AFON ADDA REFURBISHMENT, BANGOR: ARCHAEOLOGICAL EXCAVATION IN THE DEANERY YARD AND WATCHING BRIEFS ALONG THE AFON ADDA, 2007-8

Excavation and Watching Brief Report

GAT Project No. 1876
Report No. 1154
December 2013

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust
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EXCAVATION REPORT

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Prepared for the Environment Agency

By G.H. Smith
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Cover: Trench 2. Discovery of the 1597 lintel stone by Robert Evans

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ARCHAEOLOGICAL EXCAVATION IN THE DEANERY YARD AND WATCHING BRIEFS ALONG THE AFON ADDA, BANGOR, 2007-8

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ILLUSTRATION HEADINGS

1 SUMMARY

Archaeological work was carried out in conjunction with engineering works by the Environment Agency to provide flood control of the Afon Adda, a small river that runs through Bangor within culverts, some in need of replacement. The archaeological work comprised watching briefs and, in one place, excavation of the route of a new culverted diversion of the river, through the Cathedral and Deanery yards. The watching briefs produced only minor new information. The excavation in the Deanery yard recorded three main phases of activity interspersed with gradual soil accumulations. Firstly, the walls of part of two successive outbuildings of the Deanery, probably coach-houses belonging to the 18th and 19th century. Secondly, a later medieval boundary wall of the Deanery and associated yard surface on which was evidence of a demolition or other destructive event close by, possibly associated with Owain Glyndwr's sacking of the cathedral in 1402. Thirdly, the lowermost deposits were silts incorporating evidence of cooking and butchery, dated to around the early 12th century AD, probably associated with building of the first stone cathedral, begun in 1120 AD.

2 INTRODUCTION

Bangor was first established as an ecclesiastical community in the 6th century AD, occupying a small, enclosed valley and the stream that flowed through it, the Afon Adda, was a key part of it. This land was reputedly a gift of Maelgwn, the ruler of Gwynedd in the early 6th century AD, to the Church. There is a note in the Irish Annals of the sack of the Bangor monastery in AD 634. This original settlement would have been focussed on a chapel within an enclosure, from which the town takes its name – Ban chor, derived from a word for the top rail of a wattle fence (Longley 1995, 52), as similarly was the case for the ecclesiastical settlements of Bangor-on-Dee (Wrexham) and Bangor, County Down, Northern Ireland. White (1984) and Longley (1994) have argued that this early enclosure (Fig. 1) may have been the same as an oval area that was still the focus of the town on Speed's map of the town in 1610 (Fig. 3), and preserved in the modern street pattern. The area around the Adda would have been well-used, if not actually settled and Glanrafon Street probably continues the line of a Medieval road crossing the river by a ford or bridge. Excavations north of the High Street and east of the cathedral between 1981-9 (Longley 1995) identified several early boundaries, the earliest a curvilinear 'slot' just east of the cathedral, dated to between the 6th to 8th centuries AD and suggested to be part of the earliest ecclesiastical enclosure (*ibid* 56). Numerous early graves were also recorded further east, some of which predated a rectilinear boundary ditch dated to the mid 10th century (*ibid* 65). The proposal to cut a new culvert across the Cathedral and Deanery yards meant an impact on an area that had not previously been investigated and which, lying between the cathedral and the former line of the river, was one of potential interest for early activity.

The Afon Adda, although little more than a stream, has had a continuing effect on the development of Bangor because of its tendency to flood periodically. Over the centuries its route was canalised and gradually culverted in a mixture of styles and techniques. Parts of its original route were known from early maps but others were uncertain. The refurbishment of the river culvert was likely to provide more information about the route of the river and culverting. In one place a completely new culvert route was taken, across the Deanery and Cathedral yards to straighten an angular deviation in the existing river culvert route. There was also a possibility of some evidence relating to early structures that lay close to the river channel. These included a possible Medieval water mill by Glanrafon Street and a Medieval Friary close to the coast edge at the north (Fig. 1).

The archaeological fieldwork was carried out at the request of the Environment Agency as mitigation in advance of flood control works along the Afon Adda. The archaeological work comprised a watching brief during geological test-pitting and later construction of a flood bund at Bryn Llwyd, south of Caernarfon Road, Bangor and a desk-top assessment and trial evaluation excavation of the Cathedral and Deanery yards carried out in February and March 2007. Further excavation was carried out in the Deanery and Cathedral yards during July to September 2007 and in Glanrafon Street in December 2007. An

intermittent watching brief was also carried out on the culvert construction at various places in Bangor between May 2007 and April 2008. This concentrated on two places. The first was near Bangor Swimming pool, close to the site of the Medieval Friary. The second was on the area between the Deanery and the existing culvert in Sackville Road, where the new culvert trench would cut through an area of undisturbed ground. This crossed the line of the Medieval street and the vicinity of the probable Medieval water mill.

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3 BACKGROUND

3.1 Geology and Topography

Bangor lies within a narrow steep-sided linear valley which is a glacially worn feature between two ridges of harder rock. A small stream, the Afon Adda, runs along the valley, from south to north, exiting into the sea close to the entrance to the Menai Straits. The rocks on either side of the valley belong principally to the Lower Cambrian and form part of the Bangor Ridge which runs from Bangor to Caernarfon (Smith and George 1961).The soils in the Adda valley consist of sandy alluvium and loam of the Arfon series over drift derived from igneous rocks, granite and rhyolite (Ball 1963, 37). Due to the presence of at least 2.6m of deep alluvial and silted deposits within the valley itself (Smith 2007) no underlying hard rock geology was observed during the excavation itself.

4 AIMS AND OBJECTIVES

The work in the Cathedral and Deanery yards was designed to provide a total ‘preservation by record’ of the new culvert trench. This involved hand excavation and detailed recording of most of the trench. The previous evaluation excavation had excavated most of the culvert trench line down to about 18th century levels. The final excavation meant exploring the deeper stratigraphy to about an additional metre depth.

The route along Caernarfon Road at the south side of Bangor followed an existing culvert and was not informative. The watching brief elsewhere was intermittent and focussed on areas where new ground was disturbed or where evidence of early structures might be found.

5 METHODS

5.1 Deanery Yard Excavation

The area of the Cathedral yard, formerly part of the grounds of the Deanery, is now used as a car park for the Cathedral staff and congregation, while the Deanery yard is used by the Dean and Canonry. The line of the proposed new river culvert across the Cathedral and Deanery yards was first evaluated by means of investigation of a sample of about 50% of its length. Of this, sufficient was excavated to indicate the presence of structures and the depth of archaeological remains within the proposed trench, which would be 2m wide and 2m deep. Trench 1 was excavated in the north-eastern part of the yard and showed quite

shallow stratigraphy with no significant structures but increasing depth of stratigraphy to the south and west. The evaluation allowed complete recording of all archaeological remains within this trench, so that no further investigation was needed. Trench 2 lay across the whole width of the southern part of the yard. This revealed a complex series of structures and a great depth of stratigraphy, which was shown to be at least 1.80m below the existing surface (BS). Only the later deposits were investigated, which comprised yard surfaces and structures relating to the Deanery at the time when it underwent a major renovation in 1863 (Smith and Evans 2007).

After the evaluation the trenches were backfilled and temporarily re-surfaced until the results were assessed. These showed that the depth of deposits justified further hand-excavation and recording and so arrangements were the made for further excavation of Trench 2 and excavation of the remaining parts of the proposed new culvert cutting (Fig. 2). This included an area to the north-east of Trench 1, called Trench 3, and the areas between Trench 1 and Trench 2, called Trench 4. There had been an earlier Deanery yard boundary wall at the south, alongside Glanrafon Street that had been demolished and re-placed on its present line about 1960 to widen Glanrafon Street. Trench 2 was extended south across the line of the existing boundary wall to the edge of the modern road, and this part was called Trench 5. It was not possible at this stage to excavate into the modern Glanrafon Street because of road traffic and so still did not include the line of the earlier Deanery boundary wall and therefore the probable line of the Medieval street frontage. Later, permission was given to excavate the additional area, of about a further 2m, and this was called Trench 6. After the construction of the culvert through the Cathedral and Deanery yards a junction had to be created between the new culvert and the existing culvert beneath the Bishop's Walk. An area of this was opened up by machine at the east end of Trench 3, exposing the old culvert to view and providing an opportunity for recording. This area was called Trench 7.

Six main phases of activity were identified after post-excavation study from 6 most recent, to 1 at the base and 0 natural deposits, and the results are described in terms of those phases. The excavation was recorded using GAT recording sheets and all significant features planned and an overall section drawn. Photographs were taken in digital and 35mm format. A digital database was produced with stratigraphy and internal cross-references allowing interrogation for analysis, but not a complete digital archive.

5.2 Watching brief on Afon Adda culvert construction

The watching brief observations were recorded on day sheets with sketch plans, sketch sections, measured drawings as required, and a continuous photographic record.

The archive of paper records, drawings, photographs and digital data will be stored at Gwynedd Archaeological Trust. The artefacts will be stored at Gwynedd Museum and Art Gallery, Bangor.

6 EXCAVATION RESULTS: BANGOR CATHEDRAL AND DEANERY YARDS

The northern yard

Prior to the construction of the car park in the north part of the Cathedral yard this area was a garden or paddock, as shown on 19th century maps (Figs 5, 7 and 8) and this use was represented in the excavated deposits as a dark humic soil sealed beneath the car park surface. The results are described from north to south, in trenches 3, 1 and 4.

Trench 3
This was the northern part of the cathedral yard and had not been investigated as part of the preliminary evaluation. It was 16m long and *c*. 2m wide. The results were limited because most of the area of the trench had been affected by 20th century pipe trenching, so is not illustrated.

Phase 6: Immediately below the tarmacadam car-park surface was a dark, humic old topsoil layer, belonging to the former gardens that were present until at least 1930. Beneath this old topsoil layer were

areas of yellow-brown buff stony clay amongst a background of dark brown silty loam. It was at first thought that the areas of stony clay represented the fill of old soak-away pits taking drainage from the Deanery, similar to two that were found further to the west in Trench 1 during the evaluation. However, further excavation to a depth of -1.8m below surface (BS) showed that these patchy deposits were actually the backfill of a large linear feature that crossed Trench 3 in an approximately south-south-west to north-north-east orientation. At the base of the trench was the concrete capping of a large ceramic pipe culvert of about 0.7m internal diameter. This pipe was unknown to the contractors and not indicated on service plans. Its top was drilled which showed it to be clean and dry with no liquids or silts within it and so appeared never to have functioned. Its position and orientation suggest that it may have been built as a foul-water pipe and had perhaps been made redundant by the later sewage system built at even greater depth below Sackville Road and Glanrafon.

