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# Lesnes Abbey, Bexley, Greater London: An Archaeological Survey of Selected Areas of the Abbey Grounds

Lawrence Rees

(with contributions from Sarah Newsome)

Discovery, Innovation and Science in the Historic Environment



**LESNES ABBEY, BEXLEY, GREATER LONDON:**  
**AN ARCHAEOLOGICAL SURVEY OF SELECTED AREAS**  
**OF THE ABBEY GROUNDS**

Lawrence Rees  
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## **SUMMARY**

Between September 2018 and January 2019 Lawrence Rees (Chartered Institute for Archaeologists Specialist Placement) and Sarah Newsome (Historic England) undertook a project to research the landscape of Lesnes Abbey, Bexley, Greater London as a training exercise and as part of preliminary work to address some of the oldest scheduled monument entries on the National Heritage List for England. The project involved the examination of secondary documentary sources and historic maps, aerial investigation of the wider abbey site and targeted analytical earthwork survey of three areas of the abbey grounds. The research has enabled the authors to identify and survey the possible site of the dovecot, survey Second World War activity adjacent to the abbey and record the 17th-century farm site located to its south-west. It has also highlighted the potential significance of the barn platform to the north-east of the abbey, where Clapham's interpretation of the barn as a late monastic building has been largely substantiated.

## **CONTRIBUTORS**

The aerial investigation was undertaken by Lawrence Rees under the supervision of Edward Carpenter (Aerial Investigation and Mapping, Historic England). The analytical earthwork survey was carried out by Lawrence Rees and Sarah Newsome (Historic Places Investigation Team, Historic England). The report was produced by Lawrence Rees with contributions from Sarah Newsome and graphics support from Sharon Soutar. Desktop publishing was undertaken by Rachel Forbes.

## **ACKNOWLEDGEMENTS**

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## **ARCHIVE LOCATION**

The project archive is located at the Historic England Archive, Swindon.

## **DATE OF SURVEY**

September 2018 – January 2019

## **CONTACT DETAILS**

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## ABBREVIATIONS USED IN REPORT

BGS	British Geological Survey
BL	British Library
CIfA	Chartered Institute for Archaeologists
GLHER	Greater London Historic Environment Record
GNSS	Global Navigation Satellite System
HEA	Historic England Archive
LCC	London County Council
LMA	London Metropolitan Archives
NGR	National Grid Reference
NHLE	National Heritage List for England
NRHE	National Record of the Historic Environment
OCN	Old County Number
SSSI	Site of Special Scientific Interest
TNA	The National Archives





# INTRODUCTION

## Background to the project

Lesnes Abbey was a small Augustinian abbey of the Arrouaisian order, founded in 1178 by Richard de Luci, Chief Justiciar of England. Documentary evidence suggests that it was a relatively modest institution, which at times struggled financially due to the cost of managing the marshes to the north of the abbey and misgovernance by successive abbots, though some periods saw considerable investment. It was dissolved in 1525 on the orders of Cardinal Wolsey. Immediately after the dissolution of the abbey, it is thought the abbot's lodging was converted into a house of some status. Ownership of the abbey site passed to Christ's Hospital School in 1633, after which it was managed as a tenant farm until the 1930s. It is situated immediately south of the former Erith Marshes and is now owned by the London Borough of Bexley and maintained as a public park along with Abbey Woods.

Lesnes Abbey was identified by Jane Sidell, Inspector for Ancient Monuments, as requiring further investigation during initial discussions for an Historic England project to enhance entries that are known on the National Heritage List for England (NHLE) as the Old County Numbers (OCNs). This aimed to bring some of the earliest scheduling entries for monuments up to modern standards. Lesnes Abbey was not considered suitable for that project as its schedule entry had already been subject to a minor amendment in 2015. However further investigation of the site was considered beneficial, as the current scheduled area only covers the site of the church and main claustral range, with other elements of the precinct, that may be of national significance, not fully understood.

Features noted before formal investigation began included possible surviving elements of the precinct boundary, as well as earthworks to the north-east, north-west and south-west of the scheduled area. The aim of this project was to increase understanding of the abbey and its immediate landscape setting through a literature review, aerial investigation and mapping, and analytical earthwork survey, in order to inform a potential designation review and to support management and interpretation of the site.

## Location and extent

Lesnes Abbey is situated in the London Borough of Bexley, about 15km east of central London, with the scheduled area centred on NGR TQ 4790 7881 (Figs 1 and 2). Until the 20th century, Lesnes Abbey was in the parish of Erith, in the county of Kent, and occupied a relatively remote position to the south of Erith Marshes on the southern bank of the Thames, just under 3km from the river. Prior to development in the late 19th and 20th centuries, urban settlement did not extend into Erith Marshes, but largely consisted of dispersed farms and cottages, aside from a small settlement at the crossroads of Knee Hill Lane and Abbey Road to the north-west of the abbey site, and the village of Belvedere to the south-east of Abbey Woods.



Figure 1: The location of Lesnes Abbey. (© Crown Copyright and database right 2019. All rights reserved. Ordnance Survey Licence number 100024900). Image: Sharon Soutar.

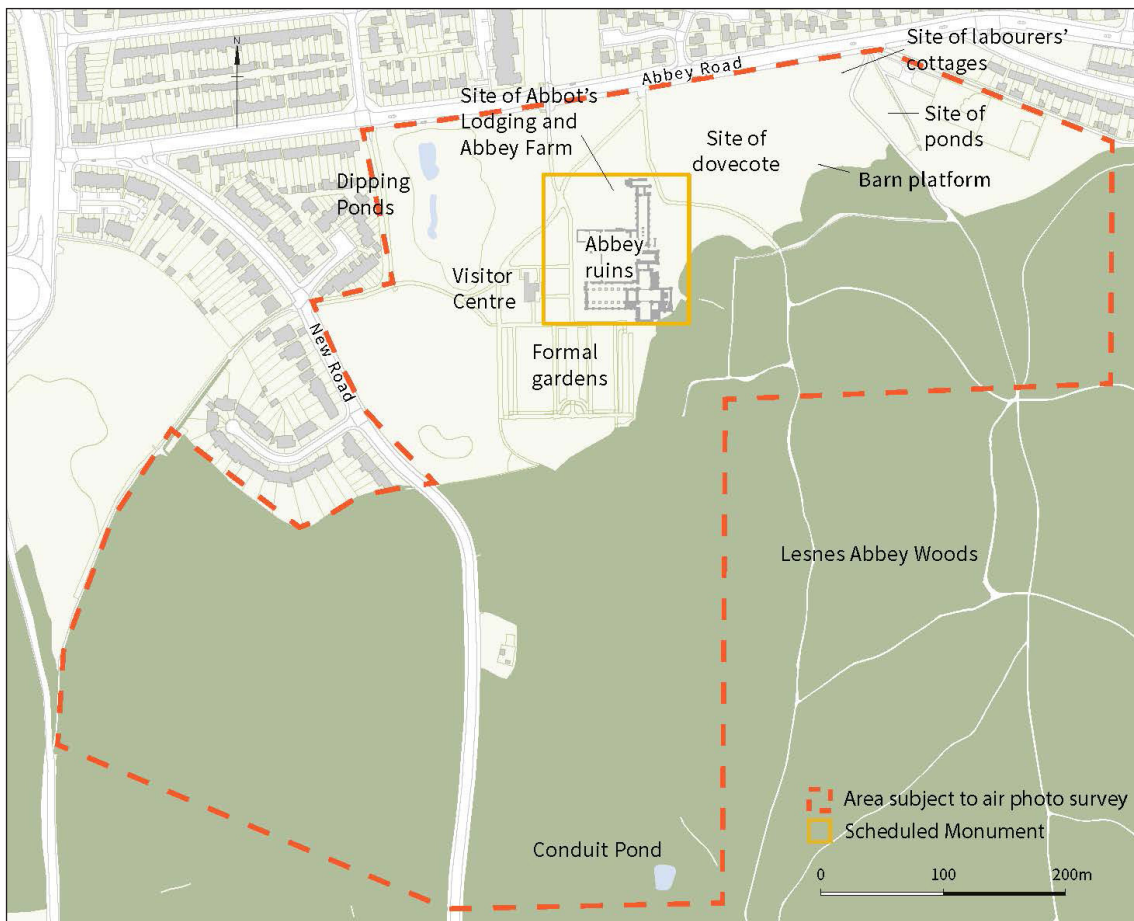


Figure 2: Lesnes Abbey, with the scheduled area shown in yellow, the extent of the aerial photographic survey shown in orange and various locations of interest labelled. (© Crown Copyright and database right 2019. All rights reserved. Ordnance Survey Licence number 100024900). Image: Sharon Soutar.

Today the site consists of surviving low walls that mark the arrangement of the abbey buildings with the claustral buildings located to the north of the remains of the abbey church. To the west of the abbey church are the modern visitor centre built in 2016 and an entrance drive from New Road. To the south of the abbey ruins are formal gardens laid out in the 1930s, beyond which the ground rises up into Lesnes Abbey Woods. To the east the ground rises up sharply beyond the monastic buildings, whilst to the north it drops towards Abbey Road, the Thamesmead estate and the Thames. To the north-west of the abbey are the 'Dipping Ponds', whilst to the far north-east is a modern playground and tennis courts (Fig 2).

The project focused on the area broadly thought to represent the abbey precinct and its immediate hinterland (Fig 2). This is loosely defined by Knee Hill Road to the west, Abbey Road to the north, Elstree Gardens to the east and the northern boundary of Abbey Woods to the south of the scheduled area. Abbey Woods was not subject to systematic survey south of the historic bank and ditch boundaries which survive, due to the large areas concerned, the intensity of post-medieval industrial activity (particularly quarrying) and the problems of undertaking archaeological survey in dense woodland within a limited time-frame. However aerial photographic and lidar sources were used to record the Conduit Pond located 450m to the south of the abbey (Fig 2).

## **Heritage Designations**

The abbey is a Scheduled Monument (NHLE 1002025) and all the standing abbey fabric within the scheduled area is also Listed at Grade II (NHLE 1359415). The scheduled area was designated in 1930, and measures 120m by 120m. It covers the site of the church, cloisters, chapter house, dormitory range, latrine, refectory, and the site of the kitchens and abbot's lodging (Figs 2 and 3).

## GEOLOGY, TOPOGRAPHY AND MODERN LAND USE

All of the area investigated forms part of Lesnes Abbey Woods, a public park owned by the London Borough of Bexley.

All measured ground survey was undertaken in the northern part of the site, which is managed as open parkland and is primarily mown grass with some specimen trees. Some areas have rough low vegetation such as longer grass and brambles. The site of Orchard Cottage and Farm has mature planting that includes an established bed with ornamental shrubs.

To the south of this open parkland, Lesnes Abbey Woods is characterised by ancient woodland and former coppice, with a large number of chestnut stools still evident. Its ecological value was first studied in detail in 1925 and it is designated as a Local Nature Reserve and a Site of Special Scientific Interest (Marriott 1925; Natural England 2018a; Natural England 2018b). Abbey Woods is designated as a Site of Special Scientific Interest (SSSI) as a result of its geological deposits, including part of the Blackheath fossil bed (Natural England 2018b), an Eocene deposit rich in fossil shark teeth, shells and fish, mammal and bird remains.

The abbey remains are located on a level river terrace with the ground rising into Lesnes Abbey Woods to the south and dropping away to towards the Thames to the north. The local topography is characterised by several shallow dry valleys running north-south across the river terrace. The site is geologically complex with numerous localised variations. To the north, the bedrock is the Cretaceous Lewes Nodular Chalk Formation. Further south, the ground rises onto a ridge of different bands of Palaeogene deposits of sand, silt, clay and gravel, including the Thanet Formation and Lambeth Group, but primarily the Harwich Formation of sand and gravels (British Geological Survey 2018).

The evidence for relatively small scale extraction can be seen throughout the study area, including at, possibly, the 'Dipping Ponds' (Fig 2) to the north-west, and several deneholes (vertical shafts probably dug to enable the extraction of chalk) and gravel pits within Lesnes Abbey Woods.

## DOCUMENTARY EVIDENCE FOR THE HISTORY OF THE SITE

### Pre-Monastic Activity

Though the Thames river terraces were heavily exploited during the prehistoric and Roman periods there is little evidence for activity of this date around the monastery. Within the immediate environs of the abbey, the principal work for the pre-monastic periods has been undertaken by Tony Thomas who has extrapolated a Roman landscape from limited excavations and a small amount of dateable material found on site (Thomas in prep, 237-244). Beyond the outer precinct of the abbey, around 600m to the south-east, there is what appears to be a bowl barrow (NRHE 407899; GLHER 070428/00/00), described by F C J Spurrell as a 'crematory' based on his excavations in the very late 19th century (Spurrell 1889, 308) and assumed to be Bronze Age in date. Further excavations of the barrow by Elliston-Erwood revealed a mound 51-52 ft (around 15m) in width with a surrounding ditch and a few burnt flints (NRHE 407899). Thomas also notes two more mounds in his survey work, 'To the south and east, two smaller heavily truncated mounds and outer ring ditches can still be seen' (Thomas, in prep, 23; 216). This location was not visited as part of this project and only the mound excavated by Spurrell can be identified on the lidar.

At Domesday, the manor of 'Lessness' was held by Robert Latimer from Odo, Bishop of Bayeux (Morgan 1983, 5, 19). Clapham (1915, 2) states that the 'church and manor of Lesnes' came into the hands of Richard de Luci during the reign of Stephen (1135-1154) based on documents held in the Bodleian Library, though it is not clear exactly where the church and manor were located in relation to the later monastic foundation. The abbey later fell within the parish of Erith, though Erith is not mentioned in the Domesday Book and the relationship between the manor of Lesnes and Erith prior to the foundation of the abbey is unclear.

### Monastic History

An extensive review of the monastic history of Lesnes features in Alfred Clapham's volume on the early 20th-century excavations and therefore the abbey's history will only be summarised here (Clapham 1915). The summary will focus on items relevant to the abbey landscape.

The abbey was founded by Richard de Luci, justiciary of England, in 1178. It has been suggested that the dedication of the church to St. Thomas the Martyr (along with St Mary) may indicate that the abbey was partly established as de Luci's penance for his involvement in the murder of Thomas Becket, as with the refounding of the abbey at Waltham (Clapham 1915, 2). Its location, close to the edge of Erith Marshes, may have been influenced by a monastic desire for relative remoteness. Before his death in the following year, de Luci endowed the abbey with considerable lands at Erith and the advowsons of two churches. His descendants gifted further churches to the abbey.

The abbey was affiliated to a branch of the Augustinian Order known as the Arrouaisian (or Arroasian) Order, which followed the Augustinian rule but developed

distinct organisational and liturgical practices. This affiliation may have been established on its foundation or may have occurred slightly later, probably under Fulc, the second abbot, in 1197 (Flanagan 1980, 223; Clapham 1915, 7; Knowles and Hadcock 1971, 164).

In the 13th century there is documentary evidence that the abbey was involved in the reclamation of the nearby marshes and the maintenance of river walls (Clapham 1915, 11-12). In 1280 the Abbot of Lesnes was granted the right of free warren in 'all his demense lands of Lesnes, Tong and Acolt' (ibid, 12; NB 'Acol' in Page (1926, 165-67)), Tong and Acol being in North Kent, giving him the right to take small game across these areas. Ecclesiastical taxation records from 1291 suggest that the abbey also maintained a ferry across the river (ibid, 13).

By the end of the 13th century there were signs that the abbey was not being run to strict monastic rule, a situation that would affect its finances in the following century. Both Archbishop Peckham in 1283 and Archbishop Winchelsea in 1299 issued injunctions against the abbey, which included stipulations regarding financial management, the order that flesh should be eaten in the common refectory rather than chambers, and that nuns should on no account pass the night in the cloister (Page 1926, 165-7).

The first half of the 14th century appears to have been a tumultuous time at Lesnes with the need to maintain the abbey and the river walls creating mounting financial pressure, for example 160 marks was needed for repairs to the abbey church in 1336 which had 'by sudden chance become ruinous' (Clapham 1915, 15). In 1340 there appears to have been gross misgovernance on the part of the abbot (Page 1926, 165-7) and in 1344 the then abbot, John of Hoddesdon, was removed from his post for, amongst other things, being 'disobedient, rebellious and incorrigible' and 'wasting the goods of the Convent' (Clapham 1915, 15). The debts incurred by the abbot may have had a lasting effect on the abbey's finances; there are many documentary references to the abbey's heavy debts through the 1340s and 1350s (Clapham 1915, 16). In 1349 the abbey was apparently found to be 'so destroyed that it seemed as though it could hardly be repaired by the Day of Judgement' (Page 1926, 165-7). However the abbey's financial situation may have improved as in 1371 it appears that the Lady Chapel underwent a programme of enlargement (Clapham 1915, 18), though the repairs may have been funded by a specific endowment.

In contrast, in 1383 one William de Kelleshell, fishmonger, asked to be buried in the churchyard at the abbey and signed the will 'at my mansion house within the Abbey of Lesnes' (Clapham 1915, 19) perhaps reflecting the need of the abbey to raise funds by renting out buildings to lay people. The renting out of buildings within the immediate vicinity of the abbey continued into the early 16th century, with documentary evidence for leases of barns, yards and buildings adjoining the gatehouse in 1516 and a reference to a Richard Clement being granted a 'residence within the close called the upper gatehouse' in 1519 (ibid, 29).

Page (1926, 165-167) states that by the beginning of the 15th century the abbey had 'fallen into a bad state of impoverishment and debt through the misgovernance of

the abbots' and that on 1 February 1402 the king gave the management of the abbey to the Prior of Christchurch, Canterbury in order to address the situation. Though the abbey's revenue at the time was £217 10s 0d (Clapham 1915, 18) large amounts seem to have been used to relieve debts and when Abbot Adam Say died in 1460 the abbey still had debts of £199 3s 4d (ibid, 21).

The appointment of the last abbot, William Tysehurst, in 1514 was followed by a significant amount of building at the abbey. £56 was spent on new work to the kitchen, larder, slaughterhouse, the entry, the frater, the abbot's camera, the cloister, the church, a lime kiln and a new fence around the monastery. In particular £16 5s 4d was spent on a new barn (Clapham 1915, 28; TNA C 142-76/77). Clapham (1915, 56) excavated evidence immediately west of the cloister which he ascribed to this new phase of building.

### **Layout of the monastic complex**

Most of what is known of the layout of the abbey was recovered during Clapham's excavations and is visible on the large site plan in the rear of the 1915 volume (see Fig 3) as well as on the ground. The plan shows that the abbey church is located to the far south of the excavated monastic complex, with the cloister located to the north-west of the church. There is no clear topographical explanation for the unconventional siting of the cloister to the north of the church but it appears to adopt the layout of Lesnes's mother house, Holy Trinity, Aldgate, which also followed this plan (Clapham 1915, 3). Millard (1916, 298) notes other foundations with cloisters to the north of the abbey church (Buildwas and Dore) and suggests the arrangement is related to the practicalities of drainage on the site.

According to Clapham's plan, extending from the north transept of the church on the east side of the cloister, were the sacristy, chapter house, parlour, dormitory, warming house and, to the far north, the latrines. On the north side of the cloister was the refectory and the kitchens. To the west of the kitchens was a covered walkway (pentise) which, according to Clapham, replaced an earlier building in the 13th century. What Clapham interpreted as a brew house was built on this side of the cloister in the 15th or early 16<sup>th</sup> century. In a similar period the abbot's lodging was built, or rebuilt, to the west of the northern end of the dormitory (Figs 2 and 3). Based on his excavations, Elliston-Erwood went as far as describing the 14th- and 15th-century rebuilding as 'a complete reorganisation of the domestic side of the Abbey life following the destruction of the western range' in a letter dated 1956 (LMA SC/SS/07/012/035). To the east of the chapter house and parlour was a passage that led to the infirmary which was built (or rebuilt) in the 13th and 15th/early 16th centuries. A lady chapel was also added to the south of the chancel in the late 14th century. The east wall of the chancel and lady chapel and all of structures associated with the infirmary appear to have been dug into the rising ground to the east. Clapham (1915) also marks the location of the 'Canons' Cemetery' to the north-east of the church, but any evidence on which this is based is not recorded.



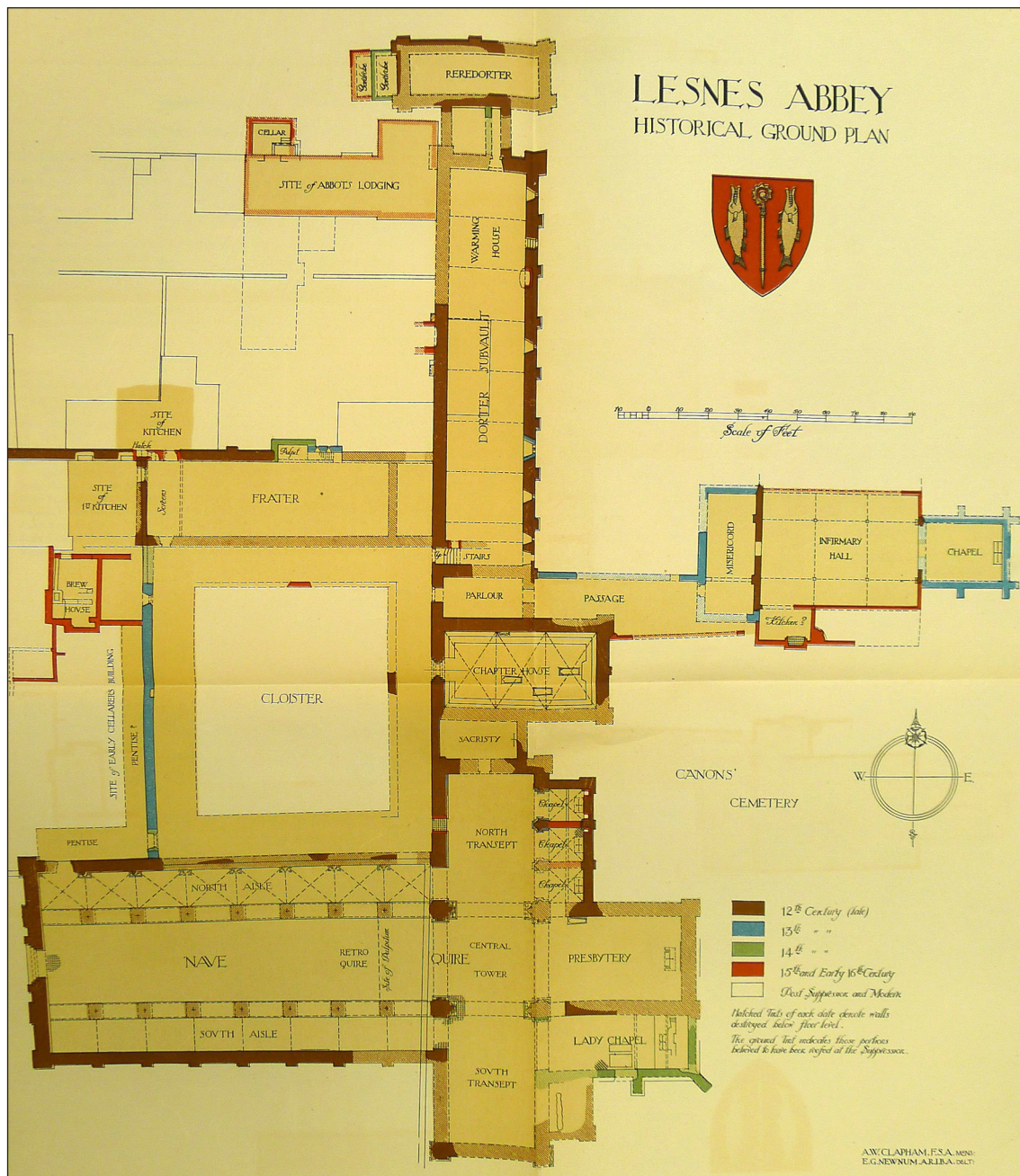


Figure 3: 'Lesnes Abbey Historical Ground Plan' as interpreted and published by Clapham in his 1915 volume on the excavations.

