PRIORY CHURCH OF ST MARY AND ST MICHAEL, CARTMEL, CUMBRIA

Archaeological Evaluation

Client: PCC Cartmel Priory

NGR: 337959 478815

March 2021

The Site	
Site Name	Priory Church of St Mary and St Michael, Cartmel
County	Cumbria
NGR	337959 478815

Client	
Client Name	PCC Cartmel Priory

Planning	
Pre-planning?	Yes
Planning Application No.	-
Plans (e.g. conversion, extension, demolition)	New extension to church
Condition number	-
Local Planning Authority	South Lakeland District Council
Planning Archaeologist	Jeremy Parsons, Cumbria County Council

Archaeological work	
Desk-based assessment done as previous phase of work?	Yes, as part of statement of significance compiled by Marion Barter Associates
Approximate number and dimensions of trenches proposed	Five trenches, between 2.4m and 3.8m long

Archiving	
Relevant Record Office(s)/Archive Centre(s)	Barrow-in-Furness/Kendal
Relevant HER	Cumbria
Relevant Museum	Kendal Museum

Staffing	
Site work	Dan Elsworth Tom Mace
Report writing	Dan Elsworth
Report editing	Jo Dawson
Illustrations	Tom Mace
Date(s) site work carried out	15th and 16th December 2020 and 25th March 2021

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Summary

As part of proposals for the construction of an extension to the north side of the nave of the Priory Church of St Mary and St Michael, Cartmel, Cumbria, Greenlane Archaeology was commissioned to carry out an archaeological evaluation. This was primarily to be carried out inside the footprint of the proposed extension and comprised the excavation of three trenches within this area. A fourth trench was excavated in an area to the north where it is intended some extant grave covers would be moved in order to accommodate the new extension, and a fifth trench was excavated alongside part of the footpath where it is proposed that the ground level might be lowered in order to improve accessibility. In all cases excavation ceased at the first deposit of archaeological interest and in all five trenches features of archaeological interest were encountered.

There is evidence for human activity in the local area from at least the end of the last Ice Age, with substantial remains of prehistoric settlement and more tantalising evidence for Roman and early medieval activity, although none of this is particularly prevalent within the village of Cartmel itself. The site is dominated by the presence of the medieval Priory Church, which originally formed part of the Augustinian Cartmel Priory, which was established in the late 12th century. The documentary history of the priory in the medieval period is not detailed, although a postulated understanding of the development and arrangement of the site has been established through various pieces of evidence. Significantly it is thought that the cloister was moved from the south side of the church to the north in the 14th century. The church is the only part of the priory that survived the Dissolution to the present day and there is considerable documentary evidence for renovation and alterations to it from the early 17th century onwards, with a particularly large programme of work in the late 19th century.

The evaluation revealed features and deposits of archaeological interest in all five trenches, with deep, vertically-sided, linear features present in Trenches 1 and 4 and shallower linear features in Trenches 1, 2 and 5. In Trench 3 a substantial deposit of dumped demolition material containing large amounts of human bone was also found, and in Trench 4 a shallow pit containing a large amount of domestic rubbish, essentially the remains of a midden, of late 18th or early 19th century date, was found.

All of the features and deposits encountered were apparently post-medieval in date; two pieces of medieval pottery and 10 fragments of floor tile of probable medieval date were recovered, but these were residual in later contexts. However, the form of the deep vertically-sided features in Trenches 1 and 4 is suggestive of robbed out walls. In the latter case the dating evidence shows that this must have taken place in the late 18th or early 19th century, but it is plausible that the walls were part of the medieval priory. The shallower linear features were typically filled with very loose stony material suggestive of demolition rubble, but these may have been created to form wide drains along the sides of the Priory Church. The thick deposit in Trench 3 also appeared to be essentially demolition rubble and perhaps derived from attempts to dispose of material removed during one of the phases of renovation inside the church. Dating evidence from these features indicates that they cannot have been created before the late 19th century.

It is arguable that the probable robbed wall lines discovered in two of the trenches represent the line of the cloister when it was moved to the north side of the church in the 14th century. There is enough space to accommodate a cloister of fairly standard size; the alignment of the features shows that it could not have been perfectly square or rectangular but seems to have been constructed to respect the boundary wall to the north-west, which presumably already existed in some form. What is perhaps most noteworthy about their removal is that this would have meant that they were still visible on the surface as late as the early 19th century. The reason for such thorough robbing is not clear, but it was perhaps because the area was due to be used for burials, although none of those now present pre-date the middle of the 19th century. Plans for the creation of drains along the outside walls of the church are recorded in documentary sources as early as the 1820s, and there are also references to substantial amounts of material being moved as part of reflagging the floor, which would fit to some degree with the other features. The likely impact of the proposed extension on these deposits of archaeological interest, which are primarily of post-medieval date, would depend on the manner in which the foundations are created, with a shallow raft footing unlikely to cause any substantial harm.

Acknowledgements

Greenlane Archaeology would like to thank the PCC of Cartmel Priory for commissioning the project and for their help on site, in particular David Hugget and the late Bill Cockshott, and their agent Dominic Roberts at Francis Robert Architects for his assistance during the project. Thanks are also due to Malin Holst at York Osteoarchaeology for the assessment of the human remains, Jane Richardson at ASWYAS for the assessment of the animal bone, and Luscombe Plant Hire for providing the excavator and driver. Further thanks are due to Sam Seddon and Tom Booth at WSL Consulting Ltd and colleagues for their assistance during the excavation of the window samples and test pits.

1. Introduction

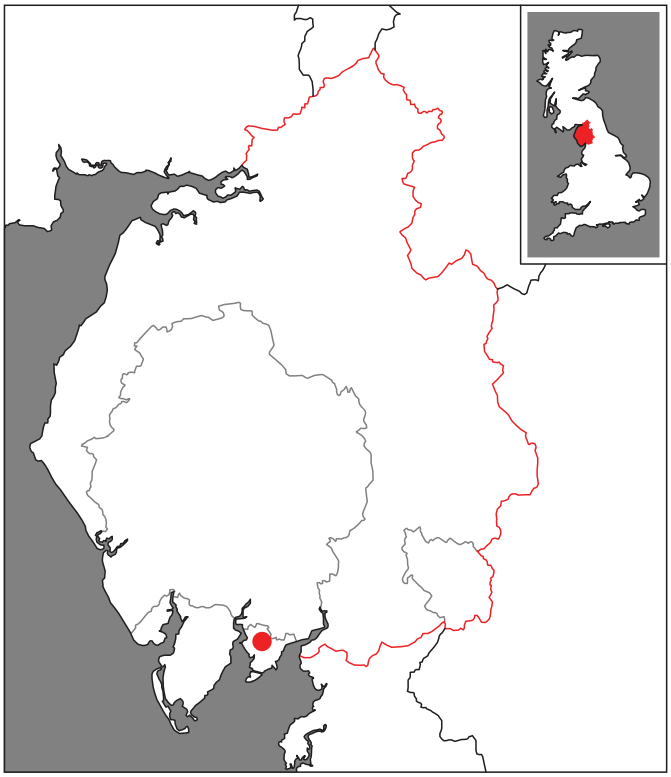
1.1 Circumstances of the Project

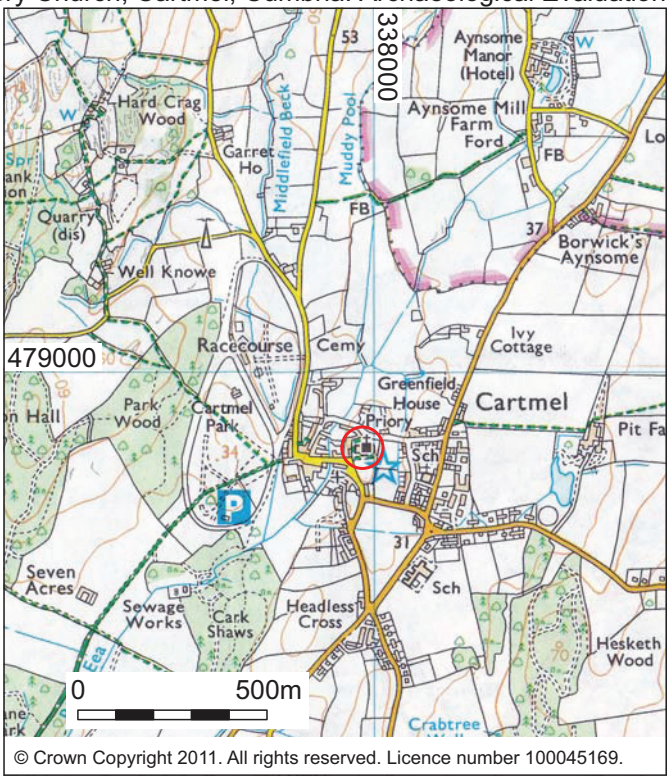
1.1.1 The circumstances of the project are set out in the tables on the inside cover of this report.

1.2 Location, Geology, and Topography

1.2.1 The site is located on the north-east side of Cartmel immediately to the north of the nave of the Priory Church, south of Priest Lane, at approximately 30m above sea level (Figure 1; Ordnance Survey 2011). The 'exceptional' and 'largely unspoilt' village of Cartmel, situated approximately 3.5km north-west of Grange-over-Sands to the south of the South Cumbria Low Fells on the northern side of Morecambe Bay (Countryside Commission 1998, 69; Ordnance Survey 2011), is now protected by Conservation Area status (Countryside Commission 1998, 73).

1.2.2 Cartmel lies on the junction of a complex series of solid geology comprising Bannisdale Slates of Silurian age and carboniferous limestone, covered by thick glacial debris, including deposits of cobbles, pebbles and sandy material (Moseley 1978, plate 1) and is this thought to have been substantially influenced by a post-glacial lake that filled much of the low-lying area in which the village now sits (Mitchell 1990). The local topography is typically that of improved undulating pasture set between areas of limestone, and more locally to Cartmel, slate outcrops.





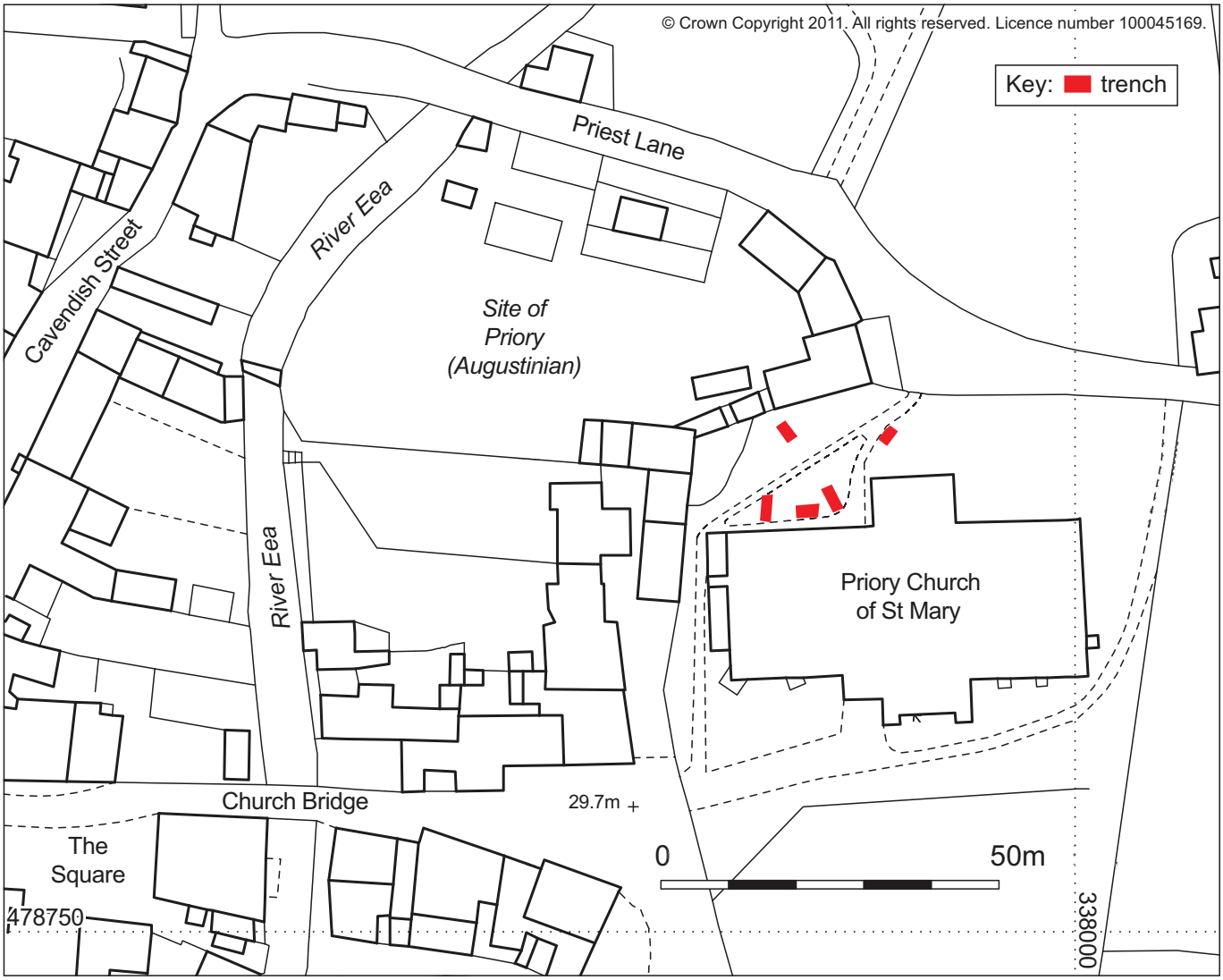


Figure 1: Site location

Client: PCC Cartmel Priory

2. Methodology

2.1 Archaeological Evaluation

2.1.1 The evaluation was carried out according to the standards and guidance of the Chartered Institute for Archaeologists (CIfA 2020a) and comprised the excavation of five evaluation trenches, numbered from 1 to 5 approximately from west to east (Figure 2).The three largest of these were positioned within the area of the proposed extension to the church, while Trench 4 was in the area in which it was proposed to move the tombs within the footprint of the proposed extension and Trench 5 in an area in which it was proposed that the ground level of the path might need to be changed in order to provide a more accessible footpath. None were targeting any specific known or suspected areas of archaeological interest. The dimensions of Trench 2 had to be slightly changed due to the presence of a memorial slab. The trenches varied from between 2.4m and 3.8m long and between 1.1m and 1.4m wide, with the area of trenching totalling *c*18.7m^2. Excavation was discontinued once the natural geology or the first feature of archaeological interest was reached, which was typically around 0.3m below the ground surface, although in Trench 3 the first deposit of archaeological interest extended to the depth of excavation. In Trenches 1-4, features or deposits were encountered that were too deep to fully excavate because of the loose surrounding deposits and limited space, which led to a considerable risk of collapse, especially in the case of Trench 3.

2.1.2 The topsoil was removed using a mechanical excavator with a toothless bucket and underlying deposits were cleaned and further investigated by hand. All finds were collected from all deposits, as far as was practical. The following recording techniques were used during the evaluation:

- ***Written record***: descriptive records of all deposits and features (see *Appendix 2*) were made using Greenlane Archaeology *pro forma* record sheets, specifically trench record sheets;
- ***Photographs***: photographs in colour digital format (both 12 meg JPEG and RAW file format) were taken of the site during the evaluation, including general views of the site, the surrounding landscape, and working shots. A selection of the colour digital photographs is included in this report and the remainder are included in the archive. A written record of all of the photographs was also made using Greenlane Archaeology *pro forma* record sheets (Greenlane Archaeology 2007);
- ***Instrument survey***: the trench locations were recorded using a Leica TS06 Plus total station which captures the survey data as a digital .dwg file directly in AutoCAD on a Microsoft Surface Pro computer. This enabled the location of each trench to be positioned relative to the local topography and allowed levels above Ordnance Datum to be provided through reference to a nearby spot height;
- ***Drawings***: since the only features of archaeological interest were exposed largely in plan and did not have deep sections they were only recorded in plan and were recorded using the total station, as described above.

2.2 Additional Monitoring

2.2.1 Following the completion of the evaluation the excavation of a series of small pits as part of window sampling and testing the foundations of the north wall of the priory church was archaeologically monitored. The three window sample pits were all initially hand-excavate within the footprint of evaluation trenches 1, 2 and 3, prior to a percussion corer being used to take samples to a depth of up to 5m. These were monitored in order to avoid any *in situ* remains of archaeological interest identified during the evaluation but also to record any additional remains of archaeological interest. The three test pits were monitored in order to identify any remains of archaeological interest.

2.2.2 All aspects of the archaeological monitoring were carried out according to the standards and guidance of the Chartered Institute for Archaeologists (CIfA 2020b) and Greenlane Archaeology's own excavation manual (2007). The deposits encountered were recorded in the following manner:

- ***Written record***: descriptive records of all deposits were made using Greenlane Archaeology's *pro forma* record sheets;
- ***Photographs***: photographs in colour digital format (both 12 meg JPEG and RAW file format) were taken of the site as well as general working shots. A selection of the colour digital photographs is included in this report. A written record of all of the photographs was also made using Greenlane Archaeology's *pro forma* record sheets;
- ***Drawings***: drawings were produced on site as follows:
    i. The location of the areas monitored was marked on a site plan at a scale of 1:100 and added to Figure 2.

2.3 Finds

2.3.1 ***Collection***: all of the finds were recovered by hand and stored in self-seal bags with white write-on panels on site before being removed for processing and assessment. The spoil was also checked with a metal detector and any non-iron finds retained.

2.3.2 ***Processing***: all of the artefacts recovered from the evaluation were washed, with the exception of metal objects, which were dry-brushed. They were then naturally air-dried and packaged appropriately in self-seal bags with white write-on panels.

2.3.3 ***Assessment and recording***: the finds were assessed and identified in the first instance by Jo Dawson. The finds were recorded directly into the catalogue produced as part of this report (*Appendix 3*).

2.4 Environmental Samples

2.4.1 No environmental samples were collected as no suitable deposits were encountered during the evaluation.

2.5 Archive

2.5.1 The archive of the project will be deposited with the relevant Record Office or Archive Centre, as detailed on the cover sheet of this report, together with a copy of the report. The archive has been compiled according to the standards and guidelines of the CIfA guidelines (CIfA 2020c). In addition, details will be submitted to the *Online Access to the Index of Archaeological Investigations* (OASIS) scheme. This is an internet-based project intended to improve the flow of information between contractors, local authority heritage managers and the general public. A copy of the report will be provided to the client and a digital copy of the report will be provided for the relevant Historic Environment Record, as detailed on the cover sheet of this report.

3. Rapid Desk-Based Assessment

3.1 Introduction

3.1.1 The desk-based assessment is used to produce two elements: a map regression showing the development of the site with particular relevance to the position of the evaluation trenches, and a site history in order to present the results of the evaluation in their local historical and archaeological context. The latter was extracted from information compiled as part of previous reports carried out by Greenlane Archaeology in Cartmel, in particular a historical background for the priory church recently produced for a Statement of Significance compiled by Marion Barter Associates (2020).

3.2 Map Regression

3.2.1 ***Introduction***: early maps of the area tend to be relatively lacking in detail, the earliest useful maps are therefore only from the 19th century. There is no tithe map as the area was not subject to tithe, having formerly belonged to Cartmel Priory. The earliest detailed map of the area is that which accompanied the enclosure award of 1807, although this map is not particularly detailed compared to later ones.

3.2.2 ***Enclosure map, 1807***: this shows the priory church as a very basic cross-shape (CAC(K) WPR 89 Z3 1807) and so it is not possible to accurately locate the site of the evaluation trenches. However, it does show the adjoining buildings to the north-west and west in reasonable detail.

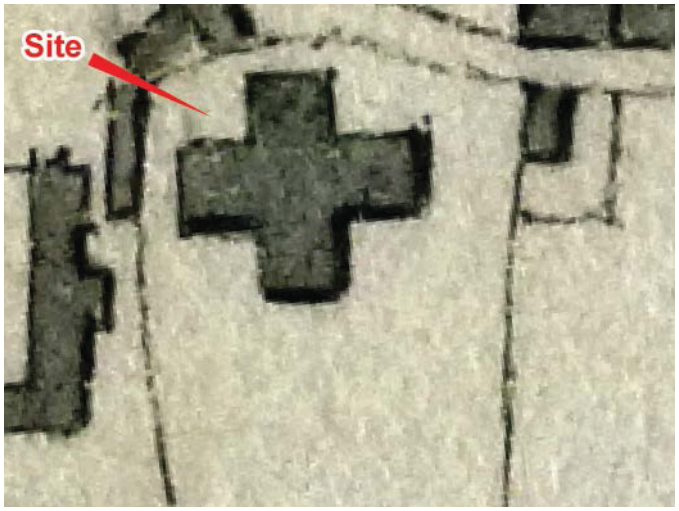


Plate 1: Extract from the enclosure map of 1807 showing the approximate location of the site

3.2.3 ***Ordnance Survey, 1851***: this is the earliest useful edition of the Ordnance Survey maps and shows the site in reasonable detail, with the priory church depicted accurately allowing the evaluation trenches to be properly located (Plate 2). It demonstrates that the arrangement of the footpaths within the churchyard was similar to what it is now, although with only the path running north-east/south-west depicted, and the location of the adjoining buildings to the north-west and west.

3.2.4 ***Ffolliott's Plan of 1854***: a similar arrangement is shown on Ffolliott's map to that depicted on the first edition Ordnance Survey, certainly in terms of the priory church and adjoining buildings, although in more detail (Plate 3; cf. Plate 2). The footpaths through the churchyard are only shown to comprise a single one running more north/south but meeting the boundary to the north at the same point. There are some details shown on the church building at this point that are not depicted on the other maps, including a small extension from the north-west corner of the north transept and a projection from the west end of the nave.

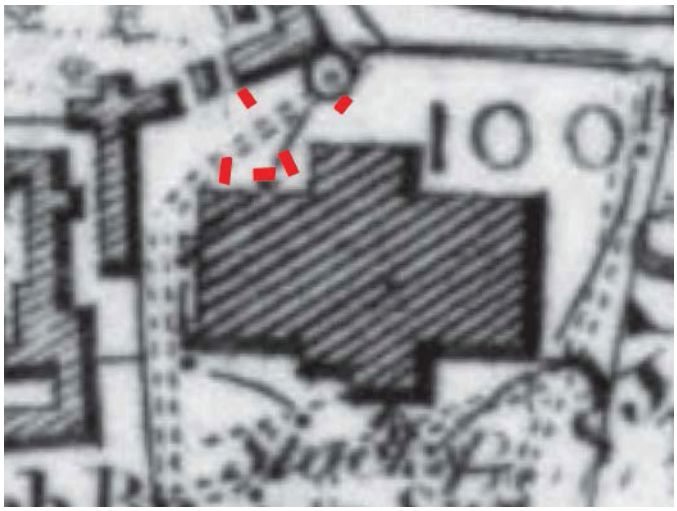
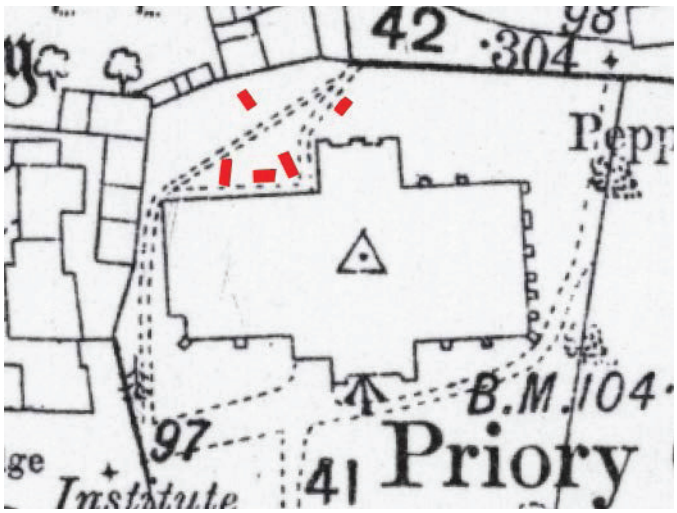


Plate 2 (left): Extract from the Ordnance Survey map of 1851

Plate 3 (right): Extract from Ffolliott's plan of 1854

3.2.5 ***Ordnance Survey, 1890***: the 1890 edition of the Ordnance Survey map was surveyed in 1889 and shows much the same layout as the 1851 edition albeit it in more detail due to the differences in scale at which the two editions were produced (Plate 4). By this time the footpaths in the churchyard have reached their current arrangement and there is more detail shown in the buildings nearby.

