

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

## Archaeological Watching Brief



Client: PCC Cartmel Priory

NGR: 337978 478797

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## Non-Technical Summary

Following the granting of a faculty for internal works to the Priory Church of St Mary and St Michael, Cartmel Cumbria, primarily to install pipes for a new heating system, a condition was placed requiring an archaeological watching brief on the associated groundworks. Greenlane Archaeology was appointed by the PCC for Cartmel Priory to carry out the work, which was undertaken in May 2018.

There is evidence for human activity in the area around Cartmel from at least the end of the last Ice Age, although the nature of any settlement in Cartmel itself is unclear until at least the early medieval period. A church is known to have existed in Cartmel in the 12<sup>th</sup> century, before the establishment of Cartmel Priory the late 12<sup>th</sup> century. This is thought to have been substantially reorganised after the late 14<sup>th</sup> century with the buildings described as ruinous, perhaps due to problems with the foundations or due to the Scottish raids that took place in this century. Following the Dissolution much of the former property of Cartmel Priory was acquired by the Preston family, who carried out some repairs to the church in the 17<sup>th</sup> century.

The groundworks were relatively shallow, generally comprising the hand excavation of a shallow narrow trench for the housing of water pipes, although the area in which the font had once stood was also cleared of material below the flags and an electrical cable that had been hidden beneath boxing on which the pews stood was also buried. In each area an upper deposit of loose made ground was encountered, typically containing some human bone and occasional other finds, including medieval pottery and clay tobacco pipe. In a couple of areas underlying lime-rich deposits were encountered, which may relate to earlier surfaces or footings as well as an area of stones, also probably footings.

Although limited in scope the groundworks revealed a similar sequence of deposits to that encountered during a similar phase of work carried out in 1991. They also revealed that the burials beneath the current flag floor, although only disturbed elements of these were encountered, might include some that date from the medieval period. In addition a humerus found among the bone displayed signs of *mesomelia*, a form of dwarfism.

## Acknowledgements

Greenlane Archaeology would like to thank the PCC Cartmel Priory for commissioning the project and Francis Roberts Architects, in particular Dominic Roberts, for providing information about the project and relevant drawings of the building. Further thanks are also due to Jeremy Parsons, Historic Environment Officer at Cumbria County Council, for providing a copy of the report on the previous archaeological work at the Priory Church.

The watching brief was carried out by Dan Elsworth who also this report. The illustrations were produced by Tom Mace, who also assessed the medieval pottery, animal bone, and clay tobacco pipe, and the report was edited by Jo Dawson, who also processed the finds and assessed the metal finds. The human bone was assessed by Malin Holst and Katie Keefe at York Osteoarchaeology. Dan Elsworth managed the project.

# 1. Introduction

## 1.1 Circumstances of the Project

1.1.1 Following the submission of a petition by the Team Vicar and Church Wardens at the Priory Church of St Mary and St Michael, Cartmel (NGR 337978 478797) to the Consistory Court of the Diocese of Carlisle, for internal works to the church primarily to allow the installation of a new heating system, a Faculty permitting the proposed works was granted (No. 61.2017). One condition (condition (b)) of the Faculty was that an archaeological watching brief be carried out on below-ground works. Greenlane Archaeology was approached by Dominic Roberts at Francis Roberts Architects on behalf of the PCC for Cartmel Priory (hereafter 'the client'), to carry out an archaeological watching brief and the relevant groundworks was carried out on May 14<sup>th</sup> and 15<sup>th</sup> 2018.

## 1.2 Location, Geology, and Topography

1.2.1 The site is fairly centrally located within the village of Cartmel, less than 100m to the east of the market place (Figure 1). The priory church, which is visually prominent in the landscape, formed the hub around which Cartmel developed and the village, which is described as 'exceptional' and 'largely unspoilt', is now protected by Conservation Area status (Countryside Commission 1998, 73). Cartmel is 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 2008).

1.2.2 Cartmel is situated 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 (Mitchell 1990, 43; Moseley 1978, plate 1). The site is located to the east of the River Eea, at approximately 30m above sea level (Ordnance Survey 2008); the underlying solid geology in the catchment area to the west of the River is mainly slate, but to the east the deposits are mostly limestone, and deposits of alluvium (soft peaty and clayey soils) are likely to be present closer to the River (Mitchell 1990, figure 2; 1992, figure 1). The River itself was doubtless an important influence on the sourcing of construction material in the area most notably that used in the construction of the Priory (Mitchell 1992, 72-73).