### The monastic precinct at Lesnes

The typical monastic layout comprised an inner precinct (or inner court) containing the church, claustral range, guest accommodation, bake house, and granary, and an outer precinct (or outer court) with less restricted access containing agricultural and industrial functions (Coppack 1990, 100). Defining the exact extent of the monastic precinct (or precincts) at Lesnes is difficult due to a lack of physical, documentary or excavated evidence and the effects of 20th-century urban development in the immediate environs of the abbey (Figs 2 and 5). It is not clear whether both an outer precinct and inner precinct were demarcated. The physical definition of a more

extensive outer precinct may have been less significant than at other Augustinian houses, particularly those adjacent to or within settlements, because of the relative isolation of Lesnes. It also may not have been in keeping with a relatively small foundation.

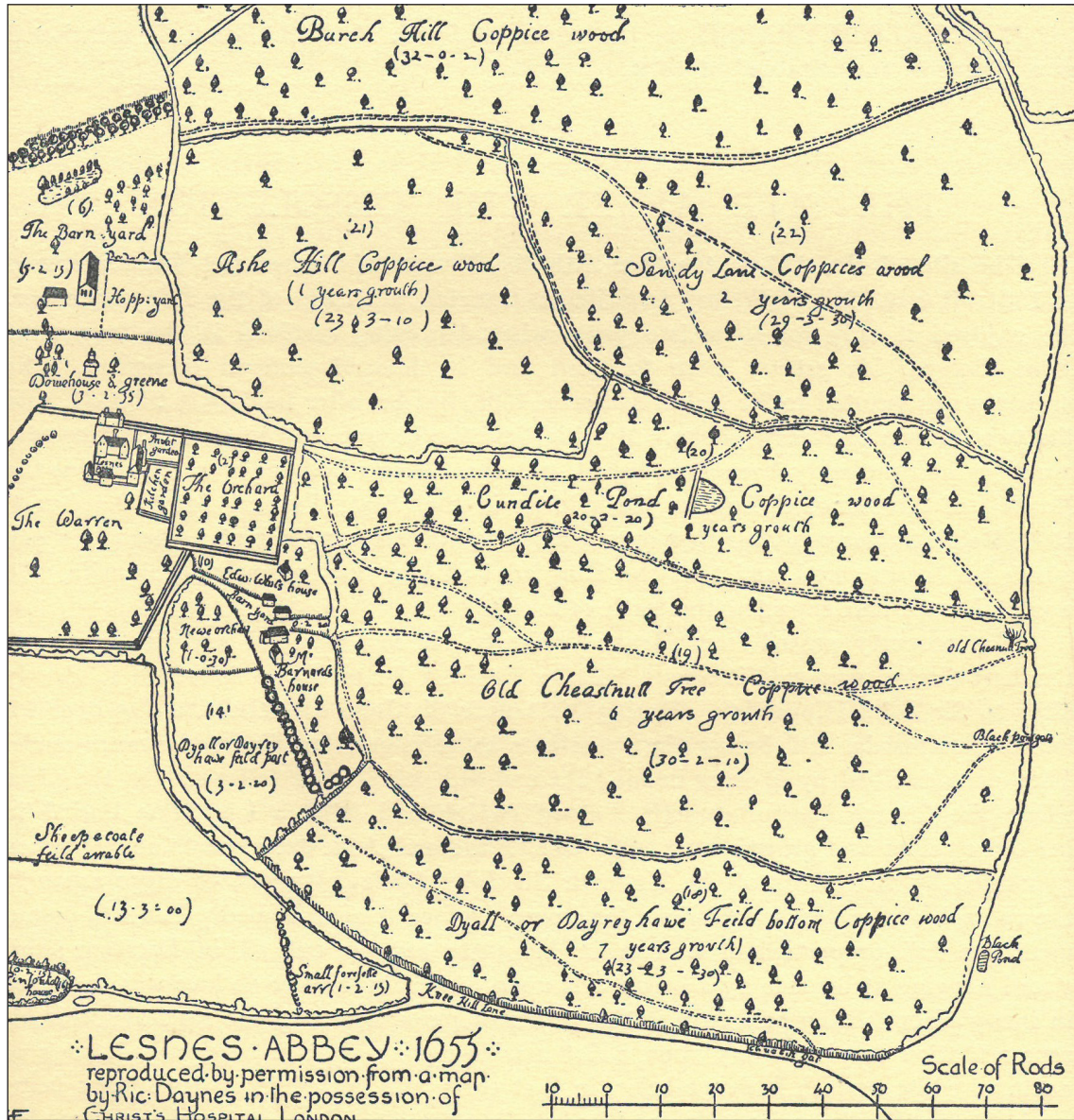


Figure 4: A copy of part of a map of the Lesnes Abbey estates produced by Richard Daynes for Christ's Hospital in 1655. The original remains in the Christ's Hospital collection of the London Metropolitan Archives (CLC/210/H/094/MS22639/037). Reproduced from Clapham (1915; 38). North is to the left of the image and has been cropped.

One of the most significant cartographic sources for the site (and particularly the potential extent of the monastic estate and monastic boundaries) is a plan produced by Richard Daynes in 1655 for Christ's Hospital showing their estates in the surrounding area, entitled:

‘An exact platt & description of ye. mannor house and lands belonging to Lesney and Faunts lying & being within the parishes of Erith & Bexley in ye. county of Kent being ye. donation of Thomas Hawes of London, salter, unto the maior, commaltie & citizens of ye. Citie of London governors of ye possession revenews of the hispitalls of Edward King of England ye. sixt of Christ, Bridewell & St. Tho. ye. Appostle’.

The original is held within the Christ’s Hospital Collections at the London Metropolitan Archives (LMA CLC/210/H/094/MS22639/037), alongside a survey of Abbey Wood for Christ’s Hospital, showing the coppice compartments, ‘corrected in 1791’ but potentially drawn at an earlier date (LMA CLC/210/H/048/MS22636/020B). A poor quality copy of the original 1655 map was reproduced in the London County Council guide to the site in 1961 (LCC 1961, 14-15), and a detail from it was redrawn as a line drawing for Clapham’s publication and is reproduced in this report (1915, 38; Fig 4). Comparison to the original suggests that this redrawn map is accurate with the possible exception of the depiction of the buildings within the core of the abbey ruins.

At the time the Daynes plan was produced in 1655 (Fig 4), the site of Lesnes Abbey was within a large area of single ownership, now broadly defined by the modern Abbey Road (B213) to the north, Knee Hill Lane (A2041 and the former boundary between the parishes of Erith and Plumstead) to the west, the Woolwich Road (A206) to the south, and St. Augustine’s Road/Heron Hill to the east. This could represent a survival of the pattern of monastic land ownership, fossilised in later land boundaries, but it is not clear whether this can be seen as equivalent to an outer precinct. Though lacking solid evidence, it seems possible that a compact (inner?) abbey precinct may have encompassed the areas later known as ‘The Orchard’ and ‘The Warren’ (see Figs 4 and 5).

#### Northern boundary of precinct

The northern boundary of the precinct may have followed the line of the current Abbey Road, which separates the former marsh to the north from the steeply rising ground to the south. Clapham (1915, 40-41; [A] on Fig 5) noted that boundary walls, that he supposed to have been surviving elements of the precinct wall, were standing along this road ‘within living memory’. He also noted that possible foundations of a precinct wall were noted when the roadway was widened for trams. Clapham (1915, 42) quotes an early 16th-century indenture which suggests that a gatehouse may have been located along the northern boundary, possibly where the farm entrance was at that date, as the lease includes the land around the barn and a ‘chamber set on the east side of the Porter’s Lodge of the Gate House’ (Fig 2 and [B] on Fig 5).

#### Western boundary of precinct

The western boundary of the precinct may have run north-south to the west of the Dipping Ponds where a substantial walled boundary is shown on the Daynes plan of 1655 (Fig 4; Fig 5 [C]). This wall is also marked as the precinct boundary on the Stukeley plan of 1752 (Clapham 1915, Pl III; Fig 6), though its course is depicted with some artistic licence.

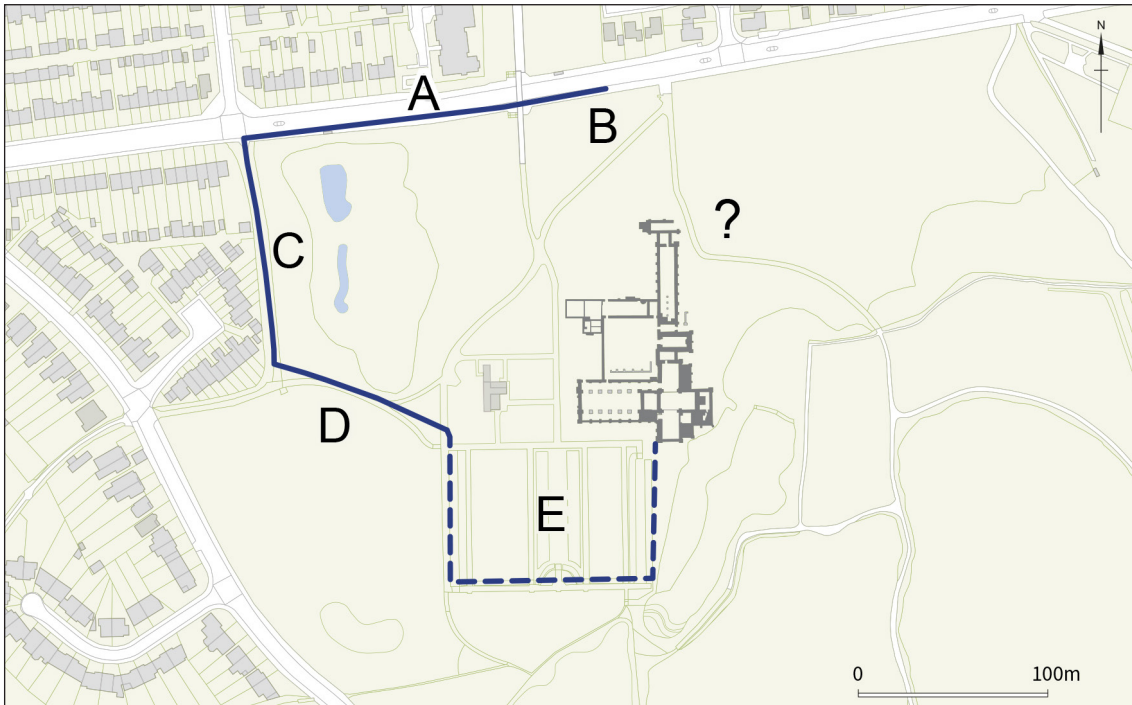


Figure 5: Tentative interpretation of the possible precinct boundary at Lesnes Abbey based on aerial, cartographic and documentary sources. The letters refer to locations mentioned in the text. Image: Sharon Soutar. © Crown Copyright and database right 2019. All rights reserved. Ordnance Survey Licence number 100024900.

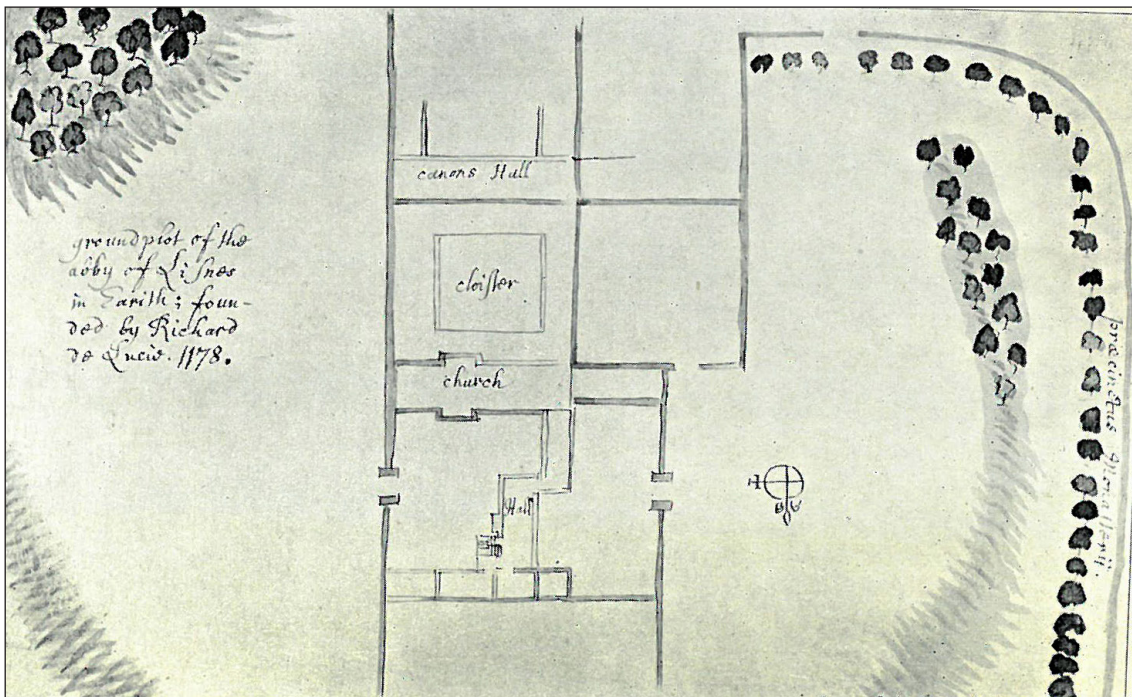


Figure 6: Sketch of the abbey site entitled “Groundplot of the abby of Lisnes in Earith; founded by Richard de Lucie. 1178” by William Stukeley dated 1752 showing what may have been an original entrance into the precinct to the south-west (top-right) of the ruins. The monastic precinct “praecinctus monasterii” is labelled to the west (right). (Taken from Clapham 1915, Plate III). NB North is to the bottom of the image and the church is labelled in the wrong location.

### South-western boundary of the precinct

The western boundary of the precinct may then have turned south-east, running along the causeway towards the site of the modern visitor centre (Fig 2). A continuation of the substantial wall forming the western boundary of the Warren is shown in this location on the Daynes plan (Fig 4). A second possible gatehouse mentioned by Clapham (1915, 42) may have been located close to the entrance shown on this stretch of wall on the Stukeley plan of 1752 (Clapham 1915, Pl III; Fig 6; [D] on Fig 5). The possibility of a gatehouse in this area may have influenced Thomas's (in prep 110-11) interpretation of excavated features in this location (NGR TQ 47919 78905) associated with the adjacent raised trackway running south-west to the post-medieval farm site. However, there is insufficient evidence to extrapolate the existence of a substantial gatehouse structure and no evidence of a direct relationship between the excavated features and the trackway. Thomas also excavated a wall foundation which he believed to be part of the south-western stretch of precinct boundary wall.

### Southern boundary of precinct

It is hard to be confident about the southern boundary of the precinct based on the available evidence. The area shown as 'The Orchard' on the Daynes plan (Fig 4; [E] on Fig 5), may have been part of the conventual space, given that a significant portion of the abbey church, the most important building in the monastic complex, seems to have been located in its north-western corner. 'The Orchard' appears to be bounded by a substantial wall on the 1655 plan. Clapham (1915, 61) described the then surviving garden and orchard walls as of early 17th-century date and containing architectural fragments from the abbey but it is not clear whether they were aligned on earlier monastic boundaries.

Though it is unclear exactly how the cemetery, discovered in the construction of the visitor centre to the west of the abbey buildings, relates to the later orchard enclosure, it is unlikely that this was external to the precinct (cf Thomas in prep 43). Lay cemeteries, such as this appears to be, were 'usually found on the side of the church away from the conventual buildings and close to the principal gate into the precinct' (Gilchrist and Sloane 2005, 32). Whether any part of the later orchard had origins in the medieval period is unknown, although there are examples of orchards and gardens that formed part of monastic inner precincts, including the moated area at Waltham Abbey, as well as documentary evidence of orchards, or at least fruit trees, being planted within cemeteries at Christchurch, Canterbury, and Westminster Abbey (Gilchrist and Sloane 2005, 44) as noted by Thomas (in prep).

### Eastern boundary of precinct

Defining the eastern boundary of the precinct also presents a challenge. The Clapham copy of the Daynes plan (Fig 4) indicates a substantial wooded boundary, on an alignment with the present tree avenue which separates Abbey Woods Park from the Abbey Wood Playground, south of Abbey Road. This may have been the eastern limit of the abbey precinct, although it could equally have extended further to

the east. Closer to the core of the abbey the Daynes plan also shows a fence between the areas labelled 'Dovehouse & greene' and 'The Barn Yard' which could also reflect a significant monastic boundary.

The substantial wall forming the eastern boundary of 'The Orchard', 'Privat Garden' and 'The Warren', immediately adjacent to the post-monastic buildings on the Daynes plan, can still be traced on the 1st edition 25 inch Ordnance Survey (OS) map published circa 1865 (Fig 23) even to the detail of the slight step in the boundary immediately north of Abbey Farm. The 1865 map, compared to later OS editions, places this boundary and the accompanying paths and track as running through the conventual range between the dormitory and the infirmary, crossing the chapterhouse and the eastern end of the abbey church. It is clearly unrelated to any boundary which existed within the lifetime of the abbey and must post-date its substantial demolition. Clapham (1915) provides no evidence to support his statement on his excavation plan that a separate 'Canon's Cemetery' was located on the north-eastern side of the abbey church, though a cemetery in this location would support the argument for a precinct or inner ward boundary lying further to the east. The rising topography and the layout of the claustral range on the relatively restricted site may have prevented a separate religious cemetery being located directly east or north of the church as may have been preferred by convention (Coppack 1990, 60; Gilchrist and Sloane 2005, 32).

## Post-Dissolution History

Lesnes Abbey was dissolved in 1524 -25, as part of a 'little reformation' orchestrated by Cardinal Wolsey, in which 29 religious houses with fewer than twelve inmates were dissolved, primarily to endow new colleges in Oxford and Ipswich (O'Sullivan 2006; TNA E 21/2/8). The abbey's holdings at the time of its dissolution are recorded in the state papers known as 'The Cardinal's Bundles' (TNA C 142/76; TNA C 142/77). Following the fall of Wolsey, Lesnes reverted to the crown. Though the abbey passed through nine different owners between 1534 and 1633, it was in the possession of the same family, the Cookes, for around eighty years before it was bequeathed to Christ's Hospital (Clapham 1915, 37).

In 1630 Sir John Epsley (according to Weever) or Hippersley (according to Clapham) had the site dug over for building material (Weever 1631, 777; Clapham 1915, 37) suggesting many of the monastic buildings were no longer standing at that date. Weever, who recorded the excavation of funeral monuments, described the church as 'a long time buried in her owne ruines, and growne ouer with Oke, Elme and Ashe-trees'.

Both the Daynes plan of 1655 (Fig 4) and the survey of Abbey Wood dated to 1791 mentioned above (LMA CLC/210/H/048/MS22636/020B), demonstrate that management of the woodland estate was a significant activity in the abbey's post-dissolution landscape. Both plans show various woodland compartments including 'Old Cheastnutt Tree Coppice Wood', 'Ashe Hill Coppice Wood' and 'Burch Hill Coppice Wood', whilst the 1655 Daynes plan notes the numbers of years of growth for some of the compartments.

## Abbot's Lodging

Four buildings are depicted in the area of the former abbey on the original copy of the 1655 Daynes plan held in the London Metropolitan Archives (LMA CLC/210/H/094/MS22639/037). Two of these are depicted with chimneys so are presumably domestic, one aligned east-west on the site of the monastic refectory and a much more substantial building to its north-east with a u-shaped plan. This building appears to have a centre range where Clapham located the site of the abbot's lodging on his excavation plan (1915; Figs 2 and 3) and two cross wings projecting to the south, the one to the east in a similar position to the monastic dormitory. It should be noted that the redrawn plan in Clapham (Fig 4) appears shown two much simpler buildings in the position of the u-shaped building apparently shown on the original.

According to Clapham (1915, 60), 'it is highly probable that the Abbot's Lodging occupied the site of the present farmhouse built in 1845', by which he meant Abbey Farm, then located to the north of the abbey cloister, west of the dorter or dormitory. This may have replaced an earlier house indicated on a plan made by William Stukeley in 1752, although the fact that Stukeley erroneously placed the church to the north of the cloister may cast some doubt on this plan (Clapham 1915, Plate III; Fig 6). Stukeley (1770, 46) visiting in 1753 described the 'present farm house' with the rest of the abbey ruins in use as a kitchen garden. Clapham (1915, 60) also mentions documentary evidence that the site was converted into a domestic dwelling soon after the abbey's dissolution, but notes that the size of the abbot's lodging suggests that it may also have incorporated other monastic functions such as the guest-house.

