This full publication of the Roman villa at Low Ham, Somerset (UK), brings together for the first time multiple pieces of research undertaken at the site over the past 80 years.

Originally discovered in 1945 and famous for its Dido and Aeneas mosaic, work by H S L Dewar and C A Ralegh Radford revealed substantial sections of what is now known to be a large courtyard villa. R H Leech carried out landscape and aerial research in the 1970s, and having conferred with the original excavators, began a publication project. A subsequent geophysical survey and further excavations, led by D Roberts, were carried out by Historic England in 2018.

This volume contains a review of structural findings from the 1940s, the detailed stratigraphic sequence revealed in 2018, and specialist reports on the findings from both campaigns. It puts forward an integrated narrative of the villa structure, contextualises both the Roman and the newly discovered prehistoric archaeology, and includes a synthesis of the material culture and environmental evidence.

The authors demonstrate the development of Low Ham from an unenclosed Middle to Late Iron Age settlement, through early Roman enclosure, to the establishment and development of one of the most elaborate and extensive 4th-century AD villas in Britannia.

Dr David Roberts is Senior Lecturer in Roman Archaeology and History at Cardiff University.

Professor Roger H Leech is Visiting Professor in Archaeology at the University of Southampton and former Head of Archaeology for the RCHME.

Rachel S Cubitt is Post-Excavation Coordinator and Finds Specialist for Historic England.

Funded by UK Government

Funded by Historic England

Pilgrim Trust

ROMAN RESEARCH TRUST

THE ASSOCIATION FOR ROMAN ARCHAEOLOGY

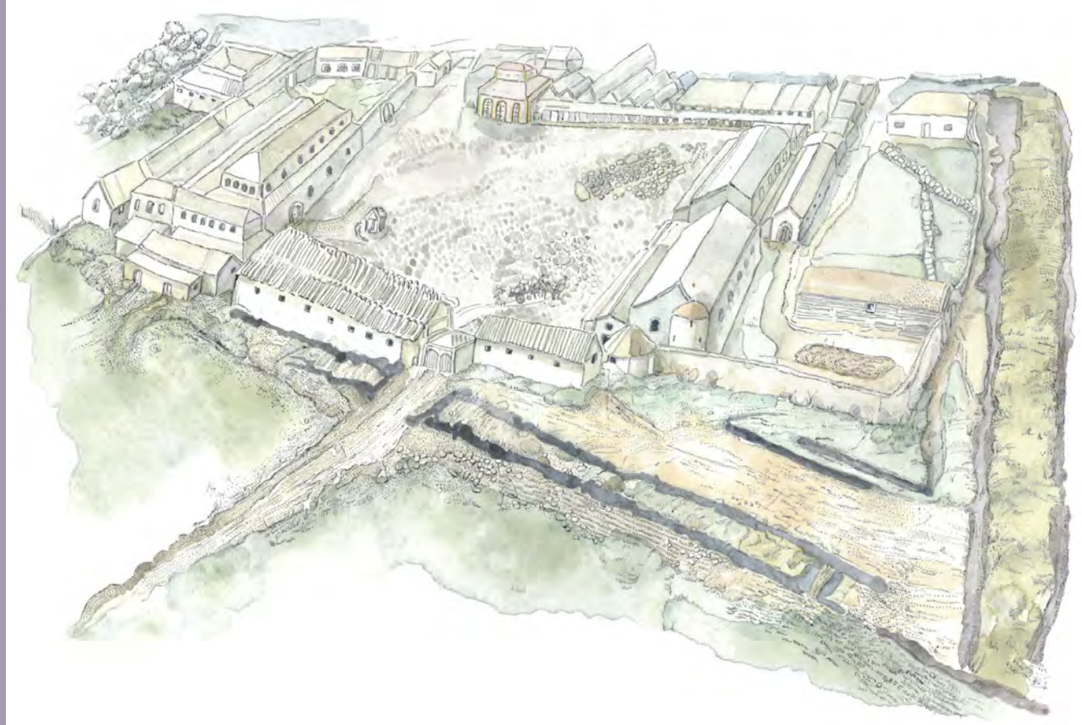
SOCIETY OF ANTIQUARIES OF LONDON

ISBN 978-0-85431-310-5

The Romano-British villa and prehistoric settlement at Low Ham, Somerset

David Roberts, Roger H Leech and Rachel S Cubitt

The Romano-British villa and prehistoric settlement at Low Ham, Somerset



David Roberts, Roger H Leech and Rachel S Cubitt

The Romano-British villa and prehistoric settlement at Low Ham, Somerset

The Romano-British villa and prehistoric settlement at Low Ham, Somerset

Excavations 1946–48 and 2018

David Roberts, Roger H Leech and Rachel S Cubitt

with contributions from Denise Allen, Olaf Bayer, Edward Besly, Ian M Betts, Matthew G Canti, Stephen R Cosh, Julia E M Cussans, H Stephen L Dewar†, Paul Flintoft, Francesca Gherardi, Harry Godwin†, Irka Hajdas, Kayt Hawkins, Kevin M J Hayward, Nicola Hembrey, Richard Henry, Jessica Holmes, Matt Law, Neil Linford, Paul Linford, Peter Marshall, Steve Minnitt, Sanne Palstra, Andrew Payne, Sarah Paynter, Ruth Pelling, C A Ralegh Radford†, Megan Scantlebury and Jane R Timby

Research Report of the Society of Antiquaries of London No. 85

SOCIETY OF ANTIQUARIES OF LONDON

First published 2025 by
The Society of Antiquaries of London
Burlington House
Piccadilly
London W1J 0BE

www.sal.org.uk

ISBN: 978-0-85431-310-5

British Cataloguing in Publication Data
A CIP catalogue record for this book is available from the British Library.

Project management: Catrina Appleby
Copy-editing: Tess Millar
Index: Cath Neal
Design and layout: Sue Cawood
Printed and bound by Henry Ling Ltd, The Dorset Press,
Dorchester, UK

Front cover: An artist's impression of the Low Ham Villa at its height (Judith Dobie, for Historic England)

Back cover: Image from the *Illustrated London News*, 11 May 1946. The reporter used his driver to pose as an archaeologist cleaning the mosaic because there were no volunteers on site when he visited (L Walrond, pers comm, April 2017)

List of contributors

Denise Allen (Independent), Glass specialist

Olaf Bayer (Historic England), Flint specialist

Edward Besly (formerly British Museum and National Museum of Wales), Numismatist – 1940s finds

Ian M Betts (formerly Museum of London Archaeology), Building materials specialist – 1940s finds

Matthew G Canti (Historic England), Geoarchaeologist

Penny E Copeland (University of Southampton), Graphics – 1940s site figures

Stephen R Cosh (Independent), Mosaic specialist

Rachel S Cubitt (Historic England), Small finds specialist and Project Manager for the publication phase

Julia Cussans (Archaeoanimalia), Zooarchaeologist – 2018 finds

Headley Davies (Engineer), Cartographer

James O Davies (Historic England), Finds photography

H Stephen L Dewar† (Independent), 1940s Excavation Director

Judith Dobie (formerly Historic England), Finds illustration – 2018 and some 1940s finds

Paul Flintoft (York Archaeology), Charcoal analysis – 2018 finds

Francesca Gherardi (Historic England), Materials scientist – 2018 finds

Harry Godwin† (University of Cambridge), Archaeobotanist – finds from the well

Irka Hajdas (ETH Zürich), Scientific dating specialist

Kayt Hawkins (Independent), Ceramic building material specialist – 2018 finds

Kevin M J Hayward (Independent), Stone specialist

Nicola Hembrey (Historic England), Small finds specialist – 2018 finds, and Project Executive

Richard Henry (Independent), Numismatist – 2018 finds

Jessica Holmes (University of Southampton), Preparation of Appendix A

Matt Law (Past Environments), Terrestrial shell specialist – 2018 finds

Roger H Leech (University of Southampton, formerly Head of Archaeology, Royal Commission on the Historical Monuments of England), Expert on the 1940s excavation, Pottery specialist – 1940s finds

Neil Linford (Historic England), Geophysicist

Paul Linford (Historic England), Geophysicist

Peter Marshall (formerly Historic England), Scientific dating specialist

Steve Minnitt (South West Heritage Trust – retired), Details of the 1940s excavation

Sanne Palstra (formerly University of Groningen), Scientific dating specialist

Andrew Payne (Historic England), Geophysicist

Sarah Paynter (Historic England), Materials scientist – 2018 finds

Ruth Pelling (Historic England), Archaeobotanist

C A Ralegh Radford† (Inspector for the Royal Commission on the Historical Monuments of Wales at the time of the excavation), 1940s site director

David Roberts (Cardiff University, formerly Historic England), 2018 Excavation Director and Project Manager up to analysis

Megan Scantlebury (Wessex Archaeology, formerly Historic England), Archaeobotanist – 2018 finds

Jane Timby (Independent), Pottery specialist – 2018 finds

Mike Trevarthen (RMA Trevarthen Archaeological Services), Finds illustration – 1940s finds

John Vallender (Historic England), Graphics – 2018 site and finds figures

Contents

* https://doi.org/10.5284/1137445

List of figures

Chapter 1

Chapter 2

Chapter 3

Chapter 4

Chapter 5

Chapter 6

Chapter 7

Chapter 8

Chapter 9

Chapter 10

Chapter 12

Appendix B*

Appendix D*

* https://doi.org/10.5284/1137445

List of tables

Chapter 4

Chapter 6

Chapter 7

Chapter 8

Appendices*

* https://doi.org/10.5284/1137445

Acknowledgements

Together the authors would like to express their gratitude to the Society of Antiquaries of London (SAL) for accepting this volume for publication, and especially to their editors (initially Stuart Brooks and latterly Catrina Appleby) for their patient and pragmatic support. The text has been delayed, both in its recent preparation (partly a consequence of the COVID pandemic), and since C A Ralegh Radford's 1953 statement of intent to publish with SAL. We hope that the final result is considered worth the wait. Generous funding that makes publication possible came from Historic England (HE), administered by Victoria Carter. Further sums have been gratefully received from the Pilgrim Trust, Somerset Archaeological and Natural History Society, the Association for Roman Archaeology, the Roman Research Trust, and the Association for the Study and Preservation of Roman Mosaics.

Tenacious project management of the publication phase has been by Rachel Cubitt, who is grateful to Nicola Hembrey and Helen Winton (HE) for championing a pathway to completion. Manuscript preparation would not have been possible without the methodical editorial input of Eva Fairnell and the detailed work of Gillian Owen (HE). Copy editing was undertaken by Tess Millar. Jessica Holmes prepared lists of the primary sources available for this and future studies. The careful indexing work was by Cath Neal. The excellent graphics are by John Vallender and Penny Copeland with advice and support from Sharon Souter (formerly HE). Particular thanks are due to John for his time and dedication in applying the finishing touches. Finds photography is by James Davies, and finds illustration by Mike Trevarthen, Stephen Cosh and Judith Dobie. Headley Davies was given particular acknowledgement in Radford's draft text and the current authors reiterate the extent to which his excavation plan has been instrumental to interpretation.

Many specialist colleagues provided insights during the post-excavation and publication stages, and all have been generous with their time and expertise in responding to queries. We particularly single out Stephen Cosh for his input into our understanding of the stratigraphic sequence and for assistance with the primary sources for Fig 3.7. Our esteemed peer-reviewers (Simon Esmonde Cleary and Tom Brindle) made valuable, sensible and radical suggestions to improve the volume, which we have endeavoured to act upon. Rachel Cubitt is grateful to Nicolas Cooper, Nicola Hembrey, Ruth Pelling and especially to Andrew Woods for constructive discussion and support. Paul Flintoft would like to thank Zoë Hazell, Gill Campbell and Ruth Pelling (all HE) for their help and support. Ruth Pelling is grateful to Zoë Hazell for useful comments on the discussion of Harry Godwin's wood identifications. Megan Scantlebury offers many thanks to Gill Campbell, who assisted with difficult identifications, and is grateful to Gill, Ruth Pelling and Ed Treasure for their patience and guidance.

Amal Khreisheh (South West Heritage Trust) kindly facilitated access to material from the original excavations, and supplied data and images for items that could not be loaned. Agata Socha-Paszkiewicz and Steve Preston (both Thames Valley Archaeological Services) provided access to unpublished material from Bowdens Lane Quarry. Chris Webster (Somerset HER) provided important data and advice during research for Chapters 9 and 12. Mike Evans (then RCHME) and Bernard Nurse (then SAL librarian) provided Leech with early access to the (then) recently deposited archive of Radford's papers.

Radford's work on the villa at Low Ham was only made possible by the cooperation of many persons to whom he and H Stephen L Dewar desired to express their most sincere thanks. The site's owners, Herbert and Lionel Cook, not only granted permission to carry out the explorations over the period of three years, but afforded the team every possible facility and allowed free access to the remains throughout the period when the mosaics were visible. Finally, when it had proved impractical to conserve the Dido and Aneas mosaic *in situ* and make the remains permanently accessible, they generously presented the mosaic and other objects found to the Museum of Somerset. This generous gift will echo down the ages.

Radford wrote (1969) that Dewar was ably seconded on the site by Mrs Dewar, and that among those too numerous to mention individually, special praise is due to Herbert Cook. The current authors were fortunate to have the opportunity to discuss the site with Lionel Walrond during the 2018 excavations. There can be few archaeologists who have participated in fieldwork on the same site at an exact 70-year interval, and the dedication to this volume rightfully recognises Lionel, and the rest of the local excavation team. They included Lionel's younger cousin David Walrond, Willian Brian Denman, Bob and

Charlie Scriven, Harry Webb, Mr Foster, Miss F, Mervyn, and Robert. We regret that reconstructing a fuller list of names has not proved possible.

Roger H Leech would like to thank those who first encouraged him to further research Low Ham in the course of his thesis, prompting meetings with both Dewar and Radford. Their help and hospitality was fondly remembered, provided encouragement over the years, and undoubtedly motivation to organise reconnaissance flights in the summer drought of 1975. Organised by Peter Fowler (then University of Bristol), these provided for the first time a glimpse of the overall plan of the villa. Support towards writing a fuller account came from Professor Stephen Rippon (University of Exeter) and Stephen Minnitt (then Keeper of Archaeology, Somerset County Museum). Financial assistance for Leech's early work was given by the Roman Research Trust/the Society for the Promotion of Roman Studies, and also through Somerset Heritage Grants' Maltwood Fund.

Leech has found working with David Roberts, and latterly with his colleague Rachel Cubitt, a rewarding experience which has resulted in a product that neither the original excavators nor he could have initially anticipated. Crucial to the completion of the manuscript are the facilities afforded to Leech by the University of Southampton in his position of Visiting Professor to the Department of Archaeology. Lastly, especial thanks are due to Pamela Leech, without whose support, encouragement and involvement over the 50 years since first visiting Low Ham, Roger's contribution to this work would never have been completed.

David Roberts is very grateful to the many people who made the 2018 excavations successful, particularly the Cooks, who, like their forebears, greatly supported and encouraged the work. Karen and Owen Cook gave permission for use of land and the History Hut. Roberts remains especially thankful to Brian Kerr (HE) for having the open-mindedness and persuasiveness to ensure that the proposal to excavate at Low Ham was agreed and actioned rapidly. Nicola Hembrey was a vital, empathetic, inclusive and steadfast colleague on and off site as Project Finds Officer and more recently as Project Executive, and Roberts is proud of how they worked together in partnership under very challenging circumstances to centre people and training in the project before, during and after fieldwork. Martyn Barber undertook valuable aerial prospection, and Matt Oakey's aerial mapping of Wearne significantly assisted with the project. The HE Geophysics team's outstanding work, undertaken by Neil Linford, Paul Linford and Andrew Payne underpins all the excavation research on this project. Roberts is very grateful for their expertise and goodwill, and begs their collective forgiveness for any interpretive liberties taken with their data in Chapter 10. Additional thanks from the Geophysics team are owed to Lawrence Rees (Historic Environment Placement) for assistance with the geophysical survey fieldwork on site.

The 2018 HE site team – particularly Ruth Pelling as Project Environmental Officer and Andy Roy and James Pearce as Logistics Officers – was magnificent. When asked to work on an excavation in winter, in the Somerset Levels, just above the floodplain, on a site only accessible by 4×4 and tractor, their response was always positive, problem-solving and stoic. Chris Leonard as Senior Excavation Supervisor deserves particular mention for being, in his words, 'the oil in the wheels of the project' on site and in the production of the Site Archive Completion (SAC) report. Rebecca Venn and Emily Walsh, as on-site Finds and Environmental Supervisors, were positive, efficient and supremely professional throughout the project. Our site team – Amelia Allen, Elena Baldi, Wendy Bishop, Richard Bradley, Thomas Cromwell, Paul Durdin, Emily Dutton, Cecilia Falkendal, Sophie Hawke, Lizzie Kendall, Anqi Liu, Darcy Lloyd, Keith May, Bryony Moody, Ruby Neale, James Osborn, Jonathan Parkhouse, Wil Partridge, Rebekah Pressler, Adrian Ruddle, Eleanor Salkeld, Samantha de Simone, Hannah Street, Florian Stroebele, Alyson Tanner, Jess Waterworth, David Weston and Kathrin Winzer – were all excellent colleagues. Roberts and Hembrey are also grateful to the Portable Antiquities Scheme, Headley Trust and Salisbury Museum for the collaborative internship we hosted on this project, and to HE colleagues for facilitating positive action training placements and experience for other HE work placements and a collaborative doctoral award PhD student.

Nicola Hembrey is grateful to Rachel Cubitt, for managing the publication phase with tenacity and sensitivity, and to the on-site finds team and project specialists, all of whom made a great contribution to the understanding of the material assemblage of the site and the people who lived there. Hembrey is especially grateful to David Roberts, as between them they placed collaboration, inclusion and learning into the fabric of the project team, enriching the project, its people, and the telling of the story of the site.

Above all, Roberts would like to thank Rachel Cubitt and Nicola Hembrey for providing the appropriate combination of tenacity, firmness and collegiality in the odyssey from SAC to publication, and Denise Wilding for her support, understanding and advice during the volume's production. Finally, Roberts wishes to thank Leech for keeping the flame alight on Low Ham since his PhD research in the 1970s, and passing on Radford's torch.

Summary

This volume comprises full publication of the Roman villa at Low Ham in Somerset, UK, and the associated prehistoric settlement. It brings together for the first time reports on all research undertaken on the site in the 80 years since it was first uncovered. The persistent research of local amateur archaeologist Lionel Walrond led, in October 1945, to the discovery of the 'Dido and Aeneas' mosaic for which the Low Ham Villa is famous. Three seasons of subsequent fieldwork led by H Stephen L Dewar and C A Ralegh Radford revealed substantial sections of the south-west wing in which this and at least eight other pavements were located. However, Radford's draft report was never completed.

Further trenching by Dewar and Radford in 1955 included excavating the villa's well and investigating parchmarks which proved indicative of further structural remains. In the 1970s, aerial and landscape research by Roger H Leech led to the proper mapping of these features, allowing for them to be considered in their immediate landscape context. Leech's initial interest in the site derived from his PhD study of Romano-British rural settlements in South Somerset and North Dorset; this included an assessment of the pottery from the 1940s' excavation work. Leech was fortunate in being able to discuss the site with Radford and to secure vital primary details of that fieldwork, providing a direct personal and intellectual link to the original excavation that has been fundamental to this current study. Leech continued to work towards publication of the villa after his retirement from the Royal Commission on the Historical Monuments in England, undertaking research at the National Archives, Historic England Archive and in Somerset.

By 2018, the villa was under threat from badger burrowing. Recognising the dearth of knowledge relating to the remains and the serious risk of damage, the Historic England Geophysical team were commissioned to survey the site. This work revealed for the first time that the villa comprised four wings arranged around a courtyard. An opportunity arose in Historic England's excavation programme to investigate these results, and David Roberts directed excavations across the area surveyed, agreeing with Leech to produce a collaborative publication of the site. Three trenches were opened, one targeting a previously unknown and un-investigated wing of the villa complex itself. Two others were placed to explore geophysical features in the immediately adjacent fields, including evidence for roundhouse structures – the first indication of pre-Roman occupation at this site.

In this current volume, Leech reviews the work of the 1940s, and with Rachel S Cubitt sets out the structural findings as far as they can be understood from the data available. Roberts' stratigraphic narrative of the 2018 excavations is included, along with a précis of the geophysical survey results (which are published in full elsewhere). Finally, Roberts, with assistance from Cubitt and Leech, sets out an integrated narrative of the villa structure. Our work demonstrates the development of Low Ham from an unenclosed Middle to Late Iron Age settlement, through early Roman enclosure, to the establishment and development of the villa into one of the most elaborate and extensive in Britannia. Given the significant gaps in the 20th-century excavation records, great emphasis is placed on Leech and Cubitt's archival detective work – mainly relating to Radford's draft publication, photographs and a small number of plans – together with the 2018 excavation and geophysical survey evidence. This allows a phased account of the villa's structural development to be proposed by Roberts, Leech and Cubitt, albeit with significant caveats and some uncertainty over various details of sequence and structuration. At its peak in the mid-4th century AD, the villa had well over 70 rooms and an internal area of over 5,000 sq m, making it one of the largest villas in the south-west of Britannia, and a similar size to the nationally significant villas at North Leigh and Bignor. The bath suite in this phase was particularly elaborate, and housed the famous Dido and Aeneas mosaic, a canopied plunge bath, and various other luxury amenities that could be enjoyed by elite inhabitants and visitors.

Roberts provides some insights into who such visitors may have been in his contextualisation of both the villa and its newly discovered prehistoric archaeology in the wider landscape and the Somerset region. The immediate local landscape is considered, particularly in relation to the neighbouring, and possibly paired, villas at Pitney, which may be comparable to Low Ham and High Ham villas. More broadly, Low Ham's context as part of the significant cluster of villas around Ilchester is discussed, along with its landscape context at the fringes of the wetlands now known as the Somerset Levels. Roberts suggests that supplying the army was a significant source of wealth for villas in this region in the late 3rd and 4th centuries AD due to the deteriorating security situation on

the continent, and the importance of the transhipment route established in the early Roman period via the river network through this region. The combination of different ecological zones for agriculture, and perhaps the opportunities for both dryland and wetland hunting – a key leisure pursuit of the late Roman aristocracy – may have made this region particularly attractive to wealthy families in this period.

Cubitt considers the material culture of the villa, integrating specialist work on all the finds and environmental evidence, including unpublished material from the 1940s. The individual specialist reports themselves are published in full, with further supporting data to be made available as part of the project archive via the Archaeology Data Service (ADS). Taken together, the material and environmental evidence speaks both of elite occupants and the activities of the other villa inhabitants who supported that way of life. Certain items hint at local choices amid the standard array of material culture from comparable villa sites, albeit with some telling absences relating to some activities. Decorative elements from the villa's internal spaces are well represented but poor spatial data limits the potential to compare individual rooms. Overall, the site is not exceptional in terms of the material culture recovered, and this observation provides a useful driver in interrogating possible pathways of change and abandonment following the 4th-century AD *floruit* of the villa.

This volume does not claim to be the final word on the Low Ham villa – the circumstances and limited nature of the interventions mean that there are still many questions which can only be addressed by further fieldwork. In the meantime, however, it is hoped that full publication of work to date will see Low Ham take its rightful place in any consideration of Roman villas in Somerset and beyond.

Résumé

Ce volume constitue la publication complète de la villa romaine et de l'habitat préhistorique de Low Ham dans le Somerset en Angleterre. Il rassemble pour la première fois toutes les études concernant ce site depuis sa découverte il y a 80 ans. Les recherches assidues d'un archéologue amateur local, Lionel Walrond, avaient mis à jour en octobre 1945 la mosaïque de « Didon et Énée » qui fit la renommée de la villa de Low Ham. Trois campagnes de fouilles dirigées par H Stephen L Dewar et C A Ralegh Radford suivirent, révélant des secteurs importants de l'aile sud-ouest de cette villa, qui contenait cette mosaïque et au moins huit autres. Cependant, C A Ralegh Radford n'acheva jamais son projet de rapport.

De nouvelles tranchées ouvertes par Dewar et Radford en 1955 leur donnèrent l'occasion de fouiller le puits de la villa et d'examiner des traces de sécheresse qui indiquaient la présence d'autres vestiges structurels. Des prospections aériennes et terrestres menées par R H Leech dans les années 1970 lui permirent de cartographier avec précision ces vestiges et de les étudier dans le cadre de leur paysage environnant. Roger H Leech s'était intéressé au site à la suite de ses travaux de doctorat sur les habitats ruraux romano-britanniques dans le sud du Somerset et le nord du Dorset ; son étude comprenait une évaluation du mobilier céramique des fouilles de Low Ham des années 1940. Il eut la chance de discuter du site avec C A Ralegh Radford et d'obtenir ainsi des détails essentiels concernant les fouilles de ce dernier. Ce lien personnel et intellectuel direct avec les fouilles initiales est fondamental pour l'étude présente. Après avoir pris sa retraite de la Royal Commission on the Historical Monuments in England, R H Leech continua à travailler à la publication de la villa en poursuivant ses recherches dans les archives nationales, les archives d'Historic England et dans le Somerset.

En 2018, la villa était menacée par des terriers de blaireaux. Consciente du manque d'informations sur les vestiges et du risque réel de dommages, Historic England chargea son équipe de prospection géophysique de prospecter le site. Ces travaux révélèrent pour la première fois que la villa comprenait quatre corps de bâtiment autour d'une cour. L'occasion de vérifier ces résultats se présenta dans le cadre du programme de fouilles d'Historic England et David Roberts dirigea les fouilles sur la zone prospectée, ayant convenu avec R H Leech de publier leur rapport en commun. D Roberts ouvrit trois tranchées dont l'une visait une aile du complexe jusqu'alors inconnue et qui n'avait jamais été fouillée. La position des deux autres tranchées fut choisie pour explorer les éléments détectés dans les prospections géophysiques des champs aux alentours immédiats, y compris des traces d'habitations circulaires, les premiers indices d'une occupation préromaine sur ce site.

Dans ce volume, R H Leech fait le point sur les travaux des années 1940 et expose, avec Rachel S Cubitt, les résultats relatifs aux éléments structurels dans la mesure où les données disponibles le permettent. D Roberts décrit la stratigraphie des fouilles de 2018 et offre un sommaire des résultats des prospections géophysiques (publiés intégralement ailleurs). Enfin, D Roberts expose (avec R S Cubitt et R H Leech) la structure de la villa dans un récit intégré. Ces travaux démontrent l'évolution de Low Ham à partir d'un site d'habitat non fortifié de l'âge du Fer moyen et final, suivi d'une enceinte d'époque romaine précoce, puis de l'établissement et enfin du développement de la villa, une des plus sophistiquées et des plus vastes dans la province de Bretagne. Compte tenu des lacunes considérables dans la documentation des fouilles du XXe siècle, une place importante est réservée aux travaux de recherche de R S Cubitt et de R H Leech dans les archives – essentiellement le projet de publication de C A Ralegh Radford, les clichés photographiques et un petit nombre de plans – ainsi qu'aux résultats des fouilles de 2018 et des prospections géophysiques. Ceci permet à D Roberts, R H Leech et R S Cubitt de suggérer une série de phases de développement de la villa, avec toutefois des mises en garde sérieuses et en notant certaines incertitudes concernant la séquence et l'agencement structurel proposés. À son apogée au milieu du IVe siècle apr. J.-C., la villa comptait plus de 70 pièces et occupait une surface de plus de 5,000m^2, ce qui en fait une des plus vastes villas du sud-ouest de la province de Bretagne ; sa taille était semblable à celles des villas d'importance nationale de North Leigh (Oxfordshire) et de Bignor (West Sussex). À cette époque ses thermes étaient particulièrement raffinés : le complexe abritait la célèbre mosaïque de « Didon et Énée », un bassin surmonté d'un baldaquin ainsi que d'autres installations luxueuses construites pour les hôtes d'élite et leurs invités.

D Roberts offre certains aperçus sur ces invités dans sa mise au point de la villa et les découvertes archéologiques préhistoriques récentes dans le contexte plus large du paysage environnant et régional du Somerset. L'étude du paysage aux alentours immédiats relève en particulier son rapport avec les villas voisines (et peut-être jumelles) de Pitney, comparables à celles de Low Ham et de High Ham. Plus généralement, la discussion met en valeur la place que Low Ham occupait dans un groupe significatif de villas autour d'Ilchester, dans un paysage à la périphérie d'une zone humide connue de nos jours sous le nom de Somerset Levels. D Roberts suggère que l'approvisionnement de l'armée romaine était une source de revenus importante pour les villas de la région entre la fin du IIIe siècle et le IVe siècle apr. J.-C .en raison de la détérioration de la sécurité en Europe continentale et de l'importance du transbordement de marchandises le long d'un réseau fluvial établi au début de l'époque romaine à travers cette région. La combinaison de différentes zones écologiques bénéficiait à l'agriculture et offrait peut-être la possibilité de chasser sur terre ferme ainsi que dans les marécages – une activité de loisir prisée par l'aristocratie du Bas-Empire – rendant cette zone particulièrement attrayante pour les riches familles de l'époque.

R S Cubitt, dans son étude de la culture matérielle de la villa, incorpore les travaux des spécialistes concernant le mobilier et l'environnement, y compris des données inédites des années 1940. Les différents rapports des spécialistes sont publiés dans leur intégralité et de plus amples données seront accessibles dans les archives du projet hébergées par l'Archaeology Data Service (ADS). Dans leur ensemble, les données matérielles et environnementales nous éclairent sur l'élite habitant la villa mais aussi sur ses autres occupants qui soutenaient ce mode de vie aristocratique. Certains aspects font penser à une préférence locale par rapport à l'éventail standard de la culture matérielle des sites de villa comparables, avec toutefois quelques absences révélatrices concernant certaines activités. Les éléments décoratifs des espaces internes de la villa sont bien représentés mais le peu de données sur leur arrangement spatial limite les possibilités de comparaison entre différentes pièces. Le site n'est en fait pas exceptionnel en termes de vestiges matériels et cet aspect sert de moteur pour interroger les éventuelles trajectoires qui ont mené à la transformation et à l'abandon de la villa après sa période de floraison au IVe siècle.

Ce volume ne prétend pas être le dernier mot su la villa de Low Ham. Les circonstances de découverte et la nature limitée des interventions laissent bien des questions ouvertes, que seules de nouvelles recherches sur le terrain pourraient résoudre. En attendant, nous espérons que la publication intégrale des travaux réalisés à ce jour permette à Low Ham d'occuper la place qui lui revient dans l'étude des villas romaines dans le Somerset et au-delà.

Zusammenfassung

Der vorliegende Band ist die vollständige Veröffentlichung der römischen Villa und der damit verbundenen frühgeschichtlichen Siedlung von Low Ham in der Grafschaft Somerset in England. Hier werden zum ersten Mal alle Berichte über die Untersuchungen, die in den 80 Jahren seit der Entdeckung der Villa durchgeführt worden sind, zusammengebracht. Die beharrlich unternommenen Erforschungen eines lokalen Amateurarchäologen, Lionel Walrond, hatten im Oktober 1945 zur Entdeckung des „Dido und Aeneas" Mosaiks geführt, welches Low Ham berühmt machte. Drei von H Stephen L Dewar und C A Ralegh Radford geleitete Feldforschungskampagnen folgten; diese legten wichtige Teile des südwestlichen Trakts der Villa frei, in welchem sich das Mosaik und mindestens acht andere befanden. Jedoch stellte C A Ralegh Radford seinen Bericht nie fertig.

In weiteren im Jahre 1955 angelegten Schnitten von Dewar und Radford wurde der Brunnen der Villa ausgegraben und die Untersuchung von Trockenheit-Spuren im Boden gab Hinweise auf andere Strukturen. In den 1970er Jahren führten die Luftbildvermessungen und Geländeuntersuchungen von R H Leech zu einer genauen Kartierung der Strukturen und Spuren. Dies ermöglichte es, sie in ihrem unmittelbaren umgebenden Landschaftskontext zu betrachten. R H Leech hatte sich ursprünglich im Rahmen seiner Doktorarbeit über romano-britische ländliche Siedlungen im Süden des Somersets und im Norden des Dorsts an Low Ham interessiert und hatte die Keramik aus den Grabungen der 1940er Jahren bewertet. Er hatte die Gelegenheit, den Fundort mit C A Ralegh Radford zu diskutieren und konnte dadurch wichtige Details über seine Feldforschungen erhalten. Dabei entstand eine direkte persönliche und intellektuelle Verbindung zu den ursprünglichen Ausgrabungen, was für das vorliegende Werk von grundlegender Bedeutung ist. Nach seiner Pensionierung von der Royal Commission on the Historical Monuments in England arbeitete R H Leech weiter an der Veröffentlichung der Villa und unternahm Nachforschungen im Nationalarchiv, in den Archiven von Historic England und im Somerset.

Im Jahre 2018 war die Villa durch Dachsbau bedroht. Angesichts des Mangels an Informationen über die Überreste und der ernsten Gefahr, dass die Villa Schaden erleiden könnte, beauftragte Historic England seine geophysikalische Abteilung mit der Erkundung der Stätte. Dies zeigte zum ersten Mal, dass die Villa vier Trakte hatte, die um einen Innenhof angeordnet waren. Im Rahmen des Ausgrabungsprogramms von Historic England ergab sich die Gelegenheit, diese Ergebnisse zu untersuchen und David Roberts leitete die Ausgrabungen im prospektierten Areal. Er vereinbarte mit R H Leech, ihren Bericht gemeinsam zu veröffentlichen. Drei Schnitte wurden angelegt: einer lag in einem bisher unbekannten und nie untersuchten Trakt des Villa-Komplexes, die zwei anderen lagen in den unmittelbar angrenzenden Feldern, um geophysikalische Ergebnisse zu erforschen. Darunter befanden sich Hinweise auf Rundhausstrukturen – die ersten Angaben, dass der Ort in vorrömischer Zeit besiedelt war.

Im vorliegenden Band bewertet R.H. Leech die Arbeiten der 1940er Jahren und legt – zusammen mit Rachel S Cubitt – die Erkenntnisse über die Strukturen dar, soweit man das aus den vorhandenen Angaben entziffern kann. Der Bericht von D Roberts enthält eine Darstellung der Stratigrafie der 2018 Ausgrabungen und eine Zusammenfassung der Ergebnisse der geophysikalischen Erkundung (letztere wird anderswo vollständig veröffentlicht). Schließlich liefert D Roberts (mit Unterstützung von R S Cubitt und R H Leech) eine integrierte Schilderung der Struktur der Villa. Dies zeigt, dass die Stätte sich von einer offenen Siedlung der mittleren und späten Eisenzeit über eine eingefriedete Anlage der frühen Römerzeit bis zur Errichtung und Bebauung einer der kunstvollsten und umfangreichsten Villen der Provinz *Britannia* entwickelte. Da es wesentliche Lücken in der Ausgrabungsdokumentation des 20. Jahrhunderts gibt, liegt der Schwerpunkt auf die Detektivarbeit von R H Leech und R S Cubitt in den Archiven – vor allem der Veröffentlichungsentwurf von C A Ralegh Radford, die fotografischen Aufnahmen und eine kleine Anzahl von Plänen – aber auch auf die Ausgrabungen von 2018 und die geophysikalische Vermessung. Auf dieser Grundlage können D Roberts, R S Cubitt, und R H Leech die bauliche Entwicklung der Villa in Phasen einstufenallerdings unter Vorbehalt und mit etwas Unsicherheit über einige Details der strukturellen Abfolge und Anordnung. In ihrer Blütezeit in der Mitte des 4. Jahrhunderts umfasste die Villa mehr als 70 Räume und eine Innenfläche von über 5000m^2. Sie war eine der größten Villen im Südwesten der Provinz *Britannia* und hatte einen ähnlichen Umfang wie die Villen von nationaler Bedeutung von North Leigh (Oxfordshire) und Bignor (West Sussex). In dieser Phase war die Badeanlage von Low Ham besonders prachtvoll; sie enthielt das berühmte „Dido und Aeneas" Mosaik, ein überdachtes Tauchbad und verschiedene andere luxuriöse Einrichtungen, die für die ansässige Elite und ihre Gäste angelegt wurden.

In seiner Kontextualisierung der Villa und der kürzlich entdeckten prähistorischen Archäologie in der Umgebung und im Somerset liefert D Roberts einige Einblicke über solche Besucher. Er betrachtet die unmittelbar angrenzende Landschaft, namentlich in Hinblick auf die benachbarten (vielleicht gepaarten) Villen von Pitney, die mit den Villen von Low Ham und High Ham vergleichbar sind. Im weiteren Umfeld bespricht D Roberts den Kontext von Low Ham als Teil einer bedeutenden Gruppe von Villen in der Umgebung von Ilchester sowie der landschaftliche Rahmen am Rande eines Feuchtgebiets, das heute als Somerset Levels bezeichnet wird. Er weist darauf hin, dass die Versorgung der römischen Armee eine wichtige Ertragsquelle für die Villen dieser Gegend im späten 3. und 4. Jahrhundert n. Chr. war. Grund dafür waren die sich verschlechternde Sicherheitslage auf dem europäischen Festland und die Bedeutung für den Güterumschlag des Flussnetzwerks, das in frührömischer Zeit durch diese Gegend eingerichtet wurde. Die Kombination von verschiedenen ökologischen Zonen für den Ackerbau und vielleicht auch die Gelegenheit, sowohl in Trocken- wie in Feuchtgebieten zu jagen – eine beliebte Freizeitbeschäftigung der spätrömischen Aristokratie – hätte wohl dieses Gebiet für wohlhabende Familien besonders attraktiv gemacht.

In seiner Besprechung der materiellen Kultur der Villa stellt R S Cubitt die verschiedenen Facharbeiten über alle Funde sowie die umweltarchäologischen Daten zusammen, darunter auch unveröffentlichtes Material aus den 1940er Jahren. Die einzelnen Fachberichte sind auch vollständig vorgelegt, während der Archaeology Data Service (ADS) weitere ergänzende Daten als Teil des Projektarchivs zur Verfügung stellen wird. Zusammengenommen geben der Befund und die Daten zur Umwelt Hinweise auf die aristokratischen Einwohner, aber auch über die Aktivitäten der anderen Bewohner der Villa, welche diese Lebensweise unterstützten. Einige Elemente deuten auf lokale Entscheidungen innerhalb des Standardangebots von Material aus vergleichbaren Villen, wenn auch mit einigen auffälligen Abwesenheiten in Zusammenhang mit bestimmten Tätigkeiten. Die Ausstattung der Innenräume der Villa ist gut vertreten, aber die wenigen Angaben über die Verbreitung der dekorativen Elemente begrenzen die Möglichkeit, einzelne Räume zu vergleichen. Im Großen und Ganzen ist die Stätte in Bezug auf die materielle Kultur nicht außergewöhnlich; dies bietet einen nützlichen Anhaltspunkt für die Erforschung von möglichen Veränderungs- und Zerfallsverläufen nach der Blütezeit der Villa im 4. Jahrhundert n. Chr.

Es wird nicht behauptet, dass dieser Band das letzte Wort über die Villa von Low Ham sei; die Umstände und die begrenzten Eingriffe lassen noch viele Fragen offen, welche nur weitere Feldforschungen antworten können. In der Zwischenzeit wird jedoch gehofft, dass die Stätte von Low Ham durch die vollständige Veröffentlichung der bisherigen Arbeiten ihren rechtmäßigen Platz in allen Betrachtungen von römischen Villen in der Grafschaft Somerset und darüber hinaus einnehmen wird.

1

Introduction

Roger H Leech, David Roberts, Steve Minnitt and Rachel S Cubitt

This monograph represents the full publication of the Roman villa at Low Ham in Somerset, UK, bringing together for the first time reports on multiple pieces of research undertaken since its discovery. It draws primarily on two separate programmes of work. One is Professor Roger H Leech's efforts to produce a report on the excavations carried out by H Stephen L Dewar and C A Ralegh Radford in the 1940s. The second is Historic England (HE)'s geophysical survey of the site and subsequent 2018 excavation of part of the south-east range and two areas of adjacent settlement, led by Dr David Roberts of the HE Excavation team. It also takes in the limited excavation and aerial survey work undertaken in the intervening period.

This chapter will set out some essentials pertaining to the work that has taken place, provide an overview of the site's topography and location, and a detailed account of the discovery. The overall volume is tripartite, with the first part dealing with the 1940s excavations and interim interventions, and the second with the 2018 geophysical survey and excavation. The 2018 work provides a detailed modern dataset that can be compared with the results from the previous excavations, which revealed a great deal of structural evidence but were very limited in terms of recording practices and the accurate collection and cataloguing of material culture.

The third part of the volume comprises extensive discussions of aspects of the site that together provide a unified interpretation of the data. In Chapter 9, Roberts assesses the pre-villa landscape of the site and its surroundings, providing a holistic summary of the evidence for the wider region in prehistory, but particularly at the time of the final centuries BC until the Roman conquest, when the pre-villa settlement at Low Ham (excavated in 2018) was occupied. In Chapter 10, Roberts, Leech and Cubitt provide a thorough review of the structures, phasing and character of the Roman villa at Low Ham, combining the excavations of the 20th and 21st centuries, and comparing this great establishment with its contemporaries. In Chapter 11, Cubitt considers the material culture of the villa alongside research on the site's environmental assemblages, integrating these strands with the stratigraphic evidence to develop insights into the lifeways of those who lived and worked on the site. In Chapter 12, Roberts sets the villa and its landscape in the broader regional and historical context of the Roman period, reviewing the settlement patterns of the area around Low Ham.

Finally, Chapter 13 considers some broader discussions in Roman archaeology to which this study may contribute, reflecting the position of the discipline in 2024, when the majority of the discussion chapters within this volume were written. HE, as majority funder, together with the other contributors (Pilgrim Trust, Somerset Archaeological and Natural History Society, Association for Roman Archaeology, Roman Research Trust, and the Association for the Study and Preservation of Roman Mosaics), has been pleased to ensure that the monograph is published, making the full account of this extraordinary site finally available to the audience it deserves. It was a joy that Lionel Walrond, whose knowledge and intuition led to the discovery of the villa in 1945, and who took part in the subsequent fieldwork, was able to visit the HE excavations in September 2018.

Sadly, Walrond died in September 2020. The authors hope that he would have approved of this latest result of his endeavours, and dedicate this volume to his memory.

1.1 Site location

David Roberts

Low Ham Roman Villa is located at ST 43649 28874, within the parish of High Ham, just within its eastern limit, which divides it from neighbouring Pitney (Fig 1.1). High Ham parish occupies the majority of a broad outcrop of higher ground, formerly an island, jutting into the Somerset Levels (neighbouring villas within these parishes are shown on Figure 12.3). The geology of the island is a range of clays, interbedded mudstones and limestones, including Blue Lias limestone used extensively for building. The south-west of the island is occupied by Aller parish. North of the island lies King's Sedgemoor, to the west North Moor, and to the south-west Aller Moor. These areas are now drained and managed former wetlands, although still subject to regular flooding in winter. The underlying geology of the villa site itself is Westbury Formation and Cotham Member interbedded mudstone and limestone, with the lowest parts of the site also bearing river terrace deposits and, immediately in front (north-east) of the villa at the base of the valley of the Low Ham Rhyne alluvium.[1] The villa is tucked into the central part of the narrow valley between the eastern side of the island and Pitney, set on a gentle east-facing slope down to a slight terrace above the floodplain of the Low Ham Rhyne. To the north are views towards King's Sedgemoor beyond the curve of the valley, and to the south towards the crossing of the Rhyne at Gore Lane, west of Pitney. Unlike some other great houses of Roman Britannia, the villa site does not occupy a dominant landscape position. Instead, it has a feel of privacy, enclosure and seclusion, despite being overlooked by higher ground to the west.

1.2 Discovery

Roger H Leech and Steve Minnitt

Investigations at Low Ham have a long history extending back to the initial discovery of a Roman tile at the site in 1937. At that date Old Manor Farm, Low Ham, was owned and farmed by brothers Herbert and Lionel Cook, members of the family that had bought the estate in 1912; in 1998 the farm was renamed Netherham Farm.

Events leading to the discovery of the Roman villa began in 1937, when Herbert Cook discovered a dead sheep in one of their fields. Rather than move it elsewhere for burial he decided to bury the sheep next to where it lay, which was normal practice at that time. In digging the grave, Herbert discovered a fragment of tile at a depth of about 3 feet [0.9m] (Fig 1.2). Noticing that it was unlike tiles on buildings in Low Ham and that it had an intriguing combed pattern on one face, he took it to the Somerset County Museum at Taunton. There, it was identified as a fragment of Romano-British box-flue tile. Herbert donated the tile to the museum (accession number TTNCM A.2972) and a very brief note was published in a later annual list of new acquisitions (Anonymous 1939, 77).

This was temporarily the end of the story and, if not for the impact that the tile's discovery had on Herbert, the rest of the villa and its pavements could well have been damaged or destroyed during the Second World War. As part of the campaign to increase home-grown food, the Ministry of Agriculture instructed Herbert to plough the field in which the tile had been found. However, with a strong sense that something important might lie there, he appealed against the Ministry's instruction and gained agreement that he could plough another field instead.

Further interest was aroused in 1945, when Lionel Walrond, a 17-year-old amateur archaeologist and farmer's assistant who lived in the neighbouring village of Pitney and had been jointly responsible for the recent discovery of the Roman villa at Lufton near Yeovil (Hayward 1952, 91), noticed the reference to the tile in the *Proceedings of the Somerset Archaeological and Natural History Society* (Anonymous 1939, 77). Intrigued, he contacted the Cook family to find out more. Nobody had a phone, so contact was made via Walrond's uncle. There was initial confusion over the find-spot. Walrond's question about the location of the sheep's grave was answered by Lionel Cook, Herbert's brother. Lionel Cook believed the query related to a dead sheep that he had buried on a terrace close to the church. Walrond knew the site and was aware that this was a relatively recent historic feature and that the tile could not therefore have come from a Roman context. Consequently, Walrond took no further action.

[1] To the south of Stembridge Road, where it passes in close proximity to the villa site, this watercourse is known as the Low Ham Rhyne. However, to the north of Stembridge Road it becomes the Leazemoor Rhyne. The former name is used consistently throughout this volume except where the northern stretch is specifically discussed.

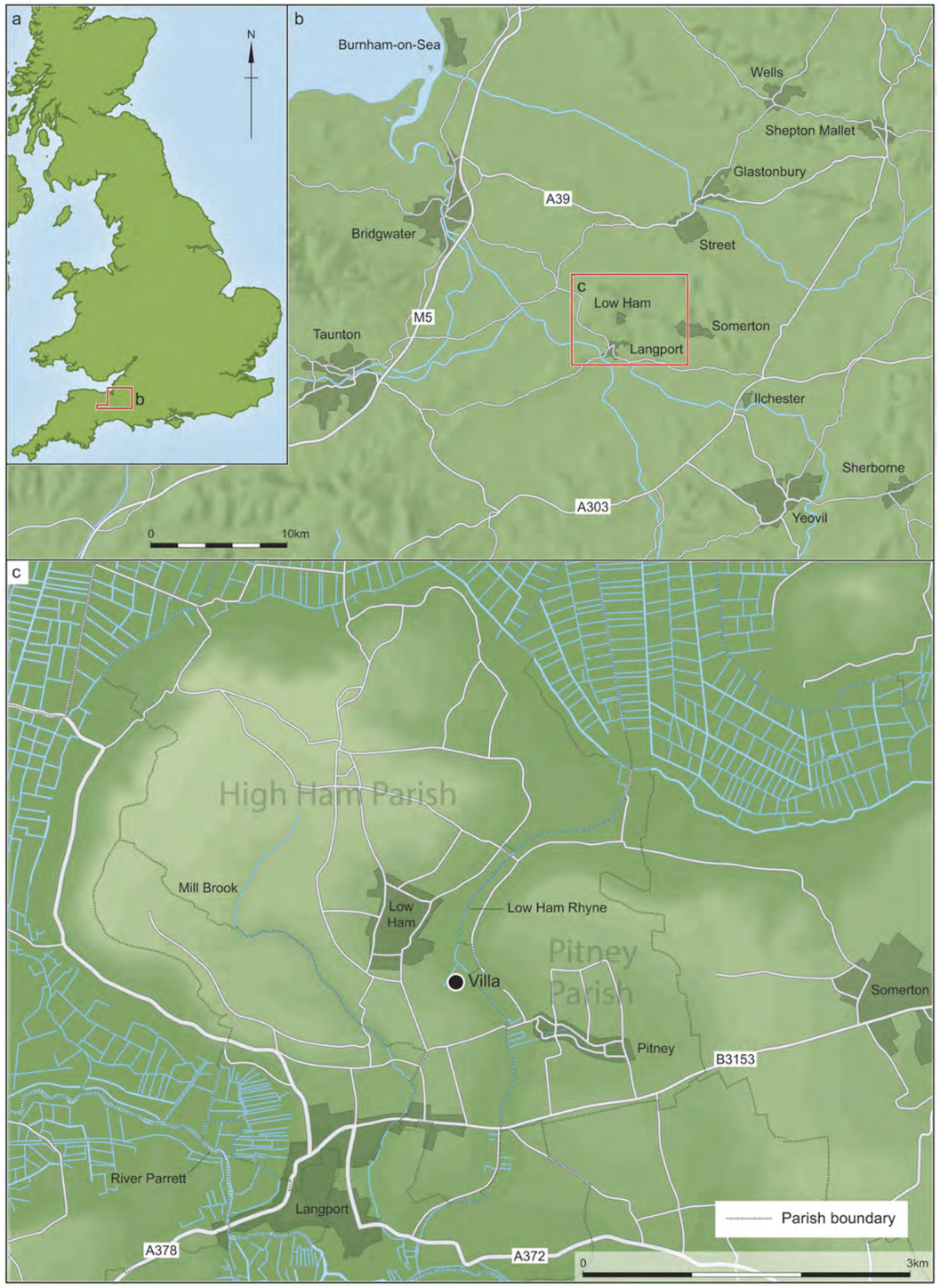


Fig 1.1 Location of the Roman villa at Low Ham (John Vallender, Historic England. (c) Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900)

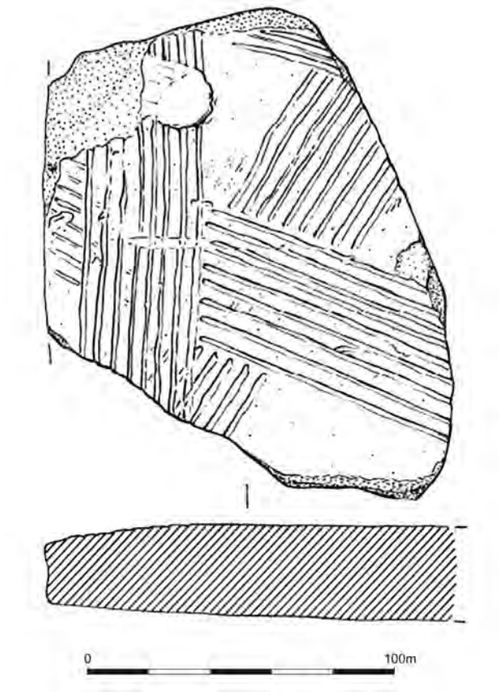


Fig 1.2 The fragment of box-flue tile found in 1937 (Mike Trevarthen)

Fortunately, the Cook brothers had a conversation about Walrond's interest in the box-flue tile. Herbert realised the confusion and contacted Walrond with the correct location for the burial. As a result, in August 1945 Walrond and Herbert Cook visited the site and decided to dig a small trench in the vicinity of the tile's place of discovery, with the result that more tiles were found. They were keen to investigate further but recognised that they needed expert help. In October 1945 a small team, led by local amateur archaeologist Dewar, was brought together to carry out a limited excavation. The trench was just 6 by 3 feet [1.8m × 0.9m]. According to Walrond, he had a dispute with Dewar about where to locate the trench. Walrond's argument won the day. This outcome would lead to the discovery of the Dido and Aeneas mosaic, for which Low Ham Villa is best known (see Chapter 2, and Chapter 4.5, Fig 4.11).

The issue of whether Walrond or Dewar first exposed an area of the mosaic and therefore discovered it was a sensitive matter and caused friction between the two men. Dewar receives most of the credit in published sources, while Walrond rarely receives a mention. For example, *The Roman Mosaics from Low Ham & East Coker*, a paper reprinted as a museum guide (Radford and Dewar 1954), states that the mosaic was discovered in 1938 by Herbert Cook and that the find was reported to 'one of the writers'. There seems to have been a conscious attempt on Dewar's part to write Walrond out of the story. The typescript of a lecture about the Low Ham excavations given by Dewar in Cambridge, date unknown, supports this (SRO DD SAS A/DWX). Dewar began by summarising the events that led to the discovery of the site and acknowledges the support he received during the excavations. All are named except Walrond who, in a reference to him having followed up the note on the fragment of tile discovered in 1937, is simply described as 'a Pitney farm-boy'. This is an appropriate point at which to note that Walrond subsequently became the curator of the museum at Stroud in Gloucestershire and a leading member of the Vernacular Architecture Group, and was elected as a Fellow of the Society of Antiquaries (FSA) in 1979.

The sensitive nature of the topic is revealed in a journal kept by the late William Brian Denman of 14 Elmhurst Avenue, Yeovil. Denman kept a record of his visits to the excavations in what he called 'An Amateur's Log of visits paid to the LOW HAM VILLA during the first Summer's Dig' (SRO A/AHA/3/1; notes covering 6 October 1945 to 7 May 1946 and 1 May 1948 to 5 June 1948; hereafter referred to as Denman 1948). Denman showed his log to Dewar in September 1946, who added a number of annotations. Amongst them is a hand-written note by Dewar correcting Denman's account of the discovery of the mosaic. Denman had stated that Walrond was the first to expose the mosaic when 'he located the three-horse panel'. Dewar's note (Denman 1948, page between 5 and 6) reads: 'Actually no! On October 6th '45, I went over to Low Ham and L.W. & I dug a hole some 10 yds. W. of the sheep-burial. The trowel that struck mosaic was mine. This hole was dug under my guidance'.

In November 2013, the 60th anniversary of the lifting of the mosaic was the occasion for a celebration and press release. Aged 85 years, Walrond (Fig 1.3) travelled from his home in Stroud and recounted events from his perspective to a gathering of people from Low Ham and High Ham held in front of the mosaic at the Museum of Somerset in Taunton Castle. About 50 people attended, some purely out of interest, but a dozen or so had memories to share of the excavations and of wider happenings in Low Ham in the 1940s and 1950s. An audio recording was made by Alastair Goolden and was transcribed by Kate Lynch (a copy of the recording is held by the Somerset Heritage Centre, SRO DD/X/SOM/120). Walrond was able to place on record his account of the discovery of the Dido and Aeneas mosaic during the October 1945 excavations:

we came down on a layer of roof tiles and underneath the layer of roof tiles, was a layer of painted plaster but all of that had rotted away … and then it was dinnertime, so we sat on the side of the trench with our feet dangling inside and said now let's just think. And I can remember that Stephen Dewar said, 'oh terrible disappointment this, worked so hard to uncover all this and all we find is just a single flagstone, stone flag floor'. Well that word 'flag floor' stuck in my mind … our trench was 6 feet by 3 feet and usually the biggest flagstone you would find in the Langport/Pitney area would have been about 3 by 2 feet. So why were there no joins between the flagstones, it all appeared one even level piece and it wasn't mortar, you could see it was a stony material … And I looked and I looked, and by that time the breeze was starting to dry out a little tiny bit of the surface and I saw some small white flecks … and I thought, that's not the way a flagstone dries out, and I thought 'Is it tesserae?' I got a little scraping tool and I got down on to my knees and scraped away with it … and then you could see a patch of tesserae. And so that was the first spot that came to light and I can remember turning round and saying, 'it's not flagstones, it's tesserae' … we knew we had found something important.

The degree of detail provided leaves little doubt that Walrond should be credited with exposing the first area of mosaic, which proved to be the section between the cloak of the first rider and the head of the horse of the second rider on the horse panel.

At the gathering in 2013, Walrond referred to the strained relationship that he had with Dewar. He felt that Dewar looked down on him and treated him accordingly, for example referring to him as 'just a farm labourer'. Dewar did make some concessions to Walrond, however. He and a few others who were keen to be actively involved in the excavations had to work during the day, so a shift arrangement was devised (see Chapter 2.2).

The earliest press coverage was in *The Daily Telegraph* on 18 April 1946 and in the *Somerset County Herald and Taunton Courier* on 20 April 1946, following which the discovery of the mosaic received further national coverage on the front page of *The Illustrated London News* on 11 May 1946, and within two subsequent issues for 25 May and 17 August that same year. News of the discovery was also under discussion within His Majesty's (HM) Office of Works, predecessors of today's English Heritage (EH) and HE, with the chief inspector and archaeologist Bryan St John O'Neil noting on 22 July 1946 that 'Mr Radford is observing at a distance' (TNA WORK 14/2004/1). Radford described his first season's involvement in a report written on 14 September 1946:

Fig 1.3 Lionel Walrond FSA at the Museum of Somerset on 6 November 2013, aged 85 years (*Western Daily Press*, 9 November 2013)

work has been carried out entirely by voluntary labour, recruited by Mr Dewar, who has throughout been in charge of the site. I have acted as Consultant Director of the excavations, discussing beforehand the general conduct of the work and visiting at intervals to discuss problems that may arise and to inspect the results (SRO DD SAS A/DWX).

Dewar's own notes, also with the Somerset Record Office (SRO DD SAS A/DWX), and the variety of other sources drawn upon in this chapter shed light on various aspects of the excavation – including the order in which the mosaic panels were uncovered and the changing interpretations of the scenes revealed – it eventually being realised that the subject of the mosaic was the meeting of Dido and Aeneas in Carthage (for which see Minnitt *et al* forthcoming).

Excavations at the site continued in 1947 and 1948, with further discoveries being made through aerial photography in the 1950s and 1970s, confirming that the range of buildings excavated in the 1940s was the north-west side of a villa set around a large courtyard. Interim reports on the excavations were produced for *The Journal of Roman Studies* (Wright 1946, 1947, 1948, 1949, 1954, 1956) and *Notes and Queries for Somerset and Dorset* (Radford 1950a, 1950b, 1950c; Dewar 1961a, 1961b), but no full report was ever produced.

1.3 Research into Roman Somerset

Roger H Leech

In the region more broadly, Low Ham lies within a part of Somerset closely studied in the past and with many Romano-British sites located. Such work has been supplemented for the area close to Low Ham by much further subsequent research (see Chapter 12). Mapping of sites was first undertaken by Sir Richard Colt Hoare in his publication of *The Pitney Pavement* in 1832, building upon his collaboration with Samuel Hasell, a gentleman antiquary of Littleton, north of Somerton (Hoare 1832). The Romano-British sites closest to Low Ham recorded by Hoare were the courtyard villa at Pitney and another possible villa of character unknown (see Chapter 12) much closer to Low Ham. The existence of the site at Low Ham and another villa at High Ham was not known at that time. The Pitney Pavement was well known to Dewar, who extended Hoare's list with his own research in and around Somerton, assisted by maps supplied by the Inspectorate of Ancient Monuments and published as part of Radford's report on his excavations at Catsgore in 1950 (TNA WORK 14/2004/169-171 and Radford 1951, 43–51).

A further phase of research into this well-studied area of Roman Somerset could be said to have begun with Leech's excavations of the Romano-British sites at Bradley Hill and at Catsgore, the former a farmstead which might now be interpreted as a small villa (Leech 1981a, 1982b), the latter now identified as a roadside settlement or village comprised of at least five separate farms (Leech 1982a). The purpose of the excavations at Bradley Hill 'was to examine completely a small Romano-British settlement which fieldwalking and evidence from the 1950 excavation had shown was unlikely to be either a villa or other extensive site' (Leech 1981a, 80). Excavations at Catsgore contributed to the understanding of Romano-British roadside settlements in a regional and national context (Leech 1982a, 33–6). More recently Leech was involved with the survey of four late prehistoric and Romano-British settlement sites in south Somerset (Gater *et al* 1993).

Both contributed to Leech's PhD dissertation (1977a), subsequently summarised in print (Leech 1982b). The aim of the dissertation was to undertake a reassessment of the region in the Romano-British period, building on Haverfield's (1906) study of Roman Somerset and the more recent Royal Commission studies of Dorset to look at the basin of the Parrett valley and the surrounding uplands as a whole (RCHME 1952, 1970). Several areas of research were given particular attention. Focusing on unpublished excavations and finds from fieldwalking enabled a new examination of the ceramics from the region to underpin revisions to chronologies and question existing assertions. The 'new archaeology' of the 1960s and 1970s (Clark 1972) provided a framework with which to analyse the relationships between Late Iron Age, Romano-British and medieval settlement patterns (Leech 1982b). With the emphasis placed on villas by past researchers, the new investigation of other less well understood settlement types was seen as a priority.

1.4 Writing up the 1940s excavations

Roger H Leech

While undertaking his research, Leech met and talked at length with those responsible for the work at Low Ham and became aware of the potentially illuminating excavation records that remained in their care, including Radford's notebook (1948a, see Chapter 3.1). Both of the original excavators provided access to material for the dissertation, notably the finds and the unpublished plans showing the full extent of the excavations in 1946–47 and 1946–47–48 (see Chapter 3.1, Fig 3.1). As part of the research for his dissertation, Leech was also able to record and then publish a plan of the villa and adjacent earthworks as revealed by parchmarks during the drought of 1975. It was then possible to place the villa buildings excavated in 1946–48 in their wider context (Leech 1978, 64–7). As had so often happened in the past, the original excavators had failed to provide a plan placing their survey within the wider landscape recorded on an Ordnance Survey (OS) map, which has been a source of difficulty for subsequent research (see Chapter 3.1). Aware of the importance of the nearby and extensive garden earthworks, and by then responsible for the oversight of the archaeological survey by the Royal Commission on the Historical Monuments of England (RCHME), Leech was also able to include a full survey of these (see Chapter 3.4, Fig 3.31) in the programme of the RCHME Exeter office; the results were then published in 1998 (Wilson-North 1998).

Using the disparate sources summarised in Appendix A that relate to the 20th-century investigations, work to produce the long-awaited report on the excavations began in 1998 following Leech's retirement from the RCHME, and was given a further boost from 2016 onwards with the support of a succession of grants from the Roman Research Trust and the Society for the Promotion of Roman Studies. Chapter 2 of this volume provides further details pertaining to the circumstances and organisation of the 1940s fieldwork. In Chapter 3, some of the original records of the 1940s excavations and subsequent interim works are reproduced, with others either made available or signposted via the digital appendices to this volume.

In writing up, consideration was given to adopting an approach similar to that followed for the publication of Radford's excavations at Glastonbury (Gilchrist and Green 2015), with a modern system of context numbers and inter-relationships being used to construct a site matrix and narrative from the original records. Such systematic analysis was not possible for Low Ham, where there are no separately recorded contexts or features. Record-keeping seems to have been poor, even for the period. However, the Low Ham excavations also differed from those at Glastonbury in having been the subject of a draft site narrative by Radford himself. A transcript of this hand-written manuscript is published for the first time as Appendix C, with references to primary photographs and interpolated comments by Leech. The latter demonstrate some of the difficulties and deficiencies of this narrative, which Radford no doubt intended to undertake further work on before publication. To enable a clearer understanding for the reader, Chapter 3.3 contains a room-by-room account of the excavations drawn from multiple primary sources.

In Chapter 4 the finds from the 1946–48 excavations are published, many of them for the first time. Inclusion of Cosh's contribution on the mosaics, drawn from publication elsewhere (Cosh and Neal 2005, 2024), allows these spectacular figured and accomplished geometric pavements to be considered in context. Leech's report on the pottery, undertaken for the dissertation thesis, is reproduced (Chapter 4.3) as well as a catalogue of the coins produced by Besly in 2019 (Chapter 4.1). Work on other categories of material took place between 2019 and 2024 under the auspices of HE. However, the quantity and quality of some portions of the retained assemblage, which had not progressed through the stages of assessment and analysis advocated today, only became apparent as the work progressed, meaning certain aspects of analysis fell out of the scope of this research. It was possible, however, for Pelling to provide text to supplement Godwin's (1961) tabulation of the plant remains from the well, excavated in 1955 (Chapter 4.8).

1.5 New research at Low Ham

David Roberts

In 2017, Leech approached the HE Geophysical Survey team to request whether a survey like those recently conducted under Roberts' management for the newly discovered Brixton Deverill Villa could be undertaken at Low Ham (Sabin and Donaldson 2016). As the site was suffering from badger damage and was therefore on the Heritage at Risk Register, following consultation with the HE South West Heritage At Risk team and the Inspector of Ancient Monuments, HE's Geophysical Survey team was able to undertake both magnetometry and ground-penetrating radar surveys in July 2018, the project being managed by Neil Linford (see Chapter 5). This research produced remarkable results, greatly extending the plan of the villa and revealing a sizeable surrounding palimpsest of settlement. It also highlighted the importance of the site in view of ongoing badger damage to the south-west range. A large badger sett was present in the south-west range of the villa, largely coincident with the former areas of excavation, providing a salutary reminder of the unforeseen deleterious effects of

excavation beyond merely the destruction of archaeological deposits under the trowel. Badger activity has continued despite attempts to protect the archaeological deposits through excluding the burrowing animals from the known remains.

In the latter part of 2018, the HE Excavation and Analysis team had a large project scheduled at a major Roman site in South West England, to be directed by Roberts. Shortly before that project commenced, the landowners involved withdrew permission. After representations by Roberts and Brian Kerr (formerly head of Archaeological Investigation for HE) and following discussions with the Geophysical Survey team and landowners at Low Ham, HE senior management then agreed to move the project to Low Ham, given the exceptional results of the geophysical survey and the need to better understand the as-yet undamaged parts of the site. Following this decision, Roberts consulted Leech regarding the previous excavations and to discuss the potential of working towards a joint publication, which was the genesis of this monograph. The second part of this volume thus provides a record of the geophysical survey (Chapter 5) and excavations (Chapter 6). Specialist reporting on the finds and environmental evidence from those excavations was undertaken between 2019 and 2023, and is presented as Chapters 7 and 8, respectively.

The HE excavations were undertaken between 28 October and 7 December 2018, with the bulk of the work being completed in November, and an on-site 'tail' of finds and environmental processing and record-checking continuing into December at Low Ham and the HE offices at Fort Cumberland, Hampshire. The field team comprised *c* 15 members of HE staff and several HE placements and interns, as well as on average 10–15 volunteers and students for the second, third and fourth weeks of the project. The excavation aimed to 'improve our understanding of the archaeology of Low Ham Villa's landscape through excavation and analysis in order to inform and improve current listing and better protect the site' (Roberts 2018). The excavations also aimed to test HE's plans for the provision of field skills training, and a significant training programme was provided to participants, which received excellent feedback (Roberts and Hembrey 2019). On-site finds and environmental samples were processed in temporary facilities and the History Hut, a local history exhibition curated by Karen Cook and others, housed in a refurbished Nissen hut at Netherham Farm, atop Hext Hill and to the west of the excavations. The site is owned by Karen and Owen Cook, who provided very substantial assistance to the project in addition to their kind permission for the work to take place.

The excavation was conducted according to the methodology laid out in the Project Design (Roberts 2018), which in summary comprised single context excavation in line with the HE recording manual (Historic England 2018). This system uses HE's digital excavation recording methodology, based on the Intrasis software created by the Swedish Heritage Board (see https://www.intrasis.com/). The digital record, comprising surveyed features, finds and other entities, contexts, samples, small finds and other information in the database, plus digital photographs, forms the primary site record, supplemented with Permatrace drawings of features scanned into the database following fieldwork. Specific number blocks were assigned to particular entities on site, as outlined in the Site Archive Completion (SAC) report (Leonard *et al* 2019). This methodology created a comprehensive digital database linked to geospatial data for all archaeological entities within the area of excavation, with shared access to all specialists and the site team, enabling rapid correction of any errors of recording and the exchange of information between excavation and post-excavation specialists, and adaptation of site strategies during fieldwork. The digital dataset thus created will be archived with the Archaeology Data Service (ADS), as will the project's various full specialist reports.

Given the previous excavations' focus on the structural archaeology of the main phases of the Roman villa, the 2018 excavations aimed to characterise pre-Roman activity on the site (Trench 3), ancillary Roman settlement beyond the villa buildings (Trenches 1 and 3), and late to post-Roman activity within the villa itself (Trench 2). The aim was also to characterise key areas of the archaeological features newly revealed by the geophysical survey (Chapter 5), providing a wider narrative for the site. Trench 2, in particular, focused on areas of the villa buildings unknown prior to the survey, and therefore also unscheduled, allowing a revision of the scheduling in 2019 to cover the entirety of the villa field (see the National Heritage List for England (NHLE) no 1006192).

2 A summary of the 1946–48 excavations

Roger H Leech and Steve Minnitt

2.1 Previous published accounts

Roger H Leech and Steve Minnitt

The various interim reports published as similar texts in the *Journal of Roman Studies* and *Notes and Queries for Somerset and Dorset* provide what has until now been the definitive account of the villa as excavated between 1946 and 1955 (Wright 1946, 1947, 1948, 1949, 1954, 1956; Radford 1947a, 1947b, 1948b, 1950a, 1950b, 1950c; Dewar 1961a, 1961b). A separately printed and edited version of the reports in *Notes and Queries for Somerset and Dorset*, summarising the results of the 1946 excavations, was the only one to provide a plan (Radford 1950b; Fig 2.1).

Much of the detail contained within these publications is incorporated in Radford's later manuscript (1969; Appendix C) and pertinent details are referenced separately in Chapter 3.3. The records made during the excavations are referred to in the paragraphs that follow.

A summary of the archaeological work in 1946, based on information supplied by C A Ralegh Radford and

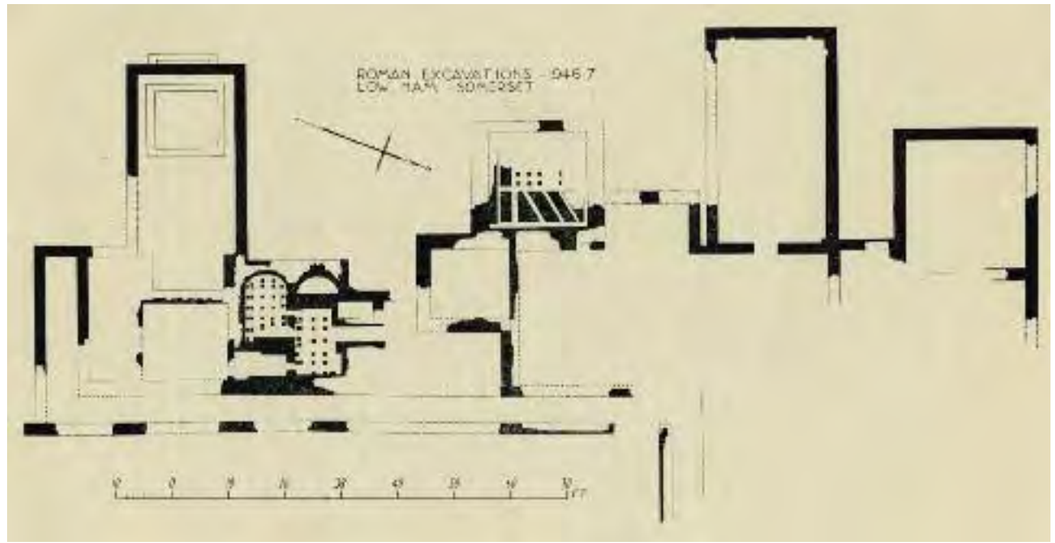


Fig 2.1 A plan of the Roman villa at Low Ham (Radford 1950b, fig 1, not dated)

H Stephen L Dewar, was provided in the *Journal of Roman Studies* as a report on Roman Britain in 1946 (Wright 1947, 173). The excavations were then backfilled with soil in August 1946, the intention being that all should 'be covered in before the coming winter'. The building with Rooms 11–14, known to the volunteers as 'the elephant house', was to 'be left open for continued research next season' (Denman 1948, 56). Fortuitously, 1947–48 was the year chosen for the first complete aerial photographic survey of Britain, a useful way of employing Royal Air Force (RAF) personnel and equipment for a national project following the end of the Second World War. Low Ham was photographed in January 1947, the filled-in excavations and adjacent site hut and electricity pylon clearly visible from the air (Fig 2.2). A second summary of the subsequent archaeological work in 1947 was provided in the *Journal of Roman Studies* as a report on Roman Britain in 1947 (Wright 1948, 93–4).

It is clear from the files in The National Archives (Kew, London; hereafter TNA) relating to the excavations that the principal objective of the 1948 season was to determine the extent of the villa with 'a series of trial holes', in order to facilitate plans for its purchase (TNA WORK 14/2004/101–3). This was not mentioned in the summary of the archaeological work in 1948, provided in the *Journal of Roman Studies* as a report on Roman Britain in 1948 (Wright 1949, 109). Little evidence is apparent for the earlier timber phases of the villa claimed to have been identified (Wright 1949, 109; Chapter 3.3).

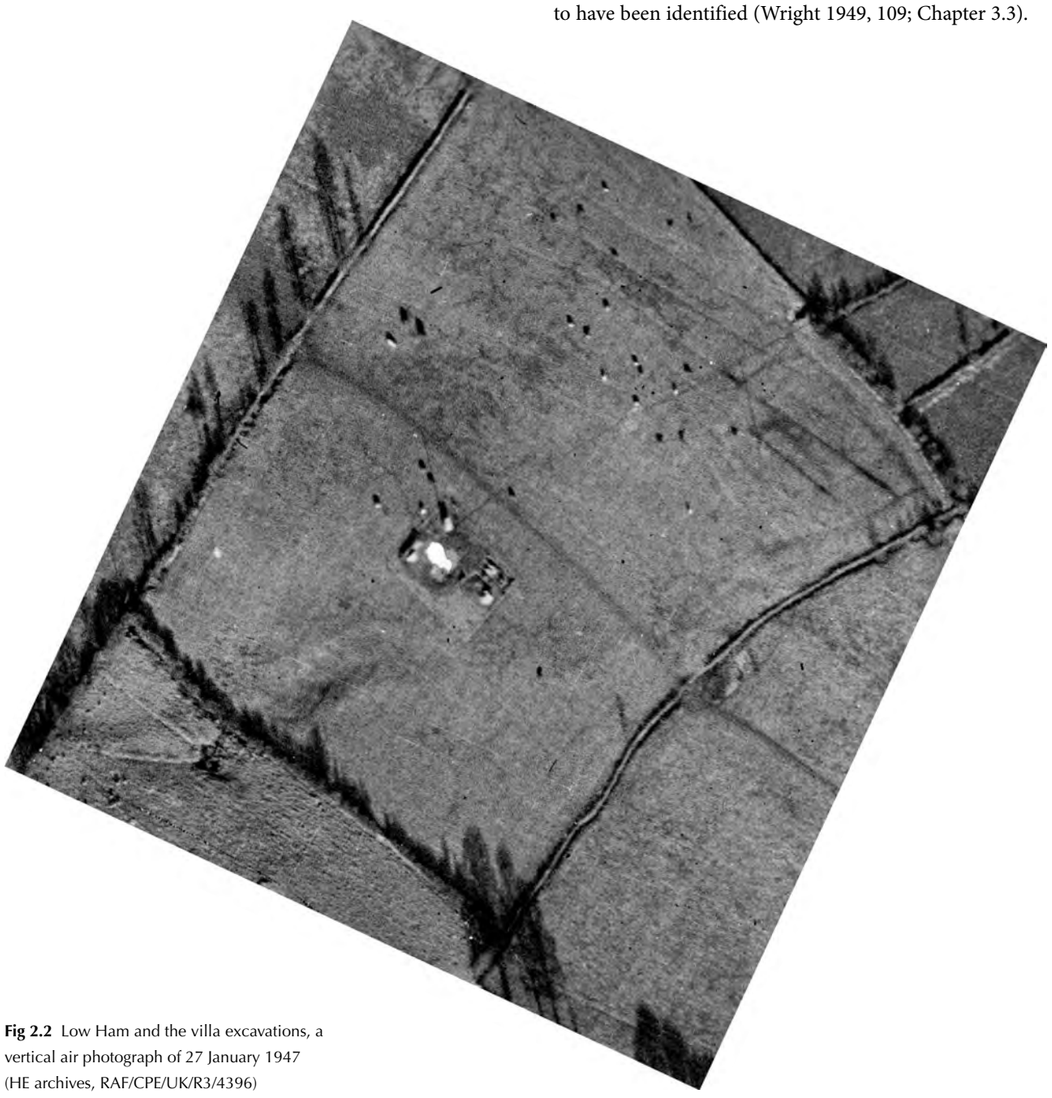


Fig 2.2 Low Ham and the villa excavations, a vertical air photograph of 27 January 1947 (HE archives, RAF/CPE/UK/R3/4396)

The excavations were not continued into 1949. Writing to Paul K Baillie Reynolds on 21 August 1948 (TNA WORK 14/2004/151), Radford explained that:

> *Dewar and I have decided that the season just ended will have to be the last carried out on the present basis. He is finding increasing difficulty in carrying on the work of supervision and my own possibilities on continuing work in this field are problematical. Also the present petrol regulations have prevented people who in previous years came to Somerset from travelling by car, and the volunteer labour force has been heavily reduced. The possibilities of the site are by no means exhausted and the report will necessarily be incomplete and therefore unsatisfactory. We are however taking full records of what has been done and shall proceed to prepare them for publication on the assumption that no further work will be carried out in the near future.*

The site was to remain a subject for discussion between Radford and the Inspectorate for at least three more years prior to a decision being made as to whether to move the Dido and Aeneas mosaic to the Somerset County Museum. Lifting of the mosaic finally took place in 1953, leading to a subsequent interim report by Wright (1954). Photographs and documents relating to this are numerous (TNA WORK 14/2003), with some of the detail contained in those sources summarised by Maddalena and Cosh (2024), and to be supplemented in print by Minnitt *et al* (forthcoming). Lifting both the Dido and Aeneas and geometric mosaics from Room 1 led to earlier features being revealed and recorded (see Chapter 3.1).

2.2 Organisation and methods, 1946–48

Roger H Leech

It can be discerned that the excavations of 1946–48 commenced in a fairly informal manner, led by Lionel Walrond with the assistance and encouragement of the Cook brothers (Herbert and Lionel) and then assisted by Dewar, who by the time of Radford's arrival on the scene had assumed charge of the operation. Radford's role initially was that of visiting consultant, and from that position he gradually took charge of the work. From April 1946, the excavations were directed by Dewar, with Radford acting as consultant, thereby involving a professional archaeologist in the work. Dewar was clearly delighted by Radford's involvement. In a letter he sent to Radford on 17 December 1945 he wrote:

> *Believe me, we are all very fully appreciative of the good fortune to have a chance of securing your services as Chief Director of operations. I think you could rest assured that if you advise us on the spot regarding the excavation as far as the removal of the soil, general and particular methods of what to do and what not to do, I would endeavour to see that your instructions were carried out* (SRO DD SAS A/DWX).

Dewar in the same letter sought Radford's advice on the use of a mine detector for locating metals on the site and about approaching the RAF regarding air photographs. It was a story not dissimilar to that of the excavations at Sutton Hoo, where Charles Phillips moved gradually from the role of visiting expert to that of being director of the excavations. These respective roles were at Low Ham regularised in the letterhead agreed for typed and written communications, with Radford the 'Consultant Director' and Dewar the 'Local Director' (examples within HEA RAD01/22/01).

Radford's hand-written description of the excavations (1969, 6; see Chapter 3.2 and Appendix C) includes the following paragraph on excavation strategy:

> *With only limited assistance available, it was not possible to uncover the whole of the Roman site. The building was opened up in a series of trenches* [Fig 2.3], *which were first carried down to the latest floor level. These trenches were extended or linked up, wherever substantial areas of mosaics or other detail of interest were discovered. Areas, which appeared barren or which had been badly wrecked by subsequent cultivation, were not fully cleared. Subsequently, when it became clear that the building was of more than one period, a number of sections and trial holes were opened in places designed to elucidate the relation between the various parts. These cuttings were sited so as to avoid disturbing masonry or mosaics in situ, as it has recently been hoped to preserve and keep available the whole building, and it was felt that such excavations could be best carried out during the process of conservation. After the removal of the most important mosaic, that of the Frigidarium (Room 3)* [Room 1 must have been intended], *trenches were cut under the floor to explore the earlier remains in this area.*

The various excavation records, notably the plans by Headley Davies (see Chapter 3.1) and William Brian Denman's log book (1948), enabled the sequence of the

excavations over the three years 1946–48 to be mapped (Fig 2.3). In each year, new excavation trenches 3–4 feet [0.9–1.2m] in width extended in different directions to determine the extent and character of the site, being subsequently widened as necessary. There was no concerted effort to dig through the full depth of archaeology present, however, with the latest floor encountered being left *in situ*.

Initially, a day shift for Dewar and volunteer diggers was followed by an evening shift for the benefit of Walrond and others. By May 1946 the cold plunge-bath had been revealed. When daylight hours allowed it was not uncommon for them to work until 23.00. This appears to have worked well for the majority of time but there were occasional difficulties when it appeared to the evening shift that they were regularly left with the removal of topsoil while the day shift focused on the archaeology below (SRO DD/X/SOM/120). This locally based team (Fig 2.4) was able to exercise considerable ingenuity in the undertaking, Dewar's use of a mine detector for what would now be metal-detecting being one example. The apparatus constructed for the photographing of the Dido and Aeneas mosaic (see Fig 3.10) is also worthy of note.

However, by 1948, enthusiasm was waning and petrol rationing was starting to take its toll (see Chapter 2.1). Dewar's site notebook (SRO DD SAS A/DWX) for the period 1 May–5 June for that year mentioned that the digging team now comprised only him with one or two volunteers.

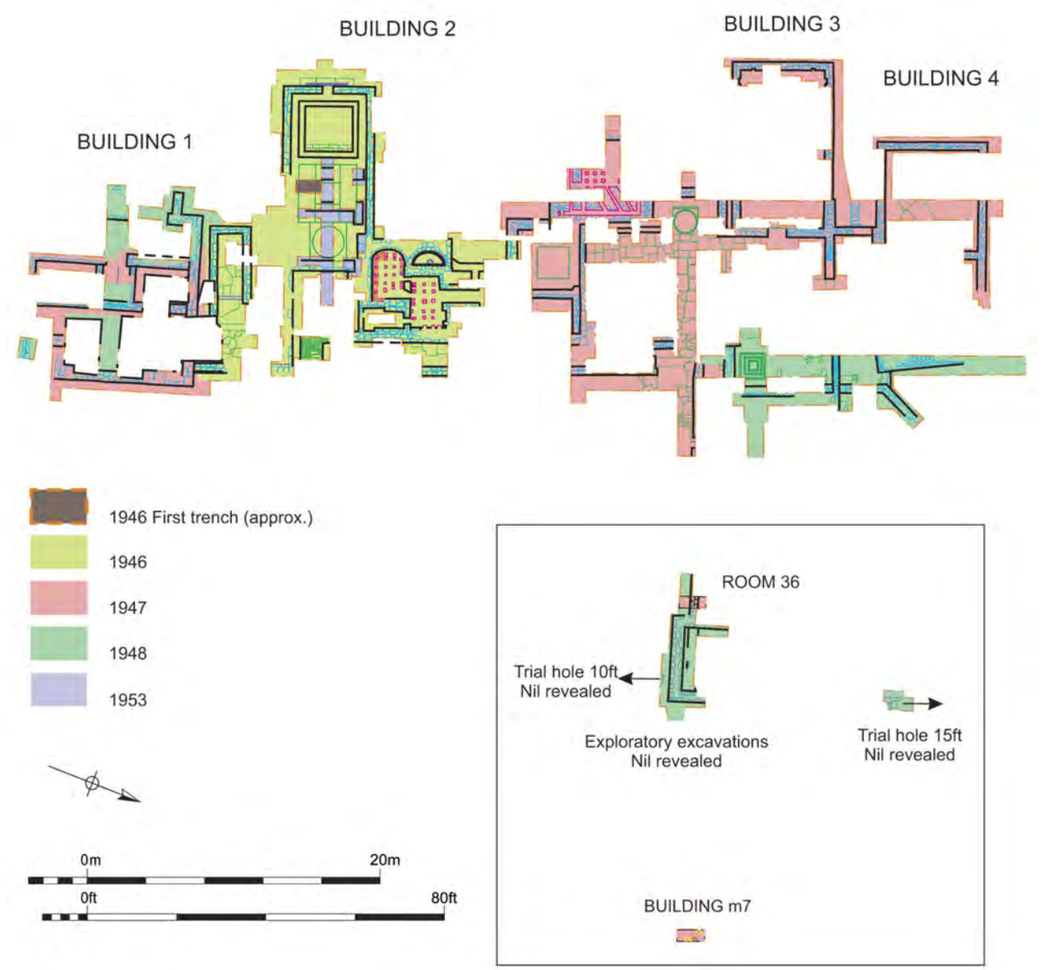


Fig 2.3 Plan of the excavation trenches by year, 1946–53 (scale: 1:1000) (Penny E Copeland)

Fig 2.4 The local excavation crew behind the newly excavated hypocaust of the hot baths. From left to right: Lionel Walrond, Herbert Cook, David Walrond, Bob Scriven, Harry Webb and Charlie Scriven (photograph from Lionel Walrond)

2.3 Visitors to the excavations

Steve Minnitt

Something of the impact of the discovery of Low Ham Villa on Somerset and beyond is encapsulated in a record of visitors to the excavation site. The Cook family kept a visitors' book (now in the Karen Cook collection) which, in two volumes, reveals something about the numbers and where they came from. The covers of the two volumes refer to the site as Ashwell Mosaics, Ashwell being the name of the field. The dig attracted large numbers of people, not just from Somerset but from much further afield in Britain and beyond. Over 8,000 people visited during the 1946 and 1947 seasons in total, and on busy days some hundreds of people arrived. This was a significant influx considering the then population of Low Ham of about 100 people (Fig 2.5).

The visitors' book began on 13 April 1946, just before the Dido and Aeneas mosaic was fully exposed. People turned up in considerable numbers even though the discovery did not receive its first media coverage until an article appeared in the *Somerset County Herald and Taunton Courier* on 20 April 1946. During its first week of use (13–19 April 1946), some 188 people signed the book. All but 25 attended on Friday 19 April. Visitors on the 19th included the first recorded school group, a

Fig 2.5 Visitors to the excavations in 1946. Visitors' cars are parked to the south of the farm (Karen Cook Collection)

teacher and nineteen boys from Brooklands, Langport. During that week visitors were overwhelmingly local, with people from Low Ham, High Ham, Langport and Pitney predominating. Some, however, came from further afield, including Kent, London, Birmingham, Poole and Plymstock. News of the discovery spread rapidly, and on 21 April 1946 the site received 261 visitors. Even on Monday 22 April there were 199 signatures in the book. Local interest was maintained throughout, with some, such as members of the Vigar and Ford families, visiting on numerous occasions.

As news of the mosaic's discovery spread, there were increasing numbers of people from elsewhere in the country and from abroad, including twelve people from Italy on 2 May 1946. There was a distinct increase in visitors from other parts of the country later in May and June 1946, following the national publicity. This was still a time of post-war petrol rationing, which further emphasises the excitement created.

There were those who showed a sense of humour by signing the visitors' book with false names. 'Joe Soap' appears on 20 April 1946, when his place of origin was given as Somerton; he returned on 10 May, when he stated that he was from Hong Kong; on 30 June, describing himself as being from Dorset; on 12 July, when he was from London, and then again on 1 June. 'Joe Loss' visited on 21 April 1946, 'Field Marshal Joe Starling' from Russia on 6 May 1946, 'Soppy Date' and 'Ivor Screwlose' on 10 May 1946, 'Wippit Kwick' from Buckingham Palace on 4 August 1946, 'Winston Churchill' of 10 Downing Street on 5 August 1946, 'HRH Princess Elizabeth' on 23 July 1947, and 'Julius Caesar from Rome' on 3 August 1947. It is probably reasonable to assume that most of these entries were by local people.

The visitors' book refers to visits by schools and colleges from within and beyond the county. Figure 2.6 shows a group from Tiverton Art School working on the site on 17 June 1946. The visitors' book shows that they comprised the principal, F Goodchild, and nine students (Karen Cook collection).

Amongst others visiting was Field Marshal Jan Smuts, the prime minister of the Union of South Africa. He went to the site on 25 May 1946, quite soon after the discovery of the mosaic had gone public. Sadly, there is no photograph or account of the visit, and he did not personally sign the visitors' book; his name was added by Dewar. People from various parts of the world made their way to Low Ham, including from Australia, Canada, USA, Egypt, Nigeria, the Gold Coast, India, Sudan, Peru, Jamaica, Singapore, China, Burma, Greece and Czechoslovakia. However, it is not being suggested that they journeyed to Somerset from these distant places especially to see the Low Ham mosaic.

Although various people involved in the archaeology of Somerset and Dorset can be identified, there are very few recognisable 'figures' from the wider archaeological world. An exception was Jocelyn Toynbee, a leading British scholar in Roman artistic studies, who is recorded in the visitors' book as having seen the excavations in progress on 18 June 1947.

Fig 2.6 Students from Tiverton Art School sketching the mosaic, 17 June 1946 (Denman 1948, 14)

Group visits to the excavations were organised by various archaeological societies in the area. Somerset Archaeological and Natural History Society went on 10 July 1946 and again on 13 August 1947. On both occasions there were about 150 members present. Sixty-six members of the West Somerset Branch of the Somerset Archaeological and Natural History Society visited on 20 July 1946, 90 members of the Dorset Natural History and Archaeological Society went on 25 June 1946, and 50 members of the Bristol and Gloucester Archaeological Society viewed the discoveries on 5 July 1946.

Other organisations arranged group visits. Eighty people from the London Missionary Society's South West Conference visited on 10 June 1946, 90 girls from Bishop Fox's School, Taunton, on 1 July 1946, 72 from Sunnyhill School, Bruton, on 17 July 1946, and 75 from Clifton College, Bristol, on 31 May 1947.

This influx of people had an impact on the people of Low Ham and the Cooks in particular. Many local children must also have visited the excavations, ensuring that it lived on in the folk memory of the village (Fig 2.7). In a report written on 14 October 1946, Radford records

> *The owners of the site, Messrs. H. and L. Cook of Low Ham, have afforded every assistance. Loss of crop and the damage resulting from the passage of many thousands of visitors across their land has been partly compensated by their setting up a collecting box on site* (SRO DD SAS A/DWX).

Visitors to the site were much reduced in 1948. Dewar's site notebook survives for the period 1 May–5 June for that year. It was noted that there had been no visitors on a number of days. For the same period the digging team comprised only Dewar with one or two volunteers. It was at this point that Radford wrote to Baillie Reynolds at the Ministry of Works, informing him that 1948 would be the last season of excavations (see Chapter 2.1).

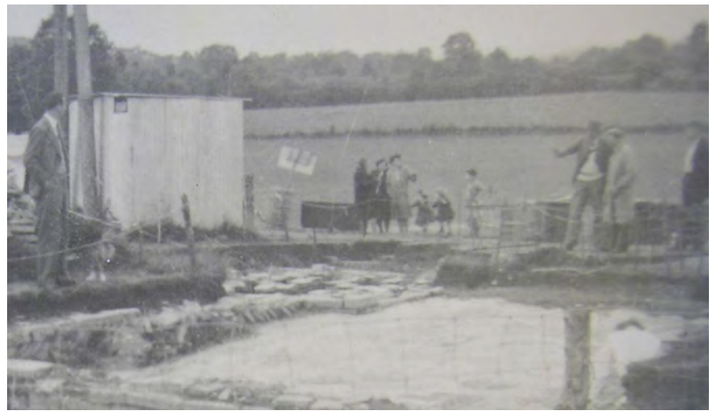


Fig 2.7 Many local people must have visited the excavations (Denman 1948, 4)

3 The 1946–48 excavations and later research assessed

Roger H Leech, Rachel S Cubitt and Steve Minnitt

3.1 Detailed records of the excavations of 1946–48

Roger H Leech and Steve Minnitt

The records and papers left upon C A Ralegh Radford's death in 1998 to the care of the Society of Antiquaries, London, and subsequently in the care of the Historic England Archive (HEA), Swindon, are of the greatest importance. Grouped under the overall reference number of HEA RAD01/22, the C A Ralegh Radford Collection for Low Ham comprises many plans, drawn sections and accompanying handwritten descriptions, photographs, correspondence and notes. The latter include a notebook compiled during the 1948 season of excavations, with entries in Radford's hand covering his activities, including the excavations at Low Ham (HEA RAD01/22/168; hereafter Radford 1948a). These are supplemented by Radford's handwritten account of the excavations of 1946–48, evidently intended to be submitted for publication (Radford 1969; see Chapter 3.2 and Appendix C).

The C A Ralegh Radford Collection at HEA is much augmented within The National Archives (TNA), London, by files of the Inspectorate of Ancient Monuments, formerly part of the Ministry of Works. Two sets of files relate to Low Ham: first, those concerned with the monitoring of Radford's excavations and the possible purchase of the site, and including many photographs (TNA WORK 14/2004); second, those concerned with the preservation and removal to Somerset County Museum of the Dido and Aeneas mosaic (TNA WORK 14/2003).

Other sources of importance remain in Somerset. The Somerset Archives, formerly the Somerset Record Office (SRO; this prefix retained here), contains several items that have been of significant use in writing this report. First are H Stephen L Dewar's notes covering 6 October 1945 to 7 May 1946 and 1 May 1948 to 5 June 1948 (SRO DD SAS A/DWX), which shed light on various aspects of the excavation, including the order in which the mosaic panels were uncovered, and the changing interpretations of the scenes revealed (see Minnitt *et al* forthcoming). Second, and probably the most useful, is the logbook compiled by William Brian Denman, a visitor to the excavations who was taken on as a volunteer digger. Entitled 'An Amateur's Log of visits paid to the Low Ham Villa during the first summer's Dig. 1946–1948' (SRO A/AHA/3/1; referred to hereafter as Denman 1948), the book contains many site plans and photographs. He visited the excavations 27 times during 1946, and on ten of those occasions assisted with the work. He returned on nineteen occasions between 8 May and 30 August in 1947, and worked on fifteen of those visits. His 'Log' (Denman 1948) includes a summary account of the progress of the excavations, with drawings of walls, mosaics and other features discovered, together with lists of finds and where they came from, often closely dated, providing a record of the sequence in which various features were examined. Third, and like the second probably compiled with no awareness that this would one day become a uniquely valuable record, is a collection of photographs taken by James Stevens Cox, bookseller, amateur archaeologist and antiquary of Ilchester and Guernsey and Fellow of the Society of Antiquaries. This collection of 26 prints (SRO A/CTP/13/10) provides the only photographic record of parts of the site excavated in 1948. A fourth collection of interest in the Somerset Archives shows the Dido and Aeneas mosaic being rolled up by the contractor for transfer from the field to Somerset County Museum, the photographs accessible only as an album of some fourteen negatives, formerly held by the County Education Service (SRO DD/X/SOM/60).

Some records and finds from the excavations remain at Low Ham with the Cook family (Karen Cook Collection), including notably one album of 24 photographs and some finds, including pottery, a pine cone and the bucket handles from the well excavated in 1955 (see Chapter 4.2). The photographs are partly duplicated in other collections, and some have been printed from negatives that have been reversed, identifiable as such from the plans and from the numbering on the photographic scales.

A few photographs were given to Leech by Dewar in 1977. A much larger collection of notes, photographs and a copy of Davies' plan showing the 1948 trenching, discussed in the following section, was retained by Dewar, but the whereabouts or fate of this collection has not been established.

The plan by Headley Davies and its derivatives

Roger H Leech

In Radford's summary of the excavations published as an offprint by *Notes and Queries for Somerset and Dorset*, the preparation of the plan of the site was attributed to a Mr Headley Davies: 'The site was surveyed by Mr Headley Davies, to whom we owe the excellent plan of the two seasons' work which accompanies this interim report' (Radford 1950b). According to Lionel Walrond, Davies was an engineer who, having turned up as a visitor to the site to view the discoveries, then offered to make a plan of the excavations. The published image (Fig 2.1) gave no hint of the detail to be found in the plans on which it was based.

Figure 3.1 reproduces the plan of the 1946–47 excavation now held by Historic England (HEA RAD 01/022/013/001). Note that in the legend, prominence was given to the Director in Charge (Dewar) and the Consultant Director (Radford), but no acknowledgement was made by Davies of his own contribution. Unusually for the time, it records the excavated features in considerable detail, stone for stone, enabling the relationships between structural features to be considered. They can be regarded as an early version of the plans of excavations that would be normal today. Such plans have evolved from those drawn with the use of drawing frames and a graticule mirroring that on a drawing board, to those using overhead digital photography replicated or traced within a computer-aided drawing (CAD) environment. However, comparing Davies' drawing with photography of the excavations, the use of a drawing frame seems unlikely. More probably, Davies worked from a series of baselines aligned on the corridor walls.

The overall accuracy of his plan was confirmed by the evidence from aerial photographs (Chapter 3.4) and then by the geophysical surveys undertaken in 2018 (see Chapter 5). However, scaling the Davies plan (produced at a quarter-inch to one foot, but lacking a scale bar) to the satellite georeferenced geophysical survey data (see Chapter 5) has been a point of difficulty. A 'best fit' has been achieved by shrinking the Davies plan by 3 per cent, which may have introduced up to 2m of error.[1]

The second known inked-up version of Davies' plan to have been identified was in the possession of Dewar, shown to Leech in 1972, illustrating the updated final excavation plan at the end of the 1948 season. Having had no success in tracing Dewar's archive, the only copies available for study more than 50 years later were a set of hand-held photographs taken by Leech in 1972, which have been of immense use in the preparation of this monograph but are not reproducible for publication. Another copy was given by Dewar to Professor Barry Cunliffe, then a lecturer at the University of Bristol. Cunliffe is confident that he gave this to Bristol City Museum, but it cannot now be traced. As a result, included as a supplement to Fig 3.1 is a carefully drawn tracing of the original, with scale bar added, made by Leech for his PhD dissertation (1977a, fig 105). However, the reader is encouraged to consult the 1946–47 original wherever possible.

The hand-held photographs taken by Leech of the plan in Dewar's possession include an illustration of the detached building in the centre of the north-west range and the various trenches excavated to provide evidence of a corridor on the north side of the courtyard. This is the only detailed record of that part of the 1946–48 excavations, as this part of Dewar's plan was not otherwise copied by Leech and does not appear on Radford's published plan (Fig 2.1). Fortunately, a less detailed (not stone by stone) but nonetheless important

[1] On this basis, there has been no attempt in the subsequent description to convert Imperial measurements to metric equivalents.

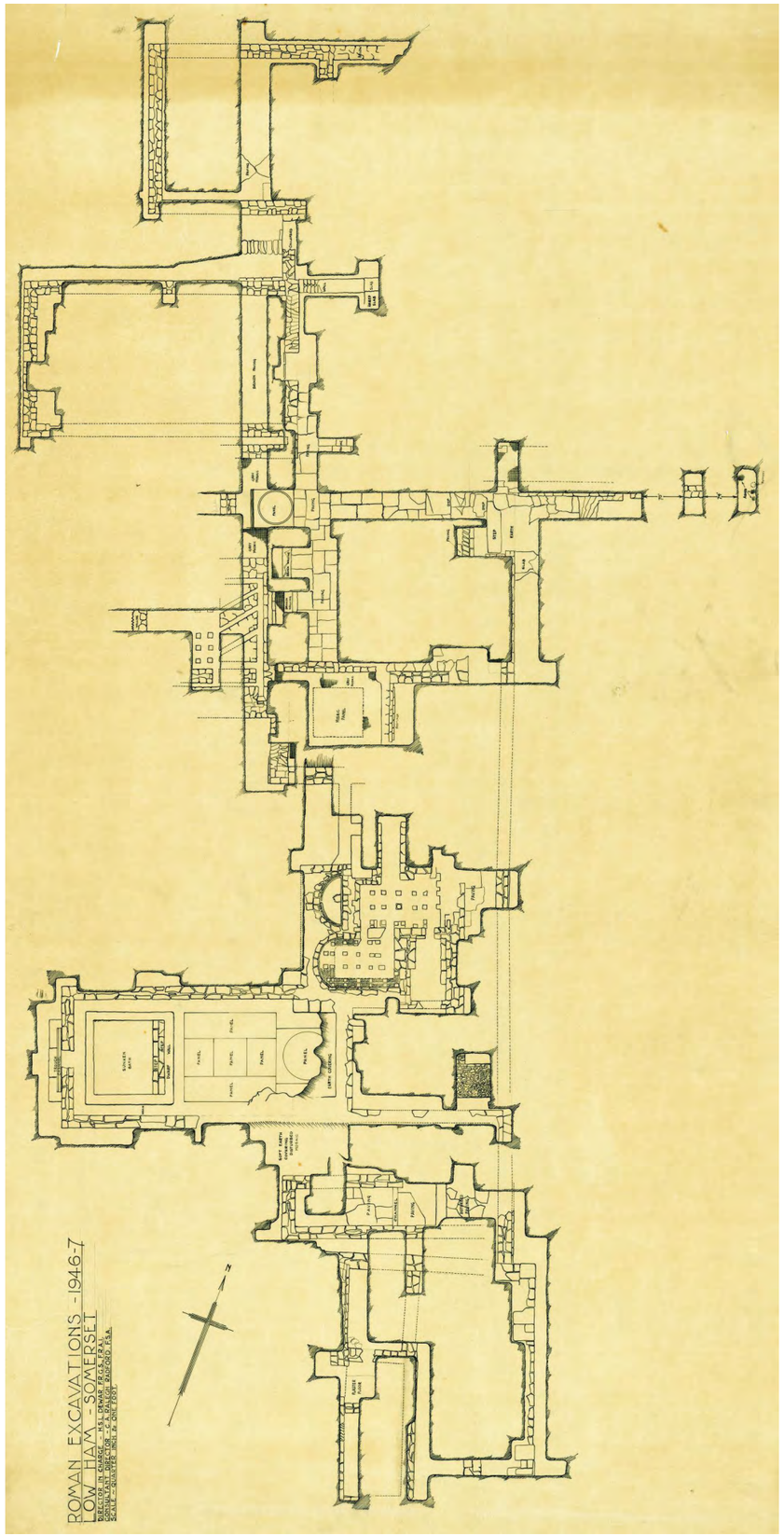
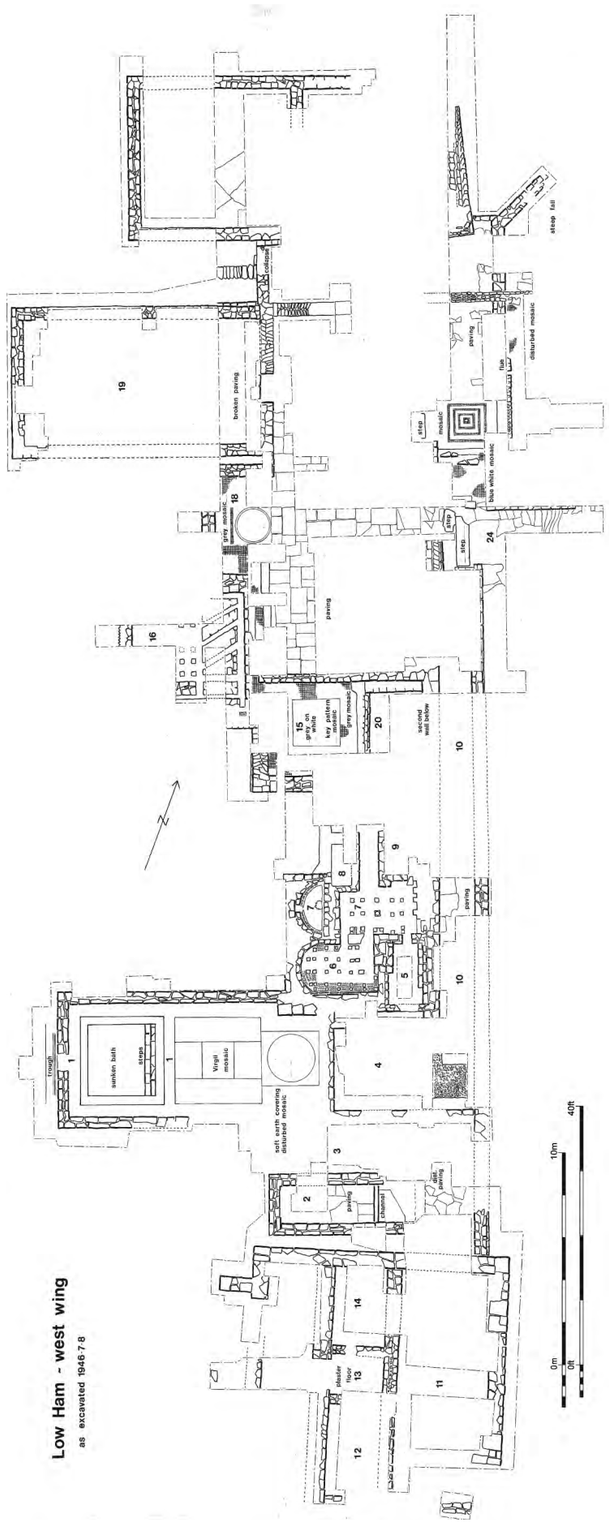


Fig 3.1 Plan of the excavations of the Roman villa at Low Ham 1946–47, by Headley Davies (HEA RAD01/022/013/001) (above). Supplemented by a tracing (by Leech) of the 1946–47–48 plan by Headley Davies (Corrected version drawn by Penny E Copeland) (below)



version exists within the HEA and has been reproduced later in this chapter as Fig 3.28.

Various other plans in the C A Ralegh Radford Collection are clearly derived from Davies' plan. These include a draft of a 'Plan of part of Roman villa at Low Ham' perhaps intended for publication (HEA RAD01/22/ loose in Box 34), and a set of plans annotated to show the phases of building, the locations of drawn sections, the evidence for structural relationships, and the distribution of rooms with mosaic or paved floors and those overlying a hypocaust (Fig 3.2).

Radford's section drawings and descriptions

Roger H Leech and C A Ralegh Radford

Drawn sections and handwritten descriptions are to be found in the C A Ralegh Radford Collection (HEA RAD01/22) supplemented by the sketch sections and rough notes in Radford's daybook (Radford 1948a), and by those descriptions of sections that appear in his handwritten account of the excavations of 1946–48 (Radford 1969). The locations of the sections are indicated on a redrawn version of the plan by Davies (Fig 3.3). Where descriptions exist, they have been transcribed by Leech from HEA RAD01/22/C164 (Sections 1 and 2), HEA RAD01/22/C165 (Section 8) and HEA RAD01/22/C163 (Section 9) and are reproduced, along with digitised drawings of the sections themselves by Penny Copeland, in Appendix B. Regrettably, lack of space precluded including these here, with the exception of Section 9, which is of key importance in recording the walls found under the mosaics in Room 1 when they were lifted in 1953. Radford's original text is given in italics.

Section 9 (Fig 3.4)

Section 9 was drawn along the south face of the trench cut east from the inner edge of the late plunge bath after the lifting of the Virgilian mosaic. [?] *feet long 2 feet south of the median line and extended for 7 feet into Room 4. The drawing was extended across the plunge bath and corridor to the west and linked with a hole dug against the outer wall of Room 1.*

The bedding of the Virgilian mosaic was 3 inches thick of a very fine, rather soft, yellowish mortar. This had remained undisturbed under the border of coarse tesserae along the face of the wall enclosing the plunge-bath. It lay in turn on a layer of medium sized stones – 4–6 inches across – but irregular and penetrating the

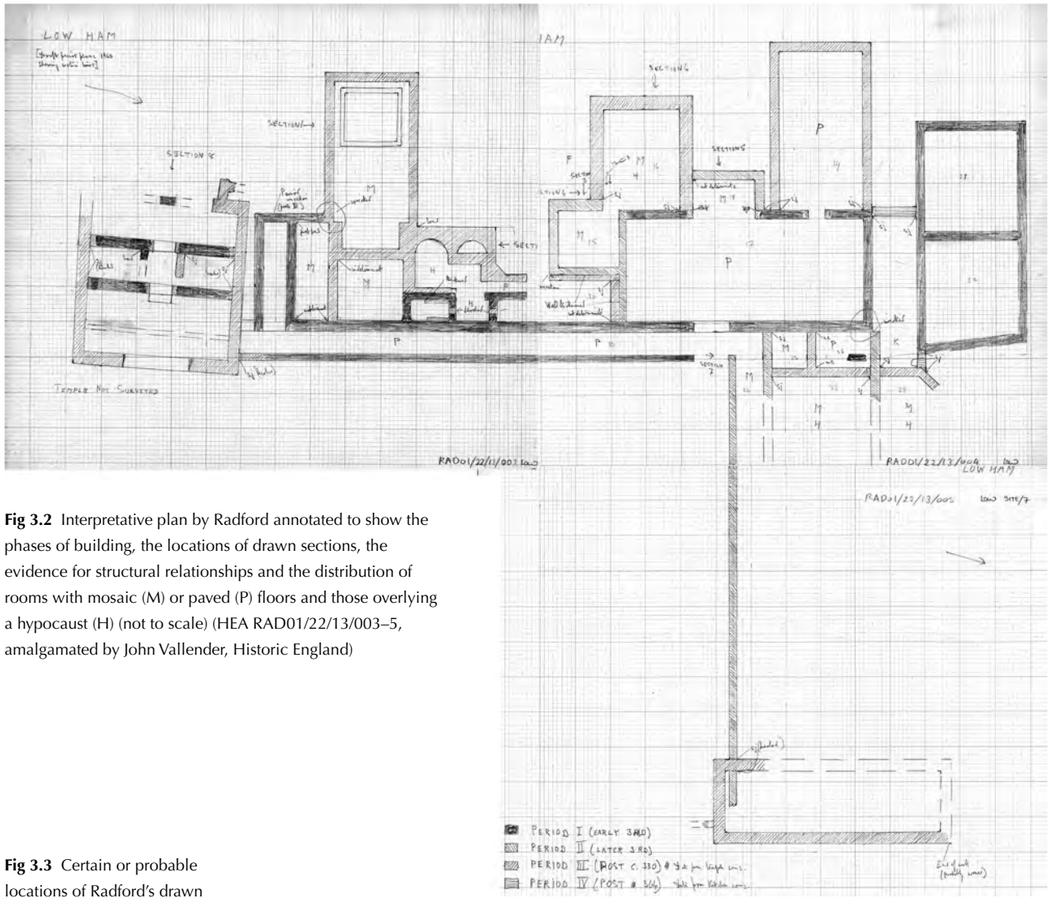


Fig 3.2 Interpretative plan by Radford annotated to show the phases of building, the locations of drawn sections, the evidence for structural relationships and the distribution of rooms with mosaic (M) or paved (P) floors and those overlying a hypocaust (H) (not to scale) (HEA RAD01/22/13/003–5, amalgamated by John Vallender, Historic England)

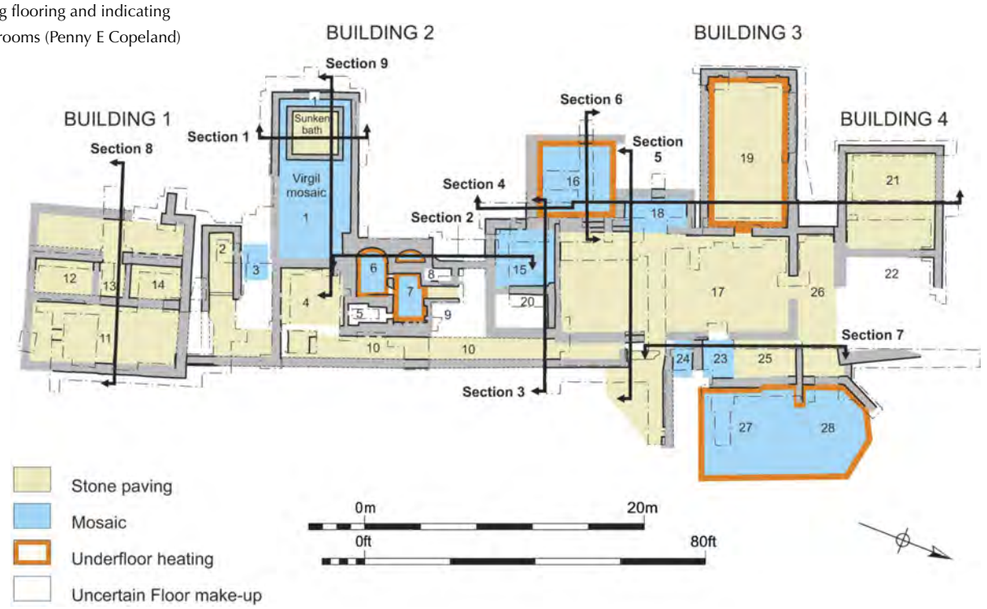


Fig 3.3 Certain or probable locations of Radford's drawn sections, 1946–53, with colours denoting flooring and indicating heated rooms (Penny E Copeland)

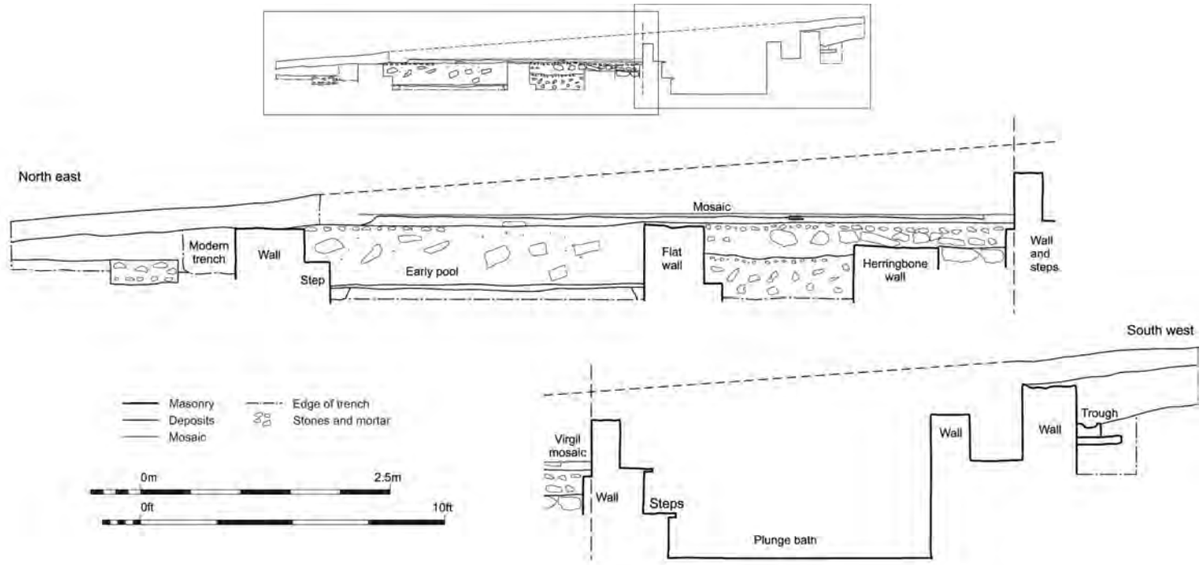


Fig 3.4 Section 9 (HEA RAD01/22/14/012, Bundle 42); profile of section across the cold plunge-bath and features to the east (Penny E Copeland after C A Ralegh Radford)

surface of the fill below. Over the back wall of the earlier basin [the words 'plunge bath' have been deleted] *the medium-sized stones were lacking and the mortar rested directly on the older masonry. Both layers continued across the front wall, which formed a deepening* [???] *across the opening between Rooms 1 and 4. The surface of the mortar was disturbed and the tesserae missing for the last few feet of Room 1, and all levels of this period had been destroyed in Room 4. Outside the end wall of Room 1 the masonry had an offset of 3 inches at a level 6 inches below the level of the mosaic. At this level the clay abutted on the masonry near the foundation was trench built. Above the offset the masonry was built with a fair face. The contemporary ground surface slipped down against the wall and was covered by a thick layer of stones with soil, occasional patches of mortar and rubbish, overlaid in turn by the plough soil. A solid drain 9 inches wide formed of stones set in mortar with a dished surface of mortar ran along the face of the wall to carry off surface water. The masonry was 9 inches deep into a wider base course of slabs to prevent sinkage in the soft soil, piled back on the clay surface after the wall was built. The cutting for the wall was wider than the 2 feet for which the trench was opened down to the level of the offset.*

3.2 Radford's handwritten account of the Low Ham Villa

Roger H Leech

Radford's handwritten manuscript of the excavations was evidently being written as late as 1969, as shown by the latest date of the references given in the notes that conclude the report. It is hereafter referred to as Radford (1969), although in the original preface Radford describes the text as a joint work between himself and Dewar. Leech's transcription of this document is reproduced in Appendix C, with inserted comments and references to plans and photographs from the various archive collections. The original preamble has been largely removed, as it contains background information to the site and its location, and acknowledgements, all of which are now found elsewhere in this monograph.

Radford's manuscript is clearly in a draft state, with deletions, insertions and gaps for details to be added. Often left blank are key details such as measurements and room numbers (some of which Leech has been able to reconstruct, see interpolations within Appendix C), and in some parts it is clear that rooms being described are misnumbered. A sketch plan of the villa (Fig 3.2), created at an unknown date but based on the Davies plan (Fig 3.1), was apparently used as an aid to Radford in preparing his draft text; however, there are some key points at which

the two sources differ. One of these is the dates Radford assigned to some of his four periods of occupation:

Phase i – early 3rd (same in both sources)

Phase ii – later 3rd (Fig 3.2) compared with *c* AD 300 (Radford 1969)

Phase iii – post *c* AD 330 (Fig 3.2) compared with *c* AD 340 (Radford 1969)

Phase iv – post AD 364 (Fig 3.2) and not given its own heading in the manuscript (Radford 1969)

The latter two are derived from coin dates, those found in Room 11 (and crucially seen by Radford as dating the Dido and Aeneas mosaic via a relationship with a drain in Room 77) and Room 26, respectively.

3.3 Room-by-room description of the discoveries in 1946–48

Roger H Leech and Rachel S Cubitt

Making use of the various records relating to the 1940s excavation alluded to in this and earlier chapters, and following the additional room numbering by David Roberts, it is possible to reconstruct the following description of the rooms and features encountered during the 1946–48 excavations. It should be read in conjunction with Fig 3.3, to which floor finishes and an indication of heated rooms have been added. This descriptive sequence is correct to the best of our abilities to interrogate the sources, some of which are admittedly difficult to work with. Being the writing of someone with first-hand experience of these excavations, Radford's draft manuscript (1969) is quoted extensively, often verbatim, but always with reference back to the original source (see Appendix C) to facilitate the reader in undertaking their own research. To ease such cross-references, cardinal directions are used following Radford's convention with a 'site north' to the northernmost part of the south-west range, and a north–south axis running the length of the range. Room measurements are internal, and quoted consistently as north–south axis × east–west axis, regardless of the shape of the room.

Today, such a narrative would have been arrived at through a systematic analysis of the relationships between separately recorded contexts or features (as Chapter 6), but for Low Ham such information is not available for most of what was excavated in 1946–48. The possibilities for an alternative to the phased narrative presented by Radford are hinted at in the comments by Leech on Radford's 1969 account of the excavations (Appendix C). This room-by-room sequential presentation of the evidence supports a wider discussion, and evaluation of the sequence and its dating is presented in Chapter 10.6.

The south-west range

A general statement regarding the masonry of the range is that it comprises squared local Oolite [Leech considers Lias would be more correct], laid in regular courses, varying from 3 to 5 inches in depth (Radford 1969, 10). No attempt was made to achieve a regular length of stone, blocks up to 1 foot in length being used, and the courses were laid with wide joints in a rather coarse yellow mortar (Radford 1969, 10).

Building 1

At the southern end of the range of buildings making up the south-west range is Building 1, Radford's Rooms 11–14, the front face projecting 3 feet forwards of the front wall of Corridor 10 (Radford 1969, 37). Little standing masonry survived, and comprised Lias blocks, probably the base for stone walls rather than a plinth for a timber structure (Radford 1969, 39). Radford's argument for an earlier timber phase (1969, 13) is substantiated from a plan sketch (1948a, 35) and written notes (1948a, 70) detailing the discovery of a foot-square wooden sill beam at the 'back' of Building 1. It runs diagonally across the narrow trench, heading at 45 degrees towards a wall, with 'gravel floor' marked to one side and an illegible note on the other (1948a, 35). It is unclear whether Radford saw a preserved wooden beam or its matrix. Behind Building 1 and following the natural slope of the ground (Radford 1969, 27), Section 8 (see Appendix B, Fig B.8) describes an older gravel spread, cut through in the upper part of the trench (Radford 1969, 27). It is dated to approximately AD 200 based on a pottery spot date (Radford 1948a, 37; Wright 1949, 109). Regrettably this sherd does not appear to have been retained as it is not included in Leech's pottery report (see Chapter 4.3). Unfortunately, reconciling the sketch plan drawing with others to firmly locate this timber beam and wall has not been possible (it is not shown on Section 8, Fig B.8). However, the different angle of the beam to anything within the stone villa plan would seem to evidence an earlier phase of construction.

Room 11

Room 11 formed the east side of Building 1, a rectangular space (10.5m × 4.2m) with the long axis facing the

Fig 3.5 Building 1, looking south along the east wall, blocks of Ham Hill stone at intervals (HEA RAD01/22/12/008)

courtyard. That the partially excavated front wall had mortar bedding for stone steps indicated an entranceway and an 8-foot-wide veranda carried on a wooden sill beam (Radford 1969, 38). Photographs and the Davies plan (Fig 3.1; Fig 3.5) show the wall line interspersed with large blocks of Ham stone. Radford also describes a front wall inside the veranda, retaining part of a course of blocks of Oolite forming a screen on which piers or columns could have been raised (1969, 40). It is presumed that this is the short stretch of north–south walling illustrated within Room 11 on the Davies 1946–47 plan (Fig 3.1), curiously absent from the later iteration, but added by Radford to Fig 3.2 as a double-dashed line.

The north side of the room was only partially excavated and while access into Corridor 10 might be surmised it is undocumented. The south side was also only partially exposed but corresponds to geophysical results confirming a longer expanse. The west wall of Room 11 is discussed below. Evidence for internal plaster work survives, although as part of a group relating to Rooms 11–14. Betts states that the majority of the fragments have the same backing type and thus may all derive from the same room (Chapter 4.6), but it is not possible to say which.

The floor of Room 11 is 6 inches below that of the rooms to the west, part of the terracing required for this sloping site, also evidenced elsewhere along the south-west range. The flooring comprises a mortar bedding for stone flags, a few broken examples still in position (Radford 1969, 40). Along the inner face of the east wall at the south-east, the illustrated elongated stone may be one of these *in situ* pavers (see Fig 3.1). In addition to 4th-century pottery, a group of four mid-4th-century coins was discovered (see Table 4.1). When taken together, details provided for their findspot (Denman 1948, 48; Radford 1948a, 37) place them somewhere along the face of the east wall, towards the south end, within in a black earthy layer and either on an earlier floor or within the bedding for a later floor above. Radford considered that they were lost during building operations (1969, 40) perhaps in the course of relaying the floor.

Rooms 12–14

Rooms 12, 13 and 14 (4.2m, 1.9m and 3.6m respectively × 2.4m east to west) are arranged from south to north across the centre of Building 1. None of the internal walls bounding them was exposed in its entirety. A sequence of construction is apparent from the wall joints illustration on the Davies plan (Fig 3.1), with the north/south walls butted against the inner face of the north wall of the overall building. The south wall of Room 14 is bonded with the east wall of the same room, but butts the short section of walling to the west side (Fig 3.6, also showing the butt joint described above, and a herringbone course within the west wall of Room 14). Routes of access are difficult to determine, but it might be deduced that there was no access from Room 11 directly into Room 13, but that there was access from Room 13 into Room 79 beyond.

Difficulty in separating in the grouped wall plaster for these rooms was mentioned above, although Room 14 is separately recorded as having a single fragment of off-white with red stripe probably from a panel border (Chapter 4.6). Flooring of all three of these spaces comprises stone flags on a mortar bedding (Radford 1969), with most of the paving remaining in position in Room 12 and consisting of irregular slabs of Lias of between 1 and 2 inches thick (1969, 39). Room 13 is described as having a plaster floor on the drawn plans (see Fig 3.1) and notes associated with Section 8 (Radford 1948a, 53–8). This could be explained by it also representing bedding for the paving, and plaster and mortar being terms used interchangeably.

Fig 3.6 Building 1, looking north from Room 13 across to Room 14 (west wall) and Room 2 (paved) beyond (HEA RAD01/22/12/014)

Room 79

Walling was found on three sides of this space, including a short length of the west wall in line with Room 13. However, the majority of the south-east corner can only be deduced from geophysical evidence. Section 8 (see Appendix B, Fig B.8) records another change in level between this room and those to the east and thus the proposed access from Room 13 must have been via a step. The space is described as having a floor that is similar to that elsewhere in the building (Radford 1969, 40).

Room 77

In conjunction with the wall defining the west side of Room 79, excavation of a westwards-projecting spur of walling sited towards the north-west corner of Building 1 provided some indication for another internal space, later confirmed by geophysics. This room was not clearly referred to in Radford's text.

Within the area of this room a drain was found at 3 feet 6 inches depth from the contemporary ground surface (Radford 1969, 38), shown at the north-west end of Section 8 (see Appendix B, Fig B.8). Both it and the closest of the excavated walls of Building 1 along this section line are cut through the gravel layer. However, the stratigraphic sequence between the cuts for the drain and for this wall are unclear. The drain had seemingly been opened and recapped at least once in antiquity, as evidenced by a cover stone found higher up the sequence (Radford 1969, 38). This stone, visible in plan on Fig 3.1, is drawn in section in such a way as to obscure the necessary relationships of other crucial layers. Radford considered that a sequence could be determined and, having taken into account absence of soil accumulation over the relevant features, seems to say that the construction of Building 1 and installation of the drain are contemporary (1969, 39). Working on the assumption that this is part of the same drain that issues from the south side of the plunge-bath in Room 1, and noting a similarity in mortar bedding material in Rooms 1 and 11, Radford then uses the coin dates from Room 11 within Building 1 to place the extended and enhanced Room 1, with the Dido and Aeneas mosaic, within his phase iii (1969, 40). This dating appears both in the early summary accounts (Wright 1954, 100) and later literature relating to the villa (Cosh and Neal 2005, 256).

Building 2

Building 2 comprises the bath suite within the south-west range and was clearly the subject of multiple phases of development. However, the earlier phases of Rooms 1 and 4 only became apparent when the Dido and Aeneas mosaic was lifted in 1953 and thus the plans drawn by Davies at the end of the 1948 excavation season show only the last incarnation of those rooms. A rough plan was made of the features found under the mosaic at the time of the lift, shown superimposed on the Davies plan in Fig 3.7, and they were also drawn in section (Fig 3.4).

Rather than work numerically, this building seems best understood by starting with Room 4 and then working around the spaces that open off it.

Room 4

Room 4 in the form shown on Davies' plan (Fig 3.1) comprises a square space (3.8m × *c* 4.1m), of which very

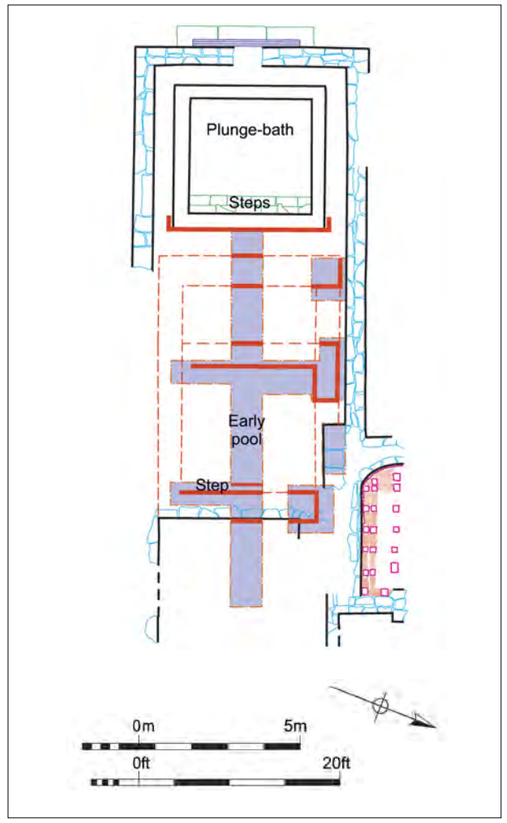


Fig 3.7 Plan of the trenches opened and walls found (in red) in 1953 beneath the mosaic pavements in Room 1 (see also key on Fig 2.3) (Penny E Copeland)

little was excavated. Radford refers to this area as a large anteroom, which abutted Corridor 10 and was destroyed to below ground level except for a few stones of the lowest course of the wall that survived at the south-east corner and along the north wall (Radford 1969, 30). At the south-west corner, Deman illustrates a 6-foot length of wall surviving to 3 feet in height, with eight courses, the upper four of which are herringbone (1948, 53). A photograph shows the wall to be of substantial thickness, perhaps 2 feet (Demann 1948, 52). A portion of the north wall of Room 4 was excavated in the area of Room 5 and appears to show an entrance into that room, Radford believing it to be the only entrance into the heated block from this anteroom (1969, 30). For discussion of a possible west wall see the section on Corridor 10 below.

An east wall to Room 4 is possibly within the unexcavated portion of the trench. It could be conjectured, as per Radford's own sketch (Fig 3.2), as a continuation of the east wall bounding Rooms 5 and 7, but this is further debated below (see Corridor 10). The nature of an entrance into Room 4 at its east end is uncertain. Wright (1947, 173) says that there are three steps up into the bathhouse from the corridor but this is not obvious on the plans. Radford's draft supposes steps between the corridor and *frigidarium*, and possibly a further step between Rooms 4 and 1, to take account of the change in level (1969, 32).

What Radford describes as the eccentricity of Room 4 in relation to Room 1 (1969, 12) suggests that the much-ruined south wall is incorporated from an older phase. Radford recognised that this space as excavated had seen change, which we now understand in the context of extensions to this element of the bath suite further evidenced by the walls running under Room 1. The sequence of walls discovered upon lifting of the Dido and Aeneas mosaic (see below) indicates that either this room once extended further towards the west, or that there was once another room situated beyond the west wall of Room 4 (see Fig 10.8 and Room 1).

The character of the opening between Rooms 1 and 4 is puzzlingly described by Radford in different ways on adjacent pages: either as a wide opening so that the two almost formed a single chamber (Radford 1969, 30), or probably a door rather than a wider arched opening (Radford 1969, 32), and elsewhere stating that a change of level might have occurred via a wide stone threshold forming a step and a single large opening, perhaps divided by columns (Radford 1969, 31). These varying observations may derive from there having been three phases of room arrangement to the west.

The nature of the flooring in this space was not apparently determined but the clay makeup below the floor level suggested a flagged pavement rather than a mosaic to Radford at the time of drafting his manuscript (1969, 29), although earlier in print he expresses the possibility of there having been a mosaic in this room (1947a, 1). Denman initially records a robbed mosaic (1948, plan following p22), but this is later corrected to a white natural deposit following expert opinion sought by the team (Denman 1948, 22, 35). Where flooring annotations have been made by Radford on his sketch (Fig 3.2), those in Room 4 are illegible. Very little of the inner area was actually excavated. Fourth-century pottery was found in this room and is reported on by Leech (Chapter 4.3).

Room 3

A rectangular space (*c* 2.1m east to west) was described by Radford as a long narrow chamber (1969, 34–5) and considered as an *apodyterium* to the bath suite (Radford 1969, 23). Very little walling belonging to this structure

survives – only part of the south wall separating it from Room 2. Discussion of the overall length of the north wall of this room is included under Corridor 10. Excavations across this west end did not provide any evidence for an enclosing wall, according to Fig 3.1. Radford refers to one, however (1969, 11), and sketches in a line that continued that of the west wall of Room 2 (see Fig 3.2). In this same section of text (Radford 1969, 11), he links this wall, by the character of the masonry, to those found running beneath Room 1 when the mosaics were lifted (see below).

Only the west end of this room was excavated, according to the plans made by Davies, with the annotation 'soft earth covering disturbed mosaic' at this location (Fig 3.1). Radford states that Room 3 had a much-ruined mosaic pavement with a geometric pattern, and that the top end of the room had been cut through by a modern pit and the bottom was destroyed by ploughing (1969, 34–5). However, as none of that east part of the room was excavated, the precise location of the plough damage Radford describes (1969, 34–5) is uncertain. In sketches (eg Fig 3.2) he continues the line of the wall bounding Rooms 5 and 7 southwards (across Room 4 as discussed above) and also across the east end of this space. This is discussed under Corridor 10.

Room 2

A second long, narrow chamber (1.8m × maximum 8.7m), immediately to the south, was interpreted by Radford as a latrine, based on analogy borne out by the discharge of water from the bath in this direction (1969, 34–5). Radford describes the masonry of the south wall as well preserved, standing in one place to a height of 2 feet above the floor, and containing stone laid obliquely (Fig 3.8; Radford 1969, 34–5). The excavated walls have no stratigraphic relationships to other rooms, but Radford considered that the south wall continued without interruption across the later corridor (Room 10) to join the front wall, which was of the same character, as far as could be judged (Radford 1969, 34–5). This is nowhere illustrated, and the observed similarity may be the sole source of this statement, as the junction between these two walls was not seen in excavation. It is possible that the end of the south wall was seen in the section immediately to the west of the corridor wall, but this is not indicated on Fig 3.1. This end of the corridor is further discussed under Room 10. Regarding the internal face of these walls, Radford states that their rough surface suggests they were rendered and describes a quarter-round fillet at the base of the south wall (1969, 10). Painted plaster from this

Fig 3.8 Room 2, looking west, showing south and north walls, the folding ruler placed within the channel in the paving (HEA RAD01/22/12/010)

room is described by Betts, including a fragment with a concave surface that may have come from a niche (Chapter 4.6).

The floor comprised a flagged pavement of slabs 1½ inches thick, set on a layer of mortar, spread over a pile of stones and clay resting on the natural clay subsoil (Radford 1969, 34–5). Elsewhere Radford states that is it less regular than that of Room 17 (1969, 13). A 'channel' (Figs 3.1 and 3.8) bisects the room, which Denman surmised was fitted with Ham stones with V-shaped channels in the upper surfaces and found loose nearby (1948, 36). Possibly describing this feature, Radford discusses a slot for a wooden sill beam, part of a wooden partition, dividing the room into two parts (Radford 1969, 13, 34–5). In discussing access to this room, Radford seems to suggest that this partition was impassable, stating that the larger upper section was entered directly from the *apodyterium*; the smaller lower part was entered from the corridor by means of one or more steps (1969, 34–5).

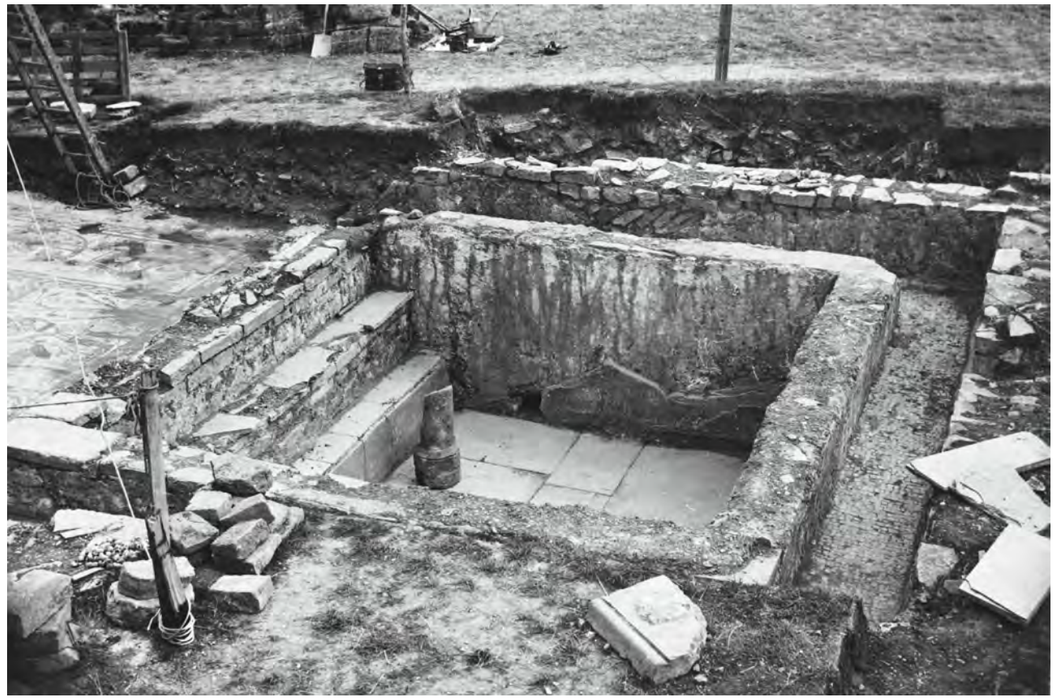


Fig 3.9 Room 1, showing excavations of the plunge bath in progress. Note the remains of the parapet and the tessellated floor between the bath and the end wall of the room (HEA RAD01/22/12/005)

Davies' plan (Fig 3.1) also shows a second cross feature to the east, between an area of paving and disturbed paving, which is not specifically referred to in Radford's (1969) draft. It could represent one of the steps or change in level Radford hints at above. Figure 3.8 does show a change of level in the paving in this room, on an approximate line with other step-changes in level elsewhere across this wing. A possible explanation of this feature as the inner wall of Corridor 10 (see below) has been discounted on the basis of it being too far west to continue the line extrapolated from elsewhere.

Room 1

The cold room was almost entirely excavated so as to expose the Dido and Aeneas mosaic, and the geometric panel to the east (Chapter 4.5). Outer walling of the room was uncovered on three sides, forming a space 11.5m × 5.2m, and for the most part did not survive beyond a few courses. Herringbone construction within the wall is visible on photographs of both the interior (Fig 3.9) and exterior (Fig 3.10) walling of the west end of the room, but not illustrated by Davies (Fig 3.1). Section 1 (see Appendix B, Fig B.1), positioned north–south across the

Fig 3.10 Room 1, looking east, showing in the foreground the trough or drain on the exterior of the west wall. Note the A frame erected for vertical photography (TNA WORK 14/2003/2/7)

plunge-bath, shows that the exterior walls had a 3-inch offset below the level of the mosaic. The west wall of Room 1 was found to have a centrally positioned access point and what appears from photographs to be a stone curb, with a channel along the outer edge, butted up against the exterior (Fig 3.10; see also Fig 3.9 showing a displaced fragment laying on the section). In Fig 3.10, stone paving is visible beyond the curb, set at a lower level. Radford considered the amount of good building stone found within the plunge-bath to be evidence for this room being originally entirely of stone construction (1969, 33). Elements of an arch, visible in Fig 3.11 and drawn reconstructed in Fig 7.10, were found lying on the Dido and Aeneas mosaic in a manner suggesting they had fallen as one piece (Radford 1969, 33). In Radford's view, supposing any windowsill to be at least 6 feet above floor level, it evidenced a lofty room (1969, 34).

The flooring of Room 1 as found was largely taken up with the two mosaics, installed on the same level (Radford 1969, 32), and described at length in Chapter 4.5. The narrowness of the area occupied by the geometric mosaic resulted from it being within the redeveloped zone between Rooms 1 and 4. Between it and the figurative mosaic and the wall of the room were narrow borders of larger, plain grey tesserae, which also paved the narrow corridors around the plunge-bath (Fig 3.9; Radford 1969, 32–3). The mosaic pavement (Radford does not specify whether part or all of the room is meant) was edged by a quarter-round fillet of plaster at the base of the outer walls (1969, 32–3). The quantity of plaster labelled as Room 1 is actually considered by Betts to be derived from multiple rooms (Chapter 4.6).

Fig 3.11 Herbert Cook poses with the architectural fragments from Room 1 including box-flue tiles, stone window voussoirs, turned columns, and moulded parapet coping stone (Karen Cook Collection)

Denman shows the base of the plunge-bath (3.2m × 3.1m internally) at 4 feet 6 inches below a datum line of the level of the mosaic, with the wall bounding the bath to the east given as 1 foot 6 inches above datum (1948, drawing following p22). Radford surmised an enclosing parapet with canopy, noting that a flat top with chamfered sides remained in place and, where best preserved, the square bedding for the base of wooden columns could be observed (1969, 33). No clear explanation is offered as to why the use of wood was specifically assumed. Notably a lathe-turned stone column was found as part of the rubble in the plunge-bath (Fig 3.9) but is not thought to have formed part of this canopy structure (pencil note by Dewar inserted into Denman 1948, 28). Radford describes (1969, 33) and Denman draws (1948, plan following p22) three steps down into the bath, running the whole width of the east end. However, from photographs it is clear that there were only two within the depth of the bath itself (Fig 3.9; see also Fig 3.1), the third 'step' perhaps being that over the dwarf wall (see Fig 3.1) at the west end of the mosaic.

The sides of the bath were of masonry carefully laid in horizontal courses and originally lined with flat slabs of stone (Fig 3.9; Radford 1969, 33–4), to which a mortar render had been applied (see Section 1 description in Appendix B). The base was also lined with slabs set on a bed of mortar (Radford 1969, 33–4). A presumed drain hole was visible in the south wall of the bath (Fig 3.9) and 'drain' is marked, in an adjacent position, on the Davies plan (Fig 3.1).

Leech notes that if Room 1 had been designed contemporaneously with the rest of Building 2, the south-west corner of the bath block would probably not have been planned to project into it. It hints at a now demolished earlier phase of Room 1 as a shorter space, its north wall taking the line of the projecting corner Leech remarks upon, and comprising a cold bath (3.2m east to west internally) with a paved area beyond. These earlier features first became apparent in 1953 when lifting the Dido and Aeneas mosaic revealed a series of walls beneath. A sketch plan of these (HEA RAD01/22/14/012/Bundle 42) has been superimposed on the outline of Room 1 in Fig. 3.7. The findings are further known from Section 9 (Fig 3.4), whose description (Chapter 3.1) is valuably supplemented by the following words from Radford's draft transcript (1969, 7–10):

> *Section 9* [Fig 3.4] *was cut along the main axis of Room 1, after the removal of the mosaic.*
>
> *Two feet west of the wall separating Rooms 1 and 4 a shallow foundation trench 2 ft 3 in wide by 6 in deep and running north and south, was cut into the natural soil and the underlying subsoil. The wall which it carried had been robbed and the trench contained only small stones, builders' rubbish and soil* [the authors note that this is the posited earlier end wall of Room 4, its non-appearance on Fig 3.7 presumably as a result of it having been robbed out]. *Overlying this was a layer of disturbed subsoil and soil varying in depth from about 1 ft at the top end of the trench to rather over 6 in at the lower end. The disturbed modern plough soil lay directly over this mixed layer, the level of the later floor having been completely destroyed along the line of the trench.*
>
> *To the west, under the mosaic, the surface soil and subsoil had been removed to a depth of at least 1 ft below the level of the natural surface under Room 4; the depth of the removal had probably increased gradually as the natural subsoil surface slopes upwards.*
>
> *Two walls, 11 ft and 16 ft west of the wall separating Rooms 1 and 4, had been built running north and south on this new surface. The inner wall, 2 ft wide, had a substantial offset on the upper side; it was associated with a level floor, 4 in thick, of very hard mortar with a high proportion of pounded brick, set directly on the new surface of the clay. The rough surface suggested the removal of stone slabs.*
>
> *The mortar bedding was cut through for the building of the later wall between Rooms 1 and 4. Between the two walls no floor was observed. The whole space was filled with loosely packed stones, builders' rubbish and soil. An irregular layer of mortar about 18 in above the clay suggested no more than a temporary surface onto which the mortar used for pointing the upper part of the walls had fallen. Beyond the upper face of the wall a slightly dished channel formed of mortar laid on stones set on the natural soil formed a drain outside the wall. The filling of the space on top of the mortar bedding was of builders' rubbish similar to that between the early walls, but was tightly packed and around near contemporary with the wall between Rooms 1 and 4.*

These details, in conjunction with the plan (Fig 3.7) and Section (Fig 3.4) drawings offer two key comparisons with the later arrangement of Room 1, the first being that the early pool was located at the east end of the room. It was apparently sunk directly against the west side of the west wall of Room 4, accessed via a step. The form of the opening through the wall and its leading directly to the pool is uncertain; Radford offers three possibilities, as noted in the discussion of Room 4 above. What appears like a similar step to the west side of the 'flat wall' (Fig 3.4) was not labelled as such and might have been considered a foundation. A second and related observation is difficulty of access to the narrow room at the west end of this extension. On the north side of the early pool, there is no indication of a narrow corridor as found around the later plunge-bath. On the south side, the width of the room could not be determined because of truncation. However, it is possible that there was no narrow corridor here either, with a constriction to both sides providing the explanation for the narrower width of the geometric pavement versus Dido and Aeneas. However, in light of Roberts' discussion (Chapter 10.5) of a southern entrance to the later incarnation of Room 1, we should not necessarily assume that all access had to be from the east side.

Room 5

A small (2.8m × maximum 1.6m) anteroom to the heated block at its south-east corner, providing access between Rooms 4 and 6, was described by Radford as badly destroyed and not heated (1969, 32). Little other mention is made of this space despite it being one of the few rooms for which an almost complete circuit of walls was uncovered. Fourth-century pottery was found in this room.

Rooms 6 and 7

These were spaces making up the heated block and they produced 4th-century pottery. The apsidal Room 6 (2.3m maximum × 3.4m) comprised a warm bath sited furthest away from the furnace, and Room 7 the hot bath (2.2m maximum × *c* 5.3m including apse), its apse end described by Radford as a sweat bath (diagram given to Leech by Radford, 15 March 1974). The apses were enclosed in a wall squaring off this end of the block (Fig 3.1; Fig 3.12). Photographs show the outer walls of these rooms surviving only to the same height as the top of the tile *pilae* stacks; their nature is nowhere described, save that the east wall of Room 7 had channels for internal heating (Fig 3.1; Radford 1969, 31).

Fig 3.12 Room 7 (closest) and Room 6, excavations in progress (photograph from H Stephen L Dewar)

The floors of Rooms 6 and 7 were completely destroyed and the description of the nature of the floor differs between sources, Radford citing fragments of mortar and the absence of tesserae in the fill between *pilae* stacks suggesting plaster (1969, 29), while Denman records the discovery of tesserae amid the stacks of Room 7 (1948, 29). A photograph of a handwritten sign board displayed for public site visits somewhat curiously makes reference to the stacks supporting 'stone floors topped with concrete and rough mosaic – now vanished' (Denman 1948, between pp 28 and 29). Radford's draft text (1969) makes no mention of the stone column fragment found replacing one of the *pilae* stacks (see Fig 3.14), suggestive of repair during the use life of the structure.

The apsidal portion of Room 7 appears to have been distinct. Certainly the underfloor area is separated by a north–south wall with a narrow arch for the hot air to pass through (Denman 1948, 45), perhaps accounting for Radford's statement that the spring of the arch through the north wall of the caldarium remained (Radford 1969, 32). The floor of this apsidal area was plaster and remained largely intact. It lay at a lower level, about 16 inches below the level of the remainder of Room 7 (Radford 1969, 31). The semi-circular edge of the room was marked by a closely set series of box tiles rising up the wall, several of the lowest remaining in position (Radford 1969, 31; Fig 3.1). Denman records a semi-circular (*sic*) cement fillet around the edge of the floor (1948, 62), which shows along the straight side of the room in Fig 3.12. A 2-inch lead conduit pipe was found ?beneath the floor of this apse area (Denman 1948, 27), and Fig 3.12 shows the hole which Denman says was 'punched' through to look for the pipe, which his sketch also implies projected west beyond the apse (1948, 27). Figure 3.12 does not offer confirmation as to the nature of the hypocaust stacks beneath the plaster floor.

Rooms 8 and 9

The spaces labelled on Fig 3.1 as Rooms 8 and 9 comprise the *praefurnium*, with these individually numbered areas being the cheeks of the furnace. They were divided by two parallel walls (Radford 1969, 32), and the area between those walls was paved (Fig 3.2). The discovery of 4th-century pottery in these sub-floor spaces (Chapter 4.3) is evidence for some of the disturbance in this area of Building 2. It is of note that Walrond indicated the channel between these two walls as the location at which the burial of the dead sheep that led to the discovery of the villa took place (annotation made by Walrond on Leech's copy of Fig 3.1 when visiting the HE excavations in November 2018). Perhaps it is unsurprising that digging so close to the heat source for the villa should have produced box-flue tile (see Fig 1.2).

Whether there was any communication through this zone into Room 15 and the additional heated Room 16 is unknown. The northern end of the *praefurnium* was largely unexcavated except for a trench across the western side. Radford describes the area between the *praefurnium* and Building 3 as entirely wrecked (1969, 19), presumably extrapolating from the findings within that trench. Geophysical survey now hints at other walls within this area, which may relate to the operation of this furnace or the second supplying Room 16 (see below). Perhaps corresponding with a spread of geophysical anomalies in this area are extensive ash deposits recorded to the west (Radford 1969, 32) and noted as lying on the bedding of a formerly paved area to the south of Room 15 (see Section 2, Appendix B, Fig B.2). The thick deposit of ash and soil sloping up from a depth of about 9 inches against the wall of Room 15 to a maximum of nearly 2 feet on the other side of the open space, with tip lines, showed that the ash, waste from the furnace, had been brought from the south (Radford 1969, 6–7). This is indicative both of a dedicated working area and its intensive use.

Room/Corridor 10

Located to the east of the range, this space is best described by working through the segments in which it was exposed, starting at the south. Confirmation of the outer wall as a continuous feature comes from the geophysics (Chapter 5). In considering this room it must be noted that some of Radford's discussion of the space results from his determination to see it as a reincarnation of the eastern aisle of an earlier villa structure (1969, 29). Fourth-century pottery was found in one of the interventions, but it is not known which.

The crucial intersection of the outer wall of Corridor 10 with Building 1 is a butt joint, making the corridor later. Radford recognised this sequence, which is confirmed by photographs (Fig 3.13). Denman, however, drew a continuous wall across this join (1948, plan preceding p59), perhaps not understanding the stratigraphic relationship. Radford's statement that the outer wall of the later corridor formed part of a first phase (1969, 12) is explained by his theories relating to an earlier aisled structure.

