ISSN 1478-7008

ENGLISH HERITAGE

FRAMLINGHAM CASTLE
Framlingham, Suffolk

Moraig Brown

SURVEY REPORT

ARCHAEOLOGICAL INVESTIGATION SERIES
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ISSN 1478-7008

NMR No: 390442

NGR: TM 287 638

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"Heir of Antiquity! - fair castled Town
Rare spot of beauty, grandeur and renown
Seat of East Anglian kings! – proud child of fame
Hallowed by time, illustrious FRAMLINGHAME!"
(Bird 1831)

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1. INTRODUCTION

In January and February 2002 Archaeological Investigation staff from English Heritage (EH) in Cambridge carried out field survey and analysis of the earthworks of Framlingham Castle. The survey was requested by John Etté, EH Inspector of Guardianship Monuments, East of England Region, as part of the Conservation Plan for the castle, which was being produced by the Oxford Archaeological Unit.

The site is a Scheduled Ancient Monument (Suffolk 3), and the stone castle and the poor house are both Grade I Listed Buildings. The site is also referenced by the National Monuments Record (TM 26 SE 1) and by the Suffolk Monuments Record (Suffolk 0001).

Framlingham Castle is situated within the small historic market town of Framlingham in north-east Suffolk, some 20km north-east of Ipswich (Figure 1). Situated at 42m above OD on rising ground at the south-eastern limit of the Suffolk uplands, the town is located on the Hanslope series of chalky till overlain by slightly permeable calcareous clayey soils, in an area of mixed agriculture (Soil Survey of England and Wales 1983). The castle is situated upon slightly higher ground at the northern end of the medieval town, and its position means that it dominates both the town and the Mere to the west (Figure 2).

Figure 1
Location map

Framlingham Castle is one of the major English Heritage sites in the region, with the stone part of the castle being managed as a visitor attraction, while the rest of the earthworks form part of the wider Guardianship Site owned by Pembroke College and leased to and managed by the Town Council. There is access to most of the Guardianship Site, although a small area of the bailey is given over to a Bowling Green and private gardens. A large stretch of the outer ditch has been filled in and only partially survives within private gardens and adapted as a pond. At present, the bailey and the Back Meadow are covered in mown grass and are used for public access and dog walking. The bailey is also the location for overspill car parking and a number of large events, including fairs and music concerts.

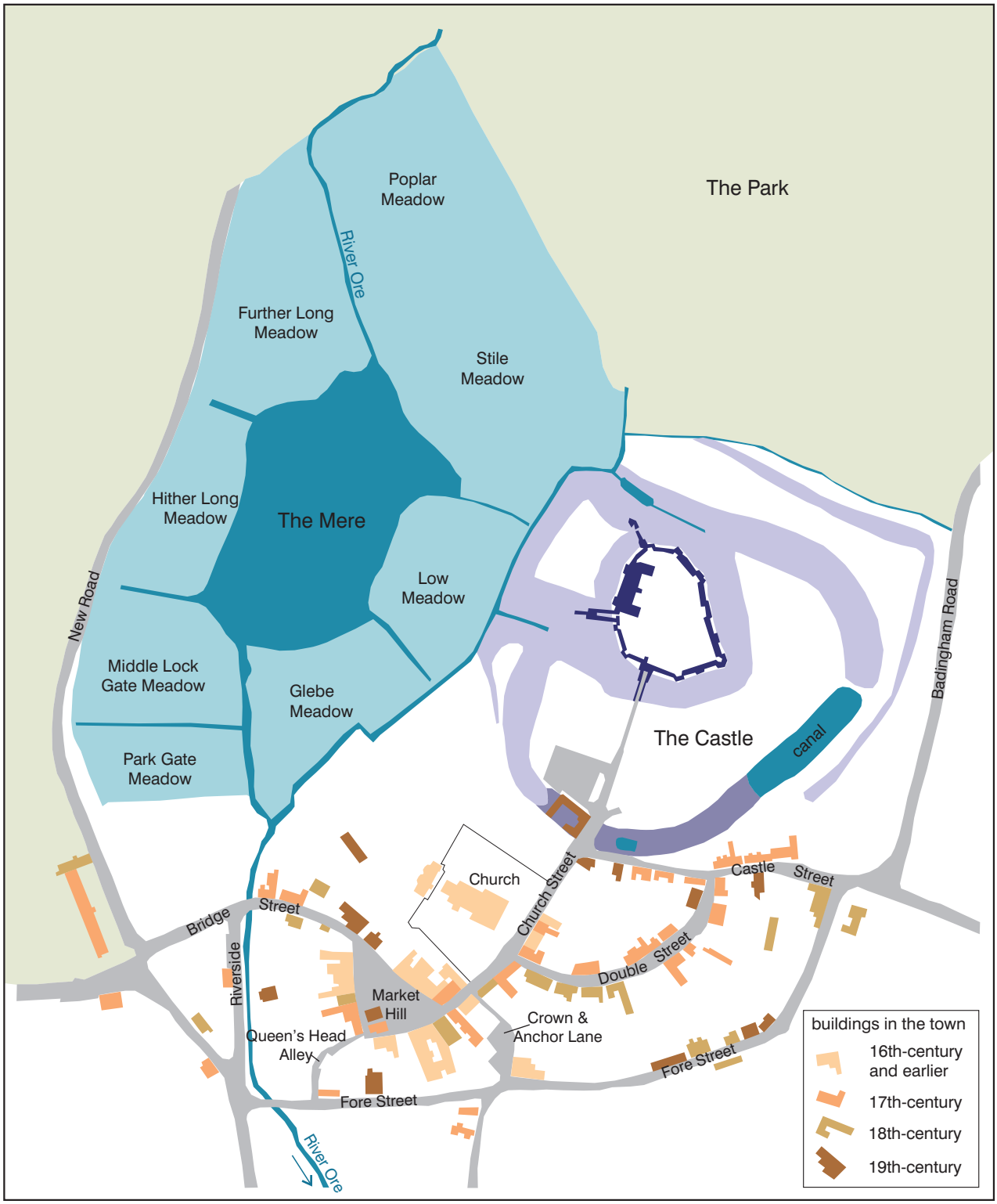

Figure 2 *Framlingham, showing the relationship between the Castle, Mere and town, and with broad phasing of the buildings in the town*

2. BACKGROUND HISTORY

Anglo-Saxon activity

Framlingham is thought to have been a settlement of *'Framela's peoples'* in Saxon times and legend suggests that there was a Saxon stronghold in the days of St Edmund who was apparently beseiged there by Danes shortly before his martyrdom (Phipson 1863, 386). Certainly there was a settlement here during the middle Saxon period, as demonstrated by the presence of an extensive cemetery beneath the site of the bailey; the cemetery was dated by pottery and a bronze openwork disc to the 7th or 8th centuries AD (Knocker 1958, 65).

At the time of Domesday, Roger Bigod held 117 lordships in Suffolk, including two manors in Framlingham held from Earl Hugh of Chester (Brown 1952, 127). These substantial manors, previously held by Aelmer and Munulf, were valued at £36 and 40 shillings respectively, and were held in addition to other pieces of land in and around Framlingham, the sum of which amounted to a considerable holding (Hinde 1996, 253).

The early castle

Sometime after 1086, and possibly only after 1100-01 when the land at Framlingham was formally granted to him by Henry I, Roger Bigod erected a fortified settlement. This was probably a small motte and bailey castle as was typical of the time, but alternatively may have been a timber house protected by a ditch and palisade (Ridgard 1986, 2; Knocker 1958, 65-6). By 1154 Hugh, younger son of Roger, was one of the most powerful magnates of the realm. He had not suffered under Stephen's reign and had been made Earl of Norfolk in 1140 (although titled Norfolk, this was in fact the old earldom of the East Angles): in the 1166 feudal inquest he recognised a total of 160¼ knights' fees. Following the contested accession between Stephen and Matilda, Hugh Bigod was instrumental in Henry II's accession and in 1155 was rewarded with a charter confirming the lands which Stephen had bestowed upon him (Brown 1952, 129). It is thought that by *c*1150 he had reconstructed some of the more important castle buildings in stone, notably the first hall and chapel, parts of which can still be seen in the east curtain wall (Knocker 1958, 65-6).

Hugh Bigod also held Walton and Bungay, but Framlingham was his main seat giving him a wide area of control over much of East Anglia, rivaling that of Henry II who in the early years of his reign had only Eye and Haganet (Haughley) (Figure 3). Bigod also had designs on Norwich Castle, acquisition of which would have made his earldom a political reality. The struggle for power in East Anglia between Henry II and Hugh Bigod is an important part of the history of the King's reign, and this is emphasised by the Pipe Rolls which indicate political unrest: Norwich Castle appears to have been provisioned in 1156-7 and garrisoned the following year. By 1157 the King was ready to quash an uprising in East Anglia; he ordered the destruction of the Earl of

Figure 3
East Anglia, showing the distribution of castles owned by Bigod, the King and others

Essex's castles at Pleshey and Saffron Walden and Hugh Bigod was made to surrender his possessions, though the specific reasons for this are not clear. The Pipe Rolls testify to the King's acquisition of the Bigod castles, with a royal garrison at Framlingham in 1156-7 and at Walton Castle in the following year (Brown 1952, 130).

It is not known when Hugh's lands were restored to him but they certainly had been by 1173, at the outbreak of rebellion. An unidentified fine in 1165 may have been the catalyst, and it is certain that Bungay had been restored by then: Hugh began work on a new keep there in 1165, the same year as Henry began construction at his new castle at Orford. Walton Castle remained in the King's hands until 1175, when it was pulled down having been made obsolete by his newly-completed Orford Castle. By 1173 the balance of power in East Anglia had shifted considerably. On the one hand there was Hugh Bigod with Framlingham and a new keep at Bungay, and on the other the King with Eye, Haganet, Walton and Orford, the latter probably the strongest and most modern castle in the country (Brown 1952, 130-2).

Against the backdrop of this power struggle came the rebellion of the young Prince Henry against his father. East Anglia was prominent in the dispute and Hugh Bigod was one of the ringleaders, having been promised by the young Prince both the hereditary custody of Norwich Castle and the Honour of Eye. After failing to take back Walton Castle, Hugh Bigod and the Earl of Leicester destroyed Haganet Castle; Leicester was then briefly sheltered by Bigod at Framlingham before being defeated by the royal army at Fornham as he made his way home. Following the formation of a royal army at Bury St Edmunds and Ipswich, Hugh pleaded for a truce until Whitsun, after which he sacked Norwich, having been strengthened by a new force of Flemish soldiers sent over by Philip of Flanders. This victory was short-lived and soon overturned by local forces. The King quickly formed an army to attack Framlingham and Bungay, at which point Hugh submitted, surrendered his castles, bought peace for 1000 marks and swore fealty to the King (Brown 1952, 134).

After the rebellion, Henry II decided to punish Hugh Bigod, and the Pipe Rolls of 1174-5 and 1175-6 note that Alnoth the Engineer was tasked with dismantling Framlingham Castle. The use

of the master engineer has raised an interesting debate. Brown suggests that this was because the King wanted the job well done but Coad questions whether Alnoth was in fact responsible for construction of a new hall and chapel there (Brown 1952, 134-7; Coad 1973, 160-1). Ridgard suggests that the presence of carpenters and masons with Alnoth may indicate that his work there included repair of the existing stone buildings (Ridgard 1985, 3).

Bigod's new castle

Upon the death of Hugh in 1177, Henry II refused to confer the earldom on Hugh's son Roger, but Richard I, upon his accession to the throne in 1189, restored both lands and title. Roger Bigod was a trusted supporter of King Richard, and it seems likely that it was during this time, and possibly the early years of King John's reign, that he began construction of the present castle (Coad 1973, 153).

Roger Bigod was one of the 25 guarantors of the 1215 Magna Carta and is listed by Matthew Paris as one of the main rebels in the civil war which followed the failure of that peace (East Anglians were probably as important as the 'Northerners' commonly attributed with the leading role). After the siege of Rochester and the capture of the castle in 1215, John divided his army into two, and while he marched into the north the second part of the army, under Savaric de Malleon, was sent to East Anglia. By early 1216 John was back in East Anglia, and in March the siege of Framlingham took place. John was at Framlingham on the 12th of March, but left for Ipswich the following day when the surrender took place. No further details are available but it is possible that the castle was at that time unfinished. It should also be noted that John was a particularly successful 'castle-breaker': after Rochester and success in the North, he took Framlingham, Colchester and Hedingham in quick succession (Brown 1952, 141-3).

At the time of the surrender, the constable of Framlingham Castle was William le Enveise and the garrison included 26 knights, 20 sergeants, 7 crossbowmen, 1 chaplain and 3 miscellaneous persons (either knights or sergeants). The presence of crossbowmen is interesting, possibly following the new fashion favoured by both Richard I and King John (Brown 1952, 144-5).

After surrender, Roger Bigod's lands were in the custody of Master Henry de Cern and Nicholas fitz Robert, while custody of the castle itself was given to a royal constable, Elyas de Beauchamp. He had a garrison of royal knights, sergeants and crossbowmen ('*balistarii*'), paid for out of the revenues of Roger's lands. Later in 1216 King John died and in the following year Henry III restored Bigod's lands to him. The town received both borough status and its first market grant in 1286, for three markets a week on Tuesdays, Fridays and Saturdays. It is possible that a toll gate existed in what is now Queen's Head Alley which leads from the south-western corner of the marketplace to Fore Street. There is also mention in 13th-century court rolls of a vineyard in the area, though its location is not known (Sitwell 1982, 5). Framlingham, Bungay and all other lands

remained with the Bigod Earls until 1306 with the death of Roger Bigod, the 5th and final Earl of Norfolk (Brown 1952, 145-6).

Changing fortunes in the 14th century

In 1309 with the death of Alice, widow of the 5th Earl, the castle and all estates passed to King Edward II. In 1312 it was granted to his half-brother Thomas de Brotherton who obtained a grant for a yearly fair on the Monday, Tuesday and Wednesday of Whitsun week. It seems certain that Framlingham was not de Brotherton's main residence but there is some evidence to suggest that the castle was being refurbished at this time (Ridgard 1985, 5). De Brotherton and his only son Edward died in 1338, and the estates passed jointly to Edward's sisters Margaret and Alice. In 1381, following a complicated line of succession, Framlingham Castle passed to Thomas de Mowbray (Coppinger 1909, 268-70).

Framlingham appears to have been the main seat of the Mowbray family (Ridgard 1985, 5). In 1397 John de Mowbray was part of a plot to seize the king and the Dukes of Lancaster and York. The plot was foiled and de Mowbray was forced to murder the Duke of Gloucester and take part in the execution of his own father-in-law, the Earl of Arundel. To repay him for these services to the Crown, he was in the same year created Duke of Norfolk but he died of pestilence in Venice three years later (Coppinger 1909, 271).

The Howard dukes

In 1480, following an uneventful succession from the de Mowbrays, Framlingham Castle passed to Sir John Howard and William, Lord Berkeley, descendents of the first Thomas de Brotherton. Howard was proclaimed Duke of Norfolk in 1483, six days after Richard III was proclaimed King. It was at about this time that the castle was modernised, with the addition of a number of highly decorative chimneys (some of which are false), new windows in the Great Hall and elsewhere, and the creation of a new bridge across the inner moat to the bailey. In 1485, during the Battle of Bosworth Field, the Duke of Norfolk led the front line of Richard III's armies, while the Lancastrian's front line was led by John de Vere, Earl of Oxford and 2nd cousin of the Duke of Norfolk (the two men met and began hand to hand combat, but the Duke of Norfolk was killed by a stray arrow.) Thomas Howard, son of John, was committed to the Tower for 3½ years and his estates were granted to John de Vere, Earl of Oxford, but these were returned to Howard in 1489 or 1490 (Coppinger 1909, 271-5).

After the reinstatement of his lands, Thomas Howard lived at Framlingham for some time. Following his death in 1524 an inventory of the castle was taken, in which 29 rooms are mentioned. Based upon the inventory and on comments by Zaccheus Leverland, a late 17th-century local historian, Ridgard postulates that there may have been a central block of rooms dividing the Inner Ward into two, or alternatively a substantial tower (Ridgard 1985, 130). Whatever the accommodation arrangements, the inventory describes Framlingham Castle *'at its*

most glorious but on the brink of a steep decline'; certainly by this date the principal Howard residence was at Stoke-by-Nayland where the family awaited completion of their new palace at Kenninghall in Norfolk (*ibid*). At Framlingham, the present bridge across the inner ditch was built between 1524 and 1547, replacing an earlier drawbridge (Knocker 1958, 66).