The upper part of the pipe trench cut through a deep layer of mid-brown stony silt (304) that was the same as the soil build-up or made ground (34) recorded in the north end of Trench 1, adjoining at the south. This overlay layers of more clayey silt, to about -1.70m (BS) where they overlay purer red-brown clay. At the east end, where exposed in Trench 7 (see Fig. 16), layers of alluvial silt and gravel were reached at *c*. 1.50m depth (BS).

Trench 1

This trench was *c.* 43m long, situated at the foot of the lower hill slope on which the Deanery and cathedral are built (Fig. 2). It was therefore on the edge of the valley floor of the Afon Adda, but rose up the slope towards the west end where it cut partly into the valley slope. This was relatively shallow and so had been excavated to the full depth of the subsoil during the evaluation excavation. The trench was illustrated in the evaluation report and is not repeated here (Smith and Evans 2007).

Phase 6: As in Trench 3 a humic old garden soil lay immediately beneath the car park surface over the entire trench. At this level, at the north end, was found a narrow, roughly-laid dry stone-built curving wall and at its side a gravel surface. The wall was the border of a garden bed with a gravel path beside it. These features belong to the wooded garden with a path running through it that existed at this end of the yard in 1889 (Fig. 8).

Phase 5: The former garden soil lay directly over the subsoil over most of the trench at a depth of 0.60m (BS). The subsoil was yellow-brown stony fluvio-glacial silty clay till. Cut into the subsoil were several features. One was a narrow flat-bottomed linear feature [3], with steep sloping sides and a rounded base, oriented east to west, directly up and down slope. This could have been a drainage gully or even a robbed wall foundation trench. The other most evident feature was a narrow stone-lined drain [10], which led into a large rectangular, shale-filled soak-way pit [8], 4m long. The drain was constructed of shale slabs set on edge in a vee-shaped cut, with other slabs set horizontally as capping. The alignment of the drain suggested that it originated from the Deanery house and that the pit was designed to collect foul water to avoid it entering the nearby river. Pit [8] was cut into a deeper, friable dark loam, representing an earlier topsoil build-up or deliberate made-ground to level up the ground after construction of the Bishop's Walk. This was removed and proved to be a deep horizon lying over a gentle natural slope in the subsoil.

This drain and pit appeared to be a replacement for similar features further to the south where there had been another pit [14] and similarly oriented drain [15]. This drain had no stone lining or capping and so perhaps been robbed to construct the second drain [10].

The type of construction of drain [10] and its use of stone rather than slate suggests a date probably before 1800, after which a neatly constructed slate-built culvert could be expected. This accords with the early town plans of Bangor of 1834 and 1854, which show that the drains and soak-away pits were positioned to respect the boundaries of the Deanery grounds as they were in 1834 (Fig. 5) rather than as they had become in 1854 (Fig. 7).

To the south-west of drain [15] were the slight remnants of a previously demolished wall [6], oriented north-west to south-east, originally continuing beyond the limits of the trench. The wall was 0.72m wide

and lime mortared. Its position and alignment matches with a boundary of the Deanery grounds here in 1834 (Fig. 5).

Both the drain [15] and wall [6] were constructed over the line of the small linear feature [3], which is therefore the earliest feature found. Its fill produced one thick irregular piece of bottle glass, which is probably part of the base of a flask-type wine bottle of 18th century date and indicates that its use was of that period. It was a minor feature and probably just part of the layout of the gardens as they existed and shown on Wood's map of 1834 (Fig. 5).

In the southern half of trench 1 the subsoil again lay immediately below the recent garden soil and sloped down to the west, corresponding to the slope at the west edge of the Deanery garden, nearby. The subsoil slope dipped sharply towards the west edge of the trench into a large, linear feature [20]. This proved to be a deep terrace cut into the hill slope, largely filled with dark, friable loam, similar to the former garden soil. Comparison with the layout of the Deanery grounds shown on the map of 1834 identifies it as an artificial terrace between the upper coach drive and a lower yard area. This terrace had been cut away later to expand the lower yard area and reduce the front garden area of the Deanery, as shown on the town map of 1854 (Fig. 7).

Trench 4 (Fig. 15)
This trench joined the two previous evaluation trenches 1 and 2 and so exposed some new ground.

Phase 6: The dark, humic former garden soil (401) again lay immediately beneath the car park surface. Beneath this at a depth of -0.5m (BS) at the north end of the trench was a stony horizon containing occasional cobbles, which belonged to the yard that existed here as marked on the map of 1889 (Fig. 8). At the south end of the trench at the same depth was a spread of demolition rubble (407) containing brick, stone and mortar fragments.

Phase 5: This proved to come from a demolished wall [416] of which some of the footings remained. It was dry stone-built, of roughly rectangular slabs set in a shallow trench (Fig. 15). The wall formed a right angle corner belonging to a structure that is not readily identifiable on the early town maps but seems to have been part of an outbuilding that existed here alongside the earlier Deanery boundary, seen on the 1854 town plan (Fig. 7). This outbuilding and others were all demolished as part of a refurbishment of the Deanery in 1863 and no longer existed at the time of the 1889 map (Fig. 8). A collapsed, slate slab-built drainage culvert [405] crossed the trench at an angle and belonged to the same phase as this former outbuilding.

Phase 4: The wall [416] was cut into a buried dark humic old topsoil (419) containing scattered charcoal fragments.

Phases 3-2: Layer (419) overlay and merged into a much deeper, fairly homogeneous mid-brown silt layer (406) which contained scattered small angular stones. This continued to a depth of -1.50m (BS) and clearly represented a long period when this area was a garden or unused ground, a period during which other phases of activity were later identified in Trenches 2, 5 and 6 to the south.

Phases 1-0: At -1.50m (BS) the deep humic soil overlay a shallow compact fine gravel layer (409)/(413) which overlay mid-grey silt. This mid-grey silt was distinctive because it contained about 20% burnt stones, mainly angular but including a few broken sub-rounded cobbles. This became stonier to the south and included scattered charcoal and animal bone fragments. The deepest part of this silt was at -1.9m (BS) where it overlay a slight hollow [422] in the subsoil, 0.5m deep, which was tested by a slot (Fig. 15). The depth of the deposits to the natural subsoil was also tested by two cross trenches, the depth being too great to allow wider excavation. The subsoil was yellow-buff fine silt (411)/(415) at a depth of -2.4m (BS) and its surface sloped down towards the west (section a-b). The burnt stone layer overlay this slope but was leveling out towards the north. Some of the animal bone and burnt stone was compressed into the top of the subsoil, beneath which was another deeper and less compact gravel layer (410)/ (414). It was uncertain if this was a naturally-derived layer but did contain some burnt stone so if natural was at least mixed by

trampling or colluviation. The burnt stone layer was shown to extend for several metres here and similar deposits were also uncovered in Trench 2 to the west, so this was not a single localized deposit but quite widespread.

Trenches 2, 5 and 6

Phase 7: The southern part of the Cathedral yard was an enclosed yard from about 1950 when the existing triple garage was constructed, with a concrete forecourt on the south side and accompanying piped drains, some of which proved to have removed much of the stratigraphy in the southern half of Trench 2. At the south, the Deanery boundary wall had been demolished and re-built slightly further north about 1960 in order to widen Glanrafon Street and to provide a wider pavement.

Phase 6 (Fig. 9): Prior to the construction of the garage the 1938 and earlier maps back to 1889 show a coach house along the Deanery boundary wall at the side of Glanrafon. This had a yard in front (at the north) and an access road down the slope through the Dean's front garden from Bishop's Gate further east. A small building between parallel walls lay north of the coach house and this is almost certainly the Dean's pig sty, mentioned in earlier documents, and the area to the north of this was presumably the pig yard.

The lower part of the coach-house walls and the internal and external floors still survived beneath demolition debris that had been used to create a more level yard surface. The building was 6.2m (20ft) wide externally, 5.2m (17ft) wide internally. The walls were partly brick-built and the south side of the coach house had also formed the Deanery boundary wall. The point where the new culvert trench crossed the former coach-house happened to have been largely destroyed by the construction of a modern sewer but remnants of a tiled internal floor survived within a room or subdivision of the coach-house marked by cross walls 2.20m apart. Outside, to the north were remnants of a yard surfaced with large water worn cobbles set vertically in sand with a slate slab drainage channel. This cobbled yard was fairly level south to north but sloped up at an angle towards the Deanery at the east.

The remaining portion of the coach-house wall at the north was of quite different construction to that at the west, being built of large stone blocks. One of these proved to be part of a re-used stone lintel with a carved relief inscription '1597 HR' (Fig. 22). The date shows that the initials are those of Henry Rowlands, Dean of Bangor from 1593-8 and then Bishop from 1598 until his death in 1616. The lintel would have been erected in a prominent place to record improvement work done by Dean Rowlands, and was probably over a doorway or porch. This is interesting because the present Deanery is a renovation of an earlier one built by Dean Humphreys in 1685 and suggests that part of an even earlier Deanery survived Humphrey's work. This may have been a porch and may be that shown on the north side of the Deanery on the plan of 1854 (Fig. 7) but which had been removed by the time of the OS plan of 1889 (Fig. 8).

To the north of the coach-house were two dry stone built parallel walls, identified as those of the pigsty yard, seen on the maps from 1914 and 1889. The area between them was mixed and humic as to be expected, and the area beyond them, to the north was un-surfaced yard.

Phase 5 (Fig. 10): This was in fact part of the wall of an earlier building, another probable coach-house, that was shown alongside Glanrafon Street on the 1834, 1841 and 1854 town plans (Figs. 5-7). This shows that the second coach house must have been part of the 1863 renovations. By moving the coach-house to the west it allowed creation of vehicle access from Glanrafon Street, perhaps to make the Dean's front garden more private. The second coach house wall was also shown to have been built on top of the cobbled yard surface, which therefore originally belonged to the previous phase when a small yard and outbuilding adjoined the earlier coach house at the west side on the maps of 1854 and 1841 although these were not present on the map of 1834.