Across the eastern end of Rooms 2 and 3 disturbed paving is shown on, and spreading west of, the line of the corridor (Fig 3.1). There is scant evidence for an inner wall, which Radford draws across the west of Room 3 but not 2 (Fig 3.2; see discussion of Room 2 above). Further, Radford states (1969, 11) but did not sketch (Fig 3.2) that the south wall of Room 2 continued without interruption across the later corridor. It is supposed that the narrow

Fig 3.13 Two views of the north wall of Building 1 (with folding ruler laying on top) abutted by the east wall of the corridor, Room 10 (HEA RAD01/22/12/021 and 023)

gap (given as 2 feet by Denman 1948, 48) between Buildings 1 and 2 was of little utility and that access to Room 11 would have been a sensible provision. However, placement of the doorway(s) is problematic, as access would have had to take account of the division within Room 11 (see above). Ultimately, there is insufficient data for the internal arrangements of this area to be determined.

Moving northwards along Corridor 10, Radford writes that the east–west wall separating Rooms 2 and 3 ended in a door jamb (1969, 11). Based on the stated measurement, 31 feet from the upper wall (Radford 1969, 11), Leech postulates that Radford was actually talking about an entrance way through the wall between Rooms 3 and 4. Leech considers that the two stones shown in line with the south wall of Room 4 constitute a continuation of that wall to the outer face of Corridor 10 and are possibly part of this doorway. Radford certainly states that the much-ruined south wall of Room 4 once extended without interruption across the later corridor (1969, 12) but again does not draw this on Fig 3.2.

Undoubtedly there was some observable difference in the flooring of Room 10 at the east end of Room 4, where Davies uses a different illustrative technique to denote 'random paving' (Fig 3.1, the legend is well disguised among the illustrated ?stones). This might evidence removal of the surface pavers. Radford states that the floor of the corridor was set on a bed of stones and mortar 3 inches thick lying on the natural clay (1969, 17). Perhaps more likely is that this space had some different internal arrangement. The presumed inner wall of Corridor 10 is seen continuing south from the south-east corner of Room 5, but the line is difficult to resolve with the western edge of this 'random paving'. There are no photographs to assist with an interpretation.

Paving and the inner wall of Room 10 as it runs along the east side of Room 7 is shown in Fig 3.14, where the internal width of the corridor is 1.6m. Presumably this relates to Radford's statement that in the area of the bath block only the foundations of the inner wall survived, and paving of irregular Lias slabs, roughly squared (1969, 30). Elsewhere this section seems to be described as of similar character to the paving in Room 2 (Radford 1969,13). Figure 3.14 also serves to show the difference in height between the corridor level and the floor of the heated rooms beyond. Another archive photograph (TNA WORK 14/2003/2/17) shows the outer wall, perhaps the length parallel with Room 17, slumping downhill, reinforcing the difficulties inherent in terracing the villa into the slope.

The nature of the outer wall of the corridor is indeterminate but may have been an open colonnade,

Fig 3.14 Looking west across the paved floor and west wall of corridor Room 10 and the east part of Room 7, showing *pilae* of tiles and one reused stone column (HEA RAD01/22/12/013)

perhaps employing some of the column fragments found elsewhere on the site. Cosh considers that the paved nature of the space means that it was open to the elements (mosaics suffer from frost damage; pers comm, 2025).

Understanding ease of movement through this feature as well as along its length would assist with discussion of possible doorways along the axis of the corridor, and whether access to the bath complex was only via what appears to have been the primary access point to the range: at the junction between Corridor 10 and Room 24. At this position, steps up into Room 17, seemingly aligned on the alcove Room 18, suggest an entrance into that space from Room 10 (Figs 3.1 and 3.15; further discussed as part of Room 17). The long stone step seen in Fig 3.15 and located immediately west of the outer wall of Corridor 10 (Fig 3.1) is recorded in an original caption of another photograph as being 8 feet 2 inches in length (SRO A/CTP/13/10/9).

Still further to the north, Wright reports that 'the veranda of the first stone house … was found extending

Fig 3.15 Looking west across the long stone step in the centre of corridor Room 10. To the right is the trench excavated across the stone-paved floor of Room 17 (see also Section 5; this is not shown on any other photograph) (Karen Cook Collection)

under the second antechamber' (1949, 109). Cosh considers (pers comm, 2025) and Cubitt agrees that this describes a line of walling drawn in the north-east corner of Room 25 on Fig 3.2 and, with the eye of faith, a corresponding block shown on Fig 3.1. It demonstrates an original continuation of Corridor 10 probably to meet up with the south-east corner of Room 22, before this space was widened and remodelled to form a series of separate rooms. Leech does not agree, considering the feature on Fig 3.2 a crossed-out legend and the block on Fig 3.1 more of the same paving shown in the rest of the space.

Recourse to Radford's (1969) draft only muddles the matter. He writes that the outer wall originally extended across the upper part of the north range, where a short stretch with paving on the inner side was found still in position under the floor of Room 17. The confused masonry and rebuilding at the low end of Room 17 make it difficult to disentangle the structural sequence, but the oldest wall face coincides almost exactly with the line of this outer wall. It may therefore be concluded that the front wall originally presented an unbroken external façade *c* 230 feet long (all Radford 1969, 12). The difficulty arises from Radford's known theory that some 'original walls' related to an aisle of an earlier building in a different form (1969, 29), from the assertion elsewhere that the paving in Room 17 was 'nowhere lifted' (Radford 1969, 12) and from the measurement stated: 230 feet seems over long unless some of the frontage of Building 1 is also being included. However, reference to 'confused masonry and rebuilding' could be cited in support of remodelling of this area to form Rooms 23–25, further explored in Chapter 10.

Building 3

Building 3 might be best characterised as opulent reception rooms that undergo stages of development from a large early 'hall' building and see a remodelling in the latest phases. The core of this element of the building is Room 17, which is discussed first, followed by the rooms south to north.

Room 17

This is a large (*c* 7.4m east to west), paved open area at the centre of Building 3, with only elements of walling exposed on three sides. The thesis proposed here and further developed in Chapter 10 is that this was once part of larger room that was subsequently remodelled. The north-east corner was entirely unexcavated but, notably, does not line up with the wall further to the east that divides Rooms 25 and 26. Radford draws an offset

junction between these two lines, ringed with the annotation 'wrecked' (Fig 3.2).

Both walls leading from the north-west corner are of herringbone construction and considered here a single phase. A stumbling block to interpretation has been a photograph in Denman's log (1948, 75; Fig 3.16) which, unlike the Davies plan (Fig 3.1) appears to show an offset alignment. It is now thought that this appearance results from a course of ashlar masonry in the north wall butting up to a herringbone course in the west wall, with the later butt of the west wall of Room 26 being keyed in via the removal of the end stone of the herringbone course.

Both the north wall of Room 19 and the west wall of Room 26 are shown butted up to this junction, with a second photograph (Fig 3.17) confirming the inference from the Davies plan (Fig 3.1) that the west wall of Room 26 is the latest of these, being also butted against the outer face of Room 19. Radford also recognised the awkwardness of this junction, seeming to say that the way the wall of Room 26 was set further west than the original corner shows that the older wall (the west side of Room 17) originally continued north, probably to link up with the detached northern block (1969, 10). While there is no evidence to support this, a counter explanation for this offset cannot be offered.

On the west side of the room, the line of the wall continues southwards, across the front of Room 19, where Radford says it is 2 feet thick (1969, 9). It then follows the line of narrow 'broken walling' marked on Davies' plan (Fig 3.1). Both Leech and Radford discuss a wall line 2 feet further west. Radford gives it as evidence for there having been a complete rebuild (Radford 1969, 19). Leech considers it was constructed when Building 3 was

Fig 3.16 The north-west corner of Room 17 and joining walls of Rooms 19 and Room 26 looking south (along the west wall of Room 17, with the west wall of Room 26 in the foreground) (Denman 1948, 75)

Fig 3.17 The north-west corner of Room 17 and joining walls of Rooms 19 and Room 26, looking east (the west wall of Room 26 to front left of image, north wall of Room 19 to front right) (Karen Cook Collection)

extended both southwards (to form Rooms 15 and 20, see below) and westwards with the addition of the alcove Room 18. However, Cosh (pers comm, 2025) cautions that the deep wall of the last channel of the hypocaust in Room 16 is not the outer edge of that room, which on the basis of all the evidence was further to the east, along the line of the broken walling. So it is probable that the line, if not the form, of the west wall of Room 17 has remained unchanged through the lifetime of the Building 3.

Cubitt and Roberts consider that the line of the west wall of Room 17 continues to finish at the south-west corner of Room 15 (an original north–south extent of 21.1m), which is also of herringbone construction, and thus allowing for Building 2 to be sited directly alongside this original space when it was later constructed. Leech does not agree, preferring the south-west corner of Room 17 to be also the north-west corner of Room 15 (a north–south extent of 16.4m), with that and Room 20 being additions. Running east from that point is what Radford terms a 'party wall' (1969, 19). Its narrowness is remarked upon by all who have been involved in the preparation of these chapters, and can only be interpreted as an internal subdivision, not an original exterior wall. Further east, alongside Room 20, this wall seems to run along the back of a more substantial wall, resulting in a partition of double thickness. It is presumably the herringbone wall face visible in section beyond the more substantial stonework shown in Fig 3.18.

The east side of the room is largely left to supposition, and presumed to have also formed the inner wall of Corridor 10. Radford describes it as ruined down to or even below the level of the pavement (1969, 19), but argues that its (unstated) thickness shows it formed the main front wall of the building (1969, 19). Two glimpses comprise the end of the double-thickness wall described above as illustrated on Fig 3.1, and some of the face exposed in the left section beyond the mosaic in Room 23 (see Fig 3.23). A more substantial length is seen across the slot trenches running into Room 17, where steps up from the corridor and in line with the alcove Room 18 afforded access (Fig 3.1). The wall appears between the long slab step and the east side of the paving of Room 17, under the feet of Lionel Walrond and his Aunty May, in Fig 3.15. It is visible again in the second excavation slot just to the north, underneath the end of the paving. The plan by Davies (Fig 3.1) is inaccurate in comparison to this photograph in its treatment of the critical masonry at this location, showing instead some odd triangular pieces of pavement west of the step. However, this observation does not entirely explain Radford's earlier cited comments

Fig 3.18 Looking north alongside the wall between Rooms 15 and 20 to its abutting of the south wall of Room 17 (TNA WORK 14/2003/2/18; the same photograph in HEA RAD01/box of photographs is captioned by Radford: 'Room 15/17 showing periods of building')

about Corridor 10 being under the paving of Room 17, as Radford is there referring to the outer, not inner, wall of that space (1969, 12).

The surface of Room 17 as found comprised paving, whose multiple mentions taken together describe it as a carefully laid, flagged floor of large flat Lias slabs, between 1 and 2 inches thick, carefully trimmed and generally of rectangular shape (Radford 1969). The surface was chased across a substantial area of the south portion of the room but none of the slabs was lifted (Radford 1969, 12). 'Slab' shown in the proposed access way between Rooms 17 and 26 on Fig 3.1 may or may not represent continuation of the same along the northern edge of the space. In Fig 3.19, the paving appears to end in a straight line against the edge of the large tesserae of Room 18, while in Fig 3.1 it appears to actually go around the wall corner and though the north side of the opening of Room 18. To the south, the paving is shown (Fig 3.1) and described (Radford 1969, 19) as respecting the line of the broken walling. Whether the slabs were also continuous through the opening into Room 19 is indiscernible from either Fig 3.1 or contemporary photographs.

Cosh argues convincingly that the paving covers an earlier mosaic floor, based on Fig 3.19 apparently showing the odd situation in which paving is installed to the same level of the mosaic in Room 18. The argument is further developed in Chapter 4.5, where Cosh goes as far as to say that Room 18 as found may originally have been part of a larger space incorporating some of what is now Room 17. Another interim arrangement of the south-west corner of Room 17 as found, perhaps at the point of insertion of Room 16, and which is now masked by the paving and the party walls it is butted against, is conceivable. Only further excavation in which the paving is lifted will allow this issue to be addressed.

A final note regarding Room 17 is that it had a sloping floor, a drop of 9 inches over 32 feet (see Section 7 description in Appendix B), within a building where change of level is otherwise carefully managed. Radford considers resorting to a slope may have been unavoidable in such a large space (1969, 19). An alternative explanation may be that in a late stage of occupation those installing this flooring were less inclined to address the levels and, literally, paved over any intermediate changes and earlier features. The magnetometer survey (Fig 5.2) indicated a feature running east–west across the centre of Room 17 and presumed below the paving. It could represent an earlier room division, or a heating or even water pipe.

Fig 3.19 Rooms 17 and 18, the regularly cut paving stones of Room 17 adjacent to the tessellated surround to the mosaic floor of Room 18 (Chapter 4.5, mosaic 207.4) (TNA WORK 14/2003/2/12)

Room 15

This was a square room (4.3m × 4.1m) at the south-west corner of Building 3, probably functioning as an anteroom to the heated Room 16. The walls survived to only one course above the base (Radford 1969, 18), internally seen to comprise regular coursing of small square blocks of varying length (Radford 1969, 20–1). Davies appears to draw a herringbone course on the west side at the south-west corner (Fig 3.1).The solidly built east wall, 2 feet 6 inches thick with two offsets each of 4.5 inches above the natural clay (Fig 3.18; Radford 1969, 18), was taken by Radford to indicate an upper storey (1969, 20–1); however, it might be better interpreted as a battered foundation into the sloping site.

As for internal decoration, small fragments of painted plaster are described as being found in quantity, lying on the pavement (Radford 1969, 20). Among them Betts has identified two major decorative schemes (see Chapter 4.6). The mosaic floor of this room, comprising a repetitive geometric design in dark blue-grey on a white background (Fig 4.13; see Chapter 4.5), was installed at the same level of that in Room 18 (Radford 1969, 18), but not centred in the room. Radford says the floor was not disturbed (1969, 18), and thus comments about a mortar bedding at 2 feet below the surface of the pavement (1969, 18) are perhaps more likely a statement of relative heights referring, based on other discussions at the same point in the transcript, to the wrecked area located south-east of this room.

Room 20

This room is not specifically described in the transcript. Very little of the interior was uncovered and only two of its four walls were seen in excavation. At the east side it must have been bounded by the wall of Corridor 10 although nothing of this side of this room is known. On the Davies plan (Fig 3.1) the north wall of this room is annotated 'second wall below', conceivably a reference to there being two walls on this alignment, with one surviving to a lower level than what is proposed here to be the later south wall of Room 17 (see Fig 3.18 and the discussion above).

Room 16

This was a heated space, only partially excavated and heavily disturbed in antiquity (6.0m maximum from east to west). The south outer wall of the room, seen in Section 4 (see Appendix B, Fig B.4), was 3 feet wide and with an offset of 3 inches at slightly below contemporary ground level. A trench 1 foot 6 inches wide and filled with loose stones was followed to a depth of 1 foot 6 inches below the level of the offset and continued downwards: probably a rumbling drain designed to deal with seepage from the slope behind the building (Radford 1969, 26–7). The north wall also forms the south wall of Room 18, and was considered by Radford to be a rebuild occasioned by the addition of Room 16, on the basis of its greater thickness compared to the rest of the walls of Room 18 (see below) (1969, 26–7). The eastern edge was made up with the narrow 'broken walling' discussed in relation to Room 17 above.

A 1947 account outlining the discovery of broken fragments of mosaic within the hypocaust (1969, 18) is reproduced in Chapter 4.5, along with discussion of letters in which Dewar suggests this floor may have been deliberately destroyed. The pavement originally comprised marine scenes of exceptional quality. *In situ* remnants survived only in patches around the edges of the room, particularly on the east side as shown on Davies' plan (Fig 3.1), where it continued up to the line of the broken walling, and in a photograph taken looking east across the end of the channelled hypocaust (Fig 3.20). Internally the walls were plastered, with Betts noting that most fragments come from the same polychrome scheme, and that imitation marble panels are indicated by the extant fragments (Chapter 4.6).

The floor rested on a composite hypocaust that was given detailed description: on the inner side, ducts parallel to the walls were linked with each other, and into the further area by further ducts running diagonally through a block of masonry (Radford 1969, 28). Based on Davies' drawing (Fig 3.1), the photograph of the diagonal channels terminating before a herringbone sub-floor wall must be of the east side of this overall arrangement (Denman 1948, 75). A further block of masonry, again separated by ducts from the outer walls, ran west to the outer end of the space. The rest of the hypocaust, covering about half the total area, was formed of *pilae* of tiles arranged in the normal manner (Radford 1969, 28; Fig 3.21). The arrangement of the hypocaust would have been symmetrical around the air inlet from the furnace.

Radford describes an unexplored stoke hole lying to the south, the main duct piercing the south wall of the room, presumably allowing service of this furnace from the same space as that used for the service of the furnace for the baths (Rooms 8/9) (1969, 28). Photographic evidence to confirm a stoke hole in the south wall has not been found.

Radford believed that access to Room 16 was via

Fig 3.20 Looking east across the hypocaust channels of Room 16 and towards the paved floor of Room 17. *In situ* tesserae are visible beside the baulk, part of the original inner edge of Room 16, with the 'broken walling' beyond (HEA RAD01/22/12/001)

Fig 3.21 Looking north across the *pilae* of the hypocaust in Room 16, with flues to the channelled hypocaust on the right (SRO A/CTP/13/10/16)

Rooms 15 and 17. Any communication with the alcove Room 18 is unclear, perhaps falling within an unexcavated portion of the wall line. Connections from these spaces back to Building 1 are also unknown, as set out above.

Room 18

This space (4.5m × 2.5m measured to the edge of the mosaic roundel), projecting westwards from Room 17, receives little discussion in Radford's draft other than being described as an alcove with a knot mosaic (1969, 9), a useful descriptor in identifying passages where this room is clearly meant but not named. Radford's identification of the space as a 'tribunal' is based on the mosaic elevating its status compared to the flagged hall of Room 17 (1969, 24), but it seems more likely that these two floors are not contemporary (see the Room 17 discussion above). Little of the outer walling was seen but it is only 2 feet thick on the north and west sides (Radford 1969, 26–7). Radford thought this indicated a timber superstructure (1969, 26–7) but Cosh (pers comm, 2025) prefers the unheated nature of the room as an explanation. The probably rebuilt thicker south wall (see Fig 3.1) relates to the heated Room 16 beyond.

This west wall was set on a spread of small stones and mortar cut 6 inches deep into the clay subsoil and extending about 10 inches beyond the outer face. Few stones of the wall remained, but occasional facing blocks were sufficient to establish the line and thickness (Radford 1969, 16–17). Beyond, Section 5 (see Appendix B, Fig B.5) demonstrated that the wall was cut through a gravel spread 4 feet 6 inches wide and 6 inches deep, running parallel to the outer wall of the villa and lying on the natural clay from which the humus had been removed (Radford 1969, 16–17).

The stated levels of floors within rooms of this building so far discussed are best considered together. Room 16 is described as the highest, 1 foot above the floor of Room 18 and 16 inches above the floor of Room 15 (Radford 1969, 18). This is further evidence for the building being terraced into the slope, and broadly agrees with the subsequent statements by Radford that almost the same level was employed over Rooms 15 and 18 (1969, 18). The knot mosaic of Room 18 (Chapter 4.5), which is described as lying on the level and covered at the outer end by a small pile of fallen mortar (Radford 1969, 17), was not disturbed. The larger tesserae forming the border met the pavers of Room 17 on the same level where they ended in a straight line (Radford 1969, 17; Fig 3.19).

Room 19

This rectangular space (5.8m × 10.8m) was not specifically described in Radford's text (1969) but elements of all four of the walls were encountered in the excavations (Fig 3.1). The east end is a mixture of herringbone and masonry, whereas the rest of the circuit does not appear to have herringbone as part of the construction (Fig 3.1), betraying the east wall's origin as the west wall of Room 17. The relationship demonstrating that Room 19 is a later addition to this part of the villa is discussed above and evidenced through photographs (Figs 3.16 and 3.17). Footings drawn along the outside of the north wall are reminiscent of those in Room 15, and being oriented at 90 degrees to the slope might suggest this feature is in relation to the substantial nature of these rooms rather than being to avert subsidence as elsewhere.

Only small parts of the interior were uncovered, including a strip across the width of the room at the east end and recorded as 'broken paving' (Fig 3.1). Other parts of the interior investigated elsewhere around the room are not similarly annotated. The space is marked as 'P' for paved on Radford's sketch (Fig 3.2). On that diagram it is not marked as being heated, presumably an oversight as there is evidence for it. Davies' drawing shows vertical channels in the walls on three sides of the building at the west end (Fig 3.1) and photographs record box-flue tiles *in situ* at this location (Fig 3.22). It is curious that such a large, heated room would not have been furnished with a mosaic – it would have been by far the largest heated room in the villa – and this raises the possibility that one lies undiscovered beneath the paved surface. The non-observation of a mosaic in Room 19 is reliant on the assumption that no attempt was made anywhere in the room to lift paving and that it was not sufficiently broken or dislodged for tesserae to be visible beneath. The similar suggestion made for Room 17 is advanced from photographs, whereas the single, poor quality image of the doorway into Room 19 barely shows the exposed paving at the threshold (SRO A/CTP/13/10/17).

Room 23

This small square space (maximum 2.8m east to west) with a concentric mosaic may have functioned as an anteroom, on the basis of position and the nature of the mosaic installed within it (Chapter 4.5). To the west, it is aligned with a step up into Room 17, visible on Fig 3.1 and Fig 3.23. As a precursor to this and following rooms, it is necessary to highlight that close inspection of the

Fig 3.22 Looking south-west to the south-west inside corner of Room 19, with recesses for box-flue tiles visible on both walls. One such tile appears to remain *in situ* (HEA RAD01/22/12/009)

Davies drawing (Fig 3.1) does not obviously bear out the separation of this area of the villa into three spaces, namely, Rooms 23, 25 and 24. A dividing wall can be inferred from Section 7, however (see Appendix B, Fig B.7), and Radford inks them in on his sketch (Fig 3.2). Regarding Room 23 specifically, the square shape of the simple concentric mosaic contained within this space is also a telltale. The wall on the east side might be extrapolated from the short length in Room 25, putting it west of the 'deep walling' marked on Davies' plan (Fig 3.1). It has been proposed (Cosh pers comm, 2025) that all four of the walls around this pavement were internal doorways with little solid walling to either side. This could account for a slight footprint and a different appearance in plan to other of the wall lines drawn by Davies.

Fig 3.23 Looking west from Room 27 into the part of Room 23 with the mosaic floor of concentric squares, the east wall of Room 23 being a continuation of the east wall of Rooms 25 and 26, separating these from Rooms 27 and 28 (see Fig 3.1) (SRO A/CTP/13/10/15)

Room 25

This small rectangular space does not appear to receive any discussion by Radford (1969) and is in fact mislabelled as Room 26 on Fig 3.2. Very little of the walling that bounds it was excavated, as explored under the relevant heading for adjoining rooms. Only in the north-east corner of this room is there secure evidence for the east wall. The Davies plan marks broken paving in the interior (Fig 3.1), and to the north side a blocky element that could correlate to a feature of interest drawn on Fig 3.2 and potentially representing an original front face of Corridor 10 (see above).

Room 26

Although misplaced on Fig 3.2, Room 26 is known from other sources to have been the minimally investigated rectangular space (2.6m north to south) between Rooms 17 and 21/22 (Radford 1948a, 4, 42). Radford refers to it as the kitchen (1948a, 5), 'K' being written on Fig 3.2, perhaps owing to a combination of location within the floor plan, the ashy deposit (see below) and discovery of a now lost stone mortar (Radford 1969, 80; see Chapter 11). It lies between other rooms known to have undergone alteration and may even have been partly open to the elements before being enclosed as other changes happened around it. Fragments of plaster found at this location (see Chapter 4.6) argue for it being or becoming an internal space. At the west end, the space is bounded by a substantial wall (Fig 3.17) that butts both Room 19 to the south and Room 21 to the north. A collapsed element part way along this length (Fig 3.1) has been suggested by Roberts to represent a fallen doorframe, evidencing an access point to space towards the rear of this range.

A greater area was exposed at the east end where it is bounded to the north by the corner of Room 22 on its offset alignment and to the east by the outer wall of the apsidal Room 28. A length of substantial wall, apparently butting up to both of those aforementioned and logically only required once both are in position, closes the gap (Fig 3.1 and Fig 3.24). Access may have been possible through here to the north-east range via Room 30. The final wall bounding the space at this end of the room is the wall of Room 25. The drawing for Section 7 suggests that masonry here did not survive to a great height (see Appendix B, Fig B.7) and there are no photographs to

Fig 3.24 Looking north-east at the joining wall (centre) between Room 22 (bottom) and the apse of Room 28 (top) (SRO A/CTP/13/10/19)

assist with interpretation as to the relationship with the north–south wall of Room 27/28 (see below). The non-alignment with the extrapolated north wall of Room 17 is noted.

As this east end was the only interior part of the room investigated it must be the location of the paving discussed in Radford's notebook (1948a, 83). Disturbed paving may be the poorly visible legend written on the no-longer extant version of the Davies plan, but 'P' is not marked on Fig 3.2. Within this room, a record of an object findspot provides a rare description of a stratigraphic relationship. Radford states 'foundation trench of wall of 22 outside wall to south sealed by upper layer filling foundation trench of Room 25' (1948a, 74).

Radford's notebook also describes that lying on the paving within this room was a 5-inch-thick layer (1948a, 9). It comprises one of the most productive contexts excavated and in particular, contained a scattered hoard of Constantinian coins, described as sealed by a fall of slates from the roof (Radford 1948a, 9). This gives rise to the label 'black Constantinian level' for this deposit, which is clearly stated as being within Room 26 (1948a, 80). While these coins can be confidently assigned to this room, based on the combination of evidence, it must be noted that the coin envelopes themselves are not marked Room 26, but record the objects as coming from a black layer in domestic quarters in the north-west wing.

Building 4

Radford's excavations determined part of the floor plan of a large block to the north of the original house. He considered it a 'service block', on the basis of location, construction and lack of opulence (Radford 1969, 35).

Room 21

Room 21 (6.4m × 6.9m) was the most extensively excavated of the two rooms, with elements of all four walls uncovered although found to be badly ruined (Radford 1969, 25). On the south side they were described as 'thin' (Radford 1969, 27), which Radford took as evidence that they probably served as the plinth for a timber or half-timbered superstructure (1969, 25). As corroborating evidence, he offers the general scarcity of stone over this room, and the pile of mortar banked against the inner side of the south wall (1969, 27), the logic of which is not understood.

At the west end of the room, in the trench across its width, there were traces of a flagged floor (Radford 1969, 35), also shown on the Davies plan (Fig 3.1) and in the drawing of Section 4 (see Appendix B, Fig B.4). It is not shown on the sketch (Fig 3.2), and thus one of the indicators that the details marked on this diagram should be treated with caution. Elsewhere Radford seems to describe the paving as disturbed (1969, 13) and, while the exact room number he is referring to in this passage is unclear, he does use the nomenclature 'northern block'. The only securely located fragment of window glass is from this room.

Room 22

Much less of the walling of Room 22 was seen in excavation, really only the continuation of the north wall of Room 21. Of note is that the length of wall continuing east into Room 22 on Fig 3.1 is marked 'below' and is drawn differently to the walling along Room 21. None of the interior was uncovered.

At the east end of the area occupied by this room Radford encountered the corner of a room or building on a slightly different alignment, but which he nonetheless connects with the rest of the supposed circuit of the room in Fig 3.2. The south face obviously contains herringbone construction and the east face may also, but this is less clear in Fig 3.25, which also appears to show slightly

Fig 3.25 Looking north, the east face of the east wall of Room 22 on the left (SRO A/CTP/13/10/1)

divergent lines along the outer face of the east wall. The angle of this corner is observed to be a mirror image of that in Building 1, at the south end of this range. Whether an original extension of Corridor 10 (discussed above) served to fossilise this angle in the floor plan is unknown.

The north-west range

The following rooms might strictly be considered part of the north-west range, lying beyond the north–south line of Corridor 10 and Rooms 23 and 25. However, Roberts includes them in the south-west wing in Chapter 10 to allow their stratigraphic relationships to be considered. Radford's transcript notes that this range ran downslope and had been almost entirely destroyed by ploughing: in places even the surface of the subsoil had been removed (1969, 35). Very little stone was found and trenching was on a small scale (Radford 1969, 35).

Room 24

This is described as a corridor (1.4m north to south) to the north side of the courtyard, bounded by a south wall 2–3 feet wide and starting at the north jamb of the main entrance (Radford 1969, 35). It is said to have been traced for a distance of 85 feet (Radford 1969, 35), presumably by joining the dots provided by small-scale interventions along this wing and perhaps also in light of the parchmark evidence discussed in Chapter 3.4 (see Fig 3.31). A detail shown on the Davies 1946–47 plan (Fig 3.1) hints at breaks in this wall as it runs east.

A trench along the outer faces of Room 24 and Corridor 10, located at the point at which they meet, provided evidence for paving along the outer face of the former. A blue-and-white mosaic was found on the inside of the wall of Room 24, possibly that recorded in a letter from Radford to D J Smith (Cosh and Neal 2005, 260, mosaic 207.6), and known only from documents and photographs (see Chapter 4.5). Any inner face of this space falls within an unexcavated area, save for the postulated doorway into anteroom 23.

Rooms 27 and 28

These two spaces are discussed together as they are considered to form part of the same apsidal room. Note that an earlier interpretation of the orientation of the apse (Cosh and Neal 2005, 253, fig 247), based on the evidence available at the time, is now shown to be erroneous by the later geophysics.

Of Room 27, only a short length of the west wall was found at the north end of the room. To the south, in line with a supposed entrance from anteroom 23, no walling is drawn on this alignment. It may have been removed along with other above-ground walling – see Radford's reference to plough damage above – or its perceived absence is due to it being a lowered threshold. What is apparent from Fig 3.1 and Fig 3.26 is a very deep section of walling to the east of this line. On Fig 3.1 the legend 'flue' has been added at its north end, thus it may represent the edge of the sub-floor space for the hypocaust. It is constructed with stone *pilae* (Radford 1948a, 142), deemed unusual by Cosh (Chapter 4.5), but the deep wall and minimal excavation leaves the possibility for a composite construction as for Room 16. The hypocaust was found to be filled with stones, earth, mortar, mosaic and plaster, considered by Radford as evidence of wrecking (1948a, 63). Disturbed mosaic is annotated on Davies' plan (Fig 3.1) and the challenges of identifying these fragments in the archive is related in Chapter 4.5. Trenching failed to reveal either the extent or character of Room 27, but the broken fragments of a mosaic suggested an apartment of some distinction (Radford 1969, 36), which can also be evidenced as having plastered walls (Chapter 4.6).

Fig 3.26 Looking north, the east face of the deep west wall of Room 27 on the left (SRO A/CTP/13/10/12)

Two sides of the apse of Room 28 were seen in excavation (Figs 3.24–25), with only the lower courses apparently surviving. No discussion of this space is made in Radford's (1969) draft. The outermost projecting spur of the apse is marked on Fig 3.1 as demonstrating a 'steep fall' (the full legend unfortunately is unclear). At the same point [**gpr19**] (see Chapter 5) is also said to indicate deep wall footings. Taken together, this may be positive evidence for a hypocaust continuing into this room. Figure 3.2 marks both parts of this combined room as having a hypocaust and mosaic. In terms of function, these two spaces were considered to form a dining room (*triclinium*) (Wright 1949, 109), perhaps in part influencing or influenced by the 'kitchen' label applied to Room 26.

Rooms 27/28 are in part bisected by the wall line that also divides Rooms 25 and 26, hereafter the cross wall. From geophysics we now know that it does not cut across Room 27/28 entirely, but is one of a pair of projections serving to create a narrowed access between Room 27 and the apse (Room 28) to the north. The great difficulty, however, is putting this cross wall into a sequence with the west wall of Room 27/28 that also explains both its continuation eastwards into the space under discussion here, and its non-alignment on the north wall corner of Room 17. We are not aware of any photographs to assist with the stratigraphic relationship at this point. Figs 3.1, 3.2 and 3.27 all show the cross wall as a continuous feature segmenting the west wall of Room 27/28. The shading on sketch Fig 3.2 shows Radford thought it earlier, the summary publication describing Room 28 as a later extension to the rectangular space of Room 27 (Wright 1949, 109). In this instance the cross wall must have been broken through to provide access from Room 27 into this new space. Leech believes that the diagrams show the cross wall as overlying (and therefore later than) the west wall of Room 27/28. This issue is further discussed in Chapter 10.

Room 36

Exploratory trenching at a distance of 84 feet 6 inches from the south-west range (measured from the large stone forming the step entrance to Room 17; different

dimensions recorded on Fig 3.1 are from the end of the trench along Room 24) encountered further structural remains (Fig 3.27). It comprised a building Radford describes as 20 feet wide from east to west and over 16 feet long (1969, 37), although a calculated east–west dimension of 4.3m suggests these figures may be quoted back to front. Wright, writing about this wing, describes a solidly built but much damaged structure of 54 × 24 feet, erected over the corridor and projecting 4 feet into the courtyard (1949, 109). A trench along the axis produced no evidence of the northern end wall (Radford 1969, 36).

The walls were 3 feet thick, roughly constructed in rubble, with foundations about 1 foot deep (Radford 1969, 37). None of the interior was explored save for a narrow strip at the south end, found to contain part of the wall seen projecting westwards from the outer edge of this room (Figs 3.28–9), and considered by Radford to represent the front wall of the north-west range (1969, 36). Leech makes the connection between this wall and the outer wall of the corridor of Room 24 (Appendix C).

Regarding the relationship between these two walls, Radford writes that the south wall of Room 36 was cut across the front wall of the range (1969, 36), adding that the front wall of the north range was demolished to ground level at the time Room 36 was constructed (1969, 37). Radford further shows the walls of Room 36 as 'later' on Fig 3.2. Within the draft text he states that its position and character of the masonry suggest a post-Roman date, perhaps contemporary with a known post-medieval great house located nearby at Hext (1969, 37), but for which no further corroborating evidence is offered.

Final notes on this building are that Fig 3.28 shows an exploratory trench running north-east from the corner of Room 36, indicated by the limit of the excavation being open ended, but which is recorded on Davies' plan as having no result (this is better evidenced on the now lost 1948 edition of the Davies plan). Further, Fig 3.2 appears to show a wall at right angles to the courtyard face of Room 36 and heading south. This may be a mistranscription from Fig 3.27, which here describes a trial hole having been sunk 10 feet into the courtyard with nil result.

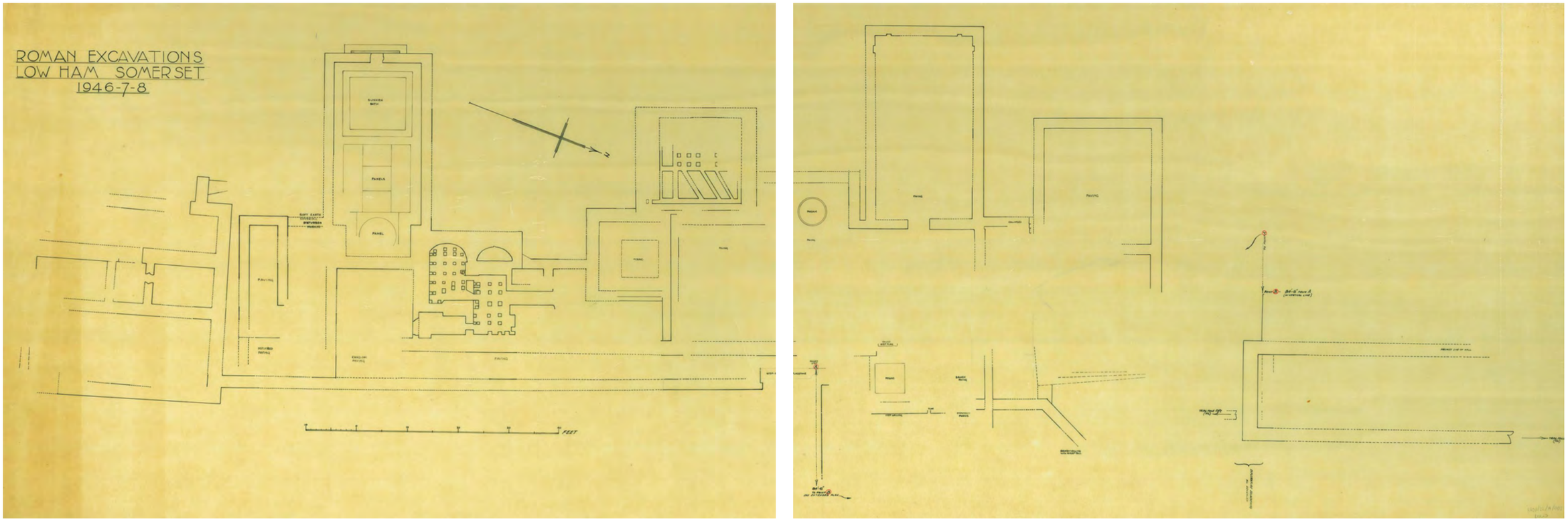


Fig 3.27 Draft plan of the excavations showing the north-west range and providing the measurements to locate Room 36 (HEA RAD01/22/14/003)

Fig 3.28 Looking west along the south end wall of Room 36 to the corner with the west wall, which is seen at its inside corner to be cut through the outer wall of the corridor to the north range, Room 24, on the right-hand side of the trench (SRO A/CTP/13/10/2)

Fig 3.29 Detail of the inside corner from Fig 3.28, showing the wall of Room 24 on the right-hand side of the image (SRO A/CTP/13/10/10)

3.4 Later research

Roger H Leech

Work by H Stephen L Dewar in 1955

Dewar's later research at Low Ham was a response to observations made in the drought and exceptionally dry summer of 1955. The discovery of a well head was followed by the realisation that parchmarks were revealing the plans of buildings opposite those excavated in 1946–48. These finds were reported upon as follows, but no plan was apparently made (Dewar 1961a, 58–60):

> *Small trial excavations were made to discover how far the scorched grass bands accurately corresponded with foundation walls below. In many cases it was found possible to follow the wall-edges to the nearest inch by looking along the lines of grass burned brown on a fairly green pasture. One building was perfectly delineated, and consists of 2 rooms having a combined length of 86ft., and 26ft. wide, with a corridor 10ft. in width behind them, facing east, away from the courtyard. At the south end, a wall appears to have connected with another complex of rooms, and reached the vicinity of the "Smithy" which was located by using a mine detector in 1946, but not excavated. Removal of a few sods of turf in 1955 revealed a quantity of slag and some scraps of coal.*
>
> *It was noted that the foundation courses of the 86ft. building above were largely ploughed away or robbed below floor level, only the lower ½-herring-bone course remaining. This, however, consisted of small blocks and was resting on what appears to have been an older foundation of larger, roughly laid herring-bone work.*
>
> *Similar wrecking was recorded by C. A. Ralegh Radford in the case of the "Granary" built across the line of the north wall of the courtyard, excavated in 1948. No effort was made to investigate the 86ft. building further, or to follow up the intricacies of the building complex between it and the "Smithy," owing to the lateness of the season and the chances of the dry weather enabling us to empty the well.*
>
> *This is situated 33ft. from the S.W. corner of the 86ft. building. It is soundly built of dressed blue lias stones, their inner faces cut on the curve. The diameter of the well is 5ft. 1 in. at the top* [Fig. 3.30]. *The total depth is 17ft. 9in. from the turf line, the structure descending in diminishing stages by 2 reducing collars to widths of 3ft. 9in. and 2ft. 9in. respectively. The lowest cylinder is ill-built by comparison. The lowest course of masonry rests on what seems to be a natural sandy, brownish stratum the writer proposes to term 'gravel.' The well-ring was surrounded by a layer of mason's grits about 3ins. thick at ground level.*
>
> *Nothing of interest was found while removing the infilling of lias blocks, roofing slates and so on, until 6ft. 6ins., when a number of bones of horse, ox, sheep, pig etc. were found, and the right femur of a child of some 3–4 years of age. At 8ft. 6ins. some water was met, but caused no difficulty until a depth of 14ft. 0ins. Then it was found necessary to replace the small semi-rotary pump by a motor pump lent by the courtesy of the Langport R.D.C.* [rural district council]. *Pottery sherds of a late colour-coated bowl were first noted at 8ft. 3ins., one with a rivet hole for repairs. Also an iron hook, and parts of a bucket hoop. At 10ft. 0ins., large clinkers and slag were recovered, and at 12ft. 0ins., a sticky, blackish deposit with a quantity of wood, sticks, twigs, fruit-stones, nuts and seeds was met. This water-logged deposit was worked through a series of sieves with the water-hose to recover objects of importance, about 90% of the sludge being so treated.*
>
> *Items of interest include fish-bones, walnuts, a bronze ring, bucket handles and ears, part of the bottom of a wooden bucket, footwear, including the perfect insole of a left shoe, and a child's shoe with slashed toe-cap and cruciform patterns cut out each side of the 'heel.' There were also portions of an egg shell, four pony hoof-cores, 2 Kimmeridge shale spinning whorls, the antler handle of a tool drilled for suspension, fragments of window glass, and two large pine cones, as well as sundry minor objects.*
>
> *The pottery, seen by Mr. C. A. Ralegh Radford, F.S.A., affords a good conspectus of the types of vessels used in the Villa from circa 200 A.D. to the year 367 A.D., with perhaps an upper margin of 15 years during which the building may have been left in charge of someone left to look after the absent owner's interests. The pottery serves as a useful check in confirming previous dating of the Villa. No single scrap of Samian has been found. Coins were conspicuous by their absence in the well, and no post-Roman objects were recovered.*
>
> *The chief interest and importance of the well will be found in the identification of the wood, seeds and so forth, on which Dr. Harry Godwin, F.R.S., of the Botany School, Cambridge, has consented to report* [see

Fig 3.30 The well, as excavated in 1955 (photograph from H Stephen L Dewar)

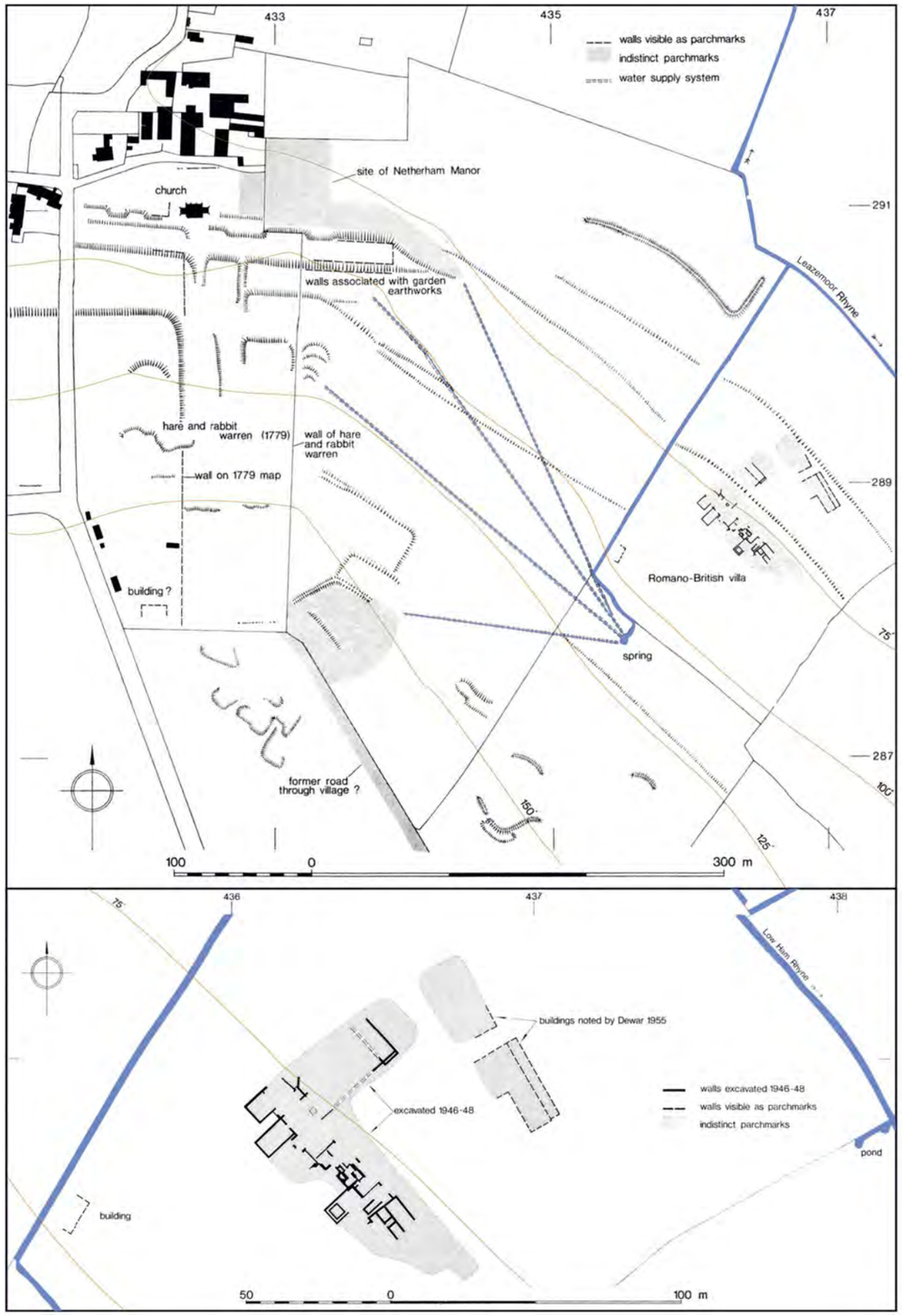


Fig 3.31 The parchmarks of the Roman villa (inset below) seen in relation to other adjacent earthworks, site contours and hydrology. Redrawn from Leech (1978, figs 9 and 10) (Penny E Copeland)

Chapter 4.8]. *Should a pollen analysis of the sludge be possible in addition, it will be impossible to overemphasise the importance of Mr. Cook's discovery. The writer believes that for the first time it may prove possible to assess the economic basis of a Romano-British Villa. Since slag has been recovered from well and smithy, analysis of this may show if and how far the Villa economy may have had an industrial base in addition to that of husbandry.*

Mr. Cook is to be congratulated on successfully applying a classic method of archaeological observation to locate buried masonry, and without his personal efforts the lowest section of the well could hardly have been emptied. To him and to his brother Mr Lionel Cook is due the greatest credit for their fullest help and co-operation in this piece of archaeological research.

A further report giving more of the local background was published in *The Countryman* (Dewar 1966). A shorter summary of the work was also published in the *Journal of Roman Studies* (Wright 1956, 141).

Aerial photographic reconnaissance in 1975

The drought that existed by early July 1975 provided exceptionally favourable conditions for observing archaeological sites as cropmarks and parchmarks. Aware of Dewar's recording of parchmarks at Low Ham in 1955, and working then as a field officer for the archaeological unit for Avon, Gloucestershire and Somerset, Leech was able to secure two reconnaissance flights over south Somerset. Two flights on 10 and 11 July 1975 recorded information relating to 55 separate sites, including the Roman villa and late medieval or early modern garden earthworks at Low Ham (Leech 1978).

It was now possible to draw a plan of the villa in its landscape context and as excavated from 1946 to 1948, together with the north-east range of the villa recorded as parchmarks from the ground in 1955, showing that 'the whole complex was a large villa with buildings grouped irregularly around three sides of a large courtyard *c* 70 × 40m' (Leech 1978, 67–68 and figs 9–10, reproduced here as Fig 3.31).

Combining the results of the 1975 air reconnaissance with the vertical air photography held by Somerset County Council, it was also possible to map for the first time the earthworks of the water supply system and post-medieval formal gardens of the long demolished Netherham Manor (Leech 1978, fig 9, reproduced here as Fig 3.31). Visible were the walls of a later rabbit and hare warren, parchmarks in the grass of garden walls, walls and structures within the rabbit and hare warren, the demolished Netherham Manor and other buildings, and a former road to the south-east. The spring used for the water supply system was also probably utilised by the Roman villa (see below). An estate map of 1779 (Wilson-North 1998, fig 37) showed the manor house and rabbit warren, but not the gardens and water supply system or a building east of the manor (where parchmarks were visible in 1975); the map of 1823 (SRO DD/SAS C/212, High Ham) showed the manor house as in ruins. The earthworks as plotted for publication (Fig 3.31) were partly sketched from air photographs and partly based on the 2nd edition Ordnance Survey (OS) 1:2500 map of 1904; the resulting plan was checked on the ground, at the same time as noting the need for a detailed field survey (as subsequently undertaken by the Royal Commission; Wilson-North 1998).

4 The 1946–48 and 1955 finds and environmental reports

4.1 The coins

Edward Besly

Tables 4.1 and 4.2 summarise the coins found during the 1946–48 excavations. These are discussed alongside the coins from the later Historic England excavations in the report by Henry (Chapter 7.1).

4.2 Metal and non-metal small finds

Rachel S Cubitt

A modest assemblage of small finds survives from the 1940s excavations of the villa and the 1955 investigations of the well. Twenty-eight objects are discussed here by functional category, following Crummy (1983), before the limited spatial information available for them is outlined. Each of the items discussed has been given a unique number, in a sequence starting from 1, to allow them to be referred to individually in the text, and a concordance catalogue has been prepared and deposited with South West Heritage Trust.

While it is apparent that the assemblage from these excavations was once larger, discussion of now-absent small finds is limited to those for which some description or illustration survives. Reconstructing a full original finds list proved futile because of the variation between the primary sources and difficulties in deducing precisely which objects are being discussed in each instance. For example, the 'antler handle of a tool drilled for suspension' (Chapter 3.4) may or may not explain a reference to the well containing 'many tool handles' (Wright 1956, 141). In another case, Radford's notebook records five spindle whorls being found in Room 26 (Radford 1948a, 80) and two are said to have been recovered from the well in 1955 (Chapter 3.4). Yet neither source provides the detail necessary to securely link the seemingly unstratified extant whorls to these locations. Our only clue is that the packing for No. 4 records a 1948 find date, meaning it is not from the well.

Description of the objects according to functional category

Dress accessories

Dress accessories form the most numerous category and comprise primarily bracelet fragments (Fig 4.1): two of shale, probably from Kimmeridge, and two of copper alloy. Both of the shale fragments appear to come from circular bracelets and are relatively plain, the norm for the majority of finds from most sites (Allason-Jones 1996, 33). No. 5 has a flattened D-shaped cross-section, while No. 6 has a square cross-section and two horizontal grooves around the outer face.

Of the copper-alloy bracelets, No. 11 is decorated with a band of transverse incisions separated by areas of plain band, conforming to Swift's type a14 (Swift 2000, 183). Bracelets with this decoration are found predominantly in the South-West and East Anglia (Swift 2000, 129). No. 20

Table 4.1 Summary schedule of coins found during the 1946–47 excavations

Context	Issuer	Reverse type	Mint	Marks	Irregular?	Date (AD)	Reference
Outside Room 1	House of Valentinian?	Victory left? H. of V. or Theodosian?	uncertain	-	-	364+	-
Room 5	House of Theodosius	VICTORIA AVGGG type	uncertain	-	-	388+	-
Room 4	Theodosius I	VICTORIA AVGGG type	uncertain	-	-	388+	-
Room 11	House of Constantine	Wolf and twins	-	-	Y	330+	-
Room 11	House of Constantine	GLORIA EXERCITVS, one standard	-	-	Y	335+	-
Room 11	House of Constantine	Wolf and twins	Lyon	// PLC (?)	-	330–5	LRBC i, 224
Room 11	Constantinopolis	Victory on prow	-	-	Y	330+	-
Room 14	Prob. H. of Theodosius	Victoria?	-	-	-	388+	-
Room 14	Valens	SECVRITAS REIPVBLICAE	Lyon	S - // [?]	-	364–78	LRBC ii, 359/61
Room 21	Theodosius I	VICTOR - IA AVGGG; weakly struck	Arles	// [T?]CON	-	388+	LRBC ii, 565/8
Uncertain	Valens	SECVRITAS REIPVBLICAE	Lyon	OF I / - c // LVG[ ]	-	364–78	LRBC ii, 340–1
Room 18?	Constans, Augustus	GLORIA EXERCITVS, one standard?	uncertain	-	-	337–40	-
Uncertain	Magnentius	FELICITAS REIPVBLICE	Trier	- A // TRPc	-	350–3	-

LRBC: Late Roman Bronze Coinage

Table 4.2 Summary schedule of coins found during the 1948 excavations. The majority of the coins were from a single general context, likely to have formed a single, scattered deposit

Context	Issuer	Reverse type	Mint	Marks	Irregular?	Date (AD)	Reference
Constantinian Passage	Constantine I	GLORIA EXERCITVS, two standards	-	-	Y	330+	-
Constantinian Passage	Constantius II, Caesar	GLORIA EXERCITVS, two standards	Trier	// TRS·	-	330–5	LRBC i, 57
Constantinian Passage	Constantius II, Caesar	GLORIA EXERCITVS, two standards	Trier	// TR·S	-	330–5	LRBC i, 64
Constantinian Passage	Constantine II, Caesar	GLORIA EXERCITVS, two standards	Trier	branch // TRP	-	330–5	LRBC i, 82
Constantinian Passage	Constantius II, Caesar	GLORIA EXERCITVS, two standards	uncertain	// ?	Y?	330–5+	-
Constantinian Passage	House of Constantine	GLORIA EXERCITVS, two standards	-	-	Y	330–5+	-
Constantinian Passage	House of Constantine	Wolf and twins	uncertain	-	-	330–5	-
Constantinian Passage? Found on tip	House of Constantine	Wolf and twins	Lyon	// [*PLC]		330–5	as LRBC i, 205
Constantinian Passage	House of Constantine	Wolf and twins	-	-	Y	330–5+	-
Constantinian Passage	House of Constantine	Victory on prow	uncertain	// ?	-	330–5	-

Table 4.2 (cont)

Context	Issuer	Reverse type	Mint	Marks	Irregular?	Date (AD)	Reference
Constantinian Passage	House of Constantine	Victory on prow	-	-	Y	330–5+	-
Constantinian Passage	House of Constantine	GLORIA EXERCITVS, one standard	uncertain	-	Y?	337–40(+?)	-
Constantinian Passage	Constantius II (?)	GLORIA EXERCITVS, one standard	-	-	Y?	337–40(+?)	-
Constantinian Passage	Constans, Aug	VICTORIAE DD AVGG Q NN	Trier	branch // TRP	-	340s	LRBC i, 160
Constantinian Passage	Constans, Aug	VICTORIAE DD AVGG Q NN	Trier	D // TRP	Y	340s	-
Constantinian Passage	Magnentius	VICT DD NN AVG ET CAE	Trier	// TRP	Y	350–3+	-
Constantinian Passage	Magnentius	Two victories type, [VOT]/MVLT/X *sic*	-	-	Y	350–3+	-
Constantinian Passage	Constantius II	FEL TEMP REPARATIO, fallen horseman	-	-	Y	350s	-
Constantinian Passage	Constantius II	FEL TEMP REPARATIO, fallen horseman	-	-	Y	350s	-
Constantinian Passage	Constantius II	FEL TEMP REPARATIO, fallen horseman	-	-	Y	350s	-
Constantinian Passage	Constantius II	FEL TEMP REPARATIO, fallen horseman	-	-	Y	350s	-
Constantinian Passage	uncertain	uncertain, probably FTR/fh type	-	-	Y	350s	-
Constantinian Passage	uncertain	uncertain, after 330	-	-	Y	330+	-
NW wing, top of quoin NW of room, 2′ 0″	Constantine II, Caesar	GLORIA EXERCITVS, two standards	Trier	// TR·P	-	-	LRBC i, 68
Surface find – top of wall – NE of Constantinian Passage	House of Constantine	Victory on prow	Trier	// TRS·	-	-	LRBC i, 59

LRBC: Late Roman Bronze Coinage

is roughly rectangular in cross-section, with the outer face decorated with a series of triangular notches cut alternately into either edge of the outer face and forming a zigzag or faceted pattern. Swift defines this decoration as a5 (Swift 2000, 183, fig 156 on p 132), a type found in the east and south-west of Britannia (Swift 2000, 129). Both of these bracelet types are part of the so-called 'Jurassic way' distribution, running from East Anglia into Hampshire and the South West (Swift 2000, 175).

Complete copper-alloy finger ring (No. 10) has a band of square cross-section and an outer surface decorated with transverse lines arranged in groups with areas of plain band in between. This decoration is reminiscent of bracelet No. 11, and the two objects were found in the same room (Room 26).

Brooches are represented by a single example (No. 22), classified as a south-western development of a Colchester type (Butcher 2014, 14, fig 31 on p 25; Naomi Payne is gratefully thanked for providing this reference). No traces of enamel survive in the cells on the bow, and

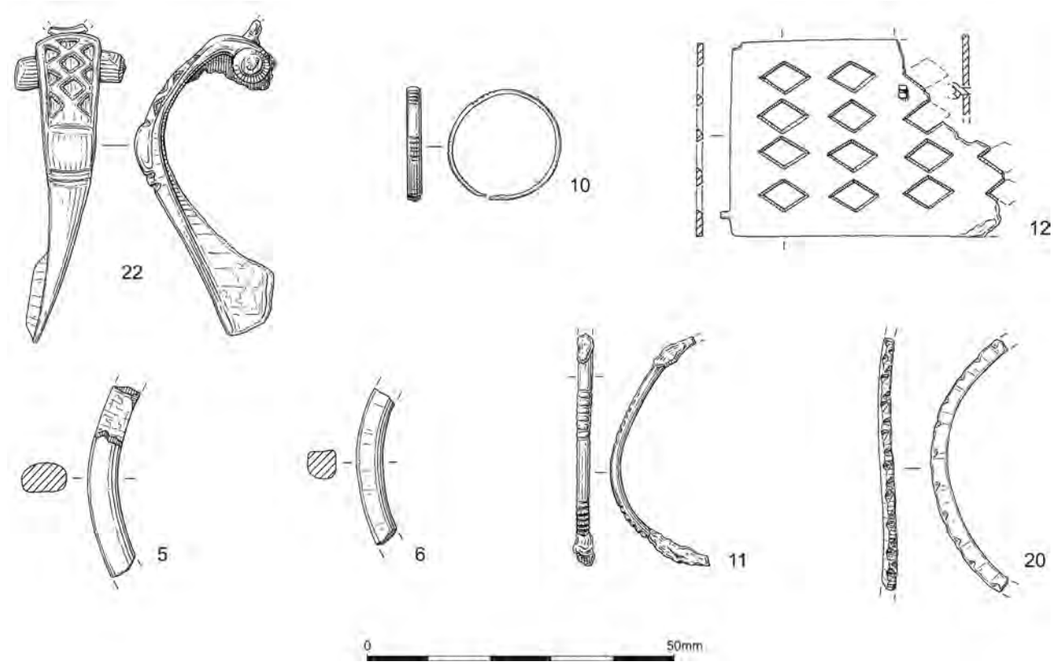


Fig 4.1 A selection of the dress accessories discussed in Chapter 4.2 (Mike Trevarthen)

only a stub of the hinged pin is present. The industry producing this brooch type was likely to have been centred on the Mendip lead-mining area in Somerset (Butcher 2014, 67), and examples occur almost exclusively in south-western Britain (Butcher 2001, 57, no. 107). Few examples of are known from closely dated contexts but generally seem to be later 1st century and earlier 2nd century AD (Butcher 2001, 14). Mackreth includes a very similar brooch within a group that is suggested to have a mid-2nd century date AD (Mackreth 2011, vol 1, 102, vol 2, pl 68, no. 2212).

Object No. 12, an openwork sheet plate, is probably a decorative fitting for a leather belt or strap, based on its size and the comparative appearance of other examples, although this identification is still to be proven conclusively. It is hoped that bringing this find to wider attention through publication might lead to it being more securely understood. It comprises a bronze rectangular plate with a series of lozenge-shaped perforations neatly arranged into at least four rows. The only complete corner features a short tab projecting from the short edge of the plate. Towards the broken terminal is a small perforation with the remains of something reminiscent of a double-spiked loop projecting from the face of the plate. A very thin, corroded and fragmented brass sheet (the two metals having been determined by pXRF) of roughly similar width is thought to form part of the same object, having been found within the same packaging; however, arrangement of the two parts at the time of discovery is unknown.

Openwork fittings were perhaps intended for use with belts of bright fabric or dyed leather, with the colours visible through the openings (Marzinzik 2003, 53). Further, double-layered decorative fittings are known, with some buckles having an underplate (Marzinzik 2003, 472, no. 2). The accompanying brass sheet could have fulfilled this function, and itself provided a colour contrast if visible. Belt fittings were normally held in place by means of rivets, and in some periods a hinged terminal permitted articulation with other elements (Bishop and Coulson 1993, 132, fig 91 nos 9–11). Openwork was common on belt fittings from the mid-2nd century, and similar decorative details can also be observed among late Roman buckle plates (Hawkes and Dunning 1961). In most cases known to Cubitt, however, the openings tend to be in a denser arrangement and to comprise more than just one repeated shape. The closest parallel for repeated geometric decoration appears among continental buckle plates (Marzinsik 2003, 320, especially D). Working through the related types in this typology, No. 12's width of 25mm would place it into type II.2, of late or sub-Roman date (Marzinsik 2003, 36). It was found with a group of Constantinian coins.

Footwear

A well-preserved, albeit incomplete, leather shoe was found in the well in 1955 (No. 28; Fig 4.2). It has been published previously as part of a corpus of archaeological footwear (Volken 2014).[1] That catalogue description is repeated here (Volken 2014, 114, 272):

> *The Low Ham-Ba style is attested by a single shoe and shows that the asymmetrical Ba pattern was in use during the Roman period. It has decorative cut outs on the toe and an X shaped decoration on both the lateral and medial back section. It has a wide, open instep. The closing seam is asymmetrically placed on the medial back section. The fastening method uses an integral single lace from lateral back passing over to the medial side and passes inside through slot, under the foot, outside through lateral slot to cross over the instep to fasten at medial back lace hole with a half bow.*

The size of the shoe, *c* 12.5cm in length, suggests that it belonged to a child. The cutting pattern used to make it dates to the late Roman period, appearing from the end of the 3rd century AD/beginning of the 4th century AD (Volken 2014, 113).

Dewar's report (1961b 58–60; Chapter 3.4) on the well excavations states that the work recovered 'the perfect insole of a left shoe, and a child's shoe with slashed toe-cap and cruciform patterns cut out of each side of the "heel"'. While the child's shoe has survived and is detailed above, nothing further is known about the insole.

Textile working

Extant objects associated with textile working comprise four shale spindle whorls, all likely to be of Kimmeridge shale (Fig 4.3) and one made from a pottery sherd.

No. 1 is complete and has the most elaborate form, which does not neatly fit the standard shape typology. A possible parallel from antiquarian excavations at Silchester is noted as being similar to the cores produced in the manufacturing of shale bracelets (within Lawson 1976, compare no. 108j in fig 14 with no. 56 in fig 6). However, this is not to suggest that bracelet manufacturing was taking place at Low Ham, and the object is published here as a whorl, albeit one that may have been derived from manufacturing debris and traded from a factory site in Dorset alongside other finished objects (Lawson 1976, 248).

Whorl No. 2, which can be paralleled elsewhere (Crummy 1983, cat. no. 2002), is described as the least common shape type for whorls in the Roman period (Alberti 2017, 3). No. 3, which comprises approximately half of the original circumference of a whorl, with a D-shaped cross-section, derives from a globular whorl (Alberti 2017, 2, fig 1). No. 4 is made up of refitting fragments that appear to make up a conical profile; however, as most faces look broken, it is possible that this is actually part of biconical whorl.

The incomplete whorl made from a grey-ware pottery sherd (No. 7) can be classified as discoid in shape (Alberti 2017, 2, fig 1). Whorls in this easily obtainable medium were probably manufactured in the home rather than acquired from a professional manufacturer (Rees *et al* 2008, 76).

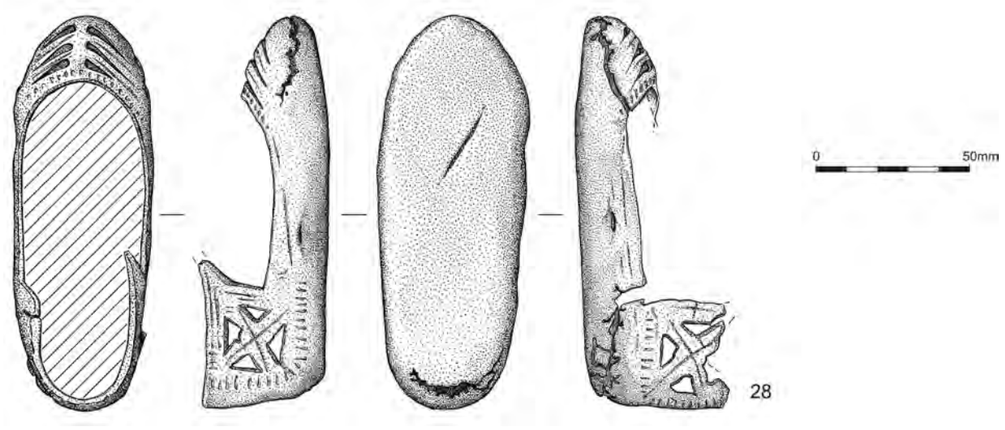


Fig 4.2 The leather shoe from the well, drawn from photographs of shoe mounted on wooden last (Mike Trevarthen)

[1] The shoe itself was not seen by Cubitt. It forms part of the collection of the Shoemakers Museum, Somerset.

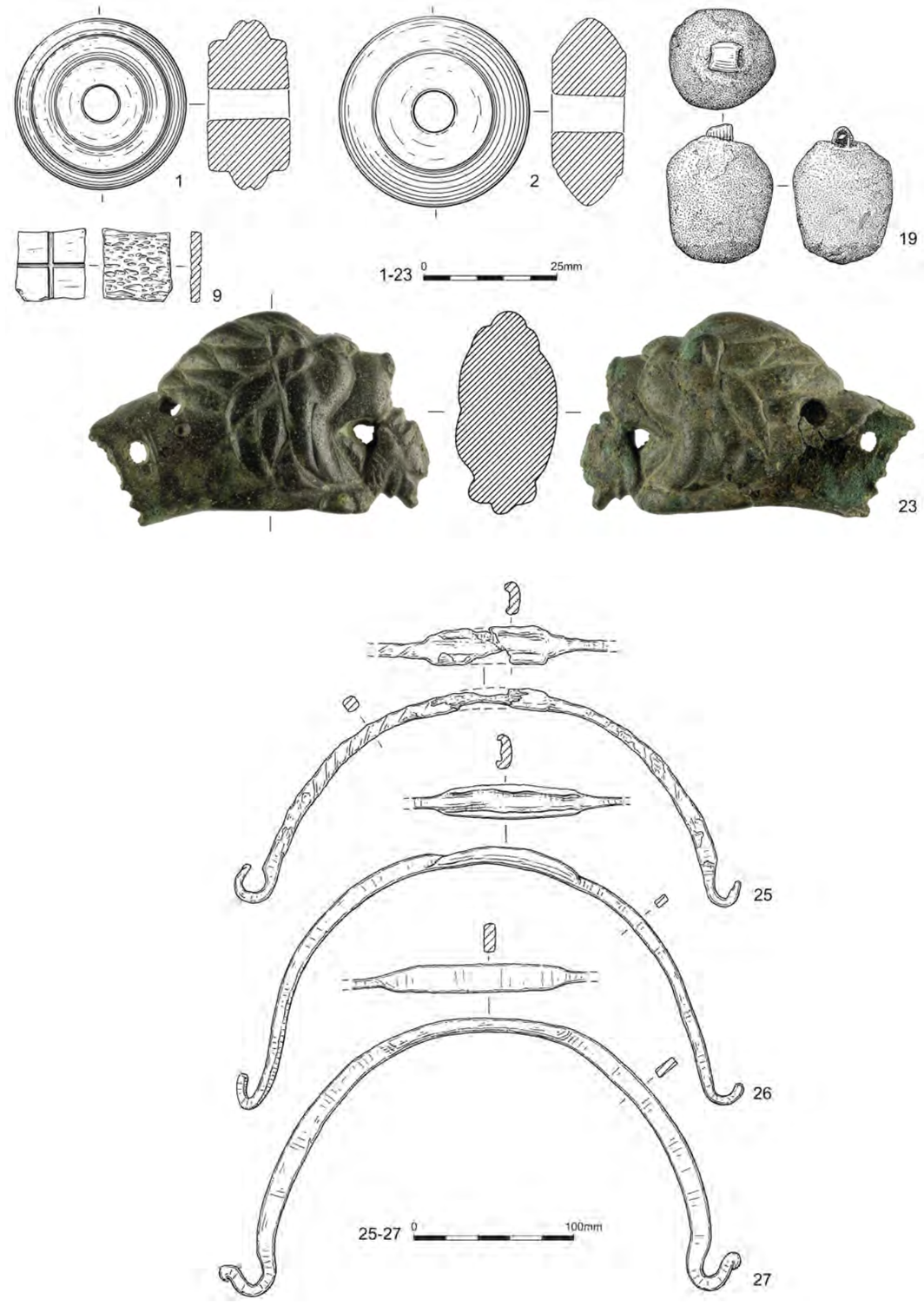


Fig 4.3 Textile working objects, weighing equipment and household objects (Mike Trevarthen; photograph by South West Heritage Trust)

Household objects

A small fragment of bone inlay, with a deeply incised '+' shape dividing the extant surface into quadrants (No. 9; Fig 4.3), can be paralleled at the late Roman furniture makers' workshop at South Shields (Greep 2015, 146, no. 132). The bone itself is derived from a large mammal (F Worley, pers comm, 2024). Decoration such as this appeared on items of furniture, such as beds and couches, as well as on boxes (Mould 2011, 161). Greep has remarked (pers comm, 2023) that it is most likely to derive from a box of the type used to store jewellery and other similar personal possessions.

No. 23 comprises the end section of a copper-alloy key handle. The handle terminal is of a known form, comprising a lion's head with details of the mane and face clearly moulded: the lion rests its head on its paws and holds its prey in its jaws. Although this object has not been seen by Cubitt, high-resolution photographs (Fig 4.3) show the prey to be a human head. The lion-and-prey design is known from a number of sites of varying date. This example is broken just beyond the lion's head, with the remainder of the body and the key itself missing, precluding discussion of type and size. Perforations through the hollow body of the object beyond the break are noted and may be evidence of an attempted repair or reuse of this item.

Object No. 24 comprises a ?fragment of a small stone vessel (?Purbeck marble) known to Cubitt only from illustration. It is 11cm in diameter at the base. The illustrated profile, compared with those from other sites, is suggestive of a 4th-century AD date (Holbrook and Bidwell 1991, 279, no. 4 and fig 133).

Three iron bucket handles (Nos 25–27; Fig 4.3), now in private ownership, are discussed on the basis of existing illustrations. All are of a semi-circular shape with recurved terminals. In each case the mid-point of the handle has an expanded width, and in two cases the outer edge of this expanded section is curved upwards, presumably for increased comfort when carrying. The scaled drawings suggest that each of the handles derives from a vessel of just under 30cm at the mouth, roughly comparable in size and form to the buckets found in a well at Dalton Parlours Villa, West Yorkshire (Wrathmell and Nicholson 1990). The lack of suspension loop at the mid-point indicates that the Low Ham buckets were used for carrying, rather than hauling, water (Mould 2011, 172). This apparent contradiction with them having been found in the well at Low Ham is further explored in Chapter 11.

Weighing and measuring

The assemblage includes a single piece of weighing equipment in the form of a lead weight with a single copper-alloy suspension loop (No. 19; Fig 4.3), indicating that it was intended to be used as a barrel weight with a steelyard balance (Smither 2016, 56). However, it fits best into the 'uncertain' shape category and cannot be dated intrinsically (Smither 2016, 57, table 22, and 67). At 38.2g it is not far off a *sescuncia* (41.1g), an eighth of a Roman pound.

Fixtures and fittings

As is typical for a Roman site, the assemblage contains a number of iron fixtures and fittings, most of which have only generic functions. These include No. 17, an iron nail of Manning type 2 (Manning 1985, 135), two iron rings lacking much of their original surface (Nos 13 and 14), and a lead fragment (No. 8). The latter is considered structural because it incorporates a fragment of an iron nail shank. Object Nos 15 and 18 were described in the original catalogue as iron clamps but are now in too poor a condition to confirm this identification.

Unknown function

Two items can be given an identification that does not automatically lead to a functional classification. They are a copper-alloy tube fragment (No. 21) and an iron sheet fragment (No. 16).

Spatial distribution of the finds

Spatial details and comments on the nature of specific findspots are known for 20 of the 1940s objects (Table 4.3).

Details come from object packaging and notes in Radford's notebook (Radford 1948a) where the item under discussion is unequivocal thanks to sketches. Recorded details suggest that several objects are in deposits comprising debris, and thus may not be indicative of uses of the space in which they were found. Chapter 11 contains further discussion about the circumstances surrounding the wider group of objects from the well.

All of the personal items in this table come either from the vicinity of Room 1 or from Room 26. Bracelet No. 20 could represent casual loss of a personal item by someone exiting the bathing facilities in Room 1. The Room 26 group also includes the inlay and, following Greep's comments, could tentatively be interpreted as representing a cache of personal possessions within a container. Note that Radford's record of 'two fragments of bronze bracelet' (1948a, 81) is explained by No. 11 comprising two refitting parts. The openwork fitting's inclusion in this group is worth highlighting as it

Table 4.3 The distribution of small finds within the villa at room level

Room	Object(s)	Recorded findspot detail
1	Two iron rings (Nos 13 and 14)	One inch above floor
1	Copper-alloy key handle (No. 23)	From fill of plunge-bath
(1)	Copper-alloy bracelet (No. 20)	Outside Room 1, above paving outside south-west wall
(1)	Copper-alloy brooch (No. 22)	Area of Room 1, but found on tip
14	Shale whorl (No. 2) and lead weight (No. 19)	On floor
15	Iron clamp (No. 15)	Debris above floor
17	Iron plate (No. 16)	By door to Room 18
17	Iron spike (No. 17)	In debris over flagstones
18	Iron clamp (No. 18)	In debris over flagstones
26	Bone inlay (No. 9), copper-alloy belt fitting (No. 12), finger ring (No. 10) and bracelet (No. 11)	In black layer above paving and sealed by fallen roof material
28	Shale whorl (No. 1)	-
Courtyard well	Bucket handles (Nos 25–27) and shoe (no number)	-

confirms this as a Roman, or perhaps early post-Roman, object rather than a modern intrusion within the assemblage. Other recorded finds from within the same layer in Room 26, called 'black Constantinian layer' in some primary sources (Radford 1948a, 80), include the scattered hoard of Constantinian coins (see Chapters 4.1 and 7.1), 4th-century pottery (Radford 1948a, 80; not part of the assemblage outlined in Chapter 4.3), five spindle whorls (Radford 1948a, 80), a fragment of lead scrap (conceivably No. 8?) and a non-extant burnt bird bone. This deposit is further discussed in Chapter 11.

4.3 The pottery

Roger H Leech

The pottery from the 1946–48 excavations was examined, catalogued and drawn in March 1973 at the house of C A Ralegh Radford in Uffculme, Devon, and reported on in Roger H Leech's PhD dissertation submitted in December 1977 (Leech 1977a). This was one of a number of separate reports in the dissertation, prefaced by a general introduction to the Late Iron Age and Romano-British pottery from South Somerset and North Dorset, now summarised and updated here (Leech 1977a, 230–2; Jane Timby is thanked for the updates). Following Radford's death, the pottery was included within the archives from his excavations, initially in the care of the Society of Antiquaries and then in the English Heritage Archives, where it was identified by Leech and transferred to the care of the Somerset Heritage Centre.

Types identified

The following were the principal types of Romano-British pottery identified in the assemblage from the 1946–48 excavations, with abbreviations indicated.

Black-burnished wares Black-burnished ware category 1 (**BB1**), now including both south-east and south-west Black-burnished ware. Following Tomber and Dore (1998), the codes for BB1 = DOR BB 1/SOW BB1. The most closely dateable BB1 forms remain those found in more closely dated contexts elsewhere, notably military sites, the Roman palace at Fishbourne, and the Roman Saxon Shore fort at Portchester (Brailsford 1958; Gillam 1970, nos 220, 221, 306–9; Cunliffe 1971, type 218 1.4; Farrar 1973, 69).

Grey wares 'Brue valley' grey wares are those from the Somerset Levels between the Poldens and the Mendips, for which see Leech (1977a, chapter 5), subsequently mostly published as Leech (1981b).

Storage jar fabric Used extensively for hand-made large storage jars, this fabric was very coarse, tempered with quartz, sand, grog and sometimes limestone, varying in colour from almost black, through grey to reddish brown, probably always very local in origin. At Catsgore (Leech 1982a), this was found almost entirely in groups of 3rd- and 4th-century AD date. It would now be identified as 'SW storage jar' (Holbrook and Bidwell 1991, 177), for

which at least one or the main source is Norton Fitzwarren, where AC Archaeology excavated kilns (Webster 2018, 92).

Fine micaceous fabric A hard, fine micaceous fabric, often with a reddish core and the exterior surface varying from grey to black. As a fabric type it was widespread in southern Britain in 1st- and early 2nd-century AD contexts, for instance at Holcombe (Pollard 1974, 116), Verulamium (Frere 1972, nos 157, 218 onwards) and Fishbourne (Cunliffe 1971, 188, figs 89, 108, no. 229). Whether it is a type of pottery produced locally at several or many centres, or whether it emanated from one centralised and as yet unlocated industry, is uncertain.

Mortaria fabric 1 A hard sandy fabric, grey core with a red exterior and cream colour coat, used from the 2nd to the 4th centuries AD. Vessels produced included mortaria and flagons, though none of the latter is represented in any of the following groups. V G Swan (pers comm, 1977) commented that pottery in this fabric was distributed throughout North Wiltshire, Gloucestershire and Oxfordshire.

Oxford region products For detailed descriptions of the fabrics and forms see Young (1977). In the following catalogue the abbreviations used are: **OxWWM** Oxfordshire white ware mortaria; **OxCC** Oxfordshire colour coated vessels; **OxPW** Oxfordshire parchment ware.

New Forest products (NF) have been categorised according to the fabrics and types classified by Fulford (1975).

Dating and distribution

The assemblage described within this report can be confidently dated to the 4th century AD.

Illustrated sherds (Fig 4.4)

This list is based on Leech's original catalogue (1977a, 244–5) with the addition of finds spot references in the form: excavation year.room number.

1.–3. Jars with everted rims, BB1, 3rd–4th century AD. 1. and 2. were from 47.1; 3. was from 47.5; a second similar, unillustrated jar was from 47.1; others were from 46.7, 47.1, 47.5, 47.8, 48.2, 48.5

4. Dish with plain rim, BB1, 2nd–4th century AD. Recovered from 47.9; others from 46.7, 47.5, 47.6, 47.8 and 48.2

5.–6. Bowls with flanged rims, BB1, 4th century AD. 5. unprovenanced; 6. from 47.11

7. Bowl with applied flanged rim, BB1. Recovered from 47.5. The only other example of this type noted by Leech is from Bradley Hill (Leech 1981a, 241, no. 56); it is possibly a late 4th- or early 5th-century AD form

8. Base, BB1, very crudely made. Recovered from 47.14

9. Storage jar, in 3rd- to 4th-century AD storage jar fabric. Recovered from 47.11

10. Bowl, OxCC, Young type C75, 325–400+ AD. Recovered in 1947.21, from below floor level

11. Bowl with drooping flange, OxCC, Young type C49, 240–400+ AD. Recovered from 46.2

12. Flanged bowl, OxCC, Young type c51, 240–400+ AD. Recovered from 47.1; others from 46.6 and 47.5

13. Flagon, hard fine red fabric with dark red colour coat. Recovered from 46.10

14. Fragment of bowl, hard grey fabric with red colour coat, rouletted. Recovered from 47.2

15. Wall sided mortarium, OxCC, Young type C97, 240–400+ AD. Recovered from 47.8

16.–17. Flanged mortaria, OxCC, Young type C100, 300–400+ AD. Recovered from 46.3 and 47.6, respectively

18.–19. Flanged mortaria, OxCC, Young type WC7, 240–400+ AD. Recovered from 47.6 and 46.8 respectively, similar example from 48.1

20. Flanged mortarium, OxCC, Young type C100, 340–400+ AD. Recovered from 47.1; similar vessel from 47.4

21. NF fabric 1a, Fulford type 23, probably after *c* 350 AD. Recovered from 48.10

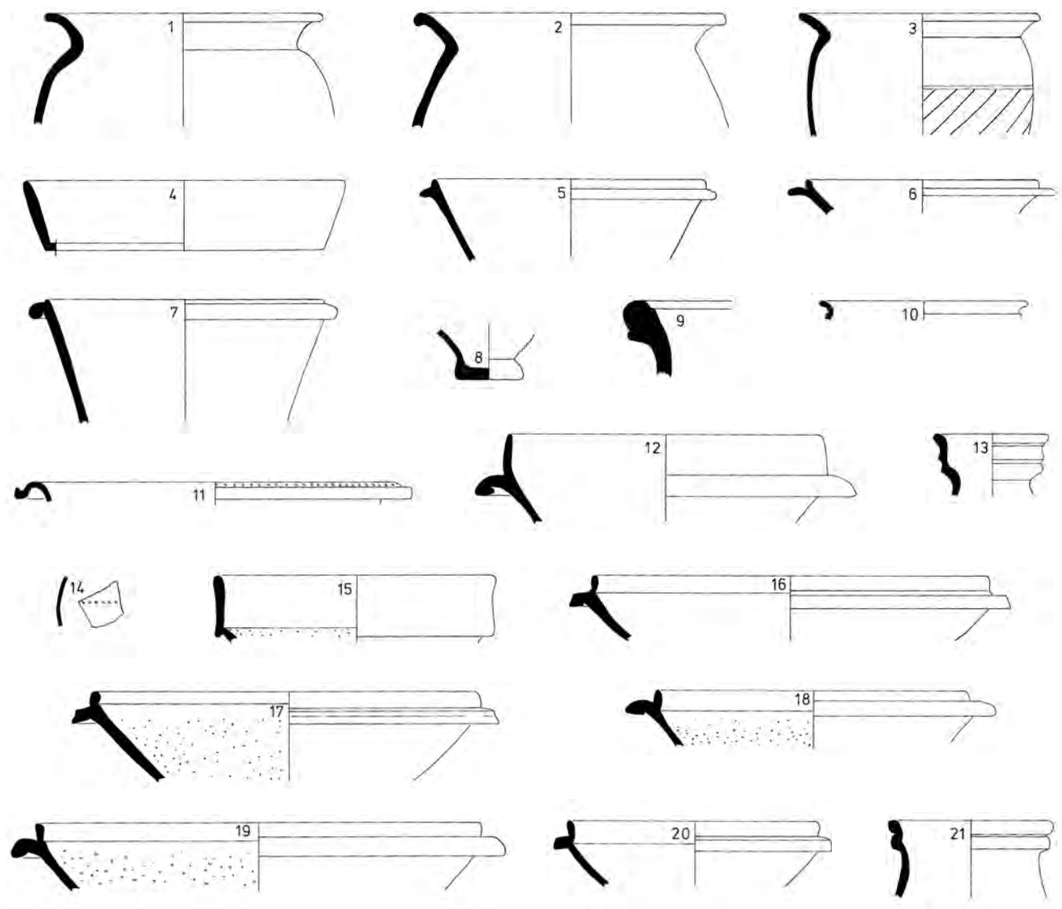


Fig 4.4 Illustrated pottery from the 1940s excavations at Low Ham Roman villa, reproduced at 1:4 (Roger H. Leech)

4.4 Voussoir and box-flue tiles

Ian M Betts

Sixty-three individual voussoir and box-flue tiles were recovered from the 1940s excavation of Low Ham Villa. An earlier box-flue tile from the site was published in 1939 (Anonymous 1939, 77). Evidence of previous attempts at reconstruction were noted on the fragments themselves, which suggests some fragments are now missing from the collection. None of the tiles was numbered, so it is not possible to determine where in the villa they were excavated, but their function suggests the assemblage derives from various heated rooms (see Fig 3.3).

The assemblage can be split into box-flues and voussoirs, although at least one tile could be either. There is also a complete example of what Brodribb (1987, 3) refers to as a springer, believed to have been set at the base of voussoir arches. Many box-flue tiles can be distinguished by the presence of knife-cut vent holes in the centre of each side face.

The various box-flue and voussoir types from Low Ham have been categorised by the number of teeth in the combs used for keying, and the keying patterns themselves. Most box-flue tile types have unkeyed side faces, but there are also examples with combed sides.

Fabric type

Most tiles had been fired to various shades of red, brown and cream. Light grey cores were occasionally present. The majority of tiles have a similar fabric, comprising a scatter of very small black, dark red and occasional grey inclusions, possibly iron oxide (mostly around 0.1mm, but occasionally up to 0.3mm), and white inclusions, possibly calcium carbonate (up to 0.3mm). Larger white

inclusions (up to 0.75mm) and occasional thin, cream-coloured silty bands and more rounded inclusions are noted in some tiles. The differences probably reflect natural variation in the clay deposits exploited by the same tilery, or tilemaking location, that produced both box-flues and voussoirs.

Two separate sources of box-flue tile can be distinguished based on fabric. One (5-tooth comb, type B) has a distinctive fabric characterised by common cream and light grey silty clay bands with frequent medium to large dark red clay inclusions (up to 8mm). There are some similarities with the small area of internal fabric visible on the springer. Both may have been keyed with the same comb.

A second distinctive fabric also belongs to box-flues keyed with another 5-tooth comb (type A). This has frequent cream and dark red iron oxide inclusions (up to 0.3mm), with a scatter of thin, cream-coloured silty clay lenses.

Voussoir tiles

As voussoir tiles are tapered and have four sides of different shape, they are not always easy to describe and the reader is directed to Fig 4.5. The nomenclature adopted is that used by Brodribb (1987, 79) and Betts *et al* (1997, 10–11). The Low Ham examples are unusually well preserved: there are relatively few sites in Roman Britain with intact or even partially intact voussoirs.

All the definite voussoir tiles that could be identified were keyed with either a 7-, 8- or 9-tooth comb, generally in a cross pattern (Fig 4.6). Only one edge of each side face was cut to a taper, the other edge being at right angles to the tile edges. This has been noted on other voussoir tiles seen by Betts. Similarly, relief-patterned voussoirs found in Roman Britain have the same feature (Betts *et al* 1997, 9). This is somewhat at odds with a drawing of a complete voussoir in Brodribb (1987, 79), which shows the side face tapered along both edges.

Combed – 7-tooth comb

Bottom face (keyed): depth 99mm, lesser width *c* 192mm. Thickness 19–22mm. Comb width 31mm (Fig 4.6, no. 1).

The voussoir base has cross-shaped keying, as may the surviving adjacent combed side face.

Combed – 8-tooth comb

Two side faces (keyed): height 237–241mm, lesser width 194–198mm, greater width (226–*c* 234mm). Bottom face (keyed): depth *c* 102mm, lesser width 194–198mm. Top face (keyed): depth *c* 102mm, greater width 226–*c* 234mm. Thickness 15–20mm. Comb width 42–43mm (Fig 4.6, no. 2).

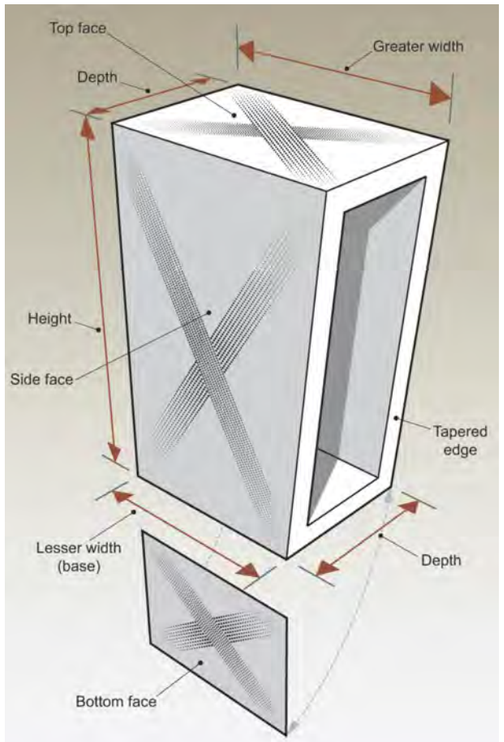


Fig 4.5 Labelled drawing of a voussoir tile (John Vallender, Historic England)

The voussoirs keyed with an 8-tooth comb have a simple cross shape. The bottom face is also keyed with a simple cross pattern. The keying on the top face is more problematic. Only two small areas survive, one showing diagonal keying, the other an area of curved keying. This may be of the wavy keying type seen on various box-flues, such as those keyed with an 8-tooth comb (type C). One 8-tooth box-flue (type A) may have been keyed with the same comb as used on the voussoir tiles, as both are the same length.

Combed – 9-tooth comb

Two side faces (keyed): height 221–234mm, lesser width 193–194mm, greater width (218–*c* 231mm). Bottom face (keyed): depth 107–108mm, lesser width 193–194mm. Top face (keyed): depth 107–108mm, greater width 218–220mm. Thickness 15–21mm. Comb width 36–37mm (Fig 4.6, no. 3).

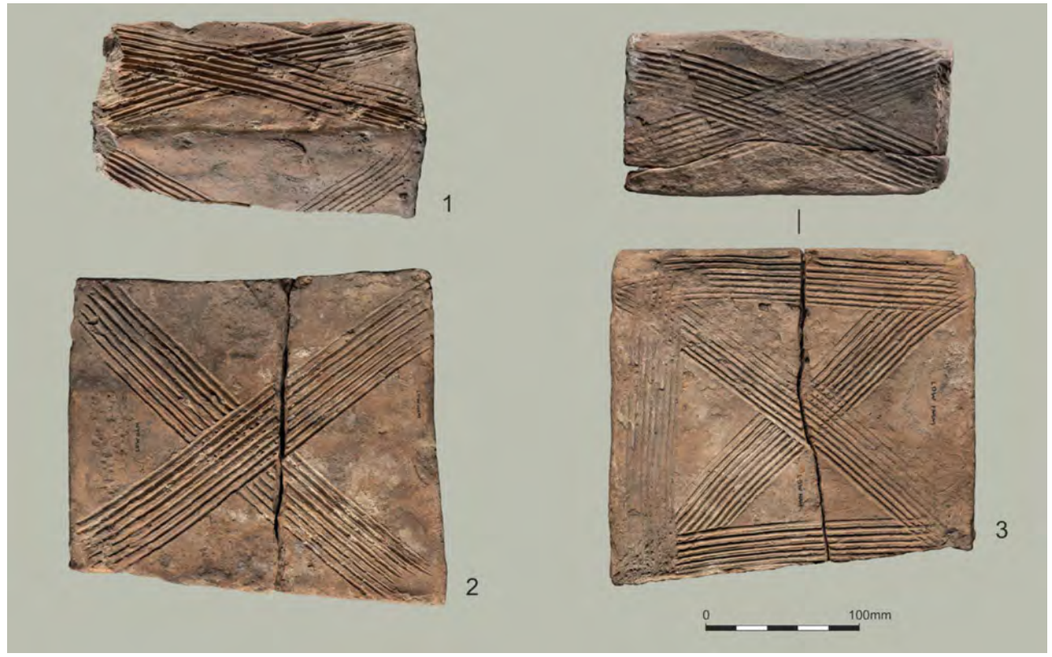


Fig 4.6 Photographs of voussoirs (James O Davies, Historic England)

The keying pattern on the 9-tooth voussoirs also has a cross pattern, but on most examples there is horizontal keying along three edges. Both the top and bottom faces have simple cross combing. Again, the same comb may have been used to key certain box-flue tiles (9-tooth comb, types A–C).

Springer

Two side faces (plain): length 231–233mm, height 149mm (keyed smaller end), height (plain side) 175mm, width (keyed and plain ends) 96–100mm. Thickness 21–24mm. Comb width 29mm.

Low Ham Villa produced one complete example of a springer (Fig 4.7). This has two larger tapered unkeyed side faces, a smaller front keyed face and a larger unkeyed back face. There are no vent holes. The smaller front face has cross-shaped keying undertaken with a 5-tooth comb. The tile would have been set with the keyed side facing into the room interior.

This would have been set on the top of a wall above a vertical row of box-flue tiles. Above the tapered top face the first of a line of voussoir tiles would have been set, forming the barrel vault of a heated room. The springers allowed hot air rising up through the box-flue tiles to circulate around the voussoir tiles. There may have been some sort of chimney to allow the hot air to escape

Fig 4.7 Photograph of the springer tile (James O Davies, Historic England)

outside. What have been described as lamp-chimneys have been found on various sites in Roman Britain. Usually ceramic, it is uncertain if these were used to vent hot air from hypocausts or other systems of heating, or whether they were purely decorative (O'Shea 2003). They may have been both.

A feature of note is that the length of the springer is substantially larger than the width (*c* 98–116mm) of the box-flues over which it would have been placed. This suggests that the back of the springer would have been set into solid masonry for stability.

Box-flue tiles

A labelled schematic diagram of a box-flue tile is shown in Fig 4.8, and photographs of the Low Ham examples in Fig 4.9a–c.

Combed – 4-tooth comb (type A)

Height 373–374mm, breadth (front/back keyed face) *c* 200mm, thickness 18–23mm. Comb width 26mm (Fig 4.9a, no. 5)

These tiles were keyed with a 4-tooth comb with a distinct gap between two of the teeth. This was almost certainly where a tooth had broken off what would originally have been a 5-tooth comb.

Using various tiles it is possible to reconstruct the full height of a combed face. The combed pattern has a cross with horizontal keying at the top and bottom and across the middle.

There is a plain rectangular vent in one of the adjacent plain sides. The interior of the reconstructed tile is of interest as there are two areas of horizontal wood grain impressions, one at the top of the tile, the other at the base. The area between is covered with normal moulding sand.

These areas of wood grain appear to be traces of the wooden mould (or 'former') around which the clay was wrapped during manufacture (Brodribb 1987, 75). This was probably dipped in water then covered by moulding sand to prevent the clay sticking to the wooden mould, so normally the impression of the wooden mould is not present.

Combed – 4-tooth comb (type B)

Thickness 17–20mm. Comb width 34mm (Fig 4.9a, no. 6).

There are a number of smaller fragments of tile keyed with a 4-tooth comb with fairly broad teeth. All seem to be from a curved keying pattern. Often, because of the position the combing implement was held in, only three teeth are visible.

One tile is of particular interest as the adjacent plain side has part of two triangular-shaped holes. Vent holes of this type are much rarer than the square/rectangular and round/oval varieties usually found on in the sides of British box-flue tiles. Brodribb (1987, 75–6) illustrated similar triangular cutaways from Winchester, Hampshire, and Bignor, West Sussex, and notes their presence at Guildford, Surrey.

Combed – 5-tooth comb (type A)

Breadth (front/back keyed face) 178–186mm, width

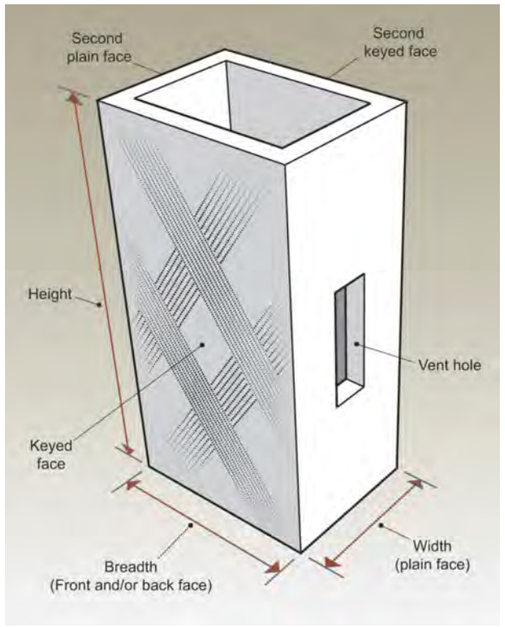


Fig 4.8 Labelled drawing of a box-flue tile (John Vallender, Historic England)

(plain face) 115–116mm, thickness 17–25mm. Comb width 31mm (Fig 4.9a, no. 7).

The combing lines on these box-flues are difficult to distinguish, as two teeth are very faint or not visible at all. Although a 5-tooth combing pattern, a gap between two of the teeth suggests the comb used originally had six teeth. As with certain 4-tooth box-flues (type A), one tooth would appear to have broken off.

The keying pattern on the front and back faces comprises three vertical lines, one along each edge and a third through the middle. These are accompanied by a cross in the tile centre. Rectangular vent holes are present in the unkeyed plain sides.

The tiles in this group are distinctive in having the remains of moulding sand attached to both the inner and outer surfaces. It is extremely rare for moulding sand to be attached to the outer surface of box-flue tiles. Perhaps the clay was first rolled out to the correct thickness on a sanded bench before being wrapped around the mould. The absence of a sanded outer surface on all other box-flue types suggests such sanding was not normally necessary.

Combed – 5-tooth comb (type B)

Breadth (front/back keyed face), 142–168mm, width (plain face) 102mm, thickness 16–22mm. Comb width 29mm (Fig 4.9a, no. 8).

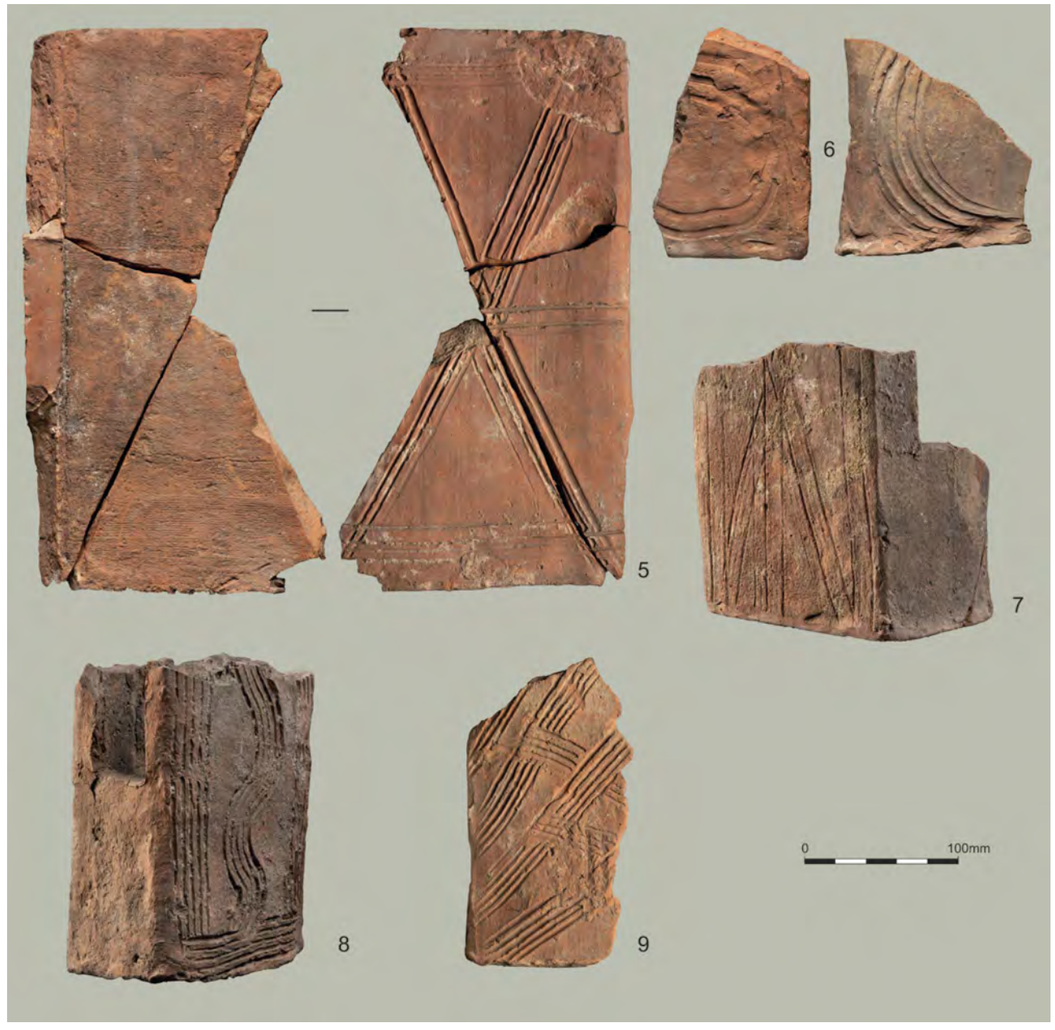


Fig 4.9a Photographs of box-flue tiles 5–9 (James O Davies, Historic England)

One of the most common box-flue tile types from the villa has a distinctive combing pattern and distinctive fabric. The front and back faces have combing along each edge, with curved wavy combing running down the tile centre. The adjacent plain sides have rectangular vent holes. One half-complete tile still survives, showing both the combed back and front face, but not the full height. Fragmentary tiles indicate the height would have been over 327mm.

There is some variation in breadth, suggesting perhaps more than one wooden mould was in use. There appear to be two breadth groupings: 142–152mm and 157–168mm.

Soot deposits were noted in the interior of one tile, showing it was inserted in the walls of a room with a heated hypocaust system.

Combed – 5–tooth comb (type C)

Width (plain face) *c* 111mm, thickness 19–22mm. Comb width 21–23mm (Fig 4.9a, no. 9).

These tiles have a distinctive criss-cross keying pattern made with a 5-tooth comb. Similar criss-cross keying can be seen on other flue tiles made with 6-, 7-, 8- and 9-tooth combs.

One tile has a rectangular vent in the adjacent plain side measuring 35mm in width. Assuming this was centrally placed, then the width can be estimated at

Fig 4.9b Photographs of box-flue tiles 10–14 (James O Davies, Historic England)

around 111mm. The same tile has a small notch, almost certainly accidental, along the top/bottom plain side.

Combed – 6-tooth comb

Width (plain face) *c* 98mm, thickness 17–19mm. Comb width 27–28mm (Fig 4.9b, no. 10).

These tiles have a criss-cross combing applied with a 6-tooth comb. Some have a rectangular vent in the adjacent plain side. One is complete enough to be estimated, assuming the vent is more or less central, with a width of around 98mm. One plain side has what appears to be a trace of combing, but this would seem to be accidental as there is no other trace of combing on the plain vented sides.

One keyed face has a prominent join line down the central back of the tile (Fig 4.9b, no. 10i). This may have been where the clay slab met when wrapped around the wooden frame (Brodribb 1987, 75). Normally, this seems to have been smoothed over as such lines are very rarely left visible. Another tile has traces of the wooded mould (or 'former') around which the clay was wrapped during manufacture (Fig 4.9b, no. 10ii). This is somewhat different to the tile keyed with the 4-tooth comb, as the wood grain impressions are vertical.

The inside of the plain side of a box-flue tile with part of a rectangular, or possibly square, vent hole (combing type unknown) has very similar vertical wood grain impressions. This may therefore have also been a 6-tooth type.

Combed – 7-tooth comb

Breadth (front/back keyed face) 152mm, thickness 15–20mm. Comb width 44mm (Fig 4.9b, no. 11).

A box-flue tile keyed with a wide 7-tooth comb also has criss-cross keying. The tile is unusually small, being only 152mm in width. There are the remains of rectangular cutaways in both adjacent plain sides.

Combed – 8-tooth comb (type A)

Thickness 19–20mm. Comb width 42mm (Fig 4.9b, no. 12).

A further variety of flue tile with a criss-cross keying is present, this time made with an 8-tooth comb. Again, there are remains of a rectangular (or possibly square) cutaway in the adjacent plain side.

Combed – 8-tooth (type B)

Thickness 20–22mm. Comb width 30mm (Fig 4.9b, no. 13).

One tile has the remains of combing on the front face, possibly similar to that found on a 9-tooth box-flue (type C). The adjacent side has part of a round vent hole, suggesting that this was a box-flue.

Combed – 8-tooth (type C)

Thickness 20–22mm. Comb width 30mm (Fig 4.9b, no. 14).

One tile has the remains of vertical combing on the front face and central wavy combing on the adjacent side face, with the remains of a round or oval vent hole. The keying had been applied using a similar-sized comb (30mm wide) to type B, suggesting that both may perhaps have been different parts of the same box-flue type. Another side face has the same wavy combing but part of a triangular vent hole. This also has signs of sooting on the inside.

Combed – 9-tooth (type A)

Height 459mm, breadth (front/back keyed face) 203mm, thickness 19–24mm. Comb width 36mm (Fig 4.9c, no. 15).

This has an unusual combing pattern with three vertical combed lines, the middle of which had been applied above a central, wavy combed line. The complete height (459mm) of the tile is present on one fragment. The adjacent side face (width) has the remains of two adjoining rectangular-shaped vent holes of the type seen

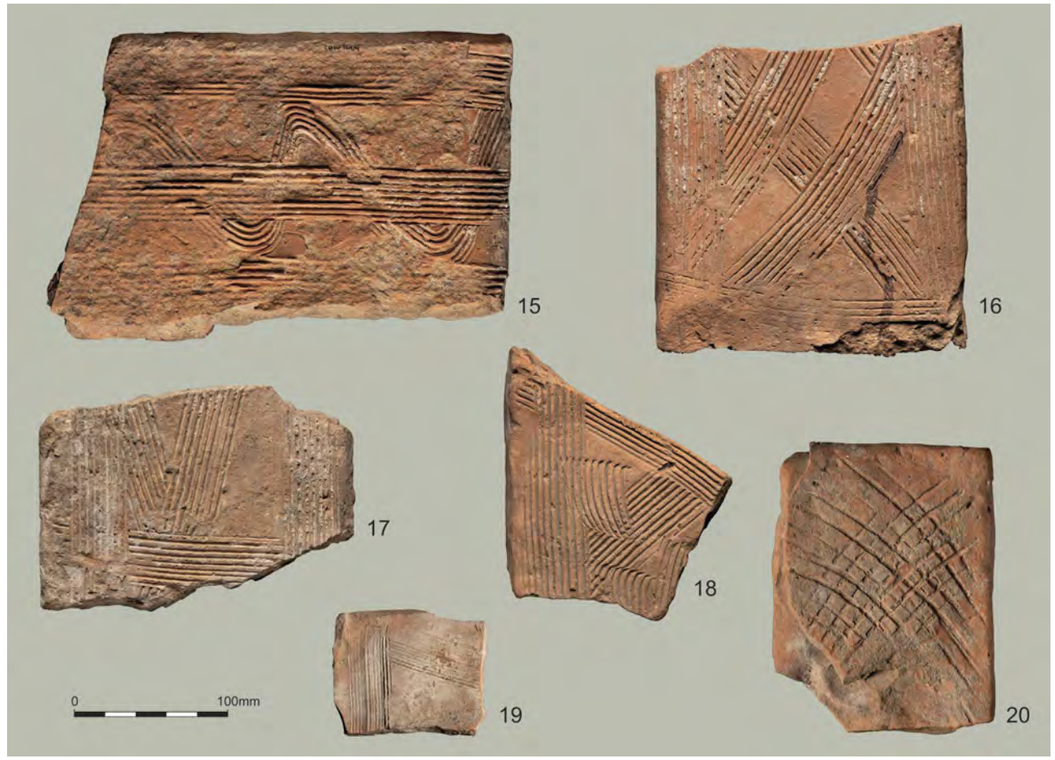


Fig 4.9c Photographs of box-flue tiles 15–20 (James O Davies, Historic England)

on certain box-flues with 4- and 8-tooth combs. Next to the vent is the trace of what appears to be a combed keying, but it is uncertain whether this covered the whole surface.

Combed – 9-tooth (type B)

Breadth (front/back keyed face) 203–207mm, thickness 21–24mm. Comb width 36mm (Fig 4.9c, no. 16).

There are two box-flue tiles that have their front and back faces keyed with horizontal and vertical combing around the edge. At least one has a central criss-cross pattern. The latter has the remains of a rectangular, or possibly square, vent hole in both side faces. One side face has a central wavy combing pattern, while the other is weathered but has a trace of combed keying. The 9-tooth comb has the same width as that employed on certain voussoir tiles.

A further tile from Low Ham Villa with similar criss-cross keying applied with a 9-tooth comb was published in 1939 (Anonymous 1939, 77; see Fig 1.2).

Combed – 9-tooth comb (type C)

Breadth (front/back keyed face) *c* 205–207mm, thickness 19–25mm. Comb width 35–36mm (Fig 4.9c, no. 17).

Of similar breadth and comb size to type B are two fairly large fragments of tile with what may have been a similar keying pattern on the front face. This seems to comprise vertical and horizontal keying around each edge, with a central cross bisected by horizontal keying.

A corner area of another box-flue may also have been a 9-tooth comb of type C. This has both horizontal and vertical keying, and part of a diagonal keyed line. The adjacent side face (width) has central wavy keying with an oval or round vent hole.

Combed – 11-tooth comb

Thickness 21–25mm. Comb width 45mm (Fig 4.9c, no. 18).

One single tile had keying applied with a large 11-tooth comb. The tile face seems somewhat over keyed, with combing covering most of the surviving surface. The adjacent plain side has part of a rectangular, or possibly square, cutaway.

Combed – 13-tooth comb

Thickness 12–13mm. Comb width 27mm (Fig 4.9c, no. 19).

Only one tile fragment in the Low Ham Villa assemblage was keyed by a 13-tooth comb. The combing pattern comprises an area of diagonal and horizontal keying along the front or back face. The fabric is slightly different from other box-flues in having more common very small black inclusions (up to 0.01mm).

Flue or voussoir tile

Width keyed face *c* 156mm, thickness 22mm. Comb width 55mm (Fig 4.9c, no. 20).

One tile has an unusually deep keyed surface applied using a 6-tooth comb. It is uncertain whether this was the base/top of a voussoir or the side face of a box-flue.

Discussion

In Roman Britain there is currently no clear chronology for box-flue and voussoir tiles based on their size and combing pattern. All that can be said with some certainty is that at many of the tileries in south-east England, combing seems to have gradually replaced scoring in the early 2nd century AD (Betts 2016, 107). Whether the same is true further west is uncertain.

The earliest hollow voussoirs are believed to have been made by a group of tilemakers situated somewhere in Sussex during the 1st century AD. These have two sloping edge tiles (Betts 2017, 375, fig 17.6). These were superseded from the 2nd century AD, at least in the London area, by hollow box-flues with one sloping edge (H Li, pers comm, 2024). This is the voussoir type used at Low Ham Villa.

Dating using fabric type has proved very useful in south-east England, particularly where distinctive fabric types can be linked to tileries with known product dates (Betts 2017, 368–83). The difference in fabric of the Low Ham box-flue tiles shows that this may be a productive avenue for future research, particularly when combined with a more broadly based examination of Roman fabric types in the Somerset area.

Examination has revealed that the similarity in size of the 8- and 9-tooth combed voussoirs suggests they derive from the same tilery. The presence of both 8- and 9-combed examples with slightly different keying patterns suggests they may be the work of two different tilemakers. The head of the tileworks would need to identify the products of each tilemaker, as they seem to have been paid by output, as some *graffiti* marks suggest (Brodribb 1987, 130–31). Finger marks, usually referred to as signature marks, which are a common feature on tegulae roofing tiles and bricks, re believed to have been added for the same purpose.

Voussoir tiles frequently have circular vent holes in their keyed side faces. These were inserted to allow hot air to pass between adjoining ribs of voussoir tiles. This would have been needed where there were adjoining lines of box-flue tiles running up the walls, such as seen at a partition between Rooms A and B of a bath suite at Ashtead Villa, Surrey (Betts *et al* 1997, 71). The absence of such holes at Low Ham Villa suggests only individual voussoir ribs were used in the roof of the vaulted building, or vaulted buildings, in the villa complex. This in turn suggests they were linked with individual lines of box-flue tiles set into the masonry walls.

There is a fairly wide range of box-flue tiles in a variety of sizes, with a number of different combing patterns. This would suggest they represent a mixed assemblage derived from different rooms in the villa, most of which would not have been vaulted. One oddity is that some box-flue tiles have their side faces keyed with a single line of wavy combing. The 8- and 9-tooth combs used appeared to be similar to those employed for the keying of voussoir tiles. Perhaps the box-flue and voussoir tiles keyed with the same, or at least very similar, combs were used together in the same room or rooms.

Analysis of the fabric suggests most of the voussoir and box-flue tiles were made at the same tilery or tilemaking area. Box-flue tiles from two other production sources were identified. Where these tileries were located requires further investigation. It should not be assumed that these were situated in the local area, as there is now increasing evidence that ceramic building material could be transported over considerable distances (Betts 2016, 99–110).

4.5 The mosaics

Stephen R Cosh

Introduction

Low Ham Villa is principally known in Britain and internationally for a splendid mosaic featuring scenes of the doomed love between Dido and Aeneas as described in Virgil's *Aeneid* (Cosh and Neal 2005, mosaic 207.1; mosaics from this publication are hereafter referenced by the mosaic number with the prefix II).[2] The spectacular nature of this pavement, and its illustration in numerous publications, rather distracts from the fact that this was the floor of a single room in a large villa complex. There is evidence of at least eight other mosaics from the limited excavations that took place in 1946–48; a further fine mosaic (II 207.9) is known only from a monochrome photograph of a fragment (Karen Cook Collection). Apart from the mosaics found surviving *in situ*, others are known from loose fragments, although, for some, their exact provenance is uncertain.

In contrast with the vast amount of literature on the Dido and Aeneas mosaic, the others are scarcely mentioned. There are scant references in the interim reports of C A Ralegh Radford (1946, 1947a, 1947b, 1948b) and in the unpublished correspondence between the excavators and the mosaic expert, Dr David J Smith (David J Smith Collection), as well as notes, photographs and fragments preserved in the Somerset Heritage Centre, Taunton (including in Denman 1948). Also consulted was Radford's 'day-book' (Radford 1948a). Inevitably the emphasis here will also be on the remarkable and well-preserved Dido and Aeneas mosaic.

The mosaics adorn three main areas in the west range: the baths, the rooms accessed from Room 17, and the rooms in the northern end of the south-west wing. The rooms receiving the finest mosaics were those in which the owner would have received guests and would have been keen to convey the attainments of education, taste and wealth. This is most evident in the latest phase of the *frigidarium* (Room 1), with its illustrations from Virgil's *Aeneid*, instead of the more mundane geometric or marine content. The mosaics are not necessarily part of the same building phase, although they appear to belong broadly to the mid-4th century AD and were probably part of a major aggrandisement at that time, as has been noted at several other villas in the area (Cosh and Neal 2024, 33–4). The Dido and Aeneas mosaic shares no significant affinities with the others at the site. Rooms 16 and 18, and an unprovenanced mosaic, have close parallels in mosaics from Fifehead Neville and Hemsworth in Dorset (II, 167.1–167.2 and 171.1–171.2), which were excavated in the 19th century and not securely dated other than that they were probably from the mid-4th century AD. The mosaic in Room 15 is reminiscent of the work of the *Lindinis* Group, notionally based in Ilchester (Cosh 2022c) and, if this were indeed their work, datable to after AD 350. The mosaics were in sophisticated residential use long enough to require repair and, in the final years of occupation, some floors were patched or replaced by flags.

[2] The descriptor 'Dido and Aeneas' has been used consistently for this mosaic throughout the monograph in preference to 'Virgil' or 'Virgilian', which appear elsewhere in the literature and in Radford's quoted text in Chapter 3.1 and Appendix B.

What follows is largely the result of research into the Low Ham mosaics for the second volume of the corpus of Romano-British mosaics (Cosh and Neal 2005, 253–63). The entries within that volume (II 207.1–207.8) have been adapted and revised for this contribution with additional information and discussion, some based on research and discoveries since that publication (Cosh and Neal 2024, 149–50). All those fragments known to Cosh at the time were drawn for Volume II (Cosh and Neal 2005). Mosaics from other sites in south-west Britain not included in Volume II are referred to by their catalogue number in Cosh and Neal (2024; hereafter referred to as V) and Cosh and Neal (2010; hereafter referred to as IV).

Room 1 *Frigidarium*

Mosaic II, 207.1. Found 1945–46. Dimensions: room (excluding cold plunge-pool) about 7.50m by 5.15m max; Dido and Aeneas measures 4.30m square; geometric mosaic measures 2.60m square. Tesserae: dark blue-grey, white, red, yellow, buff, purplish-brown, pale cream, pale pink, blue-grey and brown, 13mm. Border: blue-grey, 25mm. Later 4th century AD. Figs 4.10–12.

Roman building material discovered during the burial of a sheep in 1937, which occasioned the villa's discovery, resulted in a trial excavation a few metres to the west on 6 October 1945, revealing the head of Aeneas' horse in panel D of the mosaic. This find led to the excavation of the site from 1946, when the mosaic was found to occupy the *frigidarium* of the bath suite and be contemporary with a large rectangular cold plunge-bath (*piscina*). The figured panel had survived almost complete, with some damage where a horse had been buried through part of it. The mosaic was lifted in September 1953 by the Marble Mosaic Company using the 'rolling up' technique in strips (the longer panels divided into two) and removed to what is now the Museum of Somerset (Maddalena and Cosh 2024). The lifting was largely successful, although, as Radford noted in a letter to David J Smith dated 29 October 1976 (David J Smith Collection), there was some loss, which was almost inevitable using that method, particularly as heavy rain caused difficulties in drying the pavement properly: 'though this is hardly noticeable, the lower torso and thighs of Aeneas [in the eastern compartment] fell out during removal. They were reformed from the original tesserae, eked out with a few others from the same room, on the basis of a rubbing that I had made for record' (Radford letter of 1953, David J Smith Collection). Lifting the mosaic enabled excavations below the pavement, which revealed an earlier bath considered by Radford to belong to the third building phase approximately dated AD 330. The mosaic would thus probably date from AD 340 and perhaps much later (Wright 1954, 100).

The room was in two parts, each with its own mosaic, which adjoined; the larger figured one was next to the cold plunge-bath (and separated from it by a band of grey tesserae), the smaller geometric one to the north-east near the entrance where the room narrowed. Radford designated the smaller part 'the dressing room' (*apodyterium*) (Radford 1947a, 1), which is possible although the adjacent Room 4 could equally, and perhaps more likely, have performed that function. The tessellation continued through into this anteroom, or *apodyterium*, that 'had also been paved with mosaic though no remains of this were found in position' (Radford 1947a, 1).

The Dido and Aeneas mosaic

The larger mosaic is basically square and has an H-shaped scheme drawn in simple guilloche outlined in dark blue-grey with strands shaded red, buff and white, as is all the guilloche. Unusually, the guilloche strands run from top right to bottom left, instead of the normal top left to bottom right associated with right-handed people, but this is insufficient evidence for a left-handed worker or the panels' construction by the reverse method off-site, which would also produce this effect. Two long rectangles, framed by guilloche, are joined by two lengths of guilloche to form a central square and open-sided rectangular spaces. The central square contains an octagon of three-strand guilloche, with dark blue-grey triangles on a white ground in the triangular interspaces. Four rectangular panels (B–E) illustrate the story of Dido and Aeneas in an anticlockwise direction, around an octagonal panel with Venus at the centre (panel A). The mosaic is surrounded by a band of buff tesserae and has a narrow coarse outer border of blue-grey.

Panel A: Venus

Set within the octagon at the centre of the pavement is the standing figure of Venus, naked save for a diadem. Her arms are raised and she holds the corners of a blue-grey cloth or cloak behind her, which allows the pale cream figure to stand out from the white background. She is flanked by winged cupids: one standing cross-legged, naked and coyly with closed eyes and holding a down-turned torch in both hands; the other, with a brown and red stole draped across him, kneeling and his raised right hand holding a torch upwards.

Venus presides over the events unfolding around her, as she does in the *Aeneid*. The torches held by the cupids

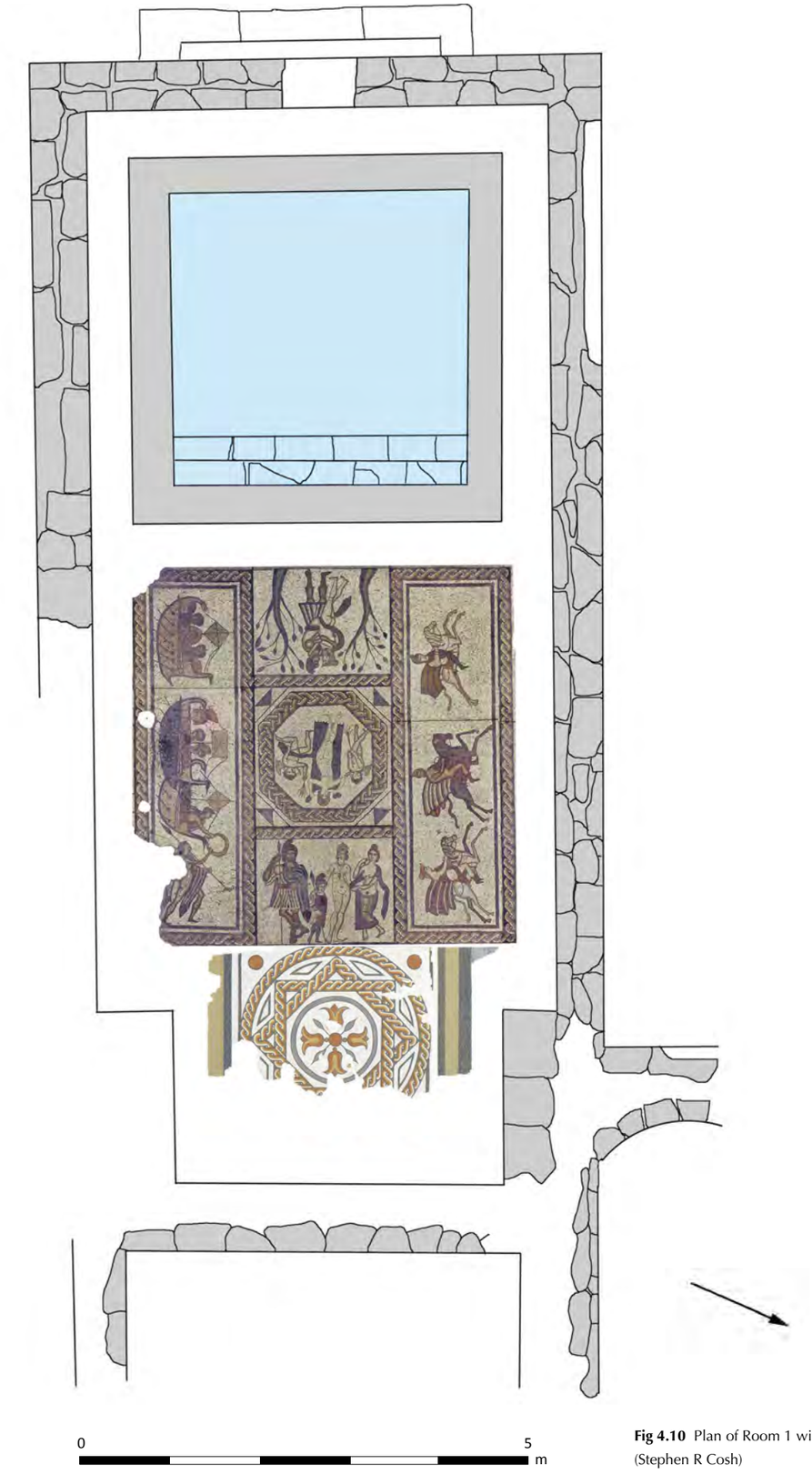


Fig 4.10 Plan of Room 1 with mosaics superimposed (Stephen R Cosh)

Fig 4.11 Dido and Aeneas: an overall photograph

perhaps symbolise the life and death in the story, based on Books I and IV of Virgil's *Aeneid* (published in translation by Jackson Knight 1980, hereafter referred to as Aeneid followed by the book and line numbers), of Aeneas and Dido, whose tale of doomed love is told in the surrounding panels and whose fate Venus determined. It is orientated to be viewed above Aeneas and Dido embracing, and perhaps reflects Virgil's conclusion to the scene that this moment of ecstasy also 'sowed the seeds of suffering and death' (Aeneid IV, 169). In the context of the baths, Venus faces the cold plunge-pool, where bathers emerging from it would see her correctly orientated. It is possible, therefore, that the cloth she is holding behind her is a towel, and that she is also emerging from her bath (Witts 2005, 49).

Panel B: The arrival of Aeneas and his companions at Carthage

This panel, to the right of Venus, shows Aeneas and his Trojan companions having arrived at Carthage from Troy (Aeneid I) in three galleys. The vessels, two overlapping, are shown in profile with no indication of water. All have beaked prows and criss-cross breastwork on a red ground; the rearmost two have rams. The central galley is infilled blue-grey, the others buff. There is a small area of ancient repair to the base of the second ship. Above the single rows of oars are the steering oars that extend beyond the sterns. Two of the sails are kite-shaped and the central one is rectangular, but all are divided diagonally by blue-grey lines on a buff ground. Two figures in the last galley face each other and alternate with semi-circular features in red, outlined in dark blue-grey, which may represent barrels or bales. One figure in the central galley wears a crested helmet perhaps belonging to the *palladion*, the ancient Trojan head of Athena which Aeneas later took to Rome (Toynbee 1964, 242; Liversidge 1968, 283), although this interpretation seems unlikely as it is being worn (D J Smith 1977, 107). At the eastern end is a spear-bearing figure drawn to a larger scale and orientated to follow on to the next panel. This represents Aeneas' companion Achates, who takes a jewelled golden diadem (drawn in purple and infilled yellow) or possibly a necklace shaped like a row of mulberries (Witts 2005, 48–9) from the figure at the prow of the leading boat as a gift to Dido, Queen of Carthage (Aeneid I, 654–5).

Panel C: The encounter of Dido and Aeneas

The eastern compartment nearest the entrance shows Aeneas, Ascanius, Venus and Dido (Aeneid I, 586–612). Aeneas stands cross-legged, dressed in military attire and a Phrygian cap signifying that he is a Trojan. He leans nonchalantly on the spear that he holds in his raised right hand. Throughout the mosaic he is shown with a dark complexion in buff, outlined in brown and dark blue-grey, and has a brown beard. Although facing forward, his eyes are turned towards Dido. The young yellow-haired Ascanius, now, by the machinations of Venus, Cupid in disguise, is clad in a white tunic and red cloak and also has a red Phrygian cap and a spear. Venus rests her right hand on Ascanius' shoulder. She adopts the same posture as in the central panel and is similarly naked. In addition to her diadem and necklace, she wears armlets and a body-chain, such as was found in a hoard at Hoxne, Suffolk (Bland and Johns 1993, 19–21). As with the central figure, she is outlined in buff (and here purple) and her body is pale cream; this tone is also used in the depiction of Dido throughout the mosaic. Venus' hair is yellow outlined in purple, centrally parted with ringlets. At the top of her head there is a small projection, which may be linked to the jewelled diadem she wears. Dido stands at the right of the compartment, semi-naked and cross-legged like Aeneas, at whom she gazes. She adjusts her dress with her left hand and holds her right hand to her lips in a typical attitude of astonishment (Aeneid I, 613). Her yellow hair is arranged in a topknot or bun. The viewer is left in no doubt of the feelings of Dido for Aeneas.

Panel D: The hunt

The northernmost panel features three figures on horseback participating in a hunt (Aeneid IV, 129–59), galloping from left to right; their cloaks fly out behind them to give an impression of speed. Ascanius leads the way, with Aeneas glancing backwards at Dido, who brings up the rear; she has a stole wrapped around her otherwise naked body and wears brown boots. Aeneas, who is now also shown almost naked except for his brown cloak bound around one arm, rides a black horse (drawn in shades of blue-grey); the other horses are white, outlined in dark blue-grey and buff. The riding tackle and saddlecloth are drawn in red and the horses have long manes and narrow tails.

Fig 4.12 Photographs of details within the Dido and Aeneas mosaic, showing Panel C (left) and Panel E (right)

Panel E: Dido and Aeneas shelter from the storm

In the westernmost panel closest to the bath, Aeneas and Dido are depicted sheltering among trees as the storm interrupts the hunt (Aeneid IV, 165–72), instead of the cave in Virgil's *Aeneid* (Aeneid IV, 165–72). The figures are locked in an embrace, Aeneas now fully clad as in panel B, and Dido naked except for her red stole coiled around her. The fact that Aeneas is now clad in armour might be indicative that he is about to leave Dido, and pursue his original quest with his companions, for which the ships sailing away in panel B to the right might double for his arrival and departure. The trees, either side of the couple, perhaps merely indicate the wooded setting where the cave was located, and is an example, as elsewhere on this and other Romano-British pavements, where only the basic elements of the tale are depicted.

The geometric mosaic

The mosaic from the narrower part of the room comprises a pair of interlaced squares within a circle, all drawn in simple guilloche, tangent to a linear square formed by three rows of dark blue-grey tesserae. The centrepiece, framed by a circular blue-grey band edged with dark blue-grey, is a large stylised flower formed by four calyxes, each separated from the central circle by small circles at their bases; these alternate with solid dark blue-grey spindle-shaped leaves radiating from the centre. The interspaces formed around the interlaced squares are occupied by dark blue-grey linear triangles with curved bases. The two surviving spandrels are largely white except for small solid red circles, edged in dark blue-grey. On three sides, the panel has a border of bands of dark blue-grey, buff (or off-white) and dark blue-grey in medium-sized tesserae and a plain area of coarse blue-grey tessellation. This mosaic was lifted in 1953 at the same time as the Dido and Aeneas mosaic and, according to an invoice from the Marble Mosaic Company, there was apparently a deal for restoration using tesserae found on site (Maddalena and Cosh 2024).

Interlaced squares in circles are found on several mosaics in Somerset: Yatton (II, 226.1), Bratton Seymour, now referred to as Hadspen (II, 191.1), and crude forms from Pitney II (II, 211.1) and Butleigh (V, 504.2), but none is comparable in other respects.

Discussion

Smith (1984, 370, 376) assigned the Dido and Aeneas mosaic to his Durnovarian School, which he believed was based in Dorchester, Dorset (*Durnovaria*). The scheme of the geometric part is found on a mosaic from Durngate Street, Dorchester (II, 165.11), but interlaced squares within circles are commonplace and the workmanship seems to be different at Low Ham; the guilloche is not interbraided in typical Durnovarian fashion. The figures on the Dido and Aeneas mosaic are not directly comparable with Durnovarian examples except for the 'flying stoles' of the winged cupids, closely matched on the principal mosaic at the nearby Pitney I villa (II, 211.1), which does have some characteristics of Durnovarian work. Although the only other probable representation of Aeneas in Britain occurs on the Durnovarian mosaic from Frampton (II, 168.1), the workmanship does not appear to be closely comparable, even allowing for the fact that the Frampton mosaic is known mainly from an old engraving. However, Radford's suggested date of AD 340 or probably later would accord well with such an attribution. Elaborating on the work of Smith, Johnson (1982, 47) included it with Pitney among the products of his conjectural *Lindinis Officina*, a branch of the Durnovarian School. With no obvious similarities to the typical Durnovarian pavements, the attribution of the pavement to this group is extremely doubtful (Cosh 2021). The figured work is of high quality, contrasting with the relatively sparse and simple geometric work with 'loose' guilloche, perhaps indicating that different craftspeople were working on the pavement and, first and foremost, reflecting the literary taste of the owner and the artistic preferences of the time.

The subject matter of this mosaic is clearly the story of Dido and Aeneas as told by Virgil in the *Aeneid*. Each of the figured panels displays a pleasing symmetry or balanced composition. Only Achates turned through 90 degrees to link with the action of the next panel bucks the trend. The rectangular shape of each compartment is suggestive of having been copied from, or inspired by, an illustrated manuscript or codex. Shortly after its discovery, Radford (1947a, 3), followed by Smith (1969, 90, pl 3.6), recognised this and cited a similar scene featuring Achates from a manuscript in the Vatican dated to around AD 400 (*Codex Vaticanus Latinus* 3225). Dark (1994, 185–91) and Henig (1979, 22–3; 1995, 126; 2022, 27–32) have gone further, arguing that the codex may have been Romano-British in origin, and a similar work was probably in the possession of the villa owner.

The mosaic is almost like a comic strip featuring the general import rather than the precise details of the popular story, with which the educated elite was probably familiar. The works of Virgil would have been an important part of their learning. Augustine of Hippo, for example, wrote at the close of the 4th century AD that when he was young he was 'obliged to learn by heart the wanderings of Aeneas … and weep for the death of Dido' (Confessions 1). However, despite Virgil's *Aeneid* being the mainstay of education, particularly in the Latin-speaking part of the Empire, scenes from it are rarely depicted in mosaic. In Britain, Aeneas is included in only one other mosaic with any degree of certainty, at Frampton, Dorset (II, 168.1), where he is shown plucking the golden bough from the sacred holm-oak as described in *Aeneid* VI (210–11), although this incident was also mentioned by Ovid in his *Metamorphoses* XIV (113–15), which may have been its source. Although other episodes from the *Aeneid* are featured on mosaics elsewhere in the Empire, such as four mosaics with similar depictions of a boxing match between Dares and Entellus (Aeneid V, 362–484) in or close to Aix-en-Provence in Southern France (Lavagne 2000, nos 789, 840, 857, 915), they were possibly the product of the same workshop or based on the same copybook, perhaps reflecting a local interest in the sport. Nevertheless, as far as Cosh is aware, mosaics with the story of Dido and Aeneas have not been found in the Western Empire.

However, in 2015 excavations by the Osmaniye Museum Directorate at a villa at Kadirli on the southern coast of Turkey revealed figured mosaics including the hunt from Virgil's *Aeneid* IV (151–9), showing the same scene as one of the panels at Low Ham (Cosh and Neal 2024, 13–14, fig 10). The riders are the same and are named in Greek as Aeneas, Dido and Ascanius. A slain lion is shown close to Ascanius and in the background is a rocky landscape including a cave where Aeneas and Dido were to make love (a separate panel at Low Ham). Although the workmanship is far superior to the Low Ham panel, this does not detract from the owner's literary accomplishment (*paideia*). It is interesting that on the Turkish mosaic it was thought necessary to name the individuals; at Low Ham this was presumably considered unnecessary. Henig has written a number of articles in which he stresses that the Romano-British elite in the 4th century AD were keen to show their knowledge of classical literature, and the Dido and Aeneas mosaic demonstrates this particularly well, especially as the images may have been taken from an illuminated manuscript or codex (Henig 2019, 2020, 2022). In the 5th century AD, Sidonius, in a letter in which he describes the villa of his friend, Consentius, mentions a copious collection of books there (*Epistulae* VIII, iv, 1), and there is no reason to doubt that some grander villas in 4th-century AD Britain, such as Low Ham, had something similar. Although Britannia was regarded as being on the periphery of the Empire, and the workmanship is inferior to that around the Mediterranean, the subject matter of its art was as sophisticated as that at its centre.

The figured compartments dominate the pavement, with guilloche serving only to frame and separate them, thus emphasising their literary rather than purely decorative purpose. This is at variance with most figured pavements in Britain, in which the figures generally occupy spaces within an elaborate geometric design and usually depict single scenes from different myths or stories where there are multiple compartments. Although scholars have attempted to identify common themes for these multi-figured pavements, until recently Low Ham was the sole example of continuous story-telling over several compartments in Britain (and exceedingly rare elsewhere). However, this changed with a discovery in 2020–21 near Ketton, Rutland, where the principal mosaic had three long rectangular panels, one above the other, separated by simple guilloche and featuring scenes from the Trojan War: Achilles' duel with Hector; Achilles dragging Hector's body behind his chariot; and the ransom of the corpse (Cosh and Neal 2024, 95–104, figs 50–52). Just as Virgil's *Aeneid* was pivotal to Latin literature and education, so Homer's *Iliad* was for Greek. In this case the story diverges from Homer's account and reflects later adaptations or popular understanding of the tale. Again the shape and balanced composition of each scene suggests that they were taken from an illustrated manuscript (Cosh 2022b, 24–8).

In the mid-4th century AD it became fashionable, especially in south-west Britain, to refurbish baths and create a large, lavishly decorated *frigidarium*. Excavation beneath the Dido and Aeneas mosaic revealed an earlier plunge-pool, making it clear that, like several other sites, the *frigidarium* was enlarged to accommodate a splendid mosaic and new plunge-pool of much the same dimensions (and much larger than its predecessor). Mostly these *frigidarium* mosaics are geometric, as at Halstock in north Dorset (II, 10.2 and 208.9), or have marine scenes, with real or imaginary sea creatures, as at Lufton, Somerset, or Dewlish, Dorset (II, 10.2 and 208.9); the aquatic theme is particularly appropriate for baths. These are often associated with a large plunge-pool, and coincide with the aggrandisement of dining rooms. The literary content of the Low Ham *frigidarium* is unusual, because normally such a display of *Romanitas* and knowledge of literature is reserved for the main reception/dining room where honoured guests would be entertained. However, dining was often preceded by a visit to the baths and the *frigidarium* might in itself be

regarded as a reception room. It is interesting to note that Sidonius, in his description of his own baths in south-west Gaul in the 5th century AD, states that there was enough room in his *frigidarium* for servants to move around the chairs of his dinner guests (*Epistulae* II, ii, 5).

One can be sure that some of the visitors were the owners of villas in the area, perhaps from one of the Pitney villas, only about 2km away. It had a large figured mosaic that Henig (2022, 16–17) has recently suggested features scenes from Ovid's *Metamorphoses* and *Heroides* as well as Hyginus' *Fabulae*. Another mosaic, in an adjacent room there, featured Cadmus slaying the serpent as recounted in Ovid's *Metamorphoses* III (58–94). Less than 20km south at Dinnington villa, there was a large room with figured mosaic sadly known only from fragments, but some adjoining pieces were clearly Daphne transforming into a laurel in her attempt to escape the clutches of Apollo, as described in *Metamorphoses* I (547–52).

References

Radford 1946, 3–8; Wright 1946, 142, pl XI; Wright 1947, 173; Wright 1954, 99–100; Radford 1947a, pls 1–6 between pp4 and 5; Radford and Dewar 1954; Toynbee 1962, 203–5, no 200, pl 235; Toynbee 1964a, 241–6, pl LVIII; Liversidge 1968, pl 49; Smith 1969, 90, pls 3.5–6; Neal 1976, 248–50, fig 387; Smith 1977, 106–7,135, 142, 144–5, pls 6.XXII–XXIII; Henig 1979, 22–3, pl II ; Toynbee 1982, 16; Cookson 1984, pl 76; Henig 1986, 18; Henig 1995, 121–2, 125–6, col pls IX–X, fig 92; *Lexicon Iconographicum Mythologiae Classicae* I, 391, pl 306 entry 159; VIII, 1997, 559–62 entries 7, 10, 10a, pls 356 (on Dido); Ling 1998, 75, 113, fig 81; Dunbabin 1999, 96–7, fig 96; Cosh and Neal 2005, 253–7, figs 248–52; Witts 2005, 47–9; Henig 2019, 29–30: Henig 2020; Henig 2022; Vellidis 2023.

Room 15

Mosaic II, 207.2. Found 1946–47. Dimensions: room 4.30m square; panel 2.47m by 2.20m. Tesserae: dark blue-grey and white, 13mm. Border: pale blue-grey, 25mm. Fourth century AD. Fig 4.13.

The room at the south-east end of the hall had a rectangular mosaic panel of simple repetitive geometric design in dark blue-grey on a white ground. It comprises a square of all-over spaced swastika-meanders with single returns, enclosing quincunx arrangements of chequers. On two sides are rows of stepped right-angled triangles and a white band surrounds the whole. The border, in larger tesserae, is pale blue-grey. Although surviving largely complete, there is some discolouration on its surface due to burning.

While this scheme of spaced swastika-meanders often occurs on mosaics, other examples in the area also have chequers in the spaces, which is more unusual. In the villa at High Ham, about 1km distant, one of its mosaics (II, 191.1) is closely analogous to the Low Ham example; it has swastika-meanders with double returns enclosing chequers, although they are tilted through 45 degrees. More similar, and located about 10km to the east, a mosaic from Butleigh, Somerset (V, 504.1) also has a panel with spaced swastika-meanders, with single returns enclosing squares of chequers at 45 degrees, as at High Ham. Both mosaics have been identified as products of the same group of craftspeople, whose work is found in and around Ilchester (the *Lindinis* Group) (Cosh 2022c), and it seems likely that this Low Ham mosaic is a further example of their work. 'Black-and-white' pavements were more prevalent in the 1st century and early 2nd century AD, and this phenomenon in the area during the 4th century AD can be regarded as a revival of the tradition.

References

Radford 1947b, 62; Wright 1948, 93; 4; Cosh and Neal 2005, 257–8, fig 253.

Room 16

Mosaic II, 207.3. Found 1947. Dimensions: room 5.23m square. Tesserae: dark blue-grey, white, red, blue-grey, pale blue-grey and yellow. Fourth century AD. Fig 4.14.

Only a small portion of this room with a composite hypocaust was excavated along the east side, as well as a narrow trench across it and a small area at the centre where the *pilae* stood. The mosaic was described by the excavators as follows (Radford 1947b, 62):

> *Fragments of mosaic were found in position alongside the front wall but the greater part of the floor had been destroyed at a time when the room was substantially intact and unencumbered with fallen debris. Large slabs of mosaic, adhering to the plaster bedding were found dropped edgeways into the channels of the hypocaust. They were found with fragments of wall plaster and other rubbish but without any admixture of earth or silt. The explanation inevitably suggests that the floor and hollow-sounding parts of the walls, in which the flues were embedded, had been deliberately broken up in the frantic search for hidden treasure and that a rough attempt to level up the floor and dispose of the rubbish had subsequently been made. The large slabs of mosaic recovered from the hypocaust shew* [sic] *that the pavement was finely executed in a technique and of materials identical with those of the Virgilian mosaic. Plait-work borders of the same design have been recovered and fragments of marine scenes with water plants and fishes indicate the subject of one or more of the panels … It is hoped that a fortunate discovery in that part of the hypocaust yet to be cleared may give a further clue to the composition of the mosaic.*

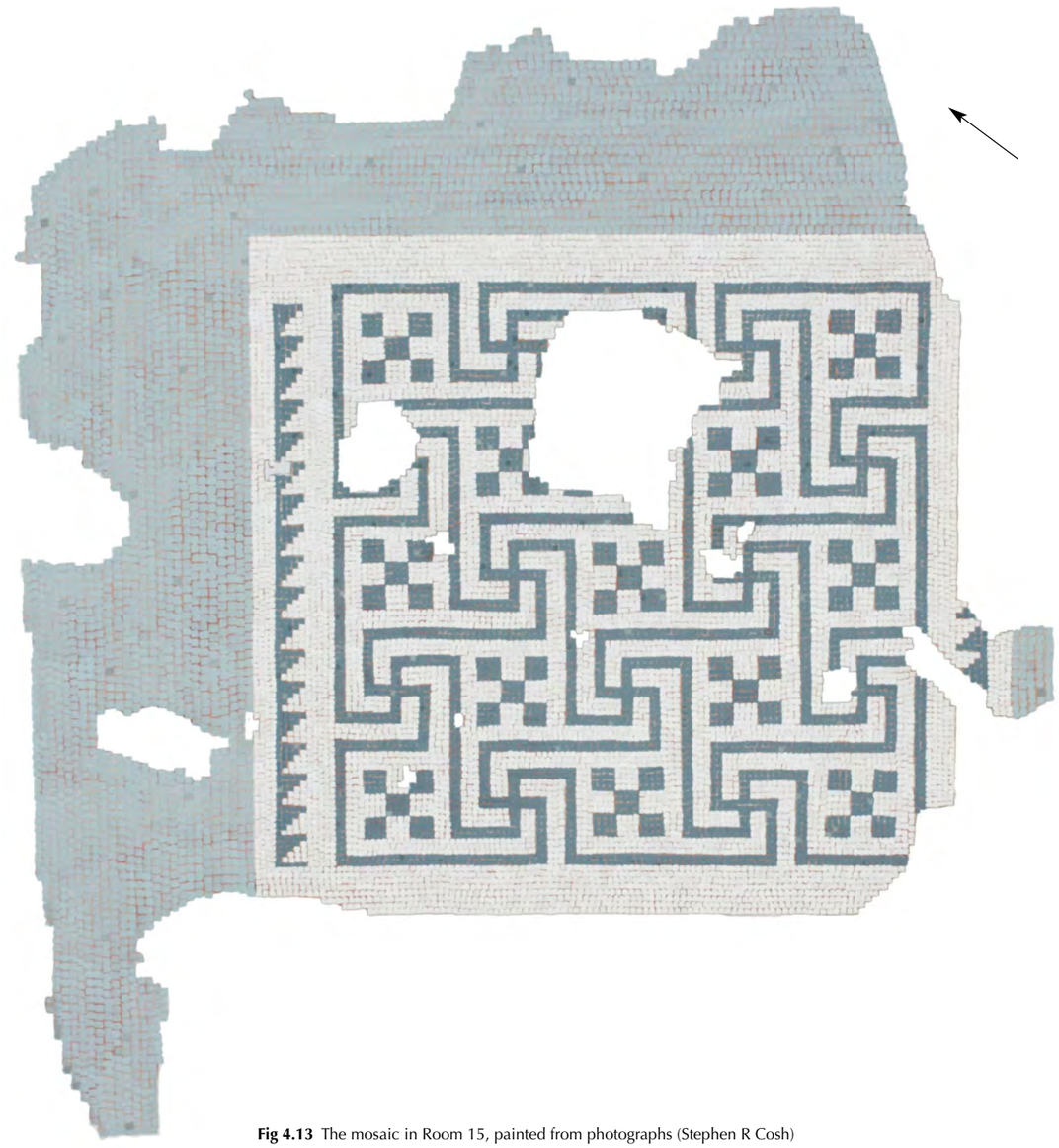


Fig 4.13 The mosaic in Room 15, painted from photographs (Stephen R Cosh)

Dewar, in a letter to David J Smith dated 9 February 1966 (David J Smith Collection), states: 'The floor of the room had not only collapsed into the pillared part of the hypocaust, but robbers' poles had been pushed along the channelled parts and the pavement heaved up and turned over. One such slab I left intact, on its face … And Radford favoured strongly the notion to leave it alone.'

In a subsequent letter from Dewar to Smith dated 13 January 1966 (David J Smith Collection), he adds: 'One of these [fragments] shows a fish and there was a piece

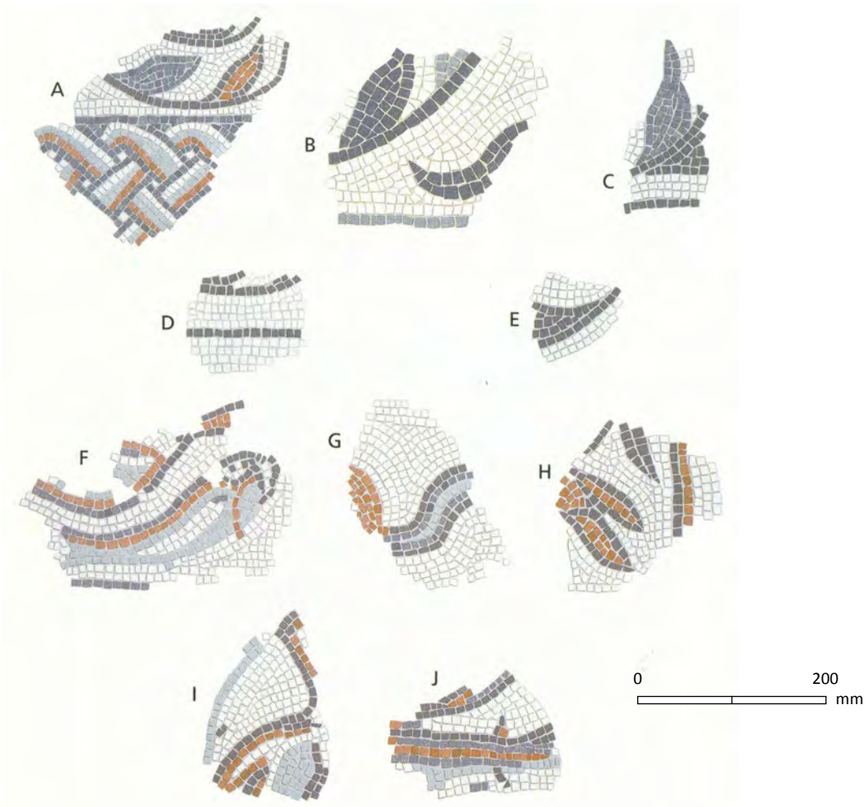


Fig 4.14 Fragments of mosaic from Room 16, painted from ?lost coloured tracings and photographs (Stephen R Cosh)

showing yellow-flowered water plants, of which I have no photo, but which was sent to the Taunton Museum. It is possible that some of these fragments sent to Taunton may have been broken up to fill in the missing parts of the geometric mosaic in front of the 'introductory' panel of the Dido-Aeneas mosaic.'

The 'fragments of mosaic alongside the front wall' perhaps represent the coarse border rather than decorative work, which appears to have been broken up and found in the hypocaust. With so little excavated, more probably remains to be discovered and a known large piece to be turned over.

Fragments of this once-fine mosaic are described on a collection of annotated copies of tracings in the David J Smith Collection as being from the hypocaust. Although some are now lost, three fragments equate to those preserved in Somerset Heritage Centre (Fig 4.14 fragments B, D, and J). Ten fragments are considered here, although some fragments listed as 'unprovenanced' (II, 207.8) may also be from Room 16. They may include part of the lost 'yellow-flowered water plants' mentioned in the letter by Dewar to Smith dated 13 January 1966 (David J Smith Collection) but none of the fragments is obvious as such (apart from possibly the unprovenanced II, 207.8 fragments 2–4, described below).

Fragment A This lost piece of uncertain dimensions is known from a photograph and a tracing. It comprised a band of four-strand guilloche in dark blue-grey, red, light blue-grey and white, and part of a foliate scroll with alternately shaded leaves in dark blue-grey, red edged in black, and black. The foliate scroll is reminiscent of a mosaic from Fifehead Neville, Dorset (II, 167.2), although the latter is wholly black, but elsewhere on the same mosaic three shades of leaves are used. Fragment F also has affinities with a mosaic from Fifehead Neville.

Fragment B A fragment (0.22m by 0.18m) in the Somerset Heritage Centre is probably from the same foliate scroll as A, with one dark blue-grey and part of a blue-grey leaf; it also includes a curving dark blue-grey leaf, clearly seen between the scrolls. A dark blue-grey line is likely to be the edge of the guilloche band.