In 1546, after the failure of the marriage between Henry VIII and Katherine Howard, the 3rd Duke of Norfolk fell from the King's favour and was executed, his lands returning to the Crown. Upon Henry's death a year later, Framlingham passed to Edward VI, who held his first court there and commissioned a survey of the estate (Pembroke College MS L_{zeta}). It is clear from this survey that the castle was in a considerable state of disrepair but it must have been habitable since Edward granted it to his sister Mary in 1553, not long before his own death, and here she awaited the result of the contested accession (Ridgard 1985, 6). A large retinue was encamped about, and on 20th July 1553 she issued her first commands as Queen from Framlingham Castle. After Mary's coronation later in the same year, the Duke of Norfolk was released from the Tower of London and restored to his estates and title.

The castle in decline

The 4th Duke of Norfolk was executed for high treason in 1572 and his estates passed to Elizabeth I (Coppinger 1909, 276-8). During this period the castle was situated within a park of between 500 to 650 acres, with 400 deer, which was disparked in 1580. A survey of 1589 highlights the ruinous state of the castle and grounds (Ridgard 1985, 7; Green 1895, 35). After this date the castle was used as a prison for priests and recusants, and *c*1600 there were forty imprisoned here. In 1603 the castle was restored to the Howard family but it seems likely that it had all but fallen out of use. Thereafter it was used locally as a quarry for materials, and a local historian, Henry Sampson, writing in 1663, notes that the chapel had been removed by 1657 (Ridgard 1985, 7). Green also notes a reference to a surveyor's account dated 1656 which details expenditure on a hammer *'to break down the Casell Walle'*, and to payments to two men for *'bringing up…loades of stones upon the casell hills'* (Green 1834, 12). The Howards sold Framlingham Castle to Sir Robert Hitcham in 1635, and upon his death a year later it was bequeathed to the Master and Fellows of Pembroke College, Cambridge, with the condition that all of the castle except the stone buildings should be pulled down, and that a poorhouse be built to serve the needs of the local poor (Coppinger 1909, 278-9).

After various contestations to Hitcham's will a poorhouse was finally built on the site of the Great Hall. The northern wing was built first and incorporates part of the Great Hall. The southern wing was built in the early 17th century and the central portion was added in 1729 (Raby & Baillie Reynolds 1959, 5). According to a survey of the castle in 1790 the canal in the western part of the bailey ditch was already in existence and seems to have been for the use of the *'master of the charity school'* (see Figure 2; SCRO: HD 11/475).

In 1913 Pembroke College gave Framlingham Castle to the Commissioners of Works and later the Department of the Environment, who preserved the site until 1984 when management passed to English Heritage.

3. PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Surveys, maps and plans

The earliest surviving survey of Framlingham Castle was carried out by Christopher Peyton in 1547 at the request of King Edward VI (Pembroke College MS L_{zeta}). This written survey records that the castle had begun to fall into ruin and that *'...many of the houses of the same castell is in greate decaye and diverse of theme is like to ffalle downe onlesse they be shortly repaired'* (Ridgard 1985, 6). However, either the castle was repaired, for which there is no record, or it was not in too poor a state, as Edward gave the castle to his sister Mary who spent some time there during the summer of 1553.

From this point onwards, it seems that little effort and expenditure was invested in the castle, as demonstrated by a survey of 1589:

"That the said Castle of Framlingham is in great Ruyne and decaie in divers places thereof, viz. the battlements above the pantry, the battlements over against the well, the gallerie over the back dore of the sellar, the Burbundy [barbican?] stayers, the back walls without the gate going into the Castell and divers places upon the wall do want paving. And the Castle walls next the harbor [arbour?] are to be restored in stone work on the outside thereof. And divers other places of Tymber work, brickwork and leadwork in and about the said castle very needful to be amended.

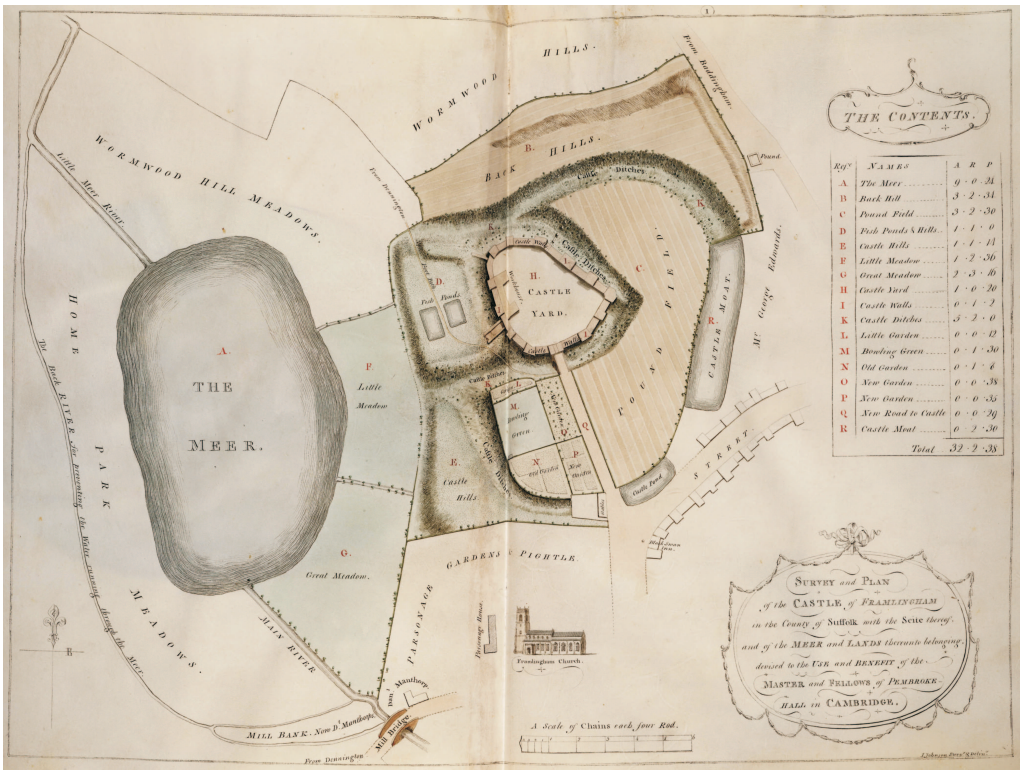

Figure 4
A survey of Framlingham Castle in 1789-90, drawn by Isaac Johnson (Pembroke College MS L_{theta}, reproduced by permission of the Master and Fellows of Pembroke College, Cambridge)

The charges of the amendyng and repayring of which said decaied places as they esteme will amount unto the somme of one hundred pounds." (Ridgard 1985, 7)

A survey of the castle and mere in 1790 by Isaac Johnson shows the earthworks essentially as they survive today (Figure 4). Two rectangular fishponds are shown in the Lower Court, and it is worth noting that the northern bank is separate from, and possibly higher than, the western bank. A footpath is evident along the route of the present path. The canalised part of the bailey ditch contained water at this date (*'castle moat'*) and although there is no obvious causeway between it and the ditch to the north it is likely that such a feature existed. The castle pond is well-defined, following the route of the bailey ditch, and although the Castle Inn is not shown, stables occupied its position over the bailey ditch. In the western part of the bailey a bowling green had been established, with the rest of the area west of the main road being given over to gardens. Another survey of the same date shows the canal, next to which is an area marked *'house and garden for the use of the master of the Charity School'* (SCRO: HD 11/475).

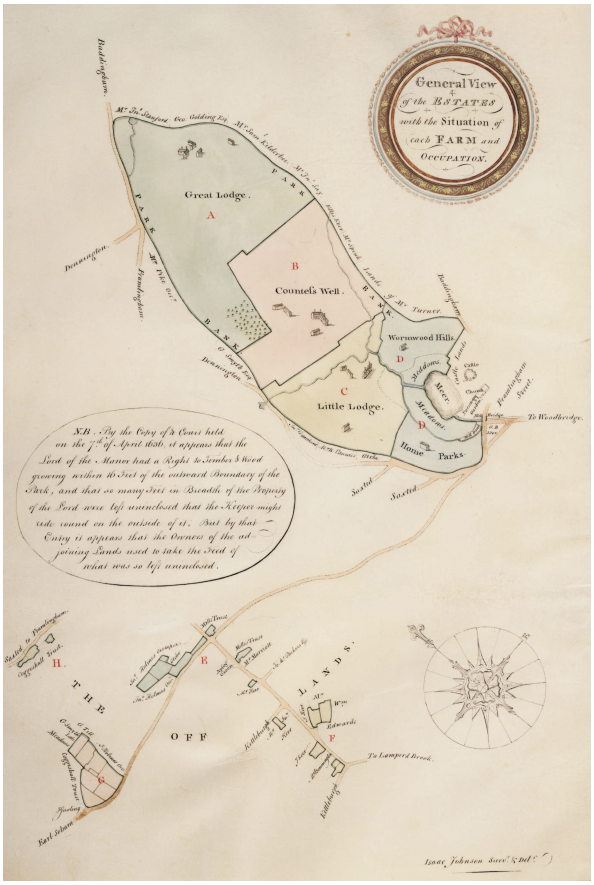

Figure 5
A survey of Framlingham Park in 1789-90, drawn by Isaac Johnson (Pembroke College MS L$_{theta}$, reproduced by permission of the Master and Fellows of Pembroke College, Cambridge)

In addition to his detailed survey of the castle, Isaac Johnson carried out a survey of the wider landscape of the park. This was a lozenge-shaped piece of land approximately 2km east to west and extending for some 3.5km north of the castle (Figure 5). At this date the park had been divided into five areas of ownership, with the castle and mere forming one.

In 1862 an architect, RM Phipson, produced a plan of the earthworks and standing remains of the castle to illustrate a short article published the following year (Phipson 1863). This plan is not an accurate survey and appears to be an interpretation of how it would have looked in its heyday, with relevant buildings and other features (Figure 6). Two ponds are shown in the Lower Court, as well as fragments of masonry on the western side (called the *'western outworks'*) and in the north-western corner. Phipson notes on his plan that the bailey or *'ballium'* was '*formerly planted as a pleasaunce'*. The Town Ditch traced a continuous route from close to the

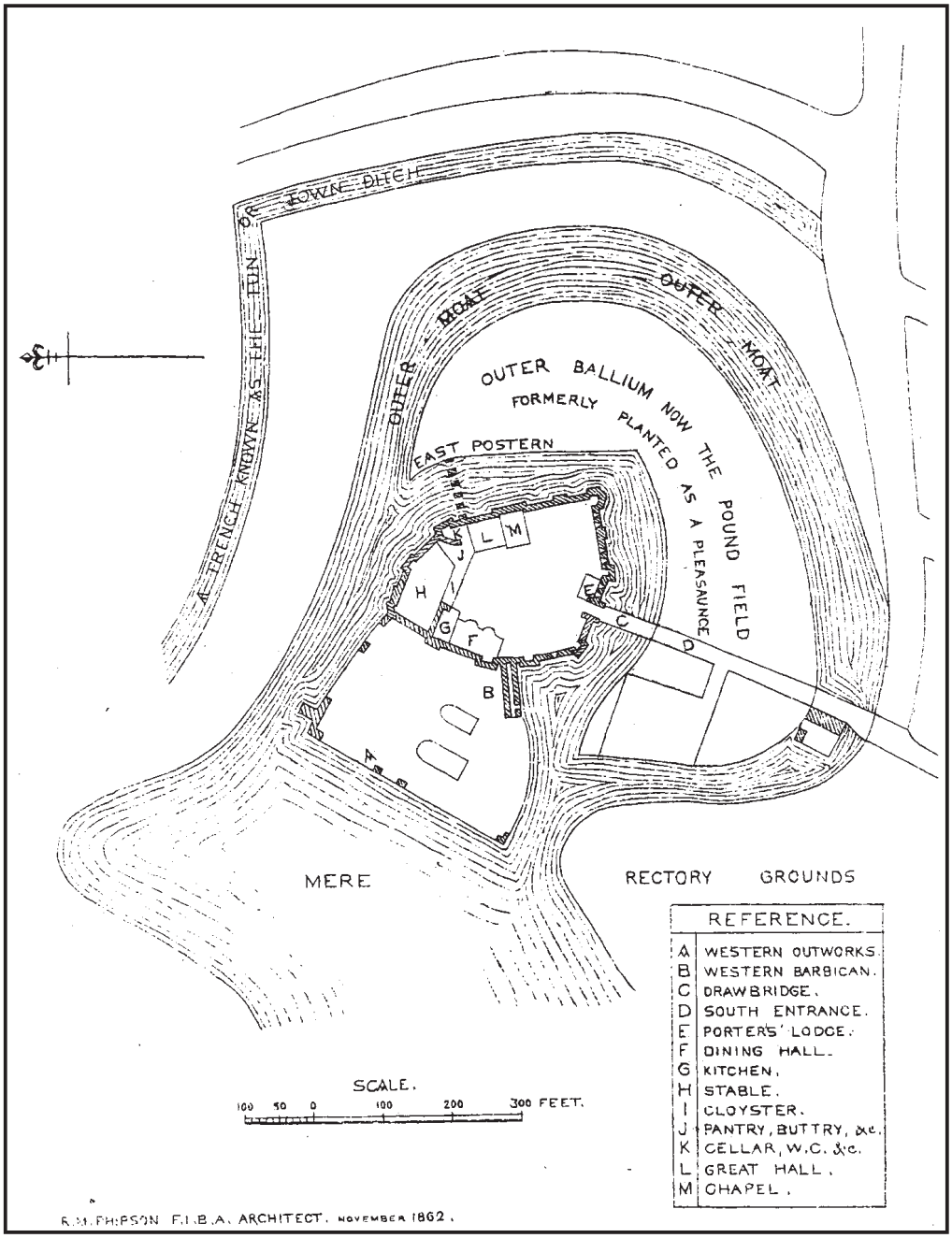

Figure 6
A survey of Framlingham Castle in 1862, drawn by RM Phipson (Phipson 1863)

Mere in the west to the edge of Castle Street. Additionally two small buildings around a yard had already begun the infill of the outer moat where the Castle Inn now stands.

In 1909 EA Downman, while visiting and drawing most of the castles in Norfolk, Suffolk and Northamptonshire, came to Framlingham (British Museum Add. 37974 f. 74). His plan of the earthworks is generally as it survives today with a few exceptions, most notably the absence of the

Castle Inn, known to have been erected shortly before 1895 and known at that date as the Castle Brewery (Green 1895, 33). This, along with some of the depiction of the castle, confirms that Downman's plan is a somewhat idealised one.

In 1919 a survey of part of the castle was carried out by the Ministry of Works, showing the fishponds in the Lower Court along with fragments of two walls running along its southern bank (Figure 7; EH Historic Plans Collection 87/6A1).