A number of drawings from the 18th and 19th centuries give some idea of the later configuration of the abbot's lodging, including two in Clapham (1915, Plate V), though the origins and authenticity of these drawings are unclear (Fig 7). The building shown comprised a main east-west range with large chimney offset to the south and west and two gabled wings of slightly different sizes to the north, the most westerly with a tall external chimney attached. The depiction of the northern elevation also shows a stone-built ground floor (possibly of monastic origin) with a timber-framed first floor and a number of large windows which stylistically could be 16th-century (Clapham, Pl V; Fig 7). This matches the description given by Stukeley (1770, 46):

"The building of the mansion house is, according to the style of that time, very good: Stone below, timber stud-work above. A noble large hall with a curious roof of Chestnut. Near the upper end, a very old fashioned stair-case of much timber, but grand. This leads up to the chambers and lodging rooms of the founder, and his successors, the priors. Beyond the hall is the parlour. On the right hand of it, the kitchen and offices."

The illustration in Clapham also appears to show a change in the height of the roofline towards the western end of the main east-west range, which possibly places the large chimney described above on the gable end of an original building with an extension to the west. A pen and ink drawing dating to 24 April 1757 by Samuel

Heronymous Grimm (British Library BL /K Top Vol 18 32-2, <http://www.bl.uk/onlinegallery/onlineex/kinggeorge/1/003ktop00000018u03200002.html> accessed 5 June 2019) shows the western elevation of the building, including the large southern wing shown on the Stukeley sketch as 'Hall', and another building which would have been located at the western end of the refectory range which is described as 'an ancient building, now a cowhouse'. The line drawing or etching in Clapham (1915, Pl V: Fig 7) shows the southern elevation including the southern 'hall' range and two square-headed hood-moulded windows, though it is important to note that there are discrepancies between the two drawings and that the depiction of the southern elevation should be treated with some caution.

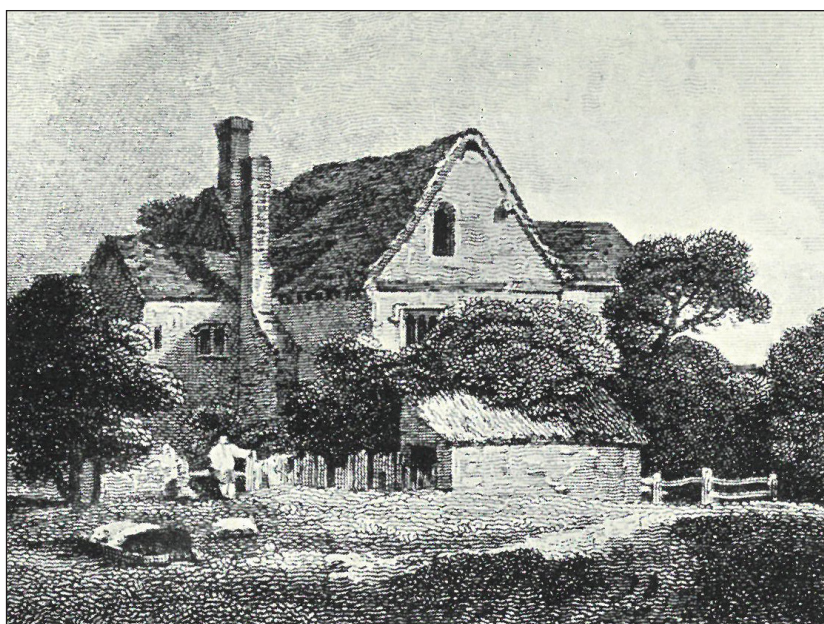
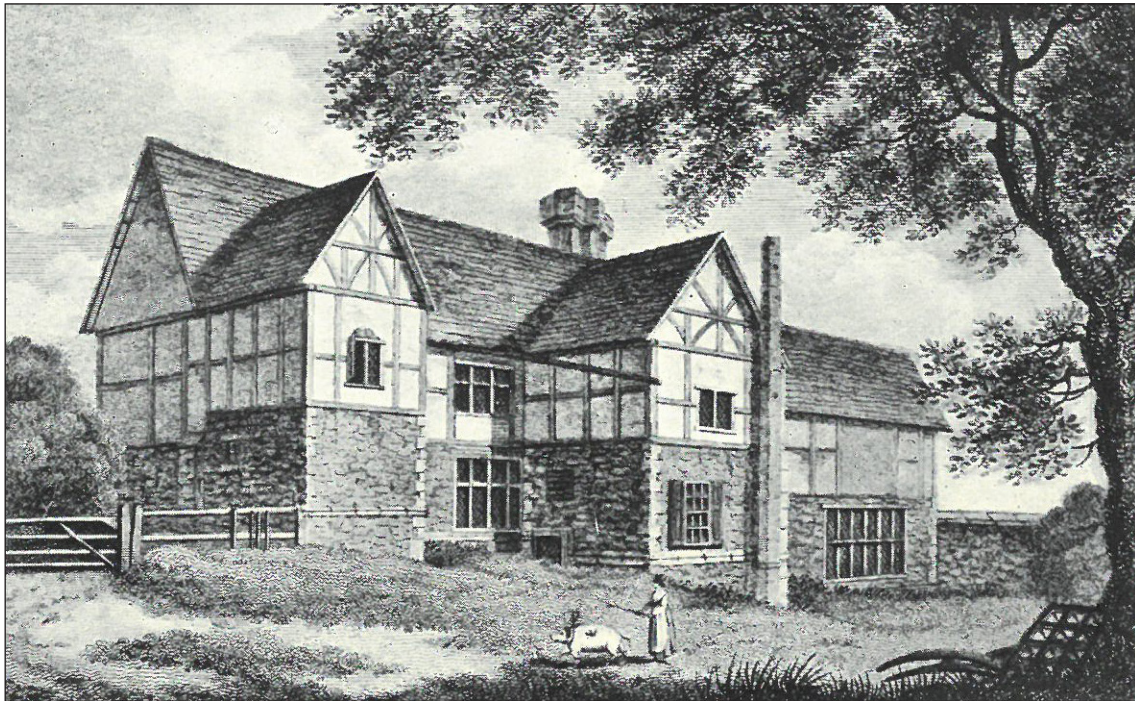


Figure 7: Two undated figures from Clapham (1915, Pl V) showing the northern (top) and southern (left) elevations of the Abbot's Lodging, though there are some discrepancies between the two, most notably the style of the central chimney, casting doubt on their authenticity.



## The gardens, The Warren and The Orchard

The group of buildings depicted in the same location as the former abbey buildings on the 1655 Daynes plan (Fig 4) are located within a small, apparently walled, enclosure in the south-eastern corner of a much larger walled enclosure labelled 'The Warren'. To the south of the buildings was a walled 'Kitchen Garden' and 'Privat Garden' and to the south of that the large square walled enclosure known as 'The Orchard' which is shown planted with trees. The walls of 'The Warren' ran north from the buildings towards the main road, turning at an angle to the west before running parallel but slightly south of the road and then returning southwards. At the point that the wall met the east-west causeway leading to the abbey it turned south-eastwards towards The Orchard.

Excavations in advance of footpath creation revealed the buried remains of the eastern boundary shown on the Daynes plan extending northwards from the abbey ruins (Thomas, in prep, 181). This boundary was also visible as a parchmark (as well as a slight earthwork) in the very dry summer of 2018 (Fig 8). It is unlikely that the fairly small area marked as 'The Warren' on the Daynes plan actually served as a rabbit warren prior to the dissolution of the abbey (Fig 4). It is possible that this area became a domestic warren after the abbey's dissolution, as seen at Sopwell Nunnery, Hertfordshire (Page 1908, 412-24) but the term may merely refer to a scrubby area (M Alexander pers comm).



Figure 8: The line of the post medieval wall defining the eastern side of 'The Warren', visible as a parchmark and a very slight earthwork, extending north from the dormitory range at the north-eastern corner of the abbey ruins (view looking south from NGR TQ 4792 7888). It seems likely that the eastern boundary of the abbey precinct was located further to the east. 11-JUL-2018 ©Historic England.

## The Dipping Ponds

The Dipping Ponds are located roughly 110m to the west of the abbey ruins, within the area formerly known as 'The Warren', in a natural gully or valley, possibly later enlarged through quarrying as their eastern side appears too steep for a natural landscape feature (Figs 2, 14 and 15). The northern pond is roughly 30m north-

south by 12m east-west, whilst the southern pond is more sinuous and roughly 35m north-south by 5m east- west. The OS 25 inch 1st edition map published circa 1865 (Fig 15) shows the two ponds as one, linked by a narrow channel suggesting that their size fluctuates due to changes in groundwater levels.

Clapham (1915, 42) suggested that they could be monastic fishponds, but he appears to favour the ponds to the north-east for this role (see below; Fig 2). Since there is no apparent water supply to the ponds other than groundwater, nor any evidence of drainage, this does indeed bring into question whether, lacking a through-flow to maintain oxygen and limit stagnation, these ponds could have served for farming fish. That said, there is presently no visible evidence for the main flow of water which must have existed to and from the reredorter (latrines), kitchens or indeed other part of the claustral buildings, so the questions of water management in the vicinity of the abbey remain largely unanswered. The relatively steep slope down to the ponds, to the east at least, appears at first glance impractical for farming fish. It is possible that the ponds are simply the result of small-scale quarrying to exploit the underlying chalk. Nevertheless, the discovery of a very small section of wooden stakes, possibly revetting the eastern bank of the northern pond (Vincent 1911, 67-72), does suggest that they were modified in some way for an, as yet unclear, purpose.

Vincent (1911, 71-72) who excavated the ponds, was driven by idea that they had originally been a dock which must have gone out of use when the causeway to the abbey was built to the south and the Thames river walls were constructed to the north. He argued that the supposed dock was a landing place for the building stone for the abbey, but this argument was refuted by Elliston-Erwood (*ibid* 78), who pointed out that the ponds are above the level of the river, though not by many metres. It also assumes that there was direct access from the river to the abbey in the 12th century. Thomas (*in prep*, 188) makes an interesting point about the Dipping Ponds and their position within what was probably the abbey precinct, also making their function as a dock less likely, unless it was abandoned after the abbey's construction.

### **Dovehouse and greene**

The area to the east of the boundary wall is marked on the Daynes plan as 'Dovehouse & greene'. A small circular structure, presumably the 'dovehouse' in question, is depicted in the middle of the 'greene' (Figs 2 and 4).

### **Barnyard and 'Hopp yard'**

East of the area labelled 'Dovehouse & greene' on the 1655 Daynes plan (Figs 2 and 4) is an area labelled 'The Barn Yard', bounded by what appears to be a fence to the west and a thick belt of trees to the east. Within this area are two buildings, a larger one aligned east- west, with what appear to be three windows in its western gable end, and a small one aligned north-south at 90 degrees to the western end of the other building. Neither structure has a chimney which suggests they were of non-domestic, probably agricultural, function. To the south of the buildings is shown a small square enclosure labelled 'Hopp yard' and to the east is an elongated pond surrounded by trees.

A drawing for the Ordnance Survey dated 1799 (British Library BL OSD 130/6) also indicates that there were two structures extant in this area at the turn of the 19th century, however its scale (1:21,120) does not allow any further detail to be discerned. The smaller building was no longer shown on the OS 1st edition 6-inch map published 1870 (Fig 29) but a building 50m to the north of the larger building is depicted. The large barn is last shown on the 1897 2nd edition 25-inch map but it had been demolished by 1908 when the 3rd edition survey revisions were undertaken. Clapham (1915, 42) states that the barn was pulled down in 1900.

Three photographs of the large barn survive, two of which were published in Clapham (1915, Plate VI, see Figs 9 and 10), and a third which is held in the Frederick Nunn collection in Bexleyheath Archive showing the Woolwich Antiquarian Society posed in front of it in 1895 (Bexleyheath Library and Archives PH/FWN/1/18-19). The photographs show a large aisled threshing barn (the threshing lift is visible on one of the photographs) with a collar rafter roof, windbraces and queen struts. It had two large barn doors (midstreys) on its northern elevation and, though it was in a state of collapse by the late 19th century, it retained a thatched roof. Any opposing entrances on the southern elevation would not have provided cart access due to the steeply-rising ground (cf Bond 2004, 128). Figure 9 also shows the rag-stone rubble plinth patched with brick described by Clapham (1915, 42). According to Clapham (1915, 43) the barn was 117ft 8in (36m) long and 38ft 9in (12m) wide (measurements from the 1st edition 25 inch Ordnance Survey map give the same width but a length of 44m). He describes the uprights as 'stood on oak plates resting on sleeper walls crossing the aisles and dividing them into eight bays'.

The style of timber frame suggests that the barn could have been of 17th-century date, but could equally date from the very end of the monastic period in the early 16th century. A reference cited by Clapham (1915, 28) certainly suggests that a new barn was being constructed around 1517, less than 10 years before the abbey was dissolved, at a cost of £16 5s 4d. If this barn did survive to the 19th century Clapham's dimensions would place it in the category of 'medium-sized' monastic barns (Bond 2004, 133). If it was not built in 1517, then construction in the 80 year period of the Cooke family's ownership from 1541-1620, or immediately following Christ's Hospital's acquisition of the site in 1633 seems most likely, in contrast to the intervening periods of unsettled ownership.

The Daynes plan (Fig 4) depicts only one pond to the east of the barns in the mid-17th century, whilst the 6-inch Ordnance Survey map published 1870 and the 1st edition 25-inch map published circa 1865 (Fig 29) depict two in this area, the northernmost perhaps truncated by widening of the road (Clapham 1915, 40-41; Thomas, in prep, 17). By the time the area was surveyed for the 1959 1:2500 map this northern pond had disappeared, though the southern pond is missing on some earlier Ordnance Survey editions so these depictions should be treated with caution. The ponds do not survive but the modern footpath deviates around the site of the southern pond (Fig 2) and an area of generally lower ground is visible on lidar.



Figure 9: The northern elevation of the barn, looking south-east, as published in Clapham (1915, Pl VI).



Figure 10: The interior of the barn as published in Clapham (1915, Pl VI).

Partly based on their form, but also their position, these are also candidates for monastic fishponds. The shape of the ponds, their potentially consecutive arrangement and topographic setting are all fairly typical of medieval fishponds and their co-location alongside the barn and 'hopp yard', if these were legacies of earlier monastic arrangements, may suggest a conscious attempt to group the abbey's productive functions together, almost like a home farm (Fig 4).

As with the Dipping Ponds to the west, however, a significant problem with the interpretation of these ponds is their apparent lack of fresh, flowing, water essential for healthy fish production. Again, as with the Dipping Ponds, these ponds are situated at the base of a small valley which heads up into Abbey Woods to the south, but it is unclear how the ponds were supplied and drained. Their location to the north of a notable deviation of boundary bank and ditch (discussed below and also noted by Thomas, in prep, 142) appears to be coincidental.

### Whit's House and Barnard's House

To the west of The Orchard enclosure on the 1655 Daynes plan (Fig 4) is a wide track heading towards a 'Barn Yard' and a group of buildings labelled 'Mr Barnards house'. To the east of these buildings, close to the south-western corner of The Orchard enclosure, is another building labelled as 'Edw. Whits house'. To the north of Mr Barnard's house is a small enclosure marked 'Newe Orchard'. By the time the Ordnance Survey 2nd edition 25-inch map was published in 1897 Mr Barnard's house, or a building in much the same location, was known as Orchard Cottage.

### Abbey Farm

In 1845 the possible abbot's lodging was demolished and a new farmhouse, Abbey Farm, built in an almost identical location (Clapham 1915, 60; Fig 2). The layout of the new Abbey Farm is shown on the Ordnance Survey 1st edition 25-inch map published circa 1865 and the 6-inch map published in 1870 (Fig 29). The farmhouse was a large Victorian building of at least four bays (the footprint of three of these was visible as a parchmark in the summer of 2018), with neo-Tudor styling, and is shown in many of the plates included in Clapham's excavation report (Pl II; Pl XIII; see Fig 11).

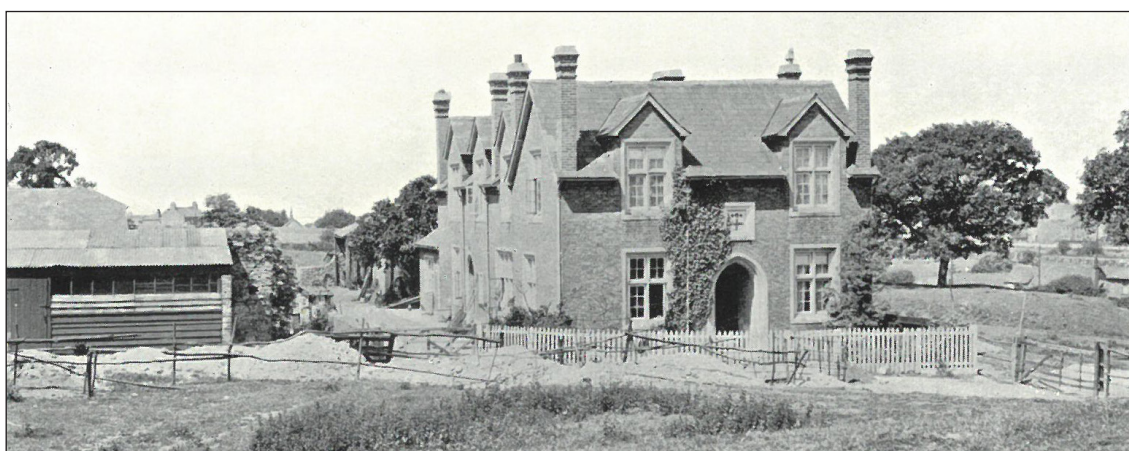


Figure 11: The eastern elevation of Abbey Farm around 1915 as reproduced in Clapham (1915, Pl II).

## The Twentieth Century

Excavations of the abbey site began at the start of the 20th century and are summarised in the next section of this report, 'Previous Research'.

The buildings to the south-west of the abbey around Orchard Cottage had been demolished by time the Ordnance Survey 25-inch map was revised in 1908 (Fig 32). Further details of the remains are given in the description of Survey Area 3 below. Correspondence held in The National Archives records that Abbey Farm was still occupied in 1932 but that there were plans in place for its demolition when the lease expired in 1937 (TNA WORK 14/1438). The buildings had been demolished by August 1944 (HEA RAF/106G/LA31 3138 07-AUG-1944).

The grounds of the abbey became a public park in 1930 (GLHER MLO 102841) after a campaign to raise funds for its purchase from Christ's Hospital began the previous year (LMA LCC/AR/TP/03/003). Correspondence relating to the excavation of the abbey ruins (which is discussed in greater detail below) suggest that the gardens, or the formal gardens to the west and south-west of the abbey at least (Fig 2), were not laid out until at least 1937 (TNA WORK 14/1438). Both were clearly in place by 1944 (HEA RAF 106G/LA31 3138 07-AUG-1944) suggesting that they may have been created in the late 1930s prior to the outbreak of the Second World War. They were created to the west of the abbey around the area of Lesnes Abbey Lodge (the site of the modern visitor centre) and across 'The Orchard' to the south, the 'The Orchard' having survived in the form shown on the Daynes plan until at least 1933 according to the Ordnance Survey 4th edition 25-inch map. The Lodge that preceded the current visitor centre was built sometime between 1931 (it is not shown on the Ordnance Survey 6 inch map revised 1931, published around 1935) and 1944 when it is shown on various aerial photographs.

There is little documentary evidence relating to Lesnes Abbey during the Second World War. The site was still in use as a public park, and public tours of the abbey site continued; for example, members of the London Appreciation Society were given a tour by Frank Elliston-Erwood on 27 May 1944 (Bexleyheath Libraries and Archives LAER/DA/4/2/135). A reference to an 'Agreement to erect Wartime nurseries at Lessness Abbey and Riverside, Erith' was noted in the catalogue of Bexley Archives (Bexleyheath Libraries and Archives LAER/DA/5/2/24). Examination of these documents may reveal where these buildings were intended to be constructed.

In the post-war period, urban encroachment began to change the setting of the abbey with the most dramatic impact coming from the construction of the Thamesmead Estate in the 1960s which came to cover 11,000 acres of marshland to the north of the abbey. The abbey site passed to the London Borough of Bexley in 1986 (GLHER MLO 79262). Between 2015 and 2017 Lesnes Abbey received £3.4 million from the Heritage Lottery Fund which became part of a £4.2 million project involving the construction of a new visitor centre (Fig 2) and a new outdoor classroom close to the park's fossil bed, as well as various other landscaping projects (Bexley Times 8 Sept 2017).

## PREVIOUS RESEARCH

### Antiquarian Investigations

As previously noted, the earliest reference to intrusive investigations on the site dates to 1630, when the owner Sir John Epsley is described as having paid workmen to dig for useable building stone. They found several funerary monuments, which apparently attracted a 'great confluence of people' (Weever 1630, 777-8; Wilkes 1825, 709).

The noted antiquarian William Stukeley visited the site in 1753 and subsequently presented a paper to the Society of Antiquaries of London (Stukeley 1770, 44-48). He predominantly focused upon historical sources (drawing greatly on Weever) and his interpretations were flawed; for example he believed that the standing fabric of the refectory was the abbey church. However, he provides the most detailed written description of the pre-19th-century farmhouse, thought to be converted from the abbot's lodging.

### Woolwich Antiquarian Society Excavations, 1909-1913

Excavations amidst the abbey buildings took place from 1909 to 1913 under the auspices of the Woolwich Antiquarian Society, initially led by W T Vincent. Alfred Clapham, an eminent archaeologist who held many high profile roles, including founder member of the Council for British Archaeology, secretary of the Royal Commission on the Historical Monuments of England and the President of the Society of Antiquaries, subsequently became the Director of Excavations, and published the site in 1915 (Clapham 1915, i). The focus of the investigations was the recovery of a plan of the church and cloisters, and also the recovery of significant architectural fragments and small finds. After the excavations the trenches were filled in and the land returned to farming (LCC 1961, 8).