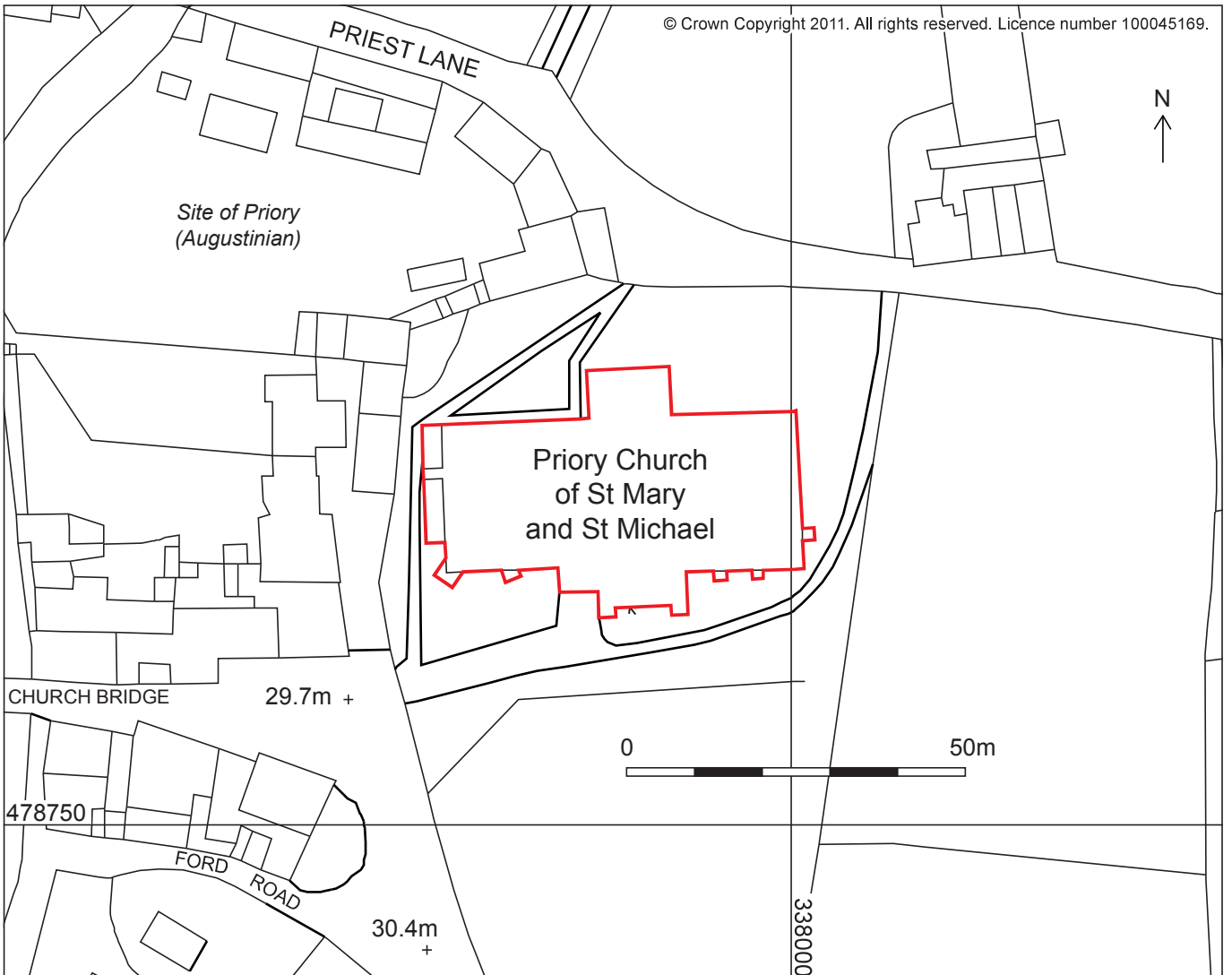
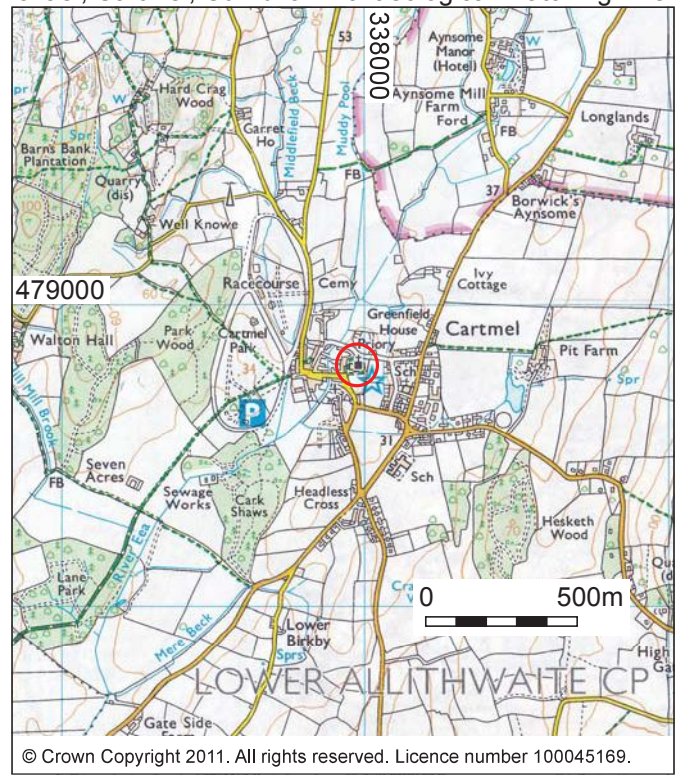
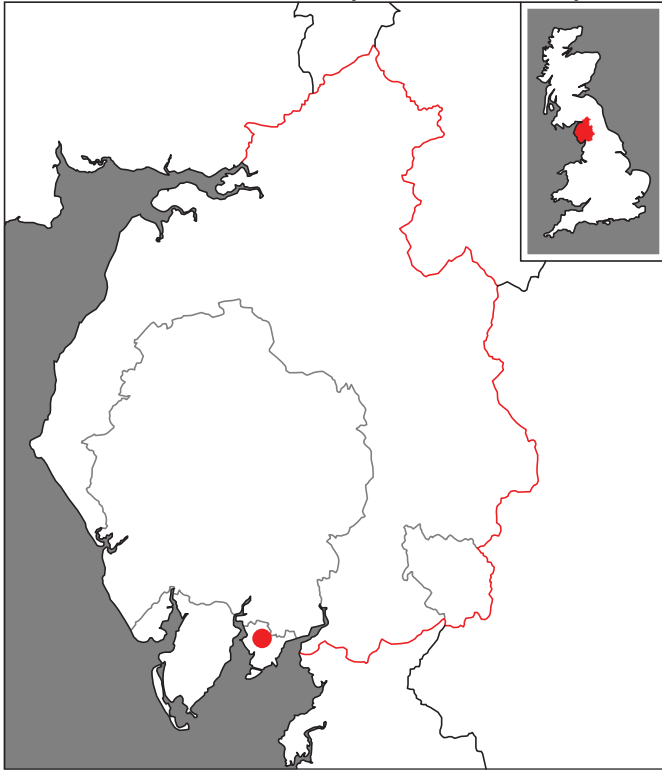


Figure 1: Site location

Client: PCC Cartmel Priory

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## 2. Methodology

### 2.1 Introduction

2.1.1 The watching brief was carried out in line with the standards and guidance of the Chartered Institute for Archaeologists (CIfA 2014a). In addition, a brief history of the site was compiled from previous archaeological work carried out in Cartmel by Greenlane Archaeology, in accordance with the relevant CIfA standards and guidance (CIfA 2014b), and a suitable archive was compiled to provide a permanent record of the project and its results in accordance CIfA guidelines (CIfA 2014c).

### 2.2 Archaeological Watching Brief

2.2.1 The watching brief monitored the excavation of all of the trenches for the pipes for the new heating system, but also that excavation carried out in order to bury an existing electrical cable below the flag floor and the exposure of an area located beneath a raised base on which the font was originally sat, this having been moved to the south.

