

In the shadow of saints: the long durée of Lyminge, Kent, as a sacred Christian landscape

Book

Published Version

Creative Commons: Attribution 4.0 (CC-BY)

Open Access

Thomas, G. ORCID: <https://orcid.org/0000-0003-0311-8218>
(2023) In the shadow of saints: the long durée of Lyminge, Kent, as a sacred Christian landscape. *Archaeologia*, 112. Society of Antiquaries of London, London, pp154. ISBN 9780854313051 doi: 10.26530/20.500.12657/60888 Available at <https://centaur.reading.ac.uk/105979/>

It is advisable to refer to the publisher's version if you intend to cite from the work. See [Guidance on citing](#).

Identification Number/DOI: 10.26530/20.500.12657/60888
<<https://doi.org/10.26530/20.500.12657%2F60888>>

Publisher: Society of Antiquaries of London

All outputs in CentAUR are protected by Intellectual Property Rights law, including copyright law. Copyright and IPR is retained by the creators or other copyright holders. Terms and conditions for use of this material are defined in the [End User Agreement](#).

www.reading.ac.uk/centaur

CentAUR

Central Archive at the University of Reading

Reading's research outputs online

IN THE SHADOW OF SAINTS: THE LONG DURÉE OF LYMINGE, KENT, AS A SACRED CHRISTIAN LANDSCAPE

Gabor Thomas

with contributions by Eric Andrieux, Lisa Backhouse, Ian Bailiff, Robert Baldwin, Rachel Ballantyne, Martin Bell, Paul Bennett, Duncan Brown, Christopher Green, David Holman, Matilda Holmes, Peter Marshall, Phil Mills, Cynthia Poole, and Daniel Secker



Being volume 112 of ARCHAEOLOGIA

First published in Great Britain 2023
by
The Society of Antiquaries of London
Burlington House
Piccadilly
London W1J 0BE

www.sal.org.uk

© The Society of Antiquaries 2023

Rights: Published under CC BY licence

Gabor Thomas FSA has asserted his right to be identified as the author of this work in accordance with the Copyright, Designs and Patents Act 1988.

Cover image: Vertical view of apse of Lyminge Church, taken from a drone. Photograph: W Wright

The Society of Antiquaries gratefully acknowledges the financial support of the University of Reading in the publication of this book.

ISBN: 978-0-85431-305-1

ISSN: 2051-3186

British Cataloguing in Publication Data

A CIP catalogue record for this book is available from the British Library.

Edited and produced by Stuart Brookes FSA

CONTENTS

GENERAL INTRODUCTION	1
PART 1: SITUATING LYMINGE: RESEARCH QUESTIONS AND HISTORIOGRAPHICAL AGENDAS	4
Between myth and reality: Lyminge's origins as an Anglo-Saxon monastery and cult centre	4
Monasteries in a changing world: reconstructing Lyminge's post-foundation trajectory	5
Mercian hegemony and Viking raiding (mid-eighth–mid-ninth century)	6
The ending and afterlife of the monastery (mid-ninth–mid-eleventh century)	6
Reading the stones: the architectural legacy of early Kentish monasticism	7
PART 2: REVIVING SANCTITY: A REVIEW OF CANON JENKINS' WORK AND LEGACY	9
Canon Robert Jenkins, cleric and scholar, <i>by</i> Robert Baldwin and Gabor Thomas	9
An overview of Jenkins' discoveries	11
Old Churchyard	11
Abbots Green	13
Jenkins' observations on the extant church	14
PART 3: RE-EVALUATION: THE RESULTS OF RECENT ARCHAEOLOGY WITHIN THE CHURCHYARD	14
Re-investigation of Jenkins' discoveries in the Old Churchyard, July–August 2019	14
Introduction	14
General description of the foundations	15
Analytical characterisation of the mortared foundations and their implications, <i>by</i> Martin Bell and Gabor Thomas	16
Eastern apse and associated elements	17
Cross wall between nave and apse	21
Associated finds from the area of the apse	22
The nave	23
Structural interpretation	25
Independent scientific dating	28
Other structural elements	28
Re-investigation of structural remains in the vicinity of Jenkins' 'atrium' and 'western apse'	28
Background	28
Objectives	29
Description of the structural elements	29
The period 1 building	30
Possible buttresses	31
An early west wall	31
Internal platform	31
The curving foundation	31
The phase 2 building	32
The north-west corner	32
Removal of the internal platform	32
A west door	32
Steps	32
Structural interpretation	33
Dating of the structural elements	33
Structural analysis and reappraisal of the standing church, <i>by</i> Daniel Secker	34

The Norman church: description and reconstruction of plan	35
Comparators	36
From Anglo-Saxon to Norman church buildings	37
The problem of the north porticus	38
Conclusions	39
Reinterpretation of the south wall niche in the context of Canon Jenkins' renovations, <i>by</i> Gabor Thomas	39
2019 discoveries in the New Churchyard (formerly Abbots Green)	41
Introduction	41
Anglo-Saxon	42
Medieval	43
PART 4: DISCUSSION AND CONTEXTUALISATION	44
The pre-Viking monastery in context	44
Similarity versus diversity: Lyminge in relation to so-called 'Kentish Group' churches	44
Defining monastic space: the implications of Anglo-Saxon activity in the New Churchyard	46
The end and afterlife of the monastery	46
Lyminge and the Vikings (?): scientific dating and the fate of the monastic community	46
New beginnings: Lyminge as a centre of archiepiscopal authority in the tenth–eleventh centuries	51
Remembering and forgetting: the legacy and afterlife of the monastic church	51
The wider landscape of episcopal authority	53
Reconstructing the archiepiscopal residence	54
The residential nucleus	54
The wider setting	55
CONCLUSION	58
ACKNOWLEDGEMENTS	60
ABBREVIATIONS AND BIBLIOGRAPHY	60
SUPPLEMENTARY MATERIALS	65
1 OSL dating of building mortars, <i>by</i> Ian Bailiff and Eric Andrieux	66
2 Compositional analysis of building mortars, <i>by</i> Martin Bell	77
3 Pottery from excavations at Lyminge Churchyard, 2019, <i>by</i> Duncan H Brown and Lisa Backhouse	86
4 Building material from excavations at Lyminge Churchyard, 2019, <i>by</i> Cynthia Poole	94
5 A checklist of coins from excavations at Lyminge Churchyard, 2019, <i>by</i> David Holman	100
6 Notes on the fabric and geological constituents of SS Mary and Ethelburga, Lyminge (excluding the tower), <i>by</i> Christopher Green	103
7 Radiocarbon dating and chronological modelling of settlement contexts, <i>by</i> Peter Marshall	111
8 Assessment of paleocological data from excavations on Tayne Field, Lyminge, 2012–13, <i>by</i> Rachel Ballantyne	117
9 Assessment of zooarchaeological material from Saxon-Norman contexts excavated on Tayne Field, Lyminge, 2012–15, <i>by</i> Matilda Holmes	141
INDEX, <i>by</i> Jennifer Foster	146



IN THE SHADOW OF SAINTS: THE LONG DURÉE OF LYMINGE, KENT, AS A SACRED CHRISTIAN LANDSCAPE

Gabor Thomas FSA, with contributions by Eric Andrieux, Lisa Backhouse, Ian Bailiff, Robert Baldwin FSA, Rachel Ballantyne, Martin Bell FSA, Paul Bennett FSA, Duncan Brown FSA, Christopher Green FSA, David Holman, Matilda Holmes, Peter Marshall, Phil Mills, Cynthia Poole, and Daniel Secker

Gabor Thomas FSA, University of Reading, Department of Archaeology, Reading, Berkshire, RG6 6AB, UK. Email: gabor.thomas@reading.ac.uk

Originating in the seventh century as one of the 'Old Minsters' of Kent, Lyminge has one of the longest continuous Christian histories in Britain. Drawing upon the results of two campaigns of re-investigation in the early 1990s and 2019, this paper elucidates this trajectory through a rigorous reassessment of archaeological remains in Lyminge churchyard, originally explored by the antiquary Canon Jenkins in the 1850s. This work generates fresh insights on the structural archaeology of the churchyard and Jenkins' influence on the interpretation and public presentation of Lyminge's early Christian heritage. New details of the seventh-century apsidal church are presented, allowing its place within 'Kentish Group' churches to be appraised with greater confidence, and aspects of the operational sequence of such buildings to be reconstructed for the first time. A fresh examination of structural foundations to the west of the apsidal church, and the current parish church of SS Mary and Ethelburga, charts the monumental development of the site into the Late Saxon period and beyond, offering insights into the commemorative processes bound up with the long-term evolution of the cult focus. Findings beyond the churchyard, from previous research excavations by the University of Reading, are woven into the current study to contextualise developments within the monumental core, providing an exceptionally rare integrated 'big picture' perspective in the study of early medieval monastic archaeology. The results of scientific dating, and the analysis of bioarchaeological data, are applied to reconstruct the lived experience of the monastic community during the Viking Age, and to reconstruct the complex settlement transformations during Lyminge's afterlife as a secular minster church and seat of archiepiscopal authority. Complementing other recent work on the long-term development of monastic landscapes, this paper demonstrates how the enduring mythology of the golden age of Anglo-Saxon saints influences the interpretation of sacred Christian heritage and how archaeological approaches can inform narratives of these potentially meaningful places.

Key words: Sacred heritage; Anglo-Saxon saints; early medieval monasticism; Anglo-Saxon churches; Anglo-Saxon Kent; early medieval settlements; Viking raiding

GENERAL INTRODUCTION

This study presents, interprets and contextualises the results of two phases of excavation and archaeological recording in Lyminge churchyard, which sought to clarify the structural remains originally brought to light by the antiquary Canon Jenkins, former rector of the church, in the 1850s and 1860s. The most recent phase, directed by the author from July to August 2019 with assistance from the Canterbury Archaeological Trust (CAT), formed part of the National Lottery Heritage

Funded (NLHF) project, 'Pathways to the Past: Exploring the legacy of Ethelburga', completed in July 2021. This aimed to rejuvenate the church as a key community and heritage asset through a scheme of improvements to infrastructure — particularly access arrangements — and the creation of a suite of public display materials of the church's history. This allowed the re-examination of the foundations of an Anglo-Saxon apsidal church, originally unearthed by Jenkins, beside the extant parish church and to undertake limited excavations within the wider churchyard.

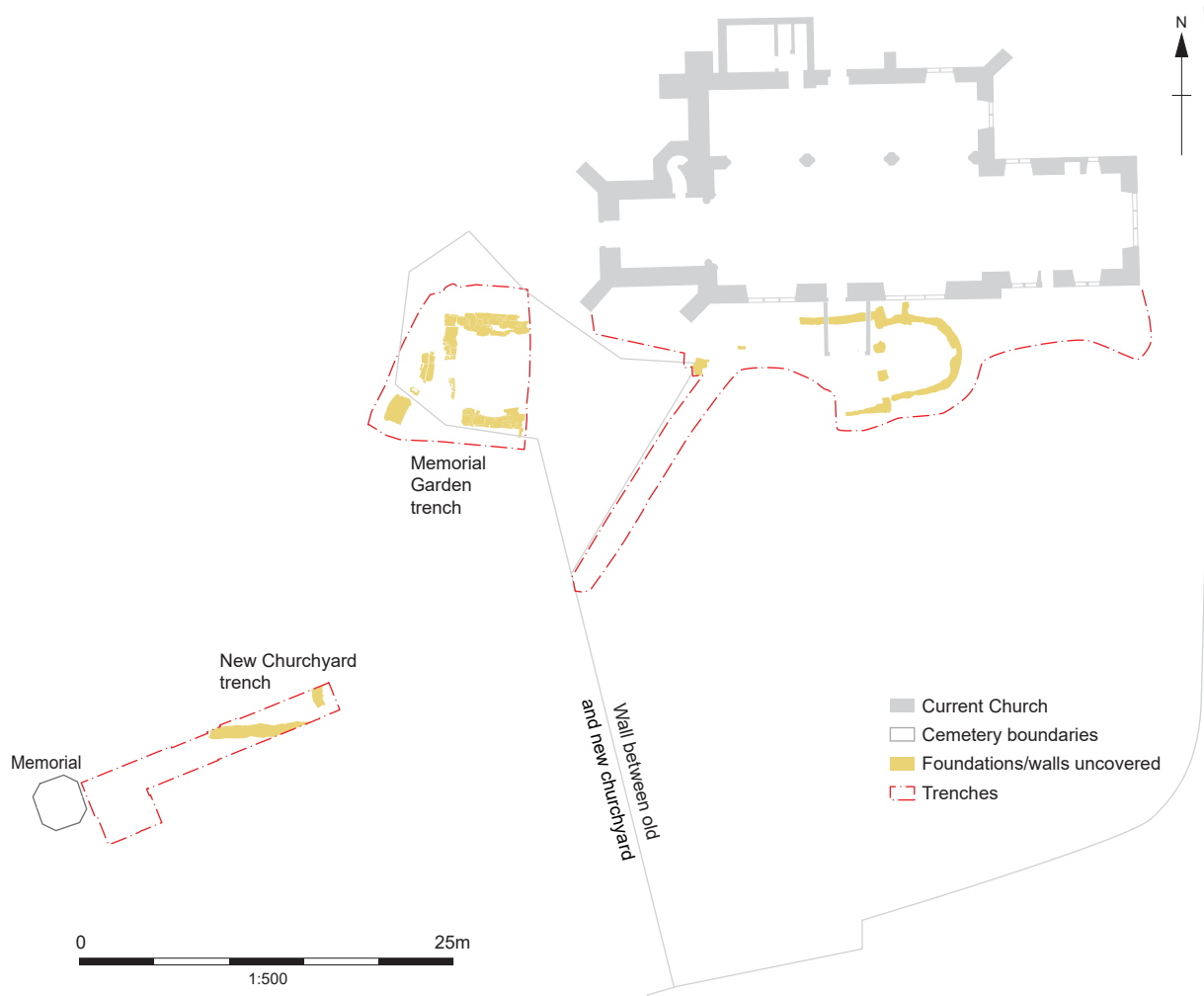


Fig 1. Location of recent archaeological interventions in Lyminge churchyard. *Image:* authors.

This was preceded by the re-investigation of a complex palimpsest of structural remains now under the ‘Memorial Garden’ to the south-west of the church tower, conducted at intervals between 1991 and 1993 by a team of volunteers led by Paul Bennett of CAT.

The two phases of work encompassed and recorded several structural foundations, all now reburied, originally examined by Jenkins and subsequently placed on public display under his instruction (fig 1). Additionally, the historic fabric of the parish church, including walling exposed through excavation, was recorded as part of the 2019 campaign. While the churchyard is the main focus, this paper also builds upon evidence generated by extensive research excavations within the Lyminge’s historic core, directed by the author on behalf of the University of Reading between 2008 and 2015 (fig 2). These findings, including the results of scientific dating and analyses of environmental and artefactual assemblages, are woven into the current study to contextualise developments within the churchyard. This enables

the evolution of Lyminge’s cult focus to be situated within a ‘big picture’ narrative embracing large parts of its associated settlement.

This paper is divided into four parts. Part I lays out the study’s conceptual foundations by elucidating key scholarly and historiographical agendas pertinent to Lyminge’s ‘long medieval’ trajectory. This takes particular inspiration from recent work on ‘sacred heritage’ as a conceptual framework, but is also guided by interdisciplinary studies investigating the long durée of medieval monastic landscapes, and historical questions concerning the fate and experience of Anglo-Saxon monasteries in Kent. Part II reviews Canon Jenkins’ work and legacy as an enduring lens through which Lyminge’s Christian heritage has been understood and presented. As well as reprising his main discoveries and interpretations, it considers recent critical historiographies reassessing the role of personal religious beliefs in shaping archaeological scholarship (Effros 2019; Gilchrist 2019) to assess how Jenkins’ intellectual and clerical leanings informed his antiquarian research. Part III presents

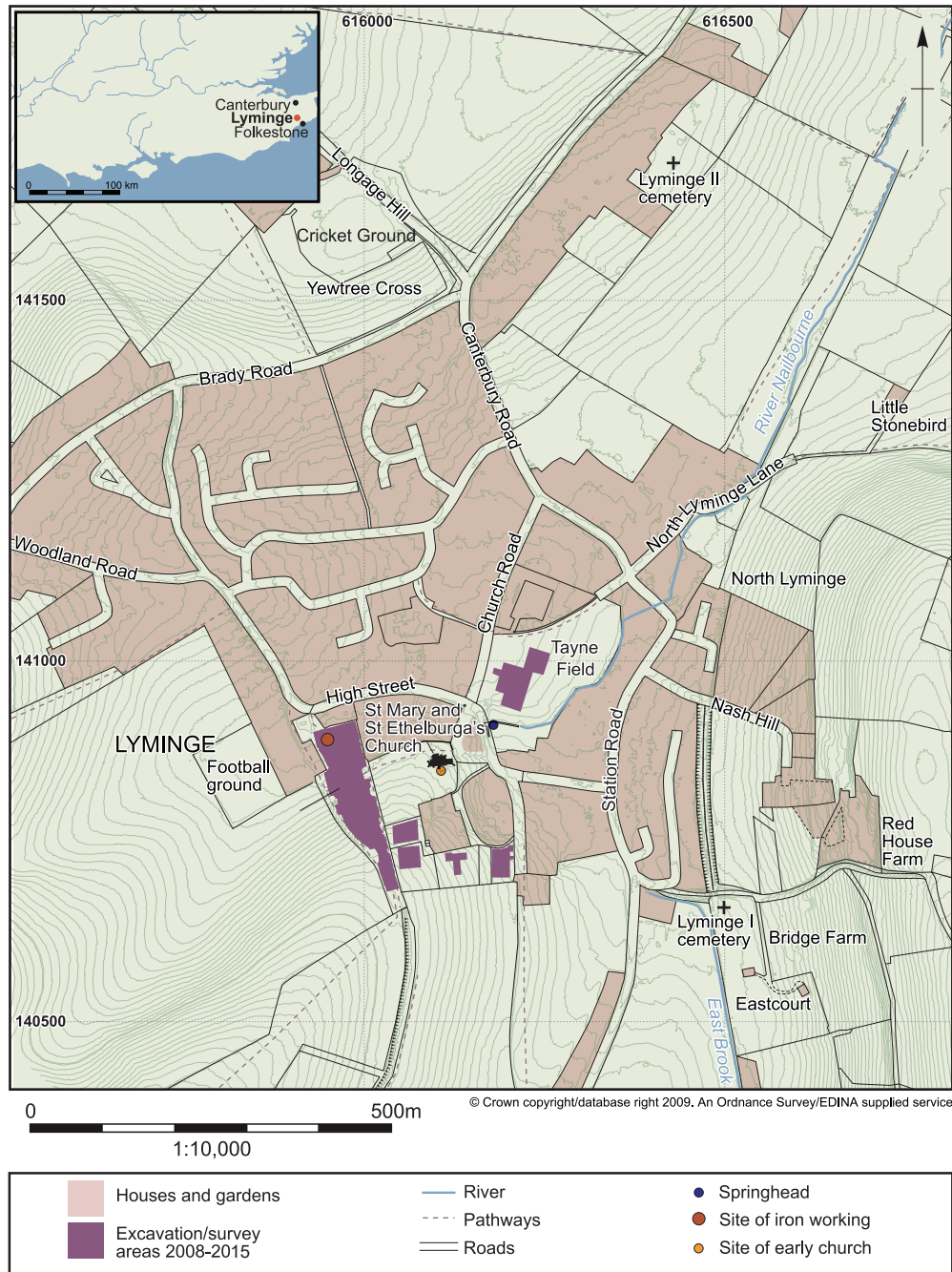


Fig 2. Location of University of Reading fieldwork and excavations in Lyminge, 2008–19. *Image:* authors, using data: Crown copyright 2009. An Ordnance Survey / EDINA supplied service.

the recent campaigns of archaeological excavation and recording and evaluates the evidence both on its own terms and in relation to Jenkins' published interpretations. Part IV interprets, synthesises and contextualises the results to construct a narrative of Lyminge's long-term development as a sacred Christian landscape. New perspectives on the pre-Viking monastery are gained by re-situating Lyminge within the so-called 'Kentish Group' of churches and by charting its experience and fate over the eighth to ninth centuries AD, informed by

independent scientific dating evidence. A detailed consideration of the afterlife of the monastery follows, commencing with an appraisal of the Norman church and wider developments in the churchyard in relation to commemorative practices and Lyminge's secularised role as a minster church, followed by a multi-stranded reconstruction of Lyminge as a landscape of medieval archiepiscopal lordship.

PART 1: SITUATING LYMINGE: RESEARCH QUESTIONS AND HISTORIOGRAPHICAL AGENDAS

This study is guided by a series of academic agendas on the experience and legacy of early medieval monastic centres, the background to which is explained in three sections. The first connects Lyminge with recent work on sacred heritage as a critical lens for examining its origins, significance and long-term legacy as an early centre of English Christianity inextricably intertwined with the golden age of Anglo-Saxon saints. The second outlines the historical context for Lyminge's experience and fate as a monastic community and raises questions and issues that are subsequently addressed through the archaeology. The final section situates Lyminge within the historiography of the study of Anglo-Saxon and Norman ecclesiastical architecture in Kent, highlighting the importance of new analytical and scientific studies of extant fabric and buried structural foundations for advancing future research agendas.

Between myth and reality: Lyminge's origins as an Anglo-Saxon monastery and cult centre

Lyminge illustrates how hagiography valorising a 'golden age' of Anglo-Saxon royal saints shapes narratives and conceptualisations of sacred Christian landscapes. As with any monastery from the pre-Viking period, Lyminge's biography must be pieced together from an eclectic range of historical sources. While the Kentish setting provides immediate advantages for historical reconstruction, not least the comparatively rich availability of authentic pre-Viking charters, here as elsewhere, most portrayals of pre-Viking monastic culture rely heavily upon later hagiographical sources (Blair 2002). In the following we appraise the value of this varied historical material for interpreting Lyminge's pre-Conquest archaeology.

Hagiography impinges particularly closely on the question of when and by whom a monastery was established at Lyminge and, by extension, its saintly associations as a cult site. The key source is a body of hagiographical work known as the Kentish Royal Legend, which reached its literary zenith in mid-eleventh-century Canterbury as a vehicle for promoting a series of female saints' cults intertwined with the genealogy of the Kentish royal

house (Rollason 1982; Love 2019). Two strands of this complexly stratified narrative tradition have particular relevance to Lyminge. The first is an account, given by some versions of the Legend, of Lyminge's foundation by Queen Ethelburga, daughter of Ethelbert of Kent and widow of Edwin of Northumbria. This historicising link lies behind the modern church dedication and the traditionally ascribed foundation date of AD 633. The second is a description of the translation of Lyminge's relics to St Gregory's Priory, Canterbury in 1085, contained in a work by the prolific eleventh-century hagiographer, Goscelin of St-Bertin (Colker 1977; Baldwin 2017). The latter account has been particularly influential in shaping archaeological interpretations because, as will become evident later, it supplies details relating to the architectural setting of the shrine.¹ Moreover, it refers to the translation of not one but two venerated burials which, if believed, suggests that Lyminge had acquired relics additional to those of its royal foundress at some point in its pre-Conquest history. This detail has relevance to the proposition, based on a reading of certain historical sources, that the main saint venerated at Lyminge was not its reputed royal founder, Ethelburga, but Eadburg, identified by some scholars as the Eadburg who succeeded Mildreth as abbess of Minster-in-Thanet (Rollason 1982, 21–5; Biddle 1986, 8; Kelly 2006, 102–3; Baldwin 2017; Love 2019, for counter argument see Brooks and Kelly 2013, 29, 465).

While more generalised, the image projected by the charters is nevertheless consistent with the view that Lyminge was founded in the seventh century as a royal nunnery. One of its principal roles, as with sister houses at Minster-in-Thanet, Folkestone and Minster-in-Sheppey, was to promote the sanctity and prestige of the independent Kentish dynasty (Kelly 2006; Brooks and Kelly 2016, 28–35; Yorke 2017). However, the first charter to make direct reference to Lyminge as a monastic community — dating to around AD 700 — is unhelpfully late for confirming the particulars of its foundation. Subsequent references to the identity of its shrine are scanty and some are of questionable authenticity (Brooks and Kelly 2016, 286–93). However, recent work on a manuscript in Hereford Cathedral library provides contemporary insights into the kind of activity that may have been evident at Lyminge in the early years of the eleventh century in and around the shrine of St Eadburg (Love 2019).

¹ Goscelin describes the monument of St Ethelburga as standing under an arch in the north porticus beside the south wall of the church (*eminentiusque monumentum...in aquilonali porticu ad australem parietem ecclesiae arcu involutum*: Colker 1977, 72, and cf 83).

Previous historical examinations have tended to view pre-Viking Lyminge through the distinctly separate lenses of either hagiography or charters. However, the most recent contribution to the literature, written by a Lyminge-based scholar, Baldwin (2017), departs from the prevailing orthodoxy by attempting to construct a narrative interwoven from both.² Baldwin's paper was written during University of Reading excavations on Tayne Field (2012–15), which unearthed the ceremonial nucleus of a royal precursor to Lyminge's documented nunnery (Thomas 2013; 2017). This timing is pertinent because it exemplifies how recent schemes of archaeological research — in both Lyminge and Folkestone — have fostered a resurgence of interest in the pre-Viking saints of Kent. This broader historiographical landscape is now surveyed to situate Lyminge within recent discourse on 'sacred heritage' as a conceptual cornerstone for the current study.

The revival of interest in the royal saints of East Kent finds its wider context in the intersection of sacred heritage and the 'spiritual re-enchantment' of contemporary western society in an age of growing secularisation (Gilchrist 2019, 21–36). Gilchrist has provided a detailed definition and contextualisation of sacred heritage as a source of spiritual re-enchantment. Several of the traits defined by Gilchrist are present in the East Kent setting. First, the region provides an illuminating case study in the revival of pilgrimage as a vehicle for spiritual and personal self-fulfilment (Mayhew-Smith and Hayward 2020, 38–60). This is reflected in the recent inclusion of the 'Royal Saxon Way' by Kent County Council in its list of Kent's pilgrim routes. This is a new linear coast-to-coast route linking all of East Kent's early monastic foundations within a wider network of twenty-four historic churches.³ Second, recent schemes of research in Lyminge and Folkestone have been driven towards unravelling the deep-time significance of these places, including a consideration of how their later medieval and modern afterlives have been shaped by saintly and spiritual associations (Doherty *et al* 2020).

Third, at Folkestone in particular, there has been a strong emphasis on integrating intangible forms of heritage such as folklore, place-names and oral traditions with more traditional forms of archaeology and historical enquiry (Doherty *et al* 2020). Finally, in focussing attention on the saintly associations of wells and watercourses, work conducted at both sites illustrates how topography and topographical distinctiveness insinuates itself in conceptualisations of sacredness.

The project upon which this paper is based, and the University of Reading research excavations that preceded it, engaged closely with artists,⁴ schools and the public to channel creative and personal responses to Lyminge's early medieval past, resulting in a 'multi-vocal' discourse on its sacred heritage (Knox 2013). Shaped through the imaginative and emotional responses, such personal connections do not necessarily map on to the scholarly agendas of archaeologists and historians. Yet there is unifying presence behind much of this creative and intellectual endeavour: Canon Jenkins, the Victorian cleric-scholar whose investigations in and around the churchyard were motivated by a desire to revive Lyminge's former glory as a formative centre of English sainthood and Christianity. Drawing inspiration from recent work at Glastonbury Abbey and other long term examinations of sacred Christian landscapes, this study deconstructs Canon Jenkins' legacy through a rigorous reassessment of the archaeology preserved in and around the churchyard. This deconstruction enables the realities and myths of Lyminge's archaeology to be freshly perceived both as an aim itself and as an exemplar for guiding future studies engaged in unravelling the complexities of places of Christian sacred heritage.

Monasteries in a changing world: reconstructing Lyminge's post-foundation trajectory

Lyminge's subsequent development and afterlife as a monastery brings into focus other scholarly debates that help to frame the research agenda for the current study. For convenience, this trajectory is examined in two chronologically consecutive phases.

² The archaeological evidence comprises a suite of high-status timber halls known as a great hall complex, established on a site with elite occupation extended back into the 6th century (Thomas 2013; 2017; 2018). It was first published as Baldwin 2016, with a revised version published as Baldwin 2017.

³ The main route runs between Folkestone and Minster-in-Thanet via Lyminge. There is a shorter circular route between Folkestone and Lyminge that includes the ancient foundations of St Martin's, Cheriton and St Oswald's, Paddlesworth. Further details on the route are available via Lyminge Parish Council at http://www.lymingeparishcouncil.org.uk/The_Royal_Saxon_Way_42226.aspx. See also Doherty *et al* 2020.

⁴ See the Pathways installation at Lyminge Parish Church at: http://www.lymingeparishcouncil.org.uk/Pathways_Art_Installation_42390.aspx.

Mercian hegemony and Viking raiding (mid-eighth–mid-ninth century)

Patronised by a succession of powerful rulers in the second half of the seventh century, monasteries grew to play a pivotal role in the dynastic politics of the independent Kentish realm. In the century that followed, these institutions gained new sacro-political significance as pawns in the geopolitics of Mercian hegemony, which climaxed under Offa in the 780 to 790s (Brooks 1984). Lyminge offers direct insight into the machinations associated with the Mercian alienation of Kentish monastic houses. Charters dated to the two decades either side of AD 800 associate Lyminge with the rule of the Mercian noblewoman, Seledhryth, who served simultaneously as abbess of Minster-in-Themet, placing her in a position to appropriate the economic and spiritual capital of both institutions (Brooks 1984, 184–5; Rollason 1984, 24–5; Brooks and Kelly 2013, 31–2, 403). It is worth pausing to reflect on the experience of monastic centres in other parts of Greater Mercia to help navigate the Kentish scene. Excavated evidence from the eastern English sites of Flixborough and Brandon offers insights into the transformations that monastic enterprises experienced in the later eighth to early ninth centuries through profit-driven Mercian investment, attested by sophisticated infrastructure, specialised production and conspicuous modes of consumption (Blair 2005; Loveluck 2007, 130–1; Blair 2011b; Tester *et al* 2014; Blair 2018, 182–6, 220–6). As we shall come to see, Lyminge provides distinctively Kentish perspectives on this theme.

One final Lyminge charter of this period demands our attention. Made in favour of the previously mentioned pluralist Seledhryth in AD 804, it grants a ‘refuge of necessity’ for the Lyminge community within the defended urban enclave of Canterbury (Brooks and Kelly 2013, 463–6). This provides crucial evidence for the strategies used to perpetuate monastic and spiritual life in the face of the earliest phase of Viking raiding. We bring new evidence to bear on the resilience of monastic communities over this troubled period using scientific dating to demonstrate significant and sustained activity at Lyminge into the second half of the ninth century.

The ending and afterlife of the monastery (mid-ninth–mid-eleventh century)

This period of Lyminge’s existence provides a microcosm for the process of ‘secularisation’ by which the wealth and power of formerly independent monastic institutions were progressively eroded by royal, aristocratic and episcopal authority (Blair 1985; 2005, esp 121–34,

279–345). Lyminge is last attested as a monastic community in a charter of AD 844 (Brooks 1984, 202–6; Brooks and Kelly 2013, 33–5). By the time it re-emerges from historical obscurity, around AD 960, it had been absorbed within the See of Christ Church Canterbury having previously been in the gift of a West Saxon king following Kent’s permanent annexation by that kingdom in AD 825 (Brooks and Kelly 2013, 34–5). There is evidence through a new hagiography of St Eadburg, attributed to the patronage of Archbishop Ælfric around AD 1000, of a desire to bolster or revive the cult status of Lyminge at that time (Love 2019). However, in 1085 the process of suppression took a more symbolic turn when its relics were translated to Canterbury to sacralise the Norman archbishop Lanfranc’s new foundation of St Gregory’s Priory (Rollason 1982, 24). While there is no evidence of an attempt by Late-Saxon archbishops to re-establish a monastic presence at Lyminge along reformed lines, it persisted as a focal point of religious and spiritual life as one of the ‘head minsters’ of the diocese of Canterbury (Tatton-Brown 1988). The evidence supplied by the Domesday Monachorum indicates that Lyminge exercised jurisdiction over an extensive parochial territory from which it rendered various ecclesiastical dues, including the right to collect and distribute the archbishop’s chrism (Brooks 1984, 203–5; Brooks and Kelly 2013, 35; Blair 2005, 433–40 for wider context). During the Late Saxon and early Norman periods, its ecclesiastical identity as a mother church was thus conjoined with a tenurial-cum-administrative identity as a demesne manor of the archbishops, a later echo of which is embodied in a smattering of thirteenth-century references to sporadic visitations to a *curia* and the upkeep and eventual decommissioning of archiepiscopal residence (Du Boulay 1966, 21–6, 239).

This documented afterlife accords with recent research investigating the long-term ‘material biographies’ of places of Christian sacred heritage. Such work has placed emphasis on the commemorative role played by architectural and other material practices in invoking, rechanneling, and in some cases in actively forgetting, the monastic past as a source of power and contestation (Gilchrist and Green 2015; Everson and Stocker 2011). Lyminge provides interesting complementary perspectives on these issues because, unlike the paradigmatic sites of Glastonbury and its Lincolnshire counterpart, Barlings Abbey, it did not experience subsequent phases of monastic renewal, but emerged as a secularised ex-minster under archiepiscopal control. Its trajectory therefore opens rather different

perspectives on processes of commemoration and transformation than those observed in more enduring monastic settings. While somewhat subtler and harder to read in archaeological terms, Lyminge's trajectory is arguably more germane to the majority of pre-Viking monastic communities, which re-emerged not as reformed monasteries, but as secular minsters, the essential driving force behind the crystallisation of the parish system (Blair 1985; 2005, 368–85, 452–63).

This perspective brings a duality to the fore: first, the interplay between the metropolitan See of Canterbury and outlying archiepiscopal estates as 'interacting orbits of sanctity'; and second, the interplay between the parochial function of ex-minsters and their continued sacral potency as a symbolic arena for assertion of archiepiscopal authority. The playing out and eventual outcomes of these tensions has invariably been studied through historical accounts of the translocation of relics as elaborate and highly theatrical performances (eg Rollason 1982). Yet, with delicate teasing, the material testimony of churches and the wider monumental landscapes of which they were part, can also be brought to bear on these processes. Freshly gleaned archaeological evidence from Lyminge suggests that, contrary to received architectural wisdom, little emphasis was placed on physically perpetuating its saintly associations through the fabric of the early Norman church, a discovery that advances understanding of the commemorative process by which memory of the church faded from collective consciousness (Connerton 1989; Williams 2006; Jones 2007), later echoes of which (again newly attested here) are discerned in the medieval evolution of the churchyard. This can be set against the results of a re-evaluation of Lyminge's later medieval archiepiscopal residence, the siting of which, close up against the Norman church on alignment with its pre-Viking precursor, might suggest that there was an attempt to consciously revive the ancient sacral associations of the site in the assertion of archiepiscopal authority.

A question with a more specific historical resonance also has relevance: the extent to which the Viking onslaught of Kent was a factor in the demise of monastic life at Lyminge and its subsequent secularisation. Several commentators — starting with Canon Jenkins — have sought to attribute the earliest fabric of the building to Archbishop Dunstan (960–78), influenced by hagiographical references that he had a hand in rebuilding the church following its desecration by Viking raids (Jenkins 1889a; Gilbert 1964; Taylor 1978). Given that the standard motif of eleventh-century clerical writing used the Vikings

as a convenient foil for valorising the heroic deeds of reforming bishops, such reading should be treated with extreme caution (cf Pestell 2004, 72–6). This view is fully vindicated by the results of scientific dating of mortar from the earliest fabric of the building, which demonstrates that the church is unequivocally early Norman in origin (see Bailiff and Andrieux, supplementary materials). While the church itself and its immediate environs may have survived as a relative island of continuity throughout the period of Viking incursions and their immediate aftermath, archaeological interventions in the wider landscape demonstrate that the settlement attached to the church was reconfigured around a new focus. We bring scientific dating evidence to bear on this relocation and conclude that it may plausibly (if not definitively) be linked to intensified Viking activity in East Kent in the final third of the ninth century.

Reading the stones: the architectural legacy of early Kentish monasticism

Kent has been prominent in architectural studies of the pre-Conquest church on account of holding esteemed survivals from the earliest generation of church building in Anglo-Saxon England that provide tangible witness to its pioneering role in the establishment of English Christianity (Peers 1901; Clapham 1930, 17–33; Taylor 1969; Fernie 1983, 32–9). While this region unquestionably provides rich scope for the interdisciplinary exploration of pre-Conquest architecture, it also highlights pitfalls that emerge when interpretation is built on insecure historical foundations. We need look no further than Lyminge's treatment in H M Taylor's *Anglo-Saxon Architecture* for ample illustration of this problem. In the third volume of his masterwork (1978, 735–42), Taylor sets out a framework for the dating of Anglo-Saxon fabric based on 'first principles'. Within this schema, Lyminge is accorded especial importance as one of only four sites nationally to present combined historical and archaeological evidence for Anglo-Saxon workmanship. While presented as unambiguous fact, the historical associations invoked to provide construction dates for Lyminge's two churches — Queen Ethelburga for the earlier ruined church and St Dunstan its extant successor — are, as we have seen, exiguous to say the least.

Insecure historical dating of this type pervades the historiography of pre-Conquest architecture in Kent and deserves critical scrutiny, not least because it has been influential in shaping and

reinforcing misconceptions in the wider public realm. Here we trace the broad elements of this historiography to foreground the methods, approaches and perspectives applied in the current study.

The pre-Viking churches of Kent have traditionally been recognised as a cohesive regional group based on similarities in construction and plan-form that stand apart from building practices seen in other regions of Anglo-Saxon England (Peers 1901; Clapham 1930, 17–33). Early studies emphasised documenting these shared stylistic tendencies and sourcing their Continental origins. This set the pattern for most of the studies that followed in the second half of the twentieth century, albeit with significant refinements in analysis, interpretation and Continental contextualisation (Taylor 1969; Fernie 1983, 32–9; Gem 1997). The safe familiarity of this approach was finally shattered in a seminal paper by Eric Cambridge (1999) published in a collection of essays celebrating the 1,400th anniversary of the landing of St Augustine’s mission in Kent. With impressive critical analysis, Cambridge demonstrated that the apparent cohesiveness of the so-called ‘Kentish Group’ churches belies considerable diversity that has important implications for understanding how church building in Kent evolved over the course of the seventh century in relation to the changing composition of the Augustinian mission and its Continental connections. Within his argument, Cambridge draws particular attention to the tendency of earlier studies to project a sense of uniformity by forcing the sometimes highly fragmentary remains associated with such churches into the mould of more fully understood examples, most notably St Mary, Reculver. Cambridge’s contribution laid a marker for future studies to interpret the available evidence on a more rigorous and critically informed basis, wherever possible taking opportunities to re-examine poorly understood sites to document both conformities and idiosyncrasies. This study is very much offered in this vein.

East Kent has been a rich laboratory for exploring themes pertaining to the use, construction and symbolism of pre-Conquest churches. The region has featured prominently in examinations of church liturgy and the architectural setting of relics in Anglo-Saxon England (eg Biddle 1986; Crook 2000; Gittos 2013, 149–60) and also in work exploring the reuse of Roman buildings and building materials (*spolia*) as a dominant feature of pre-Conquest building practice (Eaton 2000, 12–15, 28–30, 130–2; Bell 1998). This latter strand has recently been invigorated by the scientific application

of Optically Stimulated Luminescence (OSL) dating introducing more subtlety into generalised readings of reuse by addressing issues such as logistics, supply and selectivity (Bailiff *et al* 2010). Important work has also been conducted on the fabric of churches in Kent. Geological analysis of the sculptural and architectural fragments from St Mary, Reculver and other members of the ‘Kentish Group’, has demonstrated the use of Continental stone sources, specifically Marquise oolite from Boulonnais and limestone from the Paris Basin, during this period of church building (Blagg 1981; Worssam and Tatton-Brown 1990; Tweddle *et al* 1991, 32–3, 136, 162–3). At the other end of the Anglo-Saxon period, Tatton-Brown’s work on Quarr stone (1980a; 1990) has yielded a chronological marker for distinguishing the earliest generation of Norman construction in the region, applicable both to the metropolitan context of Canterbury and rural diocesan churches, Lyminge included.

Notwithstanding these varied contributions, the interpretive potential of Kent’s pre-Conquest churches remains a long way from full realisation. With notable exceptions (Tatton-Brown 1980b; North 2001), few published studies have applied detailed stone-by-stone recording as a tool for dating constructional phases and understanding the supply and structural deployment of building materials. Moreover, given the extent that pre-Viking Kentish churches have been regarded as a closely related regional group, there has been a surprising lack of comparative analysis of these structures beyond their plan-form and stylistic characteristics — apses, pilasters, chancel crossings etc. The constraints imposed by the Kentish evidence must certainly be acknowledged. The level of survival with regards to upstanding remains is highly variable, and the fabric characterising Kentish churches, involving a high constituent of reused Roman brick with flint, is less conducive to structural analysis and fabric provenancing than for broadly contemporary churches in other regions of England. Yet there is still considerable scope for reading these buildings and the nuances of their construction in new ways. For example, very little consideration, analytical or otherwise, has been given to the sequence of technical operations involved in the creation of mortared foundations, *opus signinum* flooring, plastered walls and other elements that enabled these buildings to radiate *Romanitas* — precisely the kind of perspectives that can be obtained through the scientific and compositional analysis of buried foundations of the type re-examined at Lyminge. These issues have more than simply practical relevance, for they help us to perceive churches as an outcome of distinct

socio-technical practices embedded in and shaped by dialogues between people, places, and materials (Dobres 2000; Conneller 2011; Ingold 2013). Studies of the built heritage of early Christianity remain firmly entrenched in art-historical and stylistic approaches. Future research along the lines suggested will enable this heritage to speak more directly to wider interdisciplinary agendas situating human agency and power relations at the heart of understanding of how places, monuments and material culture more generally functioned within early medieval society (eg Turner *et al* 2013; Sánchez-Pardo and Shapland 2015; Rollason 2016; Blair 2018; Carroll *et al* 2019).

PART 2: REVIVING SANCTITY: A REVIEW OF CANON JENKINS' WORK AND LEGACY

Canon Robert Jenkins, cleric and scholar, by Robert Baldwin and Gabor Thomas

Viewing Lyminge from a sacred heritage perspective invites close consideration of the role of historiography in shaping prevailing interpretations and paradigms. Building upon her work at Glastonbury Abbey, Gilchrist has explored the complicity of antiquarians and archaeologists in perpetuating myths attached to places of sacred heritage as a consequence of their personal beliefs and convictions (Gilchrist 2019, 176–218). This brings us inexorably back to the figure of Canon Jenkins and the extent that his theological outlook as a practising cleric informed his antiquarian activities. While there has been much critical engagement with Jenkins' published interpretations, this has been devoid of such a historiographical enquiry. Here we bring this neglected context to the fore as a prerequisite for understanding the motivations behind Jenkins' antiquarian work and how these shaped his interpretations.

The Reverend Robert Charles Jenkins, MA, Rector of Lyminge from 1854 to 1896, and Honorary Canon of Canterbury, was a Victorian polymath who corresponded with several leading intellectual figures of his day and whose published works cover topics as diverse as ecclesiastical history, theology, and medieval heraldry (fig 3). Jenkins began his ministry in the brand-new Christ Church, Turnham Green, one of the flourishing suburbs on the edge of London in the 1840s. This was a large church, built to seat

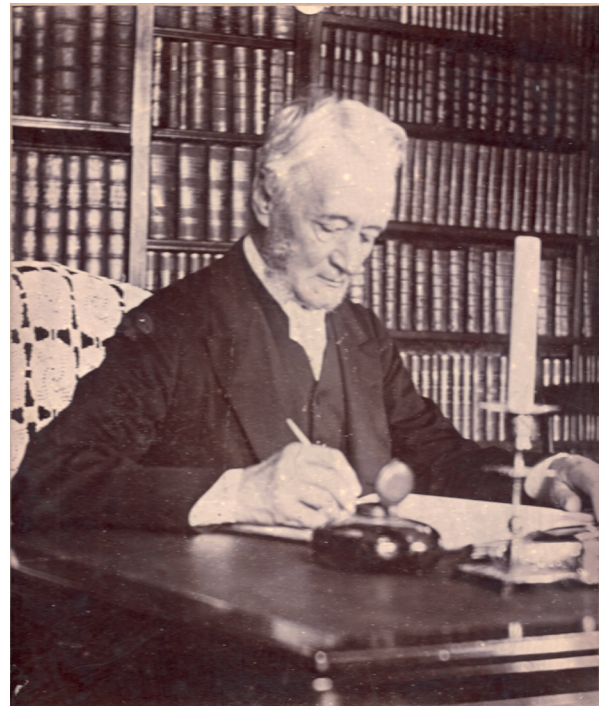


Fig 3. Portrait of Canon Robert Charles Jenkins 1815–96. From the collection of the Parochial Church Council of St Mary and St Ethelburga, Lyminge. Photograph: © Robert Baldwin.

a congregation of more than 900, and was some of the earliest work of George Gilbert Scott who played such a great role in promoting the Gothic revival. Jenkins' church embodied the ideals of the Tractarian Movement, begun just a decade before, and was actively promoting alignment between the Church of England and the Roman Catholic Church (for context, see Gerrard 2002, 30–55 and for comparative insights Jasper and Smith 2019). He was thus working in a setting that was at the cutting edge of the new architectural style and it is reasonable to believe that he was immersed in the intellectual and theological ferment that it represented.

It is hard to imagine a greater contrast than between the church at Turnham Green and that at Lyminge, where Jenkins' brother bought him the living late in 1853. This suggests that Jenkins wished to turn his back on his previous ministry, and he desired to take a completely new direction exploiting his new living to immerse himself in the history and archaeology of Lyminge and the surrounding parishes. He was a founding member of the Kent Archaeological Society in 1858 and was a regular contributor to its journal *Archaeologia Cantiana* in the 1860s to 1890s. The series of extended reports and reflections emanating from his own antiquarian researches in Lyminge, reveals Jenkins as a serious scholar with a dexterous



Fig 4. Lyminge Church interior c 1890 (Braund, Folkestone). Originally photographed by Thomas Matthews Braund. *Photograph*: from the collection of and © Robert Baldwin.

command of pre-Conquest and later medieval documentary sources, many then still unpublished, and a keen familiarity with the latest scholarly work in the burgeoning field of ecclesiology.

Given the prevailing intellectual and theological currents of his day, and his earlier experience at Turnham Green, it is tempting to ascribe Jenkins' antiquarian endeavours to the Catholic revival movement, but this connection does not stand up to scrutiny (Gerrard 2002, 30–55). From pure observation, the austere style that Jenkins adopted for the interior of the church at Lyminge does not suggest that he subscribed to Tractarian ideals of church decoration. The church interior is captured in photographs taken towards the end of his life in the late 1880s or 1890s (fig 4). The simple pared back aesthetic visible in these images was achieved through extensive work overseen by Jenkins earlier in his tenure, which principally involved stripping the plaster from the interior of the walls and removing the west gallery across the tower arch. The floor was left plain brick, and the pews, two seem still to survive in the church, were noticeably simple benches. The altar was a bare wooden table, lacking candlesticks and without a frontal or reredos, its only adornment being three books, most probably the Old and New Testaments and the Prayer Book (Glynne 1877, 93–5; Tatton-Brown 1991).

The significance of what Jenkins was doing is given added colour by looking at his published works and through understanding his family background and what this meant to him. Jenkins' mother Henriette was a German Lutheran, born in London of immigrant parents. With her family, she attended the Lutheran church in The Strand but married in St Marylebone, (the old church at

the north end of Marylebone High Street rather than the current church) and Jenkins himself was baptised there in 1815. This might suggest an orthodox Church of England upbringing, and as an undergraduate, ordinand and then ordained priest, Jenkins may well have run with the temper of the time. This is presumably what led him to a church like Christ Church, Turnham Green. But one can also see that he was very well aware of his Lutheran forebears. In his book *Romanism* (Jenkins 1882), he notes that he is descended from Valentin Alberti, Professor of Theology at the University of Leipzig from 1672 until his death in 1697. Alberti was a strident supporter of Protestantism and polemicist against Catholicism, and by referencing him in his Preface Jenkins seems to be making a claim to be continuing the work of his illustrious ancestor. This work is certainly a vigorous attack on the Catholicism of his day and in no uncertain terms, he was publicly placing himself in opposition to the Tractarian Movement. In a later biography (1889b) of Alberti, Jenkins puts himself quite explicitly in a direct family line, discussing the genealogy at some length. There is a sense in this work of Jenkins taking on the role of defender of Protestantism that had been bequeathed to him. Nor was Alberti the only eminent theologian in his family. Aside from a number of Lutheran clergymen, his mother's uncle was Ernst Wilhelm Hempel (1745–99), first Professor of Philosophy, and later of Theology, at the University of Leipzig. The family seems to have maintained connections with Germany since Ernst Hempel was made godfather to Jenkins' uncle Charles William Hempel (his mother's elder brother) while on sabbatical to London in 1777. His mother too had a German godmother. This all serves to demonstrate a strong 'Low Church' Protestantism, underpinning Jenkins' personal beliefs, and mixed with a sense of familial duty to the Protestant cause.

This evidence is all the more telling given the marked contrast with what was happening in Kent at the time where the number of medieval churches that remained untouched during the Victorian period is in single figures. Elsewhere, work to the interior of medieval churches involved redecoration alongside re-ordering to facilitate a growth in the number of church services and increased attendance. This general trend seems to have had little influence on Jenkins who as Rector could do as he liked, and it is tempting to think that he sought the Rectorship at Lyminge precisely because he could do just as he liked. He would have been well aware of the contemporary tendency towards the ornate 'Anglo-Catholic' aesthetic that sought to re-create the decorated interiors of the Middle Ages. Indeed, he would have had direct experience

of the most extreme version of this only a few miles away in Folkestone, propagated by Matthew Woodward at SS Mary and St Eanswythe and its four daughter churches. Woodward's son-in-law, the vicar at St Peter, Folkestone, was the only clergyman in Kent to be prosecuted under the Public Worship Regulation Act 1874, which sought to control the greatest ritual excesses, so ritualism was a live and contentious issue in the area (Yates 1983, 91–7). Few clergy were unmoved by the changes brought about by the Tractarian Movement, so Jenkins must have been conscious not just that he was moving against this direction of travel but also that through his publications he was being very public in doing so.

The various strands of Jenkins' legacy would appear to suggest that antiquarian interests were significantly more important than theological and liturgical matters in shaping the internal layout and decoration of his church. The removal of the west gallery and the introduction of an organ would have suited his churchmanship rooted in the Lutheran focus on hymn singing. But at the same time, opening up the Norman windows revealed when he stripped the wall plaster, and indeed leaving the walls bare stone rather than replastering them, seem to be more about highlighting the ancient masonry than about enhancing the look of the church. His endeavours inside and outside the church can therefore be seen as a conscious attempt to create a living shrine to Lyminge's foundational status as an early centre of English sainthood and Christianity.

An overview of Jenkins' discoveries

Jenkins' interventions in and around the churchyard were conducted over several years in the 1850s, but it is impossible to establish their extent and location with accuracy (Baldwin 2018). His published accounts refer to work within the churchyard and an adjoining field called Abbots Green to the west, subsequently incorporated into the bounds of the cemetery; the northern part apparently in 1855, and the southern part after the First World War. The division between the Old Churchyard and Abbots Green is fossilised in an internal boundary wall (fig 5). It is convenient to discuss the results of Jenkins' work using this spatial distinction, with the proviso that certain structures appear to have straddled the two areas.



Fig 5. Extract from 1st edition OS map 6-inch series (1876) showing the former limits of the churchyard, Scale 1:1000.

Image: Crown copyright.

Old Churchyard

As recounted in a publication of 1890 casting a retrospective glance over his work, the original spur for Jenkins' investigations in the Old Churchyard was Goscelin's *translatio* narrative.⁵ He initially targeted the flying buttress at the south-east angle of the chancel, on the grounds that it seemed to correspond to the arch described as lying over Ethelburga's tomb (fig 6). However, his attentions were subsequently drawn to a mound of earth beside the south porch, which on investigation yielded the foundations of an apsidal building on parallel alignment with and partially superimposed by the extant parish church. This configuration, and in particular a pair of walls projecting from the north side of the apsidal chancel under the south wall of the parish church, appeared to match Goscelin's somewhat confusing statement that Ethelburga's tomb was located 'in the north porticus beside the south wall of the church'. To accommodate a second tomb mentioned in the translation description, Jenkins imagined the north porticus as a shallow elongated chamber running the full length of the nave, its north wall being on a coincident alignment of the south wall of the medieval church, and its lower courses he identified as being extant fabric of the former (1890, 14; figs 7 and 8).

⁵ The work entitled *Libellus contra inanes sanctae virginis Mildrethae usurpatores* (The little book setting out the case against the foolish claimants of the body of the holy virgin Mildreth). Jenkins says that he read this in manuscript. It was subsequently edited and published by Colker 1977.

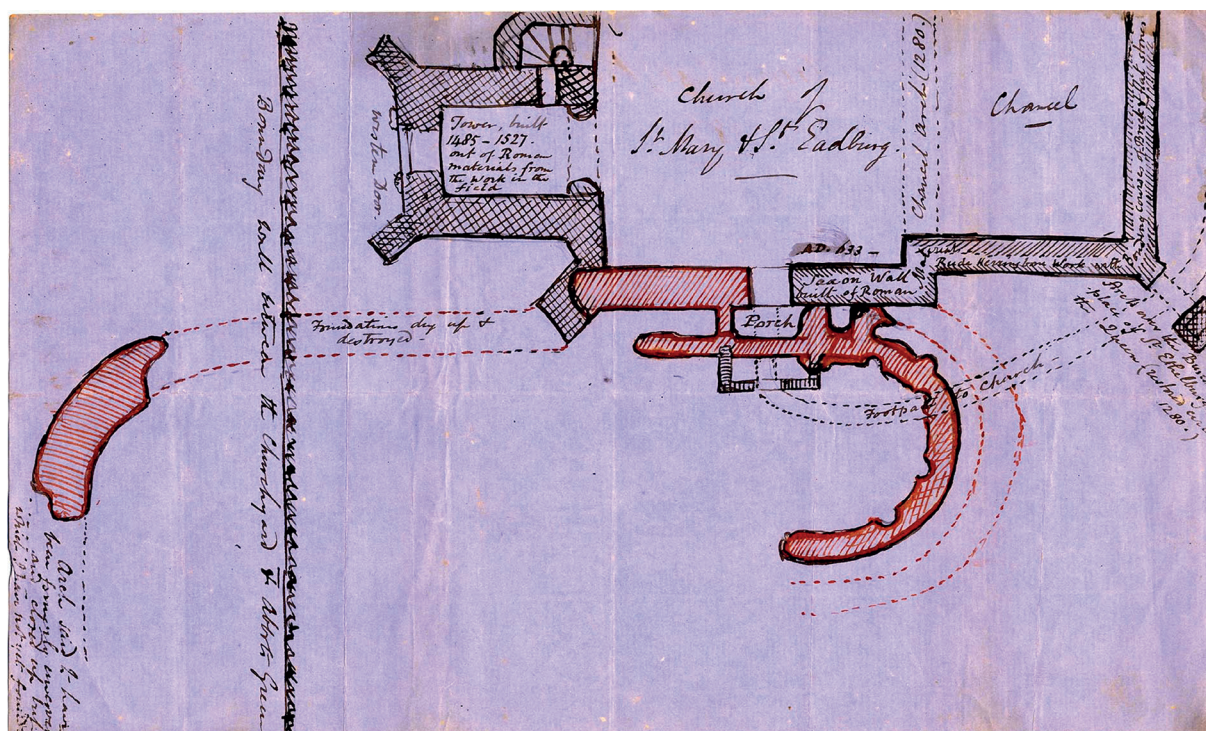
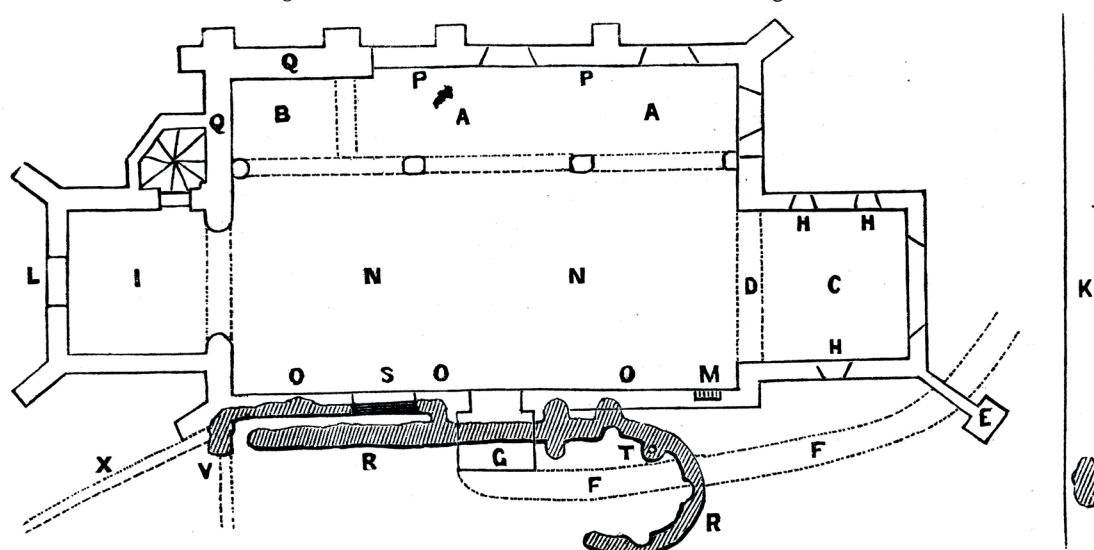


Fig 6. Sketch-plan of exposed church foundations from Jenkins' field notes, c 1860.

Image: from the collection of and © Duncan Harrington.



Ground Plan of the church of Lyminge, with the Roman foundations adjoining.

REFERENCES.

- A. North aisle of church.
- C. Chancel.
- E. Burial place of St. Eadburg.*
- G. Porch of church.
- I. Tower (A.D. 1490).
- L. West door.
- N. Nave of church.
- P. Masonry of A.D. 1470.
- R. Roman work.
- T. Small shallow pit, which was filled with black earth and charcoal.
- B. Site of original tower.
- D. Chancel arch.
- F. Pathway to church.
- H. Saxon windows in chancel.
- K. Churchyard wall containing blocks of Roman concrete.
- M. Recess formed of Roman tiles in south wall of nave.
- O and H. Saxon masonry.
- Q. Wall, apparently Norman.
- S. Ancient entrance, apparently Saxon.
- V. Portion of arch, probably of a drain.

Length of the church, 100 feet.

Fig 7. Plan of exposed church foundations, reproduced from Roach Smith's *Collectanea Antiqua* 5 (Roach Smith 1861, 198).

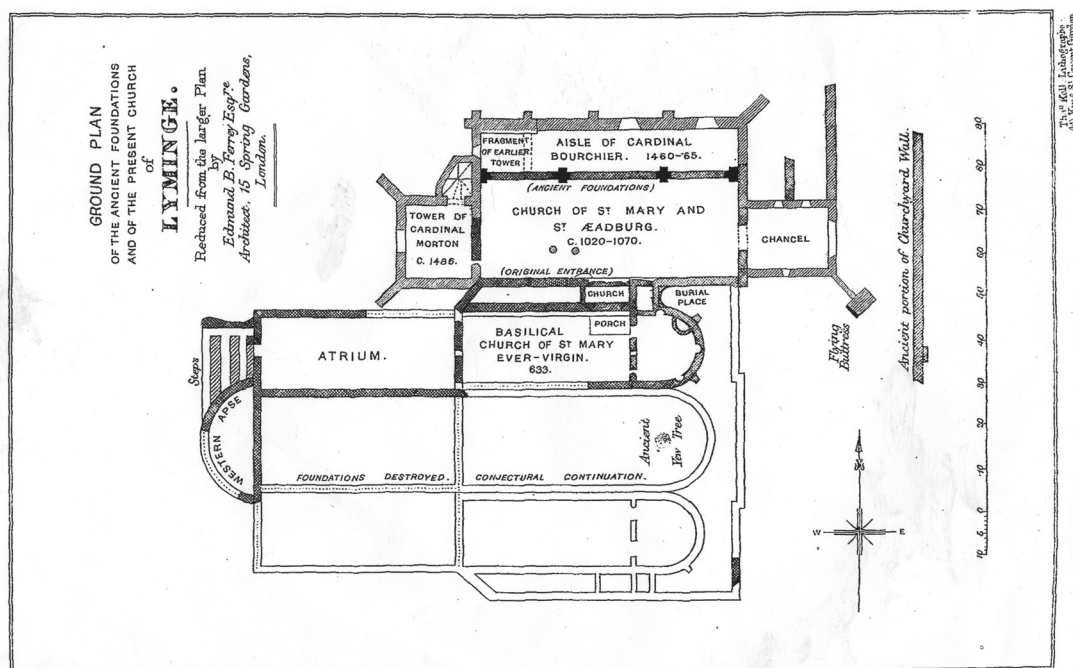


Fig 8. Jenkins' fully developed interpretation of the Lyminge 'basilica'. Image: reproduced from Jenkins 1876, ci.

Jenkins provides more detailed observations on the character of the early church in his various accounts. He notes that the foundation of the eastern apse had:

three recesses in it, and a small aperture formed of the same concrete filled with a dark clay, and apparently a receptacle for the water used in baptism or for some other ritual purposes (Ibid, 8; fig 8).

He also provides tantalising details of the walling material and finish of this structure. Thus, with reference to the projecting cell containing the tomb of Ethelburga, he observes that the walls:

still bore traces of plaster...of the finest lime, mixed with pounded brick (Ibid, 23).

In another publication he provides a fuller description of the construction materials:

There were innumerable fragments of materials taken from a still earlier [building]...portions of Roman roof-tiles, and squared stones, some of them being of an oolite which has never been found in the neighbourhood, except in the Roman work at Dover, and the pillars from Reculver, now in Canterbury (Jenkins 1889a, 50).

Abbots Green

Soon after the discovery of the buried wall foundations described above, Jenkins turned his attention to archaeological remains lying in Abbots Green, then a pasture field beyond the

western perimeter of the churchyard. In his various accounts, Jenkins' observes that extensive standing ruins had formerly covered this field and a second adjoining field, Court Lodge Green, further to the west, but had since been plundered to provide building materials for various construction projects within the village (1889a, 50; 1890, 17).

Jenkins' own interventions focused on a cluster of standing walls and foundations straddling the western boundary of the Old Churchyard, which he explored to a depth of around 8ft (c 2.4m). Left visible for display into the late twentieth century, these structural remains were re-investigated in the early 1990s prior to the area being landscaped for the creation of the present Memorial Garden. Jenkins recognised that the foundations here belonged to different phases, although his dating was wildly inaccurate. He described uncovering the remains of a:

circular apse of the most massive form and structure, built with fine concrete as hard as the stones themselves'... accompanied by 'the foundations of two walls of the most massive construction, and of a very Roman aspect...the northern was in a line with the south wall of the present church, and clearly formed a continuation of it (Jenkins 1890, 15-16).

Jenkins used these results to formulate the flawed theory that he had uncovered the western apse of a large Roman church of basilican plan, the bulk of which extended eastwards under the Old Churchyard, and the north-east cell of which was reconstituted into the smaller Anglo-Saxon

building that he had uncovered to the south of the porch. We shall see that Jenkins falsified the alignment and location of his 'western apse' and its adjacent walls in order to fabricate the illusion of a grand basilican structure (fig 8).

Jenkins also recognised a medieval structural phase in the vicinity of his western apse, described as a vaulted cellar with staired access from which were recovered:

many pieces of squared and carved stone work (both Caen stone and the soft green stone found in the neighbourhood), numerous fragments of encaustic tiles, and an immense quantity of pieces of wall-facing (Jenkins 1874, 217–18).

Jenkins interpreted this structure as either the 'aula' or 'camera' of an archiepiscopal residence responsible for a wider spread of standing ruins formerly strewn across Abbots Green and Court Lodge Green. Jenkins describes one of these as:

a foundation of considerable size, built with a very rude concrete...It was built in the form of a church, and of rude, unhewn stones; but the concrete was so perishable that the whole building, founded only on blocks of chalk and large fragments of the concrete of a Roman building (some of it painted red), fell to pieces by degrees, and has now entirely disappeared (Ibid, 212).

Jenkins' observations on the extant church

Jenkins' view on the origins of the standing parish church were again heavily based on Goscelin's narrative. Formulated as a rebuttal to the theory that the church was built under Archbishop Lanfranc in the 1080s, he argued the case for a Late Saxon date, citing as structural evidence the herring-bone construction and 'crude' workmanship of the early fabric of the nave and chancel (Jenkins 1874, 215–16). Details of Goscelin's translation narrative pertaining to the configuration and architectural setting of tomb are given prominent attention. He identified the cell projecting from the north side of the chancel as the site of Ethelburga's tomb, on the questionable grounds that 'a portion of the arch which once covered it is still existing, even the plaster upon it' (Jenkins 1890, 8). Moreover, he sought to associate the second unnamed tomb mentioned in Goscelin's narrative with a large stone slab (now under an arched recess) in the lower coursing of the outside of the nave to the west of the porch (Ibid, 9; fig 9). The theory that this latter feature represents a remnant of the original shrine, if not necessarily of the tomb itself, has proved to be one of the more resilient aspects of Jenkins' legacy. Subsequent endorsers of a Late Saxon date, including H M



Fig 9. View of arched recess in south wall of nave prior to 2019 excavation. *Photograph:* authors.