Fragment C A copy of a tracing shows a fragment (0.20m by 0.08m) that appears to be more of the foliate scroll, with a single dark blue-grey leaf and part of a leaf in the same colour outside and therefore between the scrolls. It also has a single straight line of dark tesserae at one edge.

Fragments D–E Tracings of two small fragments (0.17m by 0.13m, and 0.13m by 0.11m) possibly show more of the scroll: one had two curved black lines converging and an area of white tessellation bisected by a single black line, which would have been from the opposite side to the guilloche; the other had a curved line with part of a black leaf orientated contrary to the other leaves of fragments A–D (fragment D is in the Somerset Heritage Centre).

Fragment F Lost but known from photographs and a copy of a tracing (dimensions uncertain). This is the largest of the fragments recovered and shows what appears to be part of an aquatic scene. In a probable corner of a compartment outlined in a line of dark blue-grey on one side, is a fish shaded in black, dark blue-grey, red, light blue-grey and white. Above it is another similarly shaded figure that may be part of another fish swimming in the opposite direction but the red in its 'tail' makes this uncertain. The first fish, with the distinctive red 'V' behind its head, is so similar to the fish on mosaics from Fifehead Neville, Dorset (II, 167.1) and Hemsworth, Dorset (II, 171.2) that they could all be by the same hand; but, as Radford (1947b, 62) observed, it differs from a mosaic with fish geographically closer at Lufton, Somerset (II, 208.9).

Fragment G Known only from a tracing, a fragment (0.21m by 0.12m), largely of white infilling, features a sinuous and tapering band with black and blue-grey on the outside and light blue-grey in the centre, terminating in an area of red at right angles to it. This resembles the tail of a dolphin, or other sea creature.

Fragment H Known only from a tracing, this fragment (0.17m by 0.16m) has two ear or leaf-like features in red-outlined black with a black leaf-like spike and single adjacent lines of red and black. Given the known subject matter of this mosaic, it may be the tail of a fish or other sea creature.

Fragment I A tracing of a fragment (0.20m by 0.12m) includes sinuous lines in black and red, and a leaf-like area of light blue-grey can be seen on the tracing from which it is known. It is difficult to interpret but could conceivably represent the right upper torso and right arm of a human figure.

Fragment J This fragment (0.23m by 0.15m), preserved in the Somerset Heritage Centre (a little more is shown on a tracing), is dominated by parallel rows of black, blue-grey, red and pale blue-grey; adjacent are curved rows, similarly shaded. A small black and red 'spur' is also featured. They may be parts of fish but this identification is uncertain.

Discussion

This was clearly an exceptional mosaic originally, and the figured part appears to have had a marine theme. It is possible that the multi-stranded guilloche formed the border, inside of which was a foliate scroll. The single row of dark tesserae perhaps separated this from the figured centre. The fish is closely matched on mosaics at Fifehead Neville (II, 167.1) and Hemsworth (II, 171.2), both in Dorset, and the scroll is also reminiscent of those at these villas, as is the use of single rows of tesserae to define panels or areas. It is perhaps significant that the red band edged in black found in the alcove (Room 18), which was probably of the same building phase, is also found at both Dorset sites. One must suspect the same craftspeople working at all three sites.

References

Radford 1947b, 62; Wright 1948, 93; Cosh and Neal 2005, 258–9, fig 254; Witts 2016, 185.

Room 18

Mosaic II, 207.4. Found 1947. Dimensions: alcove 4.60m by 2.77m; panel at least 1.80m by 1.70m. Tesserae: dark blue-grey, white, red and pale blue-grey, 13mm. Border: pale blue-grey, 32mm. Mid- to later 4th century AD. ?Reburied. Known from photographs. Fig 4.15.

Just over half of a small mosaic panel was found towards the rear of an alcove opening on to the flagged hall. Within a circle of simple guilloche in dark blue-grey, red and white, was a group of four tangent trilobate knots developing five concave squares. The knots were shaded in rows of dark blue-grey, red, pale blue-grey, white, dark blue-grey, white, pale blue-grey, red and dark blue-grey, although, perhaps because they were inaccurately drawn,

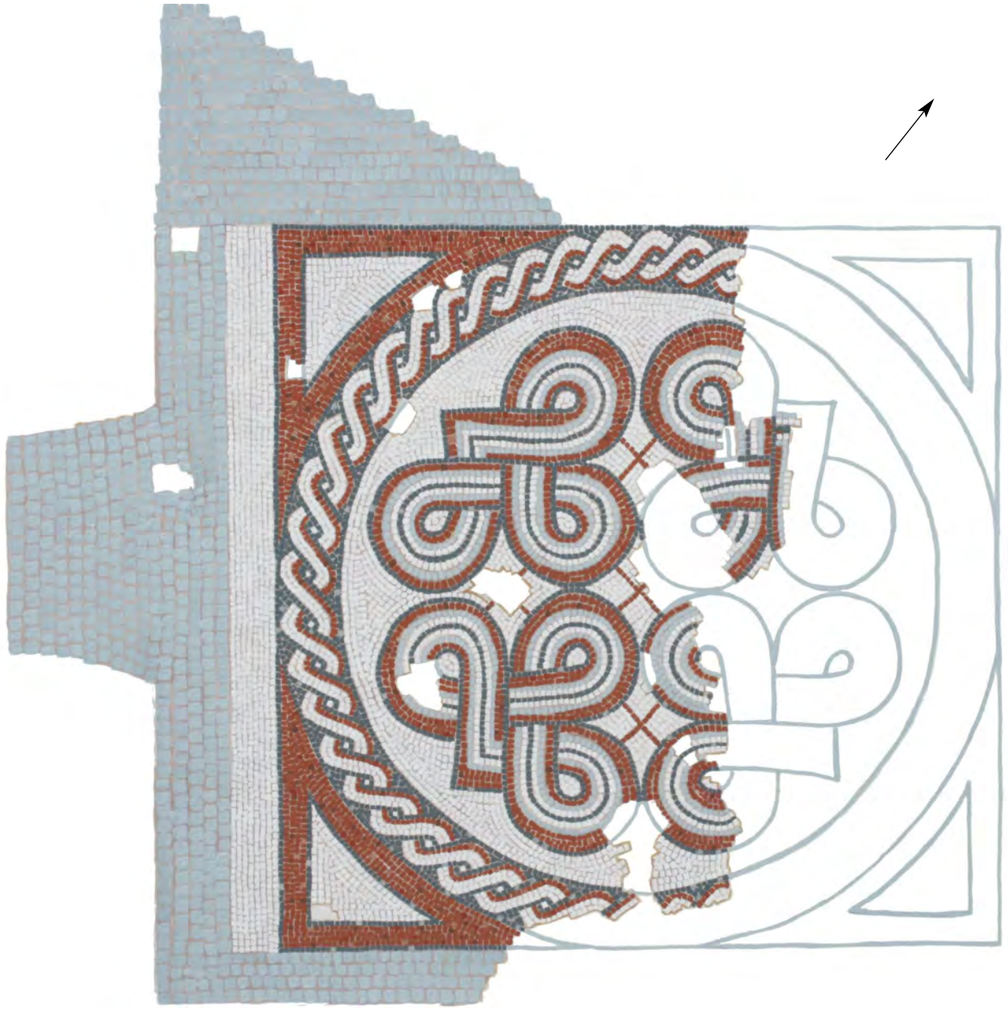


Fig 4.15 The mosaic in Room 18, painted from the excavator's annotated drawing in the David J Smith Collection and from fragments (Stephen R Cosh)

an extra row or two of red was required, and in one case an extra row of pale blue-grey. The concave squares were white and bisected on both axes by single red lines. Bands of red edged in dark blue-grey formed spandrels, the curved part contiguous with the guilloche. At one end, and possibly at the other originally, was a white band. The panel had a plain pale blue-grey border in coarser tesserae.

The trilobate knots are very unusual and cannot be matched in Britain. However, the dark-edged red band is found on mosaics from Fifehead Neville (II, 167.1–167.2), Hemsworth (II, 171.1–171.2) and Dewlish (II, 164.13), all in Dorset. As the first two of these sites also include fish of a style comparable with the one from Room 16 (Fragment F), it seems likely that this mosaic is the work of the same group. Fragments of black-edged red bands held in Somerset Heritage Centre may be from this floor or at least another floor by the same craftspeople.

The location of this mosaic in an alcove is very unusual. It lay at the rear of a large hall (Room 17), approximately 16.76m by 7.62m, almost opposite an entrance. It was clearly part of the hall where a flagged floor was found in the small areas uncovered. It is possible that the flags were not the original surface. Photographs taken during excavation appear to show the flags laid over a pre-existing floor. In several villas in the area, large rooms with broad entrances opposite an opening in the *porticus* were turned over to being workhalls in late antiquity, for which accessibility, size

and height were desirable factors. These rooms were sometimes given new flagged floors, far more durable than mosaics, which were either stripped out or covered. Examples in the general area in south Somerset are the villas at Butleigh and Littleton (Cosh and Neal 2024, 143–44; Cosh and Neal 2005, 247). The original entrance to Room 17 may well have been from an anteroom (Room 23) with a simple mosaic of concentric squares. The hall itself is very reminiscent of Room 25B at Chedworth, Gloucestershire (V, 220–4, 418.13), a large hall about 18m by 6m adjacent to the baths and with a heated room accessed from it. At Chedworth the hall was floored overall with fine geometric panels of mosaic in the mid-4th century AD (Cosh 2022a, 245–48, fig 4.12a–b). It is possible that the hall at Low Ham was originally adorned with mosaic, and that it only survived because this space, or at least the part closest to the rear wall of the alcove, experienced less wear or was ignored. Significantly, some other floors at Low Ham were found patched with flags.

References

Radford 1947b, 61–3; Wright 1948, 93; Rainey 1973, 116, pl 8b; Cosh and Neal 2005, 259, fig 255.

Room 23 Anteroom

Mosaic II, 207.5. Found 1946–47. Dimensions: about 2.50m square. Tesserae: dark blue-grey and white, 25mm. ?Reburied. Known from a photograph. Fig 4.16.

The mosaic in Room 23, an anteroom with access to possibly the original entrance to the large hall (Room 17) and perhaps the heated *triclinium* (Room 27/28), was the simplest of the known mosaics at the villa. It comprised four blue-grey rectilinear bands arranged concentrically on a white ground, executed in fairly coarse tesserae; each blue-grey band comprised three rows of tesserae, except the outer one, which had four. There was an area of burning on the north side. The simplicity of design reflects the fact that this room merely gave access to higher status rooms. This basic design was also used in passageways at other villas such as Chedworth, Gloucestershire (IV, 418.5), and Tarrant Hinton, Dorset (II, 180.2).

References

Radford 1948b, 142; unpublished photograph (SRO DD SAS A/DWX); Radford 1948a, 44 with annotated sketch; Cosh and Neal 2005, 260, fig 256; Cosh and Neal 2024, 149–50, fig 119.

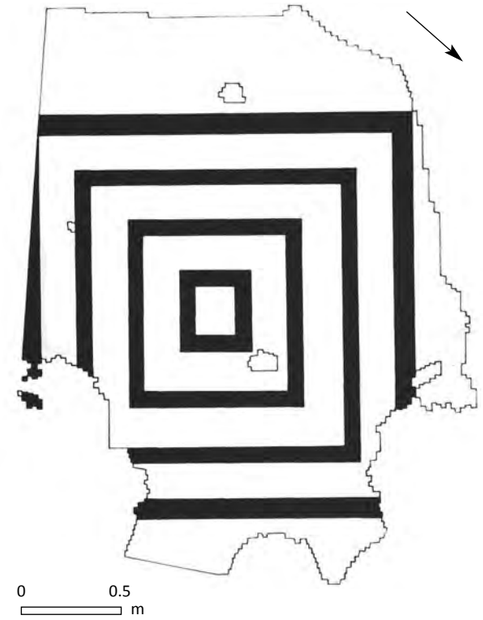


Fig 4.16 The mosaic in Room 23, line drawing from photograph in Somerset County Museum (Stephen R Cosh)

Room 24 Porticus of northern range

Mosaic II, 207.6 Found 1946–47. Dimensions not known.

In a letter from Radford to David J Smith (David J Smith Collection), it appears that another simple coarse mosaic existed, for he states that 'the corridor also had a mosaic in Period 3, but perhaps Period 2. Only coarse tesserae were found including a few still *in situ* near the centre. I judge it was a plain design in two or three colours'. This enigmatic description may refer to a basic design such as bands of differing colours or merely a tessellated pavement of one colour with tesserae of another shade (or two) interspersed. The site plan is annotated with 'blue [and] white mosaic' at this point (Fig 3.1), but on an oblique photograph, differences in colour cannot be distinguished, although it would appear that bands would have run the length of the *porticus*.

References

Letter from Radford to Smith dated 29 October 1976 (David J Smith Collection); Cosh and Neal 2005, 260.

Room 27/28 Triclinium

Mosaic II, 207.7. Found 1948. Dimensions: uncertain. Fragments in Somerset Heritage Centre. Fig 4.17.

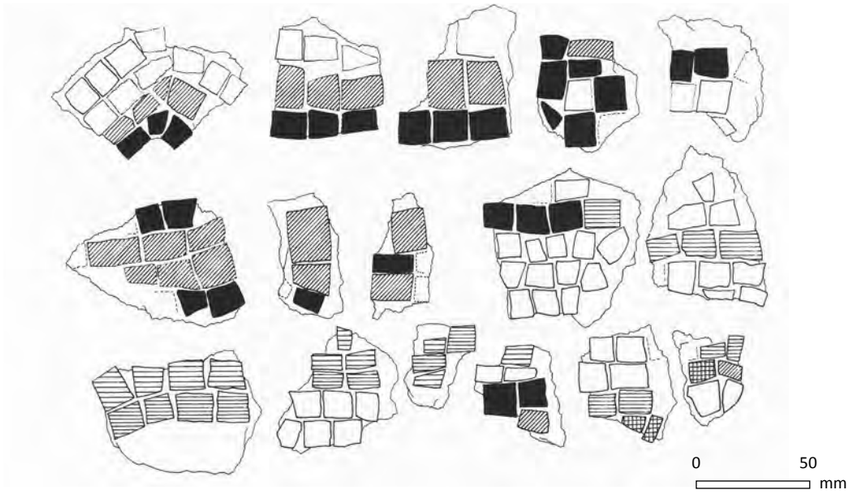


Fig 4.17 Fragments of mosaic from Room 27/28, line drawing from fragments (Stephen R Cosh)

This room, entered via an antechamber (Room 23), 'had been provided with a mosaic pavement and a hypocaust carried on stone pillars' (Radford 1948b, 142) and was assigned by Radford to the final building phase datable to after AD 330 (Fig 3.2). It was approximately square and probably had a straight-sided (semi-octagonal) apse on the north-west side. Rather than two separate rooms, this was probably a large bipartite room and the wall dividing it appears to be a later feature. Radford (1948b, 142) identified the room as a *triclinium* because of its proximity to the supposed kitchen.

According to Radford (1948a, 63) 'some fair-sized portions of mosaic [were] found at all levels and all angles. No trace of collapse but of wrecking', and (1948a, 84) 'Designs in small tesserae dark grey blue and red set in ½" of ?hard sand and yellow mortar with a larger border'. He states that the mosaic was patterned, although 'no fragment [was] large enough' to ascertain its design; another fragment 'shows repair by infilling with plaster'.

A collection of mosaic fragments in the Somerset Heritage Centre, with a note describing them as coming from the 'dining room, Room 42' are probably the remains of this pavement, although fragments from Low Ham may have become muddled. Some show parts of bands of guilloche outlined in dark blue-grey with strands shaded red and white (x2), of poor workmanship. Coarser blue-grey fragments probably came from the border.

The shape of this heated room, with its straight-sided apse, resembles that from Dewlish, Dorset (II, 164.3) and can be interpreted as a *triclinium* for winter use because a simple, coarse, chequered tessellation paved the apse, probably intended to be covered by a couch or couches, and contrasts with the fine mosaic in the main body of the room. Other heated rooms of this shape with evidence for fine mosaics were excavated at villas at Colerne, Wiltshire; Chedworth, Gloucestershire; and Shakenoak and Wigginton, both in Oxfordshire (Cosh 2001, 236–7). However, those cited have channelled hypocausts rather than having stone *pilae*, which are unusual in large rooms in the mid-4th century AD.

References

Radford 1948b, 142; Wright 1949,109; Radford 1948a, 63, 84; Cosh and Neal 2005, 260, fig. 257.

Unprovenanced

Mosaic II, 207.8. Fragments, of uncertain provenance, in Somerset Heritage Centre. Figs 4.18–21.

The fragments considered here are held by Somerset Heritage Centre in boxes labelled 'Low Ham' but their exact provenance is uncertain. From the differences in style and colour they would seem to belong to more than one floor, while some may be further fragments of mosaics in the *triclinium* and Room 16 (fragments 1–4 are in the same box as fragment 2 from the latter room, perhaps indicating the same source). Fragments 2–4 are contiguous (see Fig 4.19). Parts of a red band edged with black may have been the corner of the mosaic in Room 18 (fragments 27–33). Subsequent stray finds of small mosaic fragments (not illustrated) are in the possession of the landowner Karen Cook.

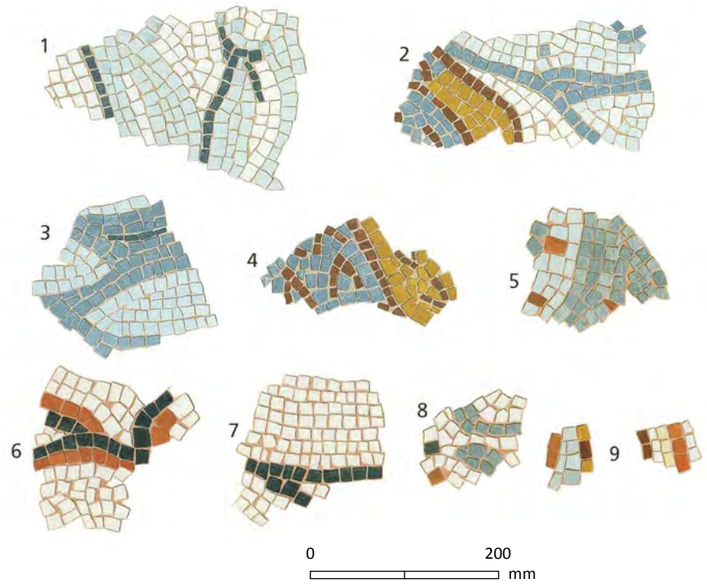


Fig 4.18 Unprovenanced mosaic, painting of fragments 1–9 (Stephen R Cosh)

Fig 4.19 Unprovenanced mosaic, photograph of fragments 2–4 conjoined

Fragment 1 0.19m by 0.35m (max). Executed in dark blue-grey, grey and white, this is clearly part of a figured scene, perhaps from Room 16. It resembles the thighs or calves (depending on its orientation) and knees of a standing figure, perhaps masculine with one leg straight, the other bent. Although this is the most likely interpretation, others are possible.

Fragments 2–4 0.40m by 0.10m. Three adjoining fragments formed an area of pale blue-grey with sinuous dark blue-grey lines adjacent to yellow and blue-grey areas divided by a fillet of reddish-purple, and elaborated by reddish-purple V-shapes flowing in opposing directions on the yellow and blue-grey grounds. This decoration is reminiscent of leopard skin and the blue-grey area perhaps represented a rocky landscape or cave; between the two was a small part of the white background. It is just conceivable that it was part of the smashed Bacchus pavement from Littleton (II, 206.1) and was possibly found during Radford's excavations there and the finds from the two sites inadvertently mixed. More probably, however, they formed part of the aquatic scene from Room 16 and may be the 'yellow lilies' referred to by Radford and Dewar in letters to David J Smith (David J Smith Collection), although a sea leopard would also be appropriate to such a scene.

Fragment 5 0.11m by 0.09m. Blue-grey tesserae lie beside pale blue, both interspersed with reddish-purple tesserae. The fragment's character suggests that it may have originally lain close to fragments 2 and 3.

Fragment 6 0.13m by 0.13m (max). Converging dark blue-grey lines edged in red and on a white ground seem to be part of indeterminate figured work.

Fragment 7 0.12m by 0.12m. Mainly comprising white infilling, this fragment is crossed by a dark blue-grey fillet perhaps with another joining it at an acute angle.

Fragments 8–9 Two small fragments are presumably parts of figured work; fragment 9 has rows of red, pale yellow, white and reddish-purple, which is the normal way of representing a limb, either human or animal.

Fragments 10–26 These show the remains of bands of simple guilloche outlined in dark blue-grey with strands shaded red, pale blue-grey and white. The

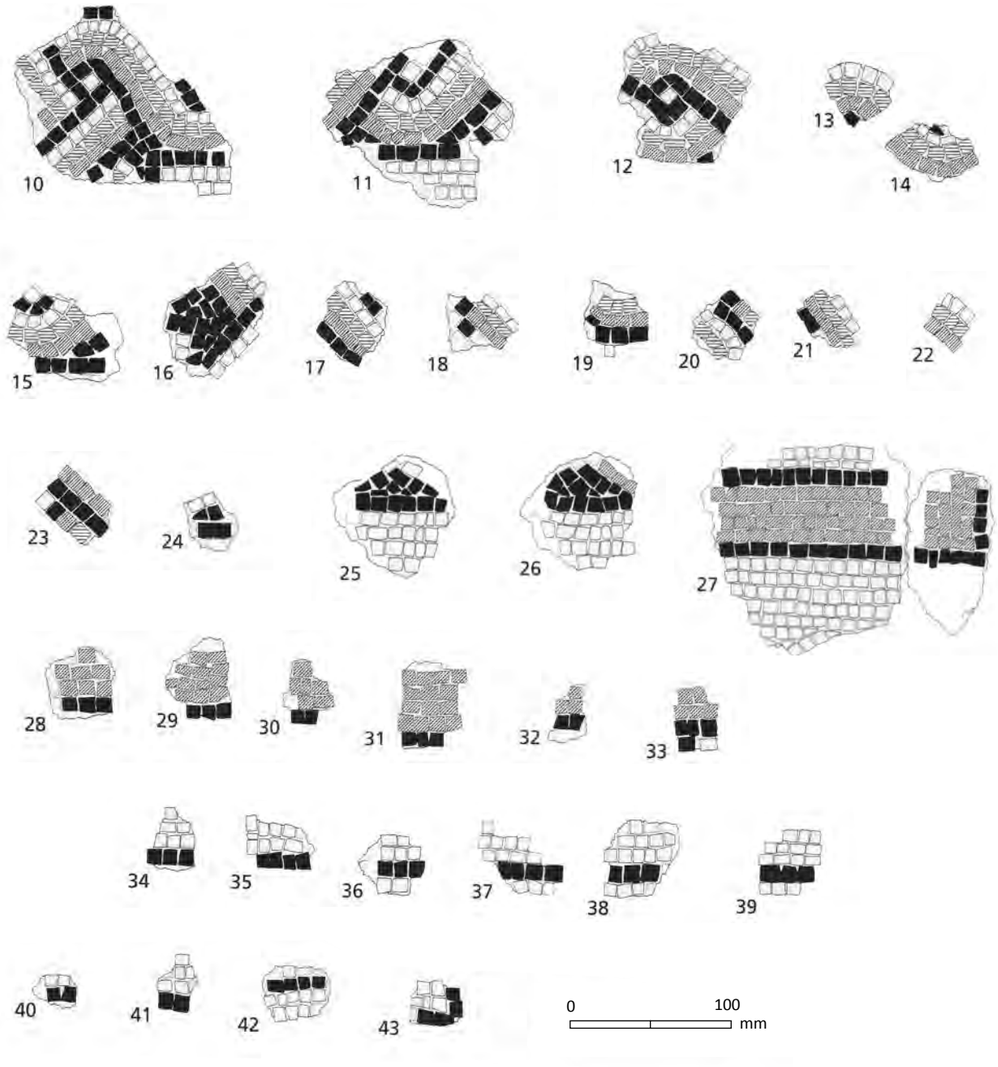


Fig 4.20 Unprovenanced mosaic, line drawings of fragments 10–43 (Stephen R Cosh)

largest fragment (10) is part of a 'T' junction of guilloche; fragment 16 also appears to form a right angle, or perhaps another 'T' junction.

Fragments 27–33 All of this group are either certainly or possibly parts of bands of red (×4) edged in dark blue-grey. The resemblance of fragments 27–28 to the corner of the mosaic in the alcove of the large hall, particularly the curving white infilling of the former, suggests that these fragments derive from the same mosaic. However, none of the other fragments can be identified as coming from the centre of that pavement, so this remains uncertain.

Fragments 34–43 Small fragments have single and double blue-grey fillets on a white ground.

Fragments 44–75 The other fragments are small and indeterminate. Some (notably fragments 60–66) show additional colours to the dark and pale blue-grey, red and white, and so may be parts of the figured pavement in Room 16 or another lost mosaic.

Reference

Cosh and Neal 2005, 261–3, figs 258–60.

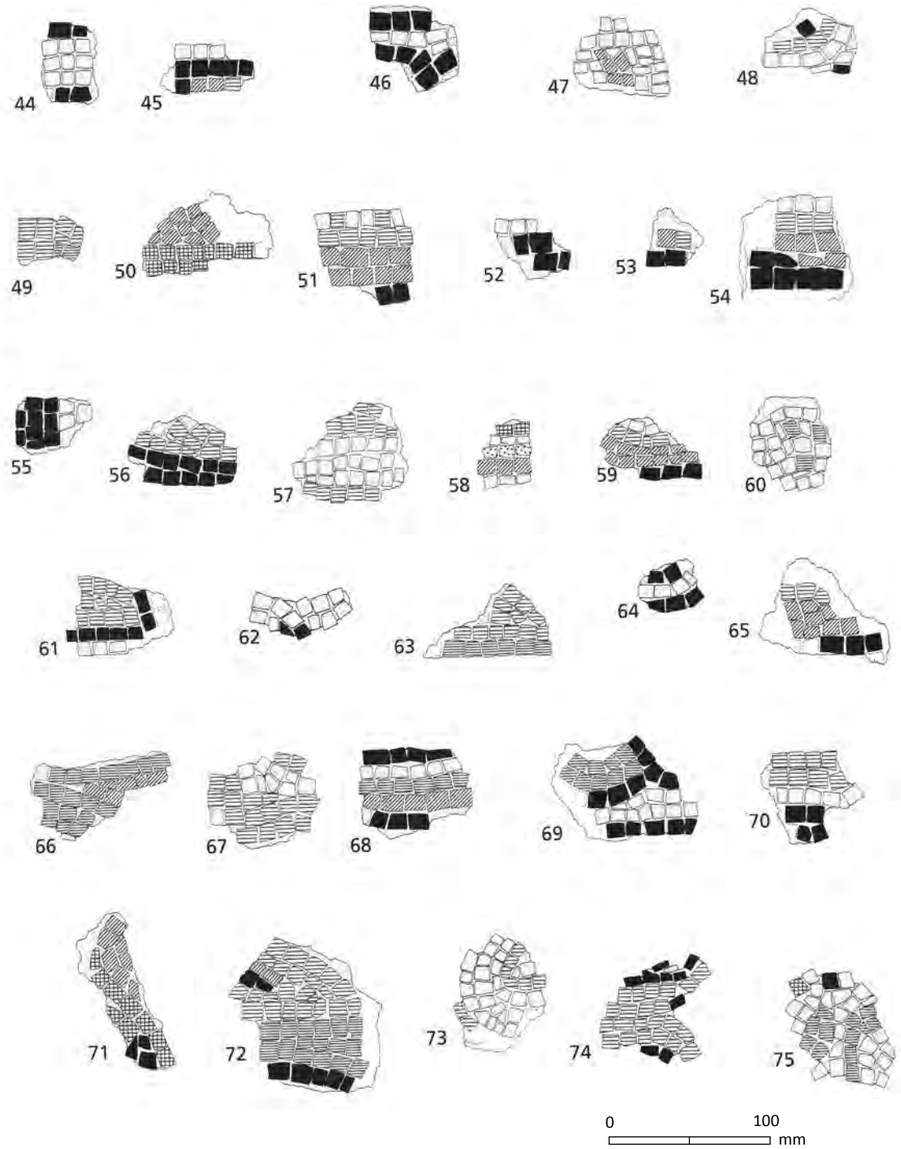


Fig 4.21 Unprovenanced mosaic, line drawings of fragments 44–75 (Stephen R Cosh)

Unprovenanced

Mosaic V, 207.9. Figs 4.22–23.

This piece, of uncertain provenance, is known only from a historic monochrome photograph in the possession of Karen Cook. It appears to show the corners of two adjacent panels, the better surviving having a circle of four-strand guilloche, the other represented by a right angle of guilloche. A floral motif, comprising a calyx with volutes at the tips and bichrome tendrils, occupies the remaining spandrel. Both panels are within a frame of L-blocks (which curiously change direction at the division between the two panels) or perhaps, more likely, as one piece is detached, an unusual form of right-angled Z-pattern. Part of the coarse tessellated border is also shown.

Since there is no indication of scale on the picture and the width of the coarse border is unknown, it is difficult to ascertain the overall size, but it is evidently from a high-status room. It does not appear to be part

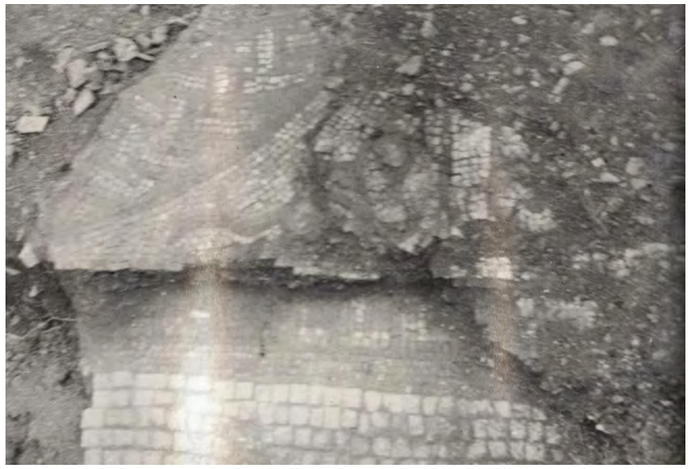


Fig 4.22 Photograph of unprovenanced mosaic with two adjacent panels (Karen Cook Collection)

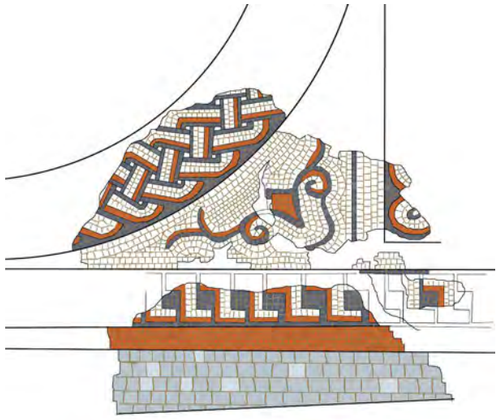


Fig 4.23 Reconstruction drawing of the mosaic shown in Fig 4.22 (Stephen R Cosh)

of any of the known mosaics found during the 1946–8 excavations and may well have been unearthed on a different occasion, perhaps from the north-west wing. Although straight lengths of four-strand guilloche were found in Room 16, the L-blocks and the floral motif cannot be matched at Low Ham, or indeed from villas in Somerset. This seems to be from a high-status, probably rectangular, room, perhaps in the main residence (north-west wing) east of the heated Room 27/28 at its western end.

Various elements, including the circle of four-strand guilloche, the use of a single row of dark tesserae to separate parts, a red band surrounding the panel, and the volutes in two colours, feature on mosaics from Fifehead Neville and Hemsworth in Dorset (II, 167.2 and 171.1). Parallels have already been drawn for the mosaics in Rooms 16 and 18 at Low Ham and those at Fifehead Neville and Hemsworth, suggesting that this previously unknown mosaic was created by the same craftspeople and was therefore contemporary with the others.

Reference:

Cosh and Neal 2024, 150, fig 120 a–b.

4.6 The painted wall plaster

Ian M Betts

There are 132 fragments of Roman wall plaster from Low Ham Villa in the collections of South West Heritage Trust. Table 4.4 outlines the area of the villa from which they were recovered. Most of the plaster comprises relatively small fragments, none of which could be reconstructed. Although there is a range of decorative elements present, most are of insufficient size to determine the wall design originally in place. This would suggest that only a selection of the plaster recovered was retained rather than the whole assemblage. The plaster does, however, include a number of features of particular interest.

A number of different mortar backing types are present, suggesting the plaster derives from different rooms. Small circular impressions, 3–5mm in diameter, are a prominent feature in the base of some of the mortar backing. These would appear to be the impression of reeds, on to which the mortar backing was applied. Not all the plaster has these impressions, even that from the same room, but in some cases this may be because the mortar backing with these impressions broke off when it was removed from the wall. Above the backing mortar is a thin *intonaco*, the thin covering plaster layer on which the paint was applied. This is present on all the Low Ham plaster. On the vast majority of plaster this is relatively thin, around 0.25mm, and white in colour.

Room 1

The wall plaster from Room 1 seems to be a mixture of material from different rooms. Various plaster groups can be tentatively identified based on backing type and the presence or absence of reed marks.

Plaster with reed impressions

Scheme 1

A panel corner in grey and blue separated by a white stripe (Fig 4.24, no. 1). This has a *c* 18mm thick cream mortar backing layer with reed marks in the base. Part of the reed impressions is partly covered by more cream mortar, suggesting the presence of a second, earlier, mortar backing layer.

Scheme 2

A small decorative area in bluish-grey and white (Fig 4.24, no. 2). This has two distinct backing layers, an initial 33mm thick creamy-white mortar layer followed by a 5mm pink layer with frequent small red ceramic inclusions. The initial creamy-white mortar layer has reed marks in the base.

Scheme 3

An area of faded green and grey. As mortar type 1 but pink in colour, again with frequent red ceramic inclusions and with reed marks in the base.

Plaster without reed impressions

Scheme 4

Border area in red and white (Fig 4.24, no. 3). This has an initial 15–21mm thick pink mortar layer with frequent small red ceramic inclusions with a 6mm thick layer of white mortar above.

Scheme 5

A small area of red and slightly darker red with a border and decoration in white (Fig 4.24, no. 4). This covers a 10mm thick layer of pink mortar with small red ceramic inclusions.

Scheme 6

A small fragment of dark red and pink paint (Fig 4.24, no. 5). This plaster appears to have a pink rather than white *intonaco* layer, the only plaster from the Low Ham assemblage to have this feature. This covers a pink 14mm thick mortar backing layer.

Scheme 7

Pale greenish-blue (Fig 4.24, no. 6). An 18–19mm thick pink sandy mortar with frequent white inclusions. These white inclusions could be either chalk or plaster. Most plaster from Low Ham with frequent white inclusions is pale cream/grey in colour.

Scheme 8

A border area in off-white, grey, red and pinkish-red with

Table 4.4 Plaster recovered from Low Ham Villa during the 1940s excavations

Area	Number of fragments/labels
Room 1	23
Room 2	3
Rooms 11–14	21; labelled ‘plaster from extension of Low Ham temple at back of (centre?) shrine. 1948. Top of tufa foundation’
Room 14	2
Room 15	10
Room 16	48
Room 26	7
Room 27	8; labelled ‘dinning room 48’ and in a different hand ‘Room 27’
Room ?	10

a line of red triangular decoration (Fig 4.24, no. 7). The backing comprises an initial 7mm white mortar layer which in turn is covered by a later cream mortar layer 15mm thick.

Scheme 9

All the plaster in this group has cream mortar backing. A solitary piece of dado is present, with black and faint dark red splashes on a white background (Fig 4.24, no. 8). The yellow background would appear to be surface discolouration. There are also various border areas in grey, cream, white, red and dark red, and a fragment of pale grey with what appears to be two pale red lines set at different angles (Fig 4.24, no. 9). Also present is a panel corner in grey and bluish-green separated by a white strip (Fig 4.24, no. 10). More unusual are areas in off-white, red, green and pale purple with two shallow grooves 2mm wide set between 5mm and 7mm apart (Fig 4.24, no. 11). These are almost

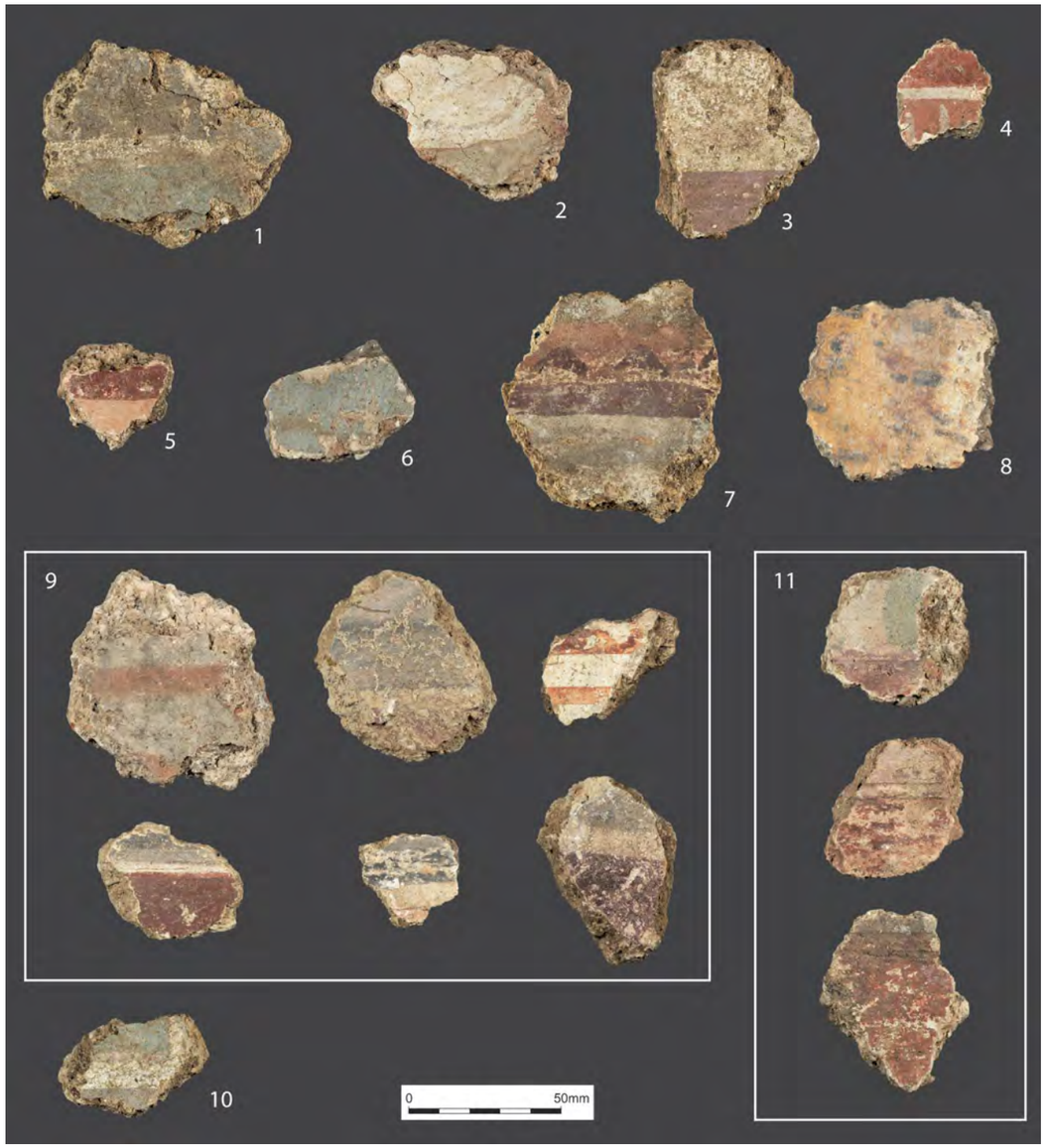


Fig 4.24 Painted plaster from Room 1. See text for description of numbered items (James O Davies, Historic England)

certainly guidelines laid into the damp plaster to aid the wall painters.

Room 2

From Room 2 is an area of dark red and pale purple plaster (Fig 4.25, no. 1) above two mortar backing layers, an initial off-white layer 12mm thick, followed by a cream layer 24mm in thickness. The second and third pieces of plaster (not illustrated) only have a cream mortar layer present. One is plain red, the other plain white. The plain white fragment has a slightly concave surface, suggesting it may have come from some sort of niche.

Rooms 11–14

Based on the mortar backing there appear to be three groups.

Scheme 1

Faded red plaster. Pale grey mortar layer, 28mm thick, with frequent white inclusions. There are reed impressions in the bottom surface.

Scheme 2

Pale blue plaster with two pale cream backing layers, a lower 50mm thick layer, with an upper 22mm thick mortar layer above.

Scheme 3

There are various decorative areas of plaster in pink, red, maroon, cream, bluish-grey, green and yellow (Fig 4.25, nos 2 and 3). A border is present in red and bluish-grey

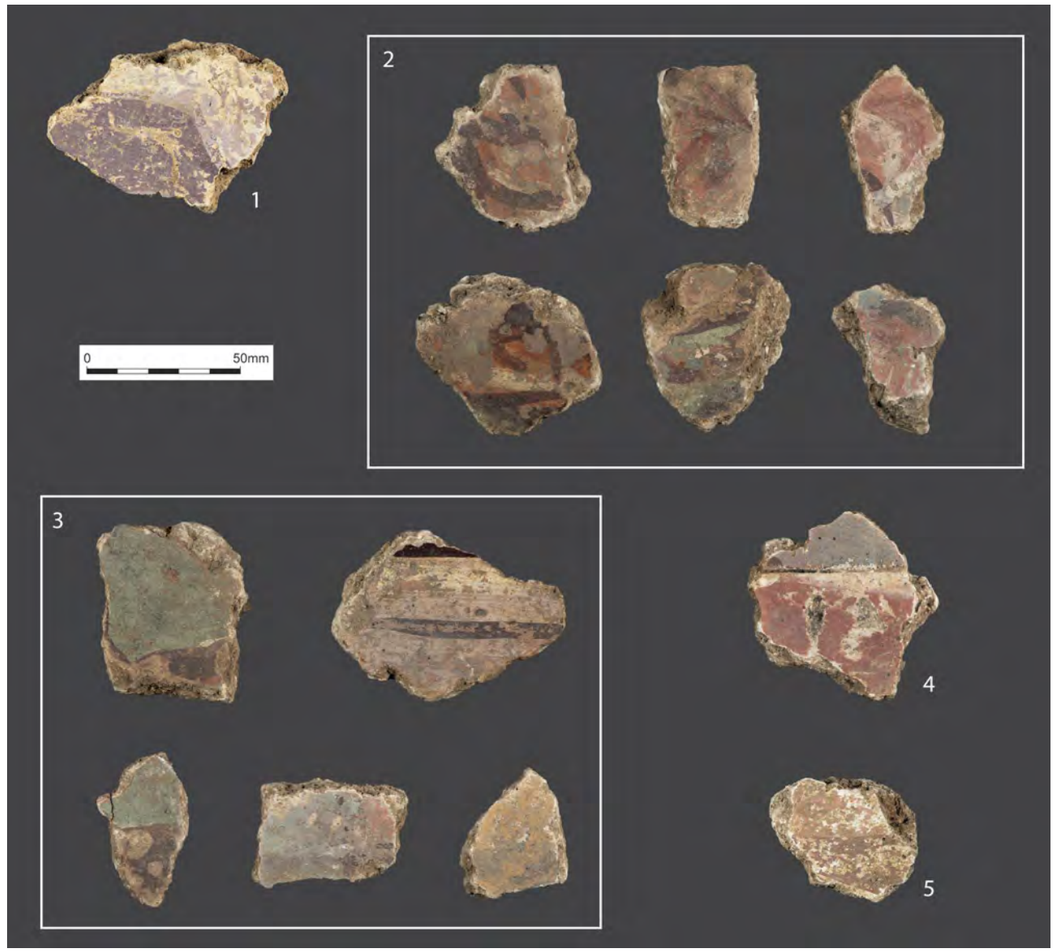


Fig 4.25 Painted plaster from Rooms 2, 11–14 and 15. See text for description of numbered items (James O Davies, Historic England)

separated by a white band with a score guideline 1mm wide (Fig 4.25, no. 4).

All the decoration lies on top of a 7–21mm thick off-white mortar backing layer similar to Scheme 1 but with a slightly more uneven texture. No reed marks are present. The majority of plaster present has the same backing type as Scheme 3, suggesting the plaster may all derive from the same room.

Room 14

One plaster fragment has an area of off-white with a 5mm red stripe and is probably from a panel border. The other plaster fragment has the same two colours. The plaster has similar mortar backing to that used on the plaster from Room 2.

Room 15

There are two major decorative schemes based on mortar backing type.

One scheme, represented by a single fragment, has a decorative area in pink, red and white (Fig 4.25, no. 5). The mortar backing is a greyish-white in colour and contains small white inclusions (up to 3mm).

The nine plaster fragments of the second scheme all have cream mortar. There are two varieties. The first has a thin backing type (6–7mm) and is present on two pieces. These are yellow with, on one piece, the trace of a 6mm wide white stripe. The remaining seven fragments would have been over 8mm thick. These are decorated in yellow and white, including one with the remains of an 8mm white stripe, faded red and white, the latter possibly part of a 13mm or thicker stripe, and plain maroon and yellow.

Room 16

The majority of the plaster would appear to be part of the same decorative scheme. All but one fragment has cream or pale cream mortar backing, the majority 8–25mm in thickness. Reed impressions are present on the base of three fragments.

Plaster with reed impressions

Scheme 1

The 18–32mm thick cream plaster with the reed impressions comprises a border area in red, white, off-white and maroon (Fig 4.26, no. 1), a decorative area in pale blue and maroon (Fig 4.26, no. 3), and a plain red area with possibly very small pink spots suggesting an area of dado (not illustrated). Alternatively the spots may be surface damage.

Plaster without reed impressions

Scheme 2

There are parts of a complex decorative pattern in red, pinkish-red, pink, maroon, blue, grey and purple with at least one area of yellow. The irregular nature of much of the decoration suggests these may be the remains of imitation marble breccia panels located on the lower part of a wall. At least two panels seem to be present. One painted blue, dark red and white (Fig 4.26, no. 4), the other red, pink, white and yellow (Fig 4.26, no. 2).

There is also part of what appears to be a grey and maroon panel border edged in white with a white circular element in the corner, and parts of a blue, white and red border (Fig 4.26, no. 5). There is also a small decorative area in maroon, purple, red, white and blue (Fig 4.26, no. 6). One curved area in bluish-grey, varying in thickness between 8mm and 25mm, may have come from a door or window surround (Fig 4.26, no. 7).

Three fragments of thick (24–30mm) plain pale blue plaster may derive from a separate room, as may a thinner area of light blue with an unusual slightly ridged, possibly combed, surface (Fig 4.26, no. 8). Similar plaster, but with more prominent ridges, was recovered from Room 27.

Scheme 3

Probably from a different room is a solitary piece of plaster with pale grey mortar backing up to 15mm thick with a white and red border (Fig 4.26, no. 9).

Room 26

These fragments all have cream-coloured backing with white and light grey rock inclusions (up to 9mm).

There was a decorative area in black and white (Fig 4.26, no. 10). The striations on the plaster surface, which are normally horizontal or vertical, suggest the black lines were set at a 45-degree angle. There is also a white border with a faded 3mm red line and areas of plain pink and white. A further two white pieces appear to show very faint traces of a black band.

Room 27

There are two plaster schemes.

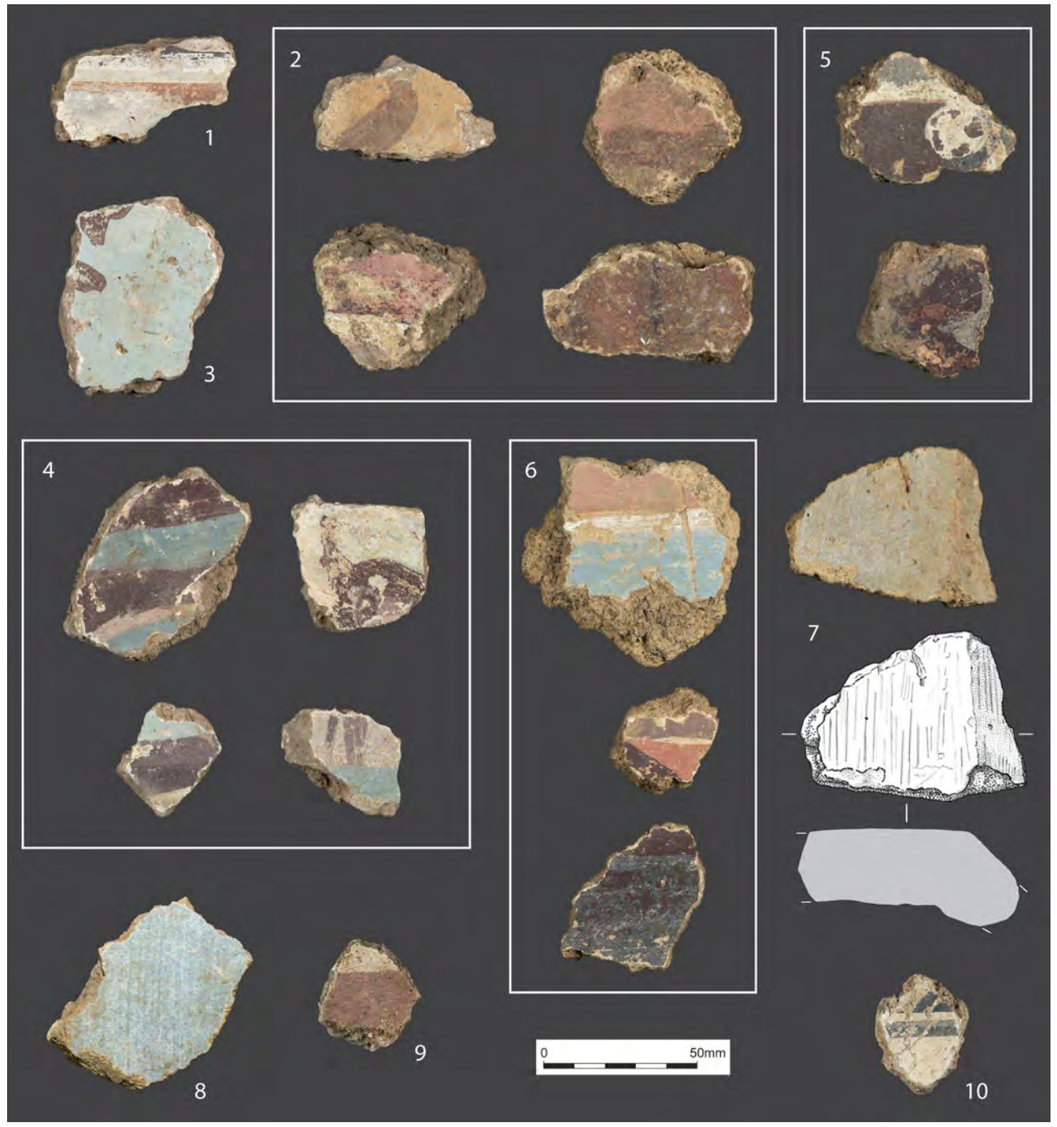


Fig 4.26 Painted plaster from Rooms 16 and 26. See text for description of numbered items (James O Davies and Judith Dobie, Historic England)

Plaster with reed impressions

Scheme 1

The first scheme comprises pale cream mortar with a scatter of white inclusions (up to 5mm) with reed impressions in the base (Fig 4.27, no. 1). This has decoration in faded red, dark red and possibly yellow and white (Fig 4.27, no. 2).

Plaster without reed impressions

Scheme 2

The second scheme is characterised by a highly unusual undulating, possibly combed, top surface (Fig 4.27, no. 3). The *intonaco* is also slightly thicker in places (up to 0.5mm). These have similar mortar backing but with no evidence of reed marks. The undulating surface is painted dark red, pale pink, yellow and cream with a trace of blue (Fig 4.27, no. 4).

Fig 4.27 Painted plaster from Room 27 and from an unknown room. See text for description of numbered items (James O Davies, Historic England)

Room unknown

Although only a small assemblage, there appears to be plaster from at least four different rooms or room areas.

Scheme 1

One plaster fragment shows an area of dark red and blue with traces of pale blue paint above (Fig 4.27, no. 5). It has a cream backing layer 29–44mm thick with reed marks in the base.

The other plaster is plain blue. This has a 22–32mm thick pink sandy mortar backing containing red ceramic inclusions (up to 7mm). Again there are reed marks in the base. The pink colour may be the result of heat damage rather than a separate plaster type. In Betts's experience, mortar backing on wall plaster can turn pink and red where it has suffered heat damage.

Scheme 2

A plaster fragment with a concave plain red surface. Two mortar backing layers are present that together measure 17–42mm in thickness. The first is pink with a few pieces of very small red ceramic, the second cream in colour with frequent white inclusions. What is most unusual is that the initial pink backing layer was keyed, perhaps with some type of comb, before the upper cream mortar layer was applied (Fig 4.27, no. 6). The concave surface, together with the wedge shape of the mortar backing, suggests this plaster may derive from some sort of curved niche.

Scheme 3

This group includes a border area in maroon with a red stripe, and a grey band followed by an area of red. The remains of a white band are also visible at the junction of the maroon and red. There are also areas of plain blue and plain red, the latter with part of the top surface accidently pushed down by 1mm.

These all have a rather 'lumpy' cream mortar matrix containing a scatter of white inclusions, flint, and other rock fragments (up to 10mm), some with various amounts of red ceramic inclusions (generally up to 4mm). There seem to be various mortar mixes represented.

Scheme 4

An area of plaster showing discoloured yellow and cream (or discoloured white) paint (Fig 4.27, no. 7) comes from a room, or part of a room, that has been replastered. The original mortar backing, measuring *c* 16mm, is pale cream with rock fragments up to 10mm. This is overlain with a creamy-white mortar layer above which is the original *intonaco*. Unfortunately, the original paint scheme is unknown. It is obscured by a 12mm thick rich cream-coloured mortar backing layer, on top of which is a second *intonaco* with the final yellow and cream paint scheme.

Plaster from the 2018 excavation

The 2018 excavation only produced a solitary, very small fragment of wall plaster (context 91020, sample <51017>). This has a white mortar backing over 10mm thick. The faded top surface seems to show a white and pink border. There is also a very small fragment of white mortar with crushed ceramic inclusions with a plain white surface (context 91085 <51044>), but it is by no means certain this is wall plaster.

Discussion

It is clear that some of the plaster found in the same room or location derived from either different rooms or separate areas of the same room. This would explain why such a wide range of decoration and backing types is present, particularly from Room 1, where nine decorative schemes could be identified. This mixture of different plaster types makes it very difficult to reconstruct the decorative patterns in any one room. There is also the added complexity that some assemblages may contain a mixture of wall and ceiling plaster. Again, this makes it difficult to reconstruct any of the decorative schemes that were originally present, although it is clear that some of the plaster does form part of the same decorative elements, particularly the plaster from Room 16. What these decorative elements are is still uncertain.

There is only one definite piece of imitation splash-decorated dado, which seems rather odd; more would have been expected in an assemblage of over 130 pieces. There were also relatively few areas of panel border and plain coloured plaster, although fragments of panel border were certainly collected from Room 1 and Room 16. This relative scarcity of panel borders and areas of splash-decorated dado suggests either they were largely absent, or were not collected, with attention being paid to more decorative pieces.

It should be noted, however, that many of the decorated pieces had irregular areas of colour, with no discernible pattern visible. It is possible that these irregular areas could represent imitation marble breccia used in place of the more common splash dado design in various areas of the villa. Although more normally found in the lower dado area, imitation breccia was occasionally used as decoration in the upper parts of the wall, as in a decorative scheme recovered from St Mary Axe, London (Betts 2019a, 1–23). What may be areas of a dark red, pink and white breccia was recovered in the vicinity of Rooms 11–14, while there appears to be breccia from at least two panels present in Room 16, one in blue, dark red and white, and a further panel in red, pink, white and yellow.

What does seem obvious is that only a small proportion of the wall plaster recovered from the 1940s excavation was retained. A letter from Lionel Walrond (to Leech, dated 11–12 November 2018) discussing the 1945–48 excavation stated that above the mosaic 'was plaster, paint side down and straight from the wall' and went on to say it 'was continuous but smashed'. Regrettably, there is no evidence this continuous decorative scheme has survived. Neither is there any plaster that matches the description 'decoration with stars, red and white' that was located over 'the two passage entrances' to the baths (Room 1) (letter from Walrond to Leech, dated 11–12 November 2018).

A particular feature of some of the Low Ham plaster is what appear to be reed impressions present in the keyed mortar backing. These are generally fairly uniform in size, most measuring around 3–5mm in diameter. According to Davey and Ling (1982, 39–40), reeds are characteristic of ceiling construction, where they were employed to lighten the weight of the roof. The decoration used on ceilings is often fairly distinctive, comprising various repeating geometric shapes, especially roundels, octagons and squares (Davey and Ling 1982, 37). The vast majority of these schemes are applied on a plain white background.

The designs on certain of the reed-impressed plaster

from Low Ham Villa are more like what would be expected on vertical wall surfaces rather than a horizontal ceiling. If so, walls of timber and reed construction may have been used as internal divisions between certain rooms in the villa. They would not, however, have been suitable for major load-bearing walls. Even if most plaster with reed impressions was set vertically, this does not discount the use of other reed-backed plaster in the villa ceilings. The blue- and pale-blue-coloured plaster may perhaps have been used in this position to imitate the sky, although only one assemblage with blue plaster (room unknown) has reed backing.

The use of reeds as a construction technique onto which plaster was attached may be a regional building technique. There is no evidence for its use in the London area, where vast quantities of Roman wall plaster have been recovered. Plaster with reed impressions is, however, known from sites in Cambridgeshire, such as Litlington (Betts 2019b), and on daub from Kettle's Yard, Cambridge (Brittain and Evans 2016, 38–41). Again, there are doubts that this derives from ceilings. At Eddington, in north-west Cambridge, the small quantity of surviving decorative plaster with reed marks from an aisled hall (Structure 4.1) would seem to be too elaborate to be from the ceiling (Betts 2019c), while the reed-marked daub recovered from Kettle's Yard, Cambridge, is believed to derive from vertical wall partitions, although some may have been used in ceiling construction.

The concentration of wall plaster and daub with reed impressions in Cambridgeshire almost certainly reflects the availability of suitable reed beds in the Fens, a natural resource that would not have been so readily available in many other areas of the country. Similarly, reeds suitable for construction of walls and possible ceilings at Low Ham Villa would have been readily available in the Somerset Levels.

There are a few more unusual areas of plaster from Low Ham Villa. Of particular interest are three fragments with an uneven, possibly combed, *intonaco* plaster layer from Room 27. One piece shows a border area, but this is somewhat obscured by the uneven surface. The combing is similar to that applied to box-flue and voussoir tiles. Another fragment of plaster from Room 16 has a similar surface, although the ridges are less pronounced. Why this uneven surface was applied is uncertain; perhaps it was an additional decorative feature, although its presence on only three fragments from Room 27 suggests it only covered a small area.

Combing may also have been applied to an initial layer of mortar backing before a second layer was applied (room unknown). Again this is unusual; normally there is no indication of keying between individual mortar backing layers. Another feature noted on plaster from Room 1 and Rooms 11–14 were thin, narrow guidelines in the top surface. Such marks were needed to impress the basic outline of the design into the plaster to aid the wall painters (Ling 1985, 56). Similar guidelines have been noted on wall plaster from other areas of Roman Britain, such as Wroxeter, Shropshire, Fenchurch Street, London (H Li, pers comm, 2024) and St Neot's in Cambridgeshire (Betts 2023). One area of Low Ham Villa (room unknown) was replastered at some point, as there are two plaster layers present separated by mortar backing.

4.7 The glass

Denise Allen

Glass was found in two boxes of the material held by South West Heritage Trust, marked CARR Box 2 (eight fragments) and CARR Box 3 (21 fragments), making an assemblage of 29 fragments of Roman date.

Eighteen of these fragments are window glass; eleven fragments are probably from vessels, seven of which are most likely to be from bottles or flasks of various sorts. Four fragments are too small and featureless to offer any information about vessel form, although the two colourless fragments might represent some type of tableware.

Vessel glass

Five small, flat fragments, listed below, all in various shades of blue-green glass, have surfaces which look more like prismatic bottles than window glass. One fragment has a change of angle suggesting a corner. Square bottles were extremely common (hexagonal and rectangular occur occasionally) during the first two centuries AD, and fragments often turn up residually in later contexts (Price and Cottam 1998, 194–202, figs 89–91; Cool 2024).

There are also two fragments likely to be from later Roman glass containers. One (Fig 4.28, no. 1) is most likely to be the neck and handle of a large cylindrical bottle with two looped handles (Price and Cottam 1998, 206–7, fig 94). These have been found in 3rd- and 4th-century AD contexts, both on villa sites such as Frocester Court, Gloucestershire (Price 1979, 44, no. 42, fig 17) and the temple-mausoleum at Lullingstone, Kent (Cool and Price 1987, 137–8, no. 382, fig 56), as well as in burials such as at Lankhills, Winchester (Harden 1979, 220, nos 20–411, figs 27, 91).

Another later Roman glass container is represented by the base of a large vessel, *c* 110mm in diameter, which could well have been cylindrical (Fig 4.28, no. 2). The colour difference between the two suggests fragments 1 and 2 were not from the same vessel. Whether the second vessel was similar to the first, or a tall cylindrical bottle with a funnel mouth and one or two flat-sectioned, angular handles (Price and Cottam 1998, 204–5, fig 93), or some other form, is impossible to say. The base has been pushed in to a central point and has a pontil scar on the underside. The colour and bubbly, streaky nature of the glass is typical of the 3rd and 4th centuries AD.

Three more tiny fragments are too small to identify, but the two colourless fragments appear to be of good quality and may be from an item of tableware. The yellow-green fragment looks more likely to be late Roman than early.

Catalogue

Box 2 In an open box, wrapped in tissue paper, side of box marked 'Floor of Centre Cell dark layer 2″–8″'. Ink mark on inside surface: 'LH/4R (reversed)/5'.

One fragment from the lower neck and shoulder of a large, thick-walled jug or flask, greenish-colourless glass. Angle of shoulder suggests a large cylindrical body. Thick-walled, diameter of neck *c* 30mm. Lower handle attachment adhering firmly to the angle between the neck and the shoulder, oval-sectioned (16mm by 7mm), extended into a short, looped trail (Fig 4.28, no. 1).

Box 2 In an open box, wrapped in tissue paper, side of box marked 'Floor of Centre Cell dark layer 2″–8″'.

One large fragment from the centre of a vessel base with high, pointed kick and pronounced pontil scar on underside. Yellow-green glass, iridescent and patchy black weathering. Diameter of base *c* 100mm (Fig 4.28, no. 2).

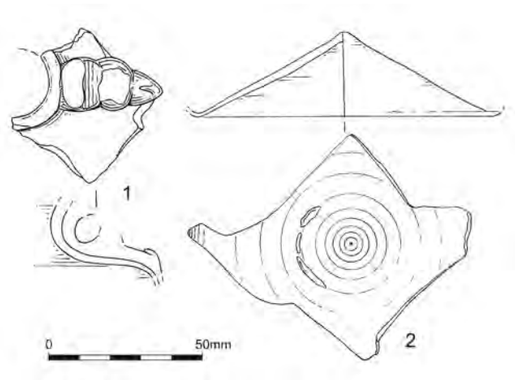


Fig 4.28 Vessel glass fragments (Mike Trevarthen)

Box 3 Unmarked paper bag from Hoopers' General Drapers.

Five fragments, varying shades of blue-green, likely to be body/base fragments from bottles, probably square (one has the very edge of a corner extant).

One indeterminate curved vessel fragment, pale yellow-green.

Three small indeterminate flat fragments, too small for further identification. Colourless glass 1mm thick.

Window glass

Nine of the window fragments can be recognised as belonging to the matt-glossy variety (Allen *et al* 2023, 41–5), with one side bearing evidence of contact with a surface (pitted and flattened), the other glossy and slightly undulating, sometimes with indented tool marks left by manipulation of the hot malleable glass. The thickness of the glass ranges from 2mm to 6mm, getting thicker towards the characteristic 'thumb' edges of the pane. Many of the fragments have impurities within the glass, either tiny 'seedy' bubbles or streaks where the glass has been incompletely mixed. Six of the fragments are blue-green, two greenish-colourless and one is yellow-green.

Experimental work by glassmakers Mark Taylor and David Hill has shown that window glass of this type could have been made by flattening a large gather of molten glass into a disc, then, using pincers and other tools, manipulating and pulling the circular pane into a square, reintroducing one side at a time into the furnace to keep it soft and malleable (Allen 2002, 103–6; Allen *et al* 2023, 41–5). This results in panes looking very like those of Roman date.

Five of these matt-glossy fragments have edges that have been grozed – that is, shaped by working the edge in a controlled way, most easily done by using special pliers with one straight and one curved edge. It is not known for certain whether the Romans had these, though iron pincers have been found at Pompeii and elsewhere (Beretta *et al* 2006, 192–3, pl 1–2). The purpose could have been to make prefabricated panes fit particular windows, or for reusing panes made for something else. It is quite commonly seen on Roman window glass of this type.

The other nine window fragments have been 'cylinder-blown': a blown bubble is swung and allowed to elongate into a cylindrical shape. After being removed from the blow-pipe, the top and bottom of the cylinder are cracked off, and after annealing the cylinder is cracked open longitudinally by running a hot iron over the desired route. This is then introduced to the furnace to allow the cylinder to open and flatten, producing

thinner panes with two glossy surfaces and thinner, heat-rounded edges. Often bubbles within the glass are elongated as a result of the blowing technique. Again, experiments have produced panes looking very like the Roman originals (Allen 2002, 109; Allen *et al* 2023, 49–52). Seven of the fragments are yellow-green in colour, and two are greenish-colourless.

Dating of the two methods is far from precise, but generally the matt-glossy panes were in use from the 1st century to the end of the 3rd century AD, and cylinder-blown panes were commonly used in the 4th century AD.

Catalogue

Matt-glossy

Box 3 'Inventory 1947 471. Below floor level of Room 21 on Section 4 line'.

One fragment of blue-green matt-glossy window glass, with thick rounded edge; one edge at approximate right angles to the rounded edge has been grozed: the line of this edge is not quite straight. Fragment measures *c* 65mm by 66mm; thickness varies from 2mm to 6mm, towards rounded edge (Fig 4.29, no. 3).

Box 3 Unmarked paper bag from Hoopers' General Drapers.

One fragment of streaky blue-green matt-glossy window glass with rounded edge; another at right angles to this also shows possible signs of grozing. Fragment measures 75mm by 56mm; thickness 3mm–4mm (Fig 4.29, no. 4).

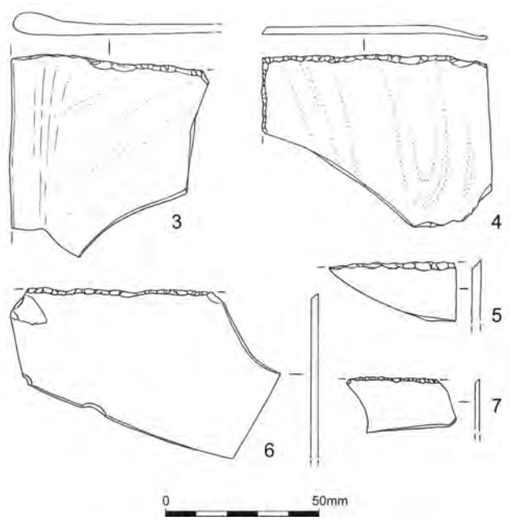


Fig 4.29 Window glass fragments (Mike Trevarthen)

One small fragment of greenish-colourless matt/glossy window glass. One edge has been grozed in a straight line. Fragment measures 12mm by 42mm; thickness 3–4mm (Fig 4.29, no. 5).

Box 2 In an open box, wrapped in tissue paper, side of box marked 'Floor of Centre Cell dark layer 2″–8″'.

One fragment of blue-green matt-glossy window glass with one straight grozed edge. Fragment measures 90mm by 52mm; thickness 2–3mm (Fig 4.29, no. 6).

One fragment of blue-green matt/glossy window glass with one straight grozed edge. Fragment measures 40mm by 16mm; thickness 2–3mm (Fig 4.29, no. 7).

One more small fragment of blue-green matt-glossy window glass in Box 2 in the same open box as nos 4 and 5; three more small fragments of matt-glossy window glass in the Hoopers' bag in Box 3 (one blue-green, one greenish-colourless, one yellow-green).

Cylinder-blown

Box 3 Unmarked paper bag from Hoopers' General Drapers.

Six fragments of double glossy window glass, pale yellow-green, elongated bubbles, 1–2mm thick.

Box 2 In an open box, wrapped in tissue paper, side of box marked 'Floor of Centre Cell dark layer 2″–8″'.

Three fragments of double glossy window glass, pale yellow-green, blackish patchy weathering on surfaces, 1–2mm thick.

4.8 Plant remains from the well

Ruth Pelling, with identifications by Harry Godwin

During the excavation of the well at Low Ham in the summer of 1955, an organic-rich waterlogged sediment was encountered at a depth of 12 feet (3.66m) below turf level. The deposit is described as 'a sticky, blackish deposit with a quantity of wood, sticks, twigs, fruit stones, nuts and seeds' (H Stephen L Dewar, reproduced in this volume, Chapter 3.4). About 90 per cent of the deposit was washed through a series of sieves of unknown mesh size, and recovered plant remains forwarded to Harry Godwin, Botany School, University of Cambridge, for identification (Chapter 3.4). A table of identifications was published (Godwin 1961), but no interpretative report, methodology or identification criteria were included, and the flora used was not given. The results reproduced in Tables 4.5 and 4.6 show Godwin's identification,

Table 4.5 Wood identifications according to Godwin

Godwin* identification	Usual reporting level based on wood anatomy	English term	Worked	Unworked
Fraxinus excelsior	*Fraxinus* sp	ash	3	4
Quercus sp	*Quercus* sp	oak	14	2
Crataegus sp	Pomoideae	pomaceous fruits	-	1
Pyrus cf *malus*	Pomoideae	pomaceous fruits	1	1
Corylus avellana	*Corylus* sp	hazel	-	9
Alnus glutinosa	*Alnus* sp	alder	-	1
Betula sp	*Betula* sp	birch	-	1
Salix sp	*Salix/Populus* sp	willow/poplar	-	5
cf *Alnus glutinosa*	cf *Alnus* sp	cf alder	-	1
cf *Corylus avellana*	cf *Corylus* sp	cf hazel	-	1
cf *Fagus sylvatica*	cf *Fagus* sp	cf beech	?1	-
cf *Salix* sp	cf *Salix/Populus* sp	cf willow/poplar	-	2
cf *Quercus* sp	cf *Quercus* sp	cf oak	1	-

*Godwin (1961).

synonyms following Stace (1997) or the usual reporting level for wood following anatomy (based on Gale and Cutler 2000), common English names and quantification.

The taxa given by Godwin in Table 4.5 do not entirely follow the more commonly used levels of identification for wood reporting based on anatomy. Tree species-level identifications reflect species native to Britain, not distinguishable anatomically, and other species may theoretically be represented. Some genera are usually grouped together according to anatomical similarities. The identification of *Crataegus* sp (hawthorn) and *Pyrus* cf *malus* (synonym *Malus sylvestris*, apple) may be better regarded together under the collective term Pomoideae (or Maloideae) given their anatomical similarities (Gale and Cutler 2000, 183–9). The Pomoideae group of pomaceous fruits includes apple, pear, hawthorn and whitebeam. Fruit stones of *Crataegus monogyna* were identified among the plant macrofossils. *Salix* sp (willow) and *Populus* sp (poplar) are not reliably anatomically distinguishable and *Salix/Populus* sp is therefore the usual identification (Gale and Cutler 2000, 193, 241).

The nomenclature of some taxa in Table 4.6 is not entirely clear: *Polygonum aviculare* agg (cf *aequale* Lindman) is a synonym for *Polygonum arenastrum* Boreau following Stace (1997), although the separation from *Polygonum aviculare* on the basis of the seed is not easy. This identification is therefore best regarded as *Polygonum aviculare* type. The nomenclature of the moss given as *Thuidium alopecurum* is unclear and may be a spelling mistake in the original transcript of Godwin's notes: it is not possible to establish whether it is a *Thuidium* species or *Thamnium alopecurum,* which is a synonym for *Thamnobryum alopecurum* (Hedw) Gangulee.

Results

The majority of the botanical remains were larger-sized seeds and nuts or fruit stones as well as wood fragments. As no sieve sizes were given, it was not possible to establish whether small-seeded taxa were under-represented; while some of the seeds were indeed small (eg *Juncus* sp), it is expected that a few small seeds would be caught on larger items. Two mosses were also identified, although not quantified. The moss may have been present on the interior of the well, or on a fallen/deposited branch or twig wood.

A total of 48 wood fragments was examined and identified from a larger sample of unknown size. Both worked and unworked (natural) fragments of wood were identified. Worked wood presumably referred to fragments with cut or saw marks, or wood chips, rather than identifiable objects, given the lack of any description of artefacts. No description of fragment size or ring data was given and, while the description of the deposit referred to sticks and twigs, no details were provided. The taxa listed were genera that have species native to Britain and indicated the exploitation of a mixture of deciduous woodland (*Fraxinus* sp, *Quercus* sp), woodland edge, hedgerow or orchard trees (*Corylus* sp, Pomoideae) and wetter ground/riparian habitats (*Salix/Populus* sp, *Alnus* sp). *Quercus* sp (oak) was the most represented among the worked wood, likely reflecting the durability and construction potential of the wood from this tree. It is possible that the worked wood derived from the construction or maintenance of the well. The twigs and branches referred to in the deposit description may have derived from surrounding structures such as fences, or

Table 4.6 Macroscopic plant remains identified by Godwin

Godwin* identification	Nomenclature after Stace 1997	Common name	Quantification
Pinus pinea	*Pinus pinea* L	Stone pine	2 cones
Corylus avellana	*Corylus avellana* L	Hazel	Abundant nut fragments
Crataegus monogyna	*Crataegus monogyna* Jacq	Hawthorn	1 fruit stone
Prunus domestica	*Prunus domestica* L	Plum, bullace, damson	10 fruit stones
Prunus spinosa	*Prunus spinosa* L	Blackthorn, sloe	2 fruit stones
Prunus sp	Prunus sp	Plum/cherry/blackthorn	1 fruit stone
Juglans regia	*Juglans regia* L	Walnut	Abundant shell fragments
Cerastium vulgatum	*Cerastium fontanum* ssp. *Holosteoides*	Common mouse-ear	6 seeds
Verbena officinalis	*Verbena officinalis* L	Vervain	1 seed
Papaver somniferum	*Papaver somniferum* L	Opium poppy	2 seeds
Stachys arvensis	*Stachys arvensis* (L) L	Field woundwort	2 seeds
Myosoton aquaticum	*Myosoton aquaticum* (L) Moench	Water chickweed	5 seeds
Potentilla sp	*Potentilla* sp	Cinquefoils	1 seed
Polygonum aviculare agg (cf *aequale* Lindman)	*Polygonum aviculare* agg	Knotweed	1 seed
Origanum vulgare	*Origanum vulgare* L	Wild marjoram	1 seed
Juncus sp	*Juncus* sp	Rushes	8 seeds
Thuidium alopecurum	†*Thuidium* species? Or *Thamnobryum alopecurum* (Hedw) Gangulee	Tamarisk-moss or fox-tail feather moss?	-
Hylocomium splendens	†*Hylocomium splendens* (Hedw) Schimp	Glittering wood-moss	-

*Godwin (1961).
†Nomenclature follows the British Bryological Society https://www.britishbryologicalsociety.org.uk/

baskets, or derived from discarded prunings of orchard or hedgerow crops. The addition of the waterlogged wood identifications from the well extends the diversity of tree taxa examined from the charcoal deposits within the villa (Chapter 8.2).

Of the macroscopic remains (seeds, fruits and nuts), both cultivated edible species and seeds of wild plants were identified. Most notable among the edible taxa were two cones of *Pinus pinea* (stone pine). It was not stated whether the cones were open or closed or whether they retained their nuts. Also identified were the stones of *Prunus domestica,* which could include bullace or damson (ssp *insititia*), or plums (ssp *domestica*), the shell of *Juglans regia* (walnut), and abundant 'nut fragments' of *Corylus avellana* (hazel), presumably the nut shell. Stones of *Prunus spinosa* (sloe, blackthorn), indeterminate *Prunus* species, and *Crataegus monogyna* (hawthorn) are theoretically edible with some processing/cooking, although may have entered the well with wood; no *Prunus* wood taxa were identified, although Pomoideae (*Crataegus* sp in Godwin's table) was.

Among the seeds, those of *Papaver somniferum* (poppy) are edible, commonly cited among Roman sources as a topping for bread (Dalby 2013); the seeds also provide an edible oil. *Papaver somniferum* has been recorded from prehistoric Britain (Preston *et al* 2004; de Vareilles *et al* 2023) but appears significantly more often in the Roman period, where it is likely to be closely associated with Roman cuisine (Van der Veen *et al* 2008). Poppy also occurs as a casual species of disturbed ground or arable fields, however, so the presence of two seeds in the well fill need not necessarily mean deliberate deposition. The only other edible species present was *Origanum vulgare* (wild marjoram/oregano), although this is a native plant of dry, usually calcareous soils (Stace 1997), and it is the leaves that are eaten rather than seeds, suggesting its presence in the well is incidental.

The remaining plant taxa represented by occasional seeds included a mix of wet/marshy ground indicators (*Cerastium vulgatum*, *Myosoton aquaticum*, *Juncus* spp), and plants of dry grassland (*Potentilla* sp) and/or disturbed/arable habitats or bare open ground (*Verbena officinalis*, *Stachys arvensis*, *Polygonum aviculare*). These seeds may have entered the well with other vegetation.

Discussion

The majority of wood and other plant remains present in the well deposit may have dropped in accidentally during construction or repairs, from surrounding plant growth or structures including fencing or cover, or incorporated with other refuse. The presence of the stone pine cones, walnut and hazelnut shell and assorted *Prunus* stones, however, must have been deliberately thrown into the well and merit further comment. Stone pine, walnut and plum are regarded as Roman introductions to Britain and finds of all three increase in number during the course of the Roman period (Van der Veen *et al* 2008). While all three could have been grown in southern Britain, it is more likely that stone pine and potentially walnut were imported – stone pine as cones and nuts, walnuts dried in their shells. Plums could have been imported as dried prunes, although perhaps it would be expected that the stones would be removed first. While the seeds of stone pine were widely used in the Roman world as food, the import and use of whole cones into Britain, which is bulky and unnecessary for the transport of the nuts, implies a use other than culinary. Nut shell of walnut and the stones of plums are more feasibly present as food debris, but their association with the pine cones raises the possibility of a more ritual origin.

The resinous cones of stone pine emit a pleasant fragrance when burnt and their use as incense in ritual activity is well recognised (Kislev 1988; Lodwick 2015), particularly in association with the cults of Mithras (Bird 2004), Bacchus, Cybele and Silvanus (Crummy 2010, 63). Both charred and waterlogged examples are known from Britain, including from well deposits, as well as temple sites and shrines (Lodwick 2015). Walnuts were sacred to Jupiter and Proserpina and are found in cremation deposits in southern Europe (Bianco *et al* 2024), and they are also associated with weddings (Dalby 2013, 346). Plums are also found in Roman cremation deposits across Europe (Bianco *et al* 2024). A large concentration of whole walnuts, and complete pine nuts, has recently been found in association with cereals, fruits and two dogs, as well as votive ceramics, combustion areas and a ritual well, within a small ritual structure at a Roman villa in Barcelona (Tarongi *et al* 2024). The association of food plants with ritual activity is difficult to demonstrate without clearly associated votive objects or physical remains of a shrine, temple or burial/cremation, particularly where the by-product is present (nut shell, fruit stones). It should nevertheless be considered that feasting remains were deposited along with the more demonstrably ritually associated items (pine cones, and possibly the shoes and child bones) in the well (Chapter 3.4).

5 The geophysical survey

Neil Linford, Paul Linford and Andrew Payne

Caesium magnetometer and ground-penetrating radar (GPR) surveys were conducted in July 2018 to address a Heritage at Risk casework request to map the extent and state of preservation of the scheduled Roman remains at Low Ham Roman Villa. In addition to informing subsequent excavation and interpretation of the Roman remains, this work also assisted the Churches Conservation Trust with the interpretation of the wider post-medieval landscape where the villa sits, as part of a Heritage Lottery Fund repair project on the nearby Grade I listed Church in the Field. A full report on all aspects of the geophysical survey is available as a Historic England Research Report (Linford *et al* 2018a).

5.1 Methodology

A vehicle-towed array of six Geometrics G862 caesium vapour sensors mounted on a non-magnetic sledge was used to conduct the magnetometer survey (Linford *et al* 2018b). The sledge was towed behind a low-impact all-terrain vehicle (ATV), which housed the power supply and data-logging electronics. Five sensors were mounted 0.5m apart in a linear array transverse to the direction of travel and, vertically, *c* 0.36m above the ground surface. The sixth was fixed 1.0m directly above the centre of this array to act as a gradient sensor. The sensors were sampled at a rate of 25Hz, resulting in an along-line sample density of *c* 0.15m given typical ATV travel speeds of 3.5–4.0m/s. As the five non-gradient sensors were 0.5m apart, successive survey swaths were separated by approximately 2.5m to maintain a consistent traverse separation of 0.5m.

After data collection the corresponding readings from the gradient sensor were subtracted from the measurements made by the other five magnetometers to remove any transient magnetic field effects caused by the towing ATV or other nearby vehicles. The median value of each instrument traverse was then adjusted to zero by subtracting a running median value calculated over a 60m 1-dimensional (1D) window (see for instance Mauring *et al* 2002). This operation corrects for any remaining biases added to the measurements owing to the diurnal variation of the Earth's magnetic field.

The GPR survey was conducted with a 3d-Radar MkIV GeoScope Continuous Wave Step Frequency (CWSF) radar console collecting data with a multi-element DXG1212 vehicle-towed, ground-coupled antenna array (Linford *et al* 2010; Eide *et al* 2018). Data were acquired at a 0.075m × 0.075m resolution and, following the estimation of an average sub-surface velocity of 0.099m/ns, a series of amplitude time slices was produced to represent the variation of reflection strength through successive *c* 0.12m intervals from the ground surface. Further details of both the frequency and time domain algorithms developed for processing these data can be found in Sala and Linford (2012) and, for example, Linford (2004).

Navigation and positional control were achieved using a Trimble R8 Global Navigation Satellite System (GNSS) receiver mounted on both the magnetometer and GPR instrument arrays, together with an R8 base station receiver established using the Ordnance Survey (OS) VRS Now correction service. Sensor output and survey location were continuously monitored during acquisition to ensure data quality and minimise the risk of gaps in the coverage for both techniques.

5.2 Results

Magnetometer survey

Results of the survey are shown in Fig 5.1, and in Fig 5.2 where significant magnetic anomalies, labelled [**m1–57**] and discussed in the following text, have been superimposed on an OS base map. The main sub-rectangular double-ditched enclosure around the villa ranges has a slanting side to the north [**m1**] on Fig 5.2, forming a sub-rectangular compound [**m2**] and [**m3**] around most of the perimeter, interrupted by the modern field boundary and the badger setts [**m4**]. An entrance gap is found at [**m5**] with a ditched access approach [**m6**] heading north-east towards the river, and is flanked inside the enclosure by two rectilinear buildings, defined by negative anomalies [**m7**] and [**m8**], which enhance parchmarks noted by H Stephen L Dewar and Roger H Leech (Goodburn *et al* 1976, fig 21; Leech 1978, figs 9 and 10; see Fig 3.31) and which may possibly have functioned as gatehouse structures or service ranges to the main residential villa [**m9–11**]. Both of the buildings [**m7**] and [**m8**] contain thermoremanent anomalies [**m12**] and [**m13**], indicative of fired structures such as hearths, furnaces, ovens or grain dryers, and perhaps similar to the Grateley Roman villa in Hampshire (Cunliffe and Poole 2008). The building ranges are constructed around a large courtyard [**m14**], which is generally devoid of activity, and suggests a similar layout to other elaborate villa sites (cf Branigan 1976a; Allen 1989).

The main villa building ranges [**m9–11**] also contain high-magnitude responses associated with fired structures and are surrounded by weaker anomalies and areas of raised disturbance, for example at [**m15**] and [**m16**], indicative of occupation activity and ceramic building material. A separate complex of buildings [**m17**], possibly a shrine or 'garden' courtyard, are found to the north-west of the villa range [**m9**].

Further structural remains [**m18**] suggest an extension of the south-east range beyond the scheduled area, perhaps associated with a possible conduit [**m19**] (cf [**gpr31**], see below) from the spring located above the villa to the south. It is, of course, possible that not all of the negative wall-type anomalies, such as [**m18**], are necessarily contemporary and of a single phase of building activity related to the main villa. Some post-Roman building activity, possibly related to the spring-fed water source, may even be represented here.

Negative anomalies on the floodplain to the north-east of the main villa at [**m20**], while suggestive of structural remains, have a curious plan and alignment and could, potentially, be related to later activity such as field drains. A ditched enclosure [**m25**] is more closely aligned with the orientation of the villa to the north-west of [**m20**], and exhibits a weak response, possibly influenced by waterlogged floodplain soils adjacent to the Low Ham Rhyne. Two further weak responses [**m21**] and [**m22**] on the floodplain may, possibly, represent structural remains, together with partially defined groups of buildings on the hillside above the villa to the south at [**m23**], replicating a parch mark, and [**m24**], possibly associated with the spring. A series of large, amorphous anomalies [**m26–29**] may represent a geomorphological response associated with the spring, similar to those recorded at the Roman settlement at Silbury Hill adjacent to the Swallowhead spring (Linford *et al* 2009). A similar, diffuse linear anomaly [**m30**] appears to follow the course of a terraced lynchet across the villa enclosure continuing into the field to the west, and perhaps may have functioned as a trackway or linear boundary, possibly even an in-filled ditch predating the villa.

A series of three parallel long, thin (or 'strip') field enclosures [**m31–33**] extends from the main villa complex into the field to the north-west, with their long axis running downslope to the Rhyne. There is little evidence of internal activity within the enclosures, other than a probable ditched trackway or droveway [**m34**] entering [**m32**], perhaps suggesting they were used for grazing and securing livestock or for cultivation of crops. Possible evidence for cultivation [**m35**] could, perhaps, be related to the villa settlement although a later origin cannot be discounted. More complex subdivisions at [**m36**] and [**m37**] within the enclosures may relate to roadside occupation aligned along a possible trackway [**m38**] skirting the northern edge of the villa complex and adjacent to the floodplain, perhaps with a terrace or revetment flood defence [**m39**].

A complex of small ditched enclosures [**m40–42**] to the north-west, together with a scatter of pit-type responses, probably represents more than one phase of development bracketing a double-ditched trackway [**m43**] heading north. It is unclear whether [**m40–42**] represent a continuation of the Roman activity or whether they are associated with the medieval or post-medieval use of the landscape, although a linear ditch [**m44**] appears to suggest continuity with the villa compound some 150m to the east. The broad linear anomaly [**m30**] also appears to terminate close to [**m43**] and in the immediate vicinity

Fig 5.1 Low Ham Villa magnetometer survey, linear greyscale image (Linford *et al* 2018a; Andrew Payne, Historic England)

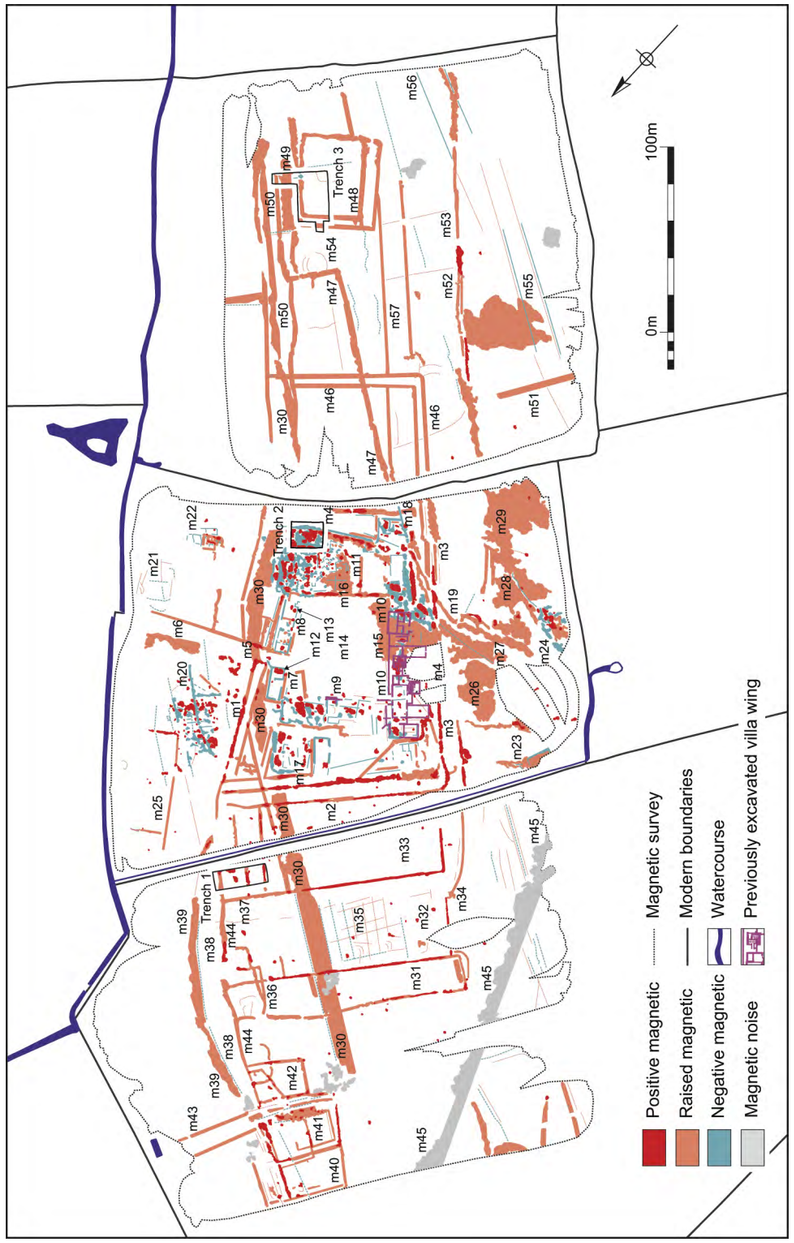
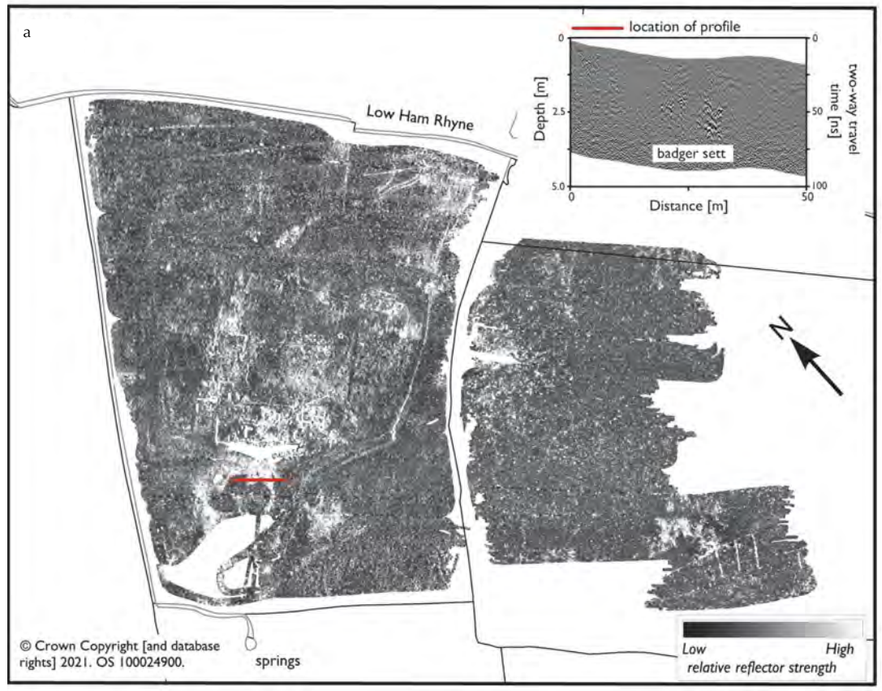


Fig 5.2 Low Ham Villa magnetometer survey, graphical summary of significant magnetic anomalies (Andrew Payne and John Vallender, Historic England. (c) Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900)

of enclosures [**m40–42**]. Disturbance from a ferrous pipe [**m45**] also crosses this area, indicating the more recent use of the spring that supplied the villa to supply the gardens and house of the Stawell mansion (Aston 1978, 24–6; Leech 1978). Elements of this activity [**m31–45**] survive as earthworks and may, potentially, be obscured by later phases of the landscape associated with the Hext and Stawell mansions (cf Aston 1978, fig 3).

The double-ditched enclosure system associated with the villa appears to extend into the field to the south-east [**m46**], but is largely lacking any internal activity other than [**m47**], which potentially merges with the drainage channel or conduit [**m18**] and [**m19**] and may represent a further continuation of the leats associated with the spring. A double-ditched rectangular enclosure [**m48**] with a probable entrance break at [**m49**]



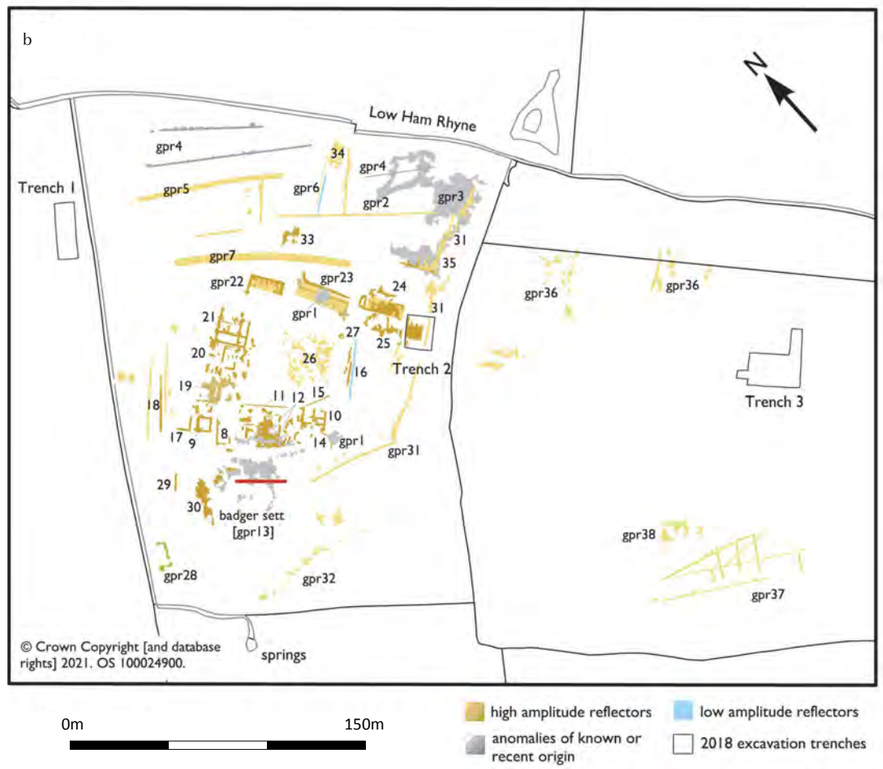


Fig 5.3 Low Ham Villa ground-penetrating radar (GPR); a) GPR amplitude time slice, between 0.62 and 0.74m, b) graphical summary of significant GPR anomalies (Linford *et al* 2018a; Neil Linford, Historic England)

faces onto a series of broad and narrow linear anomalies [**m50**] possibly representing a trackway along the southern margin of the Low Ham Rhyne floodplain. The trackway [**m50**] possibly extends north-west towards the entrance of the villa compound at [**m5**], although the association between the two is not entirely clear. There is also partially defined evidence for further field systems [**m51–53**] potentially associated with either the villa or an Iron Age precursor settlement, as well as a very tentative indication of a possible ring gully [**m54**]. On the upper slopes of the valley a series of parallel leats or stone-lined conduits [**m55**] and [**m56**] of unknown date are again potentially related to water management from the spring line above the villa. The parallel linear anomalies [**m57**] may possibly be associated with the post-medieval activity at the site as they appear to be aligned on an avenue approaching the site from the south shown on the 1779 estate map (Wilson-North 1998, fig 37).

Ground-penetrating radar survey

Results of the survey are shown in Fig 5.3a, and in Fig 5.3b where significant reflections, labelled [**gpr1–38**] and discussed in the following text, have been superimposed on an OS base map. Significant reflections have been recorded to approximately 30ns (1.49m) before the signal begins to become attenuated, although badger setts found in the main villa field extend beyond 50ns (2.48m). While the response across the site is generally good, it has been interrupted in places by the presence of collapsed badger setts ([**gpr1**] on Fig 5.3b), vehicle ruts [**gpr2**] and other topographic variation over the site. In some places it is also unclear whether the very near-surface response may also be due, at least in part, to a concentration of rabbit burrows [**gpr3**].

There is some evidence for possible field drains [**gpr4**] in the near-surface data between 2.5ns and 15.0ns (0.12–0.74m) in the lower-lying ground adjacent to the river, and these partially replicate negative linear magnetic anomalies. Other linear anomalies here [**gpr5–7**] could also be associated with field drainage and appear on a different alignment to the more significant magnetic responses. One of the broader anomalies [**gpr7**] also appears to follow a distinct break in slope running across the site.

The walls of the structural remains appear from between 2.5ns and 27.5ns (0.12–1.36m) but are very fragmented in the GPR data compared with the magnetic response, possibly due to the presence of building rubble or spoil from the original excavations. A direct correlation with the 1946–48 excavation plan of the south-west wing (Fig 3.1) is complicated by the fragmented nature of the data and the presence of extensive badger setts, although [**gpr8**] and [**gpr9**] would appear to match the dimensions of Room 19 and the partially excavated square room immediately to the north. The group of wall-type anomalies to the south of the wing at [**gpr10**] largely replicates the excavated layout of Rooms 2 and 11–14, with some slight variation to the alignment. However, the main excavated bath-suite Rooms 1 and 4–10, including the location of the Dido and Aeneas mosaic, are far more difficult to ascertain from the GPR response beyond elements of the external walls at [**gpr11**] and [**gpr12**], possibly because of the extensive network of badger setts [**gpr13**] found here. The badger sett [**gpr13**] covers a large area, perhaps partially coincident with the excavation trenches through the Roman buildings (L Rees, pers comm, 2018; cf Grahame 1908), but reflections from the air-filled tunnels also extend further south to at least 50ns (2.48m), as shown in the profiles (Linford *et al* 2018a, fig 8).

There is little evidence for the continuation of the south-west wing to the south of [**gpr10**], although some fragmented wall-type anomalies are found at [**gpr14**] in the vicinity of a collapsed badger sett. A linear anomaly [**gpr15**] runs from Room 3 at a slight angle to the orientation of the building range, perhaps a channel leading to a more complex response [**gpr16**], itself possibly a drain down the slope towards the Low Ham Rhyne.

The remains of at least one additional room [**gpr17**] appears beyond the extent of the excavation to the north, together with a group of parallel linear anomalies [**gpr18**]. There is also considerably greater detail and complexity across the apparent north range of buildings [**gpr19–21**] than was previously recognised from either the excavations or aerial photography. Again, the GPR anomalies are rather fragmented here but perhaps suggest multiple phases of construction with, for example, deeper wall footings [**gpr19**] of a room between 12.5ns and 25.0ns (0.62–1.24m) apparently with an apse to the north. The offset trenches shown on the plan of the excavations (Fig 3.1) appear to correlate with a 5m × 16m room forming part of a larger structure [**gpr21**] to the north-east, slightly off an orthogonal alignment with respect to the south-west wing. It is unclear whether the group of anomalies [**gpr20**] and [**gpr21**] form part of the same building and may even, possibly, be associated with the post-medieval activity at the site, as they appear to be aligned on an avenue approaching the site from the south shown on the 1779 estate map (Wilson-North 1998, fig 37).

Three additional buildings are suggested by fragmented structural anomalies [**gpr22–24**] found to the

east, although these appear discrete from each other rather than forming a more continuous wing, and both [**gpr22**] and [**gpr23**] have more shallow foundations that do not extend beyond 17.5ns (0.87m). The more substantial building [**gpr24**] appears to be associated with a diffuse response [**gpr25**], immediately to the west, and perhaps also the course of the drain [**gpr16**] from the south-west wing of the villa. Considered together with the other structural remains [**gpr22–24**] they suggest a layout surrounding a central courtyard, although this area is largely dominated by a diffuse anomaly [**gpr26**], perhaps indicative of a deliberately metalled surface that obscures the identification of any more significant responses. An annular sub-circular anomaly [**gpr27**] is also found here with a central low amplitude response 1m in diameter which may, perhaps, indicate the location of the excavated well.

Beyond the villa enclosure [**gpr28**] correlates with a small building known from parchmarks together with other possible fragmented structural remains at [**gpr29**] and [**gpr30**], although these may also be associated with the badger sett [**gpr13**]. A linear anomaly [**gpr31**], possibly a leat carrying water from the spring down the hill, is also expressed as a visible earthwork and may not, necessarily, be contemporary with the Roman activity (Linford *et al* 2018a, fig 8). Other more diffuse anomalies, such as [**gpr32**], are likely to represent a geomorphological response to the water flowing from the spring (cf [**m26–29**]). Some more diffuse high-amplitude anomalies [**gpr33–35**] are also found on the lower-lying ground, but these are difficult to interpret confidently as evidence for further structural remains.

Some extant earthwork banks close to the Rhyne are replicated as high-amplitude responses [**gpr36**] in the field to the south of the villa, with further linear anomalies [**gpr37**] on the higher ground, visible as parchmarks at the time of the survey, possibly associated with leats from the spring. A more diffuse high-amplitude anomaly [**gpr38**] appears to have some rectilinear elements suggestive of structural remains, although this is a highly tentative interpretation.

5.3 Discussion

Both the magnetometer and GPR surveys have successfully enhanced the known evidence of the Low Ham Roman Villa, with the negative response to walls in the magnetic data proving exceptionally clear to the extent that fragmentary plans of complete building ranges can be discerned. The response to the structural remains in the GPR data is, perhaps, less clear than might be expected given the magnetic results and may, in part, be due to a combination of demolition rubble deposits increasing signal scattering and lack of soil conductivity contrast due to the very dry conditions at the time of the survey.

Comparison of the combined data sets demonstrates a good correlation with the excavation plans of the south-west wing, and potentially suggests a location for the later building remains recorded by Dewar to the north (Goodburn *et al* 1976, 358, fig 21). The GPR has confirmed that the impact of the badger activity extends to quite a considerable depth over a wider area than the surface evidence suggests, and that the Roman buildings previously only partially known from excavation and aerial photography continue beyond the original designated area.

The magnetic survey has also revealed a wider landscape of field systems, trackways and enclosures beyond the villa complex in the adjacent fields, with some suggestion of precursor Iron Age settlement activity. Likely evidence for water management associated with the active spring located immediately above the villa has also been discerned, although the results suggest this may relate to an extended period of use, including recent ferrous pipes.

6 The 2018 excavations

6.1 Stratigraphic sequence

David Roberts

The rationale for the Historic England (HE) fieldwork is covered in Chapter 1.5 along with details of the methodology employed. The excavations were located in three fields to the south-west of Netherham Farm, comprising Trench 1 in the field immediately north of the villa, Trench 2 covering part of the villa's south-east range, and Trench 3 in the field immediately to the south of the villa (Roberts 2018). The trench locations are shown in their wider landscape context on both Fig 5.2 and Fig 5.3.

Trench 1

The phase plans for Trench 1 appear in Fig 6.1 and the sections in Fig 6.2. Trench 1 was supervised by Ruby Neale.

Phase HE1.1 – natural

The natural geological substrate (90059) in this area comprised compacted yellow gravels within a brownish-yellow sand matrix.

Phase HE1.2 – 3rd century AD

The first archaeological activity in this area of excavation was the establishment of ditches subdividing land alongside and upslope of the trackway running along the valley of the Low Ham Rhyne. The trackway ditch [90023] showed no sign of having been established prior to the 3rd century AD; two sherds of New Forest ware and a south-east Black-burnished ware (DOR BB1) flanged-rim conical bowl from [90023] demonstrated that the ditch must have been established and begun infilling by the mid–late 3rd century. This trench sampled two ditches running parallel to the trackway, [90030] and [90007]. These defined two rectangular areas to the south-west of the trackway, themselves within the northern corner of a much larger rectangular enclosure running upslope from the trackway.

The establishment of these enclosures may be contemporary with Phase HE1.3 but has been kept separate because of the relative lack of secure dating evidence for their establishment. The later fills of these ditches probably continue into/date from HE1.3, and possibly HE1.4, but these ditches had infilled fully prior to the establishment of a very late Roman or post-Roman ditch [90034=90036=90014] in Phase HE1.5. Molluscan analysis of [90030] indicated that the base of the ditch was at least seasonally wet, and may have contained vegetation, although the surrounding environment was likely to have been dry. The secondary fills accumulated relatively quickly, and the uppermost fill of the ditch quite slowly, but was still seasonally wet and contained vegetation providing abundant shade. These results are likely to be representative of the other ditches in this part of the site. The recovery of sedge (*Carex* sp) and fen sedge (*Cladium mariscus*) from archaeobotanical samples from ditches in this phase (see Chapter 8.1) indicates the character of this vegetation.

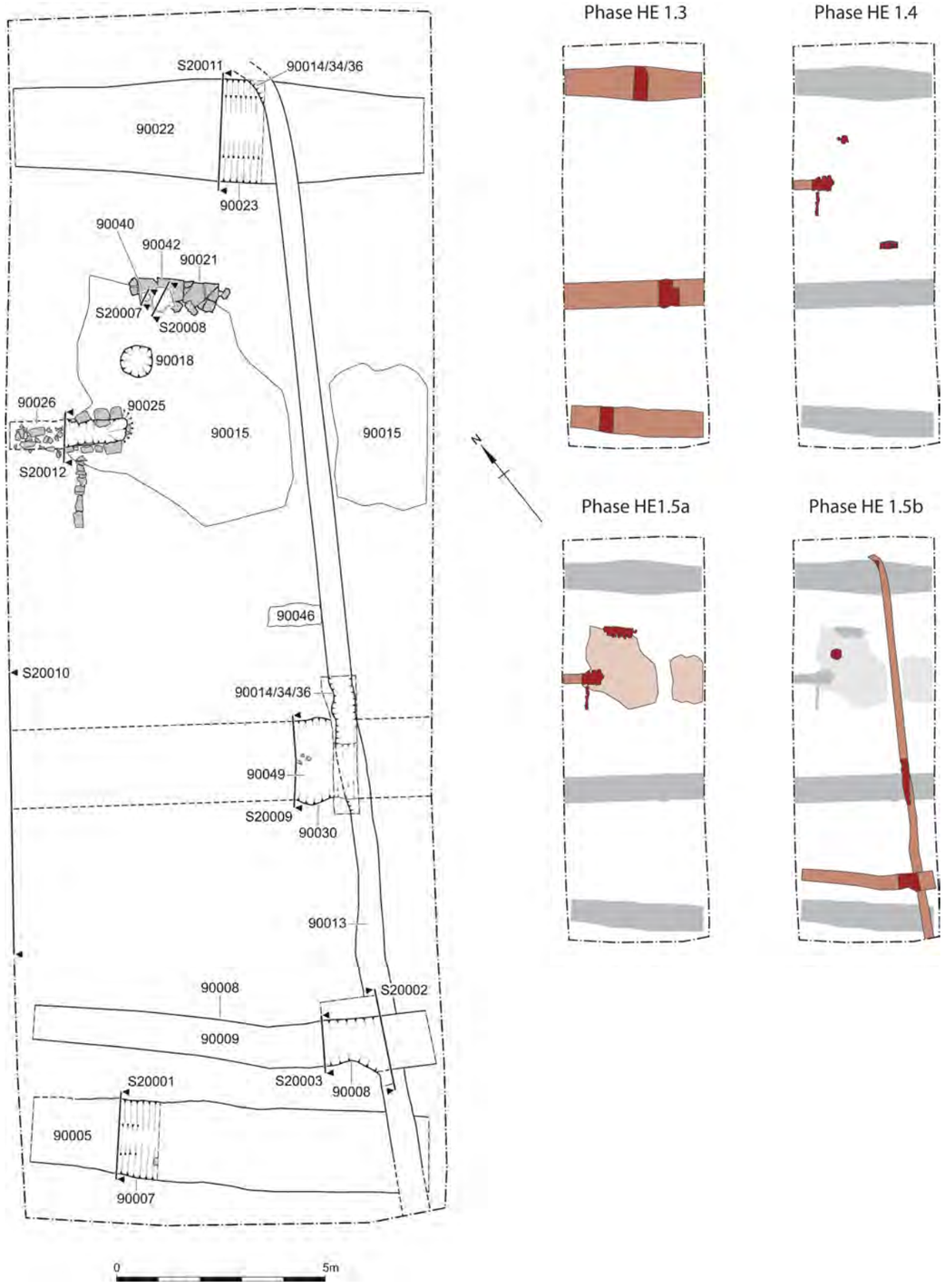


Fig 6.1 Phase plans for Trench 1 (John Vallender, Historic England)

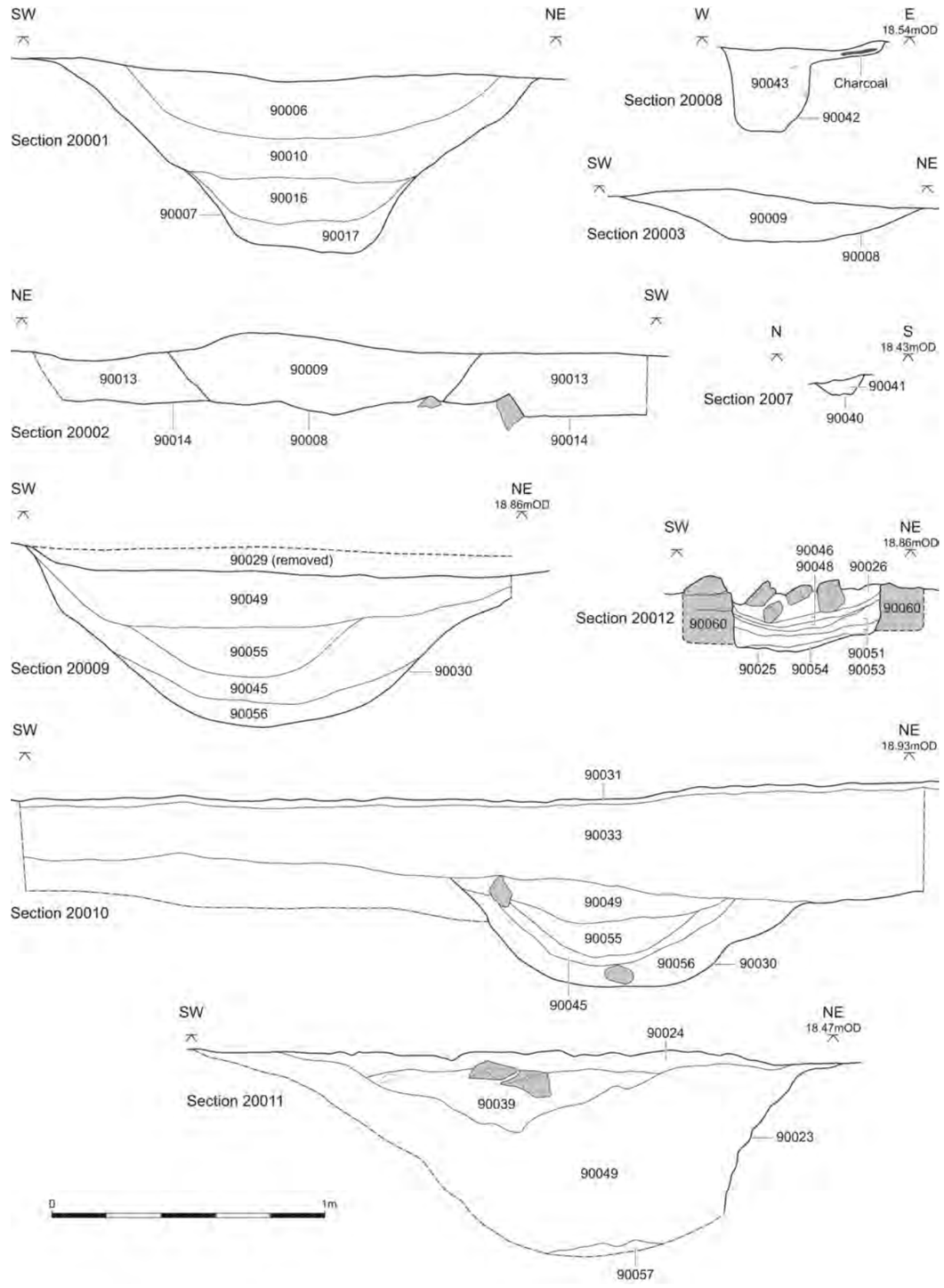


Fig 6.2 Section drawings for Trench 1 (John Vallender, Historic England)

Fig 6.3 Flue [90025] after cleaning rubble top fill (90026), with possible kerb running perpendicularly from either side of flue (Historic England)

Phase HE1.3 – 3rd–4th century AD

Activity within the enclosure adjacent to the trackway was focused on crop processing, and particularly on a long, narrow flue, [90025]. Flue [90025] extended from the limit of excavation (LOE) for 2.8m, so its full length remains uncertain. It was 1.15m wide and 0.21m deep. The flue was cut into natural and lined with stones (90060), including two very large repurposed Ham stone quoins. These are likely to be derived from the main villa buildings. The presence of red-coloured Ham stone in the flue lining in addition to the quoins may indicate that this material came from the villa building itself, where previous excavations have revealed that this stone type was used for window surrounds (Lionel Walrond, pers comm, November 2018). Other material from the flue's stone lining also hinted at being such *spolia* (Fig 6.3; Chapter 7.5). A possible kerb running from either side of the end of the flue was recorded (Fig 6.4). However, when further explored, this was an inconsistent single course of stone with no visible foundation cut, so cannot have supported a wall, although it may have functioned as a kerb.

The flue's sequence is well dated, despite only containing a small assemblage of 3rd-century pottery, because of radiocarbon dating of burnt grain (see Chapter 6.2). At the base of the flue, a dense charcoal- and cereal-rich deposit (90054) was identified directly overlying the natural substrate. This was covered by a series of deposits

Fig 6.4 Flue [90025] after excavation, with repurposed quoins visible on right-hand side of picture. Note other potential *spolia* on left-hand side (Historic England)

relating to the use of the flue: a thin, brown silt deposit (90053) containing relatively little charcoal, a reddish heat-affected deposit (90051), a compacted dark brown deposit (90048), and a further charcoal-rich deposit (90046). These deposits were overlain within the flue by rubble (90026), which may have derived from the demolished superstructure of the feature. It was observed that there was no scorching of the underlying natural substrate, although some of the flue lining stones showed signs of being heat-affected. The flue is estimated from modelling of radiocarbon results to have been constructed in *cal AD 240–295* (*95% probability*; *BuildFlue*; Fig 6.36), probably *cal AD 250–275* (*68% probability*). The latest charcoal-rich fill in the flue (90046) is estimated to have formed in *cal AD 335–395* (*95% probability*; *EndFlue*; Fig 6.36), probably *cal AD 350–375* (*68% probability*) (see Chapter 6.2).

The burnt plant remains from the flue are examined in more detail in Chapter 8.1 but are suggestive of both the preparation of grain for brewing and the parching of grain as part of the processing of cereals into flour. By-products of winnowing, threshing and sieving of grain may have been used as fuel in the flue.

Between the flue and the trackway ditch were two adjacent postholes of markedly different form, which appear to have been filled in the late 3rd century or first half of the 4th century. Fill (90041) of a small and shallow posthole [90040] is dated to *cal AD 245–340* (*95% probability*; (*90041*) Fig 6.36), probably *cal AD 290–365* (*68% probability*) from two carbonised grains. The same fill also produced a 1st-century AD date on another carbonised grain, demonstrating longer-term crop-processing activity in the vicinity. Radiocarbon dating of part of one of a pair of articulating sheep (*Ovis aries*)/goat (*Capra hircus*) tibiae and femora from fill (90043) of adjacent large posthole [90042] produced another slightly earlier late 3rd- to early 4th-century date of *cal AD 235–365* (*95% probability; GrM-21092*; Fig 6.36), probably *cal AD 245–340* (*68% probability*), strongly suggesting that the earlier grain from [90040] is residual, although indicative of earlier crop-processing activity in the wider area. These two postholes are not necessarily contemporary, or part of any archaeologically visible wider structure. The presence and placement of the faunal animal bone group (ABG) and other dating evidence from later phases suggests that the postholes were deliberately filled in after removal of their posts sometime in the first half of the 4th century cal AD. They may have been part of an ephemeral structure, or external posts. The postholes align parallel to the trackway ditch, further bearing out the contemporary relevance of these features to each other.

The infilled postholes were succeeded by a very thin spread of silty material (90032), either representing the contemporary ground surface, or possibly a bedding layer for slabs (90021). This silty spread contained two small sherds of fine black ware pottery with no macroscopically visible inclusions other than sparse iron grains, and a very small quantity of plaster type 4 (see Chapter 7.7), a very low-density wall plaster backing or *arriccio* used as a base for fresco painting. This suggests that deposit (90032) formed at a time when small fragments of plaster were circulating in surface material; notably, the same rare plaster type was found in fills (90051) and (90053) in nearby flue [90025], strongly suggesting that these deposits are contemporary.

Six large, roughly squared slabs of White Lias stone (90021) were laid over (90032). Their limited extent and lack of accompanying structural features suggests that they were laid to provide a hard surface to facilitate an archaeologically invisible activity. This activity probably related to crop processing, given the evidence from the adjacent flue. The stone slabs and underlying postholes represent two successive periods within a phase of activity relating to flue [90025] in this trackside enclosure in the mid–late Roman period.

As such, the flue appears to have been established at a similar time to the enclosure within which it was set, and continued in use during the existence of the nearby postholes and their succeeding stone slabs, as both the flue and slabs are sealed by rubble in the following phase. The residual 1st-century cal AD charred grain also hints at earlier use of this area for crop processing, and pastoral agriculture may have been going on in the vicinity given the presence of the sheep/goat ABG. Based on stratigraphy, dating and chronological modelling, the overall duration of use of the flue may have been around a century.

Phase HE1.4 – late 4th century AD

Both the flue and the potentially associated stone slabs were succeeded by (90015=90047; Fig 6.5), a spread of stone building rubble approximately 10m by 5.7m over the central part of the trench. It contained 138 sherds of 3rd–4th-century AD pottery and around 6.47kg of industrial debris, mainly smithing slag. The rubble comprised a mix of squared White Lias blocks, but also thinner White Lias roofing tiles and red- and yellow-coloured Ham stone. The spread also contained the only roof tiles with nail holes in Blue Lias and Morte slate from the entire site, suggesting that some parts of the site had quite different roofing materials to the parts of the main villa excavated thus far. The layer also produced a Blue Lias hone, perhaps linked to sharpening tools related

to crop-processing activities that took place in this part of the settlement. The rubble layer did not appear even enough to have formed a surface, although later ploughing may of course have affected this. There is very little evidence of patterning or structuration within the spread, with the exception of a row of four faced stones in the south-eastern part of the spread (see foreground of Fig 6.6). As with the possible kerb to the flue that underlay the rubble, these had no cut or second course, so were not defined as structural. The simplest explanation for the spread is that, after the cessation of use of the flue, demolition material deriving either from part of the main villa buildings or, less likely, from ephemeral structures dating to the preceding phase in this area, was used to create a rough area of hard standing within the former crop-processing enclosure. The spread remained bounded by the enclosure ditches, albeit they were by this time partly silted up and seasonally wet, so in some respects activity continued to be defined by the earlier structuration of this part of the villa landscape. It is notable that charred plant remains from this phase contained an abundance of probable black mustard seeds, hinting at the growing of this plant as a horticultural crop (see Chapter 8.1).

Dating of this layer relies on three sources of information. The rubble spread contained a short fragment of probable two-strand or possibly three-strand cable bracelet, dated to *c* AD 320–450. Five coins were retrieved, ranging from a radiate of Gallienus (AD 260–268) to a nummus of the House of Valentinian, dated to between AD 367 and AD 378. The latter was found stuck to a somewhat earlier nummus of Constans (AD 337–348) and is recorded as having been retrieved from beneath the rubble layer, ie on the working surface around the flue, and as such provides an excellent *terminus post quem* (TPQ) of AD 367. It is likely that the actual date of deposition is a little later given the considerable wear on the coin. The adhesion of these two coins is unusual, not least because they are not normally considered to have been in circulation contemporaneously (R Henry, pers comm, August 2021). Chronological modelling incorporating the stratigraphic relationship that a pit apparently cut into the rubble layer (see Phase HE1.5), provides an estimate that the stone building rubble was deposited in *cal AD 370–410* (*95% probability*; (90015=90047); Fig 6.36), probably in *cal AD 380–405* (*68% probability*).

Fig 6.5 Rubble layer (90015=90047); photo faces south-east (Historic England)

Fig 6.6 Rubble layer (90015=90047); photo faces north-west (Historic England)

It is thus likely that the end of crop-processing activity and subsequent deposition of the rubble in this area took place in the last quarter of the 4th century cal AD, perhaps most likely in the late 370s or 380s (based also on the final flue fill dating), having begun in the mid–late 3rd century AD at a time of wider restructuring of the main villa.

Phase HE1.5 – end 4th century AD/early 5th century AD

Shallow sub-circular pit [90018] cut through rubble layer (90015=90047) and contained sheep/goat ABGs comprising at least four individual animals, and late 3rd–4th-century AD pottery in its single fill (90019). Radiocarbon modelling of determinations on black mustard seed and a partial sheep ABG from the fill estimates that it was deposited in *cal AD 380–420* (*95% probability; GrM-21091*; Fig 6.36), probably *cal AD 390–410* (*68% probability*).

Rubble layer (90015=90047) was also cut by a narrow (0.48–0.74m) and shallow (0.29–0.4m) linear ditch investigated in three slots [90034=90036=90014]. The ditch ran from the south-west LOE to the north-east LOE, also cutting through [90007], [90023] and [90030]; there are signs of deliberate infilling in the upper parts of the former two of these ditches, which may well date from the establishment of [90034=90036=90014]. The single fill of the ditch contained a small quantity of south-east (DOR BB1) and south-west (SW BB1) Black-burnished ware, burnt clay and ceramic building material. Despite this ditch cutting through the ditches aligned parallel to the trackway, seemingly disregarding the prior structuration of the enclosures, it was itself cut by another north-west to south-east aligned ditch [90008], which ran approximately 1.2m north of, and parallel to, [90007], apparently restoring the previous enclosure. [90008] was only 0.17m deep although 1.08m wide, and contained 3rd–4th-century AD pottery.

These features collectively mark the last archaeologically visible phase of use of this area, comprising the redivision and use for deposition in a pit of a roughly surfaced former crop-processing enclosure. This activity may relate to pastoral agriculture given the number of ABGs from pit [90018]. Given the radiocarbon determinations and modelling, it is unlikely that this phase of activity lasted much beyond AD 410, ie in the region of one or two generations later than the cessation of crop processing on this part of the site.

Phase HE1.6 – modern

Cleaning layer (90003) sealed pit fill (90019) and comprised the diffuse horizon between the upper part of rubble surface (90015=90047) and subsoil (90002). The upper ditch fills (90006), (90009) and (90005) were also stratigraphically sealed by the subsoil, but with a much sharper horizon. The subsoil was overlain by dark brown sandy silt loam topsoil (90001).

Trench 2

Trench 2 contained numerous structural remains and related deposits, all associated with a series of phases defining the construction, occupation, disuse, robbing and reuse of the south-east range of the villa complex. The phase plans for this trench appear in Fig 6.7 and the sections in Fig 6.8. Trench 2 was supervised by Richard Bradley.

Phase HE.2.1 – natural

The natural substrate was exposed in two small slots during the excavation: externally to the villa in a machine-dug sondage in the eastern corner of the trench, where it was recorded as an orange-brown clay and assigned number (91123), and internally within the villa where it was recorded as compacted yellow mudstone gravel (91105), similar to that seen in Trench 1.

Phase HE2.2 – later 2nd- or 3rd-century AD establishment of villa

The earliest structural remains in this trench were (91069), the lower foundations for wall (91043) (Fig 6.9). (91069) comprised three large White Lias blocks, aligned north-east to south-west, that were only partially exposed below upper wall foundation (91062), a single course of

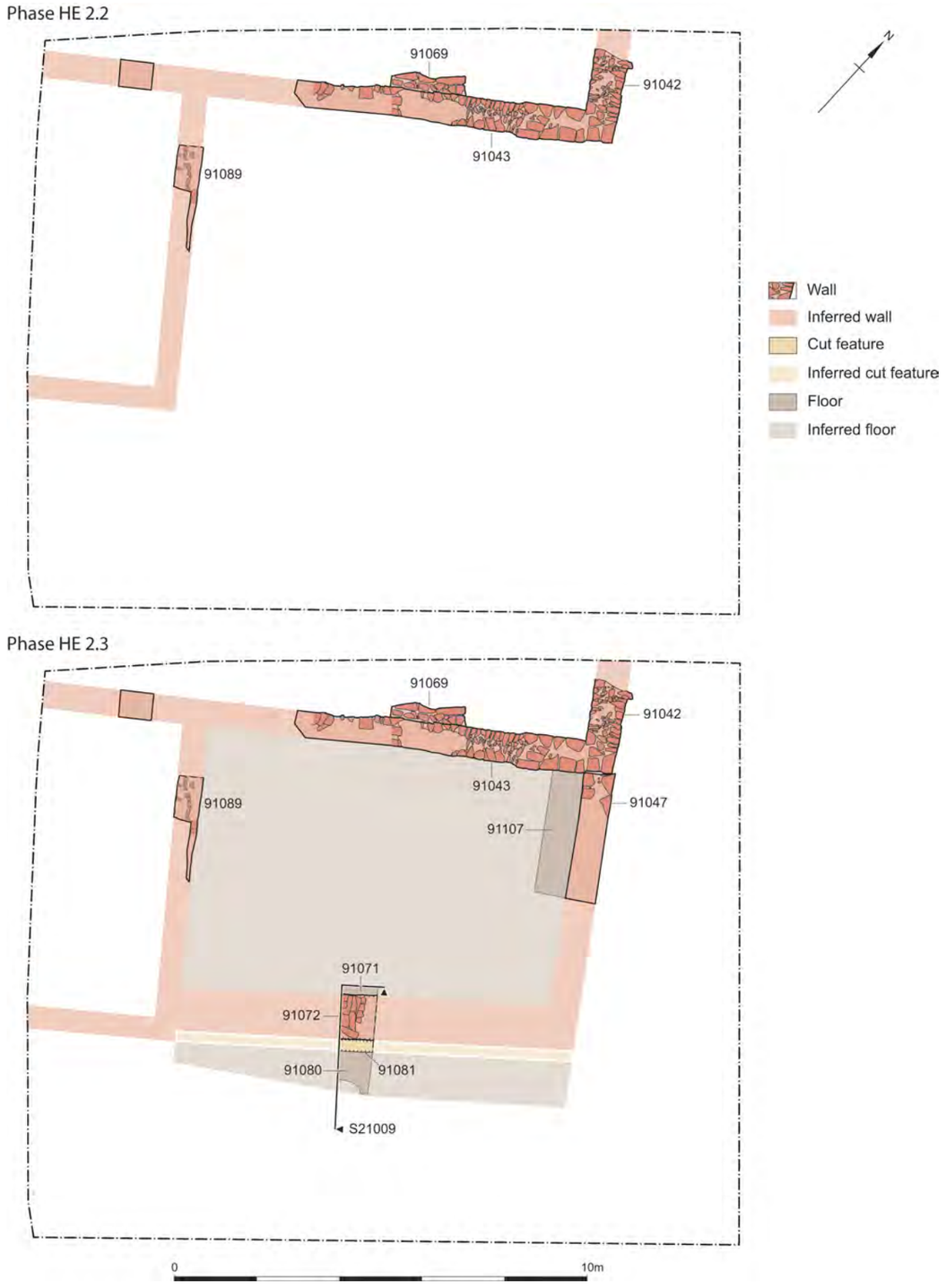


Fig 6.7 Phase plans for Trench 2 (John Vallender, Historic England)

Fig 6.7 (cont)

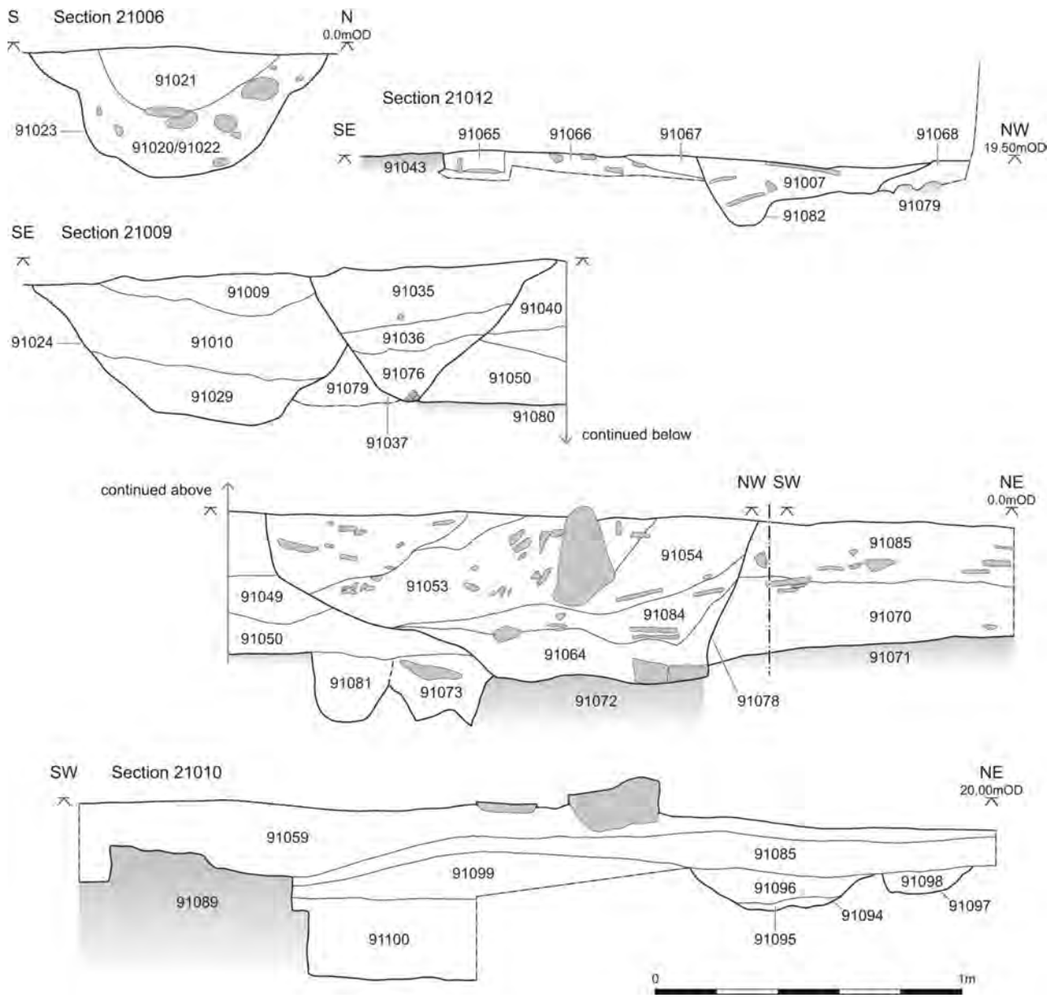


Fig 6.8 Section drawings for Trench 2 (John Vallender, Historic England)

limestone blocks laid in a herringbone pattern. This was covered by crushed orange sandy mortar (91061), providing a bedding layer for wall (91043), which was 7.9m long and 0.83m wide. It was constructed from alternating segments of herringbone and horizontally laid, roughly squared, stone blocks facing a rubble core. The south-eastern end of wall (91042) was keyed into the north-eastern end of wall (91043), and was a return of the wall to the north-west (Fig 6.10). At its south-western end (91043) was truncated by robber cut [91048], although excavation of the fill of [91048] further along the trench revealed a continuation of the wall, numbered (91086) at the base of the robber cut, covered by a thin deposit of *in situ* mortar (91087). The area to the north-west of this wall will be known as Room 57 henceforth.

It should, however, be noted that structural features (91062) and (91069), which are interpreted here as footings for wall (91043), were atypical of those seen in previous excavations at the villa and might be remnants of earlier villa buildings on a slightly differing alignment. This interpretation has not been preferred as it is more complex than the alternative, that these are simply foundations.

A further potential primary wall was excavated to the south-east of [91048]. Wall (91089) was set in construction cut [91103], which was cut into natural substrate (91105) (Fig 6.11). The wall was aligned north-west to south-east. A 2.43m section of the wall was exposed at its north-western end; the remainder was obscured by unexcavated overlying layers. The wall was

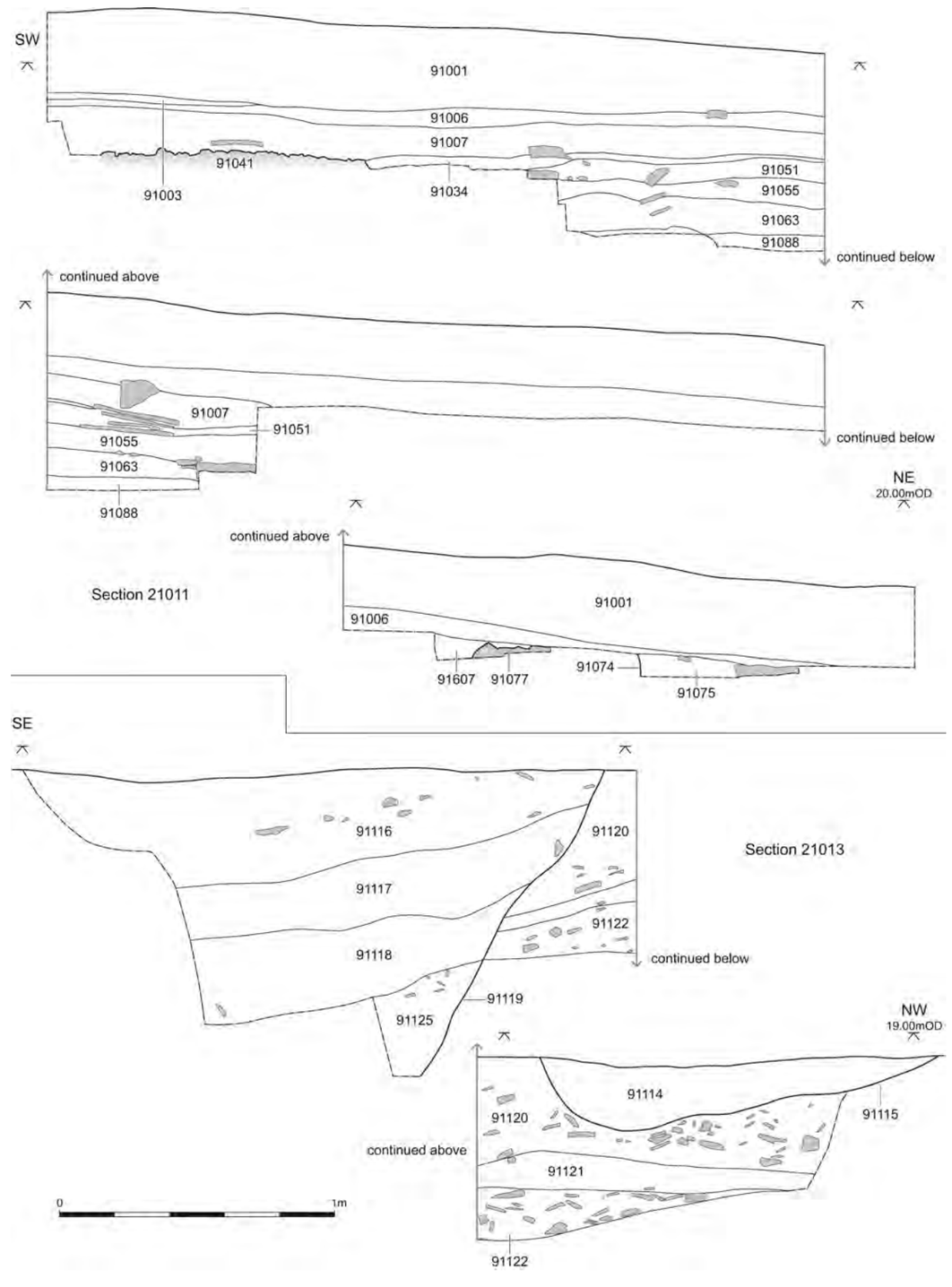


Fig 6.8 (cont)

Fig 6.9 South-east-facing photo of wall foundation (91069), upper foundation (91062), bedding (91061) and wall (91042) (Historic England)

Fig 6.10 South-east-facing photo of wall (91042) running parallel to the view, bonded to (91043) running towards the view from the north-east end of (91042) (Historic England)

0.63m wide and survived to a height of 0.3m. It was constructed of a rubble core, faced by Lias blocks in a herringbone pattern, bonded with an orange-yellow sandy mortar (91093). The construction cut was backfilled with dark brown silty loam (91104), which was unexcavated. Undecorated white plaster was identified adhering to the south-west face (91091) and north-east face (91092) (Fig 6.12). The relationship between wall (91043) and wall (91089) was obscured by the robber cut [91048] so it remains unclear whether the overall form of

Fig 6.11 South-east-facing photo of wall (91089), partially exposed by removal of overlying deposits (Historic England)

the villa in this area extended east of (91043) in its earliest phase (this area to the south-west of wall (91089) and south-east of (91086) will be known as Room 58 henceforth), although the central part of the trench was certainly not an interior space at this point.

Ditch [91024] (also recorded in section in the machine sondage as ditch [91115], fill (91114)) was located near the south-east end of the trench, and ran on a north-north-east to south-south-west alignment near-parallel to the robbed-out south-east wall of Room 59 (see below) for the entire length of the trench. At the very base of this ditch a probably earlier Roman fill was present, but not fully recorded on site due to depth considerations. Importantly, though, this demonstrated the longevity of the land division, and that the line was contemporary with the active phases of the villa.

Dating any of this early structural activity is very problematic, as no pottery was retrieved from these contexts, nor was any material suitable for radiocarbon dating. As such the establishment of these parts of the villa can mainly be dated as earlier in the Roman period than the following phases and therefore tenuously assigned to the later 2nd or 3rd century AD, depending on the length of time between this phase, Phase HE2.3, and the possibly very late 3rd-century or more probably early 4th-century Phase HE2.4 (see below).

Fig 6.12 North-east-facing photo of plaster (91091) adhering to the base of wall (91089) (Historic England)

Phase HE2.3 – 3rd century AD

Extension of villa to form Room 59, laying of mortar floor within Room 59

Wall (91047) butted against the corner formed by the north-east end of wall (91043) and the south-east end of wall (91042) (Figs 6.12 and 6.13). (91047) was 0.9m wide and survived to a height of 0.2m. Two courses of wall were exposed, the faces comprising a lower course laid in herringbone pattern, numbered as (91106), and an upper course, (91047), of horizontally laid roughly squared stone blocks with a rubble core, bonded with orange-yellow mortar (91038). (91047) was slightly offset from the alignment of the other walls and extended for a length of 3m before being cut by robber trench (91111), which continued for 9.7m in an L-shape turning from a north-west to south-east alignment to a north-east to south-west alignment, and further to the south-west towards the LOE. This forms Room 59, an extension to the earlier phases of the villa.

A white mortar surface was deposited against these walls within Room 59, being excavated in slots in the north-east as (91107) and the south-east as (91071) (Fig 6.13). This layer was probably the floor surface associated with the room, although it was absent in the narrow slot excavated at the south-western end. Another mortar surface (91080) to the exterior of wall foundation (91072) appeared to be a continuation of this surface, although this could not be proven in the excavation and it may have been a similar surface outside the villa wall; a linear channel in this surface running parallel to (91072) appears to have acted as a drain. The mortar surface was not excavated so its depth and composition could not be ascertained, but geoarchaeological analysis of (91107) and overlying (91032) was undertaken through a monolith sample (see Appendix D). This demonstrated that (91107) consisted of incompletely recarbonated burnt lime with local soil material mixed in; this may indicate the floor was exposed for a relatively short period, or that the particular composition of the layer has prevented full recarbonation. This is consistent with an *in situ* construction layer or floor.

It was unclear in excavation whether a construction trench for (91072) was cut through the mortar surface, or whether the footings and the floor were laid at the same time and were constructed around each other. Either way, this room was a later addition to the existing villa structure, with all the walls exhibiting a similar architectural style. All were constructed from rubble cores faced with roughly squared stone blocks, laid in alternating sections of herringbone and horizontally laid blocks.

Overall it was clear that (91047) formed part of a rectangular Room 59 adjoining (91043), also partly defined by robber trench (91111) in the north-east and south-east, wall foundation (91072) being excavated beneath (91111) to the south-east (see further discussion in later Phases 2.4 and 2.5; Fig 6.14), and the room's perimeter being completed by (91089), which aligns parallel to (91047) and perpendicular to (91043) and (91072)/(91111). The overall dimensions of Room 59 were approximately 9.1m north-east to south-west, by 6.0m north-west to south-east. Dating this construction is again problematic, as only two sherds of pottery (2nd/3rd century AD) were recovered, and these from the infill of the external drain, thus only providing a TPQ for the disuse of this feature. Radiocarbon dating from the succeeding phase of activity suggests that this room saw a major change in use in either the mid-3rd century cal AD, or more likely the very late 3rd century or early 4th century cal AD. As such, this construction probably dates to the 3rd century, but in any case is proved by the relationship between (91047) and (91043) to be an extension to the existing villa structure.

In a sondage dug through the external sequence in the north-eastern corner of the trench, the earliest archaeological deposit was (91122), a compact layer of rubble 0.2m deep in turn overlain by (91121), a 0.14m deep layer of brown silty clay possibly representing a buried soil. It is plausible that these layers represent a preparation layer of levelling, as evidenced by (91122) directly overlying natural, rather than any relict soil, followed by an external area of soil. No finds were recovered from these layers, although this is not unexpected as they were only excavated in the machine-dug sondage. These layers are phased with Phase HE2.3 as they are most likely to be contemporary with the establishment of the room to which they are adjacent.

Phase HE2.4 – late 3rd century AD/early 4th century AD to mid-4th century AD

Deposition of make-up layer within Room 59, subdivision of south-west part of Room 59, possible new floor added

External mortar floor surface (91080) was cut by a 0.51m by 0.57m possible pit or posthole [91102]. This feature had a single fill (91079), was unexcavated, and located just to the south-east of wall footings (91072). Based on its location and dimensions, this could be a setting for an external post associated with the mortar surface, or a pit close to the edge of the external area adjacent to the wall.

Mortar surface (91071=91107) was overlain by a deposit of yellowish-brown sandy silt loam, recorded in various interventions as (91032), (91050), (91070) and (91100), which covered the entirety of the room and was up to 0.33m thick. The deposit was largely a sterile, homogenous deposit, although it contained a single fragment of late Roman window glass, a few nails, occasional large stone blocks throughout, and at the north-eastern end of the room the almost complete remains of two sheep/goats. A single sherd of DOR BB1 with oblique burnished line lattice decoration provides an apparent TPQ of *c* AD 300. While normally a single sherd is not necessarily a reliable TPQ, this correlates with the modelling of radiocarbon dates on the ABGs, which suggests that deposition of (91032) took place in *cal AD 240–265* (*19% probability*; (*91032*); Fig 6.37) or *cal AD 275–365* (*76% probability*), probably *cal AD 245–260* (*10% probability*) or *cal AD 290–330* (*58% probability*). A date in

Fig 6.13 North-east-facing photo of components of Room 59, showing herringbone foundation (91106) and wall (91047), and mortar surface (91107) (Historic England)

Fig 6.14 South-west-facing photo of north-east-facing section of robber trench (91111), wall foundation (91072) and associated mortar surfaces, later deposits (including slumping dark spread (91054)) and other features (Historic England)

the first decades of the 4th century AD appears most likely.

Geoarchaeological analysis of (91032) showed the presence of burnt earthworm granules, indicating that parts of the soil matrix had been heated. A lack of reddening shows the soil was either not exposed to oxygen during this process or the earthworm granules are derived from elsewhere. They may be from the overlying burnt layer, or possibly parts of the layer may have derived from industrial activity elsewhere on the site and been added during its deposition. Alternatively, this heating may have occurred *in situ*, if a well-constructed floor on which heating took place had been constructed above (91032). Given the lack of *in situ* evidence for such a floor, the former may be the more likely solution, although the large and likely reused paving slab retrieved from a context associated with later pit [91094] demonstrates the presence of stone flooring nearby. The purpose of (91032) must have been to raise the floor level, although it is unclear why this was deemed necessary.

Wall (91090), overlying (91100), butted against the north-east face of wall (91089), with traces of white plaster (91092) between the two walls. A 2.2m long stretch of the wall was exposed, extending north-east, with the remainder of its length covered by unexcavated overlying deposits. It was 0.64m wide and survived to a height of 0.4m. The wall was constructed from a rubble core faced with stone blocks. Two courses of wall-facing were present: a lower course of roughly squared stone blocks laid horizontally and an upper course of thinner stone blocks laid in a herringbone pattern. The materials used in the construction of this wall were notably less consistent than in the earlier walls; fragments of tegula were present in the rubble core and red Ham stone blocks were included as facing blocks. Some of the herringbone stones were also thinner than those used in other walls and may have been repurposed roof or floor tiles. Wall (91090) was constructed on top of the made ground layer (91032) and was presumably a division of the existing internal space within the south-west part of Room 59. It was butted by mortar-rich spread (91099) (Fig 6.15), which was up to 0.14m thick and covered the area between walls (91089), (91090) and (91043). On site this material was interpreted as a bedding layer for a hypothesised robbed-out or removed floor, although, like wall (91090), it was only present in the south-west part of Room 59. The changing nature of this part of the villa at this stage is demonstrated by the blocking of the plastered wall, use of lower quality materials, and lack of plastering of the new wall; this is a utilitarian phase. Whether any floor was present is highly debatable, but the much lower quality of the apparent bedding in comparison to eg (91107) is notable.

Phase HE2.5 – mid-4th century AD to end 4th/early 5th century AD

Removal of Room 59 wall, widespread industrial activity (smithing, possibly other activities), dumping of debris into Room 57

The mortar-rich spread (91099) was cut by pits [91094] and [91097]. Pit [91094] was only partially exposed and sub-circular in plan, at least 0.38m long, 0.61m wide and 0.37m deep, with steep sides and concave base. The lower

Fig 6.15 South-east-facing photo of wall (91090). Pits [91094] and [91097] are visible in the foreground, cut into mortar-rich spread (91099). Wall (91089) is visible running perpendicular to (91090) on the right of the photo (Historic England)

fill of the pit (91095) was a charcoal-rich sandy silt loam. It was covered by upper fill (91096), which was largely similar in composition to the lower fill, but with slightly less frequent charcoal inclusions. Several large White Lias roof tiles were deposited on edge at the very top of the fill. Immediately to the north-east of pit [91094], pit [91097] was sub-circular in plan, at least 0.17m long, 0.33m wide and 0.06m deep, with a bowl-shaped profile. It contained a single charcoal-rich fill (91098), which was very similar to the fills of pit [91094].

The pit fills (91096) and (91098) were sealed by black spread (91085), also present in the north part of Room 59 as (91046), directly overlying brown layer (91032); indeed, this black spread occupied essentially the entire footprint of the room (Fig 6.16). Notably, these black spreads can also be equated to (91054), which slumped into robber cut [91078], which removed the south-eastern wall of the room (see below), showing that this wall was removed prior to the activity that produced the black spread taking place (Fig 6.14). This is significant as it means that the industrial activity relating to this phase took place in an exterior space. Analysis by Gherardi and Paynter (Chapter 7.9) demonstrates, through the concentration of hammer scale in (91046) and the unique presence on site of smithing pan (2.6kg) in this context, that there must have been a smithy in this area. Evidence from this layer shows that a combination of charcoal – mainly alder (*Alnus* sp) – and coal (probably obtained locally from the area of the modern Avon and Somerset Coalfield) was used to fuel the smithy. The dark spread can be spot-dated through a moderately sized pottery assemblage to *c* AD 270–410 and a single late Roman copper-alloy coin datable only to AD 260–402, but modelling of radiocarbon dates from charcoal in (91046) estimates the deposition of (91046) to be between *cal AD 345–410* (*95% probability*; (*91046*); Fig 6.37), probably in *cal AD 360–400* (*68% probability*). This was despite the significant expenditure to import a large quantity of soil to raise the floor level within the room, subdivide and, potentially, insert a floor to its south-west end only perhaps a few decades before.

Robber cut [91078] was cut through make-up layer (91050=91070). The initial fill of the robber cut was yellow mortar deposit (91064), which derived from the underlying wall (91072) and was probably mostly *in situ*. This was covered by dark grey-brown silty clay (91084), which was in turn sealed by dark spread (91054).

The northern quadrant of Room 59 was sampled with excavation, allowing more information about the industrial activity to be retrieved from this area (Fig 6.17). It is likely that this is representative of the remainder of the room, although there may be more complex activity to the south-western end. Shallow oval pit [91012] was located cut against wall (91106). The lower fill of the pit was dark greyish-brown sandy silt loam (91031), which was covered by upper fill (91008), a mid-greyish-brown sandy silt loam.