In 1911 Vincent undertook excavations across the ponds to the north-west of the abbey, now known as the Dipping Ponds. Vincent (1911, 68-69) 'pumped the ponds practically dry' with help of the fire brigade and excavated two upright stakes, 4ft (1.2m) in height, in the southern pond and a stockade or line about 7ft (2.1m) long of eight oak piles 4ft 6in (1.3m) in length, in the south-eastern corner of the northern pond. At the foot of the eastern bank a group of five or six tightly arranged posts was suggested to be part of a retaining embankment. His interpretation of these remains as a former dock has already been discussed in this report.

### Excavations under Elliston-Erwood, 1938 to 1960

The Ministry of Works began its involvement at Lesnes with minor repairs and the demolition of Abbey Farm, probably around 1937. Correspondence relating to this survives in The National Archives (TNA WORK 14/1438) although it mainly contains general information about logistics and the rebuilding/repairs being carried out to the wall fabric.

A campaign of excavation was undertaken in 1938-9, halted during the war, and restarted as an annual programme of work between May and October from 1951 to 1960. The excavations were undertaken with joint supervision from London County Council and the Ministry of Works, the latter supplying a mason with previous experience on the Tower of London (Bexleyheath Library and Archives LAER/DA/4/2/135). The Honorary Director of Excavations, Frank Elliston-Erwood, was a prolific amateur archaeologist in the Bexley area during the first half of the 20th century as a member of the Woolwich Antiquarian Society and had served as 'Honorary Secretary of the Works Committee' on the original excavations at Lesnes under Clapham (Clapham 1915, ii).

These excavations were in keeping with many carried out by the Ministry of Works at State Guardianship sites around this time, with a focus on uncovering the foundations and layout of the abbey and reconstruction for public display, but limited in terms of recording, publication, or appreciation of archaeological deposits (Thurley 2009). Documentary accounts of these excavations are limited to four very brief entries in *Archaeologia Cantiana*, and a short annual report for councillors for the years 1952-1960 (Elliston-Erwood 1953; 1954; 1956; 1958). Frederick Nunn, who undertook most of the photography for Clapham's excavations, also took some photographs during this post-war period (Bexleyheath Library and Archives PHFWN/1). Elliston-Erwood's reports have remarkably little detail of the deposits that were removed, but are useful in explaining the current levels of the site, describing the excavations in terms of the depth in feet of material removed. It is perhaps also worth noting that a light railway had been used on the site during the excavations at some point but was in state of disrepair by 1956 (LMA SC/SS/07/012/035). This was not visible on any of the historic aerial photographs examined.

## Modern excavations

Limited excavations in 1994 are summarised in the London Archaeologist's annual fieldwork round-up in 1995 (Anon 1995, 334). This states that Derek Garrod of the South East London Archaeological Unit carried out evaluations in February, March and November 1994 in four areas of the scheduled site in advance of flower bed creation and bush and tree planting operations. It was noted that the depth of the trenches was limited and mainly confined to post-Dissolution deposits, including 'roof tile collapse S of the church'. West of the dormer (dormitory) a chalk and pebble surface and related ragstone wall were also revealed.

In 2013 the independent archaeologist Tony Thomas carried out an archaeological watching brief, including some archaeological recording work, as part of the Lesnes Abbey Woods Enhancement Project (Thomas in prep, 3). The work was carried out after the demolition of the old Lesnes Lodge visitor centre and in advance of the construction of a new visitor centre on the same site. He also carried out watching briefs and fieldwork around the wider parkland as part of Stage 2 of the Enhancement Project. This work is as yet unpublished, though his findings, seen in draft, will be discussed where applicable in the detailed descriptions of the survey areas below and briefly summarised here.



Much of the work did not involve full excavation. A watching brief was carried out during groundworks in advance of the construction of the new visitor centre, during which several deep narrow trenches were excavated by machine and cleaned by hand. One of the most important discoveries during this work was a previously unknown medieval burial ground at the southern side of the visitor centre site, around 1.2m to 2m below current ground level (Thomas in prep, 35). Six skeletons were analysed in situ by Oxford Archaeology (Gibson 2015, 7), and Thomas states that there was evidence of at least 26 burials. Two of the burials were radiocarbon dated, returning the dates 1290-1415 and 1454-1641 at a 95.4% level of probability (Gibson 2015, 3), suggesting the burial ground may have been in use for a prolonged period (Thomas in prep, 103; 253). Though the examined sample was small, the higher male ratio (there were three male skeletons, one female, one juvenile and one where the sex was unclear) was typical of a male monastic foundation (Gibson 2015, 7) and suggested that the burials were part of the lay, rather than canonical, cemetery.

The rest of the visitor centre site appears to have revealed a complex history involving a series of different building phases. Thomas (in prep, 61-62) found Roman pottery in one small trench feature, which he interpreted as part of a building, and evidence for another possible building with an associated ditched trackway. He also suggested this building and trackway were Roman, though there is no direct link between this feature and the pottery found to the north (where Trial Pit 5 revealed a small amount of Roman black burnished and grey ware) and little evidence on which to base the extrapolated route of the trackway (in prep, 68-9).

Evidence for a number of different medieval buildings in the vicinity of the visitor centre is cited in Thomas's work (eg in prep, 61). In particular he describes the heavily robbed foundation trenches of a substantial medieval building ('Building 4') near the western end of the church, with burials aligned along its southern end, and 12th- and 13th- century decorated tiles, as well as dressed and moulded stone, in the demolition rubble (in prep, 73). He speculates (in prep, 247) that this building was an earlier pre-foundation church, as at Waltham Abbey, though Clapham did not identify it during his excavations and there is no known documentary evidence for a pre-existing church on the site. An alternative reading is that this may have been a small chapel within the cemetery (eg Gilchrist and Sloane 2005, 41). To the west of this building, Thomas describes foundation trenches and demolition rubble, which he interprets as the site of a monastic guesthouse (in prep, 106-7), and an open glazed tiled courtyard in the intervening area (in prep, 256), although a glazed floor is more likely to have been located inside a building.

On the eastern side of the visitor centre Thomas revealed part of the ground plan of a small north-south aligned timber-framed building (Building 8) which he considers to be post-dissolution. He also suggests that the chalk-rubble foundations of another building, Building 10, are of post-dissolution date (in prep, 128). His account mentions two other buildings, for which there appears to be only a small amount of evidence, as well the 1930s 'Old Lesnes Lodge' which was demolished as part of the redevelopment project (in prep, 131-2).

## METHODOLOGY

### Documentary and Cartographic Sources

The area of the abbey church and claustral range, as with much of the site, was substantially landscaped in the 20th century as part of works to present the abbey ruins to the public, and to a large extent the ground surface in these areas reflects this activity rather than the earlier, monastic, landscape. Examination of this area was therefore primarily dependent on documentary and cartographic sources, with the particular aim of understanding features within the current scheduled area that are not mentioned in the List entry (such as the infirmary), and were not exposed as consolidated ruins.

A list of cartographic sources and archives consulted can be found at the end of this report.

### Aerial Investigation

The aerial investigation systematically examined aerial photographs from the Historic England Archive, GoogleEarth imagery, Aerial Photography for Great Britain (APGB) imagery and Environment Agency lidar. The Environment Agency lidar comprised Open Access 50cm Composite lidar, both Digital Terrain Models and Digital Surface Models. The rectified images were placed as layers into AutoCAD, with features interpreted and then plotted at approximately 1:2500 scale. The aerial photographic and lidar survey was limited to the modern abbey grounds and defined to the north by Abbey Road and to the south by the sections of bank and ditch boundary (see below), with the exception of the Conduit Pond, which had been previously identified as having a direct association with the monastic landscape (see Fig 2 for the survey area). All relevant features identified within this area were mapped but the results are discussed selectively and in combination with the evidence from the ground surveys.

The principal aerial photographic frames used for mapping were:

HEA RAF/106G/LA30 RP 3137 07-AUG-1944  
HEA RAF/106G/UK/916 RVp3 6151 11-OCT-1945  
HEA RAF/106G/UK/1356 V 5018 02-APR-1946  
HEA RAF/CPE/UK/1803 V 5313 25-OCT-1946  
HEA RAF/58/1901 F56 18-OCT-1955  
HEA RAF/543/1059/1F42 134 13-SEP-1960

### Analytical Earthwork Survey

A Level 3 analytical earthwork survey was undertaken of archaeological features within three discrete areas of the site at a scale of 1:1000, primarily using survey grade Global Navigation Satellite System (GNSS) equipment, but also Total Station Theodolite (TST) and tape and offset survey where tree cover limited the GNSS signal (Historic England 2017, 33).

The three areas surveyed (Fig 12) were:

1. The area (1ha) north-west of the scheduled area, north of the visitor centre and east of the Dipping Ponds. This area is covered in low, amorphous earthworks and was selected for survey as it potentially lies within the former precinct of the abbey. However much of the earthwork evidence surveyed is likely to be of 20th-century date.
2. A small area (0.4ha) on the north-facing slope immediately north-east of the scheduled area. This area was selected for survey due to the survival of well-preserved earthworks, and to establish whether any of these related to features noted on the Daynes plan (Fig 4), where this area is labelled 'Dovehouse and greene'.
3. The former farm site (2ha) to the south-west of the abbey. The primary research aim in this area was to further understand the farm associated with Orchard Cottage, including the extent of earthwork preservation, and to attempt to establish whether the extensive post-dissolution activity in this area reflected earlier monastic activity.

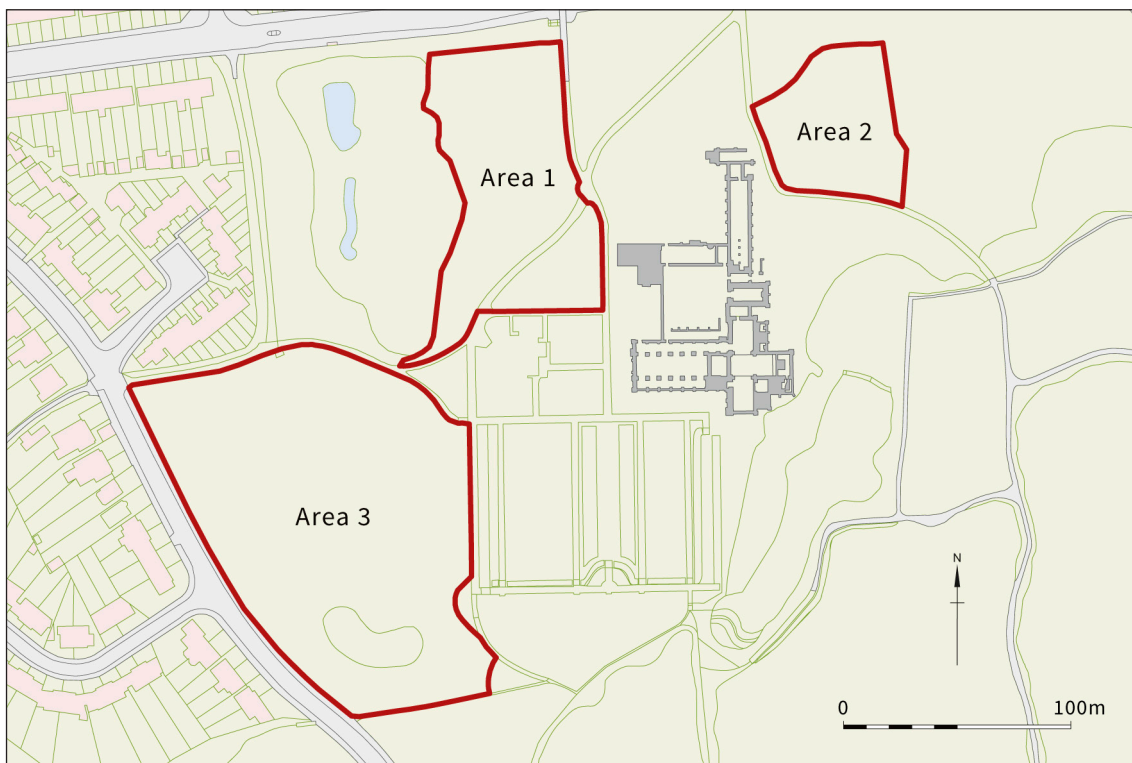


Figure 12: The three areas of the abbey grounds subject to detailed analytical earthwork survey. Image: Sharon Soutar © Crown Copyright and database right 2019. All rights reserved. Ordnance Survey Licence number 100024900.

# DESCRIPTION AND INTERPRETATION OF THE REMAINS FROM ANALYTICAL EARTHWORK SURVEY

## Survey Area 1: North-west of the scheduled area (Figs 12 and 13)

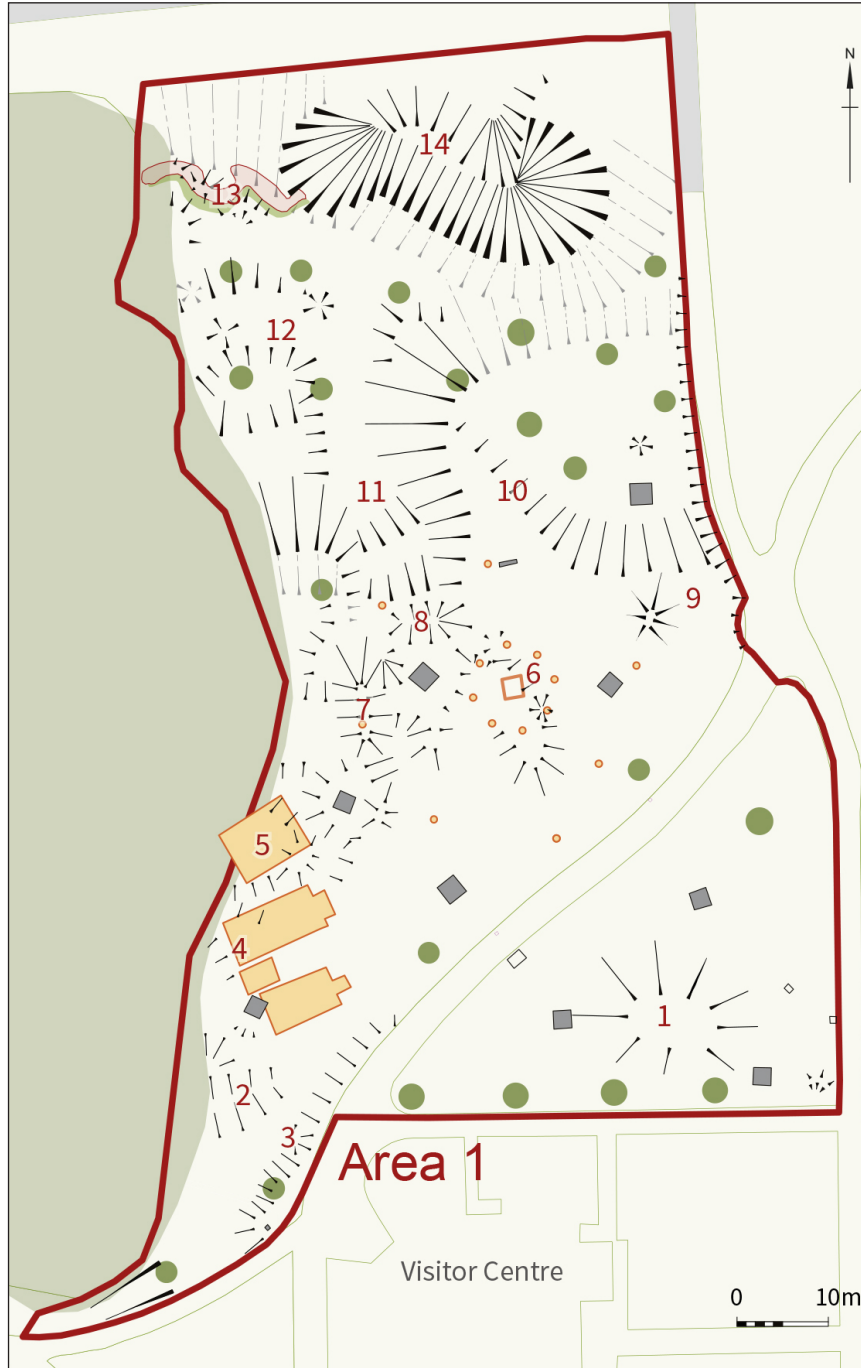


Figure 13: Survey Area 1 to the north-west of the scheduled area. The numbers refer to features mentioned in this section of the text. Image: Sharon Soutar (© Crown Copyright and database right 2019. All rights reserved. Ordnance Survey Licence number 100024900). Drawing 1:1000 scale when viewed/printed at A4.

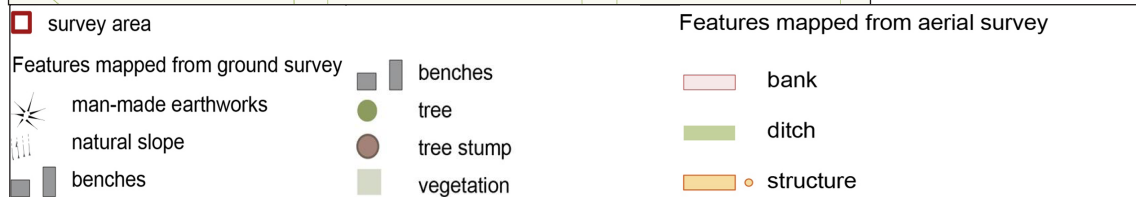




Figure 14: Survey Area 1 (looking south) located between the Dipping Ponds, visitor centre, footbridge and road (HEA 33454/009 26-MAR-2018) Image: Damian Grady © Historic England.

This part of the site is characterised by broad, shallow earthworks, and several more substantial features such as trackways and the possible quarry. The area was surveyed from south to north, and features are discussed in approximate order of survey.

The south-east of this survey area is defined by modern paths forming a triangular shape. The only notable feature is a low mound (Fig 13 [1]), measuring approximately 20.5m by 14m and up to 0.3m high, possibly the result of the demolition of late 19th- and early 20th-century buildings noted on the 1930 lease plan (Bexleyheath Libraries and Archive Service LALB/DA/1/26/26). These buildings post-dated the Ordnance Survey 1st edition 25-inch map of circa 1865 (Fig 15) and were located at the north-west corner of the rectangular enclosure originally described on the Daynes plan as the 'Kitchen Garden' (Fig 4).

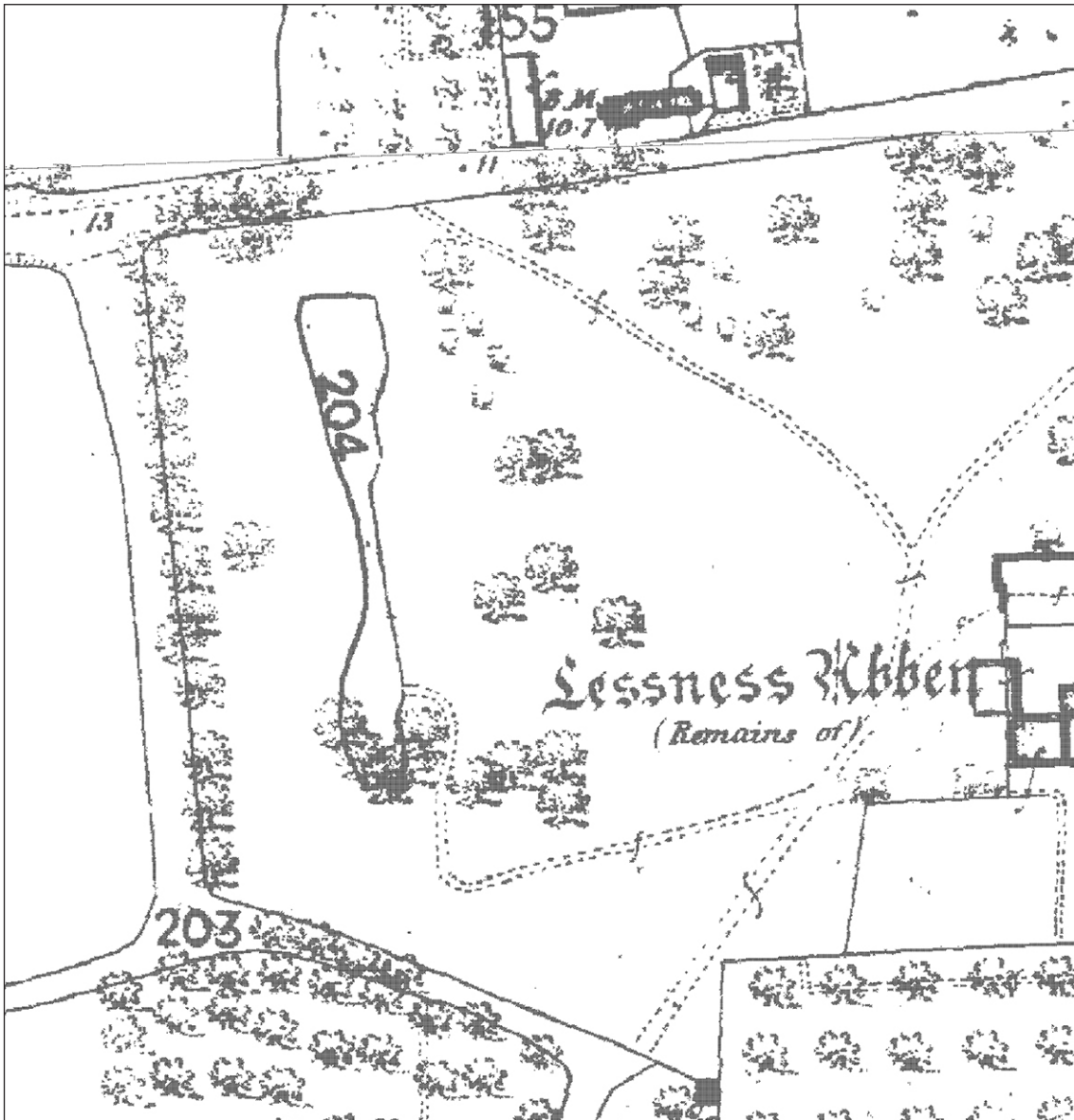


Figure 15: The Ordnance Survey 1st edition 25-inch map for Kent (II.12), surveyed 1862-63 and published circa 1865, showing Survey Area 1. © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2019) Licence numbers 000394 and TP0024. Not to scale.