Taylor, have elaborated on this identification, arguing that a small opening in the side of the recess penetrating into the interior of the church represents a viewing hole or *fenestella* (Taylor 1969, 259; Tatton-Brown 1991). Our structural reassessment casts significant doubt on this, presenting evidence that Jenkins reconstructed the south wall recess himself as part of a wider scheme of restoration to display his finds and authenticate a connection between the church and Goscelin's *translatio* narrative.

PART 3: RE-EVALUATION: THE RESULTS OF RECENT ARCHAEOLOGY WITHIN THE CHURCHYARD

Re-investigation of Jenkins' discoveries in the Old Churchyard, July–August 2019

Introduction

Excavation within the Old Churchyard followed the lifting of tarmac pathways and adjacent surface drains on the southern and eastern side of the church, which dictated the limits of investigation (fig 10). This embraced areas either side of the porch directly overlying the early church unearthed by Jenkins, which were filled in and re-instated following the decision in 1929 to rebury the structural remains after several decades of being exposed to the elements for public display (figs 11 and 12). Investigation was facilitated by the fact that Jenkins had disinterred most of the medieval and later burials lying within the footprint of the early church. Excavation outside of this area, confined to a series of sondages to reveal and record the foundations of the church, was necessarily more targeted to limit disturbance to *in situ* burials.



Fig 10. Former brick path to south porch revealed under its tarmac successor. *Photograph: authors.*



Fig 11. View in front of south porch before 2019 excavation showing mid-twentieth tarmac path and nineteenth-century niche (with headstones) constructed to display the foundations of the Anglo-Saxon apse. *Photograph: authors.*

General description of the foundations

The apsidal church was represented by sub-floor wall foundations of differential survival (fig 12). Being on the south side of a medieval parish church, centuries of grave digging have taken their toll on the remains, but topography has also had a mediating influence on their survival. The Anglo-Saxon church was constructed on sloping terrain



Fig 12. View of church foundations viewed from the east; the north wall of the nave can be seen running under the south porch. *Photograph: authors.*

at the terminal of a chalk spur forming the western flanks of the Elham Valley, within which the village of Lyminge is cradled. Measurements taken on the surface of the preserved bedrock demonstrate an almost 1m incline in the early medieval ground surface between the west end of the nave (111.52m OD) and the apex of the apse (110.56m OD). This was reflected in a progressive deepening of the foundations west to east, meaning that the chancel was better protected from the degradations of grave digging. Conversely, preservation west of the chancel crossing was much poorer, the nave being represented by incomplete and progressively attenuated north and south walls and a tiny sliver of the west wall foundation.

The foundations were laid within trenches dug down to, and partially into, the underlying chalk bedrock; in newly exposed sections of foundation, including the southern pier of the chancel crossing, the original cut of the foundation trench was observed as a flush exterior face in the bonding mortar (fig 13). The deepest surviving section of foundation at the eastern end of the apse displayed



Fig 13. East face of south foundation pier (16) supporting cross-wall between nave and apse. *Photograph: authors.*



Fig 14. Flint coursing in terminal of apse foundation. *Photograph: authors.*

regular flint coursing indicating that it had been built up in layers, presumably as a measure to maximise strength and resistance (fig 14).

Analytical characterisation of the mortared foundations and their implications

Martin Bell and Gabor Thomas

With notable exceptions (eg tile), the study of ‘Kentish Group’ churches has been devoid of detailed analytical investigations of mortar and other building constituents. This has constrained understanding of these highly distinctive buildings as more than simply an outward expression of a regional architectural ‘style’, but the product of a complex socio-technical regime shaped by people, intentions, responses, skills, knowledge and resources (Dobres 2000; Conneller 2011; Ingold 2013; Thomas and Scull 2021). With this deficiency in mind, full opportunity was taken to recover samples of mortar during the 2019 re-investigation, both for compositional study and for scientific dating. This was facilitated by the discovery of a large, detached portion of foundation derived from the north pier of the cross-wall between the nave and eastern cell (15) (fig 15), which greatly reduced the need for destructive sampling of intact historic fabric.

A ‘mixed method’ approach employing particle-size analysis, the microscopic study of thin sections,



Fig 15. Detached portion of foundation pier (15) recovered for analytical examination. *Photograph: authors.*

and portable XRF for chemical profiling, was used to extract as much information as possible from the recovered samples (Bell, supplementary material). The results demonstrate that the foundation comprises an exceptionally hard ‘pozzolon’ hydraulic mortar with six additives, the most characteristic of which — Roman brick — identifies it as *opus signinum* (Gibbons 1997; Ellis 2002). While the general character of the mortar conforms to *opus signinum*, divergence from Roman practice is evident in the comparative coarseness of the Roman brick and the abundant inclusion of marine shell.

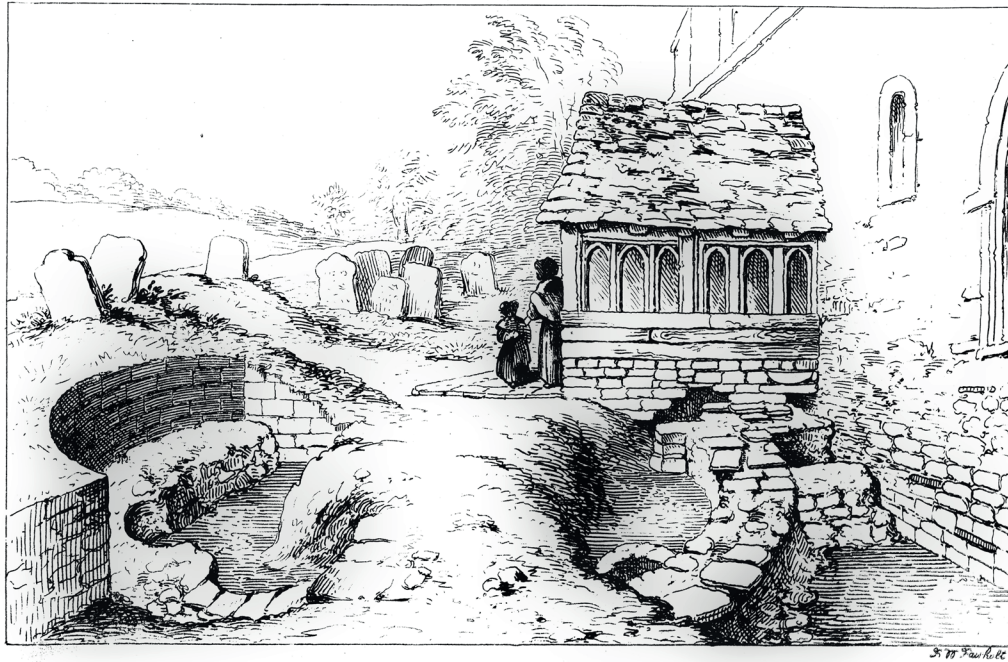


Fig 16. Exposed foundations showing a central pathway of undisturbed earth.
Image: reproduced from Roach Smith 1861, plate XXI.

These results support two key inferences with relevance to understanding the socio-technical practices behind Lyminge and the wider corpus of Kentish Group churches. First, the Roman manner of these buildings sometimes extends below ground to the construction of their foundations, a discovery that promotes new awareness of the techniques and practices through which churches of this period radiated *Romanitas*. This observation can be taken a step further for, as is apparent from distinctions in the recipe of the mortar and the preparation of its additives, Lyminge embodies a distinctive early medieval re-creation of *opus signinum* rather than a precisely executed rehearsal from a classical text. Second is the importance of coastal connections in the creation of these buildings, attested by the marine shell and also rounded flint aggregate, most likely of beach origin. Coastal connections find strong expression in the bioarchaeological assemblages recovered from previous excavations at Lyminge, particularly so in the eighth–ninth centuries supporting the conclusion that marine fish and molluscs formed a significant part of the diet during the documented monastic phase of the settlement (Thomas 2013; Knapp 2017). Overall, the results of the mortar analysis underscore the strong degree that Lyminge’s identity as a Christian royal centre was enabled and asserted through its control over outlying coastal estates (Thomas and Scull 2021).

Eastern apse and associated elements

Before describing the original form of the chancel,



Fig 17. Postcard post-dated 25 Jan 1905 showing exposed foundations with surmounting path with iron display grills. Image: from the collection of and © Robert Baldwin.

it is necessary to document later activity in this structural zone as revealed by excavation. This prelude provides specific insights into the unreliability of Canon Jenkins’ published interpretations and informs an understanding of the commemorative process by which the Anglo-Saxon church was forgotten as a key conceptual issue.

Jenkins’ investigations in the area of the chancel were limited to exposing the outer walls only, to preserve an interior island of earth to maintain the path to the south porch of the church where the main door is still located. A sketch of c 1860 (fig 16) shows this mound of earth was unretained, but subsequently, as part of a more permanent scheme of public display, a U-shaped revetment wall was



Fig 18. View of apse showing nineteenth-century retaining wall. *Photograph: authors.*

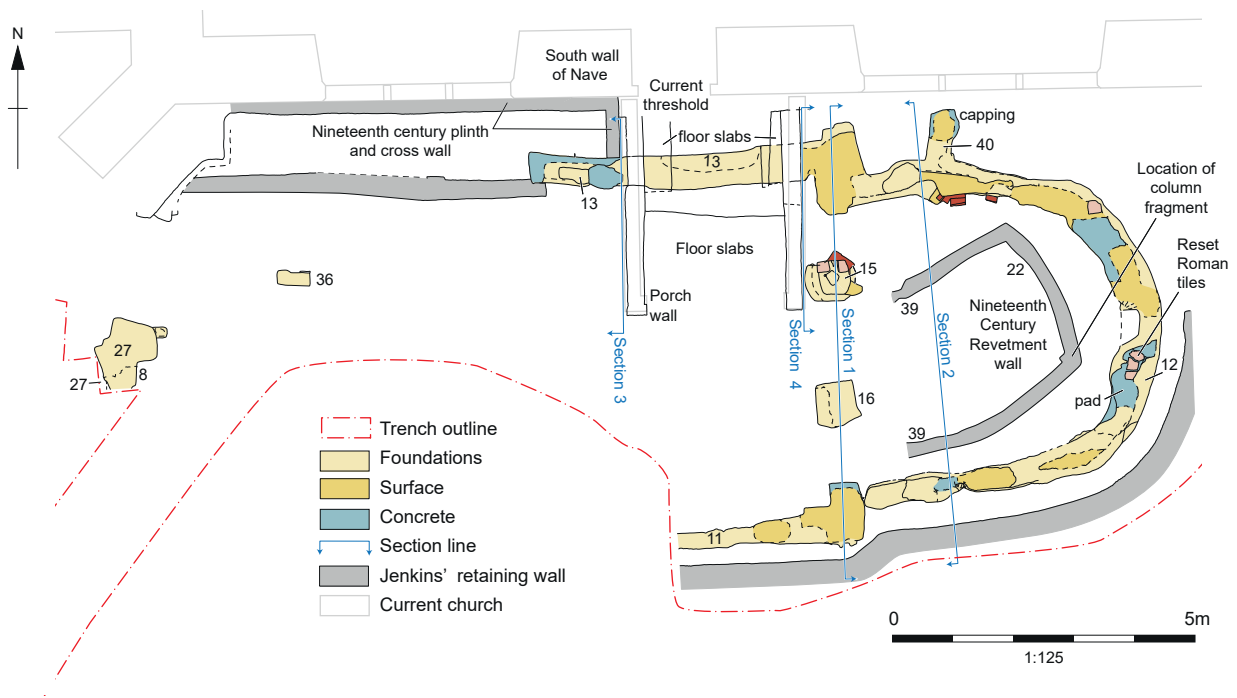


Fig 19. Plan of apse showing location nineteenth-century retaining wall. *Image: authors.*

constructed around it, which acted as a fixing point for iron display grills set within a newly laid footpath (figs 17–19).

This undisturbed central island was recognised as being of particular archaeological significance as

the only preserved stratification within the interior of the foundations, all comparable evidence having been removed by Canon Jenkins' investigations.

Excavation here revealed a series of *in situ* interments disposed in regular north–south rows

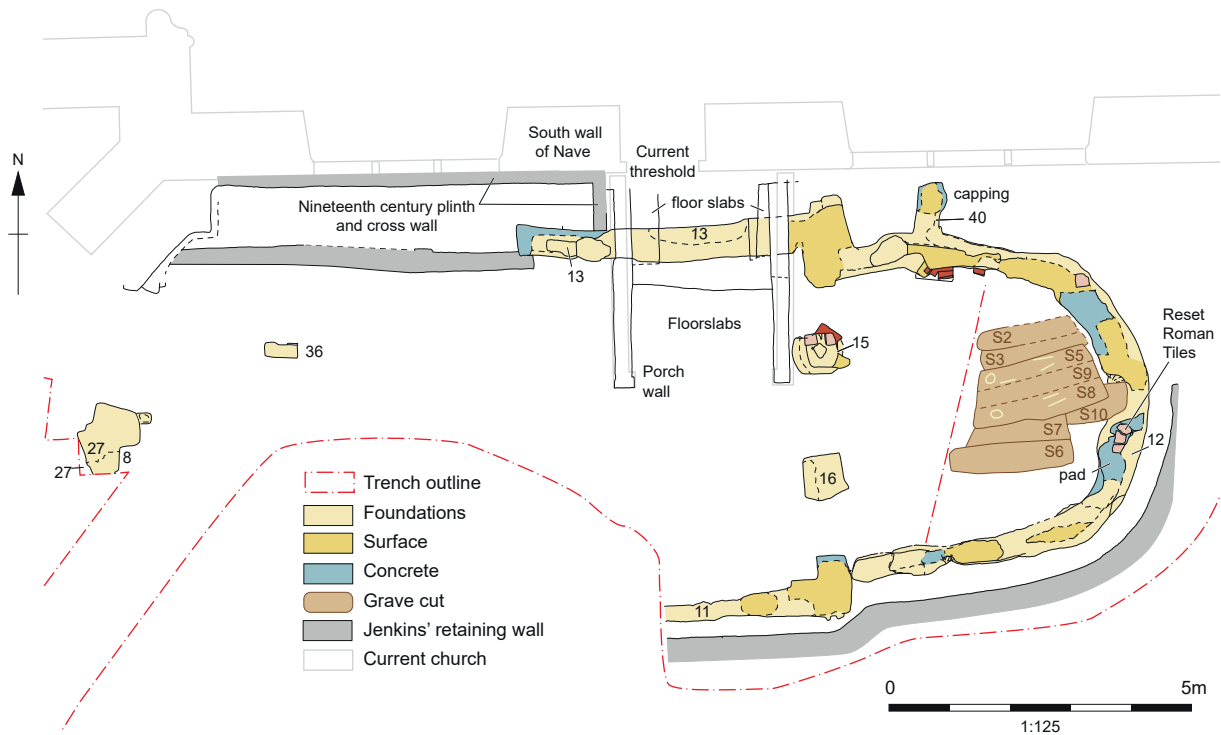


Fig 20. Plan of eastern cell showing location of excavated medieval burials. *Image:* authors.

across the width of the chancel (figs 20 and 21). Permission was obtained to excavate and lift the easternmost row to understand the chronological relationship of the burials to the early church and to establish if any earlier stratigraphy was preserved.

Eight tightly disposed burials were represented in the row, some in a stratigraphically intercutting disposition (eg S8 and S10) and others forming clusters of reinterred remains from previously disturbed graves (S1/S2); no earlier stratigraphy survived beneath the burial row, with the earliest graves cut into chalk bedrock (fig 20). Several sherds of High Medieval courseware pottery were recovered from the grave fills demonstrating that this row and, by implication, those adjacent to it, formed intact remnants of the medieval cemetery with no direct relationship to the Anglo-Saxon church (Brown and Backhouse, supplementary materials). This relationship was further demonstrated by the fact that the east end of two of the graves (S10 and S7) had been cut through the internal face of the curving east end of the apse, resulting in a pair of U-shaped gouges, which, as we have seen, Jenkins sought to explain as integral elements of the early church (fig 22).

We can now turn to the genuine Anglo-Saxon fabric itself. The eastern cell of the church comprised a stilted apse, instepped from the nave, with overall internal dimensions of 4.30m (west to east) and 4.40 (south to north), and with the stilt being carried for a distance of approximately 2.60m



Fig 21. Exposed burials S8 and S10 viewed from the east. *Photograph:* authors.



Fig 22. Burial S10 cut through the inner face of the Anglo-Saxon apse foundation. *Photograph:* authors.



Fig 23. Vertical view of apse taken from a drone.
Photograph: W Wright.

(fig 22). Its width varied from 0.42m at the stilted sections to a maximum of 0.69m at the eastern terminal of the apse; the depth of the foundations varied from 0.58 to 0.7m (figs 20 and 24). While the fabric was generally well preserved, makeshift attempts at consolidation and repair were evident in several places. This included piers of modern brick and reused stone to support undermined sections of fabric and cement patches applied to the exterior faces of the walls (fig 25).

Projecting from the stilted section of the apse's north-wall foundation was a perpendicular wall, measuring 0.82m in length and 0.44m in width, which abutted the south wall of the extant church and had clearly been truncated by it (fig 26). This wall was identical in character and build to the main chancel foundation and can be assumed to be integral to the original construction. No

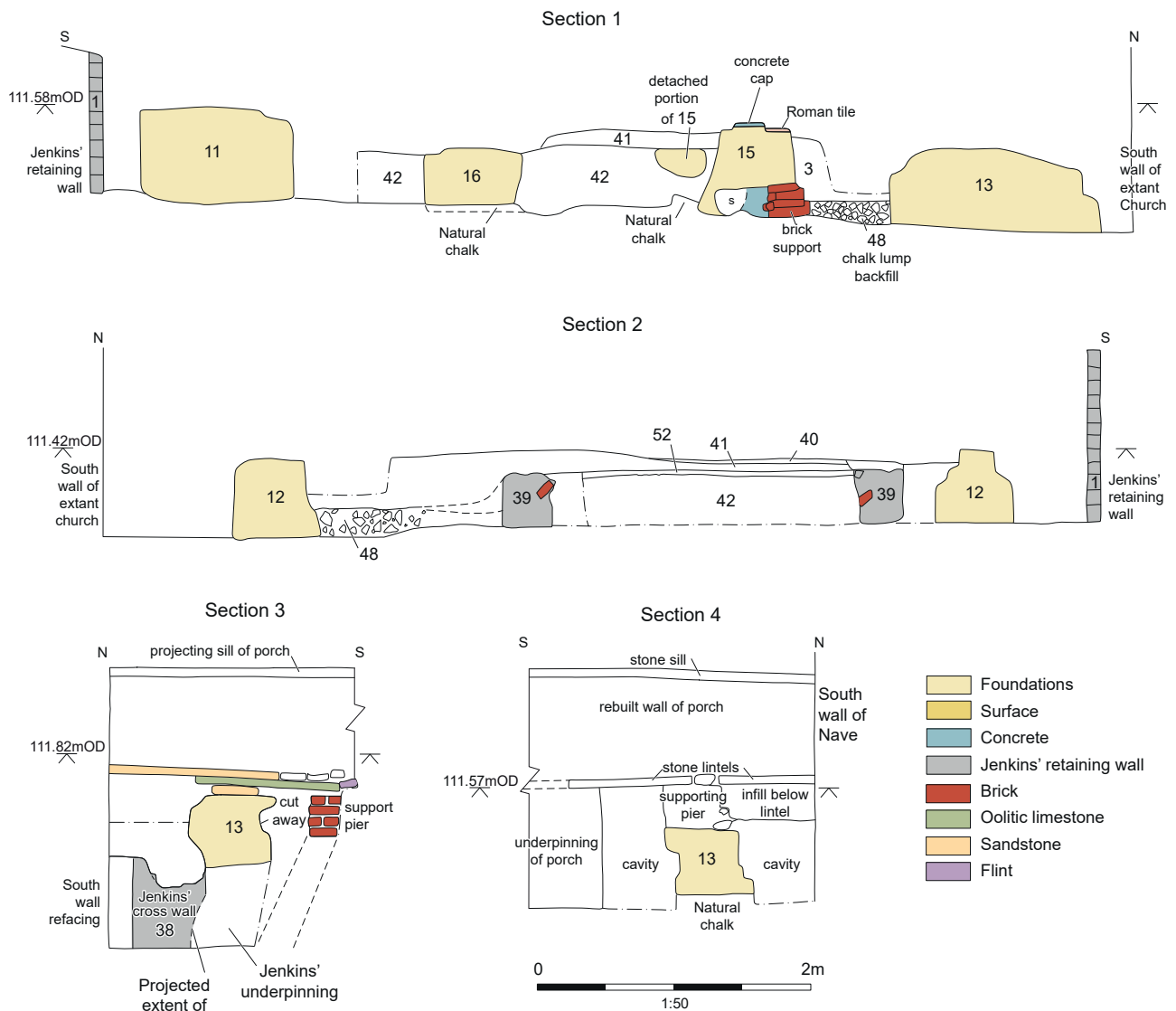


Fig 24. Sections across buried church foundations. Image: authors.



Fig 25. Brick underpinning of portion of apse foundation. *Photograph:* authors.



Fig 26. Fragment of wall projecting from the north side of the apse truncated by the south wall of the nave of the extant church. *Photograph:* authors.

corresponding projection could be seen on the south side of the chancel, but the fabric here was badly denuded by root disturbance (fig 23).

Cross wall between nave and apse

The 2019 excavation clarified the nature of the cross-wall as a notably ambiguous feature of the first church. Some background is needed here to put the results into context. Jenkins' plan shows the crossing as a discontinuous wall, but this must have been based on guesswork because, as we have seen, the central portion of the chancel was obscured by an undisturbed island of graveyard soil used to carry the path to the south porch. Probably as the result of consolidation work on the apse foundations in the closing two decades of the nineteenth century, a discrete foundation pier (15) of square proportions was exposed at the northern end of the crossing; this is noted in the record and accompanying plan of a visit by the Royal Archaeological Institute to Lyminge in 1929 published in its annual proceedings (fig 27). While this encouraged a general acceptance of Lyminge having a triple arcade, in reconsidering the evidence afresh for volume 3 of his *Anglo-Saxon Architecture*, H M Taylor (1978, 742), cautioned that: 'there does not seem to be any satisfactory evidence for this, either from the existing fabric or from the published record of the excavations'.

The 2019 re-excavation finally resolved

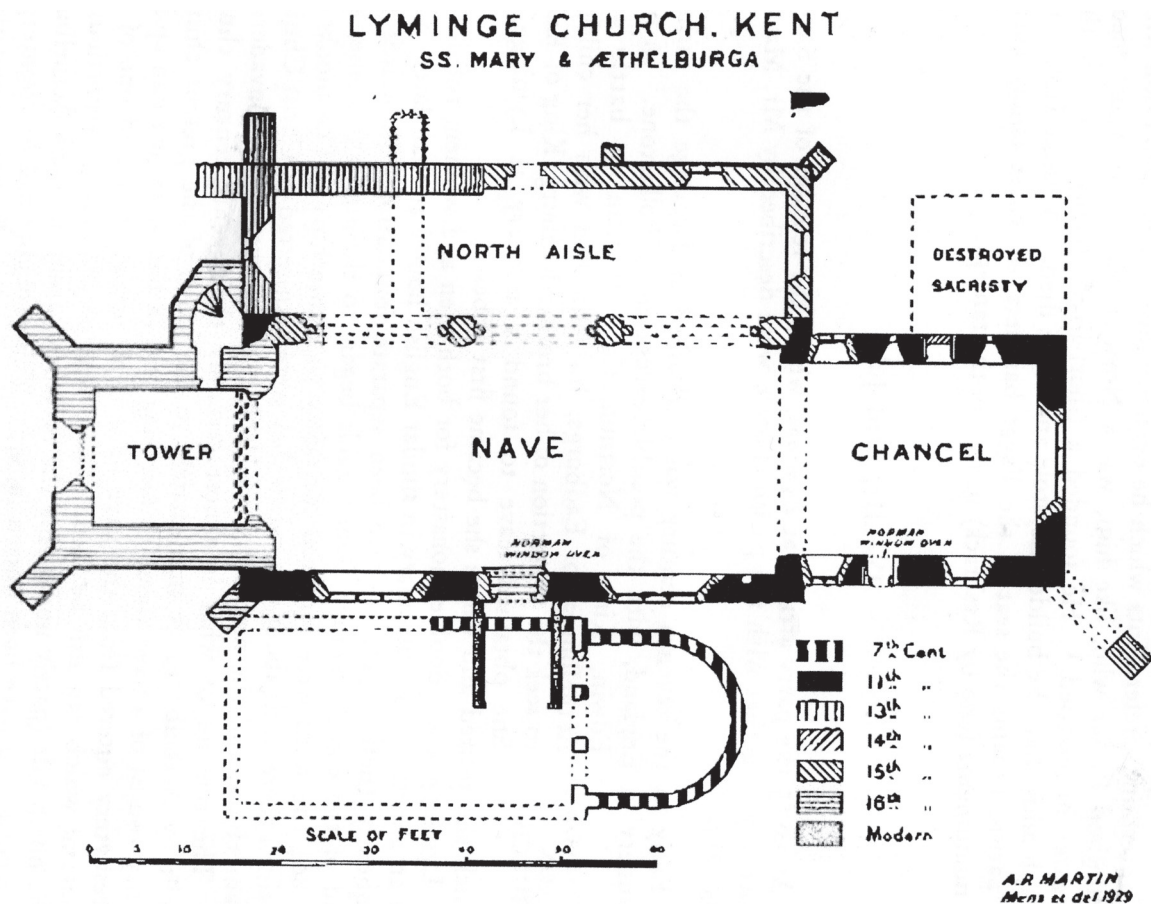


Fig 27. Plan of exposed church foundations as viewed by the Royal Archaeological Institute in 1929. Image: A R Martin, reproduced from Anon 1929, 308.

this by revealing the totality of the cross-wall foundation for the first time. This disclosed a southern counterpart (16) to the previously exposed foundation pier, confirming beyond doubt that the junction between the nave and the apse was occupied by a cross-wall pierced by a triple arcade (figs 20 and 23). Preserved to a height of 0.66m, the north pier was heavily underpinned, though retained an original capping of Roman brick (fig 28), whereas its southern counterpart was truncated from above to a height of 0.42m; both piers had similar, roughly squared, plan dimensions.

Associated finds from the area of the apse

A (re-)discovery of particular significance was a fragment of limestone column recovered from the nineteenth-century retaining wall within the footprint of the apse (fig 29). We can safely surmise that this must be 'a portion of a column of this kind of stone [oolite]', which Jenkins evidently unearthed on the north side of the chancel in the vicinity of [Ethelburga's] 'burial-site' (Jenkins 1890, 13). This is the only piece of sculpture to survive from the Anglo-Saxon church and offers important additional detail on the character and configuration of the triple arcade.



Fig 28. North face of north foundation pier (15) showing recent brick underpinning. Photograph: authors.



Fig 29. Column fragment built into the nineteenth-century retaining wall within interior of apse.
Photograph: authors.

The stone type is pale grey oolitic limestone derived from the Marquise Formation, Boulonnais, northern France. The fragment is broken on three sides with burnt and reddened patches on the preserved outer surface (fig 29). It measures 40cm high, 32.5cm wide and has a reconstructed diameter of 41cm (fig 30). Sufficient survives to demonstrate that it is a fragment of a drum for a column very closely related to the extant examples from Reculver, now in the crypt of Canterbury Cathedral, which are similarly made of Marquise stone (Worssam and Tatton-Brown 1990; Tweddle *et al* 1991, 32–3, 136, 162–3). The columns from Reculver are tapered and a comparison of the diameters suggests that the Lyminge fragment may be derived from an upper section of the column. Blagg (1981) has demonstrated that such columns, once thought to represent Roman *spolia* sourced locally within Kent, belong to a post-Roman context.

A small assemblage of artefacts was recovered from the graveyard soil excavated in the vicinity of the apse. Some of this, including twelve fragments of wall plaster, some with painted surfaces (fig 31), and a quantity of Roman brick, may be derived from the early church. The same contexts also yielded pottery and coinage derived from the general use of the churchyard in the medieval and post-medieval periods (Brown and Backhouse; Holman, Supplementary materials).

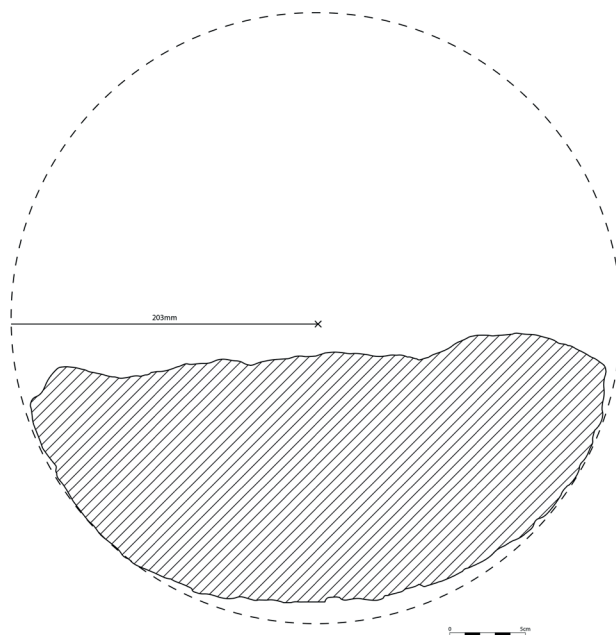


Fig 30. Reconstructed diameter of column fragment based on laser scanning conducted by Lloyd Bosworth, Department of Classical and Archaeological Studies, the University of Kent.
Image: authors.

The nave

The foundations of the nave were much more poorly preserved than those of the chancel, particularly so in the western half. Nevertheless, the results of the re-investigation enable the basic details of the nave, including its dimensions, to be established with accuracy for the first time. Moreover, they shed detailed light on the lengths taken by Jenkins to authenticate his structural interpretations through inventive restoration work. A basic description of the various elements now follows.

The north wall foundation extended for a distance of 4.48m between the instepped junction with the chancel and a fragmentary western terminus, its midportion being superimposed by the south porch of the parish church (fig 19). Projecting from the north-east corner of the nave was the fragmentary stub of a perpendicular wall, measuring 0.24m to its broken tip and 0.5m wide (fig 32). Comparison with Jenkins' field drawing (fig 6) demonstrates that, when first revealed, this fragment was of similar width to the parallel limb projecting from the stilted portion of the apse to its east. The section of foundation west of the porch was heavily restored and underpinned, necessitated by Jenkins causing a trench to be dug along the south wall of the standing church to the base of the foundations, which undermined its shallower southern neighbour (fig 33). Another element of this restoration work was a newly fabricated

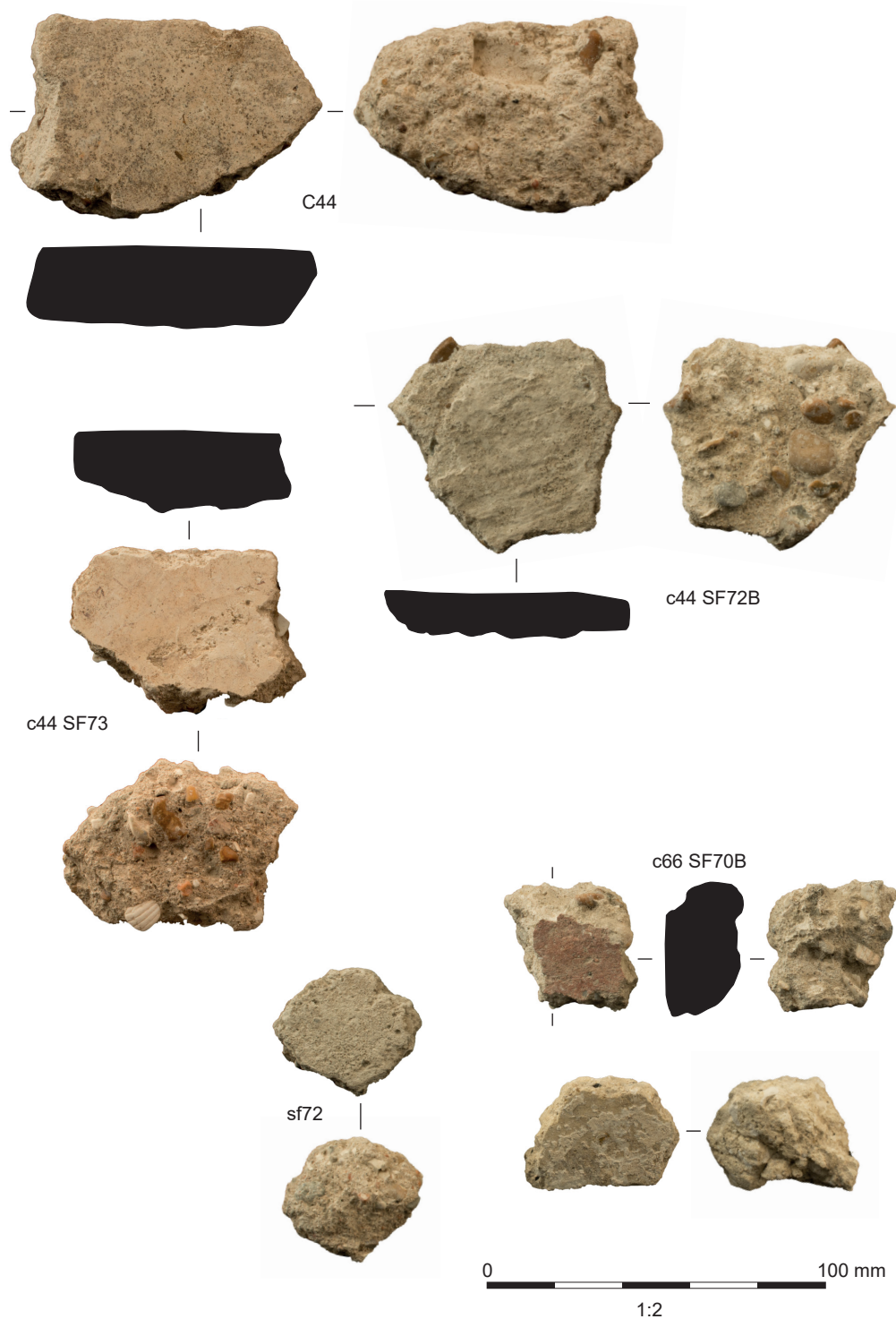


Fig 31. Wall plaster recovered from vicinity of the apse. *Image:* authors.

cross-wall, the nature and significance of which is explained below.

The south wall foundation was traced for 2.53m before running into the undisturbed graveyard lying beyond the limits of the excavation (figs 23 and 34). The recorded portion was badly damaged by grave cuts and was reduced to little more than a denuded core measuring 0.26m wide and 0.28m deep at the edge of the excavation (fig 34).

While there is some correspondence between the north and south wall foundations as recorded in 2019 and Jenkins' various accounts of what he found, the west wall is a different matter. In his published plan Jenkins shows this on alignment with the south-west buttress of the parish church (fig 8). Previous commentators have rightly dismissed this as a contrivance and conjectured a more easterly alignment (Taylor 1969). The genuine



Fig 32. Stub of a projecting north wall at the junction between the nave and apse. *Photograph: authors.*



Fig 33. Foundation of north nave wall, western section. *Photograph: authors.*

position of this wall, and by extension the length of the nave, can now be established with confidence thanks to the recovery of a small portion of the corresponding foundation in 2019 some 2m to the east of Jenkins' alignment. This was no more than a diminutive 0.54m x 0.25m sliver, having been truncated on three sides by graves, although its eastern face was preserved in contact with the chalk bedrock proving that it was in its original undisturbed position (fig 35).



Fig 34. Foundation of south nave wall. *Photograph: authors.*



Fig 35. Sliver of *in situ* foundation (36) for the west wall. *Photograph: authors.*

Structural interpretation

The observations presented above demonstrate that the monastic church at Lyminge was a two-celled structure comprising a rectangular nave, measuring 8.2m x 5.4m internally, with a narrower eastern cell in the form of a stilted apse, measuring 4.5m x 4.3m. The cross-wall between the nave and the apse was pierced by a triple arcade, supported on a pair of squared foundation piers, with a wider central arch (c 1.5m wide) flanked by a pair of



Fig 36. Conjectural reconstruction of church interior showing the triple arcade. *Image:* © Centre for the Study of Christianity and Culture, University of York.

narrower arches around two-thirds the width of the central opening (fig 36). As with other churches of the Kentish Group, limestone columns were employed to support the arcade arches, although it is impossible to determine whether their use here was restricted to the central arch (as at St Mary, Reculver) or also extended to the responds of the outer arches (as at St Pancras, Canterbury).

Owing to incomplete evidence, the most difficult element of the plan to reconstruct is the flanking chambers or porticus, which form a defining trait of churches of the so-called 'Kentish Group'. It certainly had a north porticus, represented by the truncated limb of an east wall. The position of this wall, at the end of the stilted

portion of the apse, indicates that the porticus entered directly into the eastern cell of the church. The form and dimensions of the porticus are less certain because the fragmentary projecting stub at the east corner of the nave's north wall is open to alternative interpretations. It could be the outer west wall, giving a diminutive chamber some 1.27m wide, or a partition wall within a more elongated chamber, which overlapped the body of the nave. Both scenarios find parallels in the wider corpus of Kentish Group churches (fig 37): in its primary structural phase, St Pancras, Canterbury, featured a narrow, 2.4m-wide porticus projecting beyond the stilted portion of the apse, whereas SS Peter and Paul, Canterbury and St Mary, Reculver offer

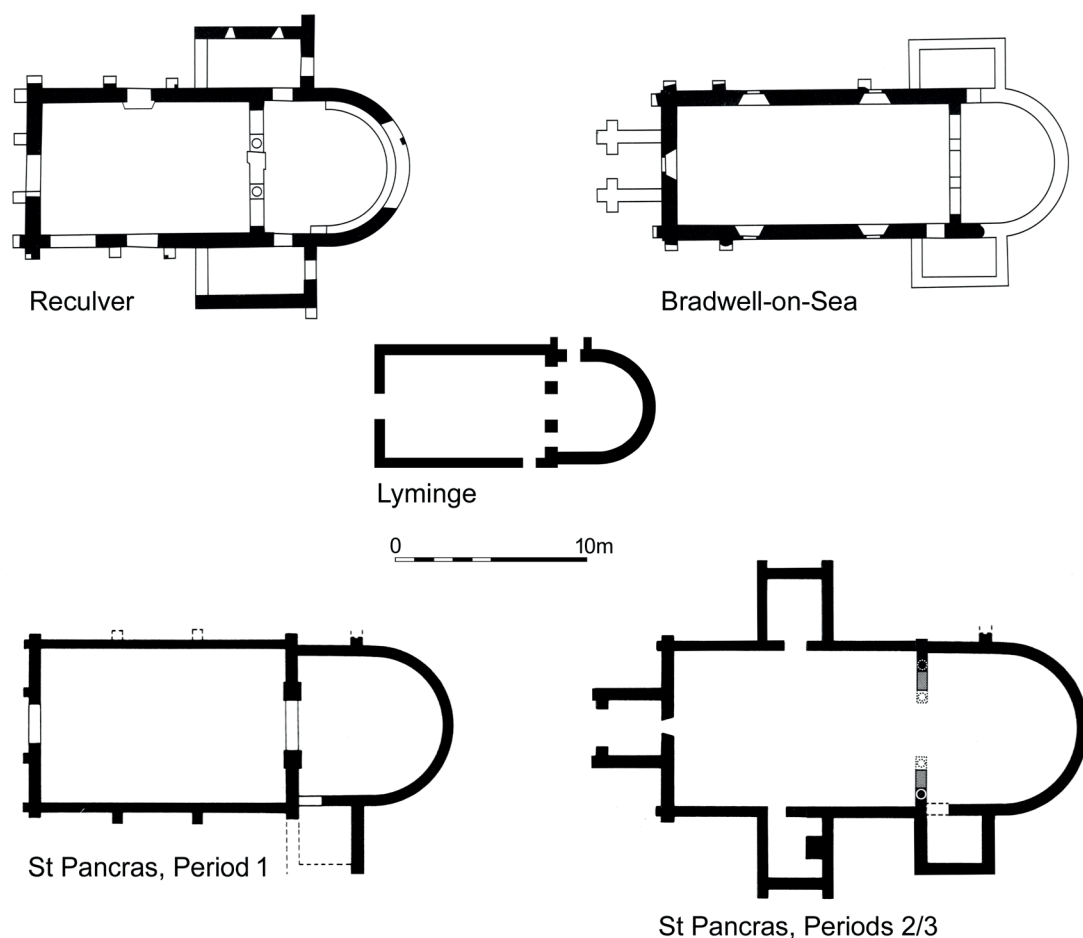


Fig 37. Select comparison of ground-plans of Kentish group churches. *Image:* authors.

good analogies for more elongated side chambers overlapping the nave and chancel, with internal subdividing walls (Gem 1997, 97; Gittos 2013, 149–50).

While the original configuration of the excavated north porticus must remain ambiguous, its position relative to the eastern cell of the church strongly suggests that it functioned as a sacristy, as has been argued for comparably located flanking chambers in other churches of the Kentish Group (Gem 1997, 97; Gittos 2013, 149–50). This location is incompatible with the view advanced by Canon Jenkins, based on Goscelin’s description, that the excavated north porticus now under consideration housed the shrine of Ethelburga, for all porticus with a known burial function represented within the corpus of Kentish Group churches were entered directly from the nave (Gem 1997, 97–106; Gittos 2013, 150–4). This reading is not necessarily irreconcilable with Goscelin’s account, for it is conceivable that the north side of the church was flanked by two porticus, one entered via the nave and one via the chancel, an arrangement paralleled, in mirror form, in one of the structural iterations (Phase 3) proposed for St Pancras, Canterbury (fig

37). The possibility of a second north porticus must, however, remain pure speculation in the absence of surviving structural evidence, an assessment that also pertains to the existence of putative flanking chambers on the other sides of the church.

Significant ambiguities also concern the original walling material of the church. Jenkins’ observations on this issue must be treated with caution given how liberal he was in his interpretation of evidence. Extensive reuse of Roman buildings materials can be safely assumed, but the extent to which this involved squared limestone blocks as described by Jenkins (1889a, 50) must remain an open question given that this material (unlike Roman brick) does not feature in the fabric of the Norman church (Green, supplementary materials). The fragments of wall plaster recovered from unstratified graveyard soils in the vicinity of the Anglo-Saxon foundations can perhaps be related to Jenkins’ description of walling close to ‘Ethelburga’s tomb’, but there are again worrying inconsistencies, not least that the material recently recovered is devoid of the crushed brick mentioned by Jenkins (Poole, supplementary

materials). On the other hand, the character of this material, both in respect to technology and colouration, is consistent with wall plaster of genuine Anglo-Saxon date, so an association with the early church remains a distinct possibility. This view is to some extent supported by fragments of Roman ceramic building material recovered from the same contexts, the character and functional associations of which are typical of post-Roman curation (Mills, supplementary materials).

Independent scientific dating

Two samples of mortar from the buried foundation were submitted for OSL dating, one from the apse and the other from a detached fragment of the north pier of the chancel crossing (16) with the following results: 730 ± 110 (Dur447-1SGqi) and 630 ± 105 (Dur447-2SGqi) (Bailiff and Andrieux, supplementary materials). These results support the accepted view that the church was constructed in the seventh century, although they are not sufficiently precise to narrow this overall attribution to within a century.

Other structural elements

A further fragment of *in situ* wall foundation (8/27), structurally distinct from the apsidal church, was identified in the western extremity of the investigation between the south-east buttress of the church tower and the northern boundary of the Memorial Garden (fig 38). The excavated portion measured 1m wide and 0.43m thick and, as far as can be ascertained from the limited exposure, seems to denote a wall on a N-S alignment. The foundation comprised flint nodules set in a hard lime mortar containing pebble aggregate. As with the foundations to the east, crushed marine shell was used as an additive, although here without an inclusion of reused Roman brick.

Somewhat surprisingly given its location hard up against the extant church, the results of the scientific mortar dating programme place the structure firmly within a later medieval timeframe: 1175 ± 70 (Dur447-4SGqi) (Bailiff and Andrieux, supplementary materials). This raises interesting implications for the wider spread of structural remains in the area of Jenkins' 'western apse', re-examined in the 1990s and to which attention now turns.

Re-investigation of structural remains in the vicinity of Jenkins' 'atrium' and 'western apse'

Background

The re-excavation of the site of Canon Jenkins' western apse beneath the footprint of what is now



Fig 38. Portion of east-west orientated foundation (8).

Photograph: authors.

a Memorial Garden, was undertaken between 27 July 1991 and 17 April 1993. The work was started at the instigation of Tim Tatton-Brown when he was surveying the present church (<https://www.kentarchaeology.org.uk/01/03/LYM.htm>) and encouraged by the then incumbent Revd Frank Kent on behalf of the parish, who wished to see an unsightly part of the churchyard converted for use as a garden of remembrance for cremation burials.

The excavation was undertaken on an occasional basis by a small number of volunteers, principally Pat and Peter Godden and Paul Bennett over a three-year period. Additional assistance was provided by Lyminge resident and local historian Duncan Harrington and by members of the Dover Archaeological Group. A final phase of site recording was undertaken by Keith Parfitt and Barry Corke in April 1993, shortly before the excavation was backfilled and laid out as a garden of remembrance.

The earliest phase of work was exceptionally arduous with the removal of self-seeded trees, saplings, bushes, and thorny vegetation that had been allowed to fill the Jenkins' excavation for perhaps a century. The exposed remains of the western end of Jenkins' 'atrium' and 'western apse' were originally contained by a wrought-iron fence that had mostly been overgrown. Almost certainly commissioned by Jenkins for display of the remains and although badly decayed and distorted, the fence was retained throughout the period of fieldwork as a security barrier. Nesting birds, lizards and frogs inhabited the area, and a process of gradual vegetation removal was adopted to allow these to migrate. There were extended periods when no work took place and once vegetation had been removed the site was invariably covered with plastic sheeting between work episodes.

The excavation area, measuring approximately 10.5m N-S by 10m E-W, was heavily root-infested and great care was taken during the removal of vegetation from surviving masonry remains (fig



Fig 39. View of 1991–3 interventions in progress. *Photograph: authors.*

39). It was often best to cut well-established trees and saplings close to walls, but not attempt to remove embedded roots. Extended gaps between work episodes, together with the covering of the excavation with sheeting, allowed some root die-back and subsequent removal, but in the main, tap roots remained *in situ*, with some of the larger roots ‘copper nailed’ to prevent regeneration. Clearance of the vegetation took many Saturdays and serious excavation did not begin until the spring of 1992.

Objectives

Our objective from the first was to expose, record and re-evaluate all that remained within Jenkins’ excavation without extending into undisturbed ground. Several graves had been cut close to, and even within, the former excavation and these were protected and remained undisturbed (2, 14–17 and 25). We were keen to uncover the masonry walls recorded by Jenkins and particularly any surviving evidence for his ‘atrium’ and ‘western apse’, together with surviving stratified deposits potentially containing dating evidence.

In the event, even though the excavation was in places filled with a significant depth of aggregated soil, mixed with stone debris from the surrounding walls (1), with some stone blocks of exceptional size, we found that the area had been excavated to chalk bedrock, which in turn had been the subject of long-term erosion and damage by roots (29, 32).

Some animal disturbances, perhaps rabbits, was also evident (34, 36, 37)

However, substantial masonry walls survived at the base of the cutting to the east (40, 41, 42) and wall fragments, including a section of curving foundation (38), and a stone paved step (39), survived against the higher west side of the excavation (figs 39 and 40).

Several undated, shallow, postholes (5, 7, 11, 12 and 27) were found cutting into chalk bedrock, mainly against the north side of the excavation, together with a deep sub-circular pit (4).

Description of the structural elements (fig 40)

The structural remains comprised a series of foundations of multiple constructional phases, the earliest of which corresponds with the western end of Jenkins’ E–W ‘atrium’ (phase 1 building), post-dated by a curving section of wall to the south-west (Jenkins’ ‘western apse’). The re-excavation showed that the early building was the subject of a major rebuild to form an undercroft (phase 2 building), incorporating a central door in a newly built west wall, accessed by steps descending from the west (also discovered and described by Jenkins). The steps and rebuilt west wall were found to post-date the curving wall, contradicting Jenkins’ phasing and interpretation, which assume contemporaneity of the structural elements.

Fig 40. Plan of structural features re-investigated 1991–3, now under the Memorial Garden. Image: © David Holman.



The period 1 building

The earliest structural remains appeared to comprise substantial north and south walls (40 and 41) for a rectangular or square building, measuring externally 6.90m N–S, excavated to an E–W width of perhaps 4.20m. A west wall (42) was present but taken to represent a rebuild of an earlier wall, re-located slightly further west of the original and extending the E–W extent of the building to 5.50m. An east wall, if present, lay outside the excavation.

The surviving walls were surrounded by several declivities or steps cut into bedrock during Jenkins' excavation or subsequently, grading downwards from west to east (3, 9, 20 and 30). Although the irregularly stepped profile of the excavated area was probably formed by workmen seeking to expose and define the masonry walls, the early foundations may have been constructed within a large rectangular cutting or pit (9, 30) measuring approximately 8.5m N–S by at least 6.5m E–W, that was overlooked or misinterpreted by Jenkins at the time of his investigation. The base of both walls lay 1.5m below the surface of natural chalk to the north and west, and 1.0m below the surface of natural chalk to the south, with no trace of an internal construction trench for either wall. Between the two walls was a truncated, flat, natural chalk surface that was traced horizontally below the lowest

structural course of walls 40 and 41.

A deposit of rammed chalk (28) capped the truncated natural chalk at the junction of walls 40 and 42, overlying part of the sub-foundation of wall 40 (see below). This suggested that the rammed chalk was laid over a previously truncated natural surface during or after the construction of wall 40. The chalk deposit was cut by wall 42, clearly indicating that it was of later build (see below).

Walls 40 and 41 were of near identical build, formed of large, slab-like, rough-cut (or selected) greensand blocks laid in up to three built courses over a sub-foundation of large blocks and boulders (some water-rounded and possibly of coastal derivation), all bonded with a mixture of cream-white chalky mortar but including 'pockets' of rammed chalk, the latter perhaps residue from layer 28 (see below).

Only wall 40 was fully excavated, built over a sub-foundation 1.5m wide, with a 0.40m wide external offset between the sub-foundation and the first building course. Wall 41 was built with a modest external offset 0.15m to 0.20m wide. Both sub-foundations were formed with large stones or boulders with an external straight edge, set parallel to one another and some 7.45m apart. There was no obvious internal facing to either wall. The external face of both walls was fashioned with selected,

straight-edged blocks, with the walls set parallel and 6.90m apart.

Possible buttresses

Against the excavation's east section, at sub-foundation level for walls 40 and 41, were traces of extended footings (18 and 45), positioned 3.20m and 3.70m east of the north-west and south-west corner of the building respectively. The footing to the north (18) was cut by a modern grave (17) and was not investigated. That to the south lay mostly outside the excavated area. Both foundations may have been for small, perhaps pilaster-type, buttress built at the same time as the main walls.

An early west wall

The west end of both walls terminated with large basal blocks, arguably larger than any other used in either wall, interpreted as quoins for a wall return. The basal block at the west end of wall 40, measuring some 1.10m by 0.80m, was surmounted by two courses of stone forming a possible north-west corner, with equidistant offset to the north and west. The west end of wall 41 terminated with a substantial basal block measuring 1.15m by 0.80m, surmounted by two courses forming a right angle and possibly an external south-west corner. If this interpretation is correct, then the large basal blocks mark the line of an original west wall for the early structure and the western ends of walls 40 and 41, retained surviving external corners for the west end of the period 1 building.

Internal platform

Although walls 40 and 41 were provided with external offset sub-foundations, in line, and with a well-formed external wall face, the internal faces of both walls were ragged and poorly defined and included 'pockets' of rammed chalk taken to represent residue from a later deposit (28) and not part of a 'bonding' material. This perhaps suggests that the interior of the structure, above natural chalk, was infilled with a stone and chalk rubble platform, retained by masonry walls to the north, south and west, finished only on the external face, and carried up to an unknown height.

Whilst the entire structure may have been formed in masonry, the walls and platform may have been designed to carry a timber frame, set at or just above contemporary ground level. Whatever the case, a limited remnant for a possible chalk rubble platform (28) was found abutting the edge of wall 40. The deposit, 1–5cm thick, of small chalk nodules on average 1–2cm in diameter mixed with off-white powdered chalk, capped two boulders forming part of the wall sub-foundation. Powdered chalk at the junction of walls 40 and 42,

probably part of the same deposit, was cut by wall 42, suggesting that wall 42 post-dated the deposit and was later than wall 40 (see period 2 building, below).

The curving foundation

An isolated masonry fragment showing a slight curvature (38) was identified to the south-east of the period 1 building. As no stratified deposits survived in association with the wall, which was isolated on a platform of natural chalk and disconnected from the phase 1 building by later features and a series of erosion hollows, the interpretation and phasing of the wall is difficult to establish.

Wall 38 was 1.22m wide, formed of slab-like greensand blocks with occasional flints and chalk lumps, set in a hard cream-white gritty lime mortar with occasional small chalk fragments and frequent orange-brown flint pebbles on average 3–5mm in diameter. Only a short section of the wall 1.90m long and 0.63m high survived *in situ*. The wall, shallow-founded, barely cutting into natural chalk, survived to three stone courses, and had well-formed near vertical faces curving slightly from south-west to north-east. To the north-east was a collapsed lump of the same wall and to the south-west a slight hollow in the natural chalk for either a construction or robber trench (19).

The curving wall (38) and the phase I building with later west wall (42) almost certainly equate with the Jenkins' 'atrium' and 'western apse', with the projected line of the curving wall meeting the phase I building approximately midway along the west wall. However, the excavated evidence does not reflect Jenkins' interpretation of the wall relationships, which he believed reflected contemporaneity. Rather, the curving wall (38) post-dated the phase 1 building, and although it may have been built to meet the original east wall, the curving wall not only pre-dated the later west wall (42) but was probably cut by it.

The foundation was of significant size and although shallow-built, was probably constructed to carry a wall of some height. Fabric at the truncated south-end of the wall was built into a slight hollow (33), perhaps resulting from the removal of a tree or sapling immediately before the wall was built.

The wall was of different character and build to the phase 1 structure, formed with more chalk and flint, and with stones of modest size, all bonded in a hard lime mortar, possibly consistent with a later Anglo-Saxon or post-Conquest date. The purpose of the wall and its relationship with the phase 1 building remain enigmatic, but it is certain that the curving wall does not represent a 'western apse'.

The phase 2 building

At some point in time, the original west wall of the period 1 building was entirely removed, together with the internal rubble platform, perhaps to form an undercroft beneath the period 1 building. At this time, a new west wall was constructed (42) with centrally located doorway (44), and three steps descending from the west cut into the natural chalk (31, 39, 43), perhaps originally provided with rubble stone treads, of which one survived (39).

The north-west corner

The original west wall was built immediately over truncated natural chalk, within a substantial pit formed to construct the phase 1 building. The removal of the wall left no trace, but large sub-foundation boulders incorporated into the western terminals of wall 40 and wall 41 have been interpreted as quoins for the early wall. Built courses above both quoins preserved a wall return (north-west and south-west corners), the former exhibiting a wide offset to the north and west, and the latter a near vertical west face to the south and west.

The new wall (42) was built approximately 1.5m to the west of the external face of the early west wall. A sub-foundation of small, roughly squared blocks was laid against the western quoin of wall 40, on-line with the built face of that wall and set back from the northern edge of the sub-foundation by 0.25m. The new foundation was surmounted by two substantial roughly squared stone blocks, the first forming a new quoin and north-west corner, and the second continuing the wall face and overlapping the western offset for the earlier quoin. Between the eastern edge of the second block and the west face of the surviving north-west corner, was a flat stone pitched vertically with lower face resting on the earlier quoin foundation and east face abutting the early corner. To the south was a third large block laid as a foundation for the new west wall. Only the rebuilt north-west corner survived to two courses, and these appeared to have been dry laid or had lost any bonding mortar. The remaining part of the rebuilt west wall foundation was formed of small fragments of stone, flint and chalk, all bonded in off-white lime mortar, for a wall approximately 0.90m wide.

Removal of the internal platform

Construction of a new extended west wall was probably associated with the removal of an internal platform formed during the construction of the early building and perhaps more than 1.5m in thickness at the time of removal. The platform, retained by substantial walls to the north and south was perhaps excavated during the phase

2 work, following removal of the phase 1 west wall, to form an undercroft below a standing building. This arrangement can hardly have been more than rudimentary, as there was no evidence to suggest that the internal faces of the north and south walls were made good at this time. Moreover, had masonry walls been carried up to any height over the early foundations, removal of the platform is likely to have severely weakened a masonry superstructure. This perhaps supports the suggestion that the masonry foundations carried a timber-framed superstructure. A rammed chalk deposit (28) taken to represent a remnant of the platform, was found *in situ* against the internal face of wall 40 and 'pockets' of rammed chalk identified in the ragged internal wall faces may also have been residue from the platform.

A west door

The foundation was interrupted by a shallow cutting, interpreted as a doorway 1.25m wide (44). A northern jamb was defined by fist-sized stone fragments bonded in a hard white mortar and an opposite jamb by a poorly preserved foundation of mortar-bonded ragstone and chalk lumps. The shallow hollow 1.10m E-W cut to a maximum depth of 0.04m, may have been formed by use, but could equally have been filled with a stone threshold, set at the level of natural chalk. The southern part of the west wall and the south-west corner of the extended building were missing, perhaps destroyed by tree roots (29 and 32) and erosion.

Steps

To the west of new west wall and doorway were two cut hollows in the natural chalk (31 and 43), separated by a third hollow, surfaced with a paving of flat stones (39). The hollows were taken to represent steps descending from the west to access the undercroft through the doorway. All three steps may have originally been paved, to approach a door, which may also have had a paved threshold (44).

Although nothing was found to directly connect the section of curving wall with the primary building, it is likely that the phase 2 rebuilding, with new west wall, steps and door into an undercroft, cut the curving foundation (38). On balance, the evidence suggests that construction of the curving wall post-dated the early building and predated the rebuilding. The function of the curving wall remains unknown.

Steps appear in Jenkins' plan north of his 'western apse' and west of the 'atrium', together with a door set centrally in the west wall of the 'atrium'. In the plan, the stairs are flanked to the north by an E-W aligned retaining wall and the

north side of the door is shown with an extended external jamb.

The retaining wall and extended jamb were not found but stairs were present, although of modest size compared with Jenkins' plan. The curving wall was found to have been cut by the steps and did not extend to meet the west wall as suggested by Jenkins. Therefore, although the components of Jenkins' plan are present, the relationship between them, their phasing and size, have been misinterpreted and exaggerated.

Structural interpretation

The structure represented by walls 40 and 41 was a substantial building, apparently constructed within a large flat-bottomed pit, cut 1m to 1.5m below the contemporary ground surface. While the eastern end of the building lay beyond the limits of the excavation, the positioning of contemporary buttresses at the mid-point of the north and south walls can be used to argue the case for a square building of 6.90m. The substantial nature of the foundations, incorporating an internal platform of chalk and stone rubble, taken up to contemporary ground level or above, strongly suggests a freestanding superstructure, possibly a tower, of either timber or stone. The later removal of this platform to form a rudimentary undercroft below the early building suggests a timber superstructure is the more likely.

The section of curving wall identified south-west of the early building is almost certainly part of Jenkins' 'western apse'. However, the curving wall was proven not to meet the west wall of the 'atrium' as suggested by Jenkins, but rather had been cut by steps that also feature on Jenkins' plan. This formed part of a rebuilding of the west wall, which incorporated a central door, also shown by Jenkins. The curving wall was built, for an unknown purpose, after the phase 1 building but before the phase 2 rebuilding.

In a major rebuild, the interior platform was removed, and the western wall reconstructed west of the original alignment incorporating a central door. Steps were formed west of the west wall to access a newly formed, rudimentary undercroft, presumably beneath the putative first-phase tower.

Jenkins assumed that the steps were formed descending from west to east, to approach the opening in the west wall to give access to the internal space formed by the three walls. Only one step survived, and it has been speculated that this may have been paved by Jenkins to provide access for public viewing.

Jenkins mentions a 'vaulted cellar' with stair access in the vicinity of his 'western apse', which he ascribes to the medieval archiepiscopal residence

based on the recovery of:

many pieces of squared and carved stonework (in both Caen stone and a soft local green stone), numerous fragments of encaustic tiles, and an immense quantity of pieces of wall-facing (Jenkins 1874, 217–18).

However, material of this type was not found during the re-excavation. Nor were there traces of a floor bedding or evidence to suggest that the undercroft formed part of a 'vaulted' structure. While this would seem to argue against a connection, the nature of Jenkins' work needs to be taken into account. His clearance of the investigated area was systematic and wholesale, leaving only standing fabric and exposed chalk and it is just possible that all portable remains were removed during the excavation. The site remained open for many years, and it is conceivable that residual traces, had there been any, could have been removed by weathering, vegetation growth and perhaps trophy collectors.

On balance, whilst it is possible that the exposed internal face of the excavated platform may have been faced in squared blocks of stone or even a thick lime-cement render, and that the natural chalk surface may have once been covered with an encaustic tile pavement, such a speculation is considered highly unlikely. A tile floor would have been bedded on mortar and no trace of mortar bedding survived. Similarly, had the interior of the undercroft been faced with any form of stonework or render, then at least a trace of this would have survived. Finally, had worked stone, wall-facing and traces of an encaustic tile floor been incorporated in the undercroft, then this would imply that the 'vaulted cellar' was built in the later twelfth century or beyond, and whilst this is not impossible, on present evidence it is unlikely, and the 'vaulted cellar' should be sought elsewhere, perhaps nearby to the south.

Dating of the structural elements

Given the absence of datable cultural material and associated stratification, it is difficult to place this constructional sequence within a chronological framework. Aspects of the construction technique are nevertheless suggestive. The style of foundation used for the rectangular building comprising substantial stone blocks can be paralleled in some later Anglo-Saxon buildings at Canterbury (eg the churches of St Mildred and St Dunstan — Tatton-Brown 1994, 190–203) and parts of the late *westwerk* of St Saviour Christ Church (Blockley *et al* 1997, 18–22), all dating from the early to mid-eleventh century. This style is very different to the foundations used for the seventh-century church

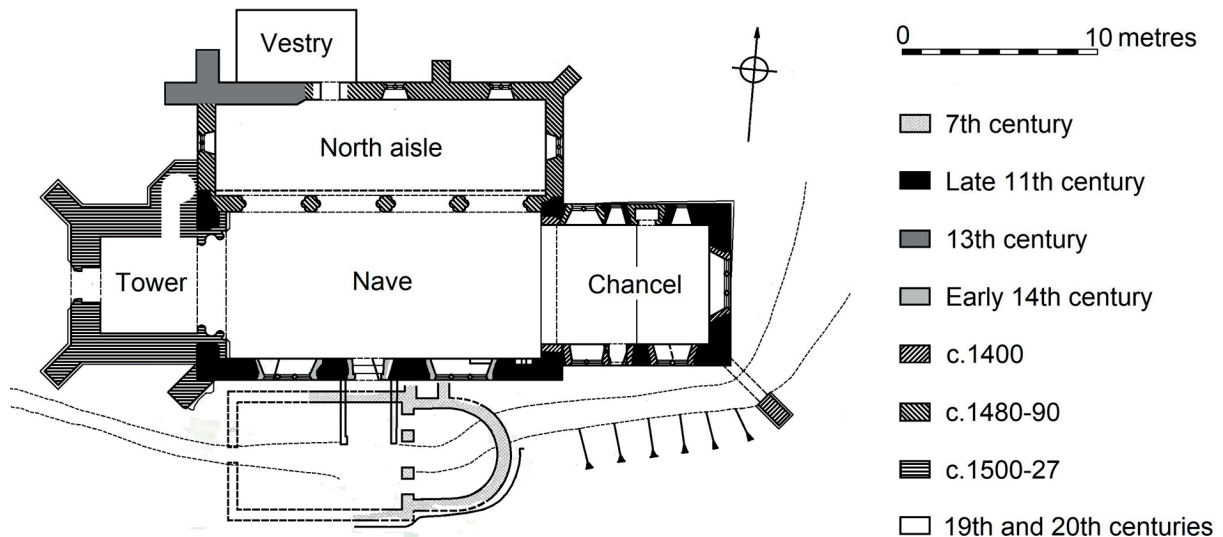


Fig 41. SS Mary and Ethelburga, Lyminge. Phased plan of the Norman and later church shown in relation to the foundations of its Anglo-Saxon precursor. *Image: Daniel Secker*

and indeed the extant (Norman) parish church. Construction of the curving wall may also be of eleventh-century date or potentially later. The later lowering of the platform, rebuilding of the west wall with door and formation of the steps, may perhaps be of later eleventh-century date, but could be much later. If the formation of a rudimentary undercroft beneath the early building can be equated with the ‘vaulted cellar’ described by Jenkins, then the building may date to the later twelfth century or beyond. This is consistent with the independent scientific dating of the fragment of N–S foundation to the east (8/27), although it is by no means certain the two are structurally related.

