THE FRATRY PROJECT, CARLISLE CATHEDRAL,

CUMBRIA

Archaeological Evaluation Report

Oxford Archaeology North

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CARLISLE CATHEDRAL DEVELOPMENT TRUST

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SUMMARY

In July 2016, Oxford Archaeology (OA) North undertook a trial-trench evaluation to the north of the medieval Fratry at Carlisle Cathedral, in central Carlisle, Cumbria (NY 399 559). This was once a priory of Augustinian canons, as well as being the seat of the bishop, from 1133. The Fratry forms the southern part of the medieval cloister, and, together with the land and buildings that now occupy the Cathedral Precinct, is of enormous cultural heritage and religious significance, falling within the jurisdiction of the Cathedrals Fabric Commission for England (CFCE), as well as being a Scheduled Monument (SM 546). The works were commissioned by the Carlisle Cathedral Development Trust, overseen by Canon Dr David Weston, the Cathedral Archaeologist, and were undertaken to help inform proposals for improvements to visitor attractions and accessibility to the Fratry building.

During the evaluation, three trenches were excavated by hand, to the north of the Fratry porchway in the footprint of the proposed new development. The trenches were of variable size and shape, and attained differing depths within various internal strategically-placed sondages. They demonstrated that significant archaeological deposits are present within the area of the proposed development, but, with the exception of some of the post-medieval structural remains, most are blanketed beneath thick bands of post-medieval demolition material, probably relating to the seventeenth-century reorganisation of the Cathedral Precinct. The shallowest medieval remains occurred in Trench 7, where the foundations of the western cloistral range and a robbed-out floor surface, lay some 0.75m below current ground level. No articulated burials were identified within any of the trenches.

The relatively substantial assemblage of material finds comprised domestic refuse, personal items and building material, dating from the medieval period to the nineteenth-century, but also including residual Roman remains. The majority of the medieval finds, including the floor tiles and window glass fragments, were recovered from demolition rubble deposited during the post-medieval period.

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The evaluation was undertaken by Steve Clark, Miranda Haigh, Shanice Jackson Hannah Leighton and Debbie Lewis, under the direction of Vickie Jamieson, who also undertook the survey. The report was written by Vickie Jamieson, with the drawings produced by Mark Tidmarsh. The animal, fish, and human bone was assessed by Ian Smith, Rebecca Nicolson, and Vickie Jamieson, respectively, whilst the finds were examined by Christine Howard-Davis. The palaeoenvironmental samples were assessed by Dr Denice Druce and Sandra Bonsall. The project was managed by Dr Adam Tinsley, who also edited the report.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF PROJECT

1.1.1 Feilden Fowles (FF), the conceptual architects to the Carlisle Cathedral Development Trust (henceforth, the Client), are currently working on proposals for the development of the Fratry at Carlisle Cathedral (Fig 1; Plate 1). The proposals comprise improvements to visitor attractions and accessibility to the Fratry building, including the construction of a new building adjoining, and at right-angles to, the western end of the north side of the Fratry itself. It is highly likely that the enactment of the proposals will be accompanied by a level of intrusive groundworks and earthmoving activities that may disturb or adversely affect below-ground archaeological remains. The land and buildings that occupy the Cathedral Precinct are of enormous cultural heritage and religious significance, falling within the jurisdiction of the Cathedrals Fabric Commission for England (CFCE) and, as a Scheduled Ancient Monument (SM546), the auspices of Historic England (HE).

Plate 1: View from the south showing trench 6 outside the cloister walk, trench 7 within the western cloister walk and trench 8 against the northern wall of the fratry

1.1.2 In order to help inform the planning process, Dr Mike McCarthy and Canon Dr David Weston (respectively the former Consultant Archaeologist and current acting Consultant Archaeologist to the Carlisle Cathedral Dean and Chapter), requested that the development should be accompanied by a programme of archaeological works that would permit a greater understanding of the nature,

depth, extent, and significance of the buried heritage resource within the projected zone of development impact. This would enable the establishment of an appropriate foundation design and a suitable mitigation strategy to be agreed upon between the Client and the regulatory bodies, and implemented either in advance of, or during, development groundworks. Accordingly, the Client commissioned Oxford Archaeology (OA) North to undertake a programme of small-scale investigation to the north and west of the Fratry.

1.2 LOCATION, TOPOGRAPHY AND GEOLOGY

1.2.1 The historic city of Carlisle occupies a strategically important site, where the principal north/south land route west of the Pennines (represented in the modern road system by the A6 trunk road) crosses the River Eden, and forms a junction with an important trans-Pennine route through the Tyne-Solway gap (represented by the modern A69). The historic city centre is situated on the south bank of the River Eden, close to its confluence with the River Caldew. A third river, the Petteril, flows through the modern eastern suburb and joins the Eden a little over 1.5km east of the Caldew.

1.2.2 Carlisle Cathedral Precinct, within the city's historic core, covers a roughly rectangular area of 2.08ha on the north-west/south-east alignment of the ancient walled city. The northern half of the precinct is occupied by the medieval cathedral, with a graveyard to its north, and the remains of the cloister of the Augustinian priory to the south. The investigation area (NY 399 559; Figs 1 and 2; Plate 1) was located immediately adjacent to and north of the current Fratry, to the south of the Cathedral.

1.2.3 The cathedral, standing at c 25m AOD, occupies one of two high points in the city, with the other occupied first by the Roman fort, and latterly by the extant medieval castle.

1.2.4 The solid geology of the Carlisle area comprises a mix of soft, reddish Triassic St Bees sandstone of the Sherwood Sandstone Group, which lies above the Permian St Bees shales and is itself overlain by and intercalated with the less extensive grey Kirklinton sandstone, as well as mudstone of the Mercia Mudstone Group (BGS 2016). Over most of the modern city, the sandstone bedrock is overlain to a depth of several metres by drift deposits of glacial till, principally an orange-pink boulder clay of the Gretna Till Formation (*ibid*).

1.3 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

1.3.1 Under the amended Care of Cathedrals Measure (2008), Carlisle Cathedral Precinct is the subject of a regularly updated archaeological assessment report (McCarthy 2010). That document presents the most comprehensive review of the current state of knowledge concerning the precinct (including the Fratry and its immediate surroundings) and it is not the intention of the following sections to reiterate data that could be more effectively sought from the assessment report.

1.3.2 The present Cathedral church was founded in 1122, originally as the church of the Augustinian Priory of St Mary, but became a Cathedral with the establishment of the diocese of Carlisle in 1133 (Weston 2000, 9; 2011, 104-5). On the south side of the cloister lay the Fratry (refectory) itself, whilst on the east was the Dorter (dormitory) range, the west wall of which is still largely standing (Weston 2000, 88). Parts of the east end of the Fratry date to the thirteenth-century, as do the earliest visible elements of the dormitory, although documentary references indicate the existence of an earlier dormitory (ibid). The Fratry undercroft has been dated to *c* 1300 (*op cit*, 91), but the building was largely reconstructed in the fifteenth-century, and was altered on several occasions subsequently.

1.3.3 Archaeological investigations in and adjacent to the Fratry itself have been limited. Wooden piles and an earlier drain were observed beneath the crypt piers in 1922 (Martindale 1924) whilst a watching brief in 1988 documented elements of the wall at 0.6m depth (Keevill 1991). A geophysical survey undertaken in 2000 (Schmidt and Hamilton 2009) revealed an extensive series of anomalies across most of what would have been the open area in the middle of the cloister and immediately to the south of the Fratry. To the south-east, anomalies found at Nos 3 and 6 The Abbey, might possibly represent pre-Norman features. A more recent ground-penetrating radar (GPR) survey (GSB Prospection 2010) to the immediate north of the Fratry revealed a series of anomalies between the ground surface and a depth of 3.15m below ground level (bgl). These could represent structural elements of the medieval cloistral ranges (*c* 0.3-2.3m bgl), possible graves, and at depths exceeding 2m bgl, potentially earlier structures within the cloister garth (*ibid*).

1.3.4 In 2012 OA North undertook a trial-trench evaluation to the north and east of the Fratry (OA North 2013). Five small trenches were excavated by hand, one against the north wall of the Fratry, another partially across the southern cloister walk and garth, and a third straddling the Dorter arcade, where it investigated the eastern cloister walk, and the former Dorter undercroft. A fourth, against the east wall of the Fratry, also lay within the former Dorter undercroft, whilst the fifth trench was excavated in the garden of No 4, the Abbey, just to the south-east of the Fratry. The trenches were generally 1m wide and up to 6m long and 1.25m deep. They demonstrated that significant archaeological deposits were present, but, with the exception of some of the post-medieval structural remains, most were blanketed beneath thick bands of post-medieval demolition material, probably relating to the seventeenth-century modification of the Cathedral Precinct. The shallowest medieval remains would appear to be in the area of the southern cloister, where the footing of the arcade, and the top of a possible medieval soil horizon, lay some 0.57m below ground level (bgl). In the eastern cloister walk, medieval deposits were rather deeper, identified at *c* 0.9m, whilst medieval remains in the area of the Dorter undercroft could have been as little as 0.75m deep. In the garden of No 4, the Abbey, the proposed location for a new boiler, no identifiably medieval deposits were encountered within the 0.9m depth of investigation, although elements of a seventeenth-century building were rather more shallow, at 0.5m. No articulated burials were identified within any of the trenches.

1.3.5 The substantial assemblage of finds comprised domestic refuse, personal items, and building material, dating from the Roman period to the nineteenth century. A concentration of Roman artefacts in one organic deposit, identified at a depth of just 0.9m at the eastern end of the Fratry, included tile fragments with legionary stamps, glass, pottery, and a fourth-century coin. Although it is possible that this may represent an *in-situ* Roman deposit with some medieval contamination, it may be material that had been disturbed during the medieval construction of the Fratry undercroft. Well-preserved palaeoenvironmental remains from that deposit suggested similar material might be encountered in other organic silts that were identified at the limit of excavation in several of the other trial trenches.

1.3.6 A ground penetrating radar (GPR) survey undertaken to inform the current project in 2016 by Stratascan, identified several anomalies that could relate to buried remains of the west range (Stratascan 2016). Anomaly 1 was the most coherent, and would appear to represent one or more phases of a rectilinear structure established on a north/south alignment. The associated foundations were judged to lie between 0.2-0.4m bgl. A pair of circular anomalies (Anomaly 2, 0.5-0.6m bgl) was identified just to the east of Anomaly 1. Although they appeared reminiscent of pillar bases, such features might be considered unusual as components of the cloister arcade (D Weston pers comm). Anomaly 3a (0.2-0.4m bgl) was identified just to the north-west of the northern end of Anomaly 1, but would appear to be on a slightly different alignment, veering more to the north-east as it continued beyond the proposed development footprint. The remains of an east/west-aligned wall may be represented by one of several anomalies labelled 3b, which were identified mostly outside of the development footprint and some 1m bgl. The north-west/south-east-aligned components of Anomaly 3b lie to the north of the development area, but share the alignment of a Roman street thought to have lain in the area (J Zant pers comm). The survey suggests that these remains lie some 0.7m bgl, which would be rather shallow when compared to the depth of Roman remains identified elsewhere in the precinct (see *Section 1.3.7*). Anomaly 4, was recorded between 0.35-1.1m bgl, but has proved difficult to interpret. Anomaly 5, a possible area of disturbance, was identified just to the north of the development site. Anomaly 6 is most likely to be a modern service.

1.3.7 Elsewhere in the Cathedral precinct, investigations have revealed a substantial depth of stratigraphy. Natural clay has been encountered in one location only, *c* 60m north of the Fratry and at a depth of 4.57m bgl (Simpson 1988). The clay is likely to be sealed by almost 2m of Roman layers, features, and structures associated with the extramural settlement to the south of the fort, including waterlogged deposits (*ibid*; Keevill 1989).

1.3.8 Fragmentary Anglian cross shafts recovered from the area and historical sources suggest that Carlisle was an important post-Roman ecclesiastical centre (Weston 2000, 7-8; Summerson 1993, 10; Tudor 1984, 68-9), and the Cathedral precinct is perhaps the pre-eminent site for understanding early medieval settlement in Carlisle (McCarthy 2004, 7-8). Significant pre-Norman deposits, graves, and finds (including ninth-century coins) were identified

during the Cathedral treasury excavations of 1988, *c* 40m north of the Fratry (Keevill 1989) and further, possibly eighth-century, burials have been identified by more recent test pits (Keevill 2008, 50). The precise depth of the top of early medieval deposits beneath the modern surface is unclear, although, in one of the test pits dug in 1985, probable early medieval graves were encountered *c* 1.2m bgl (*op cit*, 43-4). The floor of the medieval north cloister walk is said to lie 1.2m below the modern surface (Weston 2000, 88), whilst the excavations adjacent to the cathedral church in 1985 and 1988 determined that the medieval ground surface lay *c* 1m below the modern surface (*op cit*, 292). In recent years, watching briefs elsewhere within the precinct have been maintained on ground works of shallow depth, with nothing but fairly modern features and deposits being exposed.

2. METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 The project design (*Appendix 1*), which was approved by the acting Cathedral Consultant Archaeologist and HE, was adhered to in full throughout the programme of investigation. All works met current CIfA and HE standards, and generally accepted best practice (EH 1991; 2006; CIfA 2014a; 2014b, 2014c).

2.2 EVALUATION TRENCHING

2.2.1 ***Trench configuration***: in all, three trenches were excavated during this phase of the programme (Fig 2). Trench 6 was placed within the current road surface to the north of the Fratry, whilst trenches 7 and 8 were placed within the area believed to be occupied by the former cloister walks. Each trench was placed in order to try and investigate various geophysical anomalies as well as to sample the nature of deposits to be impacted upon by the proposed improvement works to the Fratry. All trenches were excavated to a depth that satisfied the Cathedral's Consultant Archaeologist, but in accordance with best health and safety practice, ie no depth exceeded 1m bgl without recourse to stepping.

2.2.2 ***Methodology***: the fieldwork methodology adhered to that presented in the project design (*Appendix 1*), with the exception of Trench 6, the position of which had to be altered, turning 90 degrees on the western edge to avoid modern services. All fieldwork was undertaken following standard OA systems and in close liaison with the Cathedral Consultant Archaeologist. Modern surfaces were either lifted and stockpiled or else cut with the assistance of the Cathedral maintenance team. Thereafter, the excavation was undertaken stratigraphically by hand. Each successive deposit was cleaned and defined by hand, and inspected for archaeological features.

2.3 FINDS

2.3.1 Artefacts and ecofacts were recovered, processed, assessed, and stored in accordance with the project design (*Appendix 1*). All sherds were examined and identified, those of medieval date being classified according to the criteria set out in McCarthy and Brooks (1992), and Brooks (2000; 2010).

2.4 PALAEOENVIRONMENTAL SAMPLING

2.4.1 A targeted programme of palaeoenvironmental sampling was implemented in accordance with the Oxford Archaeology *Environmental Guidelines and Manual* (OAU 2005), and in line with the Historic England guidance paper on Environmental Archaeology (EH 2001). All palaeoenvironmental samples were recovered, processed, assessed, and stored in accordance with the project design (*Appendix 1*).

2.5 ARCHIVE

2.5.1 The data from the investigation has been collated to form a full archive to professional standards, in accordance with Appendix 3 of Historic England guidelines (EH 1991). It is important the original record archive (paper, magnetic, and plastic media) and material archive (artefacts) is kept together in order to maintain their integrity. Accordingly, it is proposed that consultation should take place with stakeholders to establish whether the full archive will be deposited with the Cathedral, or with Carlisle's Tullie House Museum and Art Gallery (THMAG). If the latter, it would be possible for the museum to loan finds to the Cathedral on a five- to ten-year cycle.

3. FIELDWORK RESULTS

3.1 THE EVALUATION

3.1.1 In order to aid the planning and development process, the following sections present a detailed account of the stratigraphic sequence encountered in each trench. *Appendix 2* provides a catalogue of the deposits recorded.

3.1.2 ***Trench 6 (Fig 3)***: positioned north of the Fratry and west of the cloister walk (Plate 2), the trench was orientated north/south within a current road surface providing access through the Cathedral Precinct. The trench was excavated to a maximum depth of 0.46m bgl in the northern half, and 1.1m bgl in the southern half, where a 1m wide stepped sondage was excavated in order to assess the nature of the deposits. The trench itself was 5m in length and 1m wide.

Plate 2: North-west view of Trench 6 situated within the current road surface

3.1.3 The uppermost deposits consisted of the modern tarmac surface (***600***) overlying stone aggregate layers ***601*** and ***602***. These deposits formed the make-up of the current road surface and had a combined thickness of 0.33m. Deposit ***603***, under road surface ***602***, was a mid-brown sandy silt layer with frequent inclusions of crushed brick, red sandstone, and lime mortar. This deposit had a minimum thickness of 0.36m, but was not fully excavated in the northern end of the trench, where the deposit continued below the basal limit of excavation. The compact rubble deposit most likely represents a levelling layer of probable Victorian date. Beneath this layer, further levelling deposits (***604***, ***605***, and ***606***) were observed, with a cumulative thickness of 0.16m. All comprised mid-brown firm sandy silts containing frequent sub-angular stone inclusions, including broken displaced sandstone floor flagstones. They were

probably all of post-medieval origin. These deposits overlay ***607*** in the centre and southern end of the trench, a thin band of coke/charcoal, most likely waste from a fire or industrial processes.

3.1.4 The stepped sondage excavated in the southern end of the trench revealed several thin bands of levelling material (***608*** and ***609***). They in turn overlay deposit ***610*** (Plate 3), which, on the basis of diagnostic medieval Green glaze pottery, is postulated as the first horizon of *in situ* medieval activity. It was distinguished as a very dark brown, almost black, organic silt, with a minimum thickness of 0.48m, interpreted as probably deriving from a midden. The deposit was not fully excavated, due to health and safety protocols. However, a further possible rubble deposit (***611***) was observed in the base of the sondage, which may represent the remains of a robbed out wall.

Plate 3: North-facing view of trench 6 showing sondage

3.1.5 ***Trench 7 (Fig 4):*** positioned just north of the Fratry within what would have been the west cloistral range (Plate 4) to investigate potential structural remains indicated by geophysical anomalies (see *Section 1.3.6*). The trench was orientated east/west within the current pavement leading to the porch of the Fratry. It was excavated to a maximum depth of 0.31m bgl in the western half, where the presence of a modern cable duct necessarily curtailed works. The eastern end of the trench was excavated to a maximum depth of 0.76m bgl, at which point the postulated top of the cloister wall was uncovered. A

small sondage was placed in the centre of the trench, extending to a depth of 1m bgl, in order to assess the nature of deposits. The trench itself was 8m in length with a width of 1m at the western end and 2.4m at the eastern end.

Plate 4: North-facing view of trench 7

3.1.6 The upper most deposits recorded in Trench 7 consisted of a layer of flagstones, forming the modern path to the Fratry porch (removed prior to excavation), supported by a sand levelling layer (***700***), which in turn overlay aggregate levelling layer ***715***. To the west of the pavement, the trench cut into the lawn with topsoil deposit ***701*** contemporary with ***700*** and ***715***. Underneath these deposits was a dark brown, firm, sandy silt layer (***702***) with frequent inclusions of crushed red sandstone and lime mortar. This deposit was 0.22m thick and represented a levelling layer of probable seventeenth-century or later date. The deposit contained large quantities of medieval ceramic glazed floor tiles (see *Section 4.10*), presumably redeposited during demolition activity associated with remodelling of the Cathedral Precinct.

3.1.7 Below layer ***702*** was a series of post-medieval made ground deposits (***703*** and ***714***), both of which comprised dark brown sandy silt with frequent large stone rubble inclusions, and most likely part of the same levelling event. These layers had a maximum cumulative thickness of 0.38m. In the western half of the trench, a north/south aligned electrical cable and drain ***706*** were observed (Plate 5). The construction cut (***704***) for the services truncated deposits ***714*** and ***703*** (Plate 6). The drain was found to be completely silted up and no longer functional. Its top occurred at 0.17m bgl and the entire structure was 0.30m deep. The drain itself was constructed of red sandstone flagstones on top of two courses of handmade, none frogged, red bricks, high bonded with a white lime mortar, in turn surmounting a further series of red sandstone flagstones. The drain was probably late nineteenth-century in date, however, the flagstones used in the construction may have been reused and derived from medieval flooring elsewhere in the cathedral precinct. This is potentially supported by evidence for robbed-out flagstone floors identified in both Trench 7 and 8. A dark brown rubble fill (***705***), represented the backfill of the

construction cut for the drain. Immediately below drain ***706*** was a rubble demolition layer (***707***), probably nineteenth-century in date.

*Plate 5: East-facing view of Trench 7 showing the electrical cable in the foreground and drain **706** in the centre*

*Plate 6: South-east-facing view of drain **706***

3.1.8 Beneath the sequence of post-medieval levelling layers and structural features, was a 0.44m thick demolition layer comprising fragments of pink and red sandstone and mortar (***707***, ***709*** and ***710***: Plate 7). The earliest phase of demolition from the post-medieval period was observed in the centre of the trench with tentative cut ***724*** truncating the medieval deposits. ***724*** was infilled with deposit ***721***, a light grey-brown sandy silt, up to 0.33m, containing large stones. The fill also contained large quantities of stained and painted medieval glass (see *Section 4.9*), with similar material running under drain ***706***. In a similar vein to the ceramic floor tiles, this material most likely derives from the restoration of the Cathedral buildings some time during the eighteenth-century. While obviously not *in situ*, the glass fragments provide a valuable insight into the appearance of the earlier medieval structures. Contemporary with deposit ***707*** was a dark-brown sandy silt layer (***713***), up to 0.3m thick, which overlaid an earlier wall ***716*** (see *Section 3.1.11*). This deposit produced finds from both the medieval and post-medieval periods, including ***712***, a deposit of broken roof tiles (see *Section 4.10*) and a single left adult human ulna (see *Section 4.12*).