In the south-west corner of the survey area is a gully (Fig 13 [2]), measuring approximately 6m wide and 0.5m at its deepest and oriented ENE-WSW. It appears to be a trackway shown on the Ordnance Survey 6-inch map of 1870 and the 25-inch 1st edition map of circa 1865 (Fig 15), leading to the Dipping Ponds. The majority of this trackway is outside the area of survey, but is legible on lidar. It extends for approximately 34.5m, before turning north-north-east for 19m (Fig 16).

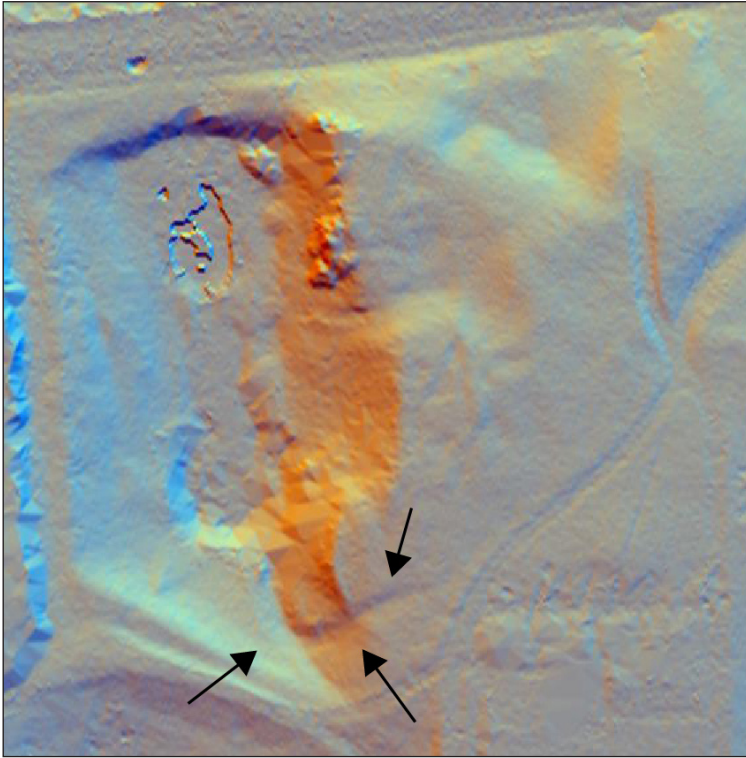


Figure 16: Gully (bottom centre of image) marking the position of the former track down to the Dipping Ponds on Digital Terrain Model (HS 16D) from Environment Agency Open Access 50cm Composite Lidar TQ4778 © Environment Agency copyright and/or database right 2019. All rights reserved.

To the east is a shallow, sub-circular, hollow (Fig 13 [3]), around 3m in diameter, which appears to be of relatively recent date. It cuts the scarp which defines the north-western side of the path. Immediately adjacent to the hollow a square parchmark was photographed in July 2018 suggesting that the grass had died over the location of a buried hard-standing or compacted surface. The hollow and buried hard standing may be related to a small structure visible on aerial photographs from 1946 onwards, possibly a shed associated with park management or post-war park repairs (Fig 18).



Figure 17: Detail from aerial photograph HEA RAF 106G/ LA31 3138 7-AUG-1944 showing a range of Second World War features including huts, a circular barrage balloon mooring position and a slit trench. Historic England Archive: RAF Photography.

To the north of this, a slight scarp (Fig 13 [4]), measuring approximately 0.18m high and extending for 6.4m, and a possible building platform at least 9.5m by 4m (Fig 13 [5]) consisting of perpendicular scarps aligning with the southern and eastern walls of the structure, measuring 5.6m and 3.8m long respectively, was recorded. A low mound, measuring 6.6m by 4.2m, where these two scarps meet, may be the result of demolition. This building platform extended beyond the surveyed area and into thick vegetation to the west.

These slight earthworks appear to mark the former positions of a group of four structures, apparently of military function, evident in 1940s aerial photographs, with one rectangular building set to the north of a row of three others (Fig 17). This row consisted of a pair of larger rectangular buildings with porches, both aligned on an ENE-WSW axis, with a smaller shed between them. Aerial photographs from 1946 show that the small shed was still extant, but the three larger buildings had been demolished (Fig 18).

From the aerial transcription, the northernmost building with a porch measured 10.1m by 5.2m, with the porch on its north-east gable measuring 3.1m by 1.5m, and the smaller rectangular shed approximately 2.7m by 3.7m. The southernmost rectangular building with a porch was slightly smaller, measuring 7.75m by 4.5m, with the porch on its north-east gable approximately 1.5m square. Beyond these three buildings to the north, the fourth structure measured 6m by 8.1m from the aerial photographic transcription. This structure was no longer visible on an aerial photograph from October 1945 (HEA RAF 106G/UK916 6151 11-OCT-1945).



Figure 18: A detail from a 1946 aerial photograph showing the remaining huts, slit trench and barrage balloon mooring point (HEA RAF 106G/UK1356 5018 02-APR-1946). Historic England Archive: RAF Photography..



To the east of these buildings, the aerial photographs from 1944 to 1946 (Figs 17 and 18) show the mooring points for a Second World War barrage balloon (Fig 13 [6]) to which the buildings are probably related. This consisted of a concrete base approximately 2.1m square, with two concentric rings of anchors, the inner ring of approximately 9m diameter with eight tethering points, and the outer ring 30m in diameter with seven tethering points. No clear evidence for this barrage balloon site was noted during the ground survey. The area of the barrage balloon mooring has some extremely slight, incoherent earthworks, but also a long low mound (Fig 13 [7]) measuring 13.4m by 5.7m, aligned approximately north-south, and a shallow scoop (Fig 13 [8]) approximately 9.7m by 4.9m. There is no obvious function for these two earthworks as part of the balloon mooring, although they can be seen in the 1946 aerial photographs (Fig 18) with an anchoring point on the long low mound, so they appear to predate the Second World War. As the name suggests the balloon moored here would have been one of a 'barrage' forcing enemy planes to fly higher. Other mooring positions can be seen on the 1944 aerial photographs including one in the far eastern corner of the abbey grounds on the recreation ground at NGR TQ 4826 7889 (HEA RAF 106G/LA30 3138 07-AUG-1944).

To the north-east of the barrage balloon site is a low oval mound (Fig 13 [9]), measuring 8m by 5.9m, with no obvious interpretation. To the north of the barrage balloon site, is a substantial curving scarp (Fig 13 [10]) approximately 34m long, and measuring up to 0.3m high. Late 19th-century editions of the Ordnance Survey indicate a trackway leading north-west from Abbey Farm to Buckle's Farm and it is possible that this scarp is the result of erosion from traffic (Fig 15). Thomas (in prep, 193) suggests that this feature is the corner of a building platform, but this was not apparent from the field evidence.

An eroded gully (Fig 13 [11]) leads from the area north of the barrage balloon site into the Dipping Ponds (Figs 16 and 19). It runs for approximately 15m northwards before sharply turning east-south-east for 40m to the Dipping Ponds. Where it extends outside of the area of earthwork survey it can be traced on lidar (Fig 16). It is consistently 5-6m wide at its base, and may represent erosion from traffic related to extracting material from the Dipping Ponds. It is not illustrated on any Ordnance Survey map editions, suggesting that it had either gone out of use by the mid-19th century, was too incoherent for mapping or was considered natural. It is presumably the 'semi-circular depression' that Thomas (in prep, 185) noted. Immediately to the north of this gully is a level area or platform, approximately 6m wide and defined by two slightly curved scarps running east/west (Fig 13 [12]). Its origin is unclear.

To the north of this platform, a zig-zagged slit trench of probable Second World War date with a parallel bank to the north, was plotted from aerial photographs and noted during field survey (Fig 13 [13]). It is visible in aerial photographs from 1944 to 1960 and measured approximately 20m long (Figs 17 and 18). During field survey, a pair of slight perpendicular scarps (less than 0.2m wide) were noted, and appeared to denote the southern edge of the trench. The trench may have been related to the barrage balloon site or perhaps to the activity of the Home Guard in the area.



Figure 19: The gully leading down into the Dipping Ponds (located beyond the left-hand side of the image), looking north-west. © Historic England (14-JAN-2019).

There is a large probable quarry scoop (Fig 13 [14]) cut into the steep natural gradient falling down to Abbey Road, possibly used as a source of material for the road (Fig 20). It is approximately 35m long, with two distinct scoops suggesting at least two episodes of quarrying. There is also a mound of waste material at the base of the quarry. It is not marked on any Ordnance Survey maps.



Figure 20: The probable quarry scoop in the north-facing slope adjacent to Abbey Road, looking east. © Historic England (14-JAN-2019).

Unsurprisingly no surface evidence was identified for the Roman building (Building 2) suggested by Thomas (in prep, 62; 192) and the evidence of its layout is not readily apparent in the draft report. Similarly no evidence was recorded of Building 1 and its associated east-west trackway which Thomas identified and suggested to be of pre-monastic date (in prep, 186). The Second World War bomb craters suggested by Thomas (in prep, 189) could not be identified, which is consistent with the lack of any such features visible on the aerial photographs taken in 1944, 1945 and 1946 (e.g. Fig 17).

## Survey Area 2: North-east of the scheduled area (Figs 12 and 21)

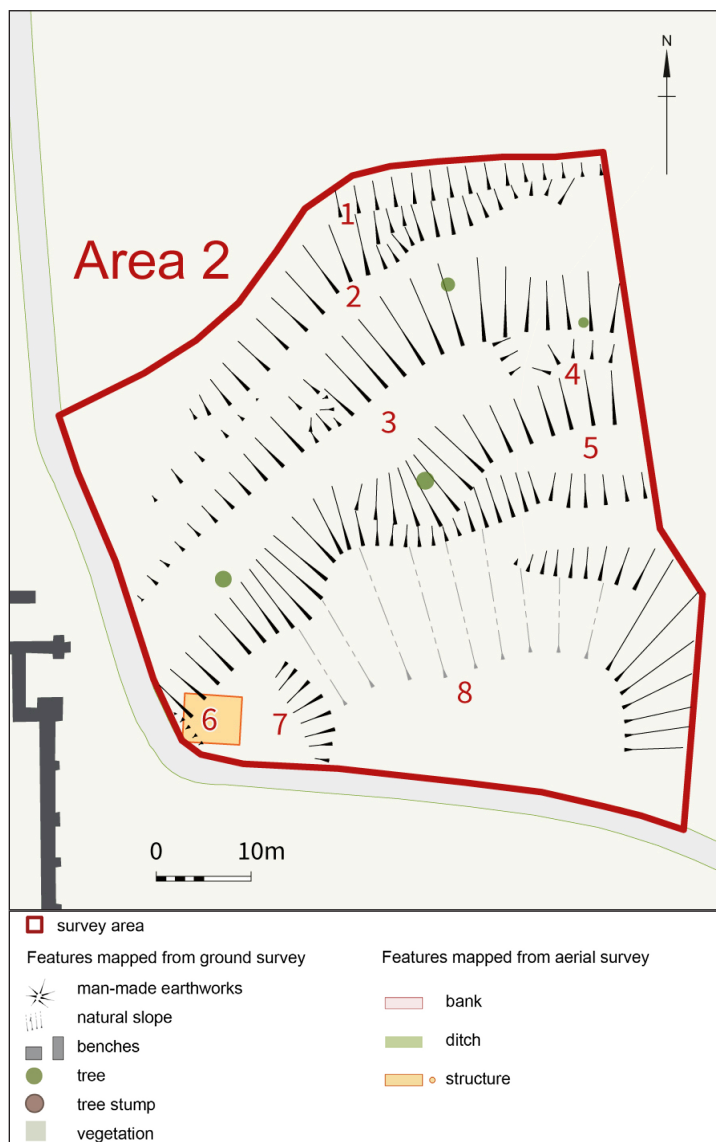


Figure 21: Survey Area 2 to the north-east of the scheduled area at 1:1000 scale when printed at A4. The exposed abbey foundations are visible in black in the south-west corner of the image. The numbers refer to features mentioned in this section of the text. Image: Sharon Soutar. © Crown Copyright and database right 2019. All rights reserved. Ordnance Survey Licence number 100024900.

Survey Area 2 was defined on the north, west and south by modern tarmac paths, and to the east by an area of denser vegetation. The survey area occupies a fairly steep north-facing slope, rising in height from 9m to 17m above Ordnance Datum (sea level). Immediately to the east of this area is the site of a substantial timber-framed barn of possible 16th - or 17th - century date, which survived until

around 1900 (see below). A number of possible building platforms were previously suggested in this area by Thomas (in prep, 173-4, areas 11-15) but these were not identified during this survey.

In the north of this area is a low scarp (Fig 21 [1]), approximately 30m long and approximately 0.6m high, and aligned east-west. It was truncated by the modern tarmac path and can be seen on lidar continuing westwards beyond the survey area (Fig 22). One possible interpretation of this scarp is that it was the position of the hedgeline defining the northern edge of the 'greene' illustrated in the 1655 Daynes plan (Fig 4), which ran on an east-west axis from the north-east corner of The Warren, to a small building just north of the barn. To the south of this scarp, a possible pathway across the site (Fig 21 [2]), approximately 3-4m wide, is defined by two north facing scarps either side of it, creating a narrow terrace. It follows the contours of the slope with a curving route and is essentially parallel to the remains of a second track immediately to the south which connected the barn site and the abbey.

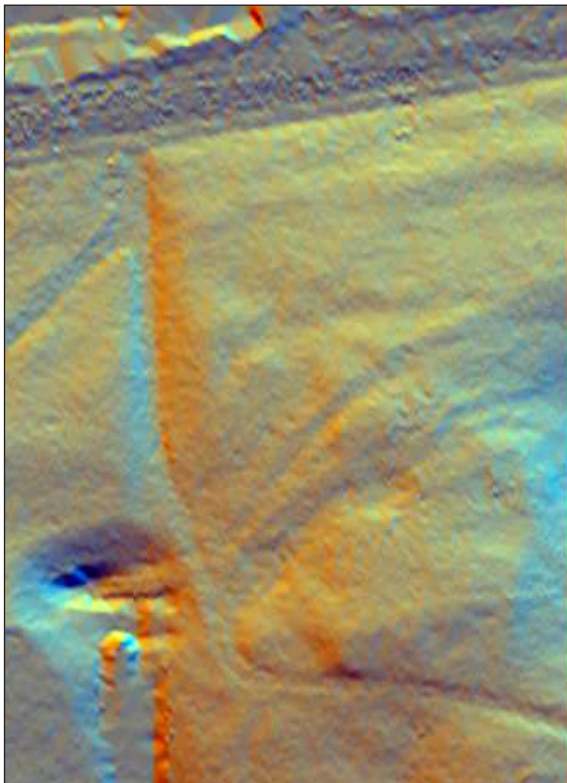


Figure 22: Survey Area 2, north-east of the scheduled area, on Environment Agency Open Access lidar (DTM 50cm composite HS 16D) TQ4778. © Environment Agency copyright and/or database right 2019. All rights reserved.

This trackway was observed during field survey as a terrace varying in width between 5.5m and 7m (Fig 21 [3]). It is defined on either side by north facing scarps, the upper scarp cut into the natural slope, and follows the natural contours. It is shown on the 1st edition 6-inch Ordnance Survey map published 1870 and the 1st edition 25-inch map of circa 1865 (Fig 23), but is no longer shown on the 2nd edition 6-inch map (published 1898), suggesting it had fallen out of use as the barn itself became derelict, possibly as agricultural buildings were consolidated closer to Abbey Farm in the late 19th century.

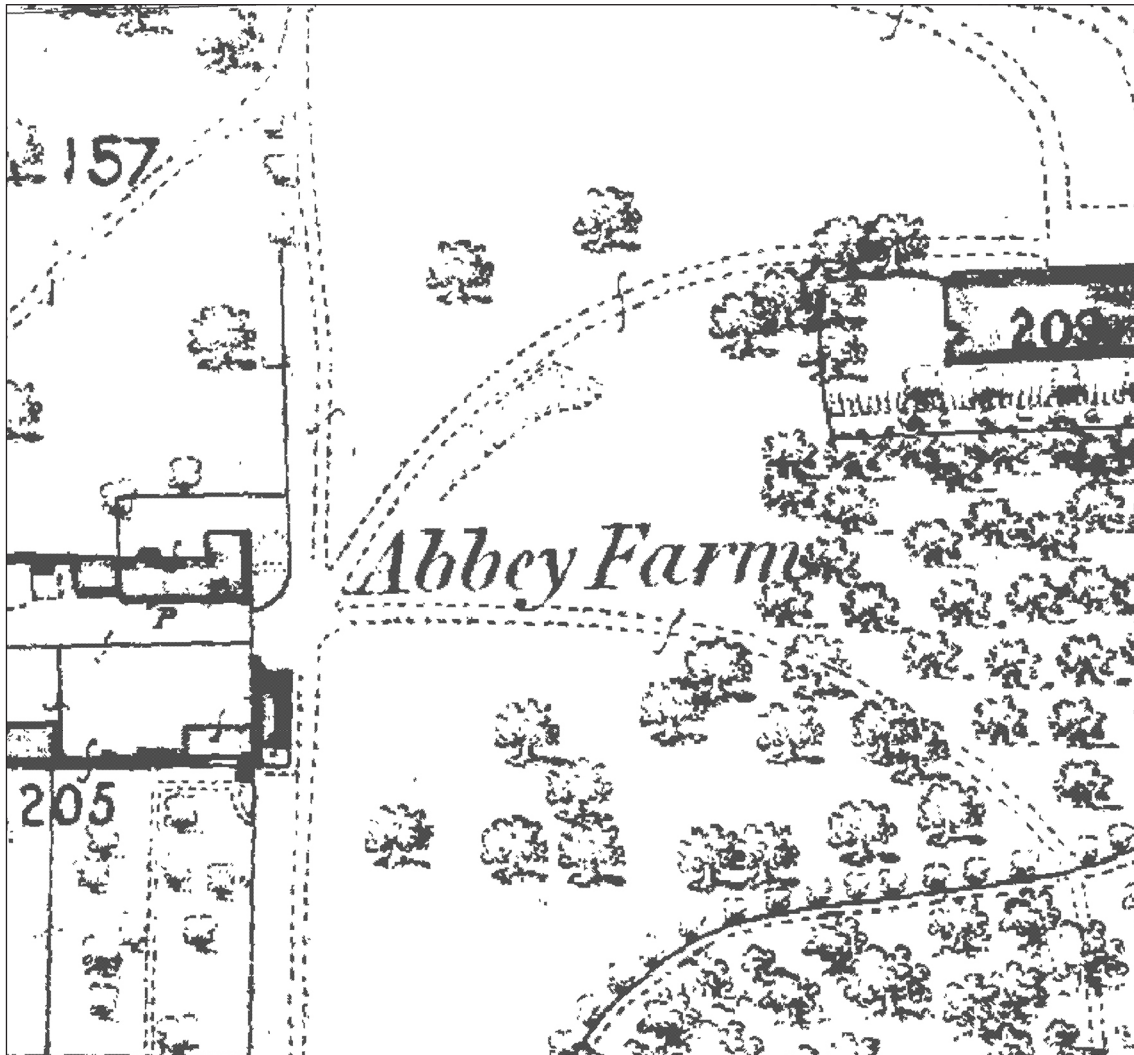


Figure 23: Survey Area 2 as seen on the Ordnance Survey 25 inch 1st edition map of Kent (II.12), surveyed in 1862-3 published in circa 1865. The curving track from Abbey Farm and the former abbey buildings to the barn can clearly be seen. (© and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2019) Licence numbers 000394 and TP0024. Not to scale.

At the eastern end of the track a slight mound was observed (Fig 21 [4]). It measures 9m by 3.5m, and is 0.3m high. The west side of this mound has been eroded by a modern informal path. It may be a fan of material deposited when the platform (Fig 21 [5]) above and to the south of it was created.

The platform (Fig 21 [5]) is a shelf cut into the slope, approximately 20m long east-west (Fig 24). It is widest at its eastern end (approximately 5m) and tapers to a point at its western end. It extends eastwards beyond the survey area. The scarp that defines the northern edge of this platform averages around 0.8m high. This is possibly the site of the 'Dovehouse' noted on the 1655 Daynes plan (Fig 4), corresponding with its rough position between the barn and the complex of buildings centred on the former abbot's lodging. This high status building would have been prominent from the road below. Thomas (in prep, 174) notes a 'slightly raised circular grass-mark of a possible dovecote platform'. This was not identified during the survey, though the accompanying grid reference places it within the area of the

abbey ruins themselves, presumably in error, and therefore its location could not be precisely identified.



Figure 24: The platform which may represent the former site of the dovehouse shown on the Daynes plan of 1655, looking east. © Historic England (14-JAN-2019).