3.2.6 ***Ordnance Survey, 1913***: this shows a broadly similar arrangement to the previous map (Plate 5; cf. Plate 4), although the small enclosure in the north-west corner of the churchyard is depicted for the first time and the arrangement of the rooms at the west end of the nave is shown in detail.



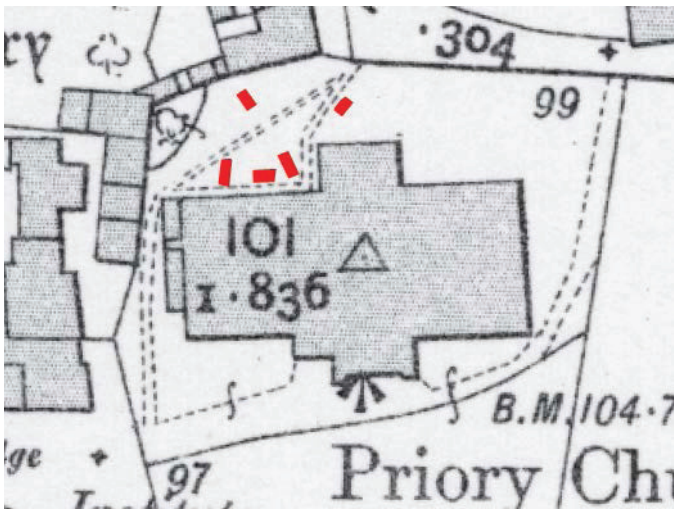


Plate 4 (left): Extracts from the Ordnance Survey map of 1890

Plate 5 (right): Extract from the Ordnance Survey map of 1913

3.2.7 ***Ordnance Survey, 1933***: this shows essentially the same detail as the previous map (Plate 6; cf. Plate 5).

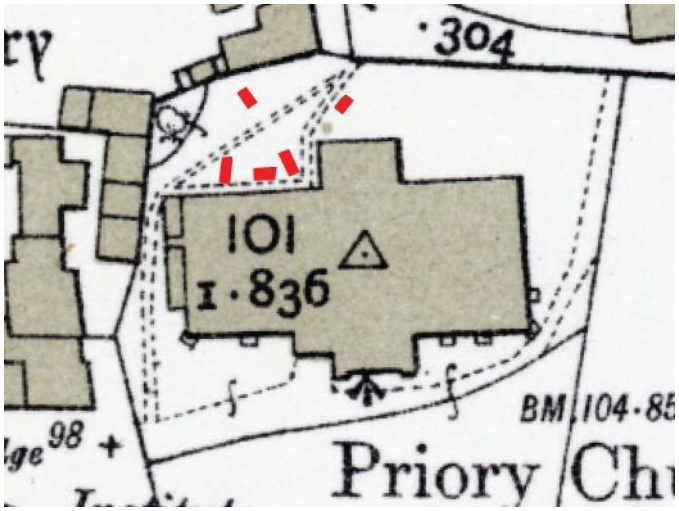


Plate 6: Extract from the Ordnance Survey map of 1933

3.3 Site History

3.3.1 ***Prehistoric Period (c11,000 BC – 1st century AD)***: while there is limited evidence for activity in the county in the period immediately following the last Ice Age, this is typically found in the southernmost part on the north side of Morecambe Bay. Excavations of a small number of cave sites have found artefacts of Late Upper Palaeolithic type and the remains of animal species common at the time but now extinct in this country (Young 2002). The county was also clearly inhabited during the following period, the Mesolithic (*c*8,000 – 4,000 BC), as large numbers of artefacts of this date have been discovered during field walking and eroding from sand dunes along the coast, but these are typically concentrated in the west coast area and on the uplands around the Eden Valley (Cherry and Cherry 2002). Slightly closer to the site, however, a large number of finds of this date were discovered during excavations carried out in the 1970s in the park belonging to Levens Hall, and, although largely ignored at the time, they were subsequently published (Cherry and Cherry 2000). In addition, a small amount of Mesolithic material has been found at the north end of Windermere during excavations on the Roman fort site (see for example Finlayson 2004). These discoveries, particularly those at Levens, demonstrate that further remains of similar date are likely to exist in the local area and that river valleys, lakesides, and coastal areas are a common place for such remains to be discovered (Middleton *et al* 1995, 202; Hodgkinson *et al* 2000, 151-152).

3.3.2 In the following period, the Neolithic (*c*4,000 – 2,500 BC), large scale monuments such as burial mounds and stone circles begin to appear in the region and one of the most recognisable tool types of this period, the polished stone axe, is found in large numbers across the county, having been manufactured at Langdale (Hodgson and Brennand 2006, 45). During the Bronze Age (*c*2,500 – 600 BC), monuments, particularly those thought to be ceremonial in nature, become more common still, and it is likely that settlement sites thought to belong to the Iron Age have their origins in this period. These are not well represented in the area around the site, although an enclosure on Hoad Hill near Ulverston perhaps has its origins in this period (Elsworth 2005), as might another one at Skelmore Heads near Urswick, although this was also associated with evidence for activity in the Neolithic (Powell 1963). Stray finds of Bronze Age date are found throughout the county and a number have been found in the Cartmel area. These include a stone axe hammer said to have been found at Aynsome, although the exact find spot of this is not known (Rigge 1885, 266). A bronze axe with a very pronounced stop ridge was also found in a peat moss near Cartmel, but again the find spot and current whereabouts are unknown (Clough 1969, 8). Sites that can be specifically dated to the Iron Age (*c*600 BC – 1st century AD) are very rare; the enclosures at Ulverston and Urswick may represent hillforts, a typical site of this period, but they have not been dated. Closer to the site, immediately to the east of Cartmel on Hampsfell, a group of over 50 structures identified as hut circles was reported in the late 19th century (Rigge 1885). No further details relating to these are known but it is possible that they represent the remains of a later prehistoric

settlement or even a hillfort. At Levens, burials radiocarbon dated to the Iron Age have been discovered (OA North 2004), but these remain a rarity both regionally and nationally.

3.3.3 ***Romano-British to Early Medieval Period (1st century AD – 11th century AD)***: late 18th and 19th century antiquarians considered a Roman military presence in the Furness area, which included the Cartmel peninsula, beyond question, but by the 20th century there was a complete reversal of opinion (summarised in Elsworth 2007, 31-37). It is evident that in this part of the country, initially at least, the Roman invasion had a minimal impact on the native population in rural areas (Philpott 2006, 73-74), but ultimately the evidence suggests a strong Roman influence or "background" presence in the peninsula during the Roman period, which doubtless would have been attractive for its rich iron reserves (Shotter 1995, 74; Elsworth 2007, 37, 41-43). Traditionally, a Roman camp is thought to have been located somewhere in area adjacent to Fairfield, perhaps most likely in an area known as 'Castle Meadows' to the north of Fairfield Lodge (Stockdale 1872, 253), although at the present time there is scant evidence to support this theory. That said, Stockdale recalls having the suspected *agger* [cambered embankment of a Roman road] of this *castellum* [small fort] pointed out to him by an acquaintance (Stockdale 1872, 253). The site was held to stretch along the side of the River Eea, "*It was then not very traceable, but he said it had been levelled down and much of it taken away*" (*ibid*.). Elsewhere, in Stockdale's unpublished manuscript notes, it is recalled that an '*oblong (parallelogram) mound in the meadows at Cartmel called Castle Meadows exactly in the shape of a Roman Camp* – [was] *destroyed partly by the encroachment of* [the] *River – the formation of the present road and cheefly* [*sic*] *by Mr Fell when he was building his house* [at Fairfield] *and improving his meadow*' (CAC(B) DDHJ/4/2/1/8 1860s-1872). Unfortunately, the location of "Castle Meadows" is now slightly ambiguous. The issue is clouded somewhat by Stockdale who implies that both fields may have been called "Castle Meadows" (Stockdale 1872, 253), potentially owing to the former location of the fort thereabouts, while the first edition of the Ordnance Survey labels a large general area to the north-east of Fairfield as 'Castle Meadows' (Ordnance 1851a; 1851b). The will of Thomas Fell of Fairfield, written in 1838 but proved in 1840, states that his house had "*three fields adjoining*" but does not give their name (CAC(B) BDKF/1/22 1840), while a later account states that Castle Meadows was "*a field on the right has side of the road which goes up to Green Bank from Cartmel*" (Institute Cartmel Branch 1928, 2).

3.3.4 Various finds of Roman coins and hoards of Roman coins have been found in or around Cartmel, dating from the first to the fourth centuries AD (Shotter 1988, 241; Shotter 1989). The exact find spots for these are unknown, but their presence perhaps points to the contemporary importance of the south Cumbrian coast and its integration into the economy of the Roman north-west and its links to other Roman centres such as Lancaster and Ravenglass (Shotter 1995). Further Roman sites may yet be discovered in the areas of Barrow and Cartmel, but firm evidence for a Roman military presence remains elusive (Shotter 1995, 77; 2004, 67). A recent evaluation at Fairfield (Greenlane Archaeology 2011a) recovered three sherds of what may be Roman pottery from a road surface, but these were not dated with certainty and may be medieval.

3.3.5 The origins of a Christian community in Cartmel and the wider Cartmel Peninsula are obscure. What is undoubted is that there was a British population in Cartmel following the demise of the Roman Empire's control over the area, as they are referred to in a grant made by the Northumbrian King Ecgfrith to St Cuthbert of land in Cartmel; historically this was translated as having included the British population, i.e. that the natives were given as chattels (Crowe 1984, 63), but more recently this has been reinterpreted as referring to the grant having been made by Ecgfrith *and* the Britons that were in Cartmel, suggesting that there was a recognised native aristocracy in the area that were negotiating with the Northumbrians (Edmonds 2013, 20). Whether that means there was an existing British church estate within the block of land that was presented as part of this grant is difficult to say. No *eccles* place-names are recorded in the immediate vicinity of Cartmel itself, which would potentially indicate the presence of a British church, or at least land held or controlled by them (Elsworth 2011), although there is an 'Eccleston Meadow' in Flookburgh, which might be significant in this regard (Stockdale 1872, 125). Nevertheless place-names indicating the presence of Britons are found in the region, such as Walton, which derives from an Anglo-Saxon word *wealas* applied to native Britons, possibly especially those that thought of themselves as Romans (Woolf 2010, 231-232).

3.3.6 Of potential interest in understanding the origins of the church in Cartmel, and therefore the subsequent development of the priory, are other local place-names, which indicate the presence of a church. Kirkhead, near Allithwaite, demonstrates that when Norse settlers arrived in the area in the 10th century there was a church already in existence, or, more implausibly, that they constructed a church when they arrived. The names 'Kirkepol' and 'Kirk Heys' are also recorded nearby (Crowe 1984, 65), but there is no certainty that a church existed in the area around Kirkhead and, like *eccles* place-names, the element *kirk* could just refer to land controlled by a church. However, Stockdale records a '*tradition that there was a chapel near Kirkhead and Abbot Hall – some remains of which, even graves, it is said, existed in the last century*' (Stockdale 1872, 505). Crowe also suggests that the place named as *Cherchebi* (meaning 'church village') in the Domesday survey corresponds with Cartmel, since it was known as 'Cartmel Churchtown' in later records (1984, 61), although this correlation is by no means definite. Complicating the issue further is the story regarding the foundation of the actual priory; according to a legend, first printed in 1821 (Atkins 1821), the monks came into Cartmel looking for a place for their new priory and found a suitable hill. Having marked out the site for building a voice spoke to them saying '*Not there, but in a valley between two rivers, where the one runs north, and the other south*'. Unable to imagine such a place they began searching across the north of England, but finding nothing matching this description they returned to the original hill. In doing so they crossed a valley where they found a stream running north and another running south, as predicted, and between them they built their priory. They also built a chapel on the original hill dedicated to St Bernard, which retains this name as 'Mount Bernard' to this day. Regardless of the speculation about the possibility of early churches being on different sites, the fact that the 12th century priory church was used as a parish church actually makes it entirely plausible that the priory actually, quite deliberately, located on the site of an earlier church. This would be more in keeping with other sites, where continuous use of the same site was relatively common, although this is normally only evident through archaeological excavation. A good recent and relatively local example of this is at St Michael's Church, Workington (Zant and Parsons 2019). Indeed, it is clear that a church did exist at Cartmel before the establishment of the priory because there is a reference in 1135 to Willelmus, clerk of Cartmel, and in 1155 to Uccheman, parson of Cartmel (Stockdale 1872, 8-9). It is also interesting to note that a consideration of the geology of the site has concluded that the priory is actually built on an island of glacial debris in a post-glacial lake (Mitchell 1990, 44 and figure 2 on page 48); this would have been an ideal location for an early medieval 'celtic' church/monastery, which were often on isolated spots such as islands or peninsulas (see Thomas 1971, 10-47). In the wider area local place names indicate a complex mixture of social and ethnic groups during this period, including native Britons, Angles and Vikings. The earliest forms of the place-name 'Cartmel', which are recorded from the 12th century, probably derive from the Old English "*ceart*" and "the Old Norse word "*melr*" (Crowe 1984, 61) and broadly mean "sand bank by rocky ground" (Dickinson 1991, 9) and may originally have applied to the Grange area (Dickinson 1980, 7).

3.3.7 ***Medieval Period (11th century AD – 16th century AD)***: by 1168 the parish of Cartmel was a royal estate and in 1186 it was granted to the Marshall family, the Earls of Pembroke, by Henry II (Crowe 1984, 65). The predominant relevant element of the historic landscape is, of course, Cartmel Priory in particular the priory church, although much of the present village of Cartmel lies within the wider precinct of the priory. The priory of St Mary the Virgin in Cartmel was established in 1188 (or at least by 1190) by an order of Augustinian Canons through the patronage of William Marshall, later earl of Pembroke (Farrer and Brownbill 1914, 259; Dickinson 1945, 51). The mother priory was Bradenstoke in Wiltshire, which sent a group of canons to Cartmel, although from the start Cartmel was independent (Farrer and Brownbill 1914, Vol.2, 143). It is apparent that the new priory at least invoked the memory of an earlier church, dedicated to St Michael, as the parish church and its chapels were referred to in the original foundation; an altar to St Michael was reserved for the use of parishioners and this dedication continued until after the Dissolution (Farrer and Brownbill 1914, 259). The parishioners continued to make use of the church after the establishment of the priory, with the Town Choir, on the south side of the chancel, reputed to have served them (Dickinson 1945, 64-65); however, the west part of the nave would have been a more usual area in a priory church for the local community to use (as at Carlisle) and from the 1340s the south chapel was a chantry chapel. Important fabric from the primary phase of construction, which continued into the early 13th century (up until the death of William Marshall in 1219), remains,

primarily in the chancel, north and south transepts, Piper Choir and crossing. This fabric, with mainly pointed arches, is characteristic of the style now referred to as Early Gothic (this was a French architectural tradition, and the term Early English is now considered to be inaccurate). The fabric of the church shows that the primary phase sanctuary projected one bay east of the east ends of the north and south chapels, so that the sanctuary was lit by north and south lancet windows. The nave may not have been built by 1219, as the quality ashlar work stops just within the east end of the nave. The evidence for missing claustral buildings at the church are blocked doorways in both the north and south transepts (that led to upper floor rooms), a book recess on the west side of the south transept and corbels on the west face of the transepts that carried a cloister roof.

3.3.8 The priory church continued to be built or remodelled in at least two phases during the later medieval period, but the lack of documentary records for this period hampers an accurate interpretation; the physical fabric of the building and its archaeology is therefore an important source of evidence for this period. The architecture of the church expresses phases of major investment, where features are readily dateable. In the mid-14th century, the chapel south of the chancel, was rebuilt and enlarged (Dickinson 1945; Dickinson 1991, 42), to create the Harrington chantry (John Harrington died 1347), with new windows of flowing Decorated Gothic tracery. The elaborate tomb and its altar would have occupied a large part of the chapel. More substantial work to the church took place in the 15th century; the building or rebuilding of the nave with arcades, clerestories and aisles. The chancel was refurbished with a vast new east window in c1420 and smaller Perpendicular Gothic windows were also installed in the transepts and Piper Choir, in place of the earlier lancet windows. The top stage of the tower and the choir clerestory is also of this period. The rebuilding of the nave with new south windows partly supports the theory that the priory underwent substantial reorganisation in the 14th century, when it is suggested that the cloister was moved from its original south location to the north. The first printed version of this interpretation, identified for this study, is in an article published in The Builder in 1899 (Anon 1899; see CAC(B) BDX/828/1/3/88 1899); this was later repeated by Farrer and Brownbill (1914, 259) and then by Curwen (1920, 111), but the most extensive discussion was by Dickinson (1945, 57-66). The evidence for this theory is a combination of the known disruption in the wider region during this period brought about by the Scottish raids, corresponding documentary evidence that by 1391 the church was in a state of decay and architectural evidence within the building. The latter include 12th century features on the south transept that express former claustral buildings here, the presence of the 15th century south aisle windows which are not compatible with a cloister here at that date, the doorway cut into the north transept north wall and a row of rough corbels on the blind north side of the nave thought to have supported the roof of a later north cloister (Dickinson 1945). It has also been suggested that the ground on which the original south cloister was built might have been subject to subsidence, which required the cloister to be moved (op cit, 63). This has been investigated more recently with Mitchell suggesting that the priory is located on an island of 'sandy glacial debris which is known to be more than 8 feet deep in places' within a post-glacial lake (1990, 45), but this does not prove that the south cloister had to be taken down. Notwithstanding these arguments for the theory, the evidence for it is not robust and has not been tested by any detailed, modern examination of the fabric, nor any archaeological evaluation of below-ground material. Indeed, earlier accounts of the church's history observed the same evidence within the building but concluded that the features on the south side of the church related to a chapter house or dormitory 'that was intended to be continued southward, but was never erected' (Paley 1872, 5) while on the north side of the nave the 'projecting through-stones indicate that a wooden pent-house… extended from some buildings lying westward, to the north doorway' (op cit, 5-6).

3.3.8 Unfortunately, it is not possible to get a detailed view of the possessions acquired by the Priory due to the loss of its archives, although it evidently received a number of further grants in the 13th and 14th century and eventually acquired a number of comparatively large farms (Dickinson 1991, 14-19). Its ecclesiastical wealth was valued at £46. 13s. 4d. in 1291 in the *Taxation of Pope Nicholas* (Dickinson 1980, 15). However, like much of the north of England, it was subject to raids by the Scots throughout the 14th century (Dickinson 1991, 29-30); the raids of 1316 and 1322 'wrought immense damage in the area' and on the latter occasion the *Lanercost Chronicle* records that the Scottish raiders "*burnt the lands around the priory… and took away cattle and booty*" (Dickinson 1980, 13). The Priory was also affected by the Black Death, which may explain why, probably like many English monasteries, it is recorded as having fewer brethren than normal in 1381 (Dickinson 1980, 16). The defensive potential of

the priory should not be overlooked (Hyde and Pevsner 2010, 268); the main priory gatehouse leading into the precinct was built between 1330 and 1340 and land surrounding the Priory was also enclosed by a precinct wall during the 14th century (Curwen 1920, 111). The gatehouse is the only remaining building associated with Cartmel Priory, although vestiges of other buildings are incorporated in later structures. Elements of the precinct wall evidently survived in reasonable condition into the early 19th century and are depicted in Ffolliott's plan of 1854; Baines describes it as running west from the gatehouse, before running north past Fairfield where '*about one hundred yards of the wall exist of rough ragcoble* [*sic*] *stone*' before it turned east then south-east (Baines 1836, 725). What is probably the earliest plan delineating the presumed and known elements of the priory and its precinct wall, produced by Ffolliott in 1854 (see Plate 3), is of interest as it seems to have been used as the basis for determining the position of these features in subsequent accounts (e.g. Dickinson 1981, 83), although the manner in which these structures were positively identified is uncertain.

3.3.9 In 1390 a papal mandate to the archbishop of York ordered an investigation of the prior of Cartmel, William, accused of simony in admitting canons to profession and of 'too frequent visits to taverns', to the extent that the monastery was falling into disrepair (Dickinson 1980, 13). This may have been the catalyst for a period of reputedly much needed reconstruction and restoration of the Priory, possibly begun in the final years of the 14th century (*ibid*., 19). Hyde and Pevsner state, somewhat enigmatically, that '*something drastic* [emphasis added] made it necessary for the canons to rebuild their monastic precinct on the [north] side' in approximately the mid-15th century (Hyde and Pevsner 2010, 267) and the surrounding lofty precinct wall is also suggested to have been largely rebuilt and partly re-sited in the 15th century (Dickinson 1980, 18). It has elsewhere been suggested that rebuilding was needed as a result of the devastation wrought by the Scottish raids, which perhaps burnt the Priory buildings to the ground (Curwen 1920, 111-112), or else the relocation of the cloistral buildings became necessary out of consideration for the underlying geological properties of the respective sides of the church (Mitchell 1990, 45-46).

3.3.10 The small field to the north side of Priest Lane (immediately to the north of the Priory Church) is called "farmery" field, which Dickinson interprets as a reference to the old word for infirmary, which in this case would have provided treatment for the sick and infirm brethren (Dickinson 1980, 21; 1991,109). Subsequent archaeological work here has demonstrated the presence of burials and a range of structures, which would support this view (Wilson and Clare 1990; Abacus Archaeology 2012). In either case, its layout can apparently be determined from aerial photographs, which show that its main structure, most likely a large hall, with twin aisles and an open area at one end, ran north/south and it had a subsidiary block on its eastern side (Dickinson 1991, 109). The walling of the monastic precinct continues to the east and the area to the north, towards the beck, is low-lying and prone to flooding (Dickinson 1991, 109-110). The land between Farmery field and the beck to the west may have been gardens and orchards with fields to the north (Dickinson 1980, 21). The field immediately to the south-east of Fairfield Lodge formed part of the priory's outer court, which would have housed the agricultural and industrial buildings essential to the priory's economy, which potentially included barns, granaries, brew house, bake house, guesthouse, wool house, swine house, stables, mills, dovecots, tannery, and blacksmiths etcetera, and nowadays forms part of the Scheduled Monument area associated with the Priory (Scheduled Monument Number: 34796).

3.3.11 During the Dissolution the value of all monastic houses was assessed and visitations took place, on the order of Henry VIII; in 1535 Cartmel was found to have a value of £91 6s 3d (Dickinson 1991, 33-34). Since it was initially the smallest houses that were most threatened by closure under the First Act of Suppression, Cartmel protested and a more detailed survey was carried out in 1536, revaluing it at £212 12s 10½d (op cit, 34). Despite this, the closure of the priory went ahead in 1537, although for a short time the canons at Cartmel were reinstated following the Pilgrimage of Grace in 1536-1537, the Northern revolt against the Crown's decision (Farrer and Brownbill Vol.2, 143-148). In 1540, the site of the priory was granted to Thomas Holcroft (op cit). At Cartmel, the parishioners purchased the whole church (Dickinson 1991, 33-23), a pattern that also occurred at some other town centre priories such as Malvern; this is likely to have reduced the damage caused, for example by the complete removal of lead from the roof (op cit, 36-37). However, various accounts suggest that it was partially unroofed and

allowed to fall into disrepair for perhaps as long as 83 years (eg Cooper 1899, 223); no specific evidence is given for this apart from an account in 1873, which states that the effect of being unroofed 'are still visible in the decayed state of certain portions of the word-work in the Choir from exposure to the weather' (CAC(K) WPR/89/4/2/12 1873-1957). The very weathered condition of the choir stalls' timber may support this. Fortunately for Cartmel a large part of the priory's estates was acquired by the Preston family of Furness, whose descendants, the Cavendish family, still own Holker. George Preston paid for repairs to the roof of the priory church between 1615 and 1617, but not a large enough sum to suggest that there was extensive damage to remedy (Dickinson 1991, 37-40). The rest of the priory buildings were almost entirely demolished; the main exception is the gatehouse, to the west of the church, and parts of the precinct wall to the north, although more substantial elements of the latter were clearly still standing into the mid-19th century (Ffoliot 1854). In addition, more recent investigation has revealed that substantial amounts of medieval fabric survive in other buildings around the village (Greenlane Archaeology 2013a; 2013b) and, as Stockdale said of the priory, it is likely that '*Half the Town of Cartmel has been built out of stones taken from these ruins*' (CAC(B) DDHJ/4/2/1/6 1860s-1870s). Some account of repairs to the church at the end of the 16th century and into the 17th century survive in the Church Book, which was saved by James Stockdale and partially transcribed by him. These show a fairly continual process of repairs, particularly to the roofs, with a more substantial programme of re-roofing carried out by the Preston family in about 1618 (Dickinson suggests it was between 1617-1622; 1991, 37. Rigge says 1618-1623, and notes that the new roof was at a lower pitch '*as the weather-mouldings on the outside walls show*' (1879, 5)).