3.1.9 Below the post-medieval sequence outlined above, the first identifiable medieval deposit was represented by layer ***711***, comprising a compact mortar and broken stone tiles, up to 0.15m thick, its uppermost level occurring approximately at a depth of 0.55m bgl. The deposit produced several

fragments of molluscan shells (see *Section 4.11.18*). Deposit ***711*** has been interpreted as the remains of a series of disturbed floor structures and was found to butt up against ***718***, a mortar layer overlying cloister wall ***717***.

3.1.10 Beneath ***711*** was a fine lens of mid-orange sand forming bedding layer ***719***, possibly representing an *in situ* element of the medieval cloister walk, as fragments of red sandstone flags were found bedded on top of ***711*** butting against internal cloister wall ***717*** (Plate 8). This layer in turn overlay deposit ***720*** comprising a 0.06m thick compact degraded red sandstone. This sealed unexcavated dark brownish-black organic soil ***723*** which probably equates with deposits ***610*** and ***823*** in trenches 6 and 8 respectively.

*Plate 7: West-facing view of trench 7 showing demolition deposit **707***

*Plate 8: North-facing view showing sand levelling deposit **719** with the remains of sandstone flags on top of it butting against internal cloister wall **717** to the east. The section shows various deposits found within the trench and can be identified further on Figure 4*

3.1.11 In the east end of the trench, structure ***716*** potentially represented the foundations of the western cloistral range. The uppermost element of this structure was recorded at 0.75m bgl and ran on a north/south alignment. Wall ***716*** was constructed of large red sandstone blocks bonded by a white lime mortar. It had a minimum width of 0.65m, but extended beyond the eastern limit of excavation (Plate 9). One of the blocks had a circular hole cut into it, probably to house a small upright post. Towards the southern end of the trench, on top of wall ***716***, was a large square flagstone that may represent a pad stone for a former column base. To the west of and butting against ***716***, was structure ***717***, which ran on the same alignment. It was constructed of large fragments of sandstones forming the rubble foundations of an internal wall 0.45m thick.

*Plate 9: West-facing view of Trench 7 showing cloister wall **716** in the foreground with the padstone to the south. Wall **717** can be seen butting against **716**, with bedding layer **719** and fragments of flagstone floor butting against **717**. Organic medieval deposit **723** can be seen in the centre of the trench*

3.1.12 ***Trench 8 (Fig 5 and 6):*** positioned in front of the northern entrance to the Fratry against the stepped porchway (Plate 10) to investigate deeper stratigraphy in the location of the proposed lift shaft. The trench measured 3.4m by 2.85m with a depth of 1.2m bgl. A stepped sondage, measuring 2m by 1.3m, was excavated in the centre of the trench and attained a maximum depth of 1.7m bgl.

*Plate 10: East-facing view of Trench 8 showing location outside Fratry steps along with the cut for drain **815***

3.1.13 Beneath the modern flagstones, forming the footpath to the Fratry, and adjacent turf, was a fine sand deposit ***800*** overlying aggregate deposit ***801***, both forming levelling layers for the current ground surface. These in turn overlay various made ground deposits through which modern sewer drain ***815*** had been cut. The drain itself ran on an east/west alignment, with the top of the pipe situated at 1.6m bgl. It was infilled with deposit ***802/812***, a dark-brown compact sandy silt with frequent stone inclusions, including a discrete dump of large blocks (***813***), redeposited from an earlier structure that the pipe most likely disturbed.

3.1.14 Below the modern sequence lay a dark-brown sandy silt rubble deposit (***803***) representing a post-medieval made ground layer. This in turn overlay deposits ***827*** and ***809***, both very similar in nature to ***803*** and possibly forming part of the same levelling event. These deposits produced finds of ceramic glazed floor tiles, animal bone and ceramic building material (CBM) attributable to both the post-medieval and medieval periods (see *Section 4*). Below this post-medieval levelling horizon, a pink rubble post-medieval demolition layer (***810***) was observed in the northern half of the trench and would appear to equate with deposit ***707*** recorded in trench 7.

3.1.15 Other post-medieval features in Trench 7 relate to the construction of the nineteenth-century porchway attached to the north side of the Fratry. Cut ***804*** in the south-west corner of the trench was the construction cut associated with the Fratry porch wall, and was observed to have truncated made ground deposit ***803*** and deposit ***806***. It was backfilled with deposit ***805***. The relationship between this construction cut and drain ***815*** is not clear in section, however, it would seem that drain ***815*** truncated the backfill (***805***). Within deposit ***806***, three large sandstone blocks and a mortar deposit (***808***), formed part of structure on the south side of the trench running on an east/west orientation (Plate 11). The phasing of this structure is unclear, as it had been heavily truncated to the north by drain ***815*** and construction cut ***804*** to the

west. It is tentatively suggested that previously formed one of the steps leading up to the original section of the Fratry.

*Plate 11: South-facing view of Trench 8 showing construction cut **804** to the west side with structure **808** towards the east*

3.1.16 The first *in situ* evidence of medieval activity in Trench 8 was recorded as ***816***, a wide spread, pale brown-yellow sand lens, forming a putative bedding layer for a flagstone floor, of which structure ***811*** was all that remained of said floor surface (Plate 12). Beneath this layer was ***821***, a dark purple-brown sandy silt levelling layer with mortar fragments, only 0.05m thick, probably representing another bedding layer for a flagstone floor. This overlay a pale pink and white mortar (***822***), only 0.01m thick. This too probably represents a further bedding deposit for an earlier floor surface.

3.1.17 These bedding deposits in turn sealed a dark brownish-black organic soil (***823***), which was up to 0.53m thick, and contained medieval pottery and animal bone (Plate 13; see *Section 4*). This organic layer can probably be equated with similar deposits recorded in the other trenches (***610*** and ***723***, see *Section 3.1.4* and *3.1.10* respectively). Layer ***823*** was truncated by several features, pit ***819***, located in the south-east corner of the trench and ***826***, a possible robbed-out section of wall partially observed in the sondage section, was only partially excavated as it ran under the baulk. The pit was infilled with a mid-dark grey sandy silt deposit (***820***), 0.22m thick. Cut ***826*** was infilled with mid-brown sandy silt deposit (***824***), 0.25m thick, containing animal bone (see *Section 4.11*). These features, while truncating the organic layer, were also interpreted as medieval in origin.

3.1.18 The earliest deposits within Trench 8 were identified as contexts ***825*** and ***828***, located immediately beneath layer ***823***. They were most likely contemporary and of medieval origin. Deposit ***825*** was a black compact clayey silt layer with a minimum thickness of 0.1m and produced pottery and animal bone (see *Section 4*). Deposit ***828*** was unexcavated, but was recorded as a black charcoal-rich silty clay in the base of the south section of the sondage.

*Plate 12: East-facing view of Trench 8 with sondage, showing floor bedding layer **811** to the north, pit **819** in the top right corner and medieval deposit **823** in the base of the sondage*

*Plate 13: West-facing view showing medieval deposit **823** underneath bedding layer **816** and truncated by drain **815** to the south*

3.2 THE STRATIGRAPHIC ARCHIVE

3.2.1 ***Quantification of the Stratigraphic archive:*** the documentation pertaining to the evaluation was quantified and assessed (Table 1).

Context sheets	64
Drawings	26
Digital images	337
Environmental sample records	3

Table 1: Quantification of the archive of stratigraphic records

3.2.2 ***Assessment:*** the archive of primary fieldwork data is a comprehensive record of the stratigraphic information recovered, with significant remains of archaeological interest having been recorded graphically, textually, and photographically. As such, it provides the analytical basis for an understanding of the sequence of historical events that took place on the site, and a flexible framework within which the analysis of the other forms of data could take place. The fieldwork has enabled a basic characterisation of the features and deposits within the areas investigated, which, on the basis of historical documentation, previous studies, stratigraphic relationships and artefact assemblages, have been allocated to the medieval and post-medieval periods.

3.2.3 ***Potential:*** the fieldwork has undoubtedly provided stratigraphic information that is of significance to the present development, which is the primary focus of the investigation, but, in addition, it has provided some appreciation of the shallower deposits north of the Fratry. However, despite the quality of the record, the stratigraphic archive pertaining to the evaluation alone has little potential for more detailed analysis. For instance, it has been possible to interpret deposits, and sometimes to equate them tentatively, and thereby to gain some understanding of the localised stratigraphic sequence. However, it is difficult, and perhaps ill-advised, to attempt to frame a wider picture from the results revealed by three small trenches in the cloistral range. Many of the deposits encountered can only be fully understood if they were to be exposed across a wider area, and the main potential of the stratigraphic sequence from the evaluation lies with the manner in which it can inform, and be integrated with previous and more extensive excavation in the future.

4. THE FINDS AND PALAEOENVIRONMENTAL REMAINS

4.1 OVERVIEW

4.1.1 ***Quantification:*** in total, 4068 fragments of artefacts and ecofacts were recovered from the three trenches investigated (Table 2). The first numeral of each context number relates to the trench within which it was recorded. The bone includes, human, faunal, and fish remains.

Trench	Context	Pottery	Ctp	Cbm	Cu alloy	Iron	Glass	Lead	Stone	Ind debis	Mollusc	Bone	*Total*
6	***602***	7	0	0	0	0	1	0	0	0	1	2	***11***
	603	2	0	0	0	0	0	0	0	0	0	4	***6***
	604	0	0	0	2	0	2	0	0	0	0	8	***12***
	605	0	0	0	0	0	0	0	1	0	1	15	***17***
	606	1	0	0	0	0	2	0	0	0	0	31	***34***
	608	0	0	0	0	0	0	0	0	0	4	70	***74***
	609	0	0	0	0	0	0	0	0	0	0	5	***5***
	610	14	0	0	2	4	0	0	0	0	0	128	***148***
	611	0	0	0	0	0	0	0	0	0	0	5	***5***
7	***700***	5	1	0	0	0	1	0	0	0	0	3	***10***
	701	7	3	0	0	1	0	0	0	0	0	1	***12***
	702	9	2	0	0	0	0	0	0	0	4	45	***60***
	703	20	3	43	1	3	2	1	5	0	26	260	***364***
	707	1	0	0	0	0	1	0	0	0	0	0	***2***
	711	0	0	0	0	0	0	0	0	0	5	4	***9***
	712	0	0	0	0	0	0	0	20	0	0	0	***20***
	713	0	0	0	0	1	0	1	0	0	74	76	***152***
	714	0	1	0	0	0	0	0	0	0	0	4	***5***
	716	1	0	0	0	1	0	0	0	0	58	23	***83***
	718	1	0	0	0	0	0	0	0	0	0	0	***1***
	720	0	0	0	0	0	0	0	0	0	0	6	***6***
	721	0	0	0	0	0	2300	10	0	0	0	0	***2310***
	723	0	0	0	0	0	0	0	0	0	0	116	***116***
8	***800***	1	0	0	0	0	0	0	0	0	0	0	***1***
	802	8	2	1	0	3	2	1	3	1	0	31	***52***
	803	1	1	51	0	0	0	0	0	0	0	8	***61***
	805	1	3	0	0	9	1	0	0	0	18	17	***49***
	806	0	0	0	0	0	0	0	0	0	0	8	***8***
	809	1	0	1	0	0	0	0	0	0	6	22	***30***
	816	1	0	0	0	3	0	0	0	0	4	66	***74***
	821	0	0	0	0	0	0	0	0	0	0	209	***209***
	822	0	0	0	0	0	0	0	0	0	0	6	***6***
	823	1	0	16	0	0	0	0	0	0	0	73	***90***
	824	0	0	0	0	0	0	0	0	0	0	4	***4***
	825	0	0	0	0	2	0	0	0	0	0	12	***14***
Unstrat		4	0	4	0	0	0	0	0	0	0	0	***8***
Totals		***86***	***16***	***116***	***5***	***27***	***2312***	***13***	***29***	***1***	***201***	***1262***	***4068***

Notes: Ctp = clay tobacco pipe; cbm = ceramic building material; cu alloy = copper alloy; ind debris = indeterminate debris

Table 2: Distribution of finds, by context and material, from the three evaluation trenches around the Fratry

4.2 POTTERY

4.2.1 ***Overview of the pottery:*** in all, 86 fragments of pottery, weighing 1.13kg, were recovered, ranging in date from the first or second-century AD to the nineteenth-century. All were in relatively good condition, with little abrasion, but on occasion, the fragments were somewhat small. The entire group was examined visually, and a preliminary fabric series established, with fabrics recorded by fabric and weight.

4.2.2 ***Roman pottery assessment:*** 16 fragments of Romano-British pottery were recovered, weighing 318g, and giving an average sherd weight of 19.9g. Roman pottery was recovered from all three trenches. Their distribution, and a broad categorisation by fabric, is shown below in Table 3. The one fragment of samian (from ***805***) cannot be identified to form, but the very hard fabric and its obvious conchoidal fracture, suggests a South Gaulish origin, which would, in Carlisle, probably date it to the mid-late first-century AD. Greyware from the site is largely undiagnostic, but rim forms suggest a broadly second/third-century date, as do the two small fragments of Black Burnished ware 1, on the basis of the angle of their lattice burnish. There is no oxidised ware amongst the group, but the significance of this in such a small group is unclear. There is, however, an appreciable fourth-century presence, with a Huntcliff-type rim, dating *c* AD 360-410, from ***701***, where it was found in association with a Crambeck greyware jar of Gillam (1970) form 41, dated *c* 320 – 400 AD. Other Crambeck vessels come from ***610*** and ***803***, the former being a flanged bowl in Parchment ware (see for instance Gillam (1970) form 208, dated *c* 370 – 400 AD). A sherd of Oxford-type mortarium, of broadly similar date, was found unstratified.

Context	Samian	Greyware	Oxidised ware	BB1	Huntcliff ware	Crambeck	Mortarium	*Totals*
610	0	5	0	2	0	1	0	***8***
701	0	2	0	0	1	1	0	***4***
702	0	1	0	0	0	0	0	***1***
803	0	0	0	0	0	1	0	***1***
805	1	0	0	0	0	0	0	***1***
Unstrat	0	0	0	0	0	0	1	***1***
Totals	***1***	***8***	***0***	***2***	***1***	***3***	***1***	***16***

Notes: BB1 = Black Burnished ware fabric 1

Table 3: Distribution of Romano-British pottery

4.2.3 *Potential*: the few datable Romano-British vessels were recovered from entirely post-medieval deposits and are therefore residual. With this said, they will contribute to an understanding of the stratigraphic succession and levels of disturbance seen in individual stratigraphic units, but the assemblage is otherwise too small to make any contribution to the understanding of the site.

4.2.4 ***Medieval pottery assessment:*** some 42 fragments of medieval pottery, weighing 651g were recovered, giving an average sherd weight of 15.5g. Their distribution is shown below in Table 4. Medieval pottery was recovered from all three trenches, but appreciably less came from Trench 6, than the others. This small group is singularly devoid of rims or other chronologically

sensitive sherds, so that dating at this stage is entirely dependent on the presence of specific fabrics. Hard Red Gritty wares are, in Carlisle, the dominant fabric of the twelfth and thirteenth-centuries (McCarthy and Brooks 1992), and their presence here makes it clear that there was, not unexpectedly, activity on the site at that time. Over the thirteenth-century these Red Gritty wares are superseded by Partially Reduced Grey wares, until the latter become dominant in later thirteenth and fourteenth-century assemblages, being replaced ultimately by Late Medieval Reduced Grey ware, which has its *floruit* in the fifteenth and sixteenth-centuries (*ibid*). All three major fabric groups are present in this small assemblage, implying some depositional activity throughout the medieval period, although it must be noted that many of the contexts producing medieval pottery were also producing both earlier and later material, indicating considerable disturbance.

Context	Red gritty ware	Partially reduced Grey ware	Late Medieval Reduced grey ware	*Total*
610	6	0	0	***6***
700	0	0	1	***1***
701	1	0	0	***1***
702	1	0	2	***3***
703	3	4	13	***20***
716	0	0	1	***1***
718	0	1	0	***1***
802	2	0	1	***3***
809	0	0	1	***1***
816	0	0	1	***1***
823	1	0	0	***1***
Unstrat	0	3	0	***3***
Totals	***14***	***8***	***20***	***42***

Table 4: Distribution of medieval pottery

4.2.5 *Potential:* the datable fabrics will contribute to an understanding of the stratigraphic succession and levels of disturbance seen in individual stratigraphic units, but the assemblage is otherwise too small to make any significant contribution to the understanding of the site. In view of the patchy nature of publication of medieval pottery in the city, however, a summary report should be prepared for inclusion in any publication.

4.2.6 ***Post-medieval and Modern pottery assessment:*** only 28 fragments (weighing 161g; average sherd weight 5.75g) fall into this date-range, the overwhelming majority of them being of late eighteenth-century or nineteenth-century date. Their general distribution is shown in Table 5. Late pottery came from all three trenches excavated. The assemblage is very fragmentary and there are few chronologically sensitive fabrics or forms present. Later seventeenth and earlier eighteenth-century fabrics are missing, the earliest fabric noted being a small fragment of slip-decorated ware, probably dating to the mid-late eighteenth-century, and several fragments of Creamware, popular in the late eighteenth and early nineteenth-centuries, and one of Black Basaltes, popular over the same date range. Without indication of the forms present, Black and Self-glazed redwares are difficult to date, but the high, metallic glaze seen on several fragments might suggest an eighteenth-century origin. The remainder of the material can be placed in the later nineteenth or early twentieth-century.

Context	Slip decorated ware	Creamware	Redwares	Refined white earthenwares	Other late wares	Total
602	0	4	2	0	1	7
603	0	0	2	0	0	***2***
606	0	0	0	0	1	***1***
700	0	2	1	1	0	***4***
701	0	0	0	2	0	***2***
702	1	1	3	0	0	***5***
707	0	0	0	0	1	***1***
800	0	0	0	1	0	***1***
802	0	1	1	0	3	***5***
Totals	***1***	***8***	***9***	***4***	***6***	***28***

Table 5: Distribution of post-medieval and later pottery

4.2.7 *Potential:* the group lacks precisely datable vessels and can thus contribute little to any understanding of the stratigraphic succession. It can indicate the levels of disturbance seen in individual stratigraphic units, but the assemblage is too small to make any further contribution to the understanding of the site.

4.3 CLAY TOBACCO PIPE

4.3.1 *Assessment*: there are only 16 small fragments of clay tobacco pipe. Although in good condition, all are featureless stem pieces, lacking stamps or decorative detail which might provide dating.

4.3.2 *Potential*: such chronologically undiagnostic fragments can contribute little to the dating or interpretation of the deposits from which they were recovered, and the assemblage is too small to make any contribution to the understanding of the site.

4.4 STONE

4.4.1 *Assessment*: the stone assemblage (29 fragments) comprises, almost entirely, small featureless fragments of building stone, all, as might be expected given the local geology, being hard red sandstone. There is, in addition, a single small fragment of stone roof tile.

4.4.2 *Potential*: the assemblage can make no further contribution to the understanding of the site.

4.5 COPPER ALLOY (INCLUDING COINS)

4.5.1 *Assessment*: there are only four fragments of copper alloy, all from Trench 6. Two are coins (from contexts ***604*** and ***610***), the others being a tiny fragment of a post-medieval dress pin and what is probably an aglet or lace chape of similar date. The coins cannot be dated at this stage, but the irregularity of Sf 2094, from context ***610***, suggests it to be Roman.

4.5.2 *Potential*: the assemblage is too small to make any significant contribution to the understanding of the site, beyond any dating evidence derived from the coins.

4.6 IRONWORK

4.6.1 *Assessment*: there are only 27 fragments of ironwork. They are in sufficiently good condition to be recognisable without x-radiography. All but two are nails, all probably hand-forged, and thus cannot be dated with any precision, the form remaining largely unchanged from the Roman period to the nineteenth-century. Two contexts (***805*** and rubble ***701***) produced larger wall-spikes, again likely to be used structurally within a building.

4.6.2 *Potential*: the assemblage is too small to make any significant contribution to the understanding of the site, but the presence of ironwork should be mentioned in any future publication.

4.7 LEAD

4.7.1 *Assessment*: there are few lead artefacts, all but one of them being medieval-type cast window kame, and all but one from Trench 7. The remaining fragment is thin (probably cast) sheet. As all of the kame fragments are broken and twisted, it can be assumed that they had been recovered from earlier glazed panels, for recycling, when they were repaired or replaced.

4.7.2 *Potential*: considered alone, the assemblage is too small to make any significant contribution to the understanding of the site, but the window kame must be considered in conjunction with medieval window glass and will add to information on the dating and appearance of the medieval structures and their glazing.

4.8 VESSEL GLASS

4.8.1 *Assessment*: there are only 15 fragments of poorly preserved vessel glass, all from dark olive green bottles in the 'English bottle' tradition and probably dating to the eighteenth-century.

4.8.2 *Potential*: the assemblage of vessel glass is too small and too undiagnostic to make any contribution to the understanding of the site.

4.9 WINDOW GLASS

4.9.1 *Assessment*: there are more than 2300 fragments of medieval and late medieval/early post-medieval window glass, coming principally from deposit ***721*** in Trench 7. There are, in addition, two small fragments of colourless modern window glass, from contexts ***703*** and ***802***.