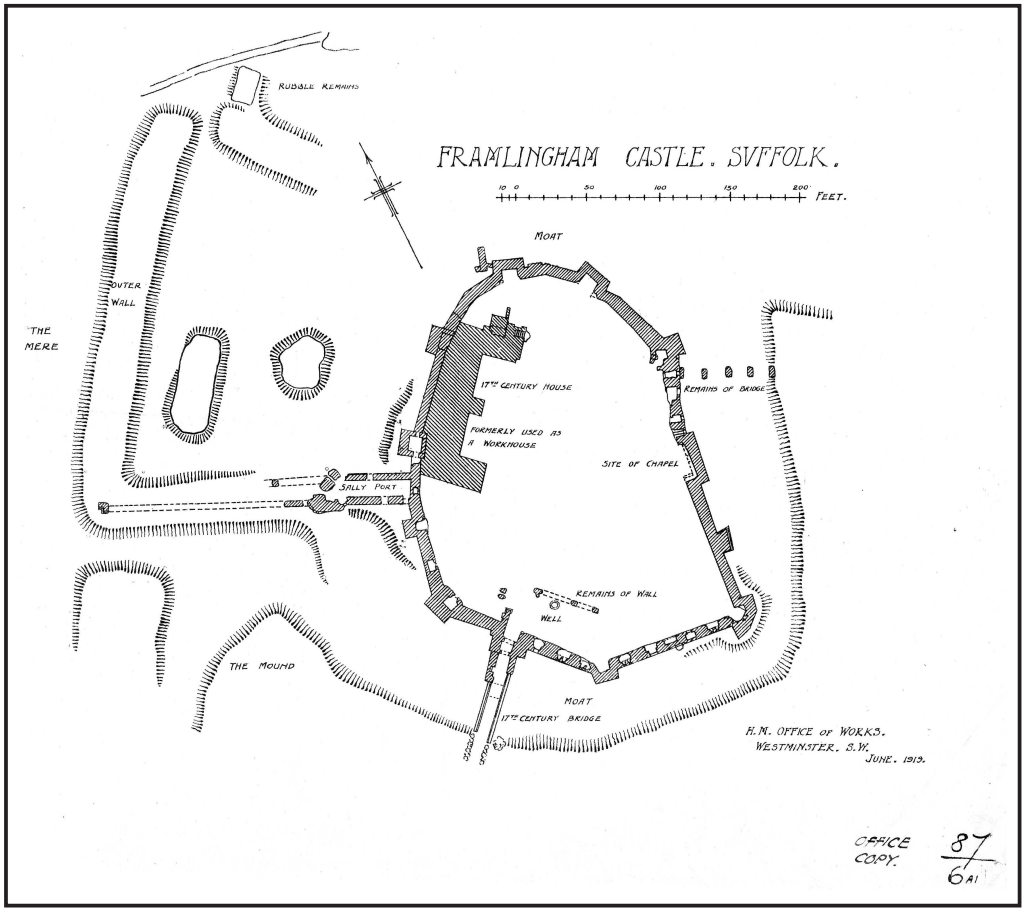

Figure 7
A survey of Framlingham Castle in 1919 (EH Historic Plans Collection 87/6A1)

The first detailed survey of Framlingham Castle was carried out in 1931 by the Ministry of Works at a scale of 16 feet to 1 inch, accurately recording all of the major earthworks and stonework associated with the castle (EH Historic Plans Collection 87/45). Another version of this survey shows a series of pecked lines along the banks of the Lower Court, presumably marking the position of wall foundations (Figure 8; EH Historic Plans Collection 87/49). This survey formed the basis of the plan in the 1959 guidebook to the castle but there is no indication as to where the information pertaining to the wall foundations comes from (Raby & Baillie Reynolds 1959, 18-9). They were obviously not evident in 1931, otherwise they would have been included on the original

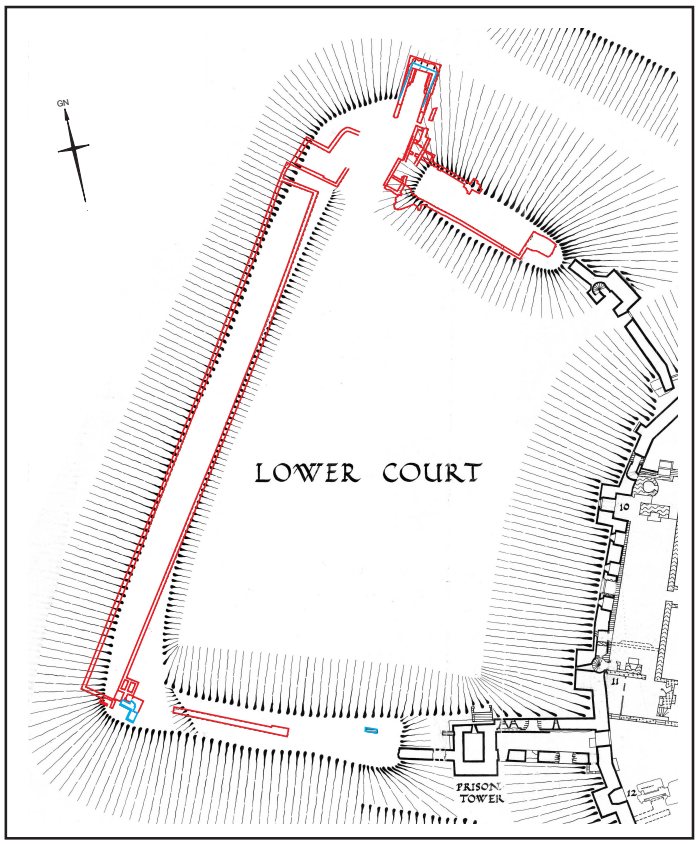

Figure 8
A survey of Framlingham Castle in 1931. Note the pecked lines depicting wall foundations (picked out in red), and the solid lines depicting standing fabric (picked out in blue) (EH Historic Plans Collection 87/49)

survey, and there is no indication that the area was ever excavated: perhaps the features showed as parchmarks during a particularly dry summer.

Antiquarian illustrations

Between the 18th and 20th centuries the Castle, by then a ruin, was drawn on several occasions with varying degrees of accuracy.

The earliest known view of Framlingham Castle was drawn in 1738 by Buck (Figure 9). During the later 18th century several other views were produced, including a watercolour of the castle across the mere drawn by T Kerrich between 1770 and 1790 (British Museum Add. MS. 6735 fol.

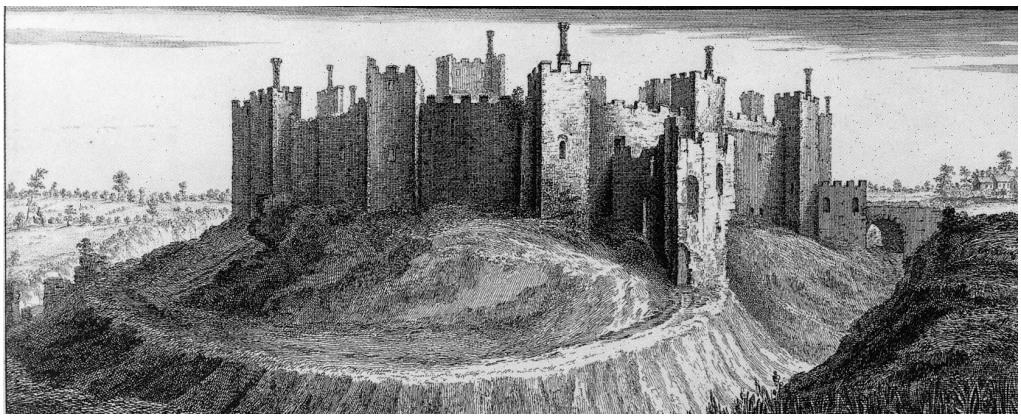

Figure 9
Framlingham Castle in 1738 by Buck (English Heritage postcard)

Figure 10
A view of Framlingham Castle across the Mere in 1790, by Isaac Johnson. This romantic view of the castle has always been popular and remains so today. (Pembroke College MS L_{theta}, reproduced by permission of the Master and Fellows of Pembroke College, Cambridge)

121). This view, often repeated, shows the earthworks much as they appear today but covered with thick low vegetation and portraying a romanticised view of the castle, as shown in this view by Isaac Johnson dated 1789-90 (Figure 10; British Museum Maps K. Top. 39.17.b.1).

A number of views within the Inner Ward also survive, providing an impression of how some of the buildings were arranged. Generally these are romantic views in the same vein as that by Isaac Johnson, but earlier sketches are slightly more useful in understanding how the castle operated. In 1895 Green published an ink drawing of the dining room range which fronted the gatehouse, as it was *c*1658 (Figure 11). Of a later date is a view of the interior of the castle showing the poorhouse, delineated by Richard Godfrey and published in 1785 (Figure 12).

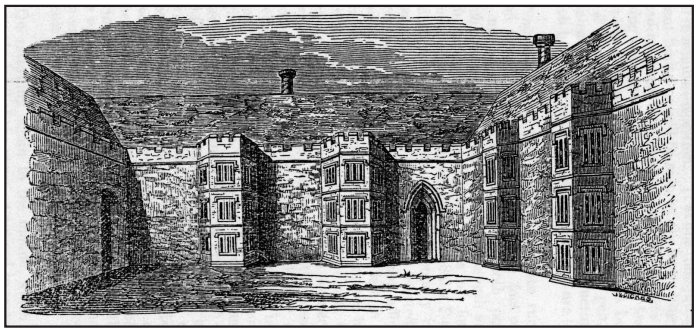

Figure 11
The dining room range, which fronted the gatehouse, as it was c1658 (Green 1895, 35)

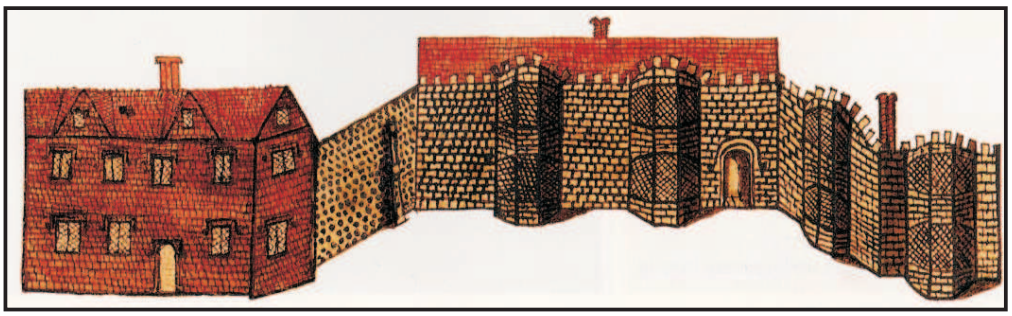

Figure 12
An illustration of the poorhouse, published in 1785 (Pembroke College Framlingham N5, reproduced by permission of the Master and Fellows of Pembroke College, Cambridge)

Excavation

Framlingham Castle has been excavated on several occasions, most notably by GM Knocker in 1954 and by Jonathan Coad between 1968 and 1970.

In 1954 a number of skeletons were discovered during the excavation of a drainage trench in the bailey. Group Captain GM Knocker was asked to investigate and date the burials and this resulted in further small areas being excavated to attempt to establish the extent of the activity (Knocker 1958).

Thirty-eight burials containing the remains of at least forty-eight individuals were excavated. All of the burials faced eastwards, in a layer of soil which has been interpreted as possibly being spoil from a pre-Norman earthwork. The skeletal material was in a relatively poor state and other than confirming that the burials fit into a general Anglo-Saxon type, little could be inferred about their date. There were few direct associations between burials and dateable small finds, though it should be noted that middle-Saxon Ipswich Ware, as well as later 13th and 14th century pottery, was found. Other small finds included a small bronze open-work disc of a type often associated with Saxon burials. The cemetery extended from the bowling green to at least 45m east of the castle approach road, and from the edge of the castle ditch for 180m. The horizon in which the burials were discovered lies below a series of layers of mortar which have been interpreted as Norman and Tudor builders' bankers used for mixing mortar for the gatehouse (Knocker 1958, 75-6).

In 1968 during repairs to the Poor House, a decision was made to ascertain whether anything survived of the early floor levels of Earl Roger's Great Hall which stood on the same site. In the next three years the excavations spread from the Poor House to a series of small areas across the Inner Ward (Coad 1973).

A twelve feet (3.7m) wide section across the width of the northern end of the Poor House revealed that the floor level of the Great Hall was essentially the same as at present and comprised a compacted earth surface. Substantial footings for a 3 feet (0.9m) wide wall of flint and septaria had a few ashlar blocks on the outer surface: it is likely that this was part of the northern end wall of the Great Hall. Below this, excavation continued down to a depth of 23 feet (7.0m) at the western end of the trench, at which point a layer of peat was overlain by successive layers of clay and sand. There was some indication that this peat layer was at least partially revetted to the east by an apparently artificial mass of chalk and flint, possibly a revetment, and the excavator very tentatively suggests that this might be part of an early moat. Work ceased at this point, owing to difficulties in digging deeper, and the natural ground surface remained undiscovered. Work immediately outside the Poor House identified a substantial wall footing of coursed flint, with septaria facing on the eastern side, running parallel to the surviving west wall of Earl Roger's Great Hall. If, as seems likely, this footing marks its east wall, the Great Hall was some 45 feet (13.7m) wide and therefore probably of aisled construction (Coad 1973, 96 & 155-7).

Following the success of the work in the Poor House and in order to determine the amount of made-up ground at the castle, the original section was continued intermittently across the Inner Ward. The top 3-4 feet (0.9-1.2m) was of relatively recent date and had been heavily disturbed by 19th-century pits, small drainage gullies and other activities (Coad 1973, 96, 156). This paucity of material from the top layers was not surprising given that the castle had been used as a quarry after its sale by Thophilus Howard in 1635, and also given Green's comment that

"In 1808 several thousand cart loads of stone and other materials were raised and removed from the interior, but neither cellars, dungeons nor subterraneous passages were found, though, on excavation, some such discoveries were expected to have been met with, on the contrary however, all was one mass of material buried in the most chaotic confusion." (Green 1834 in Coad 1973, 156)

Lower down in the section there were signs of extensive robbing and a few traces of stone buildings. It was also clear that the natural ground level, with tipped layers of clay and gravel mixed with layers of dark soil, sloped down towards the west. There is a considerable amount of made-up ground, especially towards the west where the layers are also very confused. On the basis of this evidence, the excavator suggests that a motte originally occupied the northern half of the Inner Ward and when it was thrown down in 1174-5 the resulting material formed the existing castle mound, a platform for the construction of the castle of *c*1200. Foundations of the west curtain wall were found to be 15 feet (4.6m) deep, resting on the layers formed by this destruction (Coad, 1973, 96 & 157-9).

The presence of a motte means that the dating of the first hall and chapel on the eastern side of the Inner Ward must be reconsidered. Pottery dates the destruction of the motte to the late 12th century, and stylistically Earl Hugh's Great Hall on the eastern side is of a similar date. The east wall of the Hall survives, encased within the curtain wall of *c*1200, as does an impression of the adjacent chapel. What is not clear is whether this hall and chapel post-date or ante-date 1174-5, the date of the presumed destruction of the early castle by Henry II.

It is known from accounts that Alnoth the Engineer was employed to carry out some work at Framlingham and it has always been assumed that this work was the destruction of the motte and bailey castle. If this was so, the hall and chapel may have been constructed purely as domestic buildings soon afterwards but before Roger Bigod had regained the right from Richard I to refortify the castle in *c*1200. A slight foundation on the western side of the Inner Ward may be from a domestic building of this date: it is too slight to have been part of a curtain wall and was largely destroyed by the construction of the second hall of *c*1200 (Coad 1973, 160-1).

It is possible that Alnoth's presence at Framlingham was either to repair existing buildings (Ridgard 1985, 3) or to construct a new hall and chapel for Henry II (Coad 1973, 161). If this was

the case, the existing motte and bailey must already have been levelled, possibly by Hugh Bigod during the 1160s when he was building his new castle at Bungay. There is some support for this scenario, given the huge expenditure by Henry II at Orford between 1165 and 1173. Would Henry have gone to such lengths if Framlingham was so poorly defended, and would Hugh Bigod have spent so much money updating the castle at Bungay while doing nothing at Framlingham? Additionally, Alnoth the Engineer was at the height of his career and was one of Henry's most important master builders: would a man of his status have been employed merely to demolish a simple motte and bailey castle? What is certain is that had Framlingham remained a motte and bailey until 1175, it would have been very old fashioned; an uncomfortable and undignified castle for someone of Hugh Bigod's status (Coad 1973, 160-1). However it should also be considered tha the use of a man of Alnoth's reputation and standing may have been a deliberate attempt by Henry to put the upstart Hugh Bigod in his place and to re-impose his presence in East Anglia.

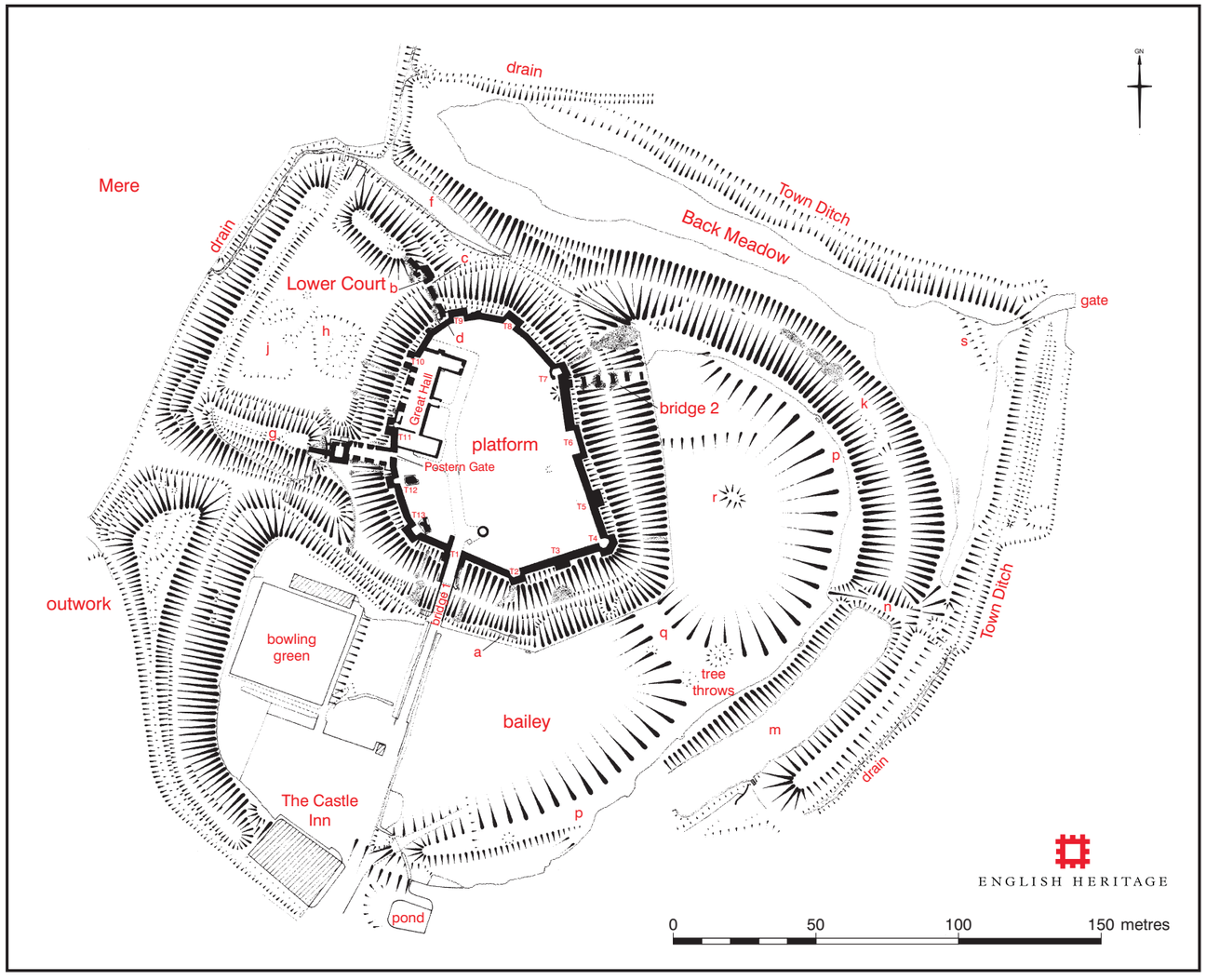

Figure 13 *English Heritage survey plan of the earthworks of Framlingham Castle. The earthworks were surveyed at a scale of 1:500 and are reproduced in the back of the report at a scale of 1:1000*

4. DESCRIPTION AND INTERPRETATION OF THE EARTHWORKS

In the following description words and letters that appear **in bold** are shown on Fig 12 and the additional figures indicated. Other figure references of relevance appear in the body of the text.