There were walls and floor belonging to this outbuilding beneath the walls and floor of the second coach-house. The floor was of small cobbles set in mortar and the walls were also well-mortared. The wall at the Glanrafon Street side also formed the Deanery boundary wall but was on a slightly different alignment to

the later boundary wall, which had used the earlier wall as a footing. This corresponded with the 1834 town plan which showed the Deanery boundary diverging slightly to the south at its west end whereas in 1889 it continued in a straight line from the south gable wall of the Deanery.

In this phase, within the time span covered by Wood's 1834 plan, the western boundary of the Deanery was formed by a substantial wall, 48. This was demolished later in the phase and the boundary moved to the west along the line where it still exists. At the south end of Trench 2 the demolished wall 52 was overlaid by the cobbles of the yard belonging to the first coach house, as shown on the plan of 1854. At the north end of Trench 2 wall 48 was robbed away totally leaving only a shallow robbing trench and a scatter of debris (See section Fig. 14).

At the southern edge of Trench 6, beneath the modern road surface, a compacted, finely gravelled surface (714) represented one of the earlier road surfaces contemporary with the 19th century Deanery. The road surface continued up to and butted the Deanery boundary wall.

Phase 4 (Fig. 11): Through the whole of Trenches 2 and 5 beneath the floors and walls of the first coach-house there had been a deep build-up of humic soil (614) (Fig. 13 section). This layer, although looking like a rubbish horizon with scattered charcoal fragments, produced very few finds so is more likely to represent a period of low activity or abandonment in the area rather than rubbish dumping. The southern limit of the Deanery at Glanrafon Street was at the same place as in Phase 5 since two layers of soil/rubbish with iron-panning areas built up at the edge of the road seen in Trench 6.

To the north, beyond about the middle of Trench 2 and in Trench 4, a similar build up occurred but the lack of surfaces or structures there in Phase 5 meant that the layer was not as closely assignable to a phase.

Phase 3 (Fig. 12): Towards the base of layer 614 there had been a short-lived dumping of stones within the southern part of Trench 2 and lying on top of a more defined, and probably laid, gravely external surface (657). This dumping of stones may have been associated with a layer (658) lying on top of the gravel surface (657) consisting of a spread of lumps of iron-rich material, possibly iron pan or some kind of demolition deposit. Layer (658) also included an enamelled crucifix plaque (SF 5), hinting at a period of demolition or destruction.

Surface 657 was associated with the remains of footings of a wall [654] at the south, which lay on a similar orientation to wall [48] and so appears to have been an earlier western boundary wall of the Deanery (Fig. 12). Some of the tumbled or demolished remains of wall 654 lay on top of the surface 657. Within surface 657 was a small drain [666] (Fig. 12) of v-shape profile with stone capping, This drain sloped towards the south where it must have drained into a roadside ditch and although no boundary wall or ditch was found, these could have been removed by later disturbance and two gravelled road surfaces were recorded in Trench 6, at -1.45m (BS) and -1.70m (BS), which sloped down to the north, as if towards a ditch.

As the surface 657 continued northwards it dipped down gently and became a roughly laid surface of irregular slabs and blocks (Fig. 12) suggesting that the slope had to be consolidated, perhaps close to the edge of the river. Beneath this stony layer was a humic loamy layer (668) which contained some Dissolution period pottery, one piece of 13-14thC pot and some butchered animal bones.

Phase 2: Beneath the external surface 657 was a sequence of what appeared to be probably natural, sterile colluvial layers and overall hand excavation had to cease for safety reasons because of the depth of excavation at beneath -1.50m (BS). After shoring had been constructed, some small areas were investigated to a greater depth. The final depth of deposits was later recorded during machining for the new culvert to a depth of approximately -2.00m (BS). At the south end of Trench 2 a deeper trial cut revealed mid grey-brown silty clay (534), a wet colluvial deposit.

Phase 1 (Fig. 13): Below layer 534 in the centre of Trench 2 was a gravelly deposit (548)/(541) overlying a layer of silt (545) in what was at first taken to be a pit or gully [546] (Fig. 13, plan and section a-b). This

had steep sides and was consolidated by iron pan. Its primary fill (545), 0.3m deep of mid grey-brown silty clay contained fire cracked stones, animal bone fragments and charcoal fragments, showing that it was an anthropogenic deposit. A small trial trench area was excavated through the feature which suggested that the pit was actually the edge of a more extensive linear feature oriented parallel to the line of the trench and to the contour along the underlying slope of the natural subsoil. A bulk soil sample was taken for possible environmental study. Although the presence of burnt stones initially suggested that this might be a prehistoric deposit, two radiocarbon dates were obtained from charcoal in the deposit, both centred on the early 12th century AD. At the east edge of {546} was a smaller linear feature, the fill of which had the appearance of a natural alluvial fill.

Some burnt stones were also recorded in the base of the deposit 548 in Trench 5 and the stratigraphic position suggested they were contemporary with the layers containing burnt stones and animal bone fragments further north in Trench 2 and in Trench 4.

Phase 0: The top of natural orange gravel subsoil was reached in a small trial cut, at about -2.40m (BS) within the Deanery yard. This appeared to be a glacial deposit, rather than an alluvial deposit associated with the later river valley.

7 WATCHING BRIEF RESULTS: BISHOP'S WALK

Trench 7 was a machine-cut trench to allow construction of a junction between the new culvert across the cathedral yard and the existing culvert below the Bishop's Walk (Fig. 2). The trench re-cut part of the earlier trench 3, removed part of the Bishops Walk wall and broke into the existing culvert there. This proved to be in two styles. At the west was the earliest surviving piece of culvert. To the east was a more substantially built length of culvert of brick in an oval cross-section to which the new culvert was joined.

The trench exposed two useful sections (Fig 16). One was approximately north-south, perpendicular to the new culvert line and to the Bishop's Walk. The other was approximately east-west along the line of the Bishop's Walk. The first exposed a good profile of the earlier Afon Adda culvert, which was to be made redundant by the new culvert across the Deanery yard. The foundations of the Bishop's Walk wall and that of the culvert butted each other in a way that suggests that the wall was built first. However, the mortar of each was similar – light grey with numerous crushed lime and charcoal fragments. The bricks used in each were also similar.

The earlier river culvert consisted of a series of brick arch 'ribs', two bricks deep and spaced about every 4ft set on rough stone footings (Fig. 16A). The brick arches were joined by a roof of long slate slabs set longitudinally along the line of the culvert and path. These were then capped by a layer of crushed brick and stone finished with crushed cinders.

The culvert interior was 1.50m wide and 0.80m high from the top of the river silt within it. Its original foundations were probably at least another 0.50m below this.

At the north-east side of trench 7 the old culvert joined a newer section of brick culvert of different and more substantial design. This was built of a double layer of better quality bricks and stronger mortar in an oval tube cross-profile, *c*. 54in high and 48in wide, internally (Fig. 16B). This was left *in situ* as part of the present construction works and joined on to the new culvert. It probably belonged to the civic works carried out about 1910, associated with the construction of Ffordd Gwynedd and the public library.

The northern side of trench 7 was a longitudinal section alongside the Bishop's Walk, being the *in situ* ground at the time the first culvert was created. This showed a quite different stratigraphy to that revealed in trench 3 nearby. It showed a complex sequence of thin horizontal layers (Fig. 16A). The top 0.50m were layers of cinder or stone chippings, make-up for the path and these lay over a dark, silty old topsoil. Below this was about 0.8m of layers of fine gravel and silt, clearly the remains of the silts of the former river channel, prior to canalising and culverting. These alluvial deposits closely match those exposed further to the east during excavations at the Bishop's Palace in 1996 (Johnstone 2000). The lowest

deposits, tested by hand excavation to -1.7m (BS), consisted of shaley, clayey silt with *c*. 90% sub-rounded to sub-angular stones and may have been of fluvio-glacial origin rather than river silt.

8 WATCHING BRIEF RESULTS: SACKVILLE ROAD AND GLANRAFON STREET

Sackville Road

Background: The watching brief here was designed to observe the area immediately south of Glanrafon Street, where the culvert was cutting through *in situ* deposits along a new line between the existing culvert and the new route through the Deanery yard. This was shown as an open area on Speed's map of 1610 where Glanrafon Street expanded as it approached the river crossing. The map also showed a building on the south edge of the river here and its position on the river suggests that it was a mill and probably the 'water mill' mentioned in the Extent of Bangor of 1306. It was possible that features associated with this mill, such as a leat, might be exposed during the culvert trenching. There was also a possibility that there had been medieval buildings along the south side of Glanrafon Street.

Excavation of the new culvert trench within the Deanery yard in October 2007 had shown the existence of up to 2.4m depth of archaeological deposits of which at about -1.50m (BS) was a probable later medieval /Dissolution period, part gravelled external surface extending towards Glanrafon Street. Below this was a colluvial layer that in places contained deposits of burnt stone and butchered animal bone fragments. Natural gravel was reached at about -2.40m (BS). This work in the Deanery yard therefore showed the potential for buried early deposits and horizons in the environs of Glanrafon Street, which might be expected to continue further south-west.

The 1889 Ordnance Survey map showed that there had at that time been several buildings, where Sackville Road now is and where the new culvert was to run (Fig. 8). An architects plan for the Penrhyn Estate about 1910 showed the proposed creation of Sackville Road by removal of several buildings there (Fig. 17).

Methods: Work began at the south edge of Glanrafon Street on the 31st January 2008 and was observed on a daily but not full-time basis until 18th February 2008 when the edge of the existing (brick) culvert was reached, 25m to the south of Glanrafon Street. Thereafter only occasional brief visits were made to observe trenching along the line of the existing culvert until 20th March 2008. The trench was cut in a series of segments, one culvert section length at a time. The trench sides and base were clearly visible until the limits of a safe working depth were reached at about -1.2m (BS). Steel sheet piling was then driven in along the trench sides and subsequent machine excavation was difficult to observe and record, the main visible area being the working face across the trench. It was not therefore possible to accurately record a running section as had been intended and it was difficult to maintain continuity between observations of each individual segment. However, it was possible to observe closely the progress of the excavation and work could have been halted at any time if potential features or structures were observed that needed investigation.