2.2.2 All aspects of the archaeological recording were carried out according to the standards and guidance of the Chartered Institute for Archaeologists (CIfA 2014b) 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 35mm colour print and 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:** plans of the watching brief area were produced at a scale of 1:100 based on a site plan supplied by the project architect.

2.2.3 No environmental samples were taken because no suitable deposits were encountered.

### 2.3 Archive

2.3.1 A comprehensive archive of the project has been produced in accordance with current CIfA standard and guidance (CIfA 2014c). The paper and digital archive and a copy of this report will be deposited in the Cumbria Archive Centre in Barrow-in-Furness on completion of the project. A digital and paper copy of this report will be provided for the client, as required, and one will be retained by Greenlane Archaeology. In addition, a digital copy of the report will be provided to the Cumbria Historic Environment Record (HER) in Kendal and a digital record of the project will be made on the *Online Access to the Index of Archaeological Investigations* (OASIS) scheme.

### 3. Site History

#### 3.1 Introduction

3.1.1 While the village of Cartmel has a very ancient history, with activity in the general area extending into the prehistoric and Roman period, the core of the village is based around the 12<sup>th</sup> century priory. The priory church obviously forms a significant element of this, the most extant surviving element of the original priory, and so the site history will concentrate specifically on the medieval period and later.

#### 3.2 Prehistoric (c11,000 BC – 1<sup>st</sup> century AD)

3.2.1 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 (c8,000 – 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).

3.2.2 In the following period, the Neolithic (c4,000 – 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 (c2,500 – 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, which was found in Cartmel before 1909 at an unknown location, which is perhaps the same as one said to have been found at Aynsome, although the find spot of this is also not known (Rigge 1885, 266). A bronze axe with a very pronounced stop ridge was also found in a peat moss near Cartmel, but the find spot and current whereabouts of this find are unknown (Clough 1969, 8). Sites that can be specifically dated to the Iron Age (c600 BC – 1<sup>st</sup> 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 19<sup>th</sup> 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 Romano-British (1<sup>st</sup> century AD – 5<sup>th</sup> century AD)

3.3.1 Late 18<sup>th</sup> and 19<sup>th</sup> century antiquarians considered a Roman military presence in the Furness area, which included the Cartmel peninsula, beyond question, but by the 20<sup>th</sup> 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 in the meadow in front of the house at Fairfield (Stockdale 1872, 253), in an area known as 'Castle Meadows' (Stockdale 1872, 253), although at the present time there is scant evidence to support this theory (Castle Meadows is actually marked some distance to the north on the Ordnance Survey map of 1851b). 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 chiefly [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 extent of the Scheduled Monument area would suggest that the fort lay to the west of the River in front of Fairfield, which corresponds with Stockdale's recollection, whereas Mitchell identifies the field north of the east end of the Priory wall to The Beck as Castle Meadows (Mitchell 1990, figure 1). 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" (Women's Institute Cartmel Branch 1928, 2).

3.3.2 A coin of Constantine I, Roman Emperor from AD 306-337, was found in Cartmel, but the exact location is unknown (Shotter 1986, 257; 1989, 43). Various other 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 also 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 2011) recovered three sherds of what may be Roman pottery from a road surface, but these were not dated with certainty and may be medieval.

### 3.4 Early Medieval to Medieval (6<sup>th</sup> century AD – 16<sup>th</sup> century AD)

3.4.1 the origins of Cartmel are potentially very early, with a reference in the *Historia de Sancto Cuthberto*, compiled in the 12<sup>th</sup> century, stating that "the land which is called Cartmel" and all its British population, which also incidentally suggests a well-established community there, was given to Saint Cuthbert around AD 688 by Ecgrith, who was King of Northumbria from 670 to 685 (Crowe 1984, 63-65; Dickinson 1991, 9). However, a more recent interpretation of this suggests that this was an agreement being made with the local Britons rather than that they were considered part of the property, and has pointed out the local place-names suggesting the survival of a British population late into the early medieval period (Edmonds 2013). There has been some discussion over whether this document indicates that there was an existing monastic community in the area at this time, although not necessarily located in the vicinity of the present village. However, the fact that Cartmel is recorded in the Domesday Survey of 1086 as 'Cherchebi', which is later recorded as Churchtown indicates that there was as a minimum already a church in existence before the current one (Crowe 1984, 61) and later references also demonstrate the existence of a place of worship by the mid 12<sup>th</sup> century (Dickinson 1991, 10). The medieval priory of Cartmel was established in c1190 (Dickinson 1980, 11) by William Marshall, Earl of Pembroke from 1189 to 1219 (Dickinson 1991, 10), with a charter being granted by the future King John in his capacity of Lord of the Honour of Lancaster (Dickinson 1980, 11). The priory was established according to the rules of St Augustine, with its first brethren acquired from the priory of Bradenstoke in

Wiltshire (Dickinson 1991, 10). Such 'Austin canons', as they were known, were primarily concerned with a regular programme of communal worship beginning very early in the morning, but we not as strict as some other contemporary orders (*ibid*). The priory at Cartmel soon acquired other properties and land in the area so that by the 14<sup>th</sup> century it held several outlying granges (*op cit*, 14-18), with a particularly important one at Frith Hall probably associated with a grant of fishing rights; elements of Frith Hall still stand to the present day (Greenlane Archaeology 2011). Details about the development of the buildings within the priory are relatively limited, although there are a number of records of visitations by heads of the order describing periods of decline in the standards of the canons of Cartmel, but the priory survived all of these despite at least one of these describing buildings falling into disrepair (*op cit*, 25-28).