4.9.2 The medieval glass can be divided into two groups; thick (*c* 4mm) painted and/or coloured glass, probably of around fourteenth-century date (on stylistic grounds); thinner greenish-colourless 'Forest' glass, probably muff-blown, and usually unpainted, with a tendency, on preliminary investigation, to be cut into lozenge-shaped quarries, which can be dated to the late medieval period and the early post-medieval, spanning a period from the fourteenth to the seventeenth-centuries. The medieval and late medieval/early post-medieval material were found together, mixed with mortar and other building debris, in a relatively large 'dump' suggesting it to have been the debris cleared from an episode of repair or re-glazing of windows within the cathedral complex. The quality and nature of the painted glass suggests that it has come from the church or another important ecclesiastical structure within the medieval priory complex, which is most likely to have been the Chapter House, as these are the two most likely to have had highly coloured decorative, and possibly figurative lights. Two events might, therefore, have generated the dump. One is the demolition of the Chapter House in the seventeenth-century (Billings 1840), although in the absence of seventeenth-century pottery, this seems unlikely. Otherwise, the glass in the tracery of the east window was repaired and partially replaced in 1856, and lower parts of the east window, described as in poor condition in the mid-nineteenth-century, had been replaced, mainly with modern glass, by 1861 (Smith 1996), and this might offer an obvious genesis for the deposit. Alternatively, the restorations undertaken by Bishop Charles Lyttelton's in 1764-9, may offer a further genesis, given he replaced the lower section of the east window, among many other alterations (David Weston pers com). The lack of lead kame makes it clear that the quarries had been systematically removed from their lead frames, with the lead collected and individual strips twisted together, presumably intended for recycling. In this case it can be asserted with confidence, that the glass does not represent an intact window light.

4.9.3 The difficulties associated with the continued survival of medieval window glass following its removal from its place of deposition have meant that, as yet, the assemblage has not been examined in any close detail. A small sample has, however, been cleaned and conserved, to assess its quality and its potential for full recording and possible subsequent display. The bulk of the material remains, at this point, unwashed, kept damp and dark, as recommended by conservators, in order to minimise lamination and shattering, both common problems with archaeological glass. Comments below are, therefore, based partly on subjective estimation, and the results of preliminary conservation.

4.9.4 Many of the medieval fragments preserve part of at least one original grozed edge, and a number (perhaps in excess of 100) are effectively complete quarries, with rectangular, square, lozenge-shaped and polygonal elements noted. The nature and size of the surviving fragments varies considerably, but all fall within a range from *c* 10mm x 10mm to *c* 120mm x 50mm. At least 50% retains obvious signs of being painted, and it would seem, even at this early stage, that there is some potential for reconstructing broken or incomplete quarries. Most of the glass is relatively thick, and whilst most is mineralised to an almost opaque black, some survives well enough for its

original colour to be determined. Much of the group is colourless or slightly greenish, but there are also fragments of a mid-blue, dark green, and cased ruby. Some of the fragments have clearly been painted with silver stain in order to give a range of yellows and oranges, a technique developed in the first decade of the fourteenth-century (Archer 1985).

4.9.5 Much of the painted glass bears naturalistic foliage, painted on colourless (Plate 14), green, or blue glass, and no doubt most would have derived from 'grisaille'-type schemes, intended to allow more light into a building than more highly coloured panels. To this end, grisaille was also a cheaper option for glazing (Howard-Davis 2008), and more widely used within the monastic buildings than richly-coloured figurative or heraldic panels, which are more likely to have been used in the church itself and in the Chapter House.

Plate 14: Colourless glass painted in the naturalistic style typical of the fourteenth century, and possibly from a grisaille panel or the grisaille ground for a figurative panel

4.9.6 There is, no doubt, evidence for figurative panels, as a number of fragments show small architectural elements, which would, by the mid-fourteenth-century, have been used extensively to frame more detailed figures (Plate 15).

Plate 15: Colourless fragment heavily painted in silver stain, which appears to depict architectural tracery, perhaps intended to frame a figure

4.9.7 Two fragments stand out, one, is an appreciable element of a flaming wheel, the emblem of St Katharine (Plate 16) whose cult, introduced into England in the eleventh-century (Walsh 2007) was particularly popular in the fourteenth-century (Lewis 2000, Morgan nd), the other part of a mailed limb (Plate 17). In this context, it is highly relevant that a chantry chapel dedicated to St. Katherine in the Cathedral from *c* 1342.

Plate 16: A flaming wheel, the emblem of St Katherine, painted on colourless glass with silver stain

Plate 17: Colourless fragment bearing painted chain mail

4.9.8 Stylistically, the glass would appear to be of approximately mid-fourteenth-century date, reflecting the date of the east window of the cathedral church. There is a marked lack of the 'stiff-leaf' foliage and cross-hatched backgrounds typical of earlier glass painting (Crewe 1987) and the naturalistic style of the foliage finds easy parallels with that seen in the east window, and in other fragments remounted in the north aisle of the cathedral in 1925 (Smith 1996), and elsewhere (see, for instance, the side windows of Merton College chapel, dated to the last years of the thirteenth-century (Crewe 1987, fig 9). In addition, the late thirteenth-century had seen the increasing introduction of architectural elements within window designs (*ibid*), and several quarries depicting arcading, or similar architectural elements are present within the assemblage.

4.9.9 *Potential*: the medieval and late medieval/early post-medieval window glass is of local and regional importance, and will require extensive conservation if it is to survive. It has considerable potential to contribute to an understanding of the appearance of buildings on the site dating to the fourteenth-century re-glazing of the cathedral church, exemplified today by the east window. It also has potential for further understanding the design and iconography of figurative glass in the North of England, and a brief literature search finds parallels in York (pre-eminent as a source of painted glass in the fourteenth-century (Howard-Davis 2008) and other northern churches, for instance Beverley (Graves 1996). As an Augustinian House, Carlisle was presumably influenced by other houses of the Order, and appropriate parallels should be sought, for instance at Norton Priory in Cheshire (Brown and Howard-Davis 2008).

4.10 CERAMIC BUILDING MATERIAL

4.10.1 *Assessment:* in all 116 fragments of ceramic building material, weighing 65.327kg were recovered, all but five of them (923g) being medieval floor tiles, identical to those recovered in 2012 by OA North (2013). There are, in addition, two small fragments of green-glazed roof tile (76g). Three further fragments, two of them joining, are from a box tile of possible Roman date, and reflect underlying Roman deposits, which can be encountered within the

area, and are implied by the amount of Roman pottery recovered (*ibid*). Most of the tile comes from three contexts: ***703*** in Trench 7, ***803*** and ***823*** in Trench 8.

4.10.2 The tiles, undoubtedly of medieval date, are unusually large for decorative floor tiles (surviving complete sides are *c* 220mm, and all fragments are around 50mm thick), with a very coarse fabric, and very poorly made. They are, in addition, very badly worn, to the extent that glaze only survives within the lines of the incised decoration, or on the sides (Plate 18). This can be contrasted with much finer, smaller (133mm square and 25mm thick) and less worn medieval glazed tiles recovered from the floor of the Chapter House, the design of which occurs also at Holm Cultram Abbey (David Weston pers com). All are lead-glazed, making them brownish-green, and there is no sign of an underlying slip which might have been used to modify their colour. All have incised geometric compass-drawn patterns, rather than being of the more conventional line-impressed type, and find no exact parallels in Stopford's corpus (2005), although her résumé of tiles from Carlisle (from the Cathedral, Scotch Street, and Annetwell Street) includes examples decorated freehand, or with a compass, to which these are presumably related. She also notes examples of significantly thicker tiles from Shap Abbey. The dimensions of these, approximately 220mm square and 55mm thick, are closely comparable to examples from the Fratry, and they bear similar, but not identical, decoration (*op cit*, fig 25.1 no 32.1) to the examples from the Fratry. The examples listed by Stopford (2005, 256) remain undated.

*Plate 18: Floor tile from context **703**, showing the extent of wear*

4.10.3 *Potential*: the assemblage of medieval tiles, which adds to the small group recovered in 2012, is of importance in illustrating the internal decoration of the monastic complex at Carlisle, and in illustrating possible links between Carlisle and other monastic establishments in the county, most obviously Shap Abbey, where similar tiles have been noted. It seems unlikely that the tiles will be dated with any more precision, but nonetheless the group is clearly medieval.

4.11 FAUNAL REMAINS

4.11.1 ***Animal Bone assessment:*** an assemblage of domesticated and wild fauna was recovered through hand collection and wet sieved samples. A proportion of the hand-collected and sampled material originates from medieval dark organic sediments and includes well preserved material. The assemblage demonstrates good potential for the preservation of medieval and post-medieval faunal remains at this site.

4.11.2 *Recovery:* the majority of the faunal remains were hand-collected, but medieval deposits were sampled and produced additional remains. Ten litres from each of the (40L bulk) sampled contexts has been processed for this assessment. Environmental remains, including bone fragments, were extracted from both residues and flots. For more details with regard to sampling please see the palaeoenvironmental section below (*Section 4.13*).

4.11.3 *Provenance:* the faunal assemblage was recovered from 27 contexts distributed among all three trenches. One of the largest hand-recovered groups derived from a post-medieval dark brown firm sandy-silt rubble deposit ***703***. Post-medieval contexts ***608***, a dark-brown black soft organic deposit, and ***713***, a dark-brown sandy-silt deposit containing broken roof tiles, also produced significant numbers of bone fragments. A small proportion of the assemblage came from medieval or late medieval contexts, including from dark organic fills ***610***, ***723***, and ***823***.

4.11.4 *Phasing and approximate date range:* seventy-eight percent of the hand collected bones are from post-medieval contexts and seventeen percent are from medieval contexts (Tables 8 and 9). The remaining small group of material awaits further phasing work, but includes groups from possible Roman/medieval, possible medieval, possible late medieval, and modern contexts. Thirty-two unstratified bones have been excluded from the totals shown in the tables.

4.11.5 *Assessment methods:* mammalian bones were recorded as "countable" if they included zones from the skeletal elements listed by Serjeantson (2006) and for birds' countable bones are those illustrated by Cohen and Serjeantson (1996). Tooth rows were recorded as such if two or more premolars or molars were present. Material was rapidly grouped and numbers of recordable elements, of tooth rows, and of recordable fusion states were noted. Approximate states of preservation were recorded in a manner that corresponds to that undertaken in previous work (OA North 2013) and some notes have been made regarding butchery, carnivore and rodent gnawing, and recent damage. Numbers of potential measurements are based on von den Driesch (1976) and potential epiphyseal fusion data and tooth wear age data has been estimated amongst the principal taxa (Baker and Worley 2014a). The bulk of the assessment data relates to hand-collected material (Tables 6-9), but semi-quantitative data was gathered from the sampled/sieved material (Tables 10 and 11). In Table 6 the vernacular "horse" is used (as well as "*Equus*") although no determination of species is claimed amongst the Equids.

4.11.6 *Hand-collected range of species:* amongst the hand-collected remains identified to species and considered countable are dominated by the remains of cattle, sheep/goat, and pig (Table 6). Cattle and sheep sized remains make up a large proportion of the assemblage. Other common domesticates and a small number of deer and wild mammal, bird, and amphibian specimens are present.

Taxa	Frags	Mammal countable	Bird countable	Mandibular toothrows	Maxillary toothrows	Ageable (Fusion)	Measurable
Mammal							
Cattle	74	60	0	0	0	25	12
Large mammal	353	23	0	0	0	0	0
Red deer	3	1	0	0	0	0	0
cf red deer	1	0	0	0	0	0	0
Fallow deer	1	1	0	0	0	1	1
Sheep/goat	63	56	0	2	2	21	16
Medium mammal	129	48	0	0	0	1	0
Pig	17	14	0	0	1	4	1
Horse	1	1	0	0	0	1	1
Dog	1	1	0	0	0	1	0
Mammal	56	1	0	0	0	0	0
Small mammal	1	1	0	0	0	1	0
Bird							
Duck	1	0	1	0	0	1	0
Fowl (*cf* Gallus gallus)	6	0	6	0	0	2	2
Gull/wader	1	0	1	0	0	0	0
Wader sp	2	0	2	0	0	0	0
Songbird	3	0	3	0	0	4	2
Bird	16	0	4	0	0	3	1
Amphibian							
Amphibian	1	0	0	0	0	0	0
Unidentified							
Small vertebrate	2	0	0	0	0	0	0
Unidentified	8	0	0	0	0	0	0
Grand Total	**740**	**207**	**17**	**2**	**3**	**65**	**36**

Table 6: Quantification of the hand-collected assemblage by faunal group, "countable" mammal and bird specimens (Serjeantson 2006; Cohen and Serjeantson 1996) and mandibular and post-cranial age related and measurement data (table based on Baker and Worley 2014a)

4.11.7 *Sampled range of species:* the samples produced relatively few identifications of large or medium-sized mammals, although a few definite cattle and pig teeth, and one small butchered probable sheep/goat vertebral part are present. One of the teeth is a cattle deciduous fourth premolar and domestic fowl (cf *Gallus gallus*), frog (*Rana cf temporaria*), and rodent remains are also present from the dark organic fills.

4.11.8 *Preservation amongst the hand-collected bones:* the majority of the bone assemblage is judged to be in a good or moderate state (Table 7). Surface preservation amongst the material judged "Good" allows the recognition of fine cut marks and comprises the majority (Table 7). The state "Very poor" corresponds approximately to "SHOT" as used by Stallibrass in Carlisle and described in Stallibrass (1993, 14). The majority of the material is judged to be in a relatively stable and robust state. Some delicate, either flaking or

fragmenting specimens are present, but overall the assemblage is relatively well preserved as compared to many from the north-west of England.

Context	Very good	Good	Moderate	Poor	Very poor
602	0	1	0	1	0
603	0	0	4	0	0
604	0	0	4	1	3
605	0	1	14	0	0
606	0	0	28	0	0
608	2	22	29	6	0
609	0	3	2	0	0
610	0	11	16	18	16
611	0	5	0	0	0
700	0	3	0	0	0
701	0	0	1	0	0
702	0	8	33	4	0
703	3	188	50	18	0
711	0	1	0	3	0
713	0	28	38	9	0
714	0	1	3	0	0
716	0	6	13	4	0
723	0	5	3	0	0
802	1	12	15	2	0
803	0	7	1	0	0
805	0	9	7	0	0
806	2	4	2	0	0
809	5	14	0	1	1
816	0	4	0	0	0
821	0	3	4	0	0
822	0	6	0	0	0
823	0	8	3	4	0
824	1	3	0	0	0
825	0	8	0	4	0
Total	**14**	**361**	**270**	**75**	**20**

Table 7: State of preservation of the hand-collected faunal assemblage by context (Very good to Very poor). States of preservation recorded to correlate with work undertaken previously on the site (OA North 2013)

4.11.9 *Preservation amongst the sampled bones:* the sampled fragments vary from spongy indeterminate mammal fragments (the majority amongst the "less than 2mm" fragments) to well preserved small complete bones. There is one large long bone shaft fragment (108.5mm in length), but a majority of fragments are of 10mm or less. There are both occasional well preserved small vertebrate elements and frequent poorly preserved fragments that derive from medium (sheep size) and large (cattle size) mammals.

Period/Taxa	Trench 6	Trench 7	Trench 8	Grand Total
Roman/medieval? Totals	**0**	**0**	**12**	**12**
Cattle	0	0	4	4
Large mammal	0	0	4	4
Medium mammal	0	0	2	2
Pig	0	0	2	2
Medieval Totals	**66**	**31**	**32**	**129**
Cattle	5	1	2	8
Large mammal	33	8	8	49
Sheep/goat	5	1	2	8
Medium mammal	7	10	14	31
Pig	2	3	0	5
Mammal	9	0	4	13
Small mammal	0	1	0	1
Bird	0	6	2	8
Unidentified	5	1	0	6
Medieval? Totals	**0**	**4**	**4**	**8**
Cattle	0	1	1	2
cf red deer	0	0	1	1
Large mammal	0	3	2	5
Late medieval? Totals	**0**	**0**	**8**	**8**
Large mammal	0	0	4	4
Sheep/goat	0	0	1	1
Medium mammal	0	0	3	3
Post-medieval Totals	**119**	**383**	**75**	**577**
Cattle	5	42	11	58
Large mammal	27	236	28	291
Sheep/goat	11	29	13	53
Medium mammal	48	33	10	91
Pig	0	9	1	10
Red deer	3	0	0	3
Fallow deer	0	1	0	1
Horse	0	1	0	1
Dog	0	0	1	1
Mammal	18	16	8	42
Duck	0	1	0	1
Wader sp	2	0	0	2
Gull/wader	1	0	0	1
Fowl (*cf Gallus gallus*)	2	3	1	6
Songbird	0	3	0	3
Bird	0	8	0	8
Amphibian	1	0	0	1
Small vertebrate	1	0	1	2
unidentified	0	1	1	2
Modern Totals	**2**	**4**	**0**	**6**
Cattle	0	2	0	2
Sheep/goat	0	1	0	1
Medium mammal	1	1	0	2
Mammal	1	0	0	1
Grand Total	**187**	**422**	**131**	**740**

Table 8: Hand-collected fragment numbers by Species/Trench/Period

Context	Cattle	Large mammal	Sheep/goat	Medium mammal	Pig	Red deer	*cf* red deer	Fallow deer	Horse	Dog	Mammal	Small mammal	Duck	Fowl (*cf Gallus*)	Wader sp	Gull/wader	Songbird	Bird	Amphibian	Small vertebrate	Unidentified	**Grand Total**
602	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**2**
603	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
604	0	2	3	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	**8**
605	0	1	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	**15**
606	0	10	0	3	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	**28**
608	5	11	8	28	0	0	0	0	0	0	1	0	0	2	2	1	0	0	1	0	0	**59**
609	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**5**
610	5	33	5	7	2	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	**61**
611	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	**5**
700	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
701	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
702	2	29	7	4	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	**45**
703	32	167	14	17	5	0	0	0	0	0	13	0	1	3	0	0	1	6	0	0	0	**259**
711	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
713	8	40	7	12	3	0	0	1	1	0	0	0	0	0	0	0	2	1	0	0	0	**75**
714	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	**4**
716	0	8	0	10	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	1	**23**
723	1	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	**8**
802	2	10	9	4	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	**30**
803	0	5	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**8**
805	2	3	2	4	0	0	0	0	0	1	2	0	0	1	0	0	0	0	0	1	0	**16**
806	0	4	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**8**
809	7	10	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**21**
816	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
821	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**7**
822	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	**6**
823	2	8	0	1	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	**15**
824	1	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
825	4	4	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**12**
Grand Total	**74**	**353**	**63**	**129**	**17**	**3**	**1**	**1**	**1**	**1**	**56**	**1**	**1**	**6**	**2**	**1**	**3**	**16**	**1**	**2**	**8**	**740**

Table 9: Hand-collected faunal remains, fragment count by context

Trench/context							**Grand Total**
Sample	**6001**	**7001**	**7002**	**8001**	**8002**	**8003**	
Trench 6	60	0	0	0	0	0	**60**
610	60	0	0	0	0	0	**60**
Trench 7	0	6	85	0	0	0	**91**
720	0	6	0	0	0	0	**6**
723	0	0	85	0	0	0	**85**
Trench 8	0	0	0	52	145	56	**253**
816	0	0	0	52	0	0	**52**
821	0	0	0	0	145	0	**145**
823	0	0	0	0	0	56	**56**
Grand Total	**60**	**6**	**85**	**52**	**145**	**56**	**404**

Table 10: Sampled material, approximate fragment counts by trench, sample number and context number

Taxa/sample	**Medieval**
Cattle total	1
8002	1
Large mammal total	1
8003	1
Medium mammal total	1
8002	1
Pig total	1
8002	1
Mammal total	194
6001	46
7001	4
7002	44
8001	9
8002	40
8003	51
Rodent (*Rattus/Arvicola*) total	1
8003	1
Rodent total	2
8003	2
Small mammal total	20
6001	3
7002	6
8001	9
8002	2
Domestic fowl (cf *Gallus*)	1
7002	1
Bird total	14
7002	11
8001	3
Frog (*Rana* sp) total	1
8001	1
Unidentified total	167
6001	11
7001	2
7002	23
8001	30
8002	100
8003	1
Grand Total	**404**

Table 11: Sampled (all Medieval) material by taxa and sample number

4.11.10 *Discussion:* the presence of a variety of wild birds, deer, calf, and fish (see *Section 4.11.15*) amongst this material are of interest, in that, although a small sample, the species profile arguably may suggest some waste disposal from a high status residence (or may indicate an ecclesiastical origin). Whilst this possibility might seem unsurprising, a key factor regarding the potential of the present assemblage is the degree of disturbance of deposits and residuality amongst the finds. It is important to note that many of the contexts that produced hand-collected bones are either disturbed or consist of levelling and rubble layers or deposits where redeposition may have occurred. Whilst this is clearly a problem, redeposition may often result in little "sideways" movement (Stallibrass pers comm *circa* 2005) and thus a distinctive species spectrum (as we appear to have here) may be preserved within an area (such as the Fratry). It is of interest that a notably wide and similar range of species was described from a post-excavation assessment of faunal remains from recent associated/nearby excavations at the Cathedral (OA North 2013).

4.11.11 *Comparanda*: The timing of the recovery of this Cathedral faunal group might be considered fortunate, since it coincides with work currently being undertaken on the post-Roman Lanes site, also located in Carlisle. Since butchery methods and stock size are important aspects of the latter work any well-dated groups from the Cathedral with butchery evidence and useful metrical data could constitute valuable comparative data. Evidence for relatively modern and recent butchery methods are included amongst the evidence that may be useful since, for instance, the widespread adoption of methods of jointing with saws (for which there is evidence in the Cathedral assemblage) amongst butchers is poorly understood. Dark organic fill ***610*** for instance produced both a worked cattle metatarsal (a typical choice of "blank" for bone working) and a sheep/goat humerus that has been sawn. Sheep/goat humeri are rarely chosen as blanks and, instead, this may well be butchery/jointing. The potential medieval date of this context is of interest, since the dating of the appearance of butchery with saws in the north-west of England is not clear. Certainly, if large well-stratified groups from the Cathedral were recovered these could ultimately be contrasted with contemporary and probable social and economic polar opposites from The Lanes.