Structural analysis and reappraisal of the standing church, by *Daniel Secker*

The Norman church, now dedicated to SS Mary and Ethelburga, is situated immediately to the north of the site of its Anglo-Saxon predecessor (fig 41). The date of the earliest fabric of the present church has been disputed. In an account of the 1960s, Edward Gilbert ascribed it to Dunstan, Archbishop of Canterbury from 960 to 988 (Gilbert 1964). Tim-Tatton Brown (1991), however, regarded it as a post-Conquest commission of Lanfranc, citing the use of Quarr stone quoins. Recent analysis has however suggested the dressings are of Binstead stone (Green, supplementary materials). Otherwise, this writer follows Tatton-Brown. In every aspect, namely round-headed windows of dressed stone with fully radial voussoirs, small side-alternate quoins and thick walls, this is an early Norman and not an Anglo-Saxon structure. The focus of this section is the Norman church,

its context and comparators. It is however a multi-period building. The post-Norman phases were described by Tatton-Brown (1991). While this writer broadly concurs with his phasing, there are some disagreements on the fine details. A revised phasing, excluding the Anglo-Saxon foundations, is offered here:

Phase 1. Late eleventh century. Large two-cell church. This is described and discussed in more detail below.

Phase 2. Thirteenth century. Remains of a lateral tower formerly abutting the western part of the nave north wall, evidenced by the thickness of the western part of the north aisle wall (Tatton-Brown 1991). The massive buttresses at the north-west corner of the aisle are best explained as intended to support a tall structure.

Phase 3. Early fourteenth century. Decorated windows in the nave south wall and south doorway. Tatton-Brown (1991) dates the windows to the late thirteenth century. The intersecting tracery and cusped cinquefoil heads are however suggestive of work of a generation later, perhaps *c.* 1320. The plain two-centred south doorway is probably contemporary.

Phase 4. *c.* 1400. Chancel east and south windows, priests’ doorway, rebuilt chancel arch. The east window is stylistically earlier than the Perpendicular work of the nave north arcade. A similar window at Holy Trinity, Bradwell-Juxta-Coggeshall, Essex, is dated by a contract of 1389, though comparable windows occur up to *c.* 1450 (Rodwell 1998, 92). The windows in the chancel south wall at Lyminge, with their depressed two-centred heads, are also early Perpendicular in form. The four-centred priest’s doorway in



Fig 42. St Mary, Brook, Kent. Chancel arch of c 1096–1107. The Early English east window is probably a modified Norman opening. Image: © Michael Garlicke, <https://creativecommons.org/licenses/by-sa/2.0/>

the south wall of the chancel is presumably also of this date and not late thirteenth century (*contra* Tatton-Brown 1991). The chancel arch is probably also of c 1400, since it comprises three plain chamfered orders, which contrast with the more intricate mouldings of the nave north arcade.

Phase 5. c 1480–90. Nave north arcade, north aisle wall, window and recess in chancel north wall. The late Perpendicular nave north arcade and aisle can be confidently dated to the 1480s (Tatton-Brown 1991). The window in the chancel north wall matches the north aisle wall windows, but contrasts with those in the chancel south wall (above). The construction of the north aisle must have resulted in the removal of the Norman north-east nave quoins, which were reused in a repair to the nave north wall. The repair is opposite a (tomb?) recess on the interior. This cannot be a doorway, as suggested by Tatton-Brown (1991), since the external repair does not extend to the lower course of the wall, the latter being original Norman work.

Phase 6. c 1500–27. West tower dated by early sixteenth-century documents and architectural details (Tatton-Brown 1991).

Phase 7. Victorian restoration and minor alterations. The external recess in the nave south wall was caused by Canon Jenkins

excavating the wall in 1860 and then repairing the hole to put the stone slab at its base on display (see above/below).

Phase 9. Vestry, 1971 (Ibid).

The Norman church: description and reconstruction of plan

The fabric is predominantly of purple-brown Lenham ironstone, (Green, supplementary materials). Other materials include Upper Greensand, flint and small proportions of Roman brick. It has been demonstrated that Roman occupation at Lyminge was minimal or non-existent (Thomas 2017, 103). It is more likely that the brick was recycled from the Anglo-Saxon church rather than imported after the Conquest.

The only surviving primary architectural details are the quoins and the windows. The former are typically Norman, being small and side-alternate. Some quoins display diagonal tooling. Original windows survive, to a greater or lesser extent, in the chancel north and south walls. One Norman window survives in the middle of the nave south wall, but there are the remains of a rear-arch of a further window in the western part of the wall. A putative further window in the eastern part of the wall may have been entirely obliterated by the present early fourteenth-century window. The Norman windows have slight chamfers. The latter

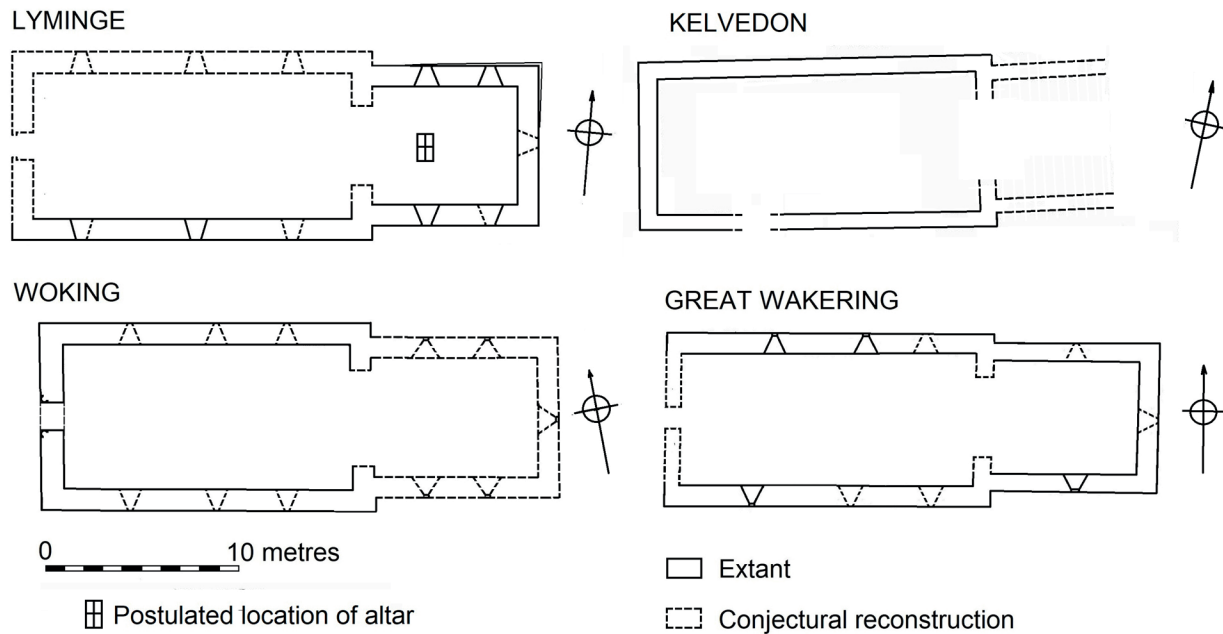


Fig 43. Reconstructed plan of the Norman church at Lyminge and contemporary churches of comparative size and form. *Image: Daniel Secker.*

are usually a twelfth-century phenomenon, but can occur in the later eleventh century. Examples occur at St Martin, Chipping Ongar, Essex, where a combination of architectural and historical evidence together with luminescence dating of the medieval 'great bricks' used in quoins suggests the church was built in 1068–75 (Secker 2013, 102–4). The chancel arch was rebuilt in c 1400, but the nave east wall, like the surviving south wall, was presumably 1.15m thick. The original chancel arch has been demolished, but was perhaps of a plain single order. A possible analogy would be St Mary, Brook, Kent (fig 42). The church there is regarded as a commission of Ernulf, Prior of Canterbury from 1096 to 1107 (Rigold 1969). The north nave arcade at Lyminge was an entirely new construction entailing the demolition of the Norman nave north wall (fig 41). This is at variance with the more normal practice of inserting arcades into pre-existing walls. Nevertheless, the fifteenth-century wall appears to follow the line of the Norman one. At the internal western end of the nave south wall is a straight joint indicating the junction between the Norman wall and the east wall of the early sixteenth-century tower, which is c 1.6m thick. It is assumed that the Norman nave west wall was of the same thickness as the south wall, namely 1.15m. The Norman nave would thus have had internal dimensions of 16.40m x 7.35m, and the chancel 7.50m x 5.98m. There is no evidence that the early fourteenth-century south doorway is a replacement for a Norman one. It is more likely that the original doorway was to the west.

On the available evidence, Lanfanc's church

at Lyminge was a simple, albeit large, two-cell building (fig 43). The surviving chancel windows are symmetrically opposed, and the same may have been the case for the nave windows. There are no signs of any original east windows, which have been entirely obliterated by the replacement of c 1400. There may have been only a single east window here, as there must have been at Brook, where a single early thirteenth-century lancet window at the east end of the church is probably a modified Norman window (fig 42). The altar may have stood between the western pair of chancel windows (fig 43). An analogous position has been suggested at the comparable church at Rivenhall, Essex (Rodwell and Rodwell 1986, 131–3).

Comparators

Lyminge is one of at least three churches certainly or probably rebuilt by Lanfranc on sites of earlier minsters. The other two are at Pagham, Sussex and Harrow-on-the-Hill, Middlesex (now Greater London). At the former, the standing church was built around the foundations of a small Anglo-Saxon predecessor (Freke 1980, 247–9) (fig 43). At Harrow, no remains of the Anglo-Saxon church survive, but there is indirect evidence that this was a former minster (Secker 2017a, 85–7). At both, the plan of the early Norman church is a large elongated nave of 4:1 proportion (Ibid, 84). Lanfranc's church at Lyminge is clearly not of this form.

There is however one church founded by Lanfranc with a nave of similar proportions to Lyminge. This is St Gregory's Priory, Canterbury,

where the excavated foundations of the nave have internal dimensions of 16.2m by an average of 6.5m (Hicks and Hicks 1991, 197, fig 1). Significantly, this was founded by Lanfranc in 1085–7 and was where the purported relics of St Eadburg and Queen Ethelburga were translated (Baldwin 2017, 216–18), perhaps to a side chapel revealed by excavation, at that date (Ibid, 200). Historical research suggests that the church was originally founded for secular canons and only became a regular Augustinian priory under archbishop William de Corbeil, Archbishop of Canterbury from 1123 to 1139 (Sparks 1998, 78–9).

The Norman church at Lyminge is comparable in size to Rivenhall, mentioned above (Rodwell and Rodwell 1986, 91). Initially thought to be work of c 1000, it is more likely to be about a century later (Blair 2005, 413–14). The church served the manor of Rivenhall Hall, held by Count Eustace of Boulogne in 1086 (Rodwell and Rodwell 1986, 174; Williams and Martin 2002, 989). Rivenhall was a proprietary foundation rather than a former minster. At Kelvedon, also in Essex, the church of St Mary preserves the plan of an early nave. Early detail is confined only to the Roman brick quoin at its north-west corner (RCHME 1922, 140–2). Therefore, although the early church is not precisely datable, it is probably eleventh or early twelfth century. Kelvedon was a possession of the Abbots of Westminster both before and after the Conquest (Williams and Martin 2002, 979). Like Rivenhall, Kelvedon appears to have been a proprietary foundation.

Certain minster churches were rebuilt after the Conquest as two-cell churches. One is at Woking, Surrey. There, a minster was in existence by 757 x 796, when King Offa endowed it with twenty hides (S 144). The present church has a Norman nave of similar proportions to Lyminge. Though the windows in the chancel are thirteenth century, the plan of the latter, at least, may be Norman. The west doorway has engaged nook-shafts supporting cushion capitals and a roll-moulded arch (Malden 1911, 388–90). The door has been dated by dendrochronology to 1106–38 (Bridge and Miles 2017, 78). Woking was a royal estate in Domesday (Williams and Martin 2002, 71). The present church is thus almost certainly a commission of Henry I (1100–35).

Another minster church rebuilt as a two-cell church c 1100 is at Great Wakering in Essex (RCHME 1923, 59–61). The minster appears to have been founded in late seventh century, on later textual evidence, by which time the bodies of the murdered Kentish princes Æthelred and Æthelberht were translated there (Witney 1984, 7–8). Excavations have revealed some features

of the minster, including an enclosure ditch producing organic-tempered pottery, a composite hearth possibly associated with ironworking and part of an eighth–tenth century cross (Dale *et al* 2010, 206–9, 226–7). The earliest fabric of the present church pertains to a two-cell structure of c 1100. In 1086, Great Wakering was held by Swein of Essex, whose *caput* was at nearby Rayleigh Castle (Williams and Martin 2002, 1001–2). There is no indication that Wakering retained its minster status after the Conquest. Indeed, it may have lost its importance when the relics of the princes were transferred to the ‘reformed’ minster at Ramsey, Huntingdonshire (now Cambridgeshire) in the late tenth century (Blair 2005, 353). While no Anglo-Saxon fabric survives above ground at Wakering, the internal dimensions of the nave (15.54m x 6.85m) are remarkably close to those of Bradwell-on-Sea (15.0m x 6.65m). Do the walls of the Norman nave at Wakering encase those of an Anglo-Saxon predecessor? This is a question that only archaeological intervention can resolve, but the issue of the post-Conquest structural transformation of Anglo-Saxon minster churches deserves some discussion.

From Anglo-Saxon to Norman church buildings

Studies on the transformation from Anglo-Saxon minster church buildings to their Norman successors have tended to concentrate on the most important and monumental examples, such as Canterbury and Winchester cathedrals, St Augustine’s Abbey, Canterbury, and Glastonbury Abbey, Somerset. In these cases, Norman rebuilding reflected a desire for a much more homogenous as well as a more massive structure, where previously there had been an accretion of Anglo-Saxon buildings (Shapland 2015, 100–4). In each case, rebuilding took a different form. At Canterbury Cathedral, Lanfranc’s new church was built slightly astride the Anglo-Saxon predecessor, while at Winchester, the Norman cathedral was roughly parallel to Old Minster (Blockley *et al* 1997, 100–23; Ottaway 2017, 221–6, 298). At St Augustine’s, the new church was built around the axially paired churches of SS Peter and Paul and St Mary and at Glastonbury, immediately east of the Anglo-Saxon church (Saunders 1978, 25–7, fig 2; Gilchrist and Green 2015, 385–92, 397–404). In other cases, rebuilding was not total. At St Oswald’s Minster, Gloucester, the Late Saxon church was largely retained, but a north transept probably supporting a lateral tower was added to the north of the crossing in the early–mid-twelfth century, followed by a north aisle in the later twelfth century (Heighway and Bryant 1999, 67–89).

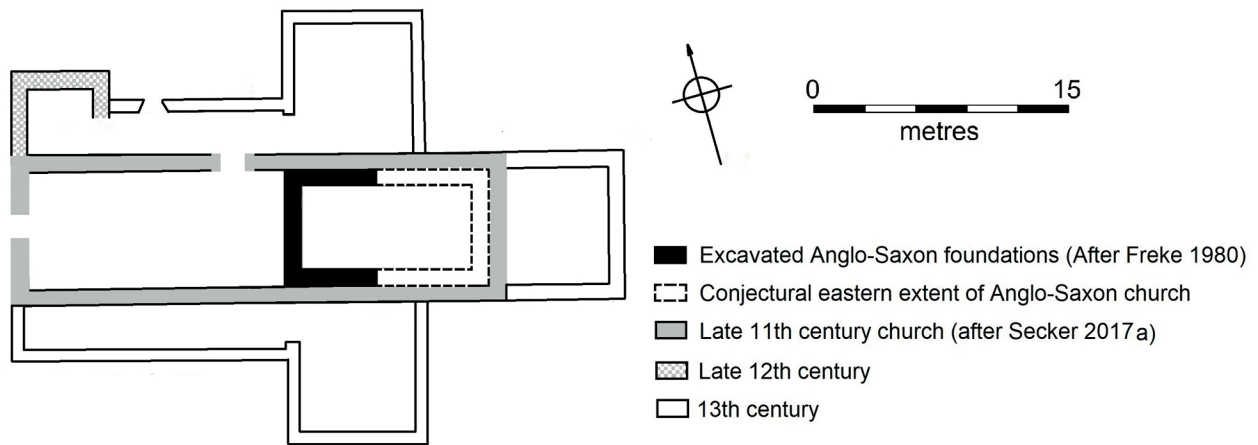


Fig 44. Pagham, Sussex. Development of the church from the Anglo-Saxon period to the thirteenth century. *Image:* Daniel Secker.

These processes are somewhat paralleled at smaller establishments. At Lyminge, the building of the Norman church parallel to the Anglo-Saxon one might be compared to the transformation at Winchester. An advantage of this method would be that worship could continue in the old church while the new one was under construction.

The building of the new church around the foundations of the old ones at St Augustine's is mirrored on a much smaller scale at Pagham (fig 44). The pattern at Pagham may have been more usual and has been shown by excavation to have been paralleled at a number of local churches, most famously at Wharham Percy, North Yorkshire (Rodwell 2012, 26, 28, fig 16). At St Andrew, Barton Bendish, Norfolk, there were two successive small eleventh-century masonry churches prior to the building of the present structure in the early twelfth century (Rogerson and Ashley 1987, 56–9). It is most likely that the rebuildings were due to practical considerations. In Wiltshire, it has been demonstrated that Norman churches were built to accommodate the populations of the estates to which they pertained (Wand and Wand 2010, 46–50).

In some cases, the Anglo-Saxon building was simply augmented rather than completely rebuilt. At Charlbury, Oxfordshire, a minster may have existed as early as c 658, when Bede records that the Irish-born missionary Diuma died in the region, and the later list of saints' resting places locates his cult at Charlbury (*HE* III, 21; Rollason 1978, 63–4). If this was the case, any early church has gone. Excavations have however revealed foundations of a Late Saxon building comprising a nave, the north wall of which was retained in the later structure, and possibly an apsidal chancel and north porticus; this was provided with a north aisle in the third quarter of the twelfth century, a modification comparable with those at St Oswald's Minster,

Gloucester (Secker 2020, 102–8).

At this time and thereafter, Charlbury was the head of a small mother-parish with a dependent chapel at nearby Shorthampton (Ibid, 93). There was probably no need to rebuild the church. In contrast, Domesday-period Lyminge was a large and very populous manor comprising some 117 households and ten slaves (Williams and Martin 2002, 10). Clearly, they could not have been accommodated within the Anglo-Saxon church (fig 41). The rebuilding of the church at Lyminge may have been for purely practical reasons. That it was not built on a grander scale may be connected with the transfer of Lyminge's relics to St Gregory's, Canterbury where, as has been seen above, Lanfranc founded a church of similar proportions to the Norman church at Lyminge.

The problem of the north porticus

At Lyminge, Goscelin's account seems to suggest that the tomb of Queen Ethelburga was located under a vault (or possibly an arch) in a north porticus of the Anglo-Saxon church beside the south wall of the Norman church (See Note 1 for the Latin text). This might be thought to be contradicted by the archaeological evidence, which demonstrates that the north porticus of the Anglo-Saxon church had to be demolished before the nave of the Norman church could be built. The textual account and archaeological evidence can however be reconciled if Goscelin had conflated the past and present tense. What he might have meant is that the shrine was maintained under an arch in the (destroyed) north porticus (which formerly lay) beside the south wall of the present church. Less probably, he may have meant that the monument: 'lay *beneath* the vault of a north porticus of her church, which was where the south wall of the present church now stands', which is an acceptable reading of the Latin. The question as to

the provenance of the relics is discussed elsewhere (Baldwin 2017).

Conclusions

The church at Lyminge, as rebuilt by Lanfranc in the 1080s, was a relatively modest affair compared with some post-Conquest rebuildings of minster churches. It is however not without its analogies, which include Woking and Great Wakering. In these cases, the patrons were the king and a lay baron respectively. These churches are however no different to larger contemporary proprietary churches, exemplified by Rivenhall in Essex, also commissioned by a lay baron, and Kelvedon, commissioned by a major monastic house, namely Westminster Abbey. Lyminge, like Wakering, was the focus for a saint's cult. The difference is that while at the latter over a century had lapsed between the transfer of the relics of the murdered princes Æthelred and Æthelberht to Ramsey and the rebuilding of the church, at Lyminge, Lanfranc's translation was contemporaneous with the building of the new church. The simple form of Lyminge was possibly a deliberate attempt to downplay its former role as a cult focus, but it is more probable that the rebuilding of the church was a practical response to this new role. Henceforth, it was simply an estate church, albeit one serving a large population and thus substantial in size.

Reinterpretation of the south wall niche in the context of Canon Jenkins' renovations, by Gabor Thomas

Several commentators since Canon Jenkins have identified the external arched niche in the south wall of the nave as an architectural remnant of the pre-Conquest shrine described in Goscelin's account, and all have accepted this reading at face value. The following places this theory under critical scrutiny by subjecting the feature and adjacent structural walling — including newly exposed walling below ground level — to structural analysis. This shows that the arched niche is not contemporary with the primary build of the nave and must be a later insertion. Consideration of previously obscured walling below ground level and contextual evidence supports the view that the arched niche was created by Jenkins to authenticate a link with the shrine described in Goscelin's translation narrative.

The arched niche covers a large basal slab of Binstead stone measuring 1.60m long, c 0.6m wide and 0.18m thick with two transverse breakages (fig 45). The slab is situated immediately above



Fig 45. Detail of arched recess in south wall of nave.
Photograph: authors.



Fig 46. Patch of inserted walling above arched recess showing it is secondary to the original (Norman) fabric.
Photograph: authors.

the original foundation course on alignment with adjacent sections of regular coursing, demonstrating that it is contemporary with the primary build of the nave (fig 46).

The arch is formed from cutdown Roman bricks set on transverse edge and interspersed with occasional fragments of Lenham stone (fig 45). The arch is supported on a pair of short jambs formed of Binstead stone; whereas the jamb to the east sits directly on top of the basal slab, that to the west stands proud. The cavity above the slab has been crudely hacked into the thickness of the nave wall in *ad hoc* fashion. A ventilation shaft has subsequently been cut through the eastern face of the cavity behind the corresponding jamb, probably connected with the cast iron Gurney stove that stood in the nave on the opposite side of the wall into the early twentieth century. The walling immediately above the arch and adjacent to the jambs interrupts the original coursing of the south wall and must therefore be a patch or later insertion (fig 46).

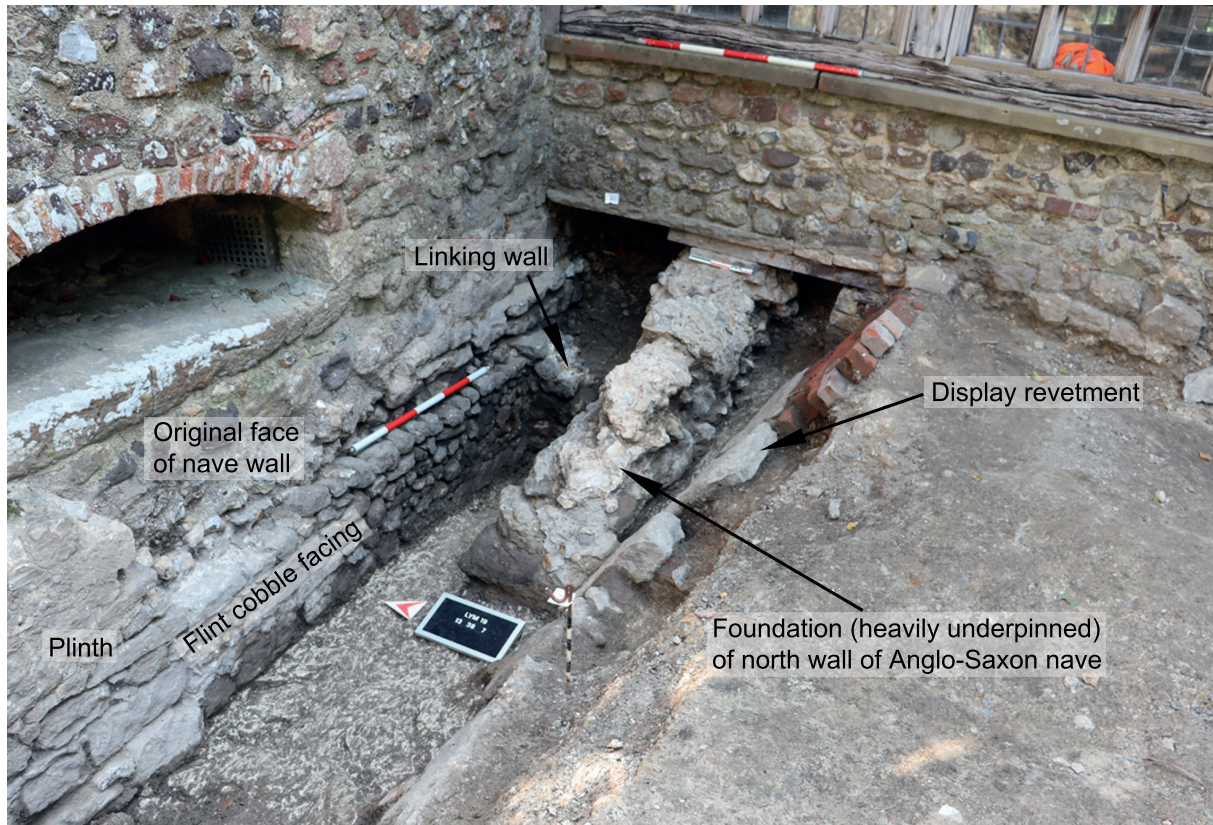


Fig 47. Renovations by Jenkins on the west side of the porch. *Photograph:* authors.

It has been demonstrated that the only element of the niche contemporary with the primary build of the nave is the large basal slab with the covering arch and the surrounding walling representing secondary *ad hoc* insertions. This is borne out by correspondence that survives between Jenkins and the antiquarian Charles Roach Smith dating to September 1860 following a visit to Lyminge. In this Jenkins says that:

I was almost poking a hole into the church to determine what the curious threshold I showed you really has been.⁶

He accompanies this account with a sketch that shows the basal slab and the upstanding stones to either side, but the remainder of the surrounding wall removed. This suggests that the Norman nave wall was substantially disturbed by his explorations, and significant subsequent repairs were required. Walling exposed below the level of the slab during the 2019 excavation provides further evidence for

significant post-Norman alterations; indeed, all the walling exposed at this level to the west of the porch is arguably of recent fabrication (fig 47).

The wall course containing the slab was underlain by a 'plinth', crudely cut away at its eastern extremity, which extends to the west end of the nave. The damaged eastern terminus sits upon seven courses of closely set flint cobbles applied as a facing to the original south wall and that incorporated a narrow cross-wall mortared into the north wall foundation of the Anglo-Saxon church (fig 47). There can be no doubt that Jenkins was responsible for these elements: the flint-cobble build is completely out of character with the authentically Norman fabric of the church and in combination they create the impression that the Anglo-Saxon church was, according to Jenkins' misguided thinking, flanked by an unfeasibly narrow north porticus containing the entombed remains described in Goscelin's narrative. The plinth, flint cobble facing and cross-wall were thus clearly built under Jenkins' instruction to give the appearance that the two parallel churches were linked in the way in which he envisaged.

The arched niche in the south wall of the nave can be interpreted afresh in the light of these discoveries. It is instructive to note that Jenkins' published account of the basal slab — described as a 'large coffin-shaped stone', supposedly the

⁶ Letter written by Jenkins, dated 24 Sep, and apparently addressed to Charles Roach Smith while he was compiling the piece that subsequently appeared in *Collectanea Antiqua* vol v (Roach Smith 1861). The letter would therefore seem to date to 1860. This letter is in the collection of Duncan Harrington and is quoted with his kind permission.

unmarked grave slab mentioned in Goscelin's narrative (1890, 9) — makes no reference to the surmounting arch, and the same is true of near contemporary descriptions of the church, including the detailed survey by Glynne (1877, 93–5). The various strands seem to point towards the following scenario: Jenkins' eye was initially drawn to the monolithic slab as potentially architectural. He had the walling above removed to expose the slab more fully, and ascertained that it was a bare slab without any inscriptions or other worked features. Initially, he thought it was a threshold stone, forming the original entrance to the Anglo-Saxon church, and it is so marked on his original published plan (fig 8). However, he seems to have changed his mind subsequently and equated the stone with the unmarked grave slab described by Goscelin, which had been moved from its original setting and built into the wall. As imagined prime evidence consistent with the historical account, he sought to keep it open and visible by inserting the brick arch. This feature then formed the centrepiece of a larger ensemble of fabricated elements to the west of the porch, framed by a slanting revetment wall of brick and reused monumental headstones (see below), which created a visual link between the two parallel-disposed churches and an evidential link with the tomb in Goscelin's description.

Whether we can conclude that Jenkins' fanciful reconstruction work does not end here and extends into the parish church is a moot point. In the south wall of the nave close to the chancel arch is the blocked doorway to a former rood stair (fig 48). Into the blocking has been inserted a niche, apparently made of Roman brick.⁷ Roach Smith records that this niche was uncovered by Jenkins when he stripped the plaster from the walls (Roach Smith 1861, 196–7). As it is in the blocked rood loft doorway, it can hardly pre-date the Reformation in the mid-sixteenth century, and yet its date and purpose in a Church of England church must remain very uncertain. It is possible that given his history of 'improving' his finds to enhance their appearance, Jenkins may have had a hand in its present form.

2019 discoveries in the New Churchyard (formerly Abbots Green)

Introduction

The path renewal by the NHLF project provided an opportunity to extend the investigations to



Fig 48. 'Shrine-aumbry' in south wall of nave.
Photograph: authors.

the south-eastern sector of the New Churchyard, specifically the pathway free of interments leading from the boundary wall of the Old Churchyard to the War Memorial. We have seen that prior to the expansion of the churchyard in the second half of the nineteenth century, this area comprised pasture with standing ruins that were actively robbed in Jenkins' lifetime and which he identified with the site of a medieval archiepiscopal residence. Unfortunately, re-locating the site of this former residence is not as straightforward as it might first appear, for in another account (1861), Jenkins pinpoints the nucleus of the archiepiscopal residence in neighbouring Court Lodge Green on the basis of prominent terraces and earthworks. Indeed, this is the location of the 'Archiepiscopal Palace' given on Ordnance Survey maps from the First Edition (1873) through until the Third Revision (1945), presumably on Jenkins' original authority (fig 5). In addition to determining if any early medieval archaeology survived in this area, a key aim of the investigation was therefore to produce fresh results that could aid in relocating this lost residence.

An 18m x 2m trench was hand excavated on the alignment of the path to the east of the War Memorial (figs 1 and 49). While the path is of recent origin, this section runs along the edge of a prominent terrace, which extends into

⁷ The niche was largely obscured by the neighbouring Jacobean pulpit until this was removed in the early 21st century. Its current use as an aumbry is thus very recent.



Fig 49. View of War Memorial trench under excavation looking west. *Photograph: authors.*

neighbouring Court Lodge Green and, as argued below, is a likely relic of the formal landscaping associated with the medieval archiepiscopal residence. Typical of eroded chalkland archaeology, the stratigraphy here was very shallow, with archaeological features appearing at depth of no more than 0.25m from the present ground level. Although some of the archaeological features remain undated, two broad chronological phases were represented: Anglo-Saxon and medieval (fig 50).

Anglo-Saxon (fig 50)

This phase comprised a smattering of postholes and a shallow sub-circular pit [821] confined to the western end of the trench. While only a small number of postholes yielded pottery dating to this period, the existence of a potential wall alignment [834, 837, 842 and 849] strongly suggests that part of a timber building existed in this area. The combination of post-built timber structures and pits offers a general parallel for the Middle Saxon occupation previously sampled to the south of the churchyard, but we shall see that there are distinctions in their character.

A small assemblage of Anglo-Saxon artefacts recovered from topsoil and unstratified overburden may be taken as 'background noise' for early medieval activity in this vicinity. This includes a penny of Archbishop Ceolnoth (862–6. Holman, supplementary report) and a small fragment of vessel glass (fig 51).

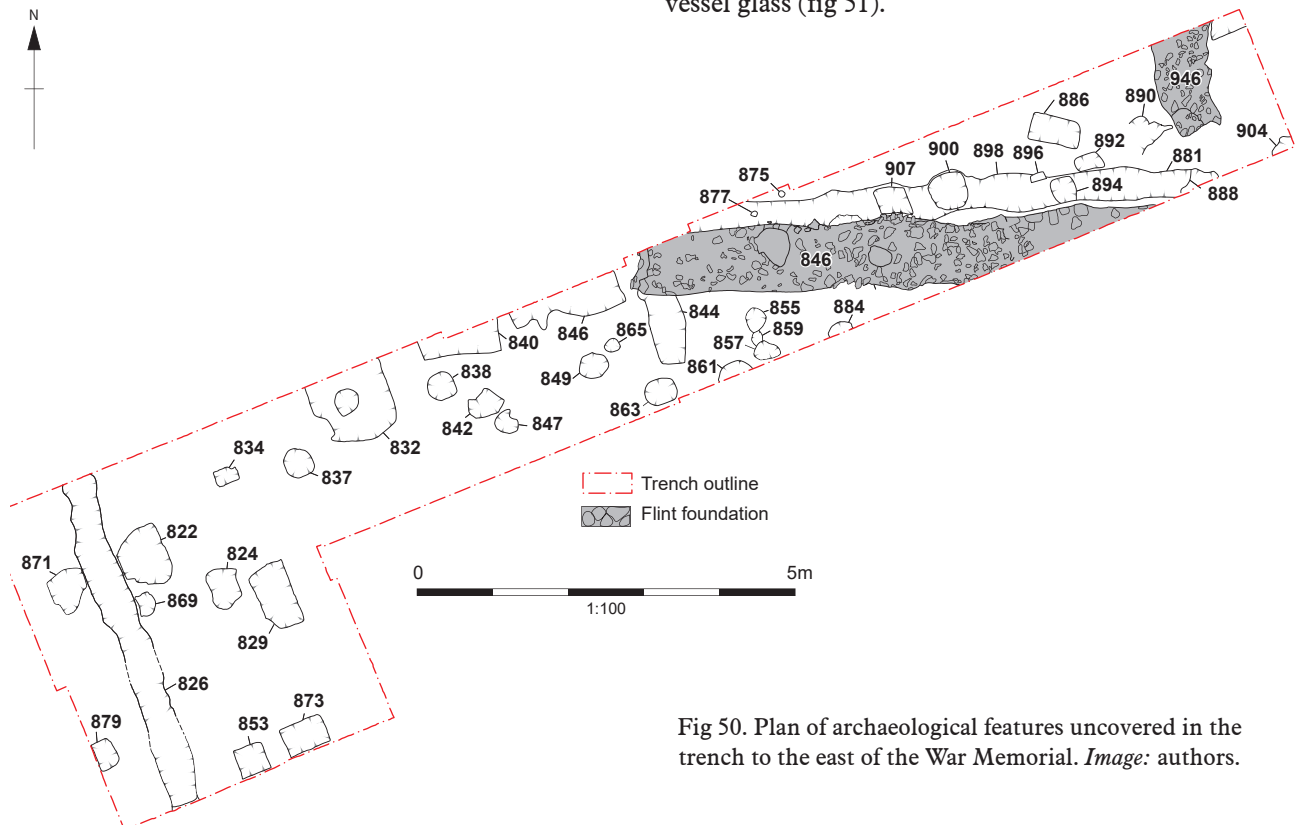


Fig 50. Plan of archaeological features uncovered in the trench to the east of the War Memorial. *Image: authors.*



Fig 51. Finds from 'War Memorial' trench: medieval painted wall plaster, Ceolnoth penny, fragment of Anglo-Saxon vessel glass. *Photographs: authors.*

Medieval (Fig 50)

The main feature ascribed to this phase was a pair of mortared foundations [846 and 906] forming the south-east corner of a stone building constructed on an E–W alignment. The longer section of foundation had an exposed length of 5.20m and width of 0.86m and its shorter neighbour corresponding measurements of 1.24m and 0.8m. Both sections were ephemeral, measuring no more than 0.30m in depth, and displayed signs of stone robbing. The foundations were flint nodules set in a hard white mortar with flush surfaces created from contact with the cut of the original foundation trench. The truncated remnant of a demolition deposit [883] was preserved between the internal faces of the two sections of foundation directly under the topsoil. This produced five fragments of red-painted wall plaster (fig 51), accompanied by several pieces of roof tile (Poole, supplementary materials), and sherds of Canterbury-type sandy coarseware pottery broadly datable to the late eleventh to thirteenth centuries (Brown and Backhouse, supplementary materials).

Running along the north (internal) face of [846] and in parallel disposition was a linear slot [881] measuring 0.30m wide and 0.17m deep with vertical sides and a flat base interrupted by a series of internal postholes [888, 894, 898, 900 and 907]. While it was not possible to determine a stratigraphic relationship between the two features, their common alignment strongly suggests that they are chronologically proximate, as also indicated by the fact that the slot produced a similar ceramic signature.

Some of the cut features located to the west of the foundations can also be ascribed to this general phase. This included a steep-sided pit [832], which contained roof tile and more sherds of Canterbury-type sandy coarseware, and a shallow N–S linear feature [826] that may represent part of a timber structure or alternatively a drainage gully.

The results demonstrate that a substantial, well-appointed and evidently high-status stone building stood on this site in the medieval period. It is not possible to date the building with precision, but the later twelfth–thirteenth-century can be suggested on the basis of the ceramics and roof

tile. The parallel slot found on the inside of the longer section of foundation may suggest that the stone building had a timber precursor on a similar footprint, but it may alternatively derive from timber shuttering used in the construction of the former.

This structure is consistent with the standing ruins described by Jenkins in the field beyond the western boundary of the Old Churchyard; indeed, given its E–W alignment and association with red-painted plaster, it may provide a match for the building, described as being ‘in the form of a church’ (Jenkins 1874, 4). Irrespective of its specific identity, there can be little doubt that this building lay within the nucleus of Lyminge’s documented archiepiscopal residence.

PART 4: DISCUSSION AND CONTEXTUALISATION

The pre-Viking monastery in context

Similarity versus diversity: Lyminge in relation to so-called ‘Kentish Group’ churches

In his critique of the homogenised view of ‘Kentish Group’ churches, Eric Cambridge called attention to ‘the inherent danger of implicitly reinforcing the similarities at the expense of the (potentially no less significant) differences between the various sites’ (1999, 203). While seeking evidence for hitherto overlooked diversity must remain a priority for future research, it difficult to ignore the significant architectural conformities that lend this regional cluster of buildings cohesion and coherence. As with the study of any cultural ‘tradition’, the focus should be on gaining a critical and balanced appreciation of the interplay between uniformity and diversity as a dualism with inherent tensions (cf Ó Carragáin 2010); the discussion that follows is guided by this approach.

While aspects of the early church at Lyminge must remain ambiguous, the fundamental architectural logic that guided its construction can now be discerned with significantly greater confidence. This particularly applies to ‘classic’ Kentish idioms, notably its distinctively configured eastern cell in the form of an elongated stilted apse, and a triple arcade incorporating imported limestone columns, which, in a liturgical context, would have been used as a theatrical backdrop to an altar positioned at the east end of the nave (Peers 1901; Fernie 1983, 41; Gem 1997; Gittos 2013, 149–50). Its two-cell plan-form, proportions and flanking porticus (precise number and configuration unknown), also conform to the

recognised ingredients of this regional grouping (fig 36). One must be cautious of the circularities of stylistic dating, but these traits are redolent of Cambridge’s (1999) ‘second generation’ of church building in Kent spanning the final third of the seventh century, which would place Lyminge on the same chronological horizon as its closest overall comparators, Reculver and St Pancras.

It is unfortunate that the original fabric of the church cannot be determined with greater certainty. We should be sensitive to the possibility that Jenkins’ observations on this matter were coloured by knowledge of other, better preserved, churches of the group, perhaps through correspondence with other local antiquaries active around the same time, notably George Dowker who led investigations at St Mary’s, Reculver. Irrespective of the specifics, there is no reason to doubt that the church was constructed substantially of reused Roman material. Eaton (2000, 131–2) has drawn attention to a chronological progression in the style in which such building material is deployed in Kentish churches, from the predominant use of curated brick, sometimes with alternating courses of reused ashlar in the pre-Viking era, to the increased use of flint rubble with sparing use of other constituents in the Late Saxon period. While the former style may have been reproduced at Lyminge, other scenarios are possible given the internal variation displayed by churches of the Kentish Group, not least the deployment of Roman brick as multiple bands of coursing within expanses of flint rubble, as seen at Reculver.

The strong Romanising tendencies seen in the walling of such churches was also carried down into their foundations. At Lyminge, the employment of a very hard concrete mortar incorporating crushed Roman brick and marine shell in the manner of *opus signinum*, demonstrates that such churches were not simply built to outwardly mimic Roman basilicas, but were re-created using their core technologies. This conclusion takes on added resonance in the current context given that *opus signinum* was also used to floor the timber halls forming the seventh-century royal ceremonial complex excavated on Tayne Field: Lyminge appears to have been a milieu where the revival of such techniques, potentially under the instruction of Continental ateliers, was fostered under royal patronage (Thomas 2018).

Yet we must resist the temptation to stereotype other sites based on the Lyminge evidence; indeed, clear distinctions in foundation type emerge when comparisons are made. The foundations at Reculver, described by Dowker (1878, 258) comprised ‘squared stone and flint 2 feet 8 inches wide, [surmounted by] three layers of Roman

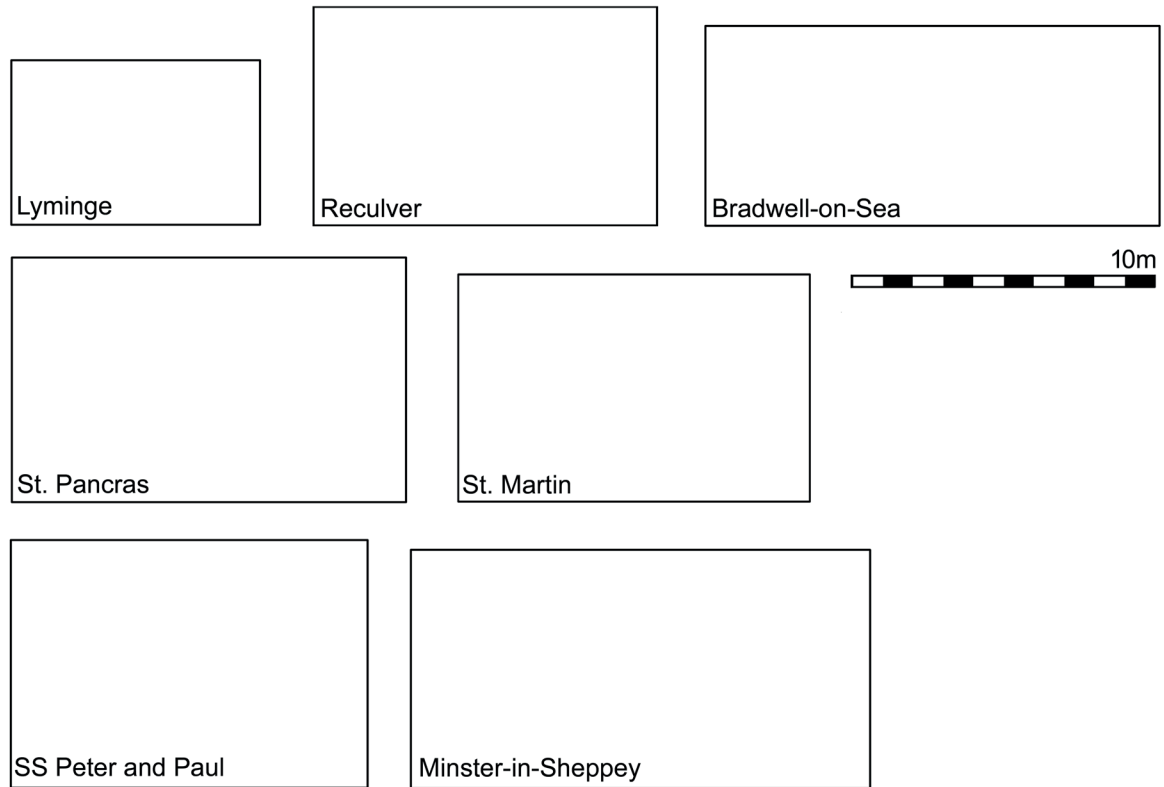


Fig 52. Diagram comparing nave proportions in 'Kentish Group' churches. *Image:* authors.

tiles', whereas the fragment of the early (Period 1) church excavated under Christ Church Cathedral employed closely packed fragments of Hythe stone and Roman tile bonded in clay (Blockley *et al* 1997, 30). Yet further diversity is attested by St Pancras, Canterbury, in its utilisation of four to five courses of unmortared flints (Ibid, 99). Rather than slavish adherence to a predefined technical template, this variety points in the direction of a flexible approach to construction whereby available resources, materials and skills were combined to achieve a desired outcome (cf Thomas and Scull 2021).

We can conclude with some comparative observations on church proportions drawing upon the complete plan measurements now available for Lyminge. In a Kentish context, nave dimension is most susceptible to such analysis owing to the uneven survival of apses. With a width-to-length

ratio of 1:1.5, Lyminge falls comfortably within the range displayed by other churches of Kentish type; indeed Clapham (1930, 41) identified this as the median value for the group as a whole (see Table 1 and fig 52). While Taylor's more extensive examination of Anglo-Saxon church proportions demonstrates nothing distinctively 'Kentish' about this ratio (1978, 1031), it nevertheless contributes to the cohesion of this regional architectural tradition in the same way that more elongated nave proportions define contemporary churches in Northumbria. Such analysis could explore whether Kentish churches subscribe to a specific metrical unit or proportional formula, but is here resisted because of inconsistencies and gaps in available measurements and because the results of similar analysis undertaken in other regions demonstrate that competing formulae can invariably be deduced

Table 1: Comparison of nave dimensions in 'Kentish Group' churches

	Interior width	Interior length	Width/length ratio	Area (m ²)
Lyminge	5.4 m	8.2 m	1:1.5	44.3
Reculver	7.3 m	11.3 m	1:1.5	82.5
St. Martin, Canterbury	7.3 m	11.6 m	1:1.6	84.7
SS. Peter and Paul, Canterbury	8.2 m	11.9 m	1:1.5	97.6
St. Pancras, Canterbury	8.1 m	13.0 m	1:1.6	105.3
Minster-in-Sheppey	7.9 m	15.0 m	1:1.9	118.5
Bradwell-on-Sea	6.6 m	15.2 m	1:2.3	100.3

from the same pool of data (Kjølbye-Biddle 1986). Notwithstanding these specific issues, the variability apparent in several aspects of Kentish data might lead one to hypothesise that here, as in pre-Norman Ireland, churches were laid out ‘within loose parameters’ (Ó Carragáin 2010, 112).

A more profitable line of enquiry can be developed by reflecting that Lyminge is, by a considerable margin, the smallest exponent of this regional architectural tradition (figs 37 and 52). Its diminutive status is reflected in both nave and, where available, apse dimensions, with the respective spaces at Lyminge being around or significantly under half of that of comparable churches (see Table and fig 37). This basic comparative analysis demonstrates that, even with Lyminge taken out of the equation, there is considerable micro-diversity in the scale of these buildings, a conclusion that again underlines the impression that construction was within flexible parameters. Could more contingent factors underlie this diversity? One might be tempted to link Lyminge’s diminutive scale with its distinct status and character as a female monastic community, but this theory runs into the obstacle that its sister establishment of Minster-in-Sheppey is appreciably larger. If gender was not an overriding factor in determining scale, then it is possible that the answer lies with the vagaries of royal patronage. The ‘old minsters’ of Kent originated as proprietary establishments of the native ruling dynasty (mainly women of that dynasty) and there is good reason to believe that the circumstances of their establishment will have varied considerably given the politically fractious environment of Kent in the seventh century and the complex internal dynamics of the native royal house (Yorke 1983; 1990, 32–9). While multiple interacting factors may be at play in governing the available pool of resources for the construction of a church, it seems likely that the wealth, power and influence of the patron concerned would have been a significant mediating influence.

Defining monastic space: the implications of Anglo-Saxon activity in the New Churchyard

Taken in isolation, it is difficult to ascribe meaning to the scant early medieval archaeology encountered in the 2019 investigation. However, when set beside the results of previous excavations conducted to the south of the churchyard, it contributes new insights into the spatial organisation of the Anglo-Saxon monastic precinct relatively close to its monumental core. The results usefully affirm that this part of the precinct was occupied by timber buildings and pits. It is tempting to suggest a simple continuation of the

Middle Saxon habitation sampled by excavations to the south of the churchyard (Thomas 2013; fig 53), but there are grounds for thinking that there was a genuine distinction between the two areas. First, the occupation identified in the New Churchyard is less dense and sustained than that to the south; moreover, if pit [821] is in any way representative, the pits in the newly investigated area are less substantial and obviously ‘domestic’ in character. Second, the two areas fall on either side of a substantial and long-lived Middle Saxon boundary, which appears to have been established early in the period of monastic occupation and repeatedly redefined to physically separate the (sanctified?) inner core of the precinct from an outer zone of domestic and quasi-industrial activity (Thomas 2013; fig 53).

There are thus good reasons to believe that activity glimpsed within the churchyard has a distinct identity. Defining this identity in precise terms is impossible given the limited evidence available. It could conceivably represent a short-lived phase of encroachment, or alternatively a structural focus associated with the liturgical use of the inner precinct. While the examined window was small, the absence of contemporary burials from the investigated area militates against this structure serving a specialised role such as a mortuary chapel/shrine. The location and extent of the monastic cemetery, indeed funerary activity within seventh–eighth-century Lyminge generally, remains frustratingly enigmatic.

The end and afterlife of the monastery

Lyminge and the Vikings (?): scientific dating and the fate of the monastic community

The impact of the Vikings on monastic life in Anglo-Saxon England forms one of the most heavily debated strands in the historiography of the period. Female houses like Lyminge lie at the heart of the debate because, as seemingly projected by historical sources, the demise of the nunnery or double house — a quintessential strand in the first florescence of Anglo-Saxon monasticism — is inextricably intertwined with the depredations of England’s first Viking Age (Foot 2000, 71–84; Yorke 1989). While previous historians saw the decline of the double monastery as a powerful metaphor for the cataclysmic brutality of Viking raiding, recent scholarship has begun to erode this established position. Placing an emphasis on processes of transformation rather than total obliteration, and armed with a more holistic awareness of the various causal factors at play and their longer-term consequences, revisionists

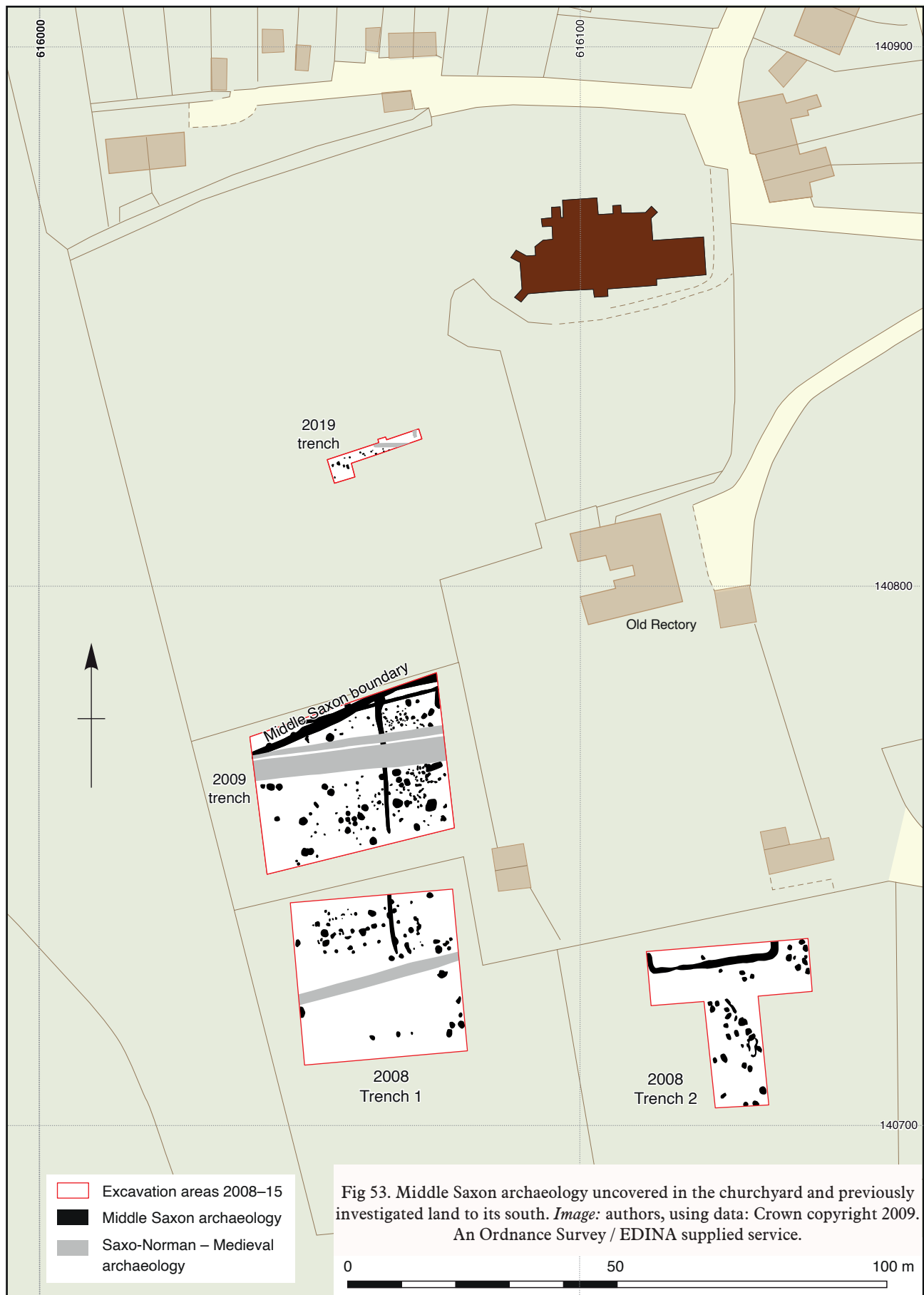


Fig 53. Middle Saxon archaeology uncovered in the churchyard and previously investigated land to its south. *Image:* authors, using data: Crown copyright 2009. An Ordnance Survey / EDINA supplied service.

have argued for significant strands of continuity in religious life and ecclesiastical provision across the Viking Age (cf Blair 2005, 292–323; Pestell 2004, 72–6). Cautioning against face-value readings of retrospective historical sources with a vested interest in portraying the Vikings as all-destructing, this recent work encourages more complex understandings of how monastic sites and their wider landscapes developed during and after the Viking Age. What follows takes inspiration from this work and a recent historical re-evaluation of the earliest phase of Viking raiding in England (Downham 2017), which provides a specifically ‘Kentish’ regional framing.

As Blair has shown in his evaluation of the Northumbrian scene (2005, 311–15), excavated evidence has provided a useful barometer for gauging the fortunes and experiences of documented monastic establishments over the Viking Age. A clear and consistent picture emerges of a mid-ninth-century watershed in the life of these establishments: a cessation in the lifestyle of conspicuous display and consumption characterising their earlier phases, accompanied by a downturn in economic activity and a contraction and/or spatial reconfiguration of associated occupation. More recently, available evidence derived from monastic excavations from different parts of Britain, Kent included (Hicks 2015, 124–5), very much confirms this pattern: a dislocation or downturn in activity accompanied by some persistence of life along more attenuated lines. It should be stated that it is rarely possible to link a hiatus in occupation to a specific raiding event — the dramatic episodes of burning and destruction inflicted on the liturgical cores of Whithorn and Portmahomack stand out as the most notable exceptions (Hill 1997; Carver *et al* 2016, 256–60). On the other hand, the consistency and synchronicity of the watershed offers compelling evidence that the relationship is meaningful.

Situated within its Kentish regional context, Lyminge offers enhanced perspectives on this theme reaching across archaeological and historical sources. Deploying an eclectic range of historical material, Downham (2017), has provided a fresh appraisal of Kent’s pivotal position in the earliest phase of seaborne Viking raiding in England between the 790s and 830s AD. Kentish charters issued on behalf of the Mercian overlords in these decades demonstrate that the usual immunities enjoyed by monastic enterprises in respect of military service and the maintenance of bridges and fortifications were withdrawn so that their assets and resources could be channelled into defensive strategies against the Viking foe. Invariably occupying highly strategic positions on estuaries

and rivers, monastic nuclei and their core estates played a key role in mediating native responses to Viking contact, not as a short dramatic episode, but as a ‘sustained pattern of activity’ involving both bellicose action and ‘non-military interactions between seaborne raiders and English people’ (Ibid, 10). This reading runs counter to the standard theme of monasteries as hapless sitting ducks destined for permanent eradication. As shown by the granting of a refuge to the Lyminge community in Canterbury, relocating monastic *familiae* to less vulnerable positions enabled religious life to be sustained during the worst depredations of Viking raiding, doubtless until it was possible to re-establish their original sites. Framed within a less polarised view of native-Viking interactions, such measures go some way to explain the apparent resilience of monastic communities during these troubled times and the long-term persistence of the sacred places that they inhabited.

The archaeological discoveries made at Lyminge offer their own distinctive perspective on this issue. Two factors make this contribution possible. First, the large scale of the excavations undertaken, comprising multiple open-area interventions within the historic core of the village with a combined spatial coverage of nearly two acres (8,000m²; fig 2). Second, is an unusually robust chronological framework supported by a suite of radiocarbon dates and associated chronological modelling, complemented by sizeable assemblages of stratified coins and diagnostic artefacts. Together, these factors allow spatial shifts in the settlement to be charted over the long ninth century (and beyond) with a level of precision such that archaeology can be brought into meaningful dialogue with contemporary historical sources.

The spatial evolution of early medieval Lyminge needs to be outlined as a prerequisite for contextualising the results of the chronological modelling (fig 2). While very much exemplifying the general long-term persistence and stability of early medieval focal places (Daubney 2016), Lyminge exhibits a fluid pattern of spatial development over the fifth–twelfth centuries AD embracing multiple locational shifts accompanied by more subtle changes in the spatial extent and configuration of each location. Early Anglo-Saxon Lyminge (fifth–seventh century AD) was confined to low-lying terrain flanking the perpetual spring that is the source of the chalk stream known as the Nailbourne with the subtle spur of Tayne Field forming its principal and longest-lived focus (Thomas 2017). The settlement subsequently shifted to the upper slopes of a broad chalk ridge terminating in a hanging promontory now surmounted by the parish church and previously

by the nucleus of the Anglo-Saxon monastery. As defined by excavations to the south of the churchyard and the neighbouring site of the 'Old Rectory', this elevated locale was inhabited by a swathe of Middle Saxon occupation, plausibly interpreted as the domestic and industrial sector of the monastery (Thomas 2013). Into the Late Saxon and Norman periods, the settlement's centre of gravity shifted yet again, reflected in the abandonment of the Middle Saxon focus and a reconfiguration of settlement along the E–W spine of the High Street and the perpendicular axis of Church Road, with the back plots of the latter extending on to the summit of the Tayne Field spur.

The pair of locational shifts punctuating this 600-year developmental trajectory represents significant ruptures in the life of the settlement. A case has previously been made for the first rupture being linked to a conscious — perhaps symbolically motivated — phase of settlement planning tied up with monastic foundation and the attendant process of re-sacralising Lyminge as a Christian centre (Thomas 2013). Chronological modelling of radiocarbon dates obtained from the Middle Saxon focus (Marshall, supplementary material) very much supports a synchronic link between the documented emergence of a monastery at Lyminge and the phase of settlement renewal observed through its archaeology (fig 53). Moreover, allowing for the marine reservoir effect, the chronological spread of these dates places much of the activity represented by pits and other occupational features into the second half of the eighth and ninth

centuries when the monastery was effectively under the control of Mercian proxies. Further analysis is required, but there is a strong likelihood that infrastructure identified within the examined parts of the monastic precinct, notably a large timber building with external metalling interpreted as a threshing barn (Thomas 2013, 130–1, fig 11), was funded through Mercian investment. But what of the second rupture?

To pursue this question a chronological model was constructed from eighteen calibrated radiocarbon dates, ten from the Middle Saxon settlement focus and eight from a spread of occupational features (pits and ditches) representing the Late Saxon/Norman reoccupation of the Tayne Field spur (Table 2 and Marshall, supplementary materials). Together with coin dates, the model provides an estimate for the end of the monastic settlement of 835–1120 cal AD at 95 per cent Probability; end_monastic; (fig 55), probably 840–920 cal AD at 68 per cent probability.

Further analysis indicates that there is a 59.5 per cent probability that monastic activity finished before the close of the ninth century. Although it is still 40.5 per cent probable that monastic settlement continued into the tenth century, there are two reasons this is unlikely: firstly, the radiocarbon calibration curve (IntCal.20.tif) is for most of the ninth and tenth centuries relatively flat and dominated by decadal data, apart from single year data at the beginning of the ninth and end of the tenth centuries. The single year data has been obtained in order to validate the dramatic increase

Table 2. Radiocarbon and stable isotopes from Lyminge (activity south of churchyard and on Tayne Field)

Laboratory number	Material and context	$\delta^{13}\text{C}_{\text{IRMS}}$ (‰)	$\delta^{15}\text{N}_{\text{IRMS}}$ (‰)	C/N ratio	Radiocarbon age (BP)
Monastic activity south of churchyard					
OxA-31749	Animal bone, <i>Felis catus</i> , right femur from primary fill (656) of pit [539]	-19.1±0.2	9.4±0.3	3.3	1313±26
OxA-31750	Animal bone, <i>Canis lupus familiaris</i> , right femur from uppermost fill (11) of pit [12]	-17.5±0.2	12.3±0.3	3.4	1322±27
OxA-31751	Animal bone, <i>Felis catus</i> , right humerus from primary fill (197) of pit [125]	-19.2±0.2	7.9±0.3	3.4	1254±25
OxA-31752	Animal bone, <i>Canis lupus familiaris</i> , right femur from secondary fill (1506) of pit [1064]	-18.5±0.2	11.0±0.3	3.4	1267±25
OxA-31753	Human bone, left tibia from tertiary fill (1672) of pit [1663]	-18.5±0.2	12.2±0.3	3.3	1322±26
SUERC-35934	Animal bone, cattle, 1 st cervical vertebrae (butchered) from primary fill (1820) of boundary ditch	-21.7±0.2	6.7±0.3	3.3	1291±20
OxA-37815	Carbonised grain, <i>Secale cereal</i> L., from fill (233) of pit [47], environmental bulk sample <30>	-23.1±0.2	—	—	1242±26
OxA-37814	Carbonised grain, <i>Avena</i> L., from fill (270) of pit [49], environmental bulk sample <24>	-25.8±0.2	—	—	1226±27
OxA-40412	Carbonised grain, <i>Avena</i> L., from fill (164) of pit [71], environmental bulk sample <5>	-22.3±0.2	—	—	1227±18
Saxo-Norman activity on Tayne Field					
OxA-37817	Carbonised grain, <i>Triticum</i> L., from fill (3535) of pit [3264], environmental bulk sample <38>	-22.5±0.2	—	—	1109±26
OxA-40413	Carbonised grain, <i>Triticum</i> L., from fill (3539) of pit [3054], environmental bulk sample <40>	-23.9±0.2	—	—	1126±18
OxA-37818	Carbonised grain, <i>Triticum</i> L., from fill (3641) of pit [3264], environmental bulk sample <42>	-23.0±0.2	—	—	1112±26
OxA-38029	Carbonised grain, <i>Triticum</i> L., from fill (9374) of pit [9102], environmental bulk sample <31>	-22.2±0.2	—	—	972±24

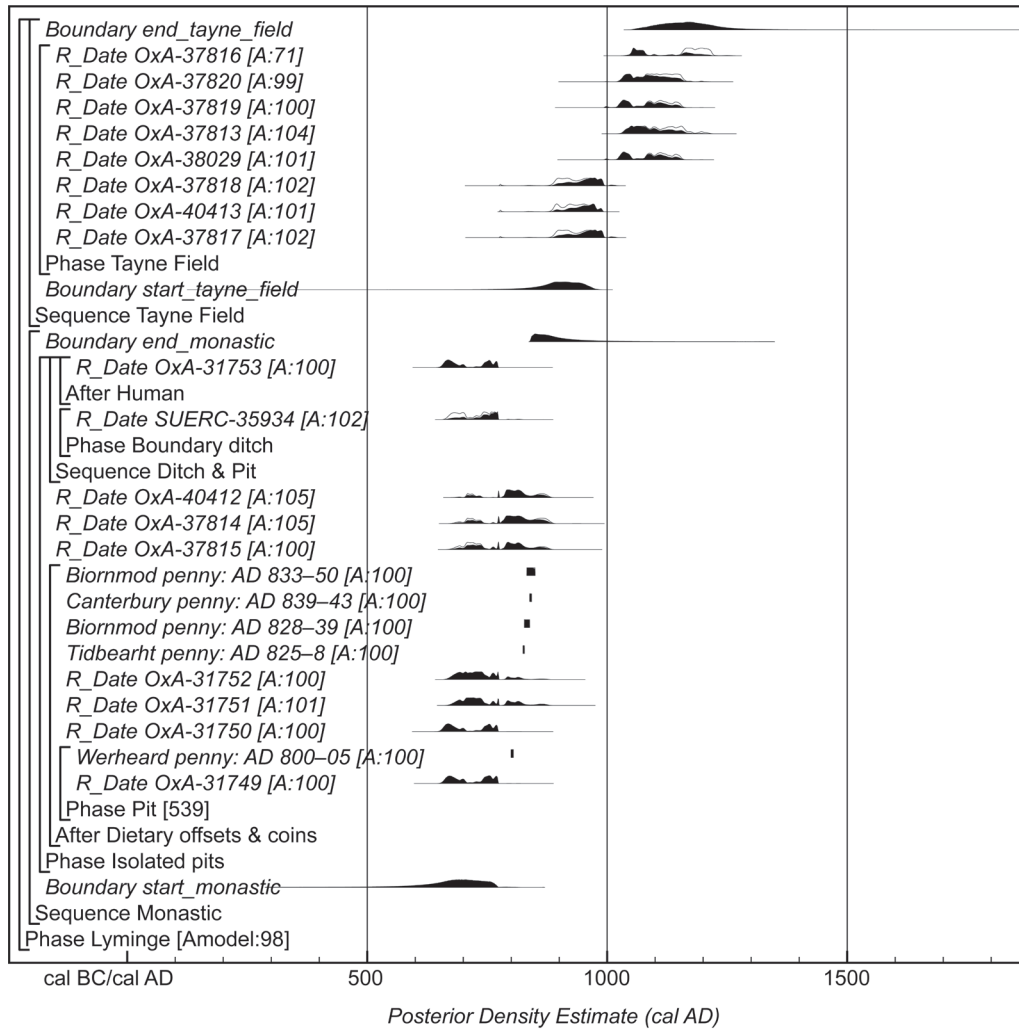


Fig 54. Probability distributions of dates from Lyminge. Each distribution represents the relative probability that an event occurs at a particular time. For each of the dates two distributions have been plotted: one in outline, which is the result of simple radiocarbon calibration, and a solid one, based on the chronological model used. The large square brackets down the left-hand side of the figure along with the OxCal keywords define the overall model exactly. *Image:* authors.