3.4.2 However, records do show that by the end of the 14<sup>th</sup> century elements of the priory buildings were in desperate need of repair (it has been suggested that their poor condition was a result of Scottish attacks in the early part of the 14<sup>th</sup> century: Curwen 1920, 112), and evidence from within the building has been interpreted as showing that a massive scheme of rebuilding and reorganisation was carried out, including the replacement of the original nave of the church and moving the cloister and its associated buildings (probably including the prior's lodgings, which is potentially of particular relevance to Priory Close) from the south side of the church to the north (Dickinson 1991, 30). Such a move seems to be extremely unusual, possibly unique, and was seemingly carried out because of the poor condition of the foundations of the original buildings although the evidence for exactly what occurred relies largely on the architectural style of the various phases of building visible in the extant church (*op cit*, 31; Dickinson 1945, 57-66). However, it has also been argued that a combination of factors including the damage caused by the Scottish raids and the need for better security but also the need to keep an increasingly large congregation separate from the canons were probably also influential in these alterations (Taylor 1955, 22). The area to the south was subsequently used for a burial ground for the local population (Dickinson 1991, 31). In the years leading up to the Dissolution Cartmel was again accused of a number of misdeeds, although some of these charges may have been over exaggerated (*op cit*, 32). The swift events that brought about the Dissolution of all of the monastic houses in England from 1535 onward were, ironically, particularly useful in recording their holdings at that time. At Cartmel the names of the canons are listed, as are the details of the staff that the priory employed (*op cit*, 34). Monastic houses were typically viewed differently in the North West compared to other parts of the country and had a more important role in the local community and aiding travellers so there was considerably more opposition to their closure, with this leading to considerable disturbance in Cartmel in which a number of canons and laymen were tried and executed (*op cit*, 35). Nevertheless, the priory at Cartmel was eventually closed and its properties quickly sold off, the majority eventually coming to the Preston family (*op cit*, 36), although it has been stated that '*The whole of the domestic buildings, with the exception of the gateway and one or two small buildings, were pulled down completely*' (Curwen 1920, 114). However, the priory church, which was also used by the local population as a parish church, was allowed to stand and even saw some restoration between 1615 and 1618, funded by the Preston family (Farrer and Brownbill, 1914, 259; Dickinson 1991, 37).

3.4.3 Previous archaeological investigations into the priory church have been relatively limited, with the exception of previous considerations of its architectural development (Curwen 1920; Dickinson 1945). An earlier programme of improvements within the church was monitored by an archaeological watching brief (LUAU 1992), which revealed layers of made ground and lime thought to comprise bedding deposits for the present and earlier floors, many with human bone present, suggesting these were made up of reworked burial deposits. Elements of the foundations for the piers or columns, comprising rounded stones, were also observed.

## 3.5 Post-Medieval (16<sup>th</sup> century AD – present)

3.5.1 By the early 17<sup>th</sup> century the Preston family then at Holker owned much of the land formerly owned by the Priory and the church was further improved and refurbished under their benefaction (Curwen 1920, 115; Dickinson 1980, 25). Cromwellian soldiers stayed in the village on 1<sup>st</sup> October 1643, stabling their horses in the church after a minor battle in Furness (Dickinson 1985, 115). In 1660 came the re-establishment of Anglicanism and the church bells were re-cast in 1661 (Dickinson 1980, 25). Despite its rural location Cartmel was still connected with industrialisation, with iron mining a smelting

taking place on the outskirts of the village, probably from the medieval period onwards, with a rapid development of the industry taking place at the beginning of the 18<sup>th</sup> century (Moseley 2010, 59-60).

### 3.6 The Development of the Priory Church

3.6.1 A description of the development of the priory church was outlined by Curwen (1920) and embellished by Dickinson (1945), who subsequently added to the discussion (1991). In brief, the earliest surviving elements are considered to comprise the crossing and chancel at the east end, with two major programmes of rebuilding occurring the 14<sup>th</sup> to early 15<sup>th</sup> centuries, primarily associated with the removal of the original cloister from the south side of the church to the north. The reason for this is uncertain but documentary sources demonstrate that it was in a dilapidated condition by this time, perhaps as a result of the Scottish raids of this period, problems with the foundations, or general disrepair due to neglect, with the renewal of the nave being one of the later phases of work of the monastic period. The porch on the south side of the church was also replaced in the 17<sup>th</sup> century, although on an existing footprint.

## 4. Watching Brief

### 4.1 Introduction

4.1.1 Three main areas of excavation were observed, labelled here Trenches A-C, each comprising a narrow shallow trench in which pipes for the reorganised heating system were to be placed. In addition, a further area, which had housed a raised area on which the font once stood (Trench D), was cleared of loose material and levelled, and a narrow shallow trench (Trench E) was also excavated in order to bury an electrical cable that had previously been laid on the surface beneath a raised platform on which the pews were stood. The watching brief involved the monitoring of all groundworks in these areas and the recording of any archaeological features or deposits that were encountered. In the case of Trenches A, B and D the paving slabs had already been lifted before the excavation took place, for Trenches C and E two areas of pews were first removed and then the paving slabs lifted, although in the case of Trench E some areas of keyhole excavation had been carried out when the cable was initially installed (before the current scheme of works), which had disturbed a number of areas along the area of excavation.

### 4.2 Results

4.2.1 **Trench A:** this comprised a single straight trench orientated east/west and excavated between two columns on the north side of the nave. It was approximately 0.4m wide and no more than 0.2m deep. The uppermost deposit (**100**) comprised a loose pale brownish grey sandy clay loam with 2% lumps of lime, 5% rounded gravels, and 1% angular gravel, at least 0.15m thick (Plate 1). Near its centre the trench was cut across by a narrow trench lined with concrete blocks that were bridged with concrete flags forming a housing for existing water pipes. At the east and west ends of the trench the dressed bases of the columns were revealed (Plate 2).



Plate 1 (left): Trench A excavated, viewed from the west

Plate 2 (right): Base of column exposed at the east end of Trench A, viewed from the west

4.2.2 **Trench B**: this comprised a single straight trench orientated north/south and excavated between a column and the south wall across the south aisle. It was approximately 0.45m wide and no more than 0.2m deep. The upper deposit (**200**) comprised a loose dark greyish brown sandy clay loam with 1% lumps of lime mortar and 5% rounded gravels only 0.1m thick. This in turn sat on a more compacted dark orange sandy clay with 30% rounded gravel (**201**) (Plate 3). At the north end of the trench a linear patch of rough stones set into **201** was revealed (**202**), projecting 0.1m from the east side of the trench, probably representing part of the footing for the column (Plate 4).