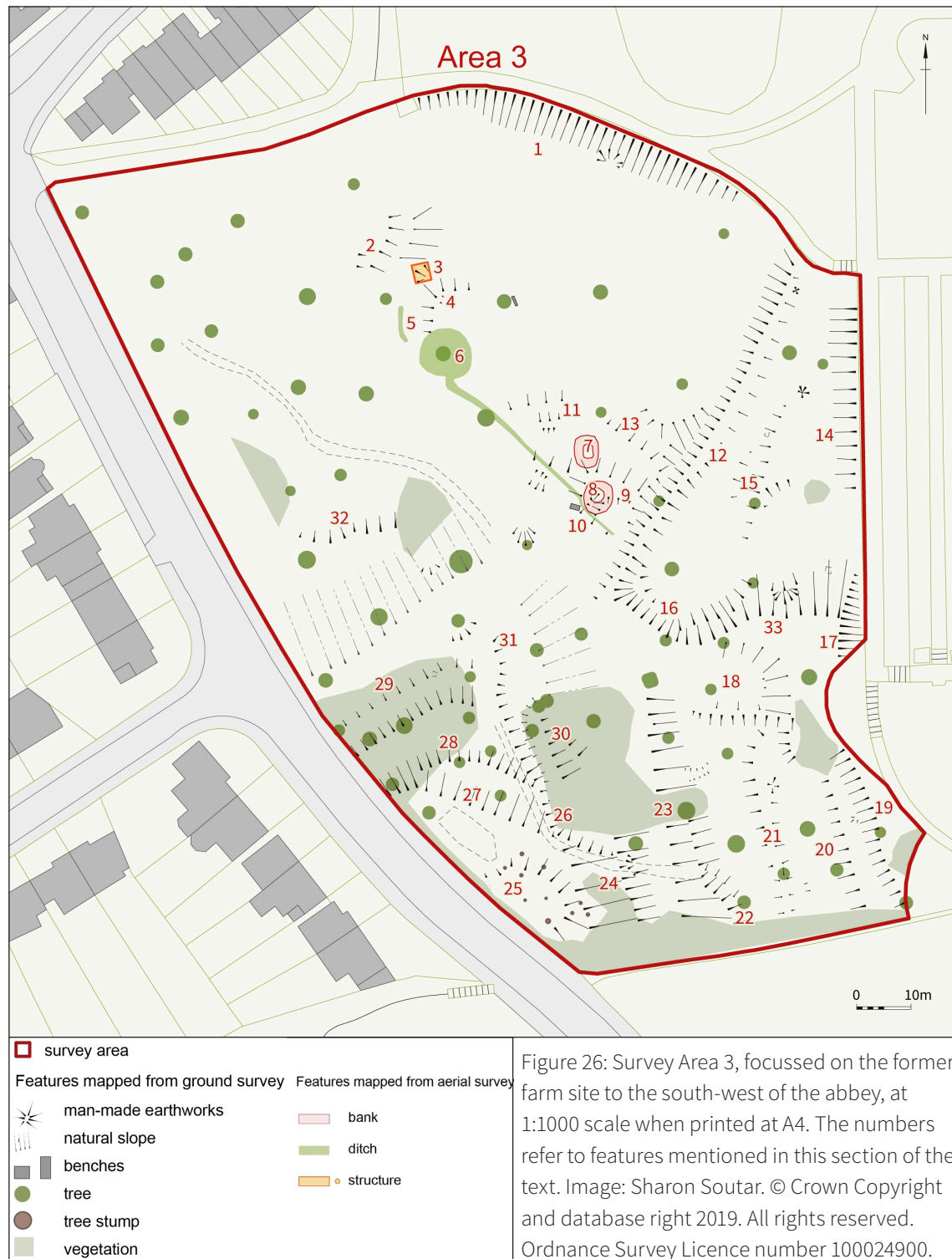
The site of the shed used during Elliston-Erwood's excavations was plotted from aerial photographs (Fig 21 [6]). It measured 6.1m by 5m, and is evident in aerial photographs between 1944 and 1955, but was probably removed shortly after excavations finished in 1960 (Fig 25). There was no evidence for this structure from field survey. To the east of the shed site was a scarp, approximately 12m long, cut into the slope (Fig 21 [7]). There is no obvious interpretation for this feature, but it may be associated with activities surrounding the shed.



Figure 25: Detail of aerial photograph HEA RAF 106G/UK1356 5018 (2-APR-1946) showing Elliston-Erwood's site hut in the centre of the photograph. Historic England RAF Photography.

The plateau at the top of the slope (Fig 21[8]), may have been slightly altered by the insertion of a modern picnic bench, but the scarps that define the plateau are visible on aerial photographs from 1944 onwards.

### Survey Area 3: The former farm site to the south-west of the abbey (Figs 12 and 26)



This was the largest area surveyed and is mostly defined to the north, east and south by modern tarmac paths within the park, and to the west by New Road. The topography in this area is characterised by a shallow, dry valley aligned roughly north-south.

This area was primarily surveyed using TST, as tree cover in this area restricted the use of GNSS equipment. Features are discussed here in approximate order of survey, which followed a clockwise traverse starting in the north of the survey area. Features noted during field survey, aerial survey and map regression are discussed as groups where they appear to relate to each other.

The most substantial earthwork feature is the embankment created where the former track to Lesnes Abbey, now the modern path leading from the west to the new visitor centre, was raised over the dry valley, presumably during the abbey's construction or period of occupation (Fig 26 [1]). As the tarmac path was taken as the boundary for the survey area, only the southern scarp of this embankment was recorded; it is approximately 70m long and on average 0.9m high. The 1655 Daynes plan (Fig 4) and various editions of the Ordnance Survey show that this track was the main route to the abbey site in the post-dissolution period and perhaps in the monastic period, possibly associated with the Upper Gate mentioned in 1524 (Clapham 1915, 42). The Daynes plan also shows this track running immediately to the south of the southern boundary of the 'The Warren' and this embankment may therefore potentially have helped to define the abbey precinct. It appears to have been modified in the post-war period, with the construction of the present tarmac path giving the causeway a slightly more curved profile than the straight field boundary noted on earlier Ordnance Survey maps (Fig 29) or shown on the 1945 aerial photographs.

### Allotment Area

In the north-west of the survey area, there are a series of short, parallel, scarps, the most substantial two being about 10m in length and 2m and 5m wide (Fig 26 [2]). They are oriented approximately north-east/south-west, and occupy the south-east corner of an area used as allotments in the mid-20th century. These allotments appear on aerial photographs from 1944 onwards (Fig 27), suggesting that they were introduced during the Second World War, and are shown until the 1975 edition of the 1:1250 Ordnance Survey map, suggesting they remained in use until the early 1970s. The scarps (Fig 26 [2]) do not appear to respect the former allotment divisions and their origins are not clear.

To the south of these scarps, and outside the former area of allotments, is a sub-circular shallow hollow (Fig 26 [3]). It is approximately 3.2m across, and coincides with the position of a small square shed as transcribed from the aerial photographs. The shed may have been associated with the allotments, though it was located outside the allotment boundary and could equally have been associated with the temporary searchlight (see below). This shed is evident in the 1946 aerial photographs (Fig 28), but is not visible in the 1955 aerial photographs.





Figure 27: Detail of aerial photograph HEA RAF 106G/LA31 3138 (07-AUG-1944) showing the allotments in the north-west corner of Survey Area 3 and the temporary searchlight battery. Historic England: RAF Photography.

### Temporary Searchlight Battery

South of the south-eastern corner of the allotments, evidence was recorded for a temporary Second World War searchlight battery, with two anti-aircraft Bren gun posts to the south (Fig 26 [4]-[9]). Comparable features have been noted at Immingham, North East Lincolnshire, and as a monument type appear to have gone out of use around 1941, accounting for its abandoned appearance by 1946 (Fiona Small pers comm). These features all appear on aerial photographs from 1944-1946 (Figs 27 and 28), but had been removed by the time that the 1955 aerial photographs were taken, and do not appear on any Ordnance Survey mapping. They are largely described here from aerial photographs, due to limited field evidence, although this is discussed where available.



Figure 28: Detail from aerial photograph HEA RAF 106G/UK1356 5018 (02-APR-1946) showing the allotments, possible associated shed and the Second World War temporary searchlight battery. Historic England Archive: RAF Photography.

The temporary searchlight battery consisted of what appears, from the aerial photographs, to be a sub-circular platform or hard standing approximately 9.7m across (Fig 26 [6]). On several of the photographs, a black dot can be seen in the middle of this platform, which may have been the mounting for the searchlight. A tree was later planted in the centre of this platform, possibly as a deliberate attempt to re-landscape the site. To the north-west of this platform, a slightly curved feature measuring approximately 7m long, and aligned roughly north-south, can be seen (Fig 26 [5]). This was possibly a temporary embankment, which could have been constructed of sandbags, to provide some sort of screening from the road.

A raised rectangular feature, interpreted as a possible platform, measuring 9m by 6.2m and approximately 0.1m high (Fig 26 [4]), was noted immediately east of the site of this embankment during field survey. There is no indication of a building here from aerial photographs or cartographic sources and this part of the site appears to have been used as orchard from at least the mid-17th century until the early 20th century. The date and function of the possible platform are unclear.

Approximately 30m to the south-east of the searchlight battery were a pair of sub-circular mounds, approximately 8.5m apart (from centre to centre), with depressions in the middle, possibly created by embanking earth for protection around a central emplacement. They have been interpreted as two anti-aircraft Bren gun posts (Fiona Small pers comm). There was no field evidence for the northernmost (Fig 26 [7]) which measured approximately 6m by 4.5m from the aerial plot. The southernmost (Fig 26 [8]) measured approximately 6m by 5.5m from the aerial plot and retained some evidence on the ground, in the form of a slight irregular scoop, approximately 3.6m by 2.5m. A very slight irregular platform immediately to the east (Fig 26 [9]), may be the result of post-war landscaping to remove the southern mound, but could also be an unrelated and possibly earlier feature.

A very slight scarp (Fig 26 [10]) was observed during field survey that aligns with a possible cable trench or pathway seen on aerial photographs connecting the temporary searchlight battery with the two gun emplacements. A track can also be seen on the 1944 and 1945 aerial photographs, heading directly north from the searchlight position, across the causeway embankment and stopping approximately halfway along the western boundary of the site to the west of the Dipping Ponds (Figs 27 and 28). It seems likely that an associated piece of equipment, perhaps a generator, was positioned there. This track also links to the hut (Fig 26 [3]) located at the corner of the allotments.

No evidence was seen during the survey to support Thomas's (in prep, 107) interpretation of a monastic guesthouse in this location.

## Trackway and Barnyard

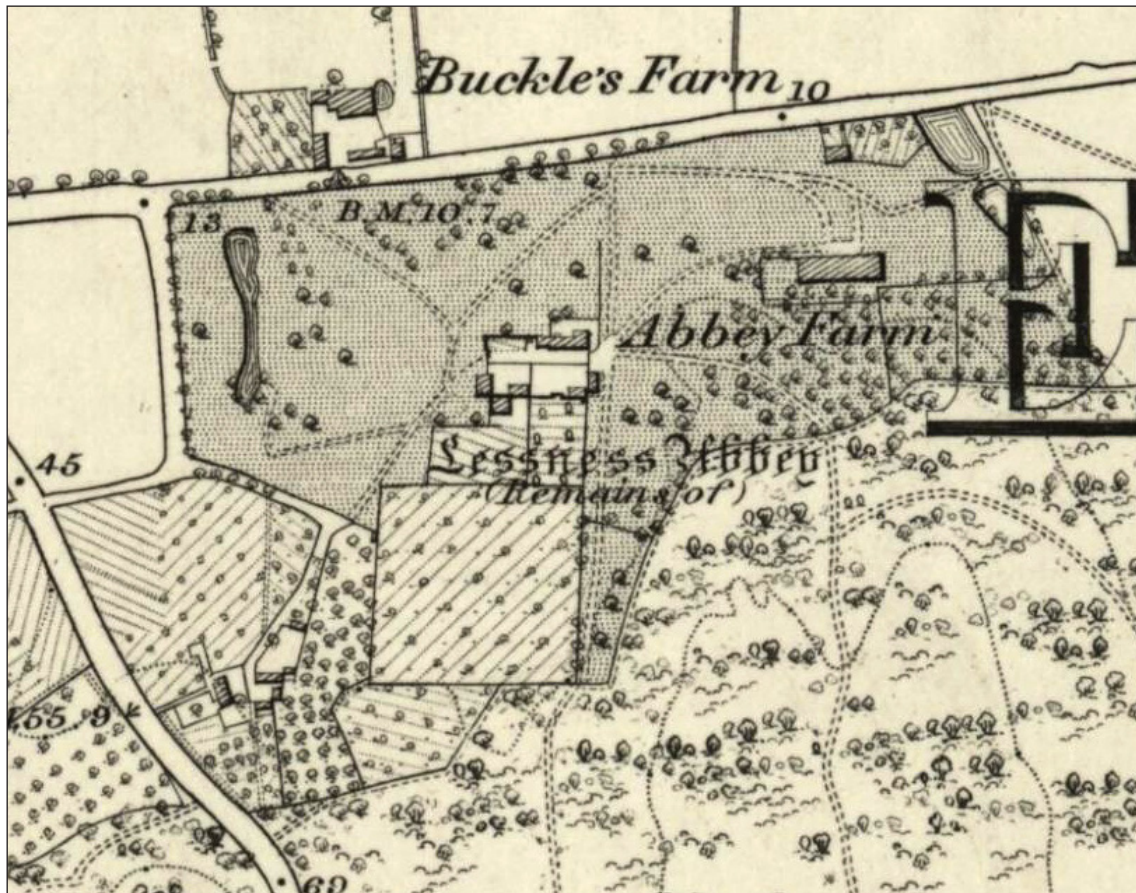


Figure 29: An extract from the Ordnance Survey 6 inch map of Kent (II) surveyed 1863-66, published 1870 showing the farm to the south-west of the abbey surrounded by orchards. Reproduced with permission from the National Library of Scotland. Not to scale.

The most substantial earthwork feature noted in this area of survey was the raised former track to Orchard Cottage, which leads south from the east-west access route into the abbey site from New Road (Fig 26 [12]). It is oriented NNE-SSW and is approximately 75m long and between 1m and 1.2m in width. There is an extremely slight scarp on its eastern side, approximately 0.05m in height, and a more pronounced scarp on its west side, varying in height from 0.1m to 0.3m (Figs 29 and 30). The more pronounced scarp on the western side has been created to compensate for the topography which begins to fall away more steeply on this side. The track appears to have been in use until the demolition of Orchard Cottage, and most of the surrounding structures, between 1897 and 1909. Thomas (in prep, 110) associates the track with the possible gatehouse structure that he recorded in a service trench, but there is no evidence of a direct relationship between the features observed in the trench and the trackway, and no dating evidence was recovered.

To the east of this track were a number of more amorphous features. A series of three parallel and fairly open scarps were observed during field survey to the north of the possible gun emplacements (Fig 26 [11]). The longest was 11m long, with the other two between 3m and 4m. There is no obvious interpretation for these features.



Figure 30: The raised trackway to the farm, looking north-east, visible as a clear parchmark in the very dry summer of 2018. © Historic England (11-JUL-2018).

A pair of inward-facing scarps (Fig 26 [13]) appear to define a very shallow gully, approximately 3m wide and 13m long. This feature is possibly the result of erosion from traffic leaving the route of the raised track in a north-westerly direction, though the raised track itself appears to overlie the gully suggesting a later improvement which did not include the sunken spur. There are no features from cartographic sources that would obviously explain traffic in this area and no clear relationship between these features and the short scarps to the west (Fig 26 [11]).

The raised track (Fig 26 [12]) formed the west side of a narrow triangular yard, first noted as a 'Barn yard' on the Daynes plan (Fig 4). The Ordnance Survey 1st edition 6- inch map shows this yard had been divided into two enclosures with a small building between them (Figs 29 & 31), although this had been demolished by the time the 1890s Ordnance Survey maps were surveyed. A slight west-facing scarp (Fig 26 [15]), approximately 25m long and oriented NNE, was noted during field survey and may have defined the east side of this yard. The scarp to the east (Fig 26 [14]) that defines the edge of the north-south path has been created by modern landscaping.



Figure 31: A detail from the 1st edition Ordnance Survey 25 inch map of Kent (II.12), surveyed 1862-63 and published 1865, showing the farm buildings and yards. © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2019) Licence numbers 000394 and TP0024. Not to scale.

A strong scarp (Fig 26 [16]) was surveyed towards the southern end of the 'Barn yard' area. The scarp, defining the east side of the raised track (Fig 26 [12]), turns sharply east-south-east for approximately 18.5m, curving to the north-east at its eastern end and continuing for 12.5m. Immediately east of this is a slightly broader north-facing slope (Fig 26 [33]), possibly a modified natural slope, approximately 15m long and 0.6m high, with a large tree hollow half way along it. The scarp which cuts this slope at its eastern end is related to the creation of the modern path (Fig 26 [17]).

The scarp described above (Fig 26 [16]) is oriented more to the south-east than the outline of the 'Barn yard' as indicated on various Ordnance Survey editions, which also show that the 'Barn yard' was defined to the south by a rectangular building approximately 13m by 7m, aligned east-west (Figs 29 and 31). This may be what

Thomas (in prep, 224) describes as a building platform (Area 30). This building, as the most substantial building in this area on the 1655 Daynes plan (Fig 4), could possibly have been a barn. The fact that the scarp (Fig 26 [16]) cuts through the site of this building is difficult to explain. It may result from landscaping during the creation of the public park, as may the broad, possibly modified natural, slope to the east (Fig 26 [33]).

Two structures to the south of the potential barn were recorded on all 19th-century Ordnance Survey editions, but there was no evidence for them during field survey (Figs 29 and 31). Only one structure remained in this area on the 1909 3rd Edition 25-inch map (Fig 32), although it had been removed by the 1937 edition. The north-south scarp to the south of this building appears to terminate where the building was located (Fig 26 [23]).



Figure 32: Only one building remained on the farm site by 1908 when the revisions were undertaken for the Ordnance Survey 3rd edition 25 inch map published in 1909. © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2019) Licence numbers 000394 and TP0024. Not to scale.

### **The south-east part of the survey area: Whit's Cottage**

Adjacent to the south-west boundary of the 'Barn yard' is a possible level area or building platform (Fig 26 [18]), approximately 9m north-south and up to 13m east-west, though the western end is not clearly defined. It is defined by a broad scarp to its north and east sides (approximately 0.3m high) and a 20m-long well-defined south-facing scarp to the south.

Historic maps show that the area immediately to the east was the site of a small house. 'Edw. Whits house' is shown on the 1655 Daynes plan, aligned on a north-east to south-west axis, beyond the south-west corner of 'The Orchard' (Fig 4). This structure does not appear on any edition of the Ordnance Survey. However, Ordnance Survey maps up to and including the 1909 25-inch edition (Fig 32) show a post-medieval field boundary enclosing an area south of 'The Orchard', with its north-west corner angled north-east/south-west and roughly in the position of Edward Whit's house on the Daynes plan. It is therefore possible that the irregular shape of this field boundary reflects the cottage that was formerly located in its north-west corner (Fig 4).

This is close to Area 29 in Tony Thomas's investigations, where he noted deposits including ceramic building material and pottery (Thomas in prep, 222-223). During field survey, lime mortar and fragments of ceramic building material were seen in animal burrows, although it should be noted that the site of the cottage has been substantially disturbed by the creation of modern tarmac paths.

To the south of the possible building platform (Fig 26 [18]) is a very slight bank (Fig 26 [21]). It is 35m long and varies in width from 3-4m wide. It runs north-south and may have functioned as a field or garden boundary and is roughly equidistant between two scarps which share the same orientation (Fig 26 [19] and [23]). The eastern scarp (Fig 26 [19]), corresponds with the western field boundary for the enclosure immediately south of The Orchard. There are several hawthorn stumps, indicating it was formerly hedged. Between the north-south bank and the former boundary is another west-facing scarp (Fig 26 [20]) that is roughly parallel. It appears to be defining a track, varying in width from 2m to 5m running to the west of the field boundary.

Thomas (in prep, 222) noted some of the features in this area during his survey.

### **The south-west corner of the survey area: terracing and Orchard Cottage**

To the south of the farm site a series of scarps were recorded running on, or parallel to, the natural slope of the rising ground towards New Road. Slight scarps (Fig 26 [22]) around 10m in length, running roughly north-south and curving to the west at their northern end, are presumably the result of erosion related to tracks heading up the hill. These scarps appear to overlie two much broader scarps (around 4m wide on average) (Fig 26 [23]) which run north-south for approximately 21m at the base of the natural slope and appear to reflect the position of a former boundary shown on the Ordnance Survey 1st edition 25-inch map published circa 1865 (Fig 23). These

scarps appear to merge and continue as one scarp northwards for at least another 20m towards the site of the former farm buildings (Figs 29 and 31).

A break of slope (Fig 26 [24]) further west up the hill is aligned with the track noted on the same 1865 map, running approximately north-south and forming the east boundary of a small rectangular enclosure, illustrated as having sparser orchard planting than the adjacent fields. This field is illustrated on the 1655 Daynes plan, between 'Mr Barnards house' and 'Edw. Whits house'. To the south of this, the Daynes plan indicates a southbound track through woodland (Fig 4).

To the west of this break of slope, where the ground levels once more, is a modern sub-circular mound (Fig 26 [25]), approximately 18m in diameter at its widest point. Limited compaction and several stumps of recently felled trees suggest it may be the result of recent park management activities. A scarp, that appears to define the edge of a relatively modern vehicle track (Fig 26 [26]), curves around the southern end of the remains of a formal planting bed and then heads north to end at the approximate site of Orchard Cottage (Fig 26 [31]), is probably of relatively recent date.

A scarp 26m long and on average 4.5m wide (Fig 26[27]) runs across the top of the gentle north-facing slope of the hill on a north-west south-east alignment. It does not appear to relate to the layout of the farm site and may be an earlier boundary or landscape feature. A narrower scarp (Fig 26 [28]), 4.5m to the north-east, roughly follows the upper scarp (Fig 26 [27]) and merges into it at its western end. The base of the scarp at this western end possibly defines the southern boundary of a rectangular enclosure to the west of Orchard Cottage seen on the 1st edition Ordnance Survey 25-inch map published circa 1865 (Fig 31) but, along with the scarp to the south, these may reflect earlier activity in the landscape.

Two parallel scarps 3.5m apart (Fig 26 [29]), running for 25m on a roughly south-east to north-west alignment, define a terrace which may represent a track from Orchard Cottage to Knee Hill Lane, possibly the one shown on the 1st edition 25-inch Ordnance Survey map (Fig 31), though this appears to be further north. These scarps are substantial features but it should be noted that they were recorded in an area of thick brambles and may not have been surveyed to the same level of accuracy as other features.

Within the large planting bed to the south of Orchard Cottage, there is a pair of scarps (Fig 26 [30]) running on a roughly north-south alignment. Whilst these may be related to the small enclosure noted to the south of Orchard Cottage on the 1st edition 25-inch map (Fig 29), they may also be the result of the later clearance and landscaping of the site.