3.3.12 ***Post-medieval Period (16th century AD – present)***: not long after the repairs carried out by the Preston family were completed Cromwellian soldiers stayed in the village on 1st October 1643, stabling their horses in the church after a minor battle in Furness and doing some damage to the building (Dickinson 1985, 115). In 1660 came the re-establishment of Anglicanism and the church bells were re-cast in 1661 (Dickinson 1980, 25). There is otherwise relatively little record of alterations for over 200 years after the improvements made by the Preston family. In 1677 the current vestry was constructed (Taylor 1959), in place of the old sacristy, following a bequest by William Robinson of Newby Bridge of £40; this comprised a two-storey extension matching the height of the Town Choir to the south, which reinstated symmetry to the east end of the church (Dickinson 1991, 88). It also reused some earlier material including a window with its earlier stained glass, and later held a collection of early books given to the church by Thomas Preston in his will (he died in 1697). Remarkably, there is seemingly no record of any work carried out at the church in the 18th century, although it is perhaps noteworthy that in 1852 the archive relating to Cartmel was described as having been 'rudely and cruelly dealt with; fire & the sword have at various times done much mischief among them & few of great antiquity or value have been preserved' (CAC(K) WPR/89/1/7/5 1845-1852) and it is likely that a gallery was added during this period.

3.3.13 It is not until the 19th century that extant records become more detailed, in part because of the extensive repairs and restoration carried out in the second half of the century (see Section 2.1.9 below); a summary of repairs, with a detailed account of expenditure from 1864, was published in 1873 by Rev Hubbersty CAC(K) WPR/89/4/2/12 1873-1957). The need for work to the building by the early 19th century was clearly urgent, given the description by Dr Whitaker in 1818: '*In this fine Church, after the lapse of nearly two centuries, another Preston begins to be wanted… there is an appearance of something between a Cathedral and a ruin. Damp floors, green walls, and rotting beams, shelter just sufficient for owls and bats, and light augmented by broken panes, are connecting links between the high and finished repair of the one, and the total abandonment of the other*' (Whitaker 1818, 5). A number of minor repairs were evidently carried out in the 1820s, with a Robert Webster (part of the architect family of Kendal; see Martin 2004) paid for '*freestone repairs to the west window*' in 1820, and for unspecified work in 1823 (Tyson 1993, 11). A much longer list of required repairs, made by the Bishop of Chester, was also produced in 1821, with relevant items including:

'*The lead of the tower to be repaired, & the inside to be rough cast.*

The covering of ye Roof & Aisles to be examined & thoroughly repaired where wanting.

The Area of ye church to be made level, & the whole re-flagged, where ye flags are broken, or bad.

The wooden frame for ye clock to be removed out of ye church.

The church yard wall to be examined, & repaired where necessary.

The organ to be removed to ye west end & it is strongly recommended, tho' not ordered by the Bishop, that when ye flagging is taken up, the pulpit & reading desk be brot [sic] near the communion rails & the Pews be carried down either near the font, or along each transept.' (CAC(K) WPR/89/4/3/3 1821-1822).

Other interesting comments include preventing cattle from grazing in the churchyard, and that '*at a vestry meeting it be consider'd whether all the paths, except one, might not be stopped up, as ye church yard is render'd very disgraceful by people loitering about & playing in it & doing mischief to W window &c*' (ibid). A separate note of the same date also adds:

'*The Glass in ye windows of ye church, in many of them, wants repairing*.

The top of ye Tower in ye church, not to be whitewashed.

The Earth to be removed from ye outside walls of ye church, & a Drain of open slate or stone made adjoining to them, as far as is practicable, so as to carry off all drippings of water into ye common Drain.

No Burials to be made without or within ye church except at ye distance of a yard from ye walls or pillars' (*ibid*).

3.3.14 It is clear that not all of the Bishop's requested repairs were carried out, at least not immediately, as a follow up letter enquired what had been done a year later (ibid). This was met with a statement from the church that confirmed that most of the roofing had been done and the drain dug along the outside of the south wall but elsewhere this was waiting upon plans to reseat the interior, as was the reflagging (ibid). Indeed, it was not until 1830 that records show the work started on the proposed reflagging of the floor, although the first relevant record is an estimate made by Roger Elleray and John Newby in 1828, which states that the west nave, north and south transepts, Town Choir, Piper Choir, including recesses in both, were to be included (CAC(K) WPR/89/4/3/5 1828-1832; the architect for this work is not known although Rigge incorrectly writes that E.G. Paley was responsible (born in 1823, he was clearly too young) (Tarney, 1897, 174). A specification for the work from 1830 gives remarkable detail, stating that the flags are to be less than two inches thick and to be sourced from Hutton Roof and Banks Bottom *'& true and self faced… well squared in the edge & laid solid on sand and jointed in regular courses with Putty & Paste in every joint and all the joints dressed off even after laid*' (CAC(K) WPR/89/4/3/5 1828-1832). The old flags were to be checked and reused where suitable, gravestones were to be re-laid, and the ground was to be levelled, evidently with imported soil where necessary (a quantity of 685 carts of soil was given in the earlier estimate; *ibid*). The resulting work by Michael Richardson and George Riley cost over £150 but also included repairs to at least one of the pillars (*ibid*). A subsequent receipt from 1831 from David Bayliss was also received for work in the 'lumber room', to the pillars, in the porch, and for flags for the pulpit (*ibid*). Shortly afterwards other repairs were also carried out to the Harrington Monument, with John Newby and David Bailey paid for cleaning and repairing it and for stone, while John Newby was also paid for cleaning arches in the church, and money was spent on the organ gallery stairs (CAC(K) WPR/89/4/6/1 1835-1969). Not everyone was happy with these renovations – James Stockdale, writing to The Times some 35 years later, condemned the work done in the 1830s to the Harrington Monument and the original font, which was '*subjected anew to the mason's chisel, and fashioned into its present shape, and (oh, the Vandalism!) a modern date – 1833 – cut in large letters upon it*' (CAC(B) DDHJ/4/2/1/6 1860s – 1870s).

3.3.15 The programme of improvements continued between 1837 and 1841, initially with repairs to the guttering on the east side of the south transept, then the '*two roofs on the south side of the Nave or West End*', with all of the work carried out by Roger Elleray (CAC(K) WPR/89/4/3/8 1837-1844). The receipts give a very detailed list of the materials used including items such as '*oak planks for the gable ends*' and '*Laths of Red deal*', while a payment for '*1 Day at Coniston choosing out*' indicates the source of the slate while it is also clear that this work extended to the include the porch and '*A New Oak Gate for the Main Entrance*' and '*Gate repairing at the East Entrance*' (*ibid*). The expense of such repairs was clearly an issue, however, and the Rev Thomas Remington stated in 1841 that '*as complaints have been made at the expense of keeping the church in repair, I have for your satisfaction, drawn out a statement of the*

ordinary expenses, which you will oblige me by showing to any one who may be inclined to think we are not saving as we ought to be' (CAC(K) WPR/89/4/3/8 1837-1844). Nevertheless, important repairs to the roof were continued under the supervision of Rev Remington through the '*principle of strict economy in the management of the Church Rates*' so that between 1845 to 1865 the roofs of the north aisle of the nave, the eastern half over the south transept, the Piper Choir and Vestry, the north transept, the south aisle of the chancel (the Town Choir) and the nave were (in that order) all '*re-slated in a most substantial and durable manner*' (CAC(K) WPR/89/4/2/12 1873-1957). During this period, in 1850, the old plaster was also removed, the walls having been coated '*with an extraordinary thickness of whitewash from top to bottom and from end to end*' and the, now decaying, plaster ceiling was also removed from the crossing and '*the present one of Timber was put up from a design gratuitously furnished by the late George Webster, Esquire of Eller How, architect*' (*ibid*). In places, beneath the old plaster, the walls were found to be of rubble construction and so new plaster was added to conceal this, it being noted by one contemporary that '*in some parts of the walls the squared stones were found to have been removed, and replaced with rubble-work… this was especially the case in the south transept, where there had been ancient alterations and buildings, traces of which are visible outside the walls. The nave and its aisles were found to be of such rough rubble workmanship as not to admit of being pointed or the surface dressed internally, they were therefore plastered in a manner as little incongruous as possible with the better built parts of the interior*' (Rigge 1879, 7).

3.3.16 The death of the Rev Remington in 1854 led to a pause in renovation, which was renewed in 1857-8 when the Chancel was re-roofed and '*the interior plaster ceiling, which had become dangerously decayed, was taken down, and the timber Roof thoroughly repaired; the walls, pillars, and arches were cleaned from whitewash; and a very striking feature of the Church which had been blocked up and almost obliterated, namely the Triforium, was opened and completely restored*' (CAC(B) WPR/89/4/2/12 1873-1957). Also, in the late 1850s, the 17th century plaster ceiling in the Town Choir was also in poor condition; this was removed and replaced with a timber ceiling, designed by EG Paley, re-roofed and the walls were stripped of whitewash (*ibid*). By 1863 a considerable donation of money and further fund-raising led to a new round of restoration also designed by E.G. Paley, recorded in detail in the Hubbersty publication of 1873, with significant elements including the restoration of the walls and roofs of the nave and side aisles, the removal of the '*cumbrous galleries*' and new seating, the restoration of the south porch including the addition of new oak doors and glazing the west window, and the erection of a new pulpit, reading desk and font, the latter '*having been rendered necessary by the unfortunate circumstance that the ancient Font of the Church had been so altered and spoiled many years ago, by some unskilled hand, as totally to have lots its original form*' (CAC(B) WPR/89/4/2/12 1873-1957). In addition, the paving in the centre of the church and south transept was re-laid with concrete used under some of the seating and new flooring laid in the sanctuary with encaustic tiles and limestone. Repairs were made to several windows, a new organ and clock was installed in the Town Choir (organ built by Jardine), and new heating stoves: '*providing for the warming of the Church by means of two of the largest sized Gurney stoves… in conjunction with the hot-water apparatus put up by Mr Remington in 1853*' (*ibid*). All of these alterations cost over £3,500.

3.3.17 Numerous original documents relating to the Paley restoration exist, including a plan for reseating the church (CAC(K) WPR/89/4/310 1863), which shows a 'large *gile* stove' on the north and south side of the nave, predating those mentioned in 1892, (see below), the faculty to take down the galleries (CAC(K) WPR/89/4/2/3 1864) and an associated plan (CAC(K) WPR/89/4/6/2 1864) and a general plan of the church showing the position of the grave slabs (CAC(K) WPR/89/4/6/3 1867). Much of this work was almost undone when a fire broke out in the nave in early January 1892, as described in a newspaper article at the time: '*The west end of the church is warmed by two large Gurenie's stoves, one located on the northern side, the beautiful memorial to Lord Frederick Cavendish being to the rear; the other on the southern side with the font between. It was from the latter the fire arose. The stove pipe enters the wall and traverses a considerable distance through it in a pretty well upright direction, when it comes under the wall plate and lead, the smoke passing through a small chimney immediately behind the battlements. The passage under the leads is of a dead level, and it was here the fire broke out, catching the spars of pitchpine which overhang the wall plate*' (Newspaper cutting in Vestry Archive 17th January 1892). Fortunately, the fire was noticed quickly, the alarm raised and it was put out with minimal damage sustained. At an unknown date before 1889, the lean-to addition was built between the west buttresses;

this is shown on the OS map surveyed in 1889 and on several late 19th century views. This may have been designed by Paley but the faculty for it has not been identified in the records. The west doorway into this area was uncovered during the 1850s restoration phase (Hubbersty, 1873, 8).

3.3.18 There is less recorded information for this period. In 1925 and 1930 Austin and Paley were commissioned to carry out repairs and pointing of internal walls and other minor work, apparently in connection with work being carried out by the stained-glass manufacturers Shrigley and Hunt, who were also based in Lancaster (Brandwood 2012, 250 and 252). A new reredos, high altar and other sanctuary fittings were installed in 1933, the gifts and names of donors recorded on a panel on the rear of the reredos. In 1934, a faculty was granted for electric lighting (the church had been lit by oil lamps). In the late 1950s further repairs were made to the roof of the chancel (CAC(K) WPR/89/4/3/12 1873-1957). This was in part funded by the Holker Estate as a result of lands conveyed to them in 1796, which carried with them '*the responsibility of the repair of the chancel*'. This charge was evidently compounded in 1956 after considerable discussion of the amount that was due, at which time it was noted that '*This liability for chancel repair is not an unusual one. Hundreds were compounded when an Act extinguished the tithe in 1936; and relatively few remain. The unusual thing in the case of Cartmel is that the liability had for so long been forgotten on both sides*' (*ibid*). In 1964 the stonework and lead in the east window was repaired by glazier Dennis King and mason John Rawson, with architect Alan Reed (recorded in a painted panel on the window). Details of subsequent faculties (held in the vestry archive) record works carried out to the fabric between 1971 and 2017; one of the most substantial and more recent changes, completed in 2018, was the removal of fixed seating within the nave, along with the timber platforms. As part of the same re-ordering (by Dominic Roberts of Francis Roberts Architects), the Paley font was relocated from the west end of the nave to the south aisle and the earlier font was reinstated in the centre of the nave. This opened up a large nave space, much as it was prior to the late 19th century, as depicted in early images of the interior.

3.4 Conclusion

3.4.1 While there is evidence for human activity in the local area from the end of the last Ice Age onwards this is largely only hinted at within the village of Cartmel. Instead, it is the site's location, on the north side of the nave of the Priory Church, that is of primary archaeological and historic interest. While this makes it within the inner precinct of the medieval priory it has been conjectured, primarily based on evidence within the fabric of the church itself, that the original priory cloister was moved from the south side of the church to the north, probably in the 13th century. In addition, the recent detailed documentary investigation into the history of the church has revealed information relating to several phases of renovation and alteration, particularly during the 19th century, all of which could have impacted on the churchyard. The map evidence is less useful as detailed depictions are only available from the mid-19th century onwards, but it shows that the current arrangement of footpaths around the north side of the church was in place by at least the late 19th century.

4. Fieldwork Results

4.1 Trench 1

4.1.1 This trench was approximately 3.8m long by 1.1m wide and orientated approximately north/south. The topsoil comprised a dark greyish black loose gritty silt between 0.25m and 0.3m thick, and with a large lense of dark purple ash on the south-east side. Below this the natural, comprising a loose mid-orangey brown gritty clay with 20% rounded pebbles (***106***), was encountered, into which was cut two features. At the north end of the trench was a linear feature orientated approximately east/west ranging from 1.3m wide at the top to 0.7m wide at the bottom, with an initial shallow sloping cut on the south side coming to a step and then a vertical cut, while the north side had a near vertical cut from the top (***103***). The base was not definitely reached due to the difficulties of keeping the loose fill from collapsing. The upper fill comprised a loose mid-greyish-brown gritty/sandy clay with lots of lime mortar and 20% angular pebbles and was up to 1.25m wide and 0.5m thick (***101***). Below this was a softer deposit of dark greyish-brown silty clay with 20% rounded pebbles, 0.7m wide and at least 0.5m thick (***102***). Part of a tree root was present near the base of the feature. At the south end of the trench there was a second linear feature extending out of the south end of the trench. This too was orientated approximately east/west and at least 1.7m wide and 0.5m deep, with a near vertical side to the north and a flat base (***105***). It had a single fill comprising a loose mid-greyish-brown sandy/gritty clay with 30% angular and sub-angular cobbles and other inclusions such as slate and lime mortar (***104***) and filled all of cut ***105***.

Plate 7 (left): Trench 1 after initial cleaning revealing features *103* and *105*, viewed from the north

Plate 8 (right): Trench 1 after initial cleaning revealing features *103* and *105*, viewed from the south

Plate 9 (left): Section through feature *103*, viewed from the west

Plate 10 (right): Section through feature *105*, viewed from the west

4.2 Trench 2

4.2.1 This was approximately 3.1m long by 1.4m wide and orientated approximately east/west. The topsoil comprised a loose dark greyish black gritty silt, 0.25m to 0.3m thick (***201***). Below this was a deposit of loose pale greyish brown gravelly clay with lots of lime mortar and 25% angular and sub-angular cobbles (***201***). Below this a large linear feature was encountered, cut into the natural, which comprised a loose mid-orangey-brown sandy/gritty clay with 10% rounded cobbles and 10% rounded gravels (***204***). The linear was orientated essentially east/west and at least 1.2m wide at the top, although extending outside the trench to the south, with a steep cut on the north coming to a step after which it was only 0.9m wide, the total depth being at least 0.7m (it was not fully excavated due to collapsing sides; ***203***). The feature had a single fill comprising a loose mid-greyish brown gritty sandy clay with 40% rounded and sub-angular stones (***202***) and this filled the whole of feature ***203***.

Plate 11 (left): Trench 2 after initial cleaning, showing deposit *201*, viewed from the west

Plate 12 (right): Trench 2 after initial cleaning, showing deposit *201*, viewed from the east

Plate 13: Section through feature *203*, viewed from the east

4.3 Trench 3

4.3.1 This was approximately 3.8m long by 1.1m wide and orientated north-west/south-east. The initial deposit comprised a very dark grey loose gritty sandy-silt topsoil up to 0.2m thick (***300***). Below this was a pale brownish grey gritty clay with 60% rounded and sub-angular cobbles and other inclusions such as roofing slate, lime mortar, brick, pottery and animal and human bone, including four complete skulls (***301***). This deposit was at least 0.6m thick but not fully excavated because of the danger of collapse; two of the skulls were left *in situ* at the limit of excavation (these were covered with boards for protection before backfilling).

Plate 14 (left): Trench 3 at limit of excavation, viewed from the north-west

Plate 15 (right): Trench 3 at limit of excavation, viewed from the south-east

Plate 16: Human skulls left *in situ* in Trench 3, viewed from the north-west

4.4 Trench 4

4.4.1 This was approximately 2.5m long by 1.1m wide and orientated approximately north-west/south-east. The topsoil comprised a dark grey or black loose gritty clay 0.2m thick (***400***). Below this were a series of dumped deposits. The uppermost comprised a loose mid-brown gritty clay with 20% angular pebbles, probably reposited natural (***401***). Below this was a loose pale brown gritty clay with 20% angular cobbles, up to 0.2m thick (***402***). Below this was a firm pale brown clay with few inclusions, 0.2m thick (***403***). This deposit sealed two features. The southernmost of which comprised a linear feature orientated essentially east/west, 0.6m wide and at least 0.6m deep (it could not be fully excavated due to the depth and loose nature of the fill; ***405***). It was filled by a single deposit, which comprised a soft pale brown silty clay with 10% rounded cobbles and some slate and was 0.6m wide and at least 0.6m deep (***404***). To the north of this feature was a pit, which was essentially oval in plan (although it extended out of the north end of the trench) orientated east/west, 0.8m wide east/west, at least 0.6m north/south, 0.2m deep and with shallow sloping sides (***407***). It had a single fill, comprising a soft pale brown silty clay with 10% angular cobbles, some slate and brick, and large amounts of post-medieval pottery, bone, and marine shells (mostly cockle but with some mussel) (***406***).

Plate 17 (left): Trench 4 cleaned to deposit *403*, viewed from the north-west

Plate 18 (right): Trench 4 cleaned to deposit *403*, viewed from the south-east

Plate 19 (left): Trench 4 following the removal of deposit *403*, showing features *405* and *407*, viewed from the north-west

Plate 20 (right): Trench 4 following the removal of deposit *403*, showing feature *405* and *407*, viewed from the south-west

Plate 21 (left): Section through feature *405*, viewed from the north-east

Plate 22 (right): Section through feature *407*, viewed from the north-east

4.5 Trench 5

4.5.1 This was approximately 2.4m long by 1.2m wide and orientated approximately north-east/south-west. The topsoil comprised a loose dark greyish-black gritty clay, 0.2m thick (***500***); along the north-west side of the trench a disused telephone cable was exposed just below the turf and so a narrow strip of the trench was left unexcavated along this side. Below this the natural was exposed, comprising a loose dark orangey brown gravelly clay with 30% rounded pebbles (***504***). Cutting into this was a linear feature running across the centre of the trench, essentially east/west (***503***). This had a near vertical cut on the south-west side but extended beyond the north-east end of the trench and was 0.45m deep and at least 1.5m wide. The upper fill comprised a loose mid-greyish-brown gritty clay with 75% angular cobbles (***501***), which filled most of feature ***503***. However, against the cut was a small deposit of pale brown firm clay with 10% rounded gravel (***502***).

Plate 23: Trench 5 excavated, showing feature *503*

4.6 Additional Monitoring

4.6.1 ***Window Sample 1 (WS01)***: this comprised the hand-excavation of an initial pit *c*0.3m square to a depth of *c*0.7m through the north end of evaluation Trench 1 (Plate 24). Below the turf was an initial topsoil deposit of loose dark grey gritty clay 0.2m thick, which was on top of a loose mid-brown sandy clay containing some small bone fragments and lime mortar, beneath which was the mid-orangey brown gritty sandy clay natural. Given its location it seems likely that this pit caught the north edge of feature ***103***.

Plate 24 (left): WS01 following excavation, viewed from the east

Plate 25 (right): WS02 following excavation, viewed from the south-west

4.6.2 ***Window Sample 2 (WS02)***: this comprised the hand-excavation of an initial pit *c*0.3m square to a depth of *c*0.8m through the centre of evaluation Trench 2 (Plate 25). This revealed a deposit of loose greyish brown sandy clay with lots of angular cobbles.

4.6.3 ***Window Sample 3 (WS03)***: this comprised the hand-excavation of an initial pit *c*0.3m square to a depth of *c*0.8m through the south end of evaluation Trench 3. The fill comprised a mid-greyish brown loose sandy clay with lots of angular and rounded cobbles and some lumps of lime mortar. The subsequent core taken through the underlying deposit revealed that full depth of context ***301*** was nearly reached during the evaluation.

4.6.4 ***Test Pit 1 (TP1)***: this comprised the hand-excavation of a pit *c*0.3m square to a total depth of *c*0.4m. The initial deposit comprised the tarmac path surface, which was 0.1m thick. Below this was a mid-greyish brown sandy clay with some fragments of roofing slate and lime mortar 0.2m-0.3m thick. The footing of the priory church wall projected to the north by *c*0.1m at a depth of 0.4m, shortly after which was the base of the footing was encountered (Plate 26).