4.11.12 *Recent material:* a small amount of material from modern contexts has not been excluded from the assessment since some of it too is sawn and the recognition of distinctions between this and the post-medieval sawing/jointing is considered important.

4.11.13 *Potential of the hand-collected assemblage:* this assemblage is instructive in highlighting relatively good potential for preservation of bones amongst various dark organic deposits of postulated medieval and post-medieval date. The species range in the small group suggests the possibility that a distinctive faunal spectrum, possibly relating to the clergy, might be revealed by any subsequent excavations. In isolation, the potential of the assemblage is small, but this potential would be enhanced by consideration of the approximately similarly-sized assemblage recovered in recent excavations on this site (OA

North 2013), in addition to the recovery of any further material during any subsequent work.

4.11.14 *Potential of the sampled material:* A small number of bones identified to Genus level will be identifiable to species. Beyond this, there is relatively little scope for robust identifications in the sampled material. However, the surface preservation amongst the more complete elements is good and this is encouraging with regard to the possibility of further excavation and recovery of further samples.

4.11.15 ***Fish remains assessment:*** a very small assemblage of fish remains was recovered by hand and from the sorted residues of sieved soil samples. The bone was in variable condition and identifications were by reference to the author's comparative bone collection. No bones were suitable for measurement.

4.11.16 *Hand-collected remains:* fifteen fish bone fragments were hand collected, from three contexts (Table 12). The majority of bones are fin rays from large gadid fish (Gadidae), a family that includes cod (*Gadus morhua*). Ten of these were recovered from probably medieval levelling deposit (***608***), probably from a single fish. A single post-temporal from a cod of 0.45-0.55m long came from post-medieval levelling deposit ***606***. A fragment of a right-eyed flatfish (Pleuronectidae) anal pterygiophore came from a medium-sized (0.25-0.40m) flatfish, probably plaice (*Pleuronectes platessa*), flounder (*Platichthys flesus*) or dab (*Limanda limanda*).

Context	***606***	***608***	***703***	**Total**
Cod	1	0	0	**1**
Gadid	1	9	0	**10**
Plaice/flounder/dab/lemon sole	0	1	0	**1**
Unidentified	1	1	1	**3**
Total result	**3**	**11**	**1**	**15**

Table 12: Hand collected fish remains

4.11.17 *Sieved remains:* the sieved remains included bones and scale fragments (Table 13) and mostly come from samples 8002 (***821***), a medieval levelling layer, and 7002 (***723***), a 'organic' layer of medieval date beneath floor (***722***). The remains include vertebrae from herring (*Clupea harengus*), eel (*Anguilla anguilla*), large salmonid (Salmonidae, probably salmon), right-eyed flatfish (Pleuronectidae: plaice, flounder or dab) and a small shad (*Alos*a sp.) were identified and an incomplete articular came from a tiny cyprinid (Cyprinidae). Two unidentified fragments of fish scales may also be cyprinid.

Context	***723***	***816***	***821***	***823***	**Total**
Sample	7002	8001	8002	8003	
Eel	1	0	0	0	**1**
Salmonid	1	0	0	0	**1**
Trout	0	0	1	0	**1**
? Clupeid	0	0	1	0	**1**
Clupeid	1	0	0	0	**1**
Herring	3	0	9	0	**12**
Shad	0	0	1	0	**1**
Cyprinid	0	0	1	0	**1**
Gadid	1	0	0	0	**1**
Right-eyed flatfish	2	0	1	0	**3**
Flatfish	0	0	2	0	**2**
Unidentified	1	0	20	2	**23**
Indeterminate	13	10	21	0	**44**
Total	**23**	**10**	**57**	**2**	**92**

Table 13: Sieved fish remains

4.11.18 *Discussion:* the remains include freshwater fish (cyprinid and trout), migratory fish (eel, shad and salmon), and marine fish (cod, herring, flatfish) indicating that fish were procured from a range of sources. All would have been available locally in coastal waters and rivers such as the Eden and Caldew, but some fish, especially the larger gadids and herring, may have been caught in deeper waters and purchased as preserved fish. The remains also include bones from large and very small fish, indicating the range of fish that would have been consumed within the Fratry

4.11.19 ***Mollusca assessment:*** marine and terrestrial mollusc shell came from a limited range of stratigraphic features. Oyster shell (*O edulis*: the native oyster) was by far the most frequent, with only one other marine species represented (*C edule*: the common cockle), and it is likely that both represent the consumption of these common edible species. The only terrestrial species present, *H aspersa*, is a common and widespread garden species and adds little to any interpretation of the site.

4.11.20 *Potential*: the assemblage is too small to make any significant contribution to the understanding of the site.

4.12 HUMAN REMAINS

4.12.1 *Assessment:* A total of 11 fragments of human bone were recovered during the evaluation at the Fratry belonging to different individuals, both adult and juvenile (Table 14). Two fragments were recovered during excavations from ***610*** and ***713*** and assessed on site and subsequently reburied in the trenches. The remaining fragments were observed amongst the animal bone and the environmental samples. The juvenile bones consisted of a humerus from ***610*** measuring 61mm in length and belonging to a neonate, less than 1 month old, a proximal unfused medial condyle of a right tibia belonging to an adolescent aged 13 to 17 years, skull fragment including part of the temporal and a first

rib. The adult bones consisted of a left clavicle, a left ulna, distal shaft of a left humerus, part of a left illium, from the innominate and a left medial cuniform. All except those in deposit ***610*** showed signs of weathering, suggesting they had been heavily disturbed from elsewhere in the Cathedral precinct and subsequently reburied within the post-medieval demolition material. Juvenile bones from within ***610*** can be placed within the medieval period, however, due to them been displaced it can be concluded that this was not an *in situ* burial. No pathology was observed on any of the skeletal remains.

Context	Element	Side	Age
610	Medial Cuniform	Left	Adult
610	Humerus	Unknown	Juvenile
610	Temporal	Left	Juvenile
610	Clavicle	Left	Adult
610	Thoracic Vertebra	-	Adult
610	1ST Rib	Right	Juvenile
610	Skull Fragment	-	Juvenile
713	Ulna	Left	Adult
802	Illium	Left	Adult
805	Tibia	Right	Juvenile
809	Humerus	Left	Adult

Table 14: Human remains recovered from evaluation at the Fratry

4.12.2 *Potential*: due to the fragmentary nature and disarticulation of the skeletal remains recovered, they do not provide sufficient information to make any further contribution to the understanding of past populations of the local area.

4.13 PALAEOENVIRONMENTAL REMAINS

4.13.1 *Introduction:* six bulk samples were processed and subjected to assessment of plant remains and charcoal, and for the recovery of small artefacts and other cultural material. The samples come from layers revealed in the three trenches excavated at the western side of the northern wall of the fratry building. Each of the three trenches revealed various layers and cultural surfaces buried below the current ground level. Contexts ***610***, ***723***, and ***823***, revealed in Trenches 6, 7 and 8 respectively, are likely to represent the same layer of organic accumulation, *c*. 0.50m, which was seen to be sealed by several later medieval/post-medieval surfaces, which were also sampled. These include contexts ***720***, ***816***, and ***821***, which are likely to represent various bedding layers for previous phases of construction at the site.

4.13.2 *Quantification and Methodology*: The bulk samples, ranging from 10 to 40 litres in volume, were processed using hand flotation where the flots were collected on a 250µm mesh and air-dried. The > 0.3mm heavy residues were checked for artefacts and ecofacts, which were extracted and quantified; the latter being kept and assessed with the rest of the flot. The dried flot was examined using a binocular microscope during which any surviving organic material, such as charred plant remains (CPR), waterlogged plant remains (WPR), and charcoal was quantified. Other remains, such as snails, insects, bone, fired clay, coal, and heat affected vesicular material (HAVM) was also quantified. Preliminary seed/fruit identifications were made with the aid of

standard texts (eg Cappers *et al* 2006, Stace 2010) and a reference collection. Plant nomenclature follows Stace (2010). The presence of modern contaminants, such as roots, insect eggs, and modern seeds was also noted as an aid to assessing the likelihood of any contamination. Material was quantified on a scale of 1 to 4 where 1 is rare (one to five items); 2 is frequent (six to 50 items); 3 is common (51–100 items); and 4 is abundant (greater than 100 items).

4.13.3 Charcoal caught on the 2mm sieve was considered identifiable and quantified; where possible *c* 20 fragments were randomly extracted, fractured, and examined in transverse section. In particular, the presence of any small round wood, sapwood, and short-lived wood species was noted, for the purpose of providing suitable material for radiocarbon dating. Identification and classification of the charcoal was made with reference to Hather (2000). The assessment results were recorded on pro-forma sheets, which will be kept with the site archive.

4.13.4 *Assessment:* the results of the assessment are presented in Table 15. Material preserved by both charring (charred plant remains and charcoal), and waterlogging (waterlogged plant remains) were recorded. Charred plant remains (CPR) were generally rare, comprising one or two cereal grains (eg barley (*Hordeum* sp) or oats (*Avena* sp)), a few hazelnut shell fragments (*Corylus avellana*), and occasional charred weed seeds, including small peas (Fabaceae), sedges (*Carex* sp), and *Solanum nigrum* (black nightshade). A single culm node (the swollen joint of cereal straw) was also recovered from context ***723*** (organic soil layer in Trench 7). Charcoal, including larger than 2mm fragments, was abundant in all of the samples. Oak (*Quercus* sp), including small twig fragments dominated all of the assemblages except that from context ***823*** (organic soil layer in Trench 8), which was dominated by alder/hazel (*Alnus glutinosa/Corylus avellana*).

4.13.5 Four of the samples (organic soil layers ***610***, ***723***, and ***823***, and surface ***720***) produced rare waterlogged seeds of birch (*Betula* sp) and/or elder (*Sambucus nigra*). The putative medieval bedding layer produced the most diverse waterlogged assemblage, and, as well as birch and elder, contained single seeds of heather (*Calluna vulgaris*), hemlock (*Conium maculatum*), and dead-nettle (*Lamium* sp). Their recovery, from well-sealed, secure, contexts at this site, coupled with damp conditions signified by high levels of organic accumulation, suggests they may well be contemporary with the archaeological deposits.

4.13.6 Five of the samples contained frequent to abundant fish bone and/or mammal bone fragments. Other remains included comminuted lime/mortar fragments and ceramic building material (CBM), which is likely to represent debris associated with the construction/demolition of the various floors/surfaces and/or former building. Other possible structural remains are represented by glass fragments, which appear to have been heat affected.

Sample no	Context no	Description	Plant remains	Charcoal	Matrix	Potential for c14 dating
6001	***610***	Trench 6: Organic soil deposit	CPR (1) *Hordeum* sp, Fabaceae, *Corylus Avellana* shell fragments. WPR (1) *Betula*, *Sambucus nigra.*	(4) >2mm (4) Mostly *Quercus* sp roundwood.	Mammal bone (2), HAVM (2)	yes
7001	***720***	Trench 7: Bedding layer	CPR (1) Fabaceae, *Corylus avellana* shell fragment.	(4) >2mm (3) Mostly *Quercus* sp.	Mammal bone (1), comminuted lime/mortar fragments (3)	no
7002	***723***	Trench 7: Organic soil deposit	CPR (1) *Avena* sp, culm node. WPR (1) *Sambucus nigra.*	(4) >2mm (3) *Quercus* sp including twig fragments.	Mammal bone (3), fish bone (3), calcined bone (1), comminuted lime/mortar fragments (3), CBM (3)	yes
8001	***816***	Trench 8: Bedding layer	CPR (2) *Avena* sp, *Corylus avellana* shell fragments, Fabaceae, *Carex* lenticular. WPR (2) *Calluna vulgaris, Sambucus nigra*, *Betula* sp, *Conium maculatum, Lamium* sp.	(4) >2mm (4) Mainly *Quercus* sp, 1 or 2 fragments from short-lived taxa.	Fish bone (1), mammal bone fragments (2), molluscs (1), glass (1), comminuted lime/mortar fragments (3), CBM (2), coal (2), HAVM (1)	yes
8002	***821***	Trench 8: Bedding layer	CPR (2) Cerealia indet, *Corylus avellana, Carex* trigonous, *Solanum nigrum.*	(4) >2mm (3) Mainly *Quercus* sp.	Fish bone (4), mammal bone fragments (1), comminuted lime/mortar fragments (3), CBM (2)	no
8003	***823***	Trench 8: Organic soil deposit	WPR (1) *Betula* sp.	(4) >2mm (4) Mixed *Alnus glutinosa/Corylus avellana* and *Quercus* sp roundwood.	CBM (1), heat affected glass (1)	yes

Notes: CPR = charred plant remains, WPR = waterlogged plant remains, HAVM = heat affected vesicular material, CBM = ceramic building material. 1=< five items; 2 = 6-25 items, 3 = 26-100 items, 4=>100 items

Table 15: Palaeoenvironmental assessment results for the Fratry, Carlisle Cathedral

4.13.7 *Potential*: Although the low number of plant remains means that no further palaeoenvironmental work is warranted on the samples, the limited data generated by this assessment has provided an insight into the nature of the local vegetation and ground conditions of the site during former periods of use.

4.13.8 The sparse charred plant remains and charcoal is likely to represent scattered floor debris originating from any number of activities. The nature of the charcoal suggests that oak, including its branch wood, provided the main fuel at the site. The recovery of occasional food remains, such as charred cereals

and hazelnut shell fragments are commonly found in soil deposits situated near to human habitation, and, as such, is likely to represent waste material from domestic hearths or cooking facilities. Similarly, it appears that the waste generated through the processing of both meat and fish also made its way onto the grounds.

4.13.9 The presence of buried, organic-rich deposits, suggests that the ground conditions at the site are damp, and thus conducive to some waterlogged preservation of plant remains. Although the low number of seeds/fruits means that any interpretations must remain tentative, some conclusions can be made. The remains indicate the possible local presence of birch and elder scrub, and heather, and the presence of hemlock and dead-nettle may indicate damp waste/rough ground, open woody areas and/or hedge banks. Black nightshade, on the other hand, is found more frequently growing on waste/cultivated soils. The significance of a couple of these plants in a medieval religious setting is also worth a mention; although both hemlock and black nightshade are highly poisonous, they were highly valued medicinal plants if properly harvested and administered (Grieve 1973).

5. CONCLUSION

5.1 INTRODUCTION

5.1.1 Despite the small scale of the evaluation, and the limited depths that could be achieved in parts of the narrow interventions, potentially significant archaeological remains were encountered in each of the trenches. Whilst seemingly analogous deposits were observed in several trenches, the correlation of those deposits at particular levels is hindered by the modern topography, which slopes down from the north. Despite the limitations of the excavations it was possible to develop a relatively secure impression of the depositional sequence within the area, which could be related to both post-medieval and earlier medieval activity at the site.

5.2 DISCUSSION

5.2.1 ***Post-medieval Remains***: as anticipated from the results of previous excavations conducted in vicinity of the Cathedral Precinct (ie OA North 2013), the uppermost stratigraphic sequence comprised a mix of modern surfaces and a substantial blanketing layer of post-medieval made ground deposits and structural features. This encompassed much of the first 0.50m or more of deposits and generally contained a substantial rubble component likely to derive from the demolition and modification of precinct buildings in the mid-seventeenth century or later (Weston 2000, 88). It also included later activity pertaining to the nineteenth-century, for example, as observed in trenches 7 and 8 in the form of drains ***706*** and ***815*** along with cut ***804*** in Trench 8 relating to the construction of the current fabric of the Fratry porch wall.

5.2.2 While obviously late in the archaeological sequence and, in themselves, such deposits hold relatively little significance, the post-medieval deposits did contain a significant body of medieval artefacts, as well as lesser quantities of Romano-British material. While this material assemblage is obviously not *in situ*, it does, nevertheless, contribute a significant body of information relating to earlier periods. In general terms, they indicate an unsurprising level of disturbance to previous deposits and structures, leading to the reworking of such material within later deposits. In addition, they also provide very general indicators to the chronology of previous activity. In specific terms, however, the corpus of medieval CBM, in the form of decorative floor tiles, as well as several fragments of roof tile, and, in particular, the stained glass fragments, are of much greater significance. Both sets of material provide an invaluable insight into the probable fabric and appearance of the former medieval cloistral buildings. In this sense it also provides the opportunity to develop a wider regional comparative study of ecclesiastical architecture during the medieval period with reference to various known sites throughout the north of England. The post-medieval deposits are, therefore, not entirely devoid of value or significance, as further redeposited elements of earlier structural fabric is undoubtedly present within the impact zone.

5.2.3 ***Medieval Remains:*** the upper parts of the buried medieval strata would appear to have been encountered in all three trenches. Chief among these were structural remains associated with the western cloistral range located in Trench 7 at 0.75m bgl. This included both external (***716***) and internal (***717***) structures of the cloister arcade with the base of a probable column plinth in the south-east corner of Trench 7. In addition, it is possible that the abutting sand deposit ***719*** at a depth of 0.75m bgl may have been a bedding surface for the corresponding cloister walk. Indeed, a broken flagstone was found embedded on top of this deposit, suggesting the remaining flags had been robbed out at a later date. This surface continued south and was evident within Trench 8 (***816***, at a depth of 0.65m bgl). Flagstone ***811*** may also have been part of the otherwise robbed-out western cloister walk, or perhaps even part of the cloister arcade. On this basis, it might be inferred, remains of such a structure are present at the western end, although investigations within Trench 8 showed no evidence of the anomalies identified during the geophysical survey.

5.2.4 In additional to any structural features of medieval date, a series of rich organic deposits were also identified towards the base of each trench. These deposits contained an array of faunal remains as well as other, potentially environmentally sensitive remains, that have considerable value in the reconstruction of medieval life within the Cathedral Precinct. Any ground works associated with the proposed development, extending below a depth of approximately 0.75m or less, may therefore impact directly upon *in situ* structural remains, as well as valuable organic-rich deposits, which clearly relate to ecclesiastical life during the medieval period.

5.2.5 ***Roman Remains***: a limited quantity of obviously redeposited Romano-British artefacts were recovered from various post-medieval and medieval deposits, and, upon subsequent interrogation of the material and paper archive, no *in situ* features could be attributed to the period. The material assemblage of Roman artefacts was too small to offer any meaningful potential in itself, beyond a general indication of periods of activity during the Roman occupation. On present evidence and given recorded depths of Roman deposits elsewhere in the Cathedral Precinct, it is unlikely that the development, if impacting on similar depths to those attained during the excavations, would directly effect this resource, although there is always a limited value in the recovery of residual material from higher deposits.

5.3 RECOMMENDATION FOR FURTHER WORK

5.3.1 The evaluation demonstrated that significant archaeological deposits are present within the area of the proposed development, but with the exception of post-medieval drain ***706***, most are blanketed beneath thick bands of post-medieval demolition material. The shallowest medieval remains would appear to be in the area of the western cloistral range, where walls ***716*** and ***717***, lay some 0.75m below the present ground level, with similar structural features and further deposits occurring at equivalent depths in Trench 6 and 8.

5.3.2 It is recommended that the archive generated during the evaluation should be integrated with that produced by any previous and subsequent archaeological

works undertaken in association with the development of the Fratry. Accordingly, no further specific works on the evaluation archive are recommended at this stage, and it is thus inappropriate to produce an updated project design. Should it be the case that, for any reason, further archaeological investigation in association with the proposed development at the site does not take place, the results of the current programme should be integrated with that of previous work.

5.3.3 Although generally in good condition, the glass is extremely fragile, and slight changes in context, or even careful handling will cause quite serious deterioration to its fabric, as much of the glass is completely demineralised (making it appear black), and will consequently crumble easily. To reduce the risk, cleaning and stabilisation by a trained conservator is strongly recommended before further analysis can be undertaken. Detailed analysis, culminating in an illustrated report, and including comment on the lead kame, will be required to ensure preservation by record. The medieval pottery should be recorded in an appropriate manner, and a fabric series compiled. The coins will require cleaning and conservation before a brief report can be prepared

5.3.4 If no further excavation is undertaken, the groups of faunal remains from each of the well-stratified dark organic deposits encountered here should be recorded. Characterisation of the range of species and the size and butchery of the domestic stock should be targeted. Well stratified/dated post-medieval groups should not be excluded since relatively little is known of post-medieval domestic stock in the north of Britain (see Thomas 2009; Thomas *et al* 2013 and *cf*. Vann and Grimm 2010). No further work is required for the human remains or the fish bone.

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APPENDIX 1: PROJECT DESIGN

THE FRATRY PROJECT, CARLISLE CATHEDRAL, Cumbria

ARCHAEOLOGICAL EVALUATION: PROJECT DESIGN

Oxford Archaeology North

March 2016

Carlisle Cathedral Development Trust

OA North Ref: L10927

NGR: NY399559

1. INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Feilden Fowles (FF), architect to the Carlisle Cathedral Development Trust (henceforth, the Client), is currently working on proposals for the development of the Fratry at Carlisle Cathedral (Fig 1). The proposals comprise improvements to visitor attractions and accessibility to the Fratry building, including the construction of a new building adjoining, and at right-angles to, the western end of the north side of the Fratry itself. It is highly likely that the enactment of the proposals will be accompanied by a level of intrusive groundworks and earthmoving activities that may disturb or adversely affect below-ground archaeological remains. The land and buildings that occupy the Cathedral Precinct are of enormous cultural heritage and religious significance, falling within the jurisdiction of the Cathedrals Fabric Commission for England (CFCE) and, as a Scheduled Ancient Monument (No 546), the auspices of Historic England (HE).