Intercutting pits [91014] and [91023] were located 0.57m west of pit [91012]. Pit [91023] was oval in plan, 0.96m long, 0.58m wide and 0.43m deep with steep sides and flat base. The lower fill (91020=91022) was a friable dark grey sandy clay with frequent charcoal inclusions. Upper fill (91021) was a charcoal-rich sandy clay. The pit was cut on its north-eastern side by pit [91014], which was sub-circular in plan, 0.94m long, 0.83m wide and 0.41m deep with a steep bowl-shaped profile (Fig 6.18). The cut of the later pit did not interact with upper fill (91021), so it cannot be proven that the earlier pit had been fully backfilled before the later one was started. The sequence of the lower fills of this pit – (91018), (91019) and (91039) – remained somewhat enigmatic, even after excavation. The compact charcoal-rich initial fill (91019) appeared to be almost entirely capped by a deposit of yellow clay (91018) and a large square stone paver (91039). However, a small amount of (91019) was observed to be 'lapping over' part of (91018) and (91039), indicating that either an additional dark fill was deposited after (91018) and (91039), which was indistinguishable from the lower fill, or that (91018) and (91039) were placed into the pit while (91019) was still being deposited. The former is probably the case, indicating continuing smithing activity in the vicinity during the life of this feature. The lower fills of pit [91014] may provide indirect evidence for an industrial structure. Yellow clay (91018) was clearly not native to the site and was similar in colour to that often seen in the superstructure of kilns, ovens and hearths. It was observed during excavation that both (91018) and large paving stone (91039) looked as though they had been 'tipped' into the pit from its north-eastern edge, close to the location of a large lump of mortar recorded on the surface of the made ground deposit. It is possible that the mortar, clay and large stone all formed part of a heated industrial structure adjacent to the pit. In this scenario the initial, charcoal-rich fill (91019) could represent waste material from the final firing, which was deposited along with some of the structure after its demolition. (91039) showed no signs of having been heat-affected, but could have formed part of a working surface or platform.

The fills above (91019) were more general rubble and industrial waste deposits, although with far fewer charcoal inclusions than the lower fills. Charred cereal grains and a spikelet fork from (91013), one such later fill, were radiocarbon dated, allowing modelling that

Fig 6.16 Orthographic render of a photogrammetric model of Trench 2, created by Paul Durdin and Samantha de Simone. Note the black spread (91085=91046=91054) (with plough marks) extending over much of the footprint of the main room (Historic England)

estimated (91013) to have formed in *375–425 cal* AD (*95% probability*; (*91013*); Fig 6. 29), probably *390–420 cal* AD (*68% probability*). This demonstrates that the latter stages of the industrial activity in this area, which appear to have included crop processing, and certainly included smithing, continued into either the final decade of the 4th century AD, or the first two decades of the 5th century AD, having begun no earlier than the third quarter of the 4th century AD (see above). This also fits chronologically with the cessation of use of the flue in Trench 1, which was last used in the third quarter of the 4th century AD.

In Room 57, to the north-west of wall (91043), layer

Fig 6.17 General south-facing view of industrial deposits within the extension room under excavation (Historic England)

Fig 6.18 North-facing photo of pit [91014] partially excavated, showing slab (91039) (Historic England)

(91088) comprised yellowish-brown loamy sand containing lumps of white mortar and fragments of stone debitage, possibly related to stone working. (91088) was overlain by mixed mortar deposit (91063), which was 0.2m thick and was itself covered by trample deposit (91044), comprising dark greyish-brown loamy sand, which lay against wall (91043). The trample deposit was overlain by yellow-brown sandy silt loam (91055). Brown loamy sand deposit (91065) was 0.25m wide and ran along the north-west face of wall (91043). The deposit contained a notable lack of stone inclusions compared to the other deposits in this area. Dark yellow-brown loamy sand deposit (91066), containing frequent angular stone inclusions, partially overlay trample (91044) and (91065) near the junction between walls (91042) and (91043), although there was no relationship between this deposit and (91055). A small patch of similar material against the north-western baulk (91077) was considered to be the same deposit. It was overlain by stone and mortar deposit (91067), which only survived in plan as a thin band

between later deposits and dark brown loam deposit (91068). This sequence of deposits may represent the removal and redeposition of a former floor area within this room prior to the creation of feature [91082].

Deposits (91055), (91067) and (91068) were cut by rectangular feature [91082], which was 7.7m long, at least 1m wide and 0.22m deep. The feature extended beyond the north-western LOE. The feature generally had gently sloping sides and a flat base, although it had a steeper side at the north-east end, adjacent to wall (91042). The lower fill (91051) was a fine mortar and sand deposit, which was a bedding layer for hearth base (91034) and associated stone surface (91041). Hearth base (91034) (Fig 6.19) was 1.75m long and 0.65m wide. It comprised a layer of small stone cobbles covered by a compacted, heat-affected upper surface made from stone fragments (including pieces of repurposed tesserae) and ferrous industrial debris. Working surface (91041) butted against the eastern side of the hearth base and was a 1.35m long, 0.86m wide layer of worn sub-angular and sub-rounded limestone cobbles. These industrial features were overlain by (91007), a loamy sand deposit that contained over 14kg of industrial waste, by far the largest assemblage from an archaeologically secure context on site. Notably, however, analysis of the material (Chapter 7.9) demonstrates that it was effectively a dump of waste from the location of the main smithy in the adjacent area, onto an earlier hearth that had not been used for smithing. This implies the disuse of this room by the later 4th century, but the features in this area produced little datable evidence beyond a number of sherds of late 3rd- to 4th-century AD DOR BB1 oblique line burnished lattice-decorated bowl from (91007).

Stone rubble layer (91006) covered fill (91007) and was in turn overlain by surface (91029)/(91033), which comprised repurposed roof tiles, some still with nails in the peg holes, bedded into a very dark grey loamy sand. It was not clear whether surface (91029)/(91033) was intentionally laid, although it appeared so, and it remains possible that it is part of the collapse/rubble layers assigned to the following phase.

In summary, the later period of villa life within the excavation area was dominated by industrial activity. A shallow pit containing a hearth base and associated cobbled working surface was identified in Room 57. This hearth was not used for smithing, but debris from smithing activity in the newly opened area to the south-east was dumped onto the hearth after it went out of use. At the beginning of this phase the external wall of Room 59 was removed, and in this now external space to the south-east of (91043), several pits containing charcoal-rich fills were cut into the made ground, which became covered by a thin, trample-like deposit of charcoal and industrial debris. Smithing certainly took place in this area, and possibly small-scale crop processing. The presence of a possible awl, chisel or punch also suggests craftworking in this area. It is possible that the removal of the wall was in part a sensible approach to fire management, as there is no evidence that Room 59 had a tile roof, unlike the adjacent older Rooms 57 and 58 of the villa, so this may have formerly been thatched. There are also interesting implications about the nature of

Fig 6.19 North-west-facing photo of hearth (91034) (Historic England)

smithing at the site that run rather contrary to traditional images of smithies and forges; as Gherardi and Paynter (Chapter 7.9) suggest, this appears to be occasional repair and small-scale manufacturing, rather than organised and intensive industry. This activity took place from around the mid-4th century AD until the end of that century or the first two decades of the 5th century AD. Given the broadly contemporary cessation of use of the flue in Trench 1, it appears that in the mid- to late 4th century AD, industrial activity was brought into the main villa compound, and buildings partly taken down to accommodate this change.

Phase HE2.6 – post-Roman

Collapse of villa and robbing

Several areas of demolition rubble or collapse were identified across the trench, concentrated particularly above Room 58 (Fig 6.16), demonstrating the contrast between the earlier parts of the villa and the later extension to the south-east. Rubble (91113) was located to the north-east of, and partially overlying, walls (91042) and (91106). Three areas of particularly dense rubble, (91108), (91109) and (91110), were identified within (91113); however they were not excavated, so it could not be discerned whether they constituted separate features cut through the rubble, or simply denser areas within the overall spread. Dense rubble layer (91057)/(91060) was located against the south-western baulk of the trench and covered the former extent of Room 58. Immediately to the north-east of layer (91057), layer (91058)/(91059) was a less dense area of the same collapse. It overlay walls (91089) and (91090).

Rubble layer (91040)/(91112)/(91124) was located along the south-western wall line of the villa. It was recorded as (91120) in the machine-dug sondage, where it overlay buried soil layer (91121).

Rubble layers (91057) and (91058), surface (91033) and wall (91086) were cut by robber cut [91048], which was 0.79m wide and 0.1m deep with vertical sides and a flat base. The cut was backfilled by (91045), a dark yellow-brown loamy sand with rubble and mortar inclusions. The unexcavated portion of the fill between (91045) and surviving wall (91043) was assigned the number (91056). Robber cut [91074] truncated wall (91042) and extended beyond the north-eastern trench baulk. It was backfilled with brown loamy sand (91075), which was unexcavated. These cuts represent the robbing of the earliest walls in this part of the villa, which had remained standing during the preceding phase of industrial activity.

Following the deposition of dark spread (91054) into robber cut [91078] along the south-eastern wall, successive fills containing large amounts of rubble, (91053), (91052) and (91083), appeared to have been deposited in the ditch from the north-west and settled against the south-eastern side of the partially backfilled cut.

The final collapse and robbing of these parts of the villa is difficult to date, although the lack of medieval material suggests a relatively early date for this activity.

Phase HE2.7 – post-Roman (medieval/post-medieval)

Agricultural ditches

All the upper fills of [91024] were notably yellower and sandier than earlier features on site. The ditch was recut along its north-western edge by [91037], containing a sequence of yellow sandy fills and some slumping from adjacent features.

Robber cut fill (91056), rubble deposits (91057), (91058), (91059) and (91060), and ditch fill (91011) in the south-west of the trench were cut by two north-west to south-east-aligned linear features, [91015] and [91026]. These appear to be the bases of furrows where the plough has bitten slightly more deeply into the underlying rubble.

Phase HE2.8 – modern layers

Cleaning layer (91003) was the diffuse horizon between the upper deposits within the villa building – (91007), (91008), (91013), (91021), (91033), (91046), (91057), (91058), (91059), (91060), (91085) and (91113) – and the subsoil.

Cleaning layer (91004) was the diffuse horizon between the external deposits (91025), (91030) and (91116) and the topsoil.

Yellow-brown sandy silt loam subsoil (91002) covered cleaning layers (91003) and (91004). It was in turn covered by dark brown sandy silt loam topsoil (91001).

Trench 3

The phase plan for Trench 3 (Fig 6.20) appears in Fig 6.21 and the sections in Fig 6.22. Trench 3 was supervised by James Osborn.

Phase HE3.1 – natural

The natural geological substrate (92005) was variable in character across the trench. In the western part of the trench it comprised degraded bedrock, while in the southern and eastern areas the archaeological features

Fig 6.20 Trench 3 being opened. Enclosure ditch corner in foreground and left, with scales. Roundhouse 2 in right mid-shot between total station theodolite (TST) and staff in trench. Roundhouse 1 terminals are just visible beyond the enclosure ditch in right foreground, with finds bags laying on top (Historic England)

were cut into a brown-orange colluvial deposit that covered the bedrock. This colluvium was in places very similar to the fills of some of the features and may have inhibited feature recognition in those areas. Deposit (92004) was initially thought to be a pit at the inside corner of enclosure ditch slot [92030]; however, after excavation (92004) was shown to be a periglacial feature, or collection of colluvial material within a hollow.

Phase HE3.2 – later Middle Iron Age to Late Iron Age

Roundhouse 3 was identified at the eastern end of the trench, extending beyond the trench limits to the south-east and north. The ring gully defining the roundhouse was excavated in four interventions. The width of the gully varied from 0.58m to 0.78m and was 0.16m to 0.23m deep with a steep U-shaped profile. The fills were inconsistent across the interventions, but broadly comprised initial erosion and later dumping/infilling. Roundhouse 3 produced by far the largest assemblage from any of the three roundhouses excavated in this trench, nearly 200 sherds of predominantly later Iron Age date. Notable within this assemblage were several sherds likely to belong to the Glastonbury South West Decorated (SWD) style, although this assemblage may still only be broadly dated to the later Middle to Late Iron Age. This dating corroborates radiocarbon dating and modelling. Re-articulating cattle bones from the primary fill of the ring gully for Roundhouse 3 provide a *terminus ante quem* (TAQ) for its construction of *210–110 cal* BC (*95% probability*; (*92140*); Fig 6.38), probably *200–165 cal* BC (*68% probability*). Given the lack of evidence for recutting of the ring gully and assuming a unitary construction with the superstructure for the building, this TAQ may be very close to the date of construction of Roundhouse 3. Infilling of ring gully slot [92145] continued until *150–45 cal* BC (*95% probability*; (*92138*); Fig 6.38), probably *125–90 cal* BC (*30% probability*) or *80–45 cal* BC (*38% probability*). It is therefore reasonably clear that Roundhouse 3 was constructed in the first half of the 2nd century cal BC, and that it had been dismantled by the middle of the 1st century cal BC at the latest. This is reinforced by the presence of only a few very small pieces of Roman pottery in the ring gully's upper fills, suggesting that these were sealed prior to Roman-period pottery reaching the site. A note of caution should be raised here, though, given the uncertainty of the depth of

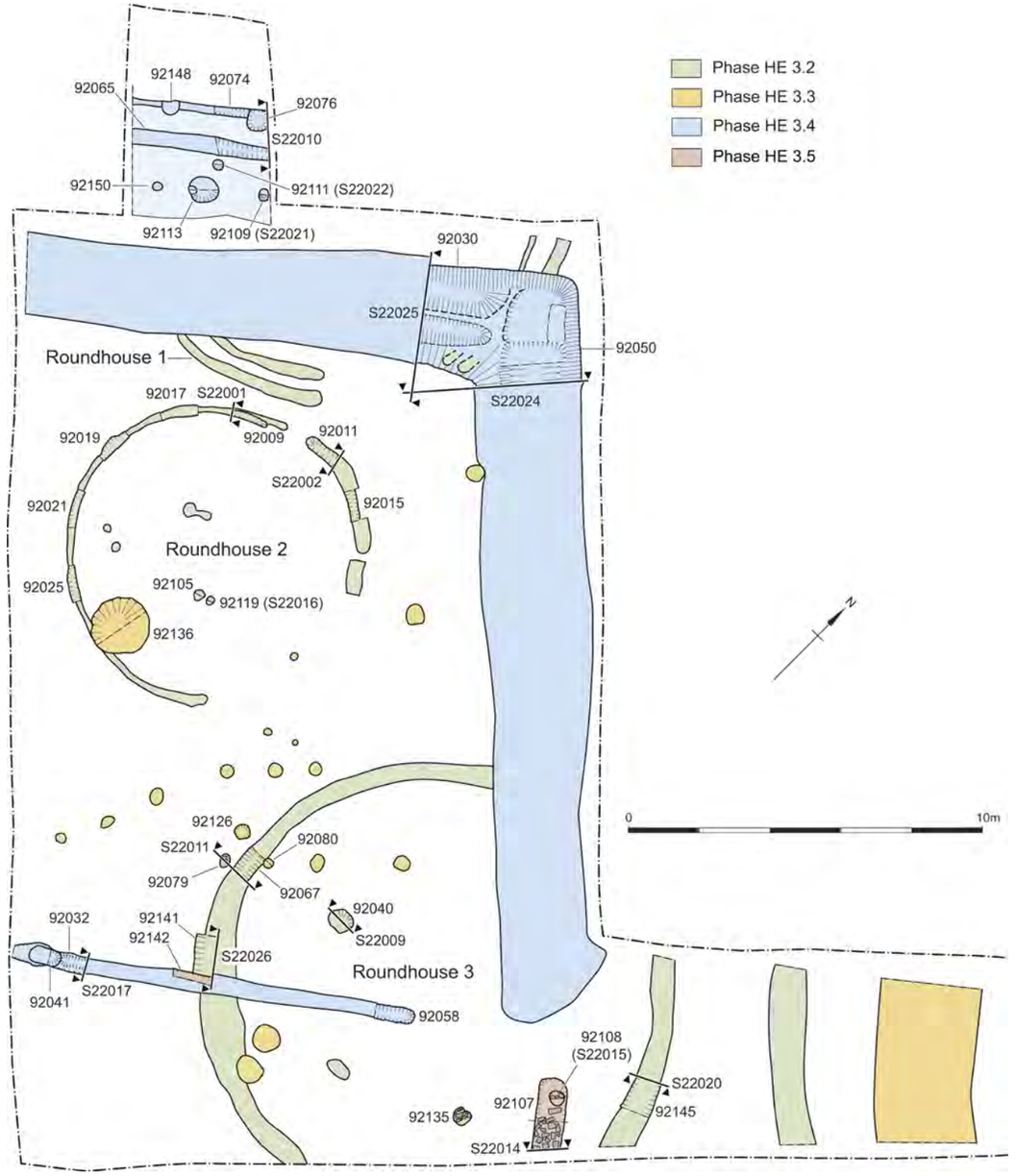


Fig 6.21 Phase plan for Trench 3. Smaller contexts are not numbered for reasons of clarity (John Vallender, Historic England)

truncation of the ring gully. A combined depth of up to 0.68m of subsoil and topsoil overlay this trench, although there were hints of a buried soil horizon below the subsoil; as we do not know the original depth of the features, we cannot be sure that their uppermost parts, now truncated, did not continue in use later than these basal deposits indicate.

Roundhouse 3 was a large building, with a maximum internal dimension (between the inner edges of the ring gully) of 12.21m. Analogy with similar structures elsewhere suggests that internal features may be present in such structures (see Chapter 9). Although six pit or posthole features were within the footprint of the roundhouse, only two were excavated. Of these, one,

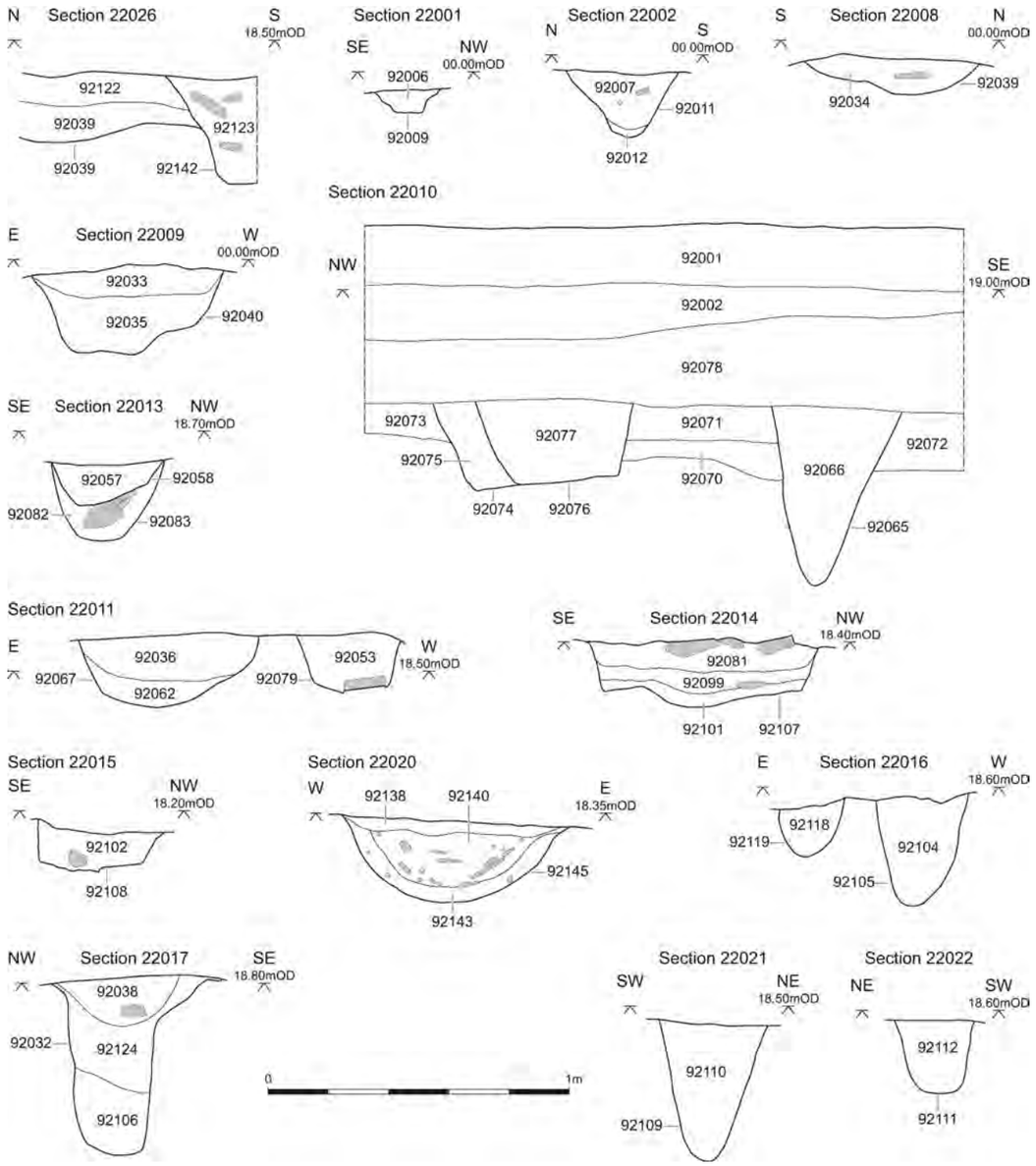


Fig 6.22 Section drawings for Trench 3 (John Vallender, Historic England)

[92040], a 0.67m wide oval pit of considerable depth (0.28m), was set 2.48m in from the western edge of the ring gully and contained four sherds of later Iron Age pottery. Stone-lined posthole [92135] was located within Roundhouse 3 near the south-eastern trench baulk. The *c* 0.45m square and 0.18m deep void within the stone lining (92137) was filled by dark brown silt loam (92096), which formed after removal of the post. On balance the unusual form of this posthole suggests that it may be later than this phase, although it contained no dating evidence and as such is phased with HE3.3 but discussed here for completeness. [92095] was an unexcavated pit or posthole of similar form (0.70m wide and oval), and located a similar distance (2.28m) from the ring gully, further south in the roundhouse footprint. As such [92095] has also been phased as a potential internal feature; both are likely to be supporting posts for the roof. The spacing of these two potential posts, if repeated in the remainder of

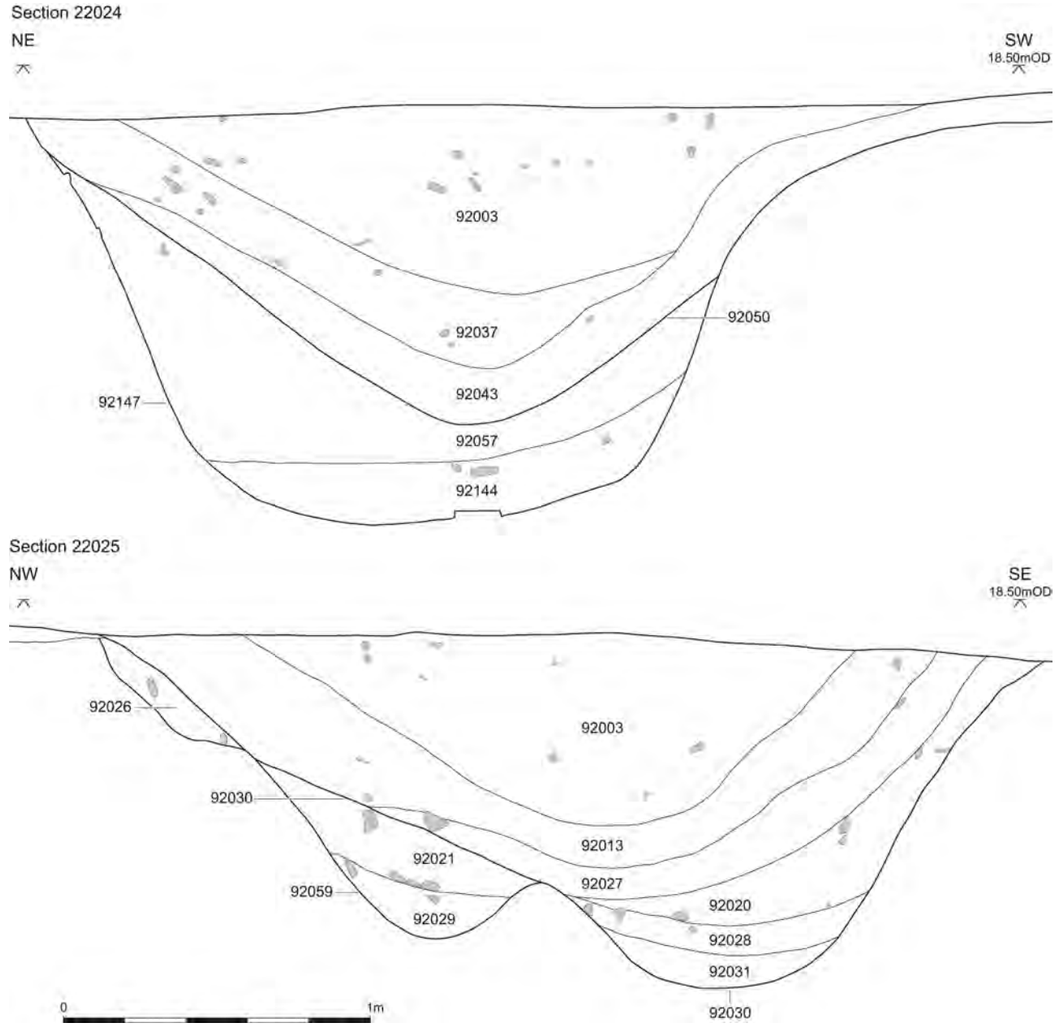


Fig 6.22 (cont)

the roundhouse, would indicate either a circular or rectangular arrangement of large posts supporting the roof. The latter is more likely as there is no posthole present at the northernmost part of the roundhouse, whereas, if rectangular, the northernmost of these putative posts lies within the footprint of the later enclosure ditch, so if it existed it would have been truncated. Notably, there is an oval posthole [92108] close to the relevant position to the eastern side of the roundhouse, but it is within the base of, and partially truncated by, later rectilinear feature [92107]. The dimensions of [92108] are similar to those of [92040] at an equivalent depth, and although [92108] contains no dating evidence, overlying feature [92107] is dominated by later Iron Age pottery despite containing sufficient Roman material to provide a clear 3rd–4th-century AD date. As such, it appears plausible that the Iron Age pottery in [92107] derives from the upper fill(s) of truncated posthole [92108], providing supporting evidence for our tenuous reconstruction of a rectangular arrangement of supporting posts for Roundhouse 3. No part of the entrance of Roundhouse 3 is visible within the area of excavation, but it is very likely to have been to the south-east, given the orientation of the entrances of the other two excavated roundhouses and narrowness of gap between extant elements of the ring gully to the north.

Two other roundhouses were excavated within the trench, but they are unlikely to be contemporary with

each other as they are very close together, and the northern side of Roundhouse 2 partially obstructs the entrance of Roundhouse 1. Dating evidence is very limited from both structures, with Roundhouse 2 practically aceramic, producing just a single later Iron Age sherd. Roundhouse 1 produced a small pottery assemblage, which notably included a sherd of DOR BB1, although this may be contamination from the early Roman enclosure ditch that truncates the structure. It is thus impossible to interpret reliably which is the earlier of the two structures. As such they are phased together.

Roundhouse 1 was in the northern part of the trench and had been significantly truncated by later features. Nevertheless, two concentric ring gullies were clearly visible, with a south-east-facing entrance evidenced by the terminals of both ditches. The estimated maximum internal dimension was 11m, slightly smaller than Roundhouse 3. There were no visible internal features, as virtually the entire area of the interior within the LOE had been truncated by later features. The fill of the outer ring gully was notably darker and stonier than that of the inner gully. This dark stony fill was similar to that of the ring gully for Roundhouse 3, while the inner ditch fill was more similar to that of Roundhouse 2, immediately adjacent to Roundhouse 1. Assuming that the two ring gullies of Roundhouse 1 are contemporary and that it was indeed a double-ditched feature, this would imply that the different fills are a product of function rather than age or other factors (eg the larger, darker, stone-filled ring gullies were drainage features that were filled with cultural material during the use of the structure, and the lighter siltier ring gully fills were possibly related to construction).

Roundhouse 2 (Fig 6.23) comprised a shallow gully defining the entire western half of the structure, a shorter, much deeper ditch defining the northern and eastern sides and a single posthole at the south-east. These construction choices may have been made in response to the fact that the roundhouse straddled the interface between bedrock natural in its western half and silty clay colluvial material in its eastern half. The 1.2m gap between terminal slots on the northern side was large enough to have been an entrance, but this northern orientation would be unusual for a roundhouse's main entrance; perhaps this was a side door. The more convincing candidate for a main entrance would be one of the large gaps between the ring-gully sections and posthole (92093) at the south-east of the structure, or both, if the posthole supported a central beam between double doors. There are two sets of double postholes

Fig 6.23 Roundhouse 2. Photo facing north-east, towards the Low Ham Rhyne at the hedge line (Historic England)

within the roundhouse that appear to have been used to support some sort of internal structure. The symmetry of the layout in plan suggests that they formed part of a four-post structure, possibly supporting a loom or raised hearth, but one set may simply be a replacement for the other.

In addition to these three clearly defined and excavated roundhouses, two further potential roundhouses are present on the site. Unexcavated curvilinear ditch (92049), to the north-east of Roundhouse 3, had a top fill of similar character to that of the ring gully of Roundhouse 3, and the admittedly limited length of the curve within the LOE appears to be of approximately the appropriate size for another large roundhouse. A fifth roundhouse may be visible to the west of the trench from geophysical survey (Fig 5.2, [**m54**]).

Phase HE3.3 – later Iron Age/Roman?

A series of features could not be definitively assigned to a particular phase because they either remained unexcavated (in most cases) or lacked dating evidence or any spatial association with dated features. These are included in this notional phase as later Iron Age/Roman, as most dated features in this trench derive from one or other of these periods. In two cases features succeed probably later Iron Age roundhouses, but they are not provably later Iron Age or early Roman by either association or datable material.

Shallow circular pit [92136] cut through the ring-gully fill in the south-western part of Roundhouse 2. It is uncertain if this pit was directly associated with the roundhouse, but the precision with which its cut stops at the external edge of the ring gully suggests that it is only from shortly afterwards. No dating evidence was recovered.

Two larger sub-circular features also within the area of Roundhouse 3 ((92069) and (92129)) may have been pits rather than postholes. (92129) had a physical connection with the ring gully, but this was not tested by excavation.

Six similarly sized postholes – unexcavated and known by fill numbers (92085), (92086), (92087), (92088), (92089) and (92092) – near the centre of the trench appeared to form a linear north-east to south-west alignment. Two smaller postholes, (92090) and (92091), adjacent to the north-west, may also have been associated although were not quite parallel to the main line. Two more postholes, (92094) and (92098), were located within Roundhouse 3 and might have been part of internal structures, although this association is not convincing enough for them to be phased in HE3.2. These two are parallel to the line of six, and also aligned with two further, slightly smaller excavated postholes [92079] and [92080]. The latter cuts the infill of the ring gully of Roundhouse 3 and is phased with HE3.5 as it contains an assemblage of 3rd- to 4th-century AD Roman pottery, but is discussed here with the undated postholes for simplicity.

Within the rectangular area defined by (92088), (92089) and (92092) to the north-west, and (92098), [92079] and [92080] to the east, lay shallow pit [92126], just external to Roundhouse 3. [92126] was circular in plan with two fills, the latter of which contained an ABG and Late Iron Age pottery. Radiocarbon dating of the ABG estimates that the infilling of pit [92126] took place in *35–10 cal BC* (*6% probability; ABG 32005*; Fig 6.38) or *cal AD 1–120* (*89% probability*), probably *cal AD 15–80* (*66% probability*) or *cal AD 100–105* (*1% probability*). Given that the date derives from material in the upper fill of the pit and therefore only provides a TAQ for its initial digging, it is not possible to determine its temporal relationship to the other postholes or Roundhouse 3. There is no stratigraphic relation between any of these features and they could be interpreted in a number of ways given the lack of excavation of most of them, and relative lack of dating evidence even from those that have been excavated. They are likely to be of generally Late Iron Age or Roman date.

Two unexcavated postholes (92097) and (92127) were located in the north of the trench with no other obviously related features.

Unexcavated 2.8m wide east–west linear ditch (92054) was tenuously identified by reference to the geophysical survey as a continuation of trackway ditch [90023], but this is phased as HE3.3 due to lack of dating evidence in this area, and the proliferation of ditches between [90023] and (92054) in front of the villa complex.

Phase HE3.4 – early Roman–1st–2nd century AD

The large rectilinear enclosure identified on the geophysical survey was investigated with an intervention at the north corner of the enclosure ditch. Several episodes of recutting of the ditch were recognised during the investigation. The stratigraphically earliest identified activity associated with the enclosure was represented by ditch cuts [92059] and [92147]. Ditch [92059] was only present at the base of the north-western arm of the enclosure ditch as a 0.9m wide and 0.55m deep depression and had its north-eastern terminal within the slot. It was initially filled by stony blue-grey silty clay (92029), which was covered by dark yellow-brown silty

clay (92121), containing frequent angular stone inclusions. Ditch [92147] was identified in the north-eastern arm of the enclosure ditch and was 1.9m wide and 0.4m deep. The lower fill of the ditch was blue-grey silty clay (92144), which contained occasional large angular cobbles. This was overlain by dark yellowish-brown silty clay (92146), which contained common small stone pebbles. Fills (92121) and (92146) were recorded as being cut by a shallow square pit [92056] located within the corner of the enclosure ditch, containing a single light yellow-brown silty clay fill (92051).

Ditch recut [92030] was identified in the north-east-facing section of the north-western arm of the ditch. It was 1.5m wide and 1.15m deep with a steep north-western side and more stepped south-eastern side. The initial fill of the recut was friable brown clay (92134), overlain by gravelly yellow-brown silty clay (92131), which was 0.13m deep and appeared to be derived from erosion of the ditch sides and base. This was overlain by a 0.1m thick blue-grey silty clay (92028), very similar in colour and composition to deposits (92029) and (92144). The blue-grey silt was overlain by dark grey silty clay (92120), which was in turn covered by grey-brown silty clay (92027), both of which appeared to be accumulated silts. The next fill (92013) was stony yellow-brown sandy clay (92013), similar to the natural substrate, which may have been a backfill of previously excavated material.

Ditch recut [92050] was identified in the north-west-facing section of the north-eastern ditch arm (Fig 6.24). It was 2.4m wide and 0.84m deep with a steep U-shaped profile. The ditch contained two accumulated silt deposits: brown silty clay (92043), sealed by dark yellow-brown silty clay (92037). Fill (92003) was recorded as being the upper fill of both recuts [92030] and [92050] and was the only deposit to have been securely identified as having been present in both sections. It was a 0.6m thick deposit of dark yellow-brown silty clay containing common small and medium-sized stones.

In summary, the stratigraphy of the enclosure ditch was complex and is likely to reflect the constant need for periodic cleaning and recutting of such a large ditch in a wet environment. Cuts [92059] and [92147] represented the deepest cuts of the ditch and were stratigraphically earliest of the surviving features; however, this is not to say that either was necessarily the original cut of the ditch, which may have been shallower and therefore removed by subsequent maintenance of the ditch. The recuts recorded as [92030] and [92050] were in all probability the same cut, extending the entire length of the corner slot and filled by a succession of deposits varying between inwashed silts and slumping of the ditch sides or associated bank material. Given the amount of ditch maintenance undertaken and the size of the feature, these fills were likely to have been localised in nature and it is not surprising that the fill sequence is slightly different in the two recorded sections (Fig 6.25). The fact that upper fill (92003) was recorded as 'filling' both [92030] and [92050] adds credence to this interpretation.

The enclosure is stratigraphically later than Roundhouse 1 and Roundhouse 3, but there is limited pottery present in the ditch's early phases, although

Fig 6.24 North-west-facing section of the main enclosure ditch (Historic England)

the small assemblage does include a sherd of Black-burnished ware (BB1), which may suggest an early Roman date (see Chapter 7.3). It is notable that there is no later Roman pottery in the ditch although it is present elsewhere on the site, suggesting that the ditch did not remain open into the 3rd or 4th centuries AD; however, the presence of a small number of possible tesserae from (92043) clouds this picture. No material suitable for scientific dating was retrieved, and it appears unlikely from the pottery assemblage, and its relationship with the roundhouses, that the ditch was dug before the 1st century AD or in use much after the 2nd century AD.

Redeposited natural (92072) was located along the north-western (external) edge of the enclosure ditch and was cut by circular pit [92113] (Fig 6.26), which had two fills. The lower fill (92114) was largely composed of redeposited natural material, but with lumps of heat-affected orange sand within. Upper fill (92115) was much darker in colour and appeared to consist of cultural material deposited in a hollow formed in the top of the partially filled pit. Large slabs of White Lias were placed on end in this deposit, protruding from the top of the

Fig 6.25 North-east-facing section of the main enclosure ditch (Historic England)

Fig 6.26 Postholes and pit [92113] between fence line (far left) and V-shaped ditch [92065] (left), and enclosure ditch (unexcavated, right) (Historic England)

backfilled pit. Stakehole [92116] was driven through the south-western edge of the pit, cutting fill (92114). It was circular in plan, 0.15m in diameter and 0.31m deep with steep sides and a tapered, blunt point. It contained a single fill of light grey sandy silt loam (92117), which formed after removal of the stake. There was no relationship between the stakehole and upper fill (92115) of the pit. Three postholes of varying forms were recorded forming a rough arc around the pit. Posthole [92109] was circular in plan, 0.36m in diameter and 0.46m deep with steep sides and a tapered, rounded point. It was backfilled with a dark grey sandy silt loam (92110) after removal of the post. Posthole [92111] was 0.28m in diameter and 0.24m deep with vertical sides and a flat base. It was filled with dark grey sandy silt loam (92112). Posthole [92150] was 0.3m in diameter and was unexcavated. Its fill (92151) was a greyish-brown sandy silt loam. These features are challenging to interpret and produced only a few sherds of pottery dated as Late Iron Age to early Roman.

North-east to south-west-aligned ditch [92065] was cut through the redeposited natural (92071)/(92072), parallel to the enclosure ditch. It was 0.54m wide and 0.58m deep with a steep V-shaped profile. The ditch contained a single brown sandy silt loam (92066), which contained lenses of yellow sand and gravel representing periodic slumping of the ditch sides from the south-eastern edge. A fence line was identified 0.69m to the north-west of ditch [92065] and on the same alignment. It was constructed from a 0.4m wide and 0.2m deep beam slot [92074], with large postholes [92076] and [92148] along its length. Posthole [92076] was located against the south-west-facing trench baulk and was 0.6m in diameter and 0.5m deep with vertical sides and a flat base. The posthole fill (92077) appeared to be stratigraphically later than the beam slot fill (92075), implying that the posthole was actually related to post removal rather than construction. Posthole [92148] was located 2.12m south-west of posthole [92076] and was 0.55m in diameter. Its unexcavated fill was numbered (92149).

The activity along the north-western edge of the ditch was interpreted on site as stratigraphically later than the cutting of the enclosure ditch because the features were cut through a layer of redeposited natural material that was initially interpreted on site as having been a bank associated with the enclosure. While the excavation provided no stratigraphic evidence to counter this interpretation (and the most logical available interpretation for the presence of the redeposited natural arises from excavation of the ditch, if not actually a bank), the relationship between the main ditch and the redeposited natural was not tested during the excavation.

The V-shaped ditch [92065] contained small lumps of red Ham stone within its fill. This stone was imported to the site for use during the monumental phase of villa construction, so its presence in this trench indicates that activity there was still ongoing after the focus of the settlement had moved further to the north-west. Alternatively, it is known that Ham stone was exploited from the very beginning of the Roman period (Hayward 2009). The lack of any other evidence for earlier exploitation of Ham stone on the site suggests that the smaller, outer ditch may have remained open for longer than the main enclosure ditch, although, as with the main enclosure ditch, there is no later Roman pottery to support this interpretation.

In the centre of the enclosure, 11.54m long north-east to south-west-aligned feature [92142] cut the infilled gully of Roundhouse 3. Three interventions were excavated in this feature, demonstrating it to be of variable depth and width, although in all places at least 0.38m wide and up to 0.68m deep, with the exception of the much shallower northern terminal. A 0.6m deep posthole [92041] was excavated towards the south-west end of the feature (Fig 6.27), cutting through all fills; shortly to the south-west of this the feature continued beyond the LOE. A recut was identified in one slot, but not others. Overall the feature gives the strong impression of a narrow, deep beam bedding slot repeatedly recut and once reinforced with the addition of a large post. Dating evidence is relatively abundant, including a Caerleon-type glazed beaker, DOR BB1 and early black sandy wares, suggesting an early Roman date. Posthole [92041] incorporated a sherd of late 1st-century AD South Gaulish samian bowl (Drag. type 29). There were also numerous later Iron Age sherds from this feature, and one slot produced sherds dating as late as the 3rd or 4th century AD. As the primary fills provide later Iron Age to Roman pottery, it appears likely that this feature was established in the first century AD, and continued in use for an extended period, possibly as late as the 3rd or 4th century AD.

Phase HE3.5 – later Roman

Ditch terminal [92107] was partially exposed against the south-eastern trench edge on a north-west to south-east alignment, and is co-aligned with the main enclosure ditch, although very much narrower. The portion of the feature within the trench was 1.88m long, 0.78m wide and 0.24m deep. Its primary fill, (92101), appeared to be derived from the erosion of the sides and base and, as discussed in Phase HE3.2, contained 30 sherds mainly of Late Iron Age date but with one piece of SOW BB1 and one sherd of New Forest red-slipped ware. (92101) was

Fig 6.27 South-west-facing photo of large posthole [92041] and beam slot [92032] (Historic England)

covered by backfill (92099), which contained common inclusions of stones, charcoal and chalk and nineteen sherds of Late Iron Age pottery. The backfill was capped by a layer of White Lias stones (92084). Despite the significant dominance of Late Iron Age pottery in total in the feature, the presence of later Roman sherds in the primary fill strongly suggests a late 3rd- to 4th-century AD date for [92107]. A small number of very small tesserae, for a central design rather than room border, from the top fill also suggest that this feature was open until late in the site's occupation. It is probable that the earlier sherds represent the pottery assemblage present in the topsoil at the time of this feature's infilling.

[92142] was orientated perpendicular to, and 2.5m away from, the entry terminal to the enclosure ditch, and perpendicular to nearby feature [92107]. While the alignment may be coincidental, it is possible that [92142] and [92107] formed internal subdivisions of the enclosure. If the continuing reworking of [92142] into the mid- to late Roman period is considered alongside the establishment of [92107], they may collectively have formed a rectangular partitioned area orientated towards the entrance; the location would place any such rectilinear structure in the exact centre of the enclosure. Undated stone-lined post setting (92137) may relate to such a fenced structure, perhaps as a gatepost for an in-turned double gate, given its location. This interpretation would certainly neatly tie together the two major features in the trench convincingly dated to the later Roman period, although it remains uncertain.

As discussed above, posthole [92079] is dated to this phase, although it is unclear with which of the other postholes in this area to the west of [92142] it is associated.

Phase HE3.6 – modern

Buried soil deposit (92070) was identified in the south-west-facing trench baulk in the northern extension of the trench, where it was preserved below later topsoil deposits. It was 0.11m thick and comprised dark brown loamy sand.

Spoil-heap (92045) produced a notable quantity of later Roman pottery (21 sherds). The mismatch between this quantity and the lack of later Roman material in the excavated features, with one or two exceptions, could suggest that later Roman features of lesser depth have been entirely removed by ploughing, that some of the unexcavated features may be later Roman, or that manuring took place in the later Roman period in this area. This is also likely to reflect the better survivability of later Roman pottery in comparison to Late Iron Age pottery; the fills of [92107] may give a better indication of the topsoil assemblage towards the end of this area's occupation, ie dominated by Late Iron Age pottery.

A dark brown soil stabilisation layer (92078) was noted at various points along the trench baulk sections but was removed during machining. It was not a consistent layer.

6.2 Radiocarbon dating and Bayesian chronological modelling

Peter Marshall, David Roberts, Irka Hajdas and Sanne Palstra

Excavations in 2018 exposed well-buried archaeological remains with a small number of sequences in the three trenches at Low Ham that were amenable to scientific dating. The first-rate survival of faunal animal bone groups (ABGs), carbonised plant remains and short-lived wood charcoal were all suitable for high-precision radiocarbon dating, with the deposits containing these,

particularly those related to agricultural and industrial activities, extensively sampled.

Objectives and sampling

The radiocarbon dating programme for Low Ham was conceived within the framework of Bayesian chronological modelling (Buck *et al* 1996). This allows the combination of calibrated radiocarbon dates with prior archaeological information using a formal statistical methodology. The primary objective of the chronological modelling has been to provide a chronology for the foundation and construction events of features in the three trenches and allow a comprehensive understanding of activity, with a secondary objective being to provide direct dating for important components of the carbonised plant remains assemblage (Chapter 8.1).

Sample selection was undertaken using the iterative process for implementing Bayesian chronological modelling on archaeological sites, as outlined in Bayliss and Marshall (2022). At Low Ham we aimed to maximise the number of stratigraphic relationships between dated deposits included in the modelling wherever possible, as stratigraphy provides a relative sequence of excavated deposits, and radiocarbon dating provides dates for samples. Accordingly, for it to be effective to use a sequence derived from stratigraphy to constrain the calibration of radiocarbon dates in a Bayesian model, it is essential to ensure that the carbon in the sampled material was in equilibrium with the atmosphere at the time the deposit was formed.

The fundamental basis of the sampling strategy was the Harris matrix of excavated deposits. Short-lived plant material from targeted deposits was identified by Ruth Pelling and Paul Flintoff, with selected material chosen based on context description (ie derived from the use of a flue) or the character of the environmental sample (eg a high density of carbonised plant remains). As the taphonomy of the carbonised material in these deposits can be inferred with a range of confidence, three items were dated from each of these contexts to ensure that residual or intrusive material could be recognised. Potential articulating or refitting groups of animal bone (ABGs) that were probably deposited shortly after the death of the animal concerned were identified as part of the faunal assessment by Polydora Baker (Baker 2019). The relatively small and limited nature of the excavations coupled with the pool of potential samples meant that in some instances samples had to be submitted that did not derive from a relative sequence of deposits that could be used to check the uncertain taphonomy of the dated material.

Methodology

A total of 32 radiocarbon measurements (animal bone, n = 9; carbonised plant material, n = 20; charcoal, n = 3) is available relating to activity at Low Ham. Details of the dated samples, radiocarbon ages and associated stable isotopic measurements are provided in Table 6.1. The radiocarbon results are conventional radiocarbon ages (Stuiver and Polach 1977), corrected for fractionation using $\delta^{13}C$ values measured by accelerator mass spectrometry (AMS).

Radiocarbon dating was undertaken by the Laboratory of Ion Beam Physics, ETH Zürich, Switzerland, and the Centre for Isotope Research, University of Groningen, the Netherlands, in 2020–21, each receiving sixteen samples. The four animal bone samples processed at ETH Zürich (see Table 6.1) underwent ultrasonic cleaning in distilled water before gelatinisation and ultrafiltration as described by Hajdas *et al* (2007, 2009), and the carbonised material (n = 12) was pretreated following the acid–base–acid protocol described by Hajdas (2008). All the samples were then combusted in an elemental analyser and graphitised using the fully automated system described by Wacker, Němec *et al* (2010). Graphite targets were then dated using a 200kV, MICADAS AMS (Synal *et al* 2007; Wacker, Bonani *et al* 2010).

Carbon and nitrogen stable isotopic ratios were obtained on subsamples of the ultrafiltered gelatin at the Department of Geology, ETH Zürich, using a ThermoFischer Flash-EA 1112 elemental analyser coupled through a Conflo IV interface to a ThermoFisher Delta V isotope ratio mass spectrometer.

Sixteen samples were dated at the Centre for Isotope Research, University of Groningen (see Table 6.1). The majority of the carbonised plant remains were pretreated using acid–base–acid (4% HCl, 1% NaOH, <1% HCl), although GrM-21093, GrM-21097 and GrM-21312 were pretreated with acid only (4% HCl). The animal bone samples were also pretreated using an acid–base–acid protocol (4% HCl, 1% NaOH, <1% HCl), before being gelatinised and filtered (50μm) (Dee *et al* 2020). All the samples were then combusted in an elemental analyser (IsotopeCube NCS) coupled to an isotope ratio mass spectrometer (Isoprime 100) for measurement of %C, %N, C/N, $\delta^{13}C$ and $\delta^{15}N$. The resultant CO_2 was graphitised by hydrogen reduction in the presence of an iron catalyst. The graphite was then pressed into aluminium cathodes and dated by AMS (Synal *et al* 2007; Salehpour *et al* 2016).

Data reduction was undertaken at both laboratories as described by Wacker, Christl *et al* (2010). Both facilities maintain continual programmes of quality assurance procedures, in addition to participation in international inter-comparison exercises (Scott *et al* 2017). Details of quality assurance data and error calculation at Groningen are provided by Aerts-Bijma *et al* (2021), and similar details for ETH are provided in Sookdeo *et al* (2020).

Replicate radiocarbon measurements are available for two animal bone samples, both of which are statistically consistent at the 5% significance level. Two pairs of replicate $\delta^{15}N$ values, and one pair of $\delta^{13}C$ values measured by isotope ratio mass spectrometry (IRMS), are also statistically consistent at the 5% significance level, but another pair of $\delta^{13}C$ values is statistically significantly different at the 1% significance level (Ward and Wilson 1978; Table 6.1). The quoted errors derive from the uncertainty in the IRMS combustion and measurement, and the observed reproducibility on repeat sample preparations. The measurements provided demonstrate that there is unlikely to have been any marine component in the diets of the sheep/goat and cattle sampled for dating, so it is appropriate to employ a fully terrestrial calibration curve for the results on these samples.

Radiocarbon dating and chronological modelling

The chronological modelling presented here was undertaken using OxCal 4.4 (Bronk Ramsey 2009) and the internationally agreed calibration curve for the northern hemisphere (IntCal20; Reimer *et al* 2020). The models are defined by the OxCal CQL2 keywords and by the brackets shown on the left-hand side of Figs 6.31–38. In the figures, calibrated radiocarbon dates are shown in outline, and the posterior density estimates produced by the chronological modelling are shown in solid black. The highest posterior density intervals, which describe the posterior distributions, are given in italics.

Trench 1

Fifteen measurements are available on animal bone (n = 3) and carbonised material (n = 12) from Trench 1 (Table 6.1; Fig 6.28).

A sequence of carbonised material derived from contexts relating to the use of flue [90025] was dated (Fig 6.28). At its base and directly overlying the natural substrate three radiocarbon measurements from (90054), a dense charcoal- and cereal-rich deposit, are statistically consistent at the 5% level (T' = 1.2; T'(5%) = 6.0, ν = 2; Ward and Wilson 1978) and could therefore be of the same actual age. Overlying (90054) three contexts, (90048), (90051) and (90053), contained relatively little carbonised material before its final deposit (90046), again containing a high density of carbonised material. Measurements on three carbonised grains of *Triticum spelta* (spelt) from (90046) are statistically consistent at the 5% level (T' = 0.4; T'(5%) = 6.0, ν = 2) and again could be of the same date.

Next to the flue [90025] were two adjacent postholes [90040] and [90042]. A single date, GrM-21092, on paired left and right tibiae/femora from a sheep (*Ovis aries*)/goat (*Capra hircus*) disposal in posthole [90040], provide a date for the post's removal. Two carbonised grains (GrM-21097 and ETH-103651) plus a carbonised *Triticum spelta* spikelet were dated from the second posthole [90040]. The three determinations are not statistically consistent at the 5% level (T' = 52.4; T'(5%) = 6.0, ν = 2), with GrM-21097 clearly being much older than the two statistically consistent (T' = 3.2; T'(5%) = 3.8, ν = 1) at the 5% level measurements. Given that a coin from the fill (90041) of posthole [90040] provides a *terminus post quem* (TPQ) for its deposition of AD 260+ (Chapter 7.1, Table 7.1), the grain dated by GrM-21097 must be residual and has therefore been included in the models described below as providing a TPQ for the infilling of the posthole.

Both the flue and ?potentially associated six Lias slabs that sealed the two dated postholes were covered by (90015=90047), a spread of stone rubble approximately 10m by 5.7m that also contained a significant quantity, *c* 6.5kg, of industrial, mainly smithing, slag debris. Measurements on two carbonised cereal grains and animal bone from the re-articulating left calcaneum and astragalus of a sheep/goat are not statistically consistent at the 5% level (T' = 7.1; T'(5%) = 6.0, ν = 2) but are at the 1% level (T' = 7.1; T'(1%) = 9.2, ν = 2). The latest of three coins (Chapter 7.1, Table 7.1) from (90015=90047), a coin

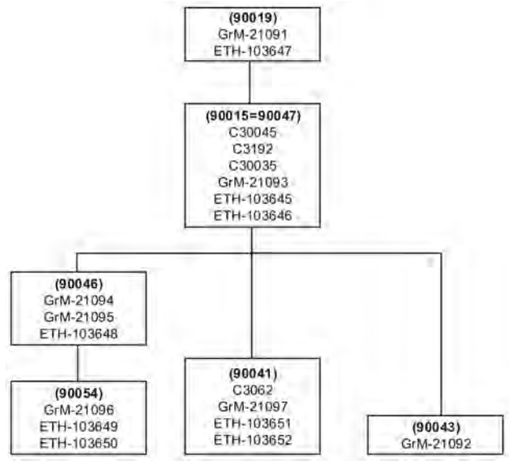


Fig 6.28 Schematic diagram showing the stratigraphic relationships between the dated samples from Trench 1, which have been included in the chronological model defined in Figs 6.31–34

Table 6.1 Low Ham radiocarbon and stable isotope results. Replicate measurements have been tested for statistical consistency and combined by taking a weighted mean before calibration as described by Ward and Wilson (1978; T′(5%)=3.8, ν=1)

Lab number	Sample no., material & context	Radiocarbon age (BP)	$\delta^{13}C_{IRMS}$ (‰)	$\delta^{13}C_{AMS}$ (‰)	$\delta^{15}N$ (‰)	C:N
Trench 1						
GrM-21091	30040. Animal bone, sheep, re-articulating left tibia, astragalus and calcaneum part of ?ABG (P Baker), from (90019), the fill of pit [90018]	1722±22	–21.8±0.15	-	6.4±0.3	3.2
ETH-103647	C14.4. Carbonised seeds, *Brassica nigra* (×25) (R Pelling) from <5007> (90019) the fill of pit [90018]	1737±24	-	–23.1±1.0	-	-
GrM-21092	90043 Animal bone, sheep/goat, left tibia, part of paired left and right tibiae & femora (P Baker), from fill (90043) of deep posthole [90042] under slabs (90021)	1757±24	–21.8±0.15	-	7.0±0.3	3.2
-	C14.1. Carbonised cereal grain, *Triticum dicoccum* (R Pelling) from <5006> (90015=90047), a layer of rubble covering the area between the 'middle' ditch and the northernmost ditch	Failed	-	-	-	-
ETH-103646	C14.2. Carbonised cereal grain, *Triticum dicoccum* (R Pelling) from <5006> [90015] a layer of rubble covering the area between the 'middle' ditch and the northernmost ditch	1714±24	-	–23.2±1.0	-	-
GrM-21093	C14.3. Carbonised cereal grain, *Triticum* cf *spelta* (R Pelling) – as ETH-103646	1713±22	–22.8±0.15	-	-	-
ETH-103645	Animal bone, sheep, re-articulating left calcaneum and astragalus (P Baker) from (90015=90047), a layer of rubble covering the area between the 'middle' ditch and the northernmost ditch	1642±22	–21.8±0.1	-	6.9±0.1	3.8
GrM-21094	C14.5. Carbonised cereal grain, *Triticum spelta* (R Pelling) from <50015> (90046), layer of burning in flue feature [90025]	1701±26	–22.3±0.15	-	-	-
ETH-103648	C14.6. Carbonised cereal grain, *Triticum* cf *dicoccum* (R Pelling) – as GrM-21094	1718±24	-	–23.7±1.0	-	-
GrM-21095	C14.7. Carbonised cereal grain, *Triticum* cf *spelta* (R Pelling) – as GrM-21094	1722±22	–21.5±0.15	-	-	-
ETH-103649	C14.8. Carbonised cereal grain, *Triticum spelta/dicoccum* (R Pelling) from <50018> (90054), dense burnt layer in flue feature [90025]	1711±24	-	–23.7±1.0	-	-
GrM-21096	C14.9. Carbonised cereal grain, *Triticum* sp (R Pelling) – as ETH-103649	1740±24	–24.3±0.15	-	-	-
ETH-103650	C14.10. Carbonised cereal grain, *Triticum* sp (R Pelling) – as ETH-103649	1706±24	-	–21.7±1.0	-	-
GrM-21097	C14.11. Carbonised cereal grain, *Triticum* sp (R Pelling) from <50021> (90041), fill of posthole [90040]	1970±24	–22.6±0.15	-	-	-
ETH-103651	C14.12. Carbonised cereal grain, *Triticum dicoccum* (R Pelling) – as GrM-21097	1795±24	-	–21.8±1.0	-	-
ETH-103652	C14.13. Carbonised *Triticum spelta* spikelet fork (R Pelling) – as GrM-21097	1734±24	-	–25.0±1.0	-	-
Trench 2						
GrM-21087	31148.1. Animal bone, sheep, re-articulating right calcaneum and astragalus (different individual to ETH-103643) (P Baker) from (91032), a made ground deposit above mortar floor (91107)	1771±24	–21.4±0.15	-	5.5±0.3	3.2
ETH-103643	31148.2. Animal bone, sheep, re-articulating right calcaneum & astragalus (different individual to GrM-21087) (P Baker) from (91032), a made ground deposit above mortar floor (91107)	1778±22	–22.2±0.1	-	6.6±0.1	3.8
GrM-21098	C14.14. Carbonised cereal grain, *Triticum* sp (R Pelling) from <51007> (91013), upper fill of pit [91014]	1691±22	–24.6±0.15	-	-	-
GrM-21099	C14.15. Carbonised cereal grain, *Triticum* sp (R Pelling) – as GrM-21098	1662±22	–22.6±0.15	-	-	-
ETH-103653	C14.16. Carbonised cereal grain, *Triticum* cf *spelta* (R Pelling) – as GrM-21098	1751±24	-	–18.6±1.0	-	-
ETH-103656	C14.22. Charcoal, *Alnus* sp fragment 001 from <51036> (91046), a burnt deposit, probably a spread of industrial waste and debitage that accumulated on the surface of compacted earth floor (91032) during the use of the room for industrial activity	1699±24	-	–28.4±1.0	-	-
GrM-21314	C14.23. Charcoal, *Alnus* sp fragment 001 – as ETH-103656	1732±26	–28.6±0.15	-	-	-
ETH-103657	C14.24. Charcoal, *Alnus* sp fragment 001 – as ETH-103656	1678±24	-	–26.7±1.0	-	-
Trench 3						
GrM-21310	C14.17. Carbonised cereal grain, *Triticum* sp (R Pelling) from <52021> (92124), the second fill of beam slot [92032]	1778±24	–24.4±0.15	-	-	-
ETH-103654	C14.18. Carbonised cereal grain, *Triticum* sp (R Pelling) – as GrM-21310	1958±24	-	–23.2±1.0	-	-
GrM-21312	C14.19. Carbonised cereal grain, *Hordeum vulgare* (R Pelling) from <52058> (92138), the upper fill of ring gully [92145]	2110±26	Failed	-	-	-
ETH-103655	C14.20. Carbonised cereal grain, *Triticum* sp (R Pelling) – as GrM-21312	2128±24	-	–21.7±1.0	-	-
GrM-21313	C14.21. Carbonised seed, *Vicia faba/Pisum sativum* (R Pelling) – as GrM-21312	2154±29	–24.4±0.15	-	-	-
ETH-103644	92140. Animal bone, cattle, left metacarpal and refitting epiphyses (P Baker) from (92140), the primary fill of ringgully [92145]	2166±22	–22.6±0.1	-	6.0±0.1	3.7
GrM-27506	92140.1. Replicate of ETH-103644	2151±21	–22.0±0.15	-	5.7±0.3	3.2
92140	^{14}C: 2158±16 BP, T′=0.2; $\delta^{13}C$: –22.4±0.1‰, T′=11.1; $\delta^{15}N$: 6.0±0.1‰, T′=0.9					
GrM-21090	32005. Animal bone, sheep, left ulna from articulating ABG 32005, (P Baker) from (92125), the upper fill of shallow pit [92126]	1945±24	–21.7±0.15	-	7.7±0.3	3.2
ETH-116652	32005.1. Replicate of GrM-21090	1998±23	–21.5±0.1	-	7.3±0.1	3.3
32005	^{14}C: 1973±17 BP, T′=2.5; $\delta^{13}C$: –21.6±0.1‰, T′=1.2; $\delta^{15}N$: 7.7±0.1‰, T′=1.6					

of Gratian SF30035, provides a TPQ for its formation of AD 367–378.

Cut through rubble layer (90015=90047) a shallow sub-circular pit [90018] contained a single fill (90019) with sheep/goat ABGs derived from at least four animals. Measurements on a bulk sample of carbonised *Brassica nigra* (black mustard) seeds (n = 25) and re-articulating sheep left tibia, astragalus and calcaneum (an ?ABG) are statistically consistent at the 5% level (T' = 0.2; T'(5%) = 3.8, ν = 1).

Trench 2

Eight measurements are available on animal bone (n = 2) and single-entity carbonised material (n = 6) from Trench 2 (Table 6.1; Fig 6.29).

Room 59, an extension to the earlier phases of the villa, and its floor (91107=91071), was overlain by (91032), a 0.33m thick deposit of yellowish-brown sandy silt loam. Although largely sterile, the deposit contained the remains of two almost complete sheep/goat ABGs at its north end. Radiocarbon determinations on both animals (GrM-21087 and ETH-103643) are statistically consistent at the 5% level (T' = 0.2; T'(5%) = 3.8, ν = 1) and they could therefore have died at the same time. After a couple of pits had been dug and infilled, the entire footprint of Room 59 was again covered, this time by a black spread (91085=91046=91054) that contained a quantity of hammer scale (91046) and smithing pan. Measurements on three single-entity charcoal fragments are statistically consistent at the 5% level (T' = 2.3; T'(5%) = 6.0, ν = 2). A single coin SF31146 (Chapter 7.1, Table 7.2) provides a TPQ for the formation of (91046) of AD 260+.

The northern part of Room 59 then appears to have been the focus of further industrial activity, although the three dated carbonised cereal grains from (91013), a later fill of pit [91014], probably derive from crop processing. These three measurements are not statistically consistent at the 5% level (T' = 7.7; T'(5%) = 6.0, ν = 2) but are at the 1% level (T' = 7.7; T'(1%) = 9.2, ν = 2).

Trench 3

Nine measurements are available on animal bone (n = 4) and single-entity carbonised material (n = 5) from Trench 3 (Table 6.1; Fig 6.30).

The ring gully defining Roundhouse 3 was excavated in four interventions. Samples from two stratigraphically related contexts, (92140) and (92138), of the ring gully, excavated as [92145], were dated. Two measurements on a left metacarpal and refitting epiphyses from the primary fill (92140) are statistically consistent at the 5% level (T' = 0.2; T'(5%) = 3.8, ν = 1) and a weighted mean (2158 ± 16 BP) has been calculated as providing the best estimate for the age of the animal. Measurements on three carbonised seeds (two cereal grains and a *Vicia faba*/*Pisum sativum* (vetch/pea) seed) from the secondary fill (92138) of ring gully [92145] are statistically consistent at the 5% level (T' = 1.3; T'(5%) = 6.0, ν = 2) and could be of the same actual age. Measurements on two cereal grains from (92124), the secondary fill of beam slot [92032] that cut the Roundhouse 3 ring gully, are not statistically consistent at the 5% level (T' = 28.1; T'(5%) = 3.8, ν = 1) and are clearly of different ages.

Measurements on the left ulna from articulating sheep/goat ABG 32005 from the upper fill (92125) of a shallow pit that lay outside the footprint of Roundhouse 3 are statistically consistent at the 5% level (T' = 2.5; T'(5%) = 3.8, ν = 1) and a weighted mean (1973 ± 17 BP) provides the best estimate for the death of the animal.

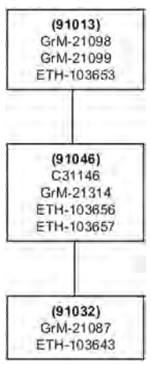


Fig 6.29 Schematic diagram showing the stratigraphic relationships between the dated samples from Trench 2, which have been included in the chronological model defined in Figs 6.31–34

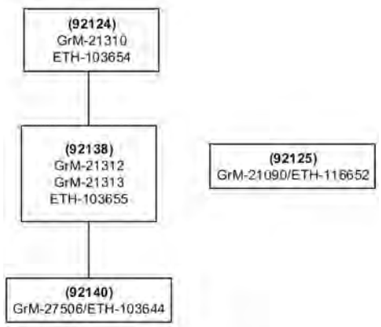


Fig 6.30 Schematic diagram showing the stratigraphic relationships between the dated samples from Trench 3, which have been included in the chronological model defined in Figs 6.31–34

Interpretation

The model shown in Figs 6.31–34, based on the available radiocarbon dates, interprets the activity from the 2018 excavations as a single continuous phase (Buck *et al* 1992). It has poor overall agreement (Amodel = 43) between the radiocarbon dates and the prior information about their stratigraphic relationships outlined above. An overall agreement index of 60% is recommended as the threshold for showing consistency between the prior information and the radiocarbon results (Bronk Ramsey 1995).

Three samples have a low individual index of agreement values: ETH-103647 (A = 40; Fig 6.32), ETH-103645 (A = 18; Fig 6.32) and ETH-103653 (A = 29; Fig 6.33). If the individual index of agreement for a sample falls below 60 (Bronk Ramsey 1995, 1998), the radiocarbon result is regarded as inconsistent with the sample's calendar age, if the latter is consistent with the sample's age relative to the other dated samples. This can indicate that the radiocarbon result is a statistical outlier (more than two standard deviations from the sample's true radiocarbon age), but a very low index of agreement may be indicative of the sample being residual or intrusive (ie that its calendar age is different to that implied by its stratigraphic position).

Given that ETH-103645 is a measurement from a re-articulating sheep/goat left calcaneum and astragalus and therefore very unlikely to be intrusive (see Fig 6.32), we have not excluded this date from the model shown in Figs 6.35–38, but have included ETH-103647 and ETH-103653 as providing TPQs. The overall structure of the

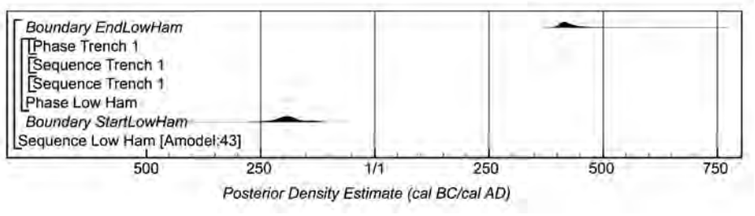


Fig 6.31 Overall structure of the chronological model for activity at Low Ham. The component sections are shown in detail in Figs 6.32–34. The large square brackets down the left-hand side of Figs 6.31–34, along with the OxCal keywords, define the overall model exactly

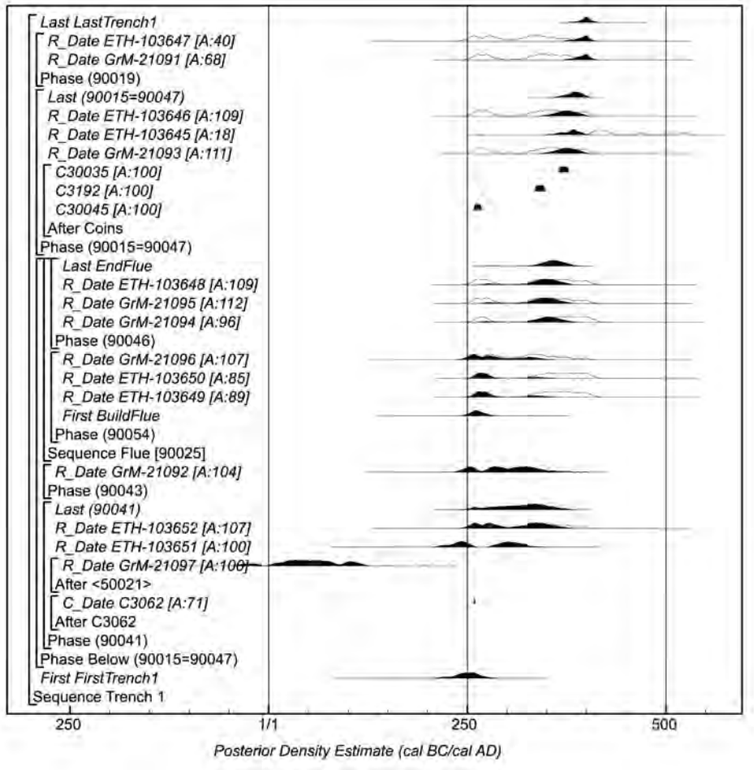


Fig 6.32 Probability distributions of dates from Trench 1 activity at Low Ham. Each distribution represents the relative probability that an event occurs at a particular time. For each of the dates two distributions have been plotted: one in outline, which is the result of simple radiocarbon calibration, and a solid one, based on the chronological model used. Distributions other than those relating to particular samples correspond to aspects of the model. For example, the distribution 'BuildFlue' is the estimated date when flue [90025] was constructed. The large square brackets down the left-hand side of Figs 6.31–34, along with the OxCal keywords, define the overall model exactly

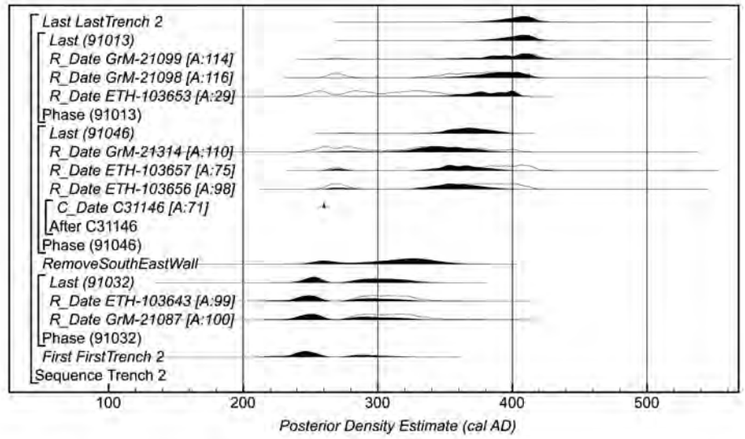


Fig 6.33 Probability distributions of dates from Trench 2 activity at Low Ham. The format is identical to that of Fig 6.32 The large square brackets down the left-hand side of Figs 6.31–34, along with the OxCal keywords, define the overall model exactly

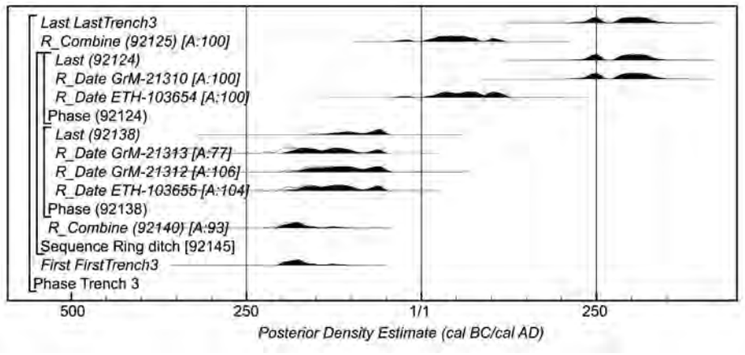


Fig 6.34 Probability distributions of dates from Trench 3 activity at Low Ham. The format is identical to that of Fig 6.32. The large square brackets down the left-hand side of Figs 6.31–34, along with the OxCal keywords, define the overall model exactly

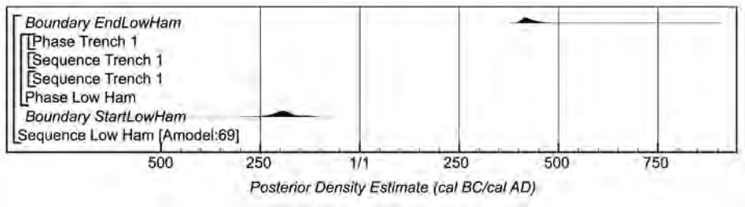


Fig 6.35 Overall structure of the chronological model for activity at Low Ham (preferred model). The component sections are shown in detail in Figs 6.36–38. The large square brackets down the left-hand side of Figs 6.35–38, along with the OxCal keywords, define the overall model exactly

preferred model for the chronology of activity at Low Ham is shown in Fig 6.35. Component sections relating to activity in Trenches 1, 2 and 3 are shown in Figs 6.36–38. This model has good overall agreement (Amodel = 68). The dated activity in the three trenches is estimated to have begun in *260–115 cal BC* (*95% probability*; *StartLowHam*; Fig 6.35), probably in *225–165 cal BC* (*68% probability*), and ended in *cal AD 395–485* (*95% probability*; *EndLowHam*; Fig 6.35), probably in *cal AD 405–440* (*68% probability*). The overall dated activity at Low Ham lasted for a period of *520–620 years* (*95% probability; LowHam*; Fig 6.39), probably for a period of *565–610 years* (*68% probability*).

Trench 1

The long, narrow flue [90025], lined with stones (90060), including two very large repurposed Ham stone quoins, was built in *cal AD 240–295* (*93% probability*; *BuildFlue*; Fig 6.36) or *cal AD 320–340* (*2% probability*), probably in *cal AD 250–275* (*68% probability*). The Ham stone quoins and red-coloured Ham stone in the flue lining suggest that this material came from the villa building itself and thus the date of construction for the flue suggests that at least part of the villa building had been demolished by the second half of the *3rd century cal AD*. The flue went out of use in *cal AD 335–395* (*95% probability*; *EndFlue*; Fig 6.36), probably in *cal AD 350–380* (*68% probability*), and was in use for a period of *35–135 years* (*95% probability*; *Flue*; Fig 6.40), probably for a period of *80–120 years* (*68% probability*).

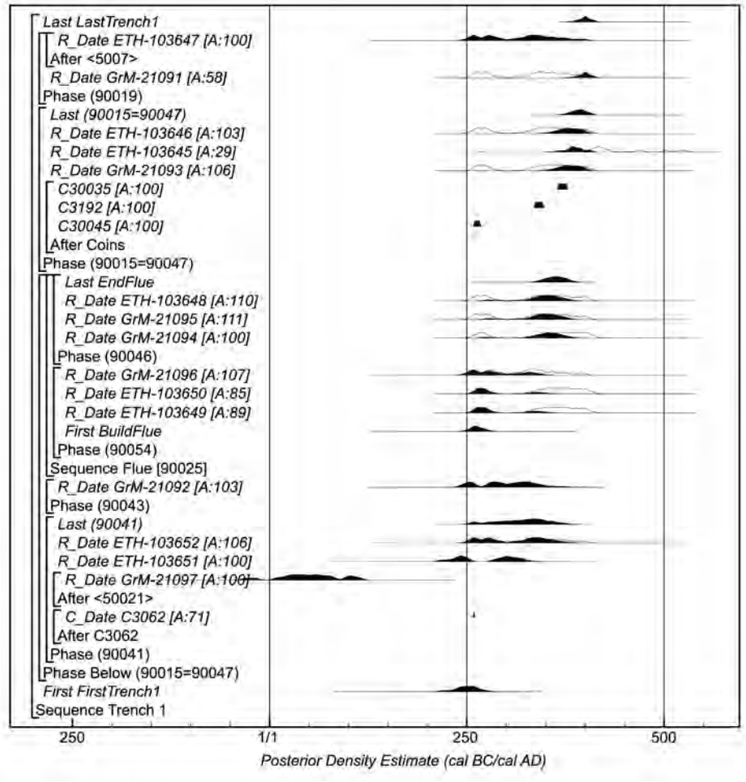


Fig 6.36 Probability distributions of dates from Trench 1 activity at Low Ham. The format is identical to that of Fig 6.32. The large square brackets down the left-hand side of Figs 6.35–38, along with the OxCal keywords, define the overall model exactly

Between the flue and the trackway ditch the two adjacent postholes that are not part of any archaeologically visible wider structure could have been contemporary with the use of the flue, given [90042] was infilled in *cal AD 235–365* (*95% probability*; *GrM-21092*; Fig 6.36), probably in *cal AD 245–365* (*13% probability*) or *cal AD 275–340* (*55% probability*), and [90040] by *cal AD 250–375* (*95% probability*; (*90041*); Fig 6.36), probably *cal AD 290–365* (*68% probability*).

The flue and the potentially associated stone slabs, which sealed postholes [90040] and [90042], were covered by an extensive spread of stone rubble (90015=90047), possibly deriving from part of the main villa buildings that included a large quantity of industrial debris. (90015=90047) was laid down in *cal AD 370–410* (*95% probability*; (*90015=90047*); Fig 6.36), probably in *cal AD 380–405* (*68% probability*).

The infilling of the shallow sub-circular pit [90018] that cut through the stone rubble (90015=90047) was infilled in *cal AD 380–420* (*95% probability*; *GrM-21091*; Fig 6.36), probably *cal AD 390–410* (*68% probability*).

The first dated activity in Trench 1 began in *cal AD 210–285* (*95% probability; FirstTrench10001*; Fig 6.36), probably in *cal AD 235–270* (*68% probability*) and ended in *cal AD 380–420* (*95% probability; LastTrench10001*; Fig 6.36), probably *cal AD 390–410* (*68% probability*). Overall the chronology of small-scale agricultural activity in the enclosures along the trackway to the north-west of the villa appears to post-date the destruction of at least part of the villa, with industrial activity taking place at the *very end of the 4th century cal AD.*

Trench 2

In Trench 2 the white mortar floor surface (91107) of the outermost room of the south-eastern range of the villa (Room 59) was laid before (91032) and was used to raise the floor level in *cal AD 240–265* (*24% probability*; (*91032*); Fig 6.37) or *cal AD 275–340* (*71% probability*), probably in *cal AD 245–260* (*15% probability*) or *cal AD 285–325* (*53% probability*).

Following a period of small-scale pit digging and the removal of the south-eastern wall of the room, the footprint of Room 59 and the robber trench were covered

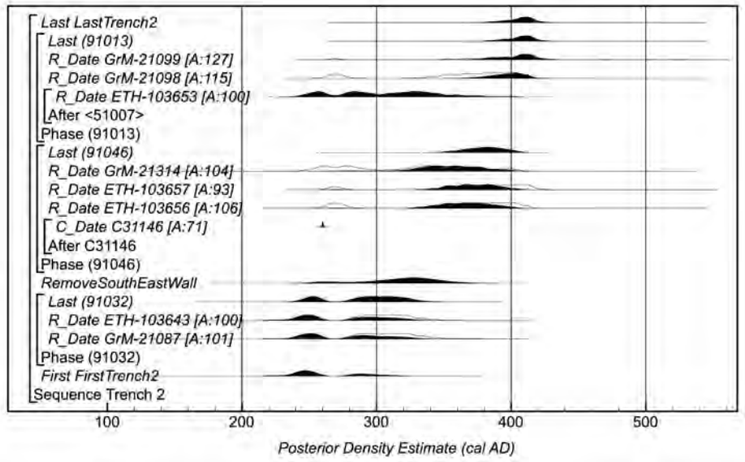


Fig 6.37 Probability distributions of dates from Trench 2 activity at Low Ham. The format is identical to that of Fig 6.32. The large square brackets down the left-hand side of Figs 6.35–38, along with the OxCal keywords, define the overall model exactly

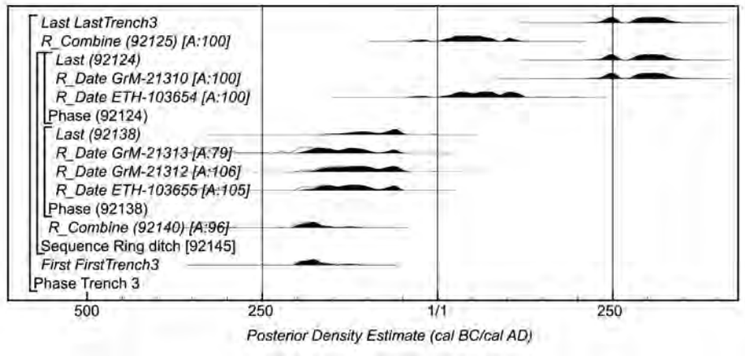


Fig 6.38 Probability distributions of dates from Trench 3 activity at Low Ham. The format is identical to that of Fig 6.32. The large square brackets down the left-hand side of Figs 6.35–38, along with the OxCal keywords, define the overall model

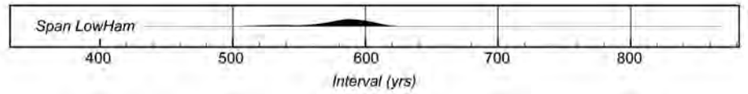


Fig 6.39 Duration of activity at Low Ham, derived from the model defined in Figs 6.35–38

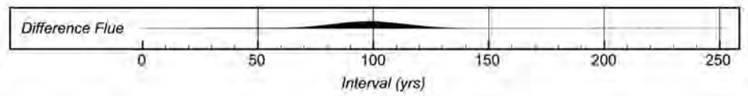


Fig 6.40 Probability distribution of the number of years that flue [90025] was in use, derived from the model defined in Figs 6.35–38

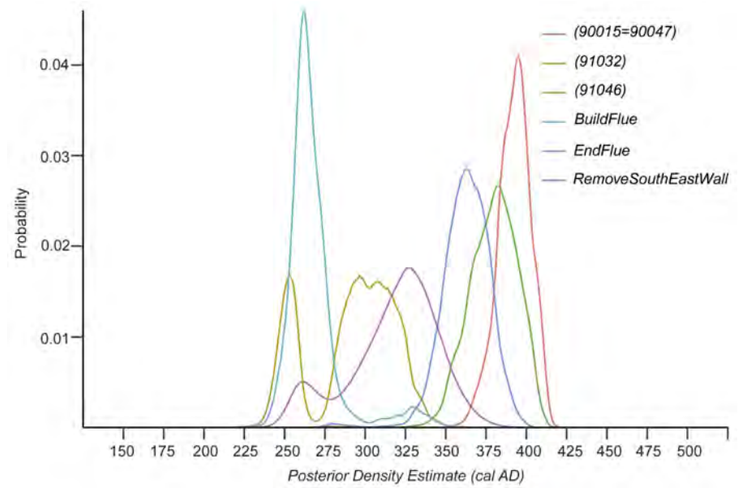


Fig 6.41 Probability distributions of dates relating to key archaeological events at Low Ham. These estimates are based on the preferred chronological model defined in Figs 6.35–38

and filled by (91046) in *cal AD 350–410* (*95% probability*; (*91046*); Fig 6.37), probably in *cal AD 365–400* (*68% probability*). The evidence for industrial activity associated with the formation of (91046) (Chapter 7.9) demonstrates there must have been a smithy in this area in the *second half of the 4th century cal AD*.

Further industrial and agricultural activity in the fills of the stratigraphically later pit [91109] demonstrates that this activity carried on until *cal AD 380–430* (*95% probability*; (*91013*); Fig 6.37), probably *cal AD 395–420* (*68% probability*).

The first dated activity in Trench 2 is estimated to have begun in *cal AD 215–265* (*62% probability; FirstTrench10002*; Fig 6.37) or *cal AD 275–320* (*33% probability*), probably in *cal AD 235–260* (*52% probability*) or *cal AD 280–300* (*16% probability*), and ended in *cal AD 380–430* (*95% probability; LastTrench10002*; Fig 6.37), probably in *cal AD 395–420* (*68% probability*).

The chronology demonstrates that the later period of villa life within Trench 2, and in particular Room 59, was characterised by industrial activity. In *cal AD 250–365* (*95% probability; RemoveSouthEastWall*; Fig 6.41), probably in *cal AD 295–355* (*68% probability*), the external wall of Room 59 was removed, and several pits containing charcoal-rich fills were cut into the made ground, which was subsequently covered by a thin, trample-like deposit of charcoal and industrial debris. This activity took place in the second half of the 4th century AD and possibly into the first couple of decades of the 5th century AD.

Trench 3

The re-articulating cattle bones from the primary fill of the ring gully for Roundhouse 3 provides *a terminus ante quem* (TAQ) for its construction of *205–110 cal BC* (*95% probability*; (*92140*); Fig 6.38), probably *200–165 cal BC* (*68% probability*). Given the lack of evidence for recutting of the ring gully, and assuming a unitary construction of the superstructure for the building, this TAQ may be very close to the date of construction of Roundhouse 3. Infilling of ring gully slot [91245] continued until *150–45 cal BC* (*95% probability*; (*92138*); Fig 6.38), probably *125–90 cal BC* (*29% probability*) or *80–50 cal BC* (*39% probability*).

Dating of the secondary fill of beam slot [92032] is uncertain given the difference in dates between the two cereal grains (GrM-21310 and ETH-103654). But, based on the interpretation that the latest material in a context should provide the best estimate for its infilling, the secondary infilling possibly occurred in *cal AD 225–265* (*27% probability;* (*92124*); Fig 6.38) or *cal AD 275–350* (*68% probability*), probably in *cal AD 240–260* (*16% probability*) or *cal AD 285–330* (*52% probability*).

The infilling of the small pit [92126] outside the footprint of Roundhouse 3 took place in *35–10 cal BC* (*6% probability; ABG 32005*; Fig 6.38) or *cal AD 1–120* (*89% probability*), probably *cal AD 15–80* (*66% probability*) or *cal AD 100–105* (*1% probability*). Given that the date derives from material in the upper fill of the pit and therefore only provides a TAQ for its initial digging, it is not possible to determine its temporal relationship to Roundhouse 3.

Of the three roundhouses in Trench 3, only Roundhouse 3 has any independent scientific dating evidence, and this suggests that it was probably constructed shortly before *200–165 cal BC* (*68% probability*) and had probably gone out of use in the *late 2nd century or 1st century cal BC*. The presence of only a few very small fragments of Roman ceramics in the upper fills of ring gully suggests, furthermore, that these were sealed prior to Roman material culture arriving on the site.

Emmer cultivation?

Although the presence of emmer (*Triticum dicoccum*) in Romano-British deposits is not uncommon, it is often found in such small numbers that is frequently interpreted as being either a contaminant in the spelt (*Triticum spelta*) crop or a contaminant from earlier, prehistoric activity (Pelling *et al* 2015). However, direct dating of emmer grains from three contexts, (90015), (90046) and (90041), clearly demonstrates that it is not a residual component of the carbonised plant remains assemblage (Table 6.2, Fig 6.42). Given its relative abundance compared to other cereals, such as barley (*Hordeum vulgare*), at Low Ham, and local evidence suggesting that it continued to be cultivated in Somerset

Table 6.2 Highest posterior density intervals for carbonised plant remains in the Low Ham Villa and environs

Parameter	Identification	*Highest posterior density interval (95% probability) except where stated*	*Highest posterior density interval (68% probability) except where stated*
Trench 1			
ETH-103647	*Brassica nigra* (×25)	*245–405*	*250–295 (31%) or 320–365*
ETH-103646	*Triticum dicoccum*	*350–410*	*cal AD 365–400*
GrM-21093	*Triticum* cf *spelta*	*cal AD 350–410*	*cal AD 370–400*
GrM-21094	*Triticum spelta*	*cal AD 265–285 (4%) or cal AD 325–395 (91%)*	*cal AD 335–375*
ETH-103648	*Triticum* cf *dicoccum*	*cal AD 270–290 (5%) or cal AD 315–390 (90%)*	*cal AD 335–375*
GrM-21095	*Triticum* cf *spelta*	*cal AD 315–390*	*cal AD 270–290*
ETH-103649	*Triticum spelta/dicoccum*	*cal AD 250–295 (69%) or cal AD 315–365 (26%)*	*cal AD 255–285 (62%) or cal AD 330–345 (6%)*
GrM-21096	*Triticum* sp	*cal AD 240–350*	*cal AD 245–295 (54%) or cal AD 320–340 (14%)*
ETH-103650	*Triticum* sp	*cal AD 250–295 (71%) or cal AD 320–365 (24%)*	*cal AD 255–285 (64%) or cal AD 335–345 (4%)*
GrM-21097	*Triticum* sp	*40–10 cal BC (8%) or cal AD 1–125*	*cal AD 15–85 (60%) or cal AD 95–110 (8%)*
ETH-103651	*Triticum dicoccum*	*cal AD 210–260 (42%) or cal AD 275–335 (53%)*	*cal AD 230–255 (27%) or cal AD 285–325 (41%)*
ETH-103652	*Triticum spelta* spikelet fork	*cal AD 245–300 (41%) or cal AD 305–380 (54%)*	*cal AD 250–290 (31%) or cal AD 320–365 (37%)*
Trench 2			
GrM-21098	*Triticum* sp	*cal AD 365–420*	*cal AD 385–415*
GrM-21099	*Triticum sp*	*cal AD 370–430*	*cal AD 390–420*
ETH-103653	*Triticum* cf *spelta*	*cal AD 240–380*	*cal AD 245–265 (12%) or cal AD 275–350 (56%)*
Trench 3			
GrM-21310	*Triticum* sp	*cal AD 225–265 (27%) or cal AD 275–350 (68%)*	*cal AD 240–260 (16%) or cal AD 285–330 (52%)*
ETH-103654	*Triticum* sp	*35–15 cal BC (3%) or cal AD 5–125 (92%)*	*cal AD 25–85 (51%) or cal AD 95–120 (17%)*
GrM-21312	*Hordeum vulgare*	*175–45 cal BC*	*155–90 cal BC (52%) or 75–50 cal BC (16%)*
ETH-103655	*Triticum* sp	*180–50 cal BC*	*170–100 cal BC (60%) or 70–55 cal BC (8%)*
GrM-21313	*Vicia faba/Pisum sativum*	*195–90 cal BC (83%) or 80–50 cal BC (12%)*	*cal BC 185–100 (65%) or 65–55 cal BC (3%)*

during the Roman period (Chapter 8.1), it seems probable that emmer was grown in small amounts alongside spelt deliberately.

Black mustard seeds: a horticultural crop?

A bulk sample of black mustard (*Brassica nigra*) seeds (n = 25) from fill (90019) of pit [90018], which cut through rubble layer (90015), has been directly dated to *cal AD 245–405* (*95% probability*; *ETH-103647*; Fig 6.36), probably *cal AD 250–295* (*31% probability*) or *cal AD 320–365* (*37% probability*). Although black mustard was grown as an oil crop in the Roman period (Zohary and Hopf 1994, 132), it can also be present as a weed in cereal assemblages. Without supporting evidence it is difficult to say which is represented here, although Scantlebury (Chapter 8.1) prefers the former.

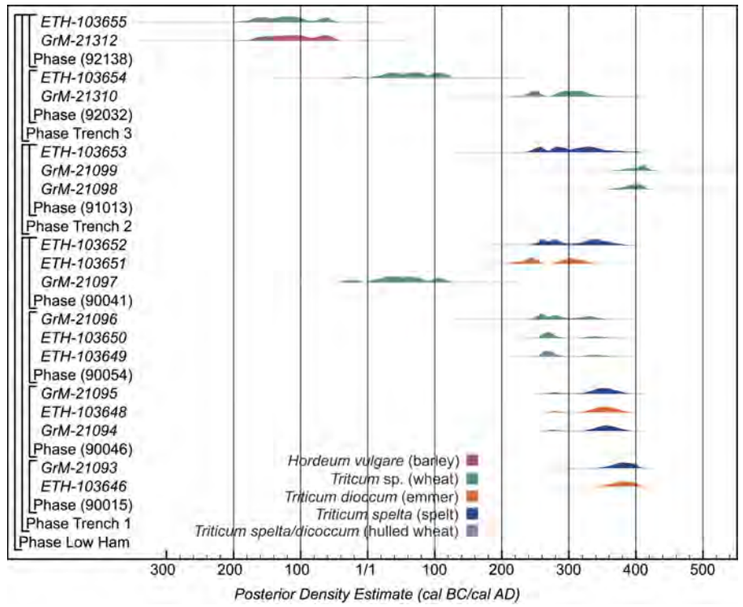


Fig 6.42 Probability distributions of dates from Roman cereal grains at Low Ham. These estimates are based on the preferred chronological model defined in Figs 6.35–38

Summary

Overall, one bulk and 29 single-entity samples have been successfully dated from Low Ham, comprising eight samples of animal bone and twenty-two samples of carbonised plant material and wood charcoal. Three of the charred plant remains are considered residual (10%). Two single-entity animal bone samples were subdivided and measured both by ETH and Groningen to verify the intra-laboratory comparability of the results.

Table 6.3 shows the percentage probabilities for the sequence of key date archaeological events from Trenches 1 and 2. By comparing the posterior density estimates, it is possible to calculate the probable order of events. For example, it is *77.6% probable* that flue [90025] was built before the raising of the floor (91032) in Room 59. It thus seems that starting in the *late 3rd century cal AD* parts of the villa were taken down and used for the construction of a flue that formed part of a kiln for the processing of cereals. The main period of activity in Trenches 1 and 2, when industrial activities were brought into the main villa compound and some of the villa's buildings partially demolished to accommodate this change in function, appears to have occurred in the mid- to late 4th century AD. Industrial activities appear to have continued in the *early 5th century cal AD*.

Roundhouse 3 in Trench 3 was probably built just before *200–165 cal BC* (*68% probability*) and had probably gone out of use in the *late 2nd century* or *1st century cal BC*.

Table 6.3 Percentage probabilities of the relative order of selected events in the Low Ham Villa and environs, from the model shown in Figs 6.29–32. The cells show the probability of the distribution on the left-hand column being earlier than the distribution on the top row. For example, the probability that *RemoveSouthEastWall* is earlier than *EndFlue* is 94.2%

	BuildFlue	***EndFlue***	***(90015_90047)***	***(91032)***	***RemoveSouthEastWall***	***(91046)***
BuildFlue	-	99.8	100.0	77.6	90.2	99.9
EndFlue	0.2	-	95.7	1.0	5.8	75.5
(90015_90047)	0.0	4.3	-	0.0	0.1	21.5
(91032)	22.4	99.0	100.0	-	70.0	99.3
RemoveSouthEastWall	9.8	94.2	99.9	30.0	-	97.6
(91046)	0.2	24.5	78.5	0.7	2.4	-

7 The 2018 finds

7.1 The coins

Richard Henry

Twenty-eight Roman coins were recovered from the Historic England (HE) excavations, all of which date from the 3rd and 4th centuries AD. The coins comprise two copper-alloy radiates, and seventeen copper-alloy nummi and nine copper-alloy radiates or nummi that could not be further identified. Reece (1995) breaks coinage in Roman Britain into 21 time periods to allow sites to be compared. Of the 28 coins, 18 can be identified to a Reece period. A catalogue of the coins is presented in Tables 7.1 and 7.2.

Of the nine coins recovered from Trench 1, the identifiable examples consist of a radiate of Gallienus dating to AD 260–268 and six nummi. These include three nummi dating to AD 330–348 (Reece period 17) and three dating to AD 364–378 (Reece period 19). The majority of the coins were found within or under a rubble layer. Nineteen coins were recorded from Trench 2, focused on a wing of the villa complex. The identifiable coins consist of a radiate of Gallienus and ten nummi. These include three nummi dating to AD 330–348 (Reece period 17), five dating to AD 364–378 (Reece period 19) and two dating to AD 388–402. The majority were recovered from cleaning layer (91003). No coins were recovered from Trench 3.

Table 7.1 Catalogue of coins from Trench 1

SF	Context	Ruler	Reverse type	Mint	Mint mark	Date (AD)	Reference
30045	90015	Gallienus	AETERNITAS AVG	Rome	-	260–68	Cun 1169
30001	90002	House of Constantine	Victory on prow	Trier	TRS.	330–1	RIC no. 530
30004	90003	Constantine II	GLORIA EXERCITVS	Arles	Branch//[…]	332–5	-
3192	90015	Constans	-	-	-	337–48	
30003	90003	House of Valentinian	SECVRITAS REIPVBLICAE	Lyon or Arles	OF/II//[…]	364–75	-
30041	90005	House of Valentinian	SECVRITAS REIPVBLICAE	-	-	364–78	-
30035	90015	Gratian	Uncertain	Lyon	-	367–78	-
3061	90004	Uncertain	Uncertain	-	-	260–402	-
3062	90040	Uncertain	Uncertain	-	-	260–402	-

Cun: Cunetio hoard; RIC: Roman Imperial Coinage

Two coins (3129 and 30035) are fused together, so only the obverse is visible on both examples. The obverse legend for 30035 suggests the coin was produced at the mint of Lyon. The pair were X-rayed, but no further details were visible.

Table 7.2 Catalogue of coins from Trench 2

SF	Context	Ruler	Reverse type	Mint	Mint mark	Date (AD)	Reference
3028	91005	Gallienus	FORTVNA REDVX	Rome	Ϛ	260–68	Cun 1215
31090	90002	Constantine I	GLORIA EXERCITVS	Trier	TRP.	330–1	RIC no. 526
31076	91003	House of Constantine	Wolf and twins	-	-	330–5	-
31072	91003	Constantius II	GLORIA EXERCITVS	-	-	335–41	-
3032	91005	Valentinian I	GLORIA ROMANORVM	Lyon or Arles	OF/III//[…]	364–75	-
31033	91003	Valentinian I	Uncertain	-	-	364–75	-
31081	91003	House of Valentinian	SECVRITAS REIPVBLICAE	Lyon or Arles	OF/I//[…]	364–75	-
3030	91005	House of Valentinian	SECVRITAS REIPVBLICAE	-	-	364–78	-
31095	91003	Gratian	GLORIA ROMANORVM	Lyon	O/F II//LVGDP	367–75	LRBC 308
31021	91003	House of Theodosius	VICTORIA AVGGG	-	-	388–402	-
31068	91003	House of Theodosius	VICTORIA AVGGG	-	-	388–402	-
31002	91003	Uncertain	Uncertain	-	-	330–402	-
3022	91005	Uncertain	Uncertain	-	-	260–402	-
3029	91005	Uncertain	Uncertain	-	-	260–402	-
31039	91003	Uncertain	Uncertain	-	-	260–402	-
31085	91004	Uncertain	Uncertain	-	-	260–402	-
31126	91003	Uncertain	Uncertain	-	-	260–402	-
31146	91046	Uncertain	Uncertain	-	-	260–402	-
31084	91003	Uncertain	Uncertain	-	-	260–402	-

Cun: Cunetio hoard; RIC: Roman Imperial Coinage; LRBC: Late Roman Bronze Coinage

In general the coins are in poor condition, corroded and have suffered circumferential losses due to post-depositional conditions. The coins from Trench 1 are in general at a slightly better level of preservation than those from Trench 2.

The coinage indicates coin use and supply to the site during the 3rd and 4th centuries AD, but there is no evidence of coin use prior to AD 260 from the areas excavated. The majority of the coinage recovered from Trenches 1 and 2 dates from AD 330–348 and AD 364–378, which is consistent with many rural sites in the south-west of England. The assemblage includes two nummi of the House of Theodosius from Trench 2, which suggests there was access to circulating coin at the very end of the 4th century AD at the villa.

The coins recovered from both trenches represent too small a quantity to be individually considered using Reece period analysis (breakdowns by Reece periods for the sites and regions discussed in the text can be found in Table 7.3). Therefore, the coins from the HE excavation have been considered as a whole for the subsequent statistical analysis. The Reece period analysis for the coins from the HE excavation in Fig 7.1 have been compared with the villa mean for the southern part of the Central Belt derived from data compiled by the Rural Settlement of Roman Britain Project (RSRB) (Smith *et al* 2016). The southern section of the Central Belt mean consists of 6,233 coins from 60 villas from the counties of Somerset, Gloucestershire and Wiltshire. The southern Central Belt mean highlights trends regularly seen at villa sites, with limited quantities of coins produced prior to AD 260 within the region, and peaks in the 3rd and 4th centuries AD.

Figure 7.1 should be viewed with a note of caution because of the limited number of coins from the site. Eighteen coins, it is argued by Moorhead (2010), is a large enough sample for such an analysis. However, although the peaks in Reece periods 17 and 19 follow a wider trend in the South West, they are high. It is likely that with a larger assemblage, which would include coinage from other points in the 3rd and 4th centuries AD, these peaks would be at a similar level to the mean for Somerset. Consequently, when considering the site profile for the villa at Low Ham and comparing the site to other villas in the wider region, coins from the 1946–48 excavations should also be considered.

A further 39 coins were recorded from the 1946–48 excavations and have been catalogued by Edward Besly (see Chapter 4.1). When the assemblages are considered in combination, 54 coins can be assigned to a Reece period for statistical analysis (Fig 7.2). Of these, 28 are from Reece period 17. A peak of over 500 per mill is considerably higher than what might be expected (Walton 2012).

Table 7.3 Breakdown by Reece period (Reece 1995) of sites and regions discussed in the text

Reece period (corresponding AD date)	Low Ham (Historic England)	Low Ham (Combined)	Combined (excluding closed deposit)	Southern Central Belt region	Western South region
1 (to 41)	0	0	0	4	11
2 (41–54)	0	0	0	16	19
3 (54–69)	0	0	0	7	1
4 (69–96)	0	0	0	24	8
5 (96–117)	0	0	0	9	13
6 (117–138)	0	0	0	18	12
7 (138–161)	0	0	0	25	16
8 (161–180)	0	0	0	19	23
9 (180–192)	0	0	0	11	7
10 (193–222)	0	0	0	33	25
11 (222–238)	0	0	0	12	7
12 (238–260)	0	0	0	9	16
13 (260–275)	2	2	2	697	531
14 (275–296)	0	0	0	784	256
15 (296–317)	0	0	0	132	51
16 (317–330)	0	0	0	343	197
17 (330–348)	6	28	13	1927	660
18 (348–364)	0	9	1	888	86
19 (364–378)	8	10	10	1041	118
20 (378–388)	0	0	0	37	4
21 (388–402)	2	5	5	197	21

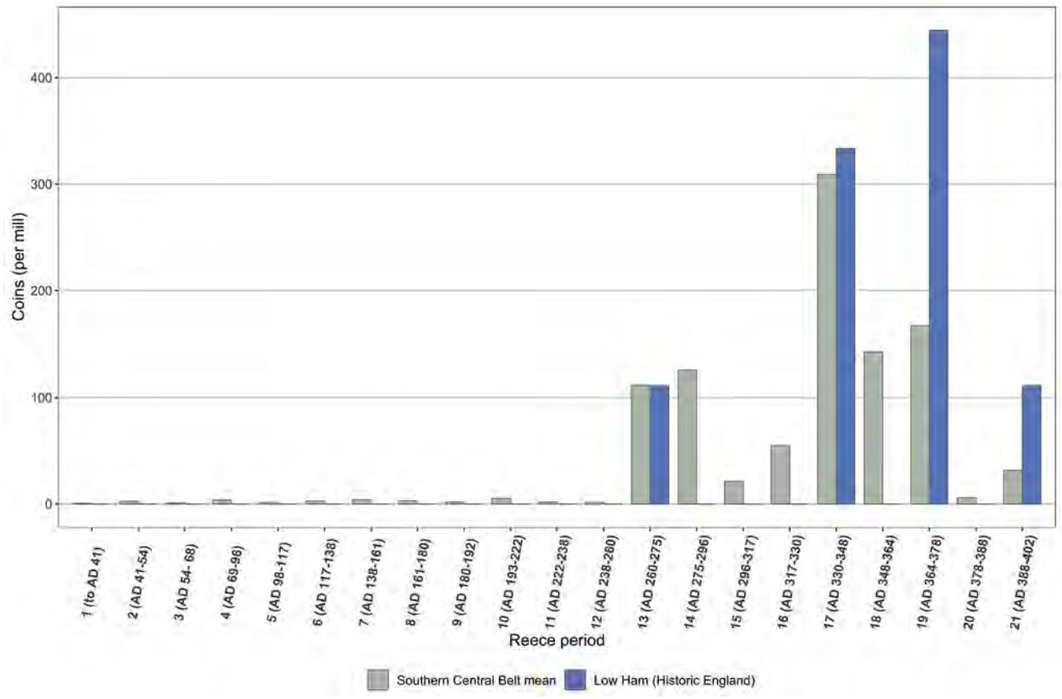


Fig 7.1 Comparison of the coins from the Historic England excavations at Low Ham with the southern Central Belt mean

Besly's tabulation of the coins noted that 23 identifiable coins from the excavation in 1948 were from a single general context described on the coin envelopes as Constantinian Passage, and positively ascribed to a black deposit within Room 26 (see Chapter 3.3). The group consists of fifteen coins from Reece period 17 and eight from Reece period 18, the latter including six *Fel Temp Reparatio* copies, providing a *terminus post quem* (TPQ) of AD 353–361 for the deposit. These coins from the Constantinian Passage have been removed from the coin profile for the site as a whole, which will be used to compare with the southern Central Belt and western South means derived from the RSRB.

When examining the majority of rural sites from Roman Britain that contain large numbers of coins, there is a substantial increase in coin loss from the 260s onwards. This is reflected in the assemblage from Low Ham. The increase in coin loss from AD 260 is due to the fact that the radiate was so heavily debased that it was effectively a copper-alloy issue. The purchasing power of bronze issues was so low that a far higher number of coins was required for transactions, and significant quantities were produced.

The distribution of these base metal radiates or nummi was not uniform geographically or temporally in the provinces of Britain (Walton 2012). There is also variation of the coin profile at various site types. At rural sites we often note peaks in the 3rd and 4th centuries AD. This is particularly visible with coin profiles from villas in the region. Low Ham is close to the border of the Central Belt and South regions as defined by the RSRB. The coin profiles for villa sites within these regions vary, the mean for the western area of the South region being lower (2,082 coins from 24 villas in Devon, Somerset, Dorset and Hampshire), highlighting greater access to circulating currency in the Central Belt, which is worthy of comparison.

Trends seen in the south-west of Britain are visible within these coin profiles. There is a high proportion of coin loss from Reece period 17 in the southern Central Belt similar to the peak seen at Low Ham (Fig 7.3). High proportions of Valentinianic coinage (Reece period 19) are a well-documented phenomenon in the region (Moorhead 2001; Brindle 2014). It has been suggested that this relates to an increase in rural activity possibly associated with the export of grain to the Empire on the Continent or the presence of state operatives in the region (Moorhead 2005, 158; Esmonde Cleary 2017). Interestingly, when coin loss is considered in parishes with more than 20 coins, we can see a general pattern of decline in loss of coinage produced from AD 364–402 in the environs of the Somerset Levels compared with the

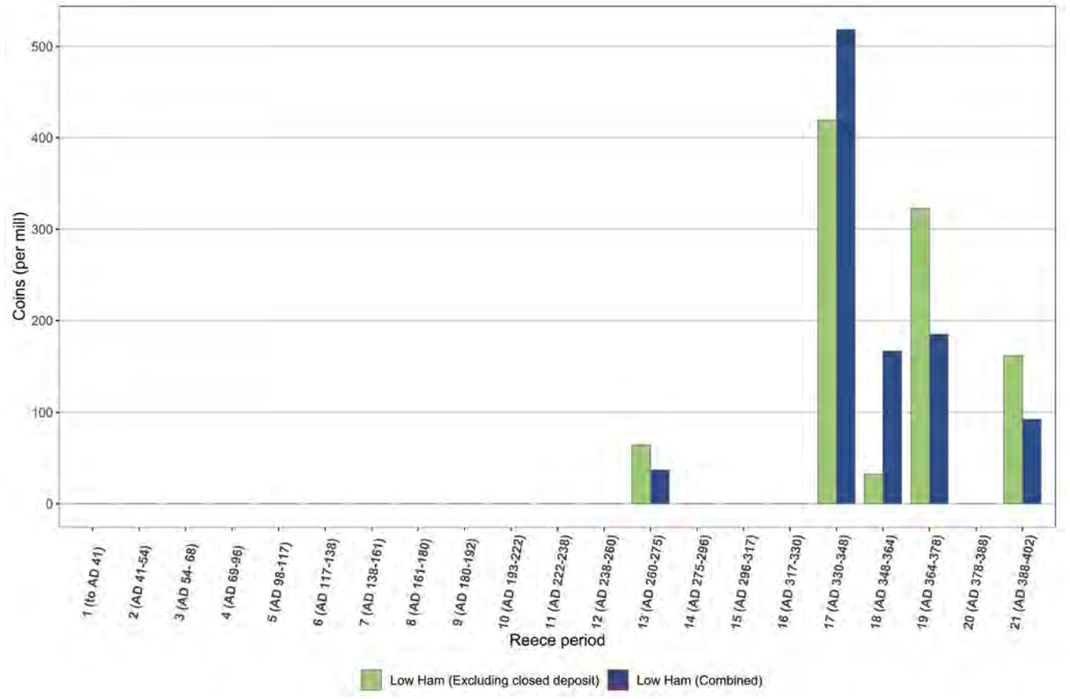


Fig 7.2 Comparison of the coins from Low Ham combined, with and without the potential closed deposit

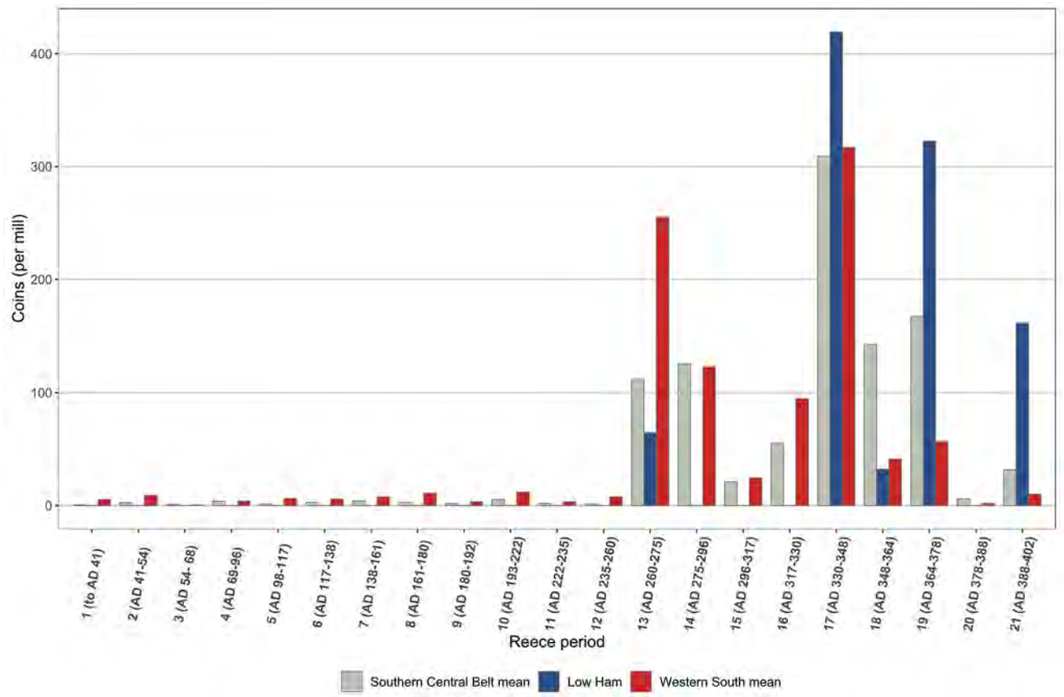


Fig 7.3 Comparison of the southern Central Belt region and the western area of the South region with Low Ham (excluding the closed deposit)

national average (for which see Walton 2012). Finally, the peak in loss of coins from Reece period 21 is greater in the southern Central Belt than the western area of the South region. Five coins from this period have been recorded from Low Ham. Therefore, the site had continued access to coinage in the last decade of the 4th century AD.

In the western mints, the production of bronze nummi ceased in Trier, Arles and Lyon around AD 395 (Carson *et al* 1994). From AD 402 the western Empire was not producing coinage in silver or base metal in substantial numbers, and coinage was not penetrating north of the Alps in any quantity (Esmonde Cleary 2013b, 349). Although the production of such issues ceased, that does not equate to a cessation in circulation, which must be remembered when considering the continued occupation of sites in some form in the early 5th century AD, which is indicated through the radiocarbon dates.

No clipped silver *siliquae* are recorded from the areas excavated at Low Ham. The clipping of *siliquae* is generally accepted to have become widespread at the beginning of the 5th century AD and to have continued until at least AD 420 (Abdy 2013; Bland *et al* 2013). For clipping to occur, *siliquae* must still have played an important role as currency or in exchange. This has led to the suggestion that a tripartite currency system remained until around AD 425 (Walton 2012). There are at least sixteen late Roman coin hoards that date to after AD 364 between the Mendips and the Blackdown Hills, particularly in the region of the River Tone and north-east of the River Parrett (Henry 2021). There are also quantities of clipped *siliquae* recorded as stray finds through the Portable Antiquities Scheme (PAS). This indicates that, potentially, coinage retained an important role in the wider environs of the villa. Given the evidence available from the coin profile from Low Ham Villa, coin use at the site continued into the 5th century AD, probably ceasing before AD 425.

7.2 Metal small finds

Rachel S Cubitt and Nicola Hembrey

This report outlines the metal small finds recovered from the Historic England excavations at Low Ham. The assemblage is presented by functional category, according to the groups set out by Crummy (1983), before being analysed spatially and by location within

Table 7.4 The assemblage of metal small finds from the 2018 excavations by trench

Metal	Trench			No. finds
	1	2	3	
Copper-alloy	5	20	1	26
Iron	299	362	7	668
Lead-alloy	3	52	-	55
Total	**307**	**434**	**8**	**749**

the stratigraphic sequence. The breakdown of objects, by material and trench, is given in Table 7.4. The assemblage comprises 749 objects recorded under 422 separate small finds numbers (an uplift from the assessment total owing to some finds being split up and renumbered) (Table 7.5).

Following recovery and recording in accordance with recognised guidance (Historic England 2018; CIfA 2021), identification and assessment of the assemblage, with the aid of X-rays, was undertaken by Nicola Hembrey (Hembrey 2019). Following investigative conservation work, a selection of iron and copper-alloy objects was re-examined by Rachel Cubitt. This report was prepared using the data gathered at the initial assessment and the updated identifications post-conservation.

Discussion by functional group

The breakdown of the assemblage by functional group is shown in Table 7.5, with the finds further subdivided according to broad period dates assigned by comparison with published type series.

It is probable that a high proportion of the objects of uncertain date are in fact Roman but cannot be confirmed as such because they were residual and lack distinctive datable morphology. Thus certain items within this group are discussed together with the definite Roman material in the following text. Only one typologically post-Roman item was recovered, copper-alloy buckle SF 3064, from the spoil-heap in Trench 1. It is not considered further as part of the following report.

Personal adornment

Items of personal adornment are dominated by those relating to footwear, namely 44 iron hobnails and two iron cleats. The latter comprise an iron plate with a shank at either end and are described as usually coming from the soles or heels of boots (Manning 1985, 131). Cleats are relatively rare, but do occur on sites in central southern Britain, particularly in the later Roman period (Crummy 2011, 48).

Six copper-alloy dress accessories were recorded. SF 31111 (91038) (Fig 7.4) is a penannular brooch fragment with a ring of rectangular cross-section. One terminal survives and has been formed through folding the ring back on itself, followed by the addition of incised decoration in the form of diagonal lines. Mackreth (2011, vol 2, pl 147, no. 3592) publishes a very similar example from Silchester (Hampshire) among the late zoomorphic penannulars, a group cautiously dated to the late 3rd century to early/mid-4th century AD (Mackreth 2011, vol 1, 216). Elsewhere this type is described as chronologically most common in the 1st or 4th centuries AD (Henry and Booth 2022, 70). Interestingly, the parallel brooch published by Mackreth also has one terminal but is described as complete, there never having been a second (Mackreth 2011, vol 1, 216). The Low Ham example has a definite break to the ring and thus it is not possible to determine whether the second terminal is simply missing or was never present.

A group of bracelets was recovered, including three of the two-strand cable type (SF 30095 (90015), SF 31001

Table 7.5 Numbers of metal small finds from the 2018 excavations by functional category and broad period date

Functional category	Roman	Uncertain	Post-medieval	No. Finds
Personal adornment	51	-	1	52
Household	-	2	-	2
Written communication	1	-	-	1
Tools	1	-	-	1
Fasteners and fittings	111	161	-	272
Metalworking	-	65	-	65
Unknown	1	355	-	356
Total	**165**	**583**	**1**	**749**

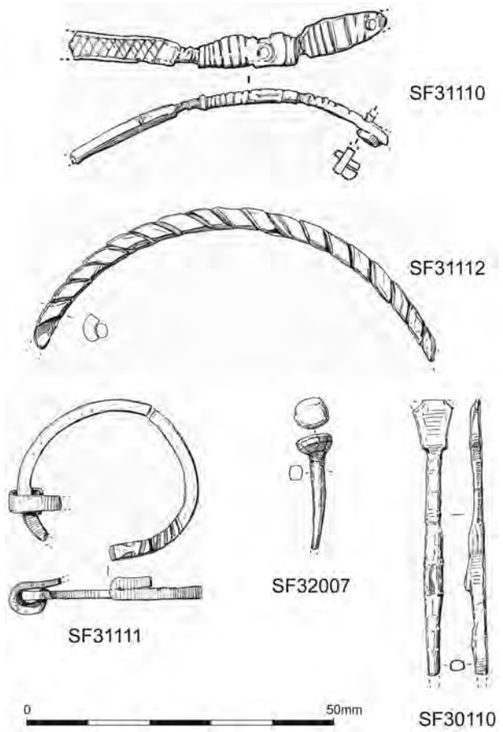


Fig 7.4 Illustrated small finds from the 2018 excavations. Copper-alloy bracelet fragments SF 31110 and SF 31112; copper-alloy penannular brooch SF 31111; copper alloy tack SF 32007; iron stylus SF 30110 (Judith Dobie, Historic England)

(91003) and SF 31112 (91020), Fig 7.4). Their design can be widely paralleled and is dated to the later Roman period (Crummy 1983, 38–9, nos 1613, dated *c* AD320–450, and 1628). Swift (2000, 123) further subdivides this type according to fastening; however, none of the Low Ham examples retains its terminals/fastenings.

A fourth copper-alloy bracelet fragment comprises a flat strip carrying three decorative motifs (SF 31110 (91038), Fig 7.4). The extant terminal is perforated to form the 'eye' from a hook-and-eye fastening (Swift 2000, 145). Working from the terminal, the motifs comprise a band of transverse incised lines, a single incised ring and dot, a second band of incised transverse lines, and finally a length of lightly incised cross-hatching set within an incised border. The bracelet is broken part way along this decorative feature. An exact parallel has not been found, and in fact identical bracelets are very rare (Swift 2000, 145). Swift (2000, 176) found 99 different individual patterns among the 109 she studied. Multiple-motif bracelets are late Roman in date (Swift 1999, 77), with a concentration in Britannia, especially in the south-west of Britain (Swift 2000, 145).

Household

The single metal household object comprises the rim from a leaded copper-alloy vessel (SF 30002 (90002)). The rim is a very simple, rounded form belonging to either a large circular vessel with very shallow curvature or from a straight-sided vessel. The enigmatic nature of this fragment means that it can only be tentatively dated to the Roman period. It could sit equally well in a later period.

Written communication

Evidence for literacy at Low Ham is provided by an iron stylus, designed for use in writing on wax tablets (Tomlin 2016, 27). The Low Ham stylus (SF 30110 from context 90031, Fig 7.4) is missing only the tip. There is a distinct junction between the upper end of the stem and the eraser, which flares along its length to a convex edge and has concave sides. It most closely resembles either Manning Type 3 or 4 (Manning 1985, 85). Poor preservation means that the form of the stem, which would normally be used to distinguish these two types (Manning 1985, 85), is uncertain. Nor can it be confidently dated.

Tools

Two of the three objects within this category are fragments of knives, which could have been used for either domestic, craft or other purposes. SF 31102 (91003) comprises a short surviving length of triangular-sectioned blade set on a rectangular-sectioned tang. The original object would not have been substantial and may have been intended for some specialist purpose. SF 3594 (90047) comprises only a small stub of blade surviving at the end of the tang. Hone stones used to sharpen edge tools such as knives are discussed among the stone assemblage (see Chapter 7.5).

SF 3553 (91096) is another possible tool with a head burred through striking, set atop a sturdy square-sectioned shank. The tip is unfortunately missing and therefore identification to type is not possible. However, something along the lines of a chisel, awl or punch, tools used in conjunction with a hammer, could be suggested.

Fasteners and fittings

As might be expected on a Roman site, the large category of fasteners and fittings is dominated by iron objects, comprising mostly nails and other miscellaneous items of structural ironwork. Unfortunately, poor preservation of

Table 7.6 Low Ham nail assemblage classified according to Manning (1985)

Manning type	Description	No. finds
1b	Square-sectioned tapering shank with flat, sub-rectangular or rounded head	88
2	Flat, rectangular-sectioned tapering shank and a triangular head with marked shoulders	2
3	Small T-shaped head no wider than the shank	1
4	Small L-shaped head no wider than the shank	1
7	Short shank and wide discoidal head that was clearly intended as a decorative feature	5
Unassigned		40
Total		**137**

much of the ironwork precludes firm identification in many cases. Those that can be identified include wall hook SF 31071 (91003). Two double-spiked loops – SF 3117 and SF 3571, both (91046) – functioned to provide a ring or loop that could be attached to woodwork or masonry (Manning 1985, 129). Once securely affixed, the loop could have been put to a multitude of uses.

Among the nails, 97 can be classified according to Manning's typology (Manning 1985, 133), as shown in Table 7.6. The relative quantities recorded from Low Ham for the different types conform to the normal pattern. The vast majority of all Roman nails tend to be of Type 1 (a or b) or Type 2 (Manning 1985, 134), with the latter being much rarer than the former, and all subsequent types being much rarer still (Manning 1985, 135). A handful of the nails are bent. Very few show the distinctive S-bend that results from nails being extracted from timber with a claw hammer or similar, suggesting most were either unused or deposited *in situ* as part of timbers that are now decayed.

The ability to undertake metric analysis on the nails is limited by their fragmentary state. Across the whole assemblage, around half are incomplete, and the picture is similar when looking at individual subgroups. The average length of complete Type 1b nails within the assemblage is 52.4mm.

The Manning Type 7 nails, of which all but one are complete, have length measurements in the range 19.6–41.9mm, with an average of 29.9mm. Manning describes these as short nails, often called tacks (Manning 1985, 135). The assemblage includes a further 13 iron studs. The 10 complete examples have an average length of 21.9mm. They probably fulfilled a decorative function, in addition to their primary role in attaching or securing items. Studs were a versatile and commonly employed fitting, used on domestic items, horse equipment and military equipment (Mould 2011, 161). They were also suitable for upholstering furniture (Mould 2011, 161).

Being decorative in addition to being a fastening is also likely for copper-alloy tack SF 32007 (92140) (Fig 7.4), which has a round, expanded flat-topped head, tapering underneath to a shaft that narrows towards a point. A parallel of a similar size, although different shaft cross-section, from Colchester can be dated to the period *c* AD 100–300 (Crummy 1983, 115, no. 3070), although it represents a form of object that has changed little between periods and could be late Iron Age in date.

Lead-alloy tack SF 3130 (91005) with an expanded pyramidal head is also included in this category and may have had a primarily decorative function. This small object is an almost exact parallel for an iron example from Colchester, Essex (Crummy 1983, 116, no. 3093).

Metalworking

Non-ferrous metalworking is indicated by a small collection of sheet offcuts and melted waste, almost all recovered from cleaning layers. Although detailed discussion of spatial distribution is invalid, the concentration of this material within the burnt layer of Phase HE2.5 is noted. Evidence for ferrous metalworking, also derived primarily from Trench 2, is discussed elsewhere (see Chapter 7.9).

In total 43.3g of melted and 35.4g of sheet copper-alloy waste was identified, and 115.3g of melted and 981g of sheet lead-alloy waste. The low melting temperature of lead alloys means it is possible for the material to become molten in circumstances outside of deliberate working, such as accidental fires. However, the sheet waste of both types is more conclusive proof of deliberate working. Items that may represent offcuts include possible edge trimming SF 3010 (91003).

Molten waste fragment SF 3131 (91005) is worthy of particular mention. This roughly rectangular object has one flat surface and another that is slightly domed and featuring two projections. The alloy has clearly solidified against or around another object. While this could be

further casting waste, some similarity in overall form to a pot mend from Catterick is noted (Cooper 2002, 107, no. 16).

Unknown/uncertain

The most numerous category of objects is those of unknown function, reflecting the extremely poor condition of the metalwork from the site, whereby many objects are too fragmented or heavily corroded for a secure identification to be proposed. This group also includes objects that can be categorised but whose identification is not clearly indicative of any particular function.

Discussion by trench

Trench 1

Trench 1 has the second largest assemblage of metal objects and is dominated by items of unknown function, followed by fasteners and fittings (Table 7.7). Personal adornment is well represented, although largely through evidence for nailed footwear in the form of hobnails, with other categories represented by either one object, or a very small number of objects in the case of metalworking.

The earliest stratigraphic phase to produce objects is Phase HE1.2. Among these, all of the items of personal adornment recorded are hobnails, which cannot be intrinsically dated when found individually. The presence of stylus SF 30110, within spread (90031) in this phase, is notable in being suggestive of literacy and record keeping.

Relatively few finds come from the phases associated with use of the flue feature (Phase HE1.3) considered to have been related to crop processing, and none related to that activity.

Phase HE1.4 is the most productive in terms of metal small finds, returning half the assemblage from Trench 1, and representing demolition of the earlier flue structure. All of the finds in this phase come from rubble layer (90015) or rubble deposit (90047) on the south-east side of (90012). Half of the fasteners and fittings are nails, which may indicate that there was originally a timber element to the rubble deposited, although whether those timbers were related to the crop-processing structure(s) or derived from elsewhere is impossible to say.

In terms of evidence for individuals and their activity, iron knife fragment SF 3573 (90047) and the stone hone (Chapter 7.5) are the only items that might relate to craft or agricultural activity. Among the datable items for personal adornment in this phase, the cable bracelet SF 30095 (90015) does not contradict the possible late 4th-century AD date for the demolition. The cleat is also likely to be a later Roman item.

Artefact recovery from Phase HE1.5 was sparse, and includes post-medieval buckle SF 3064 (90004), suggesting a degree of mixing. It is noted that the evidence for non-ferrous metalworking is first recorded in this phase, and does not appear earlier. This is in contrast to the subsequent modern phase (HE1.6), which does appear to contain objects residual from earlier activity. However, as the non-ferrous metalworking finds come exclusively from spoil, any interpretation of new activity in this phase can only be tentative.

A little over a third of the finds are assigned to 'modern' Phase HE1.6 and the vast majority of these derive from cleaning layer (90003). There are indications that this assemblage comprises at least some residual Roman objects, such as nails and a hobnail. However, items such as the enigmatic vessel fragment could be equally residual Roman or later in date.

It is noted that the context that produced the other large group of fasteners and fittings from this trench, (90015) belonging to Phase HE1.4, is located in the same spatial area, and thus reworking of the site in the 4th and 5th centuries AD could have caused some earlier objects to become displaced.

Table 7.7 Numbers of metal small finds from Trench 1 by functional category and phase

Functional category	Phase					Total
	HE1.2	HE1.3	HE1.4	HE1.5	HE1.6	
Personal adornment	9	1	4	2	1	17
Household	-	-	-	-	1	1
Written communication	1	-	-	-	-	1
Fasteners and fittings	5	1	59	2	35	102
Metalworking	-	-	-	2	2	4
Unknown	4	3	90	1	83	181
Total	**19**	**5**	**153**	**7**	**122**	**306**

Trench 2

Trench 2, located within the south-east range of the villa complex, unsurprisingly produced the largest assemblage of metal objects (Table 7.8), and in particular the largest group of fasteners and fittings in general and of nails specifically. Among both the three-dimensionally (3D) located examples and those from cleaning layers, there appears to be a real concentration of these objects towards the north-western area of the trench. The non-ferrous metalworking-related items are concentrated within this trench, as is the ferrous working evidence discussed elsewhere (see Chapter 7.9).

The stratigraphically earliest finds in this trench come from Phase HE2.2. The recovery of nails and possible nails is in keeping with construction activity occurring within this phase. By contrast, the subsequent Phase HE2.3 produced items of personal adornment. Brooch fragment SF 31111 and multiple-motif strip bracelet fragment SF 31110 are both consistent with the suggested 3rd-century AD date for this extension. Curiously, both were recovered from (91038), an orange mortar used as wall bonding. Phase HE2.4 produced only a handful of finds, which are dominated by structural nails. The two personal items recorded from this phase are hobnails. Small quantities of material are to be expected from phases that are largely concerned with structural remodelling rather than occupation and activity.

A change comes with the large assemblage of material, around half of all of the metal finds from this trench, recovered from Phase HE2.5. This is the first appearance of objects indicative of non-ferrous metalworking, which were in part recovered from burnt layers such as (91046) as well as from rubble deposits, from cleaning and from the spoil-heap. Other potential evidence for craft activity constitutes knife SF 31102 from a layer containing industrial debris (91007) and the iron tool SF 3553 from pit fill (91096). All of this material is located in the north-western area of the trench.

The large number of objects of personal adornment is almost entirely made up of hobnails, along with one of the cleats and one of the cable bracelets, both of which can be described as later Roman. It is noted that the cable bracelet fragment was found in close proximity to the wall in Phase HE2.3, which produced another bracelet and the brooch fragment.

Phase HE2.6 is described as the robbing and collapse of the villa structure in the post-Roman period. The categories of material recovered are broadly in line with those of the preceding phase, albeit recovered in much smaller quantities. 'Modern' Phase HE2.7 appears to indicate a period of inactivity with only four metal finds recovered, all from fills of ditch [91024] in the south-east of the trench.

Finally, Phase HE2.8 produced the second largest group of objects from Trench 2. The finds cover broadly the same range of functional categories as the stratified Roman phases and included some intrinsically Roman material, such as a cable bracelet fragment SF 31001 (91003).

Within Phase HE2.8 and worthy of note is copper-alloy twisted rod SF 3031 (91005). Discounted as a hairpin at the analysis stage, the discovery of this item alongside the non-ferrous metalworking finds in this trench is of interest, and could hint at an alternative functional interpretation. However, its recovery from the spoil-heap precludes any further investigation along these lines.

Trench 3

The metal small finds assemblage from Trench 3 is notably different from that of the other two trenches in both size and make-up (Table 7.9). Only nine individual items were recovered, including two from the spoil-heap. This minimal pattern of recovery likely reflects the different nature and date of occupation taking place at this location, predominantly relating to roundhouses of

Table 7.8 Numbers of metal small finds from Trench 2 by functional category and phase

Functional category	Phase							Total
	HE2.2	HE2.3	HE2.4	HE2.5	HE2.6	HE2.7	HE2.8	
Personal adornment	-	2	2	22	4	-	3	33
Tools	-	-	-	1	-	-	-	1
Fasteners and fittings	3	-	4	73	15	3	70	168
Metalworking	-	-	-	-	-	-	-	0
Unknown	-	-	1	117	17	1	34	170
Total	**3**	**2**	**7**	**213**	**36**	**4**	**107**	**372**

Table 7.9 Numbers of metal small finds from Trench 3 by functional category and phase

Functional category	Phase				Total
	HE3.2	HE3.4	HE3.5	Unphased spoil-heap finds	
Personal adornment	-	2	-	-	2
Fasteners and fittings	1	-	1	-	2
Unknown	-	3	-	2	5
Total	**1**	**5**	**1**	**2**	**9**

later Middle to Late Iron Age date. Only a single possible nail fragment was recorded from this trench. This is also the only trench that did not produce items of Roman-style jewellery, with both of the objects classified as personal adornment being hobnails. These were found in Phase HE3.4, which produced the majority of the metal finds from this trench.

The most interesting of the metal small finds from within this trench comes from Phase HE3.2: SF 32007 (92140), a copper-alloy tack with a round, expanded flat-topped head. It was recovered from the secondary fill of the ring ditch of the roundhouse, dated to the Late Iron Age. It is not in itself datable to the Iron Age, being a form that also has Roman parallels, but may be the only example of an intrinsically Iron Age small find within this assemblage.

Overall discussion

Interpretation of the Low Ham assemblage is hampered by the generally poor state of preservation of the objects (almost half cannot be assigned to a functional category) and high proportion of residuality. Nonetheless, some interesting patterns do emerge from the data, and some informative observations can be made about activities and individuals. For example, the stylus from Trench 1 indicates some level of literacy, a necessary skill to support the running of a complex estate. It was found in an early part of the stratigraphic sequence but cannot itself be dated because of the poor level of preservation.

Investigation of the breakdown of the assemblage between the different trenches and phases reinforces the differences between different parts of the villa complex that are suggested by stratigraphic and other evidence. For example, it is notable that items of structural ironwork, including nails, are largely restricted to Trenches 1 and 2, where Roman structures were found in the stratigraphic sequence. This is in contrast to Trench 3, where roundhouse architecture was present.

While activities undertaken at the villa site are not overtly demonstrated by the small finds when viewed in isolation, there is some conformity with indications of craft and activity seen in other parts of the assemblage. Knife fragment SF 3594 may be associated with craft or crop-processing activities identified through the structural evidence in the same trench. The small assemblage of non-ferrous metalworking evidence suggestive of sheet and molten lead-alloy and copper-alloy working was recovered primarily from Trench 2, which appears also to have been a hub of ferrous metalworking (Chapter 7.9), although whether this represents a wholly separate activity, or one workshop handling multiple metals, is unknown.

The finds of personal adornment are limited. Items like the iron cleat are a rare find but an object type that does appear in the South (Crummy 2011, 48) and thus in keeping with the villa's location. All of the jewellery can be typologically dated to the late Roman period, and was found in Trenches 1 and 2 and not with the more classically Iron Age roundhouse architecture in Trench 3. It is noted that personal adornment is similarly a poorly represented category at other villa sites in the South and Central Belt areas, as defined by the Rural Settlement of Roman Britain project (Brindle 2018, 15, 22).

7.3 Later prehistoric and Roman pottery

Jane R Timby

The 2018 archaeological excavation at Low Ham produced an assemblage of some 1,413 identifiable sherds weighing *c* 9kg and with 7.65 estimated vessel equivalents (EVE). In addition there were some 115 unidentifiable small crumbs (37g). The assemblage had two main components, one dating to the later Iron Age/early Roman period, the other dating to the Roman period.

Methodology

The pottery was recorded using selected recommendations outlined in the pottery standards (Barclay *et al* 2016), and this report was prepared in March 2021. Because of the small size of the sherds and overall poor condition, it was not possible to sort the assemblage macroscopically and most pieces had to be examined using a binocular (×20) microscope in order to identify the inclusions present, along with their frequency and grade. The later prehistoric wares were coded using letters to denote the main fabric constituents, as recommended in PCRG (1997). Known or traded Roman wares were coded with reference to the national Roman fabric reference collection (NRFRC; Tomber and Dore 1998). Other Roman wares were either coded using a similar format to that used in the NRFRC or coded more generically according to the firing colour, inclusion type and texture. Fabric descriptions were based on the guidelines proposed by Peacock (1977, 29), which are summarised in Appendix E. The frequency of inclusions was based on density charts devised by Terry and Chilingar (1955): rare (1–3%); sparse (3–10%); moderate (10–20%); common (20–30%); and abundant (30–40%).

The sorted assemblage was quantified by sherd number and weight. Freshly broken sherds were counted as single pieces. Rims were additionally coded by form and measured for the diameter and estimation of rim equivalence (cf Orton *et al* 1993). Existing published corpora were used where relevant, for example samian (Dragendorff 1895) and colour-coated wares (Fulford 1975; Young 1977). Details of manufacture, for example handmade or wheel-made, were not possible to ascertain for most pieces because of the small size of the sherds, but given based on the tradition and type of pot. Details of decoration and surface treatment, unless not clear from the fabric designation, were added along with any evidence of vessel modification or use. An assessment of the condition of the material was given on a scale of 1 to 5, where 1 is reserved for complete intact vessels (not present); 2 for broken sherds from single vessels with substantial profiles (rare); 3 for moderately good sherds with fresh edges and, in some cases, survival of surface treatments; 4 for small sherds where the forms can be identified but edges and surfaces are abraded or obscured by surface deposits; and 5 for very small worn, eroded sherds less than 20mm square, or rounded pot crumbs. The data was entered onto a pre-formatted MS Excel spreadsheet using fields specified for the project, with additional rows added for each fabric entry.

Pottery was recovered from 101 individually recorded contexts spread over the three trenches. Quantities ranged from single sherds to a maximum of 293 sherds from cleaning horizon (90003), which effectively accounted for 19.3 per cent of the total recovered assemblage. Overall, the pottery recovered from cleaning, spoil or subsoil/topsoil accounted for just under 40 per cent (count) of the recovered assemblage. In total, just over half (52.5%) of the contexts yielded five or fewer sherds, and 68.7 per cent produced ten or fewer sherds, which, together with the fragmentary nature of much of the material, had severe ramifications for the accuracy of any dating. The material was in mixed condition, with mostly very small abraded sherds (condition 1–2) but also a few better-preserved pieces (condition 3). The overall average sherd size (omitting crumbs) was 4g for the later prehistoric material and *c* 7.1g for the Roman wares. Surface preservation was poor, particularly for the finer wares, most of which had lost their original slipped or colour-coated surfaces.

In the following report a summary of the composition of the two main chronological groups is given first, followed by a brief discussion by site subdivision and a summary overview. A selection of the sherds is illustrated in Fig 7.5.

Later prehistoric

The later prehistoric assemblage amounted to some 374 sherds (Table 7.10), which could be divided into six main ware groups: calcareous (CA1–8; SAL1; SASH1–2); sandy (SA1–5); rock (RK); organic (OR); clay pellets (CP1); and sandstone (SST) (see Appendix E for descriptions). The most common group was the calcareous wares, which encapsulated sherds containing degraded limestone and fossil shell (CA1–2, 7; SAL1), fossil shell (SASH1–2) and calcite (CA3–6, 8) and accounted for around 70 per cent (count) of the later prehistoric fabrics, followed by the sandy wares at 37.6 per cent. The other wares were present in very minor amounts.

Some of the sandy wares were difficult to separate from Roman black sandy wares, particularly with so many small pieces. The distinction between the earlier and later phases of the Black-burnished ware (BB1) traditions can be very subtle, as is the transition from pre-Roman Durotrigian-style sandy wares to Roman BB1 (cf Seager Smith and Davies 1993, 249). As this area was nearer to the source areas for some of the BB1, it is likely to have occurred earlier than traditionally the situation on Roman sites further away, and thus likely to show a greater diversity of fabric. Of particular note were five sherds of igneous rock-tempered ware, which could be related to the Glastonbury style of wares (Peacock 1969), with similarly tempered sherds known from Ham Hill

Table 7.10 Quantified summary of later prehistoric fabrics

Fabric	Description	No.	No. %	Wt	Wt %	EVE	EVE %
CA1	calcareous	144	38.50	597.5	40.03	0.15	17.65
CA2	calcareous	1	0.27	15.0	1.00	0	0.00
CA3	calcite-tempered	54	14.44	148.0	9.91	0	0.00
CA5	calcite-tempered	3	0.80	14.0	0.94	0.04	4.71
CA6	calcite-tempered	1	0.27	1.0	0.07	0	0.00
CA7	limestone-tempered	10	2.67	46.0	3.08	0	0.00
CA8	calcite-tempered	1	0.27	4.0	0.27	0	0.00
CP1	?clay pellets	1	0.27	0.5	0.03	0	0.00
FESA	iron-rich sandy ware	2	0.53	4.5	0.30	0.01	1.18
OR	organic tempered	8	2.14	49.0	3.28	0.07	8.24
RK	igneous rock-tempered	2	0.53	10.0	0.67	0	0.00
SA	misc sandy	6	1.60	6.5	0.44	0	0.00
SA1	sandy ware	5	1.34	10.0	0.67	0	0.00
SA2	sandy ware	3	0.80	4.0	0.27	0	0.00
SA3	Durotrigian-type sandy	32	8.56	260.0	17.42	0.20	23.53
SA4	black sandy ware.	61	16.31	213.0	14.27	0.30	35.29
SA5	black fine sandy ware	15	4.01	56.3	3.77	0.03	3.53
SALI	sandy with limestone	6	1.60	9.5	0.64	0	0.00
SASH1	sandy with sparse shell	14	3.74	33.0	2.21	0.05	5.88
SASH2	sandy with sparse shell	2	0.53	5.0	0.33	0	0.00
SST	sandstone-tempered	3	0.80	6.0	0.40	0	0.00
Total		**374**	**100.00**	**1492.8**	**100.00**	**0.85**	**100.00**

and Meare Village East (Morris 1987). Three sherds of sandstone-tempered ware from a single vessel from ring ditch [92139] showed traces of a possible zonal pattern of decoration with cross-hatching (Fig 7.5, no. 1), and thus also probably belonged to the south-western (Glastonbury) decorated style. Similarly decorated bowls have been found at Cadbury Castle, Somerset (Barrett *et al* 2000, eg fig. 55.12), and Meare Village East, Somerset (Rouillard 1987).

Featured sherds were extremely limited and all the rims (ten in total) appeared to be from jars, three of which were beaded, the remainder being from simple everted or undifferentiated forms. The total EVE for this group of wares was just 0.44. A few vessels showed traces of domestic use in the form of sooting or burnt residue. Other featured sherds included two slightly recessed bases and a handle fragment from a jar from the topsoil (92001).

In terms of chronology it is quite difficult to be precise, as many wares in the Iron Age tradition would have continued in use into the early Roman period, especially in the west of Britain. A further complicating factor is the persistence of handmade technology from the Iron Age throughout the Roman period. Apart from the Glastonbury-style bowl, there were no other decorated wares. Beaded rim jars are very typical of the later Iron Age and early Roman periods, while Glastonbury-style wares are considered typical of the Middle to Late Iron Age. Calcareous-tempered wares have a long history of use going back into the Early–Middle Iron Age in this area. In the absence of any contrary evidence, the assemblage here is dated to the mid- to later Iron Age, and this appears to be corroborated by the radiocarbon dates (see Chapter 6.2).

Roman wares

Most of the remaining 1,039 sherds, as far as could be ascertained, appeared to date to the Roman period, with an emphasis towards the later Roman period (Table 7.11). Although there were a few continental and regional imports, the assemblage was overwhelmingly dominated by sherds of BB1, with both the south-east Black-burnished ware (DOR BB1) and south-west Black-burnished ware (SOW BB1) industries well represented. Of these latter two industries, sherds allocated to DOR BB1 accounted for 39 per cent by count and 51.3 per cent by weight, and SOW BB1 for 36 per cent by count and 29.7 per cent by weight.

Continental imports were limited to four probable

Table 7.11 Quantified summary of Roman fabrics

	Fabric	Description	No.	No. %	Wt	Wt %	EVE	EVE %
Import	LGF SA	South Gaulish samian	2	0.19	1	0.01	0	0.00
	LEZ SA 2	Central Gaulish samian	2	0.19	2.25	0.03	0.03	0.44
Regional	CAR GL	Caerleon glazed ware	2	0.19	7	0.09	0.12	1.76
	NFO PA	New Forest parchment ware	1	0.10	115	1.54	0	0.00
	NFO RS 2	New Forest red-slipped ware	19	1.83	132	1.77	0.06	0.88
	NFO WH 2	New Forest white ware	2	0.19	12	0.16	0	0.00
	OXF RS	Oxon red-slipped ware	45	4.33	173	2.31	0.31	4.56
	OXF WS	Oxon white-slipped ware	1	0.10	5	0.07	0	0.00
Traded	DOR BB1	Dorset Black-burnished ware	406	39.08	3832	51.27	4.86	71.47
	NFZ RE	Norton Fitzwarren storage jar	31	2.98	383	5.12	0.12	1.76
	SOW BB1	South-west Black-burnished	376	36.19	2216	29.65	0.69	10.15
	SOW OX	South-west oxidised ware	1	0.10	5	0.07	0	0.00
Unknown	BSGY	Black-surfaced grey ware	4	0.38	17	0.23	0	0.00
	BWF	fine black ware	2	0.19	2	0.03	0	0.00
	BWFMIC	fine black micaceous ware	9	0.87	71	0.95	0.03	0.44
	BWSALI	black sandy with limestone	2	0.19	22	0.29	0.01	0.15
	GY1	fine grey sandy ware	3	0.29	5	0.07	0.01	0.15
	GY2	grey sandy ware	2	0.19	6	0.08	0	0.00
	GY3	grey sandy ware	13	1.25	36	0.48	0	0.00
	GY4	glauconitic sandy ware	7	0.67	53	0.71	0.1	1.47
	GY5	grey ware with clay pellets	1	0.10	11	0.15	0	0.00
	GY6	fine grey glauconitic sandy	17	1.64	75	1.00	0.15	2.21
	GY7	pimply sandy ware	5	0.48	58	0.78	0	0.00
	GYF	fine grey ware	1	0.10	3	0.04	0	0.00
	GYFLI	fine grey ware with limestone	1	0.10	4	0.05	0	0.00
	GYFMIC	fine grey micaceous ware	1	0.10	7	0.09	0	0.00
	GYSY	misc other grey sandy wares	6	0.58	29	0.39	0.07	1.03
	OX1	orange-brown sandy	1	0.10	8	0.11	0	0.00
	OX2	oxidised sandy ware	2	0.19	10	0.13	0	0.00
	OX3	fine oxidised micaceous ware	6	0.58	23	0.31	0	0.00
	OX4	oxidised sandy ware	4	0.38	17	0.23	0	0.00
	OX5	fine sandy oxidised	3	0.29	8	0.11	0.03	0.44
	OX6	fine oxidised with glauconite	1	0.10	0.5	0.01	0	0.00
	OX7	micaceous sandy oxidised ware	3	0.29	3	0.04	0	0.00
	OXID	other oxidised sandy wares	5	0.48	15	0.20	0	0.00
	OXCC	misc oxidised with colour-coat	10	0.96	36	0.48	0.21	3.09
	OXIDF	fine oxidised ware	41	3.95	59	0.79	0	0.00
	WSOX	white-slipped oxidised ware	1	0.10	13	0.17	0	0.00
Total			**1039**	**100.00**	**7475**	**100.00**	**6.80**	**100.00**

sherds of samian, all extremely small and mostly lacking a surface. Despite the small size, however, there were both South Gaulish and Central Gaulish sherds present, with a South Gaulish bowl Dragendorff (Drag.) type 29 and a Central Gaulish (Lezoux) dish, Drag. type 35/6. There were no sherds of amphorae or other imported finewares.

Products from the regional industries accounted for 6.74 per cent (count) of the Roman assemblage and were dominated by fine and specialist wares from the Oxfordshire industries. These were nearly all red-slipped vessels (OXF RS), with a single white-slipped piece (OXF WS). Forms included Young (1977) bowl types C68, C75, beaker C22 and mortaria C100. New Forest products were less well represented but included a parchment ware (NFO PA) painted base sherd (pit [91082]), some red-slipped wares (NFO RS 2) and possibly two sherds of fine whiteware, which may have been slipped although identification is very uncertain. One of the white ware sherds from cleaning layer (90003) had an unusual stamped motif currently unparalleled (Fig 7.5, no. 5). There was one small sherd of a mortarium.

Most of the rims from the colour-coated wares appeared to be from flanged bowls (Fulford 1975, type C63).

Apart from a single sherd of south-west oxidised ware probably from Wiltshire, the only other regional fabric that could be recognised comprised two sherds from a single glazed beaker from ditch [92142] (Fig 7.5, no. 2). Similar vessels were produced in South Wales (Caerleon/Usk) dating to the Flavian–Trajanic period (Greep 1986, 92; Webster 1992, 114; cf Arthur 1978, fig 8.10, type 5). This would seem a logical source for this vessel.

A further regionally traded product, but produced more locally to Low Ham, is the large south-western-type storage jar (cf Holbrook and Bidwell 1991, 175). These vessels are known to be at least one of the products from the kilns at Norton Fitzwarren (Timby 2016), although other production centres may have existed.

The remaining Roman wares were divided according to firing colour – reduced (grey, black) and oxidised – and grade and type of inclusion. Several had a glauconitic sand fabric suggestive of a source from Lower Greensand outcrops, which is not immediately local. Most were represented by very small numbers of sherds, with few if any featured sherds.

Forms

Jars dominated the assemblage, accounting for 43.2 per cent EVE, but were fairly closely followed by bowls at 36.8 per cent. Other classes contributed quite small amounts, but dishes accounted for 10.4 per cent and beakers for 5.1 per cent. Other types present represented by rims included a flask, storage jar, lids and mortaria. Flagons were absent. The profile was quite typical of a late Roman assemblage (Table 7.12).

Many of the rims in BB1 fabrics were dominated by jars (Fig 7.5, no. 9), flanged-rim conical bowls (Fig 7.5, no. 8) and plain-walled dishes. Rarer types included a DOR BB1 handled beaker (Holbrook and Bidwell 1991, type 6.1) (Fig 7.5, no. 3); one beaded rim bowl (Fig 7.5, no. 6); two lids and one perforated lid knob; a flask; a few beakers and a small decorated handle fragment (Fig 7.5, no. 7).

Table 7.12 Summary of Roman forms (expressed by EVEs)

Category	Form	EVE	EVE %
Drinking vessel	beaker	0.35	5.1
Dispensing liquids	flask	0.07	1.0
Storage	large storage jars	0.05	0.7
Domestic/storage	jars	2.94	43.2
	bowls	2.50	36.8
	dishes	0.71	10.4
	lids	0.03	0.4
Food preparation	mortaria	0.15	2.2
Total		**6.80**	**100.0**

Several vessels showed evidence of use in the form of sooting or residues. A small number of sherds had been heavily burnt, and at least one showed some form of metallic residue (ditch [92032]). Initially these were thought to be crucibles, but examination of the fabrics suggested that they were domestic pottery vessels that had perhaps been used for some industrial purpose or were accidentally burnt. Two sherds – from cleaning layer (91004) and gully/furrow [91026]) – had internal calcareous linings.

One sherd of DOR BB1 had been modified to form a perforated disc/spindle whorl (SF 3057) (Fig 7.5, no. 4), and one grey ware jar (91027) may have had a hole or slot cut into the body after firing. As this was on the break it is a little uncertain.