Plate 26 (left): Test Pit 1 excavated, showing projecting base of footing, viewed from the north

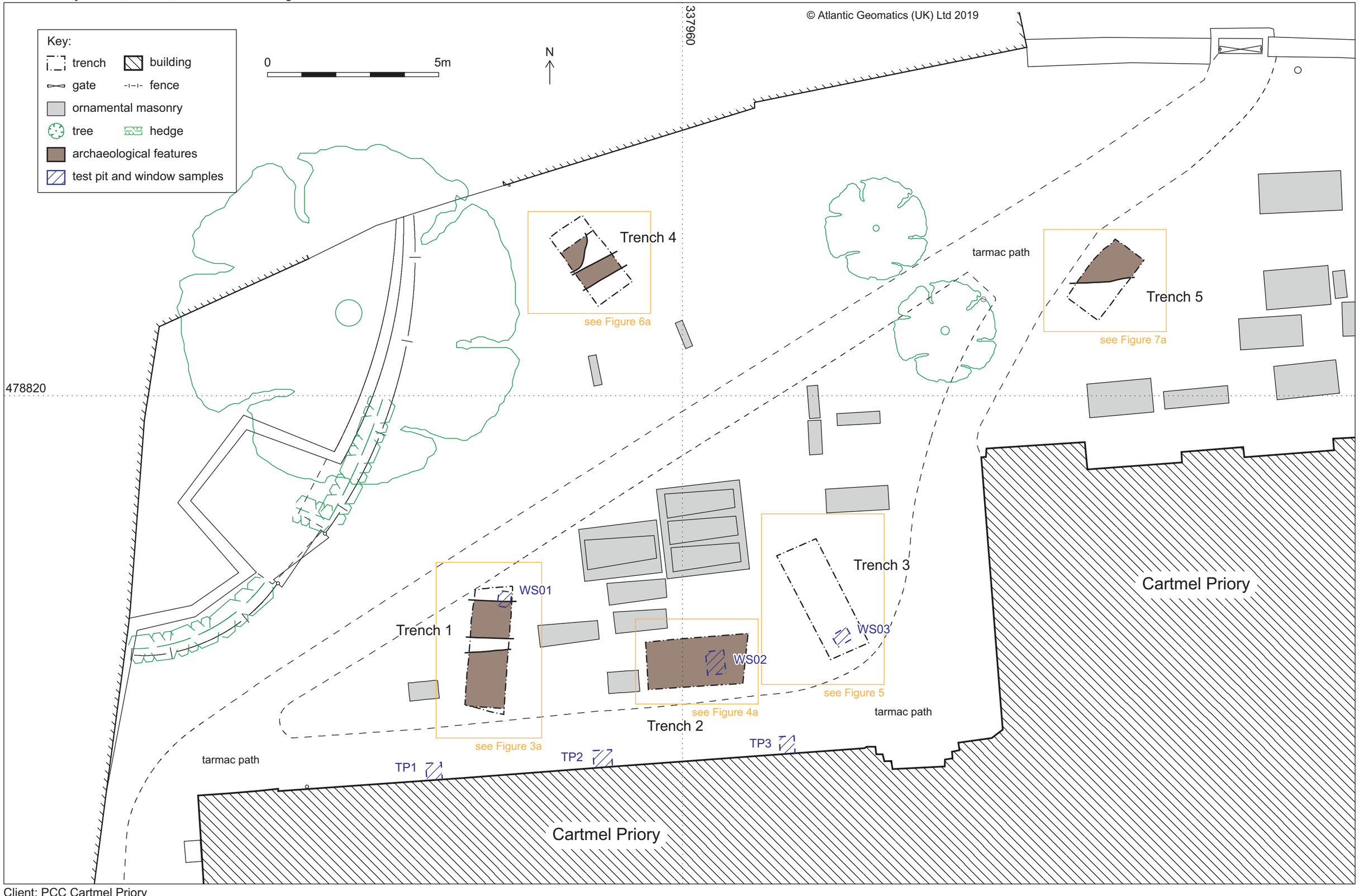
Plate 27 (right): Test Pit 2 excavated, viewed from the north

4.6.5 ***Test Pit 2 (TP2)***: this comprised the hand-excavation of a pit *c*0.3m square to a total depth of *c*0.5m. The initial deposit comprised the tarmac path, which was 0.1m thick, beneath which was a mid-greyish brown loose sandy clay with 10% rounded cobbles and some lime mortar. At a depth of 0.4m the footing of the church wall widened slightly and at 0.5m a pale brown sandy clay was encountered, presumably the natural (Plate 27).

4.6.6 ***Test Pit 3 (TP3)***: this comprised the hand-excavation of a pit *c*0.3m square to a total depth of *c*0.7m. The initial deposit comprised the tarmac path, which was 0.1m thick, beneath which was a mid-greyish brown loose sandy clay with rounded and angular cobbles, including some fragments of thick roofing slate, and lumps of lime mortar. At a depth of 0.5m the foundations became slightly wider and at *c*0.7m the base of the foundations was reached (Plate 28). An iron pipe was revealed on an east/west alignment, along the north side of the trench (Plate 28).

Plate 28 (left): Test Pit 3 excavated, viewed from the north

Plate 29 (right): Close up view of Test Pit 3 showing the pipe, from the north



Client: PCC Cartmel Priory

Figure 2: Trench location plan

FIGURE 3A) PLAN OF TRENCH 1

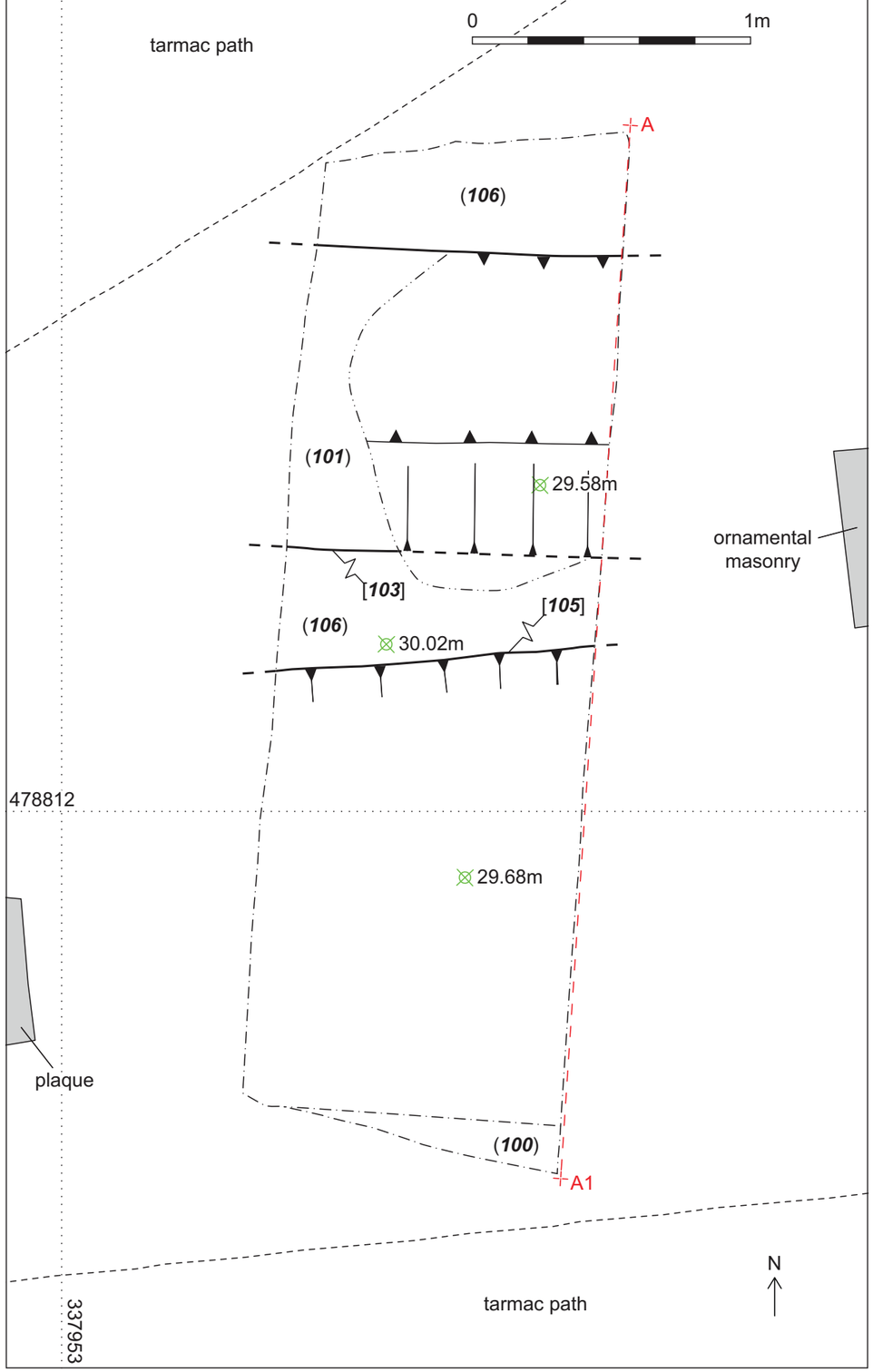
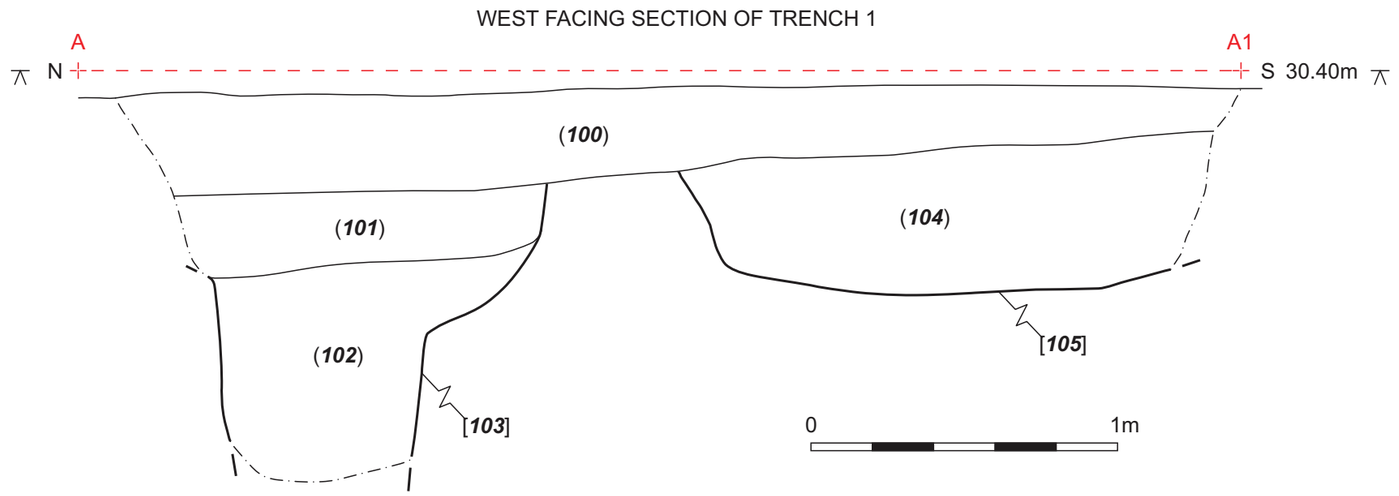


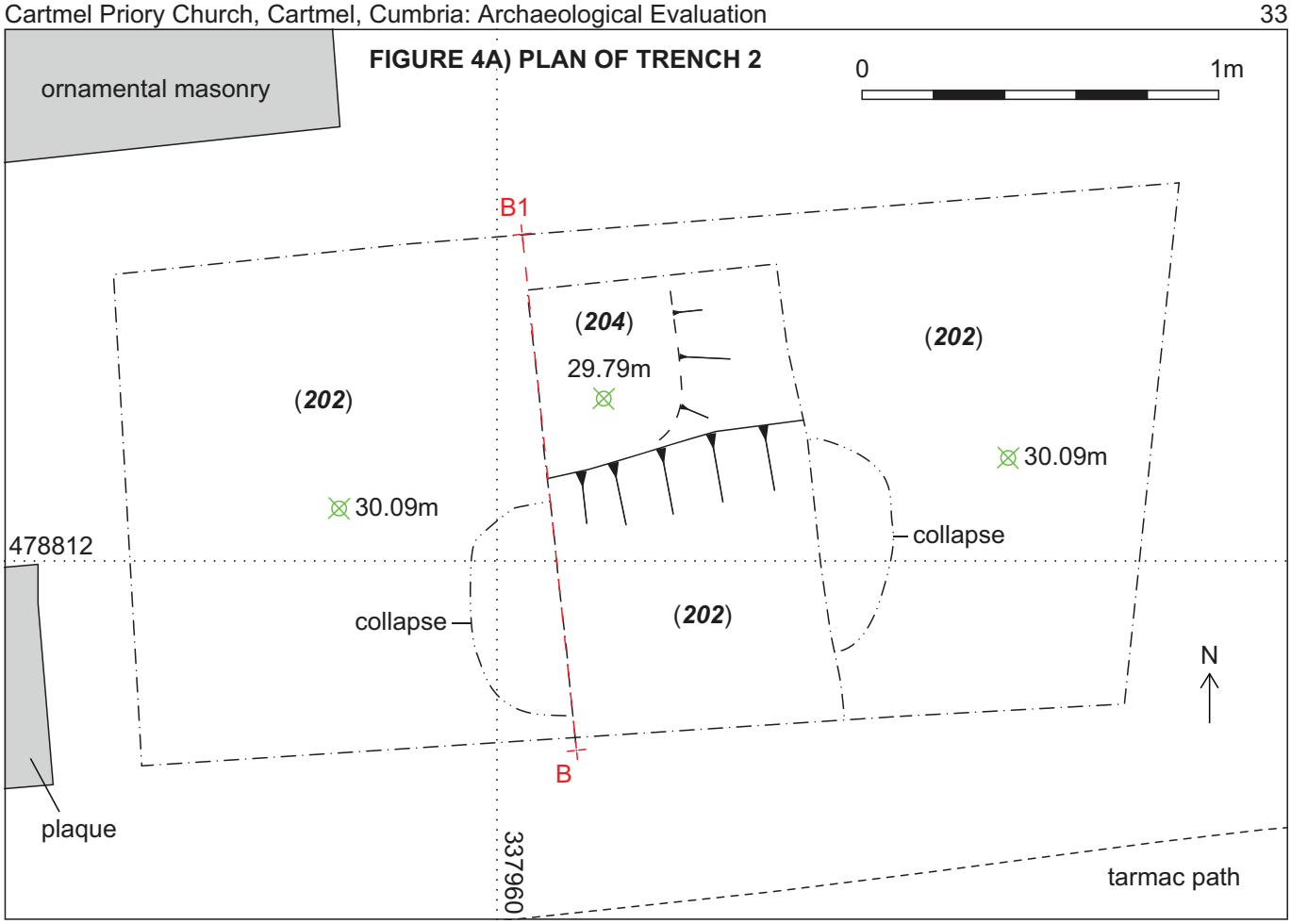
FIGURE 3B) SECTION A-A1

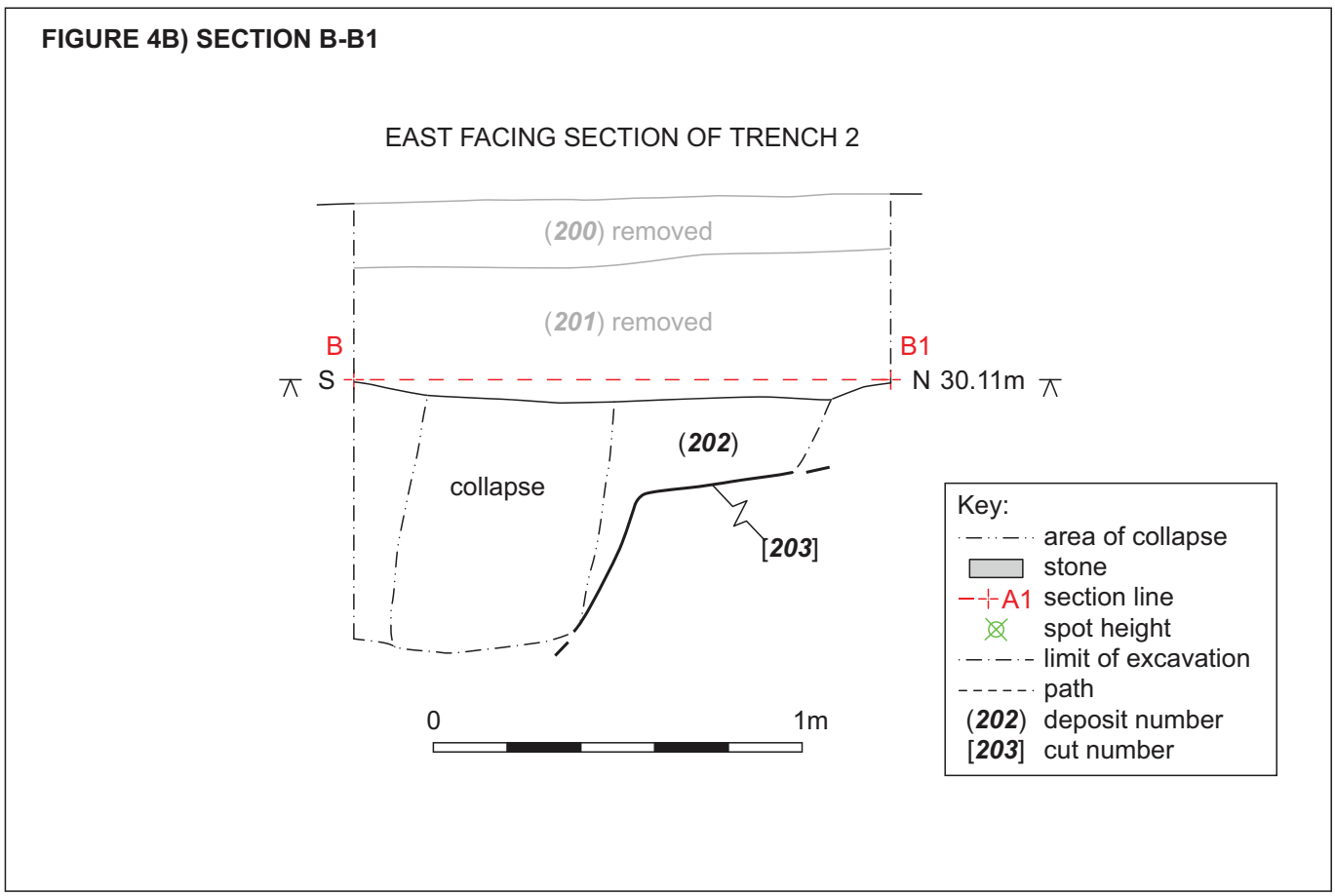


Key:
- area of collapse
- stone
- A1 section line
- spot height
- limit of excavation
- path
- (102) deposit number
- [103] cut number