At the core of Framlingham Castle is a large stone curtain wall surmounting a large earthen platform surrounded by a wide, deep, dry ditch. Attached to the eastern side of the castle platform is a large kidney-shaped bailey with its own dry ditch, and attached to the western side is a smaller bailey known as the Lower Court. A small outwork is located in the junction between the bailey and the Lower Court, separated from both by deep ditches. An earthwork referred to as the Town Ditch runs alongside the northern and eastern side of the bailey, divided from it by a narrow field called the Back Meadow.

Framlingham Castle is built upon the edge of a low south-west to north-east escarpment, resulting in its overlooking and dominating in particular the Mere and other land to the north-west. On all other sides the surrounding land slopes only gently from the castle. It seems that the moderate slope of the escarpment was artificially steepened and probably enhanced by the deposition of

Figure 14
Framlingham Castle across the outer bailey, showing the polygonal tower in the southeastern corner (NMR: AA028416)

material to form a platform upon which the stone castle wall was constructed. This platform may have resulted from the levelling of a motte which pre-dated the curtain wall, an observation supported by the pivotal position of the wall in relation to the bailey.

The stone castle

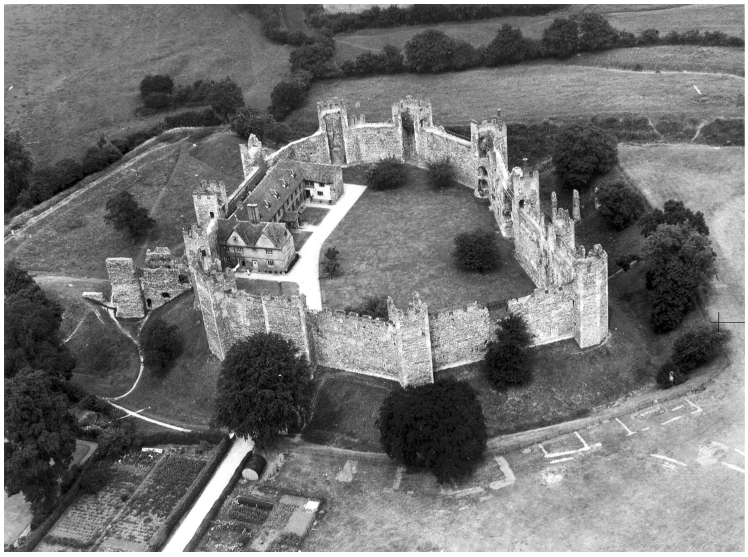

Figure 15
An aerial photograph of Framlingham Castle clearly illustrating the relationship between the curtain and the surrounding earthworks (EH Historic Plans Collection A397/9)

The stone castle was neither surveyed nor investigated as part of this work but a brief description is needed in order to provide some context for the descriptions which follow.

The curtain wall defines a roughly oval area with a rectilinear corner to the south-east, and occupies the whole of the platform (Figure 14). The wall is on average 10.5m high by 2.3m thick, with thirteen projecting mural towers (Figure 15). It is constructed mainly from roughly-coursed stonework, with sandstone ashlar quoins at all corners and salient points, though the fabric has inumerable patches and repairs of various dates. It has been suggested that the projecting south-eastern corner was to accommodate a square keep tower, although there is no evidence that such a tower ever existed (Renn 1976, 61). The mural towers, which are generally 3.8m higher than the main wall walk, were mostly open to the rear, and did not provide any form of accommodation (Figure 16). Access to the bailey is provided across a **bridge** (**1**) on the southern side of the castle, rebuilt between 1524 and 1547 (Figure 17; Knocker 1958, 66).

Figure 16
An iterpretation of how the mural towers looked and operated, with removeable sections across the open-backed towers to isolate parts of the wall walk in the event of capture by an enemy (English Heritage 1988)

The wall incorporates a continuous wall walk with crenellated battlements and arrowslits, supplemented by similar arrangements at the top of each tower. Access across the open-backed towers was probably provided by wooden planks

Figure 17
The main bridge from the bailey to the Inner Ward, probably rebuilt between 1524 and 1547 (NMR: AA028420)

which could be removed to isolate portions of the wall walk if taken by an enemy. Access from the wall walk to the top of the towers was probably by means of a wooden ladder, since there is no evidence for steps. Each of the crenellations has a small hole bored into either side which appears to have been for a removable wooden shutter. The arrowslits and details of the towers resemble Henry II's work of the 1180s elsewhere, but there is no account of spending on Framlingham, even during periods of known Royal custody (Renn 1976, 67).

The Inner Ward

Within the stone wall and close to the main entrance is a well which in the 17th century was *'compassed with carved pillars, which supported its leaden roof, and though out of repair was in being in the year 1651'*. A modern well-head has replaced this ornate original, which was probably of 16th-century date (Raby & Baillie Reynolds 1959, 10).

There are no earthworks of note within the inner ward, a consequence of years of extraction during the 19th-century and levelling carried out during the 20th-century (Coad 1973, 156). A small hollow abutting the castle wall between two towers (**T6** and **T7**) measures 5.6m by 3.1m by 0.4m deep and almost certainly marks the position of a removed piece of masonry. All other scarps are tree throws.

The castle platform and ditch (Figures 13 & 18)

The stone castle sits on the platform surrounded by a large ditch on the north, east and south sides. This **platform**, which rises between 6.4m and 10.7m above the bottom of the ditch and 7.5m above the Lower Court, is barely higher than the natural ground level of the bailey to the south and east. It is roughly oval in shape, some 98m long by 71m wide, with a rectilinear south-eastern corner. The slope of the platform is generally steep and even, with some localised soil slippage and erosion mainly where walkers have created paths. The most obvious of these has resulted in a break at the top of the slope, level with the outside faces of the mural towers.

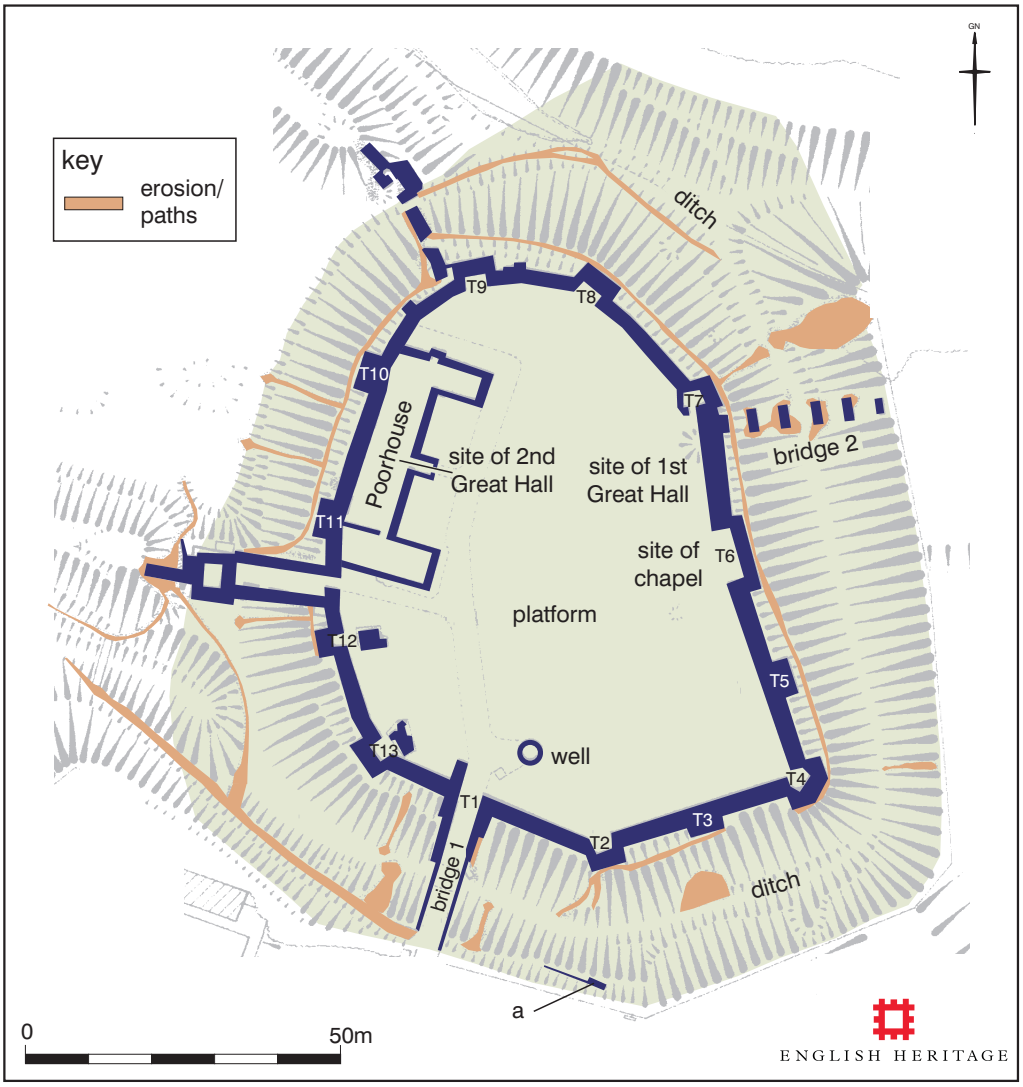

Figure 18
An interpretation of the earthworks of the castle platform, based upon the EH survey

A **ditch** extends around the platform, except on the west where the ground falls steeply to the Lower Court. It is on average 25.0m wide by 8.0m deep, and is fairly uniform in nature. At its southern junction with the Lower Court there is a steep drop in the level of the ditch. At first glance it would seem that this is the result of deliberate infilling in order to create a path to the top of the ramparts. However, it is more likely that during the construction of the Lower Court the level of the ditch had to be lowered in order to facilitate its southern arm, which would otherwise have been very shallow.

At (**a**) is a 10.7m length of stone wall on the outside face of the ditch, close to the present bridge. It is not clear whether this stonework is *in situ*, and there is no indication as to its function. There are references to a half-moon stone outwork defending the gate still standing in 1657, and it is possible that these remains formed part of that structure (Raby & Baillie Reynolds 1959, 8). If so, it is a

Figure 19
The brick-and-flint piers of the late 15th/early 16th-century bridge which provided direct access from the Inner Ward to the northern part of the bailey (NMR: AA028419)

relatively late feature, probably built some time between the mid 16th century and the mid 17th century.

In the north-east section of the ditch are the remains of brick piers from the late 15th/early 16th-century **bridge** (**2**), with decorative chequerboard work in brick and flint (Figure 19).

The Lower Court (Figures 13 & 20)

The Lower Court comprises a roughly rectangular level platform, some 59.2m by 40.0m, defined by earthen banks on three sides and by the steep scarp of the castle platform on the east. The northern and southern banks incorporate stone wall foundations connecting to the main curtain of the castle, and it is likely that the Lower Court was originally entirely enclosed by a wall. All of the banks are noticeably denuded, with flattened tops and graded profiles, and it seems likely that all, but particularly the western bank, have suffered deliberate lowering.

The 2.6m high northern bank contains the base of a stone stair turret (**b**), part of a postern gate (**c**) and the remains of a wall connecting these with the main curtain. The wall heads towards but stops short of the curtain immediately south-west of a mural tower (**T9**), thereby creating a rectilinear space measuring 1.8m by 1.2m with a 1.1m wide entrance in its south-west corner. Cursory visual inspection suggests that the return between the wall and T9 was rebuilt, and it is possible that the space served as a sentry point (**d**), perhaps with an arrowslit protecting the sally port, although no evidence for one survives.

On top of the northern bank fragments of stone fabric are evident west of the stair turret, and a slight scarp at the top of the outer face of the bank may indicate the underlying presence of a wall foundation.

The northern bank stops short of the western bank, leaving a 3.8m wide gap directly in line with a large block of unfaced masonry situated partially within the ditch. Although the purpose of this is not clear it is probably an abutment (**e**) for a bridge connecting the Lower Court with the Mere and the Park. This fits with documentary evidence of the 14th century which mentions *'the gate towards the fishery'* and of the 17th century a way *'forth to the mere'* (Raby & Baillie Reynolds

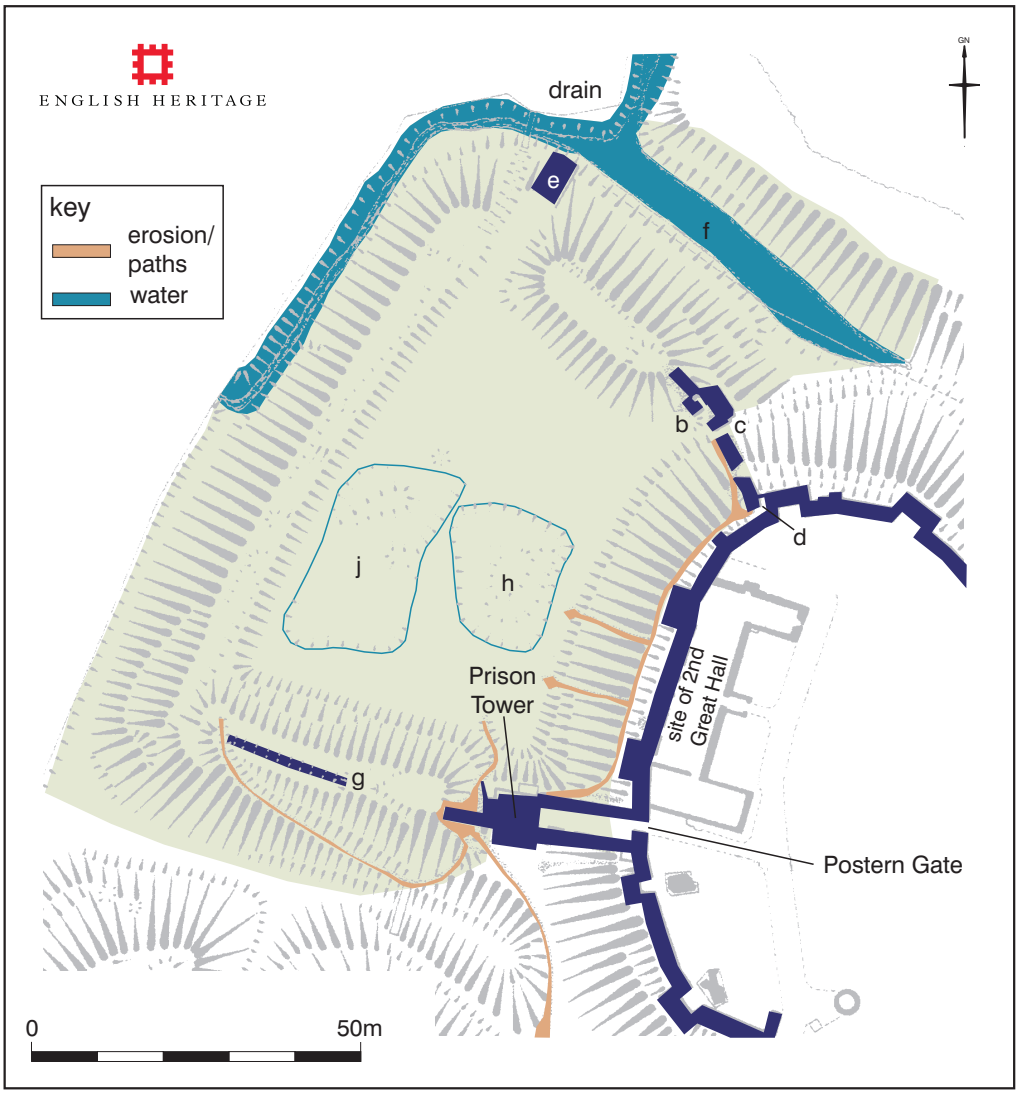

Figure 20
An interpretation of the earthworks of the Lower Court platform, based upon the EH survey

1959, 24). A small wooden bridge across the field drain now achieves the same purpose, and a set of stone steps have been built into the rampart to enable access down the steep slope.