Chronology

Dating individual sherds can be rather misleading for Roman wares, as the Dorset BB1 industry dates from the pre-Roman period through to the 4th or 5th century AD. Thus if no featured sherds are present, the dating for small body sherds can only be quite broad. The south-west BB1 industry is thought to have had a shorter duration, and evidence from Exeter suggests it did not last much after the mid-3rd century AD (Holbrook and Bidwell 1991). This was difficult to assess from the Low Ham assemblage and, although a latest date of AD 250/270 has been used here, it could extend a little later. The fine wares were limited but useful for dating. An earlier Roman presence is indicated by the samian, with South Gaulish wares in production from the 1st–early 2nd centuries AD, and Central Gaulish wares largely dating to the 2nd century AD. Samian, however, is a curated ware and often occurs in deposits much later than its production dates. Also of earlier date is the glazed beaker from South Wales. This was a very short-lived experimental industry probably dating to the later Flavian–Trajanic period (Greep 1986, 92; Webster 1992, 114). For the later Roman period, Oxfordshire and New Forest fine wares were not in production until around the mid-3rd century AD, thus providing a useful *terminus post quem* (TPQ) where present. The dating of Norton Fitzwarren-type storage jars is equally broad but thought to be from the later 2nd through to the 4th century AD. When the information is amalgamated, most of the contexts with Roman pottery date to the later 3rd–4th century AD. Although the bulk of the late coarse ware forms would have continued in use throughout the 4th century AD, evidence for other material dating to the mid- to late 4th century AD is slight, with only two of the fine wares being types not made before the 4th century AD.

Site distribution

Trench 1

Trench 1 produced a total of 633 sherds of pottery (including unidentifiable crumbs), weighing 4,075g and with 3.08 EVEs from 21 defined contexts. A substantial amount of this came from cleaning layer (90003) and subsoil (90002), with much of the remainder derived from ditch fills or rubble layers. Trackway ditch [90023] yielded 32 sherds, including two sherds of New Forest ware and a DOR BB1 flanged-rim conical bowl indicative of a date after AD 270. The field boundary ditches [90007] and [90030] produced 32 and 47 sherds, respectively. None of those from [90007] needs necessarily date after the 3rd century AD, and this is broadly similar for [90030], with the exception of a tiny piece of New Forest ware from the upper fills. No pottery was recovered from the stone-lined flue [90025] or postholes [90040] and [90042]. Rubble layers (90015) and (90047) produced 56 and 82 sherds, respectively, with sherds dating from the later 3rd century AD into the 4th century AD. The average sherd weight for the material from (90015) was 9g, compared with just 5.3g for that from (90047), suggesting that the material was perhaps derived from different sources or had undergone different processes of attrition. Among the sherds from (90015) was a DOR BB1 handled mug (Fig 7.5, no. 3), a flanged-rim conical bowl, jar sherds decorated with oblique latticing, and a reworked sherd (Fig 7.5, no. 4). The material from (90047) was slightly more diverse, with, among other wares, DOR/SOW BB1, Oxfordshire and New Forest colour-coated wares and a Norton Fitzwarren-type storage jar. Ditch [90014/90034/90036] cutting the rubble layers produced just 12 small body sherds, none of which could be closely dated other than mid- to later Roman. This in turn was cut by ditch [90008] also with 12 sherds, but including a DOR BB1 flanged-rim conical bowl, flared-rim jars, further Norton Fitzwarren-type storage jars and an Oxfordshire colour-coated mortarium (Young 1977, type C100), suggesting a late 3rd–4th-century AD date range. The remaining pottery from this trench came from cleaning layers, particularly (90003), which yielded a total of 239 sherds (1,385g), among which were jars, bowls and dishes in BB1, a Lezoux samian dish and Oxfordshire bowls (Young 1977, type C100), type C68 and possibly a C75, reflecting 4th-century AD activity (Fig 7.5, nos 5–9).

Trench 2

Trench 2 produced 357 sherds of pottery, weighing 2,882g and with 2.83 EVEs from 329 contexts. Some 31.6 per cent of the sherds came from the topsoil or cleaning, with the rest scattered across 35 contexts, largely rubble layers, pits and robber trenches. Most contexts yielded fewer than five sherds, and there were only three groups of any size: rectangular pit [91082], robber cut [91078] and pit [91012]. Pit [91082] had a single sherd from fill (91051) but a further 29 sherds from upper burnt layer (91007), which included a large painted base in New Forest parchment ware and several burnt sherds of BB1. Robber trench [91078] produced 63 sherds (583g) of pottery from the backfill, with further BB1 and New Forest wares, a flanged bowl in an unknown oxidised colour-coated ware, and a grey ware jug handle, again indicative of a date from the later 3rd century AD onwards. Pit [91012] contained 20 sherds of SOW BB1, which included pieces decorated with a right-angled burnished line lattice, suggesting a slightly earlier date in the later 2nd–early 3rd century AD. Rubble layer (91057), with just 11 sherds, had one sherd from an Oxfordshire colour-coated necked beaker, which would date from the mid-3rd century AD onwards.

Trench 3

Trench 3 produced a total of 533 sherds, weighing 2,000g and with 1.51 EVEs. The pottery comprised a mixture of later Iron Age, early Roman and late Roman wares. The topsoil (92001–2) along with the spoil produced 92 sherds, largely later prehistoric pieces but with some late Roman pieces.

Of the three ring ditches, Roundhouse 1 [92047] yielded six small sherds of pottery and five of fired clay or pot from (92026). Although close dating is ambiguous, the sherds were all Roman pieces, including a BB1 jar, suggesting there may have been some contamination of the fill. Roundhouse 2 was almost aceramic, with just one small scrap of later prehistoric sandy ware from ditch segment [92011]. In contrast, Roundhouse 3, [92145/92141/92083/92039], produced a large assemblage of 197 sherds, weighing 640g and with 0.27 EVEs. While most of the sherds were of later prehistoric date, there were a few very small, probably Roman, intrusive pieces. A diverse range of fabrics was present, dominated by calcareous-tempered wares (CA1–2) (60% count) accompanied by examples of sandy (SA1, SA2, SA4),

rock-tempered (RK), organic (OR), sandstone (SST) and sandy with shell (SASH) wares. Diagnostic rim sherds were rare but included globular jars, beaded rim jars and a body sherd from a Glastonbury-style ware bowl (Fig 7.5, no. 1).

Ditch terminal [92107] yielded 30 sherds, also mainly of later prehistoric date, but with one piece of SOW BB1 and one ?intrusive sherd of New Forest red-slipped ware. Other features exclusively containing later prehistoric pot, albeit it in very small amounts, included pits [92056], [92113] and [92126], postholes [92105] and [92109], and beam slot [92032], although the associated radiocarbon dates for [92126] and [92032], which both contained just two very small sherds of sandy ware, suggest these are potentially early Roman (see Chapter 6.2).

Ditch [92142], cutting Roundhouse 3, produced 36 sherds, including a Caerleon-type glazed beaker (Fig 7.5, no. 2), DOR BB1 and early black sandy wares, suggesting an early Roman date. Joining this was posthole [92041], with a sherd of late 1st-century AD South Gaulish samian bowl (Drag. type 29).

Enclosure ditch [92059/92147] only produced four sherds, three of Iron Age type and one of BB1, which also might suggest an early Roman date. The later recuts were more prolific in pottery, and [92030] produced 53 sherds comprising a mixture of later prehistoric and early Roman pieces, including 31 sherds of SOW BB1 with at least one beaded rim jar. A further 21 sherds (885g) came from [92050], largely sherds of BB1, including a jar handle and rim, along with further later prehistoric pieces. The latest feature on the site appeared to be posthole [92079] with five sherds of 4th-century AD types, including DOR BB1 and New Forest red-slipped ware.

Illustrated sherds

1. Small body sherd from a bowl with traces of a cross-hatch burnished line decoration in Glastonbury style. Fabric: SST. Trench 3. Ring ditch [92039] (92138).

2. Small beaker with rouletted and vertically grooved decoration. Very fine grey ware with traces of decayed glaze in the indents of the decoration. This is probably a product of the South Wales industry, most likely Caerleon, dating to the early 2nd century AD. Trench 3. Ditch [92142] (92123).

3. Handled beaker with one handle extant (Holbrook and Bidwell 1991, type 6). Fabric: DOR BB1. Probably mid- to later 3rd–4th century AD. Trench 1. Rubble (90015).

4. Body sherd reused to form a perforated disc. Diameter *c* 40 mm. Fabric: DOR BB1. Trench 1. Rubble (90015). SF 3057.

5. Slightly carinated body sherd, possibly from a small bowl, in a partly burnt white ware. The fabric is fine textured, slightly off-white and contains sparse flecks of red iron. It probably originally had a colour-coated surface and may possibly be a New Forest product. The exterior is decorated with what is probably an impressed motif that is repeated and presumably went around the vessel. No parallel has been identified for the design. Trench 1. Cleaning (90003).

6. Beaded rim bowl (Holbrook and Bidwell 1991, type 2). Fabric: SOW BB1. Probably 2nd century AD. Trench 1. Cleaning (90003).

7. Small handle fragment, slightly unusual in that it has a shallow, impressed decoration down the central zone. Fabric: SOW BB1. Trench 1. Cleaning (90003).

8. Substantial part of a flanged-rim conical bowl. Fabric: DOR BB1. Trench 1. Cleaning (90003), SF 30032.

9. Flared rim jar. Fabric: DOR BB1. Trench 1. Cleaning (90003).

Discussion

Although there are quite a few extensive pottery reports for sites in the Somerset area, few of these have been written in the past 40 or so years, and almost none from villa sites. Pottery studies have developed considerably in recent years, both in terms of methodology and in the recognition of traded wares, which has allowed a greater level of analysis in terms of the social and economic status of sites at different points in time. The generally poor condition of the recovered assemblage from Low Ham, along with its quite diverse chronology, somewhat limits the level to which comparisons can be made, but there are some general trends across the region in terms of accessibility of wares at different points in time.

Despite the fact that several villas have been investigated in Somerset, there are no detailed quantified pot reports, although Gatcombe, to the north, does provide some basic information (Branigan 1977, table 2). There does not appear to be a pre-Roman or early Roman component present within that assemblage. Similarly, pottery from the earlier investigations at Low Ham Villa also produced what appears to be a largely late Roman

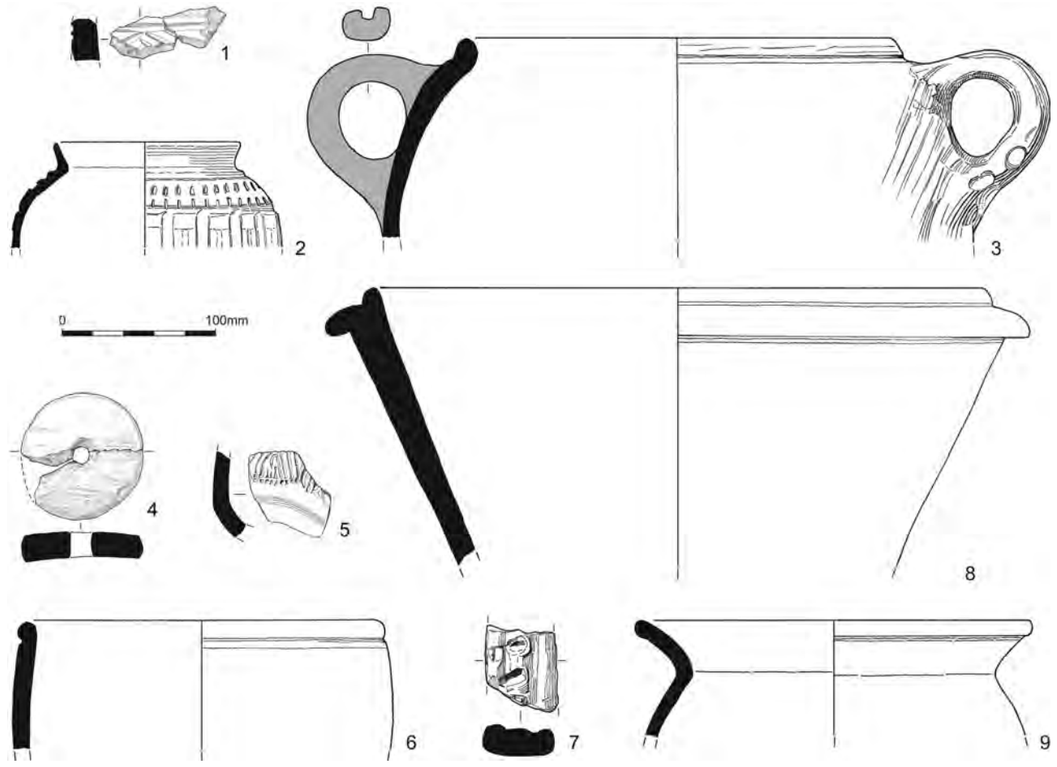


Fig 7.5 Illustrated pottery from the 2018 excavations (Judith Dobie, Historic England)

assemblage (Leech 1977a, 107) of pottery and coins. At the time there did not appear to have been any evidence to infer earlier occupation at the site, although this is now contradicted by the recent work.

Such a scenario where villa sites show earlier use does not seem that unusual in the Somerset area, and two examples investigated more recently in south and west Somerset, Dinnington and Yarford, have both, like Low Ham, shown evidence for Iron Age and early Roman land use prior to the construction of the later villas (King 2022). Similarly, pre-Roman activity has been noted on several other Roman sites in the county.

The sequences seen in the later Iron Age pottery in the area are quite well documented, with the appearance of south-western decorated (Glastonbury-style) wares and the adoption and dominance of Durotrigian black sandy wares (cf Morris 1988). Material comparable to that from Low Ham, including Glastonbury ware, has been found locally. Most of the fabrics at Low Ham are replicated in the sequences from Ham Hill (Morris 1987), with the exception of a flint-tempered fabric. The calcareous wares, along with most of the sandy wares, and the organic, clay pellet and iron-rich wares, are probably of local origin. The calcite-tempered wares probably come from the Mendip Hills, and the rock- and sandstone-gritted wares are also from non-local sources, as are the fabrics containing glauconite.

In the early Roman period Low Ham was clearly receiving Black-burnished ware pottery from Poole Harbour, Dorset (DOR BB1) and the south-west, probably the Exeter area (SOW BB1), as well as products from South Wales (Caerleon), Wiltshire (SOW OX) and the Continent (samian tableware). The numbers are very small but demonstrate the range of contact at this time. Trade or contact across the Bristol Channel is also illustrated by the distribution of BB1 and the similarities between the South Wales and the North Somerset grey ware industries in the mid- to later Roman period. Odd sherds of glazed ware have been noted at many early Roman sites in the Somerset area, although it is by no means certain these come from one source.

The assemblage in the later Roman period conforms to that which might be expected for the area, with the dominance of the big regional industries, particularly for Black-burnished wares and Oxfordshire products, most notably colour-coated wares, augmented by New

Forest products. Surprisingly, no obvious examples of North Somerset (Congresbury) grey ware were identified, but some of the less distinctive grey wares may fall into this group, although still forming only a small component.

7.4 Ceramic building material

Kayt Hawkins

A small assemblage comprising 1,549 fragments (6,631g) of ceramic building materials (CBM) was recovered from across the three areas investigated in 2018, with the majority located within Trench 2 (Table 7.13). This material included both hand-recovered fragments and those retrieved during the processing of environmental samples.

Methodology

The assemblage was fully recorded into an Excel spreadsheet during 2019, utilising the pre-determined fields required by the Historic England (HE) digital recording system (Intrasis, see https://www.intrasis.com/). The original assessment forms the basis of this report, supplemented further in accordance with current best practice (CIfA 2021). Quantification was by fragment count, weight (g) and type (where identifiable) for each individual context. Material from environmental samples was also recorded under context and sample number, to distinguish the different recovery methods and the bias in fragment size introduced when combining these counts. For example, Trench 1 accounts for 19 per cent of the assemblage by count, yet just 12 per cent by weight because of the predominance of material from environmental samples. The assemblage was highly fragmentary, with 97.5 per cent of the assemblage by count classed as unidentifiable; this accounted for less than 35 per cent of the assemblage by weight, with an average fragment weight of just 1.5g (Table 7.14). Type classification followed the terminology of Brodribb (1987), with 28 pieces (<2%) and one surviving dimension (thickness). As a consequence, a broad approach to fabric analysis characterisation was undertaken, whereby only those pieces of identifiable type were examined, a decision also informed by the residual nature of much of the assemblage and COVID pandemic restrictions preventing physical comparison with other sites. All fragments were red-orange in colour, and mostly soft with powdery surfaces, although two were hard-fired and comprised a fine sandy clay matrix, with cream calcareous pellets or swirls and varying amounts of red iron oxide inclusions. It is likely that all were derived from the same geological source.

Table 7.13 Quantification of CBM by trench

Trench	Count	Weight (g)	% (count)	% Weight (g)
1	297	813.9	19.2	12.3
2	1176	5325.9	75.9	80.3
3	76	491.2	4.9	7.4
Total	**1549**	**6631.0**	**100.0**	**100.0**

The assemblage

The range of tile types identified included plain tile, brick, *imbrices* and box-flue tiles (*tubuli*). Plain tile as a category encompassed fragments with a thickness of <35mm that lacked any diagnostic features, and it is recognised that as a group this may be expected to include a mix of *tegulae* and other thin tile types, including undecorated box-flue tile pieces (Warry 2020). Two possible brick fragments were present, both measuring 45mm thick, with one corner piece (91003) displaying possible finger-smearing along two sides. In terms of roof tile, no definite *tegulae* was identified, which may be because of the use of stone instead of ceramic roofing materials (see Chapter 7.5), although *imbrices* were present as small fragments, with the exception of a single large piece from cleaning layer (91033). Although incomplete, the extant measurements for this *imbrex* indicated a width of 240mm and thickness of 15mm, with a surviving length of 159mm. Box-flue tiles were most easily distinguished by keying on one or more faces, evidence of vent holes, and when corner returns were present. Within the twelve fragments recorded, a range of combing styles was noted,

Table 7.14 Quantification of CBM by type

Trench	Count	Weight (g)	% (count)	% Weight (g)
Brick	2	1157	0.13	17.4
Box-flue	12	1121	0.77	16.9
Plain tile	22	797	1.42	12.0
Roof tile	7	1556	0.45	23.5
Unidentifiable	1506	2000	97.22	30.2
Total	**1549**	**6631**	**100.00**	**100.0**

comprising straight or diagonal patterns, as occurred on the fragments of CBM retained from the 1940s excavations (see Chapter 4.4). Partial cut-outs on plain surfaces indicated square or rectangular vent holes on the box-flue tiles recorded.

Discussion

Although CBM was recorded distributed across all three excavation areas (19%, 75% and 6% by fragment count, respectively), there was unsurprisingly a concentration of material within Trench 2, the area of the villa. The overall paucity of CBM was largely because of the preference for stone materials within the area, as evidenced here at Low Ham (as discussed in Chapter 7.5), although the *imbrices* may have been used as ridge tiling, where they would have formed a sharp contrast to the stone roofing. The small quantities recovered may indicate the use of ceramic tiles for an alternative function, yet evidence for limited robbing of stone materials at the site (Leonard *et al* 2019) may imply selective and comprehensive removal of a visually distinctive building material following the abandonment of the building.

7.5 The worked stone

Kevin M J Hayward

A petrological and functional overview of the worked stone assemblage (2,140 examples, 309kg) from the 2018 excavations of Low Ham Villa was undertaken with reference to the findings of the 1940s excavation, which are also discussed within this report.

Geological and physiographic setting

The county of Somerset is blessed with a wide range of quarried building stones and roofing slates (Prudden 2003; Barr 2006, 2007; Historic England 2017; Dawson and Wright 2018), a reflection of its diverse, complex and protracted Palaeozoic to Mesozoic sedimentary sequence. The site of Low Ham Villa, for example, lies in a region of south-central Somerset where the underlying bedrock consists predominantly of clays, interbedded calcareous mudstones and fine (micritic) limestones of the Late Triassic to Lower Jurassic, collectively the Lias Group (Bristow and Donovan 2015), suitable mainly for paving and roofing slates but also building stone.

Away from the Liassic rocks of Low Ham, progressively older, harder Lower to Upper Devonian slates and sandstones crop out to the north and west of the county. To the east lie younger Middle Jurassic (Bajocian) freestones, including Doulting stone (Shepton Mallet) (Prudden 2003, 34) and slightly younger Bathonian freestones of Fullers Earth Rock and Bath stone at Frome (Prudden 2003, 34), which form part of the extensive 400km north-east to south-west trending Jurassic ridge that runs from Humberside to Dorset, the source of most of the native freestones suitable for fine carving in the province (Hayward 2009). Other suitable sources of freestone are slightly older Lower Jurassic (Toarcian) Ham Hill stones to the south near Yeovil (Prudden 2003, 33). The youngest bedrock is in the very south of the county, around Chard, with the Upper Cretaceous greensand and chalk.

Low Ham had access to many of these resources via two major supply routes. A major south-east to north-west-flowing river, the Parrett, which drains into the Severn Estuary, lies just 5km to the south of the site near Langport, and connects the site via its tributary, the River Cary, permitting the transhipment of bulky heavy stone from as far as north Somerset and the Estuary, while at the same time bringing in younger limestone from the south of the county. Eleven kilometres to the east is the major south-west to north-east-trending Fosse Way, a Roman road connecting south Somerset to stone from the Middle Jurassic ridge at Shepton Mallet and Carboniferous limestone from the Mendips. It also allows stone to be brought in from much further afield, including the Devonian and Upper Carboniferous sandstone rocks of the Forest of Dean (basal conglomerate; brownstone; Senni beds) and South Wales (millstone grit), suitable for quern and hone manufacture.

Previous work

Williams's (1971, 95–119) pioneering study of Roman building materials in south-west England included a review of the architectural stone from the 1940s excavations at Low Ham, and identified Blue Lias as walling material and Ham Hill stone from the façade base (Williams 1971, 104, table 1), as well as 'Devon slate' roofing (Williams 1971, 107, table 2). Other than that, only the form of the stone monolithic *pilae,* stone tiled *pilae* and stone hypocausts (Williams 1971, 114, table 3) were described. No previous attempt has been made to distinguish the stone types used in the Dido and Aeneas mosaic from the *frigidarium* (Cosh and Neal 2005, 253–7, 207.1; Chapter 4.5), nor the other mosaics (Cosh and Neal 2005, 2024; Chapter 4.5), but it is clear from the breadth of colours, including black, dark blue-grey, light blue-grey, red, buff, yellow and white hues, that a great variety of materials was used.

Methodology

The recent Historic England excavations at Low Ham Villa provided the ideal opportunity to reinvestigate the geological character, source and form of the worked stone assemblage. The retained washed and bagged stone from the site was examined and recorded by category in-house at Fort Cumberland, Hampshire. Treatment with dilute hydrochloric acid was used to determine whether the rock had a calcareous composition. The fabric was examined at ×20 magnification using a long-arm stereomicroscope or hand lens (Gowlland ×10).

A petrological review of the loose tesserae assemblage included detailed measurements and shapes to pick out the different size categories of the mosaic(s) and determine whether any of the material represented on-site processing in the form of tesserae waste. To understand the sheer breadth of mosaic materials at Low Ham, the Dido and Aeneas mosaic from the *frigidarium* was examined by Hayward from hand specimens at the Somerset County Museum in Taunton.

Consultation of county geological literature and building stone reports and geological maps (British Geological Survey, sheets 295, 296, 327), alongside unpublished worked stone reports and stone reference collections collated from villas in Somerset, Wiltshire, Dorset and Berkshire (Bedford and Clark 2014), provided the necessary body of comparative data with which to better understand rock type, source and function at Low Ham.

Petrological review

Hand-specimen analysis of the retained stone assemblage identified twelve lithotypes that were Iron Age or Roman in date; their geological character, source, function and frequency are summarised in Table 7.15.

By proportion (Fig 7.6), two local rock types, White Lias and Hard Blue Liassic stone, dominated (223kg, 72% by weight). These materials were acquired either from the underlying bedrock or within 5km to the south, where there were extensive workable units of Lias at Langport, many of which were the probable sources of White Lias roofing in villas elsewhere in the south (see especially Williams 1971, 107, map 5).

The remainder of the assemblage (86.4kg, 28% by weight) came from eleven sources, which lay at distances greater than 10km away, and consisted not only of easily transportable stone used in small portable objects (Eggardon Grit sourced to Bridport, Dorset) and as tesserae (white indurated chalk from north Dorset), but also different sources of freestone (a soft, open, porous limestone or sandstone that can be worked or carved in any direction; Sutherland 2003) suitable for fashioning at least basic architectural elements. These included the distinctive red and yellow shelly Ham Hill stone (Lower Jurassic – Toarcian), from Ham Hill to the south, and, unusually, some examples of the shelly Fuller's Earth rock (Middle Jurassic (Bathonian)) 15km to the east and north, with the distinctive large brachiopods (pentamerids) that are unique to this formation.

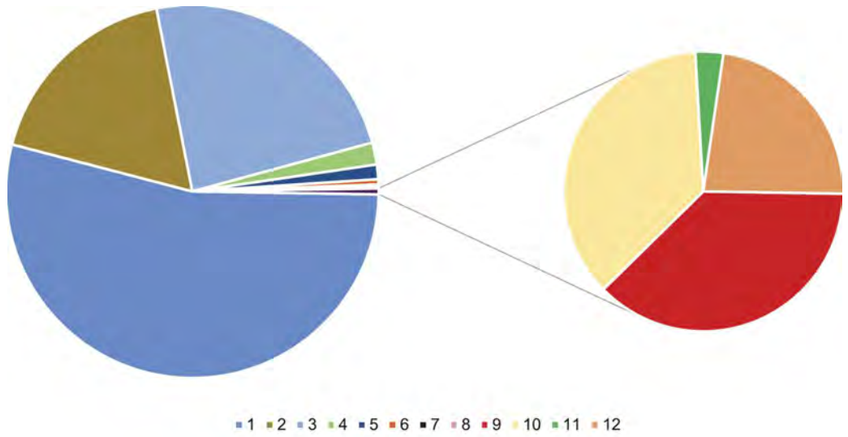


Fig 7.6 Pie chart showing the different types of stone identified from Low Ham Villa (wt%). 1= White Lias, 207 examples, 164.1kg (53.1%); 2= poor quality Blue Lias, 511 examples, 58.3kg (18.8%); 3= Ham Hill stone, 9 examples, 72.6kg (23.5%); 4= Fuller's Earth rock, 2 examples, 5.8kg (1.9%); 5= Unio Purbeck limestone, Vale of Wardour, 2 examples, 3.9kg (1.3%); 6=Shelly Greensand Eggardon Grit, 1 example, 1.4kg (0.5%); 7= Indurated chalk, 63 examples, 289g (0.1%); 8= Burnt and grey chalk, 220 examples, 743g (0.2%); 9= flint, 4 examples, 579g (0.2%); 10= Morte slate, 1073 examples, 600g (0.2%) 11= Metagabbro fragments (Lampophrye), 2 examples, 50 g (<0.1%); 12, Siltstone Yeovil sands, 3 examples, 355g (0.1%)

Despite there being abundant resources of local, easily worked Liassic roofing materials, it is perhaps surprising that other lithologies of roofing slate from more distant sources were also used at Low Ham. These included the shelly Purbeck limestone from the lowermost Cretaceous of the Vale of Wardour or Dorset coast, and Morte slate from the Devonian of north Devon. The geological sources of all the material types from Low Ham are summarised in Fig 7.7.

Functional review

By function (Fig 7.8), the retained stone assemblage from the 2018 excavations very much reflects the importance of standardised roofing, paving, guttering and walling rubble elements, including sampled herringbone walling (206kg, 68%), which would have been integral to the construction of a series of working or service rooms. There were no ornate or even standardised architectural

Table 7.15 List of Roman-dated rock types, geological source, use and frequency from the 2018 Low Ham excavations

Rock type	Geological source	Description	Frequency and use
White Lias	Triassic (Langport Member Penarth Group), Langport on the River Parret 5km	Very fine-grained fissile to even-bedded pale grey-white micritic limestone – calcareous mudstone has distinctive watermarks or calcite veins that criss-cross the fabric of the stone	Very common; 207 examples, 164.1kg Roofing, paving, rubble, bowl, tesserae
Blue Lias	Blue Lias Formation Lower Jurassic (Lias) outcrops lie on site, but workable units that could be Roman are at Charlton Mackrell 6km along Fosse Way, which are suggested from other villas (Hayward 1952, 92)	Hard fine-grained dark-grey muddy calcareous limestone or micrite	Very common; 511 examples, 58.3kg Tesserae, herringbone walling and rubblestone, hone and paving, dish
Ham Hill stone	Upper Lias (Toarcian) (178–174 million years; Cope *et al,* 1980): Ham Hill, Somerset GR (ST 478 173)	Yellow and red-brown banded ferruginous skeletal grainstone (limestone)	Selected use; architectural blocks; 9 examples, 72.6kg
Fuller's Earth rock	Middle Jurassic (Bathonian) 15km to the east and north	Hard grey fine shelly limestone distinctive large brachiopods (pentamerids) that are unique to this formation	Architectural blocks, 2 examples, 5.8kg
Purbeck limestone	Purbeckian (Lower Cretaceous) Vale of Wardour, Salisbury	Shelly calcareous mudstone – light cream-grey packed full of small regular sized *Unio* bivalves	Roofing material, 2 examples, 3.9kg
Eggardon Grit	Upper Greensand (Cretaceous) western end Eggardon Hill, West Dorset (Thomas 2008, 77)	Well-cemented green-grey medium-grained shelly sandstone Upper Greensand (Cretaceous)	Quern, 1 example, 0.4kg
Indurated chalk	Upper Cretaceous, Local Dorset outcrops local (Allen and Fulford 2004; Allen *et al* 2007)	Hard chalk, dotted with ironshot flecks brown	Tesserae/tesserae waste, 63 examples, 289g
Grey chalk	Upper Cretaceous (Lower Chalk)	Pale muddy grey calcareous argillaceous limestone	Burnt possible tesserae or lime waste, 220 examples, 743g
Flint	Upper Cretaceous (Lower Chalk)	Tabular flint, grey-brown residual cortex white with grey core	Hammerstone, counter, slingshot, 4 examples, 579g
Morte slate	Frasnian, Devonian, Ilfracombe and an inlier	Lustrous, fissile grey green slate	Stone roofing fragments amounting to 1073 examples, 600g
Metagabbro (Lamprophyre)	Permian, southern Quantock Hills	Light grey low mafic igneous rock	Function unknown, 2 examples, 50g
Siltstone – Yeovil sandstone	Upper Lias (Toarcian) Ham Hill district Somerset	Yellow-grey very grained fine ferruginous sandstones	Function unknown, 3 examples, 355g

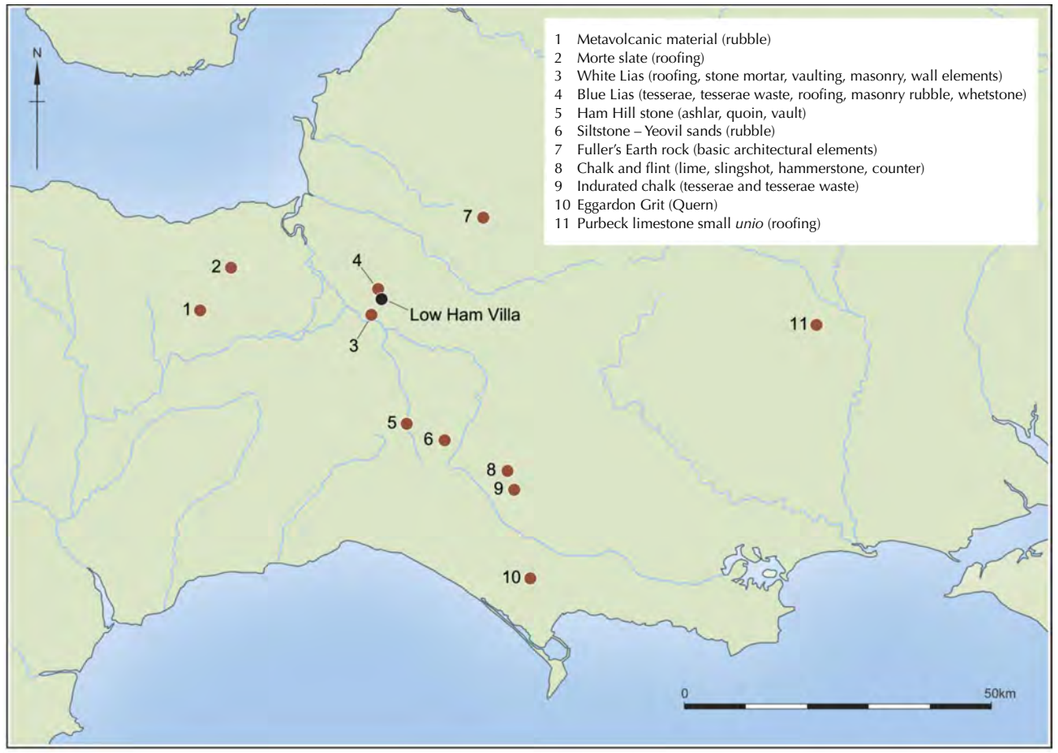


Fig 7.7 Map summarising the geological sources of all the stone types used at Low Ham Villa (John Vallender, Historic England)

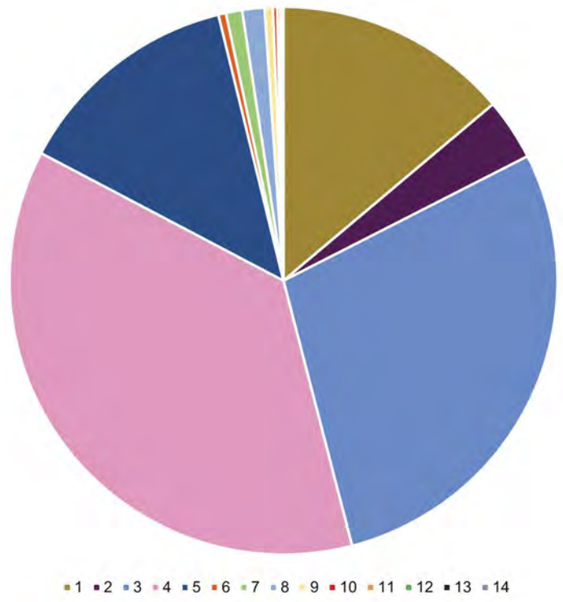


Fig 7.8 Pie chart showing the function of stone identified from Low Ham Villa (wt%). 1. Roofing, 42,930g (13.9%); 2. Paving, 11,080g (3.6%); 3. Basic architectural elements (ashlar, quoin, vaulting), 86,794g (28.1%); 4. Natural/rubblestone, 116,019g (37.5%); 5. Walling sample herringbone and flat slab elements with mortar, 41,041g (13.3%); 6. Quern, 1370g (0.5 %); 7. Tesserae and tesserae waste, 2907g (1%); 8. Rubstone/ Smoothstone, 4000g (1.3%); 9. Stone with worked markings, 1520g (0.5%); 10. Burnt chalk undifferentiated possible burnt lime or even burnt tesserae waste, 722g (0.2%); 11. Stone Mortar and dish, 571g (0.2%); 12. Hammerstone, 489g (0.2%); 13. Possible slingshot, 78g (<0.1%); 14. Counter 12g (<0.1%)

moulds, just standard ashlar, and quoins (87kg, 28.5%), with only a handful of widely dispersed individual tesserae.

Building materials

Herringbone and tabular walling

It made economic and practical sense to build a group of villa masonry structures in an area where the underlying or nearby bedrock consisted of robust, flaggy hard stone suitable for rubble stone foundation and walling construction (Williams 1971, 115–16).

At Low Ham, this was the case with all the surviving extant foundation walls in Trench 2, made from the underlying Lower Jurassic (Liassic bedrock) rock. Arranged as rubblestone courses capping obliquely set interbedded flagstone courses in herringbone style, these foundations formed the outermost rooms of the south-east range of the villa. Bonded in a sandy yellow mortar, sampled blocks of walling from the earliest Phase HE2.2, north-west to south-east-aligned truncated wall [91042] and north-east to south-west return [91043] (see Fig 6.6) and numerous *in situ* examples from the same Phase HE2.2 builds, (91062) (91086) (91089), consisted of a lower course in a herringbone pattern and an upper course of roughly square blocks and rubble. This building style continued to be adopted in the later HE2.3 extensions to the south-east part of the wing, (91038) (91047) (91072) (91106).

The herringbone stone blocks, each originally set obliquely into the walls, consisted of prepared (smoothed surface) and dressed thick rhomb-shaped elements of White Lias, weighing 10kg and measuring 335mm long × 280mm wide × 100mm thick, with a nail-hole impression and brown mortar possibly for extra support and attachment. The 7kg upper horizontally coursed flat slab from (91043) was much narrower (30mm) but long (460mm) and wide (400mm). This showed that a great deal of stone preparation for herringbone walling was required, not merely the utilisation of the nearest suitable flaggy stone.

Examples of the herringbone-style tradition of foundation walling in Blue Lias are widespread at Low Ham, with numerous examples seen in the earlier excavations, and it is a style widespread in Roman buildings in Somerset. It has been shown elsewhere (Williams 1971, 116) that the herringbone technique produces a frictional force that binds the wall together, as well as being a quicker and easier way to build.

The ashlar and quoins

Part of the repertoire of building material used in a villa are the freestones (a soft even-grained limestone with an open porous texture that enables the rock to be worked or carved in any direction) used for architectural elements.

At Low Ham, the quality and range of freestone carving, both from the 2018 phase of the excavation and the earlier excavations (Williams 1971, 104, 118–19), is poor and limited to standardised basic structural elements (Fig 7.9). The selection of freestone outcrops closest to the site (yellow and red Ham Hill stone; Fuller's Earth rock) seems to be the determining factor. These are in the main inferior, heterogeneous shelly limestones, lacking the very open oolitic texture of the best (Coombe Down Oolite; Painswick stone) dimension stones from the South Cotswold Middle Jurassic (Bathonian) escarpment that define architectural ornamentation at

Fig 7.9 Quoin from (90060) (James O Davies, Historic England)

some of the more prestigious villas, for example Chedworth, Gloucestershire (Hayward 2022).

Most (73kg) of the 80kg of freestone was Ham Hill stone, defined as a hard, banded, shelly, orange-brown (10 YR 7/6) grainstone packed full of broken-up molluscan debris and sourced to the Lower Jurassic (Toarcian) of Ham Hill, 20km to the south. Its use in villas from this area was widespread (Hayward 2018a, 2018b, 2021a). The proximity of the River Parrett and indeed the Fosse Way to the outcrop at Ham Hill would have assisted with transport, although the hauling of blocks north to Low Ham would have required plenty of human resources.

Two very large, right-trapezoid-shaped[1] quoin elements (420mm long × 300mm wide × 165mm deep; each 32kg) were recovered. Both were reused in a Phase HE1.3 fill (90060) stone lining for a mid-4th-century AD flue (90060) in Trench 1. Both had been roughly dressed with pick marks and chisel marks 20mm across. Large quoins were also used for the façade base to Building 1 (Wright 1946, 173; Williams 1971, 104; Fig 3.5). Several *ex situ* wedge-shaped stone voussoir elements in Ham stone, known from a photograph (Fig 3.11), are, based on Hayward's experience, comparable in form and size to gently angled chamfered stone blocks from Dinnington Villa, Somerset. Again in Ham stone, and including a keystone that would have formed the apex of arch (Fig 7.10), the examples from Dinnington can be interpreted as the vaulting to a high ceiling typical of opulent buildings such as temples or bath-houses.

More ornate *ex situ*, crisply executed lathe-turned column bases in Ham stone (Fig 7.11), both having the same architectural profile, were found in the 1940s work and have been identified from photographs (see Figs 3.14 and 3.11). One had an estimated height of 600mm and diameter of 300mm, while the second was of identical diameter, but survived to a height of between 1.60 to 1.70m when reassembled with the broken-off column shaft. A further detached upturned section of a capital in Ham Hill stone was found to have been recycled for use as a *pilae* stack in one of the hot rooms of the bath. Comparison with Blagg's (2002) intricate classification of Tuscan capitals and column bases was, however, hampered by the absence of any detailed images. Lathe-turned architectural elements (Blagg 1976; Blagg 2002, 13) are a feature of many opulent 4th-century AD residences in the south-west, including Great Witcombe (Blagg 2002, plates IV and VI), Dewlish (Hayward 2021) and Chedworth (Hayward 2022).

A second freestone, a hard, earthy, fine-grained, pale grey spar-filled limestone, identified as Lower Fuller's Earth rock on account of some very large (300mm)

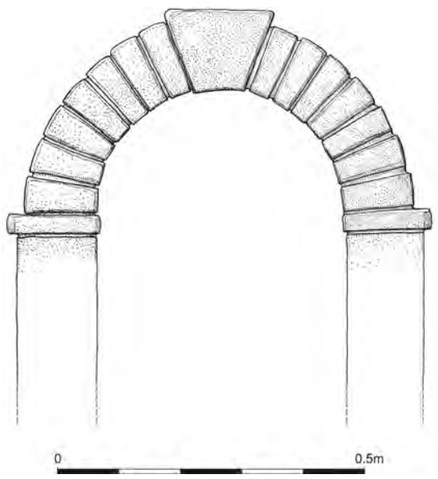


Fig 7.10 A reconstruction of the Low Ham arch, drawn from Fig 3.11 and using measurements taken from the Dinnington fragments (see text) (Judith Dobie, Historic England)

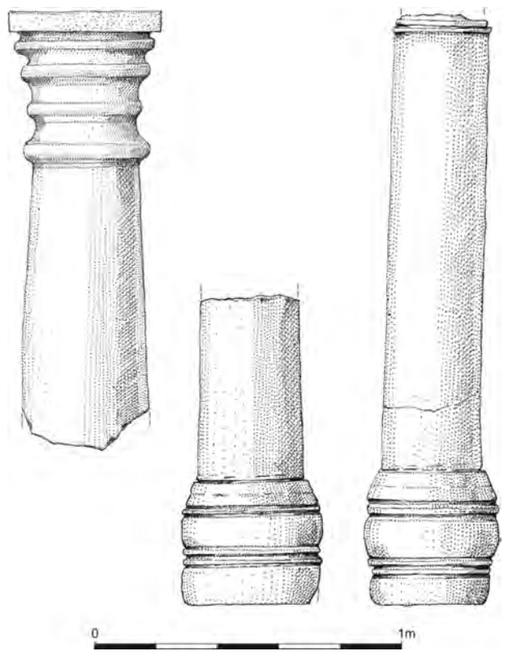


Fig 7.11 Lathe turned column fragments, drawn from photographs, see Fig 3.14 (left) and Fig 3.11 (right) (Judith Dobie, Historic England)

[1] A trapezoid is defined as a four-sided geometric figure, one set of which is parallel; a right trapezoid is defined as having two adjacent angles that are right angles.

brachiopod shell fossils of *Ornithella bathonica*, had also been worked into a basic architectural quoin element. A surviving fragmentary element (6kg), worked as with the Ham Hill stone into a right-trapezoid shape with dimensions 280mm × 140mm × 70mm, was recovered from a later Phase HE1.4 rubble layer (90015) between the middle and uppermost ditch from Trench 1. It had very distinctive steep-angled 55–60-degree coarse chisel markings. There was a second highly burnt example from the layer over a later Phase HE2.5 3rd- to 4th-century AD hearth with industrial waste (91007) in Trench 2.

The use of Fuller's Earth rock as a freestone in Roman Britain has been unreported until now. The principal outcrop of this Middle Jurassic (Bathonian) stone, between Shepton Montague and Batcombe (Prudden 2003, 34), is not easily accessible as it lies some 20km east of Low Ham, and 5km east of the Fosse Way.

Roofing

The preference in the later Roman period for using stone from a variety of sources (Boon 1974; Williams 1971) is a feature of many villas and masonry farmsteads throughout central-southern and western England (Williams 1971; Bedford and Clark 2014; Hayward 2007, 2010, 2017a, 2017b, 2018a, 2018b, 2021, 2022). Low Ham, with roofing tile from four sources (White Lias, Blue Lias, Purbeck limestone small *Unio* beds, Morte Slates) (Figs 7.6 and 7.7) amounting to 42.9kg and 14 per cent of all worked stone by weight, is no exception.

Four, maybe five, different definable forms of roofing tile could be distinguished. Their shape and measurements are listed in Table 7.16.

The material of choice is without doubt the locally acquired, easily split and worked, hard, pale grey laminated White Lias, probably sourced from the Langport area, accounting for eight of the ten roofing tiles from the 2018 excavations with a definable form (mostly complete). Furthermore, White Lias accounted for 89.2 per cent (38.3kg) by weight of all collected tile. These complete or near-complete roofing tiles, which all came from the outermost rooms of the south-east range of the villa in Trench 2, especially towards the north-east corner of the range, represent later Phase HE2.5 roofing collapse. They accumulated in the cleaning layer (91003) and collapsed rubble layer (91006), although there was some reuse in a tiled surface (91029) containing three complete repurposed or reused tiles and other examples with their nails still intact. In the same general area, in the HE2.5 fill (91096) of pit [91094] and overlying black spread (91085), there were three tiles with definable forms. Hexagonal and heptagonal forms were the most common (Table 7.16), forming a series of overlapping tiles, like fish scales, creating steep-sided eaves to the roofs of the south-east range.

White Lias stone tile also appeared to be the main roofing tile type from the bath-house excavations, and was widely present in its hexagonal form in villas around Ilchester (Williams 1971, 99). Also limited to the later Phase HE5.2 in the same general area, including the overlying tiled surface (91029) and fill (91007) overlain by the collapsed rubble layer (91006), were large fragmentary examples of the very shelly small *Unio* Purbeck limestone sourced to either Dorset or, more probably, the Vale of Wardour. The two examples can be defined as small seven-sided type 3 (see Table 7.16).

It is interesting to the note that the only surviving

Table 7.16 Definable forms of stone roofing tile recovered from the 2018 excavations

Form	Description	No.	Rock type(s)	Distribution
1	Large elongate hexagonal form	4	White Lias	Trench 2, late phase HE2.5 overlying black spread (91085) tile surface (91029) fill (91096) of pit [91094]
2	Pentagonal form	1	White Lias	Trench 2 only, late phase HE2.5 fill (91096) of pit [91094]
3	Heptagonal form small	3	Purbeck limestone and White Lias	Trench 2 only, late phase HE2.5 collapsed rubble surface (91006), overlying tile surface (91029) and (91007)
4	Narrower sub-type of tapering hexagonal version 1	1	Purbeck limestone	Trench 2 only, late phase HE2.5 overlying tile surface (91029)
5	Very unusual form, with two large '*mammae*' of crushed ceramic building material and Liassic mudstone attached. Possibly some form of heating element	1	White Lias	Trench 2, cleaning layer (91003)

roofing tile fragment made of the much harder Blue Lias (with surviving nail hole) came from Trench 1, later Phase HE1.4 rubble layer (90015), to the south-east of the flue, rather than derived from elsewhere in the villa complex. The fact that it was a different lithology may suggest different buildings of the villa complex were roofed by a particular type of stone.

It is not clear how much of a role Morte slate played in the roofing at Low Ham Villa. The River Parrett would have acted as a key supply route to this and other villas (Hayward 2010; Wiliams 1971, table 2). Described elsewhere in the bath-house excavations as 'Devon slate' (Williams 1971, 107, table 2), this fissile grey-green lithology sourced to North Devon was nearly always found in a highly fragmentary condition during environmental sampling (1,073 fragments, 600g). An example with a nail hole came from Trench 1 in a comparable late Phase HE1.4 rubble spread (90047), which may suggest it too derived from roofing elsewhere in the villa complex.

Wind-blown dispersal of crushed (and possibly burnt) highly fragmentary, very low-density fissile tile following roofing and wall collapse would have been widespread.

Flooring

Paving stones

Only one very large 11kg stone paving slab in locally acquired White Lias was recovered from a late Phase HE2.5 pit fill (91096) in Trench 2. The near-complete form was of substantial thickness (40mm) and was 495mm long × 230mm wide. The presence of soot embedded in the surface would indicate that it was once used as a step or paver, such as those seen in very large quantity lining the floor and the steps to the plunge-bath (Fig 3.9), or were perhaps used instead of *bipedalis* or *sesquipedalis* brick flooring capping the *pilae* stacks.

White Lias is the material of choice for paving and steps in villas elsewhere (Hayward 2021, 2022) because of its ability to be split easily along its fine laminae into large, elongated robust blocks.

Tesserae

The 2018 excavations produced only a small and dispersed assemblage of loose individual stone tesserae cubes (65 examples, 831g) and fragmentary tesserae waste (249 examples, 2kg).

A review by distribution showed that the focus for both the individual tesserae, 47 of 65 (72%), and tesserae waste, 201 out of 249 (81%), was Trench 2, representing the outermost rooms of the south-east range of the villa, towards the north-east corner of the range. Most of the complete tesserae, 32 examples (68%), and a proportion of the tesserae waste, 86 examples (35%), came from the cleaning layers (91003) (91004) or later Phase HE2.5 industrial and burnt layers (91008) (91046) or HE2.6 villa collapse (91057). They were likely to have been blown or trodden in from detached or loose tesserae on mosaic surfaces in buildings elsewhere in the villa complex, with slightly larger concentrations accumulating in ditches.

Forty per cent of the tesserae were border tiles of square, flat rectangular or, in one case, triangular shape. Present in three size groupings (30mm², 25mm² and 20mm²), these larger tesserae either formed the surrounding border of an intricately patterned mosaic or a singular tessellated pavement.

The remainder (60%) were design tesserae, again present in three size groupings (15mm², 10mm² and 5mm²), and formed the interior details and panels of a mosaic.

Material types

Just three stone tesserae materials were identified: the dark-grey Blue Lias, light-grey White Lias, and white indurated chalk (see Table 7.15), which, along with red ceramic tile, provided a rather limited palette of colours. Furthermore, when stone proportion is considered, just two materials dominated, Blue Lias accounting for 69.5 per cent (most of the border tesserae and half of the design tesserae) and indurated chalk 30 per cent (half of the design tesserae) overall, suggesting derivation from rather drab two-tone mosaic pavements (see Chapter 4.5). The emphasis at Low Ham seemed to be on the acquisition of local materials.

The Dido and Aeneas Mosaic: petrological review

How then does this rather limited suite of local loose stone tesserae material types compare with the variety of materials employed in the exquisitely detailed Dido and Aeneas mosaic from the *frigidarium* (Cosh and Neal 2005, 207.1. 253–7; Chapter 4.5, Fig 4.11), which displays a range of tones? Recent hand-specimen analysis of the mosaic showed that all three materials identified from the 2018 excavations were present. The most common was white indurated chalk, used in the background of the narrative and in the naked figures, with the darker grey Blue Lias used to define the margins of the panels and outlines of figures, as well as defining the outermost border. White Lias was also present in large quantities in the lighter grey elements of the guilloche and infill.

There were differences in the use of yellow, red and black hues. Yellow limestone, almost certainly Ham stone, was used to colour the legs of Aeneas in Panel E, while black polished Blue Lias defined the margins of this panel. The red colouration seen in the ships, horses, and helmets used ceramic tesserae with yellow grog inclusions.

Tesserae waste

The assemblage had sizeable quantities (249 examples, 2kg) of tesserae waste, defined as variably sized (5–50mm), angular, sliced, fragmentary and irregularly shaped blocks, made mainly out of Blue Lias (179 examples) and, to a lesser extent, indurated chalk (70 examples).

Their size and shape were comparable with tesserae waste and raw material from mid-2nd- and early 3rd-century AD Roman dumps and spreads at Insula IX at Silchester (Hayward 2011, 217) and Bridgewalk Villa (Hayward 2018b). This unequivocally points to the on-site shaping of raw materials for tesserae production brought in from a distance (north Dorset) as well as, of course, the underlying Blue Lias at Low Ham.

Portable stone objects

Iron Age–early Roman

Restricted to Trench 3, there was a group of small, portable, shaped flint and Blue Lias stone objects that related to Iron Age to early Roman activity. Included, in flint, was a fist-sized sub-ovoid stone object with percussion marks and areas of polish from a fill (92028) of an early Roman Phase HE3.4 enclosure ditch recut [92030]; this has been interpreted as a hammerstone or pestle. A hand-polished flat ovoid stone counter in flint came from the upper fill (92003) of the early Roman Phase HE3.4 enclosure ditch [92059], while two small, highly polished circular flint objects from the primary fill (92144) of the early Roman HE3.4 enclosure ditch on the northern side [92147] SF 32008 and upper fill (92138) of an HE3.2 Late Iron Age ring ditch [92145] were probably slingshots.

Later Roman

The dearth of portable stone objects dedicated to food processing (quern) and tool sharpening (hone) from the 2018 excavation was surprising, given the rural setting of the villa and likely emphasis on crop production. Material choices were also limited to inferior local stone, often quite unsuitable for the purpose for which they were intended.

Fragmentary burnt quern SF 3115 was discovered in rubble layer (90047) from Phase HE1.4 in Trench 1. Made from Eggardon Grit, sourced to Eggardon Hill, Bridport (Thomas 2008, 79), the stone is a distinctive, coarse, quite soft calcareous greensand with large scallop and oyster shells. Not ideally suited for the grinding of corn into coarse flour, it is quite inferior to competing harder or more granular quern materials in southern England, such as Lodsworth Greensand, Millstone Grit and Quartz Conglomerate, and may, like the example at Dewlish Villa in Dorset (Hayward 2021), have been selected for reasons of economic convenience or practicality.

Hone stones used to sharpen metal tools are restricted to opportunistic Blue Lias 'float', local cobbles or pebbles picked up from fields or streambeds (Allen 2014, 7). A worn elongate example from a similar later Phase HE1.4 rubble layer (90015) as the quern in Trench 1, had the distinctive diagonal cut marks of a knife blade (Fig 7.12). Other irregular criss-cross linear incisions appeared on two flat blocks of local hard Blue Lias from Trench 3, the lower (92101) (Fig 7.12) and upper (92084) fill of the early Roman HE3.4 ditch terminus [92107].

Fig 7.12 Blue Lias fragments with incised cut marks, interpreted as hones (James O Davies, Historic England)

A fragmentary curved stone mortar in local White Lias, from a stone rubble layer associated with ferrous metal (91006) from Phase HE2.4, is again a rather poor material choice, as was a dish fragment in local Blue Lias from (90019), Phase HE1.5, SF 3596. Normally, harder, superior limestone materials from much further afield, such as Purbeck marble or Burr stone from the East Dorset coast, would have been selected for this purpose.

Discussion and conclusion

Stone sources and supply at Low Ham Villa

Typical of the suite of stone building materials used in villa construction from Somerset and north Dorset (Hayward 2010, 2018b, 2021), the large assemblage of stone from the Low Ham excavations reflects the widespread use of versatile, easy to split, local Blue and White Lias cement stones. Here, they are used for a variety of purposes, including roofing, herringbone walling and *Petit Appareil* foundation walling (small blocks of ashlar), grey-hued tesserae, paving, hones, and even stone mortar. At Low Ham it was especially desirable to exploit these materials from the underlying bedrock and from the quarries at nearby Langport, resulting in considerable savings on human resources, time and haulage costs. Results of the 1940s excavations confirmed and expanded this reliance on local Liassic bedrock throughout the villa complex, with the repeated use of White Lias in large paving stones, and Blue Lias in herringbone walling, as well as its adaptation for the construction of stone-tiled *pilae*. Recent petrological re-examination of the Dido and Aeneas mosaic has shown that all the darker blue and black hues were in Blue Lias, with the lighter grey in White Lias.

The widespread use of both red and yellow Ham stone as the principal freestone material at Low Ham, not only in the quoins from Trench 1, but also in lathe-turned column bases and the façade base from the bath-house, and the yellow hue colouring the legs of Aeneas in the Dido and Aeneas mosaic, is typical of villas throughout this region. The use of a second freestone, a rather poor-quality Fuller's Earth rock, was unexpected and represents the first example of its use in Britannia.

The use of the fissile roofing material Morte slate likely results from navigable riverine transportation along the River Parrett. Low Ham shows that its overall contribution to the roofing assemblages is greatly underestimated, as it readily breaks up and splits into very small pieces following roofing collapse.

The availability of this suite of material types for villa construction materials reflects not only the excellent riverine and road communications afforded by the River Parrett and the Fosse Way, but also the exceptionally rich and diverse geology of Somerset, with cement stones that are easy to work and split, colourful red and yellow Ham stone, and accessible chalk and flint from the south of the county.

In contrast, the stone types used in villas only a little to the east of Somerset are of a completely different petrological character.

7.6 Lithics assessment

Olaf Bayer

A small assemblage of worked flint was recovered during excavations at Low Ham in 2018. The assemblage comprises ten pieces of worked flint with a combined weight of 61.3g.

Most of the assemblage (nine pieces) is flake-based and is probably Neolithic or later in date. It is dominated by unmodified debitage with a single possible notched flake. Few of the artefacts retain traces of dorsal cortex. Where present, dorsal cortex suggests a nodular chalk flint or possibly a clay-with-flints raw material source. The majority of artefacts are heavily patinated; where visible, in areas of modern damage, the raw material ranges from dark to mid-grey in colour. Flakes appear to be hard-hammer struck; where present, bulbs of percussion are prominent and several pieces have pronounced hinge terminations. Most of the artefacts are broken and three display traces of burning.

A single artefact, an obliquely blunted blade (microlith) of Mesolithic (possibly early Mesolithic) date stands apart from the rest of the assemblage. It is struck from a non-cortical dark-grey flint. It is worth noting that this artefact represents the only example of blade-based working in the assemblage, and as such constitutes the only evidence for earlier (Mesolithic/early Neolithic) activity. It is also in a relatively 'fresh' unpatinated state, possibly suggesting a different depositional history for this artefact compared with the rest of the assemblage.

Taken as a whole, the assemblage is likely to represent a degree of Neolithic or Bronze Age activity within the area of investigation that has subsequently been incorporated into later features as residual material. The single microlith suggests a lesser Mesolithic presence.

7.7 The mortar and plaster

Kevin M J Hayward

Methodology

A large collection (8,332.2g) of mortar and plaster was recovered from the three Historic England trenches excavated in 2018.

Contexts were counted, weighed and analysed using a hand lens (Gowlland ×10) during June 2019. Each sample underwent further visual analysis using a long-arm stereomicroscope to determine the basic mortar ingredients, while the texture, angularity, sorting and colour of the mortar mix were assessed with the aid of a Munsell Colour Chart (Munsell Color Group 1975).

Geological background

The geological background of the villa site is outlined in the worked stone report (see Chapter 7.5). Calcareous material that could be put to use as a lime ingredient is present locally, and a further possible local source of lime is Holocene Tufa.

Better quality sources of lime, such as those from the chalk, lie some way distant to the south; the closest sources at 20km are centred at Chard in south Somerset.

Distribution

The proportions of mortar and plaster recovered from each of the three trenches are summarised in Fig 7.13.

Trench 2 had by far the highest proportion of mortar and plaster, 7,527g (90.1wt%), from 44 contexts. Although many were acquired from pit fills, dumping horizons and burnt surfaces, there were also many examples from the extant walls and mortar spreads in this trench. These included bedding mortar recovered from masonry foundation walls (91038), (91043), (91061) and (91072), wall plaster (91091) and (91092) adhered to wall (91089) and mortar spreads (91063), (91067) and (91099). Mortar was also found attached to herringbone and flat stone elements from (91038) (see Chapter 7.5). There were also mortar samples recorded but not sampled from structures to consider. These came from *in situ* walls (91087) and (91093). There were also mortar surfaces that were recorded but not sampled from (91071), (91080) and (91107).

In the absence of any stone foundations, diffusely spread plaster fragments from thirteen contexts (see fabric types below) predominated in Trench 1.

Finally, of the 146g sampled for mortar/plaster in Trench 3 (20 contexts), just two of the samples, amounting to 18g from (92042) and (92104), were actually mortar/plaster. The remainder were burnt calcined chalk and Tufa fragments, which is what would be expected in a trench characterised by prehistoric activity (see Chapter 7.5).

Results

The proportions of the four different mortar/plaster recipes are summarised in Fig 7.14.

Mortars

Type 1, 290.1g

Brown 10YR 6/8 very loose gravel mortar with local tabular Blue Lias (Lower Jurassic) inclusions 11–35mm across with flecks of white chalk.

Not especially common (3.5wt%), this poor-quality loose brown *opus caementatum* gravel to pebble-sized bedding mortar is nevertheless important to the site as it

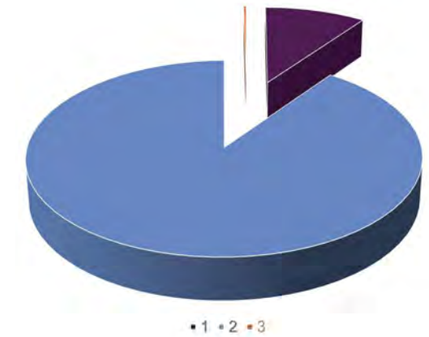


Fig 7.13 Pie chart showing the proportion (wt%) of mortar and plaster recovered from each of the three 2018 trenches from Low Ham. 1 = Trench 1, 817.1g; 2 = Trench 2, 7,526.9g; 3 = Trench 3, 18g

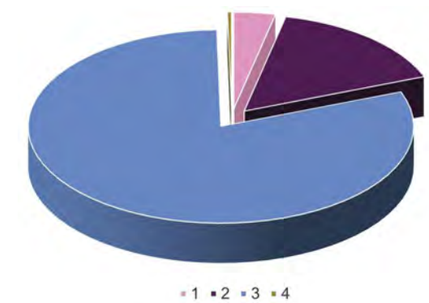


Fig 7.14 Pie chart showing the proportion (wt%) of the different mortars and plasters sampled from Low Ham Villa. 1 = *opus caementatum* mortar, 290.1g; 2 = flooring mortar/plaster, 1,314g; 3 = plaster or render backing, 6,732.8g; 4 = painted wall plaster backing, 28.2g

is specifically used to bond the stone foundation masonry walling footings in Trench 2. Examples of this recipe were identified as mortar from (91038) belonging to walls (91047)/(91106) slightly offset against the corner formed by the north-east end of wall (91043) and the south-east end of wall (91042). Wall (91043) was also bonded in this mortar type, which suggests that the corner and offset walls are contemporary or that the offset walls had been repointed in mortar Type 1. It was also identified in a mortar spread (91099) abutting wall (91098) and the fill of a robber cut [91078] deriving from the underlying wall (91072) and loose in pit fills (91017).

Mortar/plaster Type 2, 1,314g

White 10YR 8/1 low-density highly chaff-rich lime cobble mortar, made from hard fine white nodular Tufa grading to fawn-brown. Inclusions of disc or flat or angular-shaped Blue Lias (Lower Jurassic) inclusions up to 30mm across, typically 15–20mm.

It is not clear whether a second recipe described as a much lower-density open-textured, Tufa- and organic-rich white mortar, with loosely held-together tabular chunks of local Blue Lias, can all be classified as an *arriccio* backing for plaster or whether some of the coarser elements functioned as some sort of mortar. Its low density would suggest just the former, particularly as one example from a demolition rubble layer (91057) seemed to back a plaster.

In the area represented by villa buildings in Trench 2, over 1kg has been sampled (95% of all the fabric). Large quantities of it are associated with mortar surfaces (91061) and (91063) but also act as infill material between walls (91042) and (91043) and also appear as some sort of render along the face of (91043). This would suggest that it was a highly versatile material.

The use of Tufa (identified as probably local to the site and the underlying Blue Lias) is an indication that this recipe was constructed from materials in the immediate vicinity. It is widespread (15.8 wt%) and is the only mortar/plaster type occurring in all three trenches, including Trench 3 in posthole fills (92042) and (92104).

Plaster or render backing (*arriccio*)

Type 3, 6,732.8g

Light grey 2.5 YR 8/1 low-density homogeneous light grey sandy *arriccio* plaster backing with subrounded white chalk inclusions 1–3mm with small dark brown irregular organic inclusions.

A fine, low-density light grey wall plaster backing (*arriccio*) or even render coating, plaster Type 3 has an entirely different composition and character to the *opus caementatum* represented by mortar Type 1. It is a very well-made light grey lime-rich but fine gritty plaster with small 2–3mm lumps of brown vegetative matter and characteristic 2–3mm subrounded inclusions of white chalk. It is easily the most common plaster and mortar type occurring in quantities exceeding 6.5kg in Trench 2 and with a small quantity scattered in Trench 1.

Some of the individual chunks exceed 300g and are up to 45mm thick with an irregularly shaped or moulded external surface. Thus it may be that the large samples identified as 'wall plaster', (91091) and (91092), adhered to the south-west face of wall (91089), were applied in quantity as stucco to iron out irregularities to the shape of the external and internal tabular-shaped Blue Lias stone walls in Trench 2.

Type 4 28.2g

Calf-brown low-density *arriccio* mortar, chalk inclusions 2–4mm with flecks of red ceramic building material, was found to back two examples of painted wall plaster.

Fragments (0.3 wt%) of this very low-density wall plaster backing or *arriccio* occur infrequently in Trench 2, although most was found, albeit in very small quantities, in Trench 1 from posthole (90032) and pit (90019) sample <5008> fills, as well as heat deposits associated with flues (90051) and (90053). That it is associated with painted wall plaster can be shown by fragments recovered in Trench 2 from a lower pit fill (91020) and a black spread over pits (91085) where it backs small fragments of orange yellow *fresco* over a thin *intonaco* layer. This painted wall material is very likely to be *ex situ*, blown or trampled in from one of the more opulent rooms within the complex.

Summary

Visual analysis of the texture, colour and inclusion content of the mortar and plaster from the 2018 trenches has been successful in discriminating between what is wall plaster or *arriccio* and bedding mortar or *opus caementatum*. All of the sampled walls from Trench 2 were made using a brown, sandy, weathered gravel-rich mortar (Type 1). These include mortar from both the offset walls (91047)/(91106) and the north-east end of wall (91043) and the south-east end of wall (91042), which suggests that either they are all of one contemporary build or the offset walls have been repointed. There is no clear evidence from the mortar types that more than one construction phase of building was occurring in the part of the villa represented by Trench 2.

The main feature of the assemblage from Trench 2 is the enormous quantities (6.5kg) of sampled low-density *arriccio* plaster (Type 3), which may have acted as stucco to iron out irregularities in the Blue Lias walling.

A rather unusual very low-density Tufa- and organic-based pebbly mortar/plaster (Type 2) was also recorded in large quantities from Trench 2. Too weak as conventional *opus caementatum* bedding mortar, it appears as a highly versatile material type in the structure of this part of the villa. It is used in the mortar surfaces (91061) and (91063) but also acts as infill material between walls (91042) and (91043) and appears as some sort of render along the face of (91043).

Finally, there are tiny fragments of *arriccio* backing of painted wall plaster (Type 4). These contain tiny crushed lumps of red tile found to back orange *fresco* wall plaster.

Overall impressions of the mortar and plaster assemblage from Low Ham are that that all the recipes were made of local aggregate materials such as Blue Lias and Tufa. The complete absence of *opus signinum*, near absence of *arriccio* associated with painted wall plaster, possible stucco render, low-density mortar flooring, and poor-quality o*pus caementatum*, is indicative of functional rather than opulent buildings.

7.8 The glass

Denise Allen

This small assemblage of just six small fragments of Roman date does not provide a great deal of information about glass used at the villa site in general. All the fragments are quite worn and scratched and were probably lying around for some time. They may just be the pieces that escaped being collected for recycling at glass-working sites. Evidence for this survives both in towns and also occasionally at rural villa sites, notably at St Algar's Farm, south of Frome in Somerset (Tyson and Lambdin 2014). This system of collection, the workings of which remain a complete mystery, means that assessing quantities of glass in use is problematic. However, the exceptionally small assemblage here may mean that not much glass was in use in the recently excavated parts of the building.

Two blue-green fragments, SF 31042 and SF 31096, are likely to have come from bottles of the first two centuries AD. Four colourless fragments include one piece of cylinder-blown window glass, no. 3, and three tiny pieces that cannot be identified with any certainty, although the quality of one, no. 5, suggests that it is late in date. The smallest fragment of all, no. 6, is intriguing as it may have remnants of decoration, almost invisible without a magnifying glass. This, too, is perhaps most likely to be late Roman in date and is a hint that fine glassware may once have been present.

One fragment, no. 7, is probably post-medieval.

Bottles

Two fragments may have come originally from prismatic bottles, the most common of which were square, occurring in large numbers during the 1st and 2nd centuries AD (Price and Cottam 1998, 194–204, figs 89–91). Fragments do also often turn up in later contexts, both because of continuing use of the vessels and residuality of small pieces.

1. SF 31042 Trench 2 (91003)

Small fragment of blue-green glass. Both surfaces appear to be flat enough to suggest that it is part of the body of a prismatic bottle.

2. SF 31096 Trench 2 (91003)

Small fragment of blue-green glass, many scratches on outer surfaces, probably from wear. This may well be part of the body of a prismatic bottle, where it curves into the shoulder.

Window glass

One fragment is probably a piece of cylinder-blown window glass, which dates to the late 3rd or 4th century AD. It would have been produced by blowing a cylinder of glass, cracking off the top and bottom, then heating it to make it flat (Allen 2002, 109). Window glass like this, with two glossy surfaces, often occurs on Romano-British villa sites, and indeed fragments have previously been found at Low Ham.

3. SF 31149 Trench 2 (91032)

Fragment of thin, flat, colourless glass; many pinhead bubbles within the glass, with one or two larger, more elongated ones. This could be a piece of late cylinder-blown window glass. There is just a little evidence of some grozing (ie clipping with pincers) to shape the pane along the short edge.

Indeterminate Roman fragments

Three small colourless fragments are likely to be Roman, but it is not even possible to be sure they are from vessels or windows. No. 4 has no distinguishing features to suggest

a form or date; no. 5 looks late Roman in date because of the nature of the glass itself, with many pinhead bubbles.

No. 6 is tiny and has several very fine grooves across one surface. These may simply be the effects of weathering, where the glass has had bubbles or impurities through it. Alternatively, these could be the remnants of very fine trails, perhaps of something dark with tiny white dots at intervals along it. The whole thing is so fine it cannot be seen without looking through a magnifying glass and is something of a puzzle. The nature of the glass suggests a late Roman date, although this cannot be certain with such a tiny piece.

4. SF 31120 Trench 2 (91044)

Tiny fragment of colourless glass, now slightly cloudy. Roman.

5. SF 3543 Trench 2 (91046)

Small fragment of greenish-colourless glass; one surface has evidence of a large broken bubble within the glass. Further tiny 'seedy' bubbles visible. Probably late Roman.

6. SF 3501 Trench 1 (90006)

Tiny fragment of thin-walled colourless glass. Several fine grooves run along one surface, perhaps surviving parts of fine trails or perhaps natural streaks and weathering. Date uncertain, possibly late Roman.

Probable post-medieval fragment

7. SF 3056 Trench 1 (90003)

Small fragment of thick greenish-colourless glass. Surfaces very scratched. Probably post-medieval.

7.9 The industrial waste

Francesca Gherardi and Sarah Paynter

The Historic England excavations at Low Ham recovered evidence of metalworking activity in one room in the south-east wing of the villa, located in Trench 2, including a concentration of slag, a charcoal-rich occupation layer and strong positive geophysical anomalies (see Fig 5.2). Several pits were cut into the added soil layer in this area, with some evidence of burning (Leonard *et al* 2019).

This contribution describes and interprets the evidence of industrial activity from the site, comprising almost 60kg (nine boxes) of industrial waste. The assemblage was from a range of contexts in all three trenches, but predominantly Trench 2, and provides evidence of iron smithing at the site.

Background

Ironworking waste can usually be categorised by its morphological form, as set out in Historic England (2015). The waste from Low Ham was produced by smithing, when iron metal is heated in a hearth to soften it before hammering it into shape. The smithing hearth might be at waist height or at ground level and would be built of refractory materials, like clay, stone or tile, and blown by bellows. The waste products from smithing include discarded fuel (usually charcoal but sometimes coal was also used), smithing hearth slag, hammerscale and smithing pan. Fragments of hearth lining, typically coated with slag on one face, are also common finds from smithing sites.

Smithing hearth slag or smithing hearth bottoms (SHBs) form in the hearth from the hot, reactive mixture of fuel, hearth lining and iron oxide scale, the latter forming continually on the surface of the iron whenever it is heated. The slag tends to collect in the hottest zone of the hearth, just below the blowing hole where the bellows blast enters through the hearth wall. The slag becomes attached to the hearth wall and continues to accumulate, so the smith periodically cleans out the hearth by dislodging the slag and discarding it. Smithing hearth slags sometimes have a distinctive bowl shape, with a depression in the upper surface.

When the smith strikes the iron, this also dislodges the brittle oxide scale from the surface of the metal. This 'hammerscale' is found dispersed across the occupation surfaces in a smithy on the rare occasions where these survive, and the distribution can provide information on how the space was used (Paynter 2008). Hammerscale flakes are typically a few millimetres in size, metallic grey and magnetic, but there are also spheroidal types, which form when the expelled slag is more fluid, such as during welding. Samples from a well-preserved smithy floor contain high concentrations of hammerscale, upwards of 30wt%. Sometimes the hammerscale compacts and consolidates, together with small offcuts or fragments of iron metal, to form a hard layer of smithing pan that covers the floor of the smithy.

Much of the slag from a smithing assemblage will be fragmentary or corroded and cannot be confidently identified, so is categorised as undiagnostic.

Material

The assemblage from Low Ham is dominated by two contexts located in the south-east wing of the villa (Trench 2). Cleaning layer (91003) produced four boxes of material; (91007), a soil layer with burning and a high concentration of charcoal, produced three boxes (see Figs 6.7 and 6.16).

Results

The assemblage was examined and each fragment categorised as either smithing hearth slag (Fig 7.15) (intact or partial smithing hearth bottoms), smithing pan (Fig 7.16) (consolidated masses of hammerscale), iron metal (offcuts, waste and objects), hearth lining (fragments of slag-coated fired clay from the hearth) or undiagnostic slag (that cannot be confidently identified). The waste was weighed by context and the results are given in Table 7.17.

Smithy location and date of activity

Over three-quarters of the smithing assemblage by weight was recovered from Room 59 in Trench 2 (79.3%), less than a quarter from Trench 1 (19.9%) and a negligible amount from Trench 3 (0.8%). Trench 2, (91007), which contained a large proportion of the smithing waste, also contained 28 sherds of pottery dating to the later 3rd century AD onwards (Chapter 7.3).

Crucially, the smithing pan found *in situ* in Trench 2 was from one sampled quadrant (91046) of an occupation layer (91085), indicating that the locus of activity was in the extension room (Room 59, Figs 6.16 and 6.17). The deposit, described as burnt, was not an even layer, with several 'dips'/'hollows' towards the north-west corner of the quadrant, and overall the deposit had a greater depth towards the west side. In plan the deposit was found to extend out to cover the entire building area (recorded as 91085) (see Fig 6.7). The hammerscale layer (91085/91046), formed by the smith striking the iron on the anvil, had also given a strong positive magnetic reading on the ground-penetrating radar (GPR) and magnetometry surveys (Fig 5.1), confirming the distribution of hammerscale throughout this smithy building (Fig 7.17). The majority of the slag

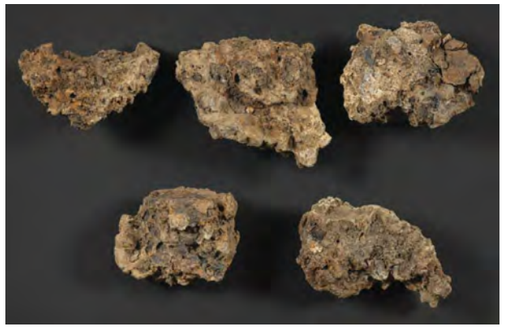


Fig 7.15 A selection of smithing hearth slags from (90047) (James O Davies, Historic England)

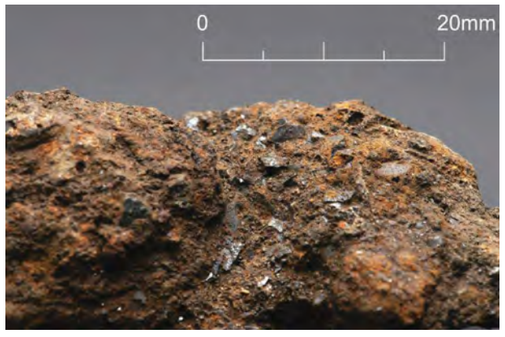


Fig 7.16 Pieces of hammerscale in a fragment of smithing pan from (91046) (James O Davies, Historic England)

Fig 7.17 South-facing view of industrial deposits within Room 59 (Historic England)

Table 7.17 The quantities of each waste type by context (g)

Trench	Context	Smithing slag	Hearth lining	Iron	Smithing pan	Undiagnostic	Total
1	90002	143	36	124	-	32	335
1	90003	1,249	623	371	-	1,072	3,315
1	90006	-	-	-	-	48	48
1	90009	-	-	-	-	25	25
1	90010	-	-	-	-	17	17
1	90015	229	69	1,093	-	305	1,696
1	90019	-	-	-	-	23	23
1	90024	-	4	-	-	45	49
1	90026	-	-	-	-	5	5
1	90029	-	11	57	-	-	68
1	90031	-	3	-	-	46	49
1	90033	-	16	-	-	-	16
1	90045	-	-	-	-	5	5
1	90047	3,478	441	957	-	1,245	6,121
1	90049	71	2	-	-	40	113
1	90051	-	-	-	-	1	1
2	91001	803	285	47	-	54	1,189
2	91003	8,343	3,004	3,420	-	4,181	18,948
2	91006	1,140	798	140	-	992	3,070
2	91007	3,407	4,243	1,589	-	4,990	14,229
2	91008	-	-	7	-	49	56
2	91009	-	-		-	9	9
2	91010	-	-	101	-	49	150
2	91011	-	-		-	52	52
2	91013	-	-	335	-		335
2	91016	-	-	196	-	23	219
2	91017	-	-	5	-	1	6
2	91018	-	-	3	-	-	3
2	91019	-	-	29	-	-	29
2	91022	165	231	105	-	-	501
2	91027	-	19	-	-	89	108
2	91028	-	-	-	-	5	5
2	91031	84	5	222	-	341	652
2	91032	0	0	90	-	6	96
2	91034	-	32	244	-	18	294
2	91038	-	-	41	-	-	41
2	91040	-	12	44	-	48	104
2	91044	-	-	23	-	-	23
2	91045	-	40	-	-	30	70
2	91046	480	376	-	2,760	423	4,039
2	91048	-	-	-	-	29	29
2	91049	42	-	17	-	27	86
2	91052	-	12	36	-	177	225
2	91053	374	242	64	-	170	850
2	91054	338	255	32	-	179	804
2	91057	351	5	-	-	86	442
2	91059	-	-	19	-	154	173
2	91061	-	-	-	-	1	1
2	91063	-	-	21	-	2	23
2	91064	-	-	-	-	12	12
2	91066	-	-	-	-	1	1
2	91068	-	8	40	-	213	261
2	91073	-	-	-	-	11	11
2	91081	-	9	-	-	38	47

Table 7.17 (cont)

Trench	Context	Smithing slag	Hearth lining	Iron	Smithing pan	Undiagnostic	Total
2	91085	-	-	65	-	61	126
2	91095	-	-	-	-	14	14
2	91096	-	-	-	-	11	11
2	91098	-	-	-	-	29	29
2	91100	-	-	-	-	2	2
3	92045	191	56	31	-	187	465
3	92084	-	-	-	-	1	1
3	92110	-	-	-	-	1	1
3	92124	-	-	-	-	1	1
3	92125	-	-	-	-	1	1
Total		**20,888**	**10,837**	**9,568**	**2,760**	**15,677**	**59,730**

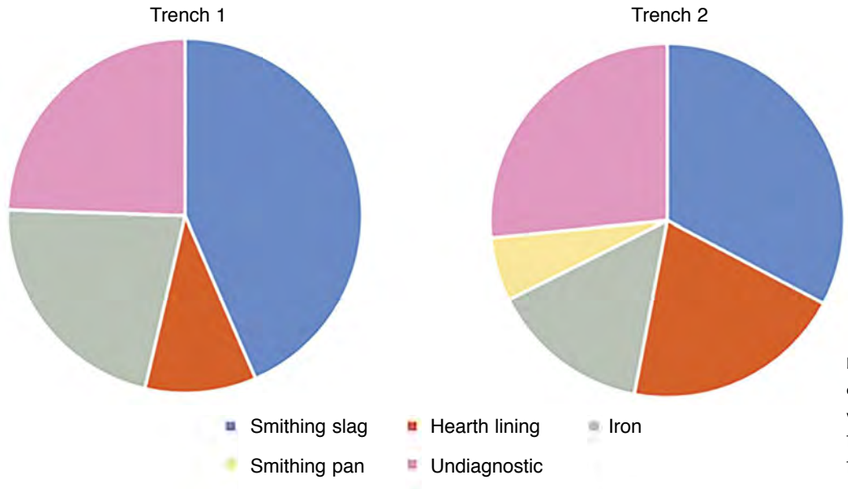


Fig 7.18 The proportions of different types of smithing waste in Trench 1 versus Trench 2 (by weight, see Table 7.18 for percentages)

appears to have been dumped outside the boundaries of the workshop, as was common practice (Paynter 2008; Historic England 2015), but the hearths outside the workshop were not related to the smithing activity.

The material from Trench 1 was similar to that from Trench 2; however, the proportions of different types of waste differed (Fig 7.18). The waste in Trench 1 is likely to have derived from the same episodes of smithing activity, but had been more disturbed and distributed further afield, so there was less of the friable hearth lining and no smithing pan present (Table 7.18).

Table 7.18 The relative proportions of the different types of waste from Trenches 1–3 (wt%)

Trench	Smithing slag	Hearth lining	Iron	Smithing pan	Undiagnostic
1	43.5	10.1	21.9	0.0	24.5
2	32.8	20.2	14.6	5.8	26.5
3	40.7	11.9	66.0	0.0	40.7

The high concentrations of charcoal noted in the smithy occupation layer (91046) suggest that this was the main fuel (see Chapter 8.2), comprising overwhelmingly *Alnus* sp (alder). Occasional pieces of coal were noted among the assemblage and, more rarely, fragments were visible incorporated into the slag itself, indicating the smith used a combination of charcoal and coal to fuel the hearth.

Discussion

The smithing assemblage from Low Ham is typical for the period, with the exception of coal being used as fuel in addition to charcoal. The smithing slags average at least 300g in size (many are partial), and the assemblage

contains 36.6kg of slag overall (comprising approximately 20.9kg of smithing slag and 15.7kg of undiagnostic slag). If the hearth was cleared of slag at the end of each day, the assemblage would represent no more than 120 days of activity. This is likely to be an underestimate, as more smithing slag will remain at the site unexcavated, but nonetheless suggests that the activity was reasonably short-lived or occasional, consistent with the repair, recycling and small-scale manufacture of items for the needs of the immediate community.

Smithing relies on accurately judging the temperature of the metal based on its colour when it is heated, and so a relatively poorly lit, enclosed room would be well-suited to this purpose. The adaptation of Room 59 for this industrial activity has parallels at other villa sites. At Ilchester Mead, a nearby winged courtyard villa, the south building, which had tessellated floors and painted wall plaster, was adapted for industrial activity, including smithing, after the mid-4th century AD (Smith 1997). Further afield at Thurnham Villa (Kent), a central room was converted to a smithy sometime from the late 3rd century into the early 4th century AD (Booth and Lawrence 2006).

Dearne and Branigan (1995) surveyed the use of coal in Roman Britain, noting an expansion from the later 1st into the 2nd century AD, which was then probably maintained until around the mid-4th century AD, and they also noted two broad concentrations of sites where coal had been reported – in the area of Hadrian's Wall and along the Bristol Channel/Severn Estuary (the latter encompassing the South Wales littoral, Avon and the Forest of Dean and into south Somerset and west Wiltshire). Although untreated coal is unsuitable for iron smelting, it can be used for smithing. Dearne and Branigan (1995) drew attention to the strong correlation between coal and ferrous metallurgy at many villa sites, such as Gatcombe, Avon; Llantwit Major, South Glamorgan; Lufton, Somerset; Frocester Court, Gloucestershire; and Marshfield, Avon, often in the 3rd and 4th centuries AD. Smithing waste, including coal, from nearby Tyning Lane, Stanton Drew, Somerset, was also thought to be from later 3rd- to 4th-century AD activity (Paynter 2009). Dearne and Branigan (1995) considered the later Roman expansion in the use of coal as being associated with the founding or elaboration of numerous south-western villas, but the excavations at Low Ham indicate that the situation is likely to be more complex. In this case, the smithing activity is associated with a change in the character of occupation of the villa, from domestic to multi-functional, including industrial.

Smith (1997) analysed coal from Roman sites in Britain to determine its provenance. The samples included coal from ironworking hearths discovered at Ilchester Mead Villa (thought to be post-mid-4th century AD) and Lufton Villa (thought to be later 4th century AD), both very close to Low Ham Villa. These samples probably originated from the local outcrops of the Avon and Somerset Coalfield, and it is likely that the coal used at Low Ham Villa originated from the same outcrops, as it was used for the same purpose and at about the same time.

Conclusions

Attention has been drawn previously to the trend of metalworking activities becoming established within disused public buildings in Roman towns of the late 3rd and 4th centuries AD (Rogers 2005). The nature of occupation at many rural villa sites also changed during this period, and Low Ham provides a good example of this repurposing. The excavation revealed the well-preserved floor of a smithy located in Room 59 in the south-east wing. The clay-lined hearth and anvil were likely located towards the north corner of Room 59, so features [91023] and [91014] probably relate to the industrial activity. The smith used a combination of charcoal (mainly alder (*Alnus*) but also coal (probably obtained locally from the Avon and Somerset Coalfield) to fuel the hearth. The certain identification of the use of coal for smithing at Low Ham adds considerable weight to the tentative evidence of a similar practice at other Roman sites nearby. The scale and duration of the operation, sometime from the later 3rd century AD, was fairly modest, and it is likely that the smith was crafting, repairing and recycling tools and fixtures mainly for the local community.

8 The 2018 environmental finds

8.1 The charred plant remains

Megan Scantlebury

The 2018 excavation season at Low Ham Roman Villa included a comprehensive sampling programme for the recovery of archaeobotanical, zooarchaeological and artefactual remains. While the archaeobotanical assemblage is generally modest, it is useful in establishing a better baseline understanding of the use and post-use period of the villa. The charred plant remains assemblage provides a significant contribution to the understanding of arable agricultural activities occurring in the villa area, and a glimpse of the landscape surrounding it.

Previous excavations took place prior to the routine adoption of systematic sampling and flotation for the recovery of plant remains and charcoal, although a small number of waterlogged plant remains were recovered from a well in 1955 (see Chapter 4.8).

Methodology

Environmental sampling followed Historic England guidance (Campbell *et al* 2011). A total of 131 flotation samples was taken during excavation from the full range of archaeological phases and feature types, including layers, ditches, pits, postholes and a stone-lined 'flue' feature. Samples were processed on site by mechanical flotation using two modified Siraf-type flotation machines. Flots were collected on a 0.25mm mesh and residues on a 0.5mm mesh. Sample volumes ranged from 2L to 40L; 40L were taken as standard where possible, or 100 per cent of smaller contexts. Larger contexts were sampled by quadrant or grid square. Large samples (>60L), or samples dominated by industrial waste, were subsampled and 10–40L were processed.

Following an assessment of all flots (Pelling 2020), 21 were selected for full analysis; only eleven samples were estimated to contain the recommended minimum of 100 items for analysis (see Van der Veen 2007). Further samples were selected if they contained more than 25 items. Eleven samples were selected from Trench 1, three from Trench 2 and seven from Trench 3.

Flots were sorted using a binocular stereomicroscope at magnifications of up to ×40. Large or very rich (large numbers of quantifiable items) flots or fractions were subsampled prior to sorting using the grid method (Steiner *et al* 2017); counts were multiplied up to be representative of the whole sample (adjusted counts are identified by an asterisk in Tables 8.1 and 8.2). Charcoal analysis is reported separately (Chapter 8.2); the abundance of charcoal in the flots analysed for plant macro-remains was estimated and recorded semi-quantitatively (Tables 8.1 and 8.2).

Identifications were determined using morphological criteria, aided by reference literature (eg Cappers *et al* 2006; Jacomet 2006) and the Historic England modern seed reference collection held at Fort Cumberland, Portsmouth, UK. Nomenclature follows Zohary and Hopf (1994, tables 3 and 5) for cereals and Stace (1997) for wild taxa. Short-grained spelt wheat (*Triticum spelta*) was identified where clear evidence was seen of the grain being held within tightly adhering glumes, usually shown by longitudinal impressions; the foreshortened rounded

appearance of the grains makes separation from free-threshing wheat grain (*Triticum aestivum/turgidum* type) difficult (see Campbell 2000, 46–50, fig 3.5). Short-grained spelt wheat may result from foreshortening during charring (Braaddbaart 2008; Charles *et al* 2015), or could be the result of genetic variation within the spelt crop, or a local landrace (Campbell 2008; Robinson 2011, 288). Germinated grain was identified following criteria given in Carruthers (2011): a furrow in the dorsal surface made by the sprout, shrunken/collapsed grains, significant damage to the embryo end, or coleoptiles (sprouts) still attached. Grain was quantified by whole grain or embryo ends. Quantified chaff elements are stated (glume base, culm node, rachis internode) where each item is counted as one, and one spikelet fork represents two glume bases. Weed and other seeds were counted as whole seeds, or fragmented seeds as estimates of whole seeds. Full results are shown in Tables 8.1 and 8.2.

Results

Trench 1

Eleven samples (of 27 assessed) were fully analysed from Trench 1 and were the richest samples of the Low Ham assemblage (Table 8.1). Preservation ranged from good to moderate, although many grains could not be identified to genus (Cerealia indet) or beyond genus level, such as numerous wheats (*Triticum* spp).

Phase HE1.2 – 3rd century AD

Ditch fills

Five samples were analysed from intercutting ditches [90007], [90023] and [90030]. The samples were similar in composition, with the fill (90049) of ditch [90030] producing a substantial number of charred items. Glume wheat cereals dominated (spelt/emmer wheat), with chaff (glume bases) outnumbering grain significantly (ratio of glume bases to grain ranging from 3.5:1 to 34:1). Given the inherent difficulties in separating glume wheat grains when charred, many could not be identified further than spelt/emmer wheat (*Triticum spelta/dicoccum*). Spelt wheat was identified in all five samples, including seven short, rounded spelt grains. Emmer wheat (*T dicoccum*) was identified in two samples, in slightly smaller numbers than spelt. Germinated wheat grains were consistently present, as were coleoptiles (detached cereal sprouts) and embryos, indicating germinated grains.

Other cereal species represented included a single hulled barley (*Hordeum vulgare*) grain and occasional oat (*Avena* spp) grains. In the absence of preserved floret bases it was not possible to establish whether a cultivated oat, such as common (*Avena sativa*) or bristle (*Avena strigosa*) oat, or wild oat (*Avena fatua*) was present. A single cotyledon (half a legume) of a vetch/pea (*Vicia/Pisum/Lathyrus* spp) was recovered from ditch [90023] fill (90037). Seeds of possible oil or vegetable crop cabbages/mustards (*Brassica/Sinapis* spp) were recovered in small quantities.

A small selection of seeds of wild species that prefer disturbed, arable and grassland environments were recovered. These included grasses (Poaceae) such as fescues/rye grass types (*Festuca/Lolium* spp), meadow-grass types (*Poa annua/Phleum* spp), medicks/clover-types legumes (*Medicago/Trifolium* spp), docks (*Rumex* spp), ribwort plantain (*Plantago lanceolata/media*) and scentless mayweeds (*Tripleurospermum inodorum*). Wet/damp areas were indicated by the recovery of nutlets of great fen-sedges (*Cladium mariscus*), and possibly by sedges (*Carex* spp), although this is a large genus with variable habitat preferences.

Phase HE1.3 – 3rd–4th century AD

Possible corn-dryer

Four samples were examined from this phase of activity in the series of enclosures north-west of the villa (Chapter 6.1), with three from contexts associated with flue feature [90025], fills (90026), (90046) and (90054), and a fourth from posthole [90042], fill (90043). The top fill of the flue (90026) comprised predominantly rubble and is likely to have originated from the demolished superstructure of a corn-dryer (Chapter 6.1). The flue and nearby postholes, including posthole [90042], were sealed by rubble layer (90015=90047) during the following phase of activity (Phase HE1.4), suggesting they were in use at the same time (Chapter 6.1).

The rubble fill (90026) of flue [90025] yielded many charred cereal grains (503 items), often too poorly preserved to be identified, with substantially fewer chaff elements (20 glume bases). Most identifiable grains were of spelt wheat (99 grains), of which 21.2% per cent were obviously germinated. Emmer wheat was present in much smaller quantities (six grains and one glume base). A small number of grains retained some of their glumes after being charred.

The two underlying flue layers (90046) and (90054) produced more modest assemblages, with grain outnumbering chaff (63 grains to 15 glume bases) in layer (90046) and chaff outnumbering grain (38 glume bases to 14 grains) in layer (90054). Few grains or chaff were identifiable to species. Two spelt wheat grains

Table 8.1 Charred plant remains from Low Ham Roman Villa, late Roman 3rd–5th century AD samples from Trench 1

	Trench	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
	Context	**90010**	**90037**	**90044**	**90049**	**90055**	**90026**	**90046**	**90054**	**90043**	**90015**	**90019**
	Sample	50003	50013	50022	50026	50032	50014	50015	50018	50023	50006	50007
	Feature	90007	90023	90023	90030	90030	90025	90025	90025	90042	–	90018
	Feature type	Ditch: fill	Ditch segment: fill	Ditch segment: fill	Ditch: fill	Ditch: back fill	Feature: rubble	Feature: fill	Feature: fill	Posthole: fill	Layer: rubble	Pit: fill
	Century AD	3rd	3rd	3rd	3rd	3rd	3rd–4th	3rd–4th	3rd–4th	3rd–4th	4th	4th–5th
	Sample volume (L)	40	40	40	40	20	40	25	20	10	40	40
	Flot volume (ml)	50	350	400	300	50	350	90	100	50	150	150
	Subsampled	No	No	Yes	Yes	No	No	No	No	No	No	No
Sorted (%)	>1mm	100	100	100	100	100	100	100	100	100	100	100
Sorted (%)	<1mm	100	100	6.25	12.5	100	100	100	100	100	100	100
	Total number of charred items	80	354.5	173	2041	112	527	81	65	830	321	197.5
Charred cereal grain												
Avena sp	Oat grain	-	-	-	-	1	-	-	3	1	1	1
cf *Avena* sp	cf oat grain	-	1	1	-	-	-	-	-	-	-	-
Triticum spelta	Short, fat, spelt wheat grain	1	-	-	2	-	3	-	-	-	-	-
Triticum spelta	cf short, fat, spelt wheat grain	-	-	-	-	-	1	-	-	-	-	-
Triticum spelta	Spelt wheat grain	1	3	-	2	-	51	3	-	2	19	9
Triticum cf *spelta*	cf spelt grain	4	4	-	2	-	22	1	-	-	6	8
Triticum spelta	Germinated spelt wheat grain	2	3	-	-	-	16	1	-	-	-	3
Triticum cf *spelta*	Germinated cf spelt grain	-	1	-	-	-	7	-	-	1	-	1
Triticum dicoccum	Emmer wheat grain	-	1	-	2	-	4	-	-	4	22	1
Triticum cf *dicoccum*	cf emmer wheat grain	-	1	-	2	-	2	2	-	2	7	2
Triticum dicoccum	Germinated emmer grain	-	-	-	-	-	-	-	-	-	-	1
Triticum cf *dicoccum*	Germinated cf emmer grain	-	-	-	1	-	2	-	-	-	3	1
Triticum spelta/ dicoccum	Spelt/emmer wheat grain	-	5	1	3	-	29	6	2	4	17	7
Triticum spelta/ dicoccum	Germinated spelt/ emmer wheat grain	-	4	-	2	-	11	3	-	3	2	2
Triticum cf free-threshing	cf naked wheat	-	-	-	-	-	-	1	-	1	-	1
Triticum sp	Wheat grain	-	18	2	13	1	168	22	4	9	23	15
Triticum sp	Germinated wheat grain	-	2	-	1	1	40	-	-	-	-	1
Triticum sp	Wheat tail grain	-	-	-	-	-	2	-	-	-	-	-
Triticum sp	Wheat cf tail grain	-	-	-	-	-	1	-	-	-	1	-
Hordeum vulgare (hulled)	Hulled barley grain	-	-	-	-	-	1	-	-	-	1	1
Hordeum vulgare (hulled straight)	Hulled barley grain	-	-	1	-	-	-	-	-	-	1	-

Table 8.1 (cont)

	Trench Context	1 90010	1 90037	1 90044	1 90049	1 90055	1 90026	1 90046	1 90054	1 90043	1 90015	1 90019
cf *Hordeum* sp	cf barley grain	-	-	-	-	-	-	-	-	1	1	-
Hordeum/ Triticum sp	Barley/wheat grain	-	-	-	-	-	2	-	-	-	-	-
Cereales indet	Indeterminate cereal-sized grain	1	24	1	24	6	137	21	5	16	49	23
Cereales indet	Germinated cereal grains	-	-	-	1	-	5	3	-	-	3	-
Cereales indet embryos	Detached cereal embryos	-	3	-	20*	1	1	-	6	16	9	-
Cereales indet coleoptiles	Detached cereal sprouts	1	8	3	27*	1	-	-	-	9	-	-
Charred cereal chaff												
Triticum spelta	Spelt wheat, glume bases	2	33	4	64*	-	3	2	2	20	1	1
Triticum cf *spelta*	cf spelt wheat, glume bases	-	-	-	9	-	2	2	-	-	-	1
Triticum spelta	Spelt wheat, spikelet forks	-	2	-	1	-	-	1	-	2	-	-
Triticum spelta	Spelt wheat, basal spikelet forks	-	-	-	1	-	-	-	-	-	-	-
Triticum dicoccum	Emmer wheat, glume bases	-	4	-	20*	-	1	-	-	15	-	-
Triticum cf *dicoccum*	cf emmer wheat, glume bases	-	9	-	10*	-	-	-	-	3	-	-
Triticum dicoccum	Emmer wheat, spikelet forks	-	-	-	2	-	-	-	-	-	-	-
Triticum cf *dicoccum*	cf emmer wheat, spikelet forks	-	-	-	1	-	-	-	-	-	-	-
Triticum spelta/ dicoccum	Spelt/emmer wheat, glume base	52	166	153*	1708*	83	12	7	34	594	19	3
Triticum spelta/ dicoccum	Spelt/emmer wheat, spikelet forks	1	9	-	26	3	1	1	1	21	3	1
Triticum sp (Tetraploid)	Basal tetraploid wheat rachis	-	-	-	-	-	-	-	-	1	-	-
Hordeum sp	Barley awn fragment	-	-	-	-	-	-	-	-	1	-	-
Avena sp type	Oat-type awn fragment	-	9	1	36*	-	-	-	2	17	1	-
Charred legumes												
Vicia/Pisum sp	Vetches/peas	-	-	-	-	-	-	-	-	-	-	0.5
Vicia/Pisum/ Lathyrus sp	Vetches/peas	-	0.5	-	-	-	-	-	-	-	-	1
Oil seeds												
Brassica/ Sinapis sp	Cabbage/mustard	2	-	-	1	2	1	3	1	-	70	57
Brassica nigra	Black mustard	-	-	-	-	-	-	-	-	-		25
Brassica cf *nigra*	cf black mustard	-	-	-	-	-	-	-	-	-	22	12
Nutshell												
cf nutshell fragment	cf indeterminate nutshell fragment	-	-	-	-	-	-	-	-	-	-	1

Table 8.1 (cont)

	Trench Context	1 90010	1 90037	1 90044	1 90049	1 90055	1 90026	1 90046	1 90054	1 90043	1 90015	1 90019
Charred weed/wild												
Poaceae indet	Wild grasses	-	8	2	7	3	1	-	2	11	3	2
Festuca/Lolium sp	Fescue/rye grasses	-	-	-	3	1	-	-	-	2	3	-
Poa annua/ Phleum sp	Meadow/cat's tail grasses	2	5	-	-	3	1	-	-	13	5	11
Fabaceae (small, weedy)	Small weedy legumes	4	5	-	1	-	-	-	-	22	-	2
Medicago/ Trifolium sp	Medicks/clovers	-	-	-	2	-	-	-	-	2	-	-
Trifolium spp	Clovers	1	-	-	-	-	-	-	-	-	-	-
cf *Odontites vernus*	cf red bartsia	1	-	-	-	-	-	-	-	3	1	-
Carex sp (2-sided)	Sedges	1	1	-	-	-	-	-	-	-	-	-
Atriplex/ Chenopodium sp	Orache/goosefoots	1	-	-	-	-	-	-	-	-	1	-
Chenopodium sp	Goosefoots	-	-	-	1	-	-	-	-	1	1	-
Atriplex sp	Oraches	-	-	-	-	-	-	-	-	1	-	-
Cladium mariscus	Great fen sedges	-	3	-	-	2	-	-	-	1	-	1
cf *Cladium mariscus*	cf great fen sedges	-	1	-	-	-	-	-	-	-	-	-
Polygonum aviculare	Knotgrasses	-	1	-	-	-	-	-	-	-	-	-
Rumex spp	Docks	-	2	-	3	-	-	1	1	6	10	-
Fallopia convolvulus	Black bindweeds	-	-	-	-	-	-	-	-	1	-	-
Polygonaceae indet	Dock family	-	1	-	-	-	-	-	-	-	-	-
Veronica hederifolia	Ivy-leaved speedwell	-	-	-	-	-	-	-	-	-	1	-
Plantago lanceolata/major	Ribwort plantains	-	-	-	1	-	-	-	-	-	1	-
Ranunculus sp	Buttercups	1	1	1	-	-	-	-	-	-	1	-
Ranunculus acris/ repens/bulbosis	Buttercups	-	1	-	-	-	-	-	-	-	-	-
cf *Ranunculus acris/repens/ bulbosis*	cf buttercups	-	-	-	-	-	-	-	-	-	1	-
Sambucus nigra	Elders	-	-	-	-	-	-	-	-	1	-	-
Stellaria media	Chickweeds	-	-	-	-	-	-	-	-	1	-	-
cf *Stellaria* sp	cf pinks family	-	-	-	-	-	-	-	-	1	-	-
Tripleurospermum inodorum	Scentless mayweeds	-	-	-	8*	-	-	-	-	-	-	-
cf Asteraceae indet	cf daisy family	-	-	-	1	-	-	-	-	-	2	-
Lamiaceae indet	Mint family	1	-	-	-	-	-	-	-	-	-	-
Arrhenatherum elatius subsp *bulbosum*	False oat-grass tubers	-	2	-	-	-	-	-	-	-	2	-
cf *Arrhenatherum elatius* subsp *bulbosum*	cf False oat-grass tubers	-	-	1	-	-	-	-	-	-	-	-

Table 8.1 (cont)

	Trench Context	1 90010	1 90037	1 90044	1 90049	1 90055	1 90026	1 90046	1 90054	1 90043	1 90015	1 90019
Indeterminate	Indeterminate	-	4	2	5	1	-	-	-	-	5	1
	weed/wild seed											
Other												
Charcoal >4mm		-	x	x	x	x	x	-	-	-	x	xx
Charcoal 2–4mm		-	x	x	x	x	x	x	-	-	x	xx
Terrestrial snails	Non-marine molluscs	x	xxx	xxxx	xxx	xxx	x	x	xx	xx	xx	xx
Cecilioides acicula Müller	Burrowing blind snails	x	xxx	xx	xxx	xx	x	-	xx	xx	xx	xx
Indeterminate plant material		-	-	2	-	-	-	-	-	3	-	-
Ignota		-	1	-	-	-	-	-	-	1	-	-

Abundance key: x, rare, 1–5; xx, frequent, 6–25; xxx, common, 26–100; xxxx, abundant, 101–500.

Spikelet forks are counted as two glume bases.

**Subsampled estimate.*
Residue finds have been added to the flots.

(GrM-21094, 1701 ± 26 BP, and GrM-21095, 1718 ± 24 BP), and a probable emmer wheat grain (ETH-103648, 1718 ± 24 BP) from (90046), were dated and are likely of the same date: *cal AD 335–395* (*95% probability*), *probably cal AD 350–375* (*68% probability*) (Chapter 6.2).

Posthole [90042] fill (90043) produced a chaff-rich assemblage similar to samples from the Phase HE1.2 (3rd century AD) ditch fills: 678 glume bases and two rachis nodes were counted to 44 grains. Both grain and chaff were dominated by hulled wheats, of which both emmer and spelt wheat were identified, with occasional barley grain and rachis. Radiocarbon dating of an animal bone group (ABG) from posthole fill (90043) (GrM-21092, 1757 ± 24 BP) indicated that the posthole and flue features were likely contemporary (Chapter 6.2).

Phases HE1.4 and HE1.5 – late 4th century AD/early 5th century AD

Demolition and rubble deposition

Rubble demolition layer (90015=90047) (Phase HE1.4), which sealed the flue and postholes, as well as an area of stone slabs (90021) in Phase HE1.3, was in turn cut by pit [90018] (Phase HE1.5). Samples from both the rubble layer and pit were similar in composition. The sample from the rubble layer (90015=90047) contained many identifiable cereal grains, and notably fewer glume bases. Glume wheats dominated the assemblage but, in contrast to other samples from the site, emmer grains slightly outnumbered spelt grains (32 emmer to 25 spelt grains including cf identifications). A small number of emmer and emmer/spelt grains had germinated. A few barley grains and a similar array of wild seeds to the other Trench 1 samples were also recorded. Pit [90018] also contained cereal remains, predominantly of glume wheat grains, including a small number of germinated specimens. Chaff items and weed seeds were very few. Two seeds of vetch/peas may represent an additional cultivated crop. Radiocarbon dates on grain of emmer (ETH-103646, 1714 ± 24 BP) and spelt grain (GrM-21093, 1713 ± 22 BP) from this layer produced almost identical results of *cal AD 350–420* (Chapter 6.2).

Present in both samples were a number of cabbage/mustard seeds (combined total of 186), with many identified as black mustard (*Brassica nigra* or *Brassica* cf *nigra*) on the basis of high and distinct reticulum ridges and more-or-less regular polygonal cells (Pearson and Robinson 1994, 567–74; Dickson 2011). Radiocarbon modelling of black mustard seeds (n = 25, ETH-103647, 1737 ± 24 BP) and a sheep ABG (GrM-21091, 1722 ± 22 BP) from pit [90018] fill (90019) is statistically consistent with *cal AD 380–420* (*95% probability*), *probably cal AD 390–410* (*68% probability*) (Chapter 6.2), indicating they derive from a late phase of activity. The presence of many *Brassica* seeds in these two samples, while only rare elsewhere in the trench, suggests some overlap or mixing of deposits. It is probable that *Brassica* seeds were present throughout the rubble layer through which the pit was cut, and material from the rubble layer consequently ended up in the pit fills.

Trench 2

Identifiable charred plant remains from Trench 2 samples (see Table 8.2) were much less numerous than those from Trench 1. Only three samples contained sufficient charred plant remains for full analysis, all from deposits associated with terminal or post-Roman activity. Preservation was poor and molluscs, including recent specimens and likely intrusive burrowing blind snails (*Cecilioides* spp), were frequent in all samples.

Table 8.2 Charred plant remains from Low Ham Roman Villa, late Roman 4th–5th century AD and post-Roman samples from Trench 2, and mid–late Iron Age and early Roman samples from Trench 3

	Trench Context	2 91013	2 91049	2 91057	3 92138	3 92140	3 92128	3 92042	3 92064	3 92124	3 92123
	Sample	51007	51016	51038	52058	52061	52055	52020	52029	52021	52052
	Feature	91014			92145	92145	92136	92041	92041	92032	92142
	Feature type	Pit: fill	Layer: rubble	Layer: rubble	Ditch: fill	Ditch: fill	Pit: fill	Posthole: fill	Posthole: fill	Beam slot: fill	Ditch: fill
	Date	4th–5th century AD	Post-Roman	Post-Roman	Mid–Late Iron Age	Mid–Late Iron Age	Late Iron Age/ Roman	Early Roman	Early Roman	Early Roman	Early Roman
	Sample vol (L)	40	40	20	40	20	40	?	?	?	40
	Flot vol (ml)	150	50	125	200	150	200	100	125	50	100
	Subsampled?	No	No	No	No	No	No	No	Yes	No	No
Sorted (%)	>1mm	100	100	100	100	100	100	100	100	100	100
Sorted (%)	<1mm	100	100	100	100	100	100	100	25	100	100
	Total number of charred items	28	159	105	69.5	42	29	67	194	35	93
Charred cereal grain											
Avena sp	Oat grain	-	1	-	1	-	-	-	-	-	-
cf *Avena* sp	cf oat grain	-	1	-	-	1	-	-	-	-	-
Triticum spelta wheat grain	cf short, fat, spelt	1	-	-	-	-	-	-	-	-	-
Triticum spelta	Spelt wheat grain	3	-	-	2	2	-	-	-	-	-
Triticum cf *spelta*	cf spelt grain	4	-	-	-	-	-	-	-	-	-
Triticum spelta	Germinated spelt wheat grain	1	-	-	-	-	-	-	-	-	-
Triticum cf *dicoccum*	cf emmer wheat grain	1	-	-	-	2	-	-	-	-	-
Triticum spelta/ dicoccum	Spelt/emmer wheat grain	1	-	-	6	8	-	2	3	-	3
Triticum spelta/ dicoccum	Germinated spelt/ emmer wheat grain	1	-	-	2	-	-	-	-	-	-
Triticum sp	Wheat grain	9	7	4	13	4	1	4	1	3	6
Triticum sp	Germinated wheat grain	-	2	-	2	1	-	-	-	-	-
Triticum sp	Wheat tail grain	-	-	-	-	1	-	-	-	-	1
Hordeum vulgare (hulled)	Hulled barley grain	-	1	-	2	2	-	-	-	-	-
Hordeum vulgare (hulled straight)	Hulled barley grain	-	-	-	-	1	-	3	1	-	-
cf *Hordeum* sp	cf barley grain	-	-	-	-	-	-	1	1	-	1
Cereales indet	Indeterminate cereal-sized grain	7	11	4	-	15	-	6	-	2	4
Cereales indet	Germinated cereal grains	-	1	-	-	-	-	-	-	-	-
Cereales indet embryos	Detached cereal embryos	-	2	-	-	-	-	-	-	-	-

Table 8.2 (cont)

	Trench Context	2 91013	2 91049	2 91057	3 92138	3 92140	3 92128	3 92042	3 92064	3 92124	3 92123
Cereales indet coleoptiles	Detached cereal sprouts	-	-	2	-	-	-	-	-	-	1
Charred cereal chaff											
Triticum spelta	Spelt wheat, glume bases	-	5	9	1	-	-	1	2	-	1
Triticum dicoccum	Emmer wheat, glume bases	-	-	3	-	-	-	-	1	1	-
Triticum spelta/ dicoccum	Spelt/emmer wheat, glume bases	-	87	67	17	1	6	16	135*	9	35
Triticum spelta/ dicoccum	Spelt/emmer wheat, spikelet forks	-	1	2	-	-	-	3	3	1	-
Triticum spelta/ dicoccum	Spelt/emmer wheat, cf basal spikelet forks	-	-	-	-	-	-	-	1	-	-
Hordeum sp	Barley rachis	-	-	-	-	-	-	1	-	-	-
Avena sp type	Oat-type awn fragment	-	3	3	1	-	3	-	-	-	5
Charred legumes											
Vicia faba var. *minor*	Celtic beans	-	-	-	-	-	1	-	-	-	-
Vicia faba/ Pisum sativum	Celtic beans/garden peas	-	-	-	2	-	-	-	-	-	-
Vicia/Pisum/ Lathyrus sp	Vetches/peas	-	-	-	0.5	-	-	-	-	-	-
Fabaceae indet	Large legume fragments	-	-	-	2	-	-	-	-	-	-
Fabaceae indet	Indeterminate large legume	-	1	-	-	-	-	-	-	-	-
Nutshell											
Corylus avellana	Hazel nutshell fragment	-	-	-	-	-	-	-	-	1	-
cf nutshell fragment	cf indeterminate nutshell fragment	-	-	-	-	-	-	-	-	1	-
Charred Wild											
Poaceae indet	Wild grasses	-	9	4	5	-	5	10	6	2	6
Bromus sp	Bromes	-	1	-	-	1	-	-	-	-	-
Festuca/ Lolium sp	Fescues/rye grasses	-	4	-	1	-	-	4	2	4	2
Poa annua/ Phleum sp	Meadow grass/ cat's tail grasses	-	1	1	3	-	5	-	-	-	4
Vicia/Lathyrus sp	Vetches/peas	-	-	-	-	-	-	1	-	-	-
Fabaceae (small, weedy)	Small weedy legumes	-	2	-	-	-	2	3	2	1	5
Medicago/ Trifolium sp	Medicks/clovers	-	-	-	-	-	-	-	12*	-	-
Odontites vernus	Red bartsia	-	-	-	-	-	1	-	-	-	-
cf *Odontites vernus*	cf red bartsia	-	-	-	-	-	-	-	4*	-	5
Cyperaceae	Sedge family	-	-	-	1	-	-	-	-	-	-
Atriplex/ Chenopodium sp	Orache/goosefoots	-	-	-	-	-	1	-	-	-	-
Chenopodium sp	Goosefoots	-	-	-	-	-	-	-	-	1	2
Atriplex sp	Oraches	-	-	-	-	-	-	1	-	-	-
Cladium mariscus	Great fen sedges	-	5	3	-	-	-	-	-	-	-

Table 8.2 (cont)

	Trench Context	2 91013	2 91049	2 91057	3 92138	3 92140	3 92128	3 92042	3 92064	3 92124	3 92123
cf *Cladium mariscus*	cf great fen sedges	-	1	-	-	-	-	-	-	-	-
Rumex spp	Docks	-	-	-	2	-	-	4	4*	2	-
Fallopia convolvulus	Black bindweeds	-	-	-	-	-	1	-	-	1	-
Polygonaceae indet	Dock family	-	1	-	1	1	-	-	-	-	-
Hyoscyamus niger	Henbane	-	2	-	-	-	-	-	-	-	-
Galium sp	Bedstraws	-	1	-	-	-	-	1	1	-	1
cf *Plantago* sp	cf plantains	-	1	-	-	-	-	-	-	-	-
Ranunculus sp	Buttercups	-	-	-	-	-	-	-	1	-	1
Ranunculus acris/repens/ bulbosis	Buttercups	-	-	-	1	-	-	-	-	-	-
Ranunculus ficaria	Lesser celandine tuber fragment	-	-	-	-	-	-	-	1	-	-
Silene sp	Catchflies	-	-	-	-	-	-	-	-	-	1
Asteraceae indet (gall)	Gall of daisy family plant	-	-	-	-	-	-	-	-	-	1
Urtica dioica	Stinging nettles	-	1	-	-	-	-	-	-	-	1
Lamiaceae indet	Mint family	-	2	-	-	-	-	-	1	-	1
Aphanes sp	Lady's mantles	-	-	-	-	-	-	-	-	-	1
Arrhenatherum elatius subsp *bulbosum*	False oat-grass tubers	-	-	-	-	1	-	-	3	1	1
cf *Arrhenatherum elatius* subsp *bulbosum*	cf false oat-grass tubers	-	-	-	-	-	-	-	-	1	-
Arrhenatherum elatius subsp *bulbosum*	Fragments of false oat-grass tubers	-	-	-	-	1	1	2	2	3	1
Indeterminate	Indeterminate wild seed	-	4	1	4	-	2	1	4*	-	3
Other											
Charcoal >4mm		xx	x	-	-	x	-	xx	x	x	-
Charcoal 2–4mm		xx	x	x	x	xx	-	xx	x	x	x
Terrestrial snails	Non-marine molluscs	xxx	xx	-	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Cecilioides acicula Müller	Burrowing blind snails	xxx	xx	-	xxx	xx	xx	xx	xx	x	xx
Charred tuberous stem/root		-	-	-	-	-	-	-	-	-	1
Indeterminate plant material		x	x	x	3	1	-	-	-	-	-

Abundance key: x, rare, 1–5; xx, frequent, 6–25; xxx, common, 26–100; xxxx, abundant, 101–500.

*Spikelet forks are counted as two glume bases. *Subsampled estimate.*

Phase HE2.5 – mid- to end 4th century AD/early 5th century AD

Pit [91014] fill (91013) yielded a small quantity of spelt wheat, including one short, rounded grain, a possible emmer wheat grain, and some unidentifiable wheat, including germinated grains. No chaff or seeds of wild plants were recovered.

Phase HE.2.6 – post-Roman

Samples from deposit (91049) and rubble layer (91057), both associated with the later robbing and collapse of the villa, produced small quantities of poorly preserved cereal grains. Hulled barley and indeterminate wheat were identified, some which had germinated. Two oat grains may have been cultivated or wild. Chaff was more numerous (a total of 177 chaff items to 32 grains); small numbers of both spelt and emmer were identified. Small quantities of seeds of wild/weed plants (35 items) were recovered from (91049), including two seeds of henbane (*Hyoscyamus niger*), a taxon of disturbed environments not present in other samples. A smaller number of wild plants (nine items) was recovered from layer (91057). Other notable wild taxa were great fen-sedge, and occasional species of wild grasses, including bromes (*Bromus* spp) and fescues/rye grass types. The presence of spelt and emmer wheat indicated that there was no change in crop repertoire associated with the final phase of the villa's use, although the material could be residual, representing late Roman rather than post-Roman activity.

Trench 3

The archaeology in Trench 3 consists of Late Iron Age roundhouse gulleys and a Roman rectilinear enclosure. Seven samples were analysed (Table 8.2). Molluscs were abundant.

Phase HE3.2 – later Middle Iron Age to Late Iron Age, and Phase HE3.3 – Late Iron Age/Roman?

Two samples were analysed from the Roundhouse 3 ring gully (Phase HE3.2). The re-articulating cattle bones from the primary fill of the ring gulley provide a TAQ for its construction of *205–110 cal BC* (*95% probability*; (*92140*); Fig 6.38), probably *200–165 cal BC* (*68% probability*). Grains of oats, hulled barley, spelt and possible emmer wheat, and indeterminate glume wheats and wheat, were recovered with some spelt/emmer wheat glume bases. False oat-grass (*Arrhenatherum elatius* subsp *bulbosum*) tubers were recovered from (92140). A small number of pulses was identified in (92138), including two Celtic bean/garden pea-like legumes (*Vicia faba*/*Pisum sativum*), the hilum impressions of which were reminiscent of Celtic beans (*Vicia faba* var *minor*), although a positive identification could not be made because of the lack of hila and abraded testa (seed coats).

A third sample from a Late Iron Age/early Roman fill (92128) of pit [92136] (Phase HE3.3) produced a positively identified Celtic bean. Also present were a single wheat grain, six spelt/emmer wheat glume bases and a range of weed seeds dominated by grasses and wild Fabaceae.

Phase HE3.4 – early Roman to 1st–2nd century AD

Four samples were taken from features associated with the enclosure ditch [92142]: one from the ditch fill (92123), two from posthole [92041] (lower fill (92064) and upper fill (92042)) and one from beam slot [92032] fill (92124), which produced only a low density of remains. Both the posthole and beam slot appeared to have been deliberately backfilled. Cereal grains were limited in all four samples (between five and sixteen grains) and included glume wheats and hulled barley. Chaff was slightly more numerous, with a larger number of glume bases (146) from posthole fill (92064). Only six glume bases in this phase were identified to species, of which both spelt and emmer wheat were identified. False oat-grass tubers were present in all samples. A fragment of hazel (*Corylus avellana*) nutshell was noted in beam slot fill (92124). The seeds of wild plants recovered broadly replicated the other samples from this trench, consisting largely of seeds from disturbed, arable and grassland species, with the addition of cleavers (*Galium* spp), and a small number of probable red bartsia seeds (cf *Odontites vernus*).

General discussion

Crop plants

The range of crop species present in the Low Ham Villa archaeobotanical assemblage is characteristic of later prehistoric and Romano-British crop choices (Lodwick 2017). Glume wheats were the dominant cereals identified in all phases, with both emmer wheat and spelt wheat present. The small number of grains identified to species from Trench 3 features are too few for meaningful interpretation and therefore do not allow the analysis of temporal changes in the assemblage. The later Romano-British (3rd–4th century AD) corn-dryer flue and associated features excavated in Trench 1 were dominated by spelt wheat, although emmer wheat was present in varying proportions. The direct dating of both wheat species confirms they were being cultivated at Low Ham into the late period of occupation (Chapter 6.2). Across Trench 1, spelt wheat grain outnumbers emmer wheat grain at a ratio of 3:1 (or 75% to 25% of the identifiable glume wheat grain assemblage), with variation in ratios by sample. Emmer outnumbers spelt in only one sample (upper flue fill (90026)).

Spelt wheat was cultivated and traded throughout the Roman period and is the crop most commonly associated with villa sites (Lodwick 2017). The relative significance of spelt and emmer wheat may be determined by socio-cultural, ecological and geographical factors. Spelt wheat grows well on heavier soils, which were increasingly brought into cultivation with the intensification of farming in the Romano-British period (Van der Veen 1992; de Carle 2014, 128–9; Lodwick 2017) and with the introduction of iron-tipped shares or ards (see Lodwick 2022 for a summary). Spelt wheat tends to be higher yielding than emmer, at least in some parts of the country, although emmer and spelt respond differently to temperature changes, while factors such as spring or autumn sowing times may also influence choice (Van der Veen 1992, 145–6; Van der Veen and Palmer 1997). The Rural Settlement of Roman Britain Project (RSRB) noted a greater frequency of emmer wheat recovered from farmsteads (particularly open farmsteads and enclosed farmsteads) compared with villas, roadside settlements and villages (Lodwick 2017; Smith *et al* 2016), suggesting socio-economic factors are significant. Emmer wheat may have persisted as a crop in the South-West longer than other areas, following the initial introduction of spelt wheat in the Bronze Age (Martin *et al* 2012).

Hulled barley is consistently present in small quantities in the Low Ham samples, mostly from Trenches 2 and 3, represented by a few poorly preserved grains and a single rachis internode. It was not possible to determine whether a two- or six-row variety was present. It is difficult to establish the importance of barley in the Low Ham economy given the differential survival rates of barley, a free-threshing cereal (in which the grain falls free from the rachis), and hulled wheat (in which the grain is held within tough glumes), which requires additional processing stages, and therefore was at greater risk of accidental burning, especially in the probable corn-drying oven. Barley may have had uses, such as fodder, that required limited processing and exposure to heat.

The abundance of mustard seeds (*Brassica*/*Sinapis* sp and *Brassica nigra*) in late Roman rubble demolition layer (90015=90047) and pit [90018] are likely contemporary with the possible corn-dryer (3rd to 4th century AD). This suggests that black mustard may have been cultivated as an oil and/or flavour crop (Zohary and Hopf 1994, 132). The presence of black mustard at a Roman villa, a high-status site, is of interest, particularly in the absence of evidence for imported plant remains and more 'Romanised' flavours such as coriander (*Coriandrum sativum*), which is well known from Roman Britain (Van der Veen *et al* 2008; Witcher 2013). The absence of imported or 'Romanised' flavourings from the cereal-dominated charred assemblage is likely due largely to preservation and recovery biases, including the type of features sampled; herbs and spices would not usually be expected from cereal-processing structures and deposits.

Sample composition: crop-processing activities

The internal composition of samples and the relative proportions of grain, chaff and weed seeds and other crop plants provide some insights into crop-processing activities at Low Ham Villa and depositional processes. The evidence is strongest for Trench 1, given the greater number of items recovered from that location.

Two samples from the likely corn-dryer flue [90025] (samples <50014> and <50015>), and a sample each from the later rubble layer (90015) (<50006>) and pit [90018] (<50007>), are grain rich. The other samples analysed from Trench 1 are all chaff rich, especially in spelt/emmer wheat glume bases, while weed seeds are generally scarce relative to grain and chaff in these samples (Fig 8.1). The

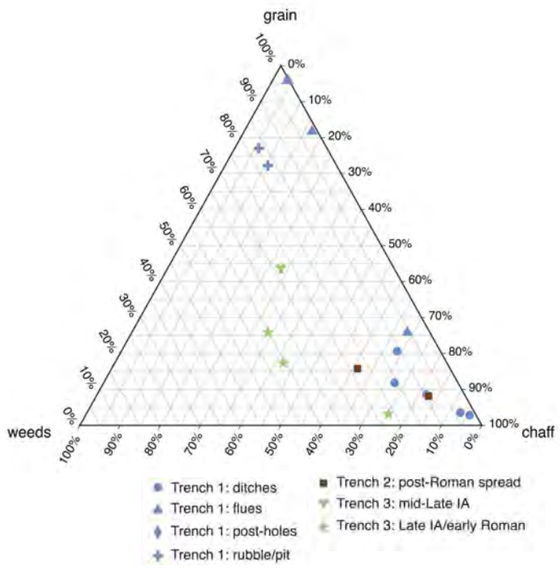


Fig 8.1 Ternary plot showing relative proportions of grain, chaff (glume bases) and weed seeds by sample. Samples containing >50 items only. Produced using https://ternaryplot.com/

high concentration of chaff in flue [90025] fill (90054) (<50018>) likely indicates use of crop-processing waste as fuel in the corn-dryer (Hillman 1981, 1982). The chaff-rich fill of posthole [90042] (<50023>) may also represent (re)deposited spent fuel that had accumulated there, as the posthole is likely to be broadly contemporary with flue [90025]. Spent chaff-rich debris from the corn-dryer was also likely deposited in the contemporary ditches, identified in samples from ditches [90007], [90023] and [90030]. Germinated grain was noted in some of these samples, in percentages potentially indicative of malting (Van der Veen 1989): 23.8 per cent of grain had germinated from ditch [90023] (<50013>), while 21.2 per cent of grain had germinated from flue [90025] fill (90026) (<50014>).

The composition of the cereal assemblage in Trench 1 is therefore consistent with this area being concerned with cereal processing, and the interpretation that flue feature [90025] was part of a corn-dryer used for the malting of grain with the intent to brew ale. Corn-dryers start appearing as early as the 1st–2nd century AD (Morris 1979), but most date from the 3rd and 4th centuries AD (Van der Veen 2016; Campbell 2017) and are frequently associated with malt or beer production or drying of grain prior to milling or storage. The appearance of such structures is associated with a shift to large-scale surplus arable production as well as the production of beer as a possible 'cash-crop' and the development of a market economy (Allen and Lodwick 2017; Van der Veen 2016).

In contrast to Trench 1, the relatively modest number of cereal remains in the Trench 2 samples is more indicative of small-scale cereal processing and use of crop-processing waste as fuel. The small number of weed seeds relative to the chaff and grain in the samples is, however, comparable to the 3rd century AD ditch fills, and the 3rd–4th century AD flue and posthole. The paucity of weeds in these late and post-Roman deposits in both Trenches 1 and 2 may indicate efficient weeding, or crop cleaning prior to processing.

With the exception of the fills of ring ditch [92145] (<52058> and <52061>), which were comparatively grain rich, all other samples in Trench 3 were dominated by crop-processing by-products, particularly the chaff-rich fill of posthole [92041] (<52029>). These samples differ from the late Roman villa samples from Trench 1, in both density of items per litre (lower) and a greater proportion of weed seeds. This difference in composition is likely to reflect a more domestic scale of cereal processing associated with the roundhouse settlements, likely related to day-to-day processing and use of by-products (Van der Veen 2007), compared to the more substantial processing structures at the villa and regular use of large quantities of chaff as fuel. The greater proportion of weed seeds from the roundhouse deposits may indicate that cereals were subject to less processing (less weed removal) immediately after harvest, or potentially less weeding of arable plots. Such differences in weed seed presence has been related to labour availability (Stevens 2003), or may simply reflect a difference in post-harvest crop-processing needs; cereals destined for malting ovens may have required the removal of weeds but not the glumes, which would be more easily removed after malting, while day-to-day processing of grain for consumption might involve the removal of weeds and chaff at the same time.

Wild species

A modest weed flora was recovered from all three trenches at Low Ham, although with notably fewer seeds in Trenches 1 and 2. Broad similarities across the three trenches are likely to reflect local soil conditions. Both grassland taxa and weeds of arable fields or disturbed habitats were present. Grassland plants identified include various grasses (Poaceae indet), such as possible wild oat, fescues/rye grass types, meadow-type grasses and bromes, various species of buttercups (*Ranunculus* spp), including meadow buttercups (*Ranunculus acris/repens/bulbosis*) and lesser celandine (*Ranunculus ficaria*), and small-seeded vetches/peas and medicks/clover-types legumes. Much of the grassland taxa may have colonised arable fields from field margins. A range of taxa of disturbed ground, cultivated fields or field margins, included stinging nettles (*Urtica dioica*), goosefoots (*Chenopodium* spp), oraches (*Atriplex* spp), knotgrasses (*Polygonum aviculare*), docks (*Rumex* spp), black bindweeds (*Fallopia convolvulus*) and bedstraws (*Galium* spp). Disturbed nutrient-rich soils are suggested by henbane, and weeds more closely associated with drier, more calcareous soils, including red bartsia. This is consistent with cultivating crops on the local lime- and chalk-rich soils. The absence of stinking mayweed (*Anthemis cotula*) and corncockles (*Agrostemma githago*) is of note, however, as these species are associated with the cultivation of heavy clay soils and expansion of arable agriculture in the Roman period (Lodwick 2017). The presence of scentless mayweeds, albeit in small numbers, potentially indicates the cultivation of lighter, free-draining soils.

Larger seeded taxa (bromes, oats, bedstraws and black bindweed) are typically regarded as being removed from crops at the final stages of processing (Stevens 2003). They often grow to the same height as crops, have seeds of similar size to cereal grain that are not removed by sieving, and/or possess seed-dispersal adaptations and appendages that are difficult to remove from harvested crops. The tubers of false oat-grass recorded in the majority of Trench 3 samples may reflect a difference in harvest methods. False oat-grass tubers in Iron Age assemblages at Nettlebank Copse, Hampshire, were suggested to result from harvesting by uprooting (Campbell 2000, 55–6; Roehrs *et al* 2013, 12). The lack of tubers in samples from Trenches 1 and 2 may reflect a more efficient method of harvesting, such as sickle cutting, by the late Roman period (cf Lodwick and Brindle 2017, 46–7).

The presence of great fen-sedge, a plant of wetter environments, in the late Roman samples from Trenches 1 and 2 may reflect wet conditions within or adjacent to arable fields, as suggested for the nearby Roman settlement of Great Yard, Ilchester, Somerset (Stevens 1999). This could reflect wetter conditions towards the end of the Roman period, perhaps due to poorly drained fields (Hillman 1991). The terrestrial mollusc assemblage from Low Ham indicates a 'progression from shaded conditions through more open environments to gradually wetter conditions' (Chapter 8.3). Alternatively, great fen-sedge could represent the use of marsh hay as fuel (Stevens 1999), potentially reflected in its presence in the chaff-rich samples associated with the corn-dryer and waste deposits in Trench 1.

Woodland or hedgerow species that could represent wild food sources are rare in the assemblage: a single elder (*Sambucus nigra*) seed in late Roman posthole [90042] and a small fragment of hazelnut shell (*Corylus avellana*) in the beam slot (92124). Such remains may have resulted from accidental inclusion in fires.

Summary

Modern sampling methods during the most recent excavations at Low Ham have provided a more enhanced insight into the farming practices at the villa site compared to the limited evidence from earlier excavation. Taking a chronological view, the Late Iron Age to Romano-British settlement examined in Trench 3 produced evidence of day-to-day crop processing, likely on a household scale, with samples being dominated by chaff and weed seeds. Tubers of false oat-grass point towards a different harvesting method by the earlier inhabitants of the site, which may have involved the uprooting of cereals. Conversely, the later 3rd- and 4th-century AD activity associated with the villa was largely focused in the area of Trench 1 and indicates more organised crop-processing activities and potential participation in a more developed market economy. Specialist crop-processing structures include a probable corn-dryer likely used for malting. Despite the high-status 'Romanised' character of the site indicated by the fine villa, emmer wheat continued to be cultivated alongside spelt wheat. Black mustard (*B nigra*) was also possibly cultivated, while introduced spices and flavourings were absent.

The absence of high-status exotic (imported) foods, herbs or spices, or fruit remains, and the presence of emmer wheat, which is more typically associated with prehistoric crop choices, and also the presence of mustard, is in contrast to the structural evidence for a high-status site with a quality mosaic. Conversely, waterlogged deposits from the well recovered in earlier investigations did produce likely imports: stone pine cones (*Pinus pinea* L), and remains of fruit and nuts including walnut (*Juglans regia* L) (Chapter 4.8). In large part this is the result of sampling being biased towards the arable activity associated with the wider villa, although the persistence of emmer wheat does reflect the pattern found in wider synthesis work, with emmer wheat appearing to persist alongside spelt wheat for longer in South West and North East England (Lodwick 2017).

8.2 The wood charcoal

Paul Flintoft

Sample selection and description

The samples selected for wood charcoal analysis derived from a total of 131 processed sediment samples recovered from a variety of archaeological features and deposits within the footprint of three trenches, including pits, postholes, ditches and deposits. Four samples underwent detailed wood charcoal analysis (Table 8.3), selected on the basis of Pelling's (2019) recommendations from the initial assessment of the charred plant remains. Samples from Trench 1 produced only small quantities of charcoal and were not included in the analysis.

Methods

All flotation samples had been processed on site using two modified Siraf-type flotation machines (see Chapter 8.1).

All wood charcoal fragments from the >4mm fractions were analysed. Additionally, ten fragments of the 2–4mm fraction were analysed to act as comparanda and to identify whether there was any variation between the size fractions. Only fragments in the >4mm fractions were recorded in detail, including evidence of tyloses,

Table 8.3 List of samples that underwent detailed wood charcoal analysis, by trench and phase, with contextual information and descriptions

Trench	Phase	Phase description	Sample	Context	Deposit description
2	HE2.5	Mid-4th century AD to end 4th/ early 5th century AD	51036	91046	Burnt layer, associated with post-occupation industrial activities
3	HE3.3	Late Iron Age/early Roman	52050	92125	Secondary fill of pit [92126]
	HE3.2	Later Middle Iron Age to Late Iron Age	52012	92033	Fill of pit [92040] NB Late Iron Age
			52037	92102	Fill of posthole [92108]

fungal hyphae, roots/insects, vitrification, radial cracking, working marks and season of felling. The 2–4mm fragments were examined only to identify wood type.

Fragments of charcoal were broken across the transversal (TS), radial longitudinal (RLS) and tangential longitudinal (TLS) sections and examined using high-power magnification (×50 to ×500) on an Olympus BHM light reflective microscope. Identifications were achieved using wood anatomical guides published by Schweingruber (1990), Gale and Cutler (2000) and Hather (2000), and Historic England's wood charcoal reference collection stored and managed at Fort Cumberland, Portsmouth, UK. As standard, attempts were made to identify all charcoal fragments to genus level. The use of 'cf' before a species name indicates some degree of uncertainty in the identification, and where it was not possible to make an identification specimens are recorded as 'Indeterminate' (or 'Indet'). Floristic nomenclature follows Stace (2010), as do inferences about likely species.

Condition of the charcoal

Using a scale that ranged from 'very poor' to 'poor', 'good', 'very good', 'mixed' and 'indeterminate', the charcoal was assessed to determine its condition.

Vitrification

Using the vitrification score system based on Marguerie and Hunot (2007), degrees of vitrification were applied to each of the fragments:

- low brilliance–refractiveness (degree I)
- low to strong brilliance (range between degrees I – II)
- strong brilliance (degree II)
- strong brilliance–total fusion (range between degrees II – III)
- total fusion–dense, non-recognisable mass (degree III).

Results

Identifications

Seven wood types (and/or wood groups) were identified, all of which were hardwoods (see Table 8.4):

- *Acer* sp = maple
- *Alnus* sp = alder
- *Frangula* sp = (alder) buckthorn
- *Fraxinus* sp = ash
- Pomoideae (/Maloideae) spp = pomaceous fruits, *Crataegus* (hawthorn), *Cotoneaster* (cotoneaster), *Sorbus* (whitebeam), *Malus* (apple) and *Pyrus* (pear)
- Prunoideae = *Prunus* spp = cherries
- *Quercus* sp = oak.

The wood identification results and counts are presented in Table 8.5, displayed by sample and fraction.

Trench 2

Sample <51036>, context (91046)

A total of 43 fragments of >4mm charcoal, and over *c* 1000 fragments of charcoal from the 2–4mm fraction, were recovered from sample <51036>. The results indicated an overwhelming presence of (cf) *Alnus*, with smaller proportions of (cf) *Acer*, *Fraxinus* and possible *Prunus* (Fig 8.2).

Trench 3

Sample <52050>, context (92125)

Pit [92126] was located just outside, and to the west of, the Roundhouse 3 ring ditch [92067]. This circular shallow pit contained two fills, (92132) and (92125), a primary and secondary fill, respectively. Sample <52050>

Table 8.4 Floristic inferences based on wood types native to the British Isles (after Stace 2010), listed alphabetically by family and then genus/group. Given the Roman age of some of the deposits at the site, taxa could in principle include non-native introductions, here particularly the Rosaceae, eg cultivated fruits (apple, cherries), grown on/near the site or brought in as wood timber/artefacts

Family	Genus/group	Possible species
Betulaceae	*Alnus*	*A. glutinosa* (alder) is the only species native to the British Isles
Fagaceae	*Quercus*	*Q. petraea* (sessile oak) and *Q. robur* (pedunculate oak) are the only species native to the British Isles
Oleaceae	*Fraxinus*	*F. excelsior* (European ash) is the only species native to the British Isles
Rhamnaceae	*Frangula*	*F. alnus* (alder buckthorn) is the only species native to the British Isles
Rosaceae (Pomoideae)	*Cotoneaster*	*C. cambricus* (wild cotoneaster)
	Crataegus	*C. monogyna* (hawthorn) and *C. laevigata* (Midland hawthorn)
	Malus	*M. sylvestris* (crab apple)
	Pyrus	*P. cordata* (Plymouth pear)
	Sorbus	Whitebeams are a large genus with multiple native species, of which the main ones are *S. aucuparia* (rowan) and *S. aria* (service-tree)
Rosaceae (Prunoideae)	*Prunus*	*P. avium* (wild cherry), *P. spinosa* (blackthorn) and *P. padus* (bird cherry) are the native species
Sapindaceae	*Acer*	*A. campestre* (field maple) is the only species native to the British Isles

Table 8.5 Quantities of analysed charcoal and corresponding taxa

Sample number	Context	Deposit description (simple)	Fraction size	Total no. fragments	Wood taxa												Total	No. taxa
					Acer sp	cf *Acer* sp	*Alnus* sp	cf *Alnus* sp	*Frangula* sp	*Fraxinus* sp	Pomoideae	cf Pomoideae	*Prunus* sp	cf *Prunus* sp	*Quercus* sp	Indet		
51036	91046	Burnt layer	>4mm	43	1	1	39	2	-	-	-	-	-	-	-	-	43	2
			2–4mm	>1000	-	2	2	3	-	1	-	-	-	1	-	1	10	4
52050	92125	Pit fill (secondary)	>4mm	75	-	-	-	-	-	-	-	-	68	5	-	2	75	1
			2–4mm	129	-	-	-	-	-	-	-	-	7	-	-	3	10	1
52012	92033	Pit fill (complete)	>4mm	35	-	1	-	-	2	-	11	1	8	1	-	11	35	4
			2–4mm	309	-	-	-	-	-	-	6	2	4	4	-	-	16	2
52037	92102	Posthole	>4mm	4	-	-	-	-	-	-	-	-	-	-	4	-	4	1
			2–4mm	89	-	-	-	-	-	-	-	-	-	-	10	-	10	1
Total					**1**	**4**	**41**	**5**	**2**	**1**	**17**	**3**	**87**	**11**	**14**	**17**	**203**	

(from the secondary fill (92125)) was the only one of these to be analysed; it contained 75 fragments of charcoal >4mm and 129 fragments in the 2–4mm fraction.

Of those that could be identified, only one wood type was identified in this sample: *Prunus* (cherries), which was recorded in both the >4mm and 2–4mm fractions (see Fig 8.3).

Sample <52012>, context (92033)

Sample <52012> was recovered from the charcoal-rich upper fill of oval-shaped feature [92040] within the Roundhouse 3 ring ditch. The >4mm fraction from sample <52012> produced a variety of taxa. This included cf *Acer*, (cf) Pomoideae, (cf) *Prunus* and *Frangula*. Ten of the 2–4mm fraction fragments were subsampled. The

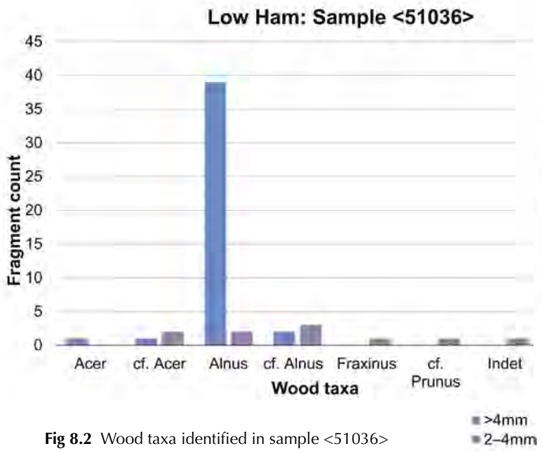


Fig 8.2 Wood taxa identified in sample <51036>

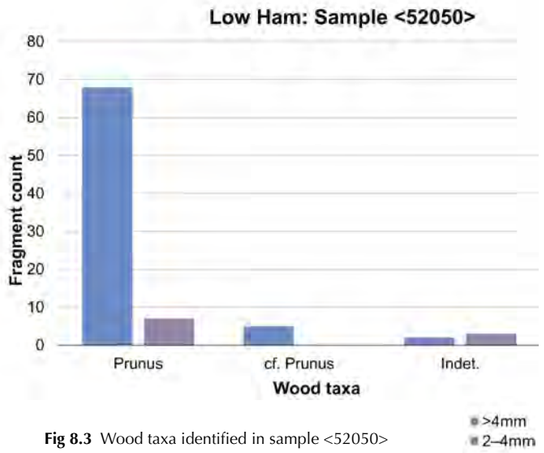


Fig 8.3 Wood taxa identified in sample <52050>

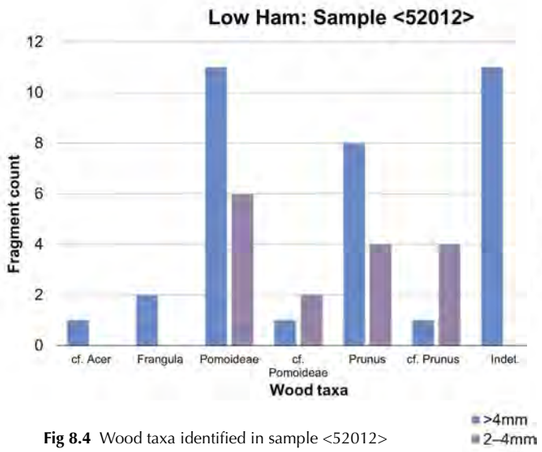


Fig 8.4 Wood taxa identified in sample <52012>

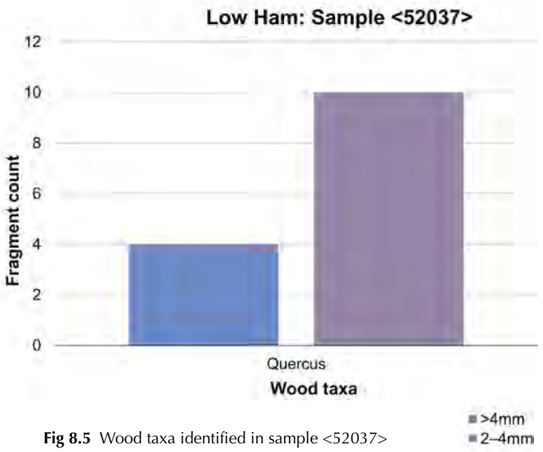


Fig 8.5 Wood taxa identified in sample <52037>

taxa identified were broadly commensurate with those from within the >4mm fraction (Fig 8.4).

Sample <52037>, context (92102)

Sample <52037>, recovered from posthole [92108] located inside the Roundhouse 3 ring ditch, produced only four fragments from the >4mm fraction. These were all identified as *Quercus* (oak), as were the ten fragments subsampled from the 2–4mm fraction (Fig 8.5). *Quercus* was extremely scarce across the site, only noted in four samples at assessment (Pelling 2019) and always in small quantities.

Other characteristics

Woodworking evidence

No evidence of woodworking was identified on any of the fragments.

Felling seasons

Four >4mm fragments from sample <52050> (all *Prunus*) displayed evidence that could indicate the season of felling, following Eckstein's (2007) observations using the presence or absence of earlywood and latewood. In three of the four suitable fragments, latewood was present, with the fourth only showing earlywood growth. This suggests late summer to late winter felling for the former (n = 3), and late spring to mid-summer felling for the latter (n = 1).

Charcoal condition

Just over half the charcoal fragments examined from Low Ham were in 'good' condition (60%), with 'poor' (29%), 'very poor' (2%) and 'indeterminate' (9%) material also recorded (Fig 8.6).

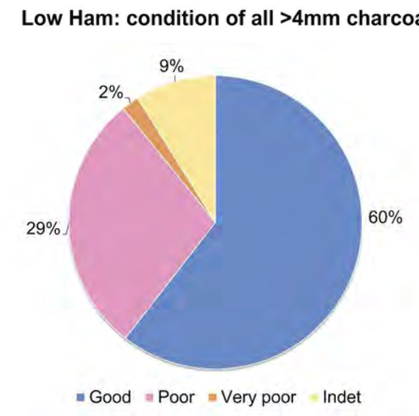


Fig 8.6 Condition of the >4mm charcoal fragments from the Low Ham samples

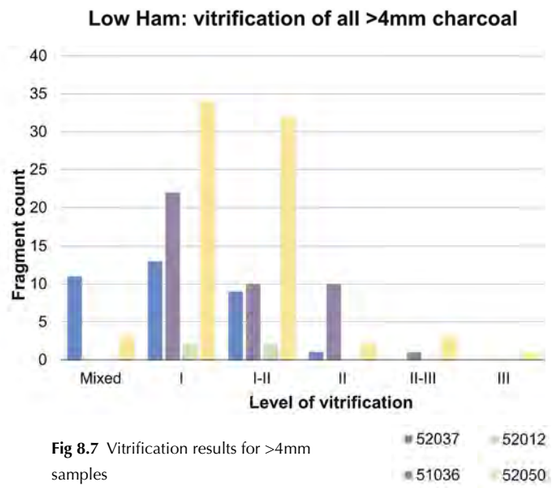


Fig 8.7 Vitrification results for >4mm samples

Vitrification

Whereas Marguerie and Hunot (2007) considered circumstances that can result in tissue deformation and vitrification are related to high-temperature combustion, this assertion is contested by McParland *et al* (2010), who have demonstrated that the causal factors that lead to instances of total fusion are poorly understood and not necessarily related to high-temperature combustion.

The data is presented here (Fig 8.7) to allow future analysts to re-visit it once vitrification is better understood. The majority of the fragments scored either I (45%) or I–II (34%) in Marguerie and Hunot's (2007) vitrification classification stages, ie towards the lower end of the scale range. Of note is that the highest scores (II–III and III) were represented (albeit in small numbers overall) by sample <52050>, which was from the secondary pit fill deposit that also contained calcined bone and is thought to derive from domestic activities.

Discussion

Late prehistoric/Romano-British

With the exception of posthole [92108] (discussed next), *Prunus* and Pomoideae were the dominant taxa types recorded from the late prehistoric/Romano-British phase. Sample <52050> only contained identifications of *Prunus*, of which the three species native to the British Isles (*P spinosa*, *P padus* and *P avium*; see Table 8.4) are common in marginal woodland and hedges (Gale 2009). Sample <52012>, in addition to *Prunus*, contained Pomoideae and *Acer*, both of which also appear in hedgerows, scrub or marginal woodland (Gale and Cutler 2000). Overall, the occurrences of these taxa suggest that the wood fuel collection strategy was exploiting such local environments.

Examples where similar assemblages have been identified within ring ditches and features associated with roundhouse architecture include Alcester, Warwickshire (Greig 1992), and Cambourne New Settlement, Cambridgeshire (Gale 2009). In these cases, their presence was interpreted as fuel waste from domestic activities such as food preparation. In the case of sample <52050> from this site, calcined animal bone was found within the same fill (see Chapter 8.4), which could indicate that, here too, waste from food preparation was being deposited.

The presence of *Quercus* (oak) in posthole [92108] (sample <52307>), which was generally scarce on the site and the only taxa recorded in this sample, indicates that this charcoal could derive from the original oak timber. Its scarce occurrence at the site suggests that oak trees were present in the landscape, although more detailed interpretation of taxa representation is not possible given the small assemblage size.

Roman/post-Roman

The overwhelming presence in sample <51036> of *Alnus* supplemented with *Acer* and very occasional *Fraxinus* and *Prunus* is suggestive of a landscape that includes marginal woodland, hedgerow or scrub (Gale and Cutler 2000) and wetter habitats. The local topography and riparian environment of Low Ham is conducive to hygrophilous trees (those growing in damp or wet conditions) such as *Alnus*, suggesting localised wood collection strategies (Marston 2009; Veal 2017). *Fraxinus*

would have thrived on the lime-rich soils, further indicating a localised selection and collection strategy.

The deposit from which sample <51036> was taken (context 91046) was securely post-villa use, likely associated with industrial activity, and may have formed over a relatively long period of time. The large number of fragments in the 2–4mm fraction of this sample suggests that the charcoal may have been fractured through movement or trampling. This could be indicative of significant re-working and disturbance (Schiffer 1983; Lancelotti *et al* 2010).

Industrial activities

The only context in this phase that produced enough charcoal deemed suitable for analysis is thought to relate to iron-smithing activities (Chapter 7.9; sample <51036> from context (91046)) and was found to be dominated by *Alnus*. If the taxa identified within this sample were sourced for industrial purposes, it is possible that a local wood collection policy was favoured, rather than travelling to obtain taxa that can achieve a higher calorific output and may be better suited to certain industrial processes (Marston 2009). Conversely, waste deposit (91007), which overlay hearth (91034), produced minimal charcoal despite being described as charcoal-rich in the field (Pelling 2019). This deposit contained coal as well as indeterminate clinkered material, suggesting fuel might have included a mixture of wood, charcoal and coal.