Figure 3a: Plan of Trench 1; Figure 3b: Section A-A1

Client: PCC Cartmel Priory





Client: PCC Cartmel Priory

Figure 4a: Plan of Trench 2;
Figure 4b: Section B-B1

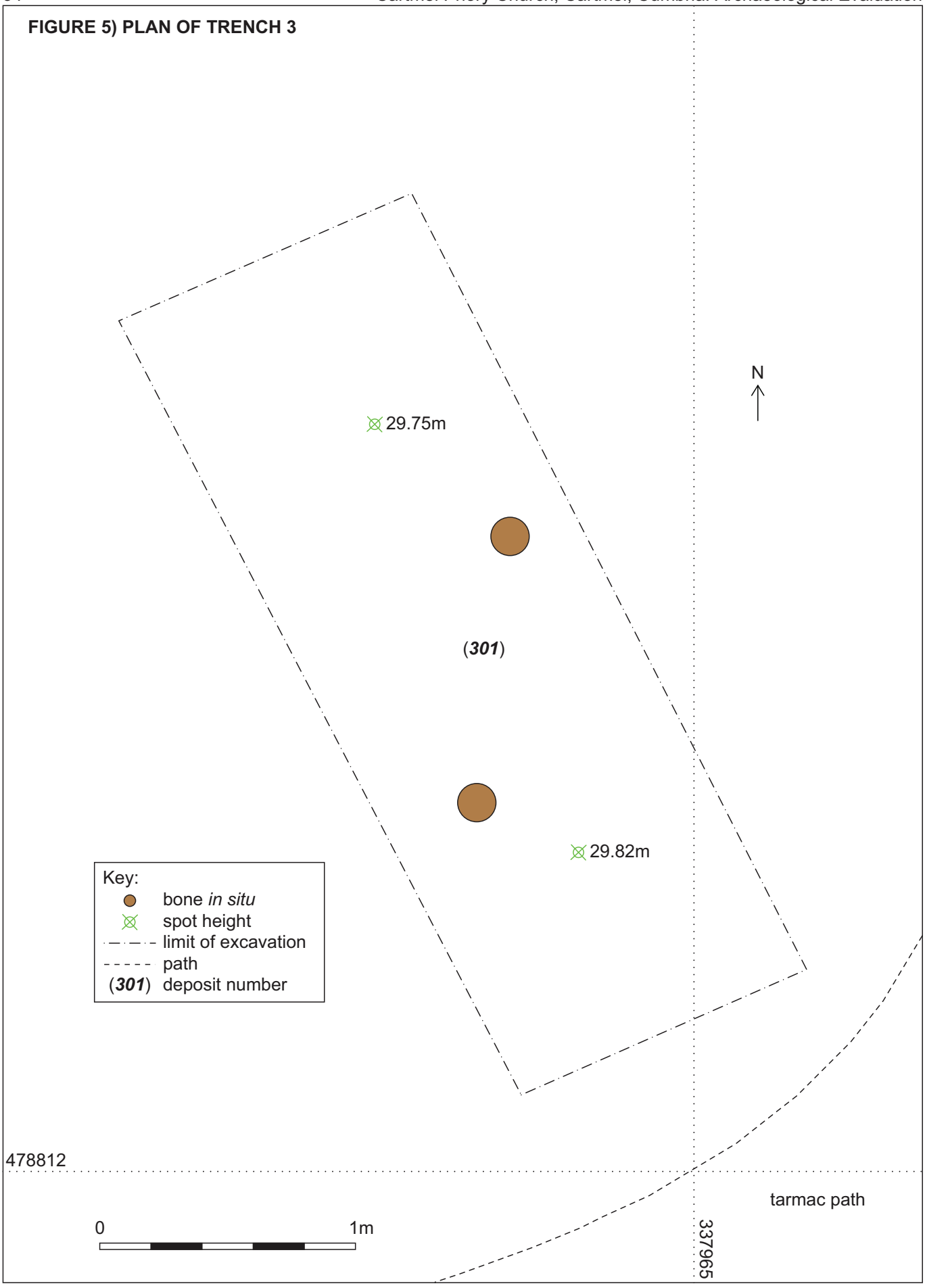


Figure 5: Plan of Trench 3

Client: PCC Cartmel Priory

FIGURE 6A) PLAN OF TRENCH 4

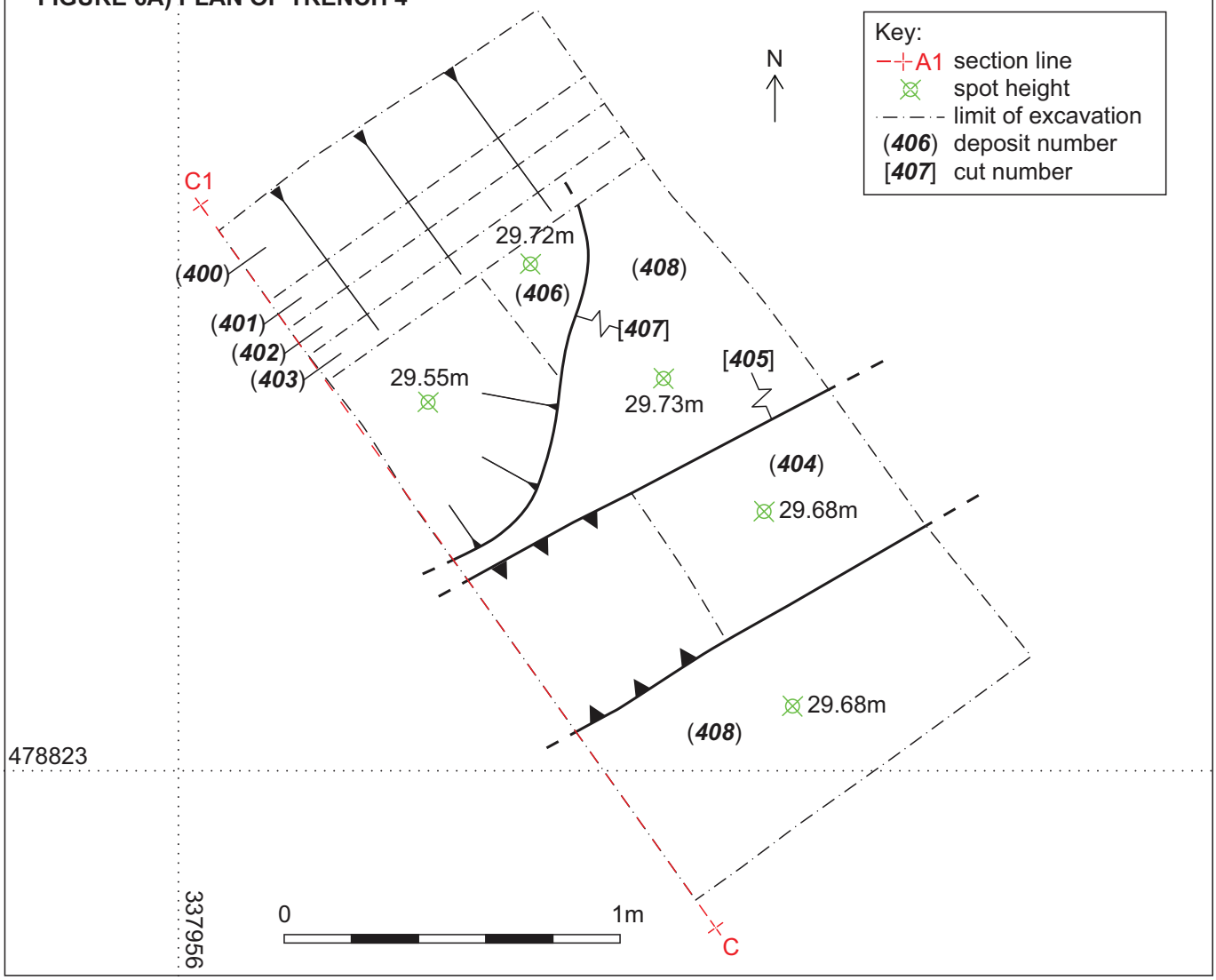
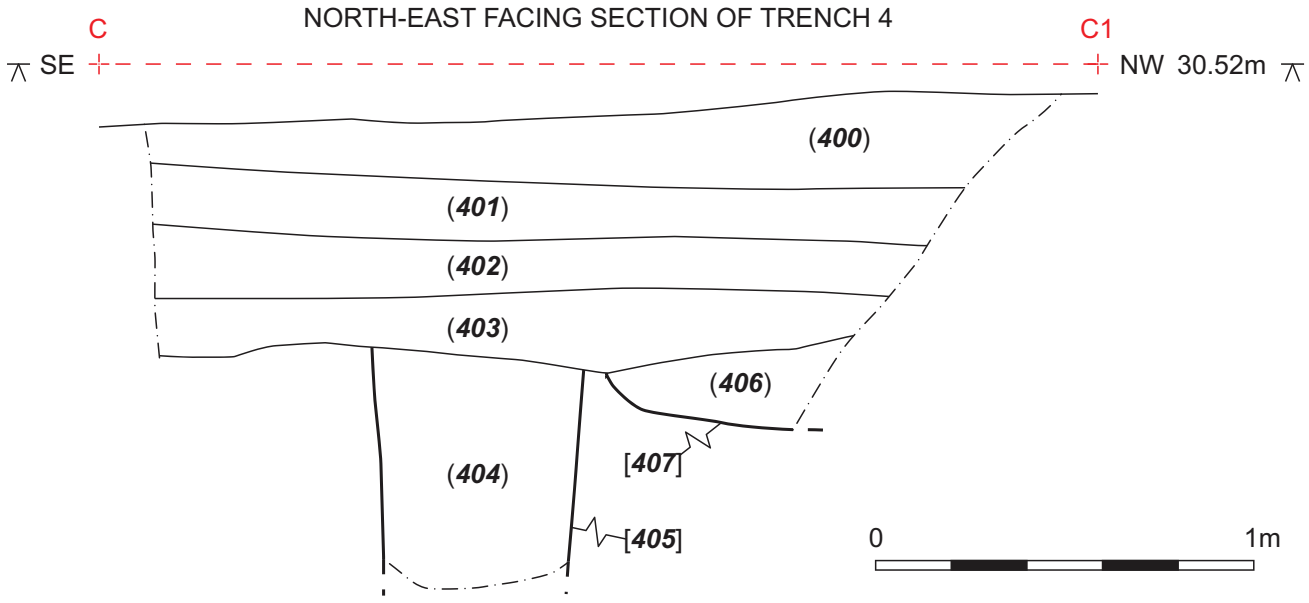


FIGURE 6B) SECTION C-C1



Client: PCC Cartmel Priory

Figure 6a: Plan of Trench 4;
Figure 6b: Section C-C1

FIGURE 7A) PLAN OF TRENCH 5

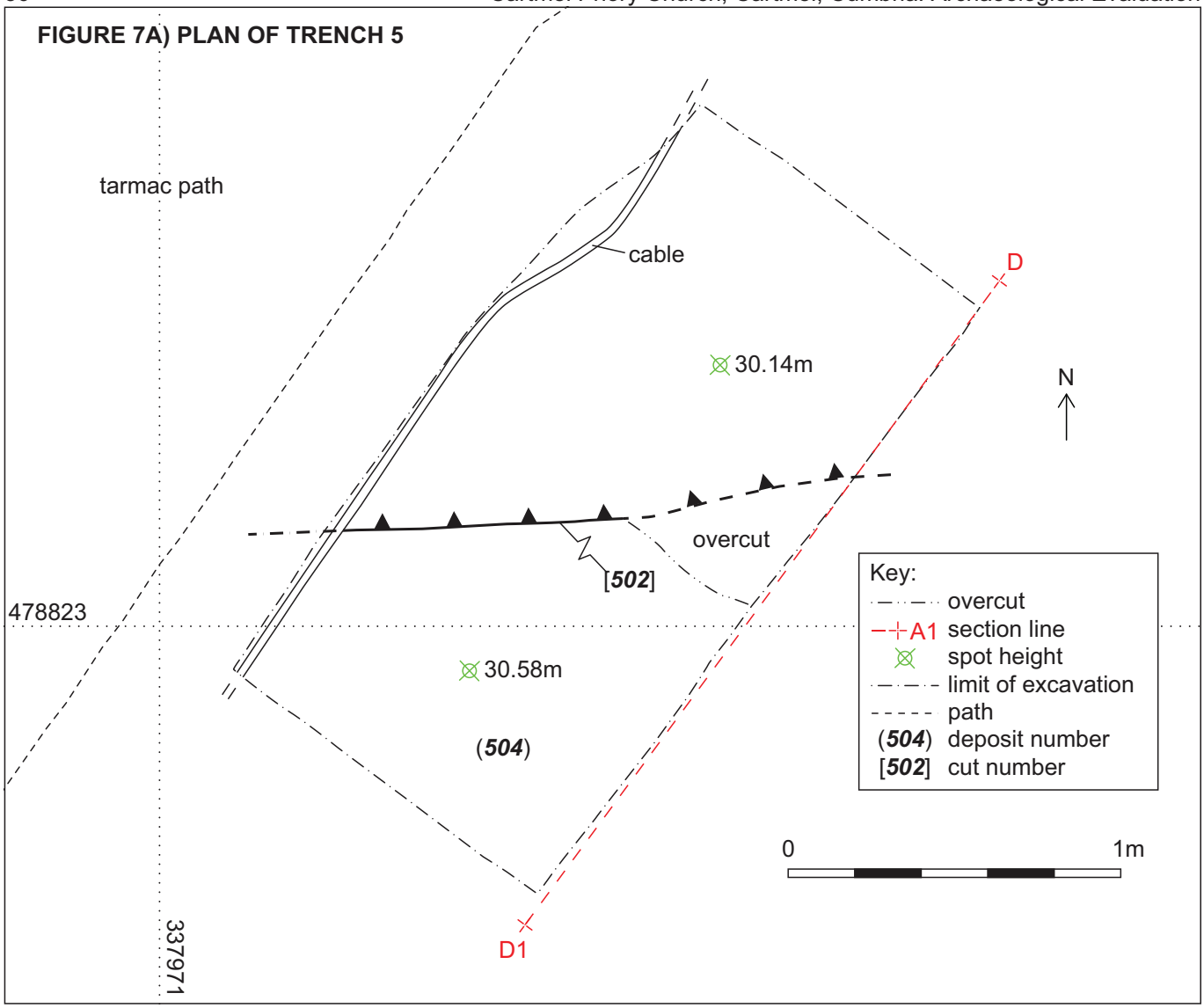


FIGURE 7B) SECTION D-D1

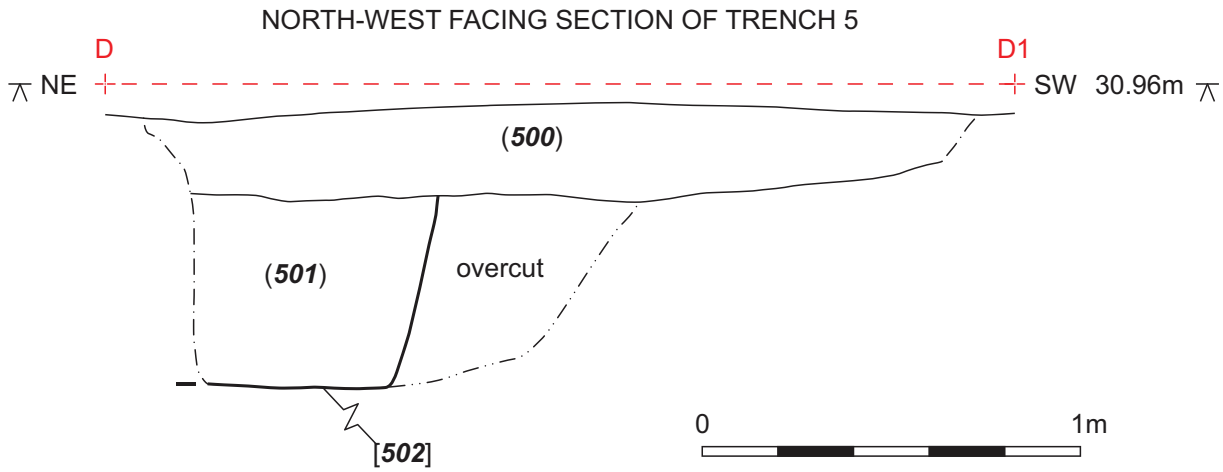


Figure 7a: Plan of Trench 5;
Figure 7b: Section D-D1

Client: PCC Cartmel Priory

4.6 Finds

4.6.1 ***Introduction***: in total, 168 artefacts and 564 fragments of human and animal bone were recovered by hand during the evaluation, of which the vast majority are of probable or definite post-medieval date, with only a small number of probable or definite medieval date. No further finds were recovered during the additional monitoring. A full list of the finds is presented in *Appendix 3* with a discussion below.

4.6.2 ***Medieval Pottery***: the medieval pottery is described in generic terms (e.g. *gritty ware*) with no attempt to link to specific fabrics or specific sources. Brief descriptions of the sherds are given in *Appendix 3* following *Guidelines for the Processing and Publication of Medieval Pottery from Excavations* (Blake and Davey 1983) and *Pottery in Archaeology* (Orton *et al* 2008), using terminology provided by the *Medieval Pottery Research Group* (1998). Only two pieces of medieval pottery were found: a base fragment from ***101*** and body fragment from ***301***, possibly from the shoulder of a jug or similar vessel. The sandy ware fragment from ***101*** was from an obtuse-angled base of a thin-walled vessel of probably 12th to 14th century date. Lightly gritted sandy wares were introduced in the 12th century and dominate late 13th to 14th century assemblages in the region (McCarthy and Brooks 1992; Bradley and Miller 2009, 663-664; Brooks 2000). The fragment from ***301*** has a dark grey core and margins reduced externally and oxidised internally. This 'sandwich-effect' cross-section is characteristic of partially reduced grey wares, which increase in prominence throughout the 13th and 14th century (e.g. Brooks 1999; 2000; McCarthy and Brooks 1992).

4.6.3 ***Medieval(?) Ceramic Building Material***: ten fragments of ceramic building material were recovered, comprising the remains of thick floor tiles. Each of the tiles is from a uniform, soft sandy fabric with flat surfaces showing they were sand-cast. The fabric is generally reddish-orange, although the piece with moulded(?) decoration has a reduced grey core. The glaze present on the more highly decorated piece (with lined impressed decoration) is noted to be similar to that used on late medieval reduced grey ware, introduced in the late 13th/14th century and becoming one of the dominant 15th to 16th century ware types. Although only fragmentary and very abraded the decorated fragment is similar to other examples recorded in the wider region such as from the Franciscan Friary in Preston, which are considered to be 14th to 15th century in date (Stopford 2020). Similar examples are also known from Holm Cultram Abbey in Cumbria (*op cit*, 46, citing Gillbanks and Oldfield 1900).

4.6.4 ***Post-medieval pottery***: in total, 126 fragments of post-medieval pottery were recovered from the evaluation trenches, with large amounts in the topsoil (***200***, ***300*** and ***400***) but the majority in dumped deposits and the fill of features in Trench 4 (***401***, ***403***, ***404*** and ***406***). The fabrics present included the typical range of utilitarian wares such as brown- and black-glazed red earthenwares (for kitchenware such as crocks and pancheons), which can be broadly dated to the late 17th to early 20th century, and a small amount of mottledware of late 17th to early 18th century date. The material from Trench 4 comprised a large amount of finewares such as factory-produced fabrics - creamware, bone china, and pearlware - which can be more closely dated to the late 18th or early 19th century. All of the type present are very common for the area and the period, and most likely represent waste from domestic settings, although context ***406*** clearly represented the fill of a pit specifically excavated to dispose of domestic rubbish, some of which also then became incorporated into fill ***404***. Indeed, some material refitted between these two contexts, demonstrating that these features [***405*** and ***407***] were filled at exactly the same time.

4.6.5 ***Clay tobacco pipe***: five plain clay tobacco pipe stem fragments were recovered, three from ***100***, one ***300*** and one from ***404*** (see *Appendix 3*). The assemblage is small, so it is difficult to make chronological judgments with any degree of confidence in terms of stem-bore analysis; however, the narrow borehole diameters (up to 4/64" and 5/64") are consistent with a late 18th to 19th century date (following Davey 2013).

4.6.6 ***Glass***: eight fragments of glass were recovered, dating to the 18th to 20th centuries. Four of these were from window glass, three post-medieval and one perhaps a fragment of stained glass, the rest

comprised fragments of bottles, also of post-medieval date. The majority of the glass was from the topsoil (***200***, ***300*** and ***400***) although most of the vessel glass was from contexts ***404*** and ***406***.

4.6.7 ***Stone***: two stone objects were recovered: part of very worn sandstone floor slab and a broken piece of roofing slate with the peg hole. Neither can be closely dated and could be medieval or post-medieval, but the contexts from which they were recovered (***202*** and ***301*** respectively) demonstrate that they represent discarded building material, probably from one of the various phases of renovation carried out at the church.

4.6.8 ***Metal***: 14 metal items, three of copper alloy and 11 iron, were recovered from six contexts (***200***, ***201***, ***202***, ***300***, ***301*** and ***406***). The majority represent casual losses in the topsoil (***200*** and ***300***), in particular iron nails, but also a pair of scissors. Of more interest are the copper alloy coffin plates recovered from ***202*** and ***301*** and the iron coffin handle with part of a decorative plate, also from ***301***. These clearly derived from phases of work at the church, perhaps associated with relaying the flag floors inside the nave, and these items were apparently discarded alongside a considerable amount of related material, specifically human bone in the case of context ***301***. The coffin plates can be accurately dated on account of their inscriptions, to 1843 and 1864.

4.6.9 ***Human bone***: a total of 385 fragments of human bone were recovered from contexts in all of the trenches, all of which are likely or certainly post-medieval in date, with a particular concentration from context ***301***. The results of the assessment of these remains are presented in *Appendix 1*, but in summary it revealed that a minimum number of 16 individuals was recovered during the evaluation, comprising 10 adults, two juveniles, two adolescents, one infant, and one perinate. Sex could only be determined in four bones, indicating at least one female and one male. A number of pathologies were identified, including a minor congenital anomaly in one case, healed infections in two cases, osteoarthritis, and a range of dental health problems.

4.6.10 ***Animal bone***: a total of 179 fragments of animal bone were recovered from contexts in all of the trenches; a full assessment is present in *Appendix 2*. These mostly comprised typical domestic species such as cattle, sheep/goat and pig, but also included more unusual species such as horse, dog, deer and a range of birds including chicken and duck. Several had signs of butchery or had been gnawed indicating processing nearby and primary deposition elsewhere, and the presence of neonatal pig bones potentially also indicates breeding nearby. As with many of the other finds, the animal bone, although a relatively small collection in broader terms, indicates that the dumping of substantial amounts of domestic waste was taking place on site in the post-medieval period. While the origin of this material is uncertain the presence of deer suggests relatively a high status for at least some of it.

5. Discussion

5.1 Results

5.1.1 The evaluation encountered features or deposits of archaeological interest in every trench, although, perhaps surprisingly, no *in situ* burials were uncovered. Despite a small amount of medieval ceramic material being recovered no features of definite medieval date were encountered, although it is likely that some were originally of medieval origin. In total, five phases of activity were encountered.

5.1.2 ***Phase 1 – natural:*** the natural geology across the site was encountered in every trench except Trench 3, where excavation had to be ceased due to the unstable nature of the deposits encountered before the natural was reached. It typically comprised a fairly loose mid-orange gritty clay with rounded inclusions (***106***, ***204***, and ***504***). However, in Trench 4 it comprised a firm pale brown silty clay with no inclusions (***408***). It is likely that this change is due to the main site of the priory being located on a slightly elevated 'island' of gravellier glacial till surrounded by lower-lying deposits deriving from a former post-glacial lake (see Mitchell 1990 for discussion of this).

5.1.3 ***Phase 2 – medieval?***: two features of possible medieval origin were revealed, both vertically-sided linear cuts, one in Trench 1 [***103***] and one in Trench 4 [***405***]. While the dating evidence from the former comprised a piece of medieval pottery, of 12th to 14th century date, which must be residual as an undiagnostic fragment of post-medieval pottery was also recovered, the finds from the fill of ***405*** (***404***) indicate that this feature was backfilled in the late 18th to early 19th century. The form of both ***103*** and ***405*** is very similar, both around 0.6m wide and vertically sided, although ***103*** splayed out on the south side near the top. The orientation of these features; ***103*** essentially east/west, parallel to the north side of the nave of the church, and ***405*** north-east/south-west, parallel to the boundary wall to the north, suggests that they were associated with the structure of the priory. Given the suggestion that the priory cloister was moved from the south side of the church to the north it is therefore feasible that these features represent the former lines of walls belonging to this structure, which were thoroughly robbed out in the late 18th/early 19th century (see *Section 5.1.3* below).

5.1.3 ***Phase 3 – late 18th/early 19th century***: as already stated, the finds recovered from the fill of feature ***405*** (***404***) can be fairly closely dated to the late 18th or early 19th century on account of several diagnostic types, and this demonstrates that ***405*** was certainly backfilled at that time. The fill of small pit ***407***, immediately adjacent to ***405***, contained a large amount of pottery of the same date – some even refitted with material recovered from ***405***, as well as animal bone and marine shells, mostly cockle but also some mussel. Pit ***407*** was evidently used to dispose of domestic waste, a substantial amount of which also found its way into the fill of feature ***405***, demonstrating that they were open at the same time. Given the similarity of features ***103*** and ***405*** it seems likely that these were both backfilled during this phase; the dating evidence for ***103*** is less conclusive but it too contained substantial amounts of animal bone, indicating that it was utilised for the disposal of domestic rubbish. In Trench 4 features ***405*** and ***407*** were also covered by three dumped deposits (***401-403***), all of which were clearly post-medieval in date, probably 19th century, although the finds were generally not very diagnostic.

5.1.4 ***Phase 4 – late 19th/early 20th century***: all of the remaining features (***105***, ***203*** and ***502***) and deposit ***301*** probably belong to this phase, although not all could be closely dated. However, in the case of ***203*** and ***301*** the coffin plates recovered demonstrate that they cannot pre-date 1864 and 1843 respectively. In all four cases the fill/deposit was very similar; a loose lime-rich deposit of very stony material almost certainly demolition rubble, and in the case of Trenches 1 and 5 at least dumped into a relatively shallow wide cut. The purpose of these features and origin of deposit ***301*** is unclear, although it seems likely that they resulted from the dumping of material removed from elsewhere on the site or represent attempts to form large 'French drains' along the side of the church. Again, these features were also utilised for the disposal of domestic rubbish, including substantial amounts of animal bone. Similar deposits were revealed in the test pits against the north wall of the priory church, indicating that these probable 'French drains' had originally extended up to the building before the paths were put in place, or at least before they were finished with tarmac.

5.1.5 ***Phase 5 – Late 19th/20th century***: in every trench the uppermost deposit (***100***, ***200***, ***300***, ***400*** and ***500***) comprised a thin gravelly topsoil just below the turf. In all but Trench 1 and Trench 5 this contained a mixed assemblage of finds, largely of undiagnostic types, but indicating a generally post-medieval date. There was also a surprising amount of human bone in some cases, indicating that this material had been disturbed and moved around over a considerable period of time, most likely as part of efforts to landscape the churchyard up to the present time.

5.2 Conclusion

5.2.1 While features of archaeological interest were present in all of the trenches none could be categorically dated earlier than the late 18th to early 19th century, although it seems likely that two derived from the robbing of walls that originated in the medieval period (***103*** and ***405***). What these walls originally formed part of also cannot be determined with certainty but it is certainly possible that they formed part of the cloister thought to have been moved to this location in about the 14th century. Unfortunately, no floors survived, although it is possible that the ceramic tiles and worn flag stone recovered from post-medieval deposits derived from the cloister. If these walls do represent the site of the cloister it would have been able to fit into an irregular space of approximately 25m by 30m, which is well within the typical range of such structures (see Thompson 2007). Cloisters were typically square or rectangular, but did not have to be, especially where they needed to fit in with existing structures (*ibid*). This was perhaps the case at Cartmel, where the line of feature ***405*** in Trench 4 is apparently running parallel to the boundary wall to the north, indicating that it was built to respect it. If ***103*** and ***405*** really do represent elements of the priory that were robbed out this implies that their line was visible on the surface in some way perhaps as late as the early 19th century. No antiquarian sources mention any walls in this area, but accounts before the middle of the 19th century are very brief and on the basis of the dating evidence from Trench 4 the walls had been removed by that point. The other issue is why such intensive stone robbing would have been carried out. Typically, it is to make use of an essentially free supply of good building stone, especially if dressed, and there is plenty of evidence from around the village for reused material from the priory having been incorporated into later buildings, but the robbing in this case was particularly thorough. It is possible that the area had not previously been used for burials but that this was planned at the time and so the walls were completely dug out in order to facilitate this; however, none of the burials in that area predate the middle of the 19th century so there would have been a considerable gap between the walls being removed and the first burials being made. Ultimately, the small scale of the evaluation means that it is not possible to be certain of the date and function of these features. The presence of a pit containing substantial amounts of marine shells and animal bones essentially comprising a midden, also shows that this event was used as a means for the opportunistic disposal of domestic rubbish.

5.2.2 The shallower features present in Trenches 1 [***105***], 2 [***203***] and 5 [***502***] and the deep deposit in Trench 3 (***301***) were also clearly backfilled/created in the post-medieval period. In the case of ***203*** and ***301*** these are clearly quite late in the 19th century on account of the coffin plates, which can be closely dated. The origin of these is also uncertain, but it is likely that ***105*** and ***203*** represent essentially the same feature, probably an attempt to form a large 'French drain' along the north side of the Priory Church to aid with the drainage of surface water and water from the roof, perhaps before the installation of gutters associated drains. A documentary reference from the 1820s mentions the creation of drains along the side of the building for this very purpose (see *Section 3.4.13*), although it is not clear if these were ever created and these cannot be the same features found during the evaluation. In the case of deposit ***301*** and probably also feature ***503*** these seem more likely to have resulted from attempts to dispose of rubble from one or more phases of work within the church. The presence of a coffin plate and considerable amount of human bone suggests that this work disturbed numerous burials and that these were cleared away at the time, so it is likely that this related to a period of relaying the floor inside the church. The dating would certainly fit with the extensive programme of refurbishment carried out by Paley and Austin in the late 19th century; an earlier phase of work gave an estimate of 685 carts of material to be brough in as part of reflagging the floor, which demonstrates how much work and material was potentially involved (see *Section 3.4.14*). Again, the presence of animal bone, pottery and other material in some of these deposits show that this work was used as an opportunity to dispose of rubbish.