The length of trench of about 25m provided a profile through the archaeological deposits in this area and the description characterizes the general stratigraphy, rather than describing each segment in detail. One part of the trench north side is illustrated as representative of the stratigraphy (Fig. 17 Section 4 and Fig. 19).

Results: At the north end, close to Glanrafon Street, the upper deposits, to a depth of -0.8m (BS), had been disturbed by insertion of a variety of modern services running beneath the pavement there, including gas and electricity and a large, 12inch diameter concrete drain pipe was uncovered at a lower level. In places there were remains of a layer of neatly set cobbles which seem to have formed an external surface between the early 19th century buildings that had existed here prior to the creation of Sackville Road. There were also parts of the slate slab floors and brick walls of these buildings.

The brick walls were set in shallow trenches cut into a deep series of deposits of fine gravel. These were external surfaces of yard or road at depths between -0.44m to -1.2m (BS).

These overlay a more irregular external surface of larger gravel and occasional flat stone slabs in dark grey silt, which included a few pieces of animal bone. One piece of 18th century slipware pottery came from this level.

At the north side of the trench a discontinuous line of boulders was found at a depth of -1.3 to -1.7m (BS) after removal of the finer gravel deposits and therefore stratigraphically equivalent to the darker gravely layer that produced the 18th C pottery. These boulders appear to have been the remains of foundations for 18th century buildings, some of which were present on Wood's map of 1834 (Fig. 5).

Close to the surviving stone-built former smithy on Sackville Road (Fig. 2) another stone boulder foundation was recorded crossing the trench at an angle and identifiable by comparison with the early maps as the west gable wall of the former buildings there.

Below the remains of these buildings was a deposit of finer gravel in loose, yellow-brown silt which incorporated many cockle shell fragments. This deposit appeared likely to have been water-laid, but it did not produce any dating evidence. This shell-rich horizon was identified over some distance along the trench, as well as in Glanrafon Street and so was not just a localized dump of food waste. It lay above a series of gravel surfaces which relate to the open area shown on Speed's map of 1610 (Fig. 3). These layers existed only outside the Deanery boundary wall but in terms of stratigraphy were probably equivalent to the Deanery outbuildings and cobbled yard surfaces of Phase 5.

Below the shelly horizon at -1.85m (BS) there was an abrupt change to dark grey clayey silt. This was a gleyed, waterlogged horizon containing fragments of preserved round wood possibly indicating that this was a natural alluvial deposit.

At -2.03m (BS) the clay overlay a compact surface of sub-angular small stone gravel in mid-grey silt with a few larger boulders. This stone was locally derived, fragmented bedrock, not fluvio-glacial gravel and indicates a powerful colluvial or alluvial episode.

At -2.40m (BS) the gravel gave way to compact grey-brown silty clay sloping down towards the west, i.e. towards the line of the former natural river channel. At -2.6m (BS) the brown clay changed to pure, stiff, mid-grey clay, probably an early post-glacial estuarine deposit, and this continued to the limit of excavation at *c*. -3.20m (BS).

Summary: The upper part of the deposits showed the remains of former buildings seen on the Bangor maps of 1834 to 1854 (Figs 5–7). These buildings included those recorded on the Penrhyn Estate map of c. 1910, which included two cottages, a smithy, stable, cow house and slaughter house. Some of these must have been built after the river had been culverted. Previously, as shown on Wood's map of 1834 (Fig. 5) the river had followed a different course at this point, although probably canalized, along a curving arc around the south side of these buildings and adjoining cottages.

No evidence was found of any structures that might belong to the possible medieval mill illustrated on Speed's map. The only possible feature was the line of boulders that was recorded close to the former smithy on Sackville Road and at a greater depth than the rest of the foundations of the former 19th century cottages there although on the same alignment. This may be supported by the fact that this alignment respected the line of the river while the buildings to the north, now surviving as the Hen Glan public house (formerly the Three Salmons) lay on a different alignment.

Glanrafon Street

The construction of the culvert across Glanrafon Street was carried out at a later date and had to be carried out by overnight working to avoid interruption of road traffic. This work started within evening daylight

hours so that some of the machine excavation was observed in conditions suitable for recording. The work cut through an area that historically was always a road, although previously narrower than at present, so there was a possibility that some earlier building street frontage might survive, if such buildings had existed.

Much of any earlier the deposits within Glanrafon Street had been destroyed by construction of a major modern sewer down the centre of the street and by connections to it from the Deanery. One section face is illustrated, to represent the stratigraphy where it had not been disturbed by the modern sewer (Fig. 17 Section 3 and Fig. 18).

The surviving *in situ* deposits seen across Glanrafon Street (Fig. 18) were all approximately horizontal and were continuous with similar stratigraphy recorded in trench 6 at the north edge of the street and along Sackville Road. At the top was the deepest deposit of dark grey silt, probably made ground. Beneath this was a dark iron-panned horizon. This lay over a silt incorporating many cockle shell fragments, a continuation of a similar layer recorded in the trenching along Sackville Road.

Immediately below was a series of gravel horizons representing a sequence of re-made road surfaces. These lay over water-laid gravely silts, which, at about -2.20m (BS) lay over stiffer clay deposits that may be early post-glacial, estuarine in origin.

Because the excavation trench was cut from north to south it was the east and west sides of the trench that were mainly visible, i.e. along the valley side, rather than across it. Such changes in level that could be seen indicated that the deposits were dipping gently down to the west, towards the valley floor.

The middle layers of gravel were clearly the remains of earlier road surfaces already recorded in Trench 6, which exposed a small amount of the stratigraphy south of, and butting up to, the original Deanery boundary wall. No boundaries to the road surfaces were found at the west side of Glanrafon Street, corresponding to the picture given by Speed's map that there were no buildings at this point on the south side of Glanrafon Street, which expanded into a larger open area at its lower, north end (Fig. 3).

9 WATCHING BRIEF RESULTS: BANGOR FRIARY

Background: This part of the river culvert route was identified as having some archaeological potential because it passed close to the site of a medieval Dominican Friary, established about AD 1250, which lay 60m to the east of the route, close to Beach Road, which formed the coast edge in the mid 19th century (Fig. 1). The full extent and details of the remains of this friary have never been properly investigated but the outline of the main buildings was recorded during building of new houses and associated drains along Orme Road and Seiriol Road (Hughes 1900). The friary lay close very to the coast edge, which may have caused problems or it may have been damaged during the war with Edward I. Whatever the reason, the Friary was re-established, with grants from Welsh nobles, in about AD 1299, on a new site, further inland, to the south-west (Fig. 1) RCAHMW 1960, 12-13). The boundary of the later Friar's Estate probably continued that of the medieval friary. It was bounded on the west by the Afon Adda and on the east by a small stream that originated from a spring below the ridge on the east (Bangor Mountain). This stream, rather than the Adda, appears to have provided the water supply for the first friary. The Adda here had been an open channel as far as Dean Street until about 1930, when it was culverted, following closely the line of the natural river channel. The route of the former river channel is still evident today by a line of trees that once stood along its bank. A small trial excavation was carried out on the land immediately east of the river culvert and south of Beach Road in 1992 after a planning submission for building development there. This indicated that there had been no major medieval buildings in that area although it did identify one substantial stone wall of possible medieval construction, oriented parallel to and only 6m south-east of the line of the river (Fig. 2) (GAT 1992). This may have been the boundary wall of the Friary, set a little way back from the river, to counter flooding. The 1992 excavation showed that there was some potential for medieval remains in the area and suggested that there may once have been a bridge over the river close to the coast edge.

Methods: Visits were intermittent between 16-5-07 to 15-8-07. A new culvert trench was cut from Glynne Road past the swimming pool to the rear of the fire station. Over most of the route this involved replacing the existing culvert on the same line with little disturbance of new ground, although some undisturbed areas were exposed in the trench sides. From the swimming pool to the fire station it was decided to divert the line of the new culvert to a new line to the north of the old culvert and this cut through new, previously undisturbed ground.

Results: The watching brief began on 17-5-07 in the area at the south-east side of the Bangor swimming pool. The machine-cut trench was *c*. 2m wide and 2m deep and situated just to the west of the original river bed. One side exposed the cut of the existing culvert and the other, south-east side, exposed about 0.60m of modern soil and hardcore make-up overlying sterile natural alluvial silts. Further north the cut included part of the former river channel with bands of silt from the base at *c*. -2.1m to -1.2m (BS), where a dark humic band marked the fill of the most recent river channel, before it was backfilled.

As the trench continued northwards alongside the swimming pool building it diverged from the line of the former river channel. Here, the upper layer consisted of made-ground of about 1.2m depth below which was soft, homogeneous sterile grey clay which is likely to be an early Holocene estuarine deposit.

Excavation then continued alongside the fire and ambulance station and most of this part consisted only of re-cutting of the old culvert trench. Below -1.2m (BS) on the east side the trench cut into mid-grey alluvial clay, which was probably a natural estuarine deposit.

As the trench continued north the west face was again old culvert fill but at the east edge the top 1.2m was of dark humic loam being the fill of the old river channel. A small disused brick-walled and arched culvert was found here which had drained into the river, probably associated with the housing around Orme Road to the east, built about 1900. The land between Orme Road and the river was not built on at that time because of the problem of flooding.

Just beyond the north end of the fire station nearly the whole depth of the trench cut through dark loam fill of the old river channel and at the base cut into a deposit of natural alluvial or marine water-logged sand. This was soft and unstable and had to be excavated to a much greater depth of -3.00m (BS) to reach a stable deposit of sterile stiff grey estuarine clay onto which a stabilizing layer of hardcore could be laid.

The new trench extended to just beyond the north-east corner edge of the fire station where the new culvert connected to an existing access chamber.

Summary: The exposed edges of the new trench were mainly of re-cut old culvert trench and backfill apart from an area to the north where the east edge was of backfill of the former river channel. The only structural feature found was an early 20th century brick culvert and no deposits were uncovered that could be of earlier date. If there were any medieval structures in this area, e.g. revetting walls to the river bank then these must have been further east, perhaps comprising the wall discovered in 1992. The narrow, straight line of the recorded river channel shown on early OS maps as it passed through this area suggests that it had been canalized at an early date. Its natural route in this lowest part of the profile as it approached the sea would naturally have been wider, meandering and partly tidal.