Plate 3 (left): Trench B excavated to deposit **201**, viewed from the north

Plate 4 (right): Stones (**202**) at the north end of Trench B, viewed from the west

4.2.3 **Trench C**: this comprised an L-shaped trench orientated east/west running along the south side of the nave up to a column, and was approximately 0.4m wide and no more than 0.2m deep. The upper deposit comprised a loose mid greyish brown sandy clay loam with 20% rounded gravel 0.15m thick (**300**) (Plate 5). It had been previously disturbed at either end for the installation of cables and pipes. At the west end, where it turned to the south, where there was an older narrow iron pipe running east/west, there was a patch of compacted lime (**301**) below **300**, which contained some slate, extending over an area at least 0.6m wide (Plate 6).



Plate 5: Trench C, viewed from the north-east



Plate 6: Deposit 301 in the south end of Trench B, viewed from the east

4.2.4 **Trench D:** this comprised an approximately square area 2.3m by 2.3m the upper surface of which comprised fragmentary mortared rubble, largely comprising fragments of paving slab and thick roofing slates, some with the peg hole still visible (**400**). Beneath this was a loose dark greyish brown sandy clay (**401**), which was only levelled off rather than excavated. In the centre of the trench was a loose deposit of rounded cobbles evidently filling a hole, 1m in diameter (**402**) (Plate 7).



**Plate 7: Trench D after excavation, viewed from the north**

4.2.5 **Trench E:** this comprised an L-shaped trench extending north/south across the nave before turning west at its north end; at the north return it connected to a small hole that had already been previously excavated to house the cables when they were hidden below the boxing on which the pews sat (Plate 8). It was approximately 0.2m wide and typically less than 0.1m deep. The upper deposit comprised a loose dark greyish brown loam deposit, damper than generally seen elsewhere, with 10% rounded gravel and the occasional piece of roofing slate (**500**) (Plate 9). Where it turned to the west this was underlain by an essentially identical deposit, only drier and firmer, containing a lot of lime (**501**) (Plate 10).



**Plate 8: Existing hole prior to excavation of Trench E, viewed from the south**

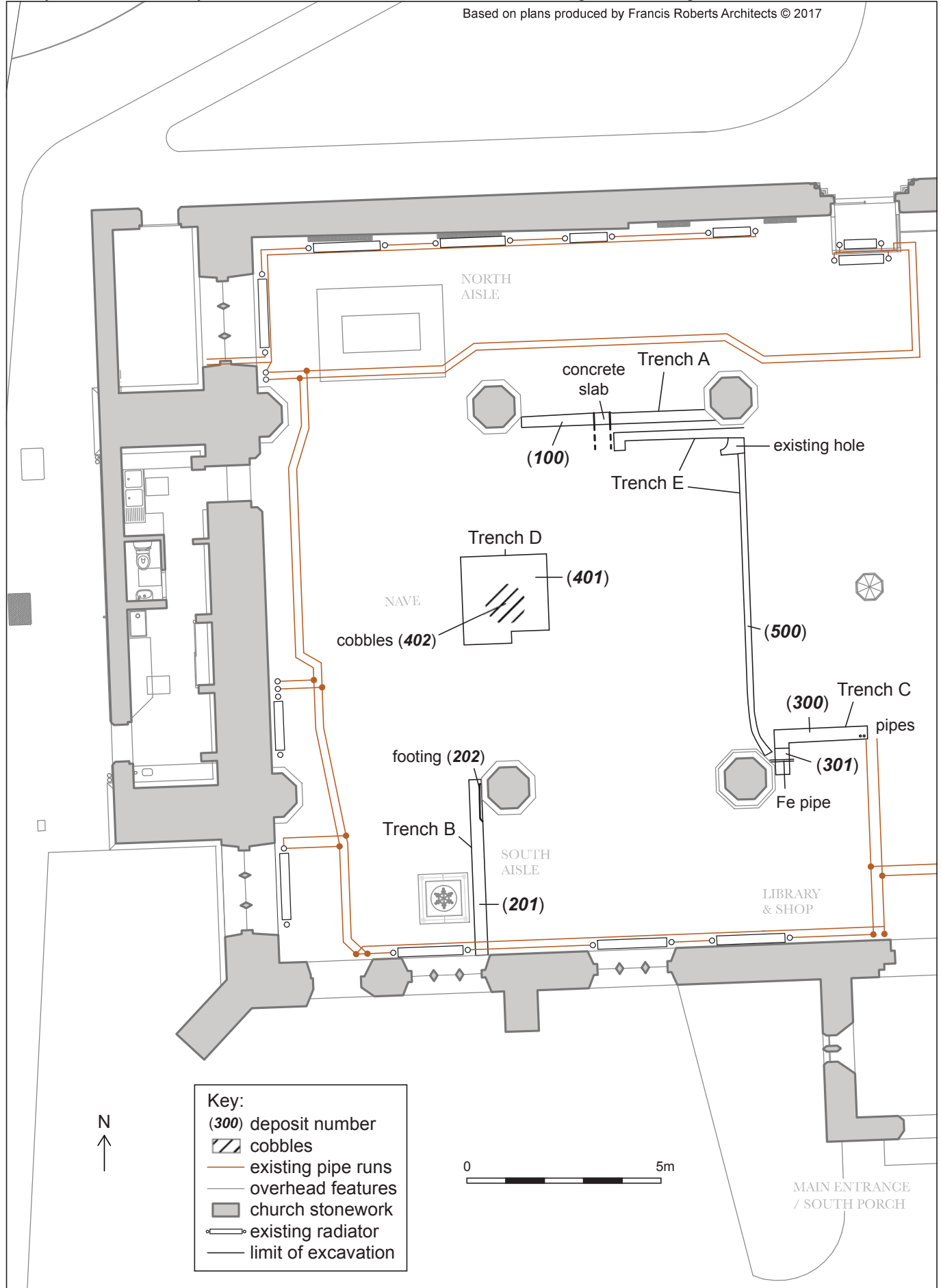


**Plate 9 (left): South end of Trench E during excavation, viewed from the north**

**Plate 10 (right): East/west arm of Trench E, viewed from the east**



Based on plans produced by Francis Roberts Architects © 2017



Client: PCC Cartmel Priory

Figure 2: Site plan

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## 4.3 Finds

4.3.1 **Introduction:** a total of 42 finds were recovered during the watching brief from various contexts, primarily comprising human bone of uncertain date (33 pieces), but also including medieval and post-medieval finds of various types.