The ditch immediately north of the Lower Court takes the form of a large pond (**f**) measuring 57.0m by 7.0m and tapering at each end. It is situated in a westward extension of the bailey ditch, fed by a small natural water course emitting from the base of the ditch some 21.5m to the east. At the western end of the pond a field drain enters from the north before turning to run west and then south at the foot of the western rampart of the Lower Court. Most of the water feeds into the Mere, but some continues south in a smaller drain which is also fed by a similar feature running along the bottom of the bailey ditch west of the Castle Inn.

The southern bank is 3.9m high and at its eastern end are the remains of the '**Prison Tower**' and the '**Postern Gate**'. These stone structures connect the bank with the main curtain wall between mural towers **T11** & **T12**, where the postern gate issues from the Inner Ward. The masonry has not been investigated in any detail, other than to note that, in common with the stonework at the northern end of the Lower Court, it is an addition to the main curtain wall. It is also clear that there was substantial re-use of the structure here, with alterations to windows and other openings, primarily attributable to the Tudor period (Adam Menuge, pers comm).

On top of the southern bank, slight earthworks mark the position of wall foundations (**g**) extending for 18.3m. This, in conjunction with the presence of fragments of stone fabric at either end of the bank, demonstrates that there was a structure along this side of the Lower Court, although its nature is uncertain. The fact that only a single footing exists suggests that this was a free-standing wall - perhaps for a garden - and did not form part of an accommodation block.

The western bank is just 0.7m high and has no clear features except several slight scarps which may be associated with the removal of stonework.

A plan in the 1959 guidebook shows what appear to be traces of foundations on all three banks, possibly including a narrow building range on the western bank, but it is not clear where this information comes from (see Figure 8). The plan is an enhanced version of the 1931 survey of the castle prepared for His Majesty's Office of Works (HMOW) (EH Historic Plans Collection 87/45). However, it does not show the foundations in question, and they must therefore have been added subsequently from an unknown source and included on the publication copy of the plan (EH Historic Plans Collection 87/49).

The Lower Court contains a slight scarp defining a roughly rectilinear area measuring 21.2m by 15.5m by 0.2m deep. There was a pond (**h**) in this location in the late 19th-century which is also shown on surveys by Isaac Johnson, Phipson and the Ministry of Works (see Figures 4, 6 & 7;OS 1883). Immediately west of the pond some slight, amorphous scarps probably mark the location of a second pond (**j**) shown on the same map. With the exception of these former ponds, the Lower Court is noticeably flat and featureless.

Overlooking the Lower Court in the main curtain wall are the three windows of Hugh Bigod's **Great Hall**, as well as one inserted in the 18th century. The presence of the Great Hall on this side of the castle demonstrates the importance of this aspect overlooking the Mere. It has been postulated that the Lower Court may have been laid out as a garden by the 16th century if not earlier (Raby & Baillie Reynolds 1959, 24).

The bailey (Figures 13 & 21)

The **bailey** occupies a roughly kidney-shaped area east and south of the stone castle and is defined by a denuded bank and a deep ditch, parts of which have been filled in, altered or levelled. The south-western corner of the bailey has long been used for a variety of purposes, including a bowling green, gardens and a car park. As such no internal archaeological features survive above ground west of the approach road to the castle.

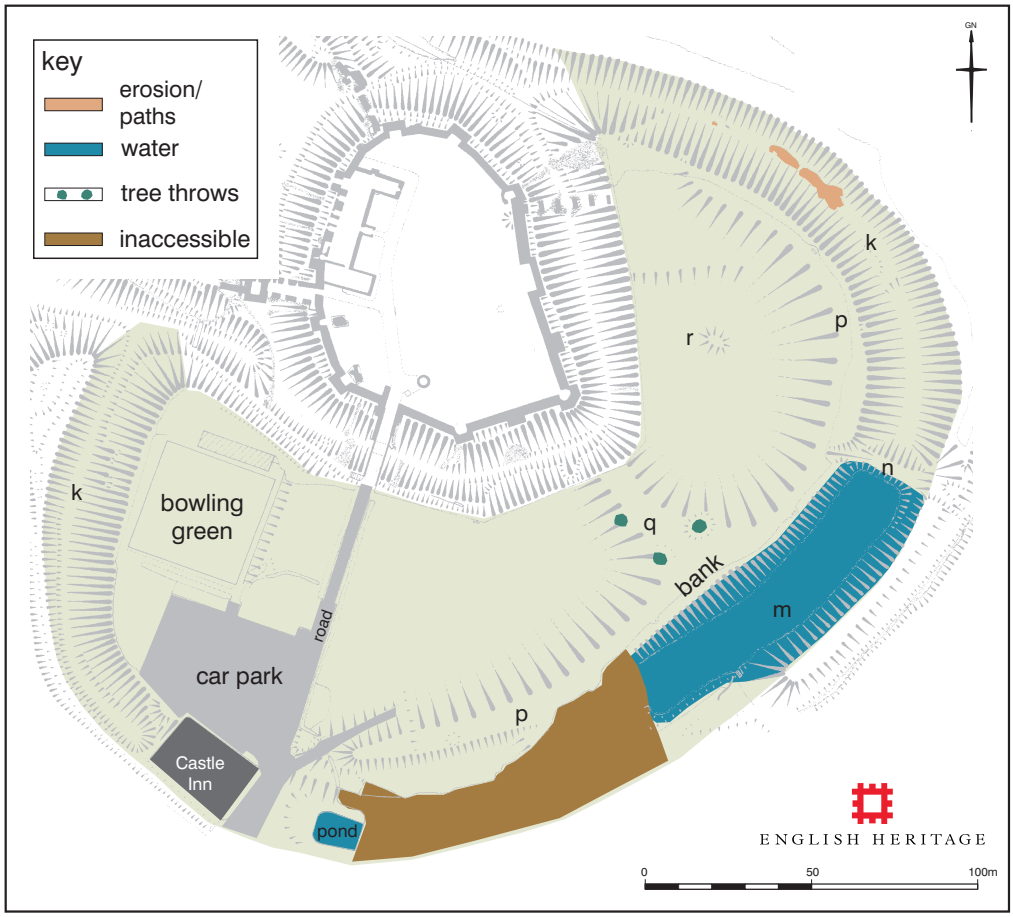

Figure 21
An interpretation of the earthworks of the bailey, based upon the EH survey

The bailey ditch (**k**) is U-shaped and measures on average 27.9m wide; it is 4.4m lower than the outside ground surface and 6.4m below the level of the bailey. The ditch has no counterscarp bank, and the slopes are relatively featureless apart from tree throws and soil slippage (Figure 22). The only exception is an area of recent disturbance in the north-east section, where extensive digging has taken place to create cycle ramps.

Part of the bailey ditch was at some time dammed to form a large ornamental water-filled pond or canal (**m**). The dam (**n**) also serves as a path from the Back Meadow into the bailey. The southern end of the canal is obscured by heavy vegetation and the earthworks are not clearly visible, but it is likely that a second, smaller dam contained the water. South of the canal, the ditch is lost under

Figure 22
The bailey ditch, now partly waterlogged. Note the vegetation cover which has appeared since the Second World War (NMR: AA028417)

private gardens (although study here may complete the picture) and beneath the Castle Inn and road; the only exception to this is the town pond, the scarps of which are adapted from the original ditch. North-west of the Castle Inn, the ditch resumes its true profile until it reaches the southern edge of the Lower Court; there is a small drain running along its base.

The bailey bank (**p**) is very spread and denuded and measures 29.2m wide by 2.3m high. A second bank (**q**), 34.4m wide by 0.5m high, divides the bailey into two separate enclosures: the northern one measures 57.3m by 40.2m and the southern one at least 81.7m by 43.8m. Other than a small mound (**r**), 11.2m by 8.7m by 0.4m high, and some tree throws, there are few notable earthworks in the bailey. Given that castle baileys generally contained a wide range of structures, much may survive below ground.

The outwork (Figure 13)

This is a large irregular mound defined by the ditches of the Lower Court and the bailey, a smaller ditch to the south-west, and the field drain running along the eastern edge of the Mere meadows. This outwork measures 60.5m by 38.3m by 6.2m high and has a number of slight amorphous scarps on its otherwise level top. Its function is not clear, but it seems likely that following the addition of the Lower Court - which created a vulnerable right-angled junction between it and the bailey ditch – part of the latter had to be re-routed to rectify this weakness. The creation of this outer work provides a smooth junction between the extended bailey and the Lower Court.

The Town Ditch and the Back Meadow (Figures 13 & 23)

To the north and east of the castle are the remains of the **Town Ditch**. The northern segment is well preserved, although partially reused as a field drain, while the remainder has been substantially altered or lost in gardens.

North of the castle the Town Ditch is broad and U-shaped, though heavily choked with vegetation. The ditch measures 10.8m wide by 1.1m deep on average, and has several slight causeways across it. South of the angle the earthworks are very denuded, in part because a modern gate provides vehicular access from the main road, but it is clear that at this point a bank (**s**), now 4.0m wide by 0.6m high, was situated immediately inside the ditch. Traces of what looks like ridge and furrow

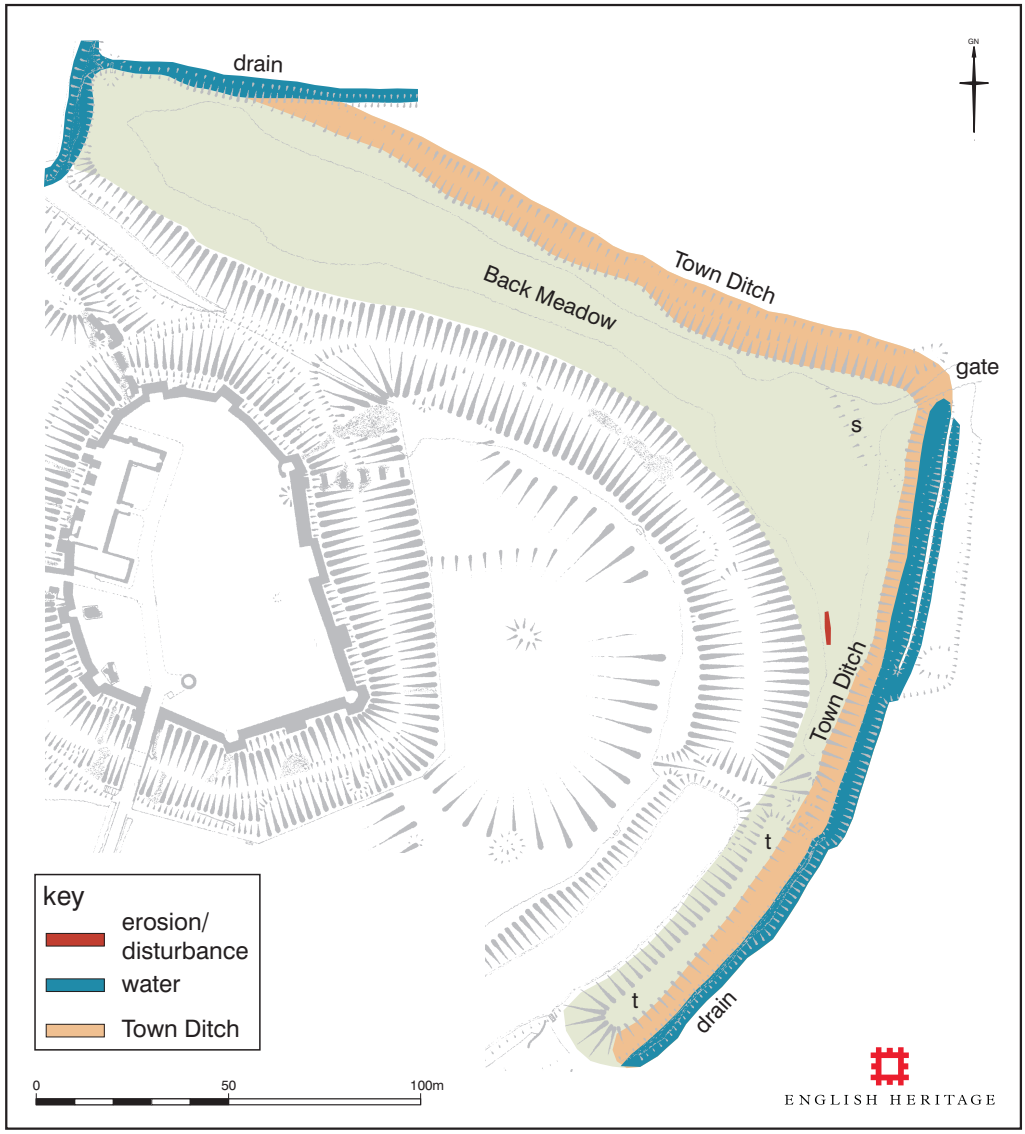

Figure 23
An interpretation of the earthworks of the Back Meadow based upon the EH survey

cultivation are present within this part of the Back Meadow, and it is possible that the bank is a headland associated with that activity. However, the narrowness of this strip of land and the lack of a ridge and furrow tradtion in Suffolk makes this interpretation doubtful. It is possilbe that the bank is part of an earlier arrangement of the Town Ditch. A small area of disturbance is of recent appearance and may be the result of digging cycle ramps.

The eastern section of the Town Ditch has been considerably disturbed by modern drains re-using and re-cutting the original earthworks. Beyond a bank (**t**) (11.8m wide by 1.3m high) separating the canal from the Town Ditch, the earthworks are lost in a garden, although there may be traces further south-west in other properties. If the Town Ditch did continue on its present alignment, it would have joined with Double Street at its corner with Castle Street, raising interesting questions regarding the topography of the medieval town.

5. DISCUSSION

Location

Framlingham Castle is consciously sited with a deliberate regard to the way in which it was to be viewed. Located on the edge of a bluff the castle overlooks a wide expanse of water,and although not particularly high it manages to command extensive views in all directions and is situated in such a position as to dominate and impose upon the town and the surrounding landscape. Its proximity to such an expanse of water would only have added to the impressiveness of the castle, and it is almost certainly because of this that the artificial Mere was created (Brown & Pattison 1997).

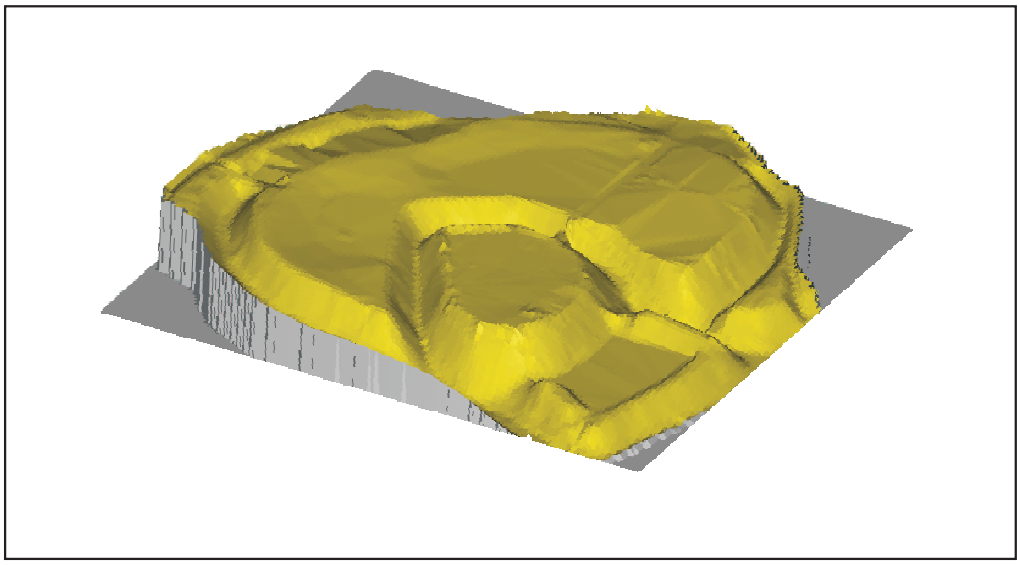

Figure 24
Three-dimensional model of the earthworks of Framlingham Castle. This clearly demonstrates the way in which the Lower Court is dominated by the rest of the site, but also the way in which the ground falls naturally from east to west, such that the bailey is in fact higher than the castle mound (north is to bottom left)

The early castle

It seems likely, though by no means certain, that there was an early motte and bailey castle at Framlingham which was adapted to create the later castle. Excavation has provided strong evidence for a motte occupying the northern part of the castle platform (Coad 1973, 159). The motte sat at the edge of the natural escarpment, protected by a bailey which sprang from and returned to the escarpment edge. This supposition is borne out by earthwork evidence which not only demonstrates that the Lower Court is an addition (see below), but also that the outer ditch possibly originally encircled most of the platform (Figure 25). The low bank around the edge of the bailey would have been a much more prominent feature, probably supporting a wooden palisade which seems to have continued in use as there is no evidence for a stone replacement. An alternataive proposal should also be considered at this point, namely that both the motte *and* the bailey occupied the area later taken up by the castle mound (Chris Taylor, pers comm).