The site of 'Orchard Cottage' (Fig 26 [31]) was only observed on the ground as a flat area defined by a slight scarp to the west and a natural fall to the east. A building in the same position as Orchard Cottage was recorded as 'Mr Barnards house' on the Daynes plan (Fig 4). An early 20th-century postcard is the only known image of Orchard Cottage<sup>1</sup> (seen by the author on eBay on 18 March 2019 but subsequently purchased by another party). It shows a two-storeyed building with dormered



windows on the roof, and a possible cross wing to the north. There was a substantial external chimney stack on the southern gable end and another chimney to the north. It may be the structure illustrated on the Daynes plan (Fig 4).

The 19th-century census returns suggest that there were no other dwellings in the cluster of buildings in this part of the site. For example, in the 1891 Census, the last showing Orchard Cottage, its closest neighbours are Buckles Farm and Cottages (north of Abbey Road) and the suburban villas on the west side of New Road. The cottage had been demolished by the time of the 1908 revision to the 25-inch Ordnance Survey map, along with all the other structures, aside from a small square building formerly at the eastern side of the barnyard (Fig 26 [33]; Fig 32).

A north-facing scarp (Fig 26 [32]), located between the site of Orchard Cottage and the allotments, to the north of a steep north-facing slope, may align with a new field boundary evident on the 3rd edition 1909 25-inch Ordnance Survey map, which has since been removed (Fig 32).

It proved difficult to reconcile some of the features recorded by Thomas in this area with the ones surveyed during the Historic England work (see Thomas in prep, 224). A possible post-dissolution building identified in a utility trench by Thomas (in prep, 232) was not visible as surface remains.

# DESCRIPTION AND INTERPRETATION OF REMAINS OUTSIDE THE AREAS OF ANALYTICAL EARTHWORK SURVEY

## Boundary earthworks



Figure 33: The location of banks and ditches to the south of the abbey as recorded from Lidar at 1:2500 scale. The letters refer to features mentioned in this section of the text. Image: Sharon Soutar. © Crown Copyright and database right 2019. All rights reserved. Ordnance Survey Licence number 100024900.

## Description of earthworks

Sections of well-preserved bank and ditch boundaries are located to the south of the monastic complex at the edge of, and within, Lesnes Abbey Woods (Fig 33). The Daynes plan (Fig 4) suggests that some substantial sections of boundary fell out of use after the abbey's dissolution, and it appears that this has helped to preserve the form of the earthworks where they have not been removed by later activity.

Most of the earthwork boundaries were recorded from lidar imagery. The features were then visited on the ground to confirm the lidar interpretations. Broadly, these earthworks are all of a similar form; they are embanked on the downward slope, and ditched on the upward slope, placing the ditch on the 'woodland' side of the boundaries. This was probably the easiest way to construct the boundaries on the slope, but it contrasts with 'typical' woodland boundaries that have an external ditch (Rackham 2000, 98-99). It might suggest an earlier or alternative function for some of the sections of boundary, with the location of the ditch providing a barrier from the south side within the woodland.

From west to east, the recorded earthworks start at approximately NGR TQ 474784, adjacent to the junction between Knee Hill Road and the track which leads southwards from New Road ([A] on Fig 33 and Fig 34). Here the bank and ditch run eastwards down a steep slope for around 50m, before turning southwards for another 45m, and then turning eastwards again for 60m before heading north again. Careful examination of the lidar and the area on the ground shows that originally the bank continued east before heading north, rather than taking this detour ([B] on Fig 33; Fig 34). A very slight bank can be seen on the lidar and on the ground where this change has been made. The repositioning of the boundary appears to represent a second phase of encroachment, resulting in the intake of a small area of approximately 0.2ha. The purpose of this undertaking is unclear, but it is possible that small parcels of land, some with no physical demarcation on the ground, were changing hands in the medieval or post-medieval period. Interestingly it appears to take in (assuming 'outside' was to the south) an area of flatter ground in the base of the valley, as seen further to the east on another section of boundary ([G] on Fig 33).

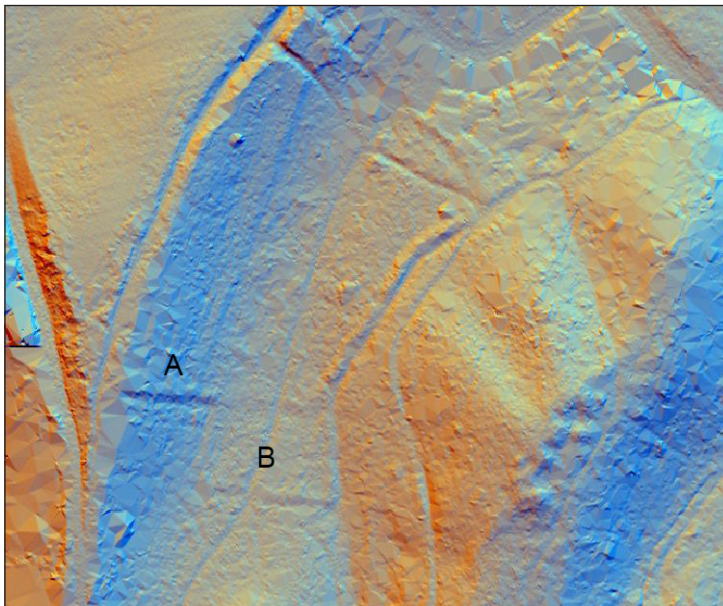


Figure 34: Lidar imagery showing the most-westerly stretch of bank and ditch boundary between Knee Hill Lane to the west and New Road to the east (A and B on Fig 33). Digital Terrain Model 16D Environment Agency Open Access 50cm composite Lidar TQ4778. © Environment Agency copyright and/or database right 2019. All rights reserved.

The boundary then heads north and east for 160m until it meets the gardens of the modern houses on Woodlands Way, where the bank is lost amongst the later garden boundaries and footpath. Up to this point, only a small section of the bank and ditch close to the garden boundaries is shown on the Daynes plan of 1655 (Fig 4) or the Abbey Wood survey of 1791 (LMA CLC/210/H/048/MS22636/020B), suggesting this section had either fallen out of use by 1655, was constructed and abandoned between 1655 and 1791, or constructed after 1791. Of these, the former explanation seems most likely given the appearance of the earthworks, and their lack of conformity with later land divisions. Beyond this point the boundary may have continued east beyond the later line of New Road, as suggested by the Daynes map, eventually joining another section of surviving bank and ditch earthwork at the south-east corner of the formal garden on the site of the earlier 'Orchard' (Fig 5 [E]), though no earthwork evidence survives for this stretch.

It is possible that a branch of the boundary continued southwards along the route later adopted for New Road to where another similar stretch of bank and ditch can be seen on the east side of the road at NGR TQ 4778 7847 ([C] on Fig 33), though this may constitute an entirely separate feature.

From this point on New Road a boundary runs east as a substantial earthwork for 180m roughly across the contours (Fig 33 [D]; Fig 35), before heading northwards towards the abbey for around 140m along the eastern side of another valley. The east-west section of this boundary is not shown on the Daynes map of 1655 (Fig 4) or the Abbey Wood survey of 1791, again suggesting it has gone out of use in the post-medieval period, though it now forms the line of a modern footpath. The north-south section of the boundary appears to be represented on the Daynes plan (Fig 4) as part of the western boundary of 'Ashe Hill Coppice Wood'.



Figure 35: The view looking east along the stretch of bank and ditch boundary as it runs east from New Road ([D] on Fig 33). The bank is to the left (north) and the ditch is to the right (south) and contains the modern footpath. © Historic England (14-JAN-2019)..

At what was the south-eastern corner of 'The Orchard', there is a short gap at around NGR TQ 4792 7865, probably caused by modern damage, after which the boundary then runs upslope in a north-eastern direction for approximately 80m, before turning east for 30m and then north for another 100m ([E] on Fig 33) before terminating at the edge of the woodland. It is very unclear from the surviving evidence as to whether the bank continued further north, and has been truncated, or whether it originally turned towards the east. The Daynes plan depicts a boundary following an alignment slightly to the west of the earthworks that turns to the east at this point (Fig 4) but the surviving earthworks cut through what would have been 'Ashe Hill Coppice Wood', eventually aligning with the fenced boundary shown on the 1655 plan between the 'Dovehouse & greene' area and the barnyard.

Thomas (in prep, 168) interprets this stretch of ditch and bank as part of a pre-monastic (possibly Roman) enclosure ('Enclosure 1') located in the area near the recently inserted viewing platform at NGR TQ 4799 7882. However there is no direct relationship between the east-west ditch excavated by Thomas and the north-south boundary ditch and bank described above, and no obvious supporting earthwork evidence. Similarly no surface evidence of the barn site in this area suggested by Thomas (in prep, 172) was seen by the author.

It seems probable that the earthwork boundary E continued to the east. This is suggested by a further stretch of boundary visible running east-west about 100m to the east at NGR TQ4812 7883, which can be seen on the ground and on lidar, as well as being depicted on the Ordnance Survey 3rd edition 25-inch map published 1909 (F on Figs 33 and 36). If the two sections were originally linked is not clear why the stretch in between is not preserved. It is possible that it never took the same form or had a different history, though a continuous boundary was marked here on the 1655 Daynes plan (Fig 4).



Figure 36: Lidar imagery showing the stretch of boundary bank and ditch to the east of the abbey ruins ([F] and [G] on Fig 33). The earthworks may have been intended to enclose or define the level ground in the valley bottom. Digital Terrain Model 16D Environment Agency Open Access 50cm composite Lidar TQ4878. © Environment Agency copyright and/or database right 2019. All rights reserved.

At NGR TQ 4816 7883 the boundary turns southwards as a bank and ditch for approximately 110m, parallel but slightly to the west of the approximate location of the eastern side of Ashe Hill Coppice Wood as seen on the 1655 Daynes plan (Fig 4). It then turns eastwards for 40m, the east-west stretch being broken by a modern footpath (Fig 36). The bank and ditch then turns back northwards for around 115m beyond which it is no longer clear, lost in the modern boundary to the east. These banks and ditches form another rectangular intake of valley floor ([G] on Fig 33; Fig 37), this time roughly 0.4ha, similar to the one described to the west beyond New Road.

Traces of a ditch across the northern side of the intake described by Thomas (in prep, 144-145) were not identified at the time of the survey, nor was an internal square banked enclosure in the south-west corner, though this area was heavily vegetated at the time of the fieldwork. Thomas (in prep, 142-44) describes this feature as 'Enclosure 2' (Area 5) and suggests it may be linked to other features in the abbey landscape for which he has suggested a Roman date, but there is no field evidence to support this interpretation and the landscape position of the boundary makes 'security' an unlikely function.



Figure 37: The much eroded bank on the eastern side of the enclosed level ground at the eastern side of the modern abbey site, looking south from NGR TQ 4823 7882 ([G] on Fig 33). © Historic England (14-JAN-2019).

It is worth noting that this valley intake or enclosure is not shown on the 1655 Daynes plan (Fig 4) and was therefore presumably either no longer in use or no longer a significant boundary at this date, perhaps because smaller parcels of land had been consolidated into larger coppice units. Alternatively it may have been constructed after the survey for the Daynes plan, though it is not shown on the 1791 Abbey Wood survey so this seems unlikely. It may reflect the importance in the monastic period of areas of level ground on a site that was relatively restricted by the topography and woodland to the south and the marshes to the north.

### Interpretation of boundary earthworks

It is likely that the earthworks on the whole represent stretches of woodland boundary bank designed to protect the coppice to the south of the abbey. In some cases the earthworks align with the woodland compartments shown on the Daynes plan of 1655 or the later Abbey Wood survey of 1791 (Fig 4; LMA CLC/210/H/048/MS22636/020B). However the location of the ditches on the woodland sides of the

banks is atypical (Rackham 2000, 98-99) and it is clearly visible on the lidar that other woodland boundaries depicted on the historic maps and surviving in the woods do not take this bank and ditch form. It is possible that some stretches of boundary earthwork may represent sections of a monastic outer precinct or estate boundary which ran to the south of the main monastic buildings and demarcated the immediate abbey environs from its wider woodland estate. The mapped boundaries all appear to have, broadly speaking, their ditches to the south of the banks, suggesting that 'outside' is to the south in what is now Abbey Woods.

As suggested previously, the small intakes or alterations to the boundaries seen to the east and the west, may reflect a desire to exploit the fairly scarce level ground around the abbey in some way, perhaps in the form of more fine-grained woodland management units later simplified into larger coppice compartments, but they could easily be post-dissolution.

Clapham (1915, 28) quotes a reference to money spent on a new fence constructed around the monastery in 1516, '*In nova edificatione paliae circum monasterium predictum*' and though this fence could have been located elsewhere it is possible that it was placed on top of some of the earthworks described above in order to create a more effective boundary, perhaps on the sections adjacent to the abbey.

## Conduit Pond



Figure 38: Conduit Pond, the possible water supply for the abbey, located in the woodland to the south of the ruins, looking south from NGR TQ 4794 7831. © Historic England (14-JAN-2019).

The Conduit Pond (Fig 38), approximately 450m south of the scheduled area, has long been postulated as the source of water for the abbey, in the absence of nearby free-flowing watercourses (Clapham 1915, 61). The pond occupies the head of a dry valley, with water from a natural spring retained by a large earthen bank, measuring approximately 60m by 10m, that defines its northern edge. A narrow channel (possibly created by the removal of a conduit pipe), which appears to have been subject to modern recutting, leads northwards from the pond dam towards the abbey, disappearing about 100m before it reaches the abbey ruins (Fig 39). Earthwork survey was not attempted in this area due to the thick vegetation, although the dam, and a possible mound of slumped material against its north-facing scarp, have been transcribed from lidar (Fig 40).



Figure 39: The narrow recut leat leading north from the Conduit Pond to the abbey ruins can be seen in this photograph to the west (left) of the footpath. View looking north. © Historic England (14-JAN-2019).

Thomas (in prep, 213) suggests that the pond was clay-lined at some point and also that there is continuous banking around the southern, eastern and western sides, though this was not identified during the field visit. He also suggests that the leat may have been lined but notes that archaeological evidence is lacking.

The hypothesis that the pond represented the principle water supply for the abbey is reasonable given that there are no other obvious constant sources of fresh water and as 'clean water and good sanitation were a necessity of monastic life' (Coppack 1990, 81). Lesnes must have had a more reliable and forceful water supply than the Dipping Ponds or the ponds east of the barn, and this substantial dam is entirely compatible with the supplies to other monasteries of this size (eg Jecock et al 2011; Coppack and Keen 2019). Its presence on the Daynes plan (Fig 4) within 'Cundite



Pond Coppice Wood' suggests that it is part of a water supply system which may have been connected to the abbey by open conduits or wooden piping. Further details of how the water supply worked are unlikely to be gleaned from 1:1000 field survey or aerial mapping from lidar, and will require either geophysical survey or excavation. Elliston-Erwood's 1952 excavation report noted a stretch of 1½ inch lead piping, some 20 feet long, projecting from the wall of the parlour, and passing into the cloister area. It is not clear whether this is the same lead pipe found in a 'tiled drain running under the east doorway' of the parlour (LCC 1961, 23). Elliston-Erwood suggested that the northern end of the conduit was near the entrance to the refectory (Bexleyheath Library and Archives LAER/Da/4/2/135).

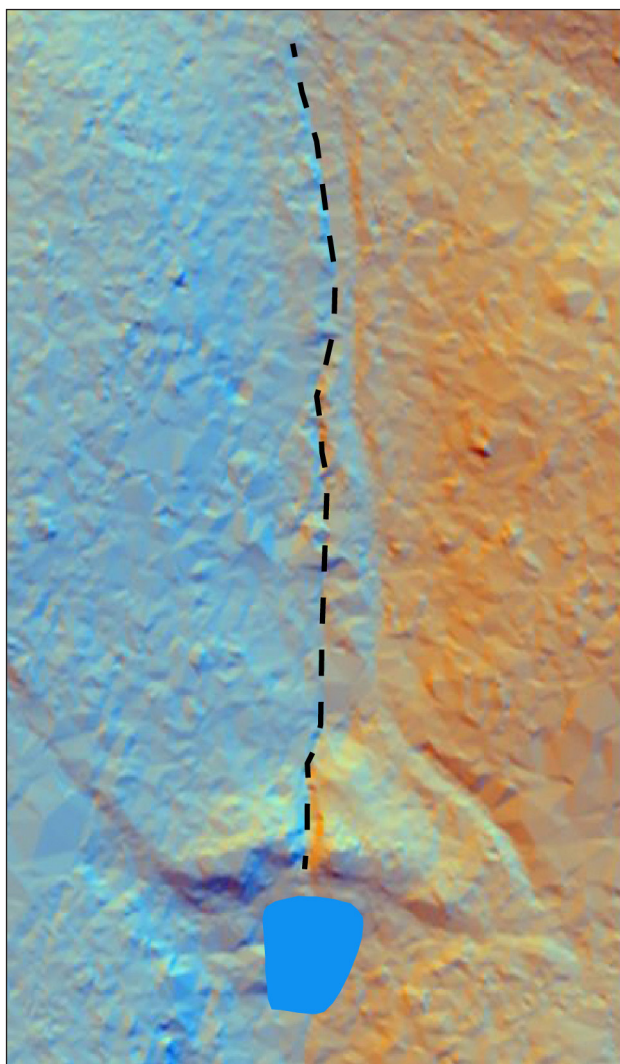


Figure 40: Lidar imagery showing the substantial dam to the north of Conduit Pond and the narrow channel running northwards parallel to the footpath. Digital Terrain Model 16D Environment Agency Open Access 50cm composite Lidar TQ4778 © Environment Agency copyright and/or database right 2019. All rights reserved.

Clapham (1915, 59; Plate XVIII) describes a 'large circular well with stone steining, probably of mediaeval date' south of the precinct and it is possible that this is the same well marked to the south of the formal gardens on the Ordnance Survey maps from 1958 onwards (e.g. OS 1st edition 1:1250 1958). It is not clear how or if this water supply was used by the abbey.

## Abbey Farm and the abbot's lodgings

The buried remains of Abbey Farm, and possibly elements of the abbot's lodging and other monastic buildings, can be seen as parchmarks on aerial and ground photographs where the grass has died over buried foundations in drought conditions. Largely, the structures suggested by the transcription of the parchmarks from aerial photographs (Figs 41 and 42) mirror a lease plan of 1930, which gives functions for each building (Bexleyheath Library and Archives LALB/DA/1/26/26). However some of the parchmarks may reflect monastic structures and Clapham is recorded as stating that the new Abbey Farm farmhouse retained the cellars of the earlier abbot's lodging (TNA WORK 14/1438). Interestingly some parchmarks recorded immediately to the north of the abbot's lodging site suggest a range of buildings on a different alignment from the monastic and post-dissolution layout which are not shown in any sources (Fig 41).

It is not clear whether any of the parchmarks relate to Thomas's (in prep, 181) Building 16 immediately north of abbey ruins, interpreted from two possible foundation trenches seen in the footpath excavations and a chalk/brickearth floor surface.



Figure 41: The buried foundations of the range of buildings that included Abbey Farm and possibly elements of the abbot's lodging (purple) as recorded from parchmarks on aerial photographs NB the evidence for a possible range of buildings on a different alignment to the north of the main group. Image: Sharon Soutar. © Crown Copyright and database right 2019. All rights reserved. Ordnance Survey Licence number100024900.



Figure 42: The foundations of Abbey Farm and possibly elements of the abbot's lodging visible as parchmarks where the grass has died over buried wall foundations in extreme drought conditions, looking west from NGR TQ 4792 7886. 11-JUL-2018. © Historic England (11-JUL-2018).

## Barn Platform



Figure 43: The former site of the threshing barn, visible as a large earthwork platform, looking east. © Historic England (14-JAN-2019).



Figure 44: The barn platform looking south-west, showing how the building was sheltered by the hillslope to the south. © Historic England (14-JAN-2019).

The site of the barn is very clearly marked by a substantial earthwork platform at NGR TQ 4803 7889 which can be seen on the ground, set into the lee of the north-facing slope to the north-east of the abbey site, with a sheltered yard area at its western end (Fig 43). It is possible that the material for the platform may have been created by cutting into the slope. The platform as recorded from lidar measures roughly 45m in length by 15m wide and could have accommodated a much longer building than the one described by Clapham or shown on the 1st edition 25 inch Ordnance Survey map (1915, 43; Figs 44 and 45), though the length of the platform may simply have enabled good access around the barn. The raised forecourt area in front of the barn doors and the raised trackways that led to the doors (shown on the 1st edition Ordnance Survey map published circa 1865; Fig 45) are also clearly visible on the lidar and on the ground (Fig 46). Internal divisions within the barn are also visible as earthworks on the ground, possibly marking the buried position of the wall footings described by Clapham.

Thomas has carried out some archaeological work in the general area of the barnyard including watching briefs on the laying of new footpaths. It is difficult to accurately relate the features described from the draft report to the barn platform or the Ordnance Survey depiction, but a ditched enclosure and internal earthworks described by Thomas (in prep, 154), possibly to the north of the surviving barn platform, were not identified during the aerial investigation or during field visits. The features described by Thomas may relate to the small building and enclosure shown adjacent to the road and northern pond on the Ordnance Survey 25-inch map of 1865 which are described by Clapham (1915, 41) as 'labourers' cottages' (Fig 2).

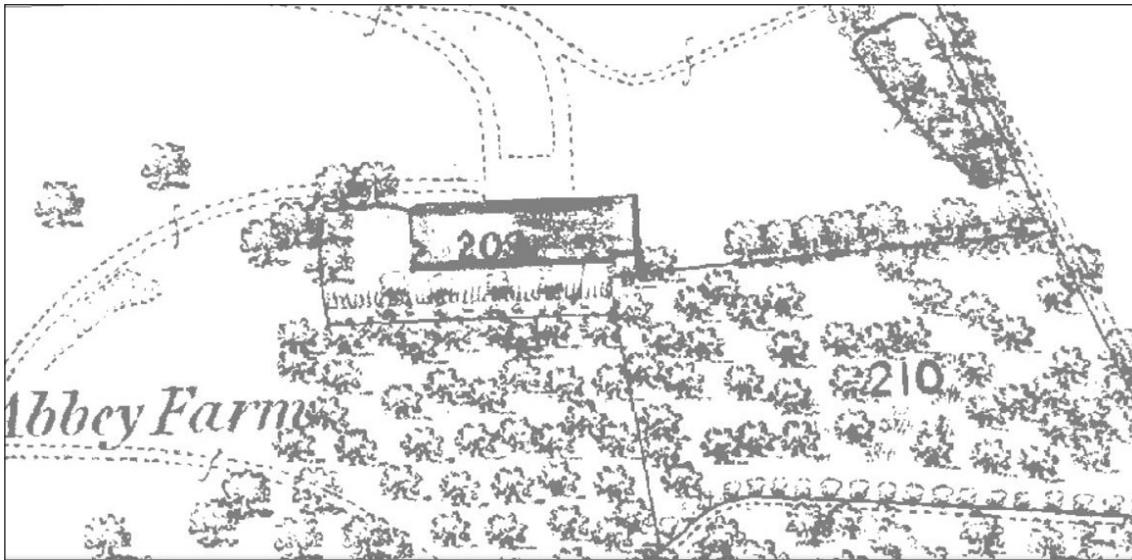


Figure 45: The area of the barn as shown on the Ordnance Survey 25 inch 1st edition map of Kent (II.12), surveyed 1862-3 and published in 1865. © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2019) Licence numbers 000394 and TP0024. Not to scale.