4.3.2 **Medieval pottery:** a body fragment of a thin-walled vessel, probably a jug or a jar, was recovered from context **500**. It is made from a soft grey-bodied fabric, glazed externally, with characteristics of both partially reduced and more fully reduced grey wares of the late medieval period. Partially Reduced Grey wares dominate late 13<sup>th</sup> to 14<sup>th</sup> century assemblages throughout the region (McCarthy and Brooks 1992, 34) and the later Reduced Grey ware tradition became the dominant ware type during the 15<sup>th</sup> and 16<sup>th</sup> century, with a broad date range for the tradition from the late 13<sup>th</sup> to the early 17<sup>th</sup> century (Mace and Dawson 2013, 74).

4.3.3 **Iron:** fragments of corroded iron nails were recovered from contexts **200** and **500**, and although not closely dateable these are likely to be early post-medieval, pre-dating the mass production of nails by machine in the late 19<sup>th</sup> century. It is conceivable that some might be coffin nails, but without further conservation, x-raying and specialist assessment this would be difficult to confirm and given the small assemblage and lack of direct association with any specific burials, there would be limited value in this.

4.3.4 **Clay tobacco pipe:** a plain stem fragment was recovered from **400**. The very wide borehole (8/64" diameter) suggests it is probably 17<sup>th</sup> century (White 2004; Davey 2013).

4.3.3 **Animal bone:** a sheep-size molar was recovered from context **500**. It is not certain which species it represents.

4.3.4 **Human bone:** a total of 33 fragments of human bone in varying degrees of completeness were recovered, the largest of which comprise seven unstratified bones recovered from underneath the timber platform that supported the north row of pews, which had clearly been disturbed during the previous installation of an electrical cable and not reburied. A full analysis of these is presented in *Appendix 3*. The most significant finding from this is perhaps that a humerus amongst the unstratified material showed possible signs of *mesomelia*, a form of dwarfism.

## 5. Discussion and Conclusion

### 5.1 Discussion

5.1.1 The deposits identified during the watching brief, although shallow, are similar in form to those recorded during the previous phase of work carried out in 1991 (LUAU 1992). In all areas the uppermost deposit comprised a loose material representing reworked soils used as bedding for the flag floor, which contained items probably accidentally deposited, such as the pottery, clay pipe, and animal bone, as well as human bone disturbed from earlier burials. According to the previous report, these were considered to have derived from outside the church although no particular explanation for this is given (*op cit*, 11); the presence of finds of an essentially domestic character would seem to support this, but the presence of bone is more indicative that these deposits were reworked from within the church. Dating the bone is difficult but given that it was beneath a flag floor thought to date from a refurbishment of the church in the 19<sup>th</sup> century (*op cit*, 5) they cannot be any later. The late medieval pottery and 17<sup>th</sup> century clay tobacco pipe fragment might indicate that they are medieval or early post-medieval. Only in Trench B was there any sense that the natural ground had been reached (**201**) and this, plus the lack of human bone in this area, might indicate that this part of the nave had not been used for burial. In Trench E the lower deposit (**501**) is similar in description to thin lime-rich deposits revealed during the previous phase of work (LUAU 1992), which were interpreted as relating to an earlier floor or lime put down as a cleansing layer over areas of burials (*op cit*, 11).

5.1.2 Of additional interest is the information gleaned about the relative levels of the columns supporting the south and north walls of the north and south aisles, respectively. The watching brief revealed that the distance between the two lowest chamfers of the columns forming the north aisle of the nave was 0.6m, while in the south aisle it was 0.45m, the latter of which was visible above the current floor level while the former was buried beneath it. While this difference is clearly a result of the renewal and levelling of the floor in the 19<sup>th</sup> century it does demonstrate a discrepancy in the height of the north and south sides of the nave that is presumably a result of its late rebuilding (Dickinson 1945).

### 5.2 Conclusion

5.2.1 While only a relatively limited investigation with very shallow excavation, the watching brief has revealed some further information useful in the understanding of the priory church. Primarily that there are burials of potentially medieval date within the nave, which might be presumed but has so far not been demonstrated, but also that the south aisle did not appear to have been used for burial. In addition, the evident difference in the relative heights of the columns forming the arcades of the north and south aisles, might lend weight to the suggestion that the church suffered subsidence in the medieval period. While the quantity of human bone recovered is small it contains an unusual example of a humerus showing possible signs of *mesomelia*.

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## Appendix 1: Summary Context List

Location	Context	Type	Description	Interpretation
Trench A	<b>100</b>	Deposit	Loose pale brownish grey sandy clay loam with 2% lumps of lime, 5% rounded gravels, and 1% angular gravel, at least 0.15m thick	Bedding for flag floor
Trench B	<b>200</b>	Deposit	Loose dark greyish brown sandy clay loam with 1% lumps of lime mortar and 5% rounded gravels only 0.1m thick	Bedding for flag floor
Trench B	<b>201</b>	Deposit	Compacted dark orange sandy clay with 30% rounded gravel	Natural
Trench B	<b>202</b>	Structure	linear patch of rough stones set into <b>201</b> , projecting 0.1m from the east side of the trench	Footing for column?
Trench C	<b>300</b>	Deposit	Loose mid greyish brown sandy clay loam with 20% rounded gravel 0.15m thick	Bedding for flag floor
Trench C	<b>301</b>	Deposit	Patch of compacted lime below <b>300</b> , with some slate, extending over an area at least 0.6m wide	Footing for column/wall?
Trench D	<b>400</b>	Deposit	Fragmentary mortared rubble, largely comprising fragments of paving slab and thick roofing slates, some with the peg hole still visible	Bedding for font base
Trench D	<b>401</b>	Deposit	Loose dark greyish brown sandy clay	Bedding for flag floor
Trench D	<b>402</b>	Deposit	Loose deposit of rounded cobbles evidently filling a hole, 1m in diameter	Soakaway for font
Trench E	<b>500</b>	Deposit	Loose dark greyish brown loam deposit, with 10% rounded gravel and the occasional piece of roofing slate	Bedding for flag floor
Trench E	<b>501</b>	Deposit	Firm dark greyish brown loam deposit, containing a lot of lime, with 10% rounded gravel and the occasional piece of roofing slate	Bedding for earlier floor or 'cleansing layer'