10 ARTEFACTS

10.1 Copper Alloy

Context 516; From Tr 2 Phase 6, mixed backfill of robbed boundary wall 48.
RF 1 Small strap buckle. Tongue-shaped.
RF 2 Small plain sheet disc. 24mm dia. 27mm long by 21mm wide. Very worn token.

Context 80; From Tr 2 Phase 6, humic soil.
RF 4 Thin triangular sheet frag, folded over. Max dimension 22mm.

Context 532; Soil accumulation below yard of first coach house. Tr 2 Phase 4.
A broken and incomplete strengthening plate. Slightly curving strip of angle plate, angle greater than 90° with holes to nail perhaps to corner of a box. Length 145mm, width 14mm, thickness 1mm.
A broken and incomplete strengthening plate from curving edge of a box. Curved and sharply folded over strip. No nail holes. Length 161mm, width 13mm, thickness 1mm.

Context 658; From Tr 2 Phase 3B, a thin deposit on top of the earliest cobbled yard surface 664.

RF 5 Enamelled plaque. See below.

A Romanesque Enamelled Plaque from Bangor Deanery
By Mark Redknap

In 2007 an enamelled, gilt copper-alloy plaque was found during the Gwynedd Archaeological Trust excavations near Bangor Deanery and Cathedral, in advance of the laying of a new pipe trench. It was recovered from context 658 (RF 5).

The plaque has the form of a T-shaped terminal depicting a lion (for St Mark the Evangelist). There are four holes for gilded, dome-headed rivets that originally attached the plaque to the arm of a cross (left arm as viewed). The lion's mane is denoted by a series of engraved Vs. The enamel is poorly preserved, but the background appears to be light blue (cobalt), with a pale cream for the border, probably a degraded enamel. Raised gilt champlevé lenticular devices divide the background panels into smaller units, providing a combination of decoration and assistance in the enamel adhesion. The lion's nimbus has concentric bands of enamel within a gilded copper-alloy border. The inner band of enamel of the nimbus is green with three red pellets to top and sides of the head; the outer band is now a pale enamel (possibly a degraded yellow). Each wing has two inner engraved lines denoting feathers. There is a square of light (pale blue?) enamel bottom left of the lion, with vertical gilt bar set in the centre – which could represent St Mark's book. The plaque measures 59mm in height, 36.7mm in width, and 2mm in thickness. The arm of the cross was 38.5mm in width.

The gilding is poorly preserved, surviving in good condition within engraved lines, and under rivet heads. The plaque has been bent, perhaps when detached from its cross.

Discussion
The plaque would have adorned the back of the cross (the front often being reserved for three-dimensional representations of the Evangelists or SS Mary and John).

Compositional analysis of the enamel by Ian Freestone and Phil Parkes (see below) suggests that the glass 'is no earlier than AD 1200, and possibly closer to AD 1250', and that this glass corresponds well to enamels produced in Limoges. Nimbi with similar concentric bands of enamel are common (e.g. Gaborit 1995, p. 43).

Medieval Limoges enamelwork has been extensively published (e.g. Rupin 1890; Marquet de Vasselot 1941; Gauthier 1987). At first sight, the eroded plaque appeared to depict the eagle of St John the Baptist, but this Evangelist is most frequently positioned at the top of the cross (e.g. cross from Menussac, Haut-Vienne, France: Thoby 1953, pl. 30, no. 61 and one in the Walters Art Gallery, Baltimore, no. 44108: Thoby 1953, pl. 41, no. 90). One in the Walters Art Gallery, Baltimore, with half-figure evangelists, has the eagle on the left (Thoby 1953, no. 79). The position on the left arm is usually reserved for the lion of St Mark, as in this case (e.g. Rupin 1890, fig. 334). A similar half-figure lion with lenticular inserts in background occurs on a Limoges cross in the National Museum Zurich dated about 1200 (LM11220). For a cross with similar plaques from Jouac, Haut Vienne, France, see Arminjon *et al* 1995, 75.

Romanesque enamelled metalwork has been recorded from a number of sites in Wales, including an early thirteenth-century *corpus* of Christ from Criccieth Castle, found 'in a very burnt and corroded condition in

a layer of burnt material in the base of the western tower of the inner gatehouse' (NMW 35.289; Ormesby-Gore 1935, 358-9; O'Neil 1944, 38). A similar plaque depicting the eagle of John the Evangelist, one of six elements from a Romanesque cross brought to the National Museum Wales for identification in 2003 and thought to come from a site in south Wales, has a nimbus in red (centre), green and yellow (outer) enamel, and measures 51mm in height, with a maximum width of 61mm. A gilt copper-alloy T-shaped enamelled mount from the terminal of a cross arm depicting the eagle symbol for St John the Evangelist has also been found at Montgomery Castle (Knight 1993, 191). The swept back wings are typical of late twelfth-century examples (e.g. Metropolitan Museum of Art 1996, cat. no. 63b, *ca*. 1185-95), and the Montgomery example may be late twelfth or early thirteenth century in date.

The Bangor find is a welcome addition to the Corpus of Romanesque enamels, providing a further glimpse of the polychrome fittings that once adorned cathedrals and churches in Wales.

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Figure caption:

Fig. 1. Front and back of the enamelled plaque from Bangor Deanery. (© National Museum of Wales)

Enamel analysis of the Romanesque plaque from Bangor Deanery

By Prof Ian Freestone and Philip Parkes

A small sample of the pale blue enamel which came loose during cleaning (from the area just above the bottom left hole, *Figure 3*) was mounted in epoxy resin and polished so that it could be analyzed. Analysis was carried out using a CamScan Maxim 2040 scanning electron microscope with an Oxford Link ISIS energy dispersive x-ray analyzer (EDS).

Table of results:

		Compound %
Sodium	Na_2O	11.8
Magnesium	MgO	2.7
Aluminium	Al_2O_3	0.7
Silicon	SiO_2	48.3
Sulphur	SO_3	0.5
Potassium	K_2O	1.2
Calcium	CaO	4.6
Manganese	MnO	0.3
Iron	Fe_2O_3	1.6
Cobalt	CoO	0.2
Copper	CuO	0.2
Tin	SnO_2	8.4
Antimony	Sb_2O_3	1.1
Lead	PbO	18.4

From the results above the glass is likely to be no earlier than 1200. Before this northern European enamels had antimony-based opacifiers and were low potash, low magnesia (both below 1%). A study of Limoges enamels (Biron, Dandridge, Wypyski and Vandevyver, 1996) indicates that enamel compositions fall into two groups that divide roughly before and after the beginning of the thirteenth century. The high levels of tin (over 8%) in this sample would suggest that the enamel falls into the late-type enamel group, dating from about the second quarter of the thirteenth century and later. The enamel is a light blue colour and has low copper but over 1% Fe_2O_3. On this basis it corresponds very well to the cobalt coloured blue glasses that were analyzed.

Overall this enamel corresponds very well to the enamel produced in Limoges from approximately the second quarter of the thirteenth century.

References

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10.2 Iron

The iron objects were thickly encrusted with corrosion and were radiographed by Philip Parkes at Cardiff University from which basic identifications were made, see below. There were no significant iron objects, in terms of type or context and none were selected for cleaning or illustration.

Phase 6
Context 516, Trench 2. Mixed backfill above line of robbed boundary wall 48.
1. RF 3 Table fork. Two pronged head on iron shank with handle of two bone plaques, tapering towards the prongs and held to the shank by three small rivets. 180mm long. Handle max 15mm x 13mm.

Context 608, Trench 5. Bedding for tiled floor of the later coach house.
1. Large building nail. Rectangular section and expanded head. 118mm long. Shank max 6mm square.
2. Tapering, slightly curving spike, rectangular section. Probably broken. Incomplete length 123mm. 8mm x 6mm section max.
3. Long thin straight strip. Slightly tapering with a circular end plate 15mm dia. with a central circular perforation 4mm dia. Strip 8mm wide x 2mm thick max., tapering. The perforation has a thin cu alloy lining. Possibly a hand from a large clock.
4 – 6. Three unidentified fragments, possibly broken nails.

Phase 5
Context 65, Trench 2. Soil accumulation predating cobbles 53 of first coach house yard.
1. A plate or strap, slightly curving and possibly a fragment from a broken wheel tyre. 177mm long, 63mm wide and 3mm thick.

Context 610, Trench 5. Soil accumulation/dump over the slate floor of first coach house.
1. A large building nail. Rectangular shank section with broad spade-shaped head turned over at right angles. Shank tapering from 16mm x 13mm max. Head 34mm x 30mm.

Context 628, Trench 2. Gravelly layer sealed below cobbles 53 of first coach house yard.
1. A large building nail with tapering rectangular section shank and rectangular expanded head. 72.5mm incomplete length. Shank 6.5mm x 5mm max. Head 10.5mm x 7mm max.
2. A large building nail, as previous. Incomplete length 52.5mm. Shank 8.5mm square max. Head 13.5mm x 12.5mm.
3. Small rivet or clench nail. Sub-rounded shank and head. Head tapered to shank and end of shank turned over. 25mm long. Shank 3mm dia. Head oval 9mmx 7mm.

Phase 4

Context 532, Trench 2. Soil accumulation.
1. Broken pony shoe.
2. Broken pony shoe. Possibly part of previous but not certainly joining it. Length 106mm.

Context 630, Trench 5. Demolition deposit sealed beneath floor of first coach house outbuilding.
1. A tapering spike with rectangular section. Probably almost complete length 91mm. Shank 4.5mm x 3mm.
2. Nail fragment (?). Incomplete length 45mm. Rectangular shank *c*. 5mm square.

Context 632, Trench 5. Humic accumulation sealed beneath floor of first coach house outbuilding.
1 – 2. Two building nail fragments with heads *c*. 12.5mm square and rectangular shanks, *c*. 6mm square.

Context 648, Trench 2. Humic soil predat6ing cobbled yard of first coach house.
1. Long tapering spike. Possible large wall nail with head missing. Incomplete length 142mm. Rectangular section *c*. 10.5mm square tapering to a point.