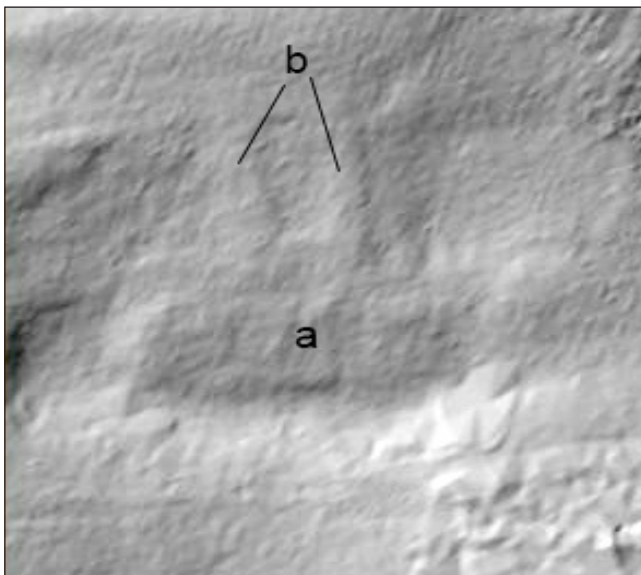


Figure 46: Lidar imagery showing the earthwork remains of the barn platform (a) and the raised trackways that led to the forecourt and entrance (b). North is to the top of the image. Digital Terrain Model 16D Environment Agency Open Access 50cm composite Lidar TQ4878. © Environment Agency copyright and/or database right 2019. All rights reserved.

Thomas describes other excavated and earthwork features in the vicinity of the barn site which are difficult to relate to the surface evidence and which were not seen at the time of the survey work. These include: a linear animal pen with internal divisions (Thomas, in prep, 155); excavated features which he interpreted as robbed out foundation trenches of an undated rectangular building (Building 15) with possible internal divisions and puddled clay floors (ibid 155-158); and vast rammed gravel foundations, 160m long east-west by 30-40m north-south, of a building internally divided into three large spaces (Barn 14), which was eventually, according to Thomas, converted into a smaller barn which filled the platform we see today. There is no mention of the paths and forecourt to the later barn, as shown on the Ordnance Survey 1st edition 25-inch map published circa 1865 (Fig 45) which may explain some of the excavated evidence.

The pegged roof tiles described by Thomas (ibid 161) probably came from a different building, however, as the barn is thatched in the surviving photos. Thomas (ibid 174) also describes a small building platform at the western end of the barn platform but this was not seen during the fieldwork. No surface evidence of the structures noted as 'shallow grass marks' to the north of the barn site (ibid 173-4, Area 11 and 12,) were noted during the fieldwork though this area was not the subject of detailed study.

## Second World War features

To the east of the abbey grounds, south of the barn site at NGR TQ 48079 78857, a neat circular hollow, just over 14m in diameter is visible on aerial photographs from 1944 into the 1950s (Fig 47). The white appearance of the hollow suggests bare, unvegetated ground and, given that it is not recorded on any of the earlier Ordnance Survey maps, suggests that the feature was probably a Second World War bomb crater or another type of modern feature. The hollow is not visible on lidar and was not located on the ground.

A probable Second World War circular concrete reservoir, which no longer survives, is also visible on aerial photographs from 1944 and 1945 at NGR TQ 47914 78936, just to the south of Abbey Road (Fig 47). The structure appears to be covered or disguised in photographs from 1944 (e.g. HEA RAF 106/G/LA30 3137 07-AUG-1944) but it is clearly visible on the 1945 photographs. The reservoir was just over 8m in diameter and may have served as an emergency water supply in the event of a fire for the barrage balloon mooring site and searchlight/gun emplacement located to the south within the abbey grounds.



Figure 47: The circular hollow, thought to be a Second World War bomb crater, visible to the north-east of the abbey church on an aerial photograph taken in 1945 (centre-right on image). A probable circular Second World War reservoir can be seen in the top left-hand corner of the image just to the south of Abbey Road (HEA RAF 106G/UK/916 6151 11-OCT-1945). Historic England Archive RAF Photography.

## DISCUSSION AND CONCLUSIONS

The survey did not reveal any information about the pre-monastic landscape to add to what was already known and recorded. No surface evidence was identified to support Thomas's (in prep, 238) speculative theory of an extensive Roman landscape, inferred from a small amount of Roman pottery found during his watching briefs.

### Monastic period

Most of the features recorded during the survey appeared to be of post-medieval date but some could easily have earlier origins that cannot be proved from survey alone. In particular, the farm focused on Orchard Cottage (Survey Area 3), visible on the 1655 Daynes plan (Fig 4), may have had monastic origins as it is clear from historical documents that the abbey rented out parts of its estate. Some of the unexplained earthworks recorded in Survey Area 3 may date to the monastic period (for example Fig 26 [2], [4] and [13]).

The research suggests that the probable boundary of the abbey precinct was very similar to that put forward by Clapham (1915, 40-42). Whether the stretches of substantial bank and ditch boundary partially recorded from lidar during the project are part of another significant monastic boundary, perhaps defining an outer precinct, remains unclear. Although some sections clearly functioned as woodland boundaries after the dissolution of the abbey, other sections may belong to an earlier division of the landscape, perhaps monastic in origin. Some of the deviations in the route of the boundaries on the southern side of the abbey suggest that level ground was important to its creators, perhaps supporting the suggestion of a function beyond woodland management.

The amount of level ground available on which to lay out the monastic buildings was relatively restricted, particularly on the eastern side of the monastic complex. Clapham (1915, 47) notes that the eastern end of the Lady Chapel cut into the higher ground to the east and it seems likely that the buildings Clapham recorded to the north-east, thought to be the infirmary and associated chapel, must have done the same as their locations seemingly lie beneath the moderate slope which rises up toward the woods at the eastern side of the cloister. There seems to be little room for the 'Canon's Cemetery' which Clapham (1915) postulates, quite reasonably, to be on the northern side of the abbey church's eastern end (a typical location for a cemetery on monastic sites where the cloister is located north of the church), creating the need for another cemetery elsewhere to accommodate the monastic community over 350 years. It is also clear that the infirmary and chapel remains are located beyond the scheduled area. Thomas (in prep, 176) carried out a watching brief on a path to the east of the abbey, apparently finding evidence of a post-medieval building (Building 17) but unfortunately the grid reference in the draft report places it in the nave of church and it is difficult relate to the abbey remains.

Correspondence relating to excavations and repairs on the site in the 1930s held in The National Archives (TNA WORK 14/1438) mentions the challenges of the

different levels on site, particularly in the context of excavating the church, and it also contains the suggestion that “the low ground to the south west of the proposed park should be used as a tipping ground and that the fish ponds and Dock should be kept free” though it is unclear if this proposal was carried out. It is not clear what impact the creation of the formal garden to the south of the abbey ruins had on the levels in that area, though a profile surveyed from east to west across the area during the research suggested that, though the area was levelled, large amounts of material were not systematically removed.

Examination of the historic maps and documents, alongside the recently recorded burial evidence, demonstrated that the monastic lay cemetery was, at least in part, situated in the area west of the abbey church, in the north-western corner of what later became known as ‘The Orchard’ on the Daynes plan of 1655, an enclosure whose northern boundary extended from the north-western corner of the abbey church westwards through the location of the visitor centre, and whose southern, western and eastern extent is reflected in the boundaries of the modern formal gardens. It is not clear how far south the cemetery extended within this later enclosure. However it seems likely that it continues beyond the area revealed during the visitors centre construction and, at least in part, beyond the current scheduled area. It is not clear what impact the creation of the formal garden may have had on the cemetery deposits, which may lay anywhere between 1.2m and 2m beneath current ground level (Thomas, in prep) but as stated above, the survey suggested that large amounts of material have not been removed from this area. No evidence of the features identified by Thomas in the formal Monks Garden area (Thomas in prep, 198–205) were seen during fieldwork though these areas were not examined in detail.

In the wider landscape, the potential significance of the barn site has been reiterated. It could have been the site of the barn built right at the start of the 16th century which then appears to have survived until 1900. It may have been the focus of a ‘home farm’ or ‘grange’ for the abbey, alongside potential fishponds, a dovecot and other possible farm buildings.

## Post-Dissolution

The evidence does not suggest that Lesnes was substantially redeveloped as a high status house and landscape following its dissolution, which frequently happened after in the major dissolutions of 1538-1540. The practice of reusing the cloisters and the abbot’s lodging are noted elsewhere, such as at Lacock Abbey in Wiltshire and Forde Abbey in Dorset (Platt 1978). This lack of wholesale redevelopment in the 16th and 17th centuries may result from the large number of different owners before it was acquired by a single institution (though the Cooke family held it for 80 years), which helped to fossilise elements of the monastic landscape such as ‘The Warren’ and possibly ‘The Orchard’.

This study has not been able to address the taphonomic processes which resulted in such a substantial change in levels in the main area of the abbey buildings. In Elliston-Erwood’s brief reports, there were frequent references to pre-dissolution



levels being some 4 feet (1.2m) below 20th-century ground levels, and substantial volumes of material were mechanically removed. A substantial part of this material is likely to be demolition rubble. As a comparison, excavations of the Chapter House of St Rhadegund's Nunnery, Cambridge showed that the 20th-century ground level was some 0.80m above the monastic levels (Evans et al 1998, 6). It is possible that the greater rise in levels observed at Lesnes may be the result of horticultural activity, such as introducing midden material, with the site of the cloisters being used as a 'Privat Garden' and 'Kitchen Garden' in the mid-17th century, and later as an orchard (Fig 4; Ordnance Survey 25 inch 1st edition 1895). This research question cannot be addressed without further excavation or coring, given the limitations of the existing 20th-century excavation archive. Drawings and illustrations of the site prior to the 20th-century excavations tend to focus on the buildings at Abbey Farm, rather than the site of the church or cloisters.

The earthwork remains of the farm buildings focussed around Orchard Cottage could have medieval origins, especially as in later centuries of the medieval period monasteries were letting out land to make money as bequests dwindled (Bond 2004, 38). However many of the features here, and in other areas recorded in survey, relate to post-medieval or modern boundaries, tracks and paths across the landscape.

## Second World War

During the Second World War the abbey remained a public space. Tours of the abbey continued and part of the western corner of the site was given over to allotments. The abbey grounds saw a variety of military activities including the installation of a barrage balloon site to the north-west of the abbey, with another to the east beyond the study area, as well as a temporary searchlight battery and gun emplacements placed to the south-west of the main abbey buildings. A zig-zag slit trench to the very north of Survey Area 1 was associated with these activities. The level of military activity around the abbey is unsurprising given its position on the flight path of enemy bombers along the Thames to London and the docks of the East End, which essentially created a militarised landscape in this part of Kent. Today all that remains visible of this period in the abbey's history are the very slight earthwork remains of the slit trench in Survey Area 1, though the probable bomb crater and other remains may survive as buried features.

## Suggestion for further work

A number of areas of study would repay further work and help to increase our understanding of the abbey and its landscape.

## Monastic

- It would be worth considering the potential of various geophysical survey techniques, particularly ground penetrating radar, in order to ascertain approximate depths of deposits, to see if this could help to define the extent of the monastic cemetery, and clarify the layout and extent of the monastic buildings to the east of the excavated remains.

- The site of the barn would benefit from detailed 1:1000 survey (not possible due to time constraints) and the benefits of geophysical survey should be considered.
- A thorough examination of the water supply to the abbey and the fishponds should be undertaken (taking into account the local geology) as this remains a significant barrier to greater understanding of the abbey site and how it functioned.
- It would be worth considering the potential of various geophysical survey techniques to attempt to locate the foundations of the dovecot.

### **Post-monastic**

- Survey of the quarrying evidence within the woodland may bring greater understanding of the use of the landscape in the post-dissolution period.
- Further documentary research about the two farms and cottages to the north-east of the site may be of use, as would a review of census returns and other social history sources.
- It would be worth trying to acquire some further documentary and photographic evidence for the site's use during the Second World War.

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Correspondence regarding excavations of Lesnes Abbey [F C Elliston-Erwood Excavations]

ANHUT/1/5

Lesnes Abbey File [Compiled by Local Historian Ruth Hutchison, c.1970-80; Research notes on the history of Lesnes Abbey including, lists and translations of documents]

LALB/DA/1/26/26

Counterpart Lease of Farmhouse land and premises at Abbey Wood, Erith, Kent part of the Lessness Abbey Farm and Orchard Cottage Land [c. 1930]

PHFWN/1

Frederick William Nunn Photographic Collection

**British Library**

OSD 130/6

1799 Ordnance Survey drawing

K Top Vol 18 32-2

A drawn View of Lesnes Abbey, by Grimm, 1757. <http://www.bl.uk/onlinegallery/onlineex/kinggeorge/1/003ktop00000018u03200002.html>

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CC/C-A/3/559

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WORK 14/1438

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A survey of Abb[e]y Wood in the parish of Eariff [i.e. Erith] in the county of Kent belongs to Christ Church Hospital / corrected [in manuscript] in Decr. 1791 [onto a much earlier manuscript map] by [I.] Foakes & [Thomas] Bainbridge

CLC/210/H/094/MS22639/037

An exact platt & description of ye. mannor house and lands belonging to Lesney and Faunts lying & being within the parishes of Erith & Bexley in ye. county of Kent being ye. donation of Thomas Hawes of London, salter, unto the maior, commaltie & citizens of ye. Citie of London governors of ye possession renews of the hispitalls of Edward King of England ye. sixt of Christ, Bridewell & St. Tho. ye. Appostle Ric[hard] Daynes surveyor, 1655. [Thomas Hawe's Gift]

SC/SS/07/012/035

Lesnes Abbey excavations (Items numbered 035-036) 1916-1956

LMA/LCC/AR/TP/03/003

Green belt proposals - Lessness Abbey, Erith 1929 - 30

## APPENDIX 1. NRHE AND GLHER RECORDS MENTIONED IN THE REPORT

### National Record of the Historic Environment

407896 / TQ 47 NE3 Lesnes Abbey

407933 / TQ 47 NE16 Linear earthwork

407936 / TQ 47 NE17 Deneholes

407899 / TQ 47 NE4 Bowl barrow

648523 – Denehole excavation

649024, 648524, 648525 – Lesnes Abbey excavations

NB At the time this report was written the NRHE system was being upgraded and none of the existing records could be updated.

### Greater London Historic Environment Record

GLHER MLO 102841 Abbey Road, [Lesnes Abbey Woods and Park], Belvedere, Bexley {20th century public park}

GLHER MLO 76262 Abbey Road, [Lesnes Abbey] {Ruins of medieval abbey}

GLHER 070425/00/00 LESNES ABBEY WOODS

## APPENDIX 2: METHOD STATEMENT

### Analytical earthwork survey

#### Fieldwork

##### GNSS with base fixed by VRS

In Survey Area 1 and Survey Area 2 detail was surveyed using a Trimble R8 survey grade GNSS receiver working in Real Time Kinematic mode (RTK) with points related to an R8 receiver configured as an on-site base station. The position of the base station had previously been adjusted to the National Grid Transformation OSTN15 via the Trimble VRS Now Network RTK delivery service. This uses the Ordnance Survey's GNSS correction network (OSNet) and gives a stated accuracy of 0.01-0.015m per point with vertical accuracy being half as precise.

##### Total Station

In Survey Area 3 detail was surveyed using a Trimble 5600 Total Station theodolite by taking radiating readings from each station on a network of 7 stations. The stations were surveyed in sequence to form a closed traverse. As the traverse was based upon GNSS control, survey was directly to Ordnance Survey National Grid and later adjusted for errors using proprietary Trimble Business Centre software. Overall accuracy is comparable to GNSS though, unlike GNSS, decreases with length of traverse and distance between surveyor and station.

#### Publication

The survey data was downloaded into Trimble Business Centre software to process the traverse and field codes and the data transferred into AutoCAD for editing. The survey plans were completed at 1: 1000 scale using digital drawing techniques. The drawings were cleaned and slopes were hachured to indicate relative strengths. The drawings were then plotted for checking in the field. Additional report illustrations were prepared using Adobe CS6 software.

The report was prepared for publication using Adobe InDesign software.

#### Archive

The survey data has been archived in compliance with Historic England guidelines and deposited at the Historic England Archive.

#### Limiting factors

In some areas survey may have been affected by dense vegetation and severe weather conditions.



## Aerial Photographic Survey

### Lidar

Lidar usually involves an aircraft-mounted pulsed laser beam, which scans the ground from side to side. The laser pulses bounce off the ground and features on the surface, and the speed and intensity of the return signal is measured. 'First return' is the term used to describe the first beams to bounce back, whether they hit the ground, a rooftop, tree canopy or bushes. Other beams will follow a path between the leaves and branches bouncing back from the ground (or a surface that allows no further progression), known as 'last return'. This data capture creates a 'point cloud', essentially individual points floating in space, which is then processed to create a precise Digital Elevation Model (DEM).

There are two primary forms of DEM. One is the digital surface model (DSM), which is effectively the result of the first return and reflects the highest points of the survey, i.e. tree tops, buildings etc. The digital terrain model (DTM) is what remains once the data has been processed using algorithms that classify the nature of the various returned points into those on the ground and those off ground thereby creating a bare earth model without trees or buildings. The denser the vegetation, the fewer laser pulses reach the ground, which affords less clarity to the DTM results.

The lidar was visualised in a number of ways. The data was viewed live in Quick Terrain Reader, which allowed real-time manipulation of the view, false-lit sun angle and height exaggeration. Additionally, 2D visualisations of the data were produced using Relief Visualization Toolbox 1.3.<sup>1</sup>

A number of visualisations were created including 16-direction hillshading, where the data is lit from multiple directions to allow better definition of earthworks on different orientations. This visualisation is the easiest to read and interpret with the human eye, giving a more understandable representation of the landscape as features are visible as light or shade as in a photograph.

A number of other forms of visualisation, including slope, local relief model and openness, calculated the data in a different manner, emphasising the height difference between points in the data and allowing an enhanced view of cut and large sloping features. For more information on lidar visualisations see Historic England 2018.

### Aerial photographs

Most of the photographs consulted are held in the Historic England Archive. This important national collection includes historic and modern aerial photographs in either black and white or colour. They consist of negatives, prints and digital only images. Archaeologists took many of these photos, but the majority were taken by the Royal Air Force (RAF). Irrespective of the age, format or origin of these photographs, the collection is primarily organised by the camera angle when

the photo was taken and all photographs are categorised as either being vertical or oblique.

### Vertical aerial photographs

Vertical aerial photographs are taken from cameras mounted facing straight down on a single run, or sortie. The aircraft follows a set course and takes a run of photographs, each frame overlapping the previous image by approximately 60%. An adjoining run will also overlap the previous one to ensure complete coverage of any given area. This overlap allows these photographs to be viewed stereoscopically, producing a 3D perspective with the aid of a stereoscope. Vertical photographs appear similar to maps but are not uniformly to scale across the entire frame. Before features can be transcribed from these images, vertical photographs are rectified.

The vertical aerial photographs used in this project consist of prints and digital images. Next Perspectives Aerial Photography for Great Britain (APGB), supplies Historic England with digital vertical photographs. Since the 1990s, a variety of companies have been commissioned to provide vertical photographic coverage of the country. Much of this output is viewable online via providers such as Google Earth.

### Oblique aerial photographs

Oblique aerial photographs are taken looking across the landscape at an oblique angle. They may be taken automatically from cameras mounted in an aircraft or with a handheld camera. Since the 1960s, Historic England, and its predecessors, have carried out a programme of aerial reconnaissance photography using handheld cameras in high-winged small aircraft. This forms the core of the Historic England oblique aerial photograph collection and includes archaeological, architectural and landscape subjects. These targeted aerial photographs were taken with a specific purpose in mind, including recording new discoveries, providing a different perspective on known sites or recording condition. These will nearly always contain archaeological or architectural information in contrast to the surveys carried out for non-archaeological purposes (such as the vertical photographs mentioned above) which rely on serendipity to record the historic environment.

### Rectifying images

Photographic prints showing archaeological features are scanned into a computer. As these are not of uniform scale across the frame, they need to be rectified and geo-referenced to match the Ordnance Survey map. This is done using the Aerial 5.36 programme. The rectification process involves matching features on a 1:2,500 Ordnance Survey digital map (the control) with the same features on the scanned aerial photograph. This gives an overall accuracy of plotted features of 2m or less to the true ground position dependent on the accuracy of the Ordnance Survey map. A digital terrain model (DTM) was incorporated into the calculation to compensate for undulating terrain. The lidar and many of the vertical photographs were already georeferenced for importing into the mapping software.

## Mapping

Archaeological features were transcribed from rectified photographs and lidar visualisations using AutoCAD Map 3D 2015 software. These were mapped on different layers based on the original form of the feature (bank, ditch, structure etc.). This provides a basic understanding of the form of features.

## Endnotes

1 © Research Centre of the Slovenian Academy of Sciences and Arts (ZRC SAZU) 2016

2 **Historic England 2018** *Guidance on Using Airborne Lidar in Archaeological Survey: the Light Fantastic, 2nd edition*. Swindon: **Historic England**





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