5.2.3 The proposed new extension to the Priory Church has the potential to impact on the deposits of archaeological interest revealed in Trenches 1, 2 and 3, although in the case of Trench 3 this only comprises a thick layer of dumped material of probable late 19th century origin. In both Trench 1 and Trench 2 the features are relatively deep and all are of post-medieval origin or ultimately derived from activity in the post-medieval period. Nevertheless, they, particularly feature ***103***, have the potential to provide important archaeological information about the development of the priory, specifically the move of the cloister from the south side of the church to the north, which has previously only been postulated on the basis of architectural evidence. One of the features present in Trench 4 [***405***] has the same interest, but is buried by a considerable depth of other deposits and so is unlikely to be impacted upon by the proposal to move the existing grave covers into this area. The feature in Trench 5 [***503***] is arguably of the least significance and, in any case, it would not be directly affected by the proposed new extension. The need for any further archaeological investigation would therefore be dependent on the nature of the proposed footings. A shallow raft foundation across the whole area would have considerably less impact than deeper footings specifically excavated for the walls, for example.

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Appendix 1: Project Design

PRIORY CHURCH OF ST MARY AND ST MICHAEL, CARTMEL, CUMBRIA

Archaeological Evaluation Project Design

Client: PCC Cartmel Priory

NGR: 337959 478815

February 2020

1. Introduction

1.1 Project Background

1.1.1 Prior to the submission of proposals for an extension to the north side of the nave of the Priory Church of St Mary and St Michael, Cartmel, Cumbria in order provide improved welfare facilities (NGR 337959 478815) it was agreed in discussion with the PCC that the affected area be subject to an archaeological evaluation. This was to comprise the excavation of an area totalling up to 30 square meters, primarily investigating the area of the foundations for the proposed extension and establish the extent of any deposits, structures or finds of archaeological interest within that area. Greenlane Archaeology was appointed by the PCC Cartmel Priory (hereafter 'the client') to carry out the archaeological evaluation and this project design was produced in response.

1.1.2 The history of the priory at Cartmel has been outlined in a number of sources from the 19th century, when it was first subject to detailed investigation by architectural historians and antiquarians, culminating in the best modern study of the site by Dickinson (1991; see also Dickinson 1980; an account of the history of previous investigations into the priory and of the priory itself has recently been compiled by Marion Barter Associates (2020)). One of the most significant issues regarding the development of the priory is the conjecture that the cloister was moved from the south side of the nave to the north, probably in the 15th century. This is primarily based on evidence within the standing priory church, with a plan showing the suggested layout of the site published by Dickinson (1980, 83; Figure). However, subsequent archaeological work has demonstrated that any cloister on the northern side of the church evidently did not extend as far west as Priory Gardens: archaeological investigations there in 1998 revealed that, while there were buildings present aligned with the priory in this area within the site of the conjectured cloister '*little evidence of activity was recovered; either the northern cloister was never in this area, lying slightly further to the east, or it has been removed completely by subsequent activity*' (Wild and Howard-Davis 2000, 178-179). There was also considerable evidence for industrial activity, which might be more likely to be found in the outer court of a priory. More recent archaeological work revealed further evidence for iron working and also dumped deposits of domestic waste, again not something that might be expected in the inner precinct of the priory (Greenlane Archaeology 2015). Building recording at Priory close, immediately to the west of the nave of the Priory Church, in what externally appears to be a Georgian building, revealed a number of evidently medieval structures based around a very tall wall that was considered likely to be the inner precinct wall of the priory (Greenlane Archaeology 2013b). This would indicate that, assuming the cloister ever was on the northern side of the church, it was essentially contained within a small area, probably corresponding to the current churchyard.

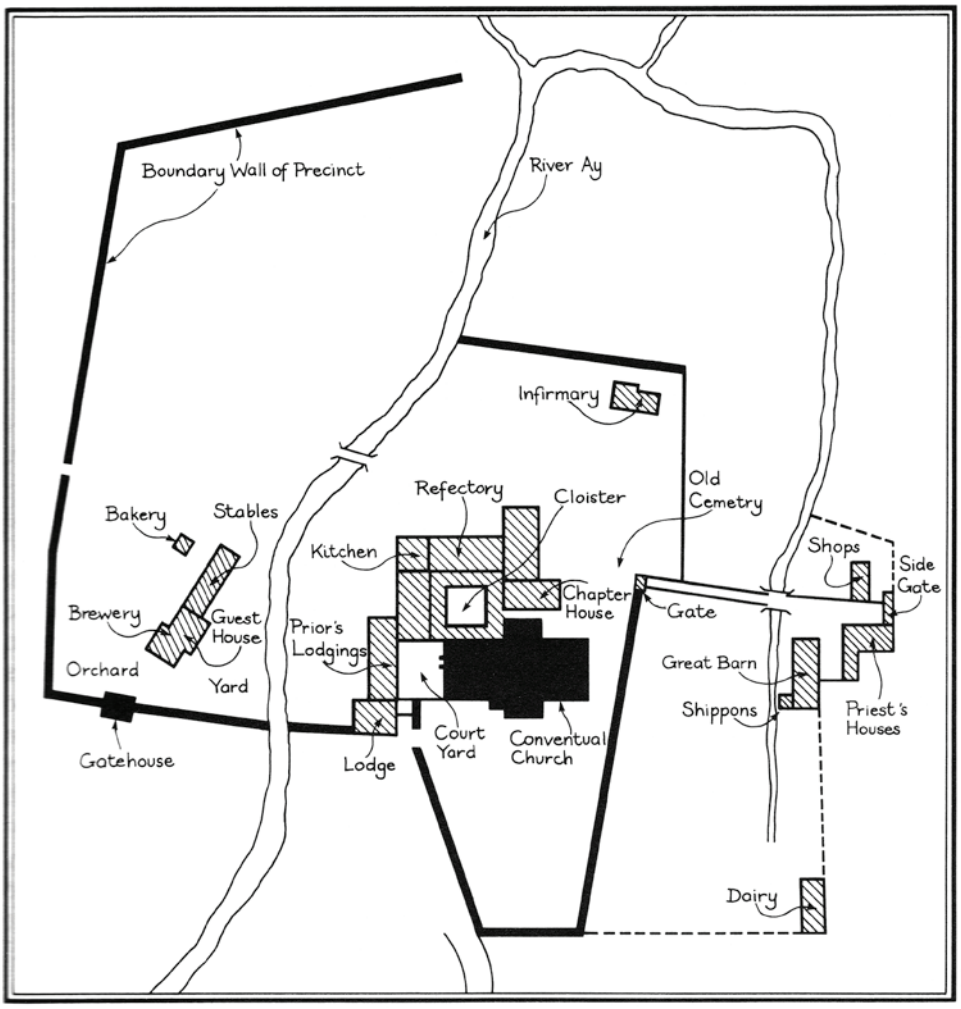

Figure 1: Conjectural diagram of the layout of the Priory of Cartmel in the 15th century (Dickinson 1980, 83; conjectural structures are shown hatched)

1.1.3 In terms of wider archaeological investigations into the site of the priory there have been only limited archaeological investigations within the Priory Church itself, comprising two phases of watching brief monitoring the excavation of utility trenches (LUAU 1992; Greenlane Archaeology 2018), which revealed evidence for the various phases of remodelling of the floor. Outside of the immediate environs of the churchyard there has been considerably more archaeological work, some of which has revealed evidence relating to the wider precinct of the medieval priory. The earliest of this comprised the monitoring of a *c*30m long pipe trench on the edge of 'Farmery Field' in 1983, which found various burials and other potentially structural features presumed to relate to the priory's infirmary (Wilson and Clare 1990). Subsequent to that, and as already outlined, an extensive programme of evaluation and later excavation and publication was carried out in advance of a proposed building project in land at Priory Gardens (LUAU 1998a; 1998b; Wild and Howard-Davis 1999; 2000). This discovered a range of structures thought to relate to activities carried out within the outer precinct of the priory and also revealed evidence for iron smelting. Some observations were also made shortly after at St Mary's Lodge on the edge of the churchyard in 2002, including human remains and post-medieval pottery (HER No. 2403). The medieval gatehouse, the most extant part of the priory's outer buildings, was subject to detailed recording and a Conservation Plan in 2003 (NAA 2004a; 2004b; 2004c; 2004d) and more recently part of the precinct wall was potentially recorded inside 5 Park View (Greenlane Archaeology 2013a) and medieval buildings evidently forming part of the priory precinct were recorded forming part of Priory Close (Greenlane Archaeology 2013b). More recently both the Farmery Field area and Priory Gardens have been subject to new investigations: at Farmery Field a range of evaluation trenches were excavated following on from a desk-based assessment, revealing several burials and structural remains, as well as post-medieval activity (Abacus Archaeology nd; 2012) and in Priory Gardens a watching brief followed a desk-based assessment and found further evidence for medieval iron working and the dumping of domestic rubbish including large quantities of animal bone, including fish, which undoubtedly derived from the priory (Greenlane Archaeology 2012; 2015).

1.1.4 At present a detailed understanding of the development of the inner court of the priory is limited as a result of the disjointed and infrequent archaeological work that has been carried out. However, it is apparent that there are a number of questions about the site's development that could potentially be answered by the evaluation, primarily whether the cloister was indeed moved to the north side of the church and at what date, and also how big it was. It should be noted, however, that the scope of the evaluation is relatively limited and its primary purpose is to identify what, if any, archaeological remains are present in the area of the proposed extension and what their significance is. In addition, the recent statement of significance produced by Marion Barter Associates (2020) has drawn together all of the available documentary sources relating to the history and development of the Priory Church, but also placed it in the context of the larger priory, especially with regard to the suggested move of the cloister from the south side of the nave to the north. It is hoped that the proposed evaluation will be able to feed into the results of this study and further enhance and be enhanced by the available historical information about the site.

1.2 Greenlane Archaeology

1.2.1 Greenlane Archaeology is a private limited company based in Ulverston, Cumbria, and was established in 2005 (Company No. 05580819). Its directors, Jo Dawson and Daniel Elsworth, have a combined total of over 30 years continuous professional experience working in commercial archaeology, principally in the north of England and Scotland. Greenlane Archaeology is committed to a high standard of work, and abides by the Chartered Institute for Archaeologists' (CIfA) Code of Conduct. The evaluation will be carried out according to the Standards and Guidance of the Chartered Institute for Archaeologists (CIfA 2014).

1.3 Project Staffing

1.3.1 ***Dan Elsworth (MA (Hons)), ACIfA)*** graduated from the University of Edinburgh in 1998 with an honours degree in Archaeology, and began working for the Lancaster University Archaeological Unit, which became Oxford Archaeology North (OA North) in 2001. Daniel ultimately became a project officer, and for over six and a half years worked on excavations and surveys, building investigations, desk-based assessments, and conservation and management plans. These have principally taken place in the North West, and Daniel has a particular interest in the archaeology of the area. He has managed many recent projects in Cumbria and Lancashire including several archaeological evaluations.

1.3.2 ***Tom Mace (BA (Hons), MA, MCIfA)*** has extensive experience of working on a variety of archaeological projects, especially watching briefs, but also excavations, evaluations, and building recordings, as well as report writing and illustration production. He joined Greenlane Archaeology in 2008 having worked for several previous companies including Archaeological Solutions and Oxford Archaeology North. He currently works on a broad range of projects and is also responsible for the production of all illustrations for reports and publications as well as some post-excavation assessments. He is a Member of the Chartered Institute for Archaeologists.

1.3.3 ***Jo Dawson (MA (Hons), ACIfA)*** graduated from University of Glasgow in 2000 with a joint honours degree in Archaeology and Mathematics, and since then has worked continuously in commercial archaeology. Her professional career started at Glasgow University Archaeological Research Division (GUARD), following which she worked for Headland Archaeology, in Edinburgh, and then Oxford Archaeology North, in Lancaster. During this time, she has been involved in a range of different archaeological projects. She has extensive experience of both planning and pre-planning projects, and has undertaken assessments of all sizes. Since establishing Greenlane Archaeology in 2005 she has managed numerous projects in south Cumbria, including desk-based assessments and evaluations. She currently mainly carries out quality control of reports and post-excavation assessments. She is an Associate member of the Chartered Institute for Archaeologists.

1.3.4 ***Specialists:*** Greenlane Archaeology have a range of outside specialists who are regularly engaged for finds and environmental work. Engagement is dependent upon availability, but specialists typically engaged are as follows:

Specialism	Specialist
Animal bone	Jane Richardson (ASWYAS) (or Tom Mace in house for smaller assemblages)
Ceramic building material, medieval and Roman	Phil Mills
Conservation	York Archaeological Trust
Clay tobacco pipe	Peter Davey (or Tom Mace in house for smaller assemblages)
Flots	Headland Archaeology, Edinburgh
Human bone	Malin Holst, York Osteoarchaeology
Industrial residue	Gerry McDonnell
Medieval pottery	Tom Mace in house for projects in Cumbria and Lancashire or Chris Cumberpatch for assemblages from elsewhere in the North of England

Miscellaneous find types, for example Roman glass and medieval and earlier metalwork	Chris Howard-Davis
Prehistoric pottery	Blaise Vyner
Radiocarbon dates	Scottish Universities Environmental Research Centre
Roman pottery	Ruth Leary
Samian	Gwladys Monteil
X-ray of metal finds	York Archaeological Trust

2. Objectives

2.1 Desk-Based Assessment

2.1.1 To examine relevant primary and secondary sources in order to better understand the site, and set it in its historic context. In particular details pertaining to previous archaeological investigations in the immediate vicinity or of relevance to the Priory Church.

2.2 Archaeological Evaluation

2.2.1 To excavate evaluation trenches totalling 30 square meters across the site, primarily within the footprint of the proposed new extension, but also in the area that the memorials would be moved to and adjacent to the line of the path (as shown in the attached figure), in order to identify the presence of any archaeological deposits, features, and structures on the site and establish their form, function, and date where possible. These will, in particular, attempt to reveal whether there are any structural remains, which might relate to the position of a former cloister or other elements of the medieval priory, and also reveal the depth of any human burials in this area.

2.3 Report

2.3.1 To produce a report detailing the results of the evaluation, which will outline the form and date of any archaeological features encountered.

2.4 Archive

2.4.1 Produce a full archive of the results of the project.

3. Methodology

3.1 Desk-Based Assessment

3.1.1 A examination of easily available sources, particularly maps and reports on previous pieces of archaeological work, relating to the site will be carried out. The sources that will be used as part of the desk-based assessment will include:

- ***Archives***: the majority of the primary and secondary sources relating to the site are deposited in the relevant Cumbria Archive Centres in Barrow (CAC(B)) and Kendal (CAC(K)). Of principal importance are early maps of the site, particularly Ordnance Survey maps but also other early maps, but other relevant primary sources will also be consulted. In addition, relevant secondary sources will also be consulted and all of this information will be utilised to better understand the historical and archaeological development of the site and set it in context. Much of this information will be extracted from the recently produced Statement of Significance (Marion Barter Associates 2020), to which Greenlane Archaeology contributed;
- ***Historic Environment Record***: details of relevant previous archaeological work carried out in Cartmel, where it is not otherwise published, is held in the HER;
- ***Online Resources***: where available, mapping such as Ordnance Survey maps and reports on previous pieces of archaeological work (held by the Archaeology Data Service as part of the OASIS scheme) will be consulted online;
- ***Greenlane Archaeology***: a number of copies of maps and local histories are held by Greenlane Archaeology. These will be consulted in order to provide information about the site.

3.2 Archaeological Evaluation

3.2.1 It is anticipated that five evaluation trenches will be excavated, varying between 2.5m and 5m long and approximately 1m wide, depending on access. These will be located within the area of the footings of the proposed extension, in the area in which the memorials would be moved, and adjacent to the position where it is proposed

the footpath will be modified, as shown in the attached figure. The evaluation methodology, which is based on Greenlane Archaeology's excavation manual (Greenlane Archaeology 2007), will be as follows:

- The trenches will be excavated with regard to the position of any known constraints, focussing on any areas of high archaeological interest or potential, and avoiding areas which are likely to have been severely damaged or truncated by later activity, unless these are considered to have a high potential;
- The overburden, which is unlikely to be of any archaeological significance, will be removed by machine under the supervision of an archaeologist until the first deposit beneath it is reached;
- All deposits below the overburden will be examined by hand in a stratigraphic manner, using shovels, mattocks, or trowels as appropriate for the scale. Deposits will only be sampled, rather than completely removed, below the first identified level of archaeological interest, with the intension of preserving as much *in situ* as possible;
- The position of any features, such as ditches, pits, burials or structures, will be recorded and where necessary these will be investigated in order to establish their full extent, date, and relationship to any other features. Negative features such as ditches or pits will be examined by sample excavation, typically half of a pit or similar feature and approximately 10% of a linear feature;
- All recording of features will include hand-drawn plans and sections, typically at a scale of 1:20 and 1:10, respectively;
- Photographs of all features of archaeological interest and general site photos at all stages of the work will be taken in colour digital JPEG and RAW file format at a size of 12meg, using a Panasonic Lumix DC-FZ82 with a sensor size of over 18 megapixels. They will be taken in accordance with the guidance produced by Historic England (2015);
- All deposits, trenches, drawings and photographs will be recorded on Greenlane Archaeology *pro forma* record sheets;
- All finds will be recovered during the evaluation for further assessment as far as is practically and safely possible. Should significant quantities of finds be encountered an appropriate sampling strategy will be devised;
- All faunal remains will also be recovered by hand during the evaluation, but where it is considered likely that there is potential for the bones of fish or small mammals to be present appropriate volumes of samples will be taken for sieving;
- Deposits that are considered likely to have, for example, preserved environmental remains, industrial residues, and/or material suitable for scientific dating will be sampled. Bulk samples of between 20 and 60 litres in volume (or 100% of smaller features), depending on the size and potential of the deposit, will be collected from stratified undisturbed deposits and will particularly target negative features (e.g. gullies, pits and ditches) and occupation deposits such as hearths and floors. An assessment of the environmental potential of the site will be undertaken through the examination of samples of suitable deposits by specialist sub-contractors (see *Section 1.3.3* above), who will examine the potential for further analysis. All samples will be processed using methods appropriate to the preservation conditions and the remains present;
- Any human bone discovered *in situ* during the evaluation, either as intact burials or within features of archaeological interest, will be left in place, and, if possible, covered. The PCC will be immediately informed; intact burials will be recorded and left in place, while human bone within other features of archaeological interest (such as pits or ditches) will be recovered, according to the terms of the faculty, and processed as finds. Any loose human bone present in the overburden will be collected during the evaluation and taken for specialist assessment, the extent of which will be agreed with the PCC, and subsequent recording within the report and will ultimately be returned to the Priory Church for reburial;
- Any objects defined as 'treasure' by the Treasure Act of 1996 (HMSO 1996) will be immediately reported to the local coroner and securely stored off-site, or covered and protected on site if immediate removal is not possible;
- The evaluation trenches will be backfilled following excavation although it is not envisaged that any further reinstatement to its original condition will be carried out.

3.2.2 Should any significant archaeological deposits be encountered during the evaluation these will immediately be brought to the attention of the client) so that the need for further work can be confirmed. Any additional work will

be carried out following discussion with the client and subject to a new project design, and the ensuing costs will be agreed with the client.

3.3 Report

3.3.2 The results of the evaluation will be compiled into a report, which will provide a summary and details of any sources consulted. It will include the following sections:

- A front cover including the appropriate national grid reference (NGR);
- A concise non-technical summary of results, including the date the project was undertaken and by whom, incorporating the results of the geophysical survey and any additional background information where relevant;
- Acknowledgements;
- Project Background;
- Methodology, including a description of the work undertaken;
- The historical and archaeological background of the site, incorporating relevant information collected as part of the desk-based assessment;
- Results of the evaluation, including finds and samples;
- Discussion of the results including phasing information, taking into account any relevant information outlined in the historical and archaeological background to the site;
- Bibliography;
- Illustrations at appropriate scales including:

  - a site location plan related to the national grid;

  - a plan showing the location of the evaluation trenches in relation to nearby structures and the local landscape, and the features revealed during the geophysical survey;

  - plans and sections of any features discovered during the evaluation;

  - photographs of any features encountered during the evaluation and general shots of the evaluation trenches.

3.4 Archive

3.4.1 The archive, comprising the drawn, written, and photographic record of the evaluation trenches, formed during the project, will be stored by Greenlane Archaeology until it is completed. Upon completion it will be deposited with the Cumbria Archive Centre in Barrow-in-Furness, together with a copy of the report. The archive will be compiled according to the standards and guidelines of the CIfA (CIfA 2014b). In addition, details will be submitted to the Online AccesS to the Index of archaeological investigationS (OASIS) scheme. This is an internet-based project intended to improve the flow of information between contractors, local authority heritage managers and the general public.

3.4.2 A paper and digital copy of the report will be provided to the client and a digital copy of the report will be provided to the Cumbria Historic Environment Record. In addition, Greenlane Archaeology Ltd will retain one copy.

3.4.3 The client will be encouraged to transfer ownership of the finds to a suitable museum. Any finds recovered during the evaluation will be offered to an appropriate museum, most likely Kendal Museum, although this would depend on the date and significance of any discoveries as Kendal Museum is essentially full at present. If no suitable repository can be found the finds may have to be discarded, and in this case as full a record as possible would be made of them beforehand.

4. Work timetable

4.1 Greenlane Archaeology will be available to commence the project from **17th February 2020**, or at another date convenient to the client. It is envisaged that the elements of the project will be carried out in the following order:

- ***Task 1***: desk-based assessment;

- ***Task 2***: archaeological evaluation;
- ***Task 3***: processing and assessment of finds and samples;
- ***Task 4***: production of draft report including illustrations;
- ***Task 5***: feedback on draft report, editing and production of final report;
- ***Task 6***: finalisation and deposition of archive.

5. Other matters

5.1 Access and clearance

5.1.1 Access to the site will be organised through co-ordination with the client and/or their agent(s).

5.2 Health and Safety

5.2.1 Greenlane Archaeology carries out risk assessments for all of its projects and abides by its internal health and safety policy and relevant legislation. Health and safety is always the foremost consideration in any decision-making process.

5.3 Insurance

5.3.1 Greenlane Archaeology has professional indemnity insurance to the value of **£1,000,000**. Details of this can be supplied if requested.

5.4 Environmental and Ethical Policy

5.4.1 Greenlane Archaeology has a strong commitment to environmentally and ethically sound working practices. Its office is supplied with 100% renewable energy by Good Energy, uses ethical telephone and internet services supplied by the Phone Co-op. In addition, the company uses the services of The Co-operative Bank for ethical banking, Naturesave for environmentally-conscious insurance, and utilises public transport wherever possible. Greenlane Archaeology is also committed to using local businesses for services and materials, thus benefiting the local economy, reducing unnecessary transportation, and improving the sustainability of small and rural businesses.