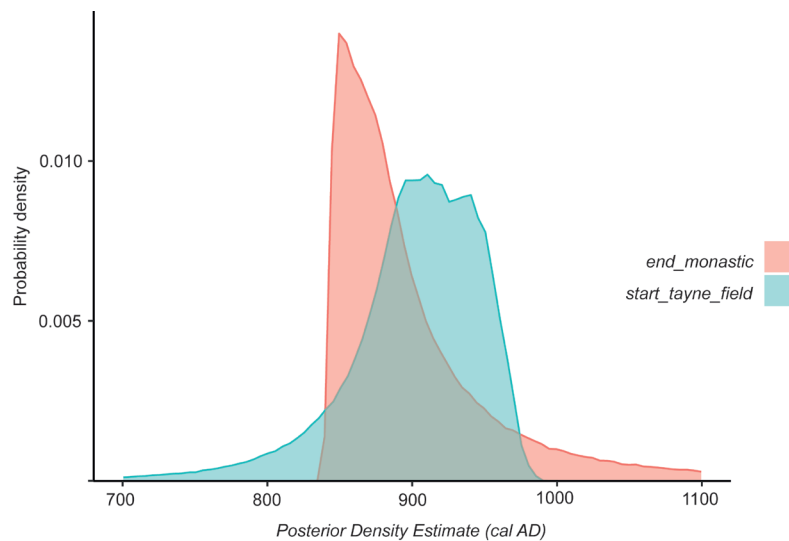


Fig 55. Probability distributions of dates for the end of monastic activity and the start of activity on Tayne Field (note some of the tails of these distributions have been truncated to enable detailed examination of the highest area of probability) derived from the model described in fig 54. *Image:* authors.

in the production of ^{14}C in the years AD 775 (Miyake *et al* 2012) and AD 993 (Miyake *et al* 2013). Secondly, while it is conceivable that the ninth-century coins were deposited in the tenth century following a prolonged period of circulation, taken as a whole, the datable material culture recovered from this phase of the settlement sits much more comfortably in a ninth-century, diagnostically Middle Saxon, timeframe.

Attention can now be turned to the origins of the Late Saxon–Norman successor settlement sampled on Tayne Field. The model shows that occupation here probably began in 445–775 cal AD at 95 per cent probability (start_tayne_field; fig 55) and probably 875–960 cal AD at 68 per cent probability. Notwithstanding the relative imprecision of these estimates due to the small number of available radiocarbon dates, there is a higher probability that the settlement originated after the cessation of the Middle Saxon focus (54.4 per cent) than during the life of its predecessor (45.6 per cent) (fig 55). The testimony of portable material culture can again qualify the results for, in spite of the large scale of the excavations, accompanied by intensive metal-detecting, Tayne Field yielded a notable absence of Middle Saxon coins and artefacts.

The temporal limitations associated with such chronological modelling need to be acknowledged and presented fully, especially when, as attempted here, correlations are made with historical frameworks. However, the following may be considered reasonable inferences within the tolerances of the available evidence. First, there are no indications that the intensity of occupation and general level of prosperity associated with the Middle-Saxon monastic focus fell off dramatically into the second half of the ninth century. The fact that the stratified coins from the Middle Saxon settlement all date to the first half of the ninth century is certainly significant in this context. This strongly suggests that monastic life, together with the infrastructure that supported it, was re-established at Lyminge following the temporary removal of the community to Canterbury c AD 805; it also chimes with the testimony of the charter record that the community continued to receive endowments (albeit sporadically) into the 840s (Brooks and Kelly 2013, 33, 688–96).

Second, our results place the abandonment of the monastic settlement firmly in the second half of the ninth century, and probably before its close. This dating strongly suggests (but of course cannot prove) that its final demise was in some way connected with intensified Viking incursions in Kent in this period, the most likely protagonists being Scandinavian armies active

along the coastal strip of south-east Kent close to Lyminge in the 880s and 890s (Brooks 1984, 30–31, 150–52; Brookes 2016). Third, while uninterrupted occupation cannot be discounted, the re-establishment of settlement in what emerged as Lyminge's Norman, and, ultimately, medieval, focus, probably followed a hiatus of several decades, likely within the early decades of the tenth century. One can only speculate, but the origins of this new focus were likely connected with renewed investment in Lyminge as a centre of archiepiscopal authority.

To conclude, the archaeological narrative constructed from the results of the chronological model adds new acuity to our understanding of the experience, fate and afterlife of monastic communities in Viking-age Kent. While historical sources furnish certain key details pertaining to Lyminge's experience, archaeology can be used to flesh out and nuance this fragmented picture. The fact that monastic life not only survived but arguably continued to flourish well into the first half of the ninth century, albeit after a temporary retreat to Canterbury, heightens awareness of the resilience of such communities in the face of the first wave of Viking incursions. However, it would appear that that resilience was stretched beyond breaking point in the increasingly deleterious circumstances that befell Kent in the second half of the ninth century, of which occupation by Viking armies seems the most likely context.

New beginnings: Lyminge as a centre of archiepiscopal authority in the tenth–eleventh centuries

Remembering and forgetting: the legacy and afterlife of the monastic church

Perceptions of Lyminge as an enduring Christian cult centre, predicated on the uninterrupted, centuries-long veneration of a sanctified royal foundress, have been strongly influenced by the parallel juxtaposition of its two churches as a material metaphor of continuity. Attempts from Jenkins onwards to reconcile Goscelin's translation narrative with this configuration have, as we have seen, resulted in muddled thinking. Jenkins proposed that the two churches formed part of a continuous structural sequence, commencing with the apsidal structure of the seventh century to the south, itself built on the foundations of an earlier late-antique basilica, followed by the present building to the north, the construction of which he attributed to Archbishop Dunstan, following the desecration of the site by Viking raiding. The south nave wall of this later church forms a

central plank of Jenkins' structural interpretation. Influenced by Goscelin's account, he argued that this wall incorporated the north porticus of its predecessor as a means of perpetuating the sanctity of the original shrine. Very little of this sequence stands up to detailed scrutiny. Contrary to Jenkins' published interpretations, there is no direct physical link between the two churches; features that purport to demonstrate such a relationship are a legacy of Jenkins' inventive renovation work. This particularly applies to the arched recess in the south wall of the extant nave that from Jenkins' time onwards has repeatedly attracted interpretation as a remnant of the original shrine described by Goscelin. This can now be dismissed as the centrepiece of an elaborate scheme by Canon Jenkins to display the results of his excavations and tie them back to Goscelin's narrative, adding or adjusting certain details, including structural elements, as he saw fit to match his conclusions. Much of what he did, though perhaps not uncreditable for the mid-nineteenth century when he was active, has to be viewed with extreme scepticism. At best, his records require interpretation, and demonstrably they cannot be taken at face value.

A rather different sequence of events emerges from a reappraisal of the archaeology. The testimony of the surviving structural remains, both buried and upstanding fabric, strongly suggests that the original apsidal chapel was demolished while the Norman church was being built. The evidence is exiguous, but the palimpsest of structural remains re-investigated in the vicinity of Jenkins' 'apse' and 'atrium', might suggest that a freestanding tower was constructed to the west of the early church on a roughly axial alignment in the Late Saxon period, a disposition paralleled at several important ecclesiastical centres across England (Gittos 2013, 55–103). The most obvious context for such a structure is the 'tower-nave' tradition employed as a monumental expression of lordship (lay and ecclesiastical) in Late Saxon England, of which Jevington, East Sussex and Bishophill Junior, York, offer good parallels for Lyminge's dimensions and plan-form (Shapland 2019, 35–6, 60–6, 97–9). If interpreted correctly, this would attest continued monumental investment in the site under archiepiscopal patronage, potentially associated with the continued promotion of Eadburg's cult (Love 2019). We have gone a step further in our interpretation by using a fresh appraisal of the archaeology to cast a critical light back on standard interpretations of Goscelin's account. Rather than viewing this source as a contemporary description, we argue that his narrative is essentially retrospective,

namely describing (whether conjured from direct memory or through details supplied second-hand) a formerly-extant shrine housed within a recently demolished church. This alternative reading provides a more satisfactory reconciliation between this historical source and the testimony of the archaeological record.

Fresh meaning can be attached to the parallel juxtaposition of the two churches from this more clear-sighted appraisal. Read across the ecclesiastical spectrum from metropolitan cathedrals downwards, the immediate post-Conquest biographies of Anglo-Saxon church sites document diverse and varied responses to the inherited built environment (Shapland 2015). This diversity highlights the complex and contingent nature of commemorative practices associated with the process of 'Normanisation'. Parallel church dispositions of the type seen at Lyminge form one strand within this variegated pattern of spatial and monumental remembrance, although, depending upon context, the underlying causal factors may be different. In the case of Lyminge, we have argued that practical considerations connected with a formalisation of the church's parochial status may have influenced the decision to build the new church alongside its predecessor, an approach that would have enabled congregations to continue uninterrupted throughout the rebuilding programme. If our interpretations of these issues are correct, then Lyminge presents continuity of a very different type and temporality to that usually identified.

We can nuance an understanding of the commemorative practices invested in Lyminge yet further by switching the focus of attention to the process by which the pre-Viking church was forgotten. The late medieval burials recorded within the footprint of the apse of the early church indicate that knowledge of the church and, by implication, its associations as a cult centre, had passed from collective memory by this period; although we should spare a thought for the gravediggers who had to battle this obstinate underground hindrance. It seems likely that the translation of Lyminge's relics to Canterbury in the 1080s provided the initial impetus for this process of forgetting. After all, this act was choreographed by Lanfranc to sacralise his new foundation at St Gregory's Priory, the church of which appears to have been specifically designed to display Lyminge's dispossessed relics (Hicks and Hicks 1991). In light of this, one might imagine that there was an active campaign on behalf of the archbishop and the community of St Gregory's to suppress continued expressions of cult devotion at Lyminge. While this may be the case, the experience of

Lyminge's former sister-house, Minster-in-Thanelt, indicates that the realities of translation could be more complex. According to available historical sources (Rollason 1982, 66–7), it continued to act as a focus for the cult of its founding saint, Mildreth, for more than a century after its relics had been translated to Canterbury in 1030. One can only speculate whether such a scenario pertained at Lyminge, but its rather different status as a parochial ex-minster might militate against significant post-translation cult activity (Thanet was re-established as a monastic offshoot of St Augustine's in the eleventh century: Kipps 1929; Brooks 1984, 204).

The wider landscape of episcopal authority

We have seen that developments of the later ninth to tenth centuries ushered a new chapter in the evolution of the wider settlement that saw the centre of gravity shift to lower ground on the axis of the High Street (fig 56). An attempt has been made to date this locational shift and the growth of a new 'Saxo-Norman' focus, but interpretation will now be taken to a deeper level by deploying archaeological evidence to help *characterise* Lyminge as a centre of archiepiscopal authority during this period. It should first be noted that beyond obviously seigneurial contexts such as castles and palaces, settlement archaeology of this period poses particular challenges for social characterisation. This problem is exacerbated by the economic

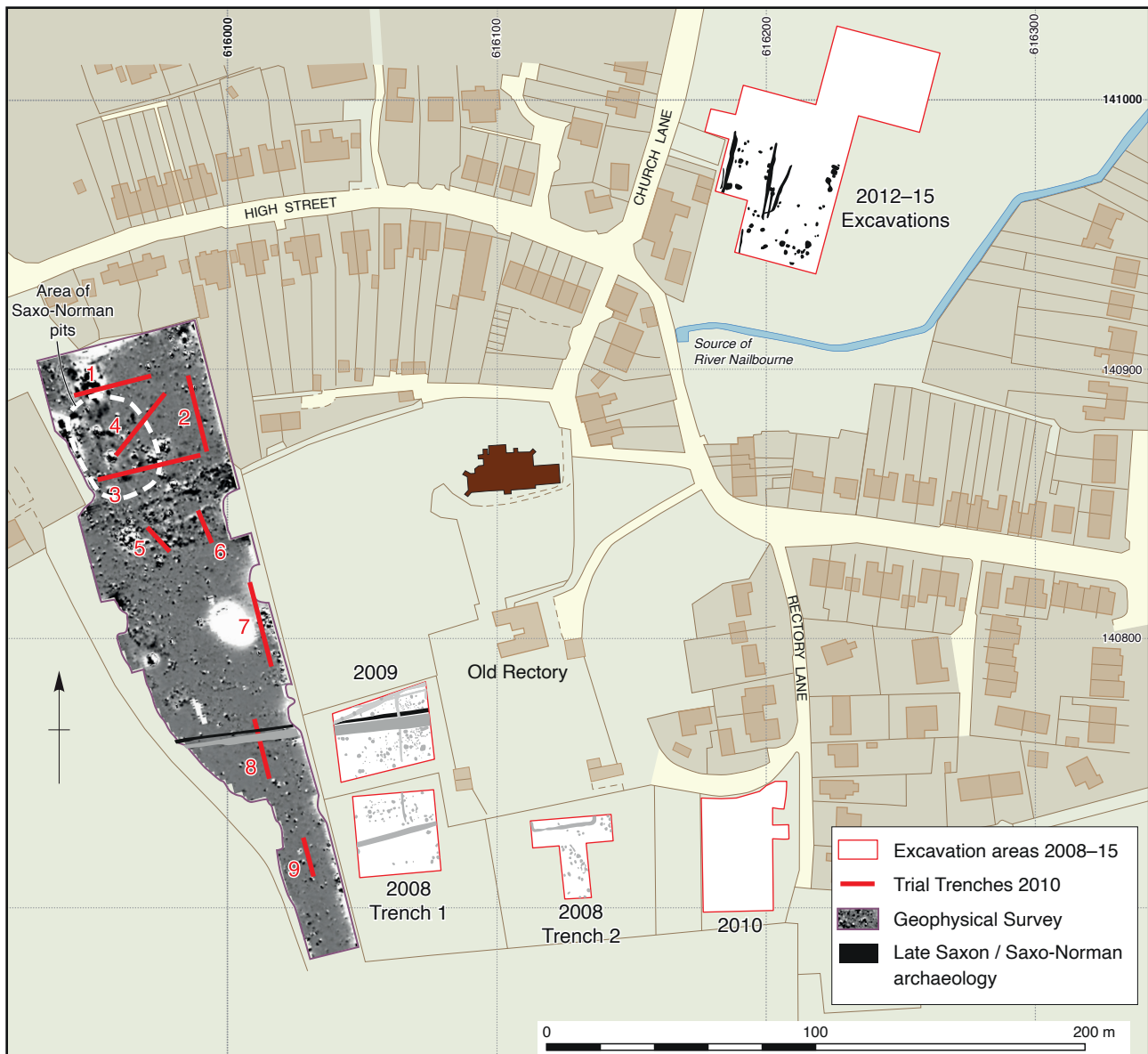


Fig 56. Sites of Late Saxon and Saxo-Norman activity to the north of the churchyard. *Image:* authors, using data: Crown copyright 2009. An Ordnance Survey / EDINA supplied service.



Fig 57. A dense area of Saxo-Norman pitting (right of post-in-trench building) revealed in excavations on Tayne Field, 2012. *Photographs:* authors.

depression in the later eleventh and twelfth centuries, reflected in the paucity of contemporary high-status metalwork and jewellery (Hinton 2005, 164–70, 171–2, 178–9). One means of circumventing this obstacle is bioarchaeological assemblages as a source of evidence for site characterisation. At Lyminge, this has been enabled by extensive assemblages of faunal and palaeoecological data from relevant contexts (fig 57), analysed in multiple phases, latterly under the umbrella of the University of Oxford's FeedSax project as a contributory case study for re-evaluating agricultural change in early medieval England (McKerracher and Hamerow 2022).

Two strands can be pulled out from this analysis, the first being the existence of several deposits of burnt cereal grain dumped in Saxo-Norman enclosure ditches. With an emphasis on free-threshing wheat and hulled barley (Ballantyne 2014; McKerracher 2015, supplementary materials) these dense, grain-rich deposits are characteristic of bulk cereal processing associated with milling, baking or malting (cf McKerracher 2019, 53–7). The deposits also contain a diverse arable weed flora, indicative of a wide and varied hinterland under extensive cultivation with heavy ploughs (Bogaard *et al* in press). The clear inference is that Lyminge was engaged in the production and

conversion of agrarian surplus at an intensity commensurate with its status as an archiepiscopal demesne manor (Du Boulay 1966; Brooks 1984, 206).

Further evidence can be adduced from the sizeable Saxo-Norman faunal assemblage. This resonates a high-status diet both in respect of species representation, specifically high proportions of pig, red deer and diverse bird taxa, and in a predominance of meat-bearing long bones (Holmes, supplementary materials). This dietary signature further underscores Lyminge's significance as a theatre of archiepiscopal lordship steeped in the practices of conspicuous consumption.

Reconstructing the archiepiscopal residence

The residential nucleus

Lyminge's significance as a medieval archiepiscopal residence has left a clear, if patchy, trail in the historical record. As with much else, Canon Jenkins was cognisant of these historical sources, but wayward in connecting them with physical, on-the-ground, evidence. The earliest relevant source is the register for Archbishop Peckham under the year 1279, when the archiepiscopal court was held

at the ‘Camera de Lymings’ (Davis 1969, IX–XVI). The residence must have been established before Peckham’s prelateship (1279–92) for he personally intervened to facilitate the rejuvenation of pre-existing buildings (Jenkins 1874, 217). No further mention is made of the residence later in Peckham’s tenure and the historical record falls silent until 1382 when Archbishop Courteney obtained a license to demolish the buildings in connection with the aggrandisement of his personal residence at Saltwood Castle (Du Boulay 1966, 239).

Several rungs down in importance from the sprawling palatial complexes of Charing, Maidstone, and Orpington that lined the archbishop’s main itineration route between Canterbury and Southwark (Du Boulay 1966, 229–37), Lyminge appears to have been subject to visitations on a relatively intermittent basis befitting its relatively isolated location in the chalklands of south-east Kent. This probably explains why it had fallen into disrepair by the start of Peckham’s prelateship and was decommissioned a century later. Irrespective of Lyminge’s precise position within the residential spectrum — it was likely a more modest version of the residences that graced the wealthiest of the See’s demesne manors at Wingham and Aldington — a sizeable and well-appointed manorial complex should nevertheless be envisaged, most likely comprising a formally arranged suite of buildings performing the role of hall, chamber and chapel, situated within a wider precinct occupied by ancillary buildings and related infrastructure (cf Thompson 1998; Roberts 1993).

Our archaeological investigations have successfully relocated what seems to be the nucleus of the residence, represented by the imposing and well-appointed E–W stone building unearthed within the area of the New Churchyard, formerly known as Abbots Green, and, less certainly, by the final phase of the structural sequence re-examined in the area of Jenkins’ ‘apse’, which could relate to his description of a vaulted undercroft (fig 58). This result challenges the received wisdom that the main residential buildings lay further west at the northern end of Court Lodge Green, a misapprehension for which Jenkins was personally responsible. It also indicates that the residence enjoyed an intimate spatial relationship with the parish church, particularly so if the final structural iteration of the second building is indeed medieval, as certainly applies to the fragment of E–W foundation (8/27) to the east that has been independently dated to this period. If this scenario did indeed transpire, then a portion of the residence would have encroached upon the former limits of the churchyard.

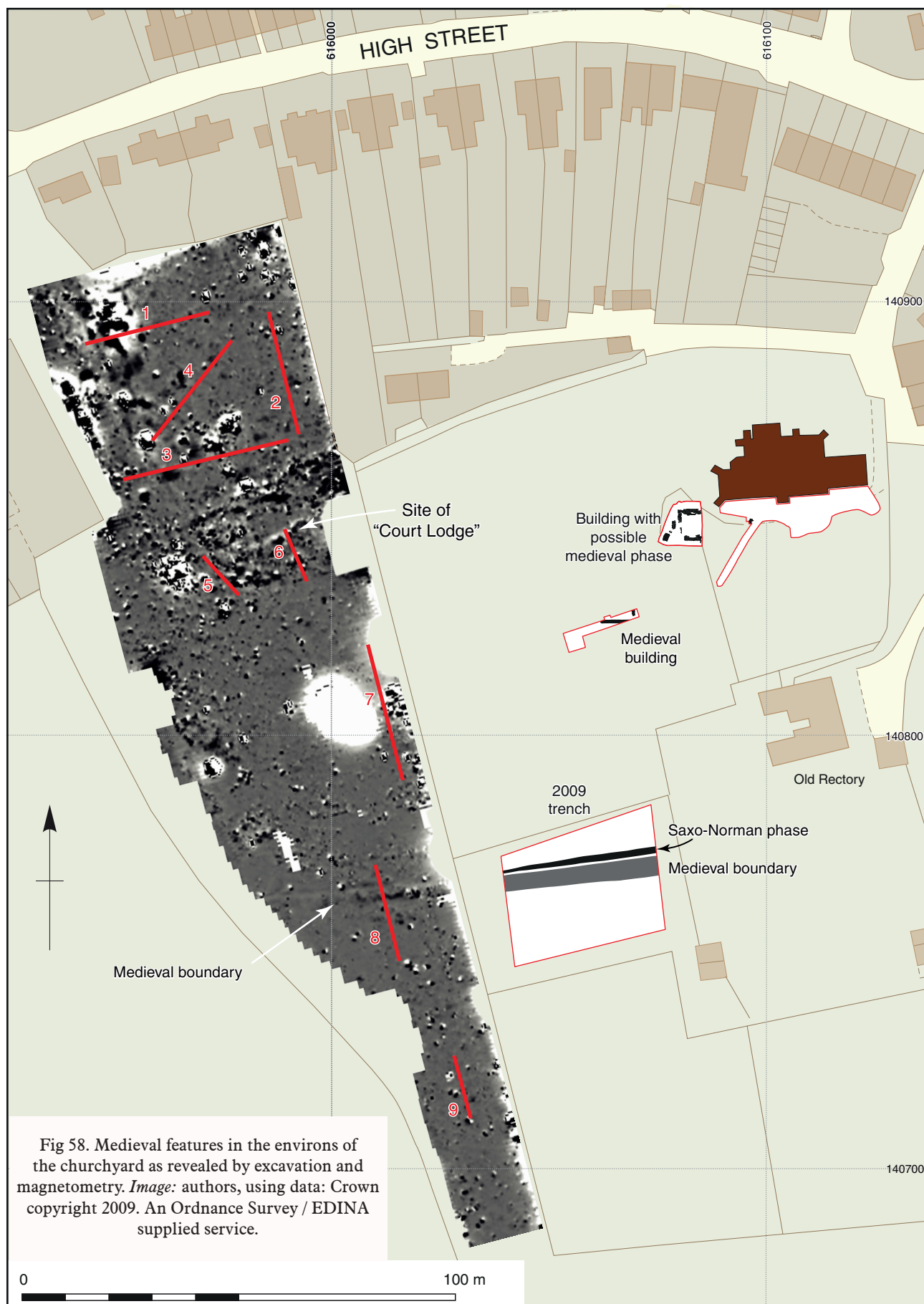
Bishop’s residences were commonly constructed

in close proximity to pre-existing parish churches, sometimes with the enclosure of the former and the churchyard directly abutting (Thompson 1998; Roberts 1993), but the strikingly close juxtaposition seen at Lyminge is suggestive of a conscious act of spatial appropriation. Support for this reading is provided by a recent illuminating study of bishops’ residences in the medieval Scottish dioceses of St Andrew’s and Glasgow (Dansart 2017). Through a subtle interdisciplinary investigation of the topographic placement, Dansart shows that residences in these regions were frequently inserted into places of long-term spiritual significance associated with early saints’ cults as a strategy for conveying messages of sacral authority. While such commemorative practices have yet to be systematically examined in a Kentish context, the cumulative evidence from Lyminge strongly suggests that here too archiepiscopal authority was asserted through a programme of monumental elaboration that sought to channel, and perhaps even actively revive, the sacral associations of the inherited landscape.

The wider setting

As with other places of medieval seigneurial power, there is every reason to believe that Lyminge’s archiepiscopal residence sat within a wider ‘designed’ landscape that performed the requirements of a working message while also proclaiming prestige and authority through manipulated vistas and settings (Johnson 2002; Creighton 2009).

Progress towards piecing together this lost medieval landscape can be made by integrating the results of previous University of Reading excavations with topographical details supplied by LiDAR imagery (fig 59). Clearly revealed by the latter is a series of E–W terraces straddling New Churchyard and Court Lodge Green. These are interrupted by a braided network of sunken trackways, which, along with circular quarry pits, are clearly intrusive. The stone building identified to the east of the War Memorial appears to have been constructed on the edge of the second terrace. At the bottom of the field is a square terrace bordered on its west by a drainage channel that feeds into a large pond straddling the west end of the High Street. Its origins are obscure, but it does appear to be represented on an estate map of 1685 (fig 60) and could conceivably have served as a fishpond for the medieval archiepiscopal residence. Also worthy of note is a sunken E–W linear feature that bisects the most southerly of the terraces and corresponds to a large medieval boundary ditch sampled in previous excavations (see below). Although the terraces have not been



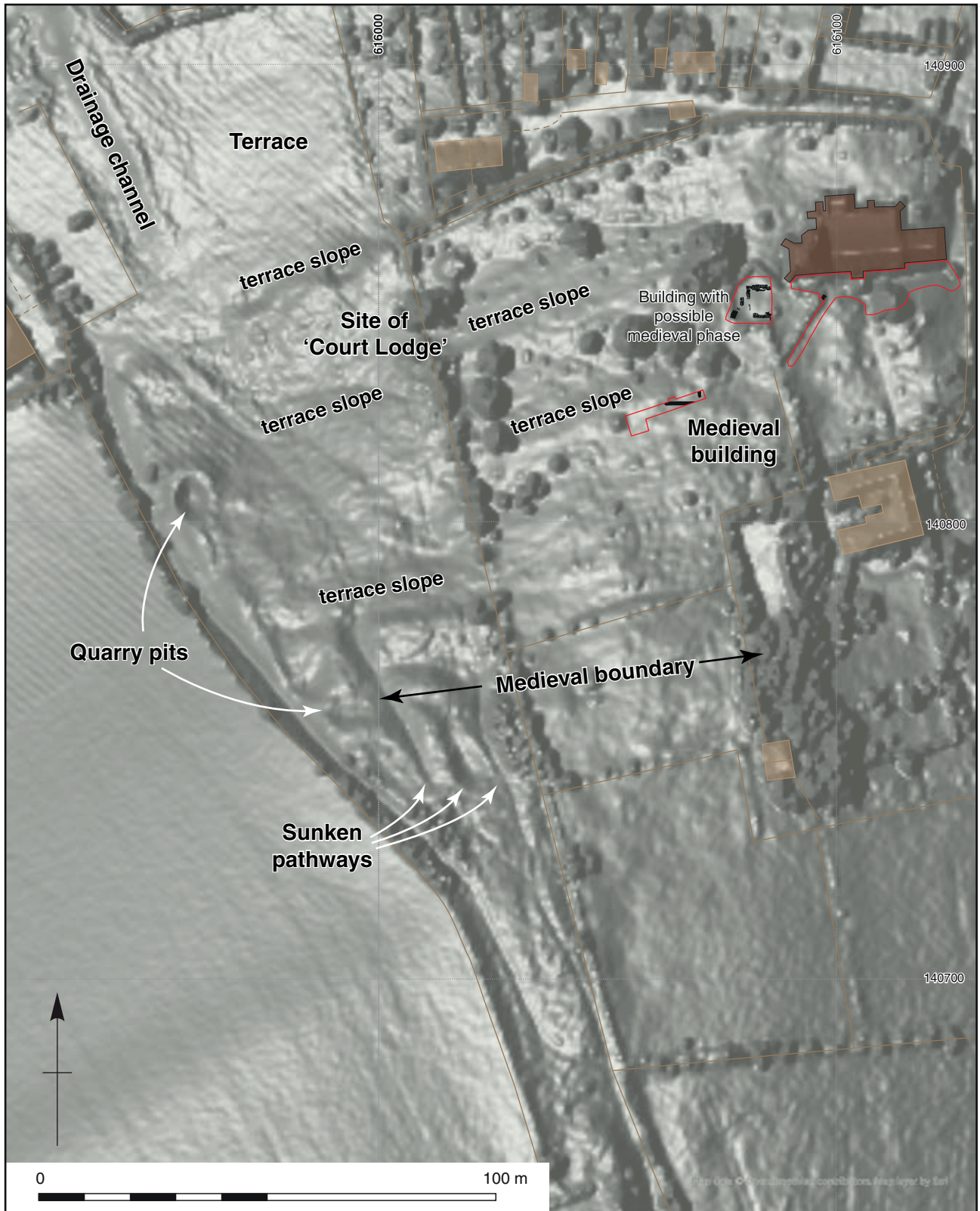


Fig 59. Earthworks in the environs of the churchyard revealed by LiDAR. *Image:* authors, using data: Crown copyright 2009. An Ordnance Survey / EDINA supplied service.

dated archaeologically, it is highly probable that they were created as part of formal landscaping for the medieval archiepiscopal residence.

Further detail is supplied by previous fieldwork to the west and south-west of the cemetery. Particularly pertinent is a major E–W boundary

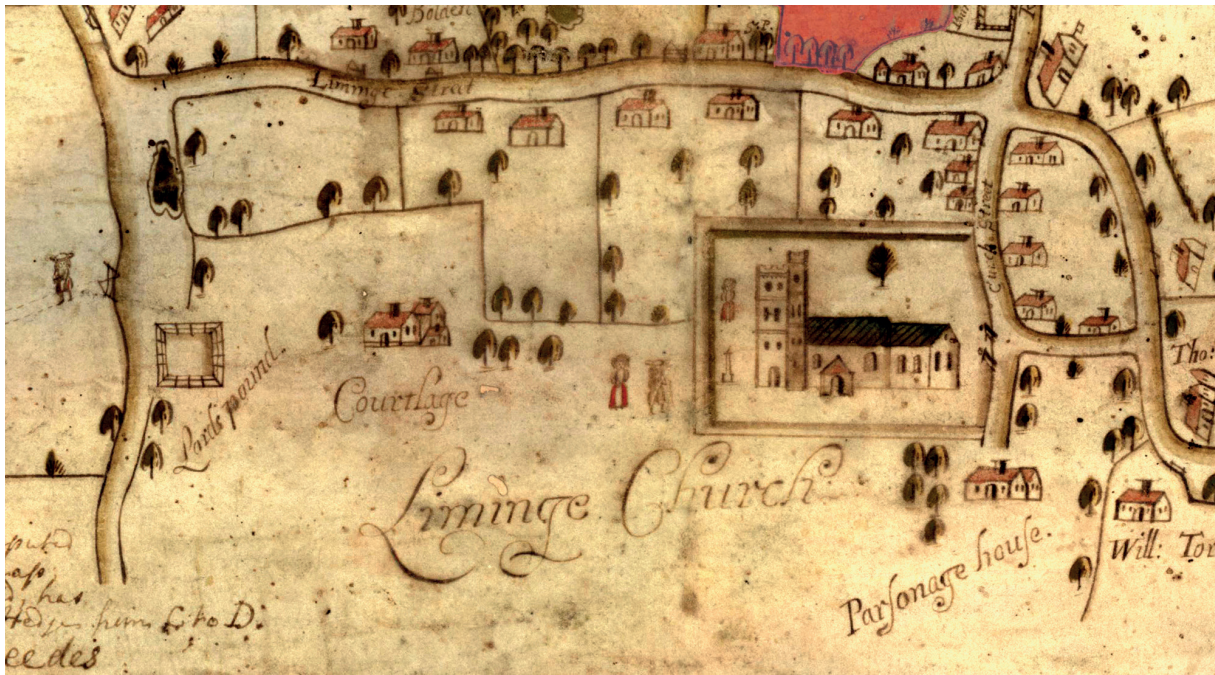


Fig 60. Extract from estate map by Thomas Hill, dated 1685. Image: from the collection of and © Lyminge Historical Society.

traced in excavations (2009) to the south of the churchyard that post-dated the mass of Middle Saxon occupation (fig 58). The boundary was represented by a pair of parallel ditches, a slighter one to the north, measuring 1.7m wide and 0.9m deep [1092], and a much more substantial version to the south, measuring 5.40m wide and in excess of 2.5m deep, which continues into neighbouring Court Lodge Green as an earthwork [1002]. The dating evidence recovered from these features was meagre, but sufficient to hypothesise that the boundary was perhaps established in the Saxo-Norman period on the alignment of the slighter of the two ditches, and subsequently redefined on a massive scale in the twelfth–thirteenth centuries. The paucity of cultural material from the ditches is consistent with an outer boundary of a seigneurial precinct, as also suggested by the absence of contemporary structural features and occupation in the immediate vicinity.

The results of investigations in Court Lodge Green in 2010 furnish additional information, albeit if mainly in the form of negative evidence. A geophysical survey and trial-trenching returned minimal signs of buried wall foundations or demolished masonry, consistent with the monumental core of the complex being located further to the east, close to the Old Churchyard. The overall impression is that this area comprised the outer court or precinct of the residence rather than its structural nucleus (cf Roberts 1993; fig 61). The only structural archaeology identified in this area was confined to a terrace straddling the

south-west corner of the churchyard. This yielded demolished remains from a late medieval tiled building, which can confidently be related to a property named ‘Court Lodge’ illustrated on a late sixteenth-century estate map (fig 60). The name of this property suggests that it may have been established on the site of an earlier gatehouse to the inner precinct of the archiepiscopal residence, accessed via an anciently established routeway (now fossilised by Woodland Road), which linked Lyminge to Stone Street, the principal communication artery extending south from Canterbury (Bell *et al* 2020).

CONCLUSION

Lyminge exemplifies the powerful degree to which the enduring mythology of the golden age of Anglo-Saxon saints has shaped how places of sacred Christian heritage have been investigated, interpreted and presented to the public since the Victorian era. This study has sought to disentangle myth from reality through a rigorous re-assessment of the archaeology — both buried and standing — behind Canon Jenkins’ published interpretations, which has enabled his legacy and its varied influences to be established with new clarity. Parts of Lyminge’s ‘long medieval’ trajectory with regards to its cult focus remains shadowy because vital evidence has been lost through centuries of continuous interment in the churchyard. This particularly applies to the organisation of the inner

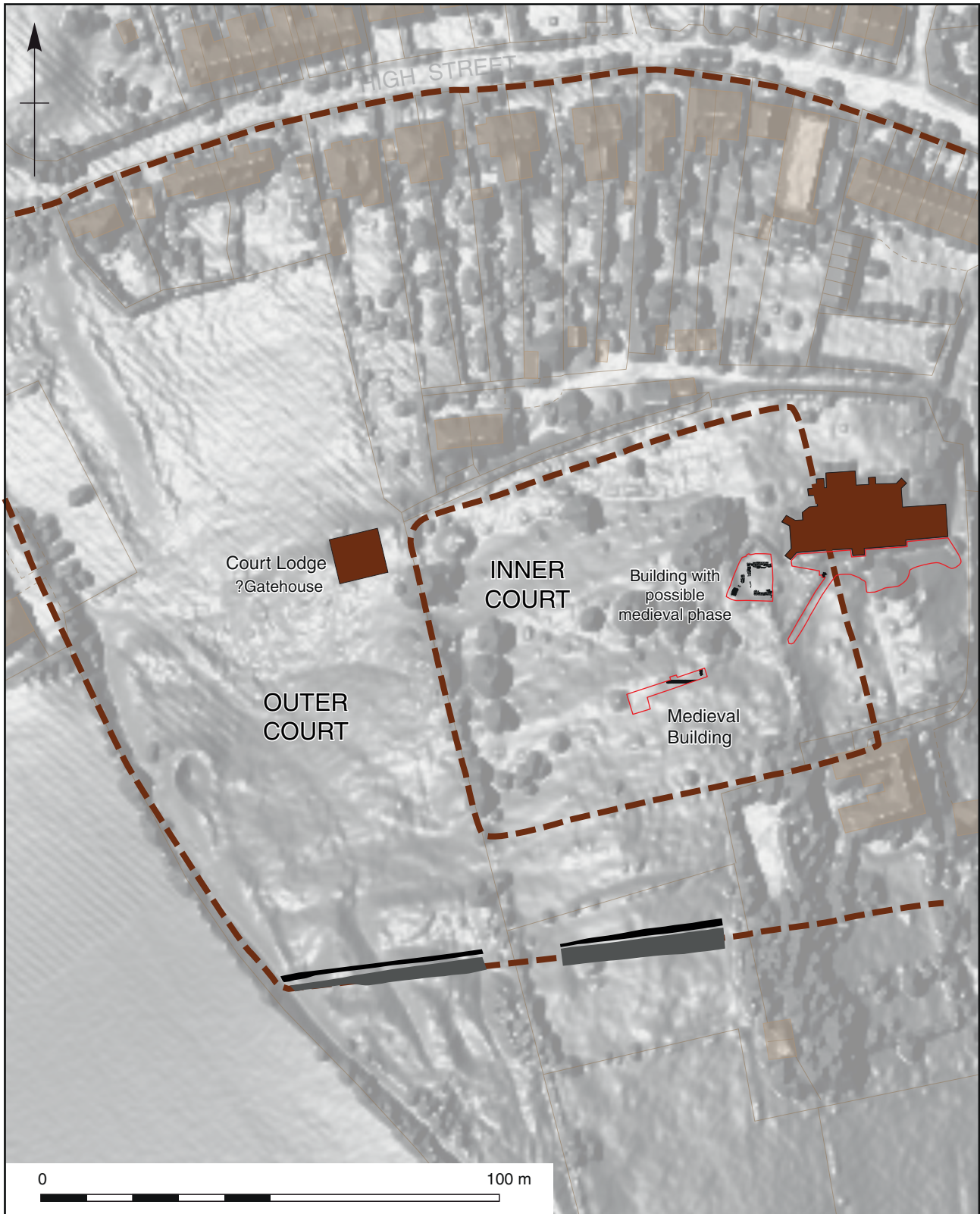


Fig 61. Conjectural reconstruction of the layout of the medieval archiepiscopal residence draped over LiDAR survey.
Image: authors, using data: Crown copyright 2009. An Ordnance Survey / EDINA supplied service.

precinct of the Anglo-Saxon monastery, including the location and extent of the monastic cemetery, the appearance and monumental constituents of the Late Saxon cult focus, and the configuration of

the core buildings of the medieval archiepiscopal residence. Nevertheless, considerable progress has been achieved by maximising the potential of the archaeology that *does* survive through

detailed structural recording of historic fabric, the application of independent scientific dating and analytical studies enabling aspects of the operational sequence behind the Anglo-Saxon church to be reconstructed. This has supported a more subtle and objective reading of the site's development than was hitherto possible, one that reflects a critical light back on problematic notions bound up with equally problematic historical sources, while also creating space for conceptual issues such as commemorative practices to be brought into the heart of the narrative.

Compensation for the uneven survival of archaeology within the churchyard has been provided by the results of open-area excavation within the wider landscape, integration of which has enabled developments within the cult focus to be connected to the evolution of the settlement as a whole. While this may fall some way short of a fully holistic narrative, it nonetheless provides integrated 'big picture' perspectives that remain exceptionally rare for early medieval monastic sites generally (Blair 2011a, 733; Loveluck 2005, 245; Cramp 2017). Insights drawn from independent scientific and analytical studies (in this case of environmental and artefactual assemblages) have once again proved vital in building a narrative that is sensitive to historical contingency and social factors. Using Lyminge as a case study, we have shown how scientific dating can be applied to generate archaeological insights on the lived experience of monastic establishments during the Viking Age and to help chart the complex settlement transformations bound up with their afterlives as parochial ex-minsters. Our narrative has been enriched by diachronic perspectives on diet and economy supported by the analysis of faunal and palaeoecological assemblages. This has shown that despite its altered and downgraded ecclesiastical status, Lyminge's role as a central place engaged in the consumption of rural surplus and in the material assertion of elite (archiepiscopal) identity persisted throughout the Norman and medieval periods. While there may have been profound changes to Lyminge's institutional identity over the 'long Middle Ages', its essential identity as a place of power where the authority of church and state were mutually re-inscribed into the landscape remained a constant.

ACKNOWLEDGEMENTS

I wish to thank Lyminge Parochial Church Council and the Diocesan Archaeologist, Paul Bennett, for making the 2019 excavation possible, and the Commissary General Rosalind Morag Ellis QC and

Ann Beswick and Owen Carew-Jones at Canterbury Diocesan Registry for dealing so quickly and professionally with last minute issues that might have prevented the faculty being granted for the excavation to proceed. I am grateful to Bob Lane, verger and churchwarden, and the other church wardens during the period, Phil Hawken and Raja Stokes, for their generous support and assistance throughout the campaign. I am deeply indebted to the excavation team who worked well beyond the call of duty in at times arduous and challenging circumstances: Lisa Backhouse, Keith Parfitt, Paul Armour, members of the Dover Archaeological Group and Reading undergraduate students, as well as numerous volunteers from Lyminge and the surrounding area. I also wish to thank Lloyd Bosworth, Department of Classical and Archaeological Studies, the University of Kent, for undertaking the laser scan of the column fragment, Robert Fry and Sarah Lambert-Gates of the University of Reading for assisting with the preparation of some of the illustrations and William Wright and Kevin White for drone photography. Robert Baldwin, Richard Gem and Roberta Gilchrist kindly commented on a previous draft of the paper and the current version has benefited immeasurably from their incisive, constructive and generous feedback. As a constant and dependable source of advice, support and encouragement over the past three years, I wish to pay a particular debt of gratitude to Robert Baldwin and Richard Gem for helping me to steer this complex project to publication. The 2019 excavation was embedded in the wider project, *Pathways to the Past: Exploring the Legacy of Ethelburga*, funded principally by the NLHF (OH-18-05795), as well as by the Sutton Hoo Society, Kent Archaeological Society, Lyminge Historical Society, the Lyminge Association, the Robert Kiln Trust and many generous donations from the general public, and the programme of mortar analysis and dating was funded by the British Academy/Leverhulme Small Grant Scheme (SRG1920\101169).

ABBREVIATIONS AND BIBLIOGRAPHY

Abbreviations

CAT	Canterbury Archaeological Trust
CBA	Council for British Archaeology
HMSO	Her Majesty's Stationery Office
LiDAR	Light Detection And Ranging
NLHF	National Lottery Heritage Fund
OD	Ordnance Datum
RCHME	Royal Commission on the Historic Monuments of England

Primary sources

HE = Bede 1994. *Ecclesiastical History of the English People*, J McClure and R Collins (eds), Oxford University Press, Oxford

S = Sawyer, P H 1969. *Anglo-Saxon Charters: An Annotated List and Bibliography*, Royal History Society, London

Secondary sources

Anon 1929. 'Lyminge Saxon Church', in 'Proceedings at Meetings of the Royal Archaeological Institute (Tuesday, 23rd July)', *Archaeol J*, 86, 307–9

Bailiff, I K, Blain, S, Graves, C P, Gurling, T, Semple, S, 2010. 'Uses and recycling of brick in medieval and Tudor English buildings: insights from the application of luminescence dating and new avenues for further research', *Archaeol J*, 167, 165–96

Baldwin, R 2016, 'The Queen, the Virgin and the Body-snatchers', in D Harrington (ed.), *Lyminge: A History, Part Seven*, ch 36, History Research, Lyminge

Baldwin, R 2017. 'Antiquarians, Victorian parsons and re-writing the past: how Lyminge parish church acquired an invented dedication', *Archaeol Cantiana*, 138, 201–26

Baldwin, R 2018. 'The first church in Lyminge', in D Harrington (ed.), *Lyminge: A History, Part Ten*, ch 70, History Research, Lyminge

Ballantyne, R 2014. 'Assessment of charred and mineral-replaced biota from Lyminge (LYM12 LYM13)', Unpublished report, University of Reading

Bell, M, Black, S, Maslin, S and Toms, P 2020. 'Multi-method solutions to the problem of dating early trackways and associated colluvial sequences', *J Archaeol Sci Reps*, 32, 1–9

Bell, T 1998. 'Churches on Roman buildings: Christian associations and Roman masonry in Anglo-Saxon England', *Medieval Archaeol*, 42, 1–18

Biddle, M 1986. 'Archaeology, Architecture, and the Cult of Saints in Anglo-Saxon England', in L Butler and Morris 1986, 1–31

Blagg, T F C 1981. 'Some Roman architectural traditions in early Saxon churches in Kent', in A P Detsicas (ed), *Collectanea Historica: Essays in Memory of Stuart Rigold*, 51–3, Kent Archaeological Society, Maidstone

Blair, J 1985. 'Secular minster churches in Domesday Book', in P Sawyer (ed), *Domesday Book: A Reassessment*, 104–42, Hodder Arnold, London

Blair, J 2002. 'A saint for every minster? Local cults in Anglo-Saxon England, and 'A handlist of Anglo-Saxon saints', in A Thacker and R Sharpe (eds), *Local Saints and Local Churches in the Early Medieval West*, 455–565, Oxford University Press, Oxford

Blair, J 2005. *The Church in Anglo-Saxon Society*, Oxford University Press, Oxford

Blair, J 2011a. 'Overview: the archaeology of religion', in H Hamerow, D A Hinton and S Crawford (eds), *The Oxford Handbook of Anglo-Saxon Archaeology*, 727–41, Oxford University Press, Oxford

Blair, J 2011b. 'Flixborough Revisited', *Anglo-Saxon Stud Archaeol Hist*, 17, 101–7

Blair, J 2018. *Building Anglo-Saxon England*, Princeton University Press, Princeton

Blockley, K, Sparks, M and Tatton-Brown, T 1997.

Canterbury Cathedral Nave. Archaeology, History and Architecture, Archaeology of Canterbury (New Series) I, Canterbury Archaeological Society, Canterbury

Bridge, M C and Miles, D 2017. 'Dendrochronologically dated doors in Great Britain', *Regional Furniture*, 26, 73–103

Brookes, S 2016. 'Viking Age Kent', in S Sweetinburgh (ed), *Early Medieval Kent 800–1220*, 103–32, Boydell Press, Woodbridge

Brooks, N 1984. *The Early History of the Church of Canterbury*, Leicester University Press, Leicester

Brooks, N and Kelly, S (eds) 2013. *Charters of Christ Church Canterbury*, 2 vols, Anglo-Saxon Charters 17, Oxford University Press, Oxford

Butler, L and Morris, R K (eds) 1986. *The Anglo-Saxon Church: Papers on History, Architecture, and Archaeology in Honour of Dr H M Taylor*, CBA Res Rep 60, London

Cambridge, E 1999. 'The architecture of the Augustinian mission', in R Gameson (ed), *St Augustine and the Conversion of England*, 202–36, Sutton, Stroud

Carroll, J, Reynolds, A, and Yorke, B (eds) 2019. *Power and Place in the Early Middle Ages*, British Academy, London

Carver, M, Garner-Lahire, J and Spall, C 2016. *Portmahomack on Tarbat Ness: Changing Ideologies in North-East Scotland, Sixth to Sixteenth Century AD*, Society of Antiquaries of Scotland, Edinburgh

Clapham, A W 1930. *English Romanesque Architecture Before the Conquest*, Clarendon Press, Oxford

Colker, M L 1977. 'A Hagiographical polemic', *Medieval Stud*, 39, 60–108

Conneller, C 2011. *An Archaeology of Materials*, Routledge, London

Connerton, P 1989. *How Societies Remember*, Cambridge University Press, Cambridge

Cramp, R 2017. 'New perspectives on monastic buildings and their uses', in G Thomas and A Knox 2017, 27–42

Creighton, O 2009. *Designs upon the Land: Elite Landscapes of the Middle Ages*, Boydell, Woodbridge

Crook, J 2000. *The Architectural Setting of the Cult of Saints in the Early Christian West, c.300-c.1200*, Oxford University Press, Oxford

Dale, R, Maynard, D, Tyler, S and Vaughan, T 2010.

'Carved in stone: a late Iron Age and Roman cemetery and evidence for a Saxon minster, excavations near St Nicholas's church, Great Wakering 1998 and 2000', *Trans Essex Soc for Archaeol Hist* (4th ser), 1, 194–231

Dansart, P 2017. 'Bishops' residences, saints' cults, and the legacy of sacred authority in the medieval dioceses of St Andrews and Glasgow', in D Rollason (ed), *Princes of the Church: Bishops and their palaces*, 81–98, Soc Medieval Archaeol Mono Ser 39, Routledge, London

Daubney, A J 2016. *Portable Antiquities, Palimpsests, and Persistent Places: A multi-period approach to Portable Antiquities Scheme data in Lincolnshire*, Sidestone Press, Leiden

Davis, F N 1969. *The Register of John Pecham Archbishop of Canterbury 1279–1292*, 2 vols, The Canterbury and York Society, 63, Devonshire Press, Torquay

- Dobres, M A 2000. *Technology and Social Agency*, Blackwell, Oxford
- Doherty, J, Hardy, L, Richardson, A and Williams, E (eds), 2020. *Finding Eanswythe: the life and afterlife of an Anglo-Saxon Saint*, Canterbury Christ Church University, Canterbury: <https://findingeanswythe.uk/> (accessed Nov 2022)
- Dowker, G 1878. 'Reculver church', *Archaeol Cantiana*, **12**, 248–68
- Downham, C 2017. 'The Earliest Viking Activity in England?', *English Hist Rev*, **132** (554), 1–12
- Du Boulay, F R H 1966. *The Lordship of Canterbury: An Essay on Medieval Society*, Nelson, London
- Eaton, T 2000. *Plundering the Past: Roman Stonework in Medieval Britain*, Tempus, Stroud
- Effros, B 2019. 'Reviving Carthage's martyrs: Archaeology, memory, and Catholic devotion in the French Protectorate of Tunisia', *Archeol Medievale*, **46**, 65–73
- Ellis, P 2002. 'The analysis of mortar' *Historic Churches*, **9**, Cathedral Communications Ltd
- Everson, P and Stocker, D 2011. *Custodians of Continuity? The Premonstratensian Abbey at Barlings and the Landscape of Ritual*, Lincolnshire Archaeology and Heritage Reports 11, Lincoln
- Fernie, E 1983. *Architecture of the Anglo-Saxons*, B T Batsford, London
- Foot, S 2000. *Veiled Women: Volume I: The disappearance of Nuns from Anglo-Saxon England — Studies in early medieval Britain and Ireland*, Taylor and Francis, London
- Freke, D J 1980. 'Excavations in the parish church of St Thomas the Martyr, Pagham, 1976' *Sussex Archaeol Coll*, **118**, 245–56
- Gem, R (ed) 1997. *St Augustine's Abbey, Canterbury*, B T Batsford/English Heritage, London
- Gerrard, C 2002. *Medieval Archaeology: Understanding traditions and contemporary approaches*, Routledge, London
- Gibbons, P 1997. 'Pozzolans for lime mortars', in J M H Taylor (ed), *The Conservation and Repair of Ecclesiastical Buildings*, BCD Special Reports, Tisbury: Cathedral Communications Ltd. (Tisbury: Building Conservation Directory). Cathedral Communications
- Gilbert, E 1964. 'The church of St Mary and St Eadburg, Lyminge', *Archaeol Cantiana*, **79**, 143–8
- Gilchrist, R 2019. *Sacred Heritage: Monastic Archaeology, Identities, Beliefs*, Cambridge University Press, Cambridge
- Gilchrist, R and Green, C 2015. *Glastonbury Abbey, Archaeological Excavations 1904–79*, Soc Antiq, London
- Gittos, H 2013. *Liturgy, Architecture, and Sacred Places in Anglo-Saxon England*, Oxford University Press, Oxford
- Glynne, S R 1877. *Notes on the Churches of Kent*, J R Murray, London
- Heighway, C and Bryant, R 1999. *The Golden Minster: The Anglo-Saxon Minster and Medieval Priory of St Oswald at Gloucester*, CBA Res Rep 117, York
- Hicks, A 2015. *Destined to Serve: Use of the outer grounds of St Augustine's Abbey, Canterbury, before, during and after the time of the monks*, CAT Occ Paper 11, CAT, Canterbury
- Hicks, A and Hicks, M 1991. 'St Gregory's Priory' *Archaeol Cantiana*, **109**, 195–201
- Hill, P 1997. Whithorn and St. Ninian: the Excavations of a Monastic Town, 1984–91, Alan Sutton, London
- Hinton, D A 2005. *Gold and Gilt, Pots and Pins: Possessions and people in medieval Britain*, Oxford University Press, Oxford
- Ingold, T, 2013. *Making: Anthropology, archaeology, art and architecture*, Routledge, London
- Jasper, D and Smith, J 2019. "The Lay Folks' Mass Book' and Thomas Frederick Simmons: Medievalism and the Tractarians", *J Ecclesiast Hist*, **70** (4), 785–804
- Jenkins, R C 1861. 'On some fragments of a Norman building recently discovered at Great Woodlands, in the parish of Lyminge', *Archaeol Cantiana*, **4**, 123–6
- Jenkins, R C 1874. 'The Basilica of Lyminge: Roman, Saxon and Mediaeval', *Archaeol Cantiana*, **9**, 205–23
- Jenkins, R C 1875. 'Remarks on the early Christian Basilicas, in connection with the recent discoveries at Lyminge', *Archaeol Cantiana*, **10**, ci–cii
- Jenkins, R C 1882. *Romanism. A doctrinal and historical examination of the Creed of Pope Pius IV*, Christian Tract Society, London
- Jenkins, R C 1888. *Observations on the Remains of the Basilica of Lyminge*, Mitchell and Hughes, London
- Jenkins, R C 1889a. 'Observations on the remains of the basilica of Lyminge', *Archaeol Cantiana*, **18**, 46–54
- Jenkins, R C 1889b. *The Life of Valentin Alberti DD*, David Nutt, London
- Jenkins, R C 1890. *The Burial-Place of St. Ethelburga the Queen in Lyminge (633–643). A brief account of its discovery and of the subsequent history of the church (965–1527)*, Birch and Co, Folkestone
- Jones, A 2007. *Memory and Material Culture. Topics in contemporary archaeology*, Cambridge University Press, Cambridge
- Johnson, M 2002. *Behind the Castle Gate: from Medieval to Renaissance*, Routledge, London
- Kelly, S 2006. 'Lyminge minster and its early charters', in S Keynes and A P Smyth (eds), *Anglo-Saxons: studies presented to Cyril Hart*, Four Courts Press, Dublin, 98–113
- Kipps, P K 1929. 'Minster Court, Thanet' *Archaeol J*, **86**, 213–23
- Kjølbye-Biddle, B 1986. 'The 7th century minster at Winchester interpreted', in Butler and Morris 1986, 196–209
- Knapp, Z 2017. 'Changing Tastes: Farming, Feasting and Fasting at Lyminge', in Thomas and Knox 2017, 135–48
- Knox, A 2013. 'Discovering an Anglo-Saxon royal hall', *Curr Archaeol*, **24** (8), 20–5
- Love, R C 2019. 'St Eadburh of Lyminge and her hagiographer', *Analecta Bollandiana*, **137**, 313–408
- Loveluck, C P 2005. 'Rural settlement hierarchy in the age of Charlemagne', in J Story (ed), *Charlemagne: Empire and Society*, 230–58, Manchester University Press, Manchester
- Loveluck, C P 2007. *Rural Settlement, Lifestyles and Social Change in the Late First Millennium AD: Anglo-*

- Saxon Flixborough in its wider context*, Excavations at Flixborough 4, Oxbow, Oxford
- Malden, H E 1911, *The Victoria History of the County of Surrey: Volume 3*, St Catherine Press, London
- Mayhew-Smith, N and Hayward, G 2020. *Britain's Pilgrim Places*, The British Pilgrimage Trust, London
- McKerracher, M 2019. *Anglo-Saxon Crops and Weeds: A case study in quantitative archaeobotany*, Archaeopress, Oxford
- McKerracher, M and Hamerow, H (eds) 2022. *New Perspectives on the Medieval Agricultural Revolution: Crop, stock and furrow*, Liverpool University Press, Liverpool
- Miyake, F, Nagaya, K, Masuda, K and Nakamura, T 2012. 'A signature of cosmic-ray increase in AD 774–775 from tree rings in Japan', *Nature*, **486**, 240–2
- Miyake, F, Masuda, K and Nakamura, T 2013. 'Another rapid event in the carbon-14 content of tree rings', *Nature Comms*, **4**, 1748
- North, M 2001. 'St Leonard's Tower: Some aspects of Anglo-Norman building design and construction', *Archaeol Cantiana*, **121**, 269–86
- Ó Carragáin, T 2010. *Churches in Early Medieval Ireland: Architecture, ritual and memory*, Yale University Press, London and New Haven
- Ottaway, P 2017. *Winchester: An archaeological assessment*, Oxbow, Oxford
- Parsons, D (ed) 1990. *Stone. Quarrying and building in England AD 43–125*, Phillimore, Chichester
- Peers, C 1901. 'On Saxon churches of St Pancras type', *Archaeol J*, **58**:1, 402–34
- Pestell, T 2004. *Landscapes of Monastic Foundation*, Boydell, Woodbridge
- RCHME 1922. *Essex, Vol 4, North-East*, Roy Comm Hist Monuments Engl Inventories, HMSO, London
- RCHME 1923. *Essex, Vol 4, South-East*, Roy Comm Hist Monuments Engl Inventories, HMSO, London
- Rigold, S E 1969. 'The demesne of Christ Church at Brook', *Archaeol J*, **126**, 270–1
- Roach Smith, C 1861. 'Lyminge in Kent', *Collectanea Antiqua*, volume 5, 184–200, (printed privately)
- Roberts, E 1993. 'William of Wykeham's House at East Meon, Hants', *Archaeol J*, **150**, 456–81
- Rodwell, W J 1998. 'Holy Trinity church, Bradwell-juxta-Coggeshall: a survey of the fabric and appraisal of the Norman brickwork', *Essex Archaeol Hist*, **29**, 59–114
- Rodwell, W J 2012. *The Archaeology of Churches*, Amberley, Stroud
- Rodwell, W J and Rodwell, K A 1986. *Rivenhall: Investigations of a villa, church, and village, 1950–1977*, CBA Res Rep 55, London
- Rogerson, A and Ashley, S J 1897. 'The parish churches of Barton Bendish: the excavation of All Saints' and the architecture of St Andrew's and St Mary's', in A Rogerson, S J Ashley and A Harris (eds), *Three Norman Churches in Norfolk*, East Anglian Archaeol Rep 32, Dereham, 1–63
- Rollason, D 1978. 'Lists of Saints' resting-places in Anglo-Saxon England', *Anglo-Saxon England* **7**, 61–73
- Rollason, D W 1982. *The Mildreth Legend*, Leicester University Press, Leicester
- Rollason, D W 2016. *The Power of Place: Rulers and their palaces, landscapes, cities, and holy places*, Princeton University Press, Princeton and Oxford
- Sánchez-Pardo, J and Shapland, M (eds) 2015. *Churches and Social Power in Early Medieval Europe: Integrating archaeological and historical approaches*, Brepols, Turnhout
- Saunders, A D 1978. 'Excavations in the Church of St Augustine's Abbey, Canterbury 1955–58', *Medieval Archaeol*, **22**, 25–63
- Secker, D 2013. 'St Martin, Chipping Ongar: the Romanesque church', *Trans Essex Soc Archaeol Hist*, (4th Ser), **4**, 88–108
- Secker, D 2017a, 'St Mary, Harrow-on-the-Hill: Lanfranc's church and its Saxon predecessor', *Trans Lond Middx Archaeol Soc*, **68**, 73–89
- Secker, D 2017b. (for 2015). 'St Andrew, Boreham, Essex: the early church and the Anglo-Saxon period brickwork', *Church Archaeol*, **18**, 51–66
- Secker, D 2020, 'St Mary the Virgin, Charlbury: The Anglo-Saxon minster church and its Norman successor', *Oxoniensia*, **85**, 91–110
- Shapland, M G 2015. 'The cuckoo and the magpie: the building culture of the Anglo-Saxon church', in M C Hyer and G Owen-Crocker (eds), *The Material Culture of the Built Environment in the Anglo-Saxon World*, Liverpool University Press, Liverpool, 92–116
- Shapland, M G 2019. *Anglo-Saxon Towers of Lordship*, Oxford University Press, Oxford
- Sparks, M 1998. 'St Gregory's Priory, Canterbury: a re-assessment', *Archaeol Cantiana*, **118**, 77–90
- Tatton-Brown, T W T 1980a. 'The use of Quarr Stone in London and East Kent', *Medieval Archaeol*, **24**, 213–15
- Tatton-Brown T 1980b. 'St Martin's Church in the 6th and 7th Centuries', in M Sparks (ed), *The Parish of St Martin and St Paul, Canterbury: Historical Essays in Memory of James Hobbs*, 12–18, Friends of St Martin's, Canterbury
- Tatton-Brown, T W T 1988. 'The churches of Canterbury diocese in the eleventh century', in J Blair (ed), *Minsters and Parish Churches: the local church in transition 950–1200*, 105–18, Oxford Comm Archaeol Monogr 18, Oxford
- Tatton-Brown, T W T 1990. 'Building stone in Canterbury, c 1070–1525', in Parsons 1990, 70–82
- Tatton-Brown, T W T 1991. 'St Mary and St Ethelburga church, Lyminge', *Canterbury Diocese: Historical and Archaeological Survey*. <<https://www.kentarchaeology.org.uk/01/03/LYM.htm>> (accessed 22 Aug 2021)
- Tatton-Brown, T 1994. 'Kent churches some new architectural notes (contd). Churches in and around Canterbury', *Archaeol Cantiana*, **114**, 189–236
- Taylor, H M 1969. 'The special role of Kentish churches in the development of pre-Norman (Anglo-Saxon) architecture', *Archaeol J*, **126**, 192–8
- Taylor, H M 1978. *Anglo-Saxon Architecture, Vol 3*, Cambridge University Press, Cambridge
- Tester, A, Anderson, S, Riddler, I and Carr, R 2014. *Staunch Meadow, Brandon, Suffolk: A high status Middle Saxon settlement on the fen edge*, East Anglian Arch 151, Suffolk Archaeological Unit, Bury St Edmunds
- Thomas, G 2013. 'Life before the Minster: the social

- dynamics of monastic foundation at Anglo-Saxon Lyminge, Kent', *Antiq J*, **93**, 109–45
- Thomas, G 2017. 'Monasteries and places of power in pre-Viking England: trajectories, relationships and interactions', in Thomas and Knox 2017, 97–116
- Thomas, G, 2018. 'Mead-halls of the Oiscingas: a New Kentish perspective on the Anglo-Saxon great hall complex phenomenon', *Medieval Archaeol*, **62** (2), 262–303
- Thomas, G and Knox, A (eds) 2017. *Early Medieval Monasticism in the North Sea Zone. Proceedings of a conference held to celebrate the conclusion of the Lyminge excavations 2008–15*, *Anglo-Saxon Stud Archaeol Hist* **20**
- Thomas, G and Scull, C 2021. 'Practice, power and place: southern British perspectives on the agency of early medieval rulers' residences', *Norwegian Archaeol Rev*, **54** (1–2), 1–28
- Thompson, M 1998. *Medieval Bishops' Houses in England and Wales*, Ashgate, Aldershot
- Turner, S, Semple, S and Turner, A 2013. *Wearmouth and Jarrow: Northumbrian monasteries in an historic landscape*, University of Hertfordshire Press, Hatfield
- Tweddle, D, Biddle, M and Kjølbye-Biddle, B 1991. *Corpus of Anglo-Saxon Stone Sculpture Volume IV: South-East England*, Oxford University Press, Oxford
- Wand, J and Wand, K 2010. 'Norman churches, Domesday population and parish formation', *Church Archaeol*, **14**, 43–61
- Williams, A and Martin, G H 2002. *Domesday Book: A complete translation*, Penguin, London
- Williams, H 2006. *Death and Memory in Early Medieval England*, Cambridge University Press, Cambridge
- Witney, K P 1984. 'The Kentish royal saints: an enquiry into the facts behind the legends', *Archaeol Cantiana*, **101**, 1–22
- Worssam, B C and Tatton-Brown, T 1990. 'The stone of the Reculver columns and the Reculver cross', in Parsons 1990, 51–69
- Yates, N 1983. *Kent and the Oxford Movement*, Kentish Sources 7, Alan Sutton, Gloucester
- Yorke, B 1983. 'Joint Kingship in Kent c 560 to 785', *Archaeol Cantiana*, **99**, 1–19
- Yorke, B 1989. 'Sisters under the skin'? Anglo-Saxon nuns and nunneries in southern England', *Reading Medieval Stud*, **15**, 95–117
- Yorke, B, 1990. *Kings and Kingdoms of Anglo-Saxon England*, Routledge, London
- Yorke, B 2017. 'Queen Balthild's 'monastic policy' and the origins of female religious houses in southern England', in Thomas and Knox 2017, 7–16

SUPPLEMENTARY MATERIAL

This supplementary material provides specialist reports on a range of analyses supporting interpretations and conclusions in the main article. These include the following:

1	OSL dating of building mortars, <i>by</i> Ian Bailiff and Eric Andrieux	66
2	Compositional analysis of building mortars, <i>by</i> Martin Bell	77
3	Pottery from excavations at Lyminge Churchyard, 2019, <i>by</i> Duncan H Brown and Lisa Backhouse	86
4	Building material from excavations at Lyminge Churchyard, 2019, <i>by</i> Cynthia Poole	94
5	A checklist of coins from excavations at Lyminge Churchyard, 2019, <i>by</i> David Holman	100
6	Notes on the fabric and geological constituents of SS Mary and Ethelburga, Lyminge (excluding the tower), <i>by</i> Christopher Green	103
7	Radiocarbon dating and chronological modelling of settlement contexts, <i>by</i> Peter Marshall	111
8	Assessment of paleocological data from excavations on Tayne Field, Lyminge, 2012–13, <i>by</i> Rachel Ballantyne	117
9	Assessment of zooarchaeological material from Saxon-Norman contexts excavated on Tayne Field, Lyminge, 2012–15, <i>by</i> Matilda Holmes	140

OSL DATING OF BUILDING MORTAR SAMPLES FROM LYMINGE

Ian Bailiff and Eric Andrieux

SUMMARY OF DATING RESULTS

Site Ref	Sample Label	Context	OSL Date ¹ CE±□	OSL Date Ref
Lym 19 Sample 1	(42) <1>	Foundation, C7th church (apse)	730±110	Dur447–1SGqi
Lym 19 Sample 2	<3>	Foundation, C7th church (crossing)	630±105	Dur447–2SGqi
Lym 19 Sample 9	<9>	SE corner chancel of extant church (C10/C11?)	1040±70	Dur447–3SGqi
Lym 19 Sample 14	(8) <14>	Foundation to west of Period 1 (C7th) church	1175±70	Dur447–4SGqi
(1)	(2)	(3)	(4)	(5)

1. The overall error is calculated at the 68 per cent level of confidence

COMMENTS AND OBSERVATIONS

1. OSL date calculation

The OSL dates given in the table have been calculated using data given in the Technical Summary below. The summary provides details of the various experimental measurements performed and the data obtained, together with a breakdown of quantities determined to evaluate the OSL age calculation based on measurements with granular quartz extracted from the mortar.