Context 655, Trench 2. Humic soil predat6ing cobbled yard of first coach house.
1. A T-headed building nail made from strip folded double to create a double head. 82mm long. Shank 10mm by 9mm tapering to a point. Head 43mm long and 15mm wide, max.
2. L-shaped nail-like object. Unidentified.
3. Probable head of a large building nail. Head *c*. 13.5mm square Tapering shank. Coal frag adhering to corrosion as well as other carbonised/vitrified fragments.
4. Ditto.
5. Small nail fragment with expanded head. Vitrified adhesions.
6. Ditto.

Phase 3
Context 663, Trench 5. Fine gravel sealed beneath earliest yard surface, predating first coach house.
1. Small slightly curving bar with rounded section. Unidentified function. Incomplete length 65mm. 10mm dia.

10.3 P**ottery**
By Julie Edwards

Pottery from Phases 3 to Phase 5 was sent for recording and analysis, totalling 274 fragments, 4022 g. This report summarizes and discusses the range of material within phase groups; details of individual contexts and sherds are recorded in the archive.

Methodology
The pottery was recorded in context groups by ware and when possible form in accordance with MPRG minimum standards (MPRG 2001); quantification was carried out using sherd count and weight. The terms used to identify wares are those employed in the Chester City Council Archaeological Service fabric reference collection modified for the post-medieval wares with terms recommended by the Potteries Museum during an English Heritage sponsored training course in 1999. The pottery data has been entered into an Access database.

Condition
The assemblage is very fragmentary, sherd size is not large and levels of abrasion vary throughout the assemblage with some sherds being in poor condition whilst others relatively good. There are no complete vessels nor can any complete or partially complete vessels be reconstructed from the fragments. Many vessels are only represented by single body sherds and their form cannot be determined. The majority of the context groups contain less than 18 sherds and within that the majority have three or less, however three groups (532), (648) and (655) in phase 4 are comparatively large, containing 34, 42 and 30 sherds respectively.

Phase 1-2
A small abraded fragment (19 g) of ceramic building material, probably a piece of post-medieval brick was the only ceramic find in this phase and is presumably intrusive.

Phase 3
A total of 22 sherds (265 g) were found in contexts (534), (540), (656), (669) and (668). These sherds are mixed in date and span the thirteenth to the late seventeenth/early eighteenth centuries.
Two pieces of medieval pottery (52 g) were found in contexts (543), a layer of silty clay and (669) in Phase 3A2 associated with the construction of the first boundary wall. Both are fragments from the thumbed bases of jugs made in a Cheshire-type red/grey ware which on the basis of finds from North Wales castle sites, notably Dyserth and Deganwy, was in use from c.1250 (Talbot 1977; Hewitt and Morgan 1977) and possibly until sometime in the first half of the fourteenth century.
The remaining contexts, including (668) in Phase 3A1, produced post-medieval wares including fragments of a sixteenth century French chafing dish, SF10 described below. Context (540) produced the largest assemblage consisting of fragments of blackwares, yellow wares and brown-glazed wares of seventeenth century date; drinking vessels and a jar are the principal vessels that can be identified. Fragments of relief moulded slipware dishes date to the second half of the seventeenth century and a piece of mottled ware is from the late seventeenth or eighteenth century. A small abraded fragment of North Devon gravel-tempered ware appears to be part of a colander. In addition to pottery fragments of clay tobacco pipe stem and the rim of a late eighteenth or early nineteenth century glass bottle were found in context (540).

> **SF 10** (534) Saintonge chafing dish. Knob from a type 1 chafing dish dated 1500-1600 (Hurst et al 1986). These dishes are decorated with a moulded face mask applied below each knob, often with poorly defined features as on this example. The knobs are alternatively glazed yellow/ orange and green around the vessel. This fragment is clear glazed (yellow) but an area of green glaze can be seen on the broken edge. Additional decoration is provided by short lines of comb stabbing set at angles to the rim. On the interior behind the mask three perforations are visible from where wooden pins were used to hold the mask in place during firing.

Phase 3-4
Thirteen fragments (236 g) of pottery were found in contexts (645), (646),(733) and (742) all are post-medieval apart from a single sherd of a Saintonge jug in (742) dating from the mid-thirteenth century. The fragment is from the base and lower body of a jug and the remains of combed decoration can be seen on the broken edge, applied strip decoration is more common on Saintonge jugs but combing is known

(Brown 2002, 26). The post-medieval wares range in date from the mid-seventeenth to eighteenth century and comprise trailed slipware dishes, blackwares, brown-glazed wares and tin-glazed ware. A small fragment of clay tobacco pipe stem and a piece from a glass wine bottle dating from the mid-seventeenth century are also present.

Phase 4

As might be expected the rubbish rich soil deposits below the cobbled yard produced the largest assemblage of pottery from the excavations totalling 159 fragments (2004 g). The deposits contained material that is mixed in date with fragments from a wide range of wares spanning the medieval and post-medieval periods. The stratigraphy does not appear to represent a chronological sequence of events and the pottery suggests that the phase consists of re-deposited soils rather than any primary deposits of rubbish.

Medieval wares consist of Cheshire-type red/grey wares as well as late medieval and transitional wares from the Ewloe and Buckley area of north-east Wales, absent are medieval imported wares from beyond the North Wales/Cheshire region however some examples of these have been noted from deposits elsewhere on the site. A small fragment of medieval floor-tile without any visible decoration was also found in (532).

The post-medieval wares are those that could be expected from a relatively prosperous urban site of the period, parallels can be drawn with assemblages from urban and high status sites on Anglesey e.g. Beaumaris (Smith and Edwards 1996) as well as Chester. A range of utilitarian storage and cooking wares as well as those designed specifically for use at table are present and include jars, dishes, cups, mugs, jugs, bowls, chafing dish fragments and also flowerpot and chimney pot fragments.

A small group of sixteenth century wares can be identified which include: Cistercian-type wares, Midland Purple-type wares, Cologne stoneware, a handle fragment from a Saintonge ware jug, Beauvais ware, a Spanish lustreware and a possible Continental stove tile; whilst Continental imports have been recorded in small numbers from a variety of sites in North Wales (Campbell 1993; Smith and Edwards 1996) the latter two are not common. The assemblage is very fragmentary and sherds are often featureless body sherds but some pieces have features worthy of illustration and are discussed individually below. Whilst several of these sixteenth century wares were found in (532) and were accompanied by other potentially contemporary wares such as transitional Ewloe type wares, Cistercian-type wares and Midland Purple-types, including chafing dishes and jars, later seventeenth, eighteenth and nineteenth century wares were also present in the context as well as later post-medieval glass wine bottle fragments and clay tobacco pipe fragments. Brick fragments also from context (525) are possibly frame moulded rather than stock moulded and potentially date to the earlier rather than later post-medieval period.

The seventeenth century and later wares include blackwares, mottled wares, yellow wares, and a variety of slipwares corresponding to types that in Chester are common components of ceramic assemblages in the mid-late seventeenth century, with some continuing into the eighteenth. Lesser amounts of tin-glazed earthenwares, North Devon wares and a fragment of an early English stoneware mug of late seventeenth or early eighteenth century date are also present. Eighteenth century fine tablewares are represented by white salt–glazed stonewares (including a scratch blue fragment), Whieldon-type ware and tin-glazed ware. Fragments of transfer-printed wares, whitewares and a stoneware sewer or drain pipe fragment are nineteenth or twentieth century in date. Wine bottle glass varying in date from the late seventeenth to the late eighteenth or nineteenth century is also present in this phase as well as fragments of clay tobacco pipe stems.

> **SF8** Tr 2 (532) a fragment from a ceramic plaque, possibly a stove tile, 36 mm wide and varying in thickness from 4 mm at the sides to 6 mm at the centre and broken at each end. The surface has part of a relief moulded figure depicting the upper body of a man dressed in clothes in the style of the late fifteenth and sixteenth century. The right hand holds an upward pointing short sword or dagger, what appears to be a heavy neck chain hangs low over the chest. The figure is bordered by columns which may have formed an arcade framing the figure. A curved band, from which there appears to hang a pendant decoration, frames the lower edge. Just to the left of the pendant a small hole pierces the thickness of the piece from the front to the back; this is possibly where a wooden pin held the moulding in place during firing, a method used for the applied masks on French chafing dishes

(Hurst et al 1986, 78-80). The reverse of the piece has been smoothed flat, the sides knife trimmed and a shallow rebate runs along each side.
The plaque is made from a fine buff firing clay that has sparse fine red iron oxide inclusions and fine pink stained quartz. A clear (yellow) glaze covers the surface, traces of which are also present on one of the sides.
The style and subject of the decoration is comparable to Rhenish stonewares of the sixteenth and early seventeenth century. It is possible that this is a fragment of an earthenware vessel copying a stoneware but the piece is totally flat which rules out a mug or jug, the most common forms. Alternatively the piece may be from a more complexly constructed vessel such as a pedestal salt or French chafing dish or a stove tile. No parallel has been found for a salt and the decoration is possibly too fine to be a French chafing dish although that does not rule out a French, possibly Beauvais origin.
Wood burning stoves incorporating ceramic tiles were in use on the Continent from the thirteenth century and from the fourteenth century the tiles used in their construction became increasingly ornate and decorative (Gaimster, Goffin & Blackmore 1990, 4-8); they were introduced to Britain during the late fifteenth to early sixteenth century (Gaimster and Nenk 1997, 179). The exteriors of the stoves were constructed of ceramic tiles with designs moulded in relief and glazed monochrome green or yellow or sometimes polychrome. These tiles were mainly imported from the Rhineland, northern Germany and the Low Countries (Gaimster and Nenk 1997, 179) but potters on the Surrey Hampshire border also began to produce stove-tiles during the sixteenth century (Gaimster 1988). The imported tiles display a variety of designs; initially Gothic styles were popular followed by classically inspired scenes and motifs of the Renaissance period however the identified English tiles display the arms of Henry VIII, Elizabeth I or James I. A range of different shaped tiles was used in each stove: rectangular niche tiles made from half cylinders or rectangular panel tiles were separated by narrow vertical (separator) tiles and various other shapes formed crests, corners, cornices etc (Gaimster, Goffin & Blackmore 1990, 8).
SF8 is an appropriate size for a separator tile although it does not follow the construction of the St Mary Graces separator tiles (Gaimster, Goffin & Blackmore 1990). At the time of writing it had not yet been possible to find a parallel design amongst a catalogue of Cologne tiles (Unger 1988) or published Continental tiles excavated in Britain or the published English produced tiles (Gaimster 1988) although the clay fabric of the piece appears too fine to be a Surrey/Hampshire Border ware. Archaeological evidence has shown that whilst Continental style ceramic stoves were clearly concentrated in high status households such as the Court, courtiers' households and wealthy ecclesiastical households their use did spread to wealthier urban homes (Gaimster and Nenk 1997, 179-181). Whilst the examples quoted by Gaimster and Nenk are concentrated in southern and eastern Britain small quantities of these tiles are found elsewhere; two examples of Continental and English stove tiles are known from Chester.