## Appendix 2: Summary Finds List (other than human bone)

Location	Context	Type	Quantity	Description	Date range
Trench B	<b>200</b>	Fe	2	Corroded hand-forged nails: complete nail with short shank and wide head, and nail shaft fragment	Not closely dateable
Trench D	<b>400</b>	Clay tobacco pipe	1	Plain stem fragment, 23mm long with 6-6.5mm round section, with very wide (8/64" diameter), central borehole	17 <sup>th</sup> century
Trench E	<b>500</b>	Animal bone	1	Sheep-size tooth (molar)	Not closely dateable
Trench E	<b>500</b>	Pottery	1	Body sherd of a thin-walled (6mm) vessel, probably a jug or a jar; it is made from a soft, sandy fabric, with few visible inclusions, predominantly reduced to a mid-grey colour (possibly with a lighter grey outer margin) with an oxidised, light orange inner margin and inner surface, with a slightly flaking dark brown to green glaze applied externally	Late 13 <sup>th</sup> century – early 17 <sup>th</sup> century
Trench E	<b>500</b>	Fe	4	Corroded hand-forged nails	Not closely dateable

## Appendix 3: Human Bone Report

### FULL ANALYSIS OF HUMAN REMAINS FROM CARTMEL PRIORY CHURCH

#### Summary

A small assemblage of disarticulated human bone was recovered during a watching brief at Cartmel Priory Church, Grange-over-Sands, Cumbria (SD 380 788). Cartmel Grange was an Augustinian Prior, which was founded in the 12<sup>th</sup> century.

A total of 33 human bone fragments were recovered from six contexts. The disarticulated assemblage from Cartmel Priory Church consisted of a minimum number of three individuals. The majority of bone belonged to adults that could not be aged more specifically, though one non-adult bone, a metacarpal shaft, was recovered from Context (300) and was believed to belong to a young juvenile (aged 1-6 years). A mandible from an unstratified was considered to possess male characteristics.

Pathological analysis revealed that an intermediate hand phalanx and a lumbar vertebra from Context (500) exhibited degenerative joint changes and a cervical vertebra from Context (100) had osteoarthritis. An adult humerus appeared to be foreshortened and had an unusual morphology to the proximal articulation (joint with the shoulder), which may have been the result of a developmental anomaly such as *mesomelia* (a condition in which the central parts of long bones are abnormally short) or a traumatic incident. A small amount of dental pathology was observed, including a mandible from an unstratified context, which had slight dental plaque concretions), four carious lesions (cavities) and ante-mortem tooth Loss of the left first molar, potentially as a result of the caries.

#### Introduction

Six contexts of disarticulated bone were recovered from Cartmel Priory Church during a watching brief, carried out by Greenlane Archaeology. This document presents the objectives, methods and results of the analysis of these remains.

#### Objectives

The skeletal assessment aimed to determine age and sex, as well as any manifestations of disease from which the individuals may have suffered.

#### Methodology



The human remains were analysed in detail, assessing the preservation and completeness, as well as determining the age, sex and stature of the individual. All pathological lesions were recorded and described. A summary of the osteological and palaeopathological data for the disarticulated skeletal material is provided in the Appendix.

### **Osteological Analysis**

Skeletal preservation depends upon a number of 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. Preservation of human remains is assessed subjectively, depending on the severity of bone surface erosion and post-mortem breaks, but disregarding completeness.

Preservation was assessed using a grading system of five categories: very poor, poor, moderate, good and excellent. Excellent preservation implied no bone erosion and very few or no post-depositional breaks, whereas very poor preservation indicated complete or almost complete loss of the bone surface due to erosion and severe fragmentation.

The preservation of the disarticulated human bone was varied, with some fragments exhibiting retention of surface detail and no erosion, while others exhibited erosion of the bone cortex and a flaky appearance. Completion of the bones ranged from 100% to 5% complete, with the smaller, more delicate bones generally being the mostly incomplete

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 disarticulated assemblage from Cartmel Priory Church consisted of two adults, represented by two fifth metatarsals and a non-adult metacarpal, therefore the MNI for the human bone recovered was three individuals.

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 40 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 majority of bone from the disarticulated assemblage belonged to adults that could not be aged more specifically, one non-adult bone, a metacarpal shaft, was recovered from context (300) and was believed to belong to a young juvenile.

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. A mandible from the unstratified context exhibited ramus flexure, gonial flaring and a pronounced mental eminence, all of which are considered to be male characteristics.

### **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. The bone elements to which muscles attach can also provide information on muscle trauma and excessive use of muscles. All bones were examined macroscopically for evidence of pathological changes.

### **Joint Disease**

The term joint disease encompasses a large number of conditions with different causes, which all affect the articular joints of the skeleton. Factors influencing joint disease include physical activity, occupation, workload and advancing age, which manifest as Degenerative Joint Changes and osteoarthritis. Alternatively, joint changes may have inflammatory causes in the *spondyloarthropathies*, such as septic or rheumatoid arthritis. Different joint diseases affect the articular joints in a different way and it is the type of lesion, together with the distribution of skeletal manifestations, which determines the diagnosis (Rogers 2000, Roberts and Manchester 2005).

### **Degenerative Joint Changes**

The most common type of joint disease observed tends to be Degenerative Joint Changes (DJC). DJC 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). Degenerative changes to the vertebral bodies were recorded when osteophytes (bony outgrowths) were present around the margins or on the body surfaces, coupled with porosity of the body surfaces (Rogers 2000).

An intermediate hand phalanx and a lumbar vertebra from Context (500) both exhibited osteophytic lipping and porosity, both of which are conditions associated with joint disease.

### **Osteoarthritis**

Osteoarthritis (OA) is a Degenerative Joint Changes 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. Other features associated with degeneration of the joint include osteophytes (bone formation) on the surface or around the margins, porosity on the surface and the development of cysts (Rogers 2000; Roberts and Manchester 2005), but if these were noted without eburnation, they were not classed as 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).

The inferior left facet of a second cervical vertebra from Context (100) had a highly polished texture, termed eburnation.