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Appendix 2: Summary Context List

Context	Type	Description	Interpretation
100	Deposit	Dark greyish-black loose gritty silt with a lense of purplish ash on the south-east side, 0.25m to 0.35m thick	Topsoil
101	Deposit	Mid greyish brown loose gritty/sandy clay with lime mortar and 20% angular pebbles, 1.25m wide and 0.5m thick	Upper fill of ***103***, robbed out wall?
102	Deposit	Dark greyish-brown soft silty clay wit 30% rounded pebbles, 0.7m wide and 0.5m thick	Lower fill of ***103***, robbed out wall?
103	Cut	Linear, orientated east/west, up to 1.3m wide at the top, 0.7m wide lower down, and 1m deep. Cut has two steps on south side, near vertical and then vertical, north side near vertical all the way	Robbed out wall?
104	Deposit	Mid greyish-brown loose sandy/gritty clay with 30% angular cobbles, some roof slate, 1.7m wide and 0.5m thick	Fill of feature ***105***
105	Deposit	Linear, orientated east/west, 1.7m wide and 0.5m thick, vertical cut on north side and flat base	Linear; drain?
106	Deposit	Mid-orangey brown loose gritty clay, 20% rounded pebbles	Natural
200	Deposit	Dark greyish-black loose gritty silt, 0.25m – 0.35m thick	Topsoil
201	Deposit	Pale greyish brown loose gravelly clay with lots of lime mortar and 25% angular cobbles	Dumped deposit, demolition material?
202	Deposit	Mid greyish-brown loose gritty/sandy clay, 40% rounded and sub-angular pebbles, 1.3m wide and 0.7m thick	Fill of linear ***203***
203	Cut	Linear, orientated east/west, 1.2m wide at the top then 0.9m wide after a shallow step on the west side, then near vertical side, at least 0.7m deep, bottom not reached	Linear; drain?
204	Deposit	Mid orangey-brown loose sandy/gritty clay with 10% rounded cobbles and 10% rounded gravel	Natural
300	Deposit	Very dark greyish-black loose gritty or sandy silt up to 0.2m thick	Topsoil
301	Deposit	Loose pale brownish grey gritty clay, 60% rounded and sub-angular cobbles, some roofing slate, brick fragments, bone and post-medieval pottery and other finds, at least 0.6m thick	Dumped demolition rubble
400	Deposit	Dark greyish black loose gritty clay, 0.2m thick	Topsoil
401	Deposit	Mid-brown loose gritty clay, 20% angular pebbles, 0.2m thick	Dumped deposit
402	Deposit	Pale brown loose gritty clay, 20% angular cobbles, 0.2m thick	Dumped deposit
403	Deposit	Pale brown firm clay, very few inclusions, 0.2m thick	Dumped deposit, redeposited natural?
404	Deposit	Pale brown soft silty clay, 10% rounded cobbles and some slate, 0.6m wide and at least 0.6m deep	Fill of ***405***; robbed out wall?
405	Cut	Linear, orientated south-west/north-east, vertical sides, 0.6m wide and at least 0.6m deep, not bottomed	Cut for robbed out wall?
406	Deposit	Pale brown soft silty clay with 10% angular cobbles and some slate, lots of pottery, bone and marine shell (mostly cockle, but some mussel)	Midden
407	Cut	Oval in plan but extending out of trench, orientated approximately east/west, 0.8m by 0.6m and 0.2m deep with shallow sloping sides and a flat base	Cut of pit containing midden
408	Deposit	Pale brown firm silty clay, no inclusions	Natural
500	Deposit	Dark greyish black loose gritty clay, 0.2m thick	Topsoil
501	Deposit	Mid orangey brown loose sandy clay, 75% angular cobbles, 0.3m to 0.4m thick	Main fill of ***503***
502	Deposit	Pale brown firm clay, up to 0.1m thick, 10% rounded gravel	Lower fill of ***503***
503	Cut	Linear, orientated east/west, vertical side on south, 0.45m deep and over 1.5m wide	Shallow ditch or large pit

Context	Type	Description	Interpretation
504	Deposit	Dark orangey brown loose gravelly clay, 30% rounded pebbles	Natural

Appendix 3: Summary Finds List

Context	Type	Quantity	Description	Date range
100	Clay tobacco pipe	3	Plain stem fragments, length: between 28mm and 42mm in length; 2 x oval-shaped section, 6-7mm across, with central 2/64" diameter borehole. 1 x circular-shaped section, 7-8mm across, with central 4/64" diameter borehole	19th century
101	Pottery	1	Sandy ware: obtuse-angled base fragment of a uniform, soft (it will mark paper), lightly-gritted sandy fabric. It contains abundant very fine inclusions. The fragment is up to 7mm thick where it has broken and the edges of the break are still quite sharp. The fabric is split approximately in half in section, with a light grey inner margin and a light, pale orange outer margin. The internal and external surfaces are both oxidised to a light/pale orange colour. There is a small patch of reddish-brown glaze (or slip?) remaining on the outer surface	12th – 14th century
101	Pottery	1	Black-glazed red earthenware coarseware body fragment	Late 17th – early 20th century
104	Pottery	1	Brown-glazed red earthenware coarseware body fragment with scar for handle terminal	Late 17th – early 20th century
200	Ceramic building material	2	1x probable tile fragment varying between 33mm and 39mm thick; probably the corner of a tile, with small patches of green glaze remaining on two of the four flat sides, which are sand-cast; it is a uniform, soft, reddish-orange fabric; 1x possible red brick fragment?	Medieval to post-medieval
200	Pottery	1	Black-glazed red earthenware pancheon rim	Late 17th – early 20th century
200	Pottery	1	Glazed cream-coloured earthenware base fragment	Late 17th – early 18th century
200	Glass	1	Thin, flat pane fragment, surfaces very degraded except along two edges, possibly from stained glass window	Medieval?
200	Fe	3	Square-section machine-cut nails, two with domed heads	19th century (Bodey23-24)
201	Ceramic building material	4	Large flat ?tile fragments each made from a uniform, reddish-orange soft, sandy fabric (it will mark paper), with abundant very fine inclusions. A very small amount of green glaze remains on each one, but no pattern is discernible. The thickness of the fragments varies from between 33mm and 40mm. A large area of a pale yellow slip is also present on one of them and all are sand-cast	Medieval
201	Pottery	1	Glazed cream-coloured earthenware fineware body fragment	Late 17th – 18th century
201	Fe	3	Curved clog iron, small tack or nail, rectangular-section bar, probably part of a nail	19th century
202	Ceramic building material	1	?Tile fragment, with two flat surfaces, 38mm (an inch and a half) thick; uniform, reddish-orange, soft, sandy fabric (it will mark paper), with abundant very fine inclusions; there is a small patch of dark green glaze (possibly above a patch of red slip (forming a line)) to one edge of the fragment. Sand-cast.	Medieval

202	Pottery	2	Black-glazed red earthenware coarseware: pancheon rim and high-fired hollow-ware body fragment	Late 17th – early 20th century
202	Pottery	1	Brown-glazed red earthenware coarseware rim fragment	Late 17th – early 20th century
202	Stone	1	Part of a very worn flat slab of buff/dark-yellow sandstone	Not closely dateable
202	Cu alloy	1	Coffin plate, rectangular with damage in the form of cracks, inscribed "ARTHUR SELLER ASHLEY BORN JUNE 29th DIED JULY 11th 1864"	1864
202	Fe	1	Very corroded rectangular-section bar, probably part of a large nail	Post-medieval
300	Fe	1	Very corroded scissors	Post-medieval
300	Pottery	2	Brown-glazed red earthenware coarseware base and rim fragments	Late 17th – early 20th century
300	Pottery	1	Creamware (?) body fragment, undiagnostic	Mid-18th – early 20th century
300	Clay tobacco pipe	1	Plain stem fragment, length: 27mm; round section, 6mm diameter, with central with 5/64" diameter borehole	Late 18th – 19th century
300	Glass	1	Very light green flat pane fragment	17th – 18th century?
301	Ceramic building material	2	1x unglazed tile? fragment with uniform, orange, soft, sandy fabric (it will mark paper), with abundant very fine inclusions; two flat surfaces remaining, sand-cast; 1x slightly harder-fired fragment, possibly the corner of a decorated tile (up to 33mm thick), with moulded decoration(?) and drab, slightly flaking brown to green glaze present on three of the four flat sides remaining. The drab glaze is noted to be similar to that found on late medieval reduced grey ware pottery. That ware type was introduced in the late 13th/14th century and became a dominant 15th to 16th century ware in the region (summarised in Greenlane Archaeology 2011b, 9). The decoration forms two curved lines along the edge of raised areas. The fabric varies from a pale orange around the margins and outer surface to reduced grey, which is generally limited to the core of the fragment	(Late?) Medieval
301	Glass	1	Very light blue thin flat pane fragment, apparently etched on both sides so translucent not transparent	19th century?
301	Pottery	1	Partial-reduced grey ware: quite a large fragment, perhaps from the shoulder of a jug or similar vessel. Wall thickness: 7mm. It is a soft, sandy, uniform fabric with very few inclusions. The outer surface varies from a pale green to light orange in places: a thin light green glaze has been applied and areas of the surface below are visible, varying from a pale orange to light grey. The fabric has a dark grey core, a light grey outer margin and light orange inner magin and surface. This 'sandwich-effect' cross-section, with a dark grey core and margins reduced externally and oxidised internally, is characteristic of the ware (e.g. Brooks 1999; 2000; McCarthy and Brooks 1992)	Late 12th – 14th century
301	Pottery	1	Mottledware fineware hollowware body fragment	Late 17th – early 18th century

301	Pottery	1	Brown-glazed red earthenware coarseware body fragment	Late 17th – early 20th century
301	Pottery	5	Black-glazed red earthenware coarseware: pancheon rim, base, and body fragments	Late 17th – early 20th century
301	Stone	1	Broken grey roofing slate with drilled peg hole in rounded end	Not closely dateable
301	Cu alloy	1	Coffin plate in the shape of a shield, slightly bent at the edges, with etched inscription: "JOSEPH G SANDERSON DIED JULY [????] 1843 AGED 56 YEARS"	1843
301	Fe	3	Very corroded flat bar, very corroded tubular object (perhaps large nail shaft), coffin handle attached to decorative plate with traces of (silver?) plate and timber still present	Post-medieval
400	Pottery	1	Black-glazed red earthenware coarseware hollowware body fragment	Late 17th – early 20th century
400	Pottery	1	Brown-glazed red earthenware coarseware hollow-ware body fragment with white slip stripe	Late 17th – early 20th century
400	Pottery	1	White earthenware Willow transfer-printed flatware base fragment	19th century
400	Ceramic building material	1	Brown salt-glazed fireclay drain pipe or similar fragment	Late 19th – early 20th century?
400	Glass	1	Dark green bottle body fragment	19th – early 20th century
401	Pottery	2	Brown-glazed red earthenware coarseware body fragments	Late 17th – early 20th century
401	Pottery	2	Glazed light brown earthenware rim and body	19th – early 20th century
401	Pottery	1	Factory-produced glazed buff-bodied earthenware with dark brown and white slip stripes – jug (?) base fragment	Late 18th – early 20th century
403	Pottery	1	Brown-glazed red earthenware jug (?) body with top of handle	Late 17th – early 20th century
404	Pottery	7	Brown-glazed red earthenware coarseware, including two high-fired body fragments and one base fragment with white slip stripes	Late 17th – early 20th century
404	Pottery	1	Factory-produced glazed orange earthenware fineware bowl base with white slip stripes	Late 18th – 19th century
404	Pottery	5	Creamware (?) bowl rim, slip-striped carinated bowl body fragment, brown slip-coated and engine-turned hollow-ware body fragment, and plain body fragments	Mid-18th – 19th century
404	Clay tobacco pipe	1	Plain stem fragment, length: 56mm; oval-shaped section, 7-8mm across, with central with 4/64" diameter borehole	19th century
404	Glass	1	Very light turquoise thin flat pane fragment, apparently etched on one side	19th century?
406	Glass	1	Dark green bottle base with kick	Mid-18th – early 19th century
406	Glass	1	Dark green bottle side fragment	18th – early 19th century
406	Glass	1	Colourless bottle (?) mouth, surface degraded	18th – early 19th century?
406	Cu alloy	1	Wire fragment	Post-medieval
406	Pottery	10	Brown-glazed red earthenware coarseware, including two bowl rims with white slip stripes and crock/jar base	Late 17th to early 20th century

406	Pottery	1	Red earthenware flower pot base	Late 18th – early 20th century
406	Pottery	4	Brown-glazed grey-bodied stoneware including dish rim	18th – early 20th century
406	Pottery	6	Factory-produced glazed orange earthenware fineware bowl (?) base, body, and rim fragments, some refitting. Base at least from same vessel as context ***404***	Late 18th – 19th century
406	Pottery	36	Creamware, including bases from three different jugs and bowls, base fragments from an oval dish, rims from at least four different bowls (two of which have slip decoration) and two refitting fragments forming a complete jug/mug handle	Mid-18th – early 19th century
406	Pottery	18	Pearlware, including nine base and body fragments from blue painted bowls/jugs/tea pots, rim fragments from three plates from the same set (all with a single blue edge stripe), a blue shell edge plate rim, and a Broseley transfer-printed body fragment	Mid-18th – early 19th century
406	Pottery	12	Bone china: eight refitting rim to base fragments from plain press-moulded plate, and four mainly refitting fragments from press-moulded plate with impressed basket weave on rim and blue painted flowers on base	Late 18th – early 19th century

Appendix 4: Human Bone Assessment

ASSESSMENT OF HUMAN REMAINS FROM PRIORY CHURCH OF ST MARY AND ST MICHAEL, CARTMEL, GRANGE-OVER-SANDS

Malin Holst

Introduction

During an archaeological evaluation prior to the construction of an extension to Priory Church of St Mary and St Michael, Cartmel, Grange-over-Sands, Cumbria (337959 478815), 385 human bone fragments were recovered from five trenches excavated on the north-western side of the church. Cartmel Priory was an Augustinian Priory, which was founded in the 12th century, however, It is thought that the human remains date to the late medieval, or, more likely, the post-medieval period, since a child's coffin plate dating to 1864 was uncovered during the excavations. This document presents the objectives, methods and results of the analysis of these remains.

Objectives

The aim of the skeletal analysis was to determine the age, sex, and stature of the disarticulated skeletal remains, as well as to record and diagnose any skeletal manifestations of disease and trauma.

Methodology

The bones were analysed in detail, assessing the preservation and completeness, as well as determining the age, sex, and stature of the individuals (Appendix A). All pathological lesions were recorded and described.

Osteological Analysis

Preservation

Skeletal preservation depends upon several factors, including the age and sex of the individual as well as the size, shape and robusticity of the bone. Burial environment, post-depositional disturbance and treatment following excavation can also have a considerable impact on bone condition (Henderson 1987, Garland and Janaway 1989, Janaway 1996). Preservation of human skeletal remains is assessed subjectively, depending upon the severity of bone surface erosion and post-mortem breaks, but disregarding completeness. Preservation is important, as it can have a large impact on the quantity and quality of information that it is possible to obtain from the skeletal remains.

Surface preservation, concerning the condition of the bone cortex, of the inhumations, was assessed using the seven-category grading system defined by McKinley (2004), ranging from 0 (excellent) to 5+ (extremely poor). Excellent preservation implied no bone surface erosion and a clear surface morphology, whereas extremely poor preservation indicated heavy and penetrating erosion of the bone surface resulting in complete loss of surface morphology and modification of the bone profile. The degree of fragmentation was recorded, using categories ranging from 'minimal' (little or no fragmentation of bones) to 'extreme' (extensive fragmentation with bones in multiple small fragments). Finally, the completeness of the skeletons was assessed and expressed as a percentage: the higher the percentage, the more complete the skeleton.

The human bone fragments recovered were largely in well preserved (Grade 1 or 2; 56.6%) and only a small percentage (16.6%) were very badly preserved.

MNI

A count of the 'minimum number of individuals' (MNI) recovered from a cemetery is carried out as standard procedure during osteological assessments of inhumations in order to establish how many individuals were represented by the articulated and disarticulated human bones (without taking the archaeologically defined graves into account). The MNI is calculated by counting all long bone ends, as well as other larger skeletal elements, such as the hip joints and cranial elements.

The MNI for the human remains recovered from Cartmel was sixteen, including ten adults (based on 10 left calcanei) two juveniles (based on 2 left calcanei), two adolescents (based on 1 left ischium) and one infant (based on two left tibiae) and one perinate (based on an ilium).

Age

Age is usually determined using standard ageing techniques, as specified in Scheuer and Black (2000a; 2000b) and Cox (2000). Age estimation in adults relies on the presence of the pelvis and uses different stages of bone development and degeneration in order to calculate the age of an individual (Lovejoy et al 1985; Meindl and Lovejoy 1989). Age is split into a number of categories, from foetus (up to 4 weeks in *utero*), neonate (around the time of birth), infant (newborn to one year), juvenile (1-12 years), adolescent (13-17 years), young adult (ya; 18-25 years), young middle adult (yma; 26-35 years), old middle adult (oma; 36-45 years), mature adult (ma; 46+) to adult (an individual whose age could not be determined more accurately as over the age of seventeen). The abbreviation 'UA' is used where bones could not be aged due to the incomplete nature of the fragment.

However, one pelvis fragments suggested a mature adult age, while a cranium belonged to a young adult.

A total of ten bones from adolescents (MNI 2), five bones from older juveniles (MNI 1), twelve bones from infants (MNI 1), four bones from neonates (amalgamated with the infant bone count) and three bones from perinates were also recorded.

Sex

Sex determination is usually carried out using standard osteological techniques, such as those described by Mays and Cox (2000). Assessment of sex in both males and females relies on the preservation of the skull and the pelvis and can only be carried out once sexual characteristics have developed, during late puberty and early adulthood.

Sex could only be assessed in four bones. A cranium and a pelvis were female, while another cranium and a mandible were male, suggesting an MNI of at least one female and one male.

Pathological Analysis

Pathological conditions (disease) can manifest themselves on the skeleton, especially when these are chronic conditions or the result of trauma to the bone. In this instance, with the bones unwashed and the rapid nature of the assessment, skeletal pathology was not assessed, as the soil masked any pathology. However, some pathologies were noted during the assessment. Pathological lesions were observed in nineteen bone fragments.

Congenital Anomalies

Heredity and environment can influence the embryological development of an individual, leading to the formation of a congenital defect or anomaly (Barnes 1994). The most severe defects are often lethal and if the baby is not miscarried or stillborn, it will usually die shortly after birth. Such severe defects are rarely seen in archaeological populations, but the less severe expressions often are, and these individuals will usually have been unaware of their condition. The frequency with which these minor anomalies occur may provide information on the occurrence of the severe expressions of these defects

in the population involved (*ibid*). It may also provide information on levels of maternal health (Sture 2001).

A very minor congenital anomaly in the form of small defect was noted at a distal first metatarsal joint from Context 200.

Infection

New bone deposits on the surfaces of the bones can indicate inflammation of a sheath of tissue (the periosteum) which surrounds all bones (Ortner 2003, 206-207). Inflammation may be due to infection, but low-grade trauma and chronic ulceration can also lead to new bone formation (Roberts and Manchester 2005; Ortner 2003, 206-207). Periosteal reactions are commonly observed in archaeological populations, particularly on the tibiae, and their prevalence has been used as a general measure of stress in past populations (Ortner 2003, 209). Woven bone deposits are indicative of inflammation that was active at the time of death, while lamellar bone indicates that the inflammation was healing.

Healing inflammatory lesions in the form of lamellar bone were recorded on the shafts of two fibulae (Context 201), and one tibia (Context 401).

Joint Disease

Degenerative joint changes in a lumbar and a thoracic vertebra, a sacral vertebra and a hand phalanx from Context 100, as well as a lumbar vertebra from Context 301. Degenerative Joint Changes (DJC) is the most common form of joint disease and is usually due to age-related wear and tear. It is characterised by both bone formation (osteophytes) and bone resorption (porosity) at and around the articular surfaces of the joints, which can cause great discomfort and disability (Rogers 2000).

Osteoarthritis (OA) is a degenerative joint change of synovial joints characterised by the deterioration of the joint cartilage, leading to exposure of the underlying bony joint surface. The resulting bone-to-bone contact can produce polishing of the bone termed ‘eburnation’, which is the most apparent expression of OA. OA is frequently associated with increasing age but can be the result of mechanical stress and other factors, including lifestyle, food acquisition and preparation, social status, sex and general health and body weight (Larsen 1997; Roberts and Manchester 2005). Osteoarthritis was observed in an axis (neck vertebra) from Context 201.

Schmorl’s nodes are indentations in the upper and lower surfaces of the vertebral bodies caused by the pressure of herniated vertebral discs (Aufderheide and Rodríguez-Martín 1998). Discs may rupture due to trauma, but vertebrae weakened by infection, osteoporosis or cancer may be more vulnerable (Roberts and Manchester 2005). A Schmorl’s node was noted in a thoracic vertebra in Context 201 and two lumbar vertebrae from Context 301.

Dental Health

Analysis of the teeth from archaeological populations provides vital clues about health, diet, and oral hygiene, as well as information about environmental and congenital conditions. All teeth and jaws were examined macroscopically for evidence of pathological changes.

A total of six lose teeth were recorded, as well as three mandible and two maxillae, which included teeth (Contexts 200, 201, 301 and 404). All of the teeth were permanent and belonged to adults or adolescents.

Calculus

If plaque is not removed from the teeth effectively (or on a regular basis) then it can mineralise and form concretions of calculus on the tooth crowns or roots (if these are exposed), along the line of the gums (Hillson 1996, 255-257). Mineralisation of plaque can also be common when the diet is high in protein (Roberts and Manchester 2005, 71). Calculus was observed in teeth from Contexts 200, 301 and 404.

Ante-Mortem Tooth Loss

Ante-mortem tooth loss (AMTL), or the loss of teeth during life, can occur as a result of a variety of factors, including dental caries, heavy tooth wear, or periodontal disease Once the tooth has been lost, the empty socket is filled in with bone (Hillson 1996, Roberts and Manchester 2005). Ante-mortem tooth loss was recorded in a mandible from Context 200 and two maxillae and a mandible from Context 301.

Dental Abscesses

Dental abscesses occur when bacteria enter the pulp cavity of a tooth causing inflammation and a build-up of pus at the apex of the root. Eventually, a hole forms in the surrounding bone allowing the pus to drain out and relieve the pressure. They can form as a result of dental caries, heavy wear of the teeth, damage to the teeth (e.g., fractures), or periodontal disease (Roberts and Manchester 2005). There was an active dental abscess in a maxilla of an adult female (Context 301).

Dental Enamel Hypoplasia

Dental enamel hypoplasia (DEH) is the presence of lines, grooves or pits on the surface of the tooth crown, and occurs as a result of defective formation of tooth enamel during growth (Hillson 1996). Essentially, they represent a period when the crown formation is halted, and they are caused by periods of severe stress, such as episodes of malnutrition or disease, during the first seven years of childhood. DEH was recorded in the anterior teeth of the mandible of a possible male adult from Context 301.

Discussion and Summary

This disarticulated skeletal assemblage from Cartmel is likely to date to the post-medieval period and contained at least sixteen skeletons, including ten adults, two adolescents one juvenile, two infants and one perinate. A more precise age could only be recorded for one adult, who was mature (46+). At least one male and one female individual were represented. The majority of pathological lesions were associated with age-related wear and tear and dental disease, as well as inflammation of the shins, which are common conditions in archaeological populations.

During a previous watching brief by Greenlane Archaeology at the Priory Church of St Mary and St Michael, 33 bone fragments were recovered, including one juvenile bone and otherwise largely adult bone fragments. Degenerative joint changes, osteoarthritis and poor dental health were also prevalent (Keefe and Holst 2018). An adult humerus was unusually short, suggesting the individual may have been suffering from *mesomelia*, a condition that leads to dwarfism.

The demographic profile and nature of pathological lesions in the skeletal assemblage from Cartmel are typical of a rural population from the post-medieval period and correspond with those previously recovered from the cemetery of the Priory Church of St Mary and St Michael at Cartmel.