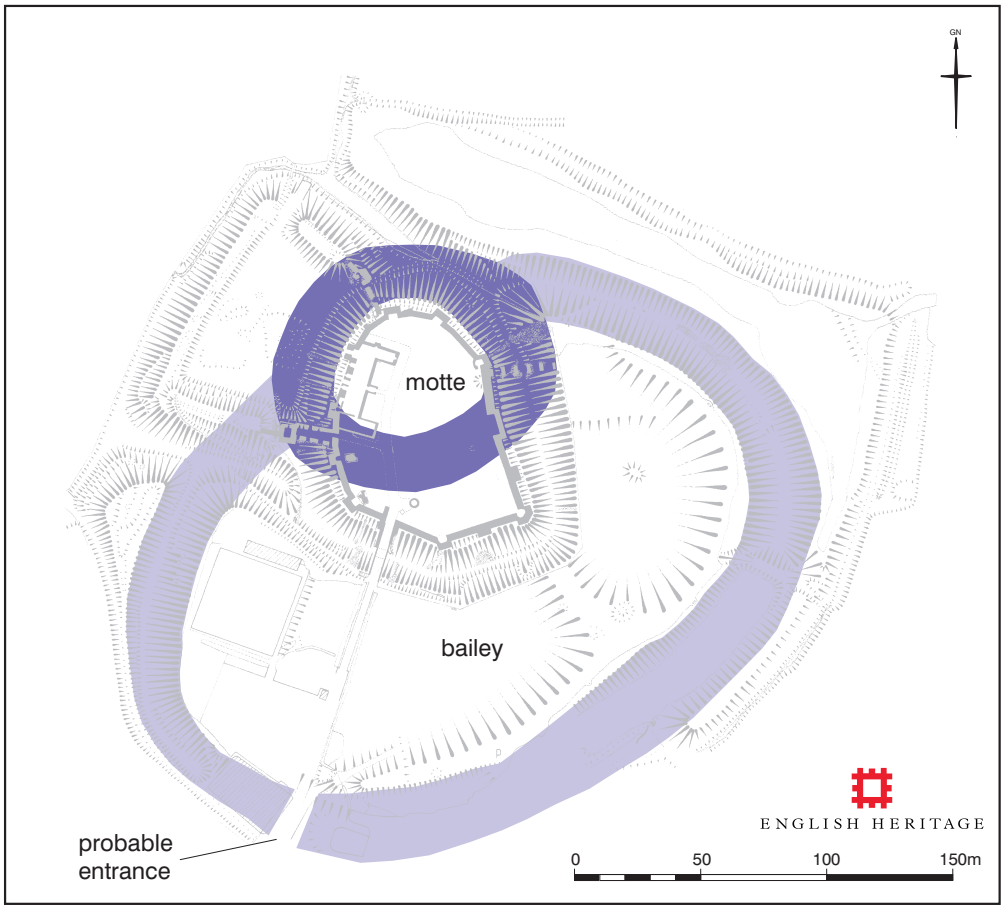

Figure 25
An interpretative plan showing the possible arrangement of the original motte and bailey castle, based upon the EH survey. Note that the size and shape of the motte is purely hypothetical

It is likely that the bailey contained a number of structures during this early phase, although these would probably have been of timber construction and would therefore leave no trace above ground. Although a large part of the outer ditch has been removed or altered, it seems likely that the original entrance to the bailey was at its present location: this is the shortest route into the medieval town and is close to the church (see Figure 2).

The new castle

During the 12th century castle building in East Anglia – as well as in the rest of the country - was going through considerable change. This sometimes merely resulted in existing earth and timber works being replicated in stone, such as at Eye Castle, but more often the new work was on a much larger scale than that which had gone before. At Bungay in the middle of the 12th century, Bigod added a substantial stone keep to his motte and double bailey castle. At the same time at Castle Acre in Norfolk, the existing unfortified hall was strengthened and raised to form a keep while also being provided with a strong ringwork and gatehouse (King 1983, 306). At Castle Rising, Norfolk, the keep was located within an existing powerful ringwork with two heavily defended baileys (King 1983, 306-7; Platt1982, 27). Keep castles were the commonest form of new castle at this date, often placed within new or existing motte and bailey style fortifications. Examples of

these include Orford Castle, Suffolk, a late 12th-century strongly defended keep, probably located within a small curtain wall, and Hedingham Castle, Essex, a large square keep built in the mid 12th-century on a large mound with an earthen (and possibly stone) rampart and ditch (Barker 2001; Brown 1995).

Bigod's new castle at Framlingham is unusual and merits some consideration. There is no surviving evidence for a keep, although it is possible that Bigod planned - or even partially built - one in the south-eastern corner, with the intention that the lower levels would be encased within the enlarged castle mound. This was not an uncommon practice - see for example Farnham Castle in Surrey - and it would explain the odd shape described by the curtain wall (Platt 1982, 22). The presence of a curtain wall, especially at this early date, has resulted in Framlingham often being referred to as a shell keep. This is misleading since shell keeps generally enclose an area considerably smaller than at Framlingham, and often incorporate accommodation within the perimeter wall. Examples of shell keeps include Pickering Castle, North Yorkshire, probably built around the 1180s, and Trematon Castle, Cornwall, where a shell keep was added to the existing motte in the 13th century (Platt 1982, 28). In both cases the shell keep occupies the entirety of the motte - like Framlingham - but both are classic mottes, and the keeps contain much smaller areas than Framlingham. In effect, Framlingham is an early example of a curtain wall castle with mural towers and provision for accommodation inside: the original Great Hall and chapel buildings were incorporated into the fabric of the curtain and replaced by a second one on the western side of the Inner Ward.

The Lower Court

The earthworks and masonry demonstrate that the Lower Court was built as an addition against the western side of the curtain wall. Further evidence for this chronology comes from the existence of the outwork. This oddly-shaped mound appears to serve no purpose. However, if it is accepted that the original ditch of the motte and bailey castle followed the present alignment of the bailey ditch this would have created an odd, and somewhat weak, angle when the Lower Court was added. It seems likely then that the outwork was added at the same time as the Lower Court in order to ameliorate that problem.

The Lower Court provided a private space overlooking the Mere on the west. There may have been accommodation arranged around the Lower Court as there certainly was in the south-eastern corner beside the Postern Gate. The remains of a stair turret in the north-eastern corner provided access either to an upper range of rooms or to a wall walk, or possibly to a tower protecting the gate to the north. It is not clear whether the western bank was originally the same height as those to the north and south; if it was it may have been lowered in order to provide better views across the Mere.

It is not clear what function the Lower Court fulfilled. The presence of a garden is fairly well established for later periods at least, but it is not improbable that the Lower Court was a garden from its inception (Raby & Baillie Reynolds 1959, 24). Small square or rectangular gardens were common in medieval England and often depicted in contemporary paintings. During the early Norman period these were predominantly monastic or ecclesiastical, but the accession of Henry I in 1100 heralded a new fashion in royal gardens (Harvey 1981, 60-1). It does not seem unlikely that Bigod, in his attempt to assert power in East Anglia, provided himself with what was generally seen as the royal prerogative of a garden at his newly built castle and power base. A parallel for this can be found at Tintagel Castle, Cornwall, where a rectilinear walled garden with paths, lawns and flowerbeds is thought to date to around 1230 for Richard, Earl of Cornwall (Rose 1994). If there was a garden as early as the 13th-century, it probably took the classic form of being divided into four by cross-axial paths meeting at a central focal point, with either a fountain or a pool (*ibid*, 60-1). Small square and rectangular medieval gardens survive at Tintagel, Cornwall, and at the deserted medieval village of Argam, East Yorkshire, the latter dated to *c*1450 (Chris Taylor, pers comm). The low, flat-topped western bank is reminiscent of 16th- and 17th-century garden terraces, but caution should be exercised in its interpretation as such given the possibility that its form is a result of later alteration.

The bailey

The division of the bailey into two areas by the cross-bank is unusual, and the reason for it is not clear. It has been suggested that the north-eastern bailey compartment was planted as a pleasance or garden, and the construction of a new bridge during the late 15th/early 16th century seems to bear this out (Phipson 1983). The original bridge to the south would have provided public access through the bailey to the castle, while the new bridge ensured private entry into the secluded garden. Private gardens of this nature were not uncommon during the medieval period: Kenilworth Castle, Warwickshire (which also, incidentally, had a large shallow mere), had a pleasance separate from the castle (English Heritage 1991).

The wider landscape

Likewise, the presence of a garden in the Lower Court has implications for the wider landscape, and the Mere would have formed a vital part of a wider design. It is not intended to provide a detailed analysis of the Mere as this has been done elsewhere (Brown & Pattison 1997), but a short summary of the findings of that survey will help to provide some context for the survey of the castle itself (see Figure 2).

In the low ground below the western ramparts of the castle was a natural glacial lake. It seems certain that soon after the completion of the castle this was enhanced to create a wide watery expanse, which in the 14th century was referred to as *'the Great Lake beneath the castle'* (Ridgard 1985, 11). It was still functioning as a fishery in the early 17th century although it probably ceased

to be adequately maintained following the decline of the castle in the mid to late 16th century (Coppinger 1909, 280).

It has long been assumed that the main, and original, function of the Mere was one of defence (Raby & Baillie Reynolds 1959, 6). This is only partially correct, for recent studies have begun to demonstrate that the use of water around castles and other lordly residences was far more complicated and often served a variety of purposes. With the construction of the stone castle in the late 12th/early 13th century, the western curtain wall in particular offered an opportunity to make a powerful architectural and political statement which was enhanced by the natural lie of the land. Viewed from the rising ground to the west, the castle commands the landscape and this dominance was reinforced by the creation of the Mere in the valley between. While certainly enhancing the defensive capability of the castle, there is also a strong psychological element in the design, a means of both intimidation and delight. Approaches to and views of castles were often manipulated such that visitors were taken on a sinuous route to present the castle and its surroundings in the best possible light. In this way the power and beauty of the castle, and consequently the wealth and status of its owner, were shown to the best possible advantage Everson 1996).

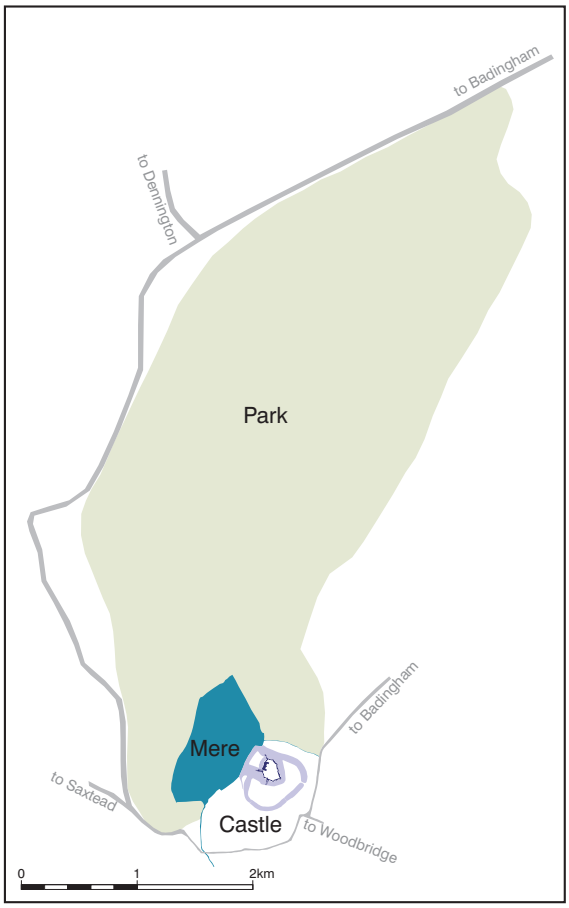

Figure 26
The Park at Framlingham extended at least 6km north of the castle in strip some 2km wide. In 1789-90 it contained three major estates as well as two smaller ones beside the Castle and Mere (based upon the 1789-90 survey of the Park by Isaac Johnson, shown in Figure 5)

Examples of this kind of designed landscape are known from several castles in England. At Kenilworth Castle in Warwickshire, King John created a huge mere at the beginning of the 13th century which almost surrounded his enlarged castle (Renn 1991, 20-1). The lake at Leeds Castle, Kent, created to accompany the new gloriette built in 1278-90, was also part of such a designed landscape (Taylor 1997, 23-4). One of the most striking examples of this is at Bodiam Castle in Sussex, where the late 14th century arrangement of lakes and ponds surround the castle and force a circuitous approach which is constantly dominated by the castle itself (Everson 1996). The ornamental aspect of the Mere is underscored by the presence of a garden in the Lower Court. It is no accident that by far the majority of views of the castle, both

antiquarian and modern, are across the Mere, which still forms an important and integral part of the castle landscape.

The Mere also formed a vital element in the economy of the medieval manor. It was created at the southern end of a hunting park which surrounded the castle and extended several kilometres to the north (Figure 26). It played an important part in the activities within the park, attracting wildfowl and animals for hunting and hawking, but also supporting an important fishery. Freshwater fish were highly prized, not least as a mark of wealth and status, and fishponds were very much a lordly and monastic preserve. The importance of the park in later periods is underscored by the addition during the late 15th/early 16th century of a second bridge from the Inner Ward to the bailey, which was at one time planted as a '*pleasaunce*' or pleasure garden (Phipson 1863).

The Town Ditch

The Town Ditch is at present little understood, and there is no clear evidence for the date of its construction. However, the fact that the northern arm lies so close to the bailey ditch, creating the narrow strip of land now known as the Back Meadow, strongly suggests that it is an earlier feature. Unfortunately much of the eastern arm has been destroyed or reused as a drain, making identification of its original course extremely difficult, if not impossible. If it continued on its present alignment the Town Ditch would roughly line up with the northern end of Double Street, or possibly with property boundaries along its southern side. When it was assessed for Domesday, Framlingham was a wealthy and important settlement, with a large cemetery in the southern part of what was to later become the castle bailey. It is possible that the Town Ditch formed a simple defence for that settlement.

Geophysical survey

Subsequent to the writing of this report geophysical survey was carried out over parts of the Lower Court and the bailey to ascertain the nature of subsurface deposits there. In the Lower Court, resistivity survey demonstrated the presence of the walls shown on the plan in the 1959 guidebook, along with what looks like a rectilinear structure abutting the southern bank (Figure 27). Results in the bailey were less forthcoming, with evidence for a number of possible structures scattered throughout the area as well as evidence of considerable modern disturbance of the ground in the southern half of the bailey (Figure 27).

For full details of the geophysical survey see Appendix 2.