(532) Spanish lustreware. A fragment of a dish with a simple rounded rim that has been slightly thinned creating a shallow rebate around the edge of the vessel. A series of petal or tear-drop shapes, arranged in lines, stand out in relief on the surface of the dish outlined by broad incised lines. Both surfaces are covered by a white tin-glaze the original surface of which has decayed and largely worn away, save for small areas of discoloured brown, leaving a matt pitted surface; within these brown patches on the back two spots of the original lustre decoration can be detected. The use of incised line decoration can be paralleled on vessels ascribed to Valencia found at various sites including Southampton (Brown 2002, 71 fig 33.347) and Chester (Edwards 2008, 200 Ill 5.5.4.30) as well as vessels surviving in collections (Wilson 1995, 348 fig 28.8). Valencian lustrewares are a well-known import to Britain and whilst a variety of Sevillian wares were also imported Sevillian lustrewares were not thought to have been amongst them. However Sevillian lustrewares have been found amongst the cargo of the Studland Bay wreck and have prompted a reassessment of some of the lustrewares found in Britain (Gutiérrez 2003, 24 and 34). Amongst these lustrewares on the ship were dishes with a similar incised line decoration to this example from Bangor (Gutiérrez 2003, 31 fig 8 1-3); it is possible therefore that this dish may be an example of Sevillian lustreware rather than Valencian (pers comm. Alejandra Gutiérrez) although chemical analysis would be required to confirm this attribution.

(532) Beauvais dish fragment with a copper green glaze and wavy combed lines around the rim flange. Two sherds from similarly decorated dishes but probably not the same vessels were found in the same context. Beauvais earthenwares were made in northern France in the late fifteenth and sixteenth centuries and particularly in the first half of the sixteenth century (Hurst et al 1986, 106).

(532) Cistercian type ware cup; five joining fragments form part of the rim of a Cistercian-type ware cup with a red fabric and a brown glaze. A raised cordon marks a carination where the flaring vessel wall turns upwards to an almost vertical rim. Similar vessels have been found in sixteenth century contexts in Chester; the place of production is currently unknown but they differ from types produced in Yorkshire and a location in the north-west is possible (Edwards 2008, 192-193).

(539) Cologne stoneware mug; part of the rim of a mug with sprig moulded decoration on the neck. These mugs were commonly decorated around the body with trailing rose and foliage or acorn and foliage moulded designs; they are dated 1500-1550 (Hurst et al 1986, 209) although examples in Southampton have been found in late fifteenth- early sixteenth century deposits (Brown 2002, 85). Examples are quite widespread throughout Britain. This fragment has a gouge in the clay on the inside of the rim that extends into the rim edge, this occurred before firing as it is covered by glaze; it would therefore be termed a second today but the fault was either not noticed or still thought acceptable for export.

Phase 5

Pottery from this phase consists of 33 fragments, (721 g), the phase includes two sub-phases A and B. Phase 5A produced 27 sherds of pottery (445 g) whilst a smaller assemblage, four sherds (243 g) were retrieved from 5B.

In similarity to Phase 4, Phase 5A contains a range of post-medieval wares although they tend to consist of seventeenth century and later wares; there is only one small fragment of Cistercian ware and no medieval wares. Blackwares of seventeenth to possible nineteenth century date predominate, many of these are represented by undiagnostic fragments but when forms can be identified they are largely storage vessels but a cup is also present. Other wares consist of tablewares such as nineteenth to twentieth century transfer printed wares, creamware, late seventeenth or eighteenth century tin-glazed ware, Chinese porcelain and an eighteenth century white salt-glazed stoneware with painted decoration.

Eighteenth and nineteenth century stonewares, late seventeenth century to eighteenth century mottled wares and seventeenth century North Devon gravel-free ware were also found. Clay tobacco pipe fragments include part of an eighteenth century bowl and bottle glass fragments dating to the late eighteenth or nineteenth century.

Phase 5B contains seventeenth/eighteenth century blackwares late seventeenth – eighteenth century mottled ware and Westerwald stoneware (see SF9 below).

SF10 (43) Westerwald stoneware mug decorated in cobalt blue and manganese purple, late 17^{th} – 18^{th} century.

Discussion

The assemblage as a whole is relatively small and clearly very mixed with a high level of residuality and potentially some intrusive material as well, although the latter would be hard to identify. The highly fragmented condition of the pottery could suggest that it does not necessarily originate from structures on the site; this detracts from its potential to draw conclusions on the nature of the occupation on the site or any socio-economic changes over time. However the assemblage has some importance, along with pottery from previous excavations at the Bishops Palace (Edwards 2005) it adds to a slowly growing body of material from Bangor for the medieval and early post-medieval periods that increases knowledge of the range of pottery in use and pottery use in general. It provides further comparative material for studies of pottery distribution and use in an area of Wales where questions have been posed regarding the tradition of pottery use and its relationship to economic conditions and cultural influences (see Campbell 1993). Whilst it is difficult to precisely identify the original owners and users of this pottery the range of material represented compares well with that in the larger assemblages from the sixteenth century and later periods

excavated in Chester (see Edwards 2008). Thus the types of pottery from the site are comparable to assemblages from an urban centre where individuals had access to a wide variety of traded goods and to people who had links with the networks of trade, status and authority**.** The range of wares is also comparable to the smaller group of pottery from the Bishop's Palace, Bangor and to material from other urban and high status sites in North Wales e.g. Beaumaris (Smith and Edwards 1996) and various North Wales castle excavations.

When the site's position within the ecclesiastical precinct and the close proximity of the Bishop's Palace and Deanery are considered the sixteenth century wares may well have originated from these high status households, which potentially would have been well-equipped. The Spanish lustreware dish when new would have been an attractive object particularly when compared to the British produced wares of the sixteenth century. If SF8 is from a stove tile it would have been a relatively luxurious method of heating a room and from the sparse evidence of stove tiles from North Wales and Chester relatively rare in the region. Both items would have befitted a household of status such as that of the Bishop or Dean, where the occupants would have access directly or indirectly to trading networks and influences from the Continent. Similarly the eighteenth century fine tablewares and post-medieval wine bottles are such as would befit a prosperous urban or high status household.

The majority of the other wares are common types in the post-medieval period produced in the North West of England, the Midlands and in North Wales; a smaller number were produced elsewhere in Britain for example North Devon gravel free wares, tin-glazed wares from London or Bristol and a single sherd of Surrey-Hampshire Border ware. The utilitarian wares and the nineteenth century tablewares are those that would have been in general use and would have furnished the kitchens and households of the rich and poor. However how far distribution of early post-medieval pottery in North Wales was affected by wealth and status is unclear and any consideration would have to take into account the findings at Brenig Hafod where a relatively large assemblage was recovered including a fragment of Spanish tin-glaze ware from a relatively low status site (Greene 1977). Further assemblages from the city are required to determine to what extent this assemblage from the ecclesiastical precinct may differ from the pottery available to the other inhabitants of the city.

Julie E C Edwards March 2009
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10.4 Stone

Broken door lintel, smooth dressed overall to produce raised relief lettering (Fig. 22). The stone was found upside down, re-used in wall 52 of the later coach house (Fig. 9). The lettering was on the inside face of this later building and had been protected by rendering. The lintel had broken to leave the lettering intact apart from very small damage. The lintel was 280mm high and 160mm deep and can be estimated as originally about 1200mm (4ft) long. The front lower edge had a chamfer. The lettering filled up most of the front face of the lintel in depth, the numbers 90mm high, the letters 120mm high, being '*1597*' over the initials 'H R' divided by a four-pointed star. The date and initials refer to Henry Rowlands, who was Dean from 1593-7 and Bishop from 1598-1616 and so must derive from the Deanery. He is recorded as being a generous benefactor, re-roofing the cathedral choir (Storer 1818). He is not recorded as having re-built the Deanery but may well have carried out improvements, which this stone probably commemorated, perhaps over a front porch, as one that formerly existed over the porch added by Bishop Skeffington to the Bishop's Palace (Willis 1721, 41).

10.5 **PETROGRAPHY of STONE SAMPLES**
By Dr David Jenkins

Bulk soil samples were taken from extensive deeply buried horizons found in Trenches 2 and 4 that contained burnt and fractured stone as well as charcoal and butchered animal bone fragments. Samples were wet sieved and floated for palaeo-botanical remains (see below). Two samples from Trench 2 were radiocarbon dated to 1020 to 1210 AD at 2 s.d. The stones were thought to be the remains of some kind of cooking process. Samples of stones from two contexts, 412 and 413 in Trench 4 (Fig. 15) were identified by hand to see if the type of stone used was selective and if so of what type and from what origin.

Context **(412)** comprises 17 samples with the following compositions:

(a) Angular fragments, pale grey weathering to a white patina, mature **sandstone** with well-rounded quartz mostly *ca.* 1mm up to 1cm, cemented in a fine quartz matrix; massive with no obvious bedding or cleavage and angular fractures. Also paler and darker versions containing larger feldspar and lithic clasts, some up to 4cm (*i.e.* conglomerate) and with quartz veins. (12 samples – 4 signs of firing)
(b) Finer grained dark grey micaceous versions, massive or weakly banded, possibly **tuff** (1 sample)
(c) Very fine grained massive blueish grey **siltstone** versions, micaceous and slightly banded (4 samples – all probably showing signs of firing)

These distinctive rocks can be matched with the Precambrian *Bangor Volcanic Series* ("Arvonian" – Greenly 1944, 1946) exposed locally in Upper Bangor and on the Menai Strait shore – comprising (rhyolitic) mature sandstones, conglomerates and crystal/lithic tuffs.