1.1.2 In order to help inform the planning process, Dr Mike McCarthy and Canon Dr David Weston (respectively the former and current Consultant Archaeologist to the Carlisle Cathedral Dean and Chapter), requested that the development should be accompanied by a programme of archaeological works that would permit a greater understanding of the nature, depth, extent and significance of the buried heritage resource within the projected zone of development impact. This would enable the establishment of an appropriate foundation design and of a suitable mitigation strategy to be agreed upon between the client and the regulatory bodies, and implemented either in advance of, or during, development groundworks.

1.1.3 Accordingly, the Client commissioned Oxford Archaeology (OA) North to undertake a programme of small-scale investigation to the north and west of the Fratry. The first stage of works comprised a ground-penetrating radar survey, which was undertaken by Stratascan (2016), and identified several anomalies. The following document is a project design for undertaking the second stage of the initial investigative works, comprising an archaeological evaluation, and represents the Written Scheme of Investigation (WSI) required to accompany applications for intrusive works to Historic England for Scheduled Monument Consent (SMC) and to the CFCE (including the investigation and recovery of funerary remains). The project design has been compiled in accordance with Historic England's Management of Research Projects in the Historic Environment (MoRPHE; 2015).

1.2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

1.2.1 Under the amended Care of Cathedrals Measure (2008), Carlisle Cathedral Precinct is the subject of a regularly updated archaeological assessment report (McCarthy 2010). That document presents the most comprehensive review of the current state of knowledge concerning the precinct (including the Fratry and its immediate surroundings) and it is not the intention of the following sections to reiterate data that could be more effectively sought from the assessment report.

1.2.2 The Cathedral precinct covers a roughly rectangular area of 2.08 ha on the north-west/south-east alignment of the ancient walled city. The northern half of the precinct is occupied by the east/west-aligned medieval cathedral, with a graveyard to its north, and the remains of a cloister to the south. The present cathedral church was founded in 1122, originally as the church of the Augustinian Priory of St Mary, but became a cathedral with the establishment of the diocese of Carlisle in 1133 (Weston 2000, 9; 2011, 104-5). On the south side of the cloister lay the Fratry (refectory) itself, whilst on the east was the Dorter (dormitory) range, the west wall of which is still largely standing (Weston 2000, 88). Parts of the east end of the Fratry date to the thirteenth century, as do the earliest visible elements of the dormitory, though documentary references indicate the existence of an earlier dormitory (ibid). The Fratry undercroft has been dated to c 1300 (op cit, 91), but the building was largely reconstructed in the fifteenth century, and was altered on several occasions subsequently.

Nothing remains above ground of the west claustral range, but it is within that area that the proposed investigation is to take place. The GPR survey has identified several anomalies within the area of the west range, lying at depth of 200-1100mm below ground level; it is thought that these relate to several phases of structural activity.

1.2.3 Archaeological investigations in and adjacent to the Fratry itself have been limited. Wooden piles and an earlier drain were observed beneath the crypt piers in 1922 (Martindale 1924) whilst a watching brief in 1988 exposed elements of the wall at 0.6m depth (Keevill 1991). A geophysical survey undertaken in 2000 (Schmidt and Hamilton 2009) revealed an extensive series of anomalies across most of what would have been the open area in the middle of the cloister (on the north side of the Fratry, where some of the proposed evaluation trenches will be), and immediately to the south of the Fratry. To the south-east, anomalies found at Nos 3 and 6 The Abbey might possibly represent pre-Norman features. A more recent ground-penetrating radar (GPR) survey (GSB Prospection 2010) to the immediate north of the Fratry revealed a series of anomalies between the ground surface and a depth of 3.15m below ground level (bgl). These could represent structural elements of the medieval claustral ranges (c 0.3-2.3m bgl), possible graves, and at depths exceeding 2m bgl, potentially earlier structures within the cloister garth (ibid).

1.2.4 In 2012 OA North undertook a trial-trench evaluation to the north and east of the Fratry (OA North 2013). Five small trenches were excavated by hand: one against the north wall of the Fratry, another partially across the southern cloister walk and garth, and a third straddling the Dorter arcade, where it investigated the eastern cloister walk, and the former Dorter undercroft. A fourth, against the east wall of the Fratry, also lay within the former Dorter undercroft, whilst the last was excavated in the garden of No 4, the Abbey, just to the south-east of the Fratry. The trenches were generally 1m wide and up to 6m long and 1.25m deep. They demonstrated that significant archaeological deposits were present, but, with the exception of some of the post-medieval structural remains, most were blanketed beneath thick bands of post-medieval demolition material, probably relating to the seventeenth-century reorganisation of the Cathedral Precinct. The shallowest medieval remains would appear to be in the area of the southern cloister, where the footing of the arcade, and the top of a possible medieval soil horizon, lay some 0.57m below ground level. In the eastern cloister walk, medieval deposits were rather deeper, at some 0.9m, whilst medieval remains in the area of the Dorter undercroft could have been as little as 0.75m deep. In the garden of No 4, the Abbey, the proposed location for the new boiler, no identifiably medieval deposits were encountered within the 0.9m depth of investigation, although elements of a seventeenth-century building were rather more shallow, at 0.5m. No articulated burials were identified within any of the trenches.

1.2.5 The substantial assemblage of finds comprised domestic refuse, personal items, and building material, dating from the Roman period to the nineteenth century. A concentration of Roman artefacts in one organic deposit, identified at a depth of just 0.9m at the eastern end of the Fratry, included tile fragments with legionary stamps, glass, pottery, and a fourth-century coin. Although it is possible that this may represent an in-situ Roman deposit with some medieval contamination, it may be material that had been disturbed during the medieval construction of the Fratry undercroft. Well-preserved palaeoenvironmental remains from that deposit suggested similar material might be encountered in other organic silts that were identified at the limit of excavation in several of the other trial trenches.

1.2.6 The GPR survey undertaken to inform the current project identified several anomalies that could relate to buried remains of the west range (Fig 2). Anomaly 1 is the most coherent, and would appear to represent one or more phases of a rectilinear structure on a north/south alignment. The associated foundations lie between 200 and 400mm below ground level (bgl). A pair of circular anomalies (Anomaly 2, 500-600mm bgl) lie just to the east of Anomaly 1. Although they look reminiscent of pillar bases, such features might be considered unusual as components of the cloister arcade (D Weston pers comm). Anomaly 3a (200-400mm bgl) lies just to the north-west of the northern end of Anomaly 1, but would appear to be on a slightly different alignment, veering more to the north-east as it continues beyond the proposed development footprint. The remains of an east/west-aligned wall, may be represented by one of several anomalies labelled 3b, and which lies mostly outside of the development footprint

and some 1000mm bgl. The northwest/south-east-aligned components of Anomaly 3b lie to the north of the development area, but share the alignment of a Roman street that is thought to have lain in the area (J Zant pers comm). The survey suggests that these remains lie some 700mm bgl, which would be rather shallow when compared to the depth of Roman remains identified elsewhere in the precinct (see below). Anomaly 5, a possible area of disturbance, again lies just to the north of the development site, whilst Anomaly 4, recorded as obstructions 350 and 1100mm bgl, are rather harder to interpret. Anomaly 6 is most likely to be a modern service.

1.2.7 Elsewhere in the cathedral precinct, investigations have revealed a substantial depth of stratigraphy. Natural clay has been encountered in one location only, c 60m north of the Fratry and at a depth of 4.57m below the modern surface (Simpson 1988). The clay is likely to be sealed by almost 2m of Roman layers, features and structures associated with the extramural settlement to the south of the fort, including waterlogged deposits (ibid; Keevill 1989).

1.2.8 Fragmentary Anglian cross shafts and historical sources suggest that Carlisle was an important post-Roman ecclesiastical centre (Weston 2000, 7-8; Summerson 1993, 10; Tudor 1984, 68-9), and the cathedral precinct is perhaps the pre-eminent site for understanding early medieval settlement in Carlisle (McCarthy 2004, 7-8). Significant pre-Norman deposits, graves and finds (including ninth-century coins) were identified during the cathedral treasury excavations of 1988, c 40m north of the Fratry (Keevill 1989; McCarthy forthcoming) and further, possibly eighth-century burials have been identified by more recent test pits (Keevill 2008, 50). The precise depth of the top of early medieval deposits beneath the modern surface is unclear, though in one of the test pits dug in 1985, probable early medieval graves were encountered c 1.2m below the surface (op cit, 43-4, fig 6). The floor of the medieval north cloister walk is said to lie 1.2m below the modern surface (Weston 2000, 88), whilst the excavations adjacent to the cathedral church in 1985 and 1988 determined that the medieval ground surface lay c 1m below the modern surface (op cit, 292). In recent years, watching briefs elsewhere within the precinct have been maintained on ground works of shallow depth, with nothing but fairly modern features and deposits being exposed.

1.3 BUSINESS CASE

1.3.1 ***Introduction***: a strong business case for the Fratry development has been set out as part of the HLF application and will not be reiterated here. Rather, this section will briefly focus on the archaeological project. The archaeological works are required as part of the planning process, in order to understand the nature of the below-ground archaeological resource. Nonetheless, the investigation will have several benefits.

1.3.2 ***Archaeological Benefits***: the principal benefit will be a better understanding of the below-ground archaeological resource in the area of the west claustral range. Not only will this help to inform decisions relating to the design of the structure, but it should also be remembered that the area of the west range has witnessed little formal archaeological investigation. Accordingly, any data that can be revealed about the position, nature, dating and phasing of any structural remains will be highly significant, and will add greatly to an understanding of the layout and development of the Cathedral precinct. Moreover, there is a possibility that archaeological findings, both in the form of interpreted data, and possibly physical remains, could be integrated into the design to be used for display and educational purposes.

1.3.3 ***Oxford Archaeology***: OA North, based in Lancaster, is the northern office of Oxford Archaeology (OA; Institute for Archaeologist's (IfA) registered organisation no 17), the leading archaeological and heritage practice in the country, employing in excess of 300 professionals across three regional offices. OA North is itself the largest archaeological contractor in north-west England, with an unsurpassed breadth of experience of working in Cumbria. As a registered educational charity, OA is dedicated to maintaining and promoting the highest professional, academic, commercial and ethical standards and to the provision of access to archaeology for all. It has both an established reputation and a philosophical imperative in the pursuit of efficient and cost-effective fieldwork, post-excavation excellence, and high-quality publication and outreach. The project thus fits in easily with the

organisation's long-term strategy and vision to be at the forefront of archaeological research, discovery and exploration and to be recognised as champions of the social and cultural importance of archaeology. Furthermore, the organisation has been regularly involved with HLF-funded and community projects, and has many staff who are skilled supervisors and teachers of volunteers of all ages and levels of experience. We pride ourselves on our delivery of accessible outreach, including open days, lectures, information panels, leaflets, etc, including the compilation of the Medieval Teacher's Pack for the Tullie House Museum and Art Gallery, Carlisle.

1.3.4 Over the past 30 years, OA has also worked extensively in the fields of church and burial archaeology, excavating and analysing literally thousands of burials ranging in date from the Neolithic period (c 4000 BC) to the twentieth century. In order to respond efficiently to a demand that has increased over the last 15 years, OA has created a dedicated burials department known as Heritage Burial Services (HBS). It employs specialist osteoarchaeologists, all of whom are fully qualified archaeologists and human osteologists, and are experienced in general archaeological fieldwork (particularly pertaining to burials) and in the study of human remains.

1.3.5 As an organisation, OA has a high level of experience early medieval and medieval ecclesiastical archaeology in the North West. We have been involved with excavations at the Viking Age burial site at Cumwhitton (Patterson et al, forthcoming), the early medieval monastic site at Dacre (Newman and Leach forthcoming), Warrington Friary (Heawood et al 2002), Chester Cathedral (OA North 2011a), Carlisle Cathedral Fratry (OA North 2013), Lancaster Friary (Bates et al in press), Preston Friary (OA North 2011b) and Furness Abbey (OA North 2011c; Bradley et al forthcoming), the post-excavation programme for Norton Priory (Brown and Howard-Davis 2008), and for St Michael's Church, Workington (Zant et al forthcoming). We have also undertaken numerous investigations of standing churches. Other significant early medieval and medieval ecclesiastical assemblages from elsewhere in Britain that have been analysed and/or published by OA include, inter alia, a mass grave of up to 54 Viking warriors from the Weymouth Relief Road, Dorset (OA forthcoming a), 187 late Anglo-Saxon and medieval skeletons from St Martin's, Wallingford (Soden et al 2005), well over 1000 articulated burials, plus hundreds more that had been disturbed, from Abingdon Abbey (Allen forthcoming), Christ Church Cathedral, Oxford (Boyle 2001), Whitefriar's, Canterbury, Kent (Webb and Loe forthcoming), and the Dominican friary church and burial ground at Princesshay, Exeter, Devon (Loe forthcoming a). In Carlisle, OA North has been/is involved with the postexcavation and publication of the sites on Rickergate and Botchergate (Newman 2011a) and with the Roman forts (Zant 2009; Howard-Davis 2009), and the northern Lanes (Zant and Howard-Davis in prep).

2. AIMS AND OBJECTIVES

2.1 RESEARCH CONTEXT

2.1.1 Although the proposed project is development led and seeks to inform the planning process, it is highly likely that the works will encounter significant archaeological remains of great academic value. In order to maximise the potential of the heritage resource, archaeological projects are strategic in nature, with a series of clearly defined aims, often posed as research questions, and objectives, which are the practical means formulated to address the research questions. These aims and objectives are modified and developed to meet the requirements of the project and the confines of the available data. In order to formulate the academic aims and objectives of the proposed smallscale investigation, it is necessary to give some brief consideration of the manner in which the known and suspected heritage resource at the site might address prioritised themes for research presented within national and regional research agendas and framework. Themes pertaining to the early medieval, medieval, and post-medieval periods are considered most appropriate (McCarthy 2010). It is probable that any Roman remains are too deeply buried to be contacted by the proposed investigation (notwithstanding the possible Roman remains represented by anomaly 3b; Section 1.2.6). However, the present limited understanding of both the full extent of the works, and of the heritage resource immediately around the Fratry, means that only a brief examination of such themes is appropriate at this stage.

2.1.2 Those national research agendas and policies consulted included Historic England Research Strategy documents Exploring our Past Implementation Plan (English Heritage 2003), Discovering the Past, Shaping the Future (English Heritage 2005a), and the guidelines produced jointly with the Church of England on the best practice for the treatment of human remains excavated from Christian cemeteries (EH 2005b). Other agendas comprise that produced in 1987 by the Society for Medieval Archaeology and JP Greene's 1992 summary of future research aims. The research framework for North West England (Brennand 2006; 2007) has provided a region-specific resource framework and research agenda for the early medieval, medieval and postmedieval periods (Newman 2006a; Newman 2006b; McNeil and Newman 2006; Newman and Brennand 2007; Newman and McNeil 2007; Newman and Newman 2007) that include numerous research topics that are relevant to the study of the data recovered from the Fratry. The themes presented in the above documents have been condensed and are briefly outlined in the paragraphs below. All are related, and need to be examined utilising an holistic, interdisciplinary, approach.

2.1.3 ***Cultural change and continuity***: there is a need to understand even the most basic aspects of activity in towns such as Carlisle following the apparent cessation of the Roman administration, and the role of different cultural, ethnic and religious influences, in evolving and crystallising the identities and institutions that can be seen with greater clarity in the post-Conquest period.

2.1.4 ***Religion, economy and society***: there is a need for extensive and site-specific studies of ancillary buildings associated with religious institutions. Also of importance is to develop further an understanding of medieval religion and its social stratification through a comprehension of its specific material remains and through burial behaviour (particularly grave form, body position, osteological attributes and associated artefacts). The organisation of medieval religious sites in accordance with belief systems should be examined, particularly in terms of their physical environment, which has been little studied. The nature of medieval religious institutions and their relationship with their hinterlands should also be studied.

2.1.5 ***Osteology***: full scientific analysis of human skeletal assemblages, using all available physical and biochemical techniques, is a high priority in examining the demography and biology of medieval populations.

2.1.6 ***Chronology***: there is a need to establish closely dated artefact sequences across the region, linked to scientific dating, but also to improve the dendrochronological sequence for the region.

2.1.7 ***Artefacts***: a corpus of artefacts relating to medieval popular belief and spiritual customs should be developed. The origin and inter- and intra-site distribution of building materials and other artefacts should be analysed and interpreted within socio-economic and technological contexts.

2.1.8 ***Palaeoenvironmental remains***: there is a need to recover and examine welldated and well-stratified assemblages of plant and faunal remains in their various forms, and through a range of techniques, where these help to provide information about the nature of activity at sites, their surrounding landscapes, and resource exploitation.

2.1.9 ***Wider themes***: data should be examined within the territorial context of the site, but also the site's natural environment, particularly where this aids the identification of regional patterns that may be different from more general trends. Studies of periods of transition (ie, from the medieval to post-medieval period) are important, as is an understanding of the subsequent post-medieval development of medieval sites.

2.2 RESEARCH AIMS

2.2.1 By considering the above themes and initiatives, the following research questions (RQ) can be posed to inform and guide the strategies to be implemented during the project.

RQ1 What is the nature, date, density, extent, and state of preservation of the archaeological remains on the site, and what can be understood of their sequence, relationships and their functions?

RQ2 How can the evidence recovered further an understanding of the historical development of activity and structures within the Cathedral precinct, particularly during the early and high medieval periods?

RQ3 What evidence is there for differing cultural, ethnic and religious influences in terms of the expression of belief and attitudes towards death and burial?

RQ4 What could be learnt about the demography, epidemiology, geographical origins and standards of living of the population buried on the site?

RQ5 What could the findings tell us about early medieval and medieval architecture and building practices?

RQ6 How can the results of the investigation be made available to the wider public in an accessible form, whilst undertaking appropriate archiving of the artefacts and primary data?

2.3 OBJECTIVES

2.3.1 The following objectives of the project have been formulated in consideration of the research questions (Section 2.2). The manner in which specific elements of these objectives will be addressed is presented in the method statement within this document (Section 4).

ROa Undertake an appropriate programme of evaluation trenching and rapidly investigate and record the on-site stratigraphy in order to:

- verify the geophysical survey results, by establishing the extent and depth of archaeological features, and to establish the presence and nature of any archaeological deposits that may not be shown up by that survey;
- define and understand better the relationships between individual deposits and elements of the site, including their relative sequencing;
- gain an understanding of the location, organisation and sequence of burial activity;
- identify variations in modes of burial practice, including body position and funerary furniture;
- establish a basic deposit model for the zone of development impact and to help inform the foundation plan for the new structure.

ROb Undertake an appropriate finds recovery strategy (including metal detection) and, using suitable reference material, undertake appropriate identification, cataloguing and stratigraphic integration of the stratified artefacts and ecofacts in order to:

- maximise the recovery of artefactual material;
- establish as accurately as possible the frequency, date, geographical origin, style, quality and function of the individual components of the artefact assemblage;
- make recommendations for stabilisation, conservation, retention and display.

ROc Recover all human remains from the area of trenching, then undertake a suitable programme of osteological assessment that will establish their potential for detailed analysis, biochemistry and scientific dating.

ROd Recover, process and assess palaeoenvironmental samples from a range of suitable well-stratified deposits in order to establish:

- their potential to provide information about the nature of activity on the site and its surrounding environment;
- their potential to contain material for scientific dating;
- the likelihood of encountering informative palaeoenvironmental remains during further works around the Fratry.

ROe Collate all results of the above objectives and prepare them for dissemination in the form of a report for submission to the project's stakeholders and to the Cumbria Historic Environment Record (Kendal).

ROf Return the assemblage of human remains and any appropriate finds to the Cathedral, and collate and submit the remainder of the archive to the Cumbria Record Office (Carlisle).

3. BASIC CONSIDERATIONS

3.1 LEGAL CONSIDERATIONS

3.1.1 ***Scheduled Monument and CFCE Consent***: the site is a Scheduled Ancient Monument and no intrusive archaeological investigation can take place until the present project design has been approved by the CFCE and HE, and written Scheduled Monument Consent (SMC) has been issued and received by OA North. A copy of the consent and any conditions pertaining will be issued to site to ensure that all works are undertaken in full compliance with that document.

3.1.2 ***Human Remains***: the site is consecrated according to the rites of the Church of England and, as a result, there is a requirement for the CFCE to ensure that appropriate Faculty permissions have been granted prior to the investigation and removal of any human remains (Care of Churches and Ecclesiastical Jurisdiction Measure 1991, Faculty Jurisdiction Measure 1964). The CFCE directions will replace the need for a Ministry of Justice (MoJ) licence. During the excavation, all treatment of human remains will be in full compliance with the CFCE directions.

3.1.3 It is the responsibility of OA North to ensure that the local Environmental Officer is informed of the proposed exhumation and to provide a Risk Assessment and this methodology for the works. The Client may appoint a co-ordinator under CDM (Construction Design and Management) regulations and, as a secondary contractor, OA North will comply with all necessary legislation and reasonable requirements of the principal contractor by operating under the principal contractor's safe system of works, by providing a specific risk assessment which will accompany the corporate health and safety policy and ensuring the maintenance of a safe working environment within OA working areas. OA North will ensure that all employees and authorised visitors are fully instructed in appropriate risk avoidance and approved on-site procedures (Public Health (Control of Diseases) Act 1984). The Health and Safety at Work Act 1974 under which the Personal Protective Equipment at Work Regulations are made will be complied with at all times by the Archaeological Contractor. Evidence of appropriate procedures will be detailed in the Risk Assessment.