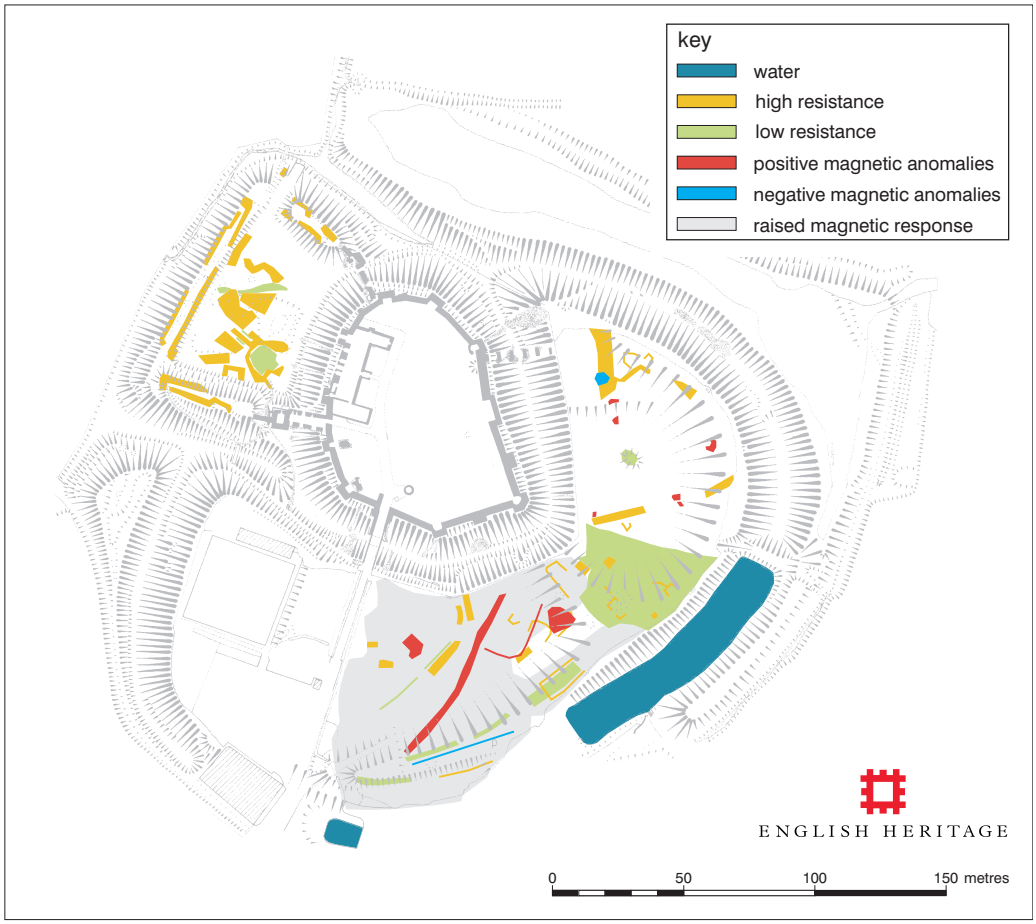

Figure 27
Interpretative summary of the results of the geophysical surveys, showing areas of geophysical anomaly in the Lower Court and bailey. This plan is not comprehensive and should only be used in conjuction with Figure 4 in Appendix II, upon which it is based (after Martin 2002)

What we need now

A significant finding of the topographical survey of Framlingham Castle is that more work is needed before we can fully understand some elements, particularly the Lower Court and the bailey. The main earthworks in the bailey are the bank which separates it from the outer ditch and another which divides the space into two distinct areas. The latter was once a substantial feature, and the fact that it is now so slight and degraded implies that the bailey was extensively ploughed during the post-medieval period. This, combined with its more recent use for car parking and other events, has gradually removed the slight traces expected from buildings, and also smoothed out the larger earthworks of the bank itself. This is particularly apparent immediately east of the main access road where a large garden/allotment existed until at least 1951. Although its position is known from plans and photographs, the evidence for it on the ground is extremely slight, demonstrating that the ground here has been substantially smoothed in a relatively short period of time (EH Historic Plans Collection A.3115/1 & A.1322/1). It is also known that there was considerable Second World War activity in the bailey - trenches and Bren Gun pits were dug and a water tower erected - but no trace of this survives (AG Moore, pers comm).

Detailed investigation of the standing fabric would also contribute greatly to understanding of the monument as a whole. There are some interesting questions regarding the relationship of the curtain to the Poor House, and further study of the castle could prove vital in demonstrating how it functioned both as an administrative centre and lordly residence as well as a defended fortification.

The topography of Framlingham is interesting but unfortunately not within the remit of this report, although it has been suggested that the layout of Double Street and Fore Street fossilise the site of a motte and bailey castle (Oxford Archaeology 2002, 7). It is possible that detailed investigation within the town would clarify some of the questions regarding the function and date of the Town Ditch, and investigation further afield in the parish may answer some interesting questions regarding the development of Framlingham and its function during the medieval period.

Another interesting element of the landscape which has not been investigated in any detail is the park and the way in which it relates to the castle, the town and the wider landscape.

6. SURVEY AND RESEARCH METHODS

The archaeological survey was carried out during January and February 2002 by Moraig Brown and Louise Barker, with assistance from Paul Pattison. Hard detail and most of the larger archaeological features were surveyed at a scale of 1:500 using a Leica 1610 theodolite with integral electronic distance measurement, based upon a system of linked traverses (Figure 25). Further details were supplied using conventional graphical methods. In addition, Leica differential GPS equipment was used to establish the positions of seven permanent survey markers which form a control framework for future survey.

Cursory architectural observations were carried out by Adam Menuge, Imogen Grundon and Moraig Brown, and all photography was by Steve Cole. The geophysical survey was carried out by Andrew Payne and Louise Martin of the Centre for Archaeology at Fort Cumberland, using both resistivity and magnetometry (for full details see Appendix 2).

The report was researched and written by Moraig Brown, who also prepared the illustrations and assembled the final report, using Trimble Geomatics, AutoCAD, Adobe Photoshop, CorelDraw, CorelPaint and CorelVentura software. Editing was by Paul Pattison.

The site archive has been deposited in the National Monuments Record Centre, Great Western Village, Kemble Drive, Swindon SN2 2GZ (NMR reference TM 26 SE 1; SAM reference SUFFOLK 3; SMR reference SUFFOLK 0001).

7. ACKNOWLEDGEMENTS

Thanks are due to the following people who assisted with various elements of the survey:

John Etté, English Heritage Inspector of Guardianship Monuments, East of England Region

The custodians at Framlingham Castle, especially Diana Howard

Jayne Ringrose, Pamela Judd and the Master and Fellows of Pembroke College

Suffolk Record Office

Jenny and Nigel Sharp of Regency House, for their wonderful hospitality

Mr & Mrs Hawksley of Moat House, Castle Street, for allowing access to their garden

Chris Taylor, who kindly read and commented upon an early draft of the report

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TM2863/10	14/04/1955
TM2863/4/270	19/07/1979
TM2863/5/272	19/07/1979
TM2863/23	14/07/1989
TM2863/31	14/07/1989
TM2863/34	14/07/1989
TM2863/64	08/07/1997
106G/UK/673/4280-1	28/07/1946

English Heritage (EH) Historic Plans Collection

Plans

87/6A1	Framlingham Castle, Suffolk. Survey by His Majesty's Office of Works (HMOW) in June 1919
87/45	Framlingham Castle. Survey by HMOW in November 1931 at a scale of 16 feet to 1 inch. In three parts.
87/49	A copy of one part of the above, but with additional detail and annotation for reproduction as a published drawing
87/65	Framlingham Castle, Suffolk. Ministry of Works (MoW) Ancient Monuments Branch, 23/03/54 at a scale of 8 feet to 1 inch.

Photographs

A397/9	Aerial photograph. View from the south (27/7/74)
A.1322/1	Custodians allotment (28/6/51)
A.3115/1	Excavation of the road for installation of drains (25/3/54)
A.3326/4-5	Castle Pond with Castle Inn in background (28/4/54)
F.1168	Interior of the Great Hall. Undated, but possibly September 1933

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Historic maps and drawings

P461/104	Tithe map, Framlingham
FDA 104/B1/1a	Tithe apportionment, Framlingham
HD 78:2671	Various sale particulars, including: a) a drawing of an oak-carved head found at Countess Well Farmhouse c1922 b) an extract from a probably 19th century history, which includes a view of the interior of the castle in 1729
HD 11/475	Framlingham Trust Estate, Town Land and other property, 1790 "Survey and Plan of the Castle and Lands belonging, in Framlingham, Suffolk, belonging to the Trust of Sir Robert Hitcham, Kght". A2 scaled plan of the castle and part of the edge of the mere

Pembroke College, Cambridge

Framlingham C10	Counterpart of Brewhouse & c. in the Castle Yard to G. Stockdale. 2 Oct. 8 Car. I (1632)
Framlingham N5	An account by Robert Hawes of the management of Sir. Robert Hitcham's estate in Framlingham since his decease, drawn up with a view to urge the building of a Workhouse. (Apparently drawn after 1729)
College MS L_n	An actual survey of several Estates lying in Framlingham & Saxted in the County of Suffolk, surveyed by John Chandler, 1745
College MS L_1	Book of Maps on vellum, quarto, by Isaac Johnson of all the Estate. 12 May 30 Geo. III, 1790
College MS L_{iota}	Maps of Waste Grounds in Framlingham, Suffolk, 1808, by Isaac Johnson
College MS L_{theta}	Surveys & plans of the castle of Framlingham in the County of Suffolk, by Isaac Johnson, 1789-90

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Add. 37974 f. 74	Framlingham, Co Suffolk, Plan of earthworks at the Castle, 1909. Downman, EA Ancient earthworks in Northants, Norfolk and Suffolk. (visited March 1909; written up Jan 1910)
Add. MS. 6735 fol. 121	Kerrich, T Collections on Architecture. Plans and views, 1770-1790. Watercolour view of the castle from across the mere.
Maps K. Top. 39.17.b.1	A view of Framlingham Castle in Suffolk. Undated, but the same view across the mere as Add. MS. 6735 fol.121, but B&W ink.
Maps K. Top. 39.17.b.2	Framlingham Castle, Suffolk. Ink interior view of the castle, showing the poorhouse. Published 20/4/1785, delineated by Richard Godfrey.

9. PHOTOGRAPHS TAKEN DURING THE SURVEY

AA028415 Exterior. Castle across the bailey; view from south. Colour

AA028416 Exterior. Castle across bailey showing polygonal tower in foreground; view from south-east. Colour

AA028417 Exterior. Outer ditch; view from north. Colour

AA028418 Exterior. Outer ditch; view from west. Colour

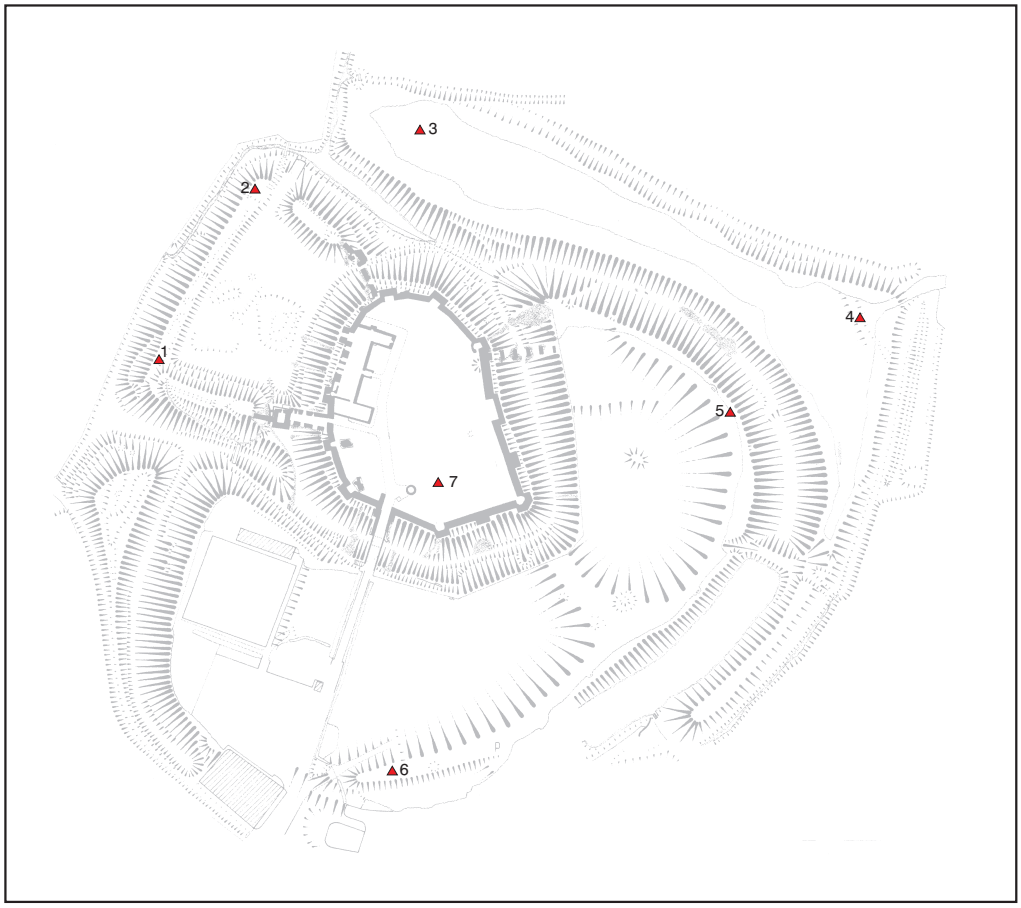
AA028419 Exterior. Late 15th/early 16th-century bridge piers in inner ditch; view from south. Colour

AA028420 Exterior. 16th-century bridge spanning inner ditch; view from east. Colour

APPENDIX ONE

Location of permanently-marked survey stations

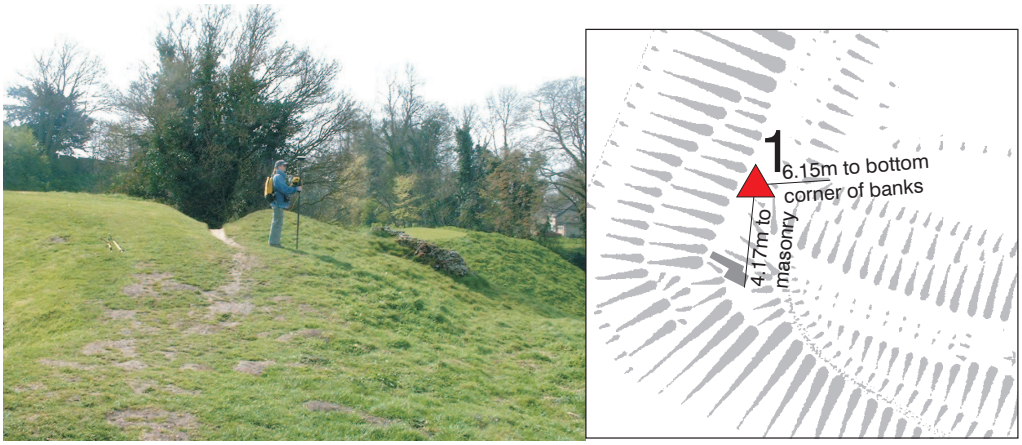
Seven survey stations were permanently-marked and can be reoccupied in the future with either theodolite or GPS equipment. These stations were not used during the main earthwork survey but have been incorporated into the digital survey plan. All of the stations have been marked using 0.5m metal spikes driven into the ground; a metal plate at the surface has a yellow plastic tag denoting its number. National Grid co-ordinates are listed below for each station, as well as a photograph and description to aid location.



Station 1

On the western bank of the Lower Court. At the southern end, close to the masonry and immediately west of the path.

Eastings	Northings	Height
628570.449	263743.773	37.494



Station 1
view from the north and measurements for locating the station

Station 2

On the western bank of the Lower Court. At the northern end, close to the steps leading down to the bridge across to the Mere.

Eastings	Northings	Height
628607.836	263816.648	35.584

Station 2
view from the south and measurements for locating the station

Station 3

At the western end of the Back Meadow, roughly 20m from the gap in vegetation leading to a small wooden bridge across a N-S running field drain. *NB No measurements are provided because there are no hard features to lock onto.*

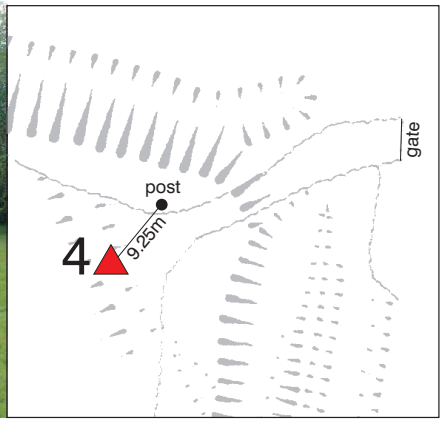
Eastings	Northings	Height
628673.740	263838.888	35.675

Station 3
view from the east

Station 4

In the north-east corner of Back Meadow, in the gap between the northern and eastern sections of the Town Ditch, on the bank/headland.

Eastings	Northings	Height
628837.051	263768.748	46.965



Station 4
view from the west and measurements for locating the station

Station 5

In the bailey, on the outer edge of the bank, north of the causeway and next to a bench.