Higher calorific output wood fuel taxa include oak (*Quercus*), maple (*Acer*) and hornbeam (*Carpinus*) and are the most commonly identified varieties of charcoal on Romano-British ironworking and industrial sites (Paynter 2007; Veal 2017). An absence of taxa that can achieve higher temperatures, from a context that has been interpreted as related to industrial activities, could be regarded as unusual. If the charcoal in this context is related to industrial activities, the absence of oak may relate to a preference for the selection of local taxa or less specialised tasks that require lower temperatures. Alternatively, coal may have been a preferred fuel at this site, while absence of charcoal may also reflect high combustion rates.

Variations in wood use

Overall, the abundance of wood charcoal at the site was generally low. While there was insufficient charcoal to be able to make conclusive statements about the wooded environment, we can however consider the selection/use of wood taxa as a reflection of settlement activity or type. What can be seen is that there is a difference between the use of *Prunus* and Pomoideae in the late prehistoric (/early Romano-British period), to *Alnus* in the Romano-British (/post-Roman) period.

The low presence of *Quercus* recorded in this analysis and at the site as a whole (see also the assessment by Pelling 2019) is unusual for British archaeological sites but could be explained by various factors. It could be related to the preservation of the wood charcoal overall: as well as low quantities of wood charcoal, the fragment sizes were also generally small. It could also relate to the original use, with the selection of woods for different purposes reflecting the activities and usage at the site, for example oak being used as a structural post, but not necessarily being available within the local environment, although if there was a shortage of large trees for structural timbers, then their use would have been prioritised accordingly.

Conclusions

The spread of charcoal across the samples from the three trenches excavated at Low Ham was very varied. Trench 1 was dominated by a corn-dryer and associated deposits within which cereal chaff may have been used as fuel (Chapter 8.1). Industrial debris was identified in Trenches 1 and 2, and fuel appears to have included coal as well as *Alnus*, with charcoal of higher calorific value conspicuously absent. The presence of *Alnus* may reflect the wetter conditions in the late Roman and post-Roman periods, as indicated by an increase in aquatic molluscs (Chapter 8.3) and seeds of wet ground taxa (Chapter 8.1). The features associated with the Iron Age and Romano-British roundhouses in Trench 3 produced more varied wood taxa, reflecting the use of scrubby woodland vegetation for domestic fuel. Tantalising evidence for the use of *Quercus* for timbers is provided by the find from a single posthole.

8.3 The molluscs

Matt Law

Introduction and methods

Twenty-five bulk sediment samples from three vertical sequences of ditch fills were presented for analysis. One kilogram of air-dried sediment from each sample was processed. The samples were washed through a 250µm mesh sieve. The resulting residues were air dried and weighed, then sorted into fractions using a nest of sieves

before being scanned under a low-power microscope.

Shells were extracted under a low-power microscope and identified to species level where possible, using a reference collection. Ecological information is derived from Evans (1972), Macan (1977), Kerney and Cameron (1979), Killeen *et al* (2004) and Davies (2008). Nomenclature follows Anderson and Rowson (2020).

For each gastropod taxon within a sample, the most commonly represented non-repetitive element (usually the shell apex, umbilicus, or body whorl with mouth) was counted to determine the minimum number of individuals (MNI) present. This avoids the underestimation reported when only shell apices are counted (Giovas 2009). Bivalves were represented only by intact left valves.

As an aid to interpretation, the taxa were arranged into groups, broadly following those of Evans (1972) and Evans (1991). These are:

1a. Oxychilidae. 'Glass snails', taxonomically related species of shaded places, represented here by *Aegopinella nitidula*, *Aegopinella pura* and *Oxychilus cellarius*.

1b. *Carychium tridentatum*. A widespread shade-demanding species.

1c. *Discus rotundatus*. A common shade-demanding species.

1d. Other shade-loving species. Represented here by *Acanthinula aculeata*, *Clausilia bidentata* and *Punctum pygmaeum*.

2. *Pomatias elegans*. A burrowing snail that tends to be associated with shaded places in the south-east of Britain, but which is found in open places in the west (Evans and Williams 1991, 115).

3. Intermediate/catholic. Molluscs with a broad range of ecological tolerances. Represented here by *Cepaea* sp, *Cochlicopa* cf *lubrica*, *Cochlicopa* cf *lubricella*, *Cornu aspersum* and *Trochulus hispidus*, as well as internal plates of slugs of the Limacidae family, and internal granules of slugs of the Arionidae family.

4a. Commonly open country. Snails associated with open habitats such as short grassland. Represented here by *Helicella itala*, *Pupilla muscorum*, *Vallonia costata*, *Vallonia* cf *excentrica* and *Vertigo pygmaea*.

5a. Amphibious/freshwater. Species found in wet ground habitats and freshwater environments that may dry out seasonally. Represented here by *Galba truncatula* and *Euglesa casertana*.

5b. Obligatory marsh. Represented here by *Oxyloma*/*Succinea* sp.

5c. Characteristic of marshes. Represented here by *Carychium minimum*.

6a. Freshwater slum. Species preferring or tolerating stagnating habitats. Represented here by *Anisus leucostoma*.

6b. Freshwater catholic. Species found in a wide range of freshwater environments. Represented here by *Ampullaceana*.

8. *Cecilioides acicula*. A subterranean snail, thought to have been introduced in the medieval period (Davies 2010, 170), and found up to 2m underground (Evans 1972, 186).

The groupings broadly represent a progression from shaded conditions through more open environments to gradually wetter conditions.

Results and discussion

The MNI for the shells are presented in Tables 8.6–8, and as biostratigraphic diagrams in Figures 8.8–10. The diagrams were produced using C2 (Juggins 2007).

Shells were well-preserved, although there were a number of fragmentary shells in all contexts. Despite the good level of preservation, numbers were low in all samples, which constrains the reliability of ecological interpretations.

Ditch slot [90030] in Trench 1

At the bottom of the sequence is a relatively diverse fauna dominated by the Group 4a species *Vallonia* cf *excentrica* and Group 5 and 6 taxa (Table 8.6; Fig 8.8). The latter are indicative of damp conditions and at least seasonal standing water in the ditch. *Vallonia* is a species of dry, open environments, which is likely to reflect local conditions rather than the ditch itself. It can thrive in plough soils, and Thomas (2010, 323) suggests the same may have been more true in the past of *Helicella itala* (also present in this context) than in the present day. Shade-demanding species may have been taking advantage of taller vegetation within the ditch itself.

Table 8.6 Ditch slot [90030]

	Sample number	50028	50029	50030	50031
	Context number	90049	90055	90045	90056
	Weight before processing (g)	1000	1000	1000	1000
	Dry weight of residue (g)	178.6	314.9	105.6	102.4
Taxon	**Ecological group**				
Aegopinella nitidula (Draparnaud, 1805)	1a	3	1	2	-
Oxychilus cellarius (O F Müller, 1774)	1a	2	-	-	-
Carychium tridentatum (Risso, 1826)	1b	9	5	-	3
Discus rotundatus (O F Müller, 1774)	1c	23	9	9	11
Acanthinula aculeata (O F Müller, 1774)	1d	1	-	-	-
Clausilia bidentata (Strøm, 1765)	1d	1	-	-	2
Punctum pygmaeum (Draparnaud, 1801)	1d	1	-	-	-
Cepaea sp	3	1	-	-	-
Cochlicopa cf *lubrica* (O F Müller, 1774)	3	1	-	-	1
Cochlicopa cf *lubricella* (Rossmässler, 1835)	3	1	-	1	-
Cochlicopa sp	3	1	-	-	-
Limacidae	3	1	-	1	-
Trochulus hispidus (Linnaeus, 1758)	3	4	4	3	2
Helicella itala (Linnaeus, 1758)	4a	20	-	9	7
Vallonia costata (O F Müller, 1774)	4a	2	-	-	-
Vallonia cf *excentrica* (Sterki, 1893)	4a	11	4	1	8
Vertigo pygmaea (Draparnaud, 1801)	4a	3	-	-	1
Galba truncatula (O F Müller, 1774)	5a	-	1	-	2
Succinea/Oxyloma	5b	1	-	2	1
Carychium minimum (O F Müller, 1774)	5c	6	-	-	2
Anisus leucostoma (Millet,1803)	6a	-	2	4	3
Ampullaceana bathica (Lineaeus, 1758)	6b	1	1	-	-
Cecilioides acicula (O F Müller, 1774)	8	2	1	-	-

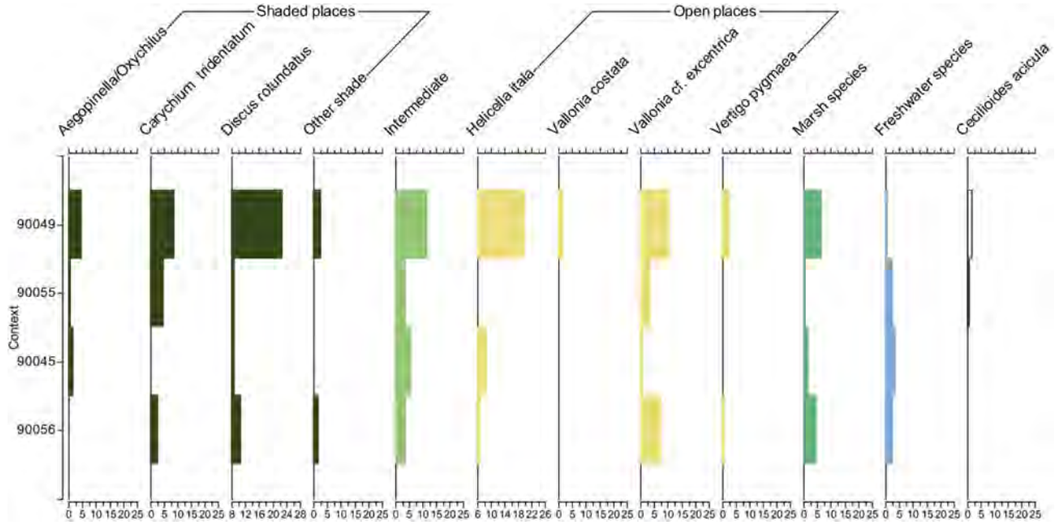


Fig 8.8 Ditch slot [90030]

The overlying contexts, (90045) and (90055), are characterised by low numbers of molluscs, although there is still a reasonable level of diversity. This is likely to be the result of relatively rapid accumulation. The subterranean snail *Cecilioides acicula* appears for the first time in (90055), where it is likely to be intrusive.

The uppermost fill, (90049), has the highest number of shells and species, of which *Discus rotundatus* is the most dominant. This context seems to represent relatively slow deposition in an environment with abundant shade within the ditch, which is still subject to at least seasonal standing water. It is likely that this context accumulated after the feature fell out of use.

Ditch [91119] in Trench 2

The sequence in ditch [91119] contains relatively few shells, likely to be the result of relatively rapid sediment accumulation (Table 8.7; Fig 8.9). The entire sequence is dominated by open country taxa, especially *Vallonia* cf *excentrica* and *Helicella itala*, which may imply plough-soil. The burrowing snail *Cecilioides acicula* appears at the top of (91118), where it is likely to be intrusive.

There are suggestions of a wetter period towards the top of (91117) and base of (91118), where *Euglesa casertana* and *Ampullaceana* are present, although again this need only be seasonal standing water.

Enclosure ditch and recuts

The enclosure ditch sequence begins with evidence of rapid accumulation, with low numbers of molluscs (Table 8.8; Fig 8.10). The sediment accumulation was likely to be linked to agricultural run-off, and was mitigated through recutting of the ditch, although the rate of sedimentation does not slow until context (92037) was deposited. At this point an assemblage dominated by *Vallonia* cf *excentrica* accumulated. Once again this is likely to reflect snails from the local environment and may suggest agrarian land use.

Snails indicative of shaded conditions, most likely within the ditch itself, are sparsely present throughout the sequence. Molluscs indicative of wet conditions are only present within (92003) at the top of the sequence.

Table 8.7 Ditch sequence [91119]

	Sample number	51061	51062	51063	51064	51065	51066	51067	51068
	Context number	91116	91116	91117	91117	91117	91118	91118	91118
	Weight before processing (g)	1000	1000	1000	1000	1000	1000	1000	1000
	Dry weight of residue (g)	573.6	506.99	44.2	74.31	103.2	181.2	192.6	402.96
Taxon	**Ecological group**								
Aegopinella nitidula (Draparnaud, 1805)	1a	1	-	-	-	-	-	-	-
Aegopinella pura (Alder, 1830)	1a	-	2	-	-	-	-	-	-
Discus rotundatus (O F Müller, 1774)	1c	1	-	-	-	-	1	-	4
Clausilia bidentata (Strøm, 1765)	1d	-	1	-	-	-	-	-	-
Pomatias elegans (O F Müller, 1774)	2	-	-	-	-	-	-	-	1
Operculum	-	-	-	-	-	1	-	-	-
Arion sp	3	-	-	-	-	-	-	-	3
Cornu aspersum (O F Müller, 1774)	3	-	1	-	-	-	-	-	-
Cochlicopa sp	3	-	-	-	1	-	-	-	-
Limacidae	3	1	-	-	1	1	-	1	-
Trochulus hispidus (Linnaeus, 1758)	3	-	1	1	3	-	-	-	5
Helicella itala (Linnaeus, 1758)	4a	7	3	10	9	4	3	7	4
Vallonia cf *excentrica* (Sterki, 1893)	4a	4	7	6	12	5	7	4	5
Vertigo pygmaea (Draparnaud, 1801)	4a	-	-	1	1	-	-	-	-
Galba truncatula (O F Müller, 1774)	5a	-	1	-	-	-	-	-	-
Succinea/Oxyloma sp	5b	-	-	1	2	-	1	1	3
Carychium minimum (O F Müller, 1774)	5c	-	-	-	1	-	-	1	-
Ampullaceana balthica (Linnaeus, 1758)	6a	-	2	1	-	-	-	-	-
Euglesa casertana (Poli, 1791)	6b	-	-	-	-	-	-	-	-
Left valve	-	-	1	-	1	-	-	-	1
Cecilioides acicula (O F Müller, 1774)	8	2	1	12	-	5	4	-	-

Fig 8.9 Ditch sequence [91119]

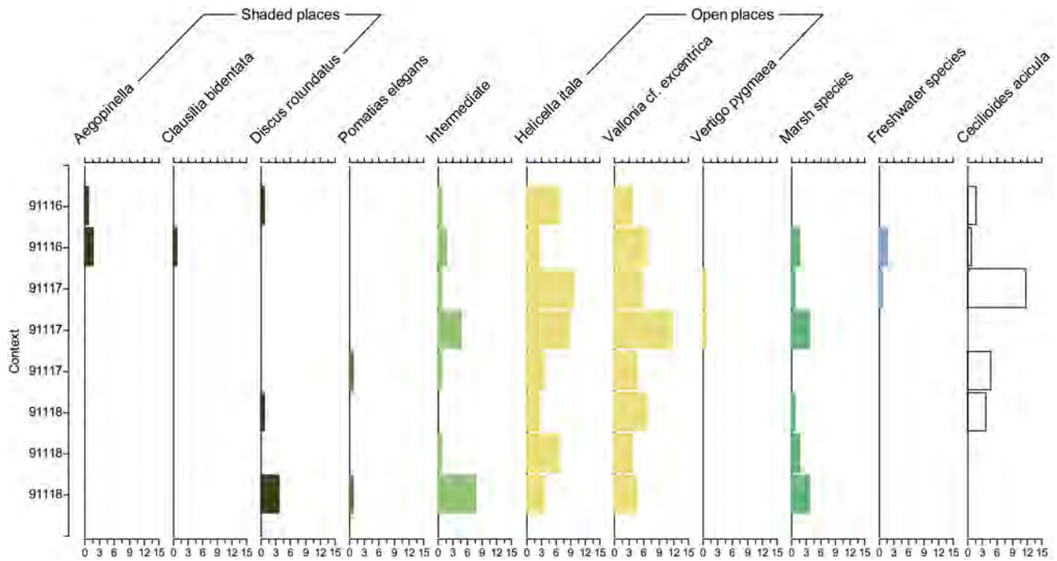
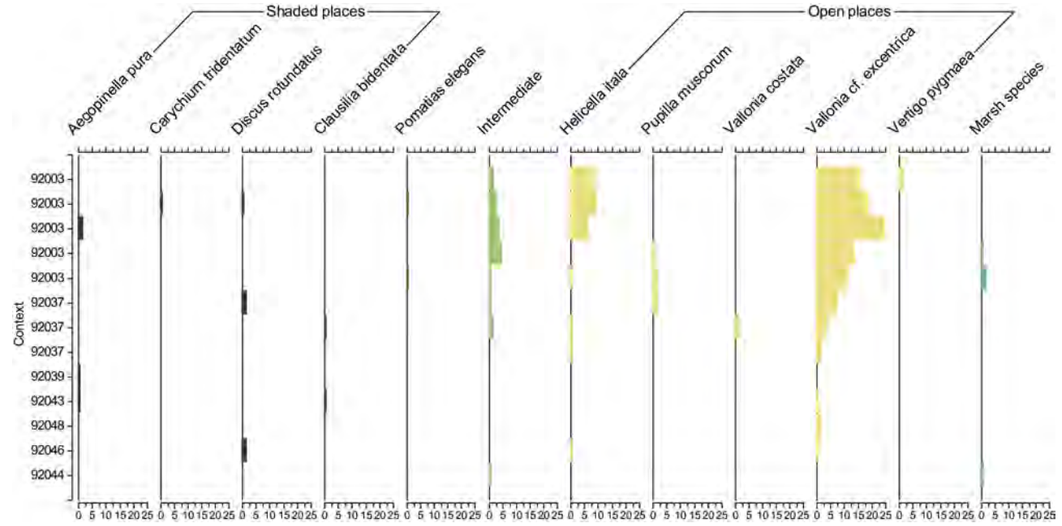


Table 8.8 Enclosure ditch and recuts

	Sample number	52064	52065	52066	52067	52068	52069	52070	52071	52072	52073	52074	52075	52077
	Context number	92003	92003	92003	92003	92003	92037	92037	92037	92039	92043	92048	92046	92044
	Weight before processing (g)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	Dry weight of residue (g)	245.9	207.9	273.2	263.4	239.3	274.4	205.1	107.5	394.7	340.5	429.65	342.6	291.6
Taxon	**Ecological group**													
Aegopinella pura (Alder, 1830)	1a	-	-	2	-	-	-	-	-	1	1	-	-	-
Carychium tridentatum (Risso, 1826)	1b	-	1	-	-	-	-	-	-	-	-	-	-	-
Discus rotundatus (O F Müller, 1774)	1c	-	1	-	-	-	2	-	-	-	-	-	2	-
Clausilia bidentata (Strøm, 1765)	1d	-	-	-	-	-	-	1	-	-	1	-	-	-
Pomatias elegans (O F Müller, 1774)	2	-	1	-	-	1	-	-	-	-	-	-	-	-
Cepaea sp	3	-	-	1	-	1	-	-	-	-	-	-	-	1
Cochlicopa cf *lubrica* (O F Müller, 1774)	3	-	2	-	-	-	-	-	-	-	-	-	-	-
Cochlicopa sp	3	-	-	1	2	-	-	-	-	-	-	-	-	-
Limacidae	3	-	-	2	-	-	1	-	-	-	-	-	-	-
Trochulus hispidus (Linnaeus, 1758)	3	2	1	-	3	-	-	2	-	-	-	-	-	-
Helicella itala (Linnaeus, 1758)	4a	9	10	7	-	1	-	1	1	-	-	-	1	-
Pupilla muscorum (Linnaeus, 1758)	4a	-	-	-	1	2	2	-	-	-	-	-	-	-
Vallonia costata (O F Müller, 1774)	4a	-	-	-	-	-	-	2	-	-	-	-	-	-
Vallonia cf *excentrica* (Sterki, 1893)	4a	16	19	33	14	12	8	4	2	-	1	2	1	-
Vertigo pygmaea (Draparnaud, 1801)	4a	2	-	-	-	-	-	-	-	-	-	-	-	-
Galba truncatula (O F Müller, 1774)	5a	-	-	-	-	-	-	-	-	-	-	-	-	1
Carychium minimum (O F Müller, 1774)	5c	-	-	-	1	2	-	-	-	-	-	-	-	-
Cecilioides acicula (O F Müller, 1774)	8	-	-	1	-	-	-	-	-	-	-	-	-	-

Fig 8.10 Enclosure ditch and recuts



Conclusions

Although snails are well-preserved within the samples, numbers are generally low. This is likely to be due to rapid sediment accumulation within the ditch sequences.

In general, the samples are dominated by open country taxa, especially *Vallonia* cf *excentrica* and *Helicella itala*. These species may have been favoured by ploughing.

The evidence from the snail assemblages suggests that ditches do not appear to have held permanent standing water.

8.4 The animal bone

Julia E M Cussans

A moderately sized animal bone assemblage was available for study, a large proportion of which was derived from animal bone groups (ABGs), where whole or partially articulated animals had been deposited. These deposits are described in detail and discussed in terms of their similarity to deposits excavated from other Roman sites in South West England. The remainder of the assemblage is also described and discussed.

Methods

All identifiable material was recorded; the majority of the assemblage derived from hand-collected material, but identifiable material from sieved residues (>4mm,

2–4mm) and from the flot (>250 microns) was also included. Bone identifications were made using the reference collection housed at Historic England's Fort Cumberland laboratories (Baker *et al* 2020), the author's own reference collection and a number of reference manuals (eg Pales and Lambert 1971a, 1971b; Schmid 1972; Pales and Garcia 1981a, 1981b; Hillson 1992; Cohen and Serjeantson 1996). All the bone fragments were recorded into the Historic England zooarchaeology recording MS Access database. Where possible, all bones were identified to element, side and specific taxa. Specific parts of elements present were recorded following the zonation system of Serjeantson (1996), with some minor alterations. The recording of the neural arch and spinous processes for lumbar vertebrae follows that of thoracic vertebrae: neural arch = zone 5 and spinous process = zone 6, following the diagram in fig 103 rather than text in table 27c (Serjeantson 1996). Conversely, recording of the sacrum follows that of the text in table 27c and not the diagram in fig 103 (Serjeantson 1996). All fragments identifiable to element were recorded, even if no specified zones were present. Identified elements included specific long bones, or specific vertebrae (thoracic, lumbar, etc), specific parts of the cranium, rib articulations, carpals and tarsals. Non-identified elements were generic vertebrae, rib blades, non-specific long bone fragments and non-specific cranial fragments. Non-identified fragments were counted and recoded as non-countable fragments. Post-cranial measurements followed von den Driesch (1976), with additional measurements for humerus and metapodials being taken following Davis (1992) and for calcaneus following Popkin *et al* (2012). The tooth measurements taken were the maximum crown widths for sheep (*Ovis aries*)/goat (*Capra hircus*) mandibular molars, referred to as measurement 1, and for cattle (*Bos taurus*) mandibular third molars the maximum width (measurement 1) and the length (measurement 2). Sheep/goat determinations were made using the criteria of Boessneck *et al* (1964), Boessneck (1969), Kratchovil (1969), Payne (1985) and Zeder and Lapham (2010). Cattle tooth wear was recorded following Grant (1982), sheep/goat following Payne (1973, 1987) and pig (*Sus domesticus*) following Grant (1982) and Wright *et al* (2014), the latter of which was used for upper as well as lower teeth. Horse tooth age was assessed following Levine (1982). Mandibular age stages were assigned following Halstead (1985) for cattle, Payne (1973) for sheep/goat, and Hambleton (1999, table 4) for pig. Bone fusion age stages were assigned following O'Connor (1989).

Results

Overall quantification and distribution of the bones

Quantification of the whole animal bone assemblage is given in Table 8.9, which lists all of the recorded fragments by trench and phase and includes bone fragments recorded as non-countable. In terms of overall fragment count, the three trenches had a fairly even distribution of bone fragments; however, when looking at just the identified taxa, there was a much greater quantity of material from Trench 1 than either Trenches 2 or 3. This was largely reflective of the distribution of ABGs, which dominated the assemblage, with the majority deriving from Trench 1. Taxa representation indicated that sheep/goat (the majority of which are likely to be sheep) were by far the dominant taxa in the assemblage,

Table 8.9 Count of all recorded bone fragments by trench and phase

		Trench 1							Trench 2								Trench 3						
Scientific name	**Common name**	**HE1.2**	**HE1.3**	**HE1.4**	**HE1.5**	**HE1.6**	**Spoil**	**Total**	**HE2.2**	**HE2.3**	**HE2.4**	**HE2.5**	**HE2.6**	**HE2.7**	**HE2.8**	**Total**	**HE3.2**	**HE3.3**	**HE3.4**	**HE3.6**	**Spoil**	**Total**	**Total**
Bos taurus	Cattle	5	-	3	-	6	-	14	1	-	-	8	6	-	17	32	5	-	6	-	1	12	58
Bos taurus?	Cattle?	1	-	1	-	-	-	2	-	-	-	-	-	-	2	2	-	-	-	-	-	-	4
Ovis aries	Sheep	2	-	4	16	-	-	22	-	-	12	2	-	-	2	16	-	9	-	-	-	9	47
Ovis aries?	Sheep?	-	-	1	4	-	-	5	-	-	1	-	-	-	-	1	-	-	-	-	-	-	6
Capra hircus?	Goat?	-	-	1	-	-	-	1	-	-	-	1	-	-	3	4	-	-	-	-	-	-	5
Ovis aries/Capra hircus	Sheep/Goat	11	8	67	174	28	-	288	-	-	58	11	2	-	8	79	8	49	5	-	-	62	429
Ovis aries/Capra hircus?	Sheep/Goat?	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	-	-	-	-	-	-	2
Sus domesticus	Pig	4	-	-	-	1	-	5	-	-	-	8	1	1	3	13	15	-	1	-	1	17	35
Sus domesticus?	Pig?	1	-	-	-	-	-	1	-	1	-	-	-	-	-	1	-	-	-	-	-	-	2
Equidae	Equid	14	-	1	1	-	-	16	-	-	-	-	-	-	1	1	3	-	-	-	-	3	20
Canis familiaris	Dog	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	1
Felis catus	Cat	-	-	-	-	-	-	-	-	-	-	-	-	3	-	3	-	-	-	-	-	-	3
Ovis aries/Capra hircus/Capreolus capreolus	Sheep/Goat/Roe deer	-	-	-	8	-	-	8	-	-	1	1	-	-	2	4	-	3	-	-	-	3	15
Bos taurus/Cervus elaphus	Cattle/Red deer	-	-	1	-	-	-	1	-	-	-	-	1	-	1	2	-	-	-	-	-	-	3
Large mammalia	Large mammal	2	-	1	-	1	-	4	-	-	-	3	1	-	3	7	1	-	1	-	1	3	14
Medium mammalia	Medium mammal	4	-	7	22	1	-	34	-	-	11	5	1	-	1	18	1	39	-	-	-	40	92
Tapla sp	Mole	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Arvicola terrestris	Water vole	1	-	-	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-	-	-	-	2
Rodentia	Large rodent	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	1
Sorex/Neomys spp	Shrew	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	1
Small rodent?	Small rodent?	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	1
Gallus gallus	Chicken	-	-	-	-	-	-	-	-	-	-	1	-	-	1	2	-	-	-	-	-	-	2
Passeriforme	Passeriforme	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1
	Total countable	**46**	**8**	**87**	**225**	**37**	**0**	**403**	**1**	**1**	**85**	**44**	**12**	**4**	**45**	**192**	**33**	**100**	**14**	**0**	**3**	**150**	**745**
Other	Other											1				1							1
Large mammal (non-countable)	Large mammal (non-countable)	73	-	7	-	20	1	101	-	-	-	20	7	2	22	51	13	-	16	2	17	48	200
Medium mammal (non-countable)	Medium mammal (non-countable)	4	5	49	123	16	-	197	-	2	87	31	6	-	28	154	43	57	8	-	4	112	463
Indeterminate (non-countable)	Indeterminate (non-countable)	89	5	71	129	21	-	315	-	-	142	143	19	5	27	336	113	425	62	-	6	606	1257
Total		**212**	**18**	**214**	**477**	**94**	**1**	**1016**	**1**	**3**	**314**	**239**	**44**	**11**	**122**	**734**	**202**	**582**	**100**	**2**	**30**	**916**	**2666**

which again was a reflection of the ABGs, which were dominated by deposits of sheep and sheep/goat body parts.

Two quantification tables (Tables 8.10 and 8.11) examine the assemblage in two separate groups – bones deriving from contexts that contained ABGs (Table 8.10) and bones deriving from contexts where no ABGs were recognised (Table 8.11). The ABG context data include all the bones from within those contexts, whether or not they were recognised as part of the articulated remains; more detailed examination of the articulated elements of the ABG deposits is given separately for each one below.

Table 8.10 NISP (number of identified specimens) counts for all contexts containing animal bone groups (ABGs) arranged in phase date order

Phase		**HE3.2**	**HE3.3**	**HE3.4**	**HE2.2**	**HE1.2**	**HE2.3**	**HE1.3**	**HE2.4**	**HE1.4**	**HE1.5**	**HE2.5**	**HE2.6**	**HE2.7**	**HE1.6**	**HE2.8**	**HE3.6**	**Total**
Period		**Pre-Roman**						**Roman**					**Post-Roman**					
Scientific name	**Common name**	LMIA–LIA	LIA/Roman?	1st–2nd C AD	Later 2nd or 3rd C AD	3rd C AD		3rd–4th C AD	Late 3rd–mid-4th C AD	Late 4th C AD	end 4th-early5th C AD	Mid-4th–early 5th C AD	Post-Roman	Med/post-med		Modern		
Bos taurus	Cattle	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	3
Ovis aries	Sheep	-	9	-	-	-	-	-	12	4	16	2	-	-	-	-	-	43
Ovis aries?	Sheep?	-	-	-	-	-	-	-	1	1	4	-	-	-	-	-	-	6
Capra hircus?	Goat?	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Ovis aries/Capra hircus	Sheep/Goat	-	49	-	-	1	-	8	58	58	174	4	-	-	27	-	-	379
Ovis aries/Capra hircus?	Sheep/Goat?	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	2
Sus domesticus	Pig	-	-	-	-	1	-	-	-	-	-	2	-	-	1	-	-	4
Equidae	Equid	-	-	-	-	12	-	-	-	-	1	-	-	-	-	-	-	13
O. aries/C. hircus/C. capreolus	Sheep/Goat/Roe deer	-	3	-	-	-	-	-	1	-	8	1	-	-	-	-	-	13
Large mammalia	Large mammal	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	2
Medium mammalia	Medium mammal	-	39	-	-	-	-	-	11	6	22	2	-	-	1	-	-	81
Total		**0**	**100**	**0**	**0**	**15**	**0**	**8**	**85**	**70**	**225**	**11**	**0**	**0**	**33**	**0**	**0**	**547**

Table 8.11 NISP (number of identified specimens) counts for all non-ABG contexts arranged in phase date order

Phase		**HE3.2**	**HE3.3**	**HE3.4**	**HE2.2**	**HE1.2**	**HE2.3**	**HE1.3**	**HE2.4**	**HE1.4**	**HE1.5**	**HE2.5**	**HE2.6**	**HE2.7**	**HE1.6**	**HE2.8**	**HE3.6**	**Total**
Period		**Pre-Roman**						**Roman**					**Post-Roman**					
Scientific name	**Common name**	LMIA–LIA	LIA/Roman?	1st–2nd C AD	Later 2nd or 3rd C AD	3rd C AD		3rd–4th C AD		Late 4th C AD	Mid-/late 4th–early 5th C AD		Post-Roman	Med/post-med		Modern		
Bos taurus	Cattle	5	-	6	1	5	-	-	-	3	-	8	6	-	3	17	-	54
Bos taurus?	Cattle?	-	-	-	-	1	-	-	-	1	-	-	-	-	-	2	-	4
Ovis aries	Sheep	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2	-	4
Capra hircus?	Goat?	-	-	-	-	-	-	-	-	-	-	1	-	-	-	3	-	4
Ovis aries/Capra hircus	Sheep/Goat	8	-	5	-	10	-	-	-	9	-	7	2	-	1	8	-	50
Sus domesticus	Pig	15	-	1	-	3	-	-	-	-	-	6	1	1	-	3	-	30
Sus domesticus?	Pig?	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	2
Equidae	Equid	3	-	-	-	2	-	-	-	1	-	-	-	-	-	1	-	7
Canis familiaris	Dog	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Felis catus	Cat	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	3
O. aries/C. hircus/C. capreolus	Sheep/Goat/Roe deer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2
Bos taurus/Cervus elaphus	Cattle/Red deer	-	-	-	-	-	-	-	-	1	-	-	1	-	-	1	-	3
Large mammalia	Large mammal	1	-	1	-	1	-	-	-	1	-	3	1	-	-	3	-	11
Medium mammalia	Medium mammal	1	-	-	-	4	-	-	-	1	-	3	1	-	-	1	-	11
Tapla sp	Mole	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Arvicola terrestris	Water vole	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	2
Rodentia	Large rodent	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Sorex/Neomys spp	Shrew	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Small rodent	Small rodent	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Gallus gallus	Chicken	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	2
Passeriforme	Passeriforme	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Total		**33**	**0**	**14**	**1**	**31**	**1**	**0**	**0**	**17**	**0**	**33**	**12**	**4**	**4**	**45**	**0**	**195**

For the current quantification, only countable elements have been included and the trench phases have been listed in date order, regardless of the trench they have come from, in order to get a broader picture of the development of animal husbandry over time.

The majority of the contexts containing ABGs were dated to the Roman period. The only one that may have been pre-Roman was from Phase HE3.3, which was broadly dated and may have belonged to the Late Iron Age or Roman period, and the only one that was possibly post-Roman was from HE1.6, phased as modern because of a lack of dating evidence, but also potentially deriving from Roman times. The main focus of the ABGs appears to be later in the Roman period, from the late 3rd century AD onwards. The majority of these are made up of sheep/goat remains and, where more specific identifications could be made, these were almost all identified as sheep or possible sheep, with only one possible goat bone noted. The next largest group of bones present was of those that could only be identified as medium mammal, most likely also belonging to sheep/goat. Very few cattle and pig bones were present. Horse was largely only represented by elements of a single skull, which has been listed as an ABG, although it does not strictly fit the criteria laid out by Morris (2011, 12). The only other category of bone present in these deposits comprised those designated as sheep/goat/roe deer (*Capreolus capreolus*), which could not be identified any more specifically; again, it seems likely that the majority of these belong to sheep. Therefore, it seems that these ABG-related deposits are in the main characterised by low species diversity and a high abundance of sheep and possible sheep bones, with only a small quantity of bones of other taxa present.

In contrast to this, the much smaller assemblage of bones from non-ABG contexts is more evenly spread across the phases and has a much greater species diversity. Here cattle and sheep/goat are almost evenly represented, and pig is also much more abundant than in the ABG deposits. The assemblages for any one period are small so it is difficult to draw too much out of the distribution of the different taxa across the periods. The major economic taxa – cattle, sheep/goat, pig and equid – appear to be present across the periods. Dog (*Canis familiaris*) is represented by a single femur fragment in the latest Roman phase (HE2.5), and cat (*Felis catus*) is represented by maxillary fragments, likely of a single animal, in the medieval/post-medieval deposits (HE2.7). Chicken (*Gallus gallus*) is represented by a single bone each in the latest Roman phase (HE1.4 and HE2.5) and the modern (HE2.8) periods. A selection of micro-fauna was present in small numbers.

Taphonomy

During recording several taphonomic factors were taken into account. Some of these will be described here and compared between the ABG and non-ABG contexts. Overall, the majority of bone fragments in both groups were rated as having moderate surface preservation (57% and 65%, respectively). For the ABG contexts there was a slightly higher proportion of bones rated as having good surface preservation (14%) than those seen in the non-ABG contexts (9%); similar proportions of bones from each group were found to have poor surface preservation (29% and 26%, respectively). In terms of overall bone completeness, a higher proportion of bones from the ABG contexts (10.9%) was found to be complete or near complete (91–100% completeness) than from the non-ABG contexts (5.4%). Conversely, at the other end of the scale (1–20% completeness), non-ABG contexts came out with a higher proportion of fragments (83.5%) than the ABG contexts (76.2%). This would indicate that, overall, the non-ABG bones were slightly more poorly preserved and more highly fragmented than those from the ABG contexts.

Other bone modifications recorded were animal gnawing and burning. In the ABG assemblage only four fragments, or 0.2 per cent of the bones from these contexts, were found to have been gnawed; all of these gnaw marks were recorded as dog gnawing. For the non-ABG assemblage, 2.3 per cent of fragments were found to be dog gnawed; one further bone was noted as rodent gnawed, and a single fragment was recorded as partially digested. This difference in the quantities of gnawed bones between the two groups indicates that the bones from the ABG contexts were probably buried much more quickly after death than those from the more general contexts, which seem more likely to have been left uncovered and available for dogs and other animals to gnaw. However, it should be noted that even for the non-ABG assemblage the quantities of gnawed bones are still fairly low. In terms of burning, only 3 per cent of the bones from ABG contexts were recorded as burnt, with calcined (burnt white) being the most frequent level of burning. In the non-ABG contexts, 8.8 per cent of the fragments were burnt, but here charred (burnt black) bones were the most frequent. The reason for this difference is not known, but it may indicate different processes taking place prior to the deposition of bones or carcass parts into the different types of deposit. What can be seen overall is that there are some clear taphonomic differences between the two groups of bones, which likely reflect the different formation processes involved between the deposition of whole or partially articulated animals and of fully disarticulated food waste.

ABGs by trench and phase

A total of eight ABGs were identified across the trenches and phases; they are summarised in Table 8.12, with further details of each one given in Appendix F (Tables F.1–8). These have been numbered in phase date order and are described below. The majority are composed of sheep or sheep/goat remains and date to the Roman period, with most ABGs being recovered from Trench 1.

ABG1: Phase HE3.3, Late Iron Age/Roman

Remains from ABG1 (see Appendix F, Table F.1) appear to all derive from a single individual. Identified articulating and paired elements include mandible and maxillae, left and right fore limbs, left and right fore feet, the left lower hind limb and foot and right hind foot. Non-articulating elements from the same deposit appear to fill in the gaps in the list above, and no repeat elements were noted, indicating that a complete or near-complete animal was buried, albeit in a particularly disarticulated form, as seen from the site photos (Fig 8.11). Tooth wear data indicate an animal aged at Payne's (1973) age stage E (2–3 years), and fusion data appear to be in agreement across the elements, indicating an animal dying at or around O'Connor's (1989) intermediate II fusion stage, which is not in contradiction to the tooth wear data.

Butchery evidence indicates a very specific pattern of carcass dismemberment. Cuts are found around both proximal metacarpals and around both sets of tarsals. These seem likely to be associated with disarticulation of the feet, possibly as part of the skinning process. A small fragment of skull from the non-articulating elements has a cut on the outer surface, which may be associated with skinning. A cut on a vertebra and a cut or chop on the femur also seem likely to indicate disarticulation. Despite the presence of phalanges and metapodials, no other marks associated with skinning appear to be present and none associated with the filleting of meat off the bone was noted.

The only pathological element present was the mandible, in which the teeth were noted as being quite loose, possibly indicative of periodontal disease. No burnt bones were noted, and only a single canid-gnawed bone was present in the associated non-articulated material.

Table 8.12 Brief summary of all animal bone groups (ABGs). MNI – minimum number of individuals; NISP – number of identified specimens

Phase	Period	Area	Context	Description	Feature type	ABG No.	Overall description	MNI	NISP
HE3.3	LIA/Roman?	Tr 3	92125	fill of 92126	pit	1	Partial sheep skeleton with selection of articulating elements. Site photo shows deposited as selection of parts rather than complete articulated burial	1	42
HE1.2	3rd C AD	Tr 1	90010	fill of 90007	ditch	2	Equid cranial elements	1	15
HE1.3	3rd–4th C AD	Tr 1	90043	fill of 90042	posthole	3	Group of paired tibiae, femora and pelves – sheep/goat	1	8
HE2.4	Late 3rd–mid-4th C AD	Tr 2	91032	made ground	layer	4	Selection of sheep/goat articulated elements with a number of juvenile, sub-adult and adult animals represented	4	68
HE1.4	Late 4th C AD	Tr 1	90015	rubble layer	layer	5	Selection of sheep, sheep/goat and possible goat articulating elements of sub-adult and adult animals	3	20
HE1.5	End 4th–early 5th C AD	Tr 1	90019	fill of 90018	pit	6	Selection of groups of articulating elements of sheep, sheep/goat and medium mammal remains. Mix of juvenile/sub-adult and adult animals present	4	50
HE2.5	Mid-4th–early 5th C AD	Tr 2	91031	fill of 91012	pit	7	Articulating astragalus, calcaneus and distal tibia – sheep	1	3
HE1.6	Modern	Tr 1	90003	cleaning layer	layer	8	Mix of sheep/goat body parts from at least three animals of different ages	3	17
Total NISP									**223**

Fig 8.11 Site photo of ABG1 bones *in situ* (Historic England)

ABG2: Phase HE1.2, 3rd century AD

Strictly speaking ABG2 (see Appendix F, Table F.2) is not an ABG, as it is likely the remains of a single skull, which Morris (2011) does not count as an ABG. However, because of the fragmentary nature of these particular remains it was thought helpful to treat them as a single group. The other fact that sets this group apart from the rest of the ABGs is that this cranium belongs to an equid rather than sheep/goat.

Tooth heights indicate an animal of 5–6 years (Levine 1982). No butchery marks were recorded as present, and the only pathology noted was a deformation of the right third premolar, thought likely to be a developmental anomaly (see Fig 8.12).

This cranium made up the majority of bone material

Fig 8.12 Comparison of equid maxillary third premolars (P3) from ABG2, (90010), Phase HE1.2. Pathological right P3: (a) buccal aspect (b) aboral aspect; unaltered left P3: (c) buccal aspect (d) aboral aspect (James O Davies, Historic England)

from this deposit and is thought likely to have been deposited whole, subsequently becoming fragmented in the burial environment. Other fragments were largely non-identifiable or non-countable, with the exception of a sheep/goat phalange and a pig atlas vertebra.

ABG3: Phase HE1.3, 3rd–4th century AD

Remains from ABG3 (see Appendix F, Table F.3) are a group of paired sheep/goat hind limb elements. It cannot be ascertained with any certainty whether these bones articulate, as some of the articulations are missing. The site records, although confusing (noting they are 'articulated, but not associated'), seem to indicate that they were found as a group. The left and right elements were identified as clearly paired on detailed analysis, and it is thought most likely that the elements all belong to a single animal. Bone fusion indicates an animal aged between the intermediate II and late fusion stages (O'Connor 1989). The only cut marks identified were on the right femur and likely indicate meat removal. The bones were noted as being particularly gracile, which may indicate poor nutrition or just an unimproved type of animal.

ABG4: Phase HE2.4, late 3rd–mid-4th century AD

The selection of articulating sheep/goat parts present in ABG4 (see Appendix F, Table F.4) appear to represent a minimum of four different individuals, although, given the number of articulating groups, up to eleven separate individuals may be represented. A neonate or very young animal was represented by hind feet group 4f and loose teeth group 4j. An adult animal was represented by the cervical vertebrae group 4c, and at least two sub-adult or young adult animals were represented by the remaining bone groups, with repeat elements being present in groups 4a and 4b. Some of these could only be aged as being beyond intermediate I fusion stage, but taken as a group they were aged between the intermediate II and late fusion groups (O'Connor 1989). With the exception of groups 4f, 4h and 4k, all of the groups had at least one element positively identified as sheep, indicating that the majority, if not all, of the bones belonged to sheep.

Butchery marks on this group of bones were very similar to some of those observed for ABG1. The only butchery marks noted were cut marks on the calcaneus and astragalus, indicative of the disarticulation of the hock joint, possibly as part of the skinning process. All of the calcanei and astragali, with the exception of the neonate (4f), were cut in a near identical way. Pathology was limited to the mandibles and maxillary teeth from 4i. Uneven tooth wear, dental calculus deposits, an impacted tooth and signs of possible infection were all noted.

ABG5: Phase HE1.4, late 4th century AD

The selection of sheep/goat body parts that make up ABG5 (see Appendix F, Table F.5) comes from a minimum of three different animals, with possibly up to six or seven individuals represented. A younger animal is represented by groups 5a and 5f, and two adult animals are represented by the two sets of maxillary teeth 5d and 5e; one or each of these could feasibly be derived from the same animal or animals as those represented in 5b and 5c. The possible presence of a goat in 5c would indicate an additional animal.

This assemblage is dominated by head and lower limb elements, the majority of which are only identified as sheep/goat. However, sheep elements are positively identified in 5a and 5c; a possible goat (metatarsal) was also noted in 5c. No butchered elements were noted in this ABG assemblage, despite some of the bone groupings being similar to those seen in other ABGs. The only pathological remains noted were the maxillary third molars from group 5e, which were noted as having a very flat occlusal surface, with the normal ridged wear pattern not present.

ABG6: Phase HE1.5, end 4th–early 5th century AD

A minimum number of individuals (MNI) of four was determined from the presence of four mandible groups with different ages (see Appendix F, Table F.6), with possibly up to seventeen different animals represented based on the identified bone groupings. However, it is likely that some animals are represented by more than one bone group, for example 6b and 6c may well belong to the same animal. A selection of body parts is present, with head, feet, limbs and vertebrae all represented. Sheep are positively identified in several of the groups; all other groups could only be identified as sheep/goat.

A small quantity of butchered remains was present. This included astragali with disarticulation cuts similar to those seen in other deposits, although not all astragali present were affected. The axis from 6e was noted as having longitudinal cuts on the ventral surface and a tibia from 6i had been chopped through the mid-shaft. In terms of pathology, uneven tooth wear was again observed. In addition to this a number of bones were noted as being particularly gracile and the cortical bone of the femora from 6c appeared to be particularly thin.

The gracile nature of the bones may simply be an indicator of an unimproved breed of sheep; however, combined with the thin cortical bone, it may indicate a poor nutritional regime.

ABG7: Phase HE2.5, mid-4th–early 5th century AD

ABG7 comprises a single group of articulating sheep tibia, astragalus and calcaneus (see Appendix F, Table F.7). Although just a small group of bones, ABG7 bears similarities with some of the other ABGs in that it has similar element groupings to those seen in ABG1 and ABG4 and similar butchery of the astragalus. This may indicate that some of the practices that took place in the forming of the ABGs had significant longevity and were passed down through the generations.

ABG8: Phase HE1.6, modern

In this final ABG, at least three different animals were represented (see Appendix F, Table F.8), the oldest by right fore limb elements from group 8d. Two younger individuals are indicated by the right calcanei from groups 8c and 8e. Mandibular and maxillary elements from groups 8f and 8g may well belong with these two younger individuals. Without any ageing evidence, beyond being able to say they are older than neonate, it is impossible to determine which animals the metapodials from groups 8a and 8b are likely to belong to, and of course it is possible that each bone group derives from a separate individual. No butchery evidence was noted for any of these remains. The only possible evidence of pathology was that the metatarsals from group 8b were noted as being particularly gracile. As mentioned previously, it is possible that this is an indicator of a poor level of nutrition.

Comparison of ABG and non-ABG assemblages

Age and animal husbandry

Only a small quantity of cattle mandibles was available for ageing, and the majority of these came from deposits phased as modern (Table 8.13), with only two dating to the Roman period. The majority of the mandibles were determined to belong to Halstead's age stage G (adult), with only one coming from a younger animal, at age stage E (30–36 months). Very little bone fusion data was available for cattle, but where this could be recorded the majority of bones were found to be fused; only a single instance of a cattle neonatal bone was recorded. The indication from this small data set would be that cattle

Table 8.13 Summary of assigned cattle mandible age stages following Halstead (1985)

Phase	Period	Halstead age stage
HE1.6	Modern	E – 30–36 mths
HE2.8	Modern	G – adult
HE2.8	Modern	G – adult
HE2.5	Mid-4th–early 5th C AD	G – adult
HE3.4	1st–2nd C AD	G – adult

were not being raised for prime meat, but were likely to have been put to other uses, possibly as plough animals, for dairying, or a mix of utilities.

Sheep/goat mandible data for both ABG and non-ABG contexts are displayed in Table 8.14 and Fig 8.13; these have been displayed side by side in order to allow comparison between the two data sets. As the sample is very small, the data have been grouped based on the broad date ranges of pre-Roman, Roman and modern; as mentioned above, those designated as modern may possibly be derived from the Roman period. There appears to be a slight concentration of animals in the E–G age stages (following Payne 1973), but these are a mix of periods and include both ABG and non-ABG contexts. The group with the largest spread of ages is the Roman ABG contexts, indicating that animals of a range of ages were selected for deposition within the ABGs. No particularly old or very young animals were evident from the mandible age data. Bone fusion data were sparse for the non-ABG sheep/goat assemblage, but indicated a mix of fused and unfused elements; in contrast to the ABG assemblage, no neonate animals were present.

Only two ageable pig mandibles/teeth were present, neither of which could be particularly precisely aged, but both indicated animals that could not be older than Hambleton's (1999) age stage D (7–21 months). This is not unusual given that the principal utility of pigs is for meat. In the post-cranial assemblage, no foetal or neonate bones were recorded, but a mix of fused and unfused elements were present.

Butchery and body parts

Table 8.15 displays cut and chop counts by taxa for both the ABG and non-ABG contexts, and indicates some clear distinctions between the two groups. Overall, there is a greater number of butchery marks in the non-ABG assemblage than in the ABG assemblage and, even when the non-countable elements are discounted, the numbers are fairly even. Given the much smaller size of the non-

Table 8.14 Summary of assigned sheep/goat mandible age stages for animal bone groups (ABGs) and non-ABG contexts following Payne (1973)

Date range	Pre-Roman		Roman		Modern	
ABG context?	ABG context	Non-ABG	ABG context	Non-ABG	ABG context	Non-ABG
A – 0–2 mths	0	0	0	0	0	0
B – 2–6 mths	0	0	1	0	0	0
C – 6–12 mths	0	0	1	0	0	0
D – 1–2 yrs	0	0	1	0	0	1
E – 2–3 yrs	0	0	1	2	1	0
F – 3–4 yrs	0	0	1	1	1	0
G – 4–6 yrs	0	1	2	0	0	0
H – 6–8 yrs	0	0	0	0	0	0
I – 8–10 yrs	0	0	0	0	0	0

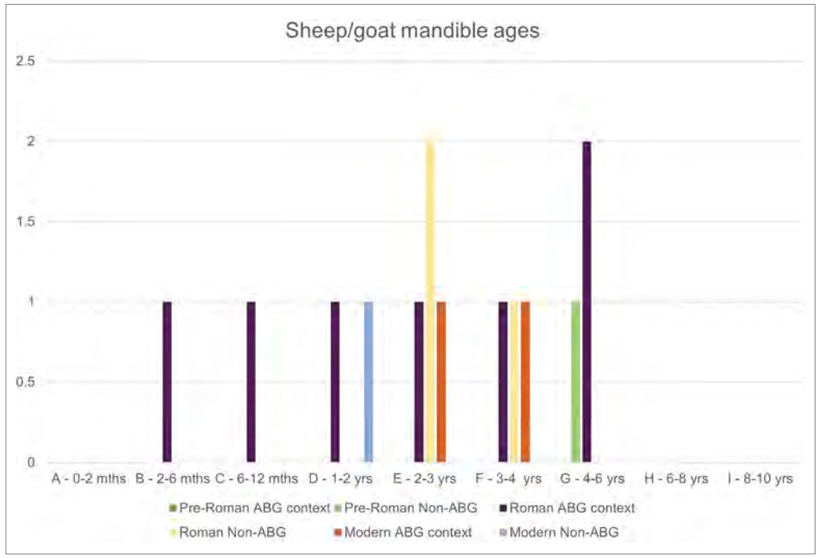


Fig 8.13 Distribution of sheep/goat mandible age stages following Payne (1973)

ABG assemblage, this would indicate a greater concentration of butchery in the non-ABG assemblage than in the ABG assemblage. One of the other distinctions is the greater incidence of chop marks in the non-ABG assemblage compared to the ABG assemblage. Butchery of the ABG assemblage is described for each of the individual deposits above and is concentrated on sheep, sheep/goat and medium mammal bones. Butchery in the non-ABG assemblage is concentrated on cattle and large mammal bones. A breakdown of cattle and large mammal butchery, indicating the elements affected, is given in Table 8.16. Humerus, scapula, tibia and the ribs appear to be the most frequently butchered elements. The majority of these are high meat-bearing elements, with butchery marks indicating carcass division and meat removal. This suggests that, although there is little evidence for the slaughtering of prime meat, beef, albeit from slightly older animals, was still likely an important product.

Butchery of sheep/goat and medium mammal bones from non-ABG contexts is summarised in Table 8.17. Chop and cut marks were present in small quantities and were evenly represented, in contrast to the ABG assemblage, where cut marks were much more prevalent than chops. Cut marks were present on rib and long bone shaft fragments, likely indicative of the removal of meat from the bone, and on the astragalus, indicating carcass dismemberment, possibly as part of the skinning process. Chop marks were present on vertebrae and the tibia, again likely indicating carcass dismemberment or jointing.

Three pig bones were noted as butchered, one of which derived from an ABG context, with the other two coming from non-ABG-related deposits. An atlas bearing

Table 8.15 Counts of cut and chop butchery marks for animal bone groups (ABGs) and non-ABG contexts by taxon

Taxa	ABG context		Non-ABG context	
	Cut	Chop	Cut	Chop
Cattle	-	-	2	5
Cattle?	-	-	1	1
Sheep	12	-	-	-
Sheep?	-	1	-	-
Sheep/goat	6	2	1	2
Pig	1	-	1	1
Equid	-	-	1	-
Red deer/cattle	-	-	-	1
Large mammal	-	-	1	3
Medium mammal	3	-	-	2
Large mammal non-countable	-	-	6	3
Medium mammal non-countable	1	-	3	-
Total	**23**	**3**	**16**	**18**

a number of cuts derived from the same deposit as the equid skull denoted as ABG2. The other butchered pig bones were a chopped metacarpal, possibly indicating the removal of the trotters, and a radius with cuts on the proximal shaft. A single equid bone was noted as butchered, an atlas from Phase HE3.2, which had a cut on the cranial articulation, likely resulting from the decapitation of the animal.

Pathology and non-metrical variation

Only a single pathological bone was noted from the non-ABG assemblage. This was a cattle scapula from a 3rd-century AD deposit in Trench 1, with lipping noted around the glenoid articulation. Such bone alterations may indicate advanced age or strain on the joint. No further pathological modifications were noted. Non-metrical variations, such as a reduced or absent third cusp on the mandibular third molar, were looked for, but none was observed.

Aside from the pathologies described for the individual ABGs above, a small quantity of other pathological bones was present in the assemblages associated with the ABGs. A sheep/goat proximal metacarpal was found to be somewhat deformed, with a slightly uneven appearance and the proximal articulation sloping downwards slightly to the lateral side and anterior (see Fig 8.14). A medium mammal rib fragment was also noted as having an area of swelling and porous bone growth, thought most likely to be the result of a fracture.

Table 8.16 Cattle and large mammal butchery mark counts by element

Taxon	Element	Cut	Chop
Cattle	Astragalus	1	-
	Horn core	-	1
	Humerus	1	2
	Pelivs	-	1
	Tibia	-	1
	Total	**2**	**5**
Cattle?	Tibia	1	1
	Total	**1**	**1**
Red deer/cattle	Humerus	-	1
	Total	-	**1**
Large mammal	Sacrum	-	1
	Scapula	1	2
	Total	**1**	**3**
Large mammal non-countable	Indeterminate frag	1	1
	Long bone frag	1	-
	Rib frag	4	2
	Total	**6**	**3**
	Grand total	**10**	**13**

Table 8.17 Sheep/goat and medium mammal butchery mark counts for non-ABG contexts

Taxa/bone	ABG context		Non-ABG context	
	Cut	Chop	Cut	Chop
Sheep	**12**	-	-	-
Astragalus	7	-	-	-
Calcaneum	3	-	-	-
Metacarpal	2	-	-	-
Sheep?	-	**1**	-	-
Tibia	-	1	-	-
Sheep/goat	**6**	**2**	**1**	**2**
Astragalus	-	-	1	-
Axis	1	-	-	-
Femur	3	1	-	-
Navicular cuboid	1	-	-	-
Second phalanx	1	-	-	-
Tibia	-	-	-	2
Triquetrum	-	1	-	-
Medium mammal	**3**	-	-	**2**
Cervical vertebra		-	-	1
Non-countable	1	-	-	-
Rib	1	-	-	-
Thoracic vertebra	1	-	-	1
Medium mammal non-countable	**1**	-	**3**	-
Non-countable long bone	1	-	1	-
Non-countable rib	-	-	2	-
Grand total	**22**	**3**	**4**	**4**

Fig 8.14 Pathological sheep/goat right metacarpal (a) compared to typical specimen (b), both from (90019), Phase HE1.5 (James O Davies, Historic England)

One of the main pathologies, or possible pathologies, mentioned in the ABG descriptions above is the extremely gracile nature of some of the sheep and sheep/goat bones included in the ABGs, and it has been suggested that this may be due to poor nutrition. Bone measurements were taken wherever possible during recording, but the sample of metrical data is still small. In order to get an idea of how gracile the bones were, metacarpal measurements of the Low Ham material were compared with those collected by the Historic England (previously English Heritage) Sheep Project (Popkin *et al* 2012), where sheep skeletons of animals of known levels of nutrition, age and sex were studied and compared. Figure 8.15 shows the small sample of measurable metacarpals from Low Ham compared with those from the Sheep Project. What is immediately clear is that the Low Ham bones are considerably smaller than all of those measured for the Sheep Project, including the low nutritional plane bones, particularly in terms of bone breadth. In order to investigate this further, the selected bone measurements were compared with data from Roman deposits at Elms Farm (Johnstone and Albarella 2002) (Figs 8.16–18). Comparisons between Elms Farm and Low Ham were made for metacarpal greatest lengths (GL) and distal breadths (Bd) and for widths of the lower third molar. For the metacarpals, the Low Ham data fall at the very lower end of the Elms Farm range for Bd and below the range for GL, indicating that the Low Ham sheep were particularly small when compared to both modern data and contemporary assemblages from southern Britain. However, when comparing the widths of the lower third molars between the two sites, the ranges of measurements are very similar indeed; the significance of this will be discussed further below.

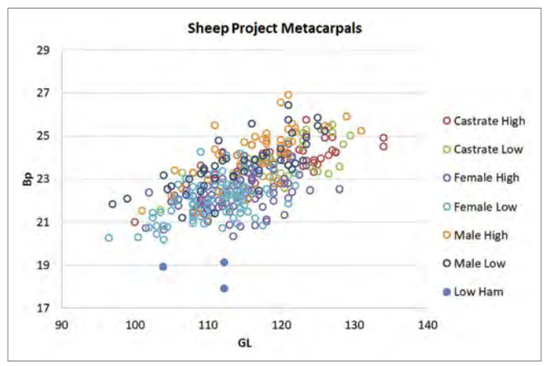


Fig 8.15 Scatterplot of metacarpal length (GL) versus proximal breadth (Bp), following von den Driesch (1976), comparing animals studied as part of the English Heritage Sheep Project (Popkin *et al* 2012) with those from Low Ham

Summary and discussion

Overall, a moderately sized animal bone assemblage was present across the three trenches but was dominated by the presence of a number of deposits of articulated and semi-articulated animal remains or ABGs. The majority of these came from Trench 1, dated to the Roman period; however, pre-Roman and undated/modern examples were also present. The majority of ABGs belonged to sheep or sheep/goat, the only exception being a collection of equid cranial elements. There was variation across the ABGs in terms of the ages and numbers of animals deposited, and in terms of which body parts were present. No fully articulated, complete burials were present; however, ABG1 did appear to

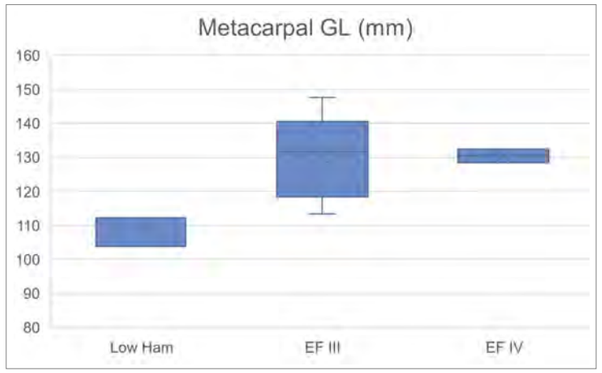


Fig 8.16 Box and whisker plot of metacarpal greatest length (GL) comparing Roman animals from Elms Farm (Johnstone and Albarella 2002) and Low Ham

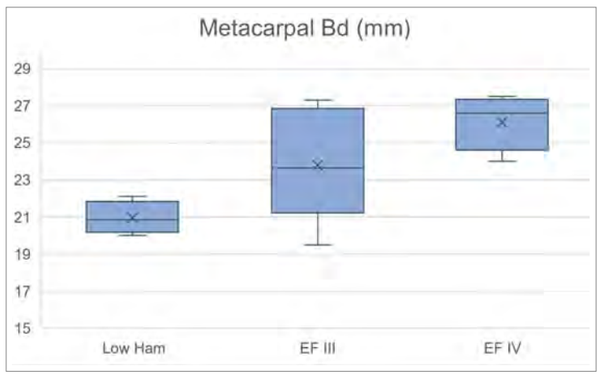


Fig 8.17 Box and whisker plot of metacarpal distal breadth (Bd) comparing Roman animals from Elms Farm (Johnstone and Albarella 2002) and Low Ham

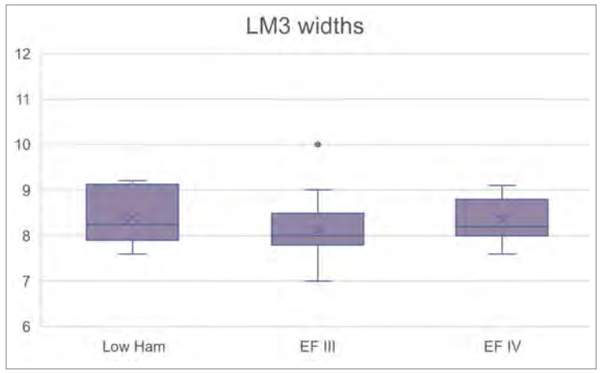


Fig 8.18 Box and whisker plot of lower third molar (LM3) maximum width comparing Roman animals from Elms Farm (Johnstone and Albarella 2002) and Low Ham

represent a complete, or near-complete, single animal, albeit in semi-disarticulated form, which sets it apart from the other, later sheep/goat ABGs. There were some common trends across the ABGs, including the nature of the butchery and the gracile nature of the bones.

Aside from the ABG assemblage there was a fairly small assemblage of disarticulated animal remains more akin to general waste than those deposited as part of the ABGs. This assemblage indicated the presence of a wider variety of taxa than represented in the ABGs, including the principal economic taxa found routinely on Roman sites, such as cattle, pig, dog and chicken.

Discussion of ABGs

The repeated patterns of butchery seen throughout a number of the ABGs is of interest as it may suggest that at least some of the ABGs had similar functions or meaning to the people present at the site. The most common butchery marks observed were cuts on the astragalus and

calcaneus. Comparison of these with reference butchery marks indicates that they were likely caused during disarticulation at the hock joint (Costamagno *et al* 2019, fig 12). Very few other butchery marks were observed on the ABG assemblage; however, as the animals had not been deposited whole, some other disarticulation must have taken place, and not all butchery activity will leave traces on the bones. What was also notable was the difference in distribution of butchery marks between the ABG and non-ABG assemblages, indicating that the aim of the ABG butchery may not have been consumption of the meat from the animals, as may be expected in the more day-to-day processing seen in the non-ABG assemblage. Skinning marks were also noted in a small number of instances relating to the ABGs.

One of the other major points noted regarding the ABGs was the gracile nature of the bones. Sheep and sheep/goat bones were found to be considerably less broad than animals from the Historic England Sheep Project (Popkin *et al* 2012), even those raised on a low nutritional plane; however, length measurements of the Low Ham specimens did overlap with those from the Sheep Project. The Low Ham bones were also at the low end of the range for bone breadth compared with animals from Elms Farm (Johnstone and Albarella 2002); however, in terms of bone length, Low Ham comes out below the range (shorter than) for Elms Farm. When comparing tooth measurements, the ranges for the two sites are very similar, or overlap considerably, indicating there is a greater difference in post-cranial measurements between Elms Farm and Low Ham than there is in tooth measurements. Tooth size tends to be less influenced by environmental factors, such as poor nutrition, than post-cranial elements are, and only tends to change with the introduction of new genetic material or through long-term selection (McCance *et al* 1968). Bone breadth, on the other hand, is fairly strongly influenced by nutritional level, as skeletal elements are found to be much more gracile in animals raised on low nutritional planes than those on high nutritional planes (Pálsson and Vergés 1952a, 1952b). Therefore, it seems likely that the very gracile nature of the bones seen at Low Ham is, at least partly, the result of a generally poor nutritional regime. In places it was also noted that cortical bone was very thin. Horwitz and Smith (1990) found that, in ewes, seasonally poor nutrition led to a reduction in cortical bone thickness; rams, however, appeared to be unaffected. It was suggested (Horwitz and Smith 1990) that this was due to the interaction of poor nutrition and the additional stresses of gestation and lactation suffered by ewes. It is possible, therefore, that a similar effect is being seen in some of the animals from Low Ham. Other pathologies noted tended to relate to oral health, which may have had a knock-on effect on animal nutrition if an animal found eating and mastication particularly uncomfortable, hence limiting food intake. A low level of nutrition may be indicative of poor pasture in the area or the lack of adequate fodder, possibly indicating wider problems with the agricultural system. However, further investigations would need to be made in order to confirm this.

Within the South West region there are a number of other Roman sites with animal bone assemblages that bear comparison, or provide useful contrast, with the Low Ham ABG assemblages. At Cannington Cemetery, Somerset, eighteen complete or near-complete sheep had been deposited in a single pit, seemingly in a single event, with no observable butchery marks (Payne and Izard 1991). In addition, the ages of the sheep all fell into a fairly tight age range of 15–18 months; based on the form of the pelvis, the majority were males, but some females were also present (Payne and Izard 1991). The interpretation of this deposit was left fairly open as at the time the dating was not certain, and it was thought possible that the animals may have been buried following death from disease or drought, or a similar occurrence causing mass mortality. Overall, this assemblage does not bear a huge amount of similarity to the Low Ham assemblage, given the single deposition, the completeness of the animals and the lack of apparent butchering.

Assemblages from Chew Valley Lake Roman Villa, Somerset, reported by Harcourt (1967), appear to show much more similarity with the Low Ham sheep and sheep/goat depositions. At Chew Valley Lake, ten groups of sheep bones, representing at least seventeen animals, were deposited and sealed under the villa floor. Their seemingly deliberate placement under the floor, close up to the walls of the villa, led to a ritual interpretation for these remains (Harcourt 1967). Animals of a range of ages were present, with nearly half of the animals being estimated to be over five years old at death. Because of their slender nature, the bones were thought likely to belong to female animals, and were compared in size and stature to Soay sheep (Harcourt 1967). Examination of the small quantity of biometrical data available indicates that the metacarpals were likely very similar in size to those from Low Ham, although, because of the age of the analysis, it is not known whether the measurements are directly comparable with those based on von den Driesch (1976), now used as the standard in zooarchaeology. In terms of the distribution of body parts, it appears that pelvic girdles, ribs and vertebrae were poorly represented, whereas limbs, head and neck were well represented; no mention was made of any butchery marks (Harcourt

1967), although it appears that some form of carcass dismemberment must have taken place. While these remains were interpreted as ritual or sacrificial offerings, Harcourt (1967) recognised that the quality of the meat being made as offerings was not prime, and that these animals would likely have been used for wool or dairy production for some time, only being offered up as sacrifices towards the ends of their economically useful lives. He even goes as far as to comment that the deities were being 'fobbed off' (Harcourt 1967, 4) with animals that were past their best and would have been due for slaughter anyway. Aside from the lack of apparent butchery marks on these animals, there are many similarities with the Low Ham assemblage. The presence of animals of a range of ages, the small, slender nature of the bones, the prevalence of limb bones, and the deposition of incomplete animals, are all reminiscent of the Low Ham assemblage. The association of the deposits with a villa should also be noted. While the Low Ham ABGs largely come from outside of the villa complex, ABG4 comes from within the villa and formed part of a make-up layer (91032) that may have had a floor laid over it (see Chapter 6.1); if this was the case, it would make this particular deposit directly comparable with the Chew Valley Lake deposits.

Further examples of the likely sacrificial use of sheep/goats on Roman sites in the South West region come from Henley Wood temple and cemetery, Oxfordshire (Jones 1996), and West Hill, Uley, Gloucestershire (Ellison 1980). At Henley Wood a number of animal burials were made within and adjacent to the temple building, with parts of at least ten sheep/goats present. Here the partial dismemberment of the animals was thought likely to reflect aspects of the ritual process associated with the sacrifice and deposition of the animal, with some animal parts being consumed on site as part of the ritual act (Jones 1996). Again, some similarities can be drawn between these deposits, particularly in the way that the animals have been partially dismembered and deposited, and the ABG deposits seen at Low Ham. Ellison (1980, quoted in Jones 1996) noted a high prevalence of sheep/goat deposition at the temple at West Hill, Uley, and indicated a possible association with the god Mercury, with whom there were other artefactual links at the site (Ellison and Henig 1981).

In terms of comparison with the wider pattern of ABGs in Roman southern England (Morris 2011), the ABGs from Low Ham appear to fit in well. Sheep/goat ABGs are the most common form of ABG at Roman rural sites (Morris 2011, 97), although the presence of ABGs with butchery marks is not particularly common, being present in only about 10 per cent of partial cattle and sheep/goat ABGs examined by Morris (2011, 92). However, sheep/goat are the most likely of all the taxa found in ABGs to bear butchery marks (Morris 2011, 92).

Discussion of the non-articulated assemblage

The non-ABG assemblage is very small and can offer little firm evidence about the wider economy of the site. A standard suite of domestic animals appears to have been present. Cattle, sheep/goat and pigs all appear to have been eaten, and it is likely that cattle had other economic functions before being slaughtered beyond prime meat age. The butchery evidence does, however, indicate that beef was being consumed despite being past its prime. Chicken meat and eggs would also have probably made a small contribution to the diet of the inhabitants.

Conclusion

The majority of the animal bone assemblage derived from a series of ABGs. These were largely dominated by the remains of sheep and sheep/goat. While these remains were spread across the phases, the majority were dated to the Roman period, and it seems likely that at least some of them would have had a ritual or religious significance. A number of similarities can be drawn between these deposits and those from other Roman-period sites within the region, particularly Chew Valley Lake Roman Villa.

9 The prehistoric landscape

David Roberts

The 2018 excavations at Low Ham demonstrated settlement from the end of the Middle Iron Age into the Late Iron Age (Fig 9.1), and hinted at earlier activity. While the prehistoric evidence from Low Ham is not unusual, the site offers the opportunity to outline the development of a small settlement into one of an extraordinary group of later Roman rural residences in the region. This chapter will synthesise the prehistoric evidence from Low Ham and set it in its landscape context, in order to better understand its most complex period, set out in Chapters 10, 11 and 12.

9.1 Early prehistory

The presence of an obliquely blunted Mesolithic microlith at Low Ham suggests that people passed through this landscape early in the Holocene, but there is no evidence to indicate a sustained presence. The nearby Mesolithic cemetery at Greylake Quarry, located at the north-east corner of what would then have been the island of Sowy, indicates that there were significant places in the vicinity (Brunning 2011, 2014). The distribution of Mesolithic finds recovered from the Sedgemoor valley suggests that, as in other parts of Britain, the fringes of the wetlands that were to become the Levels were of importance to these early communities (Coles 1989, 15; Taylor *et al* 2018, 245–50). In the wetlands just north of Low Ham, now known as King's Sedgemoor, the transition from saltwater wetland created by marine transgression to the development of freshwater peat had probably begun before the end of the Mesolithic, as it did to the south around Langport (Brunning 2013, 3–5; Fig 9.2).

9.2 Neolithic and Bronze Age

The assemblage of Neolithic, or perhaps Bronze Age, lithics from our work at Low Ham does not indicate that the site was a focus of activity in these periods, although the local landscape was occupied. This is demonstrated in part by other finds of Neolithic and Bronze Age lithics reported close to Low Ham at Aller, Upton and Greylake Quarry (Minnitt 1976; Somerset HER 11761, 53493, 55012, see Somersetheritage.org.uk). In general, the Low Ham area displays little evidence for Neolithic activity,[1] although environmental evidence from the Somerset Levels more widely suggests that, as peat formation began in the marshes, woodland clearance episodes opened out areas of higher ground, especially during the Early Bronze Age (Wilkinson and Straker 2007, 71). During the Middle Bronze Age we see the first establishment of permanent settlements in the wider region, defined by enclosures, roundhouses and land boundaries, as well as occasional cemeteries, although without the extensive co-axial field systems found on Dartmoor, in central Wessex, and further north and east (Bulleid and Jackson 1937, 174; Corney *et al* 2011; Hughes and Rainbird 2016; Allen *et al* 2020; Oxford

[1] There is far more evidence of Neolithic monumentality to the north on the Mendips (Lewis 2005). A mortuary enclosure at Park (Randall 2020) 2km north of Low Ham is an exception for the area.

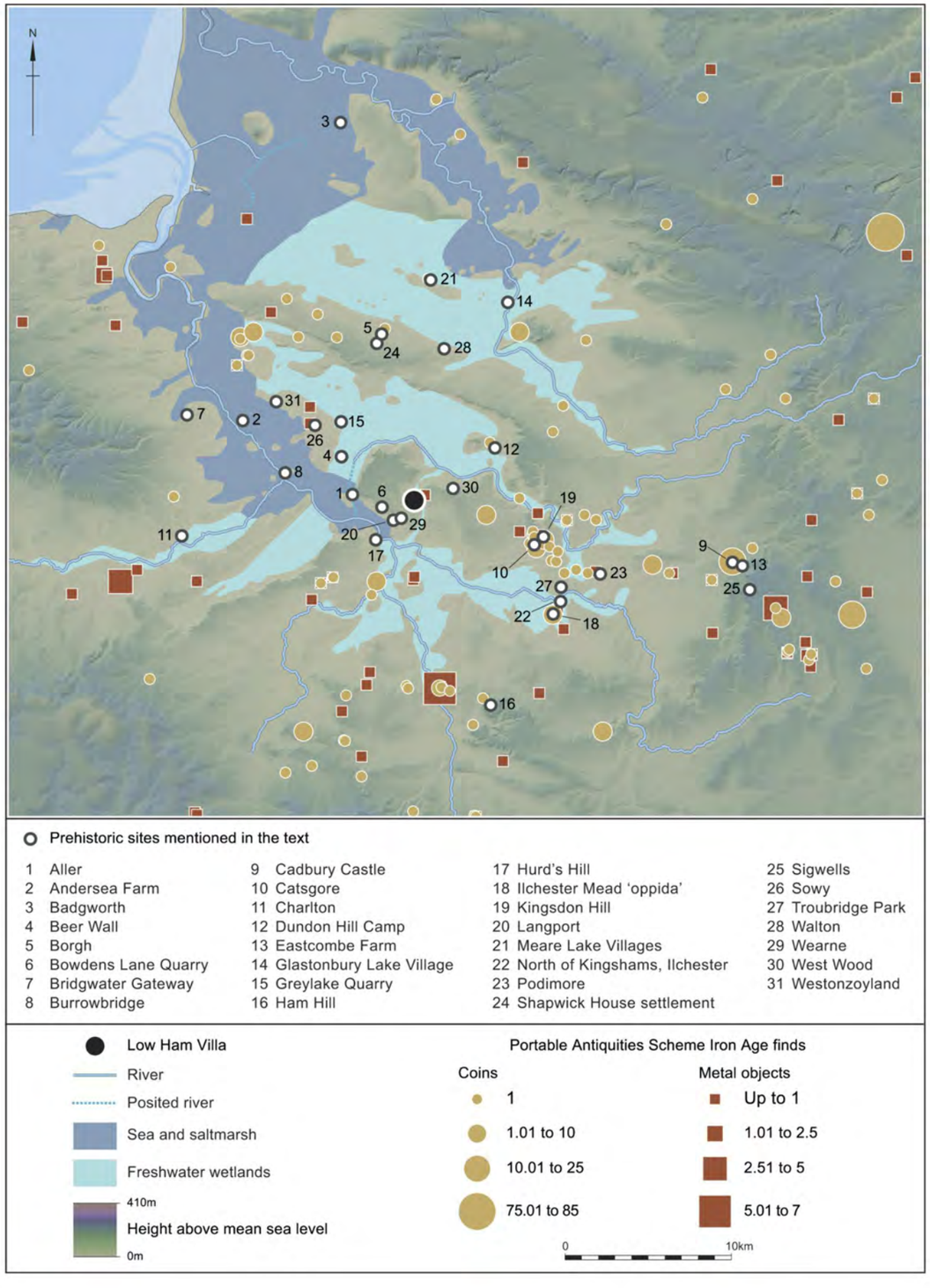


Fig 9.1 Prehistoric sites mentioned in the text (John Vallender, Historic England)

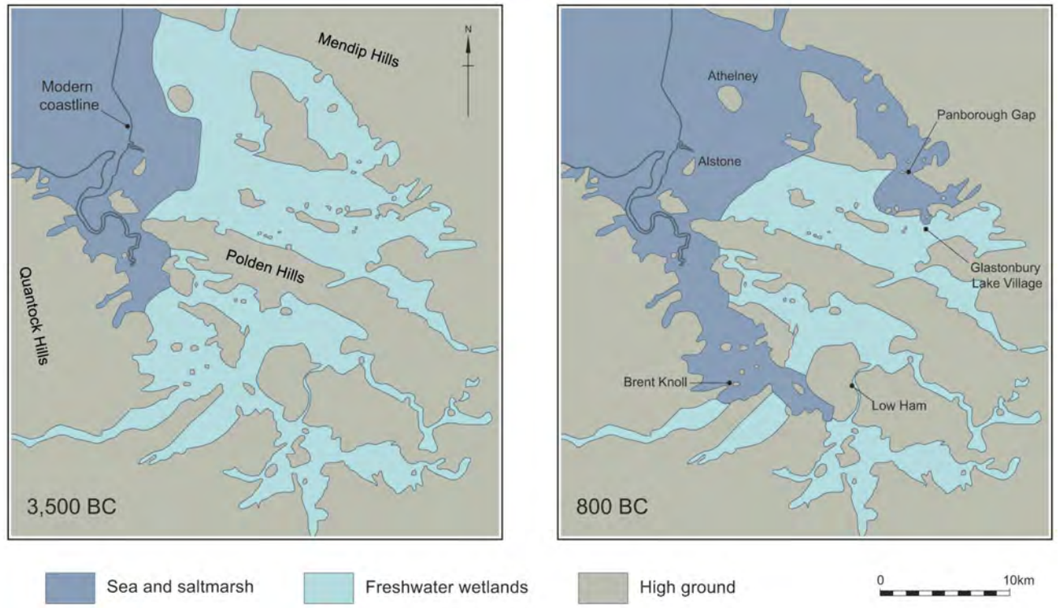


Fig 9.2 Prehistoric water levels along the Somerset coast, *c* 3,500 BC and *c* 800BC. Redrawn from Brunning (2013, 5 fig 4) (John Vallender, Historic England)

Archaeology 2020, 114, 125). Trackways were created across the freshwater wetlands and raised bogs during the Bronze Age, which may have established lines of movement that lasted into later periods (Coles 1983; Coles and Orme 1983; Coles 1989, 15–17; Brunning 2013, 5). Further marine transgressions may have reached as far as Beer Wall in the Late Bronze Age, rendering the area west of the promontory of High Ham salt marsh (Brunning 2013, 5). During prehistory and the Roman period, this area would have been bisected by the River Cary, which in its former course joined the River Parrett near Burrowbridge. Today, the river enters the King's Sedgemoor Drain through a late 18th-century diversion of its natural course (Coles and Campbell 1982, 6).

The recently excavated settlement at Bowdens Lane Quarry, north-west of Langport, showed significant occupation from the Early Bronze Age to the Roman period (Fig 9.3). Comprising a multi-period range of rectangular and circular structures, pits, ditches and a midden, the site produced large artefactual and environmental assemblages (Socha-Paszkiewicz *et al* 2023). The midden is potentially nationally significant, although not as artefactually rich or large as comparable middens in Wiltshire (McOmish 1996; Waddington *et al* 2019). The bulk of deposition is believed to have occurred between the Late Bronze Age and Early Iron Age (Socha-Paszkiewicz *et al* 2023). The site appears to have been a significant gathering place through these periods, drawing communities together to feast and deposit material culture and food waste. Its siting may be down to its topographic location, on a local high point overlooking the (former) confluence of the rivers Cary and Parrett and just downstream from the confluence of the Yeo and Parrett.

The River Parrett passes through its narrowest passage at Langport, just 2km to the south.[2] In later prehistory the rivers through the Levels would have been key axes of travel, rather than obstacles, so we may argue that the narrow passage and confluences would create a natural concentration of people moving through the landscape. Based on the import of prestige pottery, Tabor (2023) posits that the Bowdens Lane Quarry site may have functioned as a kind of dry land entrepot from the Late Bronze Age to the Middle Iron Age, and this is plausible given the landscape context. The Langport passage might be an alternative, more natural location for such a site,

[2] This river passage is itself overlooked by Hurd's Hill, where early reports of 'British' remains by Ross (1911, 356–7) may suggest Iron Age settlement, but the site has been much disturbed and remains uninvestigated in the modern era. Richardson (2003) states that no significant prehistoric remains are known from Langport itself, although various cropmark sites are present in its immediate environs.

but as already discussed, evidence for Iron Age activity at Langport is limited.

9.3 Iron Age

Early Iron Age

The effect of access to iron on societies during the first millennium BC (mainly after 700 BC) was profound (Sharples 2010). Bowdens Lane Quarry provides an apparently isolated local example of continuity in this period, with midden deposition continuing through the Early Iron Age, albeit at a lower intensity by the Middle Iron Age. The first definite structures on the site comprise four Early to Middle Iron Age roundhouses alongside pits and a four-post granary. Two of these roundhouses have been radiocarbon dated to the 3rd century cal BC and 2nd–1st centuries cal BC, respectively, placing them at the end of the Middle Iron Age, and in the latter case contemporary with the earliest roundhouse at Low Ham (Socha-Paszkiewicz *et al* 2023). Early Iron Age activity prior to the end of the Middle Iron Age (*c* 100 BC) is otherwise challenging to identify around Low Ham.

Middle to Late Iron Age Low Ham

The first settlement evidence excavated at Low Ham is Roundhouse 3, which was constructed in the first half of the 2nd century BC and occupied until the mid-1st century BC at the latest based on radiocarbon dating. This structure produced South West Decorated (SWD) ware sherds. This ware is distributed across the South West, its manufacture commencing in the 4th century BC and continuing until around the time of the Roman conquest of the region (Hart and Mudd 2018, 30; Tabor 2023). Based on petrography, SWD ware seems to have been manufactured at a range of locations, including the Mendips, although kiln sites have not yet been discovered. Dating for the other two fully excavated roundhouses at Low Ham is challenging because of their small assemblages, but their spatial configuration indicates that they were not contemporary with each other. Their very limited pottery assemblages suggest that they may have been Late Iron Age. Two further potential roundhouses have been identified from geophysical evidence and excavation, although only limited proportions of the relevant features were explored.

While not all the roundhouses at Low Ham could have been occupied contemporarily due to their spatial configuration, some may have been. Given the structural evidence we might envisage one or two households at Low Ham, with Roundhouse 3 the earliest dwelling on the site. Gradual replacement of earlier roundhouses over time until the Late Iron Age could comfortably account for the five possible excavated or surveyed examples on the site. The Roman conquest need not be the event accounting for the cessation of roundhouse settlement at Low Ham, but the large rectangular enclosure with internal rectangular structure that succeeded the roundhouse settlement can be dated to early in the Roman period.

The site is unenclosed and set just above the floodplain of the Low Ham Rhyne. The limited finds and environmental evidence from this unenclosed settlement suggest household-scale crop processing, including hulled barley, spelt and possible emmer wheat, alongside legumes. Abundant weed seeds and false oat-grass tubers may indicate lower time investment in the weeding of arable plots, and hand-pulling of crops at harvest. Wood charcoal suggests a landscape with some scrubby or marginal woodland, hedgerows or scrub being utilised for domestic fuel, access to oak in the wider landscape, and that wood was felled year-round.

The Iron Age community at Low Ham was not wealthy. Only a single metal find may be intrinsically dated to the period, a small copper-alloy tack. There are no coins, and no appearance of hierarchy within the settlement. Such wealth as they had may have been held in their small herds of cattle and sheep, and in pigs, which make up an unusually high proportion of the non-ABG faunal assemblage for the period (15 of 33 countable fragments), although the small size of the assemblage prevents much interpretive weight being placed on this apparent pattern. The small size of the finds and environmental assemblages also makes discussion of change over time within the Iron Age phases impossible. The roundhouses at Low Ham are of normal size for the period and region, with all except Roundhouse 2 over 11m in internal diameter. This conforms to the majority of roundhouses at contemporary Late Iron Age settlements at Bridgwater Gateway (Powell *et al* 2008; Oxford Archaeology 2020, 128), Ham Hill (Brittain *et al* 2015, 47) and Podimore (see below; Lovell 2005, 12). The structures at these sites seem also to have been constructed in an analogous manner to one another, with a single shallow gully and few internal features. The Bridgwater Gateway site is also in a similar topographic position to Low Ham, perched just above the edge of the floodplain of the Parrett. Bridgwater Gateway provided even less indication of the nature of activity at the site than Low Ham, beyond the presence of field beans and evidence for the processing of emmer and spelt wheat.

In summary, the settlement at Low Ham was likely a small farming community, probably consisting of a single extended family group. The site was not enclosed by ditches, although the palaeoenvironmental evidence for hedgerows implies that these may have been used instead to divide the local landscape and enclose the cattle, sheep and pigs kept by the settlement's inhabitants, probably on rotation with crops of barley, wheat and beans.

Middle to Late Iron Age landscape context

As already alluded to, there is considerable evidence for contemporary Late Iron Age settlement in dryland areas around Low Ham. The Bridgwater Gateway site has already been discussed, but another open settlement contemporary with Low Ham was excavated in 1968 at Westonzoyland on the island of Sowy (Miles and Miles 1969). However, the small-scale trenching was unable to define roundhouses amongst the various postholes found alongside pits and ditches. These features were predominantly dated to the Late Iron Age, with continuity into the Roman period through Poole Harbour pottery and later Roman material culture (Miles and Miles 1969). Just to the east, several ring ditches possibly representing roundhouses were mapped from aerial photography, as were several rectilinear and trapezoidal enclosures dating to the Iron Age or Roman periods (Truscoe 2006, 14–21). These appear to form a series of dispersed sites, although the destruction caused by the construction of the overlying airfield means that this is uncertain (Truscoe 2006). It appears that the island of Sowy was well occupied in late prehistory. South-west of Low Ham, the site at Bowdens Lane Quarry continued into the Late Iron Age, although midden deposition was reduced and roundhouse construction changed to a gully form (which may possibly be a wider change based on the evidence discussed above), with additional four-post structures being added to the site (Socha-Paszkiewicz *et al* 2023).

A significant Late Iron Age enclosure complex at Wearne, lying only 1.2km south-west of Low Ham, appears in its earliest phase to comprise a large curvilinear enclosure. Although the enclosure's morphology is suggestive of an earlier prehistoric date, when excavated it produced a small quantity of Late Iron Age and Roman material from relatively low in its ditch sequence (Fig 9.4) (Leech 1976; Robinson 2020). This, the largest enclosure at Wearne, in the south-east of the site, would measure approximately 200m across if complete. The Wearne settlement site otherwise comprises a series of sub-rectangular enclosures and associated ditches. Only the easternmost group of rectilinear enclosures has produced definitive evidence of Middle and Late Iron Age occupation (Robinson 2020, 11), and these closely resemble enclosures discovered through aerial reconnaissance east of Charlton, a few miles to the west (Somerset HER 44643; Historic England Aerial Photo 27239_050). The remainder of the Wearne site is Roman and will be discussed in Chapter 12. The interior of the large enclosure contained this Iron Age activity, but also activity right through to the late Roman period; it is challenging to discern the longevity of the enclosure because of a lack of substantial excavation, with only a single section having been cut in just one of the trenches opened across the ditch. If the limited evidence we have is correct, this is a large site of significance in the landscape, given that it is appended with several adjacent enclosures and structures through the Roman period.

Three Late Iron Age enclosed settlement sites were investigated at Shapwick, all displaying continuity into the Roman period (Aston 2013). Two were farmsteads, one of which was a relatively small site with sub-circular ditched enclosures and pits. The other was an extensive site with enclosures and evidence of crop processing, industrial activity and a South West British bronze coin (Aston 2013, 88; see below regarding this numismatic label). This appears to be a larger farmstead, and it was substantially restructured in the Roman period. The intriguing enclosure site at Borgh/Chestell in Shapwick illustrates the diversity of enclosure sites in the region. This large site, with a sub-rectangular central enclosure surrounded by multiple outer enclosures, two concentric, was thought by Aston to have origins in the Late Iron Age, although undoubtedly mainly occupied in the Roman period. The site is likely to have accommodated several households, and its complex enclosure systems to have facilitated stock management alongside other agricultural activities (Aston 2013, 88–9). The high quality of information and multiple sites of diverse form and function known from Shapwick demonstrate the value of focused investigation of a particular landscape, and serve as a salutary reminder of the likely extent and intensity of the as yet undiscovered settlement pattern in the region (Aston 2013, 88). Iron Age and Roman settlement is also known in the neighbouring parish of Walton in similar topographic locations, but is much less well understood (Somerset HER 24770).

As with the enigmatic site at Wearne, the hillforts in Low Ham's immediate vicinity pose challenges of dating and interpretation. The nearest, the promontory fort at West Wood overlooking Park and Somerton Moor, has provided only ambiguous dating evidence (Riley 1993). The univallate form of the hillfort is proven by aerial and geophysical survey, and interior features, including roundhouses, subdivisions and pits, are present. A Roman burial was inserted into an internal feature thought to be a barrow, but perhaps more likely representing a denuded

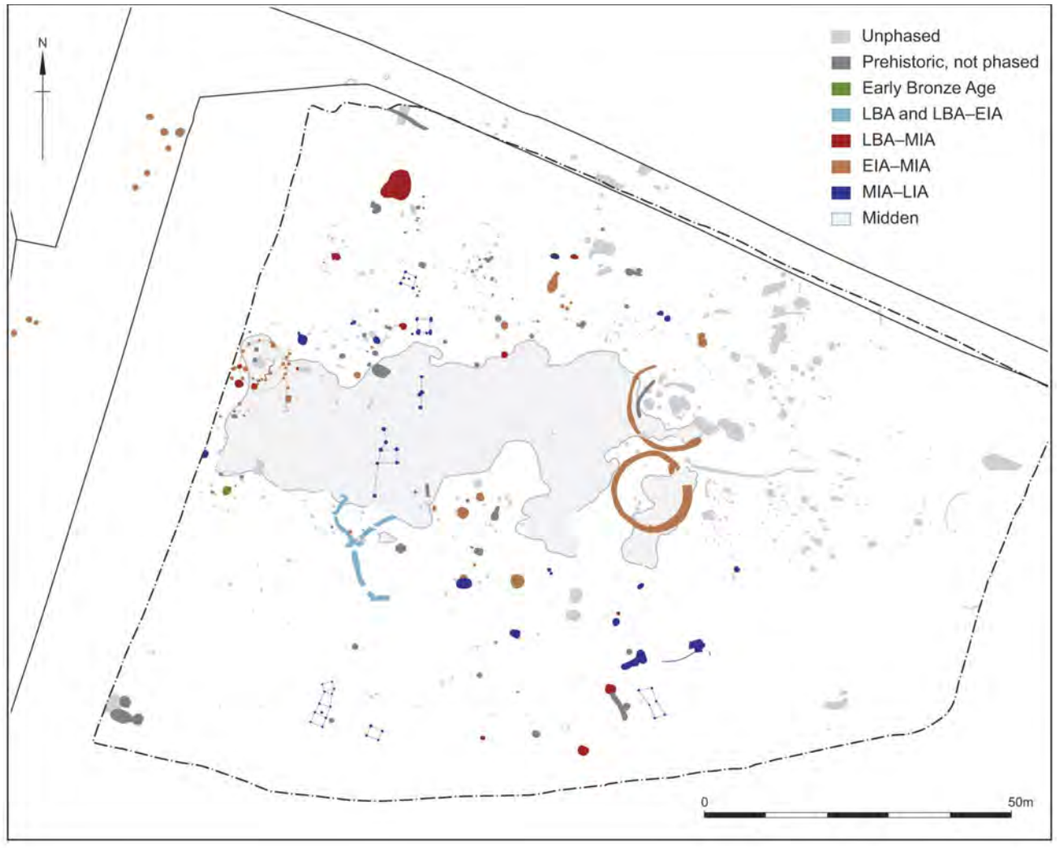


Fig 9.3 Prehistoric phases at Bowdens Lane Quarry. Redrawn from Socha-Paszkiewicz *et al* (2023, 151, fig 2.38) by John Vallender (Historic England)

part of the defences (Lock and Ralston 2024). Slightly further east, Dundon Hill Camp may be Late Bronze Age in origin, as its univallate defences are slight, but the site has never been substantially excavated, and a water pipe trench through the north-west rampart found only Iron Age pottery (Somerset HER 53760). Similarly, the evidence at Dundon Hill Camp and West Wood is essentially unclear as to whether these sites were occupied in the Late Iron Age, and they are likely to have been established considerably earlier. Both overlook King's Sedgemoor and may hint at how influence over wetland landscapes – both in terms of their productivity, and opportunities for riverine travel – remained vital in the region.

By the Middle to Late Iron Age, the marine transgression had begun to ebb in parts of the Somerset wetlands, but this was inconsistent, even within the Brue valley, the most intensively studied wetland in the region (Brunning 2013, 5; see, for example, the continued high water levels at Glastonbury Lake Village until after 200–50 cal BC demonstrated by Tinsley and Jones 2013, 198–9). As such, it is difficult to give a clear picture of the wetland landscape nearer to Low Ham at that time, other than as a seasonally changing mosaic of salt marsh, freshwater sedge marsh, and carr woodland. An increase in pollen taxa associated with disturbed dryland sites after 510–395 cal BC at Glastonbury Lake Village may represent clearance of higher ground for agriculture at this time, continuing a process starting considerably earlier in prehistory (Fig 9.2; Tinsley and Jones 2013, 199). Low Ham, being apparently first settled a few centuries later, is probably part of this process of agricultural extensification.

Somerset in the Middle to Late Iron Age is internationally famed for its wetland settlements at Glastonbury and Meare lake villages. No analogous settlements have been discovered closer to Low Ham, but brief discussion of these sites may illuminate contemporary activity in the wetlands just north of Low Ham, being only about 10km south-west of the Glastonbury Lake Village. Chronological modelling by Marshall *et al* (2020) demonstrates that Glastonbury Lake

Village was constructed sometime between the first half of the 2nd century cal BC and the middle of the 1st century cal BC. The Meare Lake Villages were occupied between sometime in the 2nd century cal BC until sometime in the 1st century cal BC or the first half of the 1st century AD. Both sites provide enormously significant environmental, faunal and dietary evidence, and evidence for craftworking and trade. Glastonbury has recently been interpreted as a primarily domestic and exchange site, whereas Meare has been viewed as a more specialised focus of craftworking and exchange, but various emphases are possible from the evidence (Norton 2021, 13). The Late Iron Age settlement at Low Ham is not comparable in terms of activity, but it is important to recognise that long-distance trade, complex seasonal mobility and specialist craftworking took place at the contemporary lake villages to the north. The evidence from the lake villages emphasises the wetlands' role as not just a highly productive, if unstable, landscape, but also a key axis of connectivity in the Late Iron Age, as they probably were earlier in prehistory as well (see the Shapwick Iron Age 'canoe' logboat or lost logboat (51) from Glastonbury Lake Village for an example of the means of transport; McGrail 1978, 159–60).

Norton (2021, 51) suggests that a large enclosure at Athelney, south of Low Ham and underlying the later Saxon abbey, may have been a 'marsh-fort', but no fieldwork has been targeted at prehistoric features on the site. The complexity of the wetlands and their ecotones in the Late Iron Age is not fully understood; in particular, the interactions between wet and dry land in terms of seasonality of lifeways, the level of integration of those using these different parts of the landscape, and the nature of power in this part of the landscape require further research. Traditional narratives drawn from the rest of Wessex and south-east Britain more broadly would have hillforts supplanted in their communal and trading functions by the possible Late Iron Age oppidum at Ilchester Mead, yet there is a tension in overall narratives of the period in Somerset between this model and the reality of continued occupation at the developed hillforts such as Ham Hill (Leach 2001a, 15; Cunliffe 2005; N Sharples, pers comm, October 2023). In general it is in eastern Somerset, north-west Dorset and western Wiltshire that this national lowland settlement pattern begins to break down. The major developed hillforts here reached their apogee slightly later than those further east and, if anything, became more densely populated in the final centuries BC, although there are certainly exceptions (Sharples 2014). There is some evidence for a reduction in occupation intensity at Cadbury Castle, with that site and Ham Hill showing evidence for developing ritual functions in this period and up until the Roman conquest in the mid-1st century AD, particularly through the structured deposition of animal remains (Brittain *et al* 2014, 204–25).

There is evidence that the deposition of metal objects in watery places around Low Ham seen in the Bronze Age (Somerset HER 544111, 54419, 54541; PAS IDs, SOMDOR-9ADF54; SOMDOR-E6A6F1) also continued into the Late Iron Age, as suggested by the neck ring from Andersea Farm, Westonzoyland (Minnitt 1988). Despite limited recording, the findspot given is approximately halfway across the wetland between the western edge of the island of Sowy and the slightly higher ground in North Petherton, not far from the Bridgwater Gateway site. This high-status item of personal adornment, with links to others found in Dorset and more widely in south-western Britain, hints at the selection of particular locations within the wetlands for the deposition of significant objects. It is tempting, given the relative lack of investigation of Sedgemoor by the Somerset Levels Project, to suggest that such depositions might indicate the locations of trackways through the marshes like those found elsewhere, in this case between the contemporary Bridgwater Gateway and Westonzoyland settlement areas.

More broadly, the distribution of Portable Antiquities Scheme (PAS, see finds.org.uk) finds of Late Iron Age date is informative regarding loss and deposition in the Low Ham area. Generally, Late Iron Age finds in Somerset are distributed more sparsely than in Wiltshire or Dorset. Using coins as a gross metric, excluding coin hoards, Somerset has produced 0.06 Iron Age coin finds per km^2, whereas Wiltshire and Dorset have produced 0.34 and 0.67, respectively (data from finds.org.uk, correct as of 27 February 2024, based on an advanced search for COIN by Broad Period: Iron Age and County). There are significant biases in PAS data; for example, Wiltshire and to a lesser extent Somerset have extensive areas that are inaccessible to metal detectorists because of military activity, National Trust ownership and other reasons. Nevertheless, the difference in intensity of coin loss is striking, and probably due to the slightly later adoption of coinage in the region, alongside a lower rate of coin use altogether.

The distribution of coin and metal object finds of Iron Age date in Somerset is concentrated towards the east and south of the county, closest to regions of more intensive coin use. When reviewed in detail almost all finds are from land that today is more than 6m above sea level (asl) (see Fig 9.1). While this is by no means a precise hydrological model for later prehistory, given the extent of landscape change since, it provides a rough indication that coin deposition or loss took place away from the

wetlands; perhaps there was a distinction between how metal objects such as the neck ring discussed above and coins were understood, although this is not a clear-cut pattern, as many PAS finds of Late Iron Age objects are from higher ground. Of course, these areas could also be locations of numinous significance.

Notably, the largest cluster of South West British coinage finds in the Low Ham region is to the south-east, centred on Kingsdon Hill, immediately above the Roman village of Catsgore (Leech 1982a). A votive model of a duck and two other contemporary objects have also been recovered from a broad area of finds across Kingsdon Hill and its western slopes towards Catsgore (R Ellis-Haken, pers comm, February 2024; PAS ID 22705). The Roman road running north through Catsgore may suggest that this route past Kingsdon Hill was also an earlier line of movement given this cluster of Late Iron Age finds. Leech (1978) mapped parts of an enclosure visible on multiple sources of aerial photography close to the crest of Kingsdon Hill that appears Late Iron Age or Roman in date. This might be considered one of a series of areas of Late Iron Age occupation sites to the north of Ilchester Mead, although only one, at Podimore (Lovell 2005), has been excavated to any significant extent. Iron Age finds have been made at Ilchester (Somerset HER 53099), Troubridge Park (Somerset HER 53071), and at Podimore a few kilometres to the north-east of the apparent oppidum. At Podimore an apparent 'banjo' enclosure was mapped from aerial photography by Leech (1975), although the morphology, in particular the lack of convincing antennae ditches, is not compelling and Lang (2016) does not include it in his corpus. Nevertheless, Leech's work and later geophysics identified settlement activity stretched over almost a kilometre along a droveway with associated field systems (Leech 1975; Lovell 2005). The site has seen two large excavations (Lovell 2005; Robinson 2021), revealing over a dozen roundhouses, many pits, and two rectilinear groups of postholes. The settlement focus shifted on several occasions, and not all the structures are contemporary. Despite this, it is a notably more intensively occupied settlement than the sites to the north and west previously discussed, and together with the Poole Harbour-dominated pottery assemblage from the site may suggest that this community had lifeways more in common with those living to the east and south than those to the north-west.

Perhaps just as significant as the cluster of settlements north of the possible oppidum is the lack of either settlements or PAS finds from the floodplain of the River Parrett to the south and west of Ilchester Mead. This area may have remained marshland during the period. This is important because it affects our understanding of the landscape context of the potential oppidum, a large circular ditched and embanked enclosure. In the Late Iron Age, rather than sitting as it would in the Roman period beside the Fosse Way, its proximity to the River Yeo (prior to the diversion of the river to its present course in the Roman period) may have meant that the site was located for purposes of seasonal trade between those travelling from the west by river, and the north, east and south by land (Leach 1994; Leach 2001a, 56). As Leach suggests, the regularly flooded nature of the site's interior prevents Ilchester Mead being a territorial oppidum occupied year-round in the manner of *Camulodunum* or *Verlamion* (Leach 2001a, 56). It is therefore necessary to ask what use or relevance the term 'oppidum' has here. The site has been defined as such because of its proximity to the Roman town of Ilchester, which certainly acted as a territorial centre. However, apart from the large size of the site and its boundary rampart and ditch, there is no evidence that it played a similar role. In reality, a model drawn from other areas of southern and eastern Britain, of pre-existing 'tribal' centres being replaced by Roman towns on the same site or very close by, has been projected onto Ilchester. Notably, the site resembles the marsh forts investigated by Norton more than it does oppida, although it does not fit all of Norton's criteria (Norton 2021, 34).

This is particularly important when we consider that occupation activity at the major developed hillfort of Ham Hill does not appear to decrease, as may be the case at Cadbury Castle (Barrett *et al* 2000; N Sharples, pers comm, October 2023). These large sites, with evidence of high-status activity, are within 6km and 11km, respectively, of Ilchester Mead, and both show evidence of redevelopment of their fortifications shortly prior to the Roman conquest, suggesting a continued significance to the communities in their vicinities. A wide range of models for understanding the social, economic and other significances of hillforts exist, but it is certainly tempting to suggest that, whether the communities of Ham Hill and Cadbury Castle were independent from each other or not, Ilchester Mead might have provided a useful meeting place between these people and those travelling inland on the River Parrett/Yeo from the Severn Estuary or wetlands beyond Ham Island to the north-west (Brown 2009; Sharples 2010, 2014; Stewart and Russell 2018).

Having considered the settlement archaeology around Low Ham in the Late Iron Age, it is also important to place the site within its broader social, economic and political context. Traditional Late Iron Age narratives assign an identity known as Durotriges to the people living in what is now south-east Somerset (Leach

2001a; Papworth 2008a; Stewart and Russell 2018). The name Durotriges is known only from the Roman geographer Ptolemy and two Roman inscriptions, both found on Hadrian's Wall and referring to the *c(ivitas) Dur(o)tr(i)g(um) (L)enidin(i)e(n)sis and ci(vitas) Durotrag(um) Lendinie(n)si(s)* (Papworth 2008a, 26). *Lindinis* is referred to in the Ravenna Cosmography and has been identified with Ilchester; presumably the *Civitas Durotrigum Lendiniensis* was a northern subdivision of a formerly larger *Civitas Durotrigum* based on Dorchester, as the latter bears far more of the urban and architectural hallmarks of an early Roman civitas capital (Wacher 1976; Woodward and Woodward 2004). Notably, the derivation of *Lindinis*/*Lendiensis* is from the British *lindo-, which may refer to various watery places, so the original sense of the name may have been something like 'the people of the marshes' in reference to the wetlands to the north-west, although it may also have referred to a more local feature at Ilchester (Rivet and Smith 1981, 392; Eagles 2018, 6).

Arguments for retro-projecting the name Durotriges into the Iron Age rest on the identification of this Roman-period name with Late Iron Age archaeological patterns (Moore 2011). These comprise a clear distribution of distinctive uninscribed coinage (numismatists now generally prefer 'South West British' to 'Durotrigian' when referring to these issues; Ghey and Talbot 2022, 2), a particular crouched and furnished burial rite for part of the population (Stewart and Russell 2018, 162), and the distribution of Late Iron Age pottery manufactured across Purbeck (Papworth 2008a, 2008b; Stewart and Russell 2018). All of these can be demonstrated to be essentially limited to a zone covering modern Dorset, far south-west Wiltshire and south-east Somerset. However, the region has long been considered to have an unusual and remarkable diversity of settlement form, with oppida, densely occupied 'developed hillforts', the entrepots of Hengistbury Head, Poole Harbour (and possibly Nursling), enclosed farmsteads and banjo enclosures (Ghey and Talbot 2022, 17). Even convinced advocates of a Durotrigian identity in the Late Iron Age agree that these communities were relatively loosely tied and diverse in their lifeways (Papworth 2008a, 374; Stewart and Russell 2018, 3–5).

Given this evidence, it is worth reconsidering the nature of social structure in the territory of the supposed Durotriges to inform us about its northern extremity around Low Ham. Various somewhat anachronistic attempts have been made to define precise boundaries to the territory, and the overlapping distributions from relatively well-documented sites in south-west Wiltshire of apparently otherwise exclusive coinage, pottery and burial traditions illustrate that those communities furthest from the centre of these distributions of so-called Durotrigian material culture were variably engaged in different networks of relations in the Late Iron Age (Cunliffe 2005, 21; Papworth 2008a; Eagles 2018; Stewart and Russell 2018, 1–2). The same is probably true for the communities in the far north-west of the supposed territory, argued to stretch to the Severn Estuary through the valleys of the south Somerset wetlands. As the key elements of the argument for some form of regional politico-cultural unity are coinage, pottery and funerary rites, these will be briefly reviewed in turn, as insights from recent research on the core of this region have implications for understanding communities around Low Ham, on the north-west edge of these distributions.

The South West British coinage is exceptional in southern Britain in the period of coin use in the Late Iron Age for bearing no regnal names, and its metal content and quality appear directly and closely linked to the prosperity of the entrepots on the Armorican trade routes, being significantly negatively affected by the Roman conquest of Gaul (Creighton 2000). Scholars have previously suggested that the former characteristic reflects a more egalitarian social structure (Stewart and Russell 2018, 1–2). Talbot's recent study of die groups of South West British silver staters, published with Ghey in their study of the Nursling hoards, has demonstrated that there were distinct distributions of coins from particular die groups (Ghey and Talbot 2022). Essentially, different dies were used to mint South West British silver staters that were used across particular areas within the broader territory traditionally defined as Durotrigian. This pattern does not generally hold true for hoards, which appear to draw on issues from a wider range of dies, although Nursling is an exception. Talbot's innovative die study therefore reveals subtle diversity within the superficially homogeneous South West British coinage. Although designs remain very closely comparable across the region using the coinage, Talbot's preliminary results appear to hint at the existence of subregional authorities minting coins to designs shared by a wider community (Ghey and Talbot 2022, 7–11).

The second pillar of the Durotrigian material culture 'set', Poole Harbour pottery, is well evidenced as widely distributed across Dorset, and parts of Wiltshire, Hampshire and Somerset during the Late Iron Age, developing from earlier industries. Ceramic specialists have argued strongly, however, that production was not under 'tribal' control (Brown 1991, 44; Jones 2017, 411–12), but rather represents people in an agriculturally less-productive zone potting and trading in an agile way, perhaps on the margins of society (Sharples 2010, 171).

The industry flexibly adapted to new forms and styles from external influences, and was closely linked with trade in other products, particularly salt (Jones 2017, 409) and perhaps cured meats (Maltby 2006). Around Low Ham, however, it seems unlikely that the distribution of Poole Harbour pottery was driven by trade in salt, given the much closer briquetage sites at Badgworth, interestingly associated with 'Durotrigian' (ie Poole Harbour) pottery, and elsewhere in Somerset where briquetage was associated with SWD ware (Leech 1977b).

Around Low Ham SWD ware is apparently replaced by Poole Harbour pottery sometime in the first half of the 1st century AD (Papworth 2008b, 171). However, although production of SWD ware ceases around this time, Poole Harbour pottery has been found across south-east Somerset alongside SWD, including at the Iron Age settlement at Low Ham. Indeed, Tabor suggests that this replacement took place in the mid-1st century BC at Bowdens Lane Quarry (Tabor 2023; Fig 9.3). The cessation of production of SWD might almost as easily be associated with the Roman conquest as with Papworth's suggested pre-conquest Durotrigian takeover of the region, if, of course, there is in fact any need to associate this change with historical events. It may simply be that the potters of the Poole Harbour area came to dominate the trade in the region after SWD production ceased for local reasons. Dating the transition is difficult, and it need not necessarily be understood through a 'competition' model; instead, potters from the Poole Harbour area may have met a need after the ending of SWD production, building on existing links with communities in the region and increasing connectivity demonstrated by the adoption of South West British coinage. It is also important to remember that in all the assemblages mentioned from the area and period, local wares dominate; while imported regional wares are undoubtedly of significance, they are not the only ceramic media for the articulation of identity.

Funerary rites in south Somerset in the Late Iron Age are difficult to define because of the limited archaeological record. In the latest Iron Age, three inhumation burials in 'Durotrigian' style, ie crouched, and furnished with Poole Harbour pottery, have been excavated at Sigwells and Eastcombe Farm (Papworth 2008b). Little other evidence supports the hypothesis of influence on funerary culture from communities to the south-east of Somerset, so the individuals at Sigwells and Eastcombe Farm hardly testify to a widespread funerary tradition; most people in the Low Ham area in the Late Iron Age appear to have been treated in an archaeologically invisible way post-mortem (although note the unusual Middle Iron Age crouched and furnished pit burials at Dibble's Farm; Morris 1988).

Having explored the evidence for the 'Durotriges' in the Low Ham area, it is clear that, if there was any Late Iron Age political unity between the region around Low Ham and communities to the south-east, it was at most a fairly tenuous link. The distribution of coinage demonstrates a decision, whether by negotiation or coercion, on the part of communities in the Low Ham area to join in with others using South West British coinage. However, die studies from elsewhere in the region demonstrate subregional minting, suggesting that there may be a comparable subregional minting authority in the south-east Somerset area. Indeed, the Roman subdivision of the *Civitas Durotrigum* into southern and northern parts, with the northern potentially named for the 'people of the marshes', may hint at a continuing recognisable differentiation in community identity between these areas, although this argument of course entails the pitfalls of retro-projection from the Roman period discussed earlier. A small number of 'Durotrigian' style burials from south-eastern Somerset demonstrate interaction between these communities and those in Dorset, as does the eventual replacement of SWD pottery with Poole Harbour pottery, and occasional presence of Kimmeridge shale objects (Sharples 2010). In summary, while there is little doubt that communities from Dorset interacted with those in the Low Ham area in the Late Iron Age, this is hardly surprising given their proximity, and there is evident diversity and differentiation in landscape use, settlement morphology and material culture that implies that the communities of south-east Somerset were not 'Durotriges' in the same way as those in Dorset.

The changes discussed above regarding facets of life in the area around Low Ham also need to be contextualised within the broader picture of relatively slow change to many aspects of life in this period across the region. The Late Iron Age saw a gradual intensification in agricultural production across much of south and central Britain (Cunliffe 2004; Van der Veen and Jones 2007). This is less visible in this region than elsewhere in Britain, but becomes evident when, rather than looking for intensification at individual settlements, we consider the overall numbers of settlements known, especially alongside the woodland clearances suggested by pollen evidence from Glastonbury Lake Village. There are many more Late Iron Age settlements known from this region than Middle or Early Iron Age settlements; Low Ham's roots in the later part of the Middle Iron Age are unusual. This is unlikely to be a function of investigation bias, given that most of the known sites are from developer-funded archaeology. It may be partly due to the

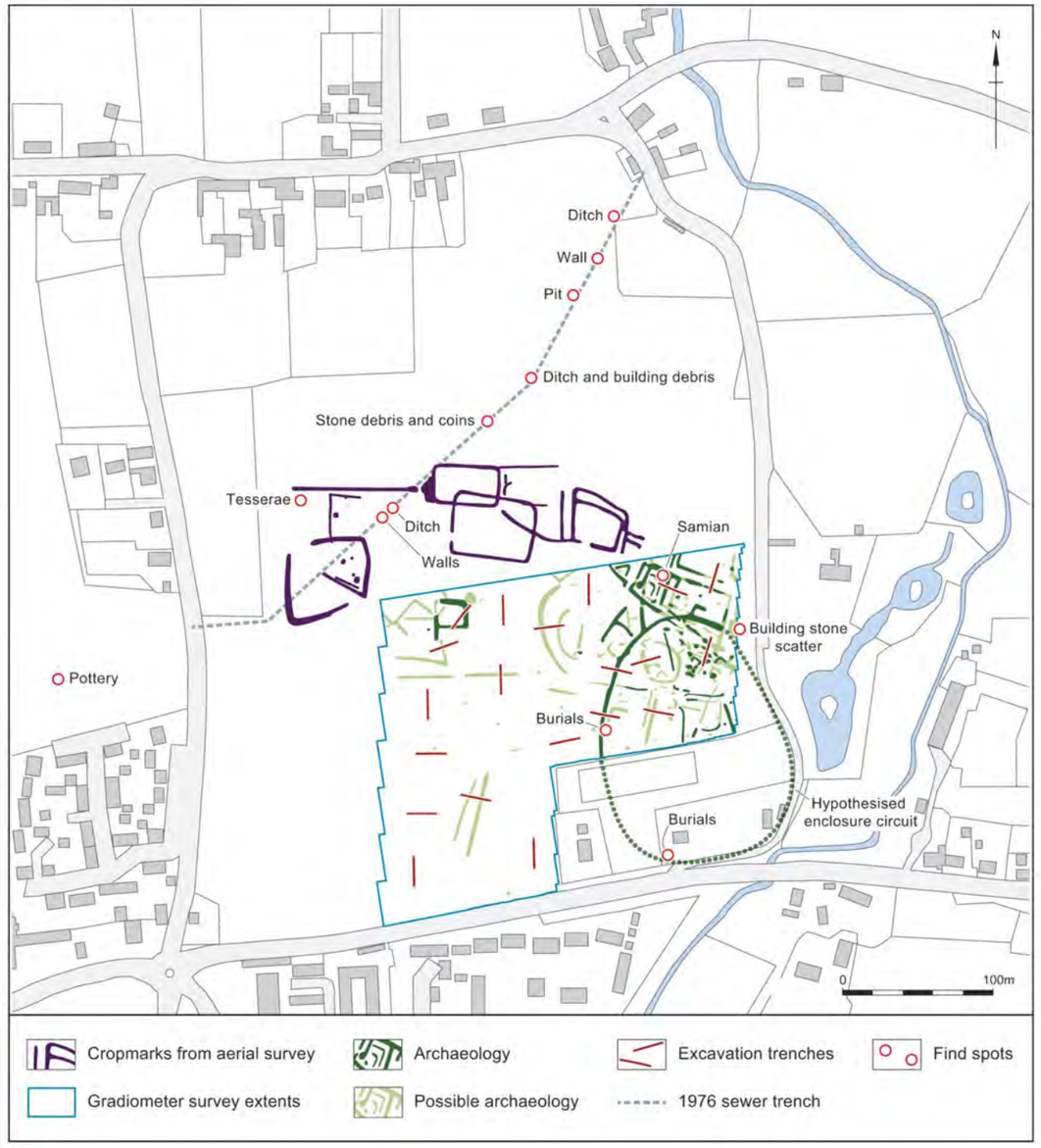


Fig 9.4 Prehistoric and Roman enclosures at Wearne, based on Leech (1976), Robinson (2020) and Barber (forthcoming) (John Vallender, Historic England)

somewhat greater durability of Late Iron Age pottery and more widespread use of metal artefacts, but these are relatively marginal factors. The broad trends are for increased settlement (and perhaps therefore increased population), and increased connectivity in comparison to earlier in the Iron Age. Around Low Ham this may have been a process of extensification of agriculture as much as intensification. Some people in the region began to use coinage at this time, perhaps in order to better facilitate exchange, on whatever basis, with those to the south and east. While coinage probably represented a store of wealth and prestigious objects rather than currency, like other parts of Britain the influence of the Roman state in Gaul evidently placed new pressures on communities of the Low Ham area, if indirectly, given the evidence of the decline in quality of coinage and its apparent export as bullion in Roman weights (Ghey and Talbot 2022, 20–21).

Summary

In the century or two prior to the Roman conquest, the settlement at Low Ham was one of many dispersed across the higher land around and beyond the wetlands of the region. Like others, its people farmed arable crops, raised sheep, cattle and pigs, and perhaps utilised nearby wetlands seasonally for grazing and the gathering of other resources such as reeds, or exchanged resources with communities closer to the wetlands. Wood was garnered both from hedgerows and more established woodlands. Unlike many contemporary settlements, Low Ham does not appear to have been enclosed. Social organisation is extremely difficult to discern; it has been suggested that being unenclosed indicates alignment with larger communities, through the removal of the boundary, a symbol of independence (Sharples 2010, 78). However, this model does not fit, as many of the surrounding settlements of similar size are enclosed, and it seems unlikely that Low Ham in particular should have such a wider allegiance. It may be that Low Ham's slightly earlier establishment in comparison to its Late Iron Age contemporaries is reflected here. Otherwise the site appears typical of the small farming settlements common in the period and region. The trajectories of change from this period to the Roman conquest are clear, but there is little sense from Low Ham's structural or material assemblages that the site's population was closely bound to these wider shifts, without evidence of higher-status lifeways. However, this would change significantly after the conquest, and it is important to be aware that such apparently dramatic changes at Low Ham were underpinned by longer-term shifts in its wider social and material landscape.

10 The Low Ham Villa

David Roberts, Roger H Leech and Rachel S Cubitt

This chapter will draw together the research presented in previous chapters to discuss the history and development of the Roman villa at Low Ham and place the villa structures in their social context. The villa consisted of four principal ranges on all four sides of a roughly rectangular courtyard angled at 45 degrees to the cardinal points (Fig 10.1); these four ranges or groups of buildings will therefore be referred to as the north-west, north-east, south-east and south-west ranges (a similar terminology has been adopted in describing the buildings ranged around the great courtyard of the villa at North Leigh, Oxfordshire; Wilson 2004).

The following discussion will consider the early phases of this part of the site, then discuss in turn the south-east, north-east, north-west and south-west ranges. The south-west range will be discussed last because its structural sequence has already been described at length in Chapter 3.3, and because it is the most complex of the ranges in terms of excavated evidence. The other ranges will be summarised room by room where this is possible. All measurements will be given in the form *x*m NW–SE by *x*m NE–SW unless specified otherwise and in all cases are the maximum internal dimensions assuming a rectangular or square form. More detail will be given if room forms are more complex.

During this discussion considerable emphasis will be placed on the geophysical evidence, which is the only evidence for much of the villa beyond excavation; although cropmark evidence has been vital in the history of the villa's investigation, it effectively adds no details that are not present on the geophysical survey results (see Chapter 5). We have made considerable effort to interpret the geophysics results carefully. Where investigated through excavation at Low Ham, negative magnetic anomalies in general appear to correspond to walls, as they do elsewhere. Positive magnetic anomalies have been found, as expected, to correspond to ditches, but also to robbed-out wall lines. Ground-penetrating radar (GPR) results have also added considerable detail to our interpretation of the villa. Necessarily, this chapter moves beyond the interpretations presented in Chapter 5 to provide a more speculative attempt at clarifying a plan of the villa structures from the often-complex geophysical responses. The general principles underlying this have been to work from the excavated evidence, and never to hypothesise a wall or structure where there is no geophysical or excavation evidence to do so. However, in parts of the plan produced, walls are projected linking lengths of wall that do not join on geophysical evidence, in order to produce a coherent structural plan, albeit one where there are several areas of clearly multiphase successive lines of walls. There is thus a distinction in Fig 10.1 between excavated walls (shown in green), posited walls which directly correspond to geophysical anomalies interpreted by us as structural remains (purple), and projected walls (pink), which join either excavated or posited walls. This level of informed speculation is of course unsatisfactory, but we hope that its necessity is appreciated in order to provide an overall interpretive account, rather than disconnected descriptions of the excavated evidence. All interpretations in this chapter are the work of Roberts, Leech and Cubitt, and any potential misinterpretations of the geophysical survey evidence should not be considered to reflect whatsoever on the authors of Chapter 5, but solely on the authors of Chapter 10.

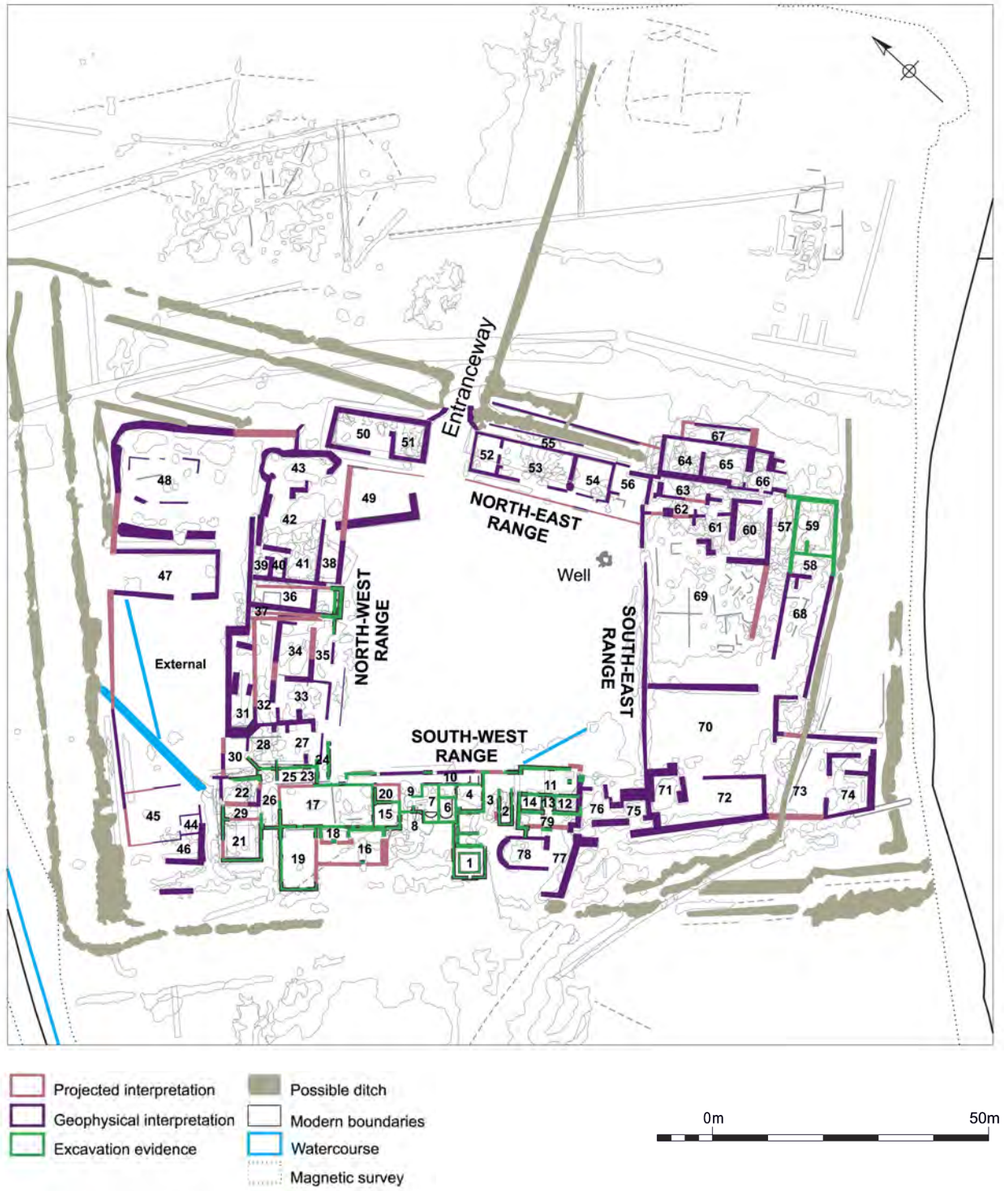


Fig 10.1 The four ranges of the villa arranged around the courtyard, with different types of contributing evidence noted. See text for further explanation (Penny E Copeland for Historic England)

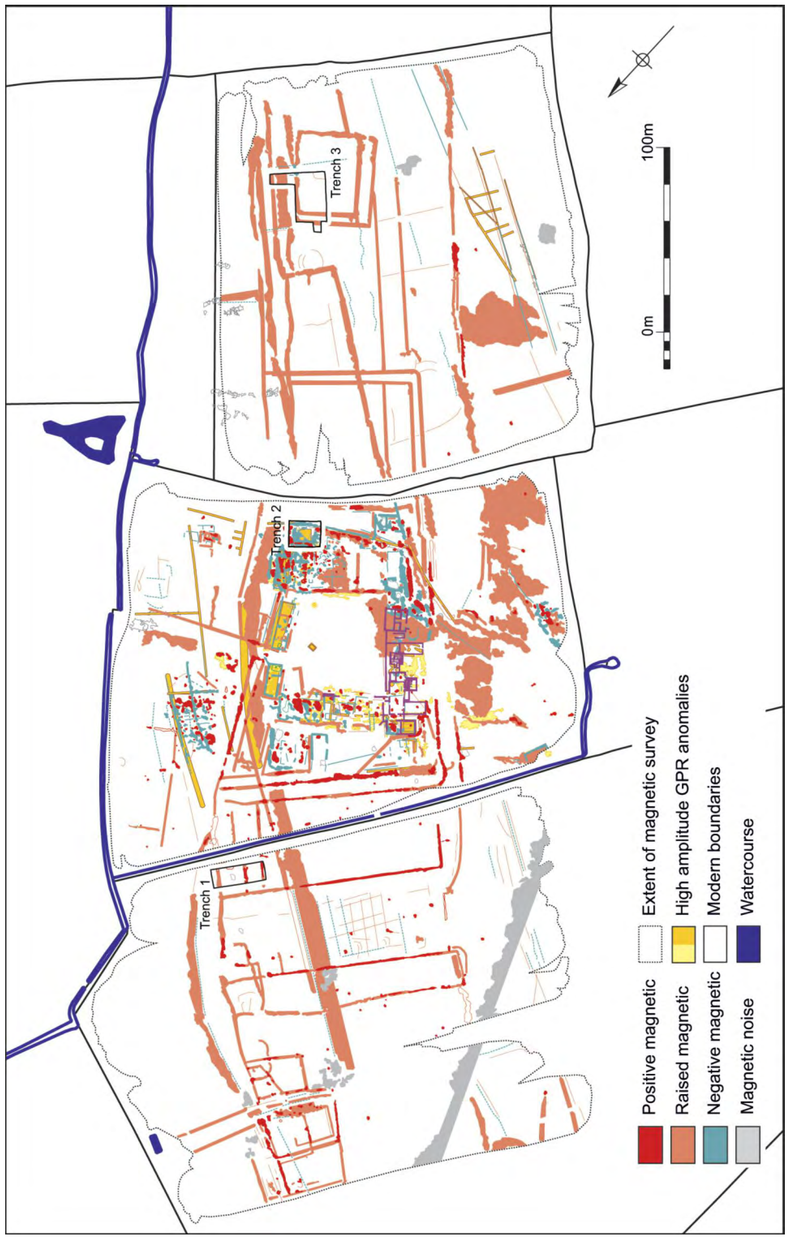


Fig 10.2 The parallel enclosures set between the two trackways running adjacent to the Low Ham Rhyne: [**m14**] containing the later villa courtyard and [**m31–33**] (see Chapter 5) (Andrew Payne and John Vallender, Historic England. (c) Crown Copyright and database right 2025. All rights reserved. Ordnance Survey Licence number 100024900)

10.1 Pre-villa occupation and enclosures contemporary with the villa

The geophysical surveys (Chapter 5) do not show any evidence of earlier features in the landscape on the direct site of the villa, although the villa may of course have obscured or removed such features. The villa courtyard and the enclosures to the north appear to have derived from a reorganisation of an earlier landscape, overlying or cutting through an earlier trackway or linear boundary [**m30**]. This trackway was possibly just one element of the more extensive earlier landscape, which included the early to mid-Roman activity excavated in Trench 1 (Fig 10.2; see Chapter 6.1), which itself succeeded the Middle to Late Iron Age settlement discussed in Chapter 9.

It is possible that the earliest elements of the villa complex were contemporary with or at least established during the existence and use of trackway [**m30**]. It is very likely, however, that [**m30**] had gone out of use by the mid-3rd century AD, as the enclosure ditches that cut [**m30**], where excavated in Trench 1, had been established and begun infilling by then, although the stratigraphic relationship with [**m30**] was not within Trench 1. Activity within these enclosures had begun by the third quarter of the 3rd century AD, as demonstrated by radiocarbon dating within the excavated flue. Crucially, however, the flue incorporated large architectural stone in its fabric. As such, the villa's earliest elements must predate the flue.

The north-west–south-east trackway that succeeded

[**m30**] is represented on geophysical survey results by several lengths of ditch, with evidence of repeated recutting and realignment in front of the villa, and in front of the rectilinear enclosure excavated in Trench 3. The trackway ditches were not repeatedly recut where excavated in Trench 1, although molluscan evidence demonstrated that they were seasonally wet and contained vegetation such as sedge. This is likely to be at least in part due to their location 1.5–2m lower than [**m30**], placing the trackway on the very cusp of the Rhyne's natural floodplain. However, the placement of enclosure [**m25**] and geophysical suggestions of structures [**m21**] and [**m22**] in the base of the floodplain surely imply that at least some degree of drainage of the floodplain was undertaken in the Roman period, given the alignment of these features with the villa enclosures and trackways. The molluscan evidence from Trench 1, and experience of excavation on the site in winter, suggest that such projects must have been a constant battle against natural hydrology and required considerable investment of resources. The wider approach to and immediate landscape context of the villa is discussed at length in Chapter 12.

North of the villa, aligned on the north-west–south-east trackway and the enclosures containing the villa (see below), are three long enclosures with subdivisions close to, and parallel with, the trackway. Based on the evidence from Trench 1 these were agricultural work areas relating to crop processing and animal management. Trench 1 is not necessarily representative of its neighbours, however, with a striking chequerboard pattern of geophysical anomalies [**m35**] in the neighbouring enclosure potentially representing an intensive area of cultivation, horticulture, arboriculture, or even an attempt at viticulture.

Further north-west is a series of smaller rectilinear enclosures fronting onto the trackway, and subdivided by a perpendicular trackway, with the first small enclosure apparently cutting across or being cut by the trackway end of the north-westernmost long enclosure just discussed. These are reminiscent of the settlement enclosures at Catsgore (Leech 1982a), although do not appear to contain stone structures; however, only magnetometry was conducted in this area, and this technique did not give any indication of the extensive stone rubble spread, slabs or flue in Trench 1. As such, there may well be small stone structures within these enclosures. Although only four enclosures are visible on the geophysical survey results, the survey area ended at the edge of the north-westernmost enclosure. There may therefore be further enclosures in that direction, towards the modern farm. This area is probably where some of the people who undertook work in the villa's immediate vicinity lived.

The villa itself was located fully or partially within three concentric enclosures. These were probably successive in date, expanding to contain the villa during phases of enlargement while maintaining the same overall form – a trapezoid with the longer of its (broadly) parallel sides fronting onto, or comprising, the ditch of the north-west–south-east trackway. The main change in morphology is that the latest enclosure extends significantly further south-east and appears to be double-ditched. The innermost enclosure appears to have been overlain by the outer parts of the north-west wing (although these may be an external wall; see Fig 10.5), and the north-easternmost and southernmost parts of the south-east wing. Although the ditches of the innermost enclosure appear to continue to meet the ditches of the north-west–south-east trackway, there are also hints that an enclosure ditch formerly turned slightly further upslope from the trackway, with partial ditches visible as magnetic responses aligned approximately with the inner (courtyard) face of the north-east wing. Neither of the outermost enclosure ditches around the villa appear to be cut by villa structures, so it seems that this double-ditched enclosure was created in a single phase.

10.2 The south-east range

The south-east range (Fig 10.3) will be discussed first for two reasons: firstly, the 2018 excavations have provided the best evidence of dating and sequence from the site; secondly, it shares its alignment with Building 1, the most southerly building of the south-west range, indicating a sequence of construction that will provide a good starting point for understanding the development of the four ranges around the courtyard.

Survey and extent

The south-east range is known both from geophysics and excavation, Trench 2 being positioned at the north-east end and providing the only well-recorded stratigraphy, dating evidence and phasing from the villa. The rooms identified in Trench 2 have the earliest confirmed date of any structure within the villa complex and thus prompt questions as to how early other parts must begin, although of course the relatively early date is primarily because of better stratigraphic recording and finds retrieval than that of the 1940s excavations.

Room-by-room account

The earliest room from the 2018 area of excavation was Room 57, onto which later walls butted. The north-east

Fig 10.3 Phasing within the south-east range (Penny E Copeland for Historic England)

wall of Room 57 is on geophysical evidence aligned on the north-east exterior walls of the buildings of the north-east range and likely, together with intervening structures, constituted the external wall of the villa courtyard. As such it appears likely that these structures are contemporary, although this is not proven. An alternative phasing might see the clusters of rooms around Room 17 (see below) and Room 57 as contemporary separate

structures, with Room 57 influencing the placement of the north-east range in alignment with it at the point of the courtyard's creation.

The long side of Room 57 adjoined other rooms prior to opening onto the courtyard. From our interpretation of the geophysical evidence in light of the excavation data from 2018, it appears Room 57 was a broad corridor, with a large room (Room 60) to its north-west and two further small rooms, Rooms 61 and 62, and corridor, Room 63, adjoining the north-east wing. The north-east wall of Room 63 is aligned with the north-east walls of Rooms 57 and 59, and the north-east wing. To the north-east of Room 63 is an apparent later addition to this wing's north-east end, a long building (21m × 10.5m) subdivided into two fairly large square rooms, Rooms 64 and 65, with smaller rooms to the north-east (Room 67) and south-east (Room 66). This building is very likely to be the same later phase as the building formed of Rooms 52–55 and the wall beyond, and associated additional walls at the courtyard entrance.

To the south-west of this more complex north-east end of the south-east wing, is a large walled area, divided approximately two-thirds along its length by a cross-wall. The villa plan interpreted from the geophysics does not convey the difference in activity within these zones, as only selected structural features have been abstracted from this for reasons of clarity (see Fig 5.2). The north-east part of this central area of the south-east wing (Room 69) contains a dense array of magnetic anomalies and responses, some of which are almost certainly further subdividing walls and some of which appear to represent broad spreads of material (although not analogous to the industrial spread of material excavated in the area of Room 59, as Room 59 contains spreads of both strongly positive magnetic and negative magnetic material, whereas this area appears to contain only strongly positive spreads), and other features that could be interpreted in several different ways. It is at least clear that this area was intensively used and is likely to have a reasonably complicated stratigraphic sequence. Both Room 69 at 20m × 21m and Room 70 (the area to the south-west of the subdividing wall) at 23m × 15.3m would have required internal posts to support a single, roofed interior space. In contrast to Room 69, Room 70 is devoid of geophysical anomalies from either magnetic or GPR data, and as such is unlikely to have seen industrial activity and probably did not have an *in situ* solid floor; it may have been a subsidiary courtyard.

The posited wall of the south-east wing fronting onto the courtyard, and the subdivision between Rooms 69 and 70 discussed above, appear from geophysical data to have been robbed out along most of their length. While negative magnetic anomalies (almost certainly *in situ* walls) are present at either end of the courtyard frontage wall of the south-east wing, the central part of the wall line provides a positive magnetic response, elsewhere indicative of ditches.

The corridor of Room 57 appears to continue until just short of the end of Room 69 and has a long, rectangular room (Room 68) to its south-east side, adjacent to Room 58. Room 58 was defined, although not excavated beyond a small sondage at its north-east side, extending south-east from the south-east side of Room 57. Later robbing meant that the relationship between these rooms could not be confirmed, but both were stratigraphically earlier than Room 59, which filled in the right angle between Rooms 57 and 58. Because of later restructuring there is no evidence of the internal decoration of Room 57, but the furthest south-easternmost wall of Room 58 was decorated on both sides with white plaster, albeit a functional render, possibly to smooth out the wall face, rather than decorative fresco. As such, this period of decoration must have been contemporary with Room 59, as otherwise this plaster would be external. While external rendering is known from villas in Britannia, one would expect variation in composition between internal and external plaster, therefore here we assign this episode of decoration to a period where both sides of this wall were internal spaces.

The extension of the wing by the construction of Room 59 indicates building up to the boundary formed by ditch [91024]/[**gpr31**]. This may be the final stage of gradual structural infilling of the space behind an existing range of buildings, of which Room 57 marked the south-eastern extent, based on the geophysical evidence discussed above. Ditch [91024] was at its earliest contemporary with villa construction, although repeatedly recut on a similar alignment after the Roman period. It may have functioned as a drain down the hillside from the spring, with the curving form of the ditch drawing off flow from upslope of the villa, behind the south-west range, possibly with a branch supplying the baths, and channelling water alongside the south-east wing and beyond to the ditches of the trackway running across the villa frontage.

Notably, geophysical survey indicated that there were further structural remains [**m18**], which appear to cut across ditch [91024], placed so as to face into the remaining part of the double-ditched enclosure that surrounded the villa as a whole (discussed further below as possibly the garden of the villa). Here these rooms are defined as Room 73 (a large 11m × 13.5m rectangular room) and Room 74, a smaller room or rooms with internal features on magnetometry survey results. These rooms take the alignment of their rear south-west wall from Rooms 72 and 71, which form the south-west end of the south-east range. Room 71 has a magnetic response covering its entire floor area suggestive of heating, but its function is unclear.

Summary

The south-east range has some clear phases of development at its north-east end identified in the 2018 excavations, which can to some extent be extrapolated to the remainder of the wing, although this is least secure at the wing's opposite end, where it meets the south-west wing.

The earliest part of the wing from established excavation evidence is Room 57, a corridor linking a complex of rooms at the wing's north-east end (Rooms 60–63) with rooms to the south-west. This is likely to have been established at the same time, or before, Room 58. Room 57 may have been established contemporarily with, or after, Rooms 60–63. If contemporary, only the north-easternmost half of this corridor is likely to have been present at the time, matching the length of Room 60. If Room 57 is later, the earlier structure is likely to have been a very simple building comprising Rooms 60 and 61 only, and perhaps the south-easternmost parts of Rooms 62 and 63, based on alignments of other surrounding rooms with later features. Notably, Room 57 is on the same orientation as Building 1, in the south-west wing, but little weight can be placed on this given the distances involved.

Whichever interpretation is preferred, Room 57 already exists or is established in its full form when the villa courtyard is established. This interpretation is based on the continuation of Room 57's corridor alongside Room 69, which can only exist once its courtyard-facing wall has been built, and on the alignment of the exterior walls of the southern buildings of the north-east range with the exterior walls of Rooms 57 and 59, as discussed above. A single phase of significant expansion is thus posited alongside the establishment of the courtyard, also including Rooms 69–72. If Room 58 does not belong to the early building discussed above, it was established in this phase, along with Room 68, expanding to the south-east side of corridor Room 57. Room 59 is also likely to have been established in this broad phase, during which period it was initially probably a residential room, having plastered walls and a mortar floor likely to have been the base for either a tessellated or paved floor. Finds of unstratified tesserae from this trench may suggest a mosaic was formerly present, although Hayward (see Chapter 7.5) believes these are displaced from elsewhere on the site. The 2018 excavations suggest a date sometime in the 3rd century AD for this development.

Between this and the late industrial phase of activity in the former Room 59, a deep layer of soil was dumped onto the mortar floor, and the room partially subdivided by a short length of wall set into this layer. This very likely took place in the early decades of the 4th century AD based on combined pottery and radiocarbon dating evidence. The room's function is unclear, but it remained an interior space. A hearth excavated in Room 57 may be part of this period of activity, as it also precedes the more intensive industrial activity in Room 59.

The next major phase of the south-east range is one of further expansion, beyond the former limits of the villa's ditched enclosure, although these developments may not be contemporary. At the south-east corner of the range, Rooms 73 and 74 are added, possibly opening onto gardens within the newly expanded double-ditched enclosure. The other late extension to the south-east range comprises Rooms 64–67, which, like Room 56 in the adjacent north-east range, break the circuit of the long external north-east face of the villa courtyard. This large extension contains strong magnetic responses across Rooms 64–66, with weaker magnetic responses in outer Room 67. Given the close similarity of these responses to those in Room 59 we can reasonably posit that this late addition to the wing was used for significant industrial activity, although, like Room 59, this may not have been its primary phase of use.

We can consider that the major industrial activity within Rooms 64–66 probably took place at the same time as that in the former area of Room 59, where the external wall was removed prior to industrial activity commencing; the same may even have happened in Rooms 64–66. Evidence from this former area of Room 59 suggests that smithing and crop processing took place here, which is surprising given that smithing is almost always undertaken indoors (see Chapter 11.4). Perhaps archaeologically invisible wooden structures were present? Smithing debris was dumped into Room 57 onto the now disused hearth, demonstrating that any residential use of this part of the south-east wing had ceased. This period of activity is well dated through finds and radiocarbon, being established in the second half of the 4th century cal AD and continuing until probably cal AD 395–420 (see Chapter 6.2).

10.3 The north-east range

Survey and extent

The north-east range comprises two rectangular buildings with internal subdivisions, flanking the entrance way into the courtyard, with several ancillary features visible on geophysics (Fig 10.4). The presence of these structures was first noted by H Stephen L Dewar in 1955 through observation of parchmarks (see Fig 3.31), followed by limited trial trenching from which few records survive (see Chapter 3.4), and they were mapped in more detail by Leech (1978). They are also known from geophysical survey (Fig 5.2), where the easternmost is labelled [**m8**] and westernmost [**m7**], both negative anomalies. Rather than introduce further nomenclature, they are referred to by their magnetic anomaly numbers in the discussion that follows.

The outer faces of the buildings as shown on Fig 10.4 are not quite on the same alignment, with the outer corners at the entrance sitting slightly forward of the rest of the wall line, although the difference in angle is subtle.

Note that the entranceway created by these buildings is not positioned in the centre of the range, but located closer to the north-west than south-east side. If a straight line is drawn along the ditched approach ([**m5–6**], see Chapter 5) into the courtyard and across to the south-west range, the line terminates close to the corner made up by Rooms 17 and 24, where we postulate an access point at the centre of the main residential ranges.

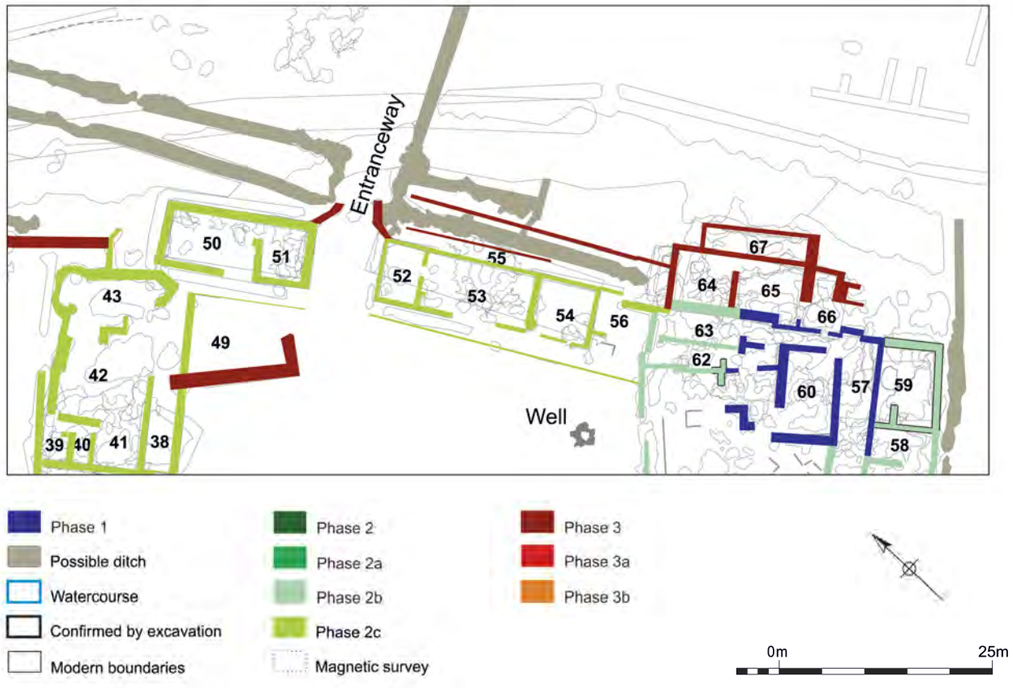


Fig 10.4 Phasing within the north-east range (Penny E Copeland for Historic England)

Room-by-room account

Building [**m8**]

Building [**m8**] was located to the south-east side of the entranceway, externally measuring 26.1m north-west–south-east by 7.8m. Geophysical survey results show that it had at least one internal division creating two, or probably three, rooms – Rooms 52, 53 and 54. This is undoubtedly the '86ft' building described by Dewar in 1955 (see Chapter 3.4) given that the dimensions Dewar gives of 86 feet by 26 feet are within a few centimetres of those measurable from geophysical survey. The extent of excavation by Dewar is unclear, although his account reveals it was relatively limited.

The structuration of the building is clearest at its north-west end, where a subdividing wall runs part way across the building to form a small room, Room 52, of 4.7m by 6.4m, within which magnetic anomaly [**m13**] has been interpreted as a fired structure (Chapter 5). A possible second subdivision of similar size, Room 54, is plausible at the opposite end of the structure, although this is a positive magnetic anomaly, and may perhaps therefore represent a robbed-out wall line. If we accept this subdivision existed, this room (Room 54) is 6.2m by 6.4m. The central Room 53 between Rooms 52 and 54 is 12.6m by 6.4m. GPR shows a badger sett obscuring some of the internal detail of this building ([**gpr1**]; Fig 5.3), although there appears to be access to the courtyard from Room 53 through a large doorway, whereas the anomalies representing the courtyard side walls of Rooms 52 and 54 appear continuous, implying their access via Room 53.

Dewar described encountering two phases during his trial trenching: a floor level of which only the lower herringbone course remained, resting on an earlier foundation of larger, roughly laid herringbone work. This may represent two phases, or simply a foundation with the wall proper set atop it. The latter appears more likely, given the very similar wall construction found in 2018 from Phase HE2.2, the earliest villa construction in the south-east range.

Within Building [**m8**], thermoremanent anomalies [**m13**] are located in Rooms 52 and 54. These are interpreted by Linford *et al* (Chapter 5) as hearths, furnaces, grain dryers or ovens. It is impossible to say whether these were original fixtures within the building or later additions; the latter is a well-known pattern from other sites and indeed demonstrated in the south-east range by the 2018 excavations. Notably, the anomaly in Room 54 is in the vicinity of the 'smithy' discovered in Dewar's investigative works of 1955 (see Chapter 3.4), although Dewar gives very imprecise location details and this feature may have been located further south-east, perhaps in Room 64, 65 or 66, given the geophysical evidence for industrial activity there.

Outside Building [**m8**] at the edge of the courtyard, a short linear magnetic anomaly parallel to the building external to Room 54, and another negative linear anomaly external to Rooms 53 and 52, may imply surviving and robbed-out foundations for a portico wall, respectively. There is better evidence for a portico elsewhere around the courtyard (especially the south-west and north-west ranges), but the evidence is insufficient to say this with any certainty. Although Building [**m8**] appears a functional structure rather than residential, the addition of architectural features to agricultural buildings within villa complexes in order to achieve an overall unified aesthetic is well known, the (externally) superficially similarly appointed *villa urbana* and *villa rustica* at Bradford-on-Avon being a recently discussed example of the phenomenon from the south-west of Britannia (Corney 2022).

Transcription of the parchmarks observed by Dewar (see Fig 3.31) and his account of his trial trenching suggested that Building [**m8**] had an outer wall sited beyond the line of the entranceway. Geophysical survey shows two anomalies parallel to the farthest wall of Building [**m8**] from the courtyard. These two anomalies represent walls based on the character of excavated features elsewhere, so require explanation. The nearest to Building [**m8**] is 2m away. Although Dewar recorded a width of 10 feet (3.04m) for the corridor, the nearer wall rather than the farther, at 5m away, seems more likely to be that seen in 1955. It is our view that Dewar is correct and this nearer wall forms a rear corridor (Room 55).

The outer parallel wall to the rear of Building [**m8**] is notable. Unlike the previously discussed elements of Building [**m8**] it lies between the two major enclosure ditches visible on this side of the villa, which are the outermost two of the three enclosures ditches forming the trapezoidal enclosure [**m2/3**] around the villa complex. If its line is extended to the west it would coincide with the spur wall running partially across the entranceway from the south-east corner of Building [**m7**]. The inner ditch of the enclosure runs directly between these two parallel walls to the rear of Building [**m8**]. If the inner ditch was infilled by the time of the outer wall's construction, this could be understood, with the spur on Building [**m7**], as the addition of an outer wall as part of a scheme to narrow and better secure the villa's entranceway and adjacent buildings. An alternative might be the reuse of this ditch as a drain for latrines at the rear of this structure in the rear corridor, with the outer wall acting as a screen hiding the drain from those approaching the villa. The aerial transcription by Dewar shows this building's overall outline as an upside-down L shape. In the latter observation, it is possible that Dewar was misled by one of the internal dividing walls into transcribing a dog-leg in the courtyard face; the geophysical survey clearly demonstrates that the courtyard face does not include a dog-leg.