2. Effect of heterogeneity in mortar composition on OSL date calculation

As discussed in the Technical Summary, the presence of cobble-sized clasts of flint within the mortar (as illustrated in the Technical Summary) affects an assessment of the dose rate to quartz grains arising from the heterogeneity of the mortar, in particular the presence of flint cobbles in Samples 1 and 2. Generally, the flint has a much lower radioactivity than the mortar matrix, reducing the dose rate. In the case of Samples 1 and 2, the composition of the mortar sample supplied was assumed to be representative of the mortar medium extending to distances of ca 30cm from the sampled volumes from which the gamma radiation component of the dose rate is derived. It was also necessary to make assumptions regarding the composition of the extended volume surrounding the sampled mortar fragment in the case of the other locations.

3. Characteristics of quartz grains extracted for OSL measurements

The OSL measurements performed with individual quartz grains extracted from the mortar samples indicated that in most cases the ‘resetting’ of the luminescence clock mechanism had been relatively effective, and significantly better than reported in some earlier reports on testing mortar from medieval structures. This may have resulted from the way in which sand had been treated before incorporation in the mortar mix, giving rise to disaggregation and thorough exposure to daylight, or that the granular quartz had been derived from a sand bearing carbonate used in the slaking process (and consequently heated). However, the yield of ‘bright’ grains suitable for use in the age calculation was very low (ca <1%) requiring significant instrument time to identify suitable grains.

TECHNICAL SUMMARY

1. Samples of mortar supplied for OSL testing had been extracted from larger volumes excavated within the four contexts indicated in Table 1 and Fig 1a–g. The mortar is generally coarse, containing a heterogeneous mixture of flint gravel, with flint cobble present in the case of samples 1 and 2.

2. Material for OSL sample preparation was extracted from the inner volume of the mortar samples under subdued red light after removal of an outer layer of at least 10mm. This inner material was mechanically disaggregated and the sand-size fraction selected and sieved to obtain the 150–250µm fraction. Prolonged immersion of the sieved fraction in dilute HCl was applied to remove carbonate minerals, and subsequently the treated material was immersed in HF (40 per cent, 45 mins) to isolate the quartz fraction and remove the outer layer of quartz grains, following the conventional quartz inclusion technique. The resulting fraction was subjected to a final treatment of immersion in HCl (40 per cent) for 1h to remove any precipitated fluorides resulting from the HF etching procedure. Following washing and drying procedures, the HF etched grains were sieved to remove grains smaller than 150µm diameter.

3. The single aliquot regeneration (SAR) procedure was followed, employing a single grain measurement procedure to determine the equivalent dose, D_e . A single preheat temperature was selected on the basis of the completion of a dose recovery experiment (Table 2a, col. 3); this was applied in the SAR procedure to determine D_e values for individual grains passing the standard rejection criteria. The rejection criteria included: 1) signal intensity; the natural signal from the aliquot/grain not distinguished from the background signal (determined using the Luminescence Analyst ‘sig. >3 sigma above BG’ rejection criterion), 2) recycling; the recycling ratio differed from unity by >20 per cent; 3) recuperation; the sensitivity-corrected zero dose luminescence intensity was >5 per cent of the natural luminescence intensity; 4) Infrared depletion; the IR-depletion ratio exceeded two standard errors below unity; 5) D_e uncertainty; the uncertainty in D_e exceeded 30 per cent; 6) saturation; the natural luminescence signal (L_n/T_n) intercepted the dose response curve at a point where signal growth had ceased and 7) Zero D_e ; where D_e was consistent with zero at two standard errors (added to exclude modern grains, or fully bleached grains, incorporated during sampling).

An example of a typical dose response curve is shown for each OSL sample in Figure 3. Generally, the frequency of bright grains was very low, requiring the testing of several thousand individual grains for each sample to produce a sufficient number of accepted D_e values (Table 2a, cols 4 and 5). The accepted values of D_e (\pm s.e.) obtained are listed for each sample in Table 2a (col. 7). The form of distribution of the D_e values for each sample and the extent of departure from a normal distribution are shown as Q-Q plots in Figure 2.

The central dose model (CDM) was initially applied to analyse the distribution of D_e values for each sample and to evaluate the degree of overdispersion (OD, Table 2a, col. 6.). On the basis of inspection of the Q-Q plots and assessment of the distributions shown in the Abanico plots (Fig 2a, c, e, g), the CDM model was applied to determine a weighted average value of D_e in the case of three samples (Samples 447 -1, -2, -3; Table 2a, col. 7). Although the degree of the skewness (c; Table 2d, col. 2) is significant in two cases (447 -2 and -3), this was negated by the removal of 1 or 2 outliers (Table 2d, cols 3 and 4). In the case of sample 447–4, the Q-Q plot contains two distinct components reflecting the presence of a ‘minimum’ dose component; removal of the D_e values forming the component in the higher dose region results in the reduction of the skewness present with the full set of data. Hence the minimum dose model (MDM) was judged to be appropriate to apply to the D_e distribution obtained with this sample.

4. The average annual dose rate to each extracted quartz sample, \dot{D}_{tot} , was assessed on the basis of the measurement of the radionuclide concentration in disaggregated sub-samples (25g) of the mortar fragments and also separated lithic clasts within them (flint and pebbles). The concentrations of the parent ^{238}U , ^{232}Th

and ^{40}K and their progeny were determined by measuring the gamma-ray spectrum using a high-resolution gamma ray spectrometer. The measured specific activities of the radioisotopes (Table 2b) were converted to infinite medium dose rates using our own conversion factors which are similar to published values (Guerin *et al* 2011). With the exception of the flint sample extracted from mortar sample 447–2, the values of the $^{226}\text{Ra}/^{210}\text{Pb}$ ratio do not indicate significant disequilibrium in the uranium chain. Adjustment of the dose rate for the moisture content of the burial medium was made (Aitken 1985) assuming an average value during burial of 10 ± 2 per cent by weight.

As can be seen in Fig 1 (b, c, e, g), the mortar fragments contain a heterogeneous mixture of clasts, including sand, pebbles and flint cobbles. These constituents formed a well-bonded and very strong mortar. While the volumes of mortar extracted for OSL measurements were selected to avoid direct contact with the larger lithic clasts (eg, as in the case of 447 -1 and -2, for example), the mortar collected from all four locations contained a high proportion of gravel. A potential issue arises in the assessment of beta dose rate (and as a consequence the cumulative dose accrued during burial, D_e) where individual grains were: a) enclosed within the finer fraction of the mortar material and b) in direct contact with the surface of a lithic clast which typically has a lower concentration of lithogenic radionuclides compared with mortar (Table 2b). There is a similar issue in the assessment of the gamma dose rate, but on a larger physical scale. Flint cobbles located within a volume of material (referred to here as the ‘gamma’ volume) that extends to ca 30cm from the OSL sample ‘dilute’ the gamma dose rate, the extent depending on their concentration and distribution in that volume. In the absence of in situ measurement of the dose rate at the OSL sample location, assumptions relating to the composition of the material within the gamma volume are necessary leading to some approximations, as outlined below.

Dur447-1 (Lym 19 — Sample 1). To account for the flint cobble present in the mortar it has been assumed when calculating the gamma dose rate that flint accounts for 50 per cent of the gamma volume by weight. In addition, to account for a concentration of ceramic material within the gamma volume that is lower than that observed in the mortar fragment, the gamma dose rate was calculated based on the measured radionuclide concentration for a mortar sample where ceramic fragments had been removed.

Dur447-2 (Lym 19 — Sample 2). The proportion of flint in the gamma volume is the same as that assumed for Location 1.

Dur447-3 (Lym 19 — Sample 9). The mortar sample was extracted from a depth of 5–10cm into the masonry wall; no sample representative of the ragstone was available. The ca 10 per cent reduction in dose rate due to proximity to the wall surface (eg, 10cm) was assumed to be compensated by gamma radiation from lithogenic radionuclides in the ground. In the absence of samples of the latter, or in situ measurements of the gamma activity/dose rate, the gamma dose rate was calculated as the infinite medium dose rate based on the analysis of the mortar sample.

Dur447-4 (Lym19 — Sample 14). The image of the sample location indicates a heterogeneous mortar containing gravel and cobbles. The gamma dose rate was calculated assuming an infinite medium defined by the mortar matrix where flint accounted for 50 per cent of the gamma volume by weight, as for Samples 1 and 2.

5. The OSL ages, listed in Table 2c (col. 6) were calculated as the quotient of the equivalent dose, D_e , and the total dose rate, \dot{D}_{tot} ; the OSL age test year was CE 2021. All uncertainties are given at the 68per cent level of confidence (1σ); the overall error associated with the OSL age (\square_o , col. 8) includes an assessment of type A (\square_A , col. 7) and type B errors combined in quadrature. The OSL dates shown in col.7, expressed on the Common Era timescale, have been rounded to the nearest five years.

Lab Ref	Site Ref	Sample Label	Context
Dur447-			
1	Lym 19 Sample 1	(42) <1>	Foundation, C7th church (apse)
2	Lym 19 Sample 2	<3>	Foundation, C7th church (crossing)
3	Lym 19 Sample 9	<9>	SE corner chancel of extant church (C10/C11?)
4	Lym 19 Sample 14	(8) <14>	Foundation hypothetical successor to Period 1 (C7th) church
(1)	(2)	(3)	(4)

Table 1

Date Ref.	PreHt Temp (°C)	DoseRec D _e /D _a	SGr n tested	SGr n accepted	OD %	D _e (Gy)	Dose Model
Dur447-							
1	200	N/A	6000	33	33	1.44±0.07	CDM
2	200	N/A	6000	50	26	1.40±0.07	CDM
3	200	N/A	6000	32	22	0.91±0.05	CDM
4	200	1.1 ± 0.09	9000	30	33	0.97±0.07	CDM
						0.81±0.05	MDM
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

Table 2a

Date Ref.		Type	Specific activities ²³² Th ²³⁸ U ⁴⁰ K (Bq kg ⁻¹)			²²⁶ Ra/ ²¹⁰ Pb
Dur447-						
1		mortar	14.1±2.7	14.3±1.5	229±5	0.88±0.19
		gravel	8.0±2.6	10.4±1.5	160±5	0.79±0.30
2		mortar	10.6±1.9	13.1±1.1	180±3	0.84±0.14
		flint	2.2±1.7	3.8±1.0	60±3	0.47±0.44
3		mortar	7.0±2.5	8.2±1.5	152±5	0.86±0.32
4		mortar	10.0±2.7	16.6±1.6	150±5	0.88±0.17
(1)		(2)	(3)	(4)	(5)	(6)

Table 2b

Date Ref.	$\dot{D}_{\text{SGi}}/\dot{D}_{\text{SGi}}$	$\dot{D}_{\text{SGe}}/\dot{D}_{\text{SGe}}$	\dot{D}_{SG}	D _e	Age (±1σ _r)	Uncertainty		Date
Dur447-	%	%	mGy a ⁻¹	Gy	a	±σ _A	±σ _O	CE±σ
1	64	36	1.12±0.02	1.44±0.07	1294	88	112	730±110
2	59	41	1.00±0.02	1.40±0.07	1394	76	103	630±105
3	51	49	0.93±0.02	0.91±0.05	981	52	69	1040±70
4	58	42	0.96±0.02	0.81±0.05	847	55	69	1175±70
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(7)

Table 2c

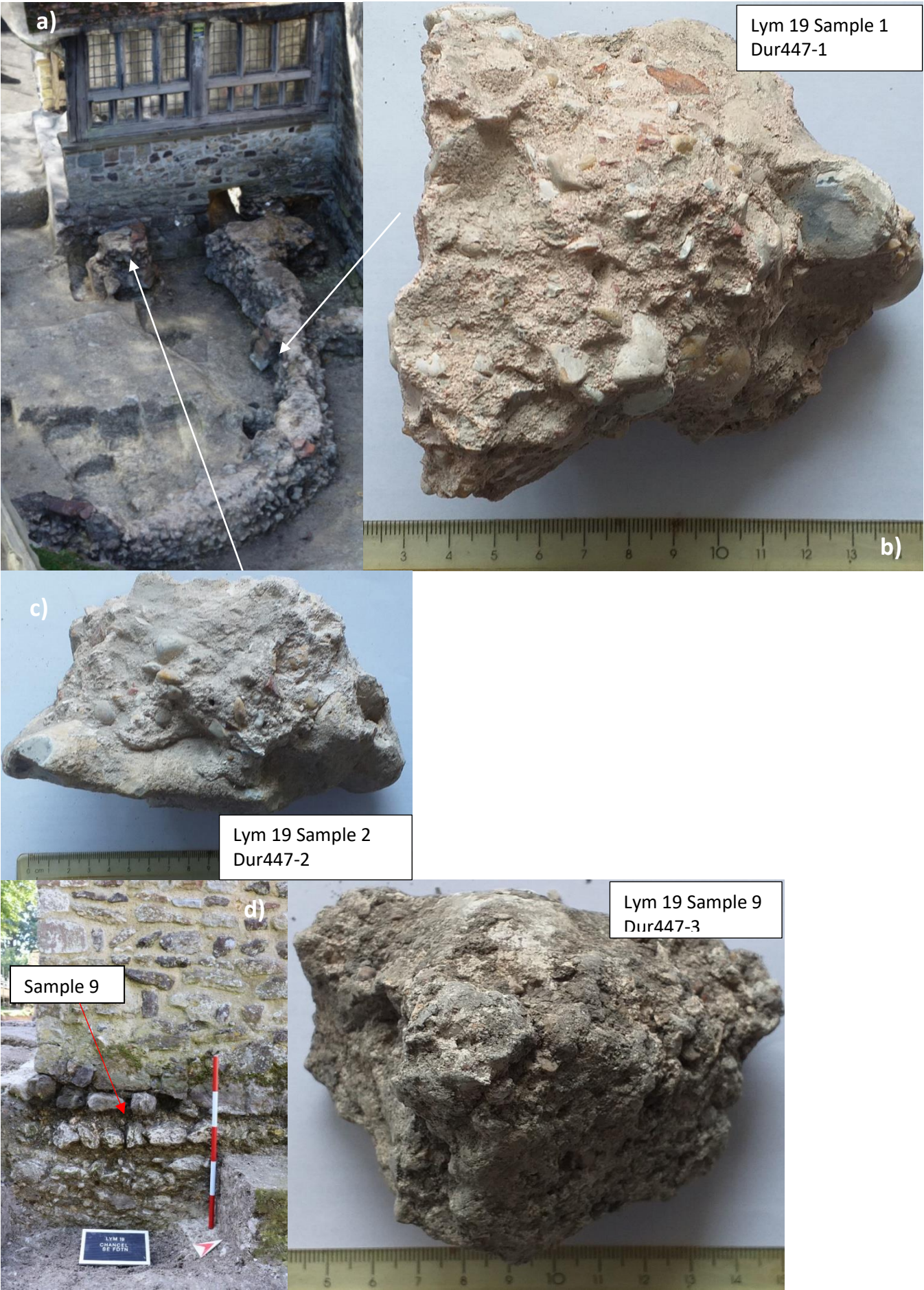
Date Ref.	Skewness c	Skewness c	Sensitivity
Dur447-	n=33		
1 SGqi	0.65(75%)	-	
2 SGqi	1.08(155%)	-0.58(-83%)	Removal of 2 highest D _e values
3 SGqi	2.63(300%)	-0.22(-25%)	Removal of highest D _e value
4 SGqi	1.24(140%)	0.19(18%)	Removal of 7 highest D _e values
(1)	(2)	(3)	(4)

Table 2d

447-1		447-2		447-3		447-4	
D _e (Gy)	s.e.	D _e (Gy)	s.e.	D _e (Gy)	s.e.	D _e (Gy)	s.e.
1.01	0.09	1.08	0.57	0.99	0.30	0.78	0.10
1.14	0.38	1.55	0.28	3.21	0.62	0.77	0.08
2.47	0.45	1.22	0.44	0.69	0.25	1.64	0.32
1.17	0.19	1.08	0.21	0.80	0.14	1.22	0.49
1.18	0.20	1.03	0.57	0.92	0.25	2.43	0.20
1.45	0.30	1.53	0.41	1.25	0.48	0.89	0.27
1.26	0.17	1.26	0.43	0.77	0.24	0.81	0.44
0.73	0.44	1.88	0.54	0.80	0.04	0.78	0.09
1.66	0.19	0.94	0.48	0.61	0.04	0.84	0.10
3.55	0.58	1.60	0.51	1.11	0.08	0.70	0.07
1.40	0.37	1.50	0.75	1.09	0.19	1.61	0.32
0.85	0.09	1.24	0.48	0.91	0.19	1.37	0.47
1.03	0.14	1.25	0.47	0.91	0.30	2.09	0.20
1.52	0.37	0.98	0.68	0.87	0.11	0.84	0.25
1.15	0.22	1.58	0.23	1.00	0.30	0.86	0.45
2.59	0.92	1.13	0.38	0.67	0.08	0.96	0.20
1.55	0.47	1.74	0.49	0.99	0.17	0.84	0.26
1.81	0.25	3.79	0.20	0.93	0.19	0.88	0.47
3.13	0.35	0.81	0.22	0.95	0.31	0.80	0.09
2.61	0.11	1.84	0.14	0.86	0.11	0.78	0.10
2.21	0.64	1.62	0.42	1.03	0.31	0.79	0.10
1.14	0.30	1.44	0.30	0.72	0.08	0.70	0.07
1.11	0.08	1.34	0.38	1.09	0.19	0.74	0.32
1.10	0.38	0.91	0.38	0.95	0.20	0.82	0.47
2.11	0.48	1.68	0.37	0.95	0.31	1.15	0.20
1.20	0.19	1.75	0.26	0.87	0.11	0.81	0.25
1.18	0.20	1.46	0.30	1.03	0.30	0.84	0.45
1.24	0.28	1.29	0.14	0.78	0.24	0.81	0.20
1.32	0.18	1.58	0.38	0.82	0.04	0.84	0.26
1.28	0.44	1.20	0.20	0.84	0.04	0.88	0.47
1.23	0.19	1.43	0.48	0.85	0.08		
1.45	0.30	1.34	0.43	1.09	0.19		
0.94	0.09	1.61	0.49				
		0.82	0.29				
		0.98	0.27				
		1.15	0.18				
		1.33	0.13				
		0.97	0.32				
		1.58	0.20				
		0.81	0.25				
		1.04	0.40				
		1.58	0.34				
		1.36	0.20				
		1.24	0.21				
		1.50	0.48				
		1.03	0.11				
		0.77	0.25				
		1.53	0.20				
		2.50	0.40				
		1.32	0.15				

Table 3

Fig 1a–g. Mortar sample locations and visual appearance



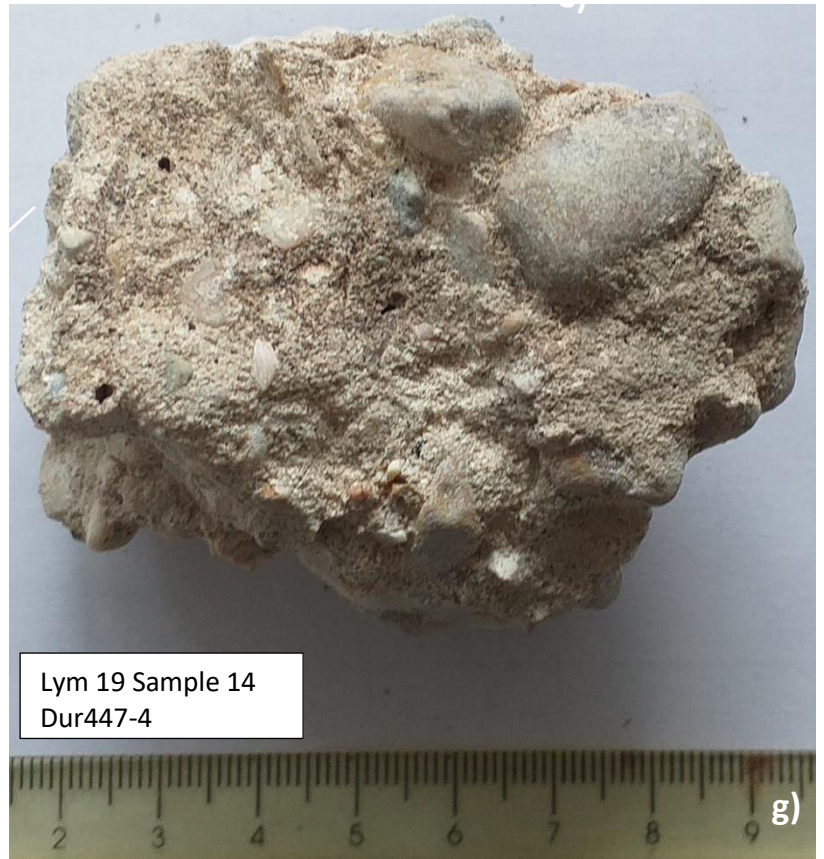
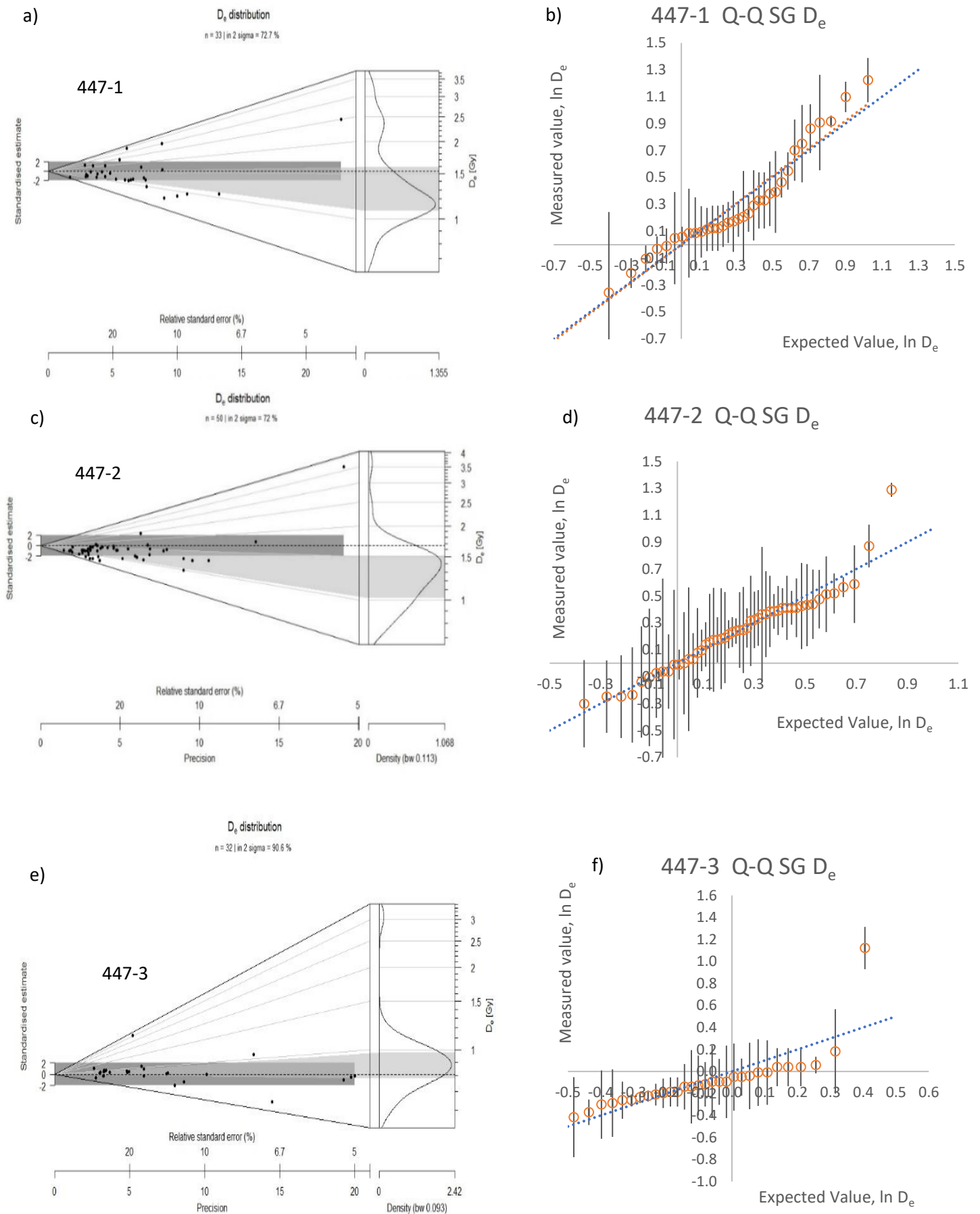


Fig 2. Equivalent dose distributions: Abanico and Q-Q plots



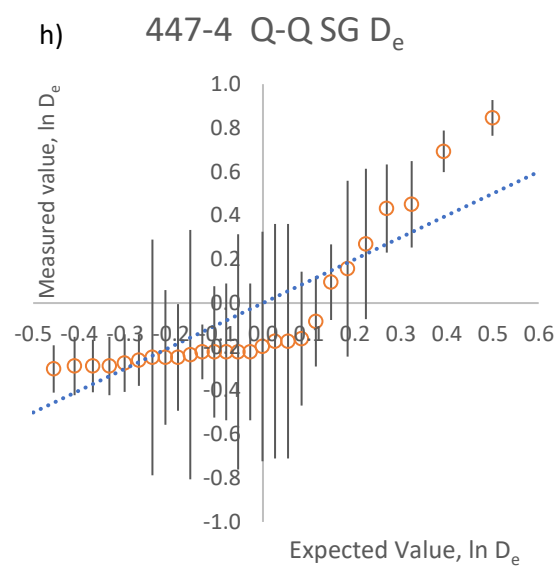
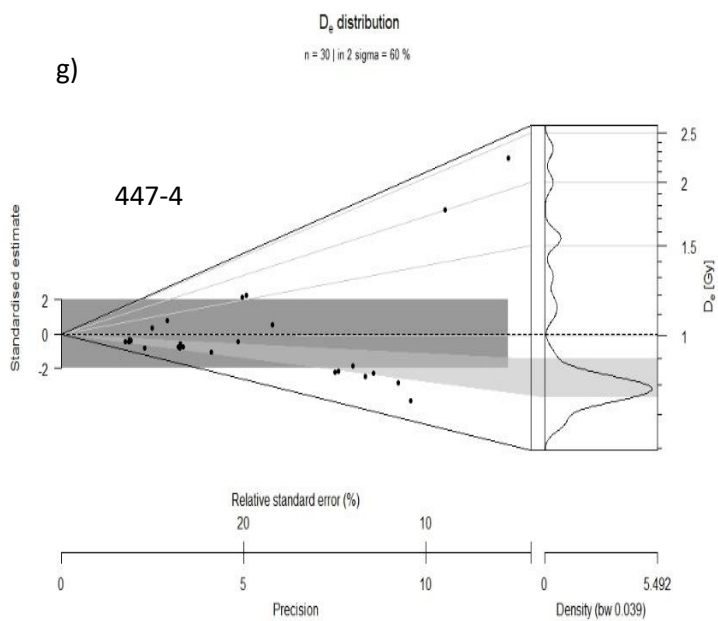
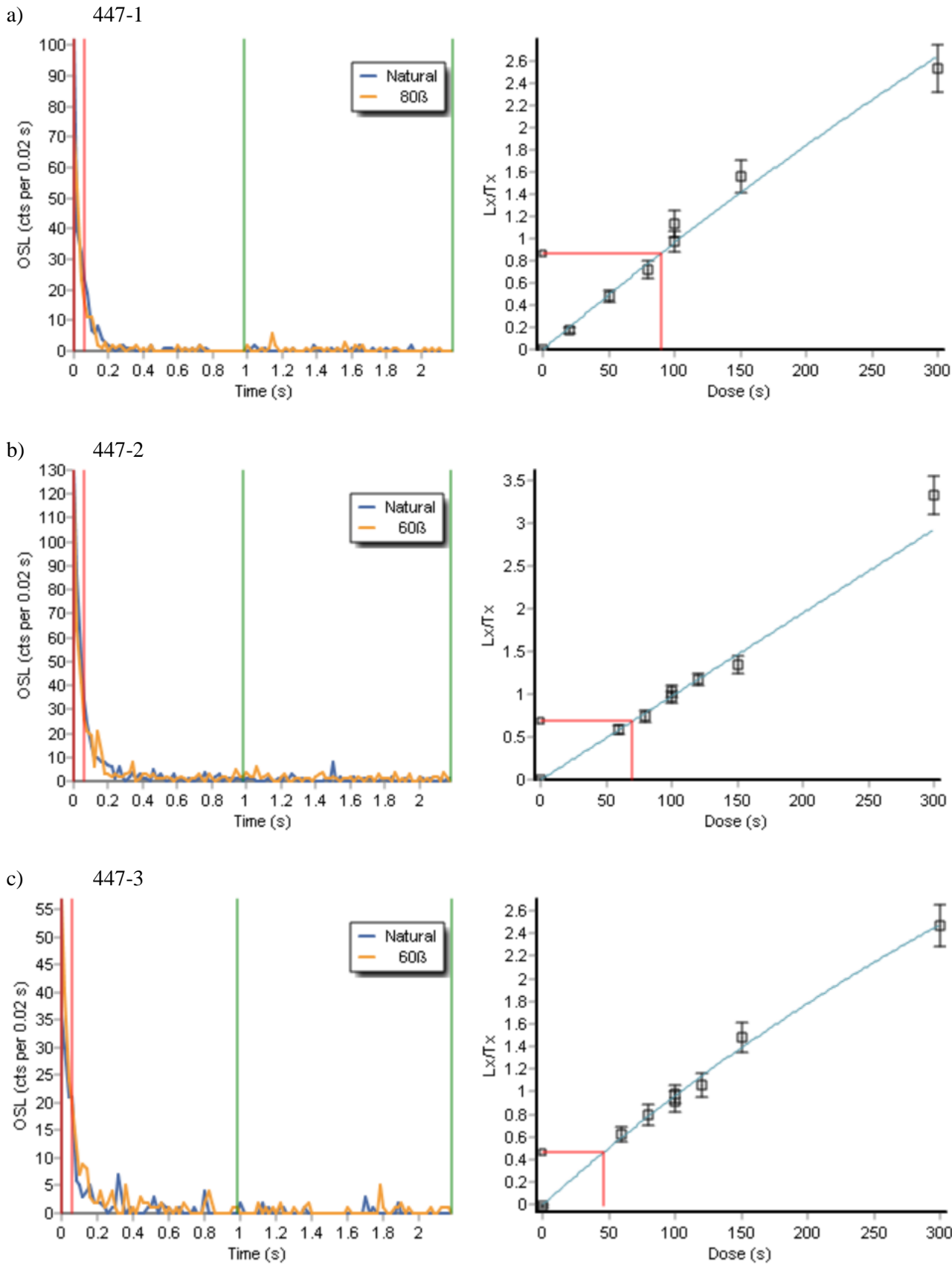
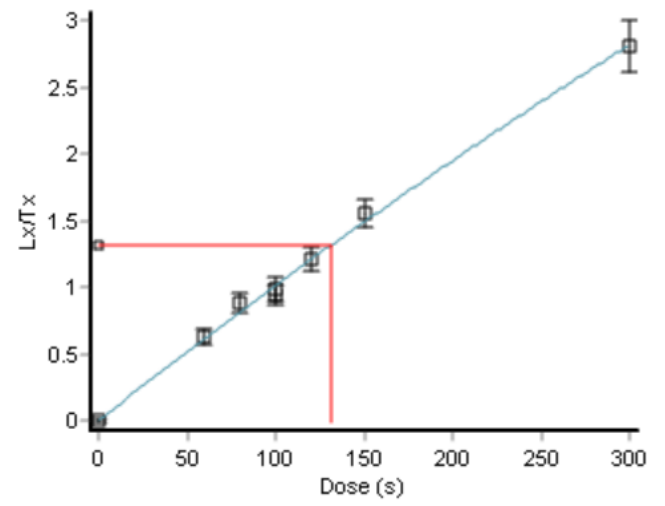
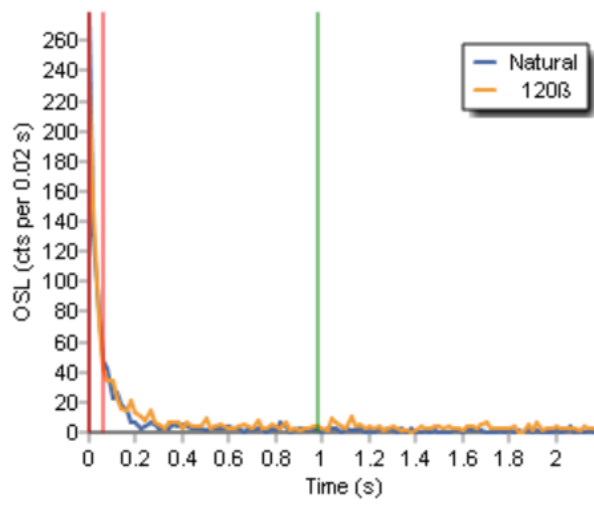


Fig 3. Dose response curves



d) 447-4



COMPOSITIONAL ANALYSIS OF BUILDING MORTARS FROM LYMINGE

Martin Bell

SUMMARY

The analysis aimed to characterise the mortared foundations of the Anglo-Saxon church and identify any material suitable for dating. Investigation focused on a large block of mortared foundation (Sample 42.1) recovered from the area of the chancel crossing which had become detached from the northern foundation pier (15). Analytical methods included: identification of inclusions on broken surfaces; disaggregation with acid facilitating examination of non-calcareous constituents; physical disaggregation to quantify the proportion of constituents; particle size analysis of the less than 1mm and less than 2mm fractions, using a Malvern Instruments Mastersizer; examination of mortar samples in thin section; and the quantification of elemental composition using portable X-Ray Fluorescence on mortar surfaces and powdered mortar of particle size less than 2mm fractions. Each method provides compositional information on somewhat different spatial scales but together they provide an overall picture of the mortar composition which can be compared to other contexts at Lyminge and elsewhere.

MORTAR THIN SECTIONS

Thin sections were produced using slices of the sample shown in Fig. 1. They were resin impregnated in a vacuum, cut to a slice, re-impregnated in vacuum, cut and ground, mounted on a glass slide, then further ground to the requisite thickness for microscopic examination. The thin sections are shown on Figs. 2–3. Table 1 summarises the constituents of the mortar samples as estimated by eye from the thin sections.



Fig. 1. Hand specimens of mortar Sample 1 (42) prior to sampling for thin section (scale cm).

Sample 42<1> Two thin sections (Figs. 2 and 3) were produced from sample 42<1>. The components are summarised in Table 1. In both, the main coarse component is rounded to sub-rounded flint gravel (Fig. 6f) which varies between c50% and 30% of the slide. The gravel varies in diameter between 2.5 and 15mm, with a mean of 6–7mm. The gravel pieces have a white surface patination which might derive from their inclusion in highly calcareous

mortar. They also have a yellow / brown surface iron staining which is particularly evident in thin sections (Figs. 2–3); this might indicate a Pleistocene gravel source, though it is perhaps more likely to have been acquired *in situ* with patination. pXRF analysis shows iron is abundant. The second most abundant coarse component is red, well-fired clay, crushed brick/ tile which is between 10–20% of the section; this is of variable size, 11mm to 0.5mm. The third most abundant coarse component is broken marine shell which comprises between 5 and 10% of the section, fragments varying in size between 1.7 and 10mm. One or two tiny angular fragments of charcoal, probably from wood, were visible on the section. The presence of a small number of black, probably iron, minerals and green glauconite grains was noted. The remainder of the section comprised quartz sand and calcium carbonate.

	Lyminge Church 2019 sample 42<1> 1/2	Lyminge Church 2019 sample 42<1> 2/2
Rounded flint gravel	50%	30%
Gravel mean size (range)	6.16mm (2.5–15mm)	7.21mm (4–9.5mm)
Fired clay/tile, angular	10%	20%
Marine shell	5%	10%
Chalk	-	-
Sand	present	present
Charcoal	present	?
Other minerals	Glauconite, iron minerals	

Table 1. Components of samples visually estimated from thin sections

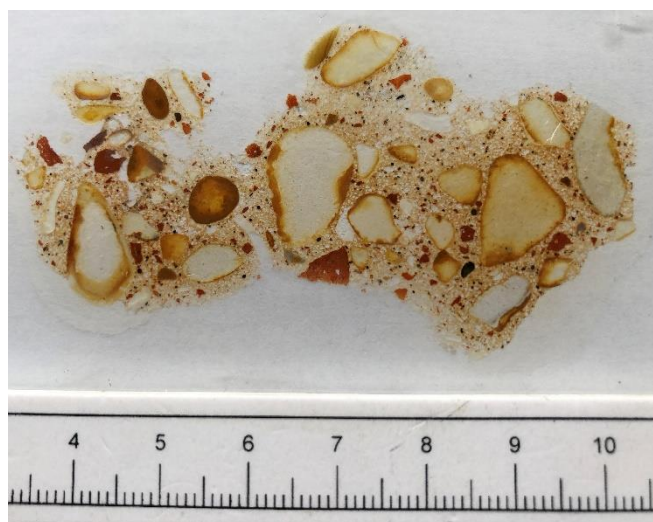


Fig. 2. Lyminge Church 2019 Sample 42. 1 of 2

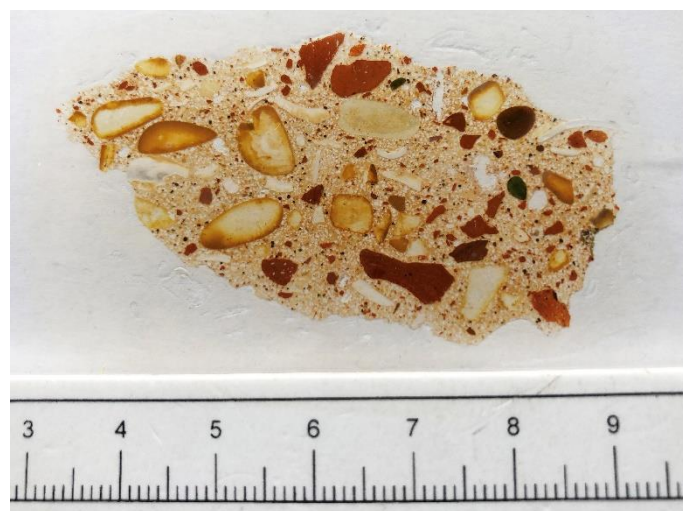


Fig. 3. Lyminge Church, 2019 Sample 4. 2 of 2

PORTABLE X-RAY FLUORESCENCE (PXRF) ANALYSIS

This provides elemental analysis of a bulk sample of the mortar in a window of *c* 1cm square. Replicate samples were done of broken mortar surfaces and a powder of the smaller than 2mm fraction. The main elements were calcium (173k ppm) and silicon (154k ppm). The samples were relatively iron (16.8k ppm) and aluminium (14k ppm) rich; the latter is known to improve the hydraulic properties of mortars (Gibbons 1997). The bulk and powder fractions produced similar results.

MICROSCOPE ANALYSIS OF MORTAR COMPONENTS

Analysis of the main mortar block (42<1>) was undertaken to identify charred plant macrofossils for radiocarbon dating. Additionally, it had the objective of characterising the macroscopic components of the mortar. First the natural fracture samples of the mortar were examined for inclusions which were removed for identification. Then the remaining samples were broken up, initially by hand. Remaining lumps were placed in a bag and broken up with a hammer until individual particles were freed. Material retained on a 2mm sieve was subject to identification under a binocular microscope at magnification up to x40. The components identified were:

a) Charcoal There was a small amount of tiny charcoal pieces in the mortar. These fragments are likely to derive from lime burning. Examination by microscope x40 of a 200g sub-sample of Sample 1 produced six fragments, the largest 3 x 1.5 x 1mm (Figs 4 and 8c). It is possible that one or two might be identifiable depending on taxa and features visible. A report on this charcoal has been prepared by Paul Flintoft. Manual disaggregation and examination by eye of a 400g sub-sample failed to identify any larger pieces, suggesting that the charcoal present may be small.



Fig. 4. Lyminge Church mortar Sample 1 (Large block) charcoal (divisions 1mm)

(b) Marine Shell This was an abundant component of the mortar (Figs. 5 and 6d and e). It is mostly of the cockle family with some examples of smaller bivalves, a few gastropod fragments and small fragments of mussel shell. The quantity suggests it is a deliberate component of the mortar. The shells do not show the iron staining evident on the flint gravel

which suggests that, if the staining is pre-mortar, the gravel and shells were not derived from the same source. In addition, there is a bag of hand-collected shell fragments from the foundations of the Anglo-Saxon church Sample 12. This contains thirty-two pieces of shell from the cockle family, some of which are immature. There is one complete mature cockle shell and one possible piece of oyster. All the marine molluscs are rounded and eroded, they are unlikely to have come from a midden and are likely to come from a beach.

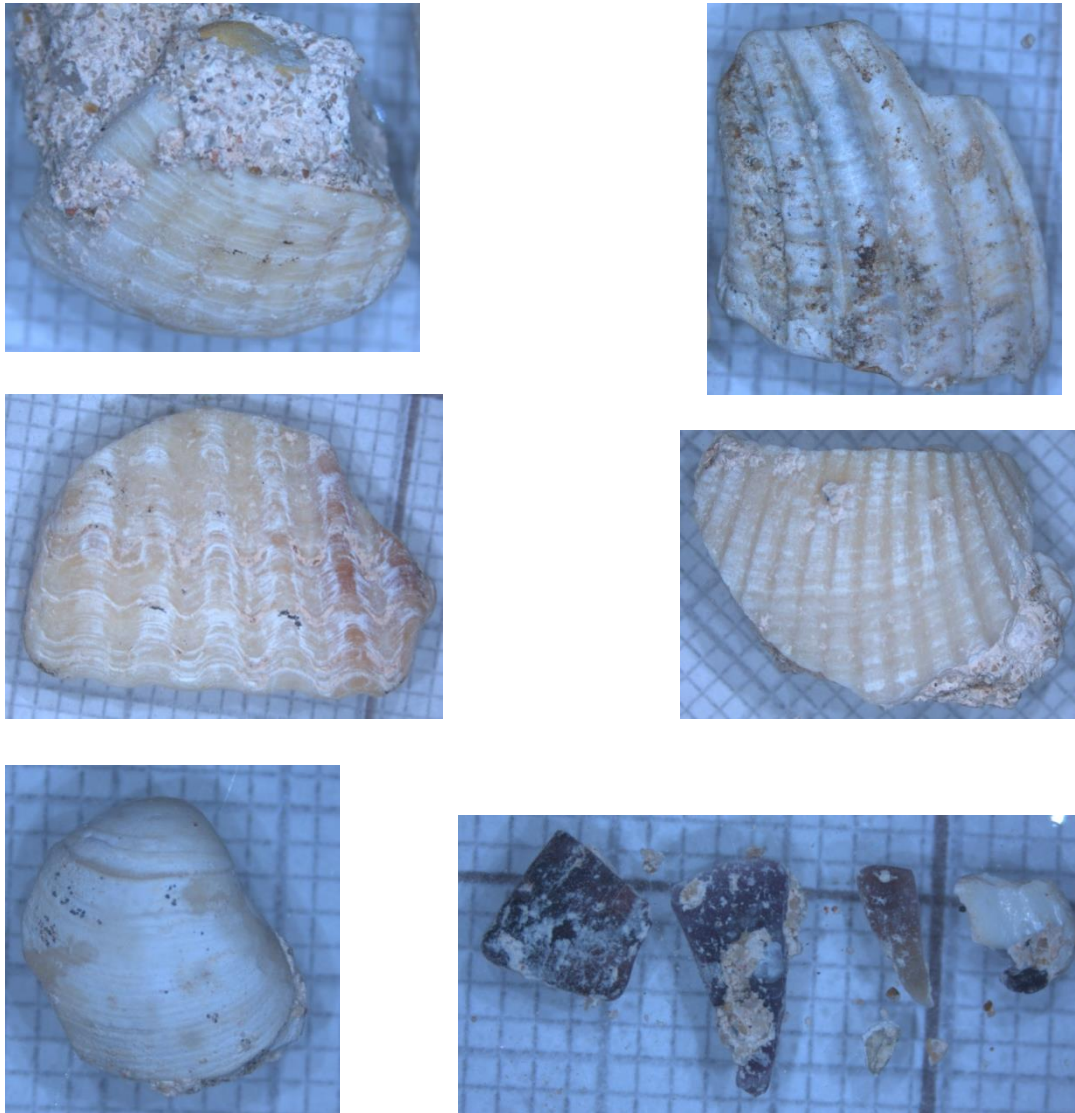


Fig. 5 Shells from Sample 42:1. **Top two rows** cockle family, **third row** (left) small bivalve, **third row** (right) small mussel fragments. Scale mm.

(c) Plant Casts The mortar also included casts of plant material which seems to have been replaced by calcium carbonate (Figs. 6a-c, 7, 8a, b and d). Some of this looks rather like straw or husk fragments that could derive from cereals. There are also some delicately preserved replaced plant structures which look like ferns or moss (Fig. 7). The replaced plants may also include phytolith (silica skeleton) structures. Similar calcified grass is reported from

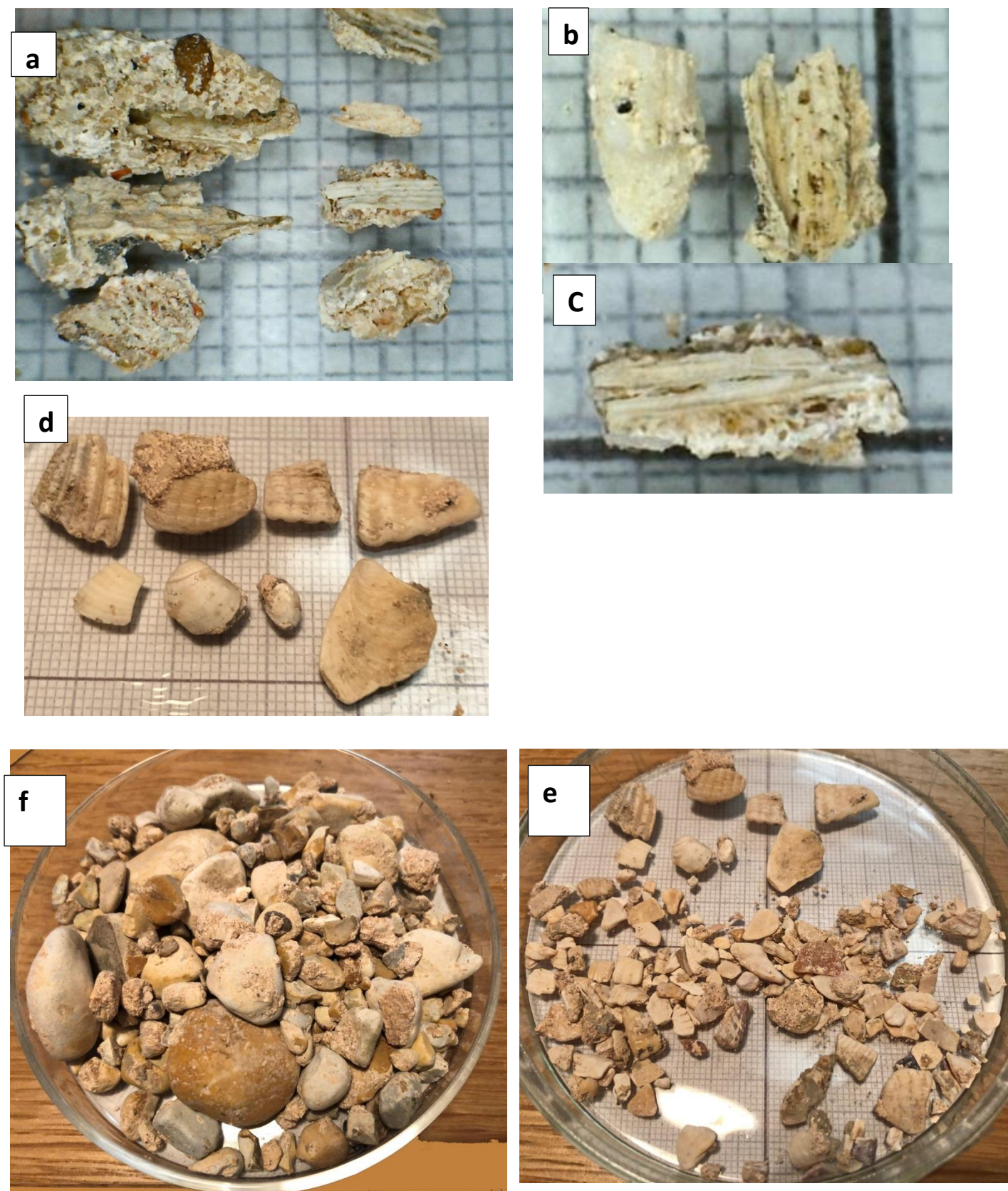


Fig. 6: Lyminge Church mortar Sample 1 (a–c) carbonate replaced plant material; (d–e) marine molluscs; (f) rounded flint beach shingle and gravel. Scales 1mm grid.

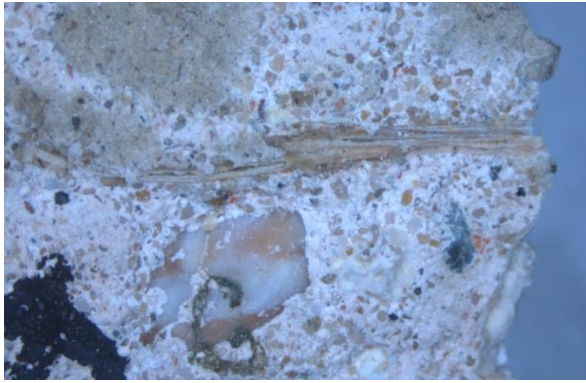


Fig 7. Sample 42: 1 calcium carbonate plant macrofossils.

Top and **bottom** right possible straw/grass

Middle possible fern

Bottom left possible moss



Roman plaster at Lullingstone, Kent (Morgan 1992, fig 6). Of the components, this is the least abundant and the least likely to be a deliberate addition, though it may have been added to increase porosity and help drying. Carbonate replacement is likely to have occurred soon after building for fine detail of the plant fibres to be preserved in the cast.

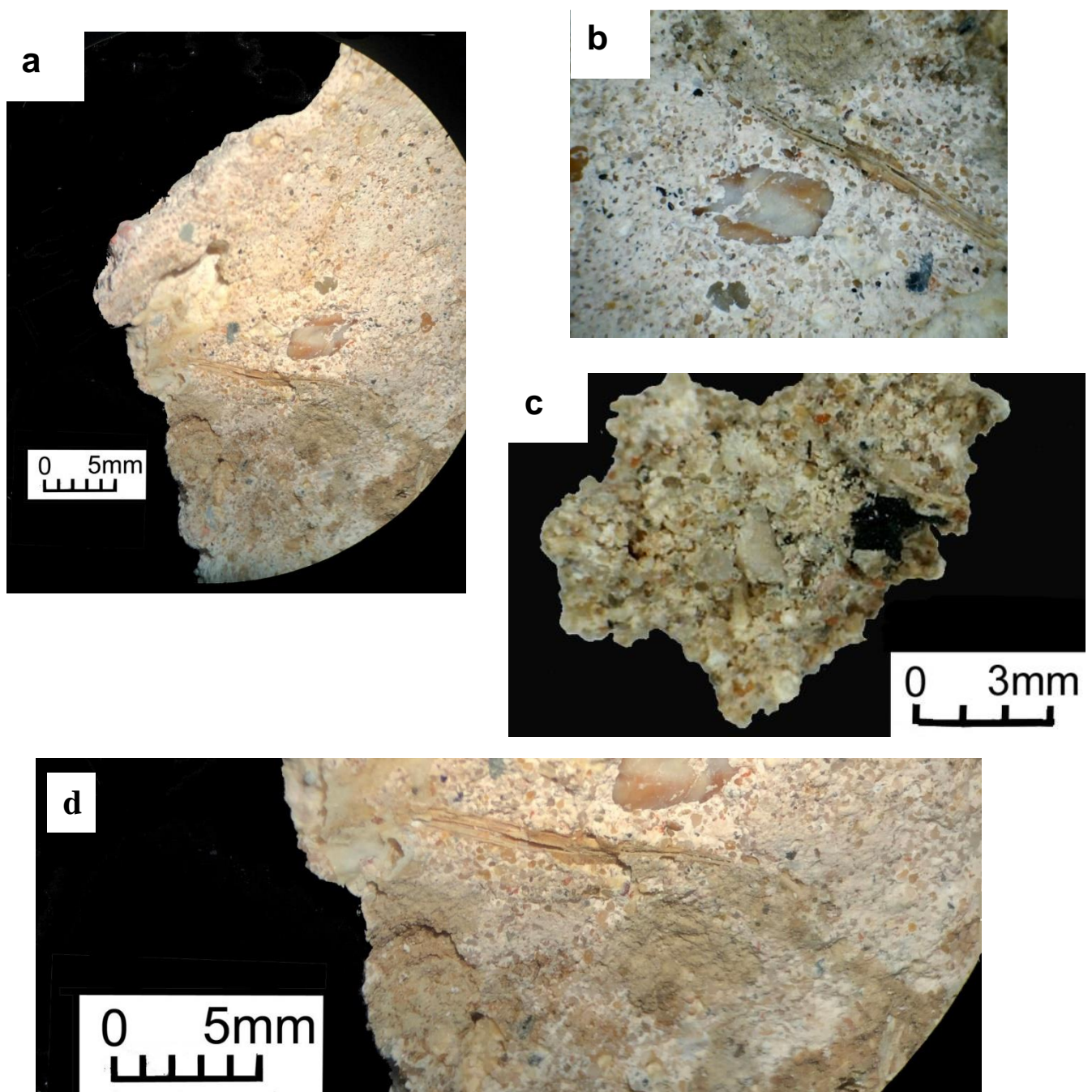


Fig 8. Lyminge mortar sample 42:1: a, b and d replaced vegetation, c charcoal

CONCLUSIONS

The foundation walls of the early church were of mortared flint nodules, probably of field origin. Analysis has shown that the mortar has six components, at least five, perhaps all, of which are thought to represent deliberate additions: (1) Rounded flint gravel of probable beach origin; (2) sand, poorly sorted predominantly coarse to medium; (3) lime; (4) Angular fired clay brick or tile of variable size, gravel to sand grade; (5) Marine shells, mainly

cockles, rounded by erosion; (6) Calcified plant material, possibly including straw. The result was a material known as a pozzolon in which materials have been added to lime mortar so that it sets more rapidly and forms a hydraulic mortar, with the added material reacting chemically with calcium hydroxide to form cementitious properties making the mortar harder (Gibbons 1997; Ellis 2002). The characteristic pozzolan component is the crushed brick or tile producing a mortar called *opus signinum*, used particularly in Roman bath houses for its water resisting properties, and more widely in Roman building. This was a frequent component of the 1,289 samples of Roman mortars and plasters from 64 sites analysed by Morgan (1992). His work looked at mortar composition, including gravel, sand and crushed tile, from nearby Roman sites such as Canterbury, Dover, Beauport Park and Lullingstone, with the latter also producing evidence for calcified plant material similar to that at Lyminge. At Lyminge, the pozzolan was of relatively crude composition, given evidence that such a mix is most chemically effective when tile is ground fine (Gibbons 1997); in this case it is of very variable size with some larger pieces (Fig. 3).

Marine shells are not specified as components of the Roman mortar and plaster samples from the 64 sites analysed by Morgan (1992). Shell, and some brick, inclusions are reported in mortars analysed from Brixworth church, Northamptonshire, though their relationship with the Anglo-Saxon phases is unspecified (Sutherland 2013). Organic materials, including vegetable ash, are recorded as pozzolan additives elsewhere (Gibbons 1997; Falkenberg and Mutterlose 2021). As regards sources of mortar components, today's beach at Hythe contains very similar rounded flint gravel with an iron stained and patinated cortex and similar rounded cockle shells (Fig. 9). Beach sampling along the coast between Hythe and Dymchurch shows that the proportion of gravel and rounded cockle decreases west so Hythe is a possible source.



Fig 9 Gravel from modern Hythe beach with rounded flints and cockle fragments. At right fractured gravel shows patinated and iron-stained surfaces

REFERENCES

Ellis, P 2002. 'The Analysis of Mortar', *Hist Churches*, **2002**.

Falkenberg, J and Mutterlose, J 2021. 'Calcareous nannofossils in medieval mortar and mortar based materials: a powerful tool for provenance analysis', *Archaeom*, **63.1**, 19–39.

Gibbons, P 1997. 'Pozzolans for lime mortars. The Conservation and repair of ecclesiastical buildings', in *The Conservation and Repair of Ecclesiastical Buildings*, 4th edn, Cathedral Communications: London.

Morgan, G 1992. 'Romano-British mortars and plasters', unpublished PhD thesis, University of Leicester.

Sutherland, D S 2013. 'Mortars', in D Parsons and D S Sutherland, *The Anglo-Saxon Church of All Saints Brixworth, Northamptonshire. Survey, Excavation and Analysis 1972–2010*, Oxbow, Oxford.

POTTERY FROM EXCAVATIONS AT LYMINGE CHURCHYARD, 2019

Duncan H Brown and Lisa Backhouse

INTRODUCTION

Two trenches, the graveyard and the War Memorial, produced an assemblage of 231 sherds of pottery, with a combined weight of 2,378g, a total rim percent of 201 and a maximum vessel count (where sherds from the same vessel are counted as one) of 222. With an average sherd weight of 10g, the likelihood is that most of this material does not reflect primary deposition and a high degree of residuality is reflected in the occasional presence of prehistoric and Romano-British wares among early, high and later medieval types. The whole assemblage was sorted and recorded by ceramic fabric type, vessel type, sherd type and glaze or decoration and quantified by rim percent, weight in grams, sherd count and maximum vessel count. It was not possible to identify any vessel types to any level of detail and the terms 'jar' and 'jug' were the closest it was possible to get. Recording was undertaken by the authors in February 2020 and data entered into a spreadsheet, which has been submitted for inclusion in the project archive. A fabric type series was created and, where possible, matched with the series developed as part of the Lyminge project. Each fabric has a number and a ware name, or descriptive equivalent. In order to avoid confusion with the established type series, fabric numbering commenced at 600. Only medieval fabrics have been included in the type series. Prehistoric, Romano-British, post-medieval and modern wares were identified but not characterised in detail. After describing the fabric type series, the assemblages from each trench will be considered separately.

WARE TYPES

Twenty-one individual medieval fabrics were identified and can be grouped into early medieval, high medieval and late medieval types. This is not a very well-stratified assemblage and it is therefore difficult to date fabrics precisely but it is worth describing them in some detail because this series supplements the more detailed analysis conducted on the assemblage from the Lyminge project as a whole. With the exception of some matches from the War Memorial trench, the relative lack of types that occur in the material excavated elsewhere in Lyminge suggests that much of this assemblage is later in date. The medieval fabrics have been categorised into three broad period groups; early, high and late medieval. Early medieval includes all pre-Conquest and Saxo-Norman wares, the latter being difficult to separate from their late Saxon counterparts. The high medieval period could be said to commence with the introduction of wheel-thrown wares in the mid-thirteenth century, and represents the flourishing of glazed, highly decorated traditions that decline following the recessions of the mid- to late fourteenth century. From the late fourteenth century, late medieval wares were introduced, lasting until the appearance of post-medieval types in the mid-sixteenth century. Table 1 shows the quantities present for each ware type, which are described below.

Early medieval wares

RP 35 Weight 397g Sherd count 41 MVC 40

Early medieval wares at Lyminge have been studied in detail elsewhere and a variety of types and groups have been formulated based mainly on the range of inclusions. The types present here are similarly characterised by their principal constituents rather than association with any known

production sites. Several ware types/groups within this assemblage can be broadly matched with the Lyminge type series, particularly the most dominant types derived from the later seventh- to ninth-century settlement sampled nearby. However, several new types are also represented, which suggests that they post-date those assemblages and are likely therefore to date to the tenth, eleventh or twelfth centuries. They are all hand-built and probably fired in clamp-type kilns, which also indicates an early medieval date. There are few sherds diagnostic of form but apart from a bowl rim, the prevalent vessel type is the round-shouldered jar/cooking pot, with an everted rim, that typifies early medieval assemblages in southern England.

Shell-tempered pottery is the most common early medieval coarseware type, accounting for 128g and represented by two fabrics: 605 and 614. Fabric 605 is comparable to 198 in the Lyminge type series. In that larger assemblage, shell-tempered wares, including Fabric 198, are dated to the later seventh to ninth centuries. Fabric 614 is fired much harder and a later tenth- or eleventh-century date is suggested.