3.2 ETHICAL AND RELIGIOUS CONSIDERATIONS

3.2.1 All staff involved in the exhumation and recording of human remains will be expected to behave with due care and attention, showing respect for the dead at all times. The burials represent the remains of past inhabitants of the city and thus particular consideration will be afforded to the sensitivities of the current parishioners and residents in all exhumation and archaeological works. The excavation and osteological analysis of human remains will be screened from the public at all times.

3.2.2 ***Storage of Remains and Reinterment***: OA North will be responsible for the individual bagging or boxing of skeletons. It is likely that, following completion of the fieldwork, the excavated assemblage will be transported to OA's offices at either Lancaster or Oxford, where they will reside whilst detailed assessment is undertaken. If the results of the assessment indicate that the remains are completely unsuitable for any form of detailed analysis, this strategy may be reviewed, to minimise movement of the remains and to expedite their deposition. It is anticipated that, following osteological analysis, all human remains (both disarticulated and articulated) and associated funerary furniture will be deposited by the Client in an appropriate manner. Whilst it is recommended that this matter be discussed with all interested parties and that there is an agreement with the CFCE, a programme for deposition will be included within the final report.

3.3 STANDARDS

3.3.1 OA North shall conform to the standards of professional conduct outlined in the Institute of Field Archaeologists' Code of Conduct, the IfA Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology (1990, revised 1997), the IfA Standards and Guidance for Excavations and Watching Briefs (1994) and the British Archaeologists and Developers' Liaison Group Code of Practice.

3.3.2 OA is a member of the Institute of Environmental Assessment and the Council for British Archaeology. All osteologists adhere to the standards of the IfA and BABAO, and subscribe to standards of excavation of human remains (McKinley and Roberts 1993) and methodologies of osteological analysis (Brickley and McKinley 2004) set out by these organisations, and to English Heritage's Guidance for best practice for the treatment of human remains excavated from Christian burial grounds in England (Mays 2005). Full archaeological recording and excavation, according to the Institute's Standard for archaeological excavation, will be followed for all structures and non-burial deposits.

3.4 HEALTH AND SAFETY

3.4.1 ***Risk assessment***: OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers (1997). OA North will liase with the client to ensure all health and safety regulations are met. A detailed risk assessment will be completed in advance of any on-site works, with continuous monitoring and updating during the fieldwork. This can be supplied to all interested parties on request.

3.4.2 ***Deep excavations and shoring***: consideration will be given to the safety of the excavation at all times, and investigation will not exceed a safe working depth. If there is a requirement for shoring to be installed, then such works would need to be undertaken by a contractor skilled in such matters and who will be available to inspect their handiwork on a regular basis. All open archaeological sites, especially in the event of deep excavations, will be inspected by the Site Director or other appointed and competent person. These inspection records will be signed and dated, and form part of the on-site Health and Safety folder, which will always be available to all interested parties on request. Further, where a shoring system has been installed within the trench to secure unstable edges or to allow deeper excavation, this shoring system will be inspected on a regular basis by a properly qualified operative, with additional visits after events that could lead to destabilisation. All inspections will be documented appropriately.

3.4.3 ***Spoil management***: where there is a requirement for the careful cutting and removal of turf, this will be conducted with appropriate tools, and stored in a manner that facilitates its removal to a storage location by ground staff (it cannot be kept at the point of excavation, as there is no means of keeping it in an appropriate manner). Paving slabs will be carefully lifted and stockpiled with appropriate lifting equipment. Areas of 'blacktop' or other such surfaces will be cut out by an appropriately skilled member of the Cathedral maintenance team (not by OA). Spoil will be neatly stockpiled on boards/tarpaulins a safe distance from the trenches, with topsoil and subsoil and surface materials kept separate.

3.4.4 ***Reinstatement***: layers of permeable membrane can be laid at the base of the excavation prior to the commencement of backfilling. Trenches will be backfilled with the excavated arisings (topsoil uppermost), and compacted manually, before the stockpiled turf and paving slabs (the latter with the aid of the cathedral maintenance team and lifting equipment, as appropriate) are relain. Reinstatement of blacktop and/or similar surfaces would be undertaken by the Cathedral maintenance team. A condition survey will be undertaken of the area of each trench prior to excavation to ensure that the area is returned to a state as close as can reasonably be expected to that which existed prior to the fieldwork.

3.4.5 ***Staff training and PPE*** : all project staff will be CSCS qualified, proof of which can be provided in the form of CSCS cards. All project staff will wear full basic PPE whilst on site,

to include safety helmets, safety boots and high visibility jackets. Noise defenders, gloves and eye protection will be made available to staff as necessary.

3.4.6 ***Site Welfare***: health and safety regulations require access to adequate welfare facilities to be provided for the duration of the fieldwork. This includes a clean area for eating, for sheltering from inclement weather, with adequate hygiene facilities (a particularly important matter when dealing with human remains and waterlogged deposits). These areas should be separated from those secure areas used for the storage of tools, finds, human remains and fuel. Such facilities will be provided by the Client, and will consist of the Cathedral Offices and the tower.

3.4.7 ***Fencing and hoarding requirements***: the area around the trial trenches will be accessible to the visiting public during working hours, whilst there is always a risk of unauthorised visits and trespassing in the evenings and at weekends. Thus, the excavation trenches and spoil, together with any additional storage and welfare facilities, will require protection with heras fencing whilst open, and any appropriate signage. Screening will be required during the exhumation of any human remains and, as a preference, will comprise layers of hessian or similar material wrapped around the heras fencing; this allows the details of the excavation to be obscured, but also the wind to pass through, meaning that the covered fence panel is lighter, more manoeuvrable and less prone to toppling than the solid barrier panels.

3.4.8 ***Services***: full regard will, of course, be given to all constraints (services etc) during the excavation as well as to all Health and Safety considerations. As a matter of course the field team will use a CAT and Genny prior to any excavation to test for services. However, this is only an approximate location tool. All information regarding services, ie drawings or knowledge of live cables or services, within the study area should be made available to the OA North project manager prior to the commencement of the evaluation. Copies of the service information will reside with the site director.

3.4.9 ***Contamination***: any known contamination issues or any specific health and safety requirements on site should be made known to OA North by the client to ensure all procedures can be met, and that the risk is dealt with appropriately. Should any presently unknown contamination be discovered during excavation, it may be necessary to halt the works and reassess the risk assessment. Should it be necessary to supply additional PPE or other contamination avoidance equipment this will be costed as a variation.

3.4.10 ***Infectious diseases***: funerary archaeology presents a specific and complex range of hazards. Although no coffin liquor and soft tissue is anticipated, the risk must be borne in mind. The risk of anyone contracting smallpox is remote but the potential threat to the population at large is such that it must be taken seriously. Staff will wear protective clothing including disposable suits and gloves where the survival of coffin liquor and soft tissue is suspected. Full protective suits, gloves and dust masks will also be worn if working in enclosed spaces, where there is a danger of inhalation of lead dust from coffins.

3.4.11 Where lead coffins were used there may be an increased risk of infection due to the good preservation of bodies and other materials. The highest risk category is that of the sealed lead coffin. If any soft tissue remains are encountered, the hazard presented will be treated as potentially severe and suitable protective systems will be used. It is not only the human remains themselves that present a risk but also the coffin linings and pads, and the result of the body's decomposition, a viscous black liquid. The greatest potential risk presented by this activity is that of contracting anthrax, although the risk associated with working with the remains of a recorded anthrax death are thought to be small. A higher risk is gained from the well-preserved horsehair or woollen materials used in the coffin pads, pillows and packing. Minimum precautions are to wear the correct level of protective equipment. On-site washing facilities will be provided for all staff. Protective clothing will remain within the area of the site for the duration of the work. Overalls, gloves and disposable respirators will be sealed in opaque plastic bags and disposed of in accordance with statutory requirements.

3.4.12 Although sealed lead coffins will be recorded, OA does not undertake their removal or disposal, but is happy to recommend a reputable exhumation company who are willing to undertake this work.

3.5 INSURANCE

3.5.1 OA North has professional indemnity to a value of £2,000,000, employer's liability cover to a value of £10,000,000 and public liability to a value of £15,000,000. Written details of insurance cover can be provided if required.

3.6 COPYRIGHT AND CONFIDENTIALITY

3.6.1 The client holds copyright of all drawings and other records that they provide to OA North as part of this work. Oxford Archaeology will retain full copyright of all generated original records and primary data, and any commissioned reports, tender documents or other project documents, under the Copyright, Designs and Patents Act 1988 with all rights reserved; excepting that it will provide an exclusive licence to the client in all matters directly relating to the project as described in this project design.

3.6.2 OA North will assign copyright to the client upon written request but retains the right to be identified as the author of all project documentation and reports as defined in the Copyright, Designs and Patents Act 1988 (Chapter IV, s.79). OA North will advise the client of any such materials supplied in the course of projects, which are not OA North's copyright.

3.6.3 OA North undertakes to respect all requirements for confidentiality about the client's proposals provided that these are clearly stated. It is expected that such conditions shall not unreasonably impede the satisfactory performance of the services required. OA North further undertakes to keep confidential any conclusions about the likely implications of such proposals for the historic environment. It is expected that clients respect OA North's general ethical obligations not to suppress significant archaeological data for an unreasonable period.

3.7 OWNERSHIP

3.7.1 Currently the material archive (artefacts, ecofacts and palaeoenvironmental samples) found during the fieldwork belong to the owners of the land from which they were recovered (ie, the Dean and Chapter), whilst the documentary archive is the property of OA North. OA North would deposit copies of the documentary archive with the Cumbria Record Office (Carlisle), whilst human remains will be deposited with the Cathedral, or the Tullie House Museum (as requested/arranged by the Dean and Chapter). It is assumed that the division and deposition of elements of the material archive with the Cathedral and the Tullie House Museum will be established in consultation with the Client and the dean and Chapter. OA North retains the intellectual property rights for photography, written text and other works generated during the programme of works and the issuing of deliverables to meet the requirements of the Client.

3.8 PROJECT MONITORING

3.8.1 Monitoring of the archaeological investigations will be undertaken by the Inspector of Ancient Monuments for HE, and by the Cathedral Archaeologist, who will be afforded access to the site at all times. Monitoring meetings will be established with the Client, Cathedral Archaeologist and the Inspector.

3.8.2 OA North will ensure that any significant results are brought to the attention of the client and the Inspector (HE) as soon as is practically possible.

4. METHOD STATEMENTS

4.1 PROJECT SCOPE

4.1.1 The project will comprise the excavation of three trial trenches to evaluate the nature of the buried archaeological resource. The trenches are placed to address a range of research questions and to inform the development of the architectural design and an archaeological mitigation strategy. Works will include the processing and assessment of the archive of raw data (comprising records and physical remains, such as finds and human remains). The findings will be presented in a report, and an archive will be generated for submission to an appropriate repository.

4.2 STAKEHOLDERS AND INTERFACES

4.2.1 As part of the current project, it will be important to develop consultational interfaces with a range of stakeholders, internal and external specialists (Table 1).

Stakeholder	Role	Interface
Carlisle Cathedral Development Trust	Client	Consultation during finalisation of the project design. Regular liaison and updates relating to progress, programme and budget. Contacts: Ian Burns, Rev Mark Boyling
Carlisle Cathedral Archaeologist	Guidance, consultation, quality management	Consultation during SMC and CFCE application and during works. Regular liaison and updates relating to progress and programme and budget. Contact: Canon Dr David Weston
Carlisle Cathedral Conservation Architect	Guidance, consultation	Consultation during SMC and CFCE application and during works. Regular liaison and updates relating to progress and programme Contact: Nicholas Rank
Frank Whittle Partnership (FWP)	Project Manager for Client	Consultation and liaison throughout all phases of the work Contact: Kate Shuttleworth
Feilden Fowles (FF)	Architect	Consultation and liaison throughout all phases of the work Contact: Ingrid Petit
Historic England	Guidance and quality assurance	Consultation during SMC application and during works. Regular liaison and updates relating to progress and programme and budget. Inspector: andrew.davison@HistoricEngland.org.uk
Historic England Regional Science Advisor	Guidance	Liaison, with particular regard to analysis of human remains and establishment of any scheme for biochemistry, radiography Contact: Sue.stallibrass@HistoricEngland.org.uk
Historic England Scientific Dating Team	Guidance; Establishment, articulation and presentation of scientific dating	Liaison, with particular regard to establishing a programme of scientific dating Contact: alex.bayliss@HistoricEngland.org.uk Cathy.tyers@HistoricEngland.org.uk for radiocarbon assay and tree-ring dating, respectively

Table 1: Summary of stakeholders, roles and interfaces

4.2.2 A further interface is the integration of the data from this stage of the works with those generated by the evaluation undertaken in 2012 (OA North 2013). Such integration is likely to be undertaken during any mitigation stage of the project. Where appropriate, updates on the project can be disseminated to the public through various forms of outreach, including on the OA website.

4.3 PROJECT STAGES AND REVIEW

4.3.1 ***Project Stages***: in accordance with MoRPHE, it is proposed that the project should be undertaken in a series of execution stages. Stages should be seen as a basic framework that allows the works to be undertaken in the flexible manner that is required.

• **Stage 1**: geophysical survey (completed; Stratascan 2016) and preparation of the present project design, including incorporation of comments from Historic England and other stakeholders.

• **Stage 2**: a programme of archaeological trial-trench evaluation and processing of the archive of raw data generated by the fieldwork.

• **Stage 3**: collation and production of an illustrated report.

• **Stage 4**: preparation in hard-copy and digital formats of the archive of raw data and specialist reports deriving from all fieldwork and post-excavation stages of the project; deposition of the archives with the Tullie House Museum and Cathedral as appropriate.

4.3.2 ***Project Review***: progress will be reviewed on a regular basis. By necessity, the reviews will involve a degree of liaison and consultation, and will be accompanied by brief update emails so that appropriate stakeholders will be kept abreast of the results of review stages, especially where review indicates that a continuing situation will present a potential risk to the completion of the project to time and budget. An Issues Log will be maintained in accordance with MoRPHE guidance.

4.4 PRODUCTS

4.4.1 The main products of the project will be :

• Illustrated report submitted to stakeholders;

• An ordered and indexed archive to agreed standards;

4.5 TASK 1: MANAGEMENT AND COMMUNICATIONS

4.5.1 Throughout both the fieldwork and post-excavation stages of the project, OA North will maintain close liaison with the Client's representatives, project manager, consultant archaeologist, and English Heritage. This will include notification of all proposals, start and completion dates, as well as regular updates on findings and progress, and any requested changes to the programme and scope of the works. Scheduled Monument Consent and a CFCE licence for the removal of human remains will be sought well in advance of fieldwork. Particularly close liaison will be required prior to the commencement of works, in order to ensure that all health and safety measures are in place, and that the site set-up is both safe, and does not interfere with the daily life of those that live and work in, and visit, the Cathedral precinct. Correspondence and copies of reports will be circulated as indicated in the brief.

4.5.2 Close project management will ensure the efficient execution of the project to time and budget. The project team will be managed by Stephen Rowland, who will organise and monitor the internal OA North staff and the external specialists. Specialists have been chosen for their knowledge of the region and its materials, and for their ability to fulfil contracts to budget and on time. Steve will report to Rachel Newman (OA North Senior Executive Officer: Research and Publication) whom, as Project Executive, will undertake quality assurance and academic direction, and to Alan Lupton (OA North Operations Manager), who is responsible for timetabling staff to ensure that the programme runs to time. In parallel, Steve will report to the Cathedral Archaeologist and to Frank Whittle Partnership (FWP), who will provide quality assurance for the Client.

4.5.3 OA North places importance on the tight and effective management of the post-excavation stages of a project in order to deliver best value to our clients. An element of managerial time, particularly of the Operations Manager, will be dedicated to ongoing internal monitoring, whilst the Project Executive will monitor and assure quality. This is part of OA North internal quality assurance system and ensures the prompt delivery of the agreed report or other deliverables on time and budget. General management time will be required to deal with the organisation of non-specific tasks, administration and correspondence, together with the preparation of any progress reports, project review meetings and for liaison with the Client's monitor. Basic project review, including the tracking of task completion and logging of resource expenditure, will be undertaken internally on a weekly basis. Brief progress reports for submission to the Client's monitor can be prepared to coincide with each invoice and would summarise the current status of each of the tasks (including task sub-divisions). Any problems likely to impact upon the schedule will be transmitted immediately to the Client's representative.

4.5.4 ***Project team briefing***: it will be necessary to brief each member of the project team concerning the aims and objectives of the project, expected outcomes, and their specific roles, responsibilities, products and timetable. Where possible, the briefing will be undertaken collectively, although external specialists may have to be contacted separately. Following the completion of each task sub-division, the responsible staff member will inform the project manager, preferably through a brief email, with details of the work that was undertaken, the time taken, and any positive or negative issues arising that may affect further works. Should any issues arise during the undertaking of a task, the responsible staff member will inform the project manager by whatever convenient method guarantees that the information is transmitted and received. The project manager will in turn keep the Project Executive informed of progress, developments and issues.

4.6 TASK 2: TRIAL-TRENCH EVALUATION

4.6.1 ***Location***: the general investigation area is shown on Figure 2. Within that area it is expected that three trenches, covering a total area of 21.5m2, will be investigated, as outlined in Table 2. Trench numbering follows on from the five trenches that were excavated as part of the previous stage of evaluation on the site (OA North 2013). Trenches 6 and 7 will initially measure 1m in width and up to 1m in depth (where safe to do so, and if necessary in localised sondages). In consultation with the Cathedral Archaeologist, excavation may cease at a lesser depth where that reaches the probably maximum depth of impact (400-450mm bgl in the case of the raft, but up to 10m in the case of piles), or, and where resources permit, may be expanded to 2m in width to allow a maximum safe excavation depth across the trench and additional sondages. Further expansion may be undertaken at the request of the Cathedral Archaeologist and where resources permit, although it is not anticipated that the total area of investigation would exceed 31m2.

Trench	Dimensions	Rationale
6	5m east/west by 1m	Placed to investigate the area of several piles, and also putative archaeological features represented by elements of Anomalies 3a and 4. In particular it will allow characterisation of any deposits to the west of structural remains
7	8m east/west by 1m, with a 1m square extension at eastern end	Lies across piles, but has also been placed to investigate the full profile of the structural remains suggested by geophysical Anomalies 1 and 2. Together with Trench 7, it provides a complete east/west-aligned transect across the development area.
8	3m east/west by 2.5m north/south	The south-eastern part of Trench 8 coincides with part of the area of maximum deep impact, and could be stepped out an extra 0.5m to the south to permit deeper excavation of the southern part of the trench to 1.5m below ground level. It has also been placed to explore and understand better the relationships that may exist between what appear to be several structural phases of the west claustral range.

Table 2: Summary of evaluation trenches

4.6.2 ***Excavation***: modern surfaces will be lifted and stockpiled, or cut out and removed, with the assistance of the Cathedral maintenance team, as appropriate. Overburden will be removed either by hand and will be stored adjacent to the trench on plastic sheeting/wooden boards. Thereafter, excavation will be undertaken in successive, level spits, by hand until the first significant archaeological deposit. This deposit will be cleaned by hand, using either hoes, shovel scraping, and/or trowels depending on the subsoil conditions, and inspected for archaeological features. Such features will be defined and a base plan produced. The exact position and extent of the excavation will be located on topographic survey information provided by the client. The trenches will be planned digitally by experienced surveyors to record the site according to OS co-ordinates, using an EDM Total Station.

4.6.3 The trenches will be excavated to a point that satisfies the Cathedral Archaeologist, to a point where structure remains preclude further investigation, or to a depth of 1m, the maximum depth of a 2m-wide trench in accordance with health and safety constraints. However, should the archaeological deposits extend below this depth, localised sondages will be excavated to a depth that is considered reasonable and safe. Where there is a requirement to excavate beyond a safe depth, this would involve stepping out or shoring of the trench sides. This has not been accounted for in the costings section as each trench or test pit will be treated on a case-by-case basis, but will be costed subsequently as a variation.

4.6.4 During excavation the trenches and spoil will be subject to an on-going metal detector survey by an OA North archaeologist experienced in this work.

4.6.5 Any investigation of intact archaeological deposits will be exclusively manual. Selected pits and postholes will normally only be half-sectioned, linear features will be subject to no more than a 1m-wide sample, and extensive layers will, where possible, be sampled by partial rather than complete removal. It is hoped that in terms of the vertical stratigraphy, maximum information retrieval will be achieved through the examination of sections of cut features. All excavation will be undertaken with a view to avoiding damage to any archaeological features that appear worthy of preservation in-situ or would be better understood across a wider-area excavation. Any archaeological or historical structural features will also be left in-situ regardless, unless their removal is specifically requested by the Cathedral Archaeologist.

4.6.6 All information identified in the course of the site works will be recorded stratigraphically, using a system, adapted from that used by Centre for Archaeology Service of English Heritage, with sufficient pictorial record (plans, sections, and monochrome contacts) to identify and illustrate individual features. Primary records will be available for inspection at all times.

4.6.7 Results will be recorded on pro-forma context sheets. The site archive will include both a photographic record and accurate large scale plans and sections at an appropriate scale (1:50, 1:20 and 1:10). All artefacts and ecofacts will be recorded using the same system, and will be handled and stored according to standard practice (following current Institute for Archaeologists guidelines) in order to minimise deterioration.

4.6.8 ***Environmental Sampling***: samples (bulk samples of c 40 litres volume, to be sub-sampled at a later stage) will be collected from stratified undisturbed deposits and will particularly target negative features (gullies, pits and ditches). These will be returned to OA North's offices for processing. Deposits of particular interest may incur additional sampling, on advice from the appropriate in-house specialist. The location of all samples will be recorded on drawings and sections with heights OD etc.