### **Miscellaneous Pathology**

A left humerus from an unstratified context had a foreshortened and particularly robust shaft. The proximal articulation appeared to have been laterally and inferiorly displaced, making the proximal metaphyseal region appear thickened. It is possible that the individual had been suffering from *mesomelia*, a condition that leads to dwarfism (Roberts and Cox 2003, 117) and affects only parts of the skeleton, leading to shortening of the central parts of long bones. Alternatively, the individual may have experienced a traumatic incident in childhood, potentially dislocation, which may have led to the premature fusion of the epiphysis inhibiting growth and may also account for the unusual morphology of the proximal epiphyses. Proximal epiphyseal separation commonly occurs in children (Dandy and Edwards 2003, 191), however, any deformity caused as a result of the injury is usually corrected by remodelling (*ibid*). The humeral head did not exhibit any signs of degenerative change, which would be expected if the morphological alterations were traumatic in origin.

### **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 (Roberts and Manchester 2005). All teeth and the jaw were examined macroscopically for evidence of pathological changes.

A mandible from the unstratified context had a total of sixteen tooth positions and eight teeth; seven teeth had been lost post-mortem and one had been lost ante-mortem.

### **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 is commonly observed in archaeological populations of all periods, although poor preservation or damage caused during cleaning can result in the loss of these deposits from the teeth (Roberts and Manchester 2005, 64).

Slight deposits of calculus were recorded on the mesial surface of one left lateral incisor.

### **Dental Caries**

Dental caries (tooth decay) forms when bacteria in the plaque metabolise sugars in the diet and produce acid, which then causes the loss of minerals from the teeth and eventually leads to the formation of a cavity (Zero 1999). Simple sugars can be found naturally in fruits, vegetables, dried fruits and honey, as well as processed, refined sugar; since the latter three contain the most sucrose they are most cariogenic. Complex sugars are usually less cariogenic and are found in carbohydrates, such as cereals. However, processing carbohydrates, including grinding grains into fine powders or cooking them, will usually increase their cariogenicity (Moynihan 2003).

Four teeth were affected by carious lesions. The lesions were so large on the right first and second premolars that the origin could not be determined, the left third molar had a medium sized caries on the buccal (cheek) surface of the crown, while the right second molar had a medium caries on the mesial surface of the crown.

### **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, pulp-exposure from heavy tooth wear, or periodontal disease (occurring when inflammation of the gums, gingivitis, spreads to the underlying bone). Gingivitis can result when deposits of calculus on the teeth aggravate the gums. Once the tooth has been lost, the empty socket is filled in with bone (Hillson 1996, Roberts and Manchester 2005).

The right first molar, belonging to the mandible from the unstratified context, had been lost ante-mortem. Caries, along with periodontal disease, abscesses and trauma may predispose a tooth to ante-mortem loss. It is of interest that the right first and second premolars exhibited large carious lesions, which had in both cases destroyed the entire crown and it is possible that the first molar was similarly affected, which may have caused the tooth to fall out.

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**Appendix****Osteological and Palaeopathological Catalogue – Disarticulated Bone**

Context	Bone Element	Detailed Description	Side	%	SP	No. Frags	Age	Sex	Other
100	Cervical vertebra	C2 complete	-	100	1	1	A	-	OA on inferior left facet
100	Talus	Complete	R	100	0	1	A	-	-
100	Metatarsal	MT5 missing distal articulation	R	90	2	1	A	-	-
100	Metatarsal	MT5 shaft	R	50	3	1	A	-	-
100	Metatarsal	MT4 Complete	R	100	1	1	A	-	-
100	Metatarsal	MT3 Complete	R	100	2	1	A	-	-
100	Metatarsal	MT3 Complete	L	100	2	1	A	-	-
100	Metatarsal	MT3 missing distal articulation	L	90	2	1	A	-	-
100	Metacarpal	MC3 Complete	R	100	1	1	A	-	-
100	Navicular	Complete	R	100	1	1	A	-	-
100	Rib	Shaft fragment	L?	10	1	1	A	-	-
200	Distal manual phalanx	Missing part of proximal and distal articulation	-	80	3	1	A	-	-
300	Zygoma	Complete	R	100	2	1	A	-	-
300	Temporal	Petrous region	L	20	5	1	?	-	-
300	Os coxa	Ilium squamous fragment	-	20	2	1	A	-	-
300	Metacarpal	Shaft	-	60	1	1	YJ	-	-
500	Clavicle	Medial third	L	30	2	1	A	-	-
500	Lumbar Vertebra	L 1 or 2 Complete	-	100	2	1	A	-	Schmorl's node on superior surface of vertebral body. DJC on inferior body.

500	Calcaneus	Anterior articular facet	R	20	2	1	A	-	-
500	Manual phalanx	Proximal, complete	-	100	2	1	A	-	-
500	Manual phalanx	Intermediate, complete	-	100	1	1	A	-	DJC on the proximal and distal articulation
500	Metatarsal	MT4, missing part of proximal and distal articulation	R	90	2	1	A	-	-
500	Pedal phalanx	Proximal, complete	-	100	1	1	A	-	-
500	Pedal phalanx	Proximal or intermediate, shaft and distal articulation only	-	80	3	1	A	-	-
U/S	Mandible	Complete	-	100	2	2	A	M?	16TP, 8 teeth, 7 lost PM, 1 lost AM, slight wear, large caries on R PM1 and 2, med caries on LM3, LM2, slight calculus on 1/8 teeth
U/S	Rib	Vertebral end and medial shaft (middle order)	R	50	2	1	A	-	-
U/S	Rib	Vertebral end and medial shaft (upper order)	L	50	2	1	A	-	-
U/S	Radius	Complete	R	100	1	1	A	-	-
U/S	radius	Distal end and mid-shaft	R	50	4	2	A	-	-
U/S	Humerus	Missing distal articulation	L	90	3	1	A	-	-
U/S	Humerus	Missing part of proximal and distal articulation	L	80	5	1	A	-	Shaft looks foreshortened and particularly robust, the proximal articulation (what remains) has a flattened appearance, and sits on much less of a tapered neck than normal, what remain of the tubercles are inferiorly displaced in relation to the proximal articulation