At the south-east end of this building, slight protrusions visible on geophysical survey from this building, and from the north-west corner of the south-east range, suggest a 6.5m × 3.25m room (Room 56) in between these major structures.

Building [**m7**]

Building [**m7**] was an 18.0m × 7.7m rectangular structure of two rooms, located to the north-west side of the entranceway, and its full extent is apparent from the geophysical survey, and hinted at by the parchmark

evidence (Fig 3.31). Access into Room 50 (9.6m by 5.6m) is from the courtyard at the mid-point of the building's length. The magnetometry (Fig 5.2) shows an internal division, running from the corner of the entrance and with an opening towards the back wall of the building, forming Room 51 (5.3m × 6.0m) at the south-eastern end of the building. Room 51 contains thermoremanent anomaly [**m12**], which has been interpreted as a fired structure, such as a hearth, furnace, grain dryer or oven like those in Rooms 52 and 54.

The outer corner of Building [**m7**] at the entranceway features a projecting spur that may have been a later addition designed to control movement through the entranceway, as discussed below.

To the south-west of Building [**m7**] is a positive magnetic anomaly of a sort that usually corresponds to a ditch. Running from the east side of the north-east end of the north-west range on a north-west–south-east alignment into the courtyard for approximately 14m, then turning 90 degrees to run north-east for another 3m before terminating, it appears to partly enclose the northern corner of the courtyard and entrance to Building [**m7**]. This may be a robbed-out wall of a late room (Room 49) enclosing the corner of the courtyard. If the measurements on Headley Davies' plan are to be relied upon, it was in this area, close to the south-east side of the north-west range, that 'ashes' and 'pottery' were found (Fig 3.1). Immediately in front of Building [**m7**] on its courtyard side is another narrow, positive, ditch-like anomaly, interpreted like that in front of Building [**m8**] as a robbing feature relating to a portico. Notably, as in front of Building [**m8**], a short fragment of probable portico wall is visible as a linear anomaly, moreover at almost the same distance (2.70m for Building [**m7**], 2.78m for Building [**m8**]) in front of the building.

Summary

The north-east wing frames the entrance to the villa courtyard. There is no phasing evidence as to whether the subdivisions of these buildings were part of the initial build or later additions. Regardless, there is no evidence that these were part of the high-status domestic residential quarters – from either the mid-20th-century excavations, or from geophysics (for instance, there are no magnetic or GPR anomalies suggestive of hard flooring, hypocausted rooms or complex structures). As such they are probably service buildings or agricultural buildings. At Pitney, similar structures are interpreted as granaries (Applebaum 1966), although on very limited evidence. At Low Ham, these large structures certainly demonstrate wealth, and power over those undertaking work inside, but it is difficult to define their function. While thermoremanent anomalies indicate some form of industrial, agricultural or (perhaps) domestic cooking activity within the structures, it is not necessarily contemporary with their first phase.

This whole range of the complex and the adjoining south-east range may have been remodelled in the late Roman period to provide suitable spaces for metal working and the industrial features within Building [**m8**]. Alongside this, a further wall to the exterior of Building [**m8**] was constructed to constrain access to the main courtyard entranceway. Dewar did not investigate the junction of Building [**m8**] with his 'smithy', so we lack any evidence of the relationship between Building [**m8**] and the north-east end of the south-east range. However, the north-easternmost elements of that range, discussed above, also build over the line of the earlier rectilinear enclosure. As such, we may argue for a late phase of expansion of the villa's footprint to accommodate additional industrial activity being brought 'in-house' from previous activity areas in the wider villa landscape, and the addition of external walls to encircle this activity and narrow the main entranceway.

10.4 The north-west range

Survey and extent

The archaeology of the north-west range is known from the excavations of 1948 and the geophysical surveys of 2018. The north-west wing is here considered to include all structures north-east of Room 27=28 until the north-east wing (Fig 10.5). Structures beyond the main body of the wing to the north-west will also be discussed in this account. The north-west range has, as identified by Radford and clear from geophysics, two main phases of construction based on alignment and small-scale excavated evidence, with two intersecting walls in the centre of the courtyard side of the range. These comprised a wall aligned perpendicularly to the south-west range, which according to Radford was cut by a walled structure on a slightly different alignment, of which three sides of a rectangular plan form were visible in excavation, although the full extent of the room or structure was not revealed. Radford's account of the key relationship has only limited photographic evidence available to corroborate it, which does not appear to provide support (Figs 3.28 and 3.29). The wall supposedly cut by the rectangular structure appears to neatly butt both sides of the supposedly later walls. The

Fig 10.5 Phasing within the north-west range (Penny E Copeland for Historic England)

construction method of the apparently later structure is also identical to various Roman walls within the south-west wing. As such there is very considerable uncertainty regarding the key stratigraphic relationship within this wing.

The 1948 excavations were primarily concerned with establishing the extent of the villa, to inform any negotiations for compulsory purchase that would be necessary to take the site into the guardianship of the Ministry of Works (Chapter 2.2), and a brief note by Leech is reproduced below regarding their extent, and Leech and Radford's interpretation of some elements of this wing. Following this, Roberts continues the account of the north-west wing to put forward his and Cubitt's interpretation, which sees all the archaeological features in this part of the villa as Roman. We leave it to the reader to decide on the respective merits of these hypotheses, but note that no material culture of post-Roman date has been found on the site, which is surprising given it lies only a few hundred metres from a major post-medieval house, Hext House. We note too that Radford's interpretation of this as post-Roman is derived from his transcript written years after the excavation. On Radford's draft phase plan from his archive (Fig 3.2) this structure is phased as Roman, although we do not know the date at which Radford drew this plan.

Note by Leech on the north-west wing

Having taken the excavation of the villa buildings close to the boundary of the Ashwell field to the north-west, a series of exploratory trenches was extended north-eastwards and established the existence of a north-west side to the courtyard, with a corridor or veranda that formed a junction with that of the south-west range. The excavated features as recorded by Davies (Fig 3.1) were shown as a series of trenches at dimensioned intervals. Apart from the corridor wall, the principal feature recorded was the rectangular building thought by Radford to be of post-medieval date, possibly a structure 'contemporary with the great house of the Hexts' (1969, 37), known also as Netherham Manor (see Chapter 3.4). This building was also revealed by geophysical survey, but slightly differently positioned, to be explained by Davies probably having surveyed this series of trenches at right angles to a baseline along the frontage of the south-west range, leaving the survey prone to any errors derived from the absence of instrument survey and the measurements being taken across sloping ground rather than truly horizontal.

The big question to be asked, therefore, of the north-west range is what is of Romano-British and what is of post-medieval date. Following the geophysical survey interpretation, the relationship of these buildings to the avenue approaching from the south and probably leading to the great house(s) of the Hexts and Stawells (Aston 1978) may be of critical importance. Two rectangular buildings are possibly of note, one being that recorded in 1948, [**gpr19**] and part of [**m9**], the other part of the complex [**m17**], both being of similar proportions but varying in size. If both were of post-medieval date, these could be compared in plan (Fig 10.6) to the banqueting houses recorded and still surviving at Chipping Campden in Gloucestershire, garden features to the elite Campden House (Everson 1989). This might at first sight seem implausible but for the proximity of an elite Anglo-Dutch water garden commissioned by Lord Stawell in the 1660s just *c* 450m to the north-west (Aston 1978; Cattell 1996; Fig 3.31), one of the most remarkable Renaissance gardens in Somerset. It is possible that these rectangular buildings situated on the hillside overlooking Stawell's great house were part of that same elite landscape, with structures deliberately placed over features of antiquity.

Room-by-room-account

The first major block of buildings to be discussed in this wing is that aligned with the north-east side of Room 27=28, the apsidal room discussed as part of the south-west range below. One long wall runs north-east from Room 27=28's north-east corner, continuing (mainly projected) for 18.5m to meet the line of the wall excavated by Radford to the south-east. Room 31 is to the north-west of the former wall, and appears to be a corridor or long room running along the rear of the range, connecting to Room 30 and providing access around the rear side of Room 27=28. To the south-east of Room 31 is Room 32, the overall form of which, like rectangular Room 33 to the south-east of it, is difficult to determine because of the intersection here of wall alignments belonging to the other main phases in this wing. The south-easternmost wall on this alignment with Room 27=28 is that bounding Room 24 of the corridor in front of Room 27=28, where it was recorded by Radford as having a 'rough unpatterned mosaic pavement' (1948b, 142). While Radford's plans project this line to meet the earlier of the two walls revealed in the small central area of the north-west range excavated by him, these are not actually on the same alignment. Close examination of the geophysical survey data in fact suggests that both the later and earlier walls in the central part of the wing align more closely with the wall between Rooms 23 and 24 than the external wall of Room 24. As such, it is

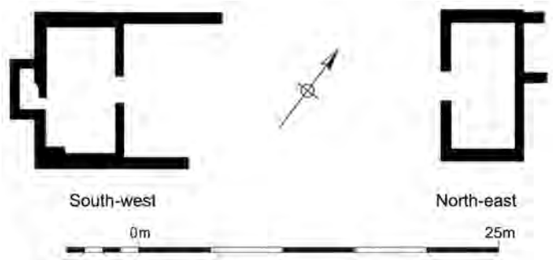


Fig 10.6 Plans of the banqueting houses at Chipping Campden, to compare with Radford's possible post-medieval Room 36, and structures 47 and 49, all shown on Fig 10.5 (Penny E Copeland)

impossible to chart the development of the frontage of this part of the villa in detail.

The second major block of buildings in this range to be discussed are those aligned with the structural remains interpreted by Radford as later; whether later Roman or post-Roman, these form the majority of the wing. The south-westernmost walls on this alignment are those narrow magnetic responses aligned between Radford's later wall parallel to the courtyard, and the wall between Rooms 23 and 24. Importantly, Radford's plan (Fig 3.2) and a photograph (Fig 3.29) show the south-west end of that wall at the end of Room 36 terminating, militating against it being part of a frontage; however, the magnetic anomalies on its alignment are intermittent, suggesting a wall with gaps in it. Perhaps Radford's corner is in fact a doorway in the villa's frontage? The walls suggested by geophysical responses can here be suggested to form a narrow corridor Room 35, facing onto the courtyard, with larger Rooms 34 and 33 to the north-west and west of Room 35, respectively. These interpretations are necessarily tenuous, given the overlapping structural phases and lack of direct excavation evidence.

Also on this alignment is the room thought by Radford to be late, here designated as Room 36, and 'Room' 37, assigned to the narrow wedge of space cut off between Rooms 32 and 36. To the north-east of Room 36 geophysical survey clearly shows several co-aligned rooms, with Room 38 forming a corridor along the courtyard frontage to meet the north-east wing (later the frontage of this room may be obscured by Room 49, discussed in the north-east wing above). To the north-west of Room 38 is a group of rooms, defined here as Rooms 39, 40 and 41, small rooms adjacent to Room 36, and Rooms 42 and 43. These latter are larger, Room 42 being approximately 8.9m × 10.0m. Room 43 had an unusual structural morphology at its north-eastern end, also the north-eastern end of the wing, incorporating two rounded niches at either side. It is unclear what parallels for this can be found in similar villas.

A spur of wall emerges from the north-eastern end of the range, and joins onto a large wall, turning to encircle an area the length of the range and to join Room 45, discussed as part of the south-west range below. Approximately a third of the distance along this wall, partly demonstrated by geophysics and partly projected, is an indented rectangular structure open on its north-western, external, side. This bears a striking resemblance to the western side of Pitney I (Hoare 1832), where a similar indented walled space opens onto an open area behind the villa's main residential wing. This appears likely to be an entrance structure, controlling external access to a private area behind the villa. Given the wall, it is tempting to interpret this as a more private outdoor space than the posited gardens to the south-east of the villa. The walled area is open to the south-west of the possible entrance structure, but to the north-east contains an additional structure, [**m17**], defined here as Room 48. An 11.5m × 8.5m area defined by narrow walls showing only intermittently on geophysics, Room 48 is framed on its north-east and south-west sides by positive magnetic anomalies. In Chapter 5 this is interpreted as a possible shrine or garden courtyard, and that interpretation is followed here.

Summary

While the division of this wing into two phases of slightly differently aligned structures is clear, the minimal investigation and ambiguous records of the key stratigraphic relationship discussed above render sequential phasing difficult to confirm with any confidence. Here, we accept Radford's phasing, which suggests that the wing was realigned to complete the courtyard, but with further complexities at its junction with the south-west range. These will be discussed in the following section relating to the posited early room in the area of later Room 27=28. Whether Radford's stratigraphy is correct or not, the possible walled garden and associated features to the rear of the range were likely added either contemporarily with, or after, the later of the two main phases of this range.

10.5 The south-west range

The buildings that made up the south-west range have already been discussed in Chapter 3.3, incorporating the interpretations of Radford, Leech and Cubitt to provide a descriptive account of the results of the mid-20th-century excavations at Low Ham. Detailed references to Radford's account are not given in this chapter: the reader is referred to Chapter 3.3. In this wing, as in Chapter 3.3, cardinal directions are used following Radford's convention with a 'site north' to the northernmost part of this range, and a north–south axis running the length of the range.

The south-west range is the most extensively investigated part of the villa (Fig 10.7) and has been published in part in various prior accounts, none of which drew on or necessarily had access to the archives investigated by Leech and further described by Cubitt in Chapter 3.3, or the personal materials given to Leech by Radford. As such this may be considered the fullest account of the range to be published. Nevertheless, the absence of key aspects of recording, limited photography, the number of plans and sections available, and non-retention of what was almost certainly the significant majority of the finds assemblage from the wing, curtail our evidence and interpretations. The known excavation circumstances at Low Ham may well mean that earlier occupation layers remain *in situ*: only certain rooms excavated in the 1940s were examined in detail and the latest floor encountered was left in place (Leech 1977a, 106).

Radford's interpretative account (1969; Appendix C) can be rejected, on the basis of specifics discussed at various points in Chapter 3.3, but principally because no evidence was provided for the dating of his successive phases, nor was any evidence explicitly offered for the proposed earliest timber phases beyond Building 1, and insufficient note was taken of the relationship between Building 1 and the outer wall of Room 10 that abutted it. An alternative account of the south-west range will be discussed here, in the context of the geophysical survey and alongside the research undertaken for Chapter 3.3. For this range, full descriptions of the various rooms and groups of rooms are provided there. Figure 10.8 illustrates our proposed phasing of this wing.

Survey and extent

The south-west range for the purposes of this account is considered to run from Room 75 in the south to Room 45 in the north, the span of which is approximately 95m. The maximum overall length of the rooms on this side of the villa, including rooms assigned to the south-east range, is approximately 135m. This discussion will also include Rooms 24 and 27=28 as, although these are strictly in the north-west wing, their excavation by Radford means that they are more usefully interpreted in this section.

Room-by-room interpretation

There are several elements of the south-west range that can be considered earliest in their own sequence, but the lack of artefactual dating for any of these early elements prevents them being dated in absolute terms, and this is compounded by the lack of clear stratigraphic recording in the 1940s work. Chapter 3 set out at length the source material for this wing, and described the evidence deduced by Cubitt and Leech (Chapter 3.3) from the work of Radford and others. This discussion by Roberts

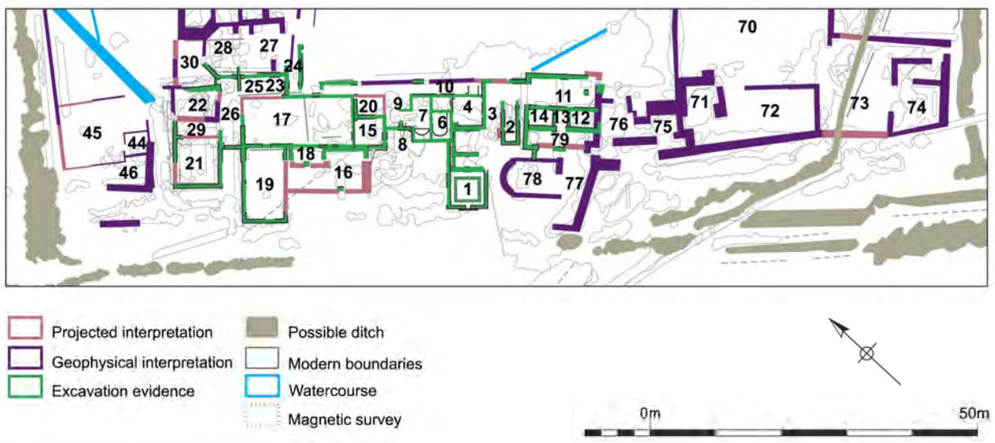


Fig 10.7 Detailed image of the contributing evidence for the south-west range (Penny E Copeland for Historic England)

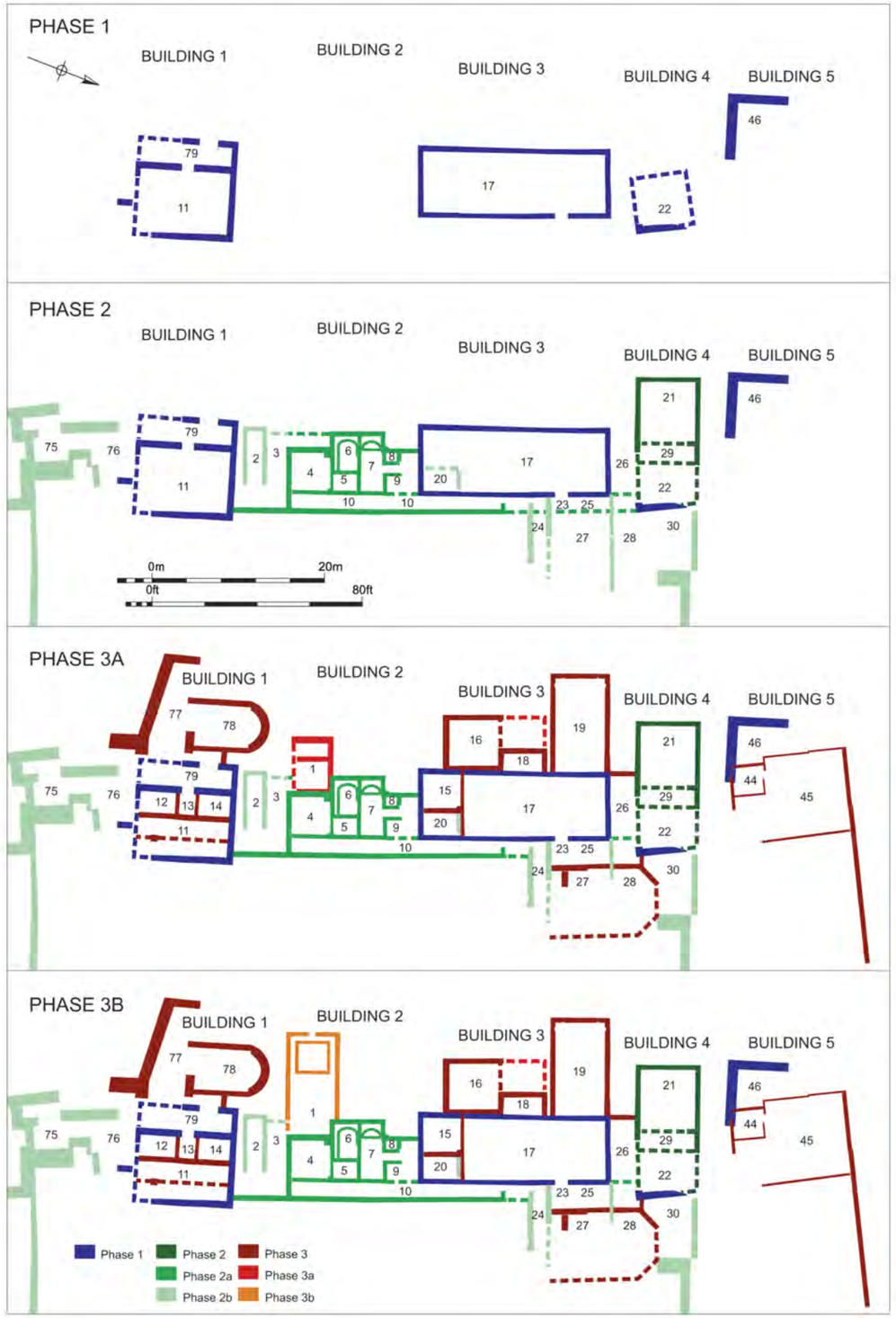


Fig 10.8 Diagram showing the sequential phasing of the south-west range (Penny E Copeland for Historic England)

will not reprise this, but instead will provide an overall interpretive account of all rooms, working in order through the buildings identified as useful units of analysis within the wing by Radford, Leech and Cubitt.

Building 1

In the south of the wing, a timber building, evidenced by a single sill beam recorded by Radford, is deemed the earliest feature. This is on a wholly different alignment to the main villa and stratigraphically earlier than Building 1, and is therefore definitively earlier than both the villa in general and Building 1 in particular. It may parallel the potentially beam-built structure in Trench 3, which was dated to the early Roman period but continued, with some reworking, until the mid-Roman period.

The possible timber structure and associated gravel spread were succeeded by Building 1, a square structure terraced at various levels into the slope, with additional unexcavated rooms to the south-east (Room 76, and possibly Room 75, although this may be later infilling). After the external walls, the north–south wall dividing Room 79 and Rooms 12–14 is earliest, possibly as it performs a partial terracing function. In its early form Building 1 is essentially square, with a 10.0m × 7.5m room to the east (encompassing the future area of Rooms 11–14), and a 10.0m × 1.6m corridor-like Room 79 to the rear. The large room was later subdivided into Rooms 11–14, at least some of which were ornamented with plaster and stone-flagged floor but not mosaics. An underfloor drain was present in Room 77 but it is unclear where this ran to or from.

Radford posited that Room 11 had a front wall inside the veranda comprising a screen of columns (1969, 40), but there is little evidence for this, although the wall he posited as a base for this is present and would divide Room 11 north–south in approximately half if it continued to the limits of the room. Here, this is interpreted as a full-height wall; the use of higher-quality Ham stone blocks for the frontage of this room speaks to its importance. Wright (1949, 109) refers to Room 11 as being provided with a series of small cubicles in the back and side walls (i.e. the indoor, western half). A speculative interpretation of these will be posited in Chapter 10.7. The eastern half of Room 11 was an open veranda, reached by steps and with four large masonry blocks at intervals jutting inwards and supporting wooden posts. The four 4th-century AD coins recovered from a layer between two floors within Room 11 date the restructuring of Building 1 to after AD 335.

Building 1 was also extended to the rear to allow access to apsidal Room 78, through Room 77, which also appears to extend beyond the entrance of Room 78. This raises the possibility that there was more generally some form of external walled area, given the presence of the hypocaust furnace in this zone, to the west of the south-west wing, hinted at by the gap in the rear wall of Room 1, and indeed, depending on how extensive it may have been, the doorway to the west side of Room 26. However, Radford's excavations did not extend upslope beyond Rooms 1 and 19, and geophysical survey in this area was limited by a badger sett.

Building 1 in its simpler form is deemed early in terms of site phasing, for two reasons. The first is that it is butted by the external wall of Room 10, the corridor facing the courtyard, and as such demonstrably pre-dates the courtyard. The second is that its alignment differs from the remainder of the south-west wing. It is likely that Building 1 was an earlier freestanding structure, later incorporated into the courtyard, and then redeveloped into a higher-status space. Radford's identification of Building 1 as a temple, repeated throughout his work (see Fig 3.2 for an example), does not find support in any artefactual or structural evidence from excavation or elsewhere. The square form of the building, paralleled by the square external walls of so many Romano-Celtic shrines as published by Lewis (1966) at the time Radford was writing, may have prompted this interpretation. None of Lewis' examples, however, has internal cross-walls like Building 1.

Building 2

Building 2 is the villa's bath suite and contains multiple phases, the earliest of which is the block of Rooms 4–9 (Fig 10.8).

This group is a well-appointed bath suite, initially comprising a small anteroom, Room 5, Room 6 being the *tepidarium* (warm room), Room 7 the *caldarium* (hot room), while Room 4 may have provided a *frigidarium* (cold bath) and/or *apodyterium* (changing room). This block of rooms is likely contemporary with the corridor (Room 10). Rooms 2 and 3, to the south, were added after this initial block, because of the general alignment of their west walls with those of the established bath suite during this phase (the elongated Room 4 or second room beyond assumed to be part of the initial block also on the basis of wall alignment). These rooms probably provided a latrine (Room 2) and an additional or extended *apodyterium* (Room 3). A doorjamb deduced by Leech to be located at the east of the wall between Rooms 3 and 4 would indicate two separate spaces, although Radford may be discussing the wall between Rooms 2 and 3. If so, the ruined nature of the east–west wall between Rooms 3 and 4 may indicate its removal to provide an extended *apodyterium* rather than an additional one. The line of any inner wall of the corridor across the east side of Room 4 is difficult to plot with certainty and may evidence alteration. The stub of wall projecting south from the south-east corner of Room 5 is difficult to resolve with the western edge of the 'random paving'. Further south, continuation of the inner side of Corridor 10 across the full width of space in front of Rooms 3 and 4 would preclude access into Room 11 and, in light of the scant evidence available for wall lines in this area, Roberts declines to speculate.

The next certain phase of activity in this area comprises a further expansion to the west, establishing Room 1, and including a cold plunge-pool with a further probably paved area to the west. This removed the former west wall of the room and filled the original bath. The final construction phase of the baths is the further extension of Room 1 to accommodate the Dido and Aeneas mosaic and a larger plunge-pool to the west, removing two earlier walls within the room. This final phase is highly elaborate in terms of décor, with arched windows in Ham stone, mosaics and possible use of columns to support a canopy over the plunge-pool; presumably this canopy would have been painted. Hayward suggests that the lathe-turned Ham stone columns found on site may have ornamented the portico/corridor (Chapter 7.5), including that from the plunge-bath. In Roberts' view, the arguments for dismissing this item as an element of ornamentation within the *frigidarium* is based on thin evidence (see Chapter 3.3). At this point the bath suite would have consisted of a large changing area with adjacent latrine flushed by wastewater from the baths, a cold room sufficiently extensive to accommodate dining if required, and substantial older hot and warm rooms, well furnished with plaster and mosaic. The complex was probably accessible from the corridor between the baths and the courtyard, but with an additional entrance from the south, from the western half of Room 11. An entrance directly from Rooms 15 and 20 is unlikely given the intervening location of the *praefurnium*, although this area of the villa remains poorly understood.

Building 3

Building 3 is the northern half of the south-west range, excluding Rooms 21, 22 and 44–46. There are complex details of the potential readings of the limited evidence available for this group of rooms set out at length in Chapter 3.3 which will not be repeated here. Instead one potential interpretation is set out, which appears to Roberts the most plausible. As Chapter 3.3 demonstrates, Radford, Leech and Cubitt all offer interpretations that differ to this to various degrees. The reader is asked to accept our multivocal approach as honesty, rather than confusion!

The earliest element of Building 3, based on stratigraphic relationships outlined in Chapter 3.3, was a long building, incorporating the north-west corner of Room 17 as excavated (where it is butted successively by Rooms 19 and 26). The line of the posited original structure within Building 3 continues through the original wall forming the east side of Room 19 (with an inserted entrance into this later room), and is preserved in the line of the eastern edge of the mosaic panel in Room 18, and in the 'broken walling' on Davies' plan (Fig 3.1). Here the broken walling is narrower than the original width of wall, due to its demolition during the addition of Rooms 16 and 18, with parts of the levelled surface of the wall presumably having been overlaid with mosaic. The south-west corner of the original structure is the south-west corner of later subdivision Room 15, which bears a striking resemblance to the north-west corner in terms of construction and is in alignment with the west wall of the building, running south from the north-west corner. The area of the south end of the building was not much excavated, being seen only in a narrow trench extending northwards from the area of excavation around Building 2; otherwise it can only be projected.

The east wall of the original structure is difficult to discern, but undoubtedly later formed the inner (western) wall of Corridor 10, which Radford himself at one point states as having been an original front wall (1969, 19). The only planned element of the original eastern wall is in the southernmost of two narrow trenches midway along Room 17's eastern side, associated with later steps (see Fig 3.15 and a discussion of this versus Fig 3.1 in Chapter 3.3). This is the top of a partially removed eastern wall of the original structure (see below for a discussion of its removal). The north-eastern corner of the original structure was not excavated. The overall plan of the first phase suggests a long building of approximately 21.5m × 8.0m. This compares well to the central hall houses discussed by Cunliffe (2008, 120–1), who reclassifies the yards of Branigan's (1976b, 125–27) intramural yard villas as interior spaces and includes them in this category. We cannot definitively tie any of the various subdivisions of the space thus created to the first phase. Similarly, its structural relationship with Building 2 is unknown as there is no physical connection between the two excavated, although they almost certainly join given the co-alignments of the elements of the front wall of corridor Room 10.

There is a range of structural elements stratigraphically later than the original central structure discussed above. The most significant is probably corridor Room 10, a 25.0m × 1.4m space running along the entire frontage of Buildings 2 and 3, and later corridor Rooms 24, 35 and 38, which together provide a continuous corridor around two sides of the courtyard. There are also clear suggestions of a portico or corridor fronting the courtyard side of the buildings of the north-east wing, although little sign of such to the south-east. Corridor 10 is floored in flagstones, although an area marked on Davies' plan as 'random paving' in front of Room 4 is likely to be a repair. Corridor 10 is likely to have originally continued as far as the cross-wall at the north end of Room 25, or perhaps even to Building 4, but was later shortened with the creation of the 'early room' posited below. Corridor 24 is marked as containing a blue-white mosaic, although few tesserae survived *in situ*. While Cosh suggests this mosaic may have run the length of the corridor, the provision of a more elaborate floor close to the villa's main entrance, where this is marked on Davies' plan, seems more likely, with the remainder of the corridor probably flagged. An external area in this corner of the courtyard is drawn as being paved on Davies' plan, a necessary precaution against mud given the volume of foot traffic to the entrance located here. It would not be surprising if there was a flagstone path from this point to the courtyard entrance; there are signs of a metalled surface in the south-west of the courtyard on geophysical survey [**gpr27**], near the well in the south-east that was excavated in 1955.

The simplest of this building's stratigraphically later elements is Room 19, a large hypocausted room that may have had a mosaic beneath its paved floor. Little can be said of the room in terms of function, although a heated dining room or reception room are possible interpretations. Roberts favours the latter because of its place on the opposite side of the main hall to the courtyard entrance. Rooms 16 and 18 may have been added at the same time as Room 19, although this is unproven, as (strictly) is their relationship to each other; Radford argues for 16 succeeding 18 because of wall thickness, but this might equally be read the other way around (see Chapter 3.3). Room 18 appears to be an alcove at the side of Room 17, ornamented by a knot mosaic but without clear function. However, it is possible that an additional room or continuation of Room 16 may be present beyond Room 18 to the west. As such, Room 18 makes sense as leading through to another room, although none of the plans or other records makes clear the extent to which the area beyond the marked wall at the west side of Room 18 was explored; Radford does mark that wall as 'delete' on Davies' plan (Fig 3.1). Room 16 was a hypocausted room with a destroyed figurative mosaic floor of exceptional quality, set on a higher terrace than Room 17. The stoke hole of the hypocaust lay on the south side of Room 16, within the same potentially walled external space that served the *praefurnium* of the baths. The insertion of Room 16 must have required the partial removal and rebuilding of the foundations of the former west wall of the original hall, to achieve the depth required by the hypocaust. Importantly, Radford notes that the hypocaust in Room 16 was 'built against the outer face of the older wall' (1969, 18) but also that there were confused foundations along this strip to the south of Room 18 (1969, 11).

Critical to understanding this phase of activity and additions is the 'grey mosaic' repeatedly marked by labels and shading on Davies' plan (Fig.3.1). This particular style of mosaic, illustrated uniformly on the plan, is present in Room 18 to the west of the knot mosaic, at the edge of the hypocausted Room 16 adjacent to Davies' 'broken walling' (Fig 13.1), and in Room 15 (see Chapter 4.5). It unites this group of rooms, and while it does not certainly mean that they are all contemporary, it does suggest that they were floored or refloored contemporarily. Notably, this mosaic does not appear in Room 20, south of Room 15, which appears to have been more functionally decorated from the little evidence we have. Nor does it appear in Room 1, which had plain grey tesserae bordering the figured pavements and plunge-bath (Radford 1969, 32–3; Fig 3.9), and which might otherwise indicate a single lavish expansion.

One of the most puzzling features of this end of the south-west range has been the oddly coursed wall that separates Rooms 15 and 20 (Figs 3.1, 3.18). Crucially, on Davies' plan the stepped masonry is only shown on the eastern side of the wall, despite both sides being excavated. Roberts hypothesises that this is due to a drop in level between the two rooms: that Room 15 has been built up to a higher level than Room 20 in order to be accessible by a manageable step down from Room 16, and that this height difference is revetted by the wall between the two, explaining the unusual construction and form on Davies' plan. Radford was clearly thinking about such issues in discussing the relative levels of Rooms 15, 16 and 18 (see Chapter 3.3).

Rooms 15, 16 and 18 being conceptually a single group of rooms explains the narrowness of the south wall of Room 17 as excavated. This is not a major weight-bearing wall, but instead a screening wall, separating the suite of more luxurious rooms from the now smaller main hall, and serving to keep the heat from the hypocaust within the higher-status rooms. The east–west element of this wall was newly established, but the north–south element running to the south side of Room 18 was more roughly built as it incorporated parts of the former exterior wall of the main hall. Room 20 may have formerly been a larger subdivision in the south-east corner of the main hall, created by the east–west wall butted by both the rear (south) side of the narrow wall just discussed (Fig 3.18), and the revetting wall between Rooms 15 and 20. The western extent of Room 20 is unknown, but may have stretch only slightly beyond the revetting wall (Fig.10.7).

Room 17 itself, in this later phase, was still a large space, at 16.8m × 8.0m. Cosh argues, and Roberts, Leech and Cubitt agree, that this space may have had a tessellated floor, despite the presence only of slabs in the limited excavated area of the room's interior. The junction of the slabs and the mosaics of Room 18 in Fig 3.19 hints that the slabs sit slightly proud of the mosaic. While the possibility is tempting, it would be surprising if no curious excavator had lifted a piece of paving during the course of the excavation. Whatever the flooring, Room 17 almost certainly still functioned as a central hall, providing a waiting room for everyday visitors awaiting an audience with the *dominus/domina*, and a gathering place for larger groups on festivals or important occasions for the wider population of the villa. This was a relatively accessible space, with openings in the former east wall of the original central hall made during the creation of Corridor 10, and at least two, stepped, entrances into the room from the main entrance into the villa in the north-west corner of the courtyard.

To summarise the development of the south end of Building 3, a formerly simple hall (Building 3, Phase 1) is subdivided in its south-east corner, forming Room 20. This may, speculatively, be associated with the creation of Building 2, which demonstrates a focus on development in this general area, and quite possibly corridor Room 10 to link these and Building 1 together. Later, probably in the mid-4th-century AD given the dating of the mosaics, substantial additions are made to the west side of the building, involving partially demolishing the former exterior wall. A large hypocausted room (Room 16) with high-quality mosaics is added, along with a second large mosaic-floored chamber (Room 15). An alcove (Room 18) is built onto Room 17, adjacent to Room 16, and probably afforded access between them. The off-centre location of the mosaic in Room 15 is notable, perhaps implying the permanent presence of a large piece of furniture in the southern side of the room. Access between Rooms 15 and 20 is unlikely, given the posited height difference and lack of step in the revetting wall between the two; Room 20 is likely to have been accessed from Corridor 10. Large hypocausted Room 19 may also date to this period, although is unlikely to be exactly contemporary as it would surely otherwise share a single wall with the adjacent Room 18.

The northern and eastern sides of Building 3 are more challenging to phase in relation to Room 17 as found, as there are few stratigraphic links. Moving clockwise around the building, it is clear that Room 26 butts Rooms 19 and 17 at the south end of its west wall, and Room 21 of Building 4 at the north end of the same wall. Room 26 is almost certainly an infilling of a gap between two existing buildings, and may have had a doorway in its west wall, evidenced by a collapsed stack of masonry that may well be a doorframe. Radford refers to this room as a kitchen (1948a, 5), which is unlikely. Instead, it linked several other rooms, providing access from Rooms 21 and 22 (which may well have been kitchens or service rooms) to the main hall, and, through its southern end (either via Room 25 as posited below or directly) to apsidal dining Room 27=28 and Room 30 to the rear of the apse. Room 26 area was extant until at least AD 353–61, the *terminus post quem* (TPQ) of a coin group found here, but this dates neither the establishment nor disuse of the room closely, simply that the room existed before that period, and was used until sometime after it.

Room 25 is a small and difficult to interpret space, possibly a relict created by the establishment of Room 27=28 removing much of a former room on the same alignment; any such former room is unlikely to have extended further west than the line of the original central hall, primarily because of changing levels of terracing (a subdivision of the east end of Room 26 might be posited for the same reason, although this area was unexcavated). The notional south wall of such an earlier room would very likely be the south wall line of Room 23, continued as the south wall of later Room 27=28. In the phase at which excavation stopped, however, Rooms 23 and 25 are neighbouring antechambers, perhaps respectively representing the entrances from Room 17 (for guests) and Room 26 (for servants) into Room 27=28.

Room 27 represents the eastern part of the posited early room discussed in the preceding paragraph, later extended by the addition of a large polygonal apse (Room 28) to make a single room, with Rooms 23 and 25 divided off to the west. The renewed room, surely a dining room, was provided with a deep hypocaust and mosaic flooring. The older wall (still forming the north wall of Room 25) was retained part way into the room, probably to provide support for a vault over the apsidal end of the room. A similar feature is visible on the other side of Room 27=28, strengthening the argument for a lofty ceiling in this space. An outstanding question is where the hypocaust stokehole was located; this room is too far from the major

furnace area behind the baths and Rooms 15–16 (which may also, just, have fed Room 19's hypocaust).

Building 4

Building 4 is a simple structure consisting, from excavation evidence, of two large rooms (Rooms 21 and 22), at least one with a paved floor, no sign of being heated, and minimal evidence for the nature of their function. Geophysical survey suggests a central subdivision, Room 29, creating three rooms. They may have been established relatively early in the sequence, especially the south-eastern corner of Room 22, which is misaligned to the rest of the surrounding structures; as Cubitt observes in Chapter 3.3, its angle to Buildings 2 and 3 mirrors that of Building 1, hinting at an intervening, pre-courtyard phase of design later than the establishment of Building 3's original hall. While there is probably insufficient evidence to sustain this very interesting argument, it should be taken seriously as a possibility. Despite this early phasing of part of Building 4, these rooms likely remain in use until late in the life of the villa, given the evidence for continuing use into, and quite probably beyond, the AD 350s/360s found in neighbouring Room 26.

Building 5

The rather enigmatic Building 5 is only known from geophysical survey, and comprises two probable phases based on differing alignments. A large right-angled wall co-aligned with the north end of Building 4 appears earlier, then realigned and expanded into a relatively large (9.4m × 9.7m) room (Room 45) with two smaller rooms at its south-west corner, in the angle of the earlier wall: Room 44, immediately adjacent to the west end of the south wall of Room 45, and Room 46, to the west of Room 46 and possibly running around to the western side of Room 45. It is unclear what function these rooms fulfilled, but they were probably physically separate to the main villa, and Room 45 opened onto the exterior walled area suggested above to be a private garden. Given their proximity to possible service Building 4, they may be living quarters for servants, or relate to storage, or perhaps horticulture or building maintenance.

10.6 Dating and sequence summary

Dating evidence

To demonstrate some of the challenges of providing a chronological framework for Roman activity at Low Ham, we summarise the evidence for the reader, with all key dating evidence set out here. Dates are given in the format in which they are available from specialist reports or techniques, and set out in chronological order.

mid–late 1st century AD – establishment of a rectilinear enclosure south of the later villa site

***c* AD 200** – apparent date of gravel spread beneath Building 1 (see Radford 1948a, 37)

pre-AD 250 – establishment of the villa (based on reuse of *spolia* that can only be from a villa-quality structure in a flue dated to third quarter of 3rd century AD in Trench 1)

later 2nd, or more probably 3rd century AD – establishment of the core of the south-east wing (Room 57 and possibly Room 58)

3rd century AD – extension of south-east wing through the creation of Room 59 as a residential space

cal* AD *245–260 (*10% probability*) or ***cal AD 290–350*** (*58% probability*) – probable period in which Room 59 ceases to be a residential space (see Chapter 6.2)

post-AD 335 – Room 11, a TPQ based on a group of four nummi (Table 4.1) suggested by Radford as lost during re-laying of a floor (1969, 40)

post-AD 350 – laying of the mosaic in Room 15 (probable, based on identification to *Lindinis* group; see Chapter 4.5)

mid-4th century AD – laying of most other mosaics, including the Dido and Aeneas mosaic; we do not believe the post-AD 340 date for the Dido and Aeneas mosaic from Radford's phasing to be sustainable (see Chapter 3.3)

AD 353–361 – the TPQ of a coin group found in a black deposit described as sealed by a fall of slates from the roof; it is clear from the primary sources that the 'black Constantinian deposit' is in Room 26, although coin envelopes are not marked with this detail; the location is based on Cubitt's deductions

cal* AD *350–375 (*68% probability*) – last use of the flue in an enclosure north-west of the villa (see Chapter 6.2)

mid-4th century AD to first decades of 5th century AD – removal of the outer wall of Room 59, and subsequent industrial activity (smithing, crop processing) in its former area

Post-AD 367; *cal* AD *380–405* (*68% probability*) – creation of a rough working surface in an enclosure north-west of the villa (see Chapter 6.2)

cal* AD *390–410 (*68% probability;*) – deposition of sheep animal bone group (ABG) in a pit in the working surface (see above) (see Chapter 6.2)

As the reader will appreciate, there is relatively little prospect of tying together a tightly dated overall chronology with any confidence. Nevertheless, a relative chronology based on stratigraphic relationships, observations and deductions painstakingly undertaken by Leech and Cubitt for the south-west wing, and the excavation of the south-east wing and deductions based on geophysical evidence by Roberts for the other wings, can be created. Parts of this can then be tied to the limited dating evidence set out above to provide a potential overall phasing.

Sequential relationships

Key sequential relationships are set out here for various wings, of which the south-west is by far the most complex. The term sequential is preferred here to stratigraphic, as while some of these relationships, chiefly those in the south-east and south-west wings, are stratigraphic, others are posited based on logic from geophysical evidence or analogy to other parts of the villa where stratigraphic sequence is evidenced. Refer to Chapters 10.1 to 10.5 for the underpinning discussion. Sequential relationships between groups of rooms in **bold** are given in *italics* and apply successionally from earlier to later in the statements below unless stated otherwise.

South-east wing sequential relationships

In the south-east wing, the following sequence can be observed/deduced.

SE1: Rooms 57, 60, 61, and perhaps parts of 62 and 63, established as a small block of rooms, aligned with Building 1. Possibly also including Room 58. Equivalent to Phase HE2.2.

SE1 is *contemporary with, or earlier than* **SE2,** the establishment of the villa courtyard, and the construction of Rooms 58 (if not already present) and 68–72, comprising the main body of the south-east wing. Equivalent to Phase HE2.2.

SE2 is *earlier than* the construction of Room 59, in Phase HE2.3.

The construction of Room 59 is *earlier than* the expansion of the south-east range beyond the original boundary ditches to the south-east and north-east, through the construction of **SE3** (Rooms 73 and 74) and **SE4** (Rooms 64–67).

SE3 and **SE4** were constructed *prior to* the infilling of Room 59, followed by the later removal of its external wall (Phase HE2.4), and use of its former area for smithing and industrial activity (Phase HE2.5).

North-east wing sequential relationships

In the north-east wing, the following sequence is suggested based on geophysical evidence, very limited evidence from the 1940s excavations, and analogy with the 2018 excavations.

NE1: Rooms 50–51 (Building [**m8**]) and Rooms 52–54 and 56 (Building [**m7**]) are established as part of the creation of the villa courtyard.

Later than **NE1 is** the establishment of **NE2**: Room 55, the additional external (north-easternmost) wall of Building [**m7**], and the creation of spur walls to narrow the courtyard entrance. *Hypothesised to be contemporary with* **SE4** due to co-alignment and both episodes disregarding the earlier villa enclosure ditch circuit.

North-west wing sequential relationships

In the north-west wing the following sequence is suggested based on geophysical evidence and the 1940s excavations. Unfortunately, as outlined above, considerable doubt remains as to the key stratigraphic relationship. In this account Radford's original sequence is preferred, though this is far from certain.

The establishment of the early room underlying Rooms 23, 25 and 27, *precedes or is contemporary with* the setting out of **NW1**, the range of rooms (Rooms 30–32, and possibly 33) comprising approximately the western half of this wing and sharing an alignment with this early room and later Room 27=28, and Room 24, the corridor fronting this part of the wing.

NW1 is established *prior to* **NW2**, which comprised the extension of the wing on a slightly different alignment, with Rooms 35 and 38 providing shorter corridors along the courtyard frontage, interrupted by Room 36. Additional Rooms 39–43 made up the main body of the wing. Room 43 was elaborated with possible niches at its north-east end. This block of rooms, or at least corridor Rooms 35 and 38, may be associated with the laying out of the courtyard, as otherwise the circuit is incomplete.

Later than or *contemporary with* **NW2** was **NW3**, the development of a walled area to the rear of the range, containing an indented gateway (Room 47) and an additional structure (Room 48).

South-west wing sequential relationships

In the south-west wing the following sequence is suggested based on geophysical evidence, the 1940s excavations, and the meticulous observations and deductions of Leech and Cubitt (Chapter 3.3). The following sequence can be postulated based on the various relationships outlined in Chapter 3.3 and summarised above in Chapter 10.5 (Fig 10.8).

The four elements of the south-west range that cannot be ascertained to be later than any other elements of the range are the:

- south-west corner wall of Building 5 in its earlier phase
- south-east corner wall of Building 4/Room 22 in its earliest phase
- external wall and westernmost internal subdivision of Building 1
- original central hall posited within Building 3.

These are unlikely to all be contemporary, but rather reflect the lack of stratigraphic information, dating evidence, and therefore nuance, in the sequence. Nevertheless, all are early. Following these elements, there is then a series of further developments that are later than those set out above. These cannot be related to one another, but in different parts of the wing comprise the following:

- The establishment of Building 2 (the bath block), Rooms 5–9, including Room 4 in its earliest form, probably contemporarily with, or earlier than, the creation of corridor Rooms 10 and 24. Rooms 2 and 3 were added after this, but within the same phase.
- The subdivision of the south-east corner of the original central hall into Room 20.
- After a period when Corridor 10 continued further north-west, the establishment of the posited early room at the junction between the north-west and south-west wings, including the areas of later Rooms 23, 25 and 27.
- The realignment and expansion of the structure formerly partly walled by the south-east corner wall of Building 4, to create Building 4 (Rooms 21 and 22).

There are then several further major structural additions across the villa, with very little dating evidence other than the generally mid-4th century AD dates of the various mosaics:

- The further subdivision of Building 1, probably including the reworking of its courtyard frontage into a veranda and the creation of narrow, niche-lined Room 11 between this and a central group of rooms (Rooms 12–14). This may have occurred in the previous phase of expansion, but the elaborate nature of the work feels more of apiece with this phase.
- The extension of Building 2 westwards through the creation of Room 1 in its earlier form. This is then succeeded by further expansion of Room 1, incorporating the Dido and Aeneas mosaic.
- The major expansion of Rooms 15, 16 and 18 to the south and west of the original central hall, and the erection of a screening wall reducing the size of the original hall to separate these heated, mosaic-floored rooms.
- The creation of large, hypocausted Room 19, and blocking in of the space between Buildings 3 and 4 as Room 26.
- The creation of hypocausted apsidal Room 27=28, and Rooms 23 and 25, from the former area of a large room, with a new apse extension.

The final phase of activity, Phase 4, is difficult to discern in this wing, although may include the paving of Room 17, if the suggestion of an underlying mosaic is accepted.

The following can only be related to the sequence in the north-west wing, but is later than the first phase outlined above, and probably most of the rest of the sequence:

- The realignment and development of Rooms 44–46 around/within the south-west corner wall of Building 5, to create a larger Building 5; this must occur contemporarily with the establishment of the posited walled garden to the rear of the north-west wing.

10.7 The development of the villa

The phases outlined above demonstrate considerable complexity, with quite major realignments or restructuring of different aspects of the villa within generational time spans. This section will attempt to draw together the overall sequence of development of the villa insofar as is possible given the limitations of the evidence, and discuss with reference to other villas in the region and beyond, primarily focusing on the 'peak' Phase 3. The overall phasing is illustrated in Fig 10.9.

Phase 1 – Multiple structures

Building 1, Building 3, at least part of Buildings 4 and 5, and possibly SE1 in the south-east wing, were established as separate structures, the first two of these certainly prior to the establishment of Building 2 and the courtyard, SE1 probably so, and Buildings 4 and 5 possibly so (their distance from the courtyard makes establishing this impossible). This is a fairly standard form of structural development in Britannia, with little apparent differentiation of status between these buildings in this phase. Differentiating function or status is especially challenging at Low Ham because of the combination of a lack of excavation below the level of later phases, and lack of retention of artefacts in the 1940s excavations.

Phase 2 – Baths and courtyard

Phase 2a

The initial bath block was one of the first elaborations to the early buildings, and may have been established contemporarily with Corridor Room 10 in front of the bath house and original central hall, extending perhaps as far as Building 4. Building 4 was created during this broad period (Phase 2), straightening up an earlier structure.

Phase 2b

The early room to the north-east of the central hall was then built, with a corridor in front of it, as was the block of rooms NW1 in the north-west wing. This restructuring around the junction of the new north-west wing and south-west wing involved shortening Corridor 10. Additional rooms were also added to the south of the bath block at this time.

The main body of the south-east wing, SE2, was also established in this phase, linking to Building 1. These major works may have provided an opportunity for use of excess new stonework, or *spolia* from restructured rooms, to build a flue in an enclosure north-west of the villa in the third quarter of the 3rd century AD.

This is the first phase where a clear cluster of the highest-status residential and reception rooms emerges in the north-west of what would become the courtyard. This notable concentration is paralleled to varying degrees at Keynsham (Somerset; Cosh and Neal 2005, 231–44), Halstock (Dorset; Lucas 1993), Chedworth (Gloucestershire; Esmonde Cleary *et al* 2022), and Bignor (West Sussex; Neal and Cosh 2009, 489–513); Pitney I (Somerset; Applebaum 1966) has a similar arrangement with reference to the courtyard entrance, but its different orientation means the concentration of key rooms is in the south-west corner.

Phase 2c

After Phase 2b, but before the major elaborations to follow in Phase 3, the north-east wing, comprising two buildings forming the villa courtyard entrance, and block NW2 were built, completing a courtyard circuit. As has been discussed above, the north-east wing was likely used for storage and possibly processing of agricultural products, primarily grain. Another possible explanation, based on the similarity of the structure to later medieval or post-medieval buildings with the same function, is stables. Again, while this is not a common interpretation of villa buildings, archaeologists are generally happy to consider that villa owners would have valued and kept high-quality horses, yet do not often carry through the material implications of this interpretation, relegating these socially important and economically valuable animals to unspecified spaces on the fringes of the household.

The walled garden to the north of the villa, and associated structures, may have been established at this time, or perhaps later. Aspects of these arrangements are notably paralleled at Bignor (West Sussex) for the possible garden room or perhaps small peristyle courtyard (Room

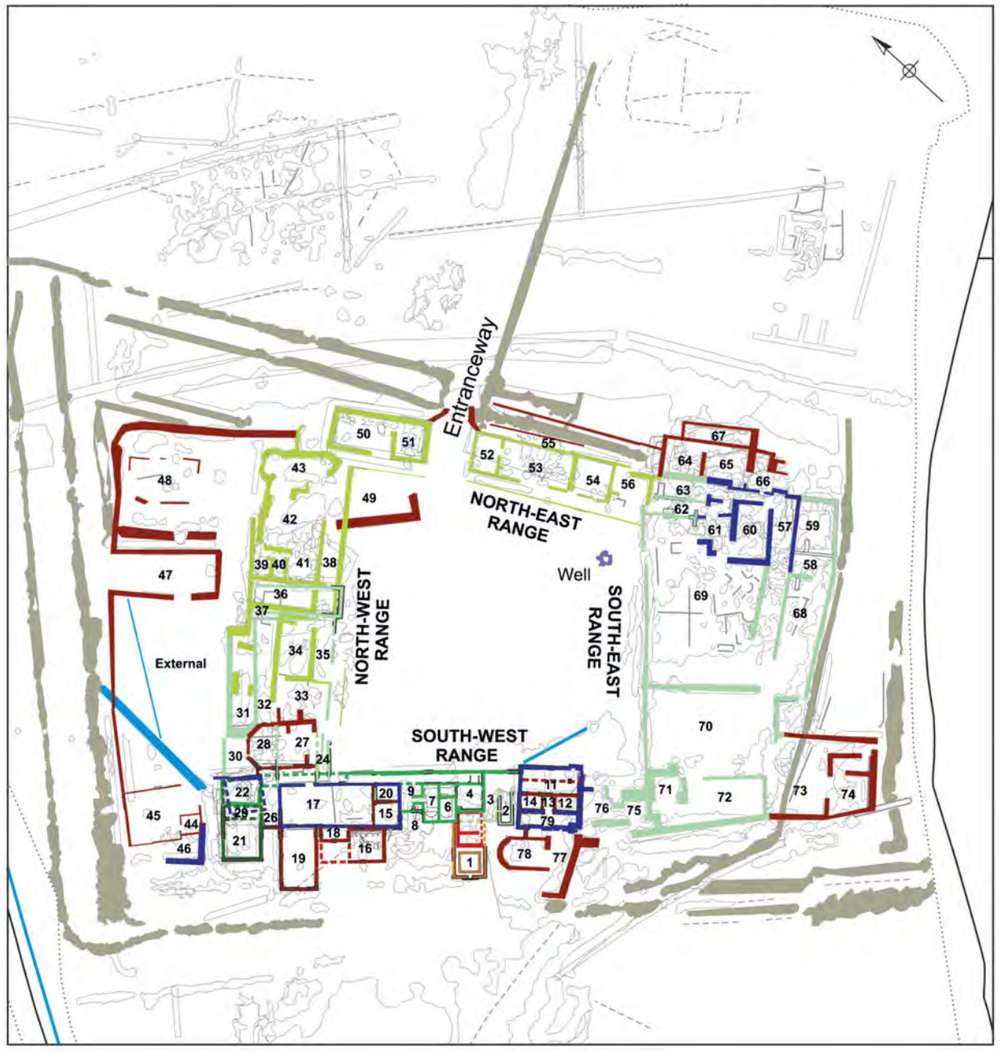


Fig 10.9 The development of the four ranges of the villa overall (Penny E Copeland for Historic England)

48), and Pitney 1 (Hoare 1832) for the walled garden to the rear of the villa. By now Low Ham could reasonably be termed a courtyard villa, albeit with only some of the usual accoutrements of the class: baths, painted plaster, but relatively few mosaics and no hypocausts beyond the baths.

Phase 3 – A villa of distinction

This title is used because in this phase the villa developed in such a way as to set it apart from most others in the region, and within it the space became particularly

socially differentiated. In the south-east wing, Room 59 became a non-residential space sometime in the first few decades of the 4th century AD, filled with soil and with a small subdivision in its corner. This may have been a walled garden, and the subdivision a porch. High-status living accommodation, previously partly distributed across the south-east wing as well as the south-west and north-west, now centred on the latter two wings as they expanded.

Building 1 was subdivided into a higher status space, with a new veranda overlooking the courtyard. The narrow room with niches behind the Ham stone facade at the back of the veranda might even have been a library; it certainly meets almost all of the potential criteria for identifying such rooms hypothesised by Carrié (2010). Low Ham's owners undoubtedly owned manuscripts and were part of a literary peer group, as testified by the mosaics at Pitney 1 and other nearby villas (see Chapter 12 for a fuller discussion). What would a villa library look like, if not a high-status, private space, architecturally elaborate with a series of small niches and cubicles around its walls, with a veranda to read on in the summer, and only 20m away from a mosaic depicting Dido and Aeneas? This is of course rampant speculation, but if we posit a strong literary culture (see Chapter 4.5) among such elites, we must take the material and architectural implications seriously.

During this period the bath suite was twice further expanded, finally with the removal of the previous *frigidarium* and its replacement by a sumptuously appointed new space centred around a large plunge-bath with possible canopy, and the adjacent Dido and Aeneas mosaic. Mosaics were designed as integral features of rooms (Scott 2000, 9), and it has been proposed that the central panel of the Dido and Aeneas mosaic references the primary function of Room 1, even if the large space was given to other uses at times (Cosh and Neal 2005, 34). The central motif, facing bathers as they emerged from the plunge-pool, may show Venus herself emerging from a bath, with the cloth behind her representing a towel (Witts 2005, 49). Blue and pale blue plaster, which may have been used on a ceiling, is recorded as having come from Room 1 and may have imitated a sky over the Dido and Aeneas mosaic (Chapter 4.6) or been a watery background to a ceiling painted with aquatic designs and used over the plunge-bath (Davey and Ling 1982, 39). The references to hunting on the mosaic also speak to the wider elite pastimes discussed in Chapter 12.

The central hall (Room 17) was slightly reduced in size and augmented with a series of heated rooms, three of which, wrapping around its south and west sides, were a single scheme of work of the highest quality, decorated with plaster and figurative mosaics. Another large heated room (Room 19) was added to the west side of the hall, and a room to its east replaced with a heated apsidal Room 27=28 and two anterooms between it and the hall. Room 27=28 appears to be of the less common semi-hexagonal type discussed by Esmonde Cleary *et al* (2022, 501) and is almost certainly a heated dining room. Service corridors were established behind the new apse, and additionally by enclosing the area between the hall and Building 4. Notably 'stair case well' was written on the envelopes of several coins from this room (Room 26). It is challenging to discern whether any part of the villa had a second storey, although Rooms 17 and 27=28 must have had a relatively high ceiling and must surely have in this phase incorporated clerestory windows for light. Similarly, rooms such as 60, 61, 12–14, 79 and 41, which were entirely enclosed, must have had access to light through higher windows within the overall superstructures of their various ranges. Any internal supports in Room 17 for a superstructure are unknown, however, because of the limited area of the room excavated, and the presence of a probably late paved floor. The walls of the original Room 17 are certainly wide enough to have supported the weight of a second storey or elaborated superstructure.

A fairly clear distinction emerges from this development of zonation of activity in the villa. The south-east range was reasonably well appointed but functional, and likely did not house members of the family, although they might well move through it to reach the gardens to the south. Similarly, the buildings to either side of the courtyard entrance were very probably service buildings or agricultural buildings. The core of the elite living quarters was the western half of the villa, comprising the south-west and north-west ranges, with additional service buildings to the rear. Even within this core there was clear differentiation. The visitor would enter the large hall to await their reception by the owner or their staff. They might be received in the large, heated Room 19, or somewhat higher status visitors in the suite of heated rooms around the southern end of the hall. These rooms have not traditionally been seen as baths, but the provision of large hypocausts in Rooms 16 and 19 does make one wonder whether they might have been. Room 17 therefore appears to fulfil a similar function to Room 25b at Chedworth, affording differential levels of access further into the villa's core (Esmonde Cleary *et al* 2022, 146).

The area of the villa around the hall seems to have been the most public-facing element of the higher status

accommodation. By contrast, the larger bath suite, developed from its original core to be truly extensive, was linked to Building 1's well-appointed private chambers, with possible library, which in turn allowed access to a smaller apsidal room to the rear. This may have been a family dining room. Significant accommodation was also likely present through the north-west wing, with a range of rooms linked by corridors and permitting access to a walled garden, possibly containing a shrine, peristyle courtyard or garden feature in its north-eastern area, and also accessible via a recessed gateway in the external wall analogous to Pitney I (Hoare 1832).

This was also likely the period of the extension of the south-west range to the south beyond the original ditched enclosure, with an expanded double-ditched enclosure likely accommodating further gardens to the south-east. At this point the villa had reached its maximum extent. One might well associate this phase with a broad mid-4th century AD peak, probably lasting only a few decades given the evidence from the following phase. It had almost 80 rooms (although basing this partly on geophysical survey results means this count is uncertain), overall maximum dimensions (excluding the possible walled garden) of 137m × 85m, and an internal area of over 5,000 sq m. Its compound, probably with walled gardens to the north and open gardens within a double-ditched enclosure to the south, was approximately 220m × 100m, narrowing to the south. Its area is greater than any villa in the Somerset region, and is very similar in size and layout to the core villa at North Leigh (Oxfordshire), although lacking North Leigh's large adjacent structures (Creighton and Allen 2017). The other reasonably close parallel is Bignor, which, although its courtyard and overall dimensions are very slightly smaller than Low Ham, shares many of the same features around its fully enclosed courtyard, with buildings on all sides and three apsidal rooms (Neal and Cosh 2009, 489–513).

Undoubtedly, as set out above, there are subtleties of sub-phasing within the interpretation suggested that may be inaccurate. This is inevitable given the quality of evidence available. We hope, though, that we have presented a logical and lively narrative of Low Ham's peak of wealth and structural elaboration.

Much has been written regarding the conditions that saw villas flourish in this period (Mattingly 2007, 374; Esmonde Cleary *et al* 2022). Positioned at the centre of elite social and cultural life (Scott 2000, 124; Gerrard 2013, 142), they acted both as a medium for transmitting cultural ideas and as a social arena (Smith *et al* 2016, 33; Morley and Wilson 2024, 269). These issues will be explored in Chapter 12. Alongside the built environment, portable material culture played a critical role in constructing and maintaining social position and economic power (Gerrard 2013, 124), and the Low Ham assemblage demonstrates access to wealth and integration into social and political networks, including networks of literary education, *paideia*. However, the late Romano-British elite was not a homogenous group (Gerrard 2013, 123) and particular choices made around local products and styles can be noted within the assemblage and will be discussed in Chapter 11. In a society where position conferred power (Gerrard 2013, 121), healthy competition must have played out among Low Ham and its neighbours, clustered around Ilchester (King 2022, 223). The concentration of villas around Ilchester will be discussed in Chapter 12, in terms of both Low Ham's local landscape and immediate neighbours, and the broader regional social context.

Low Ham in its floruit was luxurious (Mattingly 2007, 471). The appointment of certain rooms, particularly the *frigidarium*, was truly lavish, and the quantity of mosaics at the site is also exceptional, although few were undamaged or substantially excavated. It is incontrovertible that the villa should be considered among the largest and most sophisticated of Britannia's 4th-century AD courtyard villas, although palatial villas such as Woodchester (Gloucestershire) and Fishbourne (West Sussex) remain a step beyond Low Ham in terms of scale at least. We cannot know whether the exclusive group of villas to which Esmonde Cleary *et al* (2022, 503) admits Low Ham represents actual social peers, but the site is exceptional, even in the concentration around Ilchester, and must have had connections beyond. The strong overall impression from the 4th-century AD evidence is that this family belonged to the upper echelons of society in Britannia, those most exposed to the effects of the seismic shock to the social system caused when Britannia ceased to be part of the Empire (Gerrard 2004, 7; Smith and Fulford 2018, 356). The architectural arrangement and decorative details demonstrate, even from this limited evidence, nuanced cultural diversity within the elite (Mattingly 2007). In Chapter 11, Cubitt highlights that local choices in terms of food and dress are evident, and, while not demonstrably relating to the owners themselves, there seems to have been at least a tolerance for regional preferences among the villa's population. In Chapter 12, close social connections are posited between the four adjacent villas of Low Ham, High Ham, and Pitney I and II, alongside the high-status sites at Wearne and Bowdens Lane Quarry, with an attempt to draw out a more refined understanding of the relative function of, and connections between, such sites.

Phase 4 – Concentration of resources

In this phase the villa's footprint expands slightly, with the addition of rooms to the east end of the south-east range, and the adjacent exterior of the north-east range, along with the narrowing of the villa's entrance. These, alongside the well-dated commencement and continuation of industrial activity in the excavated parts of the south-east wing, speak to the oft-observed trend of villa-dwelling elites drawing key productive processes closer to home as Britannia became less stable and control over further-flung parts of estates became more difficult to maintain (Gerrard 2013, 257). At Low Ham, this probably happened through the AD 370s and 380s, with industrial activity in the south-east wing continuing into the early decades of the 5th century cal AD. The lack of detailed recording in the 1940s excavations makes it difficult to recognise late activity in the villa's elite core, but the paving of Room 17, the rough steps into it and repairs to the corridor in rough paving, and to the hypocaust using lathe-turned Ham stone columns, all hint at a degradation of the wealth and power of the owners. Regionally, Dinnington (Somerset) provides a classic example of the phenomenon (King 2022, 234).

There are also clear signs of the hypocausted mosaic floors of Rooms 16 and 27=28 being deliberately destroyed, or 'wrecked' in Radford's terms. Radford considered that this may have been due to searches for valuables (1947b, 62). Roberts wonders if, more prosaically, the hypocausts were broken into to retrieve the *pilae*. This may have been in order to repair the hypocausts in the core bath block. Note the use of a lathe-turned Ham stone column for just such a repair; the column is obvious as it is a different material, but would the 1940s excavators have been able to differentiate between original and replacement *pilae*? Alternatively they may have been sought for use as convenient and consistently sized tiles in other repairs or constructions in the very late or post-Roman period.

In its last iteration, therefore, Low Ham Villa may have remained a locus of power and wealth, but these were articulated in a more functional aesthetic, retaining a core of elite rooms displaying the owners' *paideia* around the old bath complex, and a major reception room or hall in the repaved Room 17. Might this revised operation have been orchestrated and overseen by the villa's owners? There is no evidence for a violent, forced removal, and their continued occupation might account for their prime pavement remaining unscathed and none of the rooms of the south-west range being repurposed.

11 The material and environmental evidence from Low Ham

Rachel S Cubitt

Within this chapter the wealth of artefactual and environmental data deriving from the excavations at Low Ham is examined. The evidence is shown to provide valuable details about the character of the site, the nature of the occupants, their activities and their social and economic context. Finds data amassed by the Rural Settlement of Roman Britain project (RSRB; Allen *et al* 2018) provide a means of considering the Low Ham assemblage against others with lavish mosaics, as defined by Esmonde Cleary *et al* (2022, 503), as well as to neighbouring villa sites in the South West, and those further afield in the southern section of the Central Belt of Roman Britain (as defined by the RSRB; see Smith *et al* 2016). Following Roberts' suggestion (Chapter 12) that the excavated sites of High Ham and Bowdens Lane Quarry, Somerset, form part of the same estate complex, particular consideration is also given to their assemblages. Inherent limitations of the Low Ham dataset and variable documentation of other assemblages from Somerset precludes investigation of proportional representation by function (as Durham 2022, 406, fig 4.87), and instead comparisons and contrasts are made through a series of specific examples and by noting presence/absence.

A necessary precursor to analysis is to understand the nature of the data under consideration. The villa complex has only been partially excavated, in two phases of work undertaken many decades apart and each according to the then prevalent methodologies for finds recovery and selection for archiving. With regard to the 1940s work, there are notable discrepancies between accounts of what was found and the composition of the extant assemblage (exemplified by Chapters 4.2 and 4.6). Sampling for small and biological finds was not undertaken and, where findspot information survives, most objects are spatially related at room level only. Thus intriguing patterns, such as the apparent clustering of pottery findspots (Chapter 4.3), must be treated with a degree of scepticism.

In 2018, although many items were three-dimensionally (3D) located, the overall spatial data is limited. A notable proportion of finds derive from cleaning, spoil or subsoil/topsoil layers, reflecting the disturbed nature of the archaeology following the animal burrowing that prompted these excavations (Chapter 1.5). Curiously, the effect on different parts of the assemblage varies, with almost two-fifths of the pottery coming from such layers/deposits but only a fifth of the small finds. The latter assemblage produced a high percentage of fragmentary and unidentifiable objects, resulting either from the disturbance alone or in combination with their poor preservation. Observation of the metal objects from both excavations suggests variable ground conditions (K Graham, pers comm, 2023), with the extant metalwork from the 1940s being in better condition than that from 2018, notwithstanding that other metal finds from the earlier work might have decayed altogether in the interim period.

The final note of caution is that the two excavation assemblages investigated very different parts of the complex. Consideration of the glass from earlier and later investigations at Chedworth Roman Villa, highlighted that the quantities from the modern excavations were much greater (Durham 2022, 407). At Low Ham, despite the application of extensive bulk sampling during in the 2018 fieldwork, the opposite is true, and may actually reflect less glass originally present in that part of the villa because of the different nature of the rooms located there. While acknowledging that glass may have been collected for recycling, the paucity of glass finds at Low Ham was unusual.

11.1 Evidence for Iron Age and early Roman activity

A modest and rather unremarkable Iron Age assemblage accompanies the pre-Roman structural remains in Trench 3. The mid- to later Iron Age pottery is dominated by jars, and some of the assemblage carries traces of domestic use in the form of sooting or burnt residues. A domestic activity such as food preparation is considered to be indicated by the charcoal fuel waste from (92033) (Chapter 8.2). Other artefacts reflect daily activities around obtaining and preparing food, such as the possible hammerstone or pestle, and the slingshots that might have been for hunting (Chapter 7.5). It is notable that the botanic remains indicate a crop-processing strategy distinct from the Roman one that follows (Chapter 8.1). A possible counter was also recovered, along with a tack that could be of Iron Age or Roman date.

Some of the typologically Roman pottery found in contexts relating to the Iron Age structures is considered a contaminant (Chapter 7.3). However, the inference is that certain of the features in Trench 3 did continue in use during the early Roman period, notably ditch [92142], which cuts Roundhouse 3 and produced fragments of a Caerleon-type glazed beaker, Dorset Black-burnished ware (DOR BB1) and early black sandy wares, all of which are early Roman in date. Further, posthole [92041] is noted to have incorporated a sherd of late 1st-century AD South Gaulish samian ware.

Known circumstances of the 1940s excavations may well mean that earlier occupation layers in the south-west wing remain *in situ* (Leech 1977a, 106). The only category of material evidence that might assist with dating the earliest stone architecture of the villa are the unstratified box-flue tiles. If we take the leap offered by Betts (Chapter 4.4), and extrapolate westwards an understanding of their dating in the South East, then some of the scored examples might be as early as the early 2nd century AD.

A much-used indicator for the date of activity on Roman sites is coinage, and at Low Ham there is no evidence of coin use prior to AD 260. However, most rural sites, regardless of function, demonstrate a low level of 1st- to mid-3rd-century AD coinage, which may be indicative of alternative mechanisms of exchange taking place in this period (Walton 2022, 17). Small numbers of coins dating to Reece period 13 (AD 260–275), although notably fewer than the mean for the western South (see Chapter 7.1, Fig 7.3), are significant in evidencing some activity before the beginning of the 4th century AD.

Interpreting other material perhaps attesting to an early Roman presence is difficult. Residuality among the Low Ham assemblage in tandem with well-attested 'curation' of similar objects elsewhere means there is little by way of clear-cut evidence. The south and central Gaulish samian ware fragments, dating typologically to the 1st–early 2nd centuries AD, were found in cleaning and rubble deposits in Trenches 1 and 2. Low Ham's blue/green glass bottle fragments date to the first two centuries of the Roman period but are known to have remained in use until later (Chapter 7.8). The earliest Roman small find, a South Western-type bow brooch dating typologically to the late 1st–early 2nd century AD, came from the area of Room 1 but was actually found on the spoil tip (Fig 4.1), Finally, a 1st-century cal AD date was obtained for a carbonised grain found to be residual in a 3rd–4th-century cal AD feature in Trench 1.

Some finds straddle both the earlier and later periods. Matt-glossy window glass, recovered in the 1940s, was used from the 1st century AD to the end of the 3rd century AD, and individual windows may have remained *in situ* for decades if not centuries. Among the pottery, there are fabric and form types that start in the 2nd century AD but continue into the 4th century AD, such as the Norton Fitzwarren storage jars found in 2018, and a Black-burnished ware (BB1) dish excavated in the 1940s. A penannular brooch of a type most common in the 1st and 4th centuries AD and distributed principally in the west (Henry and Booth 2022, 70) was found in a 3rd-century AD context in Trench 3 and is thus more probably of early date.

11.2 Structural evidence

With the excavations of the 1940s focused primarily towards the later phases of the villa, the majority of the datable material, unsurprisingly, clusters in the later Roman period. Most of the contexts with Roman pottery date to the later 3rd and 4th centuries AD, the 1940s sherds attributed exclusively to the latter. The majority of the coins recovered from Trenches 1 and 2 are dated AD 330–348 and AD 364–378, which is consistent with many rural sites in the South West (Chapter 7.1). Much of the

material culture belonging to the 3rd- and 4th-century AD period of the villa derives from the fabric of the superstructure itself, and its internal fixtures and fittings, and does appear representative of a villa in its zenith. Alongside the famous Dido and Aeneas mosaic, there is evidence for at least eight other 4th-century AD pavements, including another fine and colourful figured work (Chapter 4.5). Portable material culture was central to constructing and maintaining social position and economic power (Gerrard 2013, 124), and the Low Ham assemblage further illustrates both access to wealth and participation in social and political networks. The particular choices of local products and styles noted within the assemblage also reinforce that the late Romano-British elite was not a homogenous group (Gerrard 2013, 123).

Building materials

The Low Ham building material provides tangible evidence of redevelopment works carried out to keep up with social peers, maintain a good state of repair (Fleming 2021, 96), and accommodate new functions as the use of different spaces evolved. The Dido and Aeneas mosaic itself appears to have been inserted during a later 4th-century AD refurbishment. The plaster assemblage is deemed to include evidence for at least one room being replastered (Chapter 4.6), and the box-flue tile assemblage comprises two separate fabric sources that might evidence multiple phases of heating being inserted into the south-west range alone (Chapter 4.4). Lastly, there are two different types of window glass, which have some chronological distinction but could equally have been used contemporaneously (Chapter 4.7). It is regrettable that the nature of the data from the south-west range precludes detailed survey of structural components by room or phase.

Overall, the suite of stone building materials used for walls, floors and roofs, while typical of those used in villa construction in the region, suggests competent craftwork undertaken with detailed knowledge of the availability and suitability of materials to fulfil particular functions (Chapter 7.5). The architectural stone from the south-east wing is without ornament and more indicative of working areas or service rooms. A perhaps external finish of *arriccio* plaster applied to these buildings is thought to have acted as stucco to smooth out irregularities in the Blue Lias walls (Chapter 7.7). In a period when even highly functional buildings were used to monumentalise social disparity (Fleming 2021, 38), it may have served both as a daily demarcation of the spaces devoted to the owners and those who served them, and to indicate to contemporary observers the scale of service the owner was able to draw upon.

The distribution of four different stone types and four (maybe five) tile forms represented in the 2018 assemblage suggests that different buildings across the complex were roofed in particular types of stone (Chapter 7.5). The small assemblage of ceramic roofing material from the 2018 excavations comprises predominantly small fragments of *imbrices* and no definite *tegulae*. One explanation (another is set out below) is that this also indicates deliberate display: terracotta-coloured ceramic *imbrices* used as ridge tiles on an otherwise stone roof, forming a sharp visual contrast (Chapter 7.4). Denman records the discovery of Lias stone tiles in the 1940s (1948), but neither documentary nor artefactual evidence survives to indicate the existence of ceramic roofing material from that excavation. Ceramic tiles were also largely absent at High Ham, with just two imbrex and one flat fragment recovered (Wessex Archaeology 2011, 17), perhaps indicating a common architectural style.

Mosaics and decoration

Low Ham is particularly noted for the 4th-century AD Dido and Aeneas mosaic, which, decades after its discovery, continues to receive specific mention alongside new findings in synthetic studies dealing with villas located in Britain and beyond (Henig *et al* 2022b, 7; Cosh and Neal 2024). Rather than a design from a pattern book, it is one of two pavements in Roman Britain deemed to be drawn from a manuscript perhaps in the owner's possession (Cosh and Neal 2024, 104; Chapter 4.5), with deliberate consideration given to the space it would occupy (Witts 2005, 49; Chapter 10). Furthermore, in representing a sophisticated choice of subject matter (Cosh and Neal 2024, 14), the Dido and Aeneas design ably demonstrated a suitable understanding of classical culture to other 'top-rank' observers (Scott 2000, 142; Mattingly 2007, 467).

The interior of the south-west range appears to have been a visual feast of lavish decoration across all surfaces, as befitting a main reception/entertaining space. With regard to the plaster, Betts (Chapter 4.6) has already articulated as much as the evidence allows, and the overall impression has value in highlighting differences between the ranges of buildings themselves. Similar levels of interior decoration were not clearly evident among the assemblage from the south-east range. The evidence for tessellated floors and painted plaster was in such small quantity in Trench 2 that Hayward considers the former may represent material dispersed from elsewhere in the complex (Chapter 7.5). However, other authors are more cautious (Chapter 10) on the basis that so little of the south-east range has been excavated.

A final element of the villa superstructure is the window glass, which, barring a single fragment, all comes from the south-west range. The fragments are either blue-green, greenish or pale yellow-green, and many contain impurities or bubbles, indicative of late Roman glass. These visual characteristics would all have affected the quality of light passing through, and thus the atmosphere and appearance of a room. Martin Henig suggests a sparkly quality to the light may have been a positive added effect (pers comm, 2023), noting '…the sun sparkles within me …' as a line from a Roman riddle relating to window glass (see Leary 2011; although suggesting this relates to the reflective properties of glass). Low Ham produced no lighting equipment, which is poorly represented at villa sites (Mattingly, 2007, 473; Smith *et al* 2018b, 52), perhaps as a function of chronology (Smith *et al* 2018b, 52).

The opulent rooms would have been fitted with furniture, items both for comfort and for practical use. Items indicative of this include studs and nails likely used in upholstery (Chapter 7.2). There is no evidence for stone 'sideboards' or serving tables, items peculiar to villas in south-west Roman Britain (Allason-Jones 2005, 87). The structural ironwork offers little differentiation between the villa ranges, as the assemblages from both excavations comprise highly functional constructional elements (staples and clamps) which are much less evocative of overall architectural appearance. Nails offer one point of difference in that there is no assemblage from the 1940s excavations to compare with those from 2018, precluding any discussion of quantity and distribution in a bid to elucidate timber architecture (as Brindle 2023, 206).

11.3 Occupants and activities

Without osteobiographical data to draw on, an impression of the general character and status of the villa's occupants, and the nature of their activities, relies on consideration of material possessions and environmental remains. Before examining the evidence available, it is necessary to remark upon certain key absences. There is a distinct paucity of objects relating to recreation and religion, which are elsewhere used as one of the differentiators between villas and farmsteads (Smith 2016, 187). Activities in which villa occupants and their invited guests are generally thought to have indulged are music, gaming, love (Beard 2009, 247–8) and hunting (Smith *et al* 2018b, 66). The latter two are depicted on the Dido and Aeneas mosaic but none is overtly represented in the assemblages.

Further, the architecture of Low Ham provides for bathing as a Roman mode of social behaviour (Taylor 2013, 178) yet bathing equipment (Wardle 2008) and tools for ancillary activities such as styling or treating the body (Gerrard 2011, 100) are not in evidence. Toilet or cosmetic implements would have been within the means of the wealthy to possess (Allason-Jones 2005, 138), and data suggests they are abundant at villa sites (Mattingly 2007, 473). The total absence of hairpins is unusual in comparison to other villas in the southern area of the Central Belt. These small and fine implements are presumed lost from hair pinned atop the head while bathing or during the process of rearranging hair afterwards (Allason-Jones 2005, 134). Contributing factors may be chronological (Cool 2000), circumstances of recovery/selection (as outlined above), or the poor preservation of bone (Chapter 8.4). Nonetheless, it is curious that some degree of casual loss is not reflected in the finds from the south-west wing.

Dining and diet

While the range and quantity of household finds from Chedworth Villa are deemed suggestive of serving and consuming food in a manner appropriate to the opulent dining rooms (Durham 2022, 403), this cannot be so clearly argued at Low Ham, where only some of the complex Roman-style dining paraphernalia (Taylor 2013, 181) can be evidenced. Fine and specialist Oxfordshire colour-coat wares, which effectively replaced samian for tableware by the mid- to later 3rd century AD (Timby 2017, 314; Booth 2020, 36), make up a large percentage of the Low Ham pottery assemblage. Ceramic drinking vessels in the form of beakers comprise 5 per cent of the 2018 assemblage, supplemented by a single flagon within the 1940s group. Ubiquitous in most Roman assemblages (Booth 2020, 1), and certainly in use among the servile and non-elite occupants of the wider estate (Cooper forthcoming), pottery was not a luxury commodity, however (Mattingly 2007, 513).

Tableware in a house of such elevated status would be expected to have been of metal or glass (Booth 2020, 37), yet the Low Ham assemblage provides none of the former and only scant evidence for the latter. A real mark of elite status was the quality and quantity of silver plate (Mattingly 2007, 470), although such finds are normally absent from settlement assemblages owing to the enduring value of the metal (Gerrard 2013, 106–7). The High Ham excavations produced two white metal-plated spoon handles (Wessex Archaeology 2011, 18–19), which

conceivably represent the only eating implements found on the wider Low Ham Villa estate. Both metal and glass were subject to recycling (Booth 2020, 37), and Allen supposes this to be a contributor to the Low Ham assemblage make-up (Chapter 7.8). Among the sherds recovered, two colourless fragments from the 1940s excavations are tentatively identified as tableware, and a single item recovered in 2018 is possibly part of a finer vessel. The emphasis among the glass assemblage is on storage containers and, although bottles or flasks might originally have arrived at Low Ham as packaging for now-unknown contents, they could subsequently have been reused as tableware (Chapter 4.7).

The material culture of food preparation features large among the pottery and, as at other late Roman sites (Gerrard 2013, 6), jars dominate (43% of the 2018 assemblage), suggestive of stewing as a principal cooking technique (Cool 2006, 39). Continuing the normal pattern for the composition of a Roman assemblage, jars are followed by bowls (36.8%) and dishes (10%), both of which could have been used either at the table or in food preparation, although none displayed sooting. Calculated percentages for other Roman sites suggest that a greater diversity of pottery forms/fewer jars indicates higher status (Booth 2020, 34). The late Roman villa sites of Frocester and Great Witcombe, Gloucestershire, both have jars at about 53 per cent (Booth 2020, 33), indicating Low Ham falls into the same range as other sites, but quantitative comparison is precluded by lack of secure percentage figures for pottery from the whole villa.

The overall assemblage includes the two basic requirements for a Roman kitchen, where pulverising ingredients was a prerequisite for many recipes (Allason-Jones 2005, 91). A single quern was found in Trench 1, in keeping with low instances across other villas in the southern Central Belt. Mortaria are represented by colour-coated and red-slipped examples, which may also have been used at the table as large serving bowls (Cool 2006, 45–6) and need not have been restricted to kitchen-based mixing and grinding utensils (Cool 2004). The stone vessel fragments (denoting either mortars or bowls) represent a Romano-British development with a focus in the South West and, while it appears their purpose was for grinding, this was not limited to a use with foodstuffs (Cool 2005, 56).

There is more evidence for the foodstuffs consumed than for the equipment used to serve and consume them. Botanical evidence for a number of native and non-native plant taxa is indicative both of a sophisticated diet and the combination of deliberate cultivation and importation. Cultivated pears and apples, a Roman introduction to Britain (Van der Veen *et al* 2008, 12), indicated by wood from trees in the Maloideae sub-family of plants (Chapter 4.8), is likely the source of previously published assertions that Low Ham had a fruit orchard (Branigan 1976a, 82), although no pips/seeds demonstrative of consumption were recovered. Such exotics were found alongside abundant evidence of native hazelnuts (*Corylus avellana*) and sloes/blackthorns (*Prunus spinosa*), and a single charred elder seed (*Sambucus nigra*). Walnuts (*Juglans regia*) and plums (*Prunus domestica*), represented by their shells and stone, respectively, could indicate either importation or cultivation (Van der Veen *et al* 2008; Witcher 2013). The pine cones from the well represent a rare item in Roman Britain and are very likely to have been imported (Lodwick 2015, 60). As well as the seeds being consumed, the fragrant cones themselves had ritual uses (Lodwick 2015, 58). Records do not suggest that the cones were charred (Table 4.6), so they may not have been burned to release their fragrance, and might instead be discarded food waste.

Evidence for flavouring or oil crops includes black mustard (*Brassica nigra*). Regarding oils, no amphorae-borne commodities appear to have been arriving at Low Ham in this period, whereas some villas did continue to receive imported olive oil later on (Timby 2017, 314). A seed of oregano (*Origanum vulgare*) was recovered from the well and could have been another source of flavour enhancement, although the native wild marjoram is the same species. Coriander, a relatively common occurrence in Roman Britain (Van de Veen *et al* 2008, 15), is absent, perhaps indicating somewhat 'local' tastes and preference for mustard, although this could simply reflect recovery.

All three of the principal Roman cereal grains are evidenced, spelt (*Triticum spelta*) and emmer (*Triticum dicoccum*) wheats, which dominate, followed by barley (*Hordeum vulgare*). The spelt accords with observed patterns for the South, where raised loaves appear to have been the preference (Cool 2006, 77–8). Scantlebury (Chapter 8.1) has identified evidence for the malting of spelt wheat, probably for brewing beer, which might have found a ready market at nearby Ilchester. Beer's relatively short shelf life means that any intended for sale would have had to be transported regularly to the consumer (Cool 2006, 142–3).

The 2018 faunal assemblage comprises the typical components for a late Roman villa: cattle, sheep/goat and pig, with individual bones indicative of chicken and fish (Chapter 8.4; Baker 2019). The size of the assemblage precludes discussion of processing and cooking meat products. Oysters and mussel shells were found in such small quantities (G Campbell, pers comm, 2022; Denman 1948, 22) that it is not possible to comment on their contribution to diet, save for noting that more definite

oyster consumption waste was recovered from High Ham (Wessex Archaeology 2011, 21).

The animal bone data indicate that the beef consumed at Low Ham was not from prime cattle, in contrast to Chedworth, where young animals were still being consumed, while traction requirements to maximise agricultural output were of greater concern elsewhere (Ingrem 2022, 437). At Bowdens Lane Quarry the majority of cattle were also being killed at older ages (Holmes and Gordon 2023, 142), with some skeletal elements showing pathological changes consistent with use as draught animals (Holmes and Gordon 2023, 142). However, that site does show a change in the late Roman period towards the keeping of younger animals with an emphasis on meat (Holmes and Gordon 2023, 144). Whether the primary driver for change was altered eating habits or changes in land management practice, and how it reflects on the Low Ham cattle assemblage (a real difference or a taphonomic anomaly?), is unknown.

Dress and adornment

Personal appearance was a key medium through which the late Roman elite emphasised their status and social rank (Scott 2000, 169; Gerrard 2013, 145). Despite items of adornment being poorly represented object categories at villa sites in the South and Central Belt of Roman Britain (Brindle 2018, 15, 22), across these areas it has been possible to identify recognisable visual differences in the dress of those living at different settlement types (Smith and Fulford 2018, 346), with villa inhabitants more likely to have worn dress accessories such as bracelets and finger rings, as well as hairpins (Smith and Fulford 2018, 346). A plethora of styles existed within those categories, and the reception of material culture in rural areas appears to have been selective (Taylor 2013, 181), so it is illuminating that at least some of the Low Ham objects in the following discussion appear to represent local choices.

The total assemblage includes two shale armlets and six copper-alloy bracelets, a relatively modest number for a villa in the southern Central Belt. Copper-alloy bracelets perhaps having fallen from fashion in the late 4th century AD (Gerrard 2013, 105) offers a possible temporal explanation. Along with the whorls discussed below, the two lathe-turned shale armlets make up a total of six shale artefacts, the average for other villas in the southern Central Belt area. Shale, and its black shiny counterpart jet, had a particular significance for females (Allason-Jones 2005, 123–4) and was commonly manufactured into objects associated with women. What combination of belief in the special properties of the material, concerns around fashionable appearance, or demonstration of wealth saw these armlets worn at Low Ham is impossible to know. They would have been relatively easily obtained, as Low Ham is located within an area with a high distribution of Kimmeridge shale artefacts (Eckardt 2014, fig 4.12), this Dorset material being exploited on a significant scale (Mattingly 2007, 400).

The copper-alloy twisted cable bracelets from Low Ham are typical of late Roman examples from the region (Durham 2022, 403) and represent a popular style widely available across the Empire, although the evidence is for local rather than centralised production (Swift 2000, 160). The multiple-motif strip bracelet represents a southern British style, particularly a phenomenon of the South West (Swift 2000, 145), and the notched example a type found in both the east and South West of Britannia (Swift 2000, 129). Localised distribution most likely demonstrates regional workshops and their marketing zones, which must in turn be catering to local preferences (Swift 2000, 175). These bracelets demonstrate that, in a region where both Empire-wide and local styles were in circulation, the female population of Low Ham was engaging with both. Found in both the south-east range and the opulent south-west range, these bracelets could be indicative of local preferences among both elite and non-elite occupants.

The low incidence of brooches, largely utilitarian items worn by both sexes to secure garments (Allason-Jones 2005, 121), is certainly a reflection of the predominantly late date of occupation. Reflecting changes in dress, brooch use in Britain starts to decline in the 3rd century AD (Brindle 2018, 22; Durham 2022, 402), and the tradition of brooch making and wearing almost dies out in the early–mid-3rd century AD (Fulford 2018, 3). Finger rings were also worn by both males and females, with the Low Ham example of relatively slender size carrying decorative detail that matches one of the bracelets. It is possible that the two were intended to be worn together.

Most of the footwear evidence is of limited interpretive value, with the scattered hobnails and single iron cleat from the 2018 excavations serving only to demonstrate ground disturbance since the Roman period. Radford's excavation notebook hints at discovery of a nailed shoe *in situ* (1948a, 75), but it is not evidenced among the extant assemblage. Low Ham is one of only two villas in the southern section of the Central Belt with conditions conducive to leather preservation. The late Roman child's shoe from the well is important in raising the visibility of children in the archaeological record for villas. Worn on the left foot and with a sole length of 12.5cm, it is just above the range considered to represent infant shoes (10–12cm) in the large assemblage of

footwear discovered at Vindolanda (Greene 2014, 30). The shoe's style is also common to adults and includes a somewhat complex fastening mechanism. Research into the Vindolanda shoes leads Greene to propose that children were also bound by the sartorial expectations of class when it came to footwear (Greene 2014, 32). If it were deemed important to reinforce the social standing of even the youngest family members through their dress, might then this shoe have belonged to a child within the villa owner's family?

Tentatively included among the dress accessories is the openwork fitting which may be from a belt or strap. Belt fittings are generally accepted to be a facet of military dress (Mattingly 2007, 249), suggesting that someone present at the villa had an association with the Roman military or machinery of state. Discussions around the types of people who might have resided in well-appointed villas often list representatives of the state, members of the army and veterans (Mattingly 2007, 372, 457) and military equipment is not uncommon at villa sites. It was found at 23 per cent of the villa sites surveyed as part of the RSRB project (Smith and Fulford 2018, 354). Possible interpretations deriving from this particular object's presence at Low Ham are noted in the discussion below.

Other inhabitants

Much of the foregoing discussion has concentrated on the identity, activities and appearance of the villa's owner and family. Consideration of the vast array of other inhabitants is possible through the material evidence of likely administrative, agricultural and other labours. An array of both permanent and seasonal workers would have been required for the running and upkeep of the courtyard buildings and wider estate (Branigan 1976a, 69; Brindle 2023, 214), in all likelihood incorporating slave labour (Smith and Fulford 2018, 355). Visiting artisans have also left their mark, through mosaics installed (Chapter 4.5) and the sizeable quantifies of tesserae-making waste left behind (Chapter 7.5).

Villas being hives of activity might explain the high frequency of coinage recovered from these site types (Brindle 2017, 252). In fact, one theory for the prolific use of coins in rural areas in the early 4th century AD centres around the villa estate's role in taxation and pay, rather than simply reflecting widening participation in a monetary economy (Walton 2022, 20). The Low Ham coin assemblage is small, but consistent with wider trends in the South West (Chapter 7.1), namely the high proportion of Valentinianic coinage of AD 364–378, Reece period 19 (Moorhead 2001; Brindle 2014). It has been suggested that this relates to increased rural activity, possibly associated with grain export to the continent, or to the presence of state operatives in the region (Moorhead 2005, 158; Esmonde Cleary 2017). The Low Ham coin peak in Reece period 19 (ten coins from the Low Ham excavations combined) is not equalled at High Ham (two coins; Wessex Archaeology 2011, table 3 and fig 9), and conclusions about a differentiation of activities and therefore economic functions across the various elements of the purported estate are tempting. Socha-Paszkiewicz *et al* (2023, 156) conclude that the occupants of Bowdens Lane Quarry were not closely integrated into the monetary economy. However, Roberts reads that coin signature differently (see Chapter 12.2).

Some level of record keeping would certainly have been necessary for the administration of a large estate, for which the iron stylus may have been a key tool, used in conjunction with wax tablets for note taking and recording economic and legal matters, as well as for personal correspondence (Mattingly 2007, 41; Tomlin 2016, 27). Low representation of styli is the norm (Mattingly 2007, 461) and it may be significant that the Low Ham stylus was not derived from the main complex of buildings, those most often targeted for excavation and where literacy is ably demonstrated by the Dido and Aeneas mosaic, but from the area of enclosures north-west of the villa, and thus likely relating to everyday administration (Eckardt 2014, 206).

The ability to measure out goods accurately is fundamental to trade activity (Brindle 2017, 246) and steelyards, and the weights associated with them, follow a similar hierarchy to coins in terms of their social distribution (Brindle 2017, 247). A steelyard balance, with which the Low Ham weight found within Room 14 would have been used, was a highly portable and thus versatile piece of equipment (Smither 2016), perhaps employed as part of the commercial activities of the estate or used for domestic food preparation. Although the need to weigh commodities would have been part of daily life (Durham 2022, 404), weighing equipment is not a frequent find on villa sites in the southern section of the Central Belt, and so the Low Ham example is of note.

Water management would have been another daily concern, for which the bucket handles provide tangible evidence. In addition to the needs of any brewing operation, the elaborate baths, and for drinking, water would have been required for a whole host of domestic tasks such as food preparation, cleaning and laundry. Water for the kitchen was typically transferred from a well or cistern by wooden buckets (Allason-Jones 2005, 90), a task falling to the household slaves (Croom 2011, 24). The approximate size of the Low Ham buckets is comparable to those from Dalton Parlours, vessels which

Croom calculated to have held *c* 11.3 litres (2011, 29). Taking as a proxy a maximum water use per capita in rural areas of 18 litres per day (Croom 2011, 29), each of Low Ham's occupants would have had a daily requirement of almost two full buckets of water. The population hypothesised for Gatcombe of *c* 300–400 persons (Branigan 1977, 207, 213), while undoubtedly an overestimate for Low Ham, serves to reinforces that water provision was no small undertaking.

The villa economy

The villa as a consumer is apparent through the far-reaching market contacts demonstrated by the Low Ham assemblage. The well-provenanced building stone is thought to have arrived by a combination of the Fosse Way and a riverine route, a tributary of the major south-east to north-west-flowing River Parrett (Chapter 7.5). In terms of stone objects, a now unlocatable 1940s stone vessel fragment was of Purbeck marble (R H Leech, pers comm, 2022), and the 2018 vessel is of a local White Lias. This aligns with an observed fall-off in the use of Purbeck mortars as one travels further from the source (Cool 2005, 55) and a corresponding use of local stone in Somerset (Cool 2005, 56).

Patterns in the villa assemblage being driven by wider regional trends is demonstrated in the later pottery, which is predominantly represented by big regional industries. Black-burnished specialised cook wares such as jar forms (Cool 2006, 20) dominate, with a remarked-upon lack of obvious examples of North Somerset grey ware (Chapter 7.3). Consumption is not only about choice, of course, but also availability (Gerrard 2013, 90, 225). Difficulties in obtaining Black-burnished ware products in south Somerset have been supposed (Gerrard 2013, 93), but it is probable that products were carried overland via Ilchester for onward distribution via the Severn Estuary (Mattingly 2007, 517), thus passing within easy reach of those provisioning the villa. In discussing this phenomenon, Gerrard outlies possible linked distributions for pottery and salt, a commodity which played an important role in the agricultural economy (Gerrard 2013, 94).

The botanic evidence for wheat and barley crops, supplemented by the structural evidence for crop processing, indicates that the products of the Low Ham estate were largely agricultural (Leech 1977a, 160), contra H Stephen L Dewar's earlier suggestions that the villa might have had an industrial base (Chapter 3.4). A focus on agricultural production is a norm (Henig *et al* 2022b, 6), perhaps reflecting the late Romano-British economy's orientation towards agrarian production (Gerrard 2013, 99). Intensive arable farming was a feature of this area of the country specifically (Brindle 2023, 211).

Only indirectly visible in the archaeological record is the quantity of labour a villa owner must have commanded in order to run a successful estate. Estimated figures for an agricultural workforce at Gatcombe, although perhaps a dedicated processing centre (S Esmonde Cleary, pers comm, 2025) and heavily caveated by the original authors (Barker and Webley 1977), at least indicate an order of magnitude of those involved. Calculations propose that around 60 families were required to plough and harvest 1,000 acres of barley and wheat (Barker and Webley 1977, 199). Agricultural intensification would also have required an uplift in animal labour in the form of increased traction (Ingrem 2022, 435). Cussans notes that the age-at-death pattern among Low Ham cattle shows some indication that beasts were not raised for prime meat but for other utilities such as traction or dairying (Chapter 8.4), in contrast to other status establishments (Ingrem 2022) and, interestingly, to the late Roman animal remains from Bowdens Lane Quarry (Holmes and Gordon 2023, 144).

While sheep certainly seem to have been important to the estate economy in terms of meat, quantifying the contribution of their secondary products is much more difficult as there is not always a straightforward correlation between faunal assemblages including wool-bearing animals and evidence for wool production among associated material culture (Brindle and Lodwick 2017, 227). Spinning of wool into yarn is evidenced by six spindle whorls (four of shale and two reworked grey-ware pottery sherds), which is about average for villas in the southern Central Belt. Spinning can be tentatively attributed to a particular segment of the villa population. Late Roman-period whorls have been shown to be strongly associated with women (Eckardt 2014, 119), perhaps because spinning was regarded as a symbolic, virtuous pursuit (Brindle and Lodwick 2017, 226), although the popularity of wool for clothing would have made it a daily chore for most women in Roman Britain (Allason-Jones 2005, 104, 110). Black, shiny materials such as shale are assumed to have been more highly valued, and perhaps indicate an owner of wealth and status (Alberti 2017, 4). Following this line, the tempting assertion is that the shale examples relate to members of the household, and the ceramic ones to the lower orders.

Notable among the animal bone assemblage from 2018 are the sheep animal bone groups (ABGs) and their comparability with the proposed ritualistic deposition of similar carcasses at other sites (Chapter 8.4). This being perhaps the clearest evidence for ritual activity at Low Ham Villa elevates the perceived importance of sheep to

the site. The animal bone evidence from Bowdens Lane Quarry shows that sheep were also of considerable importance to the economy there (Holmes and Gordon 2023, 143). Cross-referencing the detail of the two assemblages appears to support Roberts' suggestion (Chapter 12) that there is a relationship between these two sites. Bowdens Lane provided evidence for the large-scale processing of sheep/goat carcasses (Holmes and Gordon 2023,140), with animals being culled for meat (Holmes and Gordon 2023, 142). Of key interest is the statement that meat-bearing upper limb elements are largely absent and assumed to have been consumed or disposed of elsewhere (Holmes and Gordon 2023, 141). In discussing a similar pattern at Dings Roman Villa, Bristol, Brindle cautions that 'elsewhere' may simply be an unexcavated portion of the same site (2023, 201). However, as Low Ham had hind limb elements present in a number of the sheep ABGs (especially ABGs 3 and 4; Chapter 8.4), it may well have been the consumer (in the sense of food, ritual materials, or both) of these products from Bowdens Lane. It is important to repeat here that Cussans notes a longevity of practice in forming the ABGs (Chapter 8.4), as some of the Bowdens Lane evidence dates earlier than the main *floruit* of activity at Low Ham.

11.4 Late Roman changes

Observable changes towards the end of the lifetime of the villa may have been in response to wider changes occurring across the Empire. Evidence for smithing, using a combination of charcoal and coal as fuel, comes from the south-east range, with hand-collected slags from Trench 1 likely representing waste from the same operation but distributed further afield (Chapter 7.9). Items potentially relating to manufacturing activities were found in both Trench 1, a stone hone and iron knife, and Trench 2, an iron tool used in conjunction with a hammer. The smithy identified in 1946 and quantity of slag and coal revealed in 1955 (Chapter 3.4), and of which no material evidence survives, are from the same general corner of the courtyard and could have been related to this industry.

The 2018 debris is representative of short-lived or occasional activity consistent with repair, recycling and small-scale manufacture to service the needs of the immediate community (Chapter 7.9), rather than the production of marketable commodities. That the charcoal used for this operation is indicative of local wood collection, rather than demonstrative of travelling to obtain taxa with higher calorific output (Chapter 8.2), may further support an interpretation of something other than sustained activity with considered resourcing (although Flintoft, Chapter 8.2, postulates other explanations). The stratigraphic evidence is for metalworking taking place in Trench 2 in a repurposed building that appears to have been open along one side, and Roberts even suggests that the thatch may have been removed from the roof (Chapter 6.1). Such an 'open' setting would be particularly unusual for smithing but has been suggested for operations considered to have been very temporary (Ferris 2010, 37; Cubitt and Starley 2021, 674). The perceived expedient, perhaps even opportunistic, nature of this activity may be related to the temporal period in which it was taking place. Radiocarbon dates place it right at the end of the 4th century cal AD, perhaps tipping into the early 5th century cal AD. Whereas ready-to-smith iron was in good supply even in rural areas for most of the Roman period, by the middle of the 4th century AD the metal economy had begun to unravel (Fleming 2021, 121–2).

Another function that appears late in the life of the courtyard buildings is crop processing. Charred cereal grain evidence indicates this was taking place in the south-east range (Chapter 6.1), from no earlier than the third quarter of the 4th century AD, coinciding with the probable end of crop processing in the enclosures north-west of the villa. It continues either to the final decade of the 4th century AD, or the first two decades of the 5th century AD. Bringing crop processing closer to the main focus of occupation may have been for reasons of security (Fleming 2021, 100), perhaps indicating that greater supervision was deemed necessary if the social obligations of those carrying out the work had been weakened following the collapse of previously accepted authority (Gerrard 2013, 257; Smith and Fulford 2018, 356). Furthermore, the brewing activity discussed by Scantlebury (Chapter 8.1) could represent a deliberate effort to produce a saleable commodity out of grain that was previously sold to the state (Gerrard 2013, 257). The Low Ham data does not stretch, as the similar evidence in conjunction with confirmed military dress accessories from Dings Roman Villa does (Brindle 2023, 217), to warrant reflection on Gerrard's (2013) ideas around beer consumed for feasting among those in a late Roman militaristic retinue.

Whatever the character of the latest activity, understanding quite when it ended is complex, not least as clearly accepted dates for material culture become increasingly sparse at time goes on (Gerrard 2013, 80). The suggested end date for the villa derived from the scientific dating programme is *cal AD 395–485* (*95 per cent probability*) (Chapter 6.2). The material culture assemblage supports use of the site up to the end of the

4th century AD at least, with a mixed impression beyond. Shale whorls are an object type continuing to the end of the 4th century and perhaps into the 5th century AD (Cool 2010), and late parallels are available for the copper-alloy cable bracelets (Chapter 7.2). The pottery from Trench 1 of the 2018 excavations includes slight evidence for ceramics dating to the mid–late 4th century AD onwards, to which just two sherds from the 1940s work can be added. There are none of the late Roman shelly wares that, on other villa sites, demonstrate continued use in the later 4th century AD or beyond (Timby and Bird 2022, 421), and no definitive examples of the Black-burnished type 18 bowls of probable early 5th century AD date (Gerrard 2016). The carved column reused as a *pilae* stack suggests maintenance of the bathing facilities late into the lifetime of the villa, while at the same time evidencing a pragmatic approach to building materials though recycling that is also documented elsewhere (Fleming 2021, 100–7).

Firmer evidence is found among the coin assemblage, which includes two nummi of the House of Theodosius and belonging to Reece period 21 (AD 388–402). Crucially, this suggests continued access to, and use of, money, potentially as late as the first quarter of the 5th century AD (Chapter 7.1). From High Ham, a single nummus of Honorius, dating to AD 393–402 and representing one of the last official Roman issues delivered to Britain (Wessex Archaeology 2011, table 3), could be read as late occupation there as well. The Type D penannular brooch discussed by Gerrard (2004, 5; illustrated in Leech 1981a, 213) as very late evidence at Bradley Hill, Somerset, is noted; however, the Low Ham example being from a 3rd-century AD context makes it more likely that this is a long-lived 1st-century AD example.

Sometime late in the occupation of Low Ham a scattered 'hoard' of 23 coins with a *terminus post quem* (TPQ) of AD 353 entered the sequence in Room 26. The TPQ places their manufacture a little before a replacement of the *Fel Temp Reparatio* reverse (Bland 2018, 105), which rendered them of little value, and thus contradicts the oft-repeated reasons for hoards relating to security of wealth. Recent work on coin deposits in and associated with buildings suggests other possible reasons for this deposit, all of which are indicative of change. The coins could have been accidentally incorporated within the building, perhaps in a build-up of material during renovation, levelling or disuse (Bland *et al* 2020, 202). Another possibility is that they represent a deliberate deposit within the building that then became scattered, perhaps during later scavenging of the site (Bland *et al* 2020, 202 and see 203). Alternatively, they could potentially represent a closure deposit (Bland *et al* 2020, 202). The co-location within this deposit of personal possessions, jewellery and late Roman whorls, and a fragment of inlay perhaps deriving from a box used to store such items, steers interpretation towards the latter two possibilities. The openwork belt fitting being included in this group is tantalising and could be explained either by it being included with deposited items, evidencing a military or state connection through a resident of the villa, or lost by a scavenger, emphasising a possible late Roman date for the object itself.

11.5 Abandonment

When or why villas were finally abandoned is a topic of much speculation (Scott 2000; Mattingly 2007; Gerrard 2013), and explanations range from the social, political and economic to the practical. At some stage the occupants of Low Ham did finally quit the site, and the material culture evidence offers some insight into the villa's individual biography of abandonment. Datable evidence for activity at Low Ham at the very end of the 4th century AD (see above) suggests abandonment in the early 5th century but it is not possible to be more precise about the 'when'. The absence of extant human skeletal remains precludes the use of scientific dating to address this issue, as others have done elsewhere (Gerrard 2004). The fate of the juvenile femur found within the well (Chapter 3.4) is unknown.

An overarching reason for abandonment is perhaps apparent from the material evidence. The preceding discussion has set out that agriculture was a primary component in the villa's wealth portfolio. As such, a key market for the villa's products may have been the state, the collapse of which in the early 5th century AD (Gerrard 2013, 244) would have profoundly affected the villa's economic fortunes. The new industrial uses of rooms in the south-east range, well-paralleled in the late 4th century AD at other sites (Brindle 2023, 217), might represent a period of managing differently to mitigate change. Tentative evidence for late Roman smithing at Dings Villa, Bristol, when viewed in light of other contemporary evidence, may represent altered status but not necessarily decline (Brindle 2023, 217). Ultimately, however, some combination of dwindling fortunes and the disruption of social and economic networks must have made the previous way of life unviable.

Perhaps also as a consequence of wider political changes, abandonment of the villa structure itself may have been due to declining structural integrity of the buildings. Fleming asserts that low availability of those with the skills required to keep Roman architecture in a

good state of repair would have seen masonry buildings ruinous, and by implication uninhabitable, by AD 450 (Fleming 2021, 107, 109). In this respect it is notable that the black layer in Room 26, one of the most interesting and productive deposits known from the south-west range, is described as being 'directly sealed by fall of slates from roof' (Radford 1948a, 9). Late buildings often tell a story of opportunistic scavenging (Fleming 2021, 104), and the small quantity of ceramic building materials from the 2018 excavation could imply selective and comprehensive removal of visually distinctive types of building material from the site (Chapter 7.4). Patterns among the 2018 finds are not due to recovery bias, something that cannot be argued for the earlier assemblage. However, it may be significant that the extant 1940s ceramic building material, including the unusually well-preserved voussoirs, would all have been employed within the structure of the building.

A final point of consideration is what the material and environmental evidence tells us about the mechanisms of abandonment. It is worth reflecting that while the Chedworth assemblage is described as 'representative of the luxurious lifestyle one would expect from a well-appointed villa' (Durham 2022, 407), the evidence from Low Ham does not measure up to the architectural expression of wealth in the same way. Possible explanations around recovery circumstances, and targeted removal of materials for recycling or through scavenging, have already been offered. However, the evidence from the well highlights that the material culture signature is also indicative of final activities at the site.

Although few of the objects survive for examination today, from descriptions of finds recovered from the courtyard well (Chapter 3.4; Wright 1956) we understand it to have contained building materials, animal carcasses, human remains, left shoes/shoe parts, ceramic vessels, and hazelnuts. The bucket handles found therein are not of a type thought to have been used with a well rope (Chapter 4.2), and reference to recovery of the now missing wooden parts (Dewar 1961a, 58–60; Chapter 3.4) indicate that they entered the well whole. This is a further respect in which these items parallel the buckets from the well at Dalton Parlours, Yorkshire, whose deposition along with a large number of other artefacts is interpreted as a symbolic or ritual act possibly related to desertion of the site (Wrathmell 1990, 272).

Fleming discusses well closure events in detail, citing that around 50 examples of the practice have been identified (2021, 109–10). The Low Ham well assemblage includes most of what she describes as the standard composition of such a group of objects (Fleming 2021, 110). Left shoes seem to be more commonly included than right (Fleming 2021, 110), although whether the Low Ham ceramic vessel went in whole as per the normal trend is unknown, as only sherds are reported (Chapter 3.4). Some of Fleming's typical assemblage is not matched in the Low Ham well group: there is no record of coins, querns, metal vessels or oyster shells, and other items are additional to her list (see Chapter 3.4). Dewar specifically notes that no post-Roman objects were recovered (Chapter 3.4), which is crucial to the argument that this infilling took place in the Roman period. Well closures were perhaps intended to purposefully obstruct or foul water sources, with many taking place in the decades either side of AD 400 (Fleming 2021, 109–10). Antiquarian descriptions of the well at High Ham are of it being filled with rubbish (Wessex Archaeology 2011, 12). While there are no further details of that discovery with which to make a fuller comparison to Low Ham, it being subject to the same final treatment is interesting in light of the argument that it formed part of the same estate.

Lastly, it is necessary to acknowledge a mechanism of abandonment suggested by the earliest excavators of the site, that the departing occupants may simply have taken their possessions with them (clipping attributed to the *Western Gazette*, May 1946, and pasted into Denman 1948, 16). If the occupants left the villa in an orderly and unhurried manner – Denman's 'quiet exodus' (1948, 78) – then they would have had opportunity to remove or disperse their possessions as they saw fit. The slide key handle found in the south-west range indicates a concern for security of possessions, and in fact security equipment may have become an object of status in its own right (Smith *et al* 2018b, 51). It does seem unlikely that individuals of this mindset would simply abandon their various treasures and the markers of the lifestyle to which they had become accustomed. Scholarly discussion of late Roman elites makes frequent reference to indications of power and position through both architecture and material culture (Gerrard 2013). The latter is eminently more portable and not subject to the maintenance issues that Fleming (2021) outlines may have been the death knell for some villa structures.

In considering responses to the change brought about at around the turn of the 5th century AD, Gerrard (2013, 252) suggests that at least some of the elite may have chosen to try to maintain their previous lifestyle. In this regard we note with interest the 5th-century AD reoccupation of the hillfort of Cadbury Congresbury *c* 50 miles to the north within Somerset. It may have offered both a defensible site in uncertain times (Mattingly 2007, 534) and the significance of physical separation from the surrounding area and people (Gerrard 2013, 171), perhaps also retaining some cultural significance as a 'special place' (Gerrard 2013, 171). The material culture of those who moved there suggests they retained a strong desire for some of the trappings of a Roman lifestyle, even apparently scavenging for additional items to complete the material culture package (Fleming 2021, 83).

Concluding remarks

The Low Ham assemblage is both modest in size and heavily impacted by the circumstance of its recovery. The dichotomous situation in which a site of such rich architectural remains should produce such a limited portable material culture signature has been a useful driver to interrogate nuances within the assemblages, particularly in relation to the 4th-century AD *floruit* of the villa and its subsequent demise. In synthesising the finds and environmental evidence for publication, it is hoped that Low Ham can, in turn, contribute to refining the interpretation of material culture from other elite villa sites in the South West and beyond.

12 Low Ham in its landscape context

David Roberts

This chapter will set Low Ham Villa in its wider context (Fig 12.1). A brief overview of the relevant aspects of the conquest and occupation of the region by the Roman state will be followed by consideration of Low Ham's local and regional landscape contexts. Next, dryland and wetland landscape change and rural settlement will be discussed with reference to the wider archaeology and history of the period, before the chapter closes by considering the end of Roman occupation in the region and the cessation of activity at Low Ham Villa.

12.1 Conquest and control

The region around Low Ham was conquered by the Roman Empire by AD 47. The process of conquest was likely traumatic, destructive and deliberately terrifying, based on the limited textual evidence relating to Britain and analogy with Roman texts discussing conflicts elsewhere (Mattingly 2007). While Stewart and Russell (2018, 158–61) are correct that interpretations of the evidence from Dorset and the South West have been skewed by Mortimer Wheeler's famously colourful account of the so-called war cemetery at Maiden Castle, there is nevertheless more evidence for conquest-period hostilities in the South West coin-using region than elsewhere in central and southern Roman Britain (eg Barrett *et al* 2000 for Cadbury Castle; N Sharples, pers comm, October 2023 for Ham Hill; Roberts accepts the widely held interpretation of *Suet Vesp IV* (Rolf 1914) that Vespasian's campaigns with *Legio II Augusta* took place in the South West, contra Stewart and Russell 2018, 158). Whatever interpretation one makes of the Hod Hill ballista bolts (target practice or bombardment; Stewart and Russell 2018, 167), the establishment of a fort within the hillfort's defences and the provision of artillery to its garrison hardly speaks of a quiescent local population. The same argument can be made on a larger scale regarding the establishment of the legionary campaign fortress of the *II Augusta* at Lake Farm, which was occupied during the AD 40s (Stewart *et al* 2020). This makes it very likely that the conquest was opposed in the region even if not all previously claimed instances of Roman military actions have been correctly interpreted. Some evidence, as Harding (2016, 194) and Mattingly (2007) suggest, may date to the Boudiccan rebellion rather than the conquest period.

Following its occupation, the region around Low Ham had to be controlled to ensure that domination was maintained, and the material extortions of the Empire in resources, labour and wealth could begin. Somerset was garrisoned with forts at Ham Hill (probably briefly), Ilchester in the south, close to Low Ham, and Bath and Charterhouse in the north, respectively securing the major riverine and land routeways to the west and north, and the valuable resources and a key river crossing in north Somerset (Leach 2001a, 22–26; Davenport 2021, 35–43).

The early fort at Ilchester (Fig 12.2) on the north bank of the Yeo was replaced by a larger fort on the opposite side of the river crossing, perhaps around the time of the Boudiccan rebellion or *II Augusta*'s redeployment from Lake Farm to Exeter. During this period an extramural settlement developed, but the fort was vacated by the early AD 70s as the army moved northwards and westwards, campaigning into Wales (Leach 2001a, 25–6). Despite this, a significant town developed at Ilchester, probably due to the enduring importance of the location for transhipment of goods from the coast, and the junction of one of Britannia's most important roads, the Fosse Way, with several smaller roads. There are hints at formal town planning in Ilchester's street grid, but the date that this was established is ambiguous (Leach 2001b, 56–7). The latest fort appears to have been levelled when it was vacated, so perhaps some form of grid may have been laid out at this point, given the availability of the site and military surveying expertise. The limited opportunities for excavation at the centre of Ilchester have prevented extensive exploration of the core of the town, although the presence of large masonry structures

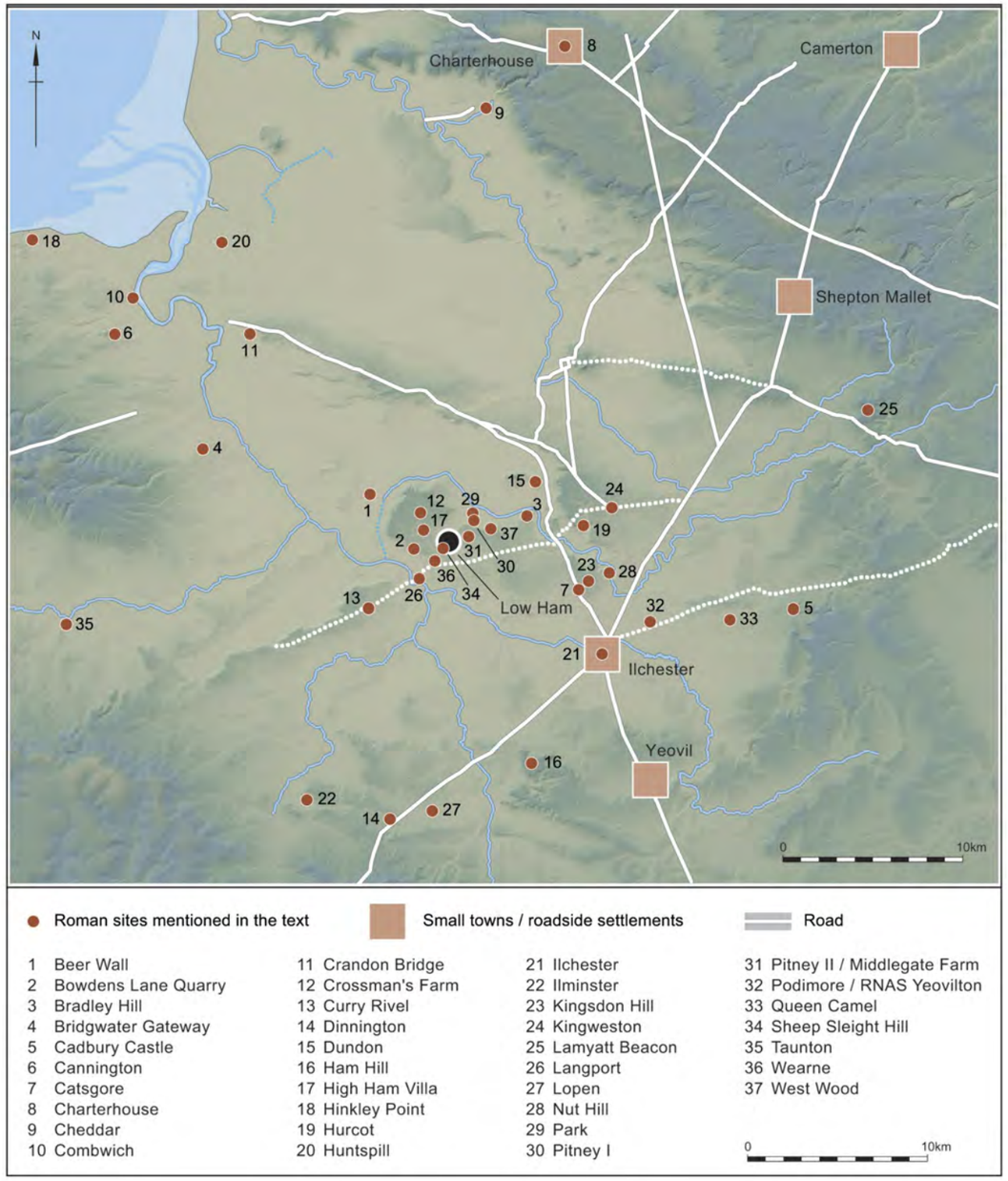


Fig 12.1 Roman sites mentioned in the text (John Vallender, Historic England)

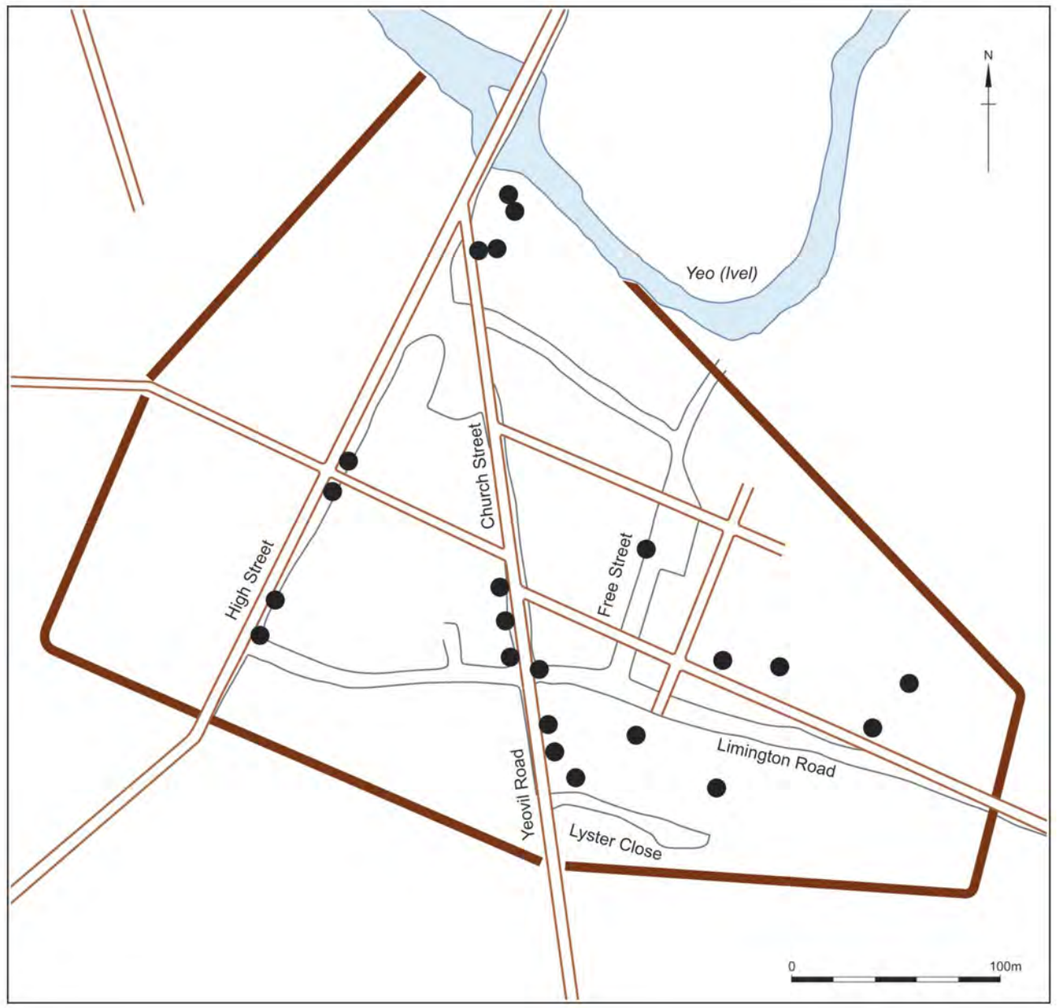


Fig 12.2 Plan of Roman Ilchester. Black dots indicate locations of mosaic pavements (Cosh and Neal 2005, 202, fig 211)

beneath the present church might hint at a forum-basilica (Leach 2001b); such a building is *de rigeur* if we accept the epigraphic evidence that Ilchester was the centre of the *Civitas Durotrigum Lendiniensis*. The apparent subdivision of the presumably formerly larger *Civitas Durotrigum* may have been relatively early in the Roman occupation of Britannia. Could this event possibly be associated with the laying out of a street grid at Ilchester in a provincial reorganisation following the Boudiccan rebellion or campaigns that followed in Wales? Subdividing a restive civitas might have made strategic sense, although evidence is required from Ilchester to prove this suggestion.

Transhipment to and from Ilchester's quays would have been to the port and depot at Crandon Bridge, on the edge of the Severn Estuary (Leach 1994, 19; Rippon 2008, 92). Rippon dates the earliest part of the excavated sequence at Crandon Bridge to the early 2nd century AD, but the artefactual assemblages suggest activity from a couple of decades earlier in the late AD 70s or early 80s (Rippon 2008, 100). This could, if considered in conjunction with the establishment of Ilchester as an urban site, be thought of as deliberate policy by the Roman state to consolidate supply networks towards the Severn and Caerleon as the campaigns in Wales concluded.

Somerset, and indeed much of Dorset, Wiltshire and beyond, can be understood in the Roman period as functioning in significant respects as a supply basket for the Roman state in the wider region of the Empire.

Especially in the earlier Roman period, the focus of the state's movement of produce was from Somerset and the broader South West to supply the army at Caerleon and perhaps also the north-west of Britannia (Leach 2001a). Later, as will be discussed below, the focus of state-driven exports broadened to the Rhine frontier (Fleming 2021; Gerrard 2013). The riverine routes into Somerset allowed not only transhipment of goods through Ilchester, including agricultural produce from its fertile hinterland, but also lead and silver from the Mendips; the extensive and complex settlement at Cheddar, where a metalled road from the Mendips meets the River Axe, may well represent another port (Leach 2001a, 72; Jamieson 2015, 113). Crandon Bridge is located at almost the last dryland (or non-drained) ground heading west along the Polden ridge, and Cheddar at the closest contemporarily navigable point to the key mining zone at Charterhouse. The Roman settlement at the natural port of Combwich, on the west bank of the Parrett, likely acted as the landing point for goods moving to and from north Somerset and the Quantocks, but also as a ferry crossing for traffic from the east. The Ilchester–Crandon Bridge–Caerleon axis appears to have been particularly important for the supply of Poole Harbour pottery to the army and wider province, and salt from the Huntspill-Burtle salterns was also probably an important product shipped along this route (Rippon 2008, 93). These considerations are vitally relevant to Low Ham as they establish the conditions for wealth creation beyond the agricultural productivity of the landscape, which is key to understanding the later extraordinary *floruit* of villas in the area.

12.2 Low Ham in its local context

At Low Ham, it is unclear if the roundhouse settlement was still inhabited by the time of the Roman conquest, but there was nevertheless a major change to the site's layout in the early Roman period. This comprised the establishment of a 45m × 36m ditched enclosure. The repeatedly recut ditch was 1.15m deep and 2.5m wide, much larger than is normal at contemporary enclosure sites – eg Bridgwater Gateway (Oxford Archaeology 2020) and Podimore (Robinson 2021) – and was elaborated on at least its western side with a second, smaller V-shaped ditch and a palisade between the two ditches. Although Roundhouses 1 and 3 were truncated by the enclosure, Roundhouse 2 and those visible on geophysical survey could in theory be contemporary with it. An entire mature sheep was deposited in a small pit within the enclosure in the 1st century cal AD (see Chapters 6.2 and 8.4), demonstrating continued activity on the site, although this could be as simple as use of the enclosure for stock. A rectilinear wooden structure or boundary was also established in the centre of the enclosure in the early Roman period, and the presence of Caerleon beaker sherds suggests a late 1st-century AD date, although the feature is much recut and reworked later into the Roman period (Chapter 6.1).

If we follow the logic of enclosure and social organisation from the Late Iron Age phase of Low Ham, then perhaps this concern with enclosure in the early Roman period represented a loss of a relationship with a larger social group based at a developed hillfort, and a new concern with security and boundedness. While it is tempting given the size and morphology of the enclosure to posit a military link, the enclosure's structure is probably not sufficiently consistent to be a temporary camp. Early Roman activity is attested in the immediate vicinity by a continental plate brooch from just north of Low Ham dating from AD 43–60 (Portable Antiquities Scheme (PAS) ID SOMDOR-8C083), a cosmetic pestle from the hilltop immediately to the east (PAS ID SOM-8CAF0C), and a 1st- or 2nd-century AD nail cleaner from just outside the villa (PAS ID SOM-B7C5BA) (see Fig 12.9). Given these finds and the Caerleon beaker sherd, we can say that there were certainly people connected to early Roman supply networks present at Low Ham in the mid- to late 1st century AD while the key early Roman axis of trade through the region, between Caerleon and Ilchester, was being established. There is also a cluster of PAS finds just south-east of Pitney II Villa, comprising over 20 Roman coins and an incomplete brooch dating to between AD 75 and AD 150 (PAS ID 1024550). The coins include an *as* of Nero; alongside the brooch, this may hint at relatively early Roman activity in this locality too (PAS ID 1024558).

Contemporary with this activity at Low Ham, a farmstead revealed by geophysical survey at Park, slightly north of the Leazemoor Rhyne[1] and 2km north-east of Low Ham, appears to have continued from the Late Iron Age. Survey revealed a small group of enclosures dated by pottery from a small-scale excavation to the Late Iron Age and Roman periods (Randall 2020). Repeated finds

[1] To the south of Stembridge Road, where it passes in close proximity to the Low Ham Villa, this watercourse is known as the Low Ham Rhyne. However, to the north of Stembridge Road it becomes the Leazemoor Rhyne. The former name is used consistently throughout this volume except in instances such as this where the northern stretch is specifically discussed.

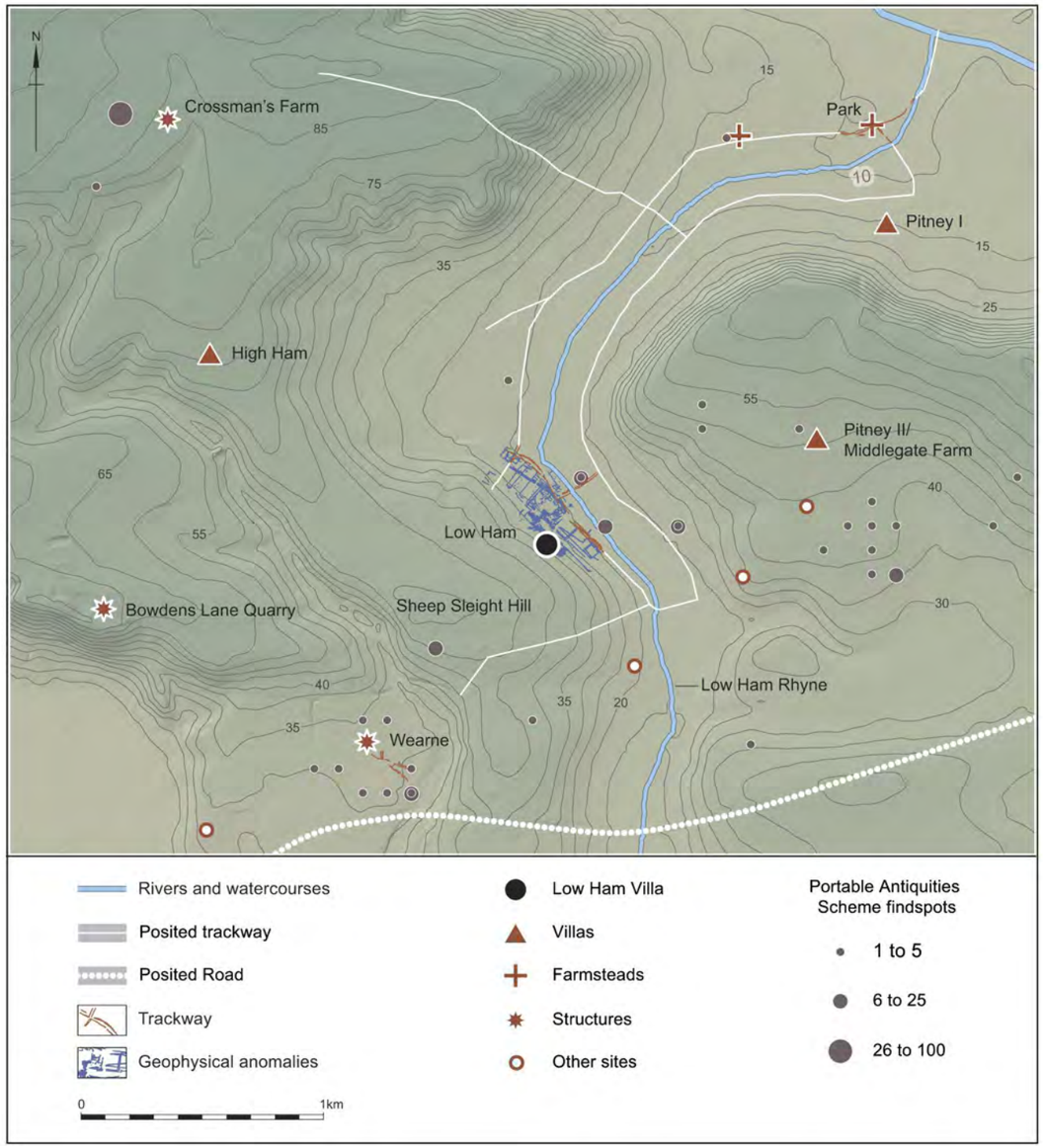


Fig 12.3 Low Ham in its local context (John Vallender, Historic England)

of Roman pottery in good condition 0.5km west of the site probably represent a further small settlement (Somerset Historic Environment Record (HER) 16737; PAS IDs SOMDOR-6F7A87, SOMDOR-6F50C4, SOMDOR-6F2223); indeed, a trackway running through the Park settlement leads directly to that concentration to the west (Fig 12.3). Tracing the line of the trackway around the contour of the valley above the floodplain leads to the extant Mortons Lane, then, departing where Mortons Lane turns uphill towards High Ham Villa, other field boundaries also coincide closely with the topographic position of the trackway, which then joins a trackway branching from those running in front of Low Ham Villa. While not fully proven, these routes may help us to build a picture of the local landscape in which the villa was built and inhabited.

The closest Roman HER record to Low Ham is of Roman burials found on Sheep Sleight Hill immediately above the villa in the early 20th century, although no details are available of these (Somerset HER 41493).

Chapter 6.1 set out the evidence for enclosures linked to the villa complex at Low Ham, dating from the 3rd century AD to the north-west of the villa, and with signs of continuing activity within the early Roman enclosure to the south-east. The south-eastern enclosure and its internal wooden structure may have been a stock enclosure and associated barn. The enclosures to the north-west were used for agricultural purposes, with the main 3rd–4th-century AD features in the excavated enclosure relating to crop processing. The other unexcavated enclosures were probably used for different agricultural tasks by labourers on the Low Ham Villa estate.

Low Ham's closest neighbouring villa is 1.1km to the east at Middlegate Farm, north-west of the modern village of Pitney (Pitney II). Very little is known about the site, which has produced a single mosaic known only from a lithograph, and reports of walls 2 feet wide and 2 feet tall. Even its location has been a matter of debate. Barber (forthcoming) has identified some cropmarks of archaeological origin where Cosh and Neal (2005, 286–7) and the HER adjudge the location to be (Somerset HER 54410; although old Ordnance Survey (OS) maps differ on location), but, while they are rectilinear, they do not resemble a villa complex (Fig 12.4). The better-known villa at Pitney (Pitney I) (Fig 12.5) is located further north, 1.8km north-east of Low Ham on the cusp of Sedgemoor, and has been discussed by several authors (Hoare 1831; Haverfield 1906; Dewar 1952; Applebaum 1966; Branigan 1976b; Leech 1977a; Leach 2001a). This large courtyard villa with several mosaics was occupied for a considerable period given that the excavator found four phases of flooring in part of the site. Cosh and Neal (2005, 282–6) give a 4th-century AD date to the mosaics, which include a panelled scene of various mythological figures or deities around Bacchus, and a secondary panel depicting cupids with the attributes of the four seasons. Pitney I bears several similarities to Low Ham, most obviously the figurative mosaic and courtyard plan, alongside its topographic location just above the floodplain. As discussed in Chapter 10, Low Ham is, however, a more elaborate complex, having considerably more, and larger, rooms around its courtyard, and more mosaics. Both establishments appear to have an enclosed area behind the villa on the western side, with an indented walled area, possibly a gateway, midway along its length. At Low Ham this feature is interpreted by Leech as a later garden (Chapter 10), but at Pitney, Applebaum and others interpret it as a private garden for the villa. At Low Ham this also appears to Roberts, Cubitt and Linford *et al* (Chapter 5; based on the geophysical survey report) to be a more parsimonious explanation of the features.

One and a half kilometres west of Low Ham is High Ham Villa, excavated most recently by Wessex Archaeology as part of a *Time Team* project (Wessex Archaeology 2011). Comprising two ranges, with the main residential range being to the north, High Ham is only slightly smaller than Low Ham in the length of the ranges, although it does not possess a complete courtyard. Both mosaics thus far discovered at High Ham are geometric and are attributed by Cosh and Neal to the Ilchester school (Wessex Archaeology 2011), and dated to the late 4th century AD. The site in general has finds hinting at early Roman activity, but the main villa could only be dated from the mosaics, therefore overall providing a familiar chronological model of early Roman activity and later Roman villa construction.

The villas of Pitney I (Fig 12.5) and Pitney II, and Low Ham and High Ham, share notable similarities as pairs. The larger and more substantially excavated villas of each pair have large numbers of rooms arranged around a central courtyard, with the provision of multiple mosaics including nationally significant figurative mosaics of mythological scenes and figures. Both are set on low-lying ground, whereas Pitney II and High Ham are set close to the highest ground in the immediate vicinity; none of the sites is intervisible. Scholars tend to discuss villas as implicitly separate entities in tenurial terms, which, as discussed above, does not consider the breadth of land-owning relationships known from the rest of the Roman world. Although proving the proposition is difficult, verging on impossible, it is tempting to see High Ham and Pitney II as subsidiary houses to those at Low Ham and Pitney I, respectively, with the Ham villas being on perhaps the somewhat richer estate given their slightly more elaborate architecture and decoration in comparison to their counterparts. Neither High Ham nor (from the limited available evidence) Pitney II appear likely to be foci of agricultural activity or industry and may instead be additional residential structures. Little consideration has been given in Romano-British studies to concepts such as dower houses or distributed subsidiary residences, with scholarship mainly discussing family dwelling models in relation to different elements of the plans of individual villas (Smith 1978). In light of the patterning at these sites, we might consider whether such explanations involving multiple foci of elite dwelling within a single estate could be useful.

Beyond High Ham villa, 2.25km north-west of Low Ham, is a cropmark site at Crossman's Farm, listed on HER as a villa, and associated with Chesters as a name for several fields (HER 55866). Reviewed for this project by Barber (forthcoming), the identification of the 35–40m

Fig 12.4 Pitney Middlegate Farm cropmarks, greyscale image (Barber, forthcoming)

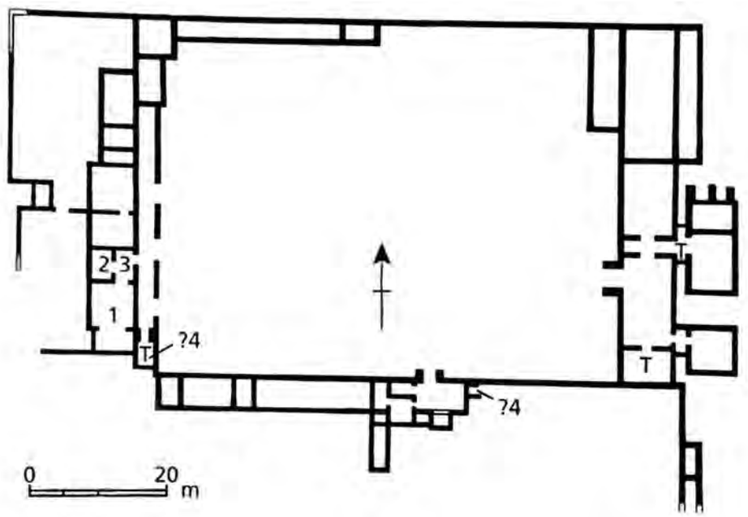


Fig 12.5 Pitney I villa plan (Stephen R Cosh after Hoare 1831)

square enclosure with a central 10m square structure as a villa is untenable on morphological grounds (Fig 12.6). The site is likely to be a Romano-Celtic shrine, which commonly comprise small square or rectangular structures within a similarly shaped enclosure (Lewis 1966). The cropmarks of the shrine at Cold Kitchen Hill provide a reasonably local example (Fig 12.7). This site occupies a similarly prominent position to confirmed

Fig 12.6 Cropmarks at Crossmans Farm (Barber, forthcoming)

Fig 12.7 Cropmarks of Roman shrine on Cold Kitchen Hill

shrines in Somerset, being on the highest ground for some distance in any direction, although far less topographically dramatic than at Brean Down or Lamyatt Beacon (ApSimon 1965; Leech 1986). There is no correlation between shrines and villas in terms of co-location in Somerset, and Leech's comment that these are more likely to have served broader communities than acting as estate temples remains well-founded (Leech 1986, 272).

South-west of Low Ham the settlement at Wearne grew during the Roman period, although the limited excavation and lack of dating evidence make it difficult to establish a detailed chronology. Broadly, occupation continued at the rectilinear enclosures occupied in the Late Iron Age, with some ditches recut and new ditches dug, expanding the site to the north and west (see Fig 9.4). Funerary activity may also have commenced on the site in the early Roman period, as an undated cremation was recently excavated (Robinson 2020, 3). An early Roman enclosure wall was constructed immediately north of the pre-existing rectilinear ditched enclosure, hinting at changing lifeways on the site (Robinson 2020, 21). The archaeology of the main, western, part of the site is recorded from aerial photography, 1946 observations by Lionel Walrond, and a 1975 rescue excavation during the cutting of a sewer pipe, but is generally later Roman (Leech 1976).

Several later Roman structures were present across the site at Wearne, including two areas where walling was observed some 200m apart, and two further areas that produced tesserae and building debris (Leech 1976). The former, from limited pottery evidence, seem to be 3rd–4th-century AD in date, and all of these reports represent buildings higher in status than the earlier enclosures, being associated with wall plaster, tesserae, *tegulae* and *imbrices*, and built of relatively high-quality

masonry. In the east of the site a 4th-century AD stone surface of Roman date is coincident with a concentration of building stone recorded in the 1970s (Robinson 2020, 12). Funerary activity continued at the site, with four inhumation burials recorded to the south of the site in episodes of building and ploughing (Leech 1976, 45, 48), notably just inside the curvilinear enclosure boundary. Overall, this site appears to be very extensive, albeit one where the structures are impossible to discern on aerial photography, and the archaeology has suffered from a lack of systematic investigation. The structural remains surely imply a villa of some scale, especially given their very wide distribution. Until further research, in particular large-scale multi-method geophysical survey, is undertaken, Wearne will remain poorly understood.

About 2km west of Low Ham is a newly discovered major Roman site at Bowdens Lane Quarry (Socha-Paszkiewicz *et al* 2023) (Fig 12.8), overlooking Lower Aller Moor and the probable Roman crossing of the Parrett at Langport. There were at least four stone structures, preceded by at least one major early–mid-Roman timber structure, and accompanied by a pottery kiln, a crop-drying oven and a range of ditches and post-built ancillary structures. Overall, the site seems to have developed from an independent farmstead in the early Roman period to a larger and somewhat higher-status site in the 4th century AD. This transition is marked by the establishment of new stone structures within a new central enclosure; the excavators note the kiln in particular as being exceptionally well built and 'showy', including quoins, Lias slabs and herringbone walling (Socha-Paszkiewicz *et al* 2023). This is the architectural vocabulary of the contemporary nearby villas at Low Ham and High Ham, and the site must surely represent a potential estate centre, perhaps the residence of a bailiff or equivalent, given the disjuncture between the fairly well-built but small domestic structure and the extent and elaboration of the kiln, crop-dryer and an enigmatic structure immediately adjacent to, perhaps even connected to, the main residence.

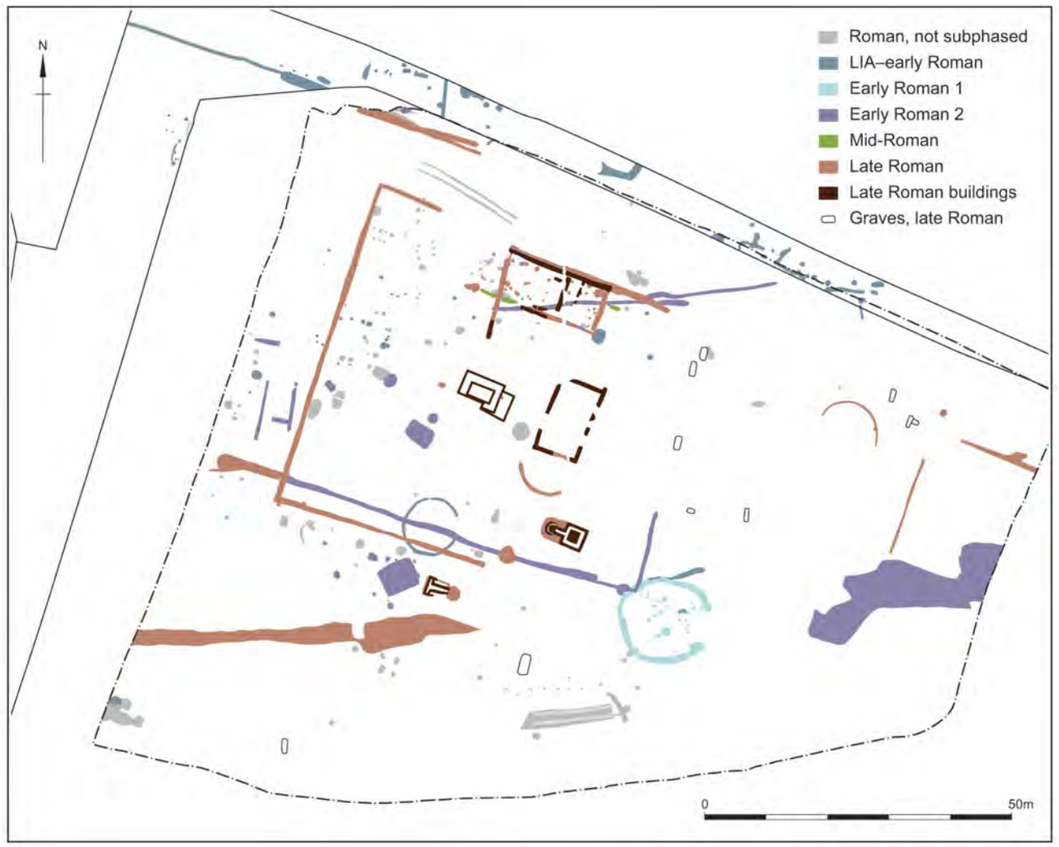


Fig 12.8 Roman phases at Bowdens Lane Quarry (Redrawn from Socha-Paszkiewicz *et al* (2023, 154, fig 2.39) by John Vallender, Historic England)

This adjacent building, which was a slightly sunken room with very thick walls, may even have been a strong room analogous to those found on some villas and other classes of site, or possibly a tower (Abdy *et al* 2001, 371). Control of monetary wealth on site may also be demonstrated by the fact that all except one of the notably small assemblages of coins found were lost within the main residential structure (Manisse 2023); if we consider these as chance losses, their distribution in the main domestic structure makes a great deal of sense and does not invalidate the interpretation of the adjacent structure as a strongroom; coins stored there would surely have been bagged. Of course, if it is an estate centre, activity here may be related to Low Ham Villa, or alternatively to Wearne.

This exploration of sites in Low Ham's locality has illustrated the biases of investigation. We best understand sites with masonry buildings, and have little excavation or survey evidence for less architecturally elaborate structures, enclosures or fields. The enclosures and activity areas at Low Ham north-west of the villa provide an unusual example of excavated elements of a villa complex beyond the main structural ranges, and illuminate the activities likely to be taking place in a villa's immediate surroundings. The following section will consider the villa's context from a more experiential landscape perspective, drawing on direct evidence and analogy with other sites to attempt to plausibly interpret the local and regional worlds of Low Ham at the height of its wealth and structural magnificence. Esmonde Cleary has recently performed a similar exercise for Chedworth (Esmonde Cleary *et al* 2022, 456–507, especially 466–81 and 485–507), and the discussion below avoids covering the same ground where there is little more to be said for Low Ham. Instead, the focus is on the character of Low Ham as a site, and its specific regional context, within the worlds of late Roman aristocratic behaviour in the rural landscape.

12.3 The villa landscape

The landscape in the immediate vicinity of Low Ham Villa would have been carefully managed on behalf of its inhabitants. Outside the villa courtyard gate lay a junction between the trackway across Low Ham Rhyne from the north-east, and a long trackway running north-west to south-east along the Leazemoor valley (Fig 12.3). These routes were the villa's connections to its estate, neighbours, and the wider province. The crossing of the Rhyne has been preserved in a field boundary to the present day, and there is even an old stone bridge remaining at the crossing.[2] In the field beyond the crossing, cropmarks of a trackway are visible on recent aerial photography (Barber, forthcoming), and the parish boundary notably runs along the south side of this same line, strongly suggesting its relative antiquity. As no geophysical survey has been undertaken in the fields opposite the villa, we cannot be sure what the villa faced, but this must have been a key vista.

Receiving clients and peers was a vital part of elite life in the Roman provinces (Esmonde Cleary *et al* 2022; Esmonde Cleary 2025), and the fields, gardens or cemetery directly opposite the villa would have been important to Low Ham's owners in making an impression on those they hosted or those otherwise active in the landscape. The least likely of the common designed villa landscape features listed in the previous sentence to occupy the other bank of the Low Ham Rhyne, despite the natural symbolism inherent in placing it there,[3] is probably a cemetery, given the inhumations on the crest of Sheep Sleight Hill (Somerset HER 41493). Activity across the Rhyne from the villa is attested by finds of over 20 radiates or nummi (PAS IDs: Valentinianic SOM-1D2C85, SOM-1D72CF, SOM-B87C21, SOM-5F6037; Postumus SOM-600F82; Allectus SOM-B892E1; Magnentius/Decentius SOM-5F371E; uncertain radiates/nummi SOM-B80EA5, SOM-B81822, SOM-9A9C31, SOM-9A9573, SOM-9A8D46, SOM-B83B78, SOM-B84F4A, SOM-B844AC, SOM-B8225D, SOM-B82F84, SOM-9A8213, SOM-9A7B75, SOM-9A10E6, SOM-B7FC64). The presence of these finds suggests an axis of movement, but the numbers of coins present here in comparison to the surrounding landscape hints at more concentrated activity. Without evidence for Roman drainage of the floodplain of the Rhyne (and indeed sedge growth in the ditches of the contemporary enclosures immediately north of the villa suggests the water table was high enough to impinge seasonally on areas above the floodplain, see Chapter 8.1) we might argue that the activity from which these coins derived was temporary. Perhaps this could be hints of an occasional small late Roman market taking place outside the villa's entrance?