Ill-sorted sandy coarseware is a dominant presence in the mid-Saxon assemblage from Lyminge. Fabric 616 has been matched with Fabric 102 in the Lyminge type series, one of the most common ill-sorted sandy coarsewares and dated to the fifth to seventh centuries.

There are three flint-tempered coarseware fabrics, two of which have been matched with the Lyminge type series: 609 with 228; 620 with 252. A seventh- to eighth-century date is suggested for fabrics 609/228 and 620/252. Fabric 617 is hard-fired, with abundant white flint and a tenth or eleventh century date is possible.

Chalk-tempered coarseware, Fabric 606 is a hand-built coarseware with abundant ill-sorted quartz sand and moderate chalk inclusions. It has not been matched elsewhere in the Lyminge type series and a late Saxon or Saxo-Norman date is likely.

Flint and chalk-tempered coarseware, Fabric 618, has moderate to abundant ill-sorted white flint, with sparse medium chalk and moderate, fine, rounded quartz and it cannot be matched elsewhere in the Lyminge type series. A small, simple upright rim sherd may have come from a bowl.

Fabric 613 is equivalent to 211 in the Lyminge type series. This is a North French greyware, fired grey throughout and with well-sorted fine quartz, and has an eighth- to ninth-century attribution. There are three small sherds, all with a diamond-roulette decoration.

High medieval wares

RP 142 Weight 1,682g Sherd count 154 MVC 150

Table 1 shows that the assemblage is dominated by high medieval wares, mainly in the form of Canterbury-type ware, Fabric 600. This is a hard-fired, sandy wheel-thrown coarseware, usually dark grey in colour, with well-sorted, medium quartz inclusions. The earliest, late tenth-century, manifestation of this product is frequently knife-trimmed (McPherson-Grant 1995; Cotter 2015) but there is little evidence of that here and an eleventh- to early thirteenth-century date range is most likely. The only diagnostic sherds are everted rims from jar/cooking pots. A few base sherds are likely to be from similar vessels.

There are three additional medieval coarseware fabrics, 603, 608 and 612. Fabric 603 has moderate to abundant quartz with sparse chalk inclusions. Fabric 608 is hard-fired with abundant ill-sorted quartz and sparse red iron, flint and chalk. Both of those are represented by single sherds. Fabric 612 has moderate to abundant, ill-sorted quartz with moderate coarse and medium shell inclusions. There are five sherds of this fabric, including a rim with external thickening and an internal incised wavy line.

High medieval glazed sandy ware occurs in four fabrics, 601, 602, 604 and 621, all of which are local products. Fabric 601 is a sandy redware with a dark-green glaze over a white slip; 602 is pink-grey in colour with sparse flint and chalk among ill-sorted quartz inclusions, decorated with a vertical thumbled applied strip under a slightly reduced green glaze; 604 has pink-red surface colour and is comprised of a fine sandy clay with larger white clay pellets and occurs as a fragment of a narrow strap handle; 621 is a redware with medium to fine quartz and sparse red iron and greenish-clear glaze. All of these sherds are most probably from jugs and are likely to date from the mid-thirteenth to mid-fourteenth century.

Late medieval wares

RP 14 Weight 96g Sherd count 8 MVC 8

Fabrics 607, 610 and 622 are locally produced, highly fired late medieval sandy wares. Fabric 607 (three sherds) has dark-grey brown surfaces and a clay matrix of moderate, medium-fine quartz sand with inclusions of medium and coarse red iron clay pellets. There are four sherds of Fabric 610, which is dark grey-brown in colour and has abundant, rounded, medium quartz with sparse fine red iron. One sherd is a fragment of a jug rim, with an external reduced green glaze and a rilled neck. Fabric 622 is pink-grey in colour, with moderate fine quartz, sparse red iron clay pellets and very sparse fine and medium chalk inclusions; the single sherd present here is decorated with applied vertical strips and has splashes of greenish-clear lead glaze. These wares fit into the late medieval tradition of well-fired sandy wares of more utilitarian character than the richly glazed and highly decorated types of the high medieval period.

Post-medieval wares

RP 0 Weight 6g Sherd count 2 MVC 2

Two post-medieval wares are represented by tiny body sherds. These are: post-medieval redware, which represents a long-standing tradition of richly glazed red sandy earthenware that persisted all over the south of England from the mid-sixteenth to early eighteenth centuries; Frechen-type stoneware, with the characteristic 'orange-peel' pimpled salt glaze. This has a similar date-range from around 1550 to 1700.

Modern wares

RP 0 Weight 40g Sherd count 2 MVC 2

One fragment of flower pot and another from a stoneware drainage pipe are also present.

ARCHAEOLOGICAL CONTEXTS

The Graveyard Trench

Thirteen contexts produced an assemblage of fifty-nine sherds, weighing 926g, with a total rim percent of seventy-five and a maximum vessel count of fifty-six. Thirteen sherds (281g; RP 3; MVC 12) came from three unstratified contexts, derived from machining and hand-cleaning (contexts 5, 10 and 66) and described as redeposited graveyard material that included large quantities of disarticulated human bone. The remaining stratified assemblage is shown in Table 2, in which ware types are quantified by weight and sherd count for each context. No contexts produced exclusively early medieval pottery, and high or late medieval wares are present throughout. All the pottery is badly fragmented and, in many cases, abraded, which indicates that it is all redeposited and no context can be securely dated beyond the provision of a broad *terminus post quem*.

The War Memorial Trench

Seventeen contexts produced an assemblage of 172 sherds and 1,452g, with a total rim percent of 126 and a maximum vessel count of 166. Four contexts were unstratified (808, 809, 825, 883) but they account for 122 sherds and 1,066g with a rim percent of ninety-four and a maximum vessel count of 121. The remaining fifty sherds are shown in Table 3, quantified by weight and sherd count according to context. There is no pottery later than Canterbury-type sandy coarseware and two features, pit 822 and posthole 853 contained exclusively early medieval material, albeit in very small quantities. The presence of prehistoric pottery in pit 822 suggests that all the pottery is residual. As with the graveyard trench, no secure dating can be offered beyond a *terminus post quem*.

This is a small assemblage, much of it unstratified and all of it probably redeposited. The principal interest is in the range of fabrics, which extend the Lyminge type series into the Saxo-Norman and high medieval periods. The sherd size is universally small and very little of this material can be related to specific activities around the church, although most of it is contemporary with the active use of that building in the medieval period.

REFERENCES

Cotter, J 2015. 'Post-Roman Pottery', in P Andrews *et al* (eds) *Digging at the Gateway Archaeological Landscapes of South Thanet, The Archaeology of East Kent Access (Phase II) Volume 2: The Finds, Environmental and Dating Reports*. Oxford and Salsbury: Oxford Wessex Archaeology, 247–78

Macpherson-Grant, N 1995. 'Post-Roman', in *Canterbury: Marlowe Car Park and Surrounding Areas, Part II: The Finds*. Canterbury: Canterbury Archaeological Trust, 815–96

.

Ware types	Rim %	Weight (g)	Sherd count	MVC
Prehistoric	5	25	12	8
Romano-British wares	5	132	12	12
Chalk-tempered coarseware		26	3	3
Flint-tempered coarseware	4	93	7	7
Flint and chalk tempered coarseware	11	35	2	2
Shell-tempered coarseware	11	128	14	14
Early medieval sandy coarseware	4	56	7	7
Early medieval imported greyware		20	3	2
Canterbury-type sandy coarseware	139	1487	146	143
High medieval coarseware	8	79	7	7
High medieval sandy ware		155	6	5
Late medieval high-fired sandy ware	14	96	8	8
Post-medieval redware		4	1	1
Frechen Stoneware		2	1	1
Modern drain pipe		13	1	1
Modern flower pot		27	1	1
Totals	201	2,378	231	222

Table 1. Quantities of each ware type in chronological order of period group

Context Number	Context type	Shell-tempered coarseware	Flint-tempered coarseware	Canterbury-type sandy coarseware	High medieval coarseware	Glazed red sandy ware	Late medieval sandy	Post-medieval redware	Modern drainage pipe	Total weight / Sherd count
28	Layer						10 / 1			10 / 1
44	Graveyard backfill	10 / 1	16 / 1	378 / 22	25 / 1				13 / 1	442 / 26
47	Graveyard backfill						28 / 1			28 / 1
49	Graveyard backfill	5 / 1		25 / 3						30 / 4
50	Graveyard backfill			25 / 2						25 / 2
52	Path surface						6 / 1	4 / 1		10 / 2
67	Grave backfill	15 / 2		6 / 2						21 / 4
74	Grave fill					3 / 1				3 / 1
75	Layer			52 / 3						52 / 3
82	Grave fill	19 / 1					5 / 1			24 / 2
Total weight / Sherd count		49 / 5	16 / 1	486 / 30	25 / 1	3 / 1	49 / 4	4 / 1	13 / 1	645 / 46

Table 2. Graveyard trench: quantities of different ware types in each stratified context

Context number	Context type	Prehistoric	Romano-British	Shell-tempered coarseware	Flint-tempered coarseware	Flint- and chalk-tempered coarseware	Sandy coarseware	Early medieval imported greyware	Canterbury -type sandy coarseware	Total weight / Sherd count
806	Pit 807			4 / 1					32 / 2	36 / 3
821	Pit 822	12 / 7			71 / 5	28 / 1				111 / 13
827	Gully 826		4 / 1						9 / 1	13 / 2
833	Pit 832					7 / 1		9 / 1	16 / 2	32 / 4
845	Pit 844	2 / 3							9 / 1	11 / 4
846	Wall foundation								12 / 2	12 / 2
847	Cut 846								8 / 1	8 / 1
848	Layer	6 / 1	8 / 2		14 / 3		8 / 1		55 / 5	91 / 12
850	Posthole 849						15 / 1		28 / 1	43 / 2
854	Posthole 853			5 / 1						5 / 1
882	Timber slot 881		1 / 1				10 / 1		3 / 1	14 / 3
887	Feature 886								3 / 1	3 / 1
891	Posthole 890								7 / 2	7 / 2
Total weight / Sherd count		20 / 11	13 / 4	9 / 2	85 / 8	35 / 2	33 / 3	9 / 1	182 / 19	386 / 50

Table 3. War Memorial trench: quantities of different ware types in each stratified context

Photographed sherds

LYM 19 Context 821, Fabric 618m, early medieval bowl

LYM 19 Context 808, Fabric 613, imported greyware with stamped rouletted decoration

BUILDING MATERIAL FROM LYMINGE CHURCHYARD EXCAVATIONS, 2019

Cynthia Poole

INTRODUCTION AND METHODOLOGY

A small quantity of building material was submitted for analysis from trenches excavated in 2019, relating to the Saxon and later medieval church. The assemblage comprised mortar and wall plaster amounting to seventeen fragments (839g) and ceramic building material comprising nine fragments (609g). The assemblage has been fully recorded in accordance with guidelines set out by the Archaeological Ceramic Building Materials Group (ACBMG 2007) and is summarised in Table 1. Fabrics were characterised on the basis of macroscopic features supplemented by the use of x20 hand lens and no scientific analysis has been carried out to identify the mineral components of either the paint or mortar.

WALL PLASTER AND MORTAR

The wall plaster and mortar were recovered from four contexts. The earliest datable context was the foundation pier of the nave crossing of the Anglo-Saxon church (15) from which a single sample was taken. This consisted of a broken fragment of Roman brick, 37mm thick, made in a hard, fine red clay fabric. It was encased in remnants of a light brown lime mortar mixed with a high density of medium sand, mostly translucent or amber quartz, together with a lower density of dark, green-black grains of glauconite, with a scatter of coarser grits of tile, quartzite and flint up to 8mm.

All the remaining pieces of mortar and wall plaster were found residually, the majority in the graveyard soil encompassing the apse of the Saxon church (44, 66), or in association with the medieval wall foundation (847) from the War Memorial trench.

Fabrics

Four mortar fabrics (M1–M4) were identified:

- M1: Light grey — pale-brown, lime mortar containing a high density of opaque white medium coarse quartz sand, and a scatter white lime balls/chalk <5mm.
- M2: White-cream or pale-brown lime mortar mixed with a high density of opaque and translucent white and amber, medium, rounded-subrounded quartz sand, a low density of green-black glauconite sand up to 2mm and a low-moderate density of coarser aggregate comprising small quartz or quartzite pebbles, flint/chert gravel and pebbles up to 15mm and more rarely rounded chalk up to 7mm and shell fragments.
- M3: Light grey-pale brown, lime mortar containing a high density of opaque white and amber medium coarse quartz sand, moderate scatter of black iron pyrites sand and frequent coarse inclusions up to 14mm of flint pebbles and gravel, shell, and tile grit.
- M4: Pale creamy brown lime mortar mixed with moderate density fine-medium quartz sand and coarse inclusions of chalk <10mm and small black inclusions that appear to include charcoal and possibly other burnt organic remains <2mm.

Fabric M2 was the most common, used also for the foundation pier of the Anglo-Saxon church, whilst the other fabrics were found in only one or two examples. The glauconite present in type M2 indicates the sand aggregate originated from Greensand deposits which outcrop 3km to the south and south-west of Lyminge (BGS 2020). The lime itself could be produced from the local chalk deposits.

Description

Apart from one fragment from context 44 that formed a broken amorphous piece containing coarse flint gravel aggregate, which probably derived from a concrete foundation for wall or floor, the remaining pieces consisted of wall render or plaster. These pieces formed thin flat slabs usually of a single layer of mortar ranging in thickness from 8–15mm or 20–26mm. The back bonding face was present on several pieces and presented a flat or slightly undulating rough surface sometimes with coarser grits protruding, indicating the plaster had been laid over a primary rough finished render surface. Rarely, impressions of coarser stones from the underlying wall structure were present.

The outer visible wall surface of the plaster was generally smooth and finished to varying degrees. This ranged from a very smooth flat polished surface through a fairly standard flat smooth surface to examples with a slightly uneven surface or with small blemishes. Most of the fragments from context 44 had a plain unpainted cream surface to the mortar plaster, or in a small number of examples remnants of a white lime wash. The piece from context 66 had been uniformly painted with a plain matt maroon-plum red paint. No edges to the paint were present and it is not known whether this colour covered extensive areas or narrower bands of colour. No narrow stripes were represented.

The fragment discovered in association with the medieval wall foundation (847) was painted matt maroon-plum red of a similar colouration and hue to the piece from context 66.

Discussion of the wall plaster

The plaster assemblage is small, and inevitably the evidence is limited for the internal finish of the Anglo-Saxon church. It may be concluded that the plaster was predominantly white, with some areas painted red. What form the red areas took it is not possible to say on the available evidence. Wall plaster excavated from contemporary structures is rare. Mortar recovered from excavation of the Saxon church of St Mary's, Deerhurst, produced very little evidence of painted surfaces and what little survived was white or cream suggesting a fairly austere interior (Rhatz 1976, 33–4). At Wearmouth and Jarrow, the plaster from the monastic buildings included white and red painted plaster, occasionally combined with black. At Wearmouth, narrow red bands or stripes, mostly straight, though including a few curved, may have formed panels set within the wall (Cramp and Cronyn 2006, 7). At Jarrow, the plaster was decorated with geometric designs based on stripes and circles painted in red on a cream ground (Cramp and Mac Mahon, 2005, 10) as well as plain matt red plaster. The complex geometric designs were laid out with scored lines that guided the painting. No evidence for decorative designs is present in the paintwork of the Lyminge plaster, nor were any scored lines encountered to suggest its presence or anything as complex as the Jarrow plaster. If anything, the Lyminge plaster is closest in character to the 'matt red' plaster that was most likely to be associated with the Saxon church at Jarrow (Cramp 2006, 15), whereas the more decorative plaster was associated with other monastic buildings.

Later post-Conquest excavated assemblages from medieval religious houses have produced limited evidence of a greater range in colour and design. At Glastonbury Abbey, the large assemblage was confined mainly to red line decoration on a white ground, with occasional blue-black lines and areas of ochre yellow. The extensive use of this limited range of decoration possibly representing foliage,

scroll work or drapery, is more typical of basic schemes of a quality similar to parish churches (Caple 2015). Similar red and black lines painted on a white ground probably of mid-thirteenth century date was found at Selborne Priory, where it was interpreted as representing mock ashlar, though other simple designs represented by curving lines and areas of ochre wash are also present (Baker 2014).

In conclusion, the wall plaster from Lyminge is closest in character to that associated with the church at Jarrow, probably representing a simple bichrome decorative design lacking the more complex geometric patterns found in the associated monastic buildings of Jarrow and Wearmouth or in later monastic foundations and churches.

CERAMIC BUILDING MATERIAL

The roof tile comprising eight fragments (510g) was all recovered from test pit 1 from demolition material of medieval date from the building represented by the wall foundation 847, and one brick fragment (99g) came from the vicinity of test pit 4 (noted as path reduction east of War Memorial trench).

Brick

The corner fragment of brick measures 43mm (1 $\frac{3}{4}$ ins) thick and has a smooth upper surface with indented borders 10mm wide along both edges, rough base and stretcher surface and a more even header with rounded arrises and corner. The outer surfaces are covered in pale blue-green vitreous vitrified veneer, which could have been caused by overfiring during the primary firing process, or as a result of use in a kiln such as a glass furnace. It was made in a yellowish-brown fabric containing a high density of fine sand, a scatter of diffuse rounded mudstone up to 14mm and occasional shell grit up to 8mm. This bears some similarity to the Type 3 brick fabric at Battle Abbey, where it is suggested to be a Flemish import from the Low Countries of fourteenth–sixteenth century date (Streeten 1985, 101).

The brick thickness is typical of medieval bricks and accords best with medieval ‘Great Bricks’ of mid-twelfth to mid-thirteenth century date, which were 1 $\frac{1}{2}$ –2ins thick, though the standard bricks, which occur from the mid-thirteenth century are only a little thicker, averaging 2ins (Brunskill 2009, 37). It is not uncommon for early handmade bricks to vary to some considerable extent across the entire brick, often thinning to the corners, so it is possible the complete brick would have had an overall thickness closer to the 2ins of standard bricks. Bricks of similar thickness (Type 4i) found at Battle Abbey amongst Dissolution debris are assigned a fifteenth–early sixteenth-century date. Indented borders or sunken margins are most commonly observed on Tudor and Stuart bricks of late-fifteenth to mid-seventeenth-century date such as those found at Hampton Court but are also a consistent feature of Dutch ‘clinker’ bricks. The general characteristics, size, colour, fabric and firing have most in common with Dutch ‘clinker’ bricks (Smith 2001), which are of c fifteenth–seventeenth-century date, rather than any locally made product.

Where brick was used in medieval churches, it was on a limited scale, usually in quoins, window dressing and arches (Brunskill *ibid*, 115–16). However, if this brick has been accurately identified as a Dutch ‘clinker’ brick, these were generally used in floor, path or yard surfaces and it may have been used in a post-medieval path through the church yard, rather than as part of the medieval church structure.

Roof tile

The roof tile all came from flat rectangular tiles, of which half could be positively identified as peg tiles from the presence of peg holes. Most were made in a hard orange/red fabric, often with a thin grey core containing low-moderate density of medium quartz sand. One group of three fragments was made in a very fine sandy fabric and a single example was made in a light pinkish brown fine silty smooth clay, containing no inclusions, but some scattered voids may indicate organic temper had been added.

The tiles generally had a fairly rough crude finish with striated upper surfaces from wiping and sometimes lumpy upper surfaces (probably from clay pellets within the fabric), rough sanded bases and edges, which sometimes have slight lips along the upper arrises. They ranged in thickness from 11 to 14mm, but no other dimensions survived complete. The best preserved was a fragment measuring more than 85mm long and more than 115mm wide, estimated to be *c* 125mm wide if the peg holes had been placed symmetrically, though this would be unusually small compared to the more standard 150–60mm. This piece has two oval peg holes measuring 19 by 15mm tapering to 10 by 8mm set 20mm apart and centred 22–5mm from the top edge and 40mm from the side edge. This piece is also distinguished by a dog paw print 45mm wide comprising the four toe pads and two claw marks.

The other peg tile fragments all had circular peg holes measuring 11 and 15mm in diameter centred 17–25mm from the top and 36–60mm from the adjacent side edges. On one tile, the peg holes were encircled by halos of thickened clay *c* 23–5mm diameter on the underside of the tile.

The roof tile cannot be closely dated: rectangular peg tiles become established in the mid-thirteenth century and have continued in use to the present day. Until the introduction of mechanisation there is little difference in character apart from changes in size relating to various statutes and a general progression from a crude to a neater finish. The general character is consistent with a medieval date and the very close spacing of the pair of peg holes also suggests this: at Battle Abbey the thirteenth–fourteenth-century peg tiles had more closely spaced peg holes than those from later phases (Streeten 1985, 97). No glaze was observed, but this is not always present on medieval tiles and when present was only applied to the lower halves of peg tiles.

Table 1: Summary of the building material assemblage

Context	SF	Nos	Wt g	Material/fabric	Form	Phase	Context description
15	<11>	1	76	Tile in mortar M2	Roman brick fragment	7th century	Foundation pier of nave crossing of Anglo-Saxon church
44	72 a	1	81	Mortar M1	Wall plaster with plain cream surface of plaster or occasionally with evidence of whitewash		General graveyard soil encompassing the footprint of the Anglo-Saxon church and immediately adjacent areas. Generated as a result of centuries of medieval and post-medieval grave digging, but incorporates residual material directly derived from the fabric of the Anglo-Saxon church, portions of which were truncated by post-Saxon graves.
44	72 b	1	52	Mortar M2			
44	72 c	1	18	Mortar M3			
44	73	4	173	Mortar M3			
44	-	1	104	Mortar M2			
44	-	1	75	Mortar M2	Concrete foundation		
66	70 A	1	23	Mortar M4	Wall plaster		
66	70 A	1	29	Mortar M2	Wall plaster with red painted surface		
847	-	5	208	Mortar M2	Wall plaster with red painted surface	Medieval	Mortared wall foundation
<i>Mortar</i>	<i>Total</i>	<i>17</i>	<i>839</i>				
Ceramic building material							
U/S	-	1	99	Fine sandy, clay pellets and shell	Glazed brick ?Dutch 'clinker'	15th-17thC	Discovered in vicinity of TP4
TP1	-	1	178	Sandy	Roof: peg tile with paw print	Medieval	Demolition material associated with building denoted by foundation 847
TP1	-	3	90	Sandy	Roof: peg tile		
TP1	-	3	209	Fine sandy	Roof: peg tile		
TP1	-	1	33	Silty	Roof tile		
<i>CBM</i>	<i>Total</i>	<i>9</i>	<i>609</i>				

REFERENCES

- ACBMG 2007. *Ceramic Building Material, Minimum Standards for Recovery, Curation, Analysis and Publication*. Archaeological Ceramic Building Materials Group
- Baker, E 2014. 'Wall plaster', in D Baker, *Selborne Priory Excavations 1953–1971*, Hampshire Field Club Archaeol Soc Monogr 12, 130-2, Hampshire Field Club and Archaeological Society
- BGS 2020. British Geological Survey, Geology of Britain Viewer:
<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>
- Brunskill, R W 2009. *Brick and Clay Building in Britain* (Vernacular Buildings), Yale University Press, New Haven
- Cramp, R 2006. *Wearmouth and Jarrow Monastic Sites Volume 2*, English Heritage, Swindon
- Cramp, R and Mac Mahon, A 2006. 'The decoration of the polychrome plasters', in Cramp 2006, 8-15.
- Cramp, R and Cronyn, J 2006. 'Polychrome plasters', in Cramp 2006, 6-8.
- Caple, C 2015. 'Ex-situ painted wall plaster', in R Gilchrist and C Green, *Glastonbury Abbey Archaeological Investigations 1904-79*, Soc of Antiquaries, London, 337–40
- Rhartz, P 1976. *Excavations at St Mary's Church Deerhurst 1971-3*, Council Brit Arch Res Rep 15, London.
- Smith, T P 2001. 'On 'small yellow bricks ... from Holland'', *Construction Hist*, **17**, 31–43
- Streeten, A D F 1985. 'Ceramic building materials', in J N Hare, *Battle Abbey The Eastern Range and the Excavations of 1978–80*, 77–10

COINS FROM THE 2019 EXCAVATIONS IN LYMINGE CHURCHYARD

David Holman

The 2019 excavations produced a total of fourteen coins of considerable heterogeneity ranging over some 2,000 years and with only one find of numismatic significance (see Table 1). All of the coins were from topsoil, or layers that had been previously disturbed and none were in a primary context. The use of a metal detector increased the total significantly from what it would otherwise have been.

The earliest coin found was an Iron-Age potin coin of the Kentish Primary series, dated to the mid-second century BC and likely to be the earliest coin type produced in Britain. These are not uncommon finds across much of east Kent and one of the four currently known hoards of these coins was found within Lyminge parish.

There were two Roman coins, one of which, from a much later context within the early Anglo-Saxon chancel, is pierced. This coin is too worn to be identified other than to say that it is of first or second century date. The piercing could have occurred at any time after this but it may be significant that numerous other pierced Roman coins were found during previous excavations at Lyminge, which in some cases certainly came from Anglo-Saxon contexts. Taken in conjunction with the lack of evidence for Roman period occupation in Lyminge, it can be inferred that the 2019 pierced coin was most likely adapted in the post-Roman period, perhaps for use as a pendant. The other Roman coin found in 2019 is a small late third-century radiate copy which shows no sign of adaptation and, like the potin coin, is perhaps a casual contemporary loss rather than an object curated during the Anglo-Saxon period.

The highlight among the 2019 coins was undoubtedly a penny of Ceolnoth, Archbishop of Canterbury (833–870). This was a spoilheap find in soil derived from adjacent to the war memorial. It is of the Floriated Cross type, a design also used by Aethelberht of Wessex (858–865/6) in the latter years of his reign, and Ceolnoth's issue is thus thought to be around the same date (*c* 862–866). This is probably the last of the 'facing bust' issues, which had been in vogue for the ecclesiastical series since the archbishopric of Wulfred (805–832). It is only the third recorded specimen and the second complete coin at the time of writing.¹ It is from the same reverse die in the name of the moneyer, Biarnred (Beornraed), as both the other coins, but from a different obverse die, which is the first indication that the issue was probably larger than the tiny surviving corpus would suggest. However, the fact that the Floriated Cross type has yet to be found in a hoard, unlike earlier types of Ceolnoth, suggests that it may have been a smaller issue than those earlier types.

The coin is in unworn condition, although with small patches of cuprous corrosion suggesting some debasement of the silver. Attempting to assess the date of deposition of a single effectively unstratified coin is problematic. Earlier types of Ceolnoth — and other issuers from, sometimes, decades earlier — are known from several hoards, including Dorking (dep. *c* 865/6), Beeston Tor (dep early 870s), Trewhiddle (dep early 870s) and Cuerdale (dep *c* 905), showing that they could have remained in circulation for some years after minting.² On balance, however, the condition of this coin, together with an obverse design which would have marked it out as unusual just a few years later, perhaps suggests a date of deposition not too long after the date of issue, probably no later than *c* 875.

¹ The others are an unprovenanced fragmentary coin in the British Museum (accession no. 1947.14.4.6), and a complete specimen from Drifffield, Yorkshire, possibly from a small hoard; see Naismith 2011, type C.218.

² Thompson 1956.

None of the Anglo-Saxon coins found during previous excavations at Lyminge are of this date, a period when the documentary sources are silent, but this coin indicates a continuing presence on the site of the monastery well into the third quarter of the ninth century.

There were four medieval coins, split between the excavation adjacent to the church and the separate area leading to the war memorial. The earliest of these can be dated to c 1170 and was found alongside the medieval building found under the path leading to the war memorial. The same area also produced a cut farthing of the mid-thirteenth century. These coins may hint at the date when the building was in use, but equally may be casual losses not directly related to the structure. From a chalk path crossing the chancel of the early Anglo-Saxon church came a penny of Edward I (1299–1301), but other finds from this layer indicate a much later, post-medieval date and it thus appears that this coin inadvertently found its way into the path during construction. The latest medieval coin, dated to the early 1480s, came from heavily disturbed later grave fill in the area of the destroyed south-western corner of the Anglo-Saxon church. None of these coins is in fresh condition and all were probably lost several years after their production date. In summary, these medieval coins represent a typical selection for the period, but in the absence of any from primary contexts, little else can be deduced from such a wide-ranging sample.

Lastly, a typical selection of post-medieval coins from the seventeenth to the twentieth centuries was recovered. These included a Victorian halfpenny dated 1862 found underneath the porch, tying in neatly with the excavation undertaken shortly beforehand by Canon Jenkins. As with the medieval coins, it is likely that all these arrived as the result of casual losses.

Table 1: a list of coins from the excavation

Period	Issuer	Description	Mint	Moneyer	Den	Date	Reference	Cond.	Weight (g)
Iron Age	Cantiaci	Kentish Primary Series (chipped)	*	*	Potin	c.175-125 BC	As Van Arsdell 1402	Corr	2.23
Roman	Uncertain	Fig. stg. I.? (pierced)	*	*	As	C1-C2	*	EW	8.82
Roman	'Tetricus I'	Rev. illegible apart from V (offcentre)	*	*	Radiate copy	c.274-286	*	UW	1.36
Anglo-Saxon	Abp. Ceolnoth	Group III, Floriated Cross, CEOLNOD ARCHIEP' / BIARNRED MONETA	Canterbury	Beornraed	Penny	c.862-866	North 247; Naismith C.218	UW	1.09
Medieval	Henry II	Cross & crosslets, Class C-E [...]EF[...]	London?	Geffrei?	Penny	c.1163-1174	As North 956	SW	1.32
Medieval	Henry III	VLC Cl.3c or 4 [...]ON]CAN	Canterbury	N/K	(Cut) farthing	1248-1251	As North 988	W	0.27
Medieval	Edward I	Class 9b (clipped)	London	*	Penny	1299-1301	Spink 1408	W	1.09
Medieval	Edward IV	mm. long cross fitchee (clipped)	Canterbury	*	Halfpenny	1480-1483	Spink 2141	W	0.33
Post-medieval	Charles I	Maltravers class 2 (mm bell both sides)	*	*	Farthing	1634-1636	Spink 3198	SW	0.44
Post-medieval	Charles II	*	London	*	Farthing	1672-1675	Spink 3394	SW	
Post-medieval	William III	*	*	*	Halfpenny	1695-1701	As Spink 3554	EW	7.94
Post-medieval	Victoria	*	*	*	Halfpenny	1862	Spink 3956	Enc.	5.47
Post-medieval	George V	*	*	*	Halfpenny	1913	Spink 4056	W	5.35
Post-medieval	George V	*	*	*	Halfpenny	1923	Spink 4056	SW	

REFERENCES

- Naismith, R 2011. *The Coinage of Southern England 796–865, Vol I*, London
- North, J J 1994. *English Hammered Coinage, Vol I, Early Anglo-Saxon to Henry III c 600–1272*, London
- Spink and Son Ltd, *Standard Catalogue of British Coins: Coins of England and the United Kingdom, Part I*, 50th edition (2015), London
- Thompson, J D A 1956. *Inventory of British Coin Hoards A.D. 600–1500*, Royal Numismatic Soc Special Publ No 1, Oxford
- Van Arsdell, R D 1989. *Celtic Coinage of Britain*, London

NOTES ON THE FABRIC AND GEOLOGICAL CONSTITUENTS OF SS MARY AND ETHELBURGA, LYMINGE (EXCLUDING THE TOWER)

Christopher Green

METHODOLOGY AND GENERAL OBSERVATIONS

The study of the fabric was constrained. Ideally, recording should extend to all the clasts and the mortars they are set in; in practice two alternatives apply: Over the north wall of the chancel, and north and north east walls of the nave, a white coating of ?whitewash, carbonates, probably silicates, and white crustose lichens has obscured the stonework over the course of centuries, and identification beneath this layer would necessarily be intrusive. Growths of moss have compounded all this near ground level. Where the white layer has been removed, the contemporary solution was to repoint in a Portland Cement mortar, shown yellow ochre in the drawings (Figs 1–3). Where an individual stone has been invisible beneath its white patina, its form may help identification. Two principal stones used in the early years of the church were ferruginous sandstone from the Lenham Beds, and a form of Oligocene limestone thought to be the Binstead Limestone from the Isle of Wight. Though they may be of similar hue, the Lenham Beds stone is emphatically not a freestone, and was usually employed with little or no cutting (where blocks are flattened it has been by pecking); Binstead Stone is however a freestone, often seen in the form of squared blocks, even bearing ?saw marks (evidently it was a relatively soft stone when freshly quarried), and could be shaped to form the closely fitting voussoirs of windows.

Sharp junctions between Lenham and Binstead stones are visible in parts of the nave wall (south) and the chancel wall (north and south) (Figs 1–3) and it appears that these may have formed successive supplies to the builders in the eleventh century.

Several interventions may be associated with the church's chief restorer, Canon Jenkins. Canon Jenkins's restoration was presumably responsible for the movement of the Caen Stone string course from the chancel parapet to the plinth of the north and north-east sides of the nave where it is today. Jenkins presumably had the chancel parapet removed, although its ceiling was also raised, as is evident on the north side.

The round-headed Romanesque windows are said by Tatton-Brown (1991) to have been re-opened by Canon Jenkins but are also often observed to have been shortened (Newman 1983; Berg and Jones 2009, 172) (ie stone mortared into their sills), but this may have been done to accommodate the fifteenth-century windows (Fig 1). The fabric survey showed evidence of a number of squared Binstead Limestone blocks alongside the fifteenth-century window to the east of the porch, and it may be that a round-headed Romanesque window was removed and replaced at this point (if so, we may suspect that there was another where the window on the south side is now). Canon Jenkins certainly carried out works in this area, as Lenham sandstone masonry has been cut away and the whole repointed with Portland Cement to the east of the Porch.

There is an unexplained scar on the north-east end of the nave, abutting the chancel, which may denote the removal of a buttress there. A buttress in an apparently anachronistic material — Ragstone — strengthens the centre of the nave on the north side, and this may have been the only source of large stones available to Jenkins at that time.

As discussed in the main text, it may be that Jenkins created or augmented the ‘niche’ (through which it was claimed pilgrims could see the remains of St Ethelburga), using many small pieces of Roman ceramic building material to form a low arch (Fig 2). The more telling feature, geologically, is the slab forming the floor of the niche at ground level. Though it is hard to determine the specific stone in its current position, it should be noted that it is longer than any other piece of stone used in the fabric, and it may even be a sawn Ragstone headstone taken from the adjoining graveyard. Irrespective of the precise identity of this stone, Jenkins is the most likely candidate for the arched niche in its present form, an identification supported by the fact that the wall above the niche has been repointed in Portland cement of some age. Jenkins is also thought to be responsible for the preservation of the plinth on which the church is built and which almost supports the niche, building it up with small pieces of Lenham ironstone or (chancel north side) with modern bricks topped by Lenham Stone.

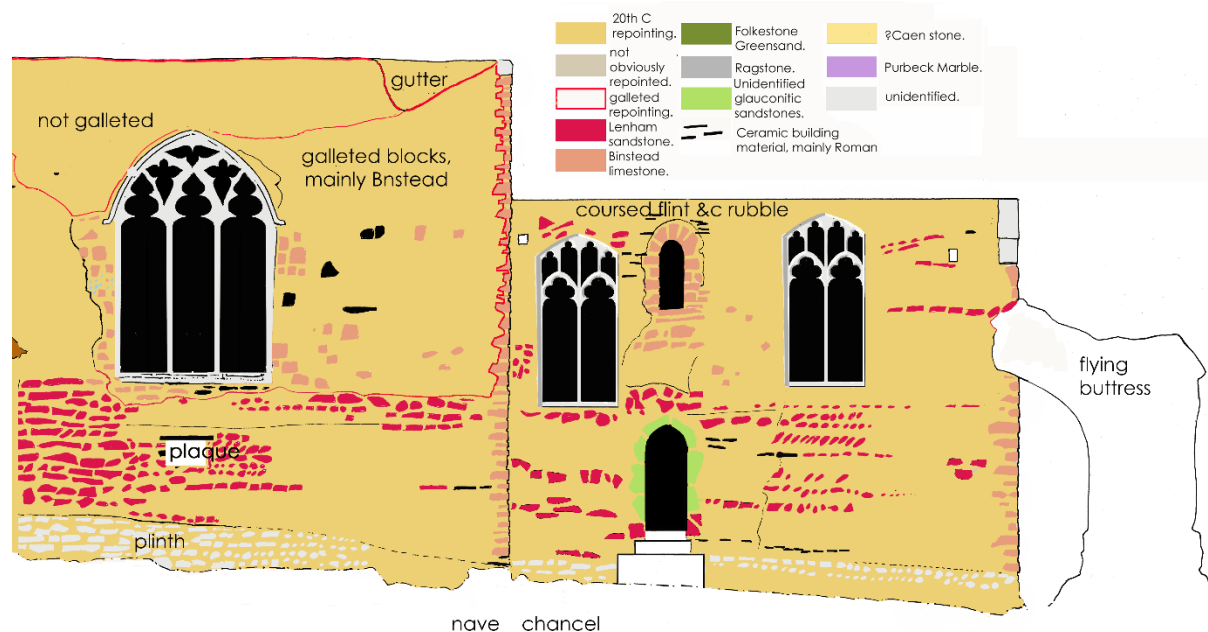


Fig 1. South elevation of church (eastern section) showing geological identifications (scale approx 1:100). Drawing by author based on results of laser scanning survey and select photogrammetry

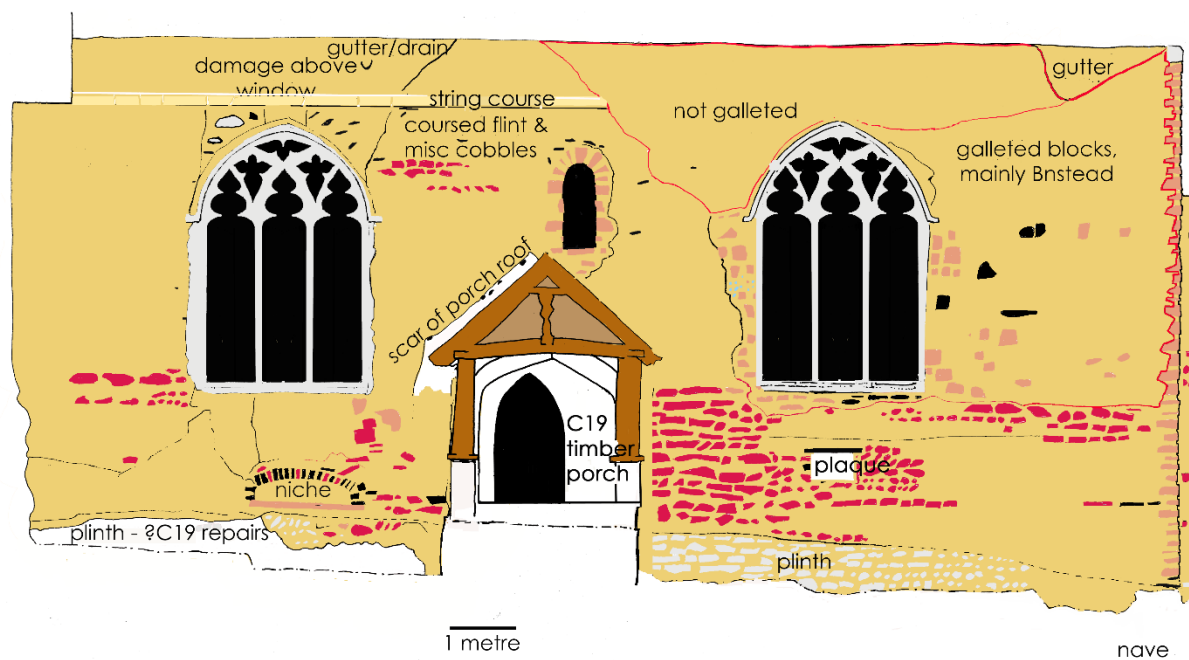


Fig 2. South elevation of church (western section) showing geological identifications (scale approx 1:100). Drawing by author based on results of laser scanning survey and select photogrammetry

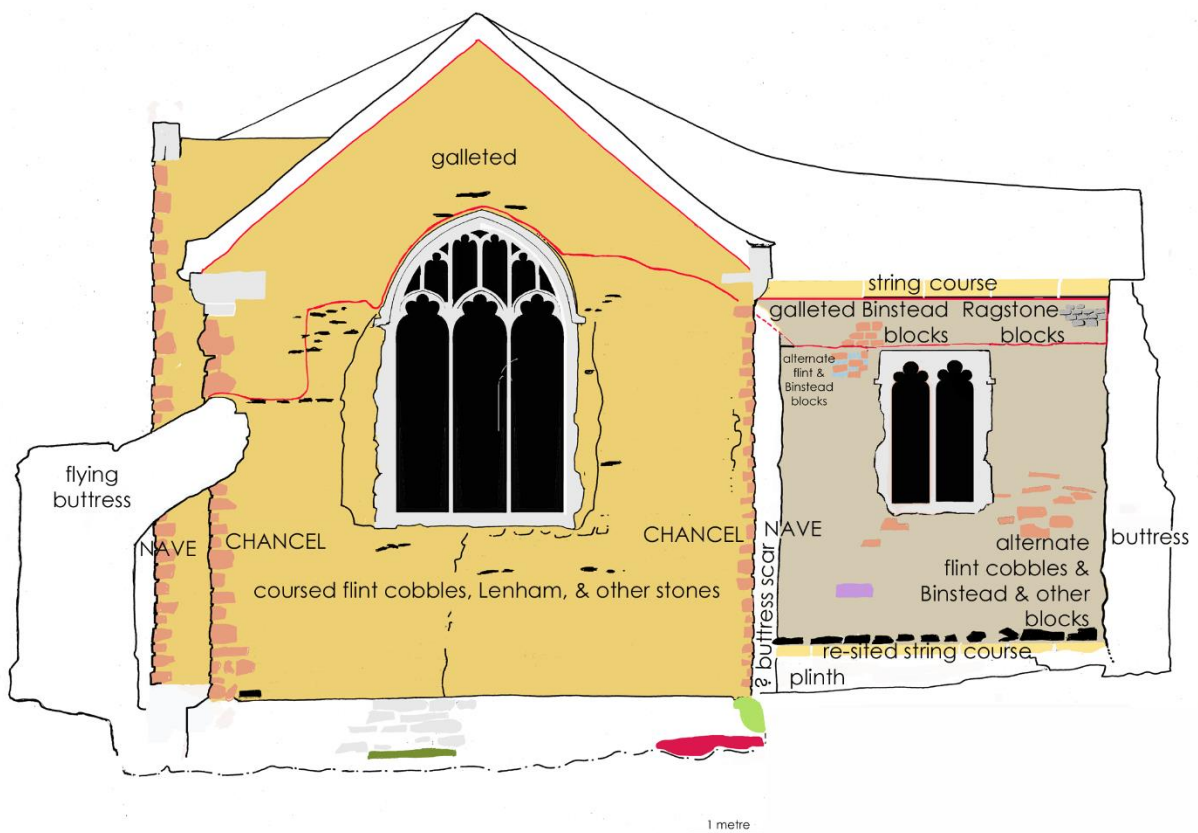
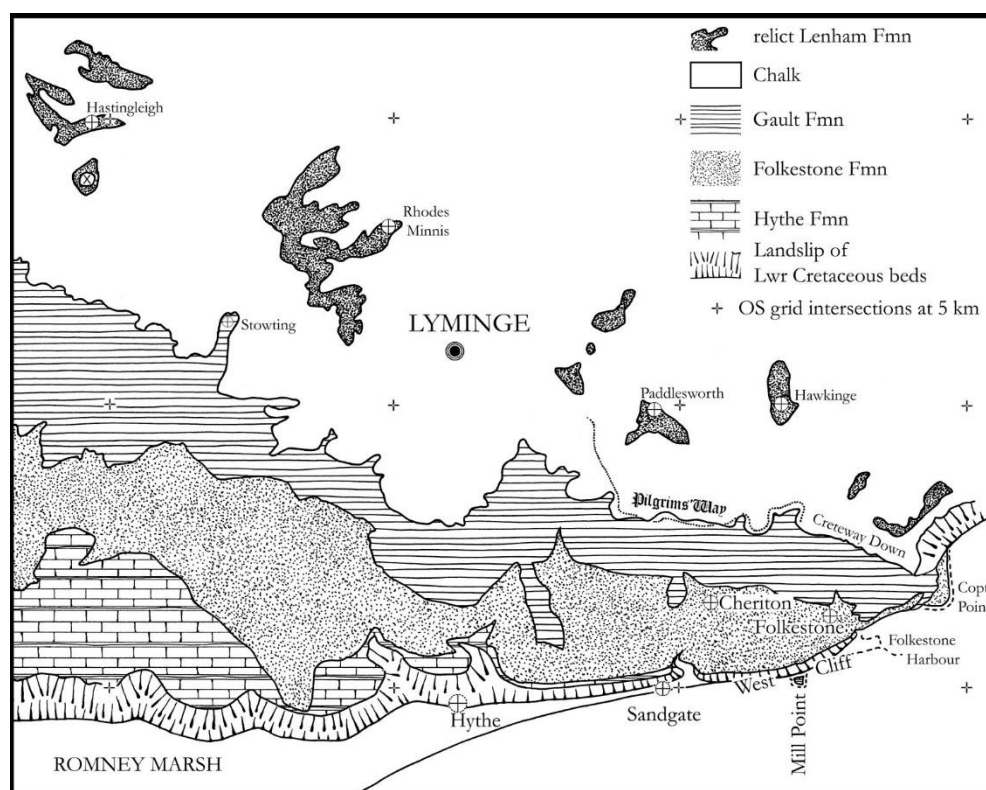


Fig 3. Eastern elevation showing geological identifications (scale approx 1:100). Drawing by author based on results of laser scanning survey and select photogrammetry

GEOLOGICAL IDENTIFICATIONS

The following geological formations provided stone for the fabric of the standing church, the occurrence of which is shown on the map below.



Sketch map of the solid geology of the Lyminge District: data from British Geological Survey. The area lies on the south edge of the North Downs

Caen Stone

A Jurassic limestone from coastal northern France west of Rouen, may have formed the string course seen *in situ* on the south side of the nave, but was apparently partially removed from that face, the chancel, and the north side of the nave, and placed near ground level on top of the plinth on the north side of the church. Caen Stone is cream coloured and without distinguishing features to the naked eye. This string course has not yet been studied closely but the identification is likely in that much Caen Stone was imported to England after the Norman Conquest, and because it would have been available in the large sizes preferred for such work (see Hayward 2009, 87). No other possible examples were identified, though Tatton-Brown (1991) says that it was used.

Purbeck Marble

A familiar shelly limestone from the uppermost Jurassic of east Dorset; bluish grey and packed with gastropods. A single block was found in the north wall of the nave.

Ragstone from the Hythe Formation

It is a Lower Cretaceous (Aptian) hard bluish grey limestone with fine to medium quartz sand, and often calcite fossils and microfossils. It occurs as beds interspersed with 'hassock', a softer deposit (Worssam 1963). It will be seen from Figure 1 that this area marks the eastern limit of the Hythe Formation and throughout the extent of the map from Romney Marsh to Hythe it forms a solid scarp above an extensive landslip of earlier clays. It has been extracted for building stone in late Roman times along the scarp above Stutfall Castle (Hutchinson *et al* 1985), and from perhaps the eighteenth

century above the town of Hythe itself; exposures of unknown age are still open between the two. However there was no source certainly open in Saxon times, and suspicion falls on the West cliff at Folkestone, where the Hythe Formation (dipping gently to the north and east) has passed below sea level, but was raised to low water mark on the 'toe' of the rotational landslips which were so much a feature of this coast before the construction of Folkestone Harbour (1800 onwards, blocking long-shore drift, stabilising the West Cliff, but accelerating marine erosion beyond; Smart *et al* 1966, 291 ff; Hutchinson *et al* 1980). Mill Point, a reef of Ragstone with a strong northward dip, is the present day example (with the embayment of its landslip to the north), and is thought to have provided stone for Sandgate Castle in Tudor Times (Worsam and Tatton-Brown 1993); no doubt the Saxon/Norman source has long since eroded away. In Victorian times, the largest supplies of Ragstone were quarried to the north and west, especially in the Medway valley, and sources in east Kent were ignored (Worssam 1963). At Lyminge, Ragstone was largely used for the tower, and where large blocks of stone were needed for nineteenth-century repairs, for instance to form a buttress on the north nave wall.

'Folkestone Rock': Calcareous Sandstones from the Folkestone Formation

Discontinuous calcareous layers occur within the slightly consolidated sands of the Folkestone Formation (Lower Cretaceous, Albion), largely within the urban area of Folkestone and its suburb, Cheriton. A very tough mid- to dark-grey rock results, though it weathers to a yellow or greenish yellow, coloured by glauconite. The clasts, of well-rounded quartz and glauconite, may be 2mm or more in diameter so the stone is quite distinctive. It reacts strongly to acid tests, and burial in acid soil may remove surface detail and leave clasts standing on the surface. The Folkestone Formation crops out on the coast along the East and West Cliffs at Folkestone, and over 10 lenses may be seen in the whole sequence. The slabs of rock, which may be 5m in length, wash out of the cliff very easily, and are now best seen at Copt Point to the East of Folkestone Harbour (NGR: TR 2436), where they stretch some 300m out to sea at low tide; this however is simply the remains of Copt Head, the Gault Clay cliff washed away in mid-Victorian times when the construction of Folkestone Harbour had cut off its protective shingle bank. Before 1800, the West Cliff, scene of many landslips, was a much better place to collect slabs of Folkestone rock (NGR: TR 1934-2235; Hutchinson 1969 and Hutchinson *et al* 1980). Even before the construction of the harbour, Folkestone provided much of the largest coastal supply of hard building stone between North Yorkshire and the Purbeck in Dorset.

Other Glauconitic Sandstones

Unfamiliar medium to fine sandstones were found supporting the NE corner of the Chancel, and surrounding the chancel door. English Heritage guidance suggests that they may be referable to the Palaeocene Thanet Sands of the coast around Reculver, but comparison by the author does not support this view, and these rocks must be suspected to be unusual and unidentified lithifications utilised by masons who would build with anything reasonably hard.

Chalk and Flint

The solid geology beneath Lyminge is the lower members of the Upper Cretaceous Chalk Formation, but most of the surroundings are free of super incumbent 'drift' deposits. Blocks are only seen under the eaves on the north side of the chancel, added when the nave ceiling was raised by Canon Jenkins.

Flint cobbles are common throughout the higher formations of the Chalk, but not in Lyminge's geology; they will have had to be collected from fields probably to the north, or from beaches at, perhaps Sandgate or Folkestone, where flint was winnowed from chalk by the continuous action of the waves. They were extensively used in Lyminge church, but often alternate with Lenham, Binstead or other clasts, especially when laid as 'rubble' in plentiful mortar: an indication that there was too

little solid stone. Very little flint is seen inside the church where its plaster has been stripped. Lenham Stone then takes its place, and it has been concluded that flint cobbles were used largely as a conveniently cheap and readily obtainable material for the repair of a stone building, though whether the stonework repairs the cobbles laid in mortar or vice versa can only be told by further observations during building works, or during a radical campaign of repointing.

Binstead Limestone and ‘Quarr Stone’

The church fabric makes substantial use of Oligocene limestones from the St Helens Member of the Solent Formation in the north of the Isle of Wight. The stone at Lyminge has been referred to ‘Quarr Stone’, raising awareness of the use of Isle of Wight stones in Kent and London (Tatton-Brown 1980), but introducing a source of chronological confusion. Quarr Stone *sensu stricto*, also known as ‘featherbed’, was of very restricted distribution and was worked out within one or two centuries of the Norman Conquest.

It is a pale-yellow facies of Binstead Limestone, light in weight as it is packed with the empty casts of broken fossil gastropod shells; and never pinkish as it is at Lyminge (pers comm A Gale 2021); at Lyminge, the stone also contains only a few patches of (smaller) gastropod fossils. It is referred instead to the more widespread Binstead Limestone following Clifton Taylor (1987, 60–1), who says, ‘unlike Quarr Stone it embodies a considerable quantity of iron, which on exposure sometimes changes its naturally creamy colour to a rich dark russet.’ Aldsworth noted that two distinct types of the stone, from separate sources, had been used at Bosham (Aldsworth 1990). Binstead Limestone was most used in Hampshire and West Sussex but was worked out in medieval times (ibid). Nonetheless its much longer date range should prevent the attribution of much of the Lyminge fabric to the late eleventh or twelfth centuries on the basis of its stonework, as Tatton-Brown (1991) and Berg and Jones do (2009, 172).

The stone was evidently soft when extracted, and cut into rectilinear blocks with a chisel or even a saw, leaving diagonal marks. It was used for the round-headed windows, whose voussoirs required careful cutting, the surviving quoins of the nave and chancel, and at higher levels in the fabric of the walls, alternating with flint cobble on the NW wall of the chancel. At three or four places it was seen close to, and always above, Lenham Stone, encouraging the view that Lenham Stone was the original choice, and that Binstead Limestone was used when the larger blocks of Lenham had run out.

Lenham Formation Ironstone

This varies from a deep purplish red to the colour of rust, usually with lighter-colour surfaces. Many of the larger fragments had formed as a layer no more than 100mm in thickness, and whose presumed upper surface was channelled or ‘plicate’. (The development of hard deposits like these sandstones, and their sculptured surfaces, presumably results from the percolation of water over geological time, and is analogous to iron pans formed in other circumstances.) The iron content is great enough to make this rock substantially denser than others recovered from the site, though it is unclear whether it was usable for iron smelting. It is clear from the local geology that it is preferable to the Lenham Beds, an early Pleistocene, Pliocene, or (it has been argued) even a Miocene, marine deposit confined to the North Downs in England, and named from a village some 24km WNW, near which fossiliferous deposits have been found. Pending further work it is probably best thought of as Plio-Pleistocene, contemporary with the East Anglian Red Crag. The outcrop is now very sporadic, but has been traced from the North Downs of Surrey to Belgium (Gossling and Woolridge 1926; Balson 1999), and is clearly evidence of a greatly raised sea level in south-eastern England during later Neogene times (see Jones 1999, 15–20). Deposits on the North Downs are now seen collapsed into

solution pipes in the chalk, and are treated by the Geological Survey as being immediately older, in the local geology, than the periglacial Clay-with-Flints. The Lenham Beds are therefore a near-surface deposit, and are reduced by weathering and by human activities, particularly quarrying and farming. The areas shown in Figure 1 (from Geological Survey data) are shrinking and more or less interspersed with blocks of sandstone from former deposits. It was obviously present in some abundance in Saxon times. It will be seen from Figure 1 that the easternmost occurrence of the deposits is at Creteway Down and there farming operations continually bring to the surface material identical to the rock under discussion. Secker noted the Lenham sandstone (as a 'purple-brown' form of Folkestone Sandstone) on the surface between Lyminge and Paddlesworth, 3km ESE, and also as a minor building material at Aldington Church 13km SW (Secker nd). At Lyminge, it is seen to the east of the Porch (ibid), and throughout the lower parts of the chancel, and to a lesser extent the nave.

CERAMIC BUILDING MATERIAL (CBM)

CBM was found fairly sparsely, and in small pieces, throughout the church fabric, and much of it appears to be Roman. Such a small amount provides, if anything, negative evidence for the pre-existence of a Roman building on or near the site.

POINTING, MORTAR, AND GALLETING

Most of the mortar so abundant in the church uses Portland Cement, a relatively quick-drying sinter of clay and chalk (see Clifton-Taylor 1987, 51–2), and distinct in every way from the previously used lime mortar. Generally, this has been applied a little thicker than the previous lime mortars, with a markedly reduced area of stone clast to inspect. Portland cements were introduced approximately from the 1840s and so Canon Jenkin's builders might have been able to use them, but much of the surfaces seen today is suspected to be later, of the twentieth century, and is marked by the use of a yellow-orange sand. Areas of the upper walls have been galleted, ie flakes of (preferably) flint have been pressed into the mortar to accentuate and strengthen its pointing. Galleting belongs to the Portland cement era, post 1840, and is a Kent speciality (ibid, 53); it is difficult to repoint around it, so it is assumed to be *in situ*, and again is probably associated with Canon Jenkins' works.

TRANSPORT

In identifying West Cliff, Folkestone, as the source of most of the stone used at Lyminge, the problem of transport is naturally raised, as the stone was obtained at sea level, while Lyminge stands at just over 100m above OD and about 15km inland. There is no certainty, but an obvious route would be to tackle the climb immediately, passing through what is now modern Cheriton and the Channel Tunnel terminal to join the Pilgrim's Way, the historic route passing E–W along the chalk scarp of the North Downs, until it was convenient to turn inland (NW) for Lyminge (Fig 1). Richardson and Parfitt provide an alternative, and not very distant way to a 'ridgeway' route (2021, 74–5). The route for any Lenham Formation ironstone may well have also been along the Pilgrim's Way, especially if it had been obtained at Creteway Down above Folkestone, a not unlikely source.

REFERENCES

- Aldsworth, F G 1990. 'Recent Observations on the Tower of Holy Trinity Church, Bosham', *Sussex Archaeological Collections* **128**, 55–72
- Balson, P 1999. 'The Lenham Beds', in L P Thomas (ed), *British Tertiary Stratigraphy*, Geological Conservation Rev Ser 15, 243–52
- Berg, M and Jones, H 2009. *Norman Churches in the Canterbury Diocese*, Stroud, The History Press.
- British Geological Survey 1982. [map] *Canterbury* sheet 289 solid and drift edition. [surveyed 1938–55]
- British Geological Survey 1974. [map] *Folkestone and Dover* sheet 305/306 solid and drift edition. [surveyed 1951–56]
- English Heritage 2011. *A Building Stone Atlas of Kent*, Strategic Stone Study, English Heritage
- Gale, A 2019. *The Isle of Wight*, Geologists' Association Guide 60, London
- Gossling, F and Woolridge, S W 1926. 'On outliers of Lenham Beds at Sanderstead, Surrey', *Proc Geologists' Association*, **37**, 92–101
- 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*, Oxford, BAR 500
- Hutchinson, J N 1969. 'A reconsideration of the coastal landslides at Folkestone Warren, Kent', *Geotechniques*, **19**, 5–38
- Hutchinson, J N, Bromhead, E N and Lupini, J F 1980. 'Additional observations on the Folkestone Warren landslides', *Quart J Engineering Geology*, **13**, 1–31
- Hutchinson, J N, Poole, C, Lambert, N and Bromhead, E N 1985. 'Combined archaeological and geotechnical investigations of the Roman fort at Lympne, Kent', *Britannia*, **16**, 209–36, pls
- Jones, D K C 1999. 'Evolving models of the Tertiary evolutionary geomorphology of southern England, with special reference to the Chalklands', in Smith *et al*, 1–23
- Jope, E M 1964. 'The Saxon building stone industry in southern and midland England', *Medieval Archaeol*, **8**, 91–118
- Newman, J 1969, *The Buildings of England: North East and East Kent*, ed N Pevsner
- Parsons, D (ed), 1990. *Stone: quarrying and building in England AD 43–1525*, Chichester
- Richardson, A and Parfitt, K 2021. *East Wear Bay, Folkestone. Archaeological conservation management plan January 2021*, Canterbury
- Secker, D nd, c 2010. *SS Mary and Ethelburga, Lyminge*: [unpublished] notes
- Secker, D 2016. 'The late-Saxon and early romanesque churches at St Mary, Prittlewell, Essex', *Medieval Archaeol*, **60**, 115–36
- Smart, J G O, Bisson, G and Worssam, B C 1966. *Geology of the Country around Canterbury and Folkestone*, Memoir of the Geological Survey of Great Britain
- Smith, B J, Whalley, W B and Warke, P A (eds), 1999. *Uplift, Erosion and Stability: perspectives on long-term landscape development*, Geol Soc Special Publ, 162
- Tatton-Brown, T 1991. *St Mary & St Ethelburga Church, Lyminge TR 1610 4085*, Canterbury Diocese: Historical and Archaeological Survey
- Tatton-Brown, T 2006. 'A new survey of the fabric of the church of the Holy Trinity, Bosham, W Sussex', *Sussex Archaeol Colls*, **114**, 129–54
- Worssam, B C 1963. *Geology of the Country around Maidstone*, Memoir of the Geological Survey of Great Britain
- Worssam, B C and Tatton-Brown, T 1993. 'Kentish Rag and other Kent building stones', *Archaeol Cantiana*, **112**, 93–125

RADIOCARBON DATING AND CHRONOLOGICAL MODELLING OF SETTLEMENT CONTEXTS FROM LYMINGE

Peter Marshall

Eighteen radiocarbon results have been obtained from charred plant material and faunal remains recovered from excavations on Tayne Field and associated with monastic activity at Lyminge. Details of the dated samples, radiocarbon ages, and associated stable isotopic measurements are provided in Table RC1. The radiocarbon results are conventional radiocarbon ages (Stuiver and Polach 1977), corrected for fractionation using $\delta^{13}\text{C}$ values measured by AMS.

Seventeen samples were dated at the Oxford Radiocarbon Accelerator Unit (ORAU) in 2015 and 2021. Samples of bone and carbonised cereal grains processed at Oxford were pre-treated and combusted as described in Brock *et al* (2010), graphitised (Dee and Bronk Ramsey 2000) and dated by Accelerator Mass Spectrometry (AMS) (Bronk Ramsey *et al* 2004). The single bone sample dated at the Scottish Universities Environmental Research Centre (SUERC) in 2010 was pre-treated, combusted, graphitised, and dated by AMS followed the methods outlined in Dunbar *et al* (2016)

The chronological model, including both radiocarbon and coin dates for monastic activity and that taking place on Tayne Filed has been constructed using the program OxCal v4.4 (Bronk Ramsey 2009; Bronk Ramsey and Lee 2013) and the atmospheric calibration curve for the northern hemisphere published by Reimer *et al* (2020). The algorithms used are defined exactly by the brackets and OxCal keywords on the left-hand side of Figure RC1 (<http://c14.arch.ox.ac.uk/>). The posterior density estimates output by the model are shown in black, with the unconstrained calibrated radiocarbon dates shown in outline. The other distributions correspond to aspects of the model. For example, the distribution ‘*start_Tayne_Field*’ (Fig RC1) is the posterior density estimate for the date when activity on Tayne Field began. In the text and Table RC1, the Highest Posterior Density intervals of the posterior density estimates are given in italics.

Given that four of the dated animals and the single human from the monastic phase of activity all show clear evidence for having a considerable marine/freshwater component in their diets (Fig RC2), we have only included these dates as providing *termini post quos* for their contexts in the model shown in Figure RC1. The overlapping (Fig RC1) model (Buck *et al* 1992) assumes that the two dated phases of activity at Lyminge are ‘independent’, ie no assumption is made about any ordering. Within each phase of activity, we assume that the dated events are randomly sampled from a uniform distribution — that is a random scatter of events between a start boundary and an end boundary (see Bayliss *et al* 2007 for further details). The model has good overall agreement (Amodel: 98) and suggest that monastic activity started in *445–775 cal AD at 95 per cent probability; start_monastic;* (Fig RC1), probably *645–765 cal AD at 68 per cent probability*, and finished in *835–1120 cal AD at 95 per cent probability; end_monastic;* (Fig RC1), probably *840–920 cal AD at 68 per cent probability*. Activity on Tayne Field is estimated to have begun in *800–980 cal AD at 95% probability; start_tayne_field;* (Fig RC1), probably *875–960 cal AD at 68 per cent probability*, and ended in *1055–1290 cal AD at 95 per cent probability; end_tayne_field;* (Fig RC1), probably *1100–1220 cal AD at 68 per cent probability*. The probability that monastic activity ended before the start of activity on Tayne Field (Fig RC3) is *54.4 per cent* with the gap estimated to be *–50 to 95 years (68 per cent probability; Fig RC4)*, with this activity probably ending before the close of the ninth century (*59.5 per cent probability, end_monastic < AD 900*).