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Table 1: Summary of Disarticulated Bones Fragments

Trench	Context	Bone Element	Bone	Side	% Bone	SP	Frags	Age	Sex	Notes
1	***100***	Pelvis	Acetabulum Ilium	U	20	4	13	A	U	
1	***100***	Hand phalanx	Proximal	U	65	2	1	UA	U	Degenerative, porosity at right inferior facet
1	***100***	Lumbar vertebra	Spinous process	U	20	2	1	UA	U	Degenerative, porosity at right inferior facet
1	***100***	Thoracic vertebra	Spinous process	LR	35	2	1	A	U	Degenerative, porosity at right inferior facet
1	***100***	Rib	Fragments	U	2	4	2	UA	U	
1	***100***	Unidentified		U	2	4	14	UA	U	
1	***100***	Cranium	Fragments	U	2	1	1	UA	U	
1	***100***	Temporal	Petrous	U	2	1	1	UA	U	
1	***100***	Metatarsal	2 Shaft	L	45	2	1	A	U	
1	***100***	Fibula	Central shaft	U	45	5	1	UA	U	
1	***100***	Radius	Proximal shaft Central shaft Distal shaft	R	80	5	1	UA	U	
1	***100***	Ulna	Proximal joint Proximal shaft	R	40	3	2	A	U	
1	***100***	Sacrum	S3	U	2	4	1	UA	U	
1	***100***	Sacrum	S1	U	2	4	1	UA	U	
1	***100***	Sacrum	S2	LR	30	3	1	A	U	
1	***100***	Sacrum	S1	LR	30	3	1	A	U	Degenerative, osteophytes at body
1	***101***	Unidentified		U	2	2	1	UA	U	
1	***101***	Sacrum	S3	U	2	2	1	A	U	
1	***101***	Metatarsal	1 Distal	U	20	2	1	A	U	
1	***101***	Metacarpal	4 Proximal	R	75	2	1	A	U	
1	***101***	Radius	Central shaft	R	25	5	1	UA	U	
1	***101***	Rib	Fragments	U	2	4	1	A	U	
1	***102***	2nd rib	All	R	80	2	1	A	U	
1	***102***	Ulna	Distal shaft	U	20	2	1	N	U	

1	***102***	Sacrum	S2	U	2	3	1	UA	U	
1	***102***	Clavicle	Lateral shaft Central shaft Medial shaft	R	75	3	1	UA	U	
1	***104***	Fibula	Central shaft Distal shaft	U	70	1	1	N	U	
1	***104***	Tibia	All	L	90	2	1	N	U	
1	***104***	Tibia	All	L	100	2	1	N	U	
2	***200***	Frontal	Orbit	R	2	2	1	A	U	
2	***200***	Unidentified		U	2	4	12	UA	U	
2	***200***	Rib	Fragments	U	5	4	15	UA	U	
2	***200***	Tibia	Proximal joint	U	5	2	2	A	U	
2	***200***	Ulna	Central shaft	R	20	4	1	A	U	
2	***200***	Ulna	Proximal shaft	R	20	2	1	A	U	
2	***200***	Hand phalanx	Proximal	U	65	2	1	A	U	
2	***200***	Hand phalanx	Proximal	U	100	2	1	A	U	
2	***200***	Hand phalanx	Proximal	U	85	2	1	A	U	
2	***200***	Metacarpal	5 Shaft	U	40	3	1	A	U	
2	***200***	Metatarsal	4 Shaft	U	40	3	1	A	U	
2	***200***	Metacarpal	2 Proximal	L	90	2	1	A	U	
2	***200***	Scapula	Coracoid	L	10	3	1	A	U	
2	***200***	Scapula	Blade	R	10	3	1	A	U	
2	***200***	Thoracic vertebra	Body	LR	10	2	1	A	U	
2	***200***	Thoracic vertebra	Spinous process	U	10	2	1	A	U	
2	***200***	Thoracic vertebra	Spinous process	U	10	2	1	A	U	
2	***200***	Thoracic vertebra	Spinous process	U	15	2	1	A	U	
2	***200***	Thoracic vertebra	Spinous process	R	15	2	1	A	U	
2	***200***	Thoracic vertebra	Spinous process	R	25	2	1	A	U	

2	***200***	Thoracic vertebra	Spinous process	LR	45	2	1	A	U	
2	***200***	Thoracic vertebra	All	R	25	2	1	A	U	
2	***200***	Thoracic vertebra	Body	LR	25	3	1	A	U	
2	***200***	Lumbar vertebra	All	LR	100	1	1	UA	U	
2	***200***	Maxillary Tooth	Second molar	L	100	1	1	UA	U	Dental Disease, calculus
2	***200***	Maxillary Tooth	Second incisor	L	100	2	1	A	U	
2	***200***	Mandible	Ramus Anterior	R	40	2	1	A	U	Dental Disease, AM tooth loss
2	***200***	Tarsal	Talus	L	70	2	1	A	U	
2	***200***	Metatarsal	1 Distal	U	20	3	1	A	U	Congenital, small cortical defect at distal joint
2	***200***	Metatarsal	1 Proximal	L	40	3	1	A	U	
2	***200***	Metatarsal	1 All	L	50	3	1	A	U	
2	***200***	Tarsal	Navicular	L	100	2	1	A	U	
2	***200***	Metatarsal	1 All	U	100	2	1	A	U	
2	***200***	Tarsal	Calcaneus	R	100	2	1	A	U	
2	***201***	Unidentified		U	2	5	15	UA	U	
2	***201***	Radius	Central shaft Distal shaft	R	55	5	1	UA	U	
2	***201***	Femur	Central shaft	U	5	5	5	UA	U	
2	***201***	Rib	Fragments	U	5	3	8	UA	U	
2	***201***	Fibula	Central shaft	U	55	3	1	UA	U	
2	***201***	Radius	Central shaft	L	40	1	1	UA	U	
2	***201***	Fibula	Distal shaft	U	20	2	1	UA	U	Infection, lamellar bone at shaft
2	***201***	Fibula	Central shaft	U	65	2	2	UA	U	Infection, lamellar bone at shaft
2	***201***	Metacarpal	2 Proximal	R	30	2	1	A	U	
2	***201***	Scapula	Blade	U	10	2	1	A	U	
2	***201***	Scapula	Blade	L	25	2	1	A	U	
2	***201***	Thoracic vertebra	All	LR	70	3	1	A	U	

2	***201***	Lumbar vertebra	Spinous process	L	35	2	1	A	U	
2	***201***	Thoracic vertebra	All	LR	90	2	1	A	U	Degenerative, Schmorl's nodes
2	***201***	Axis	Body	LR	30	2	1	A	U	Degenerative, porosity at body, eburnation at dens
2	***201***	Axis	Body	LR	30	2	1	A	U	
2	***201***	Maxillary Tooth	First premolar	L	100	2	1	ADOL	U	
2	***201***	Maxillary Tooth	Second premolar	L	100	2	1	ADOL	U	
2	***201***	Maxillary Tooth	First molar	L	100	2	1	ADOL	U	
2	***201***	Maxilla	Alveolar	L	25	2	1	ADOL	U	
2	***201***	Pelvis	Pubis	R	25	2	1	A	U	
2	***201***	Pelvis	Ischium	L	25	1	1	OJ	U	
2	***201***	Pelvis	Ilium	R	25	4	1	MA	F	
2	***201***	Pelvis	Ilium	R	70	3	1	ADOL	U	
2	***201***	Sternum	Distal	LR	10	2	1	A	U	
2	***201***	Tarsal	Calcaneus	U	10	3	1	A	U	
2	***201***	Tarsal	Calcaneus	L	55	1	1	A	U	
2	***201***	Tarsal	Calcaneus	R	55	1	1	A	U	
2	***201***	Tarsal	Talus	R	100	1	1	A	U	
2	***201***	Tarsal	Talus	L	100	1	1	A	U	
2	***201***	Patella	All	L	90	2	1	A	U	
2	***201***	Tibia	Proximal joint	U	2	4	1	A	U	
2	***202***	Mandible	Ramus	R	50	2	1	P	U	
2	***202***	Temporal	All	R	30	1	1	P	U	
2	***202***	Tarsal	Talus	R	100	2	1	A	U	
2	***202***	Tarsal	Talus	R	100	2	1	A	U	
2	***202***	Tarsal	Talus	R	45	3	2	A	U	

2	***202***	Atlas	All	R	45	2	2	A	U	
2	***202***	Ulna	Proximal shaft Central shaft Distal shaft	R	80	5	2	UA	U	
2	***202***	Hand phalanx	Proximal	U	80	5	1	A	U	
2	***202***	Rib	Fragments	U	25	3	1	UA	U	
2	***202***	Parietal	Posterior	L	55	2	2	UA	U	
2	***202***	Lumbar vertebra	Spinous process	LR	55	3	1	A	U	
2	***202***	Lumbar vertebra	Body	LR	55	2	1	A	U	
2	***202***	Clavicle	Medial joint	R	20	2	1	A	U	
3	***300***	Unidentified		U	5	2	2	UA	U	
3	***300***	Pelvis	Ilium	U	5	2	1	A	U	
3	***300***	Pelvis	Ischium	U	5	2	1	A	U	
3	***300***	Pelvis	Pubis	R	20	2	1	A	U	
3	***300***	Pelvis	Acetabulum	R	20	2	1	A	U	
3	***300***	Pelvis	Acetabulum	L	10	4	1	A	U	
3	***300***	Lumbar vertebra	Spinous process	U	20	3	1	A	U	
3	***300***	Cervical vertebra	All	LR	100	3	1	A	U	
3	***300***	Lumbar vertebra	All	R	35	3	1	A	U	
3	***300***	Thoracic vertebra	All	LR	75	2	1	A	U	
3	***300***	Scapula	Blade	R	10	2	1	UA	U	
3	***300***	Hand phalanx	Proximal	U	95	2	1	A	U	
3	***300***	Humerus	Distal shaft	R	10	4	1	UA	U	
3	***300***	Ulna	Distal shaft	U	2	3	1	UA	U	
3	***300***	Metacarpal	1 All	L	100	1	1	A	U	
3	***300***	Carpal	Hamate	R	100	2	1	A	U	
3	***300***	Humerus	Distal joint	R	25	2	2	A	U	

3	***300***	Ulna	Proximal joint	R	25	2	1	A	U	
3	***300***	Radius	Proximal joint Proximal shaft Central shaft	R	75	2	2	A	U	
3	***300***	Clavicle	Lateral shaft	R	20	2	1	UA	U	
3	***300***	Rib	Fragments	U	20	3	10	UA	U	
3	***300***	Fibula	Central shaft	U	50	2	1	A	U	
3	***300***	Fibula	Distal joint	R	15	2	1	A	U	
3	***300***	Clavicle	Central shaft Medial shaft Medial joint	R	80	2	1	A	U	
3	***300***	Metatarsal	4 Proximal	L	80	3	1	A	U	
3	***300***	Metatarsal	1 All	L	100	2	1	A	U	
3	***300***	Tarsal	Calcaneus	L	95	3	1	A	U	
3	***300***	Tarsal	Talus	L	100	2	1	A	U	
3	***300***	Tarsal	Talus	L	100	2	1	A	U	
3	***300***	Tarsal	Talus	L	100	2	1	A	U	
3	***301***	Mandible	All	LR	60	4	1	YMA	M	Dental Disease, 12 teeth, AM tooth loss, severe DEH, severe calculus
3	***301***	Cranium	All	LR	90	1	1	A	F?	Dental Disease, AM tooth loss, dental abscess
3	***301***	Cranium	All	LR	90	2	1	YA	M?	Dental Disease, AM tooth loss, dental crowding
3	***301***	Unidentified		U	20	3	10	UA	U	
3	***301***	Thoracic vertebra	Spinous process	U	20	3	2	A	U	
3	***301***	Thoracic vertebra	Spinous process	LR	40	3	1	A	U	
3	***301***	Thoracic vertebra	Spinous process	LR	50	3	1	A	U	
3	***301***	Thoracic vertebra	All	R	15	3	1	A	U	
3	***301***	Thoracic vertebra	All	L	15	3	1	A	U	
3	***301***	Thoracic vertebra	Body	LR	55	3	1	A	U	

3	***301***	Lumbar vertebra	Body	U	10	2	5	A	U	
3	***301***	Lumbar vertebra	Body	LR	10	2	1	A	U	Degenerative, Schmorl's node
3	***301***	Lumbar vertebra	Body	R	15	2	1	A	U	Degenerative, osteophytes and porosity at body
3	***301***	Lumbar vertebra	Body	L	25	2	1	A	U	
3	***301***	Lumbar vertebra	Spinous process	LR	35	2	1	A	U	
3	***301***	Lumbar vertebra	Spinous process	L	20	2	1	A	U	
3	***301***	Lumbar vertebra	All	R	35	2	1	A	U	
3	***301***	Lumbar vertebra	All	L	35	2	1	A	U	
3	***301***	Lumbar vertebra	All	LR	70	2	1	A	U	
3	***301***	Lumbar vertebra	All	LR	90	2	1	A	U	Degenerative, Schmorl's node
3	***301***	Sacrum	S2 S3	U	15	2	1	A	U	
3	***301***	Lumbar vertebra	Body	LR	50	2	1	A	U	
3	***301***	Scapula	Glenoid	L	35	2	1	A	U	
3	***301***	Pelvis	Ilium	U	2	1	1	UA	U	
3	***301***	Pelvis	Auricular surface Ilium	R	70	1	1	P	U	
3	***301***	Pelvis	Auricular surface	U	2	3	1	UA	U	
3	***301***	Pelvis	Pubis	L	2	2	1	UA	U	
3	***301***	Metatarsal	1 Distal	U	15	2	1	A	U	
3	***301***	Metatarsal	3 Proximal	R	65	2	1	A	U	
3	***301***	Metatarsal	4 All	L	100	1	1	A	U	
3	***301***	Tarsal	Calcaneus	L	30	1	1	A	U	
3	***301***	Scapula	Lateral border	R	2	2	1	A	U	
3	***301***	Scapula	Acromion	U	2	2	1	UA	U	

3	***301***	Scapula	Blade	L	10	3	1	ADOL	U	
3	***301***	Rib	Fragments	R	30	3	1	A	U	
3	***301***	Rib	Fragments	L	30	3	2	A	U	
3	***301***	Rib	Fragments	U	30	1	10	UA	U	
3	***301***	Hand phalanx	Proximal	U	100	1	1	OJ	U	
3	***301***	Radius	Central shaft	R	30	2	1	A	U	
3	***301***	Radius	Proximal joint Proximal shaft Central shaft	R	55	3	1	UA	U	
3	***301***	Ulna	Distal shaft	R	10	5	1	UA	U	
3	***301***	Ulna	Distal shaft	U	10	5	1	UA	U	
3	***301***	Ulna	Distal shaft	L	20	4	1	UA	U	
3	***301***	Ulna	Distal shaft	L	20	4	1	UA	U	
3	***301***	Ulna	Central shaft	R	30	4	1	UA	U	
3	***301***	Ulna	Proximal joint Proximal shaft Central shaft	R	90	4	2	A	U	
3	***301***	Ulna	Proximal joint Proximal shaft Central shaft	R	80	4	1	A	U	
3	***301***	Ulna	Proximal joint Proximal shaft Central shaft	L	20	3	1	A	U	
3	***301***	Ulna	Proximal joint Proximal shaft Central shaft	R	45	3	1	A	U	
3	***301***	Humerus	Proximal shaft Central shaft Distal shaft	R	75	4	1	UA	U	
3	***301***	Humerus	All	R	100	1	2	A	U	
3	***301***	Cranium	Fragments	U	2	4	1	UA	U	
3	***301***	Tarsal	Medial cuneiform	U	50	3	1	UA	U	
3	***301***	Tarsal	Talus	U	2	2	1	UA	U	
3	***301***	Tarsal	Cuboid	U	25	2	1	A	U	
3	***301***	Tarsal	Intermediate cuneiform	R	100	2	1	A	U	
3	***301***	Tarsal	Cuboid	L	30	2	1	A	U	
3	***301***	Tarsal	Navicular	L	80	2	1	A	U	

3	***301***	Tarsal	Intermediate cuneiform	L	100	3	1	ADOL	U	
3	***301***	Tarsal	Calcaneus	L	100	3	1	A	U	
3	***301***	Tarsal	Calcaneus	L	100	3	1	A	U	
3	***301***	Tarsal	Calcaneus	R	70	3	1	A	U	
3	***301***	Tarsal	Calcaneus	L	70	3	1	ADOL	U	
3	***301***	Tarsal	Talus	U	10	3	1	UA	U	
3	***301***	Tarsal	Talus	L	90	4	1	A	U	
3	***301***	Tarsal	Talus	L	90	4	1	ADOL	U	
3	***301***	Tarsal	Talus	R	2	3	1	UA	U	
3	***301***	Tarsal	Talus	R	100	3	1	A	U	
3	***301***	Tarsal	Talus	R	100	3	1	A	U	
3	***301***	Tarsal	Talus	R	100	3	1	A	U	
3	***301***	Tarsal	Talus	R	70	3	1	A	U	
3	***301***	Tarsal	Talus	R	70	3	1	A	U	
3	***301***	Metacarpal	3 All	R	100	2	1	A	U	
3	***301***	Carpal	Hamate	L	100	1	1	A	U	
3	***301***	Patella	All	L	100	1	1	A	U	
4	***401***	Fibula	Distal shaft	L	15	4	1	UA	U	
4	***401***	Pelvis	Acetabulum	U	2	4	1	A	U	
4	***401***	Unidentified		U	2	3	7	UA	U	
4	***401***	Ulna	Distal shaft	R	25	3	1	UA	U	
4	***401***	Humerus	Proximal shaft	U	20	4	1	UA	U	
4	***401***	Pelvis	Ilium	U	2	2	2	UA	U	
4	***401***	Pelvis	Pubis	R	5	2	1	A	U	
4	***401***	Pelvis	Acetabulum	U	10	2	1	ADOL	U	
4	***401***	Pelvis	Auricular surface	L	10	2	1	YMA	U	
4	***401***	Ulna	Distal shaft	U	5	2	1	UA	U	

4	***401***	Pelvis	Ilium	U	2	2	1	UA	U	
4	***401***	Frontal	Orbit	L	5	2	1	A	U	
4	***401***	Cranium	Fragments	U	5	2	3	UA	U	
4	***401***	4th rib	All	L	90	4	3	OJ	U	
4	***401***	Metacarpal	5 Proximal	L	80	4	1	A	U	
4	***401***	Metacarpal	2 Proximal	L	80	2	1	A	U	
4	***401***	Metacarpal	3 All	L	100	3	1	A	U	
4	***401***	Fibula	Central shaft	U	15	2	1	UA	U	
4	***401***	Metatarsal	4 All	R	100	2	1	A	U	
4	***401***	Metatarsal	5 Proximal	L	70	4	1	A	U	
4	***401***	Tarsal	Calcaneus	R	70	3	1	A	U	
4	***401***	Fibula	Distal joint	L	15	3	1	A	U	
4	***401***	Tibia	Central shaft	U	15	4	1	UA	U	
4	***401***	Femur	Distal joint	U	5	3	1	A	U	
4	***401***	Femur	Proximal shaft	L	5	2	1	UA	U	
4	***401***	Femur	Proximal joint	U	5	3	1	A	U	
4	***401***	Femur	Proximal shaft	R	15	2	1	A	U	
4	***401***	Patella	All	L	90	2	1	A	U	
4	***401***	Patella	All	L	100	2	1	A	U	
4	***401***	Tibia	Central shaft	U	30	4	1	UA	U	Infection, lamellar bone at medial shaft
4	***404***	Mandibular Tooth	Second incisor	R	100	3	1	A	U	Dental Disease, calculus
4	***404***	Scapula	Acromion	L	20	3	1	UA	U	
5	***501***	Rib	Fragments	U	20	3	6	UA	U	
5	***501***	Ulna	Proximal joint Proximal shaft Central shaft	L	60	3	2	A	U	

Key:

SP – Surface preservation
YA – young adult - 18-25 years
YMA – young middle adult – 26-35 years
OMA – old middle adult – 36-45 years
MA – mature adult – 46+ years
A – adult – 18+ years
AD – adolescent
OJ – older juvenile
YJ – younger juvenile
I – Infant
N – Neonate
P – Perinate
F – Foetus
UA – Unaged
M- Male
F – Female
U – Unsexed;
I – indeterminate Sex
DJC – Degenerative Joint Changes

Appendix 5: Animal Bone Assessment

by Jane Richardson

In total, 179 animal bone fragments were retrieved, of which 36 were identified as diagnostic and non-repeatable bone zones. The assemblage has been identified, quantified and described in its entirety in Table 1 below. An assemblage dominated by material associated with domestic consumption is indicated.

The bone fragments were typically well preserved, with few eroded surfaces. Some gnawing by dogs was noted indicating that deposition was not immediate. Butchery marks on cattle, pig and sheep/goat bones indicate carcass reduction. A few sawn bones are present, and this is typical of post-medieval assemblages.

Despite the small assemblage, cattle, sheep/goat, pig, deer, chicken and duck are represented. These indicate a varied diet, with the deer suggesting high status consumption. For the main domesticates (cattle, sheep/goat and pig), limb bones are most commonly recorded, but ribs, vertebrae and skull fragments were also noted. Limited age data (based on epiphyseal fusion) indicate sub-adult cattle, sheep/goat and pigs are represented, and were probably utilised for prime meat, while a neonatal pig bone may indicate localised breeding. Horse and dog bones are also present.

Given the small assemblage size, the material is of limited significance, and no further analysis is recommended.

Table 1. Animal bones by context

Context	Species	Element	Quantity	Zones
100	Sheep/goat	Distal radius (fused, gnawed)	1	1
	Sheep/goat	Pelvis fragment	2	
	Cattle-size	Skull fragment	1	
	Cattle-size	Long bone fragment (gnawed)	5	
	Cattle-size	Vertebra fragment	1	
101	Cattle	Loose tooth	1	
	Cattle	Scapula fragment	2	
	Cattle	Humerus barrel (gnawed)	1	1
	Cattle	Radius fragment	1	
	Cattle	Ulna	1	1
	Cattle	Pelvis fragment (likely female)	1	
	Cattle	Patella	1	1
	Cattle	Calcaneus (eroded)	1	1
	Cattle	Metapodial fragment	1	
	Cattle	First phalanx (fused)	1	1
	Cattle-size	Skull fragments	11	
	Cattle-size	Long bone fragment	16	
	Cattle-size	Rib fragment	1	
	Deer	Metatarsal (fused, likely fallow)	1	1
	Sheep/goat	Pelvis fragment	1	
	Sheep/goat	Distal tibia (fused)	1	1
	Sheep-size	Long bone fragment	2	
102	Cattle	Ulna	1	1
	Cattle	Proximal radius (fused)	1	1
	Cattle-size	Long bone fragment	9	

Context	Species	Element	Quantity	Zones
	Cattle-size	Rib fragment	2	
104	Deer	Proximal metacarpal (likely fallow)	1	1
	Sheep/goat	Pelvis (fused, gnawed)	1	1
	Cattle-size	Long bone fragment	4	
200	Cattle	Mandible fragment	1	
	Cattle	Atlas fragment (gnawed)	1	
	Cattle	Ulna fragment	1	
	Cattle	Pelvis fragment (gnawed)	1	
	Cattle	Calcaneus (gnawed)	1	1
	Cattle-size	Long bone fragment	9	
201	Cattle	Third molar (wear stage k)	1	1
	Cattle	Axis fragment	1	
	Cattle	Scapula fragment	5	
	Cattle	Pelvis fragment	1	
	Cattle	Distal tibia (fused)	1	1
	Cattle	Distal tibia (fused)	1	
	Cattle-size	Rib fragment (gnawed)	1	
	Sheep/goat	Distal tibia (fused)	1	1
	Pig	Humerus barrel (neonatal)	1	1
202	Cattle	Humerus shaft fragment	1	1
	Cattle	Pelvis (fused, sawn, likely female)	1	1
	Cattle	Proximal metatarsal	1	1
	Cattle-size	Skull fragment (1 gnawed)	2	
	Cattle-size	Long bone fragment	1	
	Sheep/goat	Tibia barrel (gnawed and multiple cuts to shaft)	1	1
	Sheep/goat	Tibia barrel (gnawed and cuts to shaft)	1	
300	Dog	Distal humerus (fused)	1	1
	Cattle-size	Rib fragment	2	
	Cattle-size	Long bone fragment (gnawed)	2	
	Sheep-size	Long bone fragment (1 gnawed)	3	
301	Cattle	Axis fragment	1	
	Cattle	Scapula (fused)	1	1
	Cattle	Distal radius (not fused)	1	1
	Cattle	Ulna	1	1
	Cattle	Pelvis fragment (gnawed)	1	
	Cattle	Fist phalanx (fused)	1	1
	Cattle-size	Long bone fragment	5	
	Cattle-size	Vertebra fragment	2	
	Pig	Humerus shaft fragment	1	1
	Sheep-size	Skull fragment	1	
401	Sheep/goat	Tibia barrel (gnawed and cuts to shaft)	1	
	Cattle-size	Long bone fragment (eroded)	1	
403	Horse	First phalanx (fused, gnawed)	1	
404	Cattle	Humerus shaft fragment	1	1
	Cattle	Humerus barrel (chopped)	1	
	Cattle	Metatarsal barrel	1	
	Cattle-size	Long bone fragment	6	
	Chicken	Humerus barrel (gnawed)	1	
406	Cattle	Distal femur (fused, sawn)	1	1
	Cattle	Hyoid fragment	1	
	Cattle-size	Long bone fragment	7	
	Pig	Skull fragment	3	1
	Pig	Scapula (not fused, cut)	1	1
	Pig	Proximal femur (not fused, cut plus 2 epiphyses)	3	1
	Pig	Tibia barrel (cut)	1	1
	Pig	Distal tibia (fused, sawn)	1	1
	Pig	Metapodial epiphysis	1	
	Pig-size	Rib fragment	3	

Context	Species	Element	Quantity	Zones
	Sheep/goat	Distal humerus (not fused, cut mid-shaft)	1	1
	Sheep/goat	Distal femur epiphysis	1	
	Sheep-size	Vertebra fragment	4	
	Cf. duck	Radius (fused, cut)	1	1
	Bird	First phalanx (hind)	1	
	Bird	Long bone fragment	2	
500	Cattle-size	Skull fragment	1	
501	Cattle-size	Rib fragment	2	