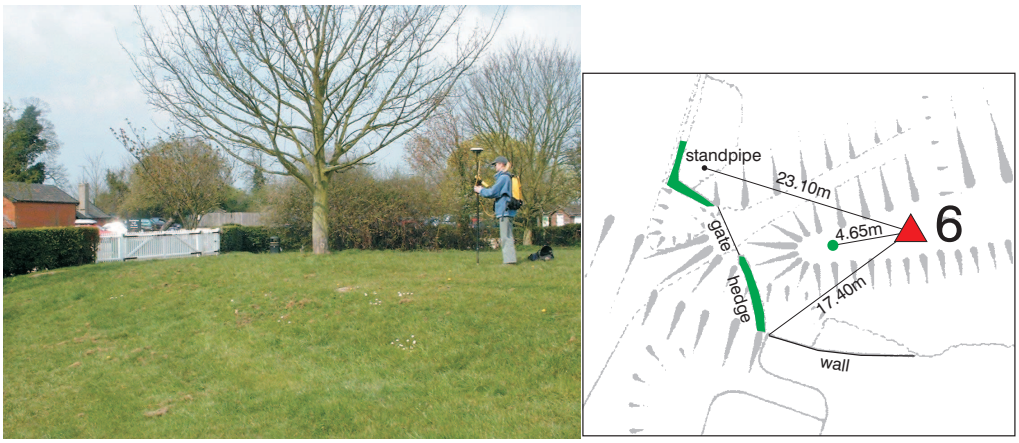
Eastings	Northings	Height
628789.789	263729.824	49.392

Station 5
view from the south and measurements for locating the station

Station 6

In the bailey, on the bank close to the vehicular access to the field.

Eastings	Northings	Height
628655.941	263586.632	45.741



Station 6
view from the south and measurements for locating the station

Station 7

Within the Inner Ward of the castle, west of the well.

Eastings	Northings	Height
628673.573	263700.500	45.044

Station 7
view from the east and measurements for locating the station

APPENDIX TWO

Geophysical survey report

Introduction

Geophysical surveys of approximately 1.7 hectares were conducted over the bailey and Lower Court at Framlingham Castle, Framlingham, Suffolk (SAM: SF3; Monument Number 390442). These two areas were highlighted as needing particular further research after analysis of the earthworks of the castle by the English Heritage Archaeological Investigation team (Cambridge office) in January and February of 2002 (see Brown 2002).

The two areas have been little studied in the past, often interpreted as extraneous to the main castle buildings, merely providing 'extra space for men and horses' (EH 1988). However, various surveys and plans show the presence of fishponds in the Lower Court and one plan notes that the bailey was once planted as a 'pleasaunce' (Brown 2002, 9-12, figs 4, 6). Questions arising from the recent study of Framlingham include: identifying the nature of the broad eroded bank in the bailey; assessing any damage caused by the use of part of the bailey as allotments, and more recently, as an overflow car park and venue for other events; and identifying evidence for walls drawn on the banks surrounding the Lower Court in the 1959 EH guidebook, that were not evident on the 1931 plan on which it was based (Brown 2002, 25, fig 8). There was also the question of the full extent of the Anglo-Saxon cemetery known to extend at least 45m east of the entrance road.

The aim of this survey was to address some of the above questions by providing a sub-surface investigation of the Lower Court, to clarify the extent of any buried walls, and of the bailey where there is limited knowledge as to the nature of the past use of this area. Both the earthwork and geophysical surveys were undertaken to assist in the preparation of a Conservation Plan for the site, being complied by Oxford Archaeology.

The castle (TM 287 638) lies on calcareous clayey soils of the Hanslope association (Soil Survey of England and Wales 1983) developed over Lowestoft Till underlain by Crag (Institute of Geological Sciences 1966). At the time of the survey the two areas were under grass and used as leisure areas by those visiting the castle.

Method

Magnetometer survey

Magnetometer survey was used to reconnoitre the bailey area and also to make some attempt at locating the Anglo-Saxon cemetery. The survey was conducted using the standard method

outlined in note 2 of Annex 1, and its location is shown on Figure 1. Plots of the data-set are presented as both an X-Y traceplot and a linear greyscale, at a scale of 1:1250 on Plan A. A plot is also superimposed over the earthwork plan provided the Archaeological Investigations team on Figure 2 (1:2000).

The corrections made to the measured values displayed in the plots were to zero-mean each instrument traverse to remove heading errors and to 'despike' the data through the application of a 2m by 2m thresholding median filter (Scollar *et al* 1990; 492) to reduce the detrimental effects produced by surface iron objects. In addition the lower and upper values of the data have been trimmed for presentation as traceplots.

Earth resistance

An earth resistance survey was conducted over all the shaded grid-squares (see Figure 1), in both the bailey and the Lower Court. The flattest areas on the high banks around the Lower Court were also surveyed in an attempt to locate the walls marked on the plan that appeared in the 1959 guidebook. Measurements were collected with a Geoscan RM15 resistance meter, PA1 mobile probe array in the Twin-Electrode configuration. Readings were collected using the standard method outlined in note 1 of Annex 1. Plots of the data-set from the bailey are presented as both an X-Y traceplot and a linear greyscale, at a scale of 1:1250, in Plan B and at a scale of 1:1000, from the Lower Court in Plan C. A linear greyscale of high-pass filtered data has been superimposed over the earthwork plan provided by the Archaeological Investigation team on Figure 3 (1:2000).

Results

Magnetometer survey

A graphical summary of the significant anomalies discussed in the following text is provided on Figure 4a.

The bailey

The overall magnetic response is rather 'noisy' (>±1nT), especially in the area [1] to the south of the broad bank across the bailey. The latter disturbance is likely to derive from modern activity, such as allotments and overflow car parking. Specific areas of magnetic noise e.g. [2] and [3] have been recorded alongside ferrous fencing and at [4] and [5], most probably responses to buried pipes. The partially negative response of [4] suggests this could be a plastic water pipe. This is further supported by the observation of two taps in the vicinity of the extremities of this anomaly.

A slightly curving linear positive magnetic anomaly [6], perhaps caused by a ditch, is just detectable running through the southern part of the bailey but its definition is very poor. Although this could have some archaeological significance it is not possible to define its purpose. A barely discernible linear anomaly [7] may abut [6], but any such interpretation is speculative.

Various discrete pit-type positive magnetic anomalies can be seen at [8-10], in the northern half of the bailey. There may well be similar occurrences in the southern part, such as at [11], but the response to pits etc is obscured by the extensive magnetic disturbance here.

Earth resistance

A graphical summary of the significant anomalies discussed below is provided on Figure 4b.

The bailey

Modern disturbance has been recorded at [R1] over a vehicle track into the field. Two linear low-high resistance anomalies [R2-3] are likely to be the service pipes as seen in the magnetic data at [4] and [5] respectively.

A broad band of very slightly lower resistance readings has been recorded at [R4]. Though this approximately corresponds with the wide bank recorded in the earthwork survey an offset is apparent suggesting that this relationship should not be over-stressed.

An area of higher resistance is apparent to the west of [R5]. Within this there appears to be a series of significantly higher resistance linear anomalies [R6] enclosing an area between the road and ditch – perhaps indicating the presence of structural foundations. The linear magnetic anomaly [5] falls between [R5] and [R6]. It is not clear how these all relate to one another, but their proximity to the gatehouse/main entrance is intriguing. Over the remainder of the site there are a series of high resistance linear anomalies e.g. at [R7-9] that possibly correlate with structural remains. There is no obvious patterning to these and no suggestion of a formal arrangement of buildings can be deduced.

The Lower Court

Several high resistance linear anomalies [R10-12] are evident on the banks around the Lower Court. It is not possible to establish an exact layout of these structures as the topography and vegetation limited the surveyable area; however, these results corroborate the presence of walls as recorded on the 1931 survey. A high resistance rectilinear anomaly [R13] is suggestive of a further possible structure within the court.

An unclear pattern of high and low resistance readings [R14] in the middle of the Lower Court does not elucidate the nature of activity here. There is no apparent correlation between the resistance readings and the suggested outline of fishponds (Brown 2002).

Conclusion

The magnetometer survey in the bailey area has not been very informative. Widespread ferrous debris of probable modern origin has disturbed much of the survey data, extending over the probable location of the cemetery, hampering the identification of archaeological anomalies. Graves themselves are, additionally, notoriously difficult to identify with standard geophysical techniques. There has been no obvious response to the broad bank across the bailey and the concentration of disturbance to the south of this is likely to be through modern use of this feature as a division. Of possibly more significance are the few pit-type responses and a linear anomaly [6] that may have enclosed an area adjacent to the road.

The earth resistance survey of the bailey has recorded further potential enclosure features in the same area, though the exact function of these is unclear. However, they are unlikely to relate to the allotment as they do not match with any feature visible on an aerial photograph of this (Brown 2002, fig 15). Elsewhere in the bailey possible structures have been recorded, although these form no obvious pattern.

The banks of the Lower Court do seem to be constructed over the remains of walls though it has not been possible to delimit these structures. There is no clear evidence for fishponds here, or any other coherent patterning to the resistance readings in the middle of the Court - apart from one potential building extending under the southern bank.

Survey information

Surveyed by A Payne and L Martin, 1-5/07/2002

Report by L Martin, 04/09/2002

Archaeometry Branch,

English Heritage,

Centre for Archaeology.

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List of enclosed figures

Figure 1 Location plan of survey grid squares over base OS map (1:2500).

Figure 2 Linear greyscale of magnetometer data over base OS map (1:2000).

Figure 3 Linear greyscale of filtered earth resistance data superimposed over base OS map (1:2000).

Figure 4 Graphical summary of significant geophysical anomalies (1:2000) (see Fig 27 in main report)

Plan A Traceplot and linear greyscale of magnetometer data from the bailey (1:1250).

Plan B Traceplot and linear greyscales of earth resistance data from the bailey (1:1250).

Plan C Traceplot and linear greyscales of earth resistance data from the Lower Court (1:1000).

Annex 1: Notes on standard procedures

1)**Earth Resistance Survey:** Each 30 metre grid square is surveyed by making repeated parallel traverses across it, all aligned parallel to one pair of the grid square's edges, and each separated by a distance of 1 metre from the last; the first and last traverses being 0.5 metres from the nearest parallel grid square edge. Readings are taken along each traverse at 1 metre intervals, the first and last readings being 0.5 metres from the nearest grid square edge.

Unless otherwise stated the measurements are made with a Geoscan RM15 earth resistance meter incorporating a built-in data logger, using the twin electrode configuration with a 0.5 metre mobile electrode separation. As it is usually only relative changes in resistivity that are of interest in archaeological prospecting, no attempt is made to correct these measurements for the geometry of the twin electrode array to produce an estimate of the true apparent resistivity. Thus, the readings presented in plots will be the actual values of earth resistance recorded by the meter, measured in Ohms (W). Where correction to apparent resistivity has been made, for comparison with other electrical prospecting techniques, the results are quoted in the units of apparent resistivity, Ohm-m (Wm).

Measurements are recorded digitally by the RM15 meter and subsequently transferred to a portable laptop computer for permanent storage and preliminary processing. Additional processing is performed on return to the Centre for Archaeology using desktop workstations.

2)**Magnetometer Survey:** Each 30 metre grid square is surveyed by making repeated parallel traverses across it, all parallel to that pair of grid square edges most closely aligned with the direction of magnetic North. Each traverse is separated by a distance of 1 metre from the last; the first and last traverses being 0.5 metre from the nearest parallel grid square edge. Readings are taken along each traverse at 0.25 metre intervals, the first and last readings being 0.125 metre from the nearest grid square edge.

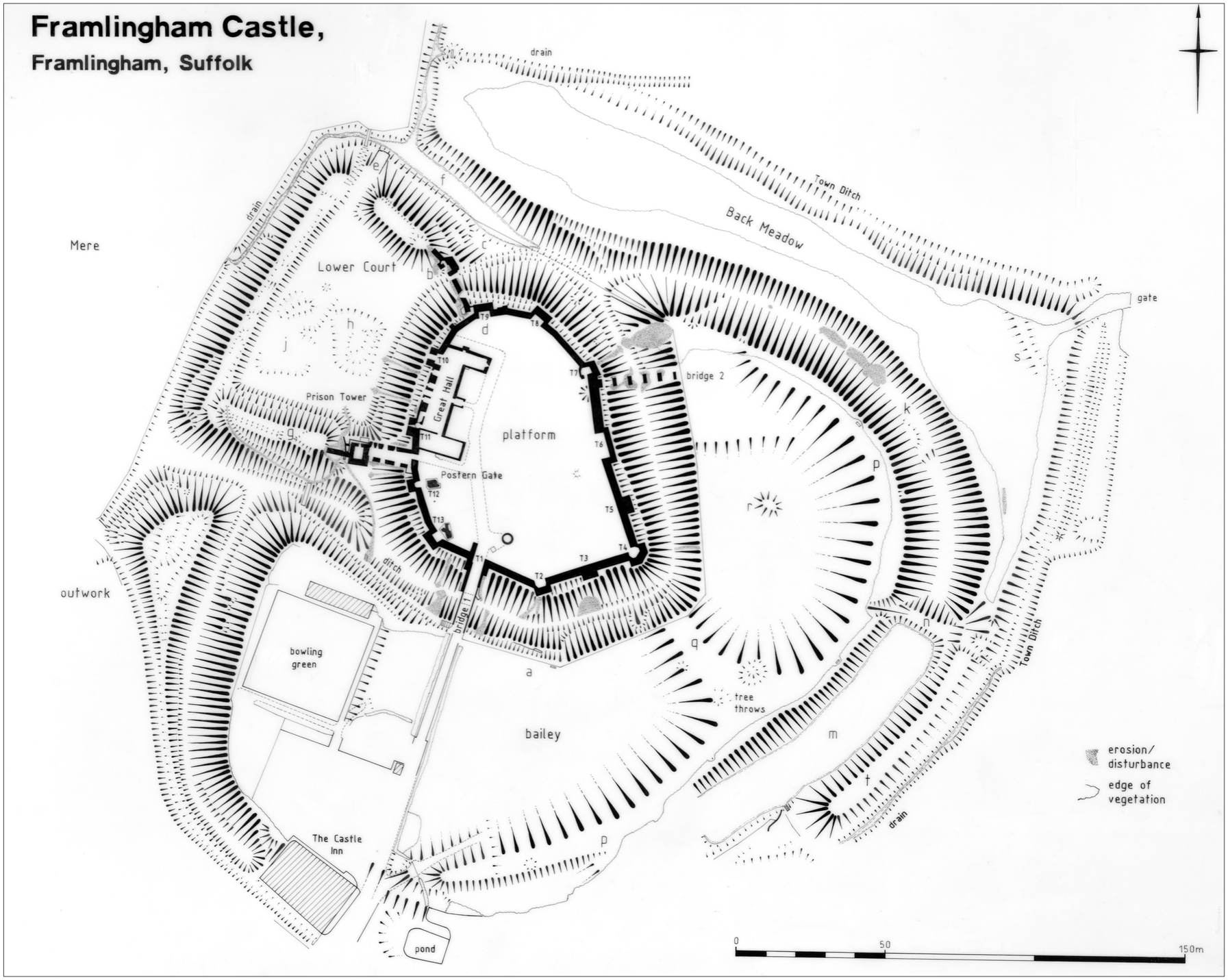
These traverses are walked in so called 'zig-zag' fashion, in which the direction of travel alternates between adjacent traverses to maximise survey speed. However, the magnetometer is always kept facing in the same direction, regardless of the direction of travel, to minimise heading error.

Unless otherwise stated the measurements are made with a Geoscan FM36 fluxgate gradiometer which incorporates two vertically aligned fluxgates, one situated 0.5 metres above the other; the bottom fluxgate is carried at a height of approximately 0.2 metres above the ground surface. The FM36 incorporates a built-in data logger that records measurements digitally; these are subsequently transferred to a portable laptop computer for permanent storage and preliminary processing. Additional processing is performed on return to the Centre for Archaeology using desktop workstations.

It is the opinion of the manufacturer of the Geoscan instrument that two sensors placed 0.5 metres apart cannot produce a true estimate of vertical magnetic gradient unless the bottom sensor is far removed from the ground surface. Hence, when results are presented, the difference between the field intensity measured by the top and bottom sensors is quoted in units of nano-Tesla (nT) rather than in the units of magnetic gradient, nano-Tesla per metre (nT/m).

3)**Resistivity Profiling:** This technique measures the electrical resistivity of the subsurface in a similar manner to the standard resistivity mapping method outlined in note 1. However, instead of mapping changes in the near surface resistivity over an area, it produces a vertical section, illustrating how resistivity varies with increasing depth. This is possible because the resistivity meter becomes sensitive to more deeply buried anomalies as the separation between the measurement electrodes is increased. Hence, instead of using a single, fixed electrode separation as in resistivity mapping, readings are repeated over the same point with increasing separations to investigate the resistivity at greater depths. It should be noted that the relationship between electrode separation and depth sensitivity is complex so the vertical scale quoted for the section is only approximate. Furthermore, as depth of investigation increases the size of the smallest anomaly that can be resolved also increases.

Typically a line of 25 electrodes is laid out separated by 1 or 0.5 metre intervals. The resistivity of a vertical section is measured by selecting successive four electrode subsets at increasing separations and making a resistivity measurement with each. Several different schemes may be employed to determine which electrode subsets to use, of which the Wenner and Dipole-Dipole are typical examples. A Campus Geopulse earth resistance meter, with built in multiplexer, is used to make the measurements and the Campus Imager software is used to automate reading collection and construct a resistivity section from the results.



English Heritage survey plan of Framlingham Castle.