REFERENCES

- Brock, F, Higham, T, Ditchfield, P and Bronk Ramsey, C 2010. 'Current pretreatment methods for AMS radiocarbon dating at the Oxford Radiocarbon Accelerator Unit (ORAU)', *Radiocarbon*, **52**, 103–12
- Bronk Ramsey, C 2009. 'Bayesian analysis of radiocarbon dates', *Radiocarbon*, **51**, 337–60
- Bronk Ramsey, C and Lee, S 2013. 'Recent and planned developments of the program OxCal', *Radiocarbon*, **55**, 720–30
- Bronk Ramsey, C, Ditchfield, P and Humm, M 2004. 'AMS methods and developments — using a gas ion source for radiocarbon AMS and GC-AMS', *Radiocarbon*, **46**, 25–33
- 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**, 497–512
- Dee, M and Bronk Ramsey, C 2000. 'Refinement of graphite target production at ORAU', *Nuclear Instruments Meth Physics Res B*, **172**, 449–53
- Dunbar, E, Cook G T, Naysmith P, Tipney, B G and Xu, S 2016. 'AMS ^{14}C dating at the Scottish Universities Environmental Research Centre (SUERC) Radiocarbon Dating Laboratory', *Radiocarbon*, **58**, 9–23
- Knapp, Z 2008. 'The Zooarchaeology of the Anglo-Saxon Christian Conversion: Lyminge, a case study', unpublished PhD thesis, University of Reading.
- Reimer, P J, Austin, W E N, Bard, E, Bayliss, A, Blackwell, P G, Bronk Ramsey, C, Butzin, M, Cheng, H, Edwards, R L, Friedrich, M, Grootes, P M, Guilderson, T P, Hajdas, I, Heaton, T J, Hogg, A G, Hughen, K A, Kromer, B, Manning, S W, Muscheler, R, Palmer, J G, Pearson, C, van der Plicht, J, Reimer, R W, Richards, D A, Scott, E M, Southon, J R, Turney, C S M, Wacker, L, Adolphi, F, Büntgen, U, Capano, M, Fahrni, S M, Fogtmann-Schulz, A, Friedrich, R, Köhler, P, Kudsk, S, Miyake, F, Olsen, J, Reinig, F, Sakamoto, M, Sookdeo, A and Talamo, S 2020. 'The IntCal20 northern hemisphere radiocarbon age calibration curve (0–55 cal kBP)', *Radiocarbon*, **64**, 725–57
- Stuiver, M and Polach, H A 1977. 'Discussion reporting of ^{14}C data', *Radiocarbon*, **19**, 355–63

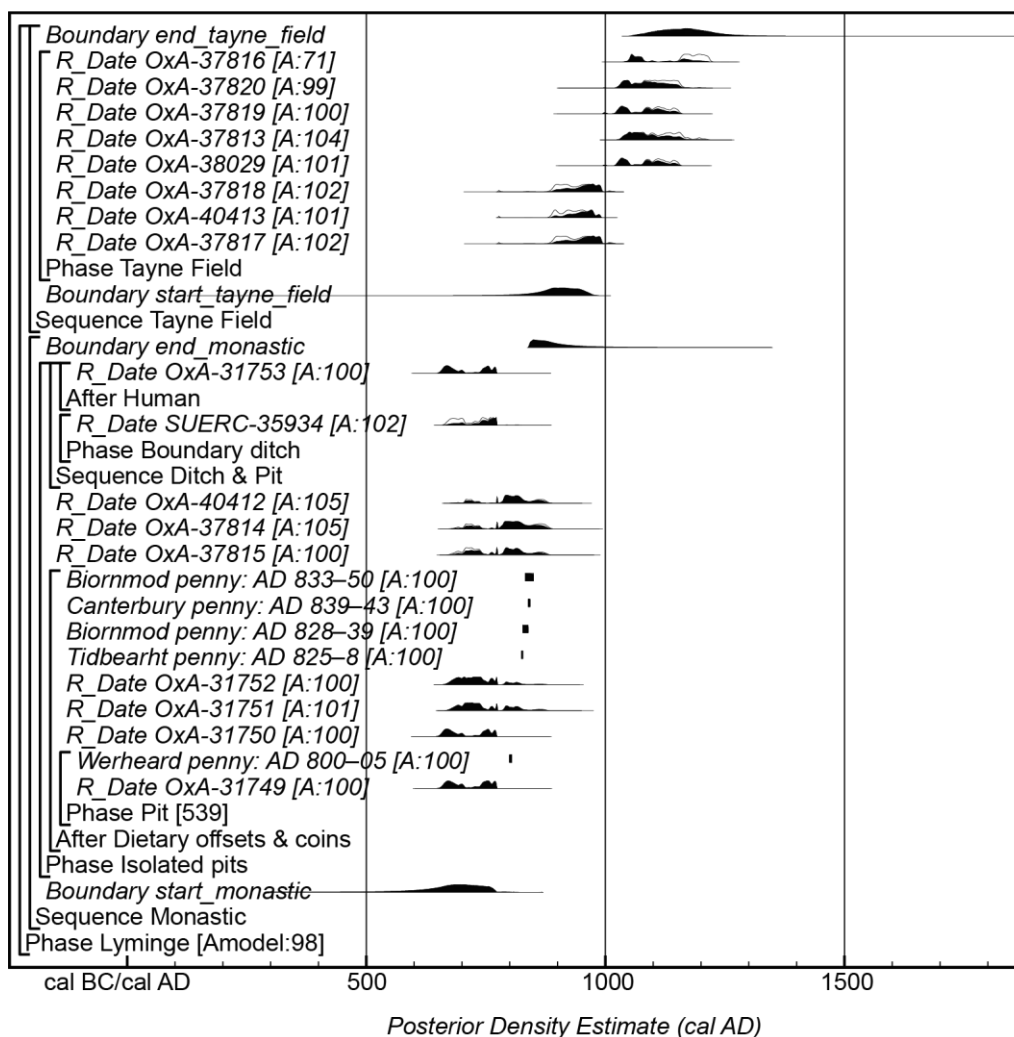


Figure RC1. Probability distributions of dates from Lyminge. Each distribution represents the relative probability that an event occurs at a particular time. For each of the dates two distributions have been plotted: one in outline, which is the result of simple radiocarbon calibration, and a solid one, based on the chronological model used. The large square brackets down the left-hand side of the figure along with the OxCal keywords define the overall model exactly.

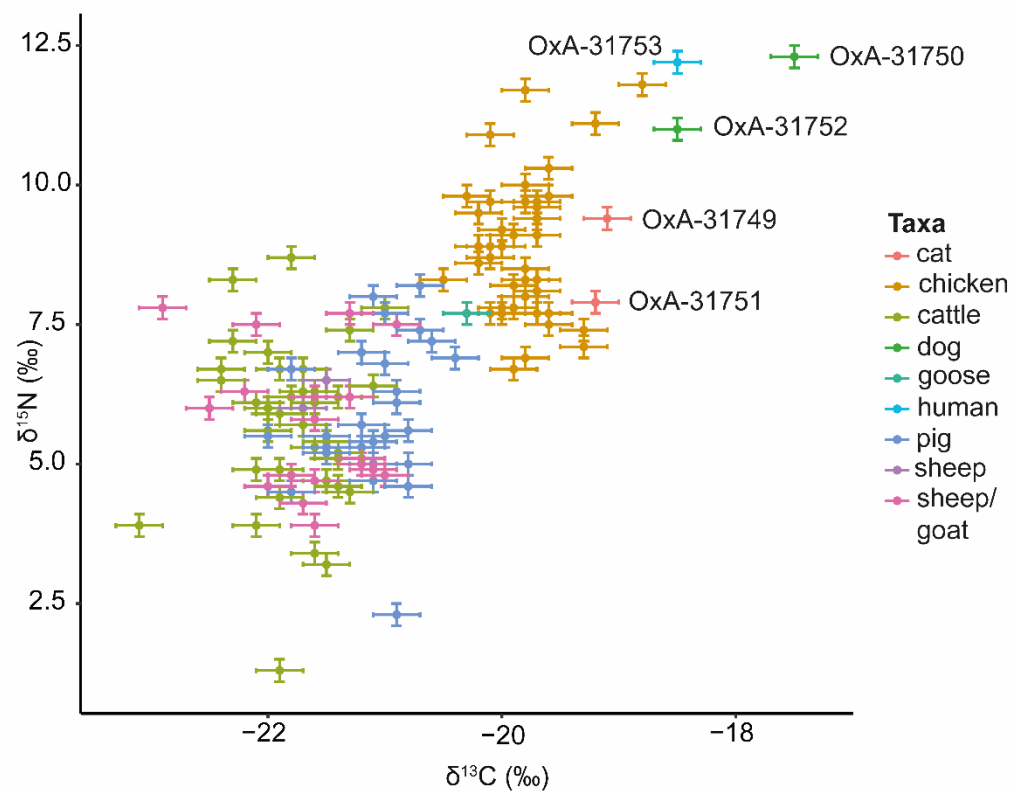


Figure RC2. Lyminge $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ isotope values (additional data from Knapp 2018)

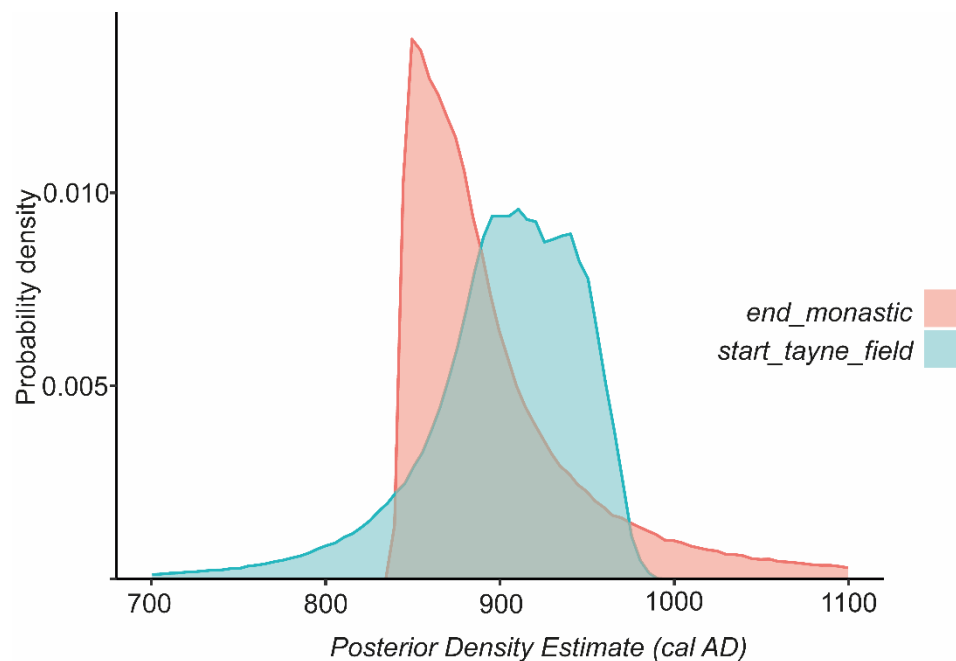


Figure RC3. Probability distributions of dates for the end of monastic activity and the start of activity on Tayne Field (note some of the tails of these distributions have been truncated to enable detailed examination of the highest area of probability) derived from the model described in Figure RC1.

Laboratory number	Material and context	$\delta^{13}\text{C}_{\text{IRMS}}$ (‰)	$\delta^{15}\text{N}_{\text{IRMS}}$ (‰)	C/N ratio	Radiocarbon age (BP)
Monastic activity					
OxA-31749	Animal bone, <i>Felis catus</i> , right femur from primary fill (656) of pit [539]	-19.1±0.2	9.4±0.3	3.3	1313±26
OxA-31750	Animal bone, <i>Canis lupus familiaris</i> , right femur from uppermost fill (11) of pit [12]	-17.5±0.2	12.3±0.3	3.4	1322±27
OxA-31751	Animal bone, <i>Felis catus</i> , right humerus from primary fill (197) of pit [125]	-19.2±0.2	7.9±0.3	3.4	1254±25
OxA-31752	Animal bone, <i>Canis lupus familiaris</i> , right femur from secondary fill (1506) of pit [1064]	-18.5±0.2	11.0±0.3	3.4	1267±25
OxA-31753	Human bone, left tibia from tertiary fill (1672) of pit [1663]	-18.5±0.2	12.2±0.3	3.3	1322±26
SUERC-35934	Animal bone, cattle, first cervical vertebrae (butchered) from primary fill (1820) of boundary ditch	-21.7±0.2	6.7±0.3	3.3	1291±20
OxA-37815	Carbonised grain, <i>Secale cereal</i> L., from fill (233) of pit [47], environmental bulk sample <30>	-23.1±0.2	–	–	1242±26
OxA-37814	Carbonised grain, <i>Avena</i> L., from fill (270) of pit [49], environmental bulk sample <24>	-25.8±0.2	–	–	1226±27
OxA-40412	Carbonised grain, <i>Avena</i> L., from fill (164) of pit [71], environmental bulk sample <5>	-22.3±0.2	–	–	1227±18
Tayne Field					
OxA-37817	Carbonised grain, <i>Triticum</i> L., from fill (3535) of pit [3264], environmental bulk sample <38>	-22.5±0.2	–	–	1109±26
OxA-40413	Carbonised grain, <i>Triticum</i> L., from fill (3539) of pit [3054], environmental bulk sample <40>	-23.9±0.2	–	–	1126±18
OxA-37818	Carbonised grain, from fill (3641) of pit [3264], environmental bulk sample <42>	-23.0±0.2	–	–	1112±26
OxA-38029	Carbonised grain, <i>Triticum</i> L., from fill (9374) of pit [9102], environmental bulk sample <31>	-22.2±0.2	–	–	972±24
OxA-37813	Carbonised grain, <i>Triticum</i> L., from primary fill (9395), of pit [9394] environmental bulk sample <44>	-23.5±0.2	–	–	929±27

OxA-37819	Carbonised grain, <i>Hordeum vulgare</i> L., from a dumped burnt-grain deposit (6764) in ditch [6599], environmental bulk sample <27>	-22.2±0.2	–	–	972±27
OxA-37820	Carbonised grain, <i>Triticum</i> L., from a dumped burnt-grain deposit (6745) in ditch [6553]. environmental bulk sample <24>	-24.1±0.2	–	–	950±27
OxA-37816	Carbonised grain, <i>Triticum</i> L., from a charcoal lens within the primary fill (9397) of pit [9375], environmental bulk sample <42>	-24.0±0.2	–	–	883±27

Table RC1. Radiocarbon and stable isotopes from Lyminge (Tayne Field and associated with monastic activity)

ASSESSMENT OF CHARRED AND MINERAL-REPLACED BIOTA FROM LYMINGE (LYM12 LYM13)

Rachel Ballantyne, 13th July 2014

INTRODUCTION

This report forms the second phase of interim assessment of the charred and mineral-replaced biota at the early monastic community of Lyminge, Kent (Thomas 2013). The 1623 litres of sediment represent 147 samples, which subdivide into: 6 of flint scatters, 36 of 6th century sunken-featured buildings (henceforth SFBs), 34 of 7th century timber hall features, 23 other 7th century pits and postholes, 34 of 12/13th Century settlement features, 11 of medieval features and 3 of an unphased double posthole sequence. In contrast, the previous assessment by Campbell (2012) covered 339 samples, which derived from one Middle Bronze Age vessel, many 6th–7th century settlement features and many 8th–9th century settlement features.

The research questions addressed broadly follow those outlined by Campbell (2012):

- What types of crops were being utilised at the site and how does this vary over time?
- What crop processing activities may have taken place within the excavation areas?
- Is there any evidence for long-distance trade, such as imported fruit or spices?
- What is the nature of the charcoal assemblage and what information might it provide on fuel use and the use of timber in construction?
- Is there variation between assemblages from the same context (intra-context variation) and between different contexts types and features (inter-context variation)?
- What biological evidence is there for refuse types and refuse management, particularly in the pit fills?
- How do the plant remains from Lyminge compare to other assemblages of the same period, especially Bishopstone, East Sussex?

METHODS

Bulk samples were processed by flotation for the recovery of plant remains, charcoal, and mineral-replaced biota, as well as molluscs, small animal bone and artefacts where present. A modified version of the Sīraf tank was used (Williams 1973) with flots collected on 300µm sieves and the heavy residues on 1mm mesh. The flotation and residue sorting were undertaken on-site during the excavations.

Flots have been scanned under a Leica MS5 (x6.3–x50) binocular microscope at the Pitt-Rivers Laboratory for Bioarchaeology, Division of Archaeology, University of Cambridge. All the identified charred plant remains and mineral-replaced biota are presented at the end of this report in Table 1. Nomenclature follows Stace (1997) for most plants, with the traditional nomenclature in Zohary and Hopf (2000, 28, Tables 3 and 65) for cereals. The recording system uses the groups: 1 present, 2 frequent, 3 common, 4 abundant, 5 superabundant.

RESULTS

?Prehistoric

Six samples represent possible prehistoric flint scatters **3828**, **3829**, **3830**, **3836** (2 samples) and fill **6701** of a possible Bronze Age posthole. All of the flint scatters include one charred grain; there is free-threshing wheat in **3828**, barley in **3829**, wheat in **3830** and an indeterminate grain in **3836**. There are also occasional charred seeds, with apple/pear (*Malus/Pyrus* sp.) in **3828** and stinking mayweed (*Anthemis cotula*) and cat's-

tail (*Phleum* sp.) in **3830**. The posthole contains no charred macrofossils. All these samples have only low amounts of highly fragmented charcoal.

The few charred macrofossils in the ?prehistoric flint scatters may be intrusive from during or after the 3rd/4th centuries AD, unless the flint scatters themselves also prove to be later in date. Firstly, the seed of stinking mayweed (*Anthemis cotula*) in scatter **3830** is unusual as this plant is often associated with cultivation of heavy clay soils following the late Roman introduction of the mouldboard plough (Jones 1988). Secondly, whilst free-threshing wheat grain and an apple/pear seed in **3828** could be characteristically Neolithic to Early Bronze Age in date (see Grieg 1991); they could also be linked with the early medieval activity at Lyminge, which has similar remains (e.g. free-threshing wheat grains in many samples, and mineral-replaced apple/pear seeds in **3673** and **3697**).

Anglo-Saxon Phase 1 (6th Century)

Thirty six samples represent three sunken-featured buildings (henceforth SFBs), with the fills excavated in spits. One further sample, **6816** from **SFB6**, was not sent for assessment.

SFB5 has 7 samples from:

spit 3 fills **3704** (NE quadrant) and **3729** (SW quadrant)

spit 4 fill **3705** (2 samples, both NE quadrant)

spit 6 **3707** (NE quadrant) and **3734** (SW quadrant)

spit 7 **3708** (NE quadrant)

Charcoal increases in abundance with depth, becoming superabundant and well preserved by **3708**. Where spits have samples from both the NE and SW quadrants, there is a bias towards the SW quadrants – spit 6 has charcoal superabundance in **3734** but only abundance in **3707** and similarly for spit 3, **3729** has charcoal abundance whilst in **3704** it is common.

The NE–SW gradient in charcoal abundance may reflect charcoal deposits near to SFB5 which subsequently became eroded or reworked post-use into the pit fills. Alternatively, the fill compositions may reflect the ash ‘shadow’ of a hearth sited on a floor above the pit. Qualities of the fill stratigraphy, including its micromorphology, and surrounding features should reveal which explanation is more likely.

The charred plant macrofossils in SFB 5 do not have any clear patterning, which is probably linked to their sporadic distribution in very low quantities. Barley grain predominates in all the samples, and where well preserved is hulled and occasionally twisted, indicating a hulled 6-rowed variety. **3708** includes a free-threshing wheat grain and **3729** has an indeterminate wheat grain. There is a single oat seed (wild or cultivated) in **3704**. Other charred plants include a likely pea cotyledon in **3734** and a pea/bean cotyledon fragment in **3704**. There are no charred cereal chaff items or wild plant seeds.

Low quantities of mineral-replaced biota occur in all but two samples (**3704** and one from **3705**), suggesting that concentrations of organic matter were once present in many of the fills. The quantity and range of mineral-replaced biota is greater with depth, which may be a function of geochemistry (greater moisture at depth, and percolation of mineral salts down the profile) rather than a simple correlate for greater quantities of organic material in the lower fills. **3708** has two mineral-replaced seeds of a goosefoot type (*Chenopodiaceae* indet.) and one of black nightshade (*Solanum nigrum*), whilst **3734** has amorphous fragments of calcium phosphate concretion that may represent coprolites. Both goosefoot and black nightshade thrive on disturbed, nutrient-enriched soils, including on farmland and settlements; so it is unclear whether these seeds were defecated by humans or animals, or were seeds from nearby plants (after Campbell and Kenward 2012). ‘Mystery objects’ (Carruthers 1989; [JISCMail Archaeobotany archives, May 2011](#)),

probably mineral-replaced fungal sclerotia, occur in **3705**, **3707**, **3708** and earthworm cocoons occur in **3705** and in **3729**.

Of note in **3705** sample <32> are numerous blackened shells of possible Hydrobiidae indet.; tiny snails of muddy water that, depending on the precise species, may be freshwater, brackish or saltwater. The shell blackening may be from charring or from peat staining, and the associated charred plant remains do not provide any further clues as to origin. The shells may be linked to burnt turf of peat, or debris from the processing of edible seashells – closer taxonomic identification should provide clarification. Sample <35> also from **3705** contains no such shells, suggesting those in <32> represent a small discrete deposit.

SFB6 has 14 samples from:

spit 1 deposits **6801** (exterior), **6826** (interior and exterior samples)

spit 2 deposits **6805** (interior), **6806** (exterior), **6830** and **6834** (both interior wall trench fills), **6835** (exterior)

spit 3 fills **6809**, **6811**, **6812** (all NW quadrant)

spit 4 fills **6815** and **6816** (again NW quadrant).

Fills **6842** and **7012**

Charcoal occurs in lower quantities than for SFB5, being common in most samples but never abundant or superabundant. There is no apparent internal–external patterning. Fill **7012** appears to have the highest charcoal concentrations, but just has frequent charcoal as a 2L sample compared to the other 10L samples.

Interior wall trench **6834** has abundant, well preserved charred cereal grain which is 70% hulled barley with some twisted grains, and 30% wheat that is mostly free-threshing with 1 or 2 possible hulled grains. There are also 1 or 2 oat seeds (wild or cultivated). No cereal chaff or wild plant seeds appear present; however this context clearly merits more detailed analysis.

As with SFB5, barley predominates in all contexts with charred grain, and when well preserved is of a hulled type. **6805** and **6815** have frequent barley grain along with some free-threshing wheat, whilst **6830** has frequent barley grain with an oat seed. Most of the other contexts have 1 or 2 grain, usually of barley, and two contexts have no grain (**6801** and **6826**). There is also an unidentifiable large legume fragment in **6835** and individual wild plant seeds of stinking mayweed (*Anthemis cotula*) in **6801**, clover/medick (*Trifolium/Medicago*) in **6805**, fat hen (*Chenopodium album*), sheep's sorrel (*Rumex acetosella*) and meadow-grass (?*Poa*) in **6809**, orache (*Atriplex* sp.) in **6826** and nipplewort (*Lapsana communis*) in **7012**. These wild plants are all likely arable weeds whose seeds may have been included with the harvest, although their provenance remains uncertain with such low quantities of both grain and seeds.

There is a single mineral-replaced mystery item, probably a seed or fungal sclerotium, in **6801**.

SFB7 has 15 samples from:

spit 1 **6201** and **6226** (both contexts with interior and exterior samples)

spit 2 **6202**, **6229** (both contexts with interior and exterior samples) and **6230** (?interior)

spit 3 **6204** (interior and exterior, NE quadrant), **6223** (interior and exterior) and **6236** (central area, cut)

spit 4 **6207** (interior, NW quadrant).

The charcoal distribution is similar to that for SFB5, with a general increase in abundance by depth. Charcoal is superabundant in spit 3 contexts **6204** (interior and exterior), **6223** (interior) and **6236**. However underlying spit 4 context **6207** only has abundant charcoal, as does overlying spit 3 **6223** (exterior) and spit 2 contexts **6202** (exterior) and **6229** (interior and exterior). The other spit 2 contexts and all those from spit 1 have poor charcoal representation and overall there is no apparent internal–external patterning.

Charred plant macrofossils in SFB7 also show similar patterning to those in SFB5, with finds sporadic, low in quantity and with no clear patterning. Most remains are of 1 or 2 cereal grain, usually barley – this is the case in **6202** (exterior), **6204** (exterior), **6226** (interior), **6229** (exterior), **6230** and **6236**. Spit 1 contexts **6201** (interior) and **6226** (exterior) have wheat grain with no barley grain and are the only such examples from the SFB fills. However, as these are the upper fills of the SFB pit it is possible they represent later activity. Wheat grains, usually free-threshing, are more frequent than in the other SFBs as they co-occur with the barley grain in **6204**, **6226**, **6229** and **6236**. Spit 2 fill **6202** (interior) also includes a single poorly preserved free-threshing wheat rachis internode, the only cereal chaff from any SFB, so the better representation of wheat in SFB7 may be a real pattern. Oat seeds also occur in **6202** and **6204** (both exterior).

There are a few charred wild plant seeds in several of the fills, as with SFB6. Stinking mayweed (*Anthemis cotula*) and many-seeded goosefoot (*Chenopodium* cf. *polyspermum*) occur in spit 1 **6226** (interior and exterior), with dock (*Rumex* sp.) and clover (*Trifolium* sp.) in spit 2 **6202** (exterior), stinking mayweed and rye grass (?*Lolium* sp.) in spit 2 **6230** and two goosefoot seeds (*Chenopodium* sp.) in spit 4 **6207**. These are all possible arable weeds that may be linked to the grain.

Only spit 4 **6204** includes mineral-replaced biota, with several ‘mystery items’ (Carruthers 1989; Campbell 2012) that are either seeds or (more probably) fungal sclerotia, and a fragment of millipede exoskeleton. Some of the upper spits also contain tarry globules and vitrified charcoal that are likely to derive from an oven or kiln – although the precise pathway for vitrification is still unknown (McParland et al. 2010). The affected contexts are **6201** (interior and exterior), **6202** (interior and exterior) and **6226** (interior and exterior).

The 6th century SFB fills provide a broad indication of the range of cereals and pulses in use; however the often very low quantities of macrofossils preclude detailed spatial or temporal analyses or, for example, use of the wild plant seeds to interpret crop husbandry in any detail. There does however appear to be greater charcoal in the mid to lower spits of each SFB pit, which may prove a useful contrast with other lines of evidence such as the stratigraphy, micromorphology and other finds. Assemblages with systematic bulk sampling of 6th–7th century features continue to be rare in England, and those that do have low numbers of charred plant macrofossils, for example Carlton Colville, Suffolk (Ballantyne 2009).

Anglo-Saxon Phase 2 (7th Century)

There are 57 samples; 34 from structural features in the timber halls, 14 from pits and 9 from other postholes. One further sample, <153> **6687** from the wall trench of a timber hall was missing at assessment. The results are discussed below by broad feature type. As with the 6th century SFBs, charcoal is occasionally abundant however charred plant macrofossils and mineral-replaced biota are at best frequent (up to 10 items per sample).

The timber halls

Charcoal is only abundant in wall trench **3560** and cess pit upper fill **7164**. Other contexts where charcoal is common are pit fill **3427**, wall trenches **3805**, **6987**, **7209**, posthole **6524**, door post **7074** and cess fill **7288**. The remaining 25 contexts have low quantities of charcoal (recorded as either ‘frequent’ or ‘present’). The actual charcoal concentrations are slightly more complicated than these records suggest, as sample volumes vary from 1–40L. Wall trench **3560** is thus particularly notable as the sample was only of 3.5L, yet contained abundant charcoal. Two contexts with common charcoal are also of note in this regard; pit fill **3427** (6.5L sample volume) and wall trench **3805** (4L sample volume).

Contexts with frequent charred grain (up to 10 items) are wall trenches **3560**, **6877**, **6987** and **7209**, posthole **6706** and cess fill **7288**. Barley usually predominates and when well preserved is hulled and sometimes

twisted – indicating a hulled six-rowed variety. A single naked barley grain occurs in **7209**. Wheat grain co-occurs in most contexts and when well preserved is almost always identifiable as a free-threshing variety. There are single ?hulled wheat grains in post setting **6937** and wall trench **6842**. Posthole **6706** is unusual in containing wheat grain without any barley. There is a single rye grain in wall trench **6877**, and oat seeds are common across the samples but cannot be distinguished as cultivated or wild. A further fifteen contexts include 1 or 2 cereal grains that are poorly preserved and thus only identifiable as wheat or barley. Unfortunately there is no cereal chaff in any context to help verify the wheat grain identifications.

Other likely food plants are represented by single Celtic beans (*Vicia faba* var. *minor*) in wall trench **3560** and posthole **6524**, and a single charred ?pea (cf. *Pisum sativum*) in the upper fill of cess pit **7164**. There are also pea/bean fragments in posthole **6706** and wall trench **6814**.

Wild plant seeds are very infrequent, suggesting that crop processing was either carried out away from the timber halls, or that the by-products were not routinely charred. There are single seeds of cat's-tail (*Phleum* sp.) in posthole **3948** and door post **7038**, meadow grass (*Poa* sp.) in wall trenches **6987** and **6814**, mint (*Mentha* sp.) in plank ghost **7030** and goosefoot (Chenopodiaceae indet.) in plank slot **7136**. These numbers of seeds are too low to support any comment regarding the original materials or charring events represented.

Lower fill **7156** of a slag-filled pit is notable for containing numerous faunal remains in addition to amorphous calcium phosphate concretions with occasional grass stem (culm) fragments embedded in them. The many small ?mammal bones (e.g. rodents) and small fragments of larger mammal bones suggest that cat, dog or pig faeces may be present. There are numerous small fish vertebrae which include some of eel (*Anguilla anguilla*) and the mineral-replaced remains of millipede exoskeleton, a fly puparium, an earthworm cocoon, and a 'mystery object' likely to be a fungal sclerotium. It is highly possible that an admixture of refuse materials is present, so the presence of human faeces cannot be excluded although there is no direct evidence such as fruit or condiment seeds.

Wall trench **7209** includes shells of *Lymnaea*, marsh snails that are usually found on slow to still water and/or emergent vegetation. These shells could be from gathered water or clay, or a wetland plant used for thatching or strewing, such as reeds, club-rush or rushes.

Other features

A further five samples represent Anglo-Saxon phase 2 pits **3296**, **6766**, **6253**, posthole **6333** and slag fill **6965**, all of which include very low amounts of charred plant remains. Cereal grain is most abundant in pit **3296**, with less than ten hulled barley grains, one free-threshing wheat grain and a wild or cultivated oat seed. Single grains of free-threshing wheat occur in pit **6253** and slag fill **6965**, and a single unidentifiable grain fragment in posthole **6333**. Pulses are represented by a pea/bean fragment in slag fill **6965** and an unidentifiable cotyledon (seed half) fragment in posthole **6333**. There are few wild plant seeds, which are thus of uncertain significance, darnel (*Lolium* cf. *temulentum*) in pit **6253**, meadow grass (*Poa* sp.) in pit **6333**, hair-grass (*Aira* sp.) in pit **6766** and clover (*Trifolium* sp.) in slag fill **6965**.

Anglo-Norman (12/13th Century)

The thirty-four samples represent thirty-one pit fills, two ditch fills (**3483** and **6429**), and posthole fill **3245**.

All of the sampled contexts contain charred cereal grain, which is occasionally abundant. Sixteen of the thirty-one pit fills (52%) include mineral-replaced remains, mostly segments of millipede exoskeleton or amorphous calcium phosphate concretions that are probably coprolitic, with occasional seeds, grass stem (culm) fragments, earthworm cocoons and fly puparia. The biota suggest that much of the decaying organic matter was vegetal in addition to human/animal faeces; e.g. bedding, fodder or strewing materials.

Good indicators of human faeces or putrefaction are relatively rare, such as likely ingested fruit/condiment seeds or the puparia of blow flies (Calliphoridae); however the relative lack of mineral-replaced fruit stones will in part be a function of the non-assessment of items collected from the heavy residues. Single apple/pear seeds (*Malus/Pyrus* sp.) occur in pit fills **3673** and **3697**. Likely condiment use is indicated by five cabbage/mustard seeds (*Brassica/Sinapis*) in pit fill **3463**, two in pit fill **3398** and one in pit fill **6387**. Cess pit **3484** appears confirmed by the presence of amorphous calcium phosphate concretions (likely coprolitic) and a puparium comparable to blow fly (Calliphoridae). Likely coprolitic, amorphous calcium phosphate concretions are also present in pit fills **3637**, **3639**, **3673** and **3893**.

Charred grain is abundant in pit fills **3535**, **3539**, **3641** and common in pit fills **3208**, **3525**, **3527**, **3665**. The range of cereals is consistent, with free-threshing wheat and hulled barley the main types, and sporadic very low quantities of wild/cultivated oats and rye. Free-threshing wheat grain is the main cereal in these grain-rich fills, except in **3535** and **3539** where hulled barley is instead predominant. Rye only occurs in fill **3208**, and wild/cultivated oats in fills **3535**, **3539**, **3641** and **3665**. Cereal chaff is rare and poorly preserved, so the wheat identifications cannot be refined – single free-threshing wheat rachis internodes occur in pit fills **3525**, **3641** and **3665** but are too fragmentary to identify as hexaploid or tetraploid types. A single free-threshing wheat rachis internode in grain-poor pit **6499** is clearly hexaploid, so bread wheat is confirmed during this period (*Triticum aestivum sensu lato*).

These seven grain-rich pit fills are likely to represent ash from a specific activity such as grain drying in preparation for storage or milling, or baking (Moffett 1994; Ballantyne 2010). There are few accompanying pulses, with possible single pea halves (cotyledons) in **3525** and **3539**. Wild plant seeds are also infrequent and in low numbers, suggesting that grain cleaning practices were highly efficient; correspondingly, there is almost no potential for the reconstruction of crop husbandry. Wild plants with 1 or 2 seeds from across the seven grain-rich pits are: goosefoot (*Chenopodium* sp.), dock (*Rumex* sp.), vetch/wild pea (*Vicia/Lathyrus* sp.), probable fool's parsley (cf. *Aethusa cynapium*), cat's-tail (*Phleum* sp.) and probable rye brome (*Bromus* cf. *secalinus*). All are potential arable weeds that also occur in a range of other habitats.

The twenty-seven other sampled pit, ditch and posthole fills have only low quantities of charred grain (up to 10 items) that are difficult to interpret as the grains are often poorly preserved and may be significantly displaced in time and space from the original charring contexts. Cess pit fills **3484** and **3639** are of note for including single well-preserved, elongate wheat grains with dorsal ridges comparable to the hulled type spelt wheat. However the identifications must be tentative as there no hulled wheat chaff has been noted in either the 2011 or 2012 assemblages. The wild plant seeds in these grain-poor fills are infrequent and low in number, with most taxa comparable to those for the grain-rich pit fills. One seed of stinking mayweed (*Anthemis cotula*) in **3667** suggests cultivation of heavier soils, probably with a mouldboard plough, for which this species is regarded as an indicator (Jones 1988).

Medieval

The eleven samples from Anglo-Norman/Medieval or Medieval features represent eight ditch fills and three pit fills. Three ditch fills contain superabundant charred cereal grain, whilst four ditch fills and one pit contain low to moderate charred grain. In contrast ditch fill **3144** and pit fills **6304** and **6316** lack all charred remains other than low amounts of charcoal. Mineral-replaced biota are absent from all the sampled contexts.

Charred cereal grain is superabundant in ditch fills **6594**, **6745** and **6764**, where it appears to represent ash from a single source; perhaps a grain-drying or baking oven. There are broadly equal quantities of hulled barley and free-threshing wheat grains, with occasional rye and oats. Cereal chaff refines the identifications further, with a six-rowed barley rachis internode in **6594** and two articulated rivet wheat rachis internodes (tetraploid, *Triticum turgidum sensu lato*) in **6745**. Many other chaff items are fragmentary and not identifiable further – up to fifty free-threshing wheat rachis internodes in **6594** and an unquantified number

in **6745**. Low amounts of brushwood charcoal (roundwood) and cereal straw (culm nodes) are also consistent with oven ash (Marguerie and Hunot 2007, 1425; Moffett 1994).

There are a moderate number (10+) of peas (*Pisum sativum*) and Celtic beans (*Vicia faba* var. *minor*) in grain-rich fill **6594**, with the identifications confirmed by good survival of the attachment scars (hila). A few peas are also present in **6745**, whilst likely peas/beans occur in **6764** but are poorly preserved. There are few other seeds, mostly probable arable weeds with grain-sized seeds that are hard to remove from the crop; darnel (*Lolium temulentum*) and seed capsules of wild radish (*Raphanus raphanistrum*). Cabbage/mustard seeds in **6594** and **6745** are probably of a weedy type such as charlock (*Sinapis arvensis*), although they could represent cultivars. A single stinking mayweed seed (*Anthemis cotula*) in **6745** suggests cultivation of heavy clay soils.

Of the samples with low to moderate charred grain, ditch fill **3248** contains similar material to the three grain-rich ditch fills above, with free-threshing wheat grain, indeterminate grain, a pea and a darnel seed. Ditch fills **3101**, **6306**, **6661** and pit **6578** also include a few grains and seeds of uncertain significance.

Double post hole sequence (unphased)

Three samples representing posthole fills **6093**, **6105**, **6107** have produced very limited results, with two barley grains in **6093** and a barley, an oat and an unidentifiable grain in **6107**. Single clover seeds (*Trifolium* sp.) are also present in these two fills, whilst **6105** includes a vetch/wild pea seed (*Vicia/Lathyrus* sp.).

INTERPRETATION

The range of economic and wild plants in the samples from 2012–13 is comparable to those identified by Campbell (2012) for the 2008–10 excavations.

Charred cereal grain predominates, with hulled six-rowed barley, free-threshing wheat and sporadic hulled wheat, oats and rye. The wheat identifications are tentative as there is little accompanying chaff, which is a more reliable indicator of taxon than grain. Bread wheat (a hexaploid free-threshing wheat) is only confirmed by chaff in 12th/13th century pit fill **6499**, whilst rivet wheat (a tetraploid free-threshing wheat) is only confirmed by chaff in medieval ditch fill **6745**. There is no hulled wheat chaff and likely hulled wheat grain occurs only as 1–2 items in several Anglo-Saxon and Anglo-Norman features. Germinated grain is very infrequent as so there is no good evidence for malting as opposed to natural grain wastage.

Hulled wheats (in Britain, usually emmer and spelt) are more characteristic of the prehistoric to very early medieval periods, although there is growing evidence for their later medieval cultivation (Greig 1991; Pelling and Robinson 1998; Ballantyne 2010). Whilst the few well preserved grains are elongate and with clear dorsal ridges, there is no hulled wheat chaff to confirm their identification as hulled wheat. It is thus unclear whether these few grains represent actual crops, naturalised (feral) populations growing as weeds, or free-threshing wheat grains exhibiting ‘speltoid’ traits (see Campbell 2012). In contrast, chaff of bread wheat, rivet wheat and spelt (a hulled wheat) all occurred in 8th–9th century features (ibid.).

Peas and Celtic beans (a small type of broad bean) occur sporadically from the 6th century onwards however, there are no remains of flax in the 2012–13 samples (cf. Campbell 2012) and there are no exotics such as fig or grape. The low numbers of seeds of non-cereal cultivars and wild plants suggests that they were not routinely exposed to charring. In addition, there are few mineral-replaced fruit seeds or condiment seeds, although this should change when the heavy residue finds are examined by an archaeobotanist. Mineral-replaced apple/pear seeds and cabbage/mustard seeds occur in several 12th/13th century pit fills, but no samples as yet include the blackberry, elder, sloe or plum seeds recorded for 8th–9th century features (ibid.); on present evidence, those form a distinct, refuse- and faeces-rich phase of pit infilling at Lyminge. The

12th/13th Century pits examined here include limited evidence of human faeces (the fruit and condiment seeds noted above), but have relatively few fly puparia and other biota compared to the 8th–9th century pits.

Variation by phase and feature type

The majority of the 2012–13 samples contain low quantities of charcoal, charred grain, chaff, pulses, wild seeds and mineral-replaced biota.

Charred grain is only superabundant in two medieval ditch fills (**6594**, **6745**) and is abundant in SFB 6 fill **6834** and three 12/13th century pits (**3535**, **3539**, **3641**); these trends are shown in Figure 1(a) below. In contrast, charcoal is only superabundant in SFB 5 (fills **3708**, **3734**) and is also abundant in SFB 5 (fills **3705**, **3729**, **3707**), SFB 7 (fills **6233**, **6236**, **6204x2**), two 7th century timber hall features (**3560**, **7164**), 12/13th century pit **3527** and medieval ditch fill **6745**; this pattern is illustrated in Figure 1(b) below. The numerical values in each chart are identical to those presented in Table 1 at the end of this report:

1 present 2 frequent 3 common 4 abundant 5 superabundant

Charred chaff, pulses and wild seeds are never abundant or superabundant and so are not illustrated by trend charts. Only medieval ditch fills **6594** and **6745** have more than 10 chaff items, and **6594** is also the only context with more than 10 pulses. No context has more than 10 wild seeds.

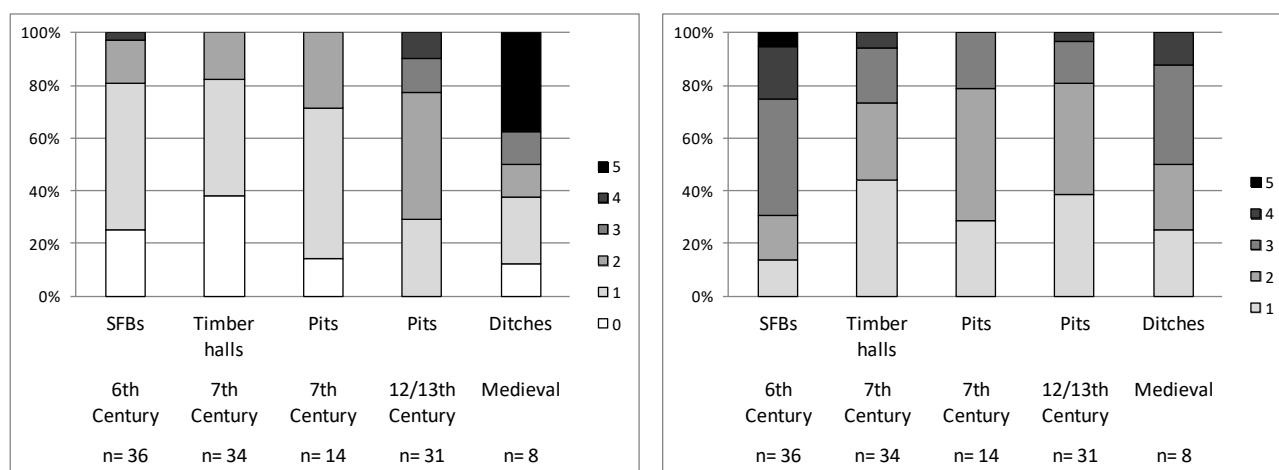


Figure 1: Abundance of (a) cereal grain and (b) charcoal for major feature groups in 2012 and 2013
‘n’ refers to the number of samples within each feature group

It is striking that there are opposing temporal trends for charred grain and charcoal, with grain best preserved in medieval dumps of apparent grain-drying oven ash, whilst charcoal is best preserved in the 6th Century SFB fills. The very good preservation of charcoal in the SFB fills suggests that these deposits formed either temporally or spatially close to their origin; rapid dumps and/or from nearby hearths, hence the good preservation. The low quantities of grain and charcoal in the 7th Century and 12/13th Century features suggests those remains are more displaced temporally and/or spatially from their charring origin; arriving via diffuse surface debris or middens. These interpretations are conjectural and require reconsideration at the full analysis stage, with complimentary lines of evidence from other artefact classes and the stratigraphy, to establish the influence of likely original charring events (e.g. activities and the materials selected) *versus* formation processes (e.g. rapidity of deposition and thus fragmentation).

Campbell (2012) has noted that barley tends to occur in a higher proportion of 6th–7th Century samples compared, whilst in 8th–9th Century samples wheat occurs in more samples than barley. This trait is explored in more detail in Figure 2, where the previous results are combined with those for the 2012–13 samples.

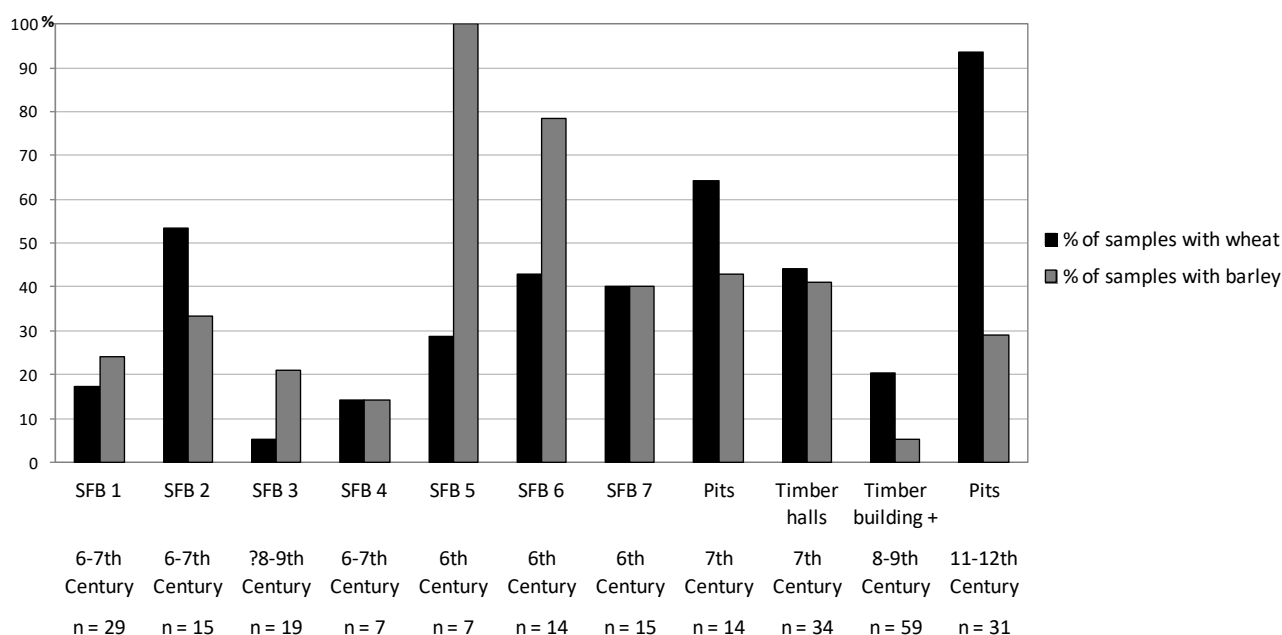


Figure 2: Incidence of wheat and barley remains across major feature groups, 2008–12 excavations
‘n’ refers to the number of samples within each feature group

There is much variety in the representation of wheat and barley in the SFBs, probably linked to the lower numbers of samples. Barley is more frequent than wheat in SFB 1, SFB3, SFB 5 and SFB 6, and has parity with wheat in SFB 4 and SFB 7. Whilst SFB 3 has been suggested as potentially 8th–9th Century in date, it is illustrated alongside the other SFBs in Figure 2 as, if the dating is correct, it is the only post-6th Century feature group where barley is more frequent in samples than wheat.

Crop husbandry

As noted earlier, wild plant seeds are either absent or in low quantities in all samples and so there is very limited potential for the reconstruction of crop husbandry from likely arable weeds. Only one seed type is an ‘indicator plant’; stinking mayweed (*Anthemis cotula*), which occurs as a single seeds in flint scatter **3830**, SFB 6 **6801** and SFB 7 **6226 6230**, 12/13th Century pit **3667** and medieval ditch **6745**. A single seed also occurs in 8th–9th Century timber hall fill **2560** (Campbell 2012). This plant has been linked to cultivation of heavy clay soils following the late Roman introduction of the mouldboard plough (Jones 1988). Other seed types are too infrequent and few in number to be informative, such as goosefoots (Chenopodiaceae), which thrive on nitrogen-rich or manured soils, and clovers (*Trifolium* sp.), which as legumes have an adaptive advantage of nitrogen-poor soils.

Pits, refuse and the living environment

Whilst mineral-replaced biota do occur in low quantities in the 6th Century SFB fills, these remains are of millipede exoskeleton, earthworm cocoons, ‘mystery objects’ (after Carruthers 1989) thought here to be likely fungal sclerotia, and very occasional wild seeds of uncertain significance such as goosefoots (Chenopodiaceae) and black nightshade (*Solanum nigrum*). The presence of calcium phosphate in itself indicates past concentrations of decaying organic matter (McCobb et al. 2001), whilst the range of biota is consistent with decaying vegetal materials rather than the faeces- and refuse-rich fills of later phases.

The low numbers of fly puparia in the 12th/13th century pits suggests that these features provided fewer opportunities for colonisation or mineral-replacement than the 8th–9th century pits examined by Campbell

(2012). The 12th/13th Century pits may have been filled and/or sealed more rapidly, or have contained a range of refuse types less conducive to mineral-replacement.

It is worth considering whether during the 8th–12th centuries there was a shift from long to short ‘refuse lives’ for the materials deposited into the pits. At later Anglo-Saxon Bishopstone (Ballantyne 2010), patterns between the charred and mineral-replaced biota in individual pits suggested that refuse had first accumulated as surface middens or spreads, perhaps mixed further and defecated by scavengers such as pigs, dogs and rodents, prior to redeposition into the pits. The assessment data from Campbell (2012) and this reports suggests that the 8th–9th century pits at Lyminge contain good evidence for long ‘refuse lives’ compared to the less biologically-diverse 12th/13th century pit fills. These later pits contain no examples of small dung fly/frit fly puparia (Sphaeroceridae/Chloropidae types) that were sometimes abundant at Bishopstone (ibid., Table 7.11) although there is one blow fly puparium (Calliphoridae) in fill **3484**. The author has not seen the puparia in the 8th–9th century pits and so cannot comment on their types, simply the frequency of their occurrence and plurality of the remains (most 12/13th Century finds are of individuals).

Plant foods, economy and status

The range of plant types provides no simplistic indication of site status, for example by the presence of exotic types such as grape or fig seeds. All the identified cereals and pulses are found on a wide range of contemporary site types (Moffett 2011), and it is other facets of the assemblage that are likely to be more illuminating regarding past lifeways and the cultural identity of the inhabitants. For example, the abundance and distribution of charred grain may be indicative of ash from particular activities such as corn drying ovens, which represents a specialisation linked to increasing the efficiency of grain storage or milling. The range of mineral-replaced biota and their temporal and spatial distributions are important indicators of past activities and attitudes to refuse management. On present evidence, the 8–9th Century was a distinct, refuse-rich period of pit infilling, possibly with redeposition from surface middens, perhaps replaced by direct pit infilling by the 12/13th Centuries.

CONCLUSIONS

This assemblage is of national significance for understanding social change during the 6th–12th Centuries AD due to its temporal breadth and association with the emergence of the early monastic community at Lyminge. In particular, the juxtaposition of charred and mineral-replaced biota offers a route into past lifeways and their material remains. As noted by Campbell (2012) and Van der Veen et al. (2013), there are still few systematically sampled sites from the 6th–9th Centuries in England, and even fewer where the assemblages are not complicated by underlying Roman period deposits. These factors mean that despite the often low quantities of plant macrofossils, charcoal and invertebrates, there is high potential for a significant contribution to knowledge.

RECOMMENDATIONS

The final season of excavation in 2014

The current, intensive bulk sampling strategy should continue in the final season, to ensure comparability across the all the different phases and feature types.

Particular attention should be given to heavy residue sorting for mineral-replaced biota that do not routinely enter flots during flotation. Greater than 4mm residue fractions may be reliably sorted by eye for fruit stones. However it is crucial that samples with mineral-replaced items greater than 4mm should have their 1–4mm fractions sorted by an appropriately skilled person using magnification. If necessary, for reasons of time or

skilled labour, these 1–4mm residues may need to be kept to allow a specialist to sort them off-site at a later date. Many crucial items in those 1–4 mm residues may be too small or indistinct (e.g. fig seeds, or invertebrate eggs/puparia) to be identifiable residue to a non-specialist with or without magnification.

The high relevance of the mineral-replaced assemblage to key questions regarding diet, status and refuse management means that the heavy residues are of high importance for characterising the site, and thus worthy of extra time and resources during sorting. Amorphous concretions of calcium phosphate are worth keeping from the residues as these are often coprolitic and when disaggregated can contain microfossils such as cereal bran, mammalian hairs, and bone fragments, depending on the originating species (e.g. Bell and Dickson 1989). Coprolites are also increasingly used for biomolecular analysis, such as the investigation of sterols to identify their content and origins (Shilito et al 2011). Finally, if distinct cess pits or latrines are encountered during the final season of excavation, it should be considered whether small sediment samples (c.50ml) should also be collected for palaeoparasitic analysis.

Post-excavation analyses

Full analysis is merited by abundance or superabundance of remains in 13 charcoal-rich samples and 7 grain-rich samples. However a number of other samples with low to moderate quantities of remains will be worthy of more detailed analysis due to their phasing and/or contextual relationships to the richer samples.

The final range of samples should be finalised alongside key research questions at an early stage of post-excavation, when the full breadth of the assemblage is known. It is anticipated that overall, perhaps 20 samples will be selected from the 2011–12 samples for their charcoal and 20 selected for their charred plant macrofossils. Temporal variation in charcoal types should provide detail regarding past fuel selection, from the well-preserved 6th Century SFB remains through to the roundwood in medieval grain-rich ash. The relatively few charred plant remains from the 6th, 7th and 12/13th centuries are an important contrast to the richer 8th–9th Century features examined by Campbell (2012), which appear to represent a distinctively intense and refuse-rich period of activity at Lyminge.

Whilst mineral-replaced invertebrates cannot support close taxonomic identifications, it is worth pursuing broad identifications (to Family, where possible) of the fly puparia to allow comparison of refuse types and refuse management across the different periods at Lyminge, and to the later Anglo-Saxon pit fills at Bishopstone. There are puparia recorded for 6 pit fills in the 2011–12 assemblage and 9 pit fills by Campbell (2012).

ACKNOWLEDGEMENTS

The author is grateful to Prof. Martin Jones and colleagues for access to resources at the Pitt-Rivers Laboratory for Bioarchaeology, Division of Archaeology, University of Cambridge. She would also like to thank Simon Maslin and Gabor Thomas, University of Reading, for their help with this assessment.

BIBLIOGRAPHY

- Ballantyne, R.M. 2009. 'Botanical evidence' in A. Dickens, S. Lucy and J. Tipper (eds.) *The Anglo-Saxon Settlement and Cemetery at Bloodmoor Hill, Carlton Colville, Suffolk* *East Anglian Archaeology Report* **131**, 305–316.
- Ballantyne, R.M. 2010. 'Charred and mineralised biota', pp.164–76 in G. Thomas *The later Anglo-Saxon Settlement at Bishopstone: A Downland Manor in the Making*. (CBA Research Report 163). York: Council for British Archaeology.

- Bell, B. and Dickson, C. 1989. Excavations at Warebeth (Stromness Cemetery) Broch, Orkney. *Proceedings of the Society of Antiquaries of Scotland* **119**, 101–131.
- Campbell, G. 2012. Assessment of charred and mineral-replaced macroscopic plant remains from excavation at Lyminge, Kent, 2008–10. Unpublished specialist report for the Lyminge Archaeological Project.
- Campbell, G. and Kenward, H. 2012. ‘Insect and plant remains’, in J. Tipper (ed.) *Experimental archaeology and fire: the investigation of a burnt reconstruction at West Stow Anglo-Saxon village*. *East Anglian Archaeology Report* **146**, 90–114.
- Carruthers, W. 1989. Mystery object 2 – animal, mineral or vegetable? *Circaea* **6**(1), 20.
- Greig, J.R.A. 1991. ‘The British Isles’, pp.299–334 in W. van Zeist, K. Wasylikowa and K. Behre (eds.) *Progress in Old World Palaeoethnobotany*. Rotterdam: Balkema.
- Jones, M.K. 1988. ‘The arable field: A botanical battleground’, pp.86–92 in M.K. Jones (ed.) *Archaeology and the Flora of the British Isles*. Oxford: Oxford University Committee for Archaeology.
- Marguerie, D. and Hunot, J.-Y. 2007. Charcoal analysis and dendrology: data from archaeological sites in north-western France. *Journal of Archaeological Science* **34**, 1417–1433.
- McCobb, L.M.E., Briggs, D.E.G., Evershed, R.P. and Hall, A.R. 2001. Preservation of Fossil Seeds From a 10th Century AD Cess Pit at Coppergate, York. *Journal of Archaeological Science* **28**, 929–40.
- McParland, L.C., Collinson, M.E., Scott, A.C., Campbell, G. & Veal, R. 2010. Is vitrification in charcoal a result of high temperature burning of wood? *Journal of Archaeological Science* **37**(10), 2679–2687.
- Moffett, L. 1994. ‘Charred cereals from some ovens/kilns in late Saxon Stafford and the botanical evidence for the pre-burh economy’, pp.55–64 in J. Rackham (ed.) *Environment and economy in Anglo-Saxon England* (CBA Research Report 89). York: Council for British Archaeology.
- Moffett, L. 2011. ‘Food plants on archaeological sites. The nature of the archaeobotanical record’, pp.346–360 in H. Hamerow, D.A. Hinton and S. Crawford (eds.) *The Oxford Handbook of Anglo-Saxon Archaeology*. Oxford: Oxford University Press.
- Pelling, R. and Robinson, M. 2000. Saxon emmer wheat from the Upper and Middle Thames Valley, England. *Environmental Archaeology* **5**, 117–9.
- Shillito, L.-M., Bull, I.D., Matthews, W., Almond, M.J., Williams, J. and Evershed, R.P. 2011. Biomolecular and micromorphological analysis of suspected faecal deposits at Neolithic Çatalhöyük, Turkey. *Journal of Archaeological Science* **38**, 1869–1877.
- Stace, C. 1997. *New Flora of the British Isles* (second edition). Cambridge: Cambridge University Press.
- Thomas, G. 2013. Life before the minster: the social dynamics of monastic foundation at Anglo-Saxon Lyminge, Kent. *Antiquaries Journal* **93**, 109–145.
- Van der Veen, M., Hill, A. and Livarda, A. 2013. The archaeobotany of Medieval Britain (c AD 450–1500): identifying research priorities for the 21st century. *Medieval Archaeology* **57**, 151–182.
- Williams, D. 1973. Flotation at Sīraf. *Antiquity* **47**, 288–92.
- Zohary, D. & Hopf, M. 2000. *Domestication of plants in the Old World* (third edition). Oxford: Oxford University Press.

Table 1: Assessment results for charred and mineral-replaced biota, Lyminge 2012 and 2013

Key: 1 present, 2 frequent, 3 common, 4 abundant, 5 superabundant (after Campbell 2012), p = present

hb = hulled barley, nw = naked wheat (a.k.a. free-threshing), hw = hulled wheat, glb = glume base

Context	Site code	Sample number	Context description	Association	Sample vol (L)	% context (if known)	Charcoal	Grain	Barley	hb	Wheat	nw	hw	Oat	Rye	glb	rachis	culm node	Seeds	Large legumes	Mineral-replaced	Un-charred	Notes (charred unless otherwise stated)
3091	LYM12	<18>	Pit fill	Anglo-Norman, 12/13th century	18		2	2	p		p	p							1			p	Free-threshing wheat and wheat grain, v few barley grain. 1 <i>Bromus</i> sp. seed. 1 charred fungal sclerotium. Uncharred <i>Sambucus</i> sp. seed.
3101	LYM12	<1>	Upper ditch fill	Medieval	21	<5	2	1	p										1	1			1 barley grain, cf. <i>Pisum sativum</i> cotyledons (no hilums). 1 <i>Trifolium</i> sp. seed.
3144	LYM12	<2>	Primary ditch fill	Medieval	7	<5	1																1 tiny fragment of parenchyma (likely from a legume cotyledon).
3188	LYM12	<16>	Pit fill	Anglo-Norman, 12/13th century	12		3	2	p	p	p	p								1			Free-threshing wheat and wheat grain, some barley grain incl. hulled, 1 rye/oat grain. 1 pea/bean cotyledon fragment.
3189	LYM12	<19>	Pit fill	Anglo-Norman, 12/13th century	12.5		1	1	p			p							1			p	Mostly free-threshing wheat grain and a few barley grain. 1 <i>Rumex</i> sp. seed, 1 <i>Brassica/Sinapis</i> and 1 medium-sized wild grass seed. Uncharred <i>Sambucus</i> sp. seed.
3195	LYM12	<13>	Pit fill	Anglo-Saxon phase 2 (7th century)	6.5		2	1	p												p		1 barley grain, 1 rye/oat grain. Mineral-replaced earthworm cocoons. Incl. vitrified charcoal.
3205	LYM12	<107>	Post hole fill	Anglo-Saxon phase 2 (7th century)		>50	1	1															Barley grain fragment.
3207	LYM12	<100>	Pit fill	Anglo-Saxon phase 2 (7th century)	6.5		3	1			p										p		1 wheat grain. Lots of mineral-replaced earthworm cocoons.
3208	LYM12	<20>	Pit fill	Anglo-Norman, 12/13th century	13		1	3	p		p	p				p		p	1		p		Mostly free-threshing wheat grain, with barley, wheat, rye and indet. grain. 1 cereal culm node. 1 small <i>Vicia/Lathyrus</i> sp. seed. Two flots very different quantities of grain. Mineral-replaced millipede exoskeleton fragments and 1 earthworm cocoon.
3240	LYM12	<21>	Pit fill	Anglo-Norman, 12/13th century	6.5	100	1	1														p	Grain indet. fragment. Uncharred <i>Sambucus</i> sp. seed. Amphibian bone.
3242	LYM12	<17>	Pit fill	Anglo-Norman, 12/13th century	10.5		2	2	p		p	p									p		Mostly free-threshing wheat grain and wheat grain, some barley and indet. grain. Small vertebrate bone. Mineral-replaced ?fungal sclerotium.
3245	LYM12	<6>	Post hole fill	Anglo-Norman, 12/13th century	4	25-50	1	2	p	p	p			p					1				Mostly barley grain, some hulled. Also 1 wheat grain, oat seed fragment. 1 <i>Atriplex</i> sp. seed and 1 <i>Trifolium</i> sp. seed.

Context	Site code	Sample number	Context description	Association	Sample vol (L)	% context (if known)	Charcoal	Grain	Barley	hb	Wheat	nw	hw	Oat	Rye	glb	rachis	culm node	Seeds	Large legumes	Mineral-replaced	Un-charred	Notes (charred unless otherwise stated)
3248	LYM12	<4>	Ditch fill	Medieval	9.5		2	3			p	p			p				1	1		p	Free-threshing wheat grain, wheat grain, grain indet. - preservation is fair. 1 rye grain and 1 cf. <i>Pisum sativum</i> cotyledon (no hilum). 1 <i>Lolium</i> cf. <i>temulentum</i> seed. 2 uncharred <i>Sambucus</i> sp. seed fragments. Incl. vitrified charcoal.
3253	LYM12	<79>	Post hole fill	Timber Hall, Anglo-Saxon Phase 2 (7th century) - v. likely	3		1															p	Uncharred <i>Sambucus</i> sp. seed.
3265	LYM12	<36>	Pit fill	Anglo-Norman, 12/13th century	14		2	2	p		p	p							1				Barley grain, free-threshing wheat grain, wheat grain. Medium <i>Vicia/Lathyrus</i> sp. seed.
3288	LYM12	<12>	Pit fill	Anglo-Saxon phase 2 (7th century)	1	100	1	1															1 grain indet. Likely <i>Quercus</i> charcoal fragment.
3296	LYM12	<14>	Pit fill	Anglo-Saxon phase 2 (7th century)	7		1	2		p		p		p					1				Hulled barley grains, 1 free-threshing wheat grain, 1 oat seed. 1 small Brassicaceae indet. seed.
3302	LYM12	<15>	Pit fill	Anglo-Saxon phase 2 (7th century)	5		1	2				p		p						1			Free-threshing wheat grain, oat seed, <i>Vicia faba</i> var. minor seed.
3398	LYM12	<31>	Pit fill	Anglo-Norman, 12/13th century	12		2	1				p								1	p		1 free-threshing wheat grain. 1 <i>Vicia faba</i> var. minor. 2 mineral-replaced <i>Brassica/Sinapis</i> sp. seeds and millipede exoskeleton fragments. 1 fly puparium. Two flots quite different in grain.
3427	LYM12	<95>	Pit fill	Timber Hall, Anglo-Saxon Phase 2 (7th century) - v. likely	6.5		3	1	p		p												2 barley grain, 1 wheat grain (possibly hulled).
3463	LYM12	<64>	Pit fill	Anglo-Norman, 12/13th century	12		3	2	p		p	p							1		p	p	Mostly wheat grain, incl. free-threshing wheat grain, also barley grain and grain indet. 1 <i>Rumex</i> sp. seed. 5 mineral-replaced <i>Brassica/Sinapis</i> sp. seeds and one ?seed. Uncharred <i>Sambucus</i> sp. seed.
3483	LYM12	<27>	Fill of truncated ditch	Anglo-Norman, 12/13th century (most likely)	6.5		2	1	p		p											p	Several barley grain, 1 wheat grain. Uncharred <i>Sambucus</i> sp. seed fragment.
3484	LYM12	<65>	Cess pit fill	Anglo-Norman, 12/13th century	18		2	2	p			p	p								p		Free-threshing wheat grain, hulled wheat grain (dorsal ridge and elongate), barley grain. Mineral-replaced <i>Rumex</i> sp. seed, <i>Bromus</i> cf. <i>secalinus</i> seed. Mineral-replaced puparia (incl. 1 likely Calliphoridae). Amorphous calcium phosphate fragments. Small vertebrate bones.