[2] We do not contend that this is a Roman survival, but perhaps a post-medieval structure in the same position. Intriguingly, however, there is substantial masonry visible in the villa-side bank of the Rhyne adjacent to the bridge (W Bishop, pers comm, February 2025). Note the alignment between trackway [**m6**] (Chapter 5, Fig 5.2) and the small kink in the field boundary which marks the bridge.

[3] cf Richeaume Villa, France, or even as has been posited for the Mausoleum of Hadrian; Davies 2000; Mocci *et al* 2005.

Arriving at the villa's entrance would also provide views into the landscape created and managed by the villa's owners, *en route* through the surrounding fields and trackways, and on arrival into the villa itself. The potential importance of demonstrations of a villa's agricultural wealth and productivity is illustrated by nearby Pitney, where – if Applebaum's (1966) identifications are to be believed – the granary and barns, including an apparent threshing floor, form a major part of the villa's courtyard (Hart and Mudd 2018, 123–4). A similar interpretation of the structures flanking Low Ham's entrance has been made by Roberts, Leech and Cubitt in Chapter 10; the visitor would enter between two large agricultural buildings that emphasised the villa's wealth and productivity, and, implicitly, the villa's control of the agricultural landscapes through which the visitor had just travelled.

Other parts of the productive landscape of Low Ham's controlling family would have commended themselves to the visitor's notice besides the imposing architecture of the villa. On the approach to the villa, fruit trees, walnut trees, managed copses of woodland, the smells of malting cereals from the malting oven, and the calls of cattle and sheep from pens and pastures, would have combined to impress sensorily on our notional visitor the breadth and richness of resources the villa's residents commanded. This would, of course, have included people. Late Roman estates required significant numbers of both free and unfree people to produce, control, craft and redistribute their agricultural surpluses; to build, maintain, service and remake their buildings; and to serve, support and feed their inhabitants. While it is possible that some estate administration and operations such as pottery production were centred away from Low Ham at Bowdens Lane Quarry, the workers of the estate would have been a visible and ever-present reminder to the visitor of the power of Low Ham's owners. It is also likely that quarries would have been visible nearby, perhaps again on the beds of Lias at Bowdens Lane Quarry, from where the villa's various phases of walling were derived. The large Ham stone quoins, voussoirs and columns imported to the villa from the quarries 20km to the south appear to date relatively early in the villa's structural sequence, but were being reused in the later Roman period in the establishment of the nearby malting oven and the refurbishment of the baths. It is important to consider that it is not only the finished building that makes a psychological impact on people in a landscape, but also the process of construction and all the movement, noise, temporary structures and change that entails. The use of recognisable architectural elements such as columns as *spolia* also drew in entanglements of power and Romanitas (see Fafinski 2021 for the early medieval period) within the late Roman period, probably more directly than in later periods, as those repurposing materials at Low Ham may have been able to articulate direct ancestral narratives for the buildings being reworked.

Periodically, consignments of grain and other produce would leave the villa by cart for transfer to boats on the Parrett, and thence to Caerleon or the Channel coast and Rhine garrisons beyond (see Chapter 12.4 below). This might well have been an occasion where members of the military would visit Low Ham to undertake the necessary exchanges and documentation around these shipments. Such visits might have provided an opportunity for Low Ham's owners to show hospitality through dining, bathing and hunting to representatives of the state, and by doing so impress on local people their close relationships with those who enforced the security of the province.

It is argued above that those at Low Ham had a close relationship, possibly familial, with the occupants of High Ham Villa, and had much in common with the owners of Pitney I. Indeed, the choices of Dido and Aeneas at Low Ham and a Bacchic scheme with seasons inspired by Ovid at Pitney (see Witts 2005) for the main figural mosaic at each villa may reflect the respective cultural interests of these villas' owners in the mid-4th century AD. Both mosaics may have been commissioned from the Durnovarian mosaicists,[4] and Cosh and Neal (2005, 284) note the similarity of cupids with red stoles that appear on both. Beeson *et al* (2022) have argued that the art of the Low Ham Dido and Aeneas and other mosaics of note from Britannia, such as Frampton, Rutland and Boxford, derive from manuscripts created in the province. The close elite relationships across villas may have carried over to the urban sphere of Ilchester; the town has a large number of mosaics (see Fig 12.2), some of which are contemporary with, or later than, those at Low Ham and Pitney (Cosh and Neal 2005, 215–26). If, as posited above, Ilchester's quays were a key node in the military supply network, Low Ham's controlling family would have spent time there and maintained a role in urban life, even if more generally elites spent less time and resources in towns in the 4th century AD than earlier in the Roman period (Esmonde Cleary 2013b). We cannot say whether those who owned villas in the countryside around Ilchester would have maintained townhouses there or simply visited from their estate, but to Roberts the former appears more likely given the distances involved, even allowing for the no doubt excellent horses available to such elites. Low Ham's owners would also have visited their contemporaries at sites such as Lopen, Hurcot, Dinnington and other major villas of the region. The concentration of villas around Ilchester raises intriguing possibilities regarding the nature of literary culture and education in the area; the transmission of *paideia* in Ilchester's hinterland appears to have been especially strong, and we might speculate about the nature of the cultural life of the late Roman town. Were there places of cultural performance and education to allow elites to display their erudition in an urban context, or were such displays confined to private banquets and visits to villas to admire one's host's manuscripts (Beeson *et al* 2022; Cosh and Neal 2005)?

Life for those who were not part of the ruling elite would have been considerably less enjoyable. Rohnbogner's recent synthetic work demonstrates that the incidence of physical trauma visible on skeletal remains nearly doubles in the rural population in the Roman period in comparison to the Iron Age, and the prevalence of a range of other skeletally visible health conditions, many related to diet and physical stress, also increases (Rohnbogner 2018, 289–90). Redfern (2008) demonstrates, through investigating stature, an increase in environmental and cultural stressors during the Roman period in Dorset, albeit primarily affecting the male population. These patterns are very likely due to overwork and physical violence, both in terms of habitual physical abuse and violent punishment of transgressions, up to and including the death penalty (Wiseman *et al* 2021). Osteoarchaeological evidence is reinforced by textual sources from other provinces; it is unlikely that social relations differed markedly in Britain in this respect. Gerrard (2013, 70–2) discusses the late Roman textual sources on violence and their potential application to late Roman Britannia in depth, concluding that, while the state theoretically maintained a monopoly on violence, violence by the civil elite against the poor was a common occurrence.

Even if they avoided violence, life for the poor in Low Ham's rural landscape must have been punishing in many respects. The yearly round of agriculture, detailed thoroughly by McCarthy (2012, 62–89), would have been a slog of hard labour for much of the year, involving long periods of digging, ploughing, sowing, manuring, marling, repairing, quarrying, building, shepherding, woodcutting and many other tasks. Maintenance of drainage ditches, both on the Low Ham estate and contributing to the maintenance of larger-scale drainage hypothesised below for the Parrett corridor, would have required considerable ongoing labour. By the heyday of Low Ham, many of the rural population were legally tied to the land, with the lack of practical difference between these *coloni* and slaves recognised in Roman law codes (McCarthy 2012, 130). Although there is debate over the complexities of the various social groups in late Roman society, and indeed attempts to retro-project later early medieval groupings, all the available evidence suggests increasing legal exploitation of the lower orders by elites in the late Roman period (Gerrard 2013, 236–9).

Gerrard (2013) argues that the evidence from Catsgore, just south of Low Ham, demonstrates that the villagers could own and probably inherit land, based on the long-term maintenance of boundaries around individual plots. This appears likely, and it is also clear that some of the rural population below elite level had at least some disposable income, given the presence of cheaply made brooches in approximately 50 per cent of enclosed farmstead finds assemblages from the South region of the Rural Settlement of Roman Britain project (RSRB; see Smith *et al* 2016), and the higher frequency and wider range of items of personal adornment in assemblages from more complex rural non-villa sites (Smith *et al* 2018a, 16–18). So, while we cannot easily elucidate the finer socio-legal gradations of status between late Roman non-elite rural groups in Britannia, we can see there was probably considerable variation. Some people will have had almost no agency or wealth, and others, although perhaps still tied to the land to some extent, may have had property and disposable income. No doubt the individual agency of the owners of Low Ham and other estates would have had a major influence on the lived experiences of local people.

Many of the rural poor would have spent much of their time among fields, whether engaged in pastoral or arable agriculture. We know surprisingly little about the fields of the Roman landscape around Low Ham, despite aerial photographic coverage of the area. The preliminary assessment of aerial photos covering the villa's hinterland undertaken by Barber for this volume (forthcoming), revealed almost no cropmarks of pre-medieval field boundaries. Extensive field systems are known from further afield within central or western Somerset, but have tended to be mapped from geophysical survey rather than cropmarks. The issue might thus be one of visibility, were it not for the quite wide range of other cropmarks mapped in the area, although not so many as on chalk geologies (see Leech 1978 for examples). Large-scale geophysical survey at Podimore/RNAS Yeovilton, east of Ilchester, revealed a field system of quite narrow, long fields laid out at right angles to the river valley, and the South Cadbury Environs project also recorded this pattern (Lovell 2005; Robinson 2021). This is in marked contrast to areas

[4] NB these craftspeople were not, despite the name, necessarily based in Dorchester – see Cosh and Neal 2005, 22–5.

further east on chalk geology, where 'Romano-Celtic' coaxial field systems of rather squarer fields blanket swathes of the Wiltshire and Dorset downs (Crawford and Keiller 1928; McOmish *et al* 2002). The enclosures north-east of the villa at Low Ham similarly are long, narrow and run uphill, but appear to be more locally bounded zones of activity for the processing of agricultural products rather than fields, given the excavation evidence. There are, however, a significant number of isolated enclosures in Low Ham's vicinity, many mapped from aerial photography by Leech (1978), and a small additional number have been mapped by Roberts for this publication. These are generally rectilinear, with no visible internal features, and are very rarely associated with other boundaries or field systems. Some resemble enclosures around known settlements, such as that excavated at Bowdens Lane Quarry, or are adjacent to villas, as at Nut Hill, Kingsdon (Leech 1978, 69). As such they may be settlements, or alternatively some may be stock enclosures. Either way, they shed little light on how the landscape was divided beyond casting doubt on assumptions that field systems were widespread around Low Ham.

It is therefore likely that some areas of the villa's immediate landscape were either grazed in common, although not necessarily in the sense of socio-economic relations implied by the use of that essentially medieval term, or were unenclosed but held by a single estate. The latter seems more likely for any meadows on drained wetlands, given the scale of labour mobilisation required to create and maintain these in a landscape so dominated by villas, although of course less hierarchical social structures can also mobilise labour in force (Oosthuizen 2016). Equally, some areas – probably of higher ground, based on the distribution of recorded field systems of Roman date on the Somerset HER – were divided into fairly narrow fields oriented at right angles to the nearest river valley, and cereals would be grown in these. We can therefore posit some degree of local transhumance between different working landscapes for Low Ham's non-elite population engaged in agriculture. Flocks and herds would require moving between grazing grounds in lowland or drained areas in summer, to upland or sheltered areas in winter. Cereals grown and harvested on slightly higher ground would need to be moved to the villa settlement for processing, as would animals to be slaughtered (although animals for export to further afield may well have been transported on the hoof, depending on their destination).

The question of where the rural population lived is still unresolved. The villa itself is likely to have accommodated some servants and retainers to maintain the lifestyle and security of the controlling family, but could not house large numbers of agricultural workers. Some almost certainly lived in the enclosures just to the north-west of the villa, as discussed in Chapter 10, and others may have lived in villages analogous to Catsgore that are yet to be discovered; Catsgore itself is significantly too far away from Low Ham for daily transhumance between the two sites. Some people associated with the estate may have dwelt at High Ham and Bowdens Lane Quarry, if the hypothesised connection between these sites is correct. The farmsteads previously discussed just north of Low Ham along the Leazemoor valley must have housed several families, but are likely to have been just a small proportion of the lower-status settlements of the area, given the lavish requirements of Low Ham. Further sites may be present under modern villages, or lie undiscovered because of the patchy visibility of cropmarks in the area discussed above.

The following section will review dryland settlement in the wider region to provide analogies that may shed light on specific issues outlined above, and allow the development of Low Ham to be set in its broader landscape context.

12.4 Dryland landscapes and settlement change

The Roman period saw settlement numbers rise across dryland landscapes in the Low Ham region, with the widespread establishment of new farmsteads and large rural settlements, including some very complex sites. These sometimes, but not always, had smaller-scale late Iron Age precursors. To better understand the settlement pattern, Roberts collated all Roman period records for a wide area around Low Ham (Fig 12.9). For detailed discussion of this work and the inherent biases it contains see Roberts (forthcoming), in which all of the interpretive ideas advanced within this section are also further explored.

For the purpose of citing Low Ham in its landscape context, Fig 12.9 shows that, across the Roman period, fairly clear settlement patterns emerge across the villa's wider environs. Overall, eastern Somerset resembles the majority of central Britannia away from the villa-rich zones, although it is far less intensively investigated than (for example) the midland counties (Smith *et al* 2018a, 33–7). There are some apparent zones of genuine absence of Roman evidence, although not large, and, given their general coincidence with woodland-indicating placenames, these are likely to have been wooded in the Roman period (cf White 2022). The other side of our study area provides a significant contrast, with a very low density, or perhaps visibility, of settlement in the Roman

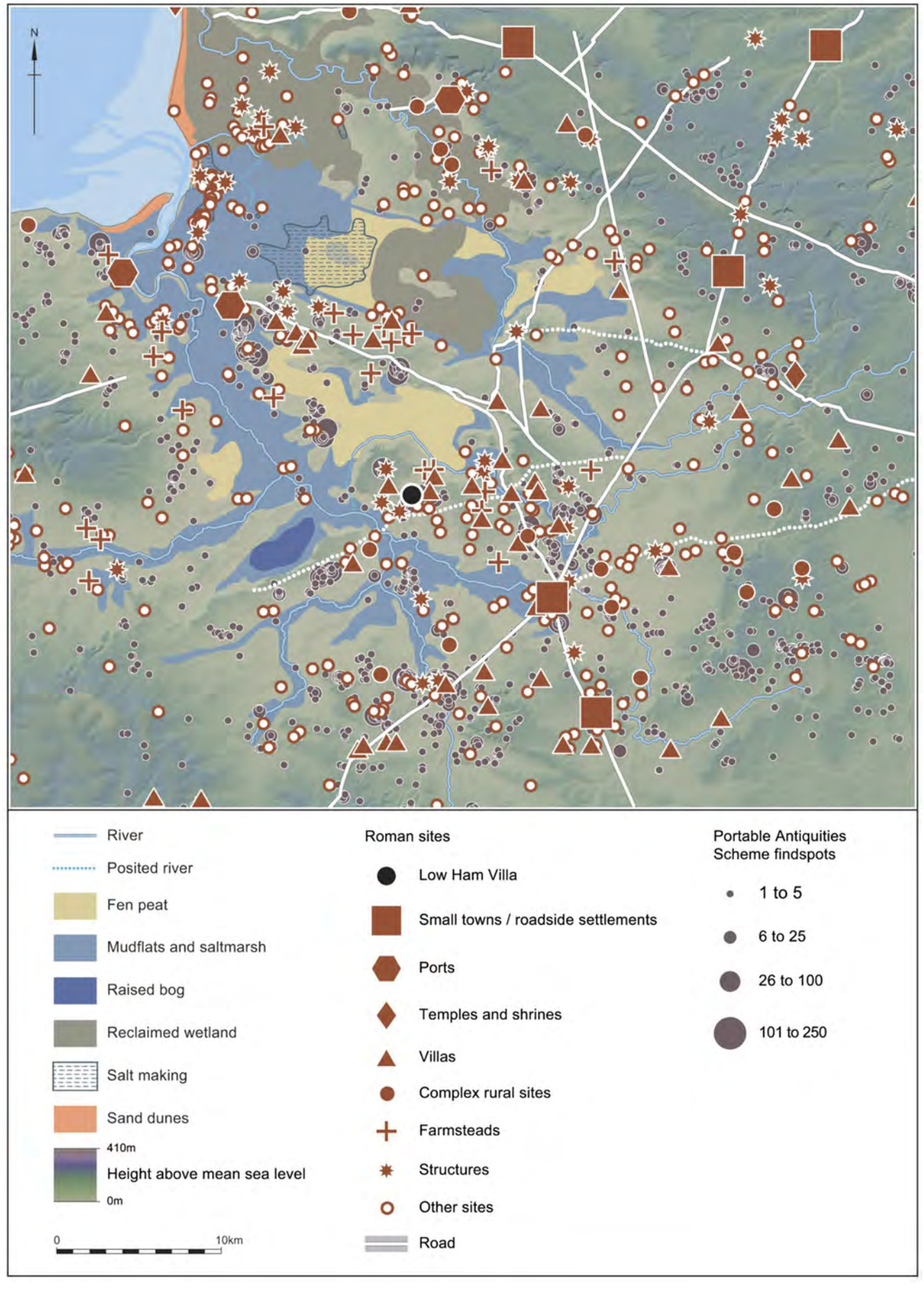


Fig 12.9 Roman sites, roads and finds in the study area (John Vallender, Historic England)

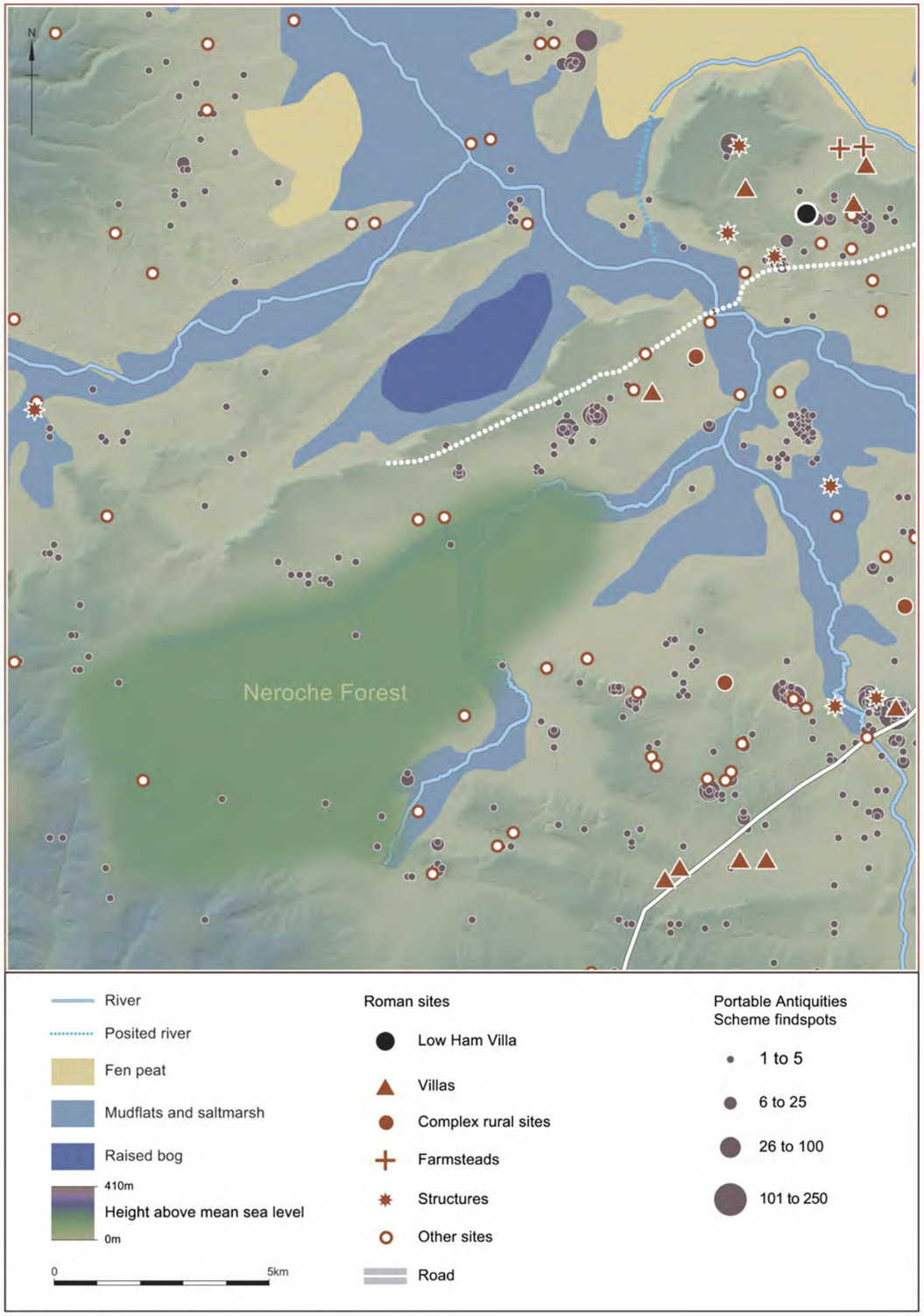


Fig 12.10 Area of the medieval Neroche Forest, and Roman archaeological evidence (after Bond 1994, John Vallender, Historic England)

period across the Quantocks (contra Riley 2006, 75) and Blackdown Hills in west Somerset, but considerable activity in the Vale of Taunton Deane between the two.

There is a notable absence of Roman-period archaeology yet discovered between Taunton, Curry Rivel and Ilminster, east of the Blackdown Hills; this gently undulating dryland ground around the rivers Fivehead and Isle would seem suited to agricultural exploitation in the Roman period, yet only a few cropmark enclosures and a smattering of PAS finds testify to any activity. Perhaps this is an absence of investigation, rather than a true lack of Roman-period exploitation of the landscape. Another significant possibility is that the medieval Neroche forest, which formerly occupied much of this area, is of earlier origin (Bond 1994, 120; Fig 12.10).

Elites, when present in the area, undoubtedly lived in villas, townhouses, or both. It is villas that dominate the pattern of settlement, and especially the history of study, closer to Low Ham, in central south-east Somerset. The concentration of villas to the north and north-west of Ilchester is especially dense, with twelve certain villas within an area of *c* 100 sq km bounded by the Fosse, the Parrett, King's Sedgemoor and the posited east–west road through Kingweston, even excluding further possible villa sites (Fig 12.11). Further, most of the Ilchester hinterland villas are to some extent contemporary. There is fairly

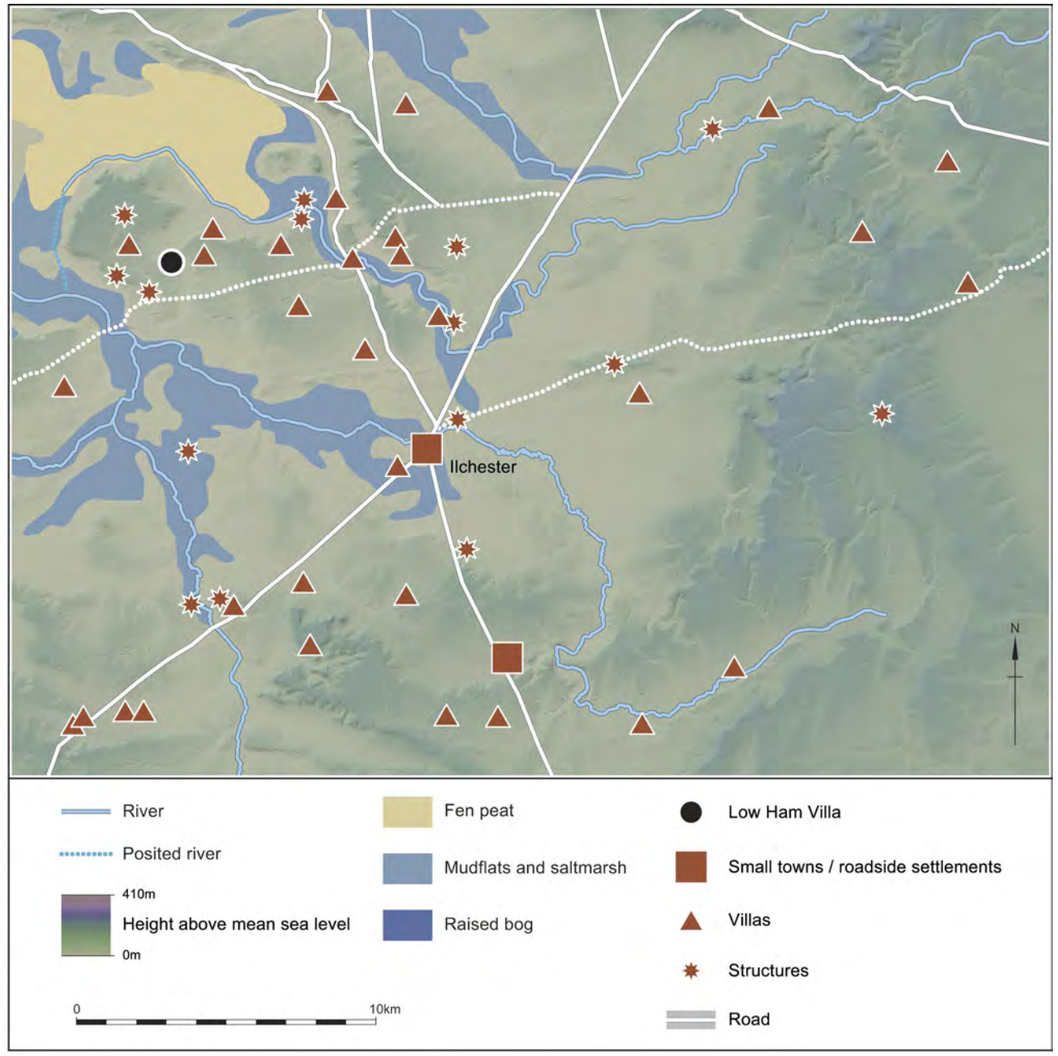


Fig 12.11 Villas and structures of Roman date in the Ilchester region (John Vallender, Historic England)

consistent evidence, where any modern excavation has taken place, of late 2nd- or more often 3rd-century AD first phases of villa structures, with complexes reaching their height in the late 3rd to mid-4th centuries AD, before changes in use towards the end of the 4th century AD (King 2022, 233; Mattingly 2007, 400). While we do not fully understand the transition from Late Iron Age to villa-dominated settlement in Ilchester's hinterland in social terms, we can see that the emergence of villas happens here at a similar time to elsewhere in the wider west and midlands of Britannia.

This concentration of villas round Ilchester has been repeatedly noted by those synthesising the archaeology of Roman Britain or the South West (Haverfield 1906; Dewar 1952; Branigan 1976b; Leech 1982b; Leach 2001a; Gerrard 2013, 233–6; King 2022). More widely, it is part of a supra-provincial concentration of late Roman villas in southern and central Britannia, which most scholars attribute to Britannia's role as a 'bread-basket' for the armies on the Rhine (Moorhead 2001, 94–5; Gerrard 2013, 99; Fleming 2021; Esmonde Cleary 2025). While evidence can be assembled to form a clear argument (Roberts, forthcoming) that Ilchester's wealth, and that of the villas like Low Ham in its hinterland, derived from trade chiefly stimulated by the need to supply the Roman army, this does not explain the local distribution of villas and other settlements in the area, merely something of the character of their inhabitants and the source of their disproportionate wealth. The local distribution of villas around Ilchester is skewed to the north-west, around Low Ham, and the south/south-west, along the Fosse (Fig 12.11). In the eastern quadrant of Ilchester's hinterland there is only a single villa, at Queen Camel, within 10km of the town. The distribution of villas close to Low Ham and south of Ilchester may in part relate to the leisure pursuits of their inhabitants. Given the highly connected social worlds of these elite individuals, hunting and travel were key, and these areas of Ilchester offered closer proximity to a range of hunting grounds: woodland hunting in Neroche Forest, and possible wetland hunting on the marshes of King's Sedgemoor (see Chapter 12.5). While land to the east offered larger tracts of forest, Selwood, for example, this may have lacked variety, as well as being further from the riverine transport routes north-west towards Caerleon, or south-east towards the Continent.

This section has begun to illustrate the diversity and complexity of the landscape of exploitation and elite dominance that emerged through the Roman period in the region around Low Ham. However, the particular character of that landscape, unlike much of the remainder of lowland Britannia, was especially shaped by the wetland landscapes of the region in concert with the dryland landscapes already discussed. The following section seeks to rebalance the discussion by exploring wetland landscape change in the Low Ham region.

12.5 Wetland landscapes and settlement change

During the Roman period, considerable reclamation of wetlands took place (Brunning and Farr-Cox 2005; Rippon 2008, 91–2; Brunning 2013, 6; Fig 12.9). The extent of reclaimed coastal land and wetland landscape change in the early and mid-Roman period is much better understood in the North Somerset Levels and the Axe valley in comparison to further south towards Low Ham, mirroring wider biases of investigation in the region (Brunning and Farr-Cox 2005; Rippon 2008). Unfortunately, further large-scale aerial mapping and other landscape investigations or sampling were beyond the scope of research for this monograph, so, while we may intuit that broadly analogous processes of change took place on Sedgemoor, locating them with certainty is difficult. Rippon and Brunning have both briefly discussed Sedgemoor, the overarching name for the wetlands lying north (King's Sedgemoor) and south-west (North Moor, West Sedgemoor, Aller Moor and others) of Low Ham (Brunning 2013, 6; Rippon 2008, 91–2). Their interpretations of the limited available evidence differ, but both agree that the area saw significant change in the Roman period.

The distribution of material culture (see Roberts forthcoming) argues clearly for regular passage along causeways or trackways between various areas of higher ground in the south of Sedgemoor, south-west of Low Ham. This area is essentially coincident with the surroundings of the River Parrett. As such, Aller Moor, Curry Moor, Earlake Moor, North Moor (near Beer Wall, not the North Moor associated with the settlement of the same name mentioned earlier), and Stan Moor appear plausible candidates for having become less wet at this time, based on an admittedly limited combination of aerial and artefactual evidence.[5] King's Sedgemoor, by contrast, has almost no evidence of Roman activity.

The presence of more Roman-period activity along the Parrett corridor makes economic sense, given the probably significant riverine traffic between Ilchester and Crandon Bridge previously discussed. Any potential drainage around the Parrett would have aimed to ensure a consistent river route, free of major obstructions or hazards due to excessive winter flooding. Even if the hypothetically drained areas were only seasonal meadows in summer use, in winter they would have helped reduce flooding and maintain safe passage for supplies to Caerleon and beyond at the worst time to circumnavigate the Cornish peninsula. The importance of the supply of Caerleon by water is emphasised by the discovery of one of the largest structures in Britannia between the Caerleon fortress and quayside, related at least in part to the management, storage and shipping of supplies or personnel to the fortress (Guest *et al* 2012).

Undrained areas also require consideration. In view of the above discussion, a high proportion of what had been wetlands in the Iron Age across Somerset had been brought into different forms of economically productive land management during the Roman period. It appears highly unlikely that King's Sedgemoor would have been simply left alone to be exploited in a similar way as it had been in the Iron Age. Given the importance of fish and hunting in elite lifeways and display and the presence of large numbers of villas in the vicinity it is probable that, if this area was wetter than the Parrett corridor, it was used for fishing, and the hunting of wild birds and mammals.

In summary, it is likely that a diverse range of land uses was present in Low Ham's environs between the remaining undrained marshes, with the drained areas set out in a patchwork of fields and causeways, and the boundaries, trackways and settlements on higher ground. Rather than be considered in isolation, all aspects of this landscape were intimately tied into networks of mobility – whether riverine or road – and economic practice and social actions. Undoubtedly the power and wealth of the villa-dwelling elite in this landscape greatly affected the land's character and use, and the discrepant experiences of the people dwelling there. Behind the more local changes such as the likely use of wetlands for hunting, extensification of agriculture through drainage, and construction of villas and associated complex rural settlements, lay the supra-provincial drivers of the Roman state's needs for the supply of the army, and taxation. The development of the Parrett corridor for transhipment of supplies via Crandon Bridge and Ilchester was key to the unusual intensity of villa settlements in Ilchester's hinterland, with areas to the north-west and south-west of the town seeing the most significant elite residences, possibly because of the proximity of hunting grounds and transport routes.

[5] Brunning 2013, 5; less wet is especially a relative term in the Levels – we may perhaps envisage a change from a landscape with significant areas of year-round open water within a mosaic of reed beds, sedge fen, causeways and carr wood, to one with more hydraulic intervention, less open water beyond the immediate vicinity of the rivers, more sedge fen and carr woodland, and areas of reclaimed summer meadow pasture, as well as some more permanent fields, industrial activity and settlement.

12.6 The end of Low Ham Villa

As previous chapters have made clear, there were major changes in the character and structuration of activity towards the end of occupation at Low Ham Villa. Industrial and agricultural processes were brought into the villa, and areas of cereal processing given over to more ephemeral activity relating to pastoral agriculture; this itself may represent a concentration of activities that previously took place in the wider landscape. The poor quality of the recording from the 20th-century excavations makes it challenging to understand the developments in the south-west wing, but changes took place here too. A full discussion of the very end of the Roman period and beginning of the post-Roman period is beyond the scope of this project, but a few indicative points are made here regarding Low Ham's ending.

As late Roman supply networks and military power began to fragment in the late 4th century AD, very significant social, economic and material changes began to reverberate through Britannia's villa landscapes. Fleming (2021) refers to this as the closing chapter of 'the world the *annona* built' and sees the process as intimately entangled in reductions or endings of the industries supplying raw materials and finished products to those with disposable income and socio-economic agency. As the security of the Empire and stimulus of imperial supply networks first reduced and then ceased through the AD 390s and 400s, the powerbases of villa owners fractured. Without the income from supplying the military or underpinning security guarantee of the state, the pillars of their economic and physical power crumbled. Responses to this in Britannia will have ranged from denial to adaption. Gerrard (2013) advocates a softer-landing interpretation, considering that the release of imperial demands may have enabled people to farm less intensively.

It is clear that some processes of maintenance of large-scale landscape management, such as the drainage of the North Somerset Levels, broke down in the late 4th century AD. This may well have been due to the removal of direct state support, but might also have been due to fractures within the relationships of the elites whose estate workforces maintained such infrastructure. We may be able to see the beginning of the breakdown of maintenance processes in the more vulnerable places of

the landscape inland too. On the floodplain west of Ilchester, an enclosure and associated features established in the late 3rd century AD were flooded and became disused in the late 4th century AD (HER 53103). This may represent in microcosm the trajectory of maximal exploitation and extensification in the period of the *floruit* of the villa landscape, following which the late 4th-century AD pressures of instability and natural processes exploit any reduction in the intensity of control and maintenance. It must be said that ambiguity remains around the dating of these changes in the absence of scientific dating; any dating reliant on material culture types that cease to be produced at the end of the Roman period can only ever provide a *terminus post quem* (TPQ), rather than a definitive date.

This is demonstrated by recent results from Dinnington, where activity certainly continued into the 5th century AD on a large scale, if with an emphasis on production rather than luxury, until the termination of the site due to a catastrophic fire sometime between AD 410 and AD 570 (King 2022).[6] At Low Ham agricultural activity continued until around AD 400, perhaps as late as AD 420. Dinnington's date range is very broad, and might well have ceased in the first half of the 5th century AD. Close to Low Ham there is definite 5th-century AD activity at Bradley Hill (Leech 1981a), and Gerrard (2004, 7) speculates that West Wood promontory fort and Dundon hillfort may have been reoccupied in the post-Roman period because of their proximity to Bradley Hill, but cites no supporting material evidence beyond an undated clay bank overlying an earlier phase of the defences at Dundon dated to the Iron Age (Gerrard 2004, 7). A section of curved wall at the Bowdens Lane Quarry site appeared to post-date the 4th-century AD Roman structures, but, despite the presence of a pebble floor, did not survive sufficiently to provide insights into form or function; if the curve was completed to a circle, the resulting building would be slightly less than 9m in diameter, although of course the wall may derive from an apsidal structure. No dating evidence was associated with the feature (Socha-Paszkiewicz *et al* 2023, 78).

Further afield, recent work at Hinkley Point has shown continuity from the late Roman period for several centuries at a cemetery that was later to be elaborated with a probable wooden church (Mudd *et al* 2024), only a short distance from Cannington and its famous post-Roman cemetery and occupation (Rahtz *et al* 2000). Clearer 5th-century AD occupation, and the mobilisation of large quantities of material and labour, is demonstrated at Cadbury Castle, where the hillfort was refortified on a large scale and shows occupation by people with access to Mediterranean material networks (Gerrard 2013, 114–17). It is highly likely that these individuals were the descendants of some of the villa-dwellers in Ilchester's hinterland who had successfully adapted to the new political and economic environment. At Low Ham itself there is no evidence for later occupation until centuries after the end of the villa, with the earliest medieval evidence being the placenames of the modern villages; the only pre-8th century AD PAS find within several kilometres is an incomplete buckle from Wearne (PAS ID PUBLIC-271EF1).

Closing remarks

The many lacunae in this chapter illustrate the immense challenges that confront attempts to understand villas holistically in their landscapes in specific, detailed terms, rather than more general discussions drawing on wider analogy. Chapter 13 will set out some of the ways in which this challenge could be addressed in Low Ham's landscape, given the foundational understanding provided by this and other site-based publications from the area; despite the many gaps in our knowledge, this is one of the better understood parts of rural Roman Somerset south of the Poldens.

[6] Radiocarbon date 1573 ± 25 BP, sample no. Wk16584.

13 Future research

David Roberts and Rachel S Cubitt with Roger H Leech

Any programme of archaeological research tends to provoke more questions than its instigators had when they started, and this project has been no exception. For Low Ham this is especially the case, given the 80-year gestation period between the commencement of fieldwork and the completion of this monograph. During this time Roman archaeology has changed enormously in terms of its interpretive and demographic diversity, its disciplinary structures, quantity of evidence, and funding sources. Furthermore, the six-year gap between Historic England (HE)'s own interventions and the emergence of this volume is testament to the complexity inherent within such projects, particularly where there is a need to marry old and new data. Rippon's (2008) work on Crandon Bridge is an outstanding example of archive-based work that has made a transformative contribution to understanding Roman Somerset and beyond. We hope that Low Ham will be equally well received.

Roman archaeology today is well served by established structures of national and regional research frameworks that provide carefully thought-through recommendations for key research questions to be addressed by future work. Resources such as these informed the scope of the 2018 programme of excavation and post-excavation and are further referenced within this chapter. Specific mention must be made of the South West England Archaeological Research Framework (SWARF), which has been migrated to the Historic England Research Frameworks Network (https://researchframeworks.org/), and into which the results of the Low Ham investigations will be fed. The link to the OASIS system, an eminently more updateable format offered by this network, better enables the regional research framework groups to incorporate archaeological findings into future frameworks. Reflecting on the national *Research Strategy for the Roman-Period Historic Environment* (Wilson 2012), we highlight that a more up-to-date national perspective is to be found within the results of the Rural Settlement of Roman Britain (RSRB) project (see Smith *et al* 2018a, 419–20).

13.1 The landscape

At the local scale of Low Ham and its surroundings, there are several priorities for better understanding the site in its context. While a small-scale assessment of the available aerial photographic and LiDAR (light detection and ranging) sources was undertaken for this project by Martyn Barber (forthcoming), it revealed few features not already mapped by Leech (1978) or the Historic Environment Record (HER) team. However, it did add useful detail to several sites and there is clear potential for much wider aerial investigation and mapping in the region. Research by Barber (forthcoming) and Roberts for this monograph, like that by Leech in the 1970s (Leech 1978), demonstrates the high potential for cropmarks in the region around Low Ham, and especially to the south-east. Approaches presented by new technologies might be applied, and in this vein Leech is pursuing the use of satellite photography.

A mapping project covering Ilchester and its

hinterland would be invaluable in connecting the currently known sites from this intensively used region, and discovering new ones. In the wetlands around Low Ham, there is clear potential for further investigation to understand properly landscape change in these environments in the Roman and other periods, to bring our understanding towards the standards of the excellently researched narratives of the Levels beyond the Polden Hills (Brunning 2013). This would test the hypotheses put forward in Chapter 12 about landscape use, drainage, hunting, riverine transport and other activities, and therefore have significant wider research implications for Britannia.

At Low Ham itself, a key priority is understanding the villa and preceding sites in their immediate landscape context, including disentangling the later medieval and post-medieval landscapes of successive great houses at Netherham Farm. This could be achieved through wider geophysical survey, ideally ground-penetrating (GPR) and magnetometry in combination, as Linford *et al* (2018a; Chapter 5) undertook for the villa, and earthwork survey of those areas not already covered by the Royal Commission on the Historical Monuments of England (RCHME; Wilson-North 1998). Key areas to survey include the hilltop west of the villa, where Roman burials have been found and there are also extensive post-medieval earthworks and extant walls, and the areas within the valley of Low Ham Rhyne, particularly directly opposite the villa.

The advent of new scientific techniques in archaeology provides great opportunities for developing our understanding of villas and the rural landscape, and especially of those who lived at these sites. If survey results on Sheep Sleight Hill (see Chapter 12) or elsewhere were to suggest the location of the cemetery associated with the villa, and an excavation undertaken, the latest osteoarchaeological, ancient (a)DNA and isotopic and dental calculus analysis techniques would enable the development of detailed osteobiographies for the villa's population (eg Mays *et al* 2018). These, especially in comparison with the other nearby cemeteries and burials such as those from Somerton (Wessex Archaeology 2020), Bradley Hill (Leech 1981a), Catsgore (Leech 1982a), Upton (HER 54172) and Bowdens Lane Quarry (Socha-Paszkiewicz *et al* 2023), could provide a very valuable case study of the interrelationships, health and status of those living in these closely adjacent communities. More widely, comparisons with urban cemeteries such as those at Ilchester (HER 53030) and Poundbury offer a route to the better understanding of urban/rural connections (Richard *et al* 1998). Indeed, aDNA research would finally allow testing of the arguments put forward by Branigan and others for migration of some villa owners from Gaul (Branigan 1976b), and perhaps also ideas posited by Cubitt in this volume (Chapter 11) about the post-Roman local migration of elite groups.

13.2 The villa complex

The villa itself continues to be damaged by badger action, and, while considerable efforts have already been made by the relevant curatorial organisations to legally and safely move the badgers, these works have not been successful. If the situation continues, damage will only become more extensive and severe. The badgers, whom it is illegal to disturb, paradoxically provide a second legal layer of 'protection', under the Protection of Badgers Act 1992, to the site in addition to the scheduling as an ancient monument, meaning that opportunities to investigate the site further are likely to be very limited. Nevertheless, significant questions of sequence and character of the site remain outstanding, despite this monograph, because of the restricted nature of the 2018 excavations, and poor, by both current and contemporary standards, archaeological recording of the 1940s excavations.

The north-west and north-east ranges of the villa, the internal courtyard, and the structures revealed by geophysical survey to the west and east of the main courtyard structures, remain entirely unexplored. Structures of significance about which we know nothing from excavation include the entrance to the villa and much of the north-west wing. Of especial interest is the large room, building or walled enclosure immediately adjacent to the north-west wing. Leech (Chapter 10) has posited, following C A Ralegh Radford (Chapter 3.2), that this may be a post-medieval structure, despite the lack of any post-medieval material from any of the excavations elsewhere on the site. In Roberts's view it is more likely to be a Roman-period ancillary structure or walled garden, and proving any of these interpretations would greatly enhance our understanding of the site's use or reuse.

Two further areas, beyond any new archaeological features revealed by notional future surveys, would greatly repay further excavation or geophysical survey at a relatively small scale. The first area is the spring west of the villa, and the various linear features interpreted by Linford *et al* (2018a; Chapter 5; N Linford, pers comm, October 2024) and Roberts as conduits leading from it to parts of the villa complex, and by Leech as conduits leading from the spring to an Anglo-Dutch water garden and associated great house of the 17th century. Understanding the supply of water to the villa and its ancillary structures, and to the hypothesised post-medieval garden and house (if it exists), would elucidate the level of hydrological expertise and investment on the site. The springhead itself, while definitely exploited in later periods, might well provide further evidence, including potential waterlogged preservation, of Roman investment in the landscape, and the ecology of the local environment of the villa.

A second priority for excavation is the trackway leading from the villa courtyard over the floodplain of the Low Ham Rhyne, the areas either side of it, and, via geophysical survey, beyond towards Pitney. This is a key approach to the villa, and worth understanding in architectural and landscape terms, and to enhance our understanding of relations between the Low Ham and Pitney villas, but also because there is very high potential for waterlogged preservation in the trackside ditches; based on observation by S Stein (pers comm, 2018) on site during fieldwork, there is peat formation adjacent to the Rhyne. Collectively, these deposits may preserve organic artefacts relating to the villa complex, and a potentially highly significant environmental record in close proximity to the villa. This would enable a high-resolution study of the local environment, and of potential organic material culture, in a way that has never previously been undertaken for a villa. This same area, as a candidate for further geophysical survey, could also provide an enhanced understanding of the relationships between the Low Ham and Pitney villas, and an enhanced plan of the latter villa within the wider landscape.

Radford's claimed earlier timber phase (see Chapter 3.3) raises the possibility of organic preservation within the villa complex itself, although the detail of the well excavations (Chapter 3.4) suggests that the water table lay somewhere between 8 and 14 feet (2.5–4.3m) below ground surface. Relevant to planning and resourcing of any future fieldwork is the apparent differential preservation across the site. Metalwork from the 1940s investigations was noted to be in better condition than items from the HE excavations (K Graham, pers comm, 2023), and the HE coins, while being in generally poor condition, showed slightly better levels of preservation in Trench 1 versus Trench 2 (Chapter 7.1). Preservation of the HE animal bone was better in Trench 2 than Trench 3 (Baker 2019), and overall varied from poor to moderate or mixed (Baker 2019), but, of course, cannot be compared to the non-retained material from the 1940s.

13.3 The material culture and environmental evidence

Among the finds and environmental remains, research undertaken for this monograph has elucidated a number of avenues for future research, some of which were not apparent at commencement of the project. Out of scope of this current work was further analysis of certain artefacts from the 1940s excavations, including to confirm that the shale spindle whorls are indeed of Kimmeridge origin (see Chapter 4.2). The possible belt fitting, perhaps indicative of a military connection and potentially of late date, warrants further attempts to find a parallel. Specialist examination of a pine cone that latterly transpired to be an extant item from the Low Ham well (K Cook, pers comm, 2024; referring to a large fir [sic] cone) is necessary to investigate whether it had a ritual use (Lodwick 2015) by confirming certain features that were not adequately described in the published references (see Chapter 4.8). This is important as other evidence pertaining to ritual practice at Low Ham is scant.

Fabric analysis of the collection of largely complete box-flue tiles reported on by Betts (Chapter 4.4) is likely to be productive given that visual assessment is already suggestive of multiple consignments of tiles arriving at the villa. Dating using fabric type has proved very useful in the south-east of Roman Britain (Betts 2017, 368–83). Previously accepted dates for the production and use of such tiles are in the range AD 70–160 (Betts *et al* 1997), and recent work on Roman London supports this traditional chronology (Li forthcoming). The potential is constrained at Low Ham, in that the assemblage is essentially unstratified, and Li' s study has determined that a nuanced approach is required, involving contextualisation of the materials (Li forthcoming). However, any further input towards the dating and phasing of the villa development proposed within this monograph represents a worthwhile avenue to explore, particularly as the box-flue tiles could in fact be an indicator of an early date for some of the Roman-style structures occupying the site. The overall assemblage from the villa is otherwise limited in ability to illuminate the transition from roundhouse living to Roman architecture, relevant to questions in the regional research agenda (Webster 2007, 279, Research Aim 10). Regionally, this research would also make a useful contribution to the growing datasets of tile fabric analysis results, leading to better understanding of this material in the South West (I M Betts, pers comm, 2023).

This monograph has observed similarities between the Low Ham and Bowdens Lane Quarry (Holmes and

Gordon 2023) faunal assemblages, with regard to the sheep/goat remains in particular (Chapter 11). Further investigation of this possible relationship is warranted as it may serve to confirm a connection between these two sites. As well as a visual/metric comparison of the zooarchaeological remains themselves, there is potential for scientific analysis of the Low Ham animal bone groups (ABGs) and the Bowdens Lane remains. Multi-isotope analysis would provide a valuable comparison of mobility and foddering practices across these neighbouring sites, and contribute, alongside aDNA work, to testing the hypothesis that they are tenurally linked.

Such research may serve to illuminate the intertwined role that sheep played in ritual as well as economic aspects of the villa, and thus contribute to wider questions about late Roman religious practice (Webster 2007, 292, Research Aim 55). Cussans outlines other sites where sheep burials appear to have had a ritual aspect, but that the Low Ham sheep bones differ notably from parallel groups in the quantity of butchery marks they carry (Chapter 8.4). If a link between the two sites can be established, and if sheep play a greater role in the villa's economic model than currently supposed, it potentially alters how these burials are viewed. Might Low Ham offer proof towards a supposition made by Harcourt regarding Chew Valley Lake Villa (1967; Chapter 8.4), that the buried sheep had served an economic purpose before being deposited as a religious offering, rather than being singled out solely for that latter function?

On a broader level, the Low Ham evidence clearly has a role to play in wider synthetic studies and should be a consideration in interpreting other well-appointed villas such as Ketton, Rutland (Browning *et al* 2022), discovered since this monograph was begun. Low Ham's lack of mention in any of the RSRB volumes presumably stems from non-publication at the time that project was being undertaken, and allowing this material to contribute to future research by bringing it to publication meets a key aim of the regional research agenda (Webster 2007, 281, Research Aim 13). Relevant ongoing synthetic work, which itself contributes to current research priorities for Roman Britain, includes the Feeding the Roman Army project (Guest *et al* 2023), which intends to investigate how the Roman garrisons were supplied. As a villa located in a rich agricultural landscape and assumed to have derived a large proportion of its wealth from that source, and in light of identified transport links through the region (discussed in Chapter 9), Low Ham is directly relevant.

The end of Roman Britain and fate of the villa-dwelling elite is a key transition area deserving of research (Webster 2007, 279, Research Aim 10). Gerrard's *The Ruin of Roman Britain* (2013) demonstrated the potential that material culture and environmental evidence has to contribute to our understanding of the fate and fortunes of the villa-dwelling elite in this key period. Chapter 11 highlights the apparent disparity between the richness of the structural remains at Low Ham and the paucity of portable material culture. To what extent this is replicated elsewhere, or the assemblage make-up is skewed by some of the circumstances set out at the beginning of that chapter, might be ascertained through the detailed comparison of functional small finds along the lines of that undertaken for Chedworth by Esmonde Cleary *et al* (2022), but which was beyond the scope of this project to undertake.

13.4 Conclusions

In summary, while much recent theoretical and archaeological literature has emphasised the outsized influence of villas on debates of the archaeology of the Romano-British countryside, these sites, and Low Ham in particular, still have many insights to offer. The importance of villas comes not only from their complexity and high status, but also from their place as nodes of control in the landscape. Villa owners, whatever one's views on the viability of villa estates as an organising concept in the rural landscape, were clearly able to influence and dominate at least part of the rural landscape and population in order to establish and maintain their luxurious rural establishments. By understanding something of the character and complexities of that unequal relationship, we can provide insights into the wider lived experience of the rural population, provided we are also assiduous in our research on lower-status sites. We hope that this monograph has addressed some of these issues, and at the very least provided new evidence from this important site, and new interpretations for colleagues to develop and critique, moving the field forwards.

Bibliography

Primary sources

Somerset Archives (Formerly Somerset Record Office (SRO))

SRO A/AHA/3/1 Volume of notes, drawings, newspaper cuttings and photographs relating to excavations at the Low Ham Villa site in 1946 entitled 'An Amateur's Log of visits paid to the Low Ham Villa during the first summer's Dig'. 1946–48. Specific pages references within this monograph under Denman 1948.

SRO A/CTP/13/10 Stevens Cox Collection of photographs (See Appendix A for full listing).

SRO DD SAS A/DWX Items in the collection of the Somerset Archaeological and Natural History Society. Not individually subnumbered. Includes correspondence, accounts and other office papers, photographs, drawings, prints and maps. Also Dewar's notes and the typescript of a lecture on Low Ham given by him in Cambridge.

SRO DD SAS C/212, High Ham 1823 map of the Netherham Manor estate.

SRO DD/X/SOM/60 Album of photographic negatives of the Low Ham mosaic excavations. *c* 1948.

SRO DD/X/SOM/120 Digital file, interview with Steve Minnitt of Somerset County Museums Service taken at Low Ham mosaic event. *c* 2014.

The National Archives, Kew (TNA)

TNA WORK 14/2004 Excavations and offer of purchase of site, 1946–48 (See Appendix A for full listing).

TNA WORK 14/2003 Removal of mosaic floor to Taunton Museum, 1949–61 (See Appendix A for full listing).

Historic England Archive (HEA)

HEA RAD01/22/01 Administrative Records – Correspondence. Radford's hand-written manuscript regarding the excavations was found among these papers. Specific pages are referenced within this monograph under Radford 1969. It is reproduced as Appendix C.

HEA RAD01/22/10 Site Records – Schedule of Photographs (See Appendix A for full listing).

HEA RAD01/22/12 Site Records – Photographs.

HEA RAD/01/022/13 Site Records – Plans.

HEA RAD01/22/14 Site Records – Sections.

HEA RAD01/22/C162

HEA RAD01/22/C163

HEA RAD01/22/C164

HEA RAD01/22/C165

HEA RAD01/22/C168 CARR notebook. Specific pages referenced in this monograph under Radford 1948a.

David J Smith Collection

Unpublished correspondence between the Low Ham excavators and the mosaic expert David J Smith, housed in the Institute of Classical Studies Library, Senate House, London.

Karen Cook Collection

Site visitors' book and photographs in the private collection of Mrs Karen Cook.

Secondary sources

Abdy, R 2013. 'The Patching hoard', in Hunter and Painter 2013, 105–113

Abdy, R, Brunning, R and Webster, C 2001. 'The discovery of a Roman villa at Shapwick and its Severan coin hoard of 9238 silver denarii', *J Roman Archaeol*, **14**, 358–72

Addadi, L, Raz, S and Weiner, S 2003. 'Taking advantage of disorder: amorphous calcium carbonate and its roles in biomineralization', *Advanced Materials* **15**, 959–70

Aerts-Bijma, A T, Paul, D, Dee, M W, Palstra, S W L and Meijer, H A J 2021. 'An independent assessment of uncertainty for radiocarbon analysis with the new generation high-yield accelerator mass spectrometers', *Radiocarbon*, **63**(1), 1–22. <https://doi.org/10.1017/RDC.2020.101>

Alberti, M 2017. *Spindle Whorls*, Roman Finds Group, Datasheet 7

Allason-Jones, L 1996. *Roman Jet in the Yorkshire Museum*, York Museums Trust, York

Allason-Jones, L 2005. *Women in Roman Britain,* new edn, Council for British Archaeology, York

Allen, D 1989. *Rockbourne Roman Villa: guide*,

Hampshire County Council, Winchester
Allen, D 2002. 'Roman window glass', in M Aldhouse-Green and P Webster (eds), *Artefacts and Archaeology: aspects of the Celtic and Roman world*, 102–11, University of Wales Press, Cardiff
Allen, D, Taylor, M and Hill, D 2023. 'Experiments in early window glass: four production methods and their possible use in Roman Britain', *J Glass Stud*, **65**, 39–59
Allen, J R L 2014. Whetstones from Roman Silchester (*Calleva Atrebatum*) North Hampshire: character, manufacture, provenance, and use. 'Putting an edge on it', BAR Brit Ser 597, Archaeopress, Oxford
Allen, J R L and Fulford, M G 2004. 'Early Roman mosaic materials in southern Britain with particular reference to Silchester (*Calleva Atrebatum*): a regional geological perspective', *Britannia*, **35**, 9–38
Allen, J R L, Fulford, M G and Todd, J A 2007. 'Burnt Kimmeridgian shale at early Roman Silchester, south-east England, and the Roman Poole–Purbeck complex-agglomerated geomaterials industry', *Oxford J Archaeol*, **25**, 167–91
Allen, L and Lodwick, L 2017. 'Agricultural strategies in Roman Britain', in Allen *et al* 2017, 142–77
Allen, M, Blick, N, Brindle, T, Evans, T, Fulford, M, Holbrook, N, Lodwick, L, Richards, J D and Smith, A 2018. *The Rural Settlement of Roman Britain: an online resource* [data set], Archaeology Data Service [distributor], York, <https://doi.org/10.5284/1030449>
Allen, M, Booth, P and Thacker, G 2020. 'An Early Bronze Age mortuary enclosure, Middle Bronze Age enclosed settlement and Late Roman trackway at Aller Court Farm, Aller, Somerset', *Proc Somerset Archaeol Natur Hist Soc*, **163**, 31–67
Allen, M, Lodwick, L, Brindle, T, Fulford, M, and Smith, A (eds) 2017. *New Visions of the Countryside of Roman Britain: volume 2, the rural economy of Roman Britain,* Britannia Monograph Series 30, Society for the Promotion of Roman Studies, London
Anderson, R and Rowson, B 2020. *An Annotated List of the Non-marine Molluscs of Britain and Ireland*, Conchological Society of Great Britain and Ireland, London, <https://conchsoc.org/sites/default/files/Ben%20Rowson/British_revised_NMList_2020%20(26%20Nov%202020).pdf> (13 June 2025)
Anonymous 1939. 'Additions to the museum from 22 June 1938 to 11 July (annual meeting) 1939', *Proc Somerset Archaeol Natur Hist Soc,* Part 1, **85**, 76–83
Applebaum, S 1966. 'Peasant economy and types of agriculture', in C Thomas (ed), *Rural Settlement in Roman Britain*, 99–107, Council for British Archaeology, London
ApSimon, A 1965. 'The Roman temple on Brean Down', *Proc Univ Bristol Speleol Soc*, **10**(3), 195–258
Arthur, P 1978. 'The lead glazed wares of Roman Britain', in P Arthur and G Marsh (eds), *Early Roman Fine Wares in Roman Britain*, 293–355, BAR Brit Ser 57, BAR Publishing, Oxford
Aston, M 1978. 'Gardens and earthworks at Hardington and Low Ham', *Somerset Archaeol Nat Hist*, **122**, 11–28
Aston, M 2013. *Interpreting the English Village: landscape and community at Shapwick, Somerset*, Windgather, Oxford
Baker, P 2019. 'Low Ham animal bone assessment', unpublished HE report, Historic England, Portsmouth
Baker, P, Fairnell, E and Worley, F 2020. *The Historic England Zooarchaeology Reference Collection: description and list*, Historic England, Portsmouth, <https://historicengland.org.uk/images-books/publications/zooarchaeology-reference-collection/> (22 Oct 2024)
Barber, M forthcoming. *Low Ham: summary of key features,* Research Report Series, Historic England
Barclay, A, Knight, D, Booth, P, Evans, H, Brown, D and Wood, I 2016. *A Standard for Pottery Studies in Archaeology*, Prehistoric Ceramics Research Group, the Study Group for Roman Pottery and the Medieval Pottery Research Group, London
Barker, G and Webley, D 1977. 'An integrated economy for Gatcombe', in K Branigan (ed), *Gatcombe Roman Villa,* 198–211, BAR Brit Ser 44, BAR Publishing, Oxford
Barr, M W C 2006. 'Building with stone in East Devon and adjacent parts of Dorset and Somerset', *Rep Trans Devonshire Ass Advancement Sci Lit Arts*, **138**, 185–224
Barr, M W C 2007. 'Building stone at the western edge of the Blackdown Hills', *Geosci south-west England*, **11**, 348–54
Barrett, J C, Freeman, P W M and Woodward, A 2000. *Cadbury Castle, Somerset: the later prehistoric and early historic archaeology,* English Heritage Archaeol Rep 20, English Heritage, Swindon
Bayliss, A and Marshall, P 2022. *Radiocarbon Dating and Chronological Modelling: guidelines and best practice*, Historic England, London
Beard, M 2009. *Pompeii: the life of a Roman town*, Profile Books, London
Bedford, L and Clark, S 2014. 'The Hoar Hill Roman Villa, Boxford, West Berkshire (HH13): report on the 2013 evaluation excavation', unpublished report
Beeson, A, Nichol, M and Massey, R 2022. 'The Triumphs of Pelops and Bellerophon: unique mosaic evidence of Romanitas in late Roman Britain', *Britannia*, **53**, 185–225
Beretta, M and Di Pasquale, G 2006. Le verre dans L'empire Romain: exposition présentée à Florence, Museo Degli Argenti, Musée "des Argents", Palais Pitti du 27 Mars au 31 Octobre 2004, Réunion Des Musées Nationaux, Paris, France. AJA online book review
Betts, I M 2016. 'Ceramic building material: production, supply and use in Roman London', in J DeLaine, S Camoreale and A Pizzo (eds), *Arqueología de la Construcción V: 5th international workshop on the archaeology of Roman construction, Anejos de Archivo Español de Arqueología, LXXVII*, 99–110, Consejo Superior de Investigaciones Científicas, Madrid
Betts, I M 2017. 'The supply of tile to Roman London', in D Bird (ed), *Agriculture and Industry in South-eastern Roman Britain*, 368–83, Oxbow Books, Oxford and Philadelphia
Betts, I M 2019a. 'Imitation marble wall plaster from 25–51 St Mary Axe, 9 St Helen's Place, London and other sites', *Trans London Middlesex Archaeol Soc*, **70**, 1–23
Betts, I M 2019b. 'Longview, 1 Manor Barns, Cockham Lane, Litlington, Cambridgeshire (ECB5273): report on Roman wall plaster and painted opus signinum', unpublished report, Museum of London Archaeology, London
Betts, I M 2019c. 'North West Cambridge/Eddington (Site VII) Roman wall plaster (NWC18)', unpublished report, Museum of London Archaeology, Museum of London
Betts, I M 2023. 'The Roman wall plaster, Neots, Cambridgeshire (STRW8321, ECB6811)', unpublished archive report, Oxford Archaeology, Oxford
Betts, I, Black, E W, Gower, J L 1997. 'A corpus of relief-patterned tiles in Roman Britain', *J Roman Pottery Stud*, **7**
Bianco, S, Tarongi, M, Allué, E, Picornell-Gelabert, L, Hinojo, E, Dufraisse, A, Miró, C and Riera, S 2024. 'Pyre wood fuel and food remains in a necropolis of Barcino (Barcelona, NE Iberian Peninsula): the case of Sant Antoni Market site (1st century CE)', *Quaternary International*, **699**, 47–64, <https://doi.org/10.1016/j.quaint.2023.10.008>
Bird, J 2004. 'Incense in Mithraic ritual: the evidence of the finds', in M Martens and G De Boe (eds), *Roman Mithraism*, 191–99, Museum Het Toreke, Brussels
Bishop, M C and Coulston, J C N 1993. *Roman Military Equipment*, Batsford, London
Blagg, T F C 1976. 'Tools and techniques of the Roman stonemason in Britain', *Britannia*, **7**, 152–72
Blagg, T F C 2002. *Roman Architectural Ornament in Britain.* BAR Brit Ser 329, Archaeopress, Oxford
Bland, R 2018 *Coin Hoards and Hoarding in Roman Britain AD 43–c.498*. The British Numismatic Society Special Publication 13, Spink, London
Bland, R, Chadwick, A, Ghey, E, Haselgrove, C, Mattingly, D J, Rogers, A and Taylor, J 2020. *Iron Age and Roman Coin Hoards in Britain*, Oxbow Books, Oxford
Bland, R and Johns, C 1993. *The Hoxne Treasure: an illustrated introduction*, British Museum, London
Bland, R, Moorhead, T S N and Walton, P J 2013. 'Finds of late Roman silver coins from Britain: the contribution of the Portable Antiquities Scheme', in Hunter and Painter 2013, 117–66
Boessneck, J 1969. 'Osteological differences between Sheep (*Ovis aries* Linné) and Goat (*Capra hircus* Linné)', in D R Brothwell and E S Higgs (eds), *Science in Archaeology: a survey of progress and research*, 331–58, Thames and Hudson, London
Boessneck, J, Müller, H H and Teichert, M 1964. 'Osteologische unterscheidungmerkmale zwischen Schaf (*Ovis aries* Linné) und Ziege (*Capra hircus* Linné)', *Kühn-Archiv*, **78**(1–2), 1–129
Bond, J 1994. 'Forest, chases, warrens and parks in medieval Wessex', in M Aston and C Lewis (eds), *The Medieval Landscape of Wessex*, 115–58, Oxbow Books, Oxford
Boon, G C 1974. *Silchester: the Roman town of Calleva*, David and Charles, London
Booth, P 2020. 'Status or what? Aspects of broad characterisation of Roman pottery assemblages in the Oxford region', *Oxoniensia*, **85**, 1–41
Booth, P and Lawrence, S 2006. *The Iron Age Settlement and Roman Villa at Thurnham, Kent*, Oxford Wessex Archaeology Joint Venture, Oxford
Braadbaart, F 2008. 'Carbonisation and morphological changes in modern dehusked and husked *Triticum dicoccum* and *Triticum aestivum* grains', *Vegetation Hist Archaeobotany*, **17**, 155–66
Brailsford, J W 1958. 'Early Iron Age "C" in Wessex', *Proc Prehist Soc*, **24**, 101–19
Branigan, K 1976a. *The Roman Villa in South-West England*, Moonraker Press, Bradford-upon-Avon
Branigan, K 1976b. 'Villa settlement in the West Country', in K Branigan and P Fowler (eds), *The Roman West Country: Classical culture and Celtic society*, 120–41, David & Charles, Newton Abbot
Branigan, K 1977. *Gatcombe Roman villa,* BAR Brit Ser 44, BAR Publishing, Oxford
Brindle, T 2014. The Portable Antiquities Scheme and Roman Britain, British Museum Press, London
Brindle, T 2017. 'Coins and markets in the countryside', in Allen *et al* 2017, 237–80
Brindle, T 2018. 'Personal appearance in the countryside of Roman Britain', in Smith *et al* 2018a, 6–47

Brindle, T 2023 'Discussion', in T Brindle, M Brett, M and J Hart, *Evolution of a Romano-British Courtyard Villa. Excavations at the former Dings Crusaders Rugby Ground, Stoke Gifford, 2016–2018*, 195–220, Cotswold Archaeology Monograph 15

Brindle, T and Lodwick, L 2017. 'Textile production', in Allen *et al* 2017, 221–30

Bristow, C R and Donovan, D T 2015. 'Geology of the Glastonbury–Shepton Mallet area', *Geosci South-West England*, **13**(4), 377–91

British Pathé 1946. 'Somerset Roman Relics AKA Somerset's Roman Relics', <https://www.britishpathe.com/asset/83401>

Brittain, M and Evans, E 2016. *Roman and medieval archaeology at Kettle's Yard, Cambridge*, Cambridge Archaeological Unit, University of Cambridge, Cambridge

Brittain, M, Sharples, N and Evans, C 2014. 'Excavations at Ham Hill, Somerset, 2013', unpublished report, Cambridge Archaeological Unit, Cambridge

Brittain, M, Sharples, N and Evans, C 2015. Excavations at Ham Hill, Somerset 2011–2013 Post Excavation Assessment, Cambridge Archaeological Unit, report no. 1318

Brodribb, G 1987. *Roman Brick and Tile*, Alan Sutton, Stroud

Bronk Ramsey, C 1995. 'Radiocarbon calibration and analysis of stratigraphy: the OxCal program', *Radiocarbon*, **37**(2), 425–30, <https://doi.org/10.1017/S0033822200030903>

Bronk Ramsey, C 1998 Probability and dating, *Radiocarbon*, **40**, 461–74, <https://doi.org/10.1017/S0033822200018348>

Bronk Ramsey, C 2009. 'Bayesian Analysis of radiocarbon dates', *Radiocarbon*, **51**(1), 337–60, <https://doi.org/10.1017/S0033822200033865>

Brown, I 2009. *Beacons in the Landscape: the hillforts of England and Wales*, Windgather, Oxford

Brown, L 1991. 'Later prehistoric pottery', in N M Sharples (ed), *Maiden Castle: excavations and field survey 1985–6,* 185–203, English Heritage Archaeological Report 19, English Heritage, London

Browning, J, Masséglia, J, Taylor, J and Thomas, J 2022. 'The discovery of a new Roman villa and unique mosaic in Rutland', *Trans Leicestershire Archaeol Hist Soc*, **96**, 79–93

Brunning, R 2011. 'Middlezoy, Greylake sand quarry', *Proc Somerset Archaeol Natur Hist Soc*, **155**, 239

Brunning, R 2013. *Somerset's Peatland Archaeology: managing and investigating a fragile resource*, Oxbow Books, Oxford

Brunning, R 2014. 'An early Mesolithic cemetery at Greylake, Somerset, UK', *Archaeology in the Severn Estuary*, **22**, 67–70

Brunning, R and Farr-Cox, F 2005. 'The River Siger Rediscovered: LiDAR survey and relict landscape on the Somerset claylands', *Archaeology in the Severn Estuary*, **16**, 1–15

Buck, C E, Cavanagh, W G and Litton, C D 1996. *Bayesian Approach to Interpreting Archaeological Data*, Wiley, Chichester

Buck, C E, Litton, C D and Smith, A F M 1992. 'Calibration of radiocarbon results pertaining to related archaeological events', *J Archaeol Sci*, **19**(5), 497–512, <https://doi.org/10.1016/0305-4403(92)90025-X>

Bulleid, A and Jackson, J 1937. 'Burtle sand beds of Somerset', *Proc Somerset Archaeol Natur Hist Soc*, **83**, 171–95

Butcher, S 2001. 'The brooches', in A S Anderson, J S Wacher and A P Fitzpatrick (eds), *The Romano-British 'Small Town' at Wanborough, Wiltshire: excavations 1966–1976*, 41–69, Britannia Monograph Series 19, Society for the Promotion of Roman Studies, London

Butcher, S 2014. 'The Roman brooches from Nornour, Isles of Scilly', *Cornish Archaeol*, **53**, 1–80

Campbell, G V 2000. 'Plant utilisation: the evidence from charred plant remains', in B Cunliffe and C Poole (eds), *The Danebury Environs Programme: the prehistory of a Wessex Landscape. Vol 2 part 5,* 45–59, Monograph 49, English Heritage and Oxford University Committee for Archaeology, Oxford

Campbell, G V 2008. 'Plant utilisation in the countryside around Danebury: a Roman perspective', in B Cunliffe (ed), *The Danebury Environs Roman Programme: a Wessex landscape during the Roman era. Vol 1: overview,* 53–74, Monograph 70, English Heritage and Oxford University School of Archaeology, Oxford

Campbell, G V 2017. 'Market forces – a discussion of crop husbandry, horticulture and trade in plant resources in Southern England', in D Bird (ed), *Agriculture and Industry in South–Eastern Roman Britain*, 134–55, Oxbow Books, Oxford

Campbell, G V, Moffett, L and Straker, V 2011. *Environmental Archaeology: a guide to the theory and practice of methods from sampling and recovery to post-excavation*, 2nd edn, English Heritage, Swindon

Canti, M G 2017. 'Burnt carbonates', in Nicosia and Stoops 2017, 181–8

Cappers, R T J, Bekker, R M and Jans, J E A 2006. *Digital Seed Atlas of the Netherlands*, Barkhuis Publishing, Groningen

Carrié, J-P 2010. Les lieux des Lettres dans les villae occidentales de l'antiquité tardive, *Antiquité Tardive,* **18**, 63–74

Carruthers, W 2011. 'Charred plant remains', in R Helm and W Carruthers (eds) Early Roman evidence for intensive cultivation and malting of spelt wheat at Nonington', *Archaeol Cantiana*, **131**, 362–70

Carson, R, Kent, J and Burnett, A 1994. *Roman Imperial Coinage. Vol X*, Spink, London

Cattell, J 1996. 'Low Ham Project, Somerset. RCH01/001/AF1048088', unpublished RCHME archive material held in the Historic England Archive, Historic England, Swindon, <https://historicengland.org.uk/images-books/photos/volume/AF1048088> (13 June 2025)

Charles, M, Forster, E, Wallace, M and Jones, G 2015. '"Nor ever lightning char thy grain": establishing archaeologically relevant charring conditions and their effect on glume wheat grain morphology', *STAR: Sci Technol Archaeol Res*, **1**, 1–6

CIfA 2021. *Toolkit for Specialist Reporting*, Chartered Institute for Archaeologists (CIfA), Reading, <https://www.archaeologists.net/reporting-toolkit> (April 2021)

Clark, D (ed) 1972. *Models in Archaeology*. Routledge, London

Cohen, A and Serjeantson, D 1996. *A Manual for the Identification of Bird Bones from Archaeological Sites*, Archetype Publications, London

Cole, R 1983. 'A brushwood structure on King's Sedge Moor', in J M Coles (ed) *Somerset Levels Papers* 9, 16–18, Somerset Levels Project

Coles, J 1989. 'Somerset Levels Papers 15', *Somerset Levels Papers* 15, 14–32, Somerset Levels Project

Coles, J M and Campbell, K R 1982. 'Archaeology in the Somerset Levels 1981', in J M Coles (ed) *Somerset Levels Papers* 8, 4–9, Somerset Levels Project

Coles, J and Orme, B 1983. 'Archaeology in the Somerset Levels 1982', in J M Coles (ed) *Somerset Levels Papers* 9, 5–6, Somerset Levels Project

Coles, J M and Campbell, K R 1982. 'Archaeology in the Somerset Levels 1982', in J M Coles (ed) *Somerset Levels Papers* 8, 4–9, Somerset Levels Project

Cookson, N A 1984. *Romano-British mosaics – a reassessment and critique of some notable stylistic affinities*, BAR Brit Ser 135, BAR Publishing, Oxford

Cool, H E M 2000. 'The parts left over: material culture into the fifth century', in T Wilmott and P Wilson (eds) *The Late Roman Transition in the North*, 47–65, BAR Brit Ser 299, BAR Publishing, Oxford

Cool, H E M 2004. 'Some notes on spoons and mortaria', in B Croxford, H Eckardt, J Meade and J Weekes (eds), *TRAC 2003: proceedings of the thirteenth annual Theoretical Roman Archaeology Conference*, 28–35, Oxbow Books, Oxford

Cool, H E M 2005. 'Roman stone mortars – a preliminary survey', in G B Dannell and P V Irving (eds), *An Archaeological Miscellany: papers in honour of K F Hartley*, J Roman Pottery Stud ***12***, 54–8, Oxbow, Oxford

Cool, H E M 2006. *Eating and Drinking in Roman Britain*, Cambridge University Press, Cambridge

Cool, H E M 2010 'Objects made of glass, shale, bone and metal (except nails)' in P Booth, A Simmonds, A Boyle, S Clough, H E M Cool and D Poore (eds) *The Late Roman Cemetery at Lankhills, Winchester: excavations 2000–2005,* 267–309, Oxford Archaeology, Oxford

Cool, H E M 2024. *Blue/Green Glass Bottles from Roman Britain*. Archaeopress Roman Archaeology 113, Archaeopress, Oxford

Cool, H and Price, J 1987. 'The glass', in G Meates (ed), *The Lullingstone Roman Villa: volume II – the wall paintings and finds*, 110–42, Kent Archaeological Society Monograph 3, Maidstone

Cooper, N forthcoming. 'Villages of the damned? Investigating Roman pottery consumption in rural Leicestershire and Rutland', in V Szafara and D van Helden (eds), *Investigating Consumption: the archaeology of social practice. Papers in honour of Penelope Allison on the occasion of her retirement*, Archaeopress, Oxford

Cooper, N J 2002. 'Lead objects from Catterick Bypass and Catterick 1972 (sites 433 and 434)', in P R Wilson (ed), *Cataractonium: Roman Catterick and its hinterland. Excavations and research, 1958–1997. Part 2*, 106–8, CBA Research Report 129, York

Corney, M 2022 'The St Laurence School villa, Bradford on Avon, Wiltshire. A late Roman estate centre and early post-Roman Church', in Henig *et al* 2022a, 204–22

Corney, M, Cox, P, Firth, E and Robinson, S 2011. 'The Wessex Water Somerset Spine Main Replacement. Assessment report on archaeological investigations undertaken between 2001 and 2008', unpublished report, AC Archaeology, Chicklade

Cosh, S R 2001. 'Seasonal dining-rooms in Romano-British houses', *Britannia*, **32**, 219–42

Cosh, S R 2021. 'The Durnovarian Group of mosaics', *Proc Dorset Natur Hist Archaeol Soc*, **142**, 135–49

Cosh, S R 2022a. 'The *Lindinis* Group of mosaics', *Proc Somerset Archaeol Natur Hist Soc*, **165**, 159–71

Cosh, S R 2022b. 'The mosaics', in Esmonde Cleary *et al* 2022, 224–54

Cosh, S R 2022c. 'The Rutland Achilles and Hector mosaic', *Assoc Roman Archaeol News*, **47**, 24–8

Cosh, S R and Neal, D S 2005. *Roman Mosaics of Britain. Vol II: South-west Britain*, Society of Antiquaries of London, London

Cosh, S R and Neal, D S 2010. *Roman Mosaics of Britain. Vol IV: Western Britain*, Society of Antiquaries of London, London

Cosh, S R and Neal, D S 2024. *Roman Mosaics of Britain. Vol V: discoveries and research since 2010*, Society of Antiquaries of London, London

Costamagno, S, Soulier, M-C, Val, A and Chong, S 2019. 'The reference collection of cutmarks', *Palethnologie, Archéologie et Sciences humaines*, **10**, <https://doi.org/10.4000/palethnologie.4089>

Crawford, O G S and Keiller, A 1928. *Wessex from the Air*, Clarendon, Oxford

Creighton, J 2000. *Coins and Power in Late Iron Age Britain*, Cambridge University Press, Cambridge

Creighton, J and Allen, M 2017. 'Fluxgate gradiometry survey at North Leigh Roman Villa, Oxfordshire', *Britannia*, **48**, 279–87

Croom, A 2011. *Running the Roman Home*, The History Press, Stroud

Crummy, N 1983. *The Roman Small Finds from Excavations in Colchester 1971–9*, Colchester Archaeology Report 2, Colchester Archaeological Trust, Colchester

Crummy, N 2010. 'Bears and coins: the iconography of protection in Late Roman infant burials', *Britannia*, **41**, 37–93

Crummy, N 2011. 'Travel and transport', in L Allason-Jones (ed), *Artefacts in Roman Britain Their Purpose and Use*, 46–67, Cambridge University Press, Cambridge

Cubitt, R S and Starley, D 2021. 'Ferrous metalworking debris', in S Ross and C Ross (eds), *Cataractonium: establishment, consolidation and retreat Vol 2*, 665–83, Northern Archaeological Associates, Barnard Castle

Cunliffe, B C 1971. *Excavations at Fishbourne 1961–1969*, The Society of Antiquaries, London

Cunliffe, B 2004. 'Wessex cowboys?', *Oxford Journal of Archaeology*, **23**(1), 61–81

Cunliffe, B 2005. *Iron Age Communities in Britain: an account of England, Scotland and Wales from the seventh century BC until the Roman conquest*, 4th edn, Routledge, London

Cunliffe, B. 2008 'The vernacular architecture of the region in the Roman period', in B Cunliffe (ed), *The Danebury Environs Roman Programme: a Wessex landscape during the Roman era. Vol 1: overview*, 113–25, Oxford University School of Archaeology Monographs 70, Oxford

Cunliffe, B and Poole, C 2008. *The Danebury Environs Roman Programme: a Wessex landscape during the Roman era. Vol 2: the sites*, Oxford University School of Archaeology Monographs 71, Oxford

Dalby, A 2013. *Food in the Ancient World from A to Z*, Routledge, London

Dark, K R 1994. *Civitas to Kingdom: British political continuity 300–800*, Leicester University Press, Leicester

Davenport, P 2021. *Roman Bath: a new history and archaeology of Aquae Sulis*, History Press, Stroud

Davey, N and Ling, R 1982. *Wall-painting in Roman Britain*, Britannia Monograph Series 3, Society for the Promotion of Roman Studies, London

Davies, P 2000. 'The phoenix and the flames: death, rebirth and the imperial landscape of Rome', *Mortality*, **5**(3), 237–58

Davies, P 2008. *Snails: archaeology and landscape change*, Oxbow Books, Oxford

Davies, P 2010. 'Land and freshwater molluscs', in T O'Connor and N Sykes (eds), *Extinctions and Invasions: a social history of British fauna*, 175–80, Windgather, Oxford

Davis, S J M, 1992. *A Rapid Method for Recording Information about Mammal Bones from Archaeological Sites*. Ancient Monuments Laboratory Report 19/92. English Heritage, London

Dawson, G J and Wright, P 2018. 'A survey of the use of traditional building stones in West and South Somerset', unpublished report for the South West Heritage Trust

de Carle, D E 2014. 'Changing plant subsistence in prehistoric Southwest Britain: archaeobotanical and anthracological evidence from the South Cadbury Environs Project: volume I', PhD thesis, Department of Archaeology, University of Sheffield

de Vareilles, A, Woodbridge, J, Pelling, R, Fyfe, R, Smith, D, Campbell, G, Smith, W, Carruthers, W, Adams, S, le Hégarat, K and Allot, L 2023. 'The development of arable cultivation in the south-east of England and its relationship with vegetation cover: a honeymoon period for biodiversity?', *Holocene*, **33**(11), 1389–1406, <https://doi.org/10.1177/09596836231185836>

Dearne, M and Branigan, K 1995. 'The use of coal in Roman Britain', *Antiq J*, **75**, 71–105

Dee, M W, Palstra, S W L, Aerts-Bijma, A T, Bleeker, M O, de Bruijn, S, Ghebru, F, Jansen, H G, Kuitems, M, Paul, D, Richie, R R, Spriensma, J J, Scifo, A, van Zonneveld, D, Verstappen-Dumoulin, B M A A, Wietzes-Land, P and Meijer, H A J 2020. 'Radiocarbon dating at Groningen: new and updated chemical pretreatment procedures', *Radiocarbon*, **62**(1), 63–74, <https://doi.org/10.1017/RDC.2019.101>

Denman 1948 – see Primary Sources list

Dewar, H S L 1952. 'The site in relation to neighbouring Roman villas' in C A R Radford, 'The Roman site at Catsgore, Somerton', *Proc Somerset Archaeol Natur Hist Soc*, **96**, 41–77

Dewar, H S L 1961a. '44. Note on a new range of buildings and a Roman well at Low Ham', *Notes and Queries for* Somerset *and Dorset*, **27**, 58–61

Dewar, H S L 1961b. '117. Plant remains from a well at Low Ham', *Notes and Queries for Somerset and Dorset*, **27**, 157

Dewar, H S L 1966 'Down the Roman well', *The Countryman*, 358–63

Dickson, C A 2011. 'Distinguishing seeds of Brassica spp.', unpublished guide, Historic England, Swindon

Dragendorff, H 1895. 'Terra sigillata, ein Beitrag zur Geschichte der grieschichen und römischen Keramik', *Bonner Jahrbücher*, **96**, 18–155

Dunbabin, K M D 1999. *Mosaics of the Greek and Roman World*, Cambridge University Press, Cambridge

Dunning, R 2004. 'High Ham', in *A History of the County of Somerset: vol 8, the Poldens and the Levels*, *British History Online*, <https://www.british-history.ac.uk/vch/som/vol8/pp70-91> (4 November 2024)

Durham, E 2022. 'Overview of the small finds', in Esmonde Cleary *et al* 2022, 400–407

Eagles, B 2018. *From Roman Civitas to Anglo-Saxon Shire: topographical studies on the formation of Wessex*, Oxbow Books, Oxford

Eckardt, H 2014. *Objects and Identities: Roman Britain and the north-western provinces*, Oxford University Press, Oxford, <https://doi.org/10.1093/acprof:osobl/9780199693986.001.0001>

Eckstein, D 2007. 'Human time in tree rings', *Dendrochronologia*, **24**(2), 53–60

Eide, E, Linford, N, Persico, R and Sala, J 2018. 'Advanced SFCW GPR systems', in Persico *et al* 2018, 253–85

Ellison, A 1980. 'Natives, Romans and Christians on West Hill, Uley: an interim report on the excavation of a ritual complex of the first millennium AD', in W Rodwell (ed), *Temples, Churches and Religion in Roman Britain,* BAR Brit Ser 77, 305–28, Archaeopress, Oxford

Ellison, A and Henig, M 1981. 'Head of Mercury from Uley, Gloucestershire', *Antiquity*, **55**(213), 43–4

Esmonde Cleary, S 2013a. *Chedworth: life in a Roman villa*, The History Press, Stroud

Esmonde Cleary, S 2013b. *The Roman West, AD 200–500: an archaeological study*, Cambridge University Press, Cambridge

Esmonde Cleary, S 2017. 'Roman state involvement in Britain in the later 4th century: an ebbing tide?', in N Roymans, S Heeren and W de Clercq (eds), *Social Dynamics in the Northwest Frontiers of the Roman Empire: beyond decline or transformation*, 179–202, Amsterdam University Press, Amsterdam

Esmonde Cleary, S 2025. 'Villae in the late Roman West as expressions of aristocratic culture', in D Moreau, O Heinrich-Tamaska, C Sfameni, C Rummel and S E Cleary (eds), *Late Antique villae in the Balkans (3rd–7th c AD): current research questions and perspectives*, Brepols, Amsterdam

Esmonde Cleary, S, Woods, J and Durham, E 2022. *Chedworth Roman villa: excavations and re-imaginings from the nineteenth to the twenty-first centuries*. Britannia Monograph Series 35; Society for the Promotion of Roman Studies in Association with the National Trust, London

Evans, J G 1972. *Land Snails in Archaeology*, Seminar Press, London

Evans, J G 1991. 'The land and freshwater mollusca', in S Needham (ed), *Excavation and salvage at Runnymede Bridge 1978*, 263–74, British Museum, London

Evans, J G and Williams, D 1991. 'Land mollusca from the M3 archaeological sites – a review', in P J Fasham and R J B Whinney (eds), *Archaeology and the M3*, 113–42, Hampshire Field Club and Archaeological Society, Winchester

Everson, P 1989. 'The gardens of Campden House, Chipping Campden, Gloucestershire', *Garden History*, **17**(2), 109–21

Fafinski, M 2021. Roman Infrastructure in Early Medieval Britain: the adaptions of the past in text and stone, Amsterdam University Press, Amsterdam

Farrar, R A H 1973. 'The techniques and sources of Romano-British Black burnished ware' in A Detsicas (ed), *Current Research in Romano-British Coarse Pottery,* 67–103, CBA Research Report 10, London

Ferris, I 2010. *The Beautiful Rooms are Empty: excavations at Binchester Roman Fort, County Durham 1976–1981 and 1986–1991*, Durham County Council, Durham

Fleming, R 2021. *The Material Fall of Roman Britain, 300–525 CE*, University of Pennsylvania, Philadelphia, PA

Frere, S 1972. *Verulamium Excavations Vol 1*, Society of Antiquaries, London

Fulford, M G 1975. *New Forest Roman Pottery: manufacture and distribution, with a corpus of the pottery types*, BAR Brit Ser 17, BAR Publishing, Oxford

Fulford, M 2018. 'Introduction', in A Smith *et al* 2018a, 1–5

Gale, R 2009. 'Charcoal', in J Wright, M Leivers, R Seager Smith and C J Stevens (eds), *Cambourne New Settlement: Iron Age and Romano-British settlement on the clay uplands of West Cambridgeshire,* 135–55, Wessex Archaeology Report 23, Wessex Archaeology, Salisbury

Gale, R M O and Cutler, D 2000. *Plants in Archaeology: identification manual of vegetative plant materials used in Europe and the South Mediterranean to c. 1500*, Westbury Academic & Scientific Publishing, Otley

Gater, J, Leech, R H and Riley, H 1993. Later prehistoric and Romano-British settlement sites in south Somerset: some recent work, *Somerset Archaeol Natur Hist*, **137**, 41–58

Gerrard, J 2004. 'Bradley Hill, Somerset, and the end of Roman Britain: a study in continuity?', *Somerset Archaeol Natur Hist Mag,* **148**, 1–9

Gerrard, J 2011. 'Romano-British small finds', in A Douglas, J Gerrard and B A Sudds (eds), *A Roman Settlement and Bath House at Shadwell Excavations at Tobacco Dock and Babe Ruth Restaurant, the Highway, London*, 91–103, PCA Monograph 12, PCA, London

Gerrard, J 2013. *The Ruin of Roman Britain: an archaeological perspective*, Cambridge University Press, Cambridge

Gerrard, J 2016. 'The black burnished type 18 bowl and the fifth century', *Internet Archaeol*, **41**, <https://doi.org/10.11141/ia.41.5>

Ghey, E and Talbot, J 2022. 'An Iron Age coin hoard from Nursling, Hampshire', *Brit Numismatic J*, **92**, 2–38

Gilchrist, R and Green, C 2015. *Glastonbury Abbey: archaeological investigations 1904–79*, Society of Antiquaries of London, London

Gillam, J P 1970. *Types of Roman Coarse Pottery Vessels in Northern Britain*, 3rd edn, Oriel Press, Newcastle upon Tyne

Giovas, C M 2009. 'The Shell Game: analytic problems in archaeological mollusc quantification', *J Archaeol Sci*, **39**, 1557–64

Godwin, H 1961. 'Plant remains from a well at Low Ham: copy of report received from Dr Harry Godwin, FRS, Cambridge University Sub-Department of Quaternary Research, Botany School, Downing Street, Cambridge, 29th November, 1956', *Notes and Queries for Somerset and Dorset*, **27**(58), 157

Goodburn, R, Wright, R P, Hassall, M W C and Tomlin, R S O 1976. 'Roman Britain in 1975', *Britannia*, **7**, 290–392

Grahame, K 1908. *The Wind in the Willows*, Methuen, London

Grant, A 1982. 'The use of tooth wear as a guide to the age of domestic ungulates', in B Wilson, C Grigson and S Payne (eds), *Ageing and Sexing Animal Bones from Archaeological Sites,* BAR Brit Ser 109, 91–108, Archaeopress, Oxford

Greene, E M 2014. 'If the shoe fits: style and status in the assemblage of children's shoes from Vindolanda', in R Collis and F McIntosh (eds), *Life in the Limes: studies of people and objects of the Roman frontiers*, Oxbow, Oxford

Greep, S J 1986. 'The coarse pottery', in J D Zienkiewicz (ed), *The Legionary Fortress Baths at Caerleon: II the finds*, 50–96, National Museum of Wales and Cadw, Cardiff

Greep, S J 2015. 'A late fourth/early fifth century furniture maker's worship at the Roman fort of South Shields', *Arbeia J,* **10**, 129–48

Greig, J 1992. *An Iron Age Hedgerow Flora from Alchester, Warwickshire*, AML Report 11/92, English Heritage, Portsmouth

Guest, P, Luke, M and Pudney, C 2012. *Archaeological evaluation of the extramural monumental complex ('the Southern Canabae') at Caerleon, 2011*. [Project Report]. Cardiff Studies in Archaeology: Specialist Report, vol 33. Cardiff: Cardiff School of History, Archaeology and Religion, Cardiff University. <http://www.cardiff.ac.uk/share/resources/CSA_33_Guest_P.pdf>

Guest, P, Ma, H, Mion, L, Lamb, A and Madgwick, R 2023. 'Feeding the Roman army in Britain', *Antiquity*, **97**, 1–5, <https://doi.org/10.15184/aqy.2023.110>

Hajdas, I 2008. 'Radiocarbon dating and its applications in Quaternary studies', *E&G Quaternary Sci J*, **57**(1/2), 2–24, <https://doi.org/10.3285/eg.57.1-2.1>

Hajdas, I, Bonani, G, Furrer, H, Mäder, A and Schoch, W 2007. 'Radiocarbon chronology of the mammoth site at Niederweningen, Switzerland: results from dating bones, teeth, wood, and peat', *Quaternary Int*, **164–165**, 98–105, <https://doi.org/10.1016/j.quaint.2006.10.007>

Hajdas, I, Michczyński, A, Bonani, G, Wacker, L and Furrer, H 2009. 'Dating bones near the limit of the radiocarbon dating method: study case mammoth from Niederweningen, ZH Switzerland', *Radiocarbon*, **51**(2), 675–680, <https://doi.org/10.1017/S0033822200056010>

Halstead, P 1985. 'A study of mandibular teeth from Romano-British contexts at Maxey', in F Pryor *et al* (eds) *The Fenland Project: archaeology and environment in the Lower Welland Valley, volume 1*, 219–24, East Anglian Archaeology 27, Cambridgeshire Archaeological Committee

Hambleton, E 1999. *Animal Husbandry Regimes in Iron Age Britain: a comparative study of faunal assemblages from British Iron Age sites*. BAR Brit Ser 282, Archaeopress, Oxford

Harcourt, R A 1967. *Animal Remains from the Chew Valley Lake Roman Villa*, Historic Buildings and Monuments Commission for England, London

Harden, D 1979. 'Glass vessels', in G Clarke (ed), *The Roman Cemetery at Lankhills, Winchester Studies 3: pre-Roman and Roman Winchester, part 2*, 209–20, Oxford University Press, Oxford

Harding, D 2016. *Death and Burial in Iron Age Britain*, Oxford University Press, Oxford

Hart, J and Mudd, A 2018. C*annington Bypass, Somerset: Excavations in 2014. Middle Bronze Age enclosure at Rodway and Roman villa at Sandy Lane*, Cotswold Archaeology Monograph 10, Cirencester

Hather, J 2000. *The Identification of the Northern European Woods: a guide for archaeologists and conservators*, Archetype, London

Haverfield, F 1906. 'Romano-British Somerset', in W Page (ed), *A History of the County of Somerset: volume 1*, 207–371, Victoria County History, London

Hawkes, S and Dunning, G 1961. 'Soldiers and settlers in Britain, fourth to fifth century. With a catalogue of animal-ornamented buckles and related belt-fittings', *Medieval Archaeol*, **5**, 1–70

Hayward, K M J 2007. 'Stone materials from Groundwell Ridge Villa, Swindon', unpublished report for English Heritage

Hayward, K M J 2009. *Roman Quarrying and Stone Supply on the Periphery – Southern England. A geological study of first century funerary monuments and monumental architecture*. BAR Brit Ser 500, Archaeopress, Oxford

Hayward, K M J 2010. 'Stone report Yarford Villa', unpublished petrological report for the University of Winchester

Hayward, K M J 2011. 'The worked stone', in M Fulford and G Clarke (eds), *Silchester: city in transition. The mid-Roman occupation of Insula IX c AD 125–250/300. A report on excavations undertaken since 1997*, 204–19, Britannia Monograph 25, Society for the Promotion of Roman Studies

Hayward, K M J 2017a. 'Assessment of the stone from Teffont Evias', unpublished report for Historic England

Hayward, K M J 2017b. 'Assessment of the stone from Tisbury Villa', unpublished report for Historic England

Hayward, K M J 2018a. 'Assessment of stone for Lufton Villa, Dorset', report for Newcastle University on behalf of Pre-Construct Archaeology Ltd

Hayward, K M J 2018b. 'Assessment of the stone tesserae from Bridgewalk House Villa', report for Historic England in partnership with the PASt Landscapes Project

Hayward, K M J 2021. 'The worked stone, building materials and furnishings', in I Hewitt, I M Putnam, J Milward and J M Dewlish (eds), *Dewlish Roman Villa, Dorset: Bill Putnam's excavations 1968–79,* 87–102, Dorset Natur Hist Archaeol Soc Monograph 25, Dorset Natural History and Archaeological Society

Hayward, K M J 2022. 'The architectural stone', in Esmonde Cleary *et al* 2022, 263–84

Hayward, L C 1952. 'The Roman villa at Lufton, near Yeovil', *Proc Somerset Archaeol Natur Hist Soc*, **97**, 91–112

Hembrey, N 2019. 'Assessment of the artefact record. HE0059: Low Ham Villa 2018', unpublished report, Historic England, Portsmouth

Henig, M 1979. 'Late antique book illustration and the Gallic prefecture', in M W C Hassall and R I Ireland (eds), *De Rebus Bellicis*, BAR Int Ser 63, BAR Publishing, Oxford

Henig, M 1986. 'Late Roman mosaics in Britain: myth and meaning', *Mosaic*, **13**, 13–20

Henig, M 1995. *The Art of Roman Britain*, Batsford, London

Henig, M 2019. 'The Vergil mosaic from Low Ham Roman villa, Somerset', *Assoc Roman Archaeol News,* **42**, 29–30

Henig, M 2020. 'From an offshore island: classical art and the Britons in Late Antiquity', in N Sekunda (ed), *Wonders Lost and Found: a celebration of the archaeological work of Professor Michael Vickers*, 146–54, Archaeopress, Oxford

Henig, M 2022. 'High Culture in Roman Britain: the myths of Ovid and Hyginus', *Antiqvvs*, **4.3**, Summer 2022, 13–18

Henig, M, Soffe, G, Adcock, K and King, A 2022a. *Villa, sanctuaries and settlement in the Romano-British countryside: new perspectives and controversies*, Archaeopress Roman Archaeology 95, Archaeopress, Oxford

Henig, M, Kings, A and Soffe, G 2022b. 'Roman villas in Britain and beyond. New discoveries and new interpretations of the role in culture, religion and landscape', in Henig *et al* 2022a, 1–13

Henry, R 2021. 'Iron Age and Roman coinage recorded with the Portable Antiquities Scheme in Dorset in the context of the south west', *Proc Dorset Natur Hist Archaeol Soc*, **141**, 135–54

Henry, R and Booth, A 2022. 'Penannular brooches', in R Henry (ed), *Roman Buckles and Brooches. Understanding the end of Roman Britain*, 66–79, Greenlight Publishing, Ipswich

Hillman, G C 1981. 'Reconstructing crop husbandry practices from charred remains of crops', in R Mercer (ed), *Farming Practice in British Prehistory*, 123–62, Edinburgh University Press, Edinburgh

Hillman, G C 1982. 'Evidence for spelt malting at Catsgore', in Leech 1982a, 137–40

Hillman, G C 1991. 'Phytosociology and ancient weed floras: taking account of taphonomy and changes in cultivation methods', in D R Harris and K D Thomas (eds), *Modelling Ecological Change*, 27–40, University College London, London

Hillson, S 1992. *Mammal Bones and Teeth: an introductory guide to methods of identification*, Institute of Archaeology, London

Historic England 2015. *Archaeometallurgy. Guidance for best practice*, Historic England, Portsmouth

Historic England 2017. *Somerset and Exmoor. Building Stones of England*, Historic England, Swindon

Historic England 2018. *Historic England Excavation Recording Manual*, Historic England, Swindon, <https://historicengland.org.uk/content/docs/research/historic-england-archaeological-recording-manual-2018/> (13 June 2025)

Hoare, R C 1831. *The Pitney Pavement: discovered by Samuel Hasell of Littleton, A.D. 1828/illustrated, with his notes*, Privately published

Hoare, R C 1832 (reprint) *The Pitney Pavement, discovered by Samuel Hasell esq of Littleton AD1828, and illustrated with his notes*. Crocker, Frome

Holbrook, N and Bidwell, P 1991. *Roman Finds from Exeter*, Exeter Archaeological Reports 4, University of Exeter Press, Exeter

Holmes, M and Gordon, R 2023. 'Animal bone', in Socha-Paszkiewicz *et al* 2023, 138–44

Horwitz, L K and Smith, P 1990. 'A radiographic study of the extent of variation in cortical bone thickness in Soay sheep', *J Archaeol Sci*, **17**, 655–64

Hughes, S and Rainbird, P 2016. 'Late prehistoric and Romano-British activity at Somerton Door, Somerton, Somerset', *Proc Somerset Archaeol Natur Hist Soc*, **160**, 1–16

Hunter, F and Painter, K (eds) 2013. *Late Roman Silver: the Traprain treasure in context*, Society of Antiquaries of Scotland, Edinburgh

Ingrem, C 2022. 'Overview of the animal remains', in Esmonde Cleary *et al* 2022, 427–50

Jackson Knight, W (trans) 1956. *Virgil: the Aeneid,* reprinted 1980, Penguin Classics, London

Jacomet, S 2006. *Identification of Cereal Remains from Archaeological Sites,* 2nd edn, Basel University, Basel

Jamieson, E 2015. *The Historic Landscape of the Mendip Hills*, Historic England, Swindon

Johnson, P 1982. *Romano-British Mosaics*, Shire Archaeology 25, Aylesbury

Johnstone, C and Albarella, U 2002. *The Late Iron Age and Romano-British Mammal and Bird Bone Assemblage from Elms Farm, Heybridge, Essex (Site Code: Hyef93-95)*, English Heritage, London

Jones, G P 2017. 'Sourcing the clay: Iron Age pottery production around Poole Harbour and the Isle of Purbeck, Dorset, UK', unpublished PhD thesis, Bournemouth University, <https://eprints.bournemouth.ac.uk/29885/> (23 Jan 2023)

Jones, R 1996. 'Animal bones', in L Watts and P Leach (eds), *Henley Wood, Temples and Cemetery Excavations 1962–69 by the Late Ernest Greenfield*, 134–7, Council for British Archaeology, York

Journal of Garden History 1988. 'The Anglo-Dutch garden', *J Garden History*, **8**, 1–341

Juggins, S 2007. *C2. Software for ecological and palaeoecological data analysis and visualisation*, University of Newcastle, Newcastle

Karkanas, P (2007). Identification of lime plaster in prehistory using petrographic methods: a review and reconsideration of the data on the basis of experimental and case studies, *Geoarchaeology,* **22**, 775–96

Kerney, M P and Cameron, R A D 1979. *A Field Guide to the Land Snails of Britain and North-West Europe*, Collins, London

Killeen, I, Aldridge, D and Oliver, G 2004. *Freshwater Bivalves of Britain and Ireland*, Field Studies Council, Shrewsbury

King, A C 2022. 'Dinnington and Yarford: two villas in south and west Somerset', in Henig *et al* 2022a, 223–42

Kislev, M 1988. 'Pinus pinea in agriculture, culture and cult', in H Küster (ed), *Der Prähistorische Mensch und seine Umwelt. Festschrift für Udelgard Körber-Grohne zum 65 Geburtstag,* 73–9, Konrad Theiss Verlag, Stuttgart

Kratochvil, Z 1969. 'Species criteria on the distal section of the tibia in Ovis ammon F. aries L. and Capra aegagrus F. hircus', *Acta Veterinaria (Brno)*, **38**, 483–90

Lancelotti, C, Madella, M, Ajithprasad, P and Petrie, C A 2010. 'Temperature, compression and fragmentation: an experimental analysis to assess the impact of taphonomic processes on charcoal preservation', *Archaeol Anthropol Sci*, **2**, 307–20

Lang, A 2016. 'Defining banjo enclosures: investigations, interpretations and understanding in the Iron Age of southern Britain', *Proc Prehist Soc*, **82**, 341–61

Lavagne, H 2000. *Recueil général des mosaïques de la Gaule, III. Province de Narbonnaise 3: partie sud-est,* 10th supplement of Gallia, Editions du Centre National de la Recherche Scientifique, Paris, France

Lawson, A J 1976. 'Shale and jet objects from Silchester', *Archaeologia*, **105**, 241–75

Leach, P 1994. *Ilchester, Volume 2: archaeology, excavations and fieldwork to 1984.* Sheffield Excavation Reports 2, Sheffield Academic Press, Sheffield

Leach, P 2001a. *Roman Somerset*, Dovecote, Wimbourne

Leach, P 2001b. *Fosse Lane, Shepton Mallet 1990,* Britannia Monograph Series 18, Society for the Promotion of Roman Studies, London

Leary, T J 2011. '"The winter does not pass through me, but the sun sparkles within me": a literary window on Roman glass?', *J Glass Stud*, **53**, 235–7

Leech, R 1975. 'An Iron Age and Romano-British settlement at Podimore, Somerset', *Somerset Archaeol Natur Hist Soc*, **119**, 72–6

Leech, R 1976. 'Romano-British and medieval settlement at Wearne, Huish Episcopi', *Proc Somerset Archaeol Natur Hist Soc*, **120**, 45–50

Leech, R H 1977a. 'Romano-British rural settlement in south Somerset and north Dorset', unpublished PhD dissertation, University of Bristol

Leech, R 1977b. 'Late Iron Age and Romano-British briquetage sites at Quarrylands Lane, Badgworth', *Proc Somerset Archaeol Natur Hist Soc*, **121**, 89–96

Leech, R H 1978. 'Air reconnaissance over Somerset: some recent results', *Somerset Archaeol Natur Hist*, **122**, 57–78

Leech, R 1981a. 'The excavation of a Romano-British farmstead and cemetery on Bradley Hill, Somerset', *Britannia*, **12**, 177–252

Leech, R H 1981b. 'The Somerset Levels in the Romano-British Period', in T Rowley (ed), *The Evolution of Marshland Landscapes*, 20–51, University of Oxford Department of External Studies, Oxford

Leech, R 1982a. *Excavations at Catsgore 1970–1973: a Romano-British village*, Western Archaeological Trust, Bristol

Leech, R 1982b. 'The Roman interlude in the South-West: the dynamics of economic and social change in Romano-British south Somerset and north Dorset', in D Miles (ed), *The Romano-British Countryside: studies in rural settlement and economy: part I,* 209–68, BAR Brit Ser 103(i), BAR Publishing, Oxford

Leech, R 1986. 'The excavation of a Romano-Celtic temple and a later cemetery on Lamyatt Beacon, Somerset', *Britannia*, **17**, 259–328

Leech, R H and Besly, E M 1981. 'Other objects of bronze,' 214, in Leech, R, 'The Excavation of a Romano-British Farmstead and Cemetery on Bradley Hill, Somerton, Somerset', *Britannia*, **12**, 177–252

Leech, R H and Copeland, P E in prep. 'The later great houses of Somerset'.

Leonard, C, Graham, K, Hembrey, N, Pelling, R and Roberts, D 2019. 'HE0059 Low Ham Roman villa. Site archive completion report', unpublished document, Historic England, Portsmouth

Levine, M A 1982. 'The use of crown height measurements and eruption-wear sequences to age horse teeth', in B Wilson, C Grigson and S Payne (eds), *Ageing and Sexing Animal Bones from Archaeological Sites,* 223–50, BAR British Series 109, Archaeopress, Oxford

Lewis, J 2005. Monuments, *Ritual and Regionality: the Neolithic of northern Somerset*. BAR Brit Ser 401, BAR Publishing, Oxford

Lewis, M 1966. *Temples in Roman Britain*, Cambridge University Press, Cambridge

Li, H forthcoming. 'Relief patterned flue tiles and wall cavity traditions in London's Roman bath houses', *Britannia*

Linford, N 2004. 'From hypocaust to hyperbola: ground penetrating radar surveys over mainly Roman remains in the UK', *Archaeol Prospection*, **11**(4), 237–46

Linford, N, Linford, P, Martin, L and Payne, A 2009. *Silbury Hill, Wiltshire: report on geophysical surveys 2005–2008*, English Heritage, London

Linford, N, Linford, P, Martin, L and Payne, A 2010. 'Stepped-frequency GPR survey with a multi-element array antenna: results from field application on archaeological sites', *Archaeol Prospection*, **17**(3), 187–98

Linford, N, Linford, P, Payne, A and Rees, L 2018a. *Low Ham Roman Villa, High Ham, Somerset. Report on geophysical survey, July 2018,* Research Report Series 72/2018, Historic England, Portsmouth

Linford, N, Linford, P and Payne, A 2018b. 'Advanced magnetic prospecting for archaeology with a vehicle-towed array of cesium magnetometers', in Persico *et al* 2018, 121–49

Ling, R 1985. *Romano-British Wall Painting*, Shire Publications, Princes Risborough

Ling, R 1998. *Ancient Mosaics*, British Museum Press, London

Liversidge, J 1968. *Britain in the Roman Empire*, Routledge, London

Lock, G and Ralston, I 2024 *Atlas of Hillforts of Britain and Ireland, EN0447: Westwood (West Wood Hillfort)*, Oxford Archaeology, Oxford, <https://hillforts.arch.ox.ac.uk> (8 Sept 2022)

Lodwick, L 2015. "Identifying ritual deposition of plant remains: a case study of stone pine cones in Roman Britain', *Theoretical Roman Archaeol J* 2014, 54–69, <https://doi.org/10.16995/TRAC2014_54_69>

Lodwick, L 2017. 'Arable farming, plant foods and resources', in Allen *et al* 2017, 11–84

Lodwick, L 2022. 'The precursor to the revolution? Current understandings of the Roman agrarian economy of Roman Britain', in M McKerracher and H Hamerow (eds), *New Perspectives on the Medieval 'Agricultural Revolution': crop, stock and furrow*, 144–59, Liverpool University Press, Liverpool

Lodwick, L and Brindle, T 2017. 'Harvest methods: arable farming, plant foods and resources', in Allen *et al* 2017, 46–8

Lovell, J 2005. 'Excavation of a Romano-British farmstead at RNAS Yeovilton', *Proc Somerset Archaeol Natur Hist Soc*, **149**, 7–70

Lucas, R N (ed) 1993. *The Romano-British villa at Halstock, Dorset: excavations 1967–1985*. Dorset Natur Hist Archaeol Soc Monogr Ser No 13

Macan, T T 1977. *A Key to the British Fresh- and Brackish-water Gastropods*, Freshwater Biological Association, Ambleside, UK

Mackreth, D F 2011. *Brooches in Late Iron Age and Roman Britain,* 2 vols, Oxbow Books, Oxford

Maddalena, S and Cosh, S R 2024. 'The Marble Mosaic Company', *Mosaic*, **51**, 20–4

Maltby, M 2006. 'Salt and animal products: linking production and use in Iron Age Britain', in M Maltby (ed), *Integrating Zooarchaeology. Proceedings of the 9th ICAZ Conference, Durham, August 2002*, 117–22, Oxbow, Oxford

Manisse, P-D 2023. 'The Roman coins', in Socha-Paszkiewicz *et al* 2023, 115–16

Manning, W H 1985. *Catalogue of the Romano-British Iron Tools, Fittings and Weapons in the British Museum*, British Museum Publications, London

Marguerie, D and Hunot, J-Y 2007. 'Charcoal analysis and dendrochronology: data from archaeological sites in North-Western France', *J Archaeol Sci*, **34**, 1417–33

Marshall, P, Brunning, R, Minnitt, S, Bronk Ramsey, C, Dunbar, E and Reimer, P 2020. 'The chronology of Glastonbury Lake Village', *Antiquity*, **94**(378), 1464–81

Marston, J M 2009. 'Modelling wood acquisition strategies from archaeological charcoal remains', *J Archaeol Sci*, **36**, 2192–2200

Martin, J, Schuster, J and Barclay, A 2012. 'Evidence of an Early Bronze Age field system and spelt wheat growing, together with an Anglo–post-Roman sunken featured building, at Monkton Road, Minster in Thanet', *Archaeol Cantiana*, **132**, 43–52

Marzinsik, S 2003. *Early Anglo-Saxon Belt Buckles (Late 5th to Early 8th Centuries AD): their classification and context*, BAR Brit Ser 357, BAR Publishing, Oxford

Mattingly, D 2007. *An Imperial Possession. Britain in the Roman Empire*, Penguin Books, London

Mauring, E, Beard, L P, Kihle, O and Smethurst, M A 2002. 'A comparison of aeromagnetic levelling techniques with an introduction to median levelling', *Geophys Prospecting*, **50**(1), 43–54

Mays, S, Roberts, D, Marshall, P, Pike, A, van Heekeren, V, Bronk Ramsey, C, Dunbar, E, Reimer, P, Linscott, B, Radini, A, Lowe, A, Dowle, A, Speller, C, Vallender, J and Bedford, J 2018. 'Lives before and after Stonehenge: an osteobiographical study of four prehistoric burials recently excavated from the Stonehenge World Heritage Site', *J Archaeol Sci Rep*, **20**, 692–710, <https://doi.org/10.1016/j.jasrep.2018.06.008>

McCance, R A, Owens, P D A and Tonge, C H 1968. 'Severe undernutrition in growing and adult animals 18. The effects of rehabilitation on the teeth and jaws of pigs', *Brit J Nutr*, **22**, 357–68

McCarthy, M 2012. *The Romano-British Peasant: towards a study of people, landscapes and work during the Roman occupation of Britain*, Windgather, Oxford

McGrail, S 1978. 'Prehistoric boats, timber and woodworking technology', *Proc Prehist Soc*, **45**, 159–63

McOmish, D 1996. 'East Chisenbury: ritual and rubbish at the British Bronze Age–Iron Age transition', *Antiquity*, **70**(267), 68–76

McOmish, D, Field, D and Brown, D 2002. *The Field Archaeology of the Salisbury Plain Training Area*, English Heritage, Swindon

McParland, L C, Collinson, M E, Scott, A C, Campbell, G and Veal, R 2010. 'Is vitrification in charcoal a result of high temperature burning of wood?', *J Archaeol Sci*, **37**, 2679–87

Miles, H and Miles, T 1969. 'Settlement sites in the late pre-Roman Iron Age in the Somerset Levels', *Proc Somerset Archaeol Natur Hist Soc*, **113**, 17–44

Minnitt, S 1976. 'Two stone axe-hammers from Somerset', *Proc Somerset Archaeol Natur Hist Soc*, **120**, 99–100

Minnitt, S 1988. 'A neck-ring or collar found near Westonzoyland', *Proc Somerset Archaeol Natur Hist Soc*, **132**, 245–7

Minnitt, S, Leech, R H, Cosh, S R and Holmes, J forthcoming. 'Epic tales from Roman Somerset. The deciphering and subsequent lifting of the Dido and Aeneas mosaic from Low Ham Roman Villa', *Mosaic*

Mocci, F, Walsh, K, Dumas, V, Gassend, J-M, Allinne, C, Badie, A, Miramont, C, Paillet, J-L and André, C 2005. 'Aqueduc et structures hydrauliques de la villa de Richeaume I à Puyloubier (Bouches-du-Rhône)', *Gallia*, **62**, 147–60

Moore, T 2011. 'Detribalizing the later prehistoric past: concepts of tribes in Iron Age and Roman studies', *J Social Archaeol*, **11**(3), 334–60

Moorhead, T S N 2001. 'Roman coin finds from Wiltshire', in P Ellis (ed), *Roman Wiltshire and After. Papers in honour of Ken Annable*, 85–105, Wiltshire Archaeological and Natural History Society, Devizes

Moorhead, T S N 2005. 'Three Roman coin hoards from Wiltshire terminating in coins of Probus (AD 276–82)', *Wilt Arch Natur Hist*, **102**, 150–59

Moorhead, T S N 2010. 'Expanding the frontiers: how the Portable Antiquities Scheme database increases knowledge of Roman coin use in England', in S Worrell, G Egan, J Naylor, K Leahy and M Lewis (eds), *A Decade of Discovery: proceedings of the Portable Antiquities Scheme Conference 2007,* BAR British Series 520, 143–60, BAR Publishing, Oxford

Morley, G and Wilson, P 2024. *Groundwell Roman Villa. Final report on the 2003–2005 excavations at Groundwell Ridge,* Swindon, Historic England, Portsmouth

Morris, E L 1987. 'Later prehistoric pottery from Ham Hill', *Proc Somerset Archaeol Natur Hist Soc*, **131**, 27–47

Morris, E L 1988. 'The Iron Age occupation at Dibble's Farm, Christon', *Proc Somerset Archaeol Natur Hist Soc*, **132**, 23–81

Morris, J 2011. *Investigating Animal Burials: ritual, mundane and beyond.* BAR Brit Ser 535, Archaeopress, Oxford

Morris, P 1979. *Agricultural buildings in Roman Britain.* BAR Brit Ser 70, BAR Publishing, Oxford

Mould, Q 2011. 'Domestic life', in L Allason-Jones (ed), *Artefacts in Roman Britain: their purpose and use*, 153–79, Cambridge University Press, Cambridge

Mudd, A, Hart, J and Rippon, S 2024. *The Archaeology of Hinkley Point C Nuclear Power Station, Somerset, Excavations in 2012–16. Volume 1: rural settlement and farming from the prehistoric to modern eras*. Cotswold Archaeology Monograph 18, Cotswold Archaeology, Cirencester

Munsell Color Group 1975. *Munsell Soil Colour Charts*, Munsell Color Group, Baltimore, MD

Neal, D S 1976. 'Floor mosaics', in D Strong and D Brown (eds), *Roman Crafts*, 241–52, New York University Press, New York

Neal, D S and Cosh, S R 2009. *Roman Mosaics of Britain. Volume III: South-East Britain, part 2*. Society of Antiquaries of London, London

Nicosia, C and Stoops, G (eds) 2017. *Archaeological Soil and Sediment Micromorphology*, John Wiley & Sons, Chichester

Norton, S 2021. *Assessing Iron Age Marsh-Forts: with reference to the stratigraphy and palaeoenvironment surrounding The Berth, North Shropshire*, Archaeopress, Oxford

O'Connor, T P 1989. *Bones from Anglo-Scandinavian Levels at 16–22 Coppergate.* Archaeology of York Series 15/3, Council for British Archaeology, London

O'Shea, L 2003. 'Roman "lamp chimneys": a reassessment of the evidence', unpublished MA thesis, University College London, London

Oosthuizen, S. 2016. 'Beyond hierarchy: archaeology, common rights and social identity', *World Archaeol,* **48**(3), 381–94, <https://doi.org/10.1080/00438243.2016.1180261>

Orton, C, Tyers, P and Vince, A 1993. *Pottery in Archaeology*, Cambridge University Press, Cambridge

Oxford Archaeology 2020. 'Bridgwater Gateway, North Petherton, Somerset. Archaeological excavation report', unpublished report, Oxford Archaeology, Oxford

Pales, L and Garcia, M A 1981a. *Atlas Ostéologique pour servir à l'identification des Mammifères du Quaternaire: II. Tête – rachis ceintures scapulaire et pelviene membres. Carnivores, homme*, CNRS (Editions du Centre National de la Recherche Scientifique), Paris

Pales, L and Garcia, M A 1981b. *Atlas Ostéologique pour servir à l'identification des Mammifères du Quaternaire: II. Tête – rachis ceintures scapulaire et pelviene membres. Herbivores*, CNRS (Editions du Centre National de la Recherche Scientifique), Paris

Pales, L and Lambert, C 1971a. *Atlas Ostéologique pour servir à l'identification des Mammifères du Quaternaire: I. Les membres. Carnivores*, CNRS (Editions du Centre National de la Recherche Scientifique), Paris

Pales, L and Lambert, C 1971b. *Atlas Ostéologique pour servir à l'identification des Mammifères du Quaternaire: I. Les membres. Herbivores*, CNRS (Editions du Centre National de la Recherche Scientifique), Paris

Pállson, H and Vergés, J B 1952a. 'Effects of the plane of nutrition on growth and the development of carcass quality in lambs. Part I. The effect of high and low planes of nutrition at different ages', *J Agric Sci*, **42**(1), 1–92

Pállson, H and Vergés, J B 1952b. 'Effects of the plane of nutrition on growth and development of carcass quality in lambs. Part II. Effects on lambs of 30lb carcass weight', *J Agric Sci*, **42**(2), 93–149

Papworth, M 2008a. *Deconstructing the Durotriges: a definition of Iron Age communities within the Dorset environs*. BAR Brit Ser 462, BAR, Oxford

Papworth, M 2008b. *In Search of the Durotriges*, The History Press, Stroud

Payne, S 1973. 'Kill-off patterns in sheep and goats: the

mandibles from Asvan Kale', *Anatolian Stud*, **23**, 281–303
Payne, S, 1985. 'Morphological distinctions between the mandibular teeth of young sheep, *Ovis*, and goats, *Capra*', *J Archaeol Sci*, **12**, 139–47
Payne, S 1987. 'Reference codes for wear stated in the mandibular cheek teeth of sheep and goats', *J Archaeol Sci*, **14**, 609–14
Payne, S and Izard, K 1991. *A Pit Full of Sheep Bones from Cannington Cemetery, Somerset (1962–3 Excavations)*, Historic Buildings and Monuments Commission for England, London
Paynter, S 2007. 'Romano-British workshops for iron smelting and smithing at Westhawk Farm, Kent', *Hist Metall*, **41**(1), 15–31
Paynter, S 2008. 'Metalworking remains', in P Booth, A-M Bingham and S Lawrence (eds), *The Roman Roadside Settlement of Westhawk Farm, Ashford, Kent, Excavations 1998–9,* 267–301, Oxford Archaeology Monograph 2, Oxford Archaeology, Oxford
Paynter, S 2009. 'Metalworking assemblage from site off Tyning Lane, Stanton Drew', unpublished report, Avon Archaeological Unit
PCRG 1997. *The Study of Later Prehistoric Pottery: general policies and guidelines for publication,* Prehistoric Ceramics Research Group Occas Pap 1 and 2 (revised), Prehistoric Ceramics Research Group
Peacock, D P S 1969. 'A contribution to the study of Glastonbury ware from South-Western Britain', *Antiq J*, **49**, 41–61
Peacock, D P S, 1977 'Ceramics in Roman and medieval archaeology' in D P S Peacock, (ed), *Pottery and Commerce. Characterization and trade in Roman and later ceramics,* 21–33, Academic Press, London
Pearson, E and Robinson, M 1994. 'Environmental evidence from the villa', in R J Williams and R J Zeepvat (eds), *Bancroft: the Late Bronze Age and Iron Age settlements and Roman temple-mausoleum and the Roman villa. Volume II: finds and environmental evidence*, 565–584, Buckinghamshire Archaeological Society Monograph 7
Pelling, R 2019. 'Excavations at Low Ham Villa, 2018 (HE0059): archaeobotanical assessment', unpublished report, Historic England Report, Swindon
Pelling, R 2020. 'Archaeobotanical remains', in D Roberts (ed), Excavation and Analysis HE0059 Low Ham Roman Villa, High Ham, Somerset: assessment report and UPD (unpublished), 30–9, Historic England, Swindon
Pelling, R, Campbell, G, Carruthers, W, Hunter, K and Marshall, P 2015. 'Exploring contamination (intrusion and residuality) in the archaeobotanical record: case studies from central and southern England', *Vegetation Hist Archaeobotany*, **24**(1), 85–99, <https://doi.org/10.1007/s00334-014-0493-8>
Persico, R, Piro, S and Linford N, 2018. *Innovation in Near-Surface Geophysics Instrumentation, Application, and Data Processing Methods*, 1st edn, Elsevier, Amsterdam
Pollard, S 1974. 'A Late Iron Age settlement and a Romano-British villa at Holcombe near Uplyme, Devon', *Proc Devon Archaeol Soc*, **32**, 60–161
Popkin, P R W, Baker, P, Worley, F, Payne, S and Hammon, A 2012. 'The Sheep Project (1): determining skeletal growth, timing of epiphyseal fusion and morphometric variation in unimproved Shetland sheep of known age, sex, castration status and nutrition', *J Archaeol Sci*, **39**, 1775–92
Powell, A B, Mepham, L and Stevens, C J 2008. 'Investigation of later prehistoric and Roman-British settlement at Huntworth, 2006', *Proc Somerset Archaeol Natur Hist Soc*, **152**, 69–81
Preston, C D, Pearman, D A and Hall, A R 2004. 'Archaeophytes in Britain', *Bot J Linnean Soc*, **145**, 257–94
Price, J 1979. 'The glass', 37–46, in H S Gracie and E G Price, 'Frocester Court Roman Villa: 2nd report', *Trans Bristol Glos Archaeol Soc*, **97**, 9–64
Price, J and Cottam, S 1998. *Romano-British Glass Vessels: a handbook*, CBA Practical Handbook in Archaeology 14, Council for British Archaeology, York
Prudden, H 2003. 'Somerset building stone – a guide', *Proc Somerset Archaeol Natur Hist Soc*, **146**, 27–36
Radford, C A 1946. 'Roman villa at Low Ham', *Proc Somerset Archaeol Natur Hist Soc*, **92**, 25–8
Radford, C A R 1947a. 'The Roman villa at Low Ham', *Notes Queries Somerset Dorset, **25**,* 1947–50, pt 232, March 1947, 1–6
Radford, C A R 1947b. 'The Roman villa at Low Ham', *Notes Queries Somerset Dorset, **25**,* 1947–50 pt 235, December 1947, 61–4
Radford 1948a. See Primary Sources list
Radford, C A R 1948b. 'The Roman villa at Low Ham', *Notes Queries Somerset Dorset **25**, 1947*–50, pt 239, December 1948, 141–43
Radford, C A R 1950a. 'Notes: 1. The Roman villa at Low Ham', *Notes Queries Somerset Dorset*, **25**, 1–6
Radford, C A R 1950b. 'Notes: 40. The Roman villa at Low Ham', *Notes Queries Somerset Dorset*, **25**, 61–4
Radford, C A R 1950c. 'Notes: 113. The Roman villa at Low Ham', *Notes Queries Somerset Dorset*, **25**, 141–143
Radford, C A R 1951. 'The Roman site at Catsgore, Somerton', *Proc Somerset Archaeol Natur Hist Soc*, **96**, 41–77
Radford 1969 – see Primary Sources list
Radford, C A R and Dewar, H S L 1954. *The Roman Mosaics from Low Ham and East Coker.* Somerset County Museum Publications 2, Somerset Archaeological and Natural History Society, Taunton
Rahtz, P, Hirst, S and Wright, S 2000. *Cannington Cemetery*, Society for the Promotion of Roman Studies, London
Rainey, A 1973. *Mosaics in Roman Britain*, David and Charles, Newton Abbott
Randall, C 2020. 'Enclosure at Park, Pitney', *Somerset Archaeol Natural Hist Soc Newslett*, **96**, 10–11
Redfern, R 2008. 'A bioarchaeological investigation of cultural change in Dorset, England (mid-to-late fourth century BC to the end of the fourth century AD)' *Britannia,* **39**, 161–91
Reece, R 1995. 'Site-finds in Roman Britain', *Britannia*, **26**, 179–206
Rees, H, Crummy, N, Ottaway, P J and Dunn, G 2008. *Artefacts and Society in Roman and medieval Winchester. Small finds from the suburbs and defences, 1971–1986*, Winchester Museums Service
Reimer, P J, Austin, W E N, Bard, E, Bayliss, A, Blackwell, P G, Bronk Ramsey, C, *et al* 2020. 'The IntCal20 Northern Hemisphere Radiocarbon Age Calibration Curve (0–55 cal kBP)', *Radiocarbon*, **62**(4), 725–57. <https://doi.org/10.1017/RDC.2020.41>
Richard, M, Hedges, R, Molleson, T and Vogel, J 1998. 'Stable isotope analysis reveals variation in human diet at the Poundbury Camp cemetery site', *J Archaeol Sci*, **25**(12), 1247–52
Richardson, M 2003. *An archaeological assessment of Langport and Frog Lane*, English Heritage Extensive Urban Survey, Somerset County Council, Taunton
Riley, H 1993. 'Somerton, Westwood, ST45992959', in C J Webster and R A Croft 'Somerset Archaeology 1993', *Proc Somerset Archaeol Natur Hist Soc*, **137**, 127–56
Riley, H 2006. *The Historic Landscape of the Quantock Hills*, English Heritage, Swindon
Rippon, S 2008. 'Coastal trade in Roman Britain: the investigation of Crandon Bridge, Somerset, a Romano-British trans-shipment port beside the Severn Estuary', *Britannia*, **39**, 85–144
Rivet, A 1969. *The Roman Villa in Britain*, Routledge, London
Rivet, A and Smith, C 1981. *The Place-names of Roman Britain*, Batsford, London
Roberts, D 2018. 'Project design: HE0059 – Low Ham Roman Villa', unpublished document, Historic England
Roberts, D and Hembrey, N 2019. 'Report on HE0059 Low Ham field school training pilot and potential models for future provision of field schools by Historic England v05', unpublished internal document, Historic England
Roberts, D forthcoming. 'The Roman landscape of south-east Somerset', Research Report Series, Historic England
Robinson, M 2011. 'Mineralised and waterlogged macroscopic plant and arthropod remains from latrine deposits', in M Fulford and A Clarke (eds), *Silchester: city in transition,* Britannia Monograph Series 25, 281–93, Society for the Promotion of Roman Studies, London
Robinson, S 2020. 'Land north of Somerton Road, Langport, Somerset: results of an archaeological trench evaluation', unpublished report, AC Archaeology, Chicklade
Robinson, S 2021. 'A multi-phased site at RNAS Yeovilton, Somerset', *Proc Somerset Archaeol Natur Hist Soc*, **165**, 70–99
Roehrs, H, Klooss, S and Kirleis, W 2013. 'Evaluating prehistoric finds of *Arrhenatherum elatius* var. *bulbosum* in north-western and central Europe with an emphasis on the first Neolithic finds in Northern Germany', *Archaeol Anthropol Sci,* **5**, 1–15
Rogers, A 2005. 'Metalworking and late Roman power: a study of towns in later Roman Britain', in J Bruhn, B Croxford and D Grigoropoulous (eds), *TRAC 2004: proceedings of the fourteenth annual Theoretical Roman Archaeology Conference, Durham 2004*, 27–38, Oxbow Books, Oxford
Rohnbogner, A 2018. 'The rural population', in Smith *et al* 2018a, 281–345
Rolfe, J C (trans) 1914. *Suetonius Volume II*, Loeb Classical Library, Harvard
Ross, D 1911. *Langport and its Church: the story of the ancient borough, with references to neighbouring parishes,* Herald Press, Langport
Rouillard, S E 1987. 'The Iron Age pottery from Meare Village East', in J M Coles (ed), *Meare Village East. The excavations of A Bulleid and H St George Grey 1932–1956*, 183–221, Somerset Levels Papers 13, Somerset Levels Project
RCHME [Royal Commission on Historical Monuments (England)] 1952. *An Inventory of the Historical Monuments in Dorset. Vol I: West*, Her Majesty's Stationery Office, London
RCHME [Royal Commission on Historical Monuments (England)] 1970. *An Inventory of the Historical Monuments in Dorset. Vol III: Central, parts 1 and 2*, Her Majesty's Stationery Office, London
Sabin, D and Donaldson, K 2016. 'Bridgewalk House Roman Villa, Brixton Deverill, Wiltshire; Ground

Penetrating Radar and Magnetometry Report', unpublished report

Sala, J and Linford, N 2012. 'Processing stepped frequency continuous wave GPR systems to obtain maximum value from archaeological data sets', *Near Surface Geophys*, **10**(1), 3–10

Salehpour, M, Håkansson, K, Possnert, G, Wacker, L and Synal, H A 2016. 'Performance report for the low energy compact radiocarbon accelerator mass spectrometer at Uppsala University', *Nucl Instrum Methods Phys Res B: Beam Interactions with Materials and Atoms*, **371**, 360–4, <https://doi.org/10.1016/j.nimb.2015.10.034>

Schiffer, M B 1983. 'Towards the Identification of Formation Processes', *American Antiquity*, **48**(4), 675–706

Schmid, E 1972. *Atlas of Animal Bones for Prehistorians, Archaeologists, and Quaternary Geologists*, Elsevier Publishing, London

Schweingruber, F 1990. *Microscopic Wood Anatomy: structural variability of stems and twigs from recent and subfossil woods from Central Europe*. 3rd edition, Swiss Federal Institute for Forest, Snow and Landscape Research, Birmensdorf

Scott, E M, Naysmith, P and Cook, G T 2017. 'Should archaeologists care about 14C intercomparisons? Why? A summary report on SIRI', *Radiocarbon*, **59**(5), 1589–96, <https://doi.org/10.1017/RDC.2017.12>

Scott, S 2000. *Art and Society in Fourth-century Britain. Villa mosaics in context*. Oxford University School of Archaeology Monograph 53, Oxford University, Oxford

Seager Smith, R and Davies, S M 1993. 'Roman pottery', in P J Woodward, S M Davies and H A Graham (eds), *Excavations at Greyhound Yard, Dorchester 1981–4*, 202–89, Dorset Natur Hist & Archaeol Soc

Serjeantson, D 1996. 'The animal bones', in S Needham and T Spence (eds), *Runnymede Bridge Research Excavations, Vol 2: refuse and disposal at Area 16 East, Runnymede*, 194–223, British Museum, London

Sharples, N 2010. *Social Relations in Later Prehistory. Wessex in the first millennium BC*, Oxford University Press, Oxford

Sharples, N 2014. 'Are the developed hillforts of southern England urban?', in M Fernández-Götz, H Wendling and K Winger (eds), *Paths to Complexity: centralisation and urbanisation in Iron Age Europe*, 224–32, Oxbow, Oxford

Smith, A 2016. 'The central belt', in A Smith, M Allen, T Brindle and M Fulford (eds), *New Visions of the Countryside of Roman Britain: volume I, the rural settlement of Roman Britain,* 141–207, Britannia Monograph Series 29, Society for the Promotion of Roman Studies, London

Smith, A, Allen, M, Brindle, T and Fulford, M 2016. *New Visions of the Countryside of Roman Britain: volume I, the rural settlement of Roman Britain*, Britannia Monograph Series 29, Society for the Promotion of Roman Studies, London

Smith, A, Allen, M, Brindle, T, Fulford, M, Lodwick, L and Rohnbogner, A 2018a. *New Visions of the Countryside of Roman Britain: volume 3, life and death in the countryside of Roman Britain.* Britannia Monograph Series 31, Society for the Promotion of Roman Studies, London

Smith, A, Brindle, T, Fulford, M and Lodwick, L 2018b. 'Lifestyle and the social environment', in Smith *et al* 2018a, 48–77

Smith, A and Fulford, M 2018. 'Conclusions', in Smith *et al* 2018a, 346–57

Smith, A H V 1997. 'Provenance of coals from Roman sites in England and Wales', *Britannia*, **28**, 297–324

Smith, D J 1969. 'The mosaic pavements', in Rivet 1969, 75–125

Smith, D J 1977. 'Mythological figures and scenes in Romano-British mosaics', in J Munby and M Henig (eds), *Roman Life and Art in Britain: a celebration in honour of the 80th birthday of Jocelyn Toynbee*, 105–94, BAR Brit Ser 41, BAR Publishing, Oxford

Smith, D J 1984 'Roman Mosaics in Britain: a synthesis', in R Farioli Campanati (ed) *Il Mosaico Antico III*. Colloquio internazionale sul mosaico antico, 357–80

Smith, J 1978. 'Villas as a key to social structure', in M Todd (ed), *Studies in the Romano-British Villa*, 149–86, Leicester University Press, Leicester

Smither, P 2016. 'Romano-British weighing instruments. Weighing up the evidence', unpublished MRes dissertation, University of Reading, Reading

Socha-Paszkiewicz, A, Preston, S, Pine, J and Weale, A 2023. *Iron Age Settlement and A Roman Villa at Bowdens Lane Quarry, Huish Episcopi, Langport, Somerset*, Thames Valley Archaeological Services Monograph 47, Thames Valley Archaeological Services, Reading

Somerset County Herald and Taunton Courier, 20 April 1946, 'Discovery at Low Ham: Roman tessellated pavement', 2

Sookdeo, A, Kromer, B, Büntgen, U, Friedrich, M, Friedrich, R, Helle, G, *et al* 2020. 'Quality dating: a well-defined protocol implemented at ETH for high-precision 14C-dates tested on late glacial wood', *Radiocarbon*, **62**(4), 891–9, <https://doi.org/10.1017/RDC.2019.132>

Stace, C 1997. *New Flora of the British Isles,* 2nd edn, Cambridge University Press, Cambridge

Stace, C 2010. *New Flora of the British Isles,* 3rd edn, Cambridge University Press, Cambridge

Steiner, B L, Antolín, F, Vach, W and Jacomet, S 2017. 'Subsampling of large-volume samples in waterlogged sediments. A time-saving strategy or a source of error?', *Rev Palaeobot Palynol*, **245**, 10–27

Stevens, C J 1999. 'Ilchester, Great Yard archaeological excavations 1995', *Somerset Archaeol Natur Hist*, **142**, 156–65

Stevens, C J 2003. 'An investigation of agricultural consumption and production models for prehistoric and Roman Britain', *Environ Archaeol*, **8**, 61–76

Stewart, D, Cheetham, P and Russell, M 2020. 'A magnetometry survey of the Second Augustan legionary fortress at Lake Farm, Dorset', *Britannia*, **51**, 307–16

Stewart, D and Russell, M 2018. *Hillforts and the Durotriges: a geophysical survey of Iron Age Dorset*, Archaeopress, Oxford

Stoops, G, Canti, M G and Kapur, S (2017) 'Calcareous mortars, plasters and floors', in Nicosia and Stoops 2017, 189–99

Stuiver, M and Polach, H A 1977. 'Discussion reporting of 14C data', *Radiocarbon*, **19**(3), 355–63, <https://doi.org/10.1017/S0033822200003672>

Sutherland, D 2003. *Northamptonshire Stone*, The Dovecote Press, Wimborne Minster

Swift, E 1999. 'Regionality in the late Roman west, through the study of crossbow brooches, bracelets, beads and belt sets', unpublished PhD thesis, Institute of Archaeology, University College London, London

Swift, E 2000. *Regionality in Dress Accessories in the Later Roman West*, Monographies Instrumentum 11, Editions Monique Mergoil, Montagnac

Synal, H-A, Stocker, M and Suter, M 2007. 'MICADAS: a new compact radiocarbon AMS system', *Nucl Instrum Methods Phys Res B: Beam Interactions with Materials and Atoms*, **259**(1), 7–13, <https://doi.org/10.1016/j.nimb.2007.01.138>

Tabor, R 2023. 'Prehistoric pottery', in Socha-Paszkiewicz *et al* 2023, 85–107

Tarongi, M, Triay, V, Esqué, M, Bianco, S, Nadal, J, Miró, C and Riera, S 2024. '2278: Walnuts, pine nuts and dogs. Study of ancient rites in a Roman villa of Barcelona through bioarchaeology', *in EAA 2024, Persisting with Change: 30th EAA Annual Meeting, Rome, Italy, 28th–31st August 2024, Conference abstract book*, 592, Environmental Archaeology Association, Rome

Taylor, B, Conneller, C, Milner, N, Elliott, B, Little, A, Knight, B and Bamforth, M 2018. 'Human lifeways', in N Milner, C Conneller and B Taylor (eds), *Star Carr Volume 1: a persistent place in a changing world*, 245–72, White Rose University Press, York

Taylor, J 2013. 'Encountering Romanitas: characterising the role of agricultural communities in Roman Britain', *Britannia*, **44**, 171–90

Terry, R and Chilingar, D 1955. 'Summary concerning some additional aids in studying sedimentary formations', in M S Shvetsov *J Sediment Petrol*, **25**(3), 229–34

The Daily Telegraph, 18 April 1946, 'Roman Pavement in Field', 1

The Illustrated London News, 11 May 1946, 'Roman mosaics revealed in Somerset: details of an important discovery', Front cover and 507

The Illustrated London News, 25 May 1946, 'Mosaics at the Low Ham Roman Villa: further beauties revealed', 573

The Illustrated London News, 17 August 1946, 'The Low Ham Roman bath: pictures showing the latest discoveries', 186–7

Thomas, J 2008. *Dorset Stone*, The Dovecote Press, Wimborne Minster

Thomas, K D 2010. 'Environment and land-use in Winchester's western suburb in the Roman period: evidence from the land mollusca', in D Serjeantson, H Rees and P J Ottaway (eds), *Feeding a Roman Town: evidence from excavations in Winchester, 1972–1985*, 318–26, Winchester Museums, Winchester

Timby, J R 2016. 'The pottery (from Monty's Farm, Norton Fitzwarren, Somerset)', unpublished report prepared for AC Archaeology

Timby, J 2017. 'What's on the table? A review of Roman pottery in the western central belt', in Allen *et al* 2017, 305–36

Timby, J and Bird, J 2022. 'Overview of the pottery', in Esmonde Cleary *et al* 2022, 408–21

Tinsley, H and Jones, J 2013. 'Environmental interpretation', in R Brunning (ed), *Somerset's Peatland Archaeology: managing and investigating a fragile resource*, Oxbow, Oxford, 197–9

Tomber, R and Dore, J 1998. *The National Roman Fabric Reference Collection: a handbook*, Museum of London/English Heritage/British Museum, London, <https://romanpotterystudy.org.uk/nrfrc/base/index.php>

Tomlin, R S O 2016. *Roman London's First Voices. Writing tablets from the Bloomberg excavations, 2010–14,* MOLA Monograph 72, Museum of London Archaeology, London

Toynbee, J M C 1962. *Art in Roman Britain*, Phaidon Press, London

Toynbee, J M C 1964. *Art in Britain under the Romans*, Clarendon Press, Oxford

Toynbee, J M C 1982. 'Mosaicists' sources', *Mosaic*, **7**, 15–17

Truscoe, K 2006. *The Aggregate Landscape of Somerset: predicting the archaeological resource – report for aerial photograph interpretation component block 2: Somerset Levels*. Research Report Series 94/2006, Historic England, Swindon

Tyson, R and Lambdin C 2014. 'Overview of the Roman glass from excavations at St Algar's Farm, Somerset, 2010–2013', *Glass News* **36**, 8–11

Van der Veen, M 1989. 'Charred grain assemblages from Roman-period corn-dryers in Britain', *Archaeol J*, **146**, 302–319

Van der Veen, M 1992. *Crop Husbandry Regimes: an archaeobotanical study of farming in northern England, 1000 BC–AD 500,* Sheffield Archaeological Monographs 3, Sheffield Academic Press, Sheffield

Van der Veen, M 2007. 'Formation processes of desiccated and carbonized plant remains – the identification of routine practice', *J Archaeol Sci*, **34**, 968–90

Van der Veen, M 2016. 'Arable Farming, Horticulture, and Food: expansion, innovation, and diversity', in M Millett, L Revell and A Moore (eds), *The Oxford Handbook of Roman Britain,* Oxford Handbooks (published online 2014, Oxford Academic) Oxford University Press, Oxford, <https://doi.org/10.1093/-oxfordhb/9780199697731.001.0001> (25 May 2023)

Van der Veen, M and Jones, G 2007. 'The production and consumption of cereals: a question of scale', in C Haselgrove and T Moore (eds), *The Later Iron Age in Britain and Beyond*, 419–29, Oxbow, Oxford

Van der Veen, M and Palmer, C 1997. 'Environmental factors and the yield potential of ancient wheat crops', *J Archaeol Sci*, **24**, 163–82

Van der Veen, M, Livarda, A and Hill, A 2008. 'New plant foods in Roman Britain – dispersal and social access', *Environ Archaeol*, **13**(1), 11–36

Veal, R 2017. 'Woods and charcoal for Rome: towards an understanding of ancient regional fuel economies', in T De Haas and G Tol (eds), *The Economic Integration of Roman Italy: rural communities in a globalising world*, 388–406, Brill Publishing, Leiden

Vellidis, N 2023. 'Motion of the mosaic: the Low Ham mosaic as an immersive narrative', *Mosaic*, **50**, 18–24

Volken, M 2014. *Archaeological Footwear: development of shoe patterns and styles from prehistory till the 1600s*, SPA Uitgevers, Zwolle, the Netherlands

von den Driesch, A 1976. *A Guide to the Measurement of Animal Bones from Archaeological Sites*, Peabody Museum Bulletin, Harvard University Press, Cambridge, MA

Wacher, J 1976 *The Towns of Roman Britain*. Batsford, London

Wacker, L, Němec, M and Bourquin, J 2010. 'A revolutionary graphitisation system: fully automated, compact and simple', *Nucl Instrum Methods Phys Res B: Beam Interactions with Materials and Atoms*, **268**(7), 931–4, <https://doi.org/10.1016/j.nimb.2009.10.067>

Wacker, L, Bonani, G, Friedrich, M, Hajdas, I, Kromer, B, Němec, M, Ruff, M, Suter, M, Synal, H A and Vockenhuber, C 2010. 'MICADAS: routine and high-precision radiocarbon dating', *Radiocarbon*, **52**(2), 252–62, <https://doi.org/10.1017/S0033822200045288>

Wacker, L, Christl, M and Synal, H A 2010. 'Bats: a new tool for AMS data reduction', *Nucl Instrum Methods Phys Res B: Beam Interactions with Materials and Atoms*, **268**(7), 976–9, <https://doi.org/10.1016/j.nimb.2009.10.078>

Waddington, K, Bayliss, A, Higham, T, Madgwick, R and Sharples, N 2019. 'Histories of deposition: creating chronologies for the Late Bronze Age–Early Iron Age transition in southern Britain', *Archaeol J*, **176**(1), 84–133

Walrond, L 2018 'Letter to Roger Leech dated November 2018', unpublished document

Walton, P J 2012. *Rethinking Roman Britain: coinage and archaeology*, Moneta, Wetteren

Walton, P J 2022. 'Where, when and what for? Coin use in the Romano-British countryside', in Henig *et al* 2022a, 14–24

Ward, G K and Wilson, S R 1978. 'Procedures for comparing and combining radiocarbon age determinations: a critique', *Archaeometry*, **20**(1), 19–31 <https://doi.org/10.1111/j.1475-4754.1978.tb00208.x>

Wardle, A 2008. 'Bene lava: bathing in Roman London', in J Clark, J Cotton, J Hall, R Sherris and H Swain (eds), *Londinium and beyond: essays for Harvey Sheldon,* 201–11, CBA Res Rep 156, CBA, York

Warry, P 2020. 'The quantification and interpretation of ceramic building material (CBM) assemblages in Britain', *Britannia*, **51**, 348–60, <https://doi.org/10.1017/S0068113X20000033>

Webster, C 2018. 'Somerset archaeology 2018', *Proc Somerset Archaeol Natur Hist Soc*, **162**, 84–104

Webster, C J 2007. *The Archaeology of South West England. South West Archaeological Research Framework*. Somerset County Council, Taunton

Webster, P 1992. 'Roman pottery in south-east Wales: an introduction', *J Roman Pottery Stud*, **5**, 111–21

Wessex Archaeology 2011. 'Langport Ranges, High Ham, Somerset. Archaeological evaluation and assessment of results', unpublished report, Wessex Archaeology, Salisbury.

Wessex Archaeology 2020. 'Undisturbed burials on school site shed light on Roman Somerset', <https://www.wessexarch.co.uk/news/undisturbed-burials-school-site-shed-light-roman-somerset> (30 June 2025)

White, R 2022. 'Whitley Grange villa, Shropshire: a hunting lodge and its landscape', in Henig *et al* 2022a, 81–92

Wilkinson, K and Straker, V 2007. 'Neolithic and Early Bronze Age environmental background', in Webster (ed), 2007, 63–74

Williams, J H 1971. 'Roman building materials in the south-west', *Trans Bristol Glos Archaeol Soc*, **90**, 95–119

Wilson, D 2004. 'The North Leigh Roman villa: its plan reviewed', *Britannia*, **35**, 77–113

Wilson, P 2012. *Research Strategy for the Roman-Period Historic Environment*, Historic England, Swindon

Wilson-North, R 1998. 'Two relict gardens in Somerset: their changing fortunes through the 17th and 18th centuries as revealed by field evidence and other sources', in P Pattison (ed), *There by Design: field archaeology in parks and gardens: papers presented at a conference organised by the Royal Commission on the Historical Monuments of England and the Garden History Society*, 56–64, BAR Brit Ser 267, Archaeopress, Oxford

Wiseman, R, Neil, B and Mazzilli, F 2021. 'Extreme justice: decapitations and prone burials in three late Roman cemeteries at Knobb's Farm, Cambridgeshire', *Britannia*, **52**, 119–73

Witcher, R E 2013. 'On Rome's ecological contribution to British flora and fauna: landscape, legacy and identity', *Landscape Hist*, **34**(2), 5–26

Witts, P 2005. *Mosaics in Roman Britain: stories in stone*, Tempus, Stroud

Witts, P 2016. *A Mosaic Menagerie: creatures of land, sea and sky in Romano-British mosaics*, BAR Brit Ser 625, BAR Publishing, Oxford

Woodward, P and Woodward, A 2004. 'Dedicating the town: urban foundation deposits in Roman Britain', *World Archaeology*, **36**(1), 68–86

Wrathmell, S 1990. 'Discussion of Well 1 and its contents', in S Wrathmell and A Nicholson (eds), *Dalton Parlours: Iron Age settlement and Roman villa,* 271–2, Yorkshire Archaeology 3, West Yorkshire Archaeology Service, Wakefield

Wrathmell, S and Nicholson, A 1990. *Dalton Parlours: Iron Age settlement and Roman villa*, Yorkshire Archaeology 3, West Yorkshire Archaeology Service, Wakefield

Wright, E, Viner-Daniels, S, Parker Pearson, M and Albarella, U 2014. 'Age and season of pig slaughter at Late Neolithic Durrington Walls (Wiltshire, UK) as detected through a new system for recording tooth wear', *J Archaeol Sci*, **52**, 497–514

Wright, R P 1946. 'Roman Britain in 1945: I. Sites explored. II Inscriptions', *J Roman Stud*, **36**(1–2), 133–48

Wright, R P 1947. 'Roman Britain in 1946: I. Sites explored. II Inscriptions', *J Roman Stud*, **37**, 165–82

Wright, R P 1948. 'Roman Britain in 1947: I. Sites explored. II Inscriptions', *J Roman Stud*, **38**(1–2), 81–104

Wright, R P 1949. 'Roman Britain in 1948: I. Sites explored: II. Inscriptions', *J Roman Stud*, **39**, 96–115

Wright, R P 1954. 'Roman Britain in 1953: I. Sites explored. II. Inscriptions', *J Roman Stud*, **44**(1–2), 83–111

Wright, R P 1956. 'Roman Britain in 1955: I. Sites explored: II. Inscriptions', *J Roman Stud*, **46**, 119–52

Young, C J 1977. *The Roman Pottery Industry of the Oxford Region*, BAR Brit Ser 43, BAR Publishing, Oxford

Zeder, M and Lapham, H A 2010. 'Assessing the reliability of criteria used to identify postcranial bones in sheep, *Ovis*, and goats, *Capra*', *J Archaeol Sci*, **37**, 2887–905

Zohary, D and Hopf, M 1994. *Domestication of Plants in the Old World: the origin and spread of cultivated plants in West Asia, Europe, and the Nile Valley*, Oxford University Press, Oxford

Index

Figures are indicated by page numbers in *italics* and Tables by page numbers in **bold**