4.6.9 Between 25%-100% of bulk samples shall be selected for processing, based on the advice from OA North's in-house environmental manager. However, the basis of the advice will be agreed with the Cathedral Archaeologist and the client prior to processing commencing, which will be included in the final report. An assessment of the environmental potential would include soil pollen analysis and the retrieval of charred plant macrofossils and land molluscs from former dry-land palaeosols and cut features. In addition, the samples would be assessed for plant macrofossils, insect, molluscs and pollen from waterlogged deposits.

4.6.10 In order to achieve the aims of the programme of work, it may be required to obtain dating evidence through radiocarbon dating, dendrochronological or other such techniques. This would only be undertaken in consultation with the Cathedral Archaeologist and the client.

4.6.11 ***Human remains***: treatment of these remains will be in accordance with the Church of England and English Heritage's guidelines (2005) and with any CFCE and Environmental Health directions.

4.6.12 For the purposes of the evaluation it is normal that only the human remains within the defined excavation areas will be removed, and the remainder of each burial outwith this will be left in-situ. However, where there is scope and resources to expand the trenches to enable the recovery of complete burials, this can be undertaken. Removal of human remains will be carried out with due care and sensitivity under the environmental health regulations, and any such remains will be screened from the public using debris netting. Furthermore, it is possible that a visit will be required from an OA North human remains specialist to advise on recording. Prior to this work commencing the English Heritage Regional Science Advisor will be contacted for advice.

4.6.13 ***Finds***: all finds recovered during the investigation will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the United Kingdom Institute for Conservation (UKIC) First Aid For Finds, 1998 (new edition) and Tullie House Museum's guidelines.

4.6.14 Finds recovery and sampling programmes will be in accordance with best practice (current IfA guidelines) and subject to expert advice. OA has close contact with Ancient Monuments Laboratory staff at the Universities of Durham and York and, in addition, employs in-house artefact and palaeoecology specialists, with considerable expertise in the investigation, excavation, and finds management of sites of all periods and types, who are readily available for consultation. Finds storage during fieldwork and any site archive preparation will follow professional guidelines (UKIC). Emergency access to conservation facilities is maintained by OA North with the Department of Archaeology, the University of Durham.

4.6.15 With the exception of human remains and metal-detected finds, neither artefacts nor ecofacts will be collected systematically during the excavation of the modern topsoil unless significant deposits are encountered. In such an eventuality, material will be sampled in such a manner as to provide data to enhance present knowledge of the production and dating of such artefacts, although any ensuing studies will not be regarded as a major element in any post-excavation analysis of the site. Other finds recovered during the removal of overburden will be retained. It is not anticipated that ecofacts (eg unmodified animal bone) will be collected during this procedure.

4.6.16 All material will be collected and identified by stratigraphic unit during the excavation process. Hand collection by stratigraphic unit will be the principal method of collection, but targeted on-site sieving could serve as a check on recovery levels where resources permit. Objects deemed to be of potential significance to the understanding, interpretation and dating of individual features, or of the site as a whole, will be recorded as individual items, and their location plotted in 3-D.

4.6.17 Finds will be administered at regular intervals. They will be retained in the Cathedral office during the works, so that they can be examined by the Cathedral Archaeologist, unless they are unstable and require immediate attention. At the completion of the works they will be removed from the site in order that they can be processed at OA North offices. All finds will be treated in accordance with OA standard practice, which is cognisant of IfA and UKIC Guidelines. In general this will mean that (where appropriate or safe to do so) finds are washed, dried, marked, bagged and packed in stable conditions; no attempt at conservation will be made unless special circumstances require prompt action. In such case guidance will be sought from OA North's consultant conservator.

4.6.18 Should waterlogged deposits and such finds be encountered, they will be treated as appropriate. In the case of large deposits of waterlogged environmental material (eg

unmodified wood), advice will be sought with the OA North specialist and English Heritage Regional Science Advisor with regard to an appropriate sampling strategy.

4.6.19 Where possible, spot dates will be obtained on pottery and other finds recovered from the site. Artefacts will be examined and commented upon by OA North in-house specialists.

4.6.20 Any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996. Where removal cannot take place on the same working day as discovery, suitable security will be employed to protect the finds from theft.

4.7 TASK 3: FIELDWORK ARCHIVE COMPLETION

4.7.1 The evaluation is likely to produce palaeoenvironmental samples, finds, and ecofacts; these will be processed so that they can be assessed.

4.7.2 ***Palaeoenvironmental samples***: a number of tubbed sediment samples for general biological analysis (GBA) and bone recovery can be expected. Since these will be collected in accordance with the judgement of the experienced excavation staff (with particular regard to stratigraphic position, formation processes, taphonomy and palaeoenvironmental potential) and in cognisance of the project's research aims and objectives, it can be assumed that all samples derive from important deposits that were considered to have sufficient palaeoenvironmental potential to make a genuine contribution to an understanding of the site. Dependent on the judgement of the palaeoenvironmentalist, between 25% and 100% of each sample will be processed, although smaller sub-samples may be retained for biochemical analysis, parasite squashes, etc.

4.7.3 GBA samples will be processed manually through their disaggregation within water, the floating-off of any light fraction (including insects, charred (CPR) and waterlogged (WPR) plant remains) within a 250-500 micron mesh, and the collection of dense residue within a nest of graded sieves, the smallest with a 500 micron mesh. Sample processing sheets will be completed. Dense residues and light fractions will be air dried or kept wet, as appropriate, and bagged for sorting.

4.7.4 Each of the processed residues will be sorted for the removal of industrial waste, artefacts, large/dense ecofacts, and for bones, which will be packaged appropriately, with bags clearly labelled that the material derives from bulk sampling (as opposed to hand collection). The residues will also be scanned for non-removable or dense palaeoenvironmental material (ie fine charcoal or encrusted/mineralised ecofacts). Records of the sorted and scanned material will be made on processing sheets.

4.7.5 ***Artefacts and Ecofacts***: the recovered artefact and faunal assemblages will need to be processed so that they are clean, appropriately packaged, organised and ready for assessment. Cleaning will be undertaken in a manner appropriate to the material, using tools and techniques that will minimise abrasion, degradation or any other form of damage. Wet materials will be dried thoroughly at a low, stable temperature. The assemblage will then be packaged appropriately according to context and material-type. Pottery of different dates will be bagged separately, as will any sherds that derive clearly from specific vessels or distinct scatters. All bags will then be allocated a unique object record number (ORN), preferably ascending in context order, boxed by material, and catalogued within the OA North computerised finds system. Summary data will be abstracted from the OA North finds database for inclusion within the site database, and as a catalogue to send to the appropriate specialists. The fully processed finds assemblage will be organised by material type, loan forms completed, and will be then transported, as required (by hand, van or courier), to appropriate internal and external specialists.

4.7.6 ***Human osteological material***: to enable the completion of all further works, the human remains will be gently processed over a fine mesh sieve to ensure that no material is lost, and will be bagged, boxed and catalogued.

4.8 TASK 4: ASSESSMENT

4.8.1 ***Stratigraphy***: the stratigraphic data gathered during the fieldwork will be checked, quantified, collated and summarised within a brief report. Digital photographs will be labelled and organised according to the relevant photographic indices; these will form the primary source of plates for all reports and publications. The labelling of the monochrome contact prints will be undertaken as part of the archiving. Original site drawings will be scanned and then digitised in a CAD package, where they will be integrated with the survey data generated during the fieldwork and the form the basis for the final report illustrations.

4.8.2 ***Osteology***: the human osteological material recovered from the evaluation and those retrieved from the washed palaeoenvironmental sample residues will be processed, catalogued and assessed for their analytical potential. Assessment of this material will seek to address a number of specific aims:

i. to assess the potential of the human remains for the estimation of biological parameters such as sex, age and stature;

ii. to assess the potential of the remains to yield palaeopathological information in order to learn about the health status of past peoples;

iii. to assess the potential of the remains for isotope analysis;

iv. to recommend any additional specialist analysis, such as radiography, of the remains;

v. to establish the potential of the remains to contribute to archaeological knowledge at regional and national levels, and the most appropriate way of realising this potential;

vi. to contribute to an updated project design for analysis of the remains, with cost and time implications specified.

4.8.3 In order to achieve these aims, the following objectives will be employed during the osteological assessment:

- quantification of the remains, including the number of articulated skeletons and quantity of disarticulated human bone;
- evaluation of the overall condition and completeness of the remains, with reference to the survival of indicators of age, sex and stature, metrical and non-metrical analyses, and palaeopathological examination;
- establishment of the basic demographic composition of the population, including the proportion of adults and the proportion of juveniles;
- establishment of the overall range and extent of palaeopathological conditions.

4.8.4 Human remains will be assessed in accordance with the recommendations set out by Mays et al (2002) in Guidelines for producing assessment documents and analytical reports. The assessment will be undertaken with reference to relevant site documentation, namely plans, on-site skeleton recording forms and photographs. Each skeleton will be rapidly scanned and a pro-forma skeleton assessment form will be completed, detailing condition, completeness and noting any potential for biological information and palaeopathological information. These observations will provide adequate guidance to the potential of the remains for further study, in accordance with recommended practice (Brickley and McKinley 2004). They will be, by their very nature, preliminary and subject to change as a result of any future recommended study of the remains.

4.8.5 *Condition and completeness*: the general condition of the skeletal material will be assessed with reference to the scoring system set out by McKinley (2004), which grades bones according to the degree of erosion to surfaces and alteration to bony contours. The

completeness of each skeleton will be estimated by recording, as a percentage, how much of the skeleton has survived, and assigning it to one of the following categories:

1 = <25% complete

2 = 25-50% complete

3 = 50-75% complete

4 = >75% complete.

4.8.6 *Biological sex and age*: the basic demographic composition of the population will be established through cursory examination of extant age and sex indicators by employing the techniques described by Brickley and McKinley (2004). The potential of the remains for estimating a more detailed demographic profile, with narrower age categories, will be explored by considering the extent and range of sex and age indicators that have survived and the reliability of these indicators. Estimation of biological sex and age is more accurate if a range of indicators is employed instead of one or two (Bedford et al 1993) and this will be taken into account.

4.8.7 *Metrical analysis*: potential of the remains for metrical analysis will be scored on a scale of 1-5, where '1' denotes skeletons that show no potential (ie no elements can be measured owing to fragmentation and/or poor preservation) and '5' denotes skeletons that show high potential (ie the full range of standard cranial and post-cranial measurements can be taken). The results will be considered in the context of estimating stature, for which the maximum length of a complete long limb bone and the sex of the individual is required (Trotter 1970). Metrical data may also be employed to assist in the estimation of sex (Bass 1987) and also to explore variation in skeletal anatomy in relation to environmental and hereditary influences. For example, calculation of the platymeric (degree of flattening on the femur front to back), platycnemic (degree of flattening of the tibia front to back) and cephalic (cranial shape) indices may be undertaken by employing measurements of the relevant bones.

4.8.8 *Non-metrical analysis*: non-metric traits are another means of studying human skeletal variation in relation to the environment and inheritance (Saunders 1989; Tyrell 2001). The potential of skeletons for scoring non-metric traits will be assessed on a scale of 1-5, where '1' denotes skeletons that show no potential (ie preservation has prevented the observation of all standard cranial and post-cranial sites) and '5' denotes skeletons that show high potential for non-metrical analysis (ie all standard cranial and post-cranial sites can be scored). More readily observable traits will be noted (but not formally scored) to provide an indication of the level and range of traits present in the population.

4.8.9 *Palaeopathology*: the analysis of palaeopathology is dependent on the completeness and preservation of skeletons. Similar bony changes may be observed in many different categories of disease and they can be very subtle; incomplete and poorly preserved skeletons therefore limit palaeopathological study. Assessment of the potential of the remains to yield palaeopathological information, including dental conditions, will, first and foremost, consider the completeness and condition of the skeletons.

4.8.10 Pathology will not be scored formally, but lesions will be noted in order to establish the range and extent of disease in the population. It will also establish the extent to which it will be possible to diagnose the lesions identified on the bones and whether any specialist analyses that may enhance understanding of the conditions are required (for example, the analysis of fractures is greatly enhanced by the application of radiography). Palaeopathological assessment will be undertaken with reference to standard texts (for example, Aufderheide and Rodriguez-Martin 1998; Hillson 1996; Ortner 2003).

4.8.11 *The significance of the assemblage*: the significance of the assemblage will be considered by taking into account the results of the above and evaluating these in the context of other populations that are similar in date and type (Roberts and Cox 2003).

4.8.12 ***Artefact and ecofact assessment***: all finds work will be carried out in accordance with the Institute for Archaeologists Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials (IfA 2001). Each of the recovered material categories will be assessed by suitable specialists to record information fully and adequately on all pertinent aspects of the assemblage, in accordance with current and accepted industry guidelines for the various material types. All metalwork and a selection of industrial residues will be submitted for x-ray, and the interpretation of these artefacts will be reviewed with the aid of the x-ray plates. The results of the assessment will be presented within a report for integration into the post-excavation assessment report, and will provide details of the quantity and quality of the artefactual data, spot-dating where possible, and an assessment of the potential for any further analysis within the framework of the original research questions and objectives, which will be articulated through a series of recommendations. Requirements for illustration and long-term conservation and storage will be established, but should any requirement for specialist short-term conservation be identified, then selected finds will be sent to Durham University Conservation Laboratory for stabilisation.

4.8.13 ***Faunal remains***: the faunal remains will be assessed using the standard zooarchaeological methodologies of Cohen and Serjeantson (1996) and Halstead and Collins (1995), and utilising osteological reference material held by OA North, together with standard reference works (Schmid 1972). Measurements taken will again follow standard guidelines (Von den Driesch 1976; Payne and Bull 1988). Separation of sheep and goat (Boessneck 1969), and the separation of red and fallow deer (Lister 1996) will take place where possible. The assessment will generate a basic catalogue recording the state of preservation, fragmentation and evidence for taphonomy, together with a count of anatomical elements by taxon and the proportion of elements usable for ageing and metrical analysis.

4.8.14 ***Palaeoenvironmental Assessment***: essentially, the assessment of the environmental assemblage will seek to identify those samples with good preservation of a range of charred (CPR) and waterlogged (WPR) plant, pollen and faunal remains, and which are apparently free from modern contamination; the assessment will then make recommendations for further analyses that are appropriate to the project's research framework. The palaeoenvironmental assessment methodology will follow HE guidelines (English Heritage 2002) and Dr Sue Stallibrass, HE Regional Scientific Advisor for the North West, will be consulted as appropriate.

4.8.15 The light fractions from the processed bulk sediment samples, together with any relevant material recovered from/observed within the dense residues, will be examined for waterlogged, charred or mineralised plant remains using a Leica MZ6 binocular microscope. All plant material will be provisionally identified and quantified on a scale of 1-5, where '1' is fewer than five items and '5' is more than 100. Plant nomenclature will again follow Stace (1997) and identification will be aided by comparison with the modern reference collection held at OA North. The components of the matrix will be noted and the suitability of the samples for further analysis and scientific dating will be recorded. The results of the identification process will be recorded into a database. The presence of snails and insects will be noted, and these can be subject to more detailed examination where additional resources are available. The results of the palaeoenvironmental assessments will be articulated within written reports for integration into the post-excavation assessment document, with a contribution to the non-technical executive summary. Care will be taken to ensure that colloquial plant names, where possible, are used alongside scientific nomenclature.

4.9 TASK 5: REPORT

4.9.1 The results from the evaluation will be presented within a report that will be issued within six to eight weeks, unless an alternative deadline is agreed with the client and regulatory bodies, and not withstanding any specialist reports. Both hard copies and digital copies (pdf) will be submitted to the Client, and the Cathedral Archaeologist. Hard copies will also be submitted to the Dean and Chapter, CFCE, the Historic Environment Records (HER) and English Heritage. The report will include;

- a site location plan related to the national grid
- a front cover to include the NGR
- a concise, non-technical summary of the results
- the circumstances of the project and the dates on which the fieldwork was undertaken
- description of the methodology
- a summary of the historical background to put the results into context
- description of the results, to include the results of any specialist work undertaken
- description and basic record of the finds and ecofacts, including qualification by sherd count and weight for the pottery and CBM
- summary analysis of the environmental assessment
- interpretation of the results and their potential archaeological significance, together with an impact assessment of the proposed development
- plans showing the location and position of trenches and test pits, excavation plans and sections,
- illustrations of unusual or important artefacts,
- photographs as appropriate,
- a copy of the brief and project design, and indications of any agreed departure from that design
- the report will also include a complete bibliography of sources from which data has been derived, and a list of any further sources identified but not consulted,
- summary tables listing contexts and finds.

4.9.2 Recommendations for further work will only be included in the report where they have been formulated in agreement with the Cathedral Archaeologist, HE and the Client, as appropriate.

4.9.3 ***Confidentiality***: all internal reports to the client are designed as documents for the specific use of the client, for the particular purpose as defined in the project brief and project design, and should be treated as such. They are not suitable for publication as academic documents or otherwise without amendment or revision.

4.10 TASK 6: ARCHIVE

4.10.1 The results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with Appendix 3 of English Heritage guidelines (Management of Archaeological Projects, 2nd edition, 1991). This archive will be provided in the English Heritage Centre for Archaeology format and a synthesis will be submitted to the HER (the index to the archive and a copy of the report). OA North will deposit the original record archive (paper, magnetic and plastic media) with the Cumbria Record Office (Carlisle), and the material archive will be submitted to Tullie House Museum.

5. PROGRAMME AND STAFFING

5.1 PROGRAMME

5.1.1 It is anticipated that the work will commence in May 2016 following receipt of SMC and the CFCE approval. The fieldwork is expected to take approximately three weeks, but this may be extended where further investigation is required and additional resources are available.

5.1.2 ***Report and Archive***: the report and archive will be produced following the completion of all the fieldwork. The final report will be available within six to eight weeks of completion of the fieldwork, specialist reports permitting. The archive will be deposited within six months.

5.2 STAFFING

5.2.1 A summary of the proposed project team is presented in Table 3. Further details of OA staff can be provided on request. The project will be under the direct management of Stephen Rowland (OA North Senior Project Manager) to whom all correspondence should be addressed.

Team Member	**Principal role**
OA North staff	
Stephen Rowland, BSc (Hons), MS	Senior Project Manager; organisation of the archaeological project, including preparation of project designs, method statements, risk assessments, strategic overview, client liaison, and basic quality assurance
John Zant, BA (Hons)	Project Champion: Academic advice, guidance and background information
Jeremy Bradley BA (Hons), MA	OA North project officers and fieldwork director. Responsible for the day-to-day management and organisation of the fieldwork team, on-site standards and interpretation of the archaeological remains. Jeremy directed the works at Furness Abbey
Rachel Newman, BA (Hons), FSA	Project Executive, responsible for overall academic guidance and quality assurance
Louise Loe BA (Hons), PhD	Head of Burials Service - Expert; Advice on the treatment and conservation of human remains
Chris Howard-Davis BA (Hons)	Finds Manager - Assessment and analysis of finds, conservation advice; detailed academic input
Dr Denise Druce, BSc (Hons), PhD	Environmental Manager Advice and academic leadership on palaeoenvironmental assessment and analysis
Dr Ian Smith BSc (Hons), MSc, PhD	Assessment and analysis of zooarchaeological remains
External Experts	
Dr Mike McCarthy	Assessment and analysis of medieval pottery
Dr Richard Macphail, UCL	Pedological thin section assessment and analysis
Ian Panter, YAT Wood Conservation Laboratory	Advice on treatment of organic remains. Conservation of such remains
Jenny Jones	Based at University of Durham; advice on, and conservation of inorganic remains
John Carrott	Palaeoecology Research Services: assessment of Parasites
Enid Allison	Canterbury Archaeological Trust; study of Insect remains
Lydia King	Based at Lancaster University; study of diatoms
Philip Barker	Based at Lancaster University; study of foraminifera
SUERC	Radiocarbon dating

Table 3: Summary of the Project Team

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APPENDIX 2: CONTEXT LIST

Context	Trench	Description	Period
600	6	Tarmac layer	Modern
601	6	Black stone aggregate layer	Modern
602	6	Grey stone aggregate layer	Modern
603	6	Mid-brown and pink firm sandy-silt rubble levelling deposit with crushed brick and mortar	Post-medieval
604	6	Mid-brown firm sandy silt rubble levelling layer	Post-medieval
605	6	Mid-brown firm sandy silt rubble levelling layer	Post-medieval
606	6	Mid-brown firm sandy silt rubble levelling layer	Post-medieval
607	6	Layer of black coke, fire waste	Post-medieval
608	6	Dark-brown black soft organic deposit	Post-medieval
609	6	Mid-orange layer of crushed brick and sandstone	Post-medieval
610	6	Dark-brown black soft organic silt layer	Medieval
611	6	Light-brown grey mortar and sandstone rubble deposit	Medieval
700	7	Mixed brown silt and yellow sand levelling deposit for paving slabs	Modern
701	7	Modern topsoil	Modern
702	7	Dark-brown firm rubble deposit	Post-medieval
703	7	Dark-brown sandy-silt firm rubble deposit	Post-medieval
704	7	Cut for land drain ***706***	Post-medieval
705	7	Backfill within cut ***704***	Post-medieval
706	7	Stone and brick built land drain	Post-medieval
707	7	Rubble deposit of red sandstone and mortar	Post-medieval
708	7	Void number	Void
709	7	Rubble deposit same as ***707***	Post-medieval
710	7	Rubble deposit same as ***707***	Post-medieval
711	7	Disturbed mortar floor surface	Medieval?
712	7	Deposit of broken roof tiles within layer ***713***	Medieval?
713	7	Dark-brown sandy-silt deposit containing broken roof tiles ***712***	Post-medieval
714	7	Dark-black brown soft sandy-silt levelling layer	Post-medieval
715	7	Dark-grey aggregate layer below paving slabs	Modern
716	7	North-south orientated red sandstone foundation wall of cloister	Medieval
717	7	Red sandstone rubble infill of internal wall of cloister	Medieval
718	7	Mortar fill of structure ***717***	Medieval
719	7	Mid-orange sand bedding layer	Medieval
720	7	Red sandstone decayed possible floor surface	Medieval
721	7	Rubble deposit, possibly robbed out wall	Post-medieval
722	7	Void	Void
723	7	Dark-brown black organic deposit	Medieval
724	7	Cut for possible robbed out wall ***721***	Post-medieval
800	8	Mixed brown silt and yellow sand levelling deposit for paving slabs	Modern
801	8	Dark-grey stone aggregate levelling layer	Modern
802	8	Dark-brown rubble infill of drain ***815***	Post-medieval
803	8	Dark-brown rubble levelling layer	Post-medieval
804	8	Construction cut for fratry porch	Post-medieval
805	8	Fill of ***804***	Post-medieval
806	8	Grey-brown deposit within ***807***	Late medieval?
807	8	Cut for red sandstone structure ***808***	Late medieval?
808	8	Sandstone structure, possibly step for fratry	Late medieval?