Context	Site code	Sample number	Context description	Association	Sample vol (L)	% context (if known)	Charcoal	Grain	Barley	hb	Wheat	nw	hw	Oat	Rye	glb	rachis	culm node	Seeds	Large legumes	Mineral-replaced	Un-charred	Notes (charred unless otherwise stated)
3525	LYM12	<37>	Pit fill	Anglo-Norman, 12/13th century	15		2	3	p	p	p	p					p		1	1		p	Flot from bags 1 & 2 of 4 not posted to Cambridge - so only flot from bags 3 & 4 analysed. Mostly free-threshing wheat grain, plus barley grain incl. hulled. 1 free-threshing wheat rachis internode. 1 ? <i>Pisum sativum</i> cotyledon (no hilum). ? <i>Aethusa cynapium</i> endosperm and 1 <i>Phleum</i> sp. seed. Uncharred <i>Sambucus</i> sp. seed.
3527	LYM12	<124>	Secondary pit fill	Anglo-Norman, 12/13th century	6		4	3	p		p	p							1				Mostly free-threshing wheat grain. Also some barley and wheat grain. 1 small <i>Vicia/Lathyrus</i> sp. seed. A few small vertebrate bones.
3534	LYM12	<34>	Cess deposit	Anglo-Norman, 12/13th century	8		1	1	p			p							1	1	p		Barley grain and free-threshing wheat grain. 1 <i>Vicia faba</i> var. <i>minor</i> . <i>Galium aparine</i> seed. Small bone fragments incl. amphibian. Quite a bit of millipede exoskeleton that looks mineral-replaced.
3535	LYM12	<38>	Pit fill	Anglo-Norman, 12/13th century	12.5		3	4	p	p	p	p		p					1				60% barley grain, some hulled and twisted, 40% free-threshing wheat grain (incl. 1 tail grain), wheat grain and oats. Preservation occasionally excellent. 2 <i>Rumex</i> sp., 1 <i>Phleum</i> sp. and 1 <i>Bromus</i> cf. <i>secalinus</i> seed.
3539	LYM12	<40>	Pit fill	Anglo-Norman, 12/13th century	14.5	5-25	3	4	p	p	p	p		p					1	1	p	p	60% barley grain incl. hulled, 40% free-threshing wheat grain and few oats. Rather silty and grain preservation fair. 1 cf. <i>Pisum sativum</i> (no hilum) and 1 <i>Rumex</i> sp. seed. Mineral-replaced <i>Brassica/Sinapis</i> sp. seeds, grass culm fragments, millipede exoskeleton fragments, earthworm cocoon and woodlouse segment. Small vertebrate bones incl. amphibian. Uncharred <i>Sambucus</i> sp. seed.
3560	LYM12	<89>	Wall trench fill	Timber Hall, Anglo-Saxon Phase 2 (7th century)	3.5		4	2	p	p				p						1	p		Mostly hulled barley and barley grain. 1 oat seed. 1 cf. <i>Vicia faba</i> var. <i>minor</i> fragment. Mineral-replaced earthworm cocoon and ?fungal body. Uncharred <i>Sambucus</i> sp. seeds. Incl. vitrified charcoal blobs.
3597	LYM12	<41>	Pit fill	Anglo-Saxon phase 2 (7th century)	13		2	1		p												p	1 hulled barley grain. Uncharred <i>Sambucus</i> sp. seed.
3637	LYM12	<66>	Tertiary pit fill	Anglo-Norman, 12/13th century	13		1	2			p	p									p		Free-threshing wheat and wheat grain. Amorphous calcium carbonate fragments. Small vertebrate bone.

Context	Site code	Sample number	Context description	Association	Sample vol (L)	% context (if known)	Charcoal	Grain	Barley	hb	Wheat	nw	hw	Oat	Rye	glb	rachis	culm node	Seeds	Large legumes	Mineral-replaced	Un-charred	Notes (charred unless otherwise stated)
3639	LYM12	<47>	Cess fill	Anglo-Norman, 12/13th century	12		1	2	p			p	p							1	p		Barley grain, free-threshing wheat grain. 1 hulled wheat grain (dorsal ridge and elongate). 1 likely <i>Vicia faba</i> var. <i>minor</i> cotyledon fragment. Small vertebrate bone. Amorphous calcium phosphate concretions.
3641	LYM12	<42>	Pit fill	Anglo-Norman, 12/13th century	12.5	5-25	3	4	p	p	p	p		p			p		1		p	p	80% free-threshing wheat grain, 15% barley (occ. hulled) and 5% oats. 1 free-threshing wheat rachis internode. 1 medium-sized wild grass seed, <i>Chenopodium</i> sp. seed and seed indet. A few charcoal fragments >1cm. 2 mineral-replaced fly puparia. Small vertebrate bones and fishscale.
3665	LYM12	<43>	Pit fill	Anglo-Norman, 12/13th century	13.5	5-25	2	3	p	p	p	p		p			p				p		Mostly free-threshing wheat grain, also barley grain occ. hulled, oats. 1 free-threshing wheat rachis internode. Mineral-replaced grass culm fragments and earthworm cocoons. Amphibian bone.
3667	LYM12	<67>	Secondary pit fill	Anglo-Norman, 12/13th century	12		1	1				p							1				2 free-threshing wheat grain, 1 wheat grain. 1 <i>Anthemis cotula</i> seed.
3673	LYM12	<45>	Pit fill	Anglo-Norman, 12/13th century	13.5		1	1		p		p									p		Hulled barley and free-threshing wheat grain. Mineral-replaced <i>Malus/Pyrus</i> sp. seed, ? <i>Agrostemma githago</i> , <i>Atriplex</i> sp. seed, plus grass culm fragments. Also mineral-replaced millipede exoskeleton, incl. flat type, and fly puparia. Amorphous calcium phosphate concretions. Plenty of small vertebrates.
3697	LYM12	<103>	Pit fill	Anglo-Norman, 12/13th century	5.5		2	2			p	p									p		1 mineral-replaced <i>Malus/Pyrus</i> sp. seed. Free-threshing wheat grain and wheat grain. Mineral-replaced millipede exoskeleton.
3704	LYM12	<30>	SFB5, Spit 3, NE Quad	SFB5, Anglo-Saxon Phase 1 (6th century)	4		3	2	p					p						1			Barley grain, grain indet., oat seed. ?Pea/bean cotyledon fragment?
3705	LYM12	<32>	SFB5, Spit 4, NE Quad	SFB5, Anglo-Saxon Phase 1 (6th century)	10		4	2	p	p											p	p	Barley and hulled barley grain (incl. 1 hulled and twisted). Mineral-replaced earthworm cocoon and ?fungal body. Uncharred <i>Sambucus</i> sp. seed.
3705	LYM12	<35>	SFB5, Spit 4, NE Quad	SFB5, Anglo-Saxon Phase 1 (6th century)	6		3	1	p	p													Hulled barley and barley grain.
3707	LYM12	<44>	SFB 5, Spit 6, NE Quad	SFB5, Anglo-Saxon Phase 1 (6th century)	7.5		4	2	p	p											p		Mostly hulled barley grain. 2 mineral-replaced ?fungal bodies.

Context	Site code	Sample number	Context description	Association	Sample vol (L)	% context (if known)	Charcoal	Grain	Barley	hb	Wheat	nw	hw	Oat	Rye	glb	rachis	culm node	Seeds	Large legumes	Mineral-replaced	Un-charred	Notes (charred unless otherwise stated)
6093	LYM13	<78>	Post hole fill	Unphased: double post hole sequence N of buildings	10		2	1	p	p									1				1 barley and 1 hulled barley grain. 1 <i>Trifolium</i> seed. Some insect-damaged charcoal.
6105	LYM13	<79>	Post hole fill	Unphased: double post hole sequence N of buildings	10		2												1			p	1 small <i>Vicia/Lathyrus</i> . Recent uncharred <i>Chenopodium album</i> . Tarry globules. + uncharred fly puparia.
6107	LYM13	<80>	Post hole fill	Unphased: double post hole sequence N of buildings	10		1	1	p					p					1				1 oat, 1 barley, 1 grain indet. fragment. 1 <i>Trifolium</i> sp. seed.
6119	LYM13	<54>	SW Quad of slag fill	Anglo-Saxon Phase 2 (7th century)	10	<5	2	2	p			p											Free-threshing wheat and barley grain - heavily charred. Some vitrified charcoal.
6119	LYM13	<55>	NW Quad of slag fill	Anglo-Saxon Phase 2 (7th century)	10	<5	2	1			p		p									p	3 wheat grain; 1 appears hulled. 1 browned subrounded wood fragment. Incl. roundwood, some insect damaged.
6119	LYM13	<58>	SE Quad periphery of slag fill	Anglo-Saxon phase 2 (7th century)	20		2	2	p		p	p											Barley and free-threshing wheat grain. Poorly preserved.
6201	LYM13	<1>	SFB 7 Spit 1, exterior sample	SFB7, Anglo-Saxon Phase 1 (6th century)	10	<5	1												1				Incl vitrified charcoal and tarry globules. 1 parenchyma fragment - looks like a legume cotyledon. Insect attacked charcoal frag.
6201	LYM13	<2>	SFB 7 Spit 1, Interior sample	SFB7, Anglo-Saxon Phase 1 (6th century)	10	<5	1	1			p	p											Incl. tarry globules.
6202	LYM13	<15>	SFB 7 Spit 2, Interior sample	SFB7, Anglo-Saxon Phase 1 (6th century)	10	<5	3										p					p	1 free-threshing <i>Triticum</i> rachis internode. 1 uncharred <i>Sambucus</i> seed. A few tarry globules and vitrified charcoal fragments. A few charred fungal sclerotia (<i>Cenococcum</i>).
6202	LYM13	<16>	SFB 7 Spit 2, Exterior sample	SFB7, Anglo-Saxon Phase 1 (6th century)	10	<5	2	1		p				p					1			p	Hulled barley grain and 1 oat seed fragment. A few tarry globules. 1 <i>Rumex</i> and 1 <i>Trifolium</i> seed. 1 uncharred <i>Sambucus</i> seed.
6204	LYM13	<37>	SFB 7, Spit 3, NE Quad, Interior	SFB7, Anglo-Saxon Phase 1 (6th century)	10		4														p		Several mineral-replaced ?fungal bodies
6204	LYM13	<38>	SFB 7, Spit 3, NE Quad, Exterior sample	SFB7, Anglo-Saxon Phase 1 (6th century)	10		4	1	p	p		p		p							p		Hulled barley, free-threshing wheat, oat. + mineral-replaced seed/fungi and millipede fragment. 1 charred fungal sclerotia.
6207	LYM13	<48>	SFB 7, Spit 4, NW Quad, Interior	SFB7, Anglo-Saxon Phase 1 (6th century)	10	<5	3												1				2 <i>Chenopodium</i> sp. endosperm.
6226	LYM13	<3>	SFB 7 Spit 1, exterior sample	SFB7, Anglo-Saxon Phase 1 (6th century)	10	<5	1	1			p								1			p	Incl. tarry globules. Uncharred <i>Sambucus</i> seed. Charred <i>Chenopodium</i> cf. <i>polyspermum</i> seed
6226	LYM13	<4>	SFB 7 Spit 1, Interior sample	SFB7, Anglo-Saxon Phase 1 (6th century)	10	<5	2	1	p			p							1				Incl. tarry globules, vitrified and charred concreted fragments. 1 <i>Anthemis cotula</i> seed.

Context	Site code	Sample number	Context description	Association	Sample vol (L)	% context (if known)	Charcoal	Grain	Barley	hb	Wheat	nw	hw	Oat	Rye	glb	rachis	culm node	Seeds	Large legumes	Mineral-replaced	Un-charred	Notes (charred unless otherwise stated)
6229	LYM13	<17>	SFB 7 Spit 2, Interior sample	SFB7, Anglo-Saxon Phase 1 (6th century)	10	<5	3																
6229	LYM13	<18>	SFB 7 Spit 2, Exterior sample	SFB7, Anglo-Saxon Phase 1 (6th century)	10	<5	3	1		p		p											Free-threshing wheat grain and hulled barley.
6230	LYM13	<19>	SFB 7 Spit 2	SFB7, Anglo-Saxon Phase 1 (6th century)	10	<5	2	1	p	p									1				Barley and hulled barley grain, 1 small ? <i>Lolium</i> seed and 1 <i>Anthemis cotula</i> seed.
6233	LYM13	<29>	SFB 7 Spit 3, Interior sample	SFB7, Anglo-Saxon Phase 1 (6th century)	10		4																1 fish vertebra and a bone fragment. Incl. vitrified charcoal.
6233	LYM13	<30>	SFB 7 Spit 3, Exterior sample	SFB7, Anglo-Saxon Phase 1 (6th century)	5	<5	3															p	Uncharred <i>Prunus</i> stone fragment.
6236	LYM13	<35>	SFB 7, Spit 3, Central area. Possible cut.	SFB7, Anglo-Saxon Phase 1 (6th century)	20	<5	4	1	p		p	p											Free-threshing wheat grain and 1 barley. 1 <i>Rumex</i> seed.
6253	LYM13	<175>	Pit fill	Anglo-Saxon Phase 2 (7th century)	10		1	1				p							1				Free-threshing wheat grain. <i>Lolium</i> cf. <i>temulentum</i> seed. Incl. tarry vitrified globules. Fine flot refloated as very silty.
6304	LYM13	<13>	Pit fill	Anglo-Norman or Medieval ('Medieval tile' in fill)	11	50	2															p	Much vitrified charcoal, with some concreted fragments and tarry globules. Many uncharred <i>Rubus idaeus</i> seeds, some uncharred <i>Sambucus</i> seed. Charred fungal sclerotia.
6306	LYM13	<22>	Ditch fill	Medieval	20		3	2	p		p	p					p		1				Barley, wheat and free-threshing wheat grain - poorly preserved. 1 free-threshing <i>Triticum</i> rachis internode. 1 <i>Galium aparine</i> seed.
6316	LYM13	<14>	Pit fill	Anglo-Norman or Medieval ('Medieval tile' in fill)	9	50	2															p	Much vitrified and concreted charcoal, with tarry globules. Fly ash. + uncharred <i>Rubus idaeus</i> seeds, * <i>Sambucus</i> seeds and subrounded wood fragments. Some silica fly ash.
6333	LYM13	<92>	Post hole fill	Anglo-Saxon Phase 2 (7th century)	10		2	1											1	1		p	1 grain indet. fragment, 1 large legume cotyledon fragment. 1 <i>Poa</i> sp. seed. 1 uncharred <i>Urtica dioica</i> seed.
6351	LYM13	<158>	Fence post	Anglo-Saxon Phase 2 (7th century)			1																
6373	LYM13	<159>	Fence post	Anglo-Saxon Phase 2 (7th century) - likely	4		1	1		p													1 hulled barley grain fragment.
6383	LYM13	<170>	Pit fill	Anglo-Norman, 12/13th century	40		2	2	p		p	p											Mostly barley grain, some wheat grain - one clearly free-threshing.
6385	LYM13	<168>	Pit fill	Anglo-Norman, 12/13th century	20		2	1	p	p		p											Hulled barley, barley and free-threshing wheat grain. Incl. a fragment of vitrified charcoal.

Context	Site code	Sample number	Context description	Association	Sample vol (L)	% context (if known)	Charcoal	Grain	Barley	hb	Wheat	nw	hw	Oat	Rye	glb	rachis	culm node	Seeds	Large legumes	Mineral-replaced	Un-charred	Notes (charred unless otherwise stated)
6387	LYM13	<167>	Pit fill	Anglo-Norman, 12/13th century	30		1	2	p	p		p		p						1	p		Hulled barley grain and barley grain fragments. Free-threshing wheat grain. 1 <i>Vicia faba</i> var. <i>minor</i> , 1 cf. <i>Pisum sativum</i> cotyledon (no hilum). Coarse flot refloated as very silty. Mineral-replaced <i>Brassica/Sinapis</i> seed. 1 amphibian bone.
6401	LYM13	<95>	Pit fill	Anglo-Norman, 12/13th century	25		2	1	p			p					p		1	1			2 barley grain, 1 free-threshing wheat grain, several grain indet. 1 <i>Vicia faba</i> var. <i>minor</i> seed. 2 free-threshing wheat rachis internodes. 1 <i>Polygonum aviculare</i> seed. 1 small seed indet. fragment.
6429	LYM13	<11>	Upper ditch fill	Anglo-Norman, 12/13th century	11		2	2	p			p							1				Grain very pitted and abraded. Small legume (<i>Vicia/Lathyrus</i>). Includes <i>Quercus</i> and roundwood charcoal. A few charred fungal sclerotia (<i>Cenococcum</i>).
6449	LYM13	<116>	Post hole fill	Timber Hall, Anglo-Saxon Phase 2 (7th century)	10		1																
6499	LYM13	<12>	Upper pit fill	Anglo-Norman, 12/13th century	20		2	2	p	p	p	p		p			p						1 hexaploid <i>Triticum</i> rachis internode.
6520	LYM13	<49>	Post hole, hall façade.	Timber Hall, Anglo-Saxon Phase 2 (7th century)	15	50	1	1			p												1 wheat grain. Rodent bones.
6524	LYM13	<145>	Post hole fill	Timber Hall, Anglo-Saxon Phase 2 (7th century)	10		3	1				p								1			1 free-threshing wheat grain. 1 <i>Vicia faba</i> var. <i>minor</i> . Grey siliceous fly ash fragments and 2 iron smithing spheroids.
6578	LYM13	<26>	Medieval pit	Medieval	10	50	1	1						p					1				1 oat seed fragment, 1 <i>Ranunculus acris/bulbosus/repens</i> seed. Vitified charcoal. A few silica fly ash fragments.
6594	LYM13	<20>	Medieval ditch fill	Medieval	20		3	5	p	p	p	p					p		1	3			c.60% free-threshing wheat grain and 40% hulled barley (incl. a few twisted grains). Presv generally poor - puffed and pitted. 2 barley rachis internodes (1 6-rowed). ?50 free-threshing wheat rachis internodes. <i>Vicia faba</i> var. <i>minor</i> and <i>Pisum sativum</i> . 1 <i>Brassica/Sinapis</i> sp. seed, 1+ <i>Lolium</i> cf. <i>temulentum</i> , 2 <i>Silene</i> sp. seeds. Fine flot refloated as v silty and concreted. Incl. some twiggy roundwood. Occasional charred fungal sclerotia.
6633	LYM13	<121>	Post hole fill	Timber Hall, Anglo-Saxon Phase 2 (7th century)	10		1																Grey siliceous fly ash fragment. 1 iron smithing spheroid.
6661	LYM13	<23>	Ditch fill	Medieval	10		1	1						p								p	1 <i>Avena</i> seed. Uncharred <i>Taraxacum</i> seed (likely recent in origin).
6701	LYM13	<77>	Potential Bronze Age post hole	Prehistoric?	10	100	1																

Context	Site code	Sample number	Context description	Association	Sample vol (L)	% context (if known)	Charcoal	Grain	Barley	hb	Wheat	nw	hw	Oat	Rye	glb	rachis	culm node	Seeds	Large legumes	Mineral-replaced	Un-charred	Notes (charred unless otherwise stated)
6706	LYM13	<108>	Post hole fill	Timber Hall, Anglo-Saxon Phase 2 (7th century)	20		2	2			p	p								1			Several free-threshing wheat grain, with some wheat and unidentifiable grain. 1 pea/bean cotyledon fragment.
6739	LYM13	<169>	Pit fill	Anglo-Norman, 12/13th century	10		1	2	p			p											Barley grain, free-threshing wheat grain, grain indet. Fine flint floated as very silty.
6745	LYM13	<24>	Charcoal rich ditch fill	Medieval	16		4	5	p	p	p	p		p	p		p	p	1	2		p	c.50% free-threshing wheat grain and 50% hulled barley (incl. a few twisted grains). Occasional rye and oats. Presv fair - moderate puffing and pitting of grain. <i>Pisum sativum</i> , from few with preserved hilum. 3+ <i>Lolium temulentum</i> seeds, 2 <i>Brassica/Sinapis</i> sp. and 1 <i>Anthemis cotula</i> seed. Tetraploid wheat rachis internodes (2 articulated) and free-threshing wheat rachis internodes. Cereal culm base (with roots). <i>Hordeum vulgare</i> rachis internode (fragment). Incl. some large charcoal fragments (>1cm).
6763	LYM13	<25>	Charcoal rich pit fill	Anglo-Saxon phase 2 (7th century): B4 raking post	4	50	3																1 spheroid from iron smithing
6764	LYM13	<27>	Medieval ditch	Medieval	20		3	5	p	p	p	p		p					2	1			c.50% free-threshing wheat grain and 50% hulled barley (incl. a few twisted grains). V few oats. Presv fair - moderate puffing and pitting of grain. Probably peas and beans from gross morphology. <i>Rumex</i> sp., small <i>Vicia/Lathyrus</i> , 1 ? <i>Raphanus raphanistrum</i> capsule fragment, 1 ? <i>Avena</i> chaff, 1 charred <i>Cenococcum</i> sclerotia. Lots of fine fragments that appear to be ?grass culms. Charcoal includes roundwood and some insect damage.
6766	LYM13	<28>	Pit	Anglo-Saxon Phase 2 (7th century)	10		2												1				Some insect damaged charcoal. Silica fly ash. 1 <i>Aira</i> sp. seed. Fish scale fragment.
6801	LYM13	<39>	SFB 6, Spit 1, Exterior sample	SFB6, Anglo-Saxon Phase 1 (6th century)	10	<5	3												1		p		1 <i>Anthemis cotula</i> . A mineral-replaced seed/?fungal body.
6803	LYM13	<34>	Fill of wall trench cutting SFB6	Timber Hall, Anglo-Saxon Phase 2 (7th century)	20	<5	2																
6805	LYM13	<45>	SFB 6, Spit 2, Interior sample	SFB6, Anglo-Saxon Phase 1 (6th century)	10	<5	3	2	p			p		p					1			p	Mostly barley grain, some hulled, also free-threshing wheat (1 germinated) and oats. 1 <i>Trifolium/Medicago</i> seed. 1 fragment of uncharred <i>Sambucus</i> seed.
6806	LYM13	<46>	SFB 6, Spit 2, Exterior sample	SFB6, Anglo-Saxon Phase 1 (6th century)	10	<5	3	1	p			p											A few barley and free-threshing wheat grains.

Context	Site code	Sample number	Context description	Association	Sample vol (L)	% context (if known)	Charcoal	Grain	Barley	hb	Wheat	nw	hw	Oat	Rye	glb	rachis	culm node	Seeds	Large legumes	Mineral-replaced	Un-charred	Notes (charred unless otherwise stated)
6809	LYM13	<63>	SFB 6, Spit 3, NW Quad	SFB6, Anglo-Saxon Phase 1 (6th century)	10		3	1	p			p							1				Hulled barley and free-threshing wheat grain. Some insect damaged charcoal. Seeds of 1 <i>Rumex acetosella</i> , 1 ? <i>Poa</i> , 1 <i>Chenopodium album</i> .
6811	LYM13	<62>	SFB 6, Spit 3, NW Quad	SFB6, Anglo-Saxon Phase 1 (6th century)	10		2	1	p		p	p										p	A few barley and wheat grain, one free-threshing. 1 uncharred <i>Sambucus</i> seed.
6812	LYM13	<61>	SFB 6, Spit 3, NW Quad	SFB6, Anglo-Saxon Phase 1 (6th century)	10	<5	2	1	p	p													A few barley grain, one clearly hulled.
6814	LYM13	<69>	Wall trench cutting SFB 6, Spit 4, NW Quad	Timber Hall, Anglo-Saxon Phase 2 (7th century)			2	1			p								1	1			1 wheat grain. Charred frags. of concreted ?chaff/seeds. 2 pea/bean cotyledon fragments. 1 <i>Poa</i> seed. Some insect damaged charcoal.
6815	LYM13	<67>	SFB 6, Spit 4, NW Quad fill	SFB6, Anglo-Saxon Phase 1 (6th century)	10		3	2	p		p	p											Mostly barley with some free-threshing wheat grain - preservation fair.
6826	LYM13	<31>	SFB 6 Spit 1, Interior sample	SFB6, Anglo-Saxon Phase 1 (6th century)	10	<5	3												1				1 <i>Atriplex</i> sp. seed.
6826	LYM13	<32>	SFB 6, Spit 1, Exterior sample	SFB6, Anglo-Saxon Phase 1 (6th century)	10	<5	3	1	p														A few barley grain - poorly preserved.
6830	LYM13	<44>	SFB 6, Spit 2, Interior sample - Wall trench fill / redeposited SFB fill	SFB6, Anglo-Saxon Phase 1 (6th century)	10	<5	3	2	p	p				p									Mostly barley, 1 oat seed. Incl. insect damaged charcoal.
6834	LYM13	<43>	SFB 6, Spit 2, Interior sample - Wall trench fill / redeposited SFB fill	SFB6, Anglo-Saxon Phase 1 (6th century)	10	<5	3	4	p	p	p	p	p	p									70% hulled barley, with some grains also twisted. 30% wheat; mostly free-threshing, but 1 or 2 look hulled. 1 or 2 oat seeds. Preservation good to excellent.
6835	LYM13	<42>	SFB 6, Spit 2, Exterior sample	SFB6, Anglo-Saxon Phase 1 (6th century)	10	<5	1	1												1			1 grain indet., 1 legume indet.
6842	LYM13	<57>	Wall trench cutting SFB 6, with redeposited SFB fill.	Timber Hall, Anglo-Saxon Phase 2 (7th century)	10		2	1	p		p	p	p								p		Barley grain - 1 germinated - also wheat grain of which 1 clearly hulled and 1 free-threshing. Incl. mineral-replaced ?fungal bodies. Incl. vitrified charcoal.
6842	LYM13	<186>	SFB 6	SFB6, Anglo-Saxon Phase 1 (6th century)	10	<5	1	1	p														1 barley grain. Incl. vitrified charcoal fragment.
6877	LYM13	<162>	Wall trench fill	Timber Hall, Anglo-Saxon Phase 2 (7th century)	10		2	2	p	p		p			p								1 rye grain fragment plus hulled barley and barley grain fragments. 1 free-threshing wheat grain. Incl. likely <i>Quercus</i> charcoal fragment(s). Grey/yellowish-grey siliceous ash fragments (?slag). Iron smithing spheroid. Fine flint refloated as very silty.

Context	Site code	Sample number	Context description	Association	Sample vol (L)	% context (if known)	Charcoal	Grain	Barley	hb	Wheat	nw	hw	Oat	Rye	glb	rachis	culm node	Seeds	Large legumes	Mineral-replaced	Un-charred	Notes (charred unless otherwise stated)
6919	LYM13	<166>	Pit fill	Anglo-Norman, 12/13th century	40		1	2	p		p	p								2			Barley and free-threshing wheat grain. Also indet. grain and possibly hulled wheat - but preservation very poor (pitting and fragmentation). 1 <i>Vicia faba</i> var. <i>minor</i> and several cf. <i>Pisum sativum</i> cotyledons (no hilums).
6928	LYM13	<118>	Door post	Timber Hall, Anglo-Saxon Phase 2 (7th century)	10		1	1															1 grain indet. fragment
6931	LYM13	<60>	Post pit fill	Anglo-Saxon phase 2 (7th century)	10		1	1															1 grain indet. fragment
6937	LYM13	<51>	Base of hall post setting	Timber Hall, Anglo-Saxon Phase 2 (7th century)	10	100	2	1	p				p										1 fragment of a hulled wheat grain. 1 barley grain. Amphibian bones. Burnt bone.
6965	LYM13	<64>	SW Quad of slag fill	Anglo-Saxon Phase 2 (7th century)	20		2	1			p	p							1	1			Free-threshing wheat grain. 1 pea/bean. Some vitrified charcoal. 1 <i>Trifolium</i> sp. seed.
6987	LYM13	<97>	Wall trench cutting SFB 6	Timber Hall, Anglo-Saxon Phase 2 (7th century)	20		3	2	p	p	p			p					1				2 hulled, twisted barley grain. Also hulled barley, 1 wheat grain and some oat seeds. 1 <i>Poa</i> sp. seed.
7012	LYM13	<124>	Possible 3rd SFB fill	SFB6, Anglo-Saxon Phase 1 (6th century)	2		2	1	p	p									1				1 hulled barley grain and 1 barley grain. 1 <i>Lapsana communis</i> seed.
7014	LYM13	<82>	Post hole associated with slag-filled pit	Anglo-Saxon Phase 2 (7th century)	20		2	2		p	p	p											Mostly free-threshing wheat grain. Also some wheat and indeterminate grain. 1 hulled barley. Incl. <i>Quercus</i> and vitrified charcoal. Fine flot refloated as very silty.
7016	LYM13	<83>	Post hole associated with slag-filled pit	Anglo-Saxon Phase 2 (7th century)	5	50	1	1				p		p									2 free-threshing wheat grain, 1 oat seed. Incl. vitrified charcoal.
7027	LYM13	<119>	Door post	Timber Hall, Anglo-Saxon Phase 2 (7th century)	10		2																1 iron smithing spheroid
7030	LYM13	<107>	Plank ghost	Timber Hall, Anglo-Saxon Phase 2 (7th century)	10		1	1			p	p							1			p	Free-threshing wheat grain, also wheat grain and indet. grain. 1 <i>Mentha</i> sp. seed. Uncharred <i>Taraxacum</i> sp. seed (?recent).
7038	LYM13	<120>	Door post	Timber Hall, Anglo-Saxon Phase 2 (7th century)	10		1												1			p	1 <i>Phleum</i> sp. seed. Uncharred <i>Sambucus</i> sp. seed.
7074	LYM13	<114>	Door post fill	Timber Hall, Anglo-Saxon Phase 2 (7th century)	20		3	1	p										1				1 barley grain fragment and 1 grain indet fragment. 1 Chenopodiaceae endosperm, 1 small ?Poaceae, 1 ?Fabaceae and 1 ?Polygonaceae indet.
7134	LYM13	<129>	Plank slot	Timber Hall, Anglo-Saxon Phase 2 (7th century)	3		1	1	p														1 barley grain and 1 grain indet. fragment.
7136	LYM13	<128>	Plank slot	Timber Hall, Anglo-Saxon Phase 2 (7th century)	3		1	1		p									1				1 hulled barley grain and 1 grain indet. 1 vitrified charcoal fragment. 1 Chenopodiaceae indet. endosperm.
7138	LYM13	<133>	Plank slot	Timber Hall, Anglo-Saxon Phase 2 (7th century)	3.5		1															p	1 uncharred <i>Taraxacum</i> sp. seed (?recent).

Context	Site code	Sample number	Context description	Association	Sample vol (L)	% context (if known)	Charcoal	Grain	Barley	hb	Wheat	nw	hw	Oat	Rye	glb	rachis	culm node	Seeds	Large legumes	Mineral-replaced	Un-charred	Notes (charred unless otherwise stated)
7140	LYM13	<135>	Plank slot	Timber Hall, Anglo-Saxon Phase 2 (7th century)	2		1																
7144	LYM13	<137>	Plank slot	Timber Hall, Anglo-Saxon Phase 2 (7th century)	8		2	1		p		p											1 hulled barley grain and 1 free-threshing wheat grain.
7146	LYM13	<134>	Plank slot	Timber Hall, Anglo-Saxon Phase 2 (7th century)	1		1																
7151	LYM13	<126>	Burnt material in wall trench	Timber Hall, Anglo-Saxon Phase 2 (7th century)	1		2																1 iron smithing spheroid.
7156	LYM13	<130>	Lower fill of slag-filled pit - C7th cess fill.	Timber Hall, Anglo-Saxon Phase 2 (7th century)	40		1	1	p												p		1 charred barley grain and 1 grain indet. Mineral replaced: ++ fish vertebrae (incl. eel), small ?mammal bones, tiny fragments of large mammal bones, amorphous calcium phosphate concretion fragments (from ?dog faeces) with occasional embedded mineral-replaced grass culm fragments. 2 mineral-replaced millipede exoskeleton fragments, 1 fly puparium, 1 earthworm cocoon and 1 ?fungal body.
7164	LYM13	<127>	Upper fill of cess pit	Timber Hall, Anglo-Saxon Phase 2 (7th century)	20		4	1				p								1			1 free-threshing wheat grain, 1 cf. <i>Pisum sativum</i> cotyledon. + iron smithing spheroids. Iron slag fragment.
7166	LYM13	<144>	Corner post hole in wall trench	Timber Hall, Anglo-Saxon Phase 2 (7th century)	2		2																1 fragment of charred concretion.
7209	LYM13	<152>	Wall trench fill	Timber Hall, Anglo-Saxon Phase 2 (7th century)	40		3	2	p	p		p		p					1			p	Mostly poorly preserved barley or hulled barley grain, incl. 1 germinated grain and 1 naked barley grain. A few free-threshing wheat grain and oats. 1 small Brassicaceae indet. seed. Uncharred <i>Sambucus</i> sp. seed.
7288	LYM13	<176>	Cess fill	Timber Hall, Anglo-Saxon Phase 2 (7th century)	40		3	2	p			p		p							p		Equal proportions of barley grain and free-threshing wheat grain, 2 oat seeds. 1 charred fungal theca. 1 mineral-replaced <i>Brassica/Sinapis</i> sp. seed. Fish scale, fish vertebra and mineral-replaced arthropod exoskeleton fragments. Amphibian bone and other small mammal bone. Amorphous calcium phosphate concretions.

A SUMMARY OF THE NATURE OF THE SAXO-NORMAN ANIMAL REMAINS FROM LYMINGE

Matilda Holmes

INTRODUCTION

A moderate assemblage of *c* 5,000 animal bones and teeth from Saxo-Norman features was scanned and catalogued. Bones were in fair condition but highly fragmentary and 944 could be identified to taxa. This is a summary report of the major findings.

METHODOLOGY

Due to various constraints, a modified recording strategy was implemented to assess the nature of the zooarchaeology of Saxo-Norman Lyminge. Each context was scanned, and those with bones and teeth that could be identified to taxon and/ or anatomical element were recorded. A basic method was undertaken. Where possible the element, taxon and state of fusion was recorded for each bone fragment, and each mandibular deciduous fourth premolar or molar was recorded to taxon. Teeth were also given a wear stage following guidelines from Payne (1973) and Grant (1982). Articulated or associated fragments were entered as a count of one, so they did not bias the relative frequency of species present. All other animal remains were recorded as unidentified.

Due to anatomical similarities between sheep and goat, bones of this type were assigned to the category 'sheep/ goat', unless a definite identification (Zeder and Lapham 2010; Zeder and Pilaar 2010) could be made. Horses, donkeys and mules were separated based on tooth morphology (Eisenmann 1986; Johnstone 2006), and dogs and foxes using bone morphology and metapodial measurements (Ratjen and Heinrich 1978). Vertebrae were recorded when the vertebral body was present, and the zygomatic arch and occipital areas of the skull were identified from skull fragments.

Quantification of taxa and anatomical elements used a count of all fragments, NISP (number of identified specimens). Mortality profiles were constructed based on tooth eruption and wear of mandibles (Grant 1982; Jones and Sadler 2012) and bone fusion (O'Connor 2003). Cattle and sheep/ goats were sexed on the basis of pelvis morphology (Davis 2000; Greenfield 2006), and pigs by their canines (Schmid 1972).

TAPHONOMY

Bones were in fair condition but highly fragmentary. Although not quantified, it was noted that a considerable proportion of the assemblage showed signs of canid gnawing, indicating that bones were not buried immediately following discard but were available for dogs to chew. Just over half the teeth recorded were loose, which can also suggest a delay in burial, or post-depositional disturbance, as it takes several months for the tough connective tissue holding teeth in the mandible to break down and cause them to become loose.

There were no obvious deposits of primary butchery, skin-processing or craft-working waste, although a fragment of worked bone was recovered from context 6776, this was bagged separately in Box 7. While butchery marks were not recorded, evidence for skinning came from cattle phalanges with cut marks, and the removal of sheep and goat horn cores from the skull is indicative of either horn working or skinning (Serjeantson 1989). A few primary contexts are implied by the presence of

associated bones that were subject to limited disturbance since deposition. These include loose epiphyses recovered alongside their corresponding metaphyses from contexts 3598, 3398 and 3639, and several associated bone groups:

- Context 3033 — two juvenile cat femurs (left and right side)
- Context 3484 — adult domestic fowl partial skeleton (coracoid, humerus, radius, tibia)
- Context 3590 — adult cat tibiae and femurs (left and right sides)
- Context 3625 — a juvenile sheep partial skeleton (scapula, metacarpal and pelvis)
- Context 3631 — a perinatal sheep/ goat humerus and radius and the ulna and femur of an adult goose
- Context 3640 — a perinatal lamb skeleton, including vertebrae, fore and hind limbs
- Context 6603 — subadult cattle ribs and several cervical and thoracic vertebrae
- Context 6776 — the metatarsal and associated lateral metapodials of an adult horse

THE ASSEMBLAGE

The assemblage was dominated by the remains of the major domesticates (cattle, sheep/ goat and pig), which most likely originated as food waste (Table 1). Other taxa contributing to the diet include red deer, domestic fowl (most likely chicken and including a bantam-sized bird), duck, goose, possibly the gull, and fish that included gadidae (cod family), of which a haddock-sized dentary was identified. Other animals were also present, some of which would have had working relationships with those living at the site, such as the equids (horse or donkey), canids (dog or fox) and cats; some would have been found in the surrounding area such as the passerine (small garden-bird size) and frog/ toad remains. The latter were numerous, testament to a good recovery programme, and indicate that there was a water source close by.

Sheep/ goat and cattle remains were recovered in similar quantities (Table 1), although the larger carcass size of cattle would have provided considerably more beef than lamb. The relatively high proportion of pig remains, identified as over 20 per cent of the major domesticates, is typical of a high-status diet (Holmes 2018, 71). The diversity of food taxa also implies that those living at the site had the ability to procure food from a wide range of sources. The presence of red deer metapodials is typical of elite sites (Sykes 2007), and reflects the consumption of venison, which is also associated with a high-status diet.

The bones of cattle, sheep/ goat and pigs came from all parts of the carcass (Table 2), but there was a bias towards the main meat-bearing limb bones (scapula, humerus, radius and ulna and pelvis, femur and tibia), which suggests that while whole carcasses were processed in the area, additional joints of meat may have been bought in from elsewhere.

Cattle

The mortality data are consistent with a cull of cattle at all ages (Tables 3 and 4), although the tooth-wear data provide more nuance, with peaks of very young animals in the first six months of life at wear stages A and B, subadult animals bred for meat at wear stages D and E, and older animals at wear stages GH, H and J that represent old adult and elderly cattle used for secondary products such as traction, milk and breeding. A single pelvis was complete enough to indicate the presence of a male animal, and pathological changes to another pelvis including eburnation and bone growth may be age-related. A tibia had massive bone growth surrounding the shaft in response to an infection to the upper hind leg, and a third molar was recorded with a reduced posterior column that is a congenital trait.

Sheep/ goats

Sheep/ goats were more likely to be culled at younger ages, with a large proportion of subadult animals culled before the late-fusing bones could fuse (Table 3), and between wear stages C and F (Table 4), which imply that most animals were culled at prime meat age. The presence of a few older animals at wear stages GH and H indicates use for wool and possibly milk and breeding. A sheep horn core had a 'thumbprint' indentation close to the tip, which may be related to a period of malnutrition (Albarella 1995).

Pigs

Pigs were primarily culled for meat, with no old adult animals present (Tables 3 and 4). This is a typical pattern for an animal that has little use for secondary products beyond breeding. Several canines were recorded, four of which came from females and seven from males.

Other mammals

Equids, canids and cats were recorded in low numbers (Table 1), which reflects their presence as non-food animals amongst deposits largely consisting of food waste. An equid mandible was likely to be from a horse rather than a donkey, and several of the canid remains were positively identified as dogs rather than foxes. All equid and canid bones were fused, suggesting that they were adult when they died, being important for tasks such as transport, traction, herding and guarding. One complete dog femur came from a large, robust animal standing *c* 65cm tall at the shoulder, and a complete horse metatarsal was also relatively large for the period, having a wither's height of *c* 1.41m, a horse mandible included a bevel on the second premolar, indicating a bitted animal that would have worn a harness. Several cat bones and teeth were recovered, including adult and juvenile animals.

Birds

Domestic fowl dominated the bird assemblage, the period and morphology of bones suggest that these are all likely to be chicken rather than pheasant or guinea fowl. The absence of medullary bone from broken bones implies that none were in lay at the time of death (Driver 1982), although neither of the two chicken tarsometatarsi were spurred, which indicates the presence of hens (West 1982). Geese were next most commonly recorded, and these were of a size likely to be domestic birds. All the chicken and goose bones were from adult animals, with no evidence for chicks.

SUMMARY

This basic analysis of the animal remains has proved useful for characterising some aspects of Saxo-Norman life in Lyminge. Deposits are typical of the deposition of general refuse, largely made up of the remains of table waste. The relatively high proportion of pigs, red-deer long-bones and diverse bird taxa is consistent with a diet of some status, and the predominance of meat-bearing long bones further implies that those living nearby enjoyed good-quality joints of meat. Much of the meat came from cattle, sheep/ goats and pigs nearing maturity, or young adults, kept purely for meat production. The presence of a few older cattle and sheep/ goats reflects the importance of these animals to the wider economy, for traction, milk, wool and breeding.

The porous bones of perinatal cattle, sheep/ goats and pigs imply that they were bred close by, although it is possible that very young animals were consumed as delicacies. It is also likely that chickens and geese were kept in the area. Wild animals including the deer, duck, gull and fish would have been hunted or bought in. Horses and dogs would also have had roles vital to other aspects of life and may have had close working relationships with those living close by.

Table 1. Species represented from Saxo-Norman contexts. Percentage given of total number cattle, sheep/ goat and pig remains

Taxa	N	%
Cattle	289	38
Sheep/ goat	305	41
Sheep	5	
Goat	3	
Pig	162	21
Equid	15	
Canid	6	
Cat	7	
Red deer	2	
Domestic fowl	21	
Bantam	1	
Duck	1	
Goose	12	
Gull	2	
Passerine	3	
?corvid	1	
Frog/ toad	107	
Gadidae	1	
?haddock	1	
Total identified	944	
Unidentified mammal	3928	
Micro-mammal	1	
Bird	11	
Fish	1	
Total	4885	

REFERENCES

- Albarella, U 1995. 'Depressions on sheep horncores', *J Archaeol Sci*, **22**, 699–704
- Davis, S 2000. 'The effect of castration and age on the development of the shetland sheep skeleton and a metric comparison between bones', *J Archaeol Sci*, **27**(5), 373–90
- Driver, J C 1982. 'Medullary bone as an indicator of sex in bird remains from archaeological site', in Wilson, Grigson and Payne, 251–4
- Eisenmann, V 1986. 'Comparative osteology of modern and fossil horses, half-asses, and asses', in R Meadow and H-P Uerpmann (eds), *Equids in the Ancient World*, 67–116
- Grant, A 1982. 'The use of toothwear as a guide to the age of domestic ungulates', in Wilson, Grigson and Payne, 91–108
- Greenfield, H 2006. 'Sexing fragmentary ungulate acetabulae', in D Ruscillo (ed), *Recent Advances in Ageing and Sexing Animal Bones*, Oxford, Oxbow 68–86
- Holmes, M 2018. *Southern England: A Review of Animal Remains from Saxon, Medieval and Post Medieval Archaeological Sites*, Portsmouth, Hist Engl Res Rep **08/2017**
- Johnstone, C 2006. 'Those elusive mules: investigating osteometric methods for their identification', in M Mashkour (ed), *Equids in Time and Space*, Oxford, Oxbow, 183–91
- Jones, G G and Sadler, P 2012. 'Age at death in cattle: methods, older cattle and known-age reference material', *Environ Archaeol*, **17**, 11–28
- O'Connor, T 2003. *The Analysis of Urban Animal Bone Assemblages: A Handbook for Archaeologists*, York, Council for British Archaeology, The Archaeology of York **19/2**
- Payne, S 1973. 'Kill-off patterns in sheep and goats: The mandibles from Asvan Kale', *Anatolian Stud*, **XXIII**, 281–303
- Ratjen, H and Heinrich, D 1978. *Vergleichende untersuchungen an den metapodien von fuchsen und hunden*, Kiel, AZA
- Schmid, E 1972. *Atlas of Animal Bones*, London, Elsevier Science Publishers
- Serjeantson, D 1989. 'Animal remains and the tanning trade', in D Serjeantson and T Waldron (eds), *Diet and Crafts in Towns: The Evidence of Animal Remains From the Roman to the Post-Medieval Periods*. Oxford, BAR Brit Ser **199**, 129–46
- Sykes, N 2007. 'Taking sides: The social life of venison in Medieval England', in A Pluskowski (ed), *Breaking and Shaping Beastly Bodies: Animals as Material Culture in the Middle Ages*, Oxford, Oxbow, 149–60
- West, B 1982. 'Spur development: recognizing caponized fowl in archaeological material', in Wilson Grigson and Payne, 255–60
- Wilson, B, Grigson, C and Payne, S (eds), 1982. *Ageing and Sexing Animal Bones from Archaeological Sites*. Oxford: BAR Brit Ser **109**
- Zeder, M and Lapham, H 2010. 'Assessing the reliability of criteria used to identify post-cranial bones in sheep, Ovis, and goats, Capra', *J Archaeol Sci*, **37**, 2887–905

Zeder, M A and Pilaar, S 2010. 'Assessing the reliability of criteria used to identify mandibles and mandibular teeth in sheep, Ovis and goats, Capra', *J Archaeol Sci*, **37**, 225–42

INDEX

by Jennifer Foster

Illustrations in **bold**.

- Abbess, Minister-in–Thanet 4, 6
- Abbots Green, excavations 11, 13–14, 41–4
- Æthelberht and Æthelred, relics 37, 39
- Æthelberht coin 100
- Agricultural change 54
- Alberti, Valentin 10
- Alterations to Lyminge church 10, 11
- Altar, Lyminge church 36, **36**
- Anglo-Saxon architecture 7, 8
- Animal bones, Anglo-Saxon 121
- Antiquarian research 3, 27, 39–41
- Antiquary, Canon Jenkins 1, 2, 5, 9–14, **9**, **12**, **13**, 27, 39–41
- Apple/pear seed 117, 118
- Apse 8, 13, **13**, 26, 27, 44
 - Dimensions 45, **45**
- Apsidal chapel 52
- Apsidal church 1, 11, 13, **13**, 15–23, **15–22**, 28
- Arable, monastic 119
- Arcade, triple, Lyminge church 21, 25, **26**, 36
- Archbishop Lanfranc: see Lanfranc
- Arched recess 52
- Archiepiscopal court 54
- Archiepiscopal manor 53, 54–8, **56–8**, 60
- Architecture, Anglo-Saxon 7, 8
- Art installation 5
- Artefacts 23
- Atrium 52
 - Jenkins' interpretation 28, 29, 33
- Augustine, mission 8
- Augustinian priory 37
- Barley 54
 - Medieval 122, 123
 - Norman 121–22
 - prehistoric 117
- Barton Bendish church 38
- Basilica 13, **13**
- Battle Abbey, brick, tiles 96, 97
- Beans, Anglo-Saxon 121
 - Medieval 123
- Bede 38
- Biarnred, moneyer 100
- Binstead stone 39
 - church building 103, **104–5**, 108
- Bird bones 142
- Birds, nesting 28
- Bishop's residence 53, 54–8, **56–8**, 60
 - Jenkins 41, 42
- Bishopstone, Sussex 117, 126
- Bones, animal 140–3
- Bones
 - Anglo-Saxon 121
 - human, dating 111, 115
 - radiocarbon dating 111, **114**, 115
- Bradwell-on-Sea church 37
- Brandon monastery 6
- Brick, Roman, in mortar 44
 - in Norman church 27
 - lack of 28
 - reused 44
- Burials 52
 - medieval and later 14, 18–19, **19**
- Butchery, lack of evidence 140
- Buttress 30
 - Lyminge church 34
 - removal 103
- Cabbage, Norman 121–2
- Caen stone 14, 33
 - church 103, **104**, 106
- Calcified plant material 117–40
- Canon Jenkins: see Jenkins
- Canterbury 51
 - Cathedral 37
 - later Anglo-Saxon churches 33
 - relics to 38
 - see 7
- Canterbury Archaeological Trust 1, 2
- Canterbury-type pottery 43
- Cat 141
- Catholicism, attack on 10
- Catholic revival 9–11
- Cattle 141
- CBM 109
- Cellar 14, **14**
- Cereal grain 54, 123, **124**
 - dating 111, 115–16
- Cess pit, Norman 121–2
- Chaff
 - absence of 118, 119, 121
 - Medieval 122, 123
- Chalk bedrock 15, 19, 29
- Chalk platform 31, 33
- Chambers, flanking 26, 27
- Chancel 8
- Chancel arch, Lyminge church 36
- Chancel, Lyminge church 34, 35, **35**, 103
 - Anglo-Saxon church 17–21, **17–23**
- Charcoal 118, 119, 120, 124, **124**
 - Medieval 122–3
 - Norman 121–2
- Charlbury church 38
- Charred cereal grains **124**
- Charred plant material 117–40
 - Anglo-Saxon 118, 119–20, 121–2
 - Medieval 122–3
 - Norman 121–2
 - seeds 118–21
- Charter, Lyminge 6
- Christianity, Lyminge 2
- Church, Lyminge 3
 - alterations, Lyminge 10, 11
 - Anglo-Saxon, Lyminge 15–23, **15–22**, 27
 - geology 103–10
 - Norman 34–9

- Norman, dating 7
- Norman, secularisation of monasteries 7
- rebuilding 38
- Churchyard, Lyminge 1
 - Jenkins' excavations 1, 11–14, **11–13, 16**
 - modern excavations 14–28, **14–16, 18–22, 25, 28**
- Coarseware pottery 19
 - Medieval 43
- Coastal connections 17
- Cod 141
- Coelnoth, penny 100
- Coins 51
 - Anglo-Saxon 42, **43**
 - Churchyard excavation 100–2
 - coins, churchyard excavation 100–1
 - Medieval 23
 - Post-Medieval 23
- Continuity, site at Lyminge 51–2
 - into Viking age 47–8, 48–9
 - lack of 51–2
- Column 26
 - Reculver 23
 - Oolite 22–23, **23**
- Composition, of mortar 68
- Corn drying 126
- Crop husbandry 125
- Crop processing, monastic 117
- Crosswall 21, **21, 22,**
- Cult site, Lyminge 4
- Cultivation, Saxo-Norman 54
- Curved wall, western apse 31–3
 - date 34
- Cut marks on bones 140
- Dating, Lyminge 4, 6, 44, 48, 49–50, **49–50**
 - Anglo-Saxon monasteries 3
 - by Jenkins 13
 - Medieval bricks 36
 - Norman church 7, 8, 34–5
 - of mortar 7, 16
 - western apse 31, 33–4, **34**
- Dating, OSL 28
 - OSL of church 68
 - OSL of mortar 66–76, **71–6**
 - OSL, church fabric 8
 - OSL, Reculver church fabric 8
- Dating, radiocarbon 111–16, **113–14**
- Defecation 118
- Dendrochronological dating, Woking 37
- Diet, high status, 54, 60, 141
- Diet, monastic 17, 111, **114**
- Dimensions, apse and nave 45, **45**
- Disrepair, Lyminge 55
- Diuna, missionary 38
- Dog 141–2
- Dog gnawing 140
- Donkey 141
- Doorway, western apse 32
- Double house, decline 46
- Dover Archaeological Group 28
- Dunstan, Archbishop 7
- Dutch bricks 96
- Eadburg, St 4–6, 52
- East window, Lyminge church 36
- Ecclesiastical history 9
- Eel bones, Anglo-Saxon 121
- Elite food 141
- End of Lyminge monastery 6, 49, 50
- Equids 142
- Ethelburga, St 1, 4
 - shrine 27
 - niche 104
 - Queen 4, 7, 38
 - tomb 11, **12, 13–14**
- Excavations, Lyminge 48
 - by Royal Archaeological Institute 21, **22**
 - by Jenkins 1, 5, 28–34
 - by University of Reading 1, 3, 5
 - for memorial Garden 28–34, **20, 29, 30**
 - Lyminge churchyard 11–28, **11–22, 25, 28**
- Faeces 125, 126
 - animal, Anglo-Saxon 121
 - Norman 121–2
- Faunal evidence 54
- Fish bones, Anglo-Saxon 121
- Fish, in diet 17
- Fishpond 55, 57
- Flax, absence of 123
- Flint 35
 - coursing, Anglo-Saxon church 16–17, **16**
 - gravel, in mortar 66–8, 83
 - in construction 45
 - use in churches 8, 107–8
 - wall 28
- Flixborough monastery 6
- Fly pupae 121–3, 125–6
- Folk lore 5
- Folkestone 5, 11
- Folkestone Formation 107
- Foundation pier 15, **15, 16, 16, 21, 22, 25**
 - mortar 77
- Foundation wall 28, **28**
 - Abbots Green **42, 43**
 - Memorial Garden 29–32, **30**
- Foundation, Lyminge monastery 4
 - Anglo-Saxon church 15, **15, 16**
- Foundations, nave 23, 25, **25**
- Fowl 141–2
- Frog/toad 28, 141
- Geological analysis, Reculver 8
- Geology, of Lyminge church walls 103–10, **104–6**
- Glass, Anglo-Saxon 42, **43**
- Glastonbury Abbey 5, 9, 37
 - painted wall plaster 95–6
- Goose 141, 142
- Goscelin 11, 13, 14, 27, 38–41, 51–2
- Gothic revival 9
- Great Wakering church 36, 37, 39
- Greensand 35
 - block wall 30–1
- Hagiography 4, 7

- Hampton Court, bricks 96
- Harness, evidence on horse jaw 142
- Harrow-on-the-hill church 36
- Hearth 118
- Heraldry 9
- Historical sources 4
- Horn working 140
- Horse 141, 142
- Human bone, date 111, 115
- Hunting 142
- Hythe Formation 107
- Hythe stone, Christ Church cathedral 45
- Imported stone 8
- Ironstone 35
 - church 106, 108
- Jarrow, painted wall plaster 95, 96
- Jenkins, Canon 1, 2, 5, 9–14, 9, 12, 13, 27, 39–41, 44, 51, 52, 55, 58
 - excavations 11–14, 11–13, 16–17, 28–34
 - interpretation 28–9, 31, 33
 - interpretation, western apse 28–9, 31, 33
 - renovations 40–1, 40–1
 - restoration of church 103, 109
- Kelvedon, St Marys church 36, 37, 39
- Kent Archaeological Society 9
- Kent, Anglo-Saxon churches 8
- Kentish Group churches 1, 3, 8, 16–17, 26–7, 27, 44
- Kentish monastic houses 6
- Kentish Royal Legend 4
- Lamb 141
- Landscapes, medieval monasteries 2
- Landscapes, sacred 5
- Lanfranc 14, 34, 36–8, 52
- Late Saxon, Lyminge 53
- Leipzig, Jenkins' family 10
- Lenham Beds stone 39
 - church building 103–4
 - ironstone 35
 - church 104, 105, 108
- LiDAR 55, 57, 59
- Limestone
 - columns 22–3, 23, 26, 44
 - church building 103, 106, 108
 - imported 8
 - squared blocks 27
- Liturgy, Anglo-Saxon 8
- Lizards 28
- Local traditions 5
- Luminescence dating, Medieval brick 36
- Lutheran, mother of Jenkins 10
- Lyminge
 - Anglo-Saxon church 17–21, 17–23, 55
 - church living 9
 - church, Norman 10, 34–9
 - excavation 1, 2
 - manor 38
 - village 53, 53–4
- Lymnaea* 121
- Mary, St and St Ethelburga, church 1, 3
- Malting, lack of evidence 123
- Marine shell in mortar 16–17, 28, 44
- Marquise Formation 23
- Meat production 54
- Medieval Lyminge 54–8, 56, 59, 60
 - building, Abbots Green 42, 43–4
 - charred seeds 122–3
 - church, geology 103–10
 - coins, churchyard excavation 101
 - landscape, Lyminge 55–8, 57, 58
 - medieval evidence 55, 56, 57
 - monastic landscapes 2
 - residence 55, 56, 57
- Memorial Garden, Lyminge 2, 13, 28
 - excavations for 28–34, 29, 30
- Mercia hegemony 6
- Mercian control 49, 49–50
- Mineral replaced biota: see calcified plant material
- Minster churches 6, 36, 37, 38, 46
 - Lyminge 3, 6
 - Minster-in-Sheppey 6
 - Minster-in-Thanel 4, 6, 52, 53
 - secular 7
 - St Oswald's minster, Gloucester 37, 38
- Molluscs, in diet 17
- Monasteries, Anglo-Saxon, Kent 2
- Monastery, Lyminge 4, 6, 49
 - date beginning 111, 113, 114
 - date end 6, 111, 113, 114
- Mortar 28, 30, 32,
 - analysis 16–17
 - composition 77–85, 77–84
 - dating 7
 - OSL dating 28, 66–77, 71–6
 - Roman reuse 44
- Nave, Lyminge Anglo-Saxon church 23–5, 22, 25
- Nave arcade, Lyminge church 34, 36
- Nave dimensions 45, 45
- New Churchyard (Abbots Green) excavations 41–44, 46, 47
- Niche, created by Jenkins 104
- Niche, south wall 39–41, 39, 40
 - Norman 121–2
- Norman church Lyminge 3, 7, 27, 34–9, 52
 - date 7
- Norman, charred seeds 121–2
- Nunnery, Lyminge 4, 46
- Oats, Anglo-Saxon 118, 119–20
 - Norman 121–2
 - Medieval 122, 123
- Offa 6, 37
- Old Churchyard excavations 11–13, 14–28, 15–20, 25, 28
- Old Minster 1
- Oolite 13, 22
 - squared blocks 27
 - imported 8
- Optically Stimulated Luminescence: see OSL
- Opus signinum* 8, 16, 17, 44
- Organ, Lyminge church 11

- OSL dating 28
 - church fabric 8
 - of mortar 66–76, **71–6**
- Pagham church, Sussex 36, 38, **38**
- Painted wall plaster, red 95–6
- Palaeoecological evidence 54
- Parallel churches 52
- Particle size, of mortar 16
- Pea
 - Anglo-Saxon 118, 121
 - Medieval 123
 - Norman 122
- Pebble aggregate in mortar 28
- Peg tiles 97, 98
- Penny, Coelnoth 100
- Perpendicular, Lyminge church 34, 35
- Phase 1, western apse 30–1, 33
- Phase 2, western apse 32–4
- Pier, foundation 16, **16**, 21, 22, 25
 - chancel crossing 28
 - mortar 25, 77
- Pig 141, 142
- Pilaster 8
- Pilgrimage 5
- Pilgrims Way 109
- Place names 5
- Plant material, monastic 117–40
- Plaster 23, **24**
 - use of 8
- Platform, date, 34
- Porticus 26, 27, 38, 44
- Portland cement 103, **104**, **105**, 109
 - repointing 104
- Postholes, Abbots Green 42, **42**
- Post-Medieval coins, churchyard excavation 101
- Potin coin, churchyard excavation 100
- Pottery
 - Anglo-Saxon, Abbots Green 42
 - coarseware 19
 - Medieval 23
 - Medieval, Abbots Green 43
 - Post-Medieval 23
- Pozzolon mortar 16
- Prehistoric charred seeds 117–8
- Priest's doorway, Lyminge Church 34–5
- Protestantism, Jenkins 10
- Pupae, fly 121–3, 125–6
- Purbeck marble, church 106
- Quarr stone 8, 34
 - use in church building 108
- Quarry pits 55, 57
- Quartz, in mortar 66
- Queen Ethelburga 4, 7
 - relic 37
 - shrine 38
- Quoins 96, 108
 - Norman church 34, 35, 36
- Rabbit disturbance 29
- Radiocarbon dating 49–50, **49**, **50**, 111–16, **113–14**
- Ragstone, church geology 103–4, **104–5**, 106–7
- Raids, Viking 48, 51
- Reading University excavations 1, 3, 5
- Rebuilding, Lyminge church 38
 - western apse 32–3
- Recess 52
 - arched 14, **14**, 39–41, **39**, **40**
- Reconstruction, of Anglo-Saxon church 26
- Rector Canon Jenkins 1, 9, **9**, 10
- Reculver, St Mary church 26, 27, 44
 - columns 23, 26
 - geological analysis 8
- Recycled Roman brick 35
- Red deer bones 141
- Refuse 121, 125–6
 - bones 142
- Relics,
 - Æthelred and Æthelberht 37, 39
 - Anglo-Saxon 8
 - Lyminge 4
 - transfer to Canterbury 38, 52
 - translocation 7
- Relocation of monasteries 48
- Renovations, by Jenkins 40–41, **40**, **41**
- Repair, modern 20, **21**, 22, **22**
- Restoration, Lyminge church by Jenkins 35, 109
- Reuse, Roman building material 8, 39, 41, 44
- Ritual excesses 11
- Rivenhall church 36, 37, 39
- Roman building material 8, 13
- Roman church, interpretation by Jenkins 13, **13**
- Roman brick 22, **22**, 23, 35
 - in Norman church 27
 - in mortar 16
 - lack of 28
 - reuse 8, 39, 41
- Roman building materials 44
 - reuse 27–8
- Roman building techniques 17
- Roman coins, churchyard excavation 100
- Roman occupation, Lyminge 35
- Roman tiles, reused 44, 45
- Romanesque windows, restoration 103
- Romanitas* 8
- Rood stair, church 41, **41**
- Roof tiles, Roman 13
- Royal Archaeological Institute 21, **22**
- Royal Christian centre, Lyminge 17
- Royal saints, Kent 4, 5
- Royal Saxon Way 5
- Rye
 - Anglo-Saxon 121
 - Medieval 122, 123
- Sacred landscape 5
- Sacristy 27
- Saints' cults 4
- Saints, association 55
- Saints, Lyminge 7
- Sandstone, church building 103, 107, **104**, **107**
- Saw, used for stones in church 103, 108
- Saxo-Norman, Lyminge 53–4, 58

- boundary 58, 58
- Scott, George Gilbert 9
- Sculpture, Anglo-Saxon pillar 22–3, 23
- Selborne Priory, painted wall plaster 96
- Selethryth, abbess 6
- Settlement
 - Lyminge, Norman 7
 - Tayne Field 51
- Sheep/goat 140, 141, 142
- Shell, in mortar 16, 17, 28, 78, 79–80, 84, 80–81
- Shifting of settlement 48–9
- Shrine, Lyminge 4, 5, 52
 - Ethelburga 38
 - Pre-Conquest 39
- Silver coin, Coelnoth 100
- Skin processing, lack of evidence 140
- Skinning 140
- Snails, Anglo-Saxon 121
- Source, of stone 109
- St Augustine, mission 8
- St Augustine's Abbey, Canterbury 37, 38, 53
- St Eadburg, relics 37
- St Ethelburga 1, 4
- St Gregory's Priory, Canterbury 36, 52
- St Martin, Chipping Ongar 35
- St Mary and St Ethelburga church 1, 3, 9, 34–9
 - geology 103–10
- St Mary, Brook church 35, 36
- St Mary, Reculver 26, 27, 44
 - geological analysis 8
- St Marys, Deerhurst, plaster 95
- St Oswald's minster, Gloucester 37, 38
- St Pancras, Canterbury 26, 27, 27, 45
- St Saviour Christ Church 33
- Stable isotope analysis 49–50
- Steps in bedrock 30, 32–3
- Stinking mayweed
 - Anglo-Saxon 120
 - Norman 122
 - prehistoric 117–19
- Stone block wall 33
- Stonework, carved 33
- Sunken floored buildings 118
- Tatton-Brown, Tim 28
- Tayne field 54
 - dates 111, 113, 114
 - excavations, radiocarbon dating 111, 114
 - settlement 51
- Teeth, animal 140–4
- Terraces, Medieval 55, 57, 57
- Theology 9, 10
- Thin-section, of mortar 77, 78, 167
- Timber frame 31–2
- Timber halls 5
- Tomb recess, Lyminge church 35
- Tomb, St Ethelburga 38
- Tooling, on quoins 35
- Tower, Lyminge church 35–6
 - late Saxon 52
 - possible 33
- Tower, use of ragstone 107
- Trackways, Medieval 55, 57, 58
- Trade, monastic 117
- Triple arcade 25, 26, 44
- Two-cell church 34, 36, 36, 37
 - Norman 34
 - plan 44
- Undercroft 29, 30, 33
 - date 34
- University of Reading excavations 1, 3, 5
- Vaulted cellar 14, 14
 - Jenkins' interpretation 33, 345
- Vestry, Lyminge church 35
- Vicia faba*
 - Anglo-Saxon 121
 - Medieval 123
- Victorian restoration, Lyminge church 35
- Viking raiding, Kent 6, 7
- Vikings 46–8, 51
- Wall plaster 23, 24, 27–8
 - Medieval 43, 43
 - painted 95–6
- War Memorial 41, 42
- War memorial trench, coins 101
- Wearmouth, painted wall plaster 95, 96
- Weed flora 54
- Weed seeds 125
 - Anglo-Saxon 117, 118, 119–21
 - Norman 121–22
- Wells, saintly associations
- Western apse 28–9, 31, 33
- Wharham Percy church 38
- Wheat 54
 - Anglo-Saxon 118, 119–20, 122
 - Medieval 122–3
 - Norman 121–2
 - prehistoric 117
- Wild seeds, Medieval 123
- Winchester Cathedral 37–8
- Windows, Lyminge church 34, 35, 35–6
- Woking church 36, 37, 39
- XRF, of mortar 16, 77–9