809	8	Dark-brown rubble levelling layer	Post-medieval
810	8	Rubble and mortar demolition deposit	Post-medieval
811	8	Remains of flagstone floor surface	Medieval
812	8	Dark-brown rubble infill of drain ***815***	Post-medieval
813	8	Large rubble stones within fill ***812***	Post-medieval
814	8	Black sandy-silt levelling layer	Post-medieval
815	8	Cut of Drain	Post-medieval
816	8	Pale brown sand bedding layer for floor surface ***811***	Medieval
817	8	Band of rubble demolition material	Post-medieval
818	8	Dark-brown rubble levelling layer. Same as ***803***	Post-medieval
819	8	Cut of pit	Late medieval?
820	8	Fill of pit ***819***	Late medieval?
821	8	Bedding layer for robbed out floor surface	Medieval
822	8	Mortar floor surface	Medieval
823	8	Black soft organic deposit	Medieval
824	8	Fill of ***826***	Medieval?
825	8	Black clay-silt deposit	Roman/medieval?
826	8	Cut of a possible robbed out structure	Medieval
827	8	Mid brown rubble deposit	Post-medieval
828	8	Black charcoal deposit	Medieval

7. ILLUSTRATIONS

7.1 FIGURES

Figure 1: Site location

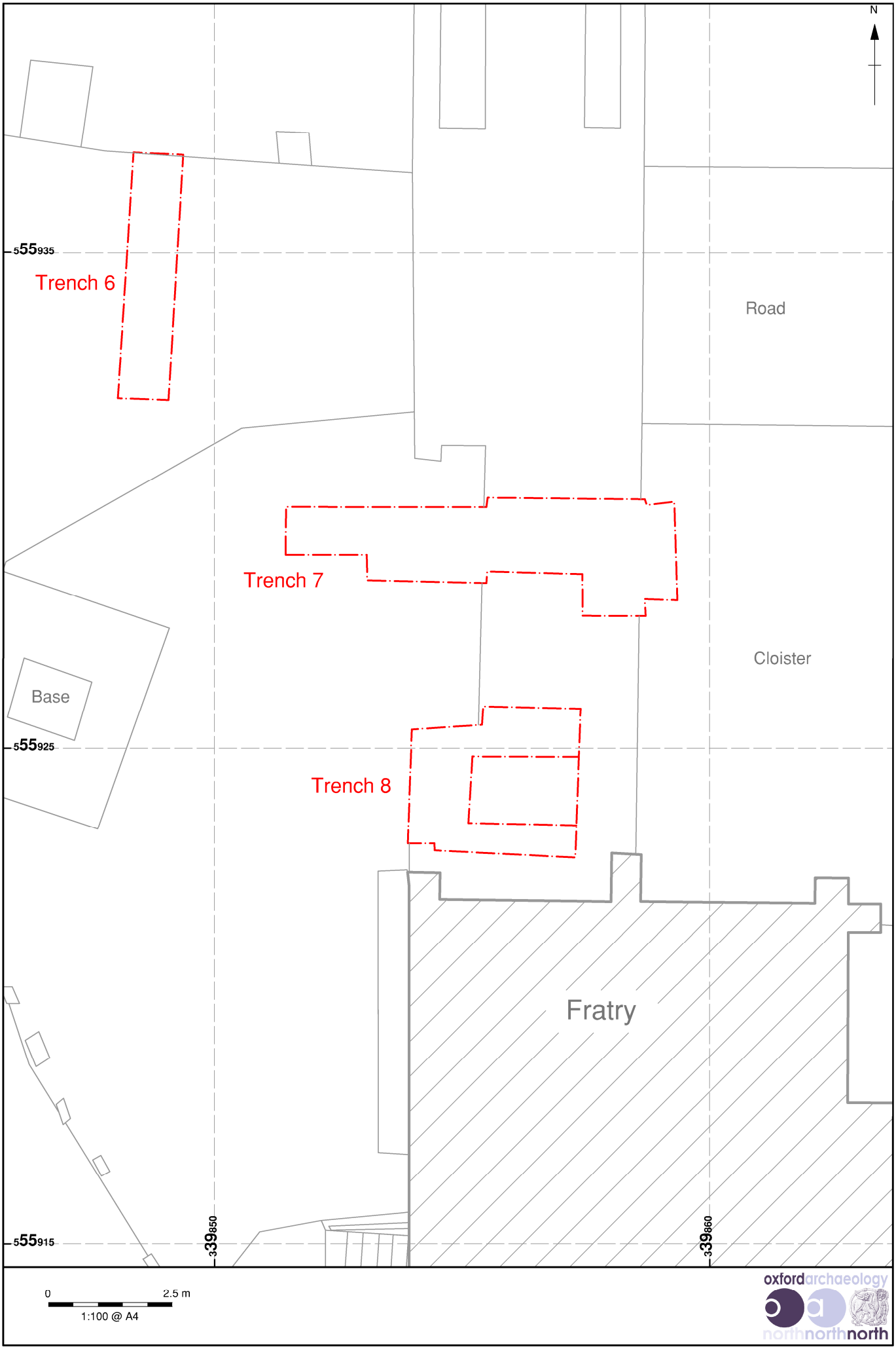


Figure 2: Trench location plan

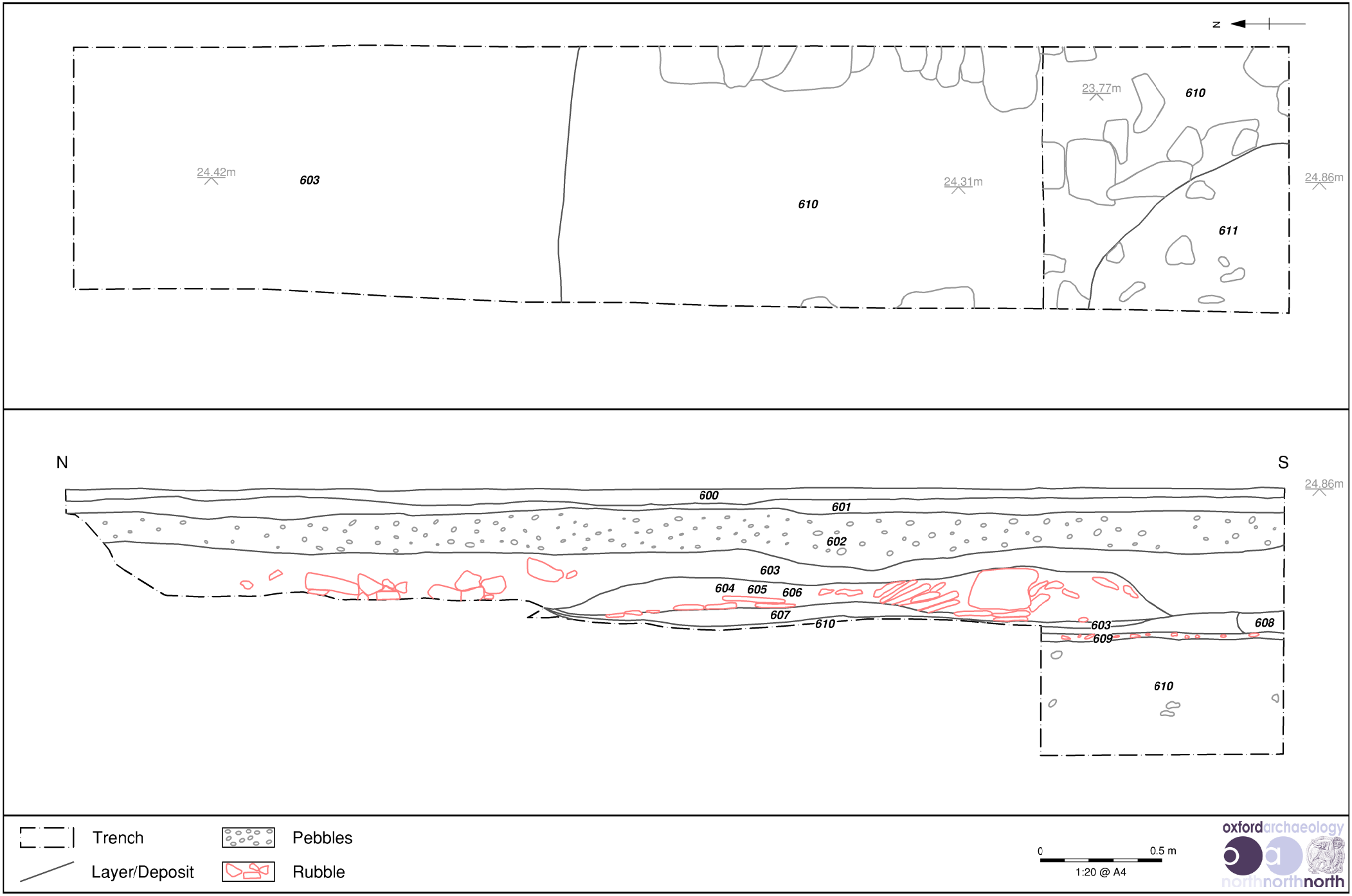
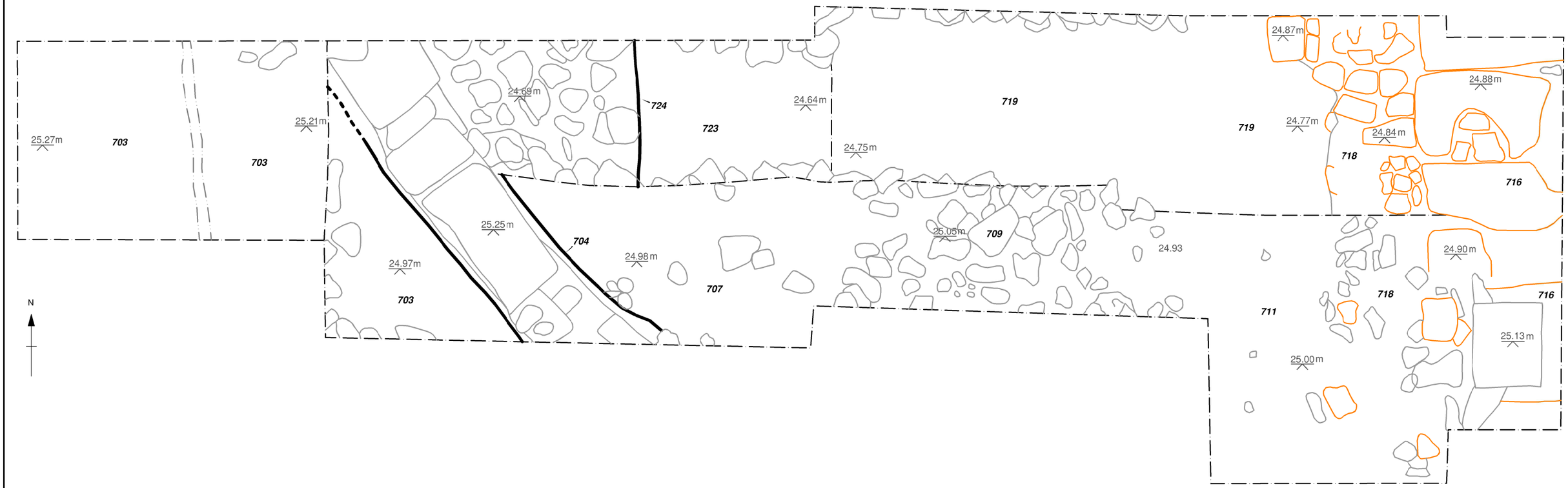
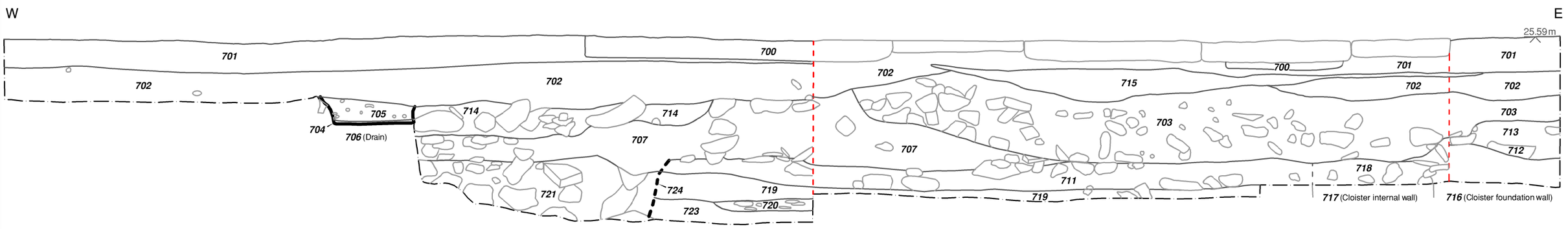


Figure 3: Plan and west-facing section of Trench 6





Trench
Layer/Deposit
Stone
Cut
Tile

0 0.5 m
1:20 @ A3

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AT*L110927*MAT*Oct 2016

Figure 4: Plan and south-facing section of Trench 7

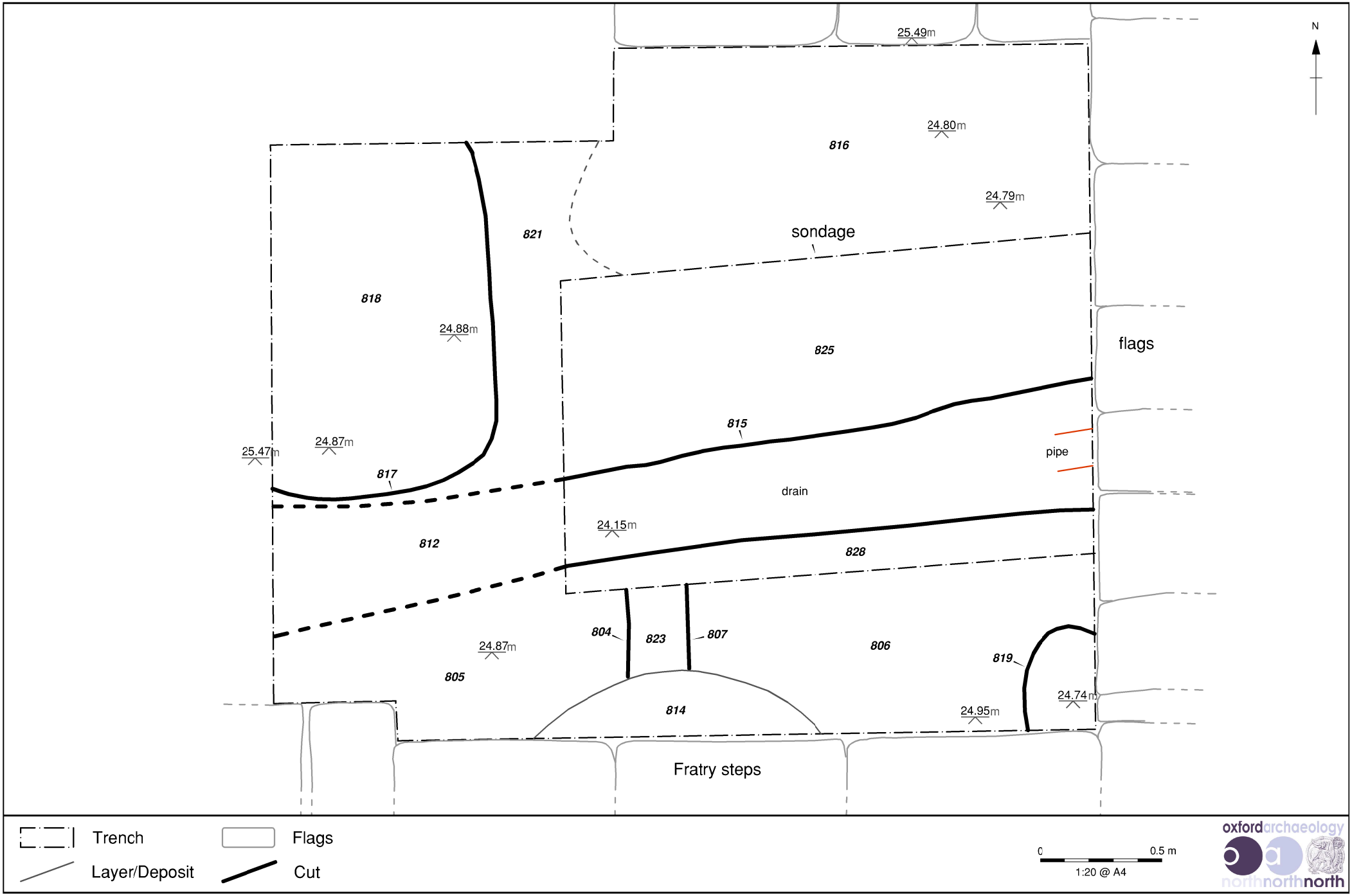
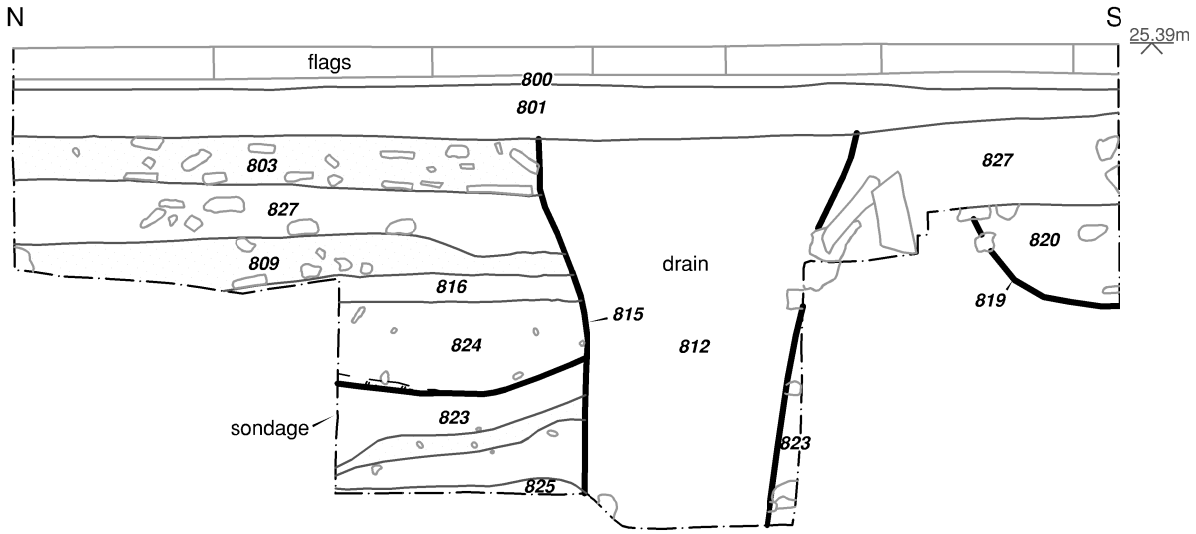
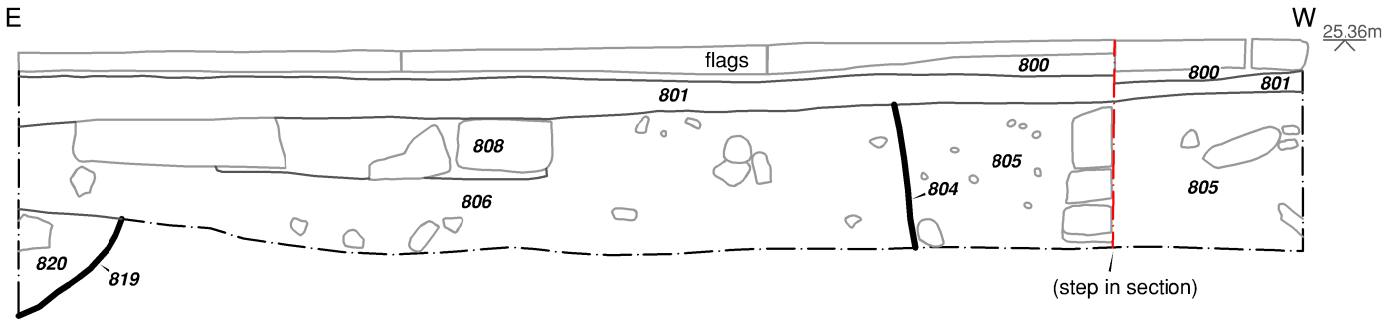


Figure 5: Final plan of Trench 8



West-facing section of Trench 8 with sondage



North-facing section of Trench 8

Trench
Flags
Layer/Deposit
Cut

0 0.5 m
1:20 @ A4

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Figure 6: West and north-facing sections of Trench 8

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