Context **(413)** comprises 23 samples of which 18 have a similar nature to those from context (412), but with the additional features of:

(a) One rounded fragmented pebble of fine grey **rhyolite/rhyolitic tuff**?
(b) Fragment of grey (Carboniferous) **limestone** containing brachiopods
(c) Pale grey, massive, well sorted fine (*ca*. 1mm) **orthoquartzite**, probably From the local Carboniferous as exposed on the Menai Strait shore
(d) Medium to fine grained silicic/intermediate **igneous** rock - **microgranite**?
(e) One recent Fe/Mn-cemented aggregate
(f) Two bone fragments

Most of this has the same probable origin as (412) supplemented by rare fragments of local Carboniferous orthoquartzite and limestone, together with rhyolite and microgranite, probably from local glacial drift.

The 40 samples from both contexts are therefore demonstrably of local origin of which 18 (possibly 15) fragments show some reddening, possibly due to fire.

11 BIOLOGICAL REMAINS

By Deborah Jaques, Alexandra Schmidl and John Carrott

Summary

This report presents the results of analyses of charred plant, shell and vertebrate assemblages recovered from sediment samples and by hand-collection from deposits encountered by excavations within the yard and car park areas of the Deanery, Bangor, North Wales. Several phases of activity were identified with the earliest probably associated with the building of the first cathedral which began around 1120 AD and the latest related to 20th century construction.

Most of the ancient botanical remains recovered were small fragments of unidentified charcoal (probably fuel debris), with a few other charred plant remains, from broadly medieval deposits. Identifiable plant macrofossils were few and restricted to small numbers of charred cereal grains and hazelnut shell fragments, together with traces of crop weeds; presumably food waste and associated crop processing remains.

The small shell assemblage was of rather poorly preserved marine shellfish, predominantly oyster, from deposits which could only be broadly dated as 13th to 18th century. The oyster valves, and the few other edible shellfish remains, probably all represented human food waste but were of little further interpretative value. A likely origin for the oysters would be from beds around the east coast of Anglesey, though sources further afield cannot be ruled out.

A small collection of vertebrate remains of rather variable preservation was recovered which included remains of the main domestic mammals. Much of the material probably represented primary butchery waste, with a component of domestic refuse also apparent.

In general, the interpretative value of the biological remains was limited by the poor condition of the material and the broad dating of many of the deposits.

Introduction

Two trenches were excavated by Gwynedd Archaeological Trust (GAT) within the yard and car park areas of the Deanery, Bangor, North Wales, adjacent to the cathedral (NGR SH 5802 7203), between the 19th of February and the 2nd of March 2007. The works were carried out in advance of the proposed construction of a new river culvert forming part of a larger scheme refurbishing the culverted route of the Afon Adda and implementing flood control measures.

Several phases of activity were identified with the earliest probably associated with the building of the first cathedral which began around 1120 AD. In brief the phases may be summarised as follows:

Phase 1-2: associated with the building of the first cathedral – radiocarbon dates in the range 1020 to 1210 (see Table 5) were obtained and pottery of 1250 to 1350 recovered. Several deposits in this phase were originally though to relate to a prehistoric 'burnt mound' and, although subsequent radiocarbon dating returned the much later dates noted above, context descriptions (in the tables) may still reflect the initial interpretation

Phase 3: associated with a gravel and slab yard surface, construction of a boundary wall and overlying burnt rubbish deposits, with pottery dating from 1200 to around 1700, essentially Tudor

Phase 4: a deep rubbish/build-up layer below cobbled yard, with mixed pottery of medieval to 19th century date including a significant group of 16th century wares

Phase 5: construction of first coach-house, a second boundary wall, cobbled yard, outbuildings and a formal garden, with mixed pottery of 16th to 19th century date (predominantly 17th century in subphase 5A)

Phase 6: construction of a second coach-house and pig sty in the late 19th century

Phase 7: demolition of the coach-house and construction of Deanery garage *c*. 1930 and subsequent reconstruction of the Deanery wall

Approximately two standard boxes of hand-collected bone (~30 litres – there were also some fragments from samples) and a third of a box of shell, together with washover ('flot') fractions from six sediment samples (five deposits) and 'charcoal' recovered from six deposits, were submitted to Palaeoecology Research Services Limited (PRS), County Durham, for analysis.

In general, the interpretative value of the biological remains was limited by the poor condition of the material and the broad dating of many of the deposits.

Methods

Sample processing

According to the sample record sheets, sediment samples of between 12 and 43 litres were processed by the excavator employing a 10 mm mesh for the residue and 0.1 mm mesh for the washover ('flot') fraction. The unsorted washover fractions were submitted, together with larger fragments of 'charcoal' recovered either from the residues or as 'spot' finds.

Plant remains

Plant remains were fully recorded using a low-power binocular microscope (x7 to x45) and identified by comparison with modern reference material at PRS and the use of published works (Cappers *et al*. 2006 and Jacomet 2006). Identifiable taxa and other components were listed on paper and the data later transcribed into Microsoft Word tables for presentation. Nomenclature for plant taxa follows Stace (1997). Wood charcoal identifications were attempted with reference to Schoch *et al*. (2004).

During recording, consideration was given to the identification of remains suitable for submission for radiocarbon dating by standard radiometric technique or accelerator mass spectrometry (AMS). Subsequently, selected remains from two deposits were returned to the excavator for this purpose (see Tables 3 and 4).

Shell remains

All of the shell fragments recovered were identified as closely as possible, principally with reference to Hayward and Ryland (1995) and Barnes (1994); nomenclature follows the first of these works. The weights (in grammes), numbers of fragments and maximum dimensions of shell of different taxa from each context were recorded (where determinable) and the minimum numbers of individuals (or individual valves for bivalve taxa) represented calculated where possible. Additional, subjective notes on the preservational condition of the shell were made on occasion.

For oyster (*Ostrea edulis* L.) shell additional notes were made (where possible) regarding: numbers of left and right valves; evidence of having being opened using a knife or similar implement; measurability of the valves; damage from other marine biota (e.g. polychaet worms and dog whelks); encrustation by barnacles. Preservation was recorded using two, subjective, four-point scales for erosion and fragmentation—scale points were: 0 – none apparent; 1 – slight; 2 – moderate; 3 – high.

Vertebrate remains

For the vertebrate remains, data were recorded electronically directly into a series of tables using a purpose-built input system and *Paradox* software. Subjective records were made of the state of preservation, colour of the fragments, and the appearance of broken surfaces (‘angularity’), with additional, semi-quantitative information recorded concerning fragment size, dog gnawing, burning, butchery and fresh breakage, where appropriate.

Identifications to species or species group were carried out using the PRS modern comparative reference collection. Distinctions between sheep and goat bones were undertaken using comparative material at PRS and with reference to Boessneck (1969). Skeletal elements which could be identified to species were recorded using the diagnostic zones method described by Dobney and Rielly (1988), whilst other fragments (classified as ‘unidentified’) were, where possible, grouped into categories: large mammal (assumed to be horse, cow or large cervid), medium-sized mammal (assumed to be sheep, pig or small cervid), unidentified bird and totally unidentified. In addition to fragment counts, total weights of bone were recorded for all identifiable and unidentifiable categories.

Caprovid tooth wear stages were recorded using those outlined by Payne (1973; 1987), and those for cattle and pig followed the scheme set out by Grant (1982). Caprovid mandibles and isolated teeth were assigned to the general age categories of Payne (1973; 1987).

Where present, epiphyseal fusion data were recorded; mammal bones were described as ‘juvenile’ if the epiphyses were unfused and the associated shaft fragment appeared spongy and porous. They were recorded as ‘neonatal’ if they were also of small size.

Measurements followed von den Driesch (1976) and Dobney *et al.* (2007) unless otherwise specified.

Results

Plant remains

The detailed results of the investigations of the botanical remains are presented in context number order in Tables 1 and 2. Archaeological information, provided by the excavator, is given in the context description column of these tables and weights for other classes of remains have been included where applicable.

Tables 3 and 4 show details of the selected remains returned to the excavator for submission for radiocarbon dating from those contexts targeted (also by the excavator) for this purpose. The dates returned are given in Table 5.

Shell remains

Details of the submitted shell remains are presented in Table 6. Only seven deposits from Phases 3 and 4 (13th to 18th century) contained shell and the remains were predominantly of rather poorly preserved oyster, with small quantities of other marine shellfish in the form of occasional fragments of cockle valves and periwinkles (there were also two fragments from a single valve of another unidentified marine bivalve from Context 539). At least 18 oyster valves were represented, together with a number of larger fragments and numerous small flakes of shell. Minimum numbers of cockles and periwinkles represented were four and eight, respectively.

Overall, preservation of the shell was poor, with most being heavily eroded and fragmented. For the oyster valves, 89% could still be identified as being either left or right valves, but none could provide biometrical data beyond a maximum linear dimension. Evidence of the oysters having been opened using a knife or similar implement (as shown by characteristic damage to the shell margins) was noted on two (possibly three – 11-17%) of the valves but almost all showed some fresh breakage presumably caused during recovery and/or reflecting post-excavation deterioration of the remains (most of the individual bags also contained small flakes of shell showing that the remains had disintegrated further post-excavation and also during recording). There was little evidence of damage to the valves from other marine biota (e.g. polychaet worm burrows, dog whelk holes) but the single left oyster valve from Context 648 had a significant quantity of worm tubes on its outer surface (these were rather eroded but appeared to be keelworm – ?*Pomatoceros lamarcki* (Quatrefages)/*P. triqueter* (L.) – tubes).

Vertebrate remains

In accordance with the post-excavation assessment and research design (GAT 2008), vertebrate material from Phases 1 to 5 was selected by the excavator for detailed recording. Subsequently, further study of the pottery recovered from the site has suggested that many deposits contained material representing a wide chronological range. The value of recording material from these deposits is somewhat limited given that there can be no knowing exactly when the bones were deposited or if the deposition occurred as one single event or many. However, vertebrate material was recorded from 43 deposits representing Phases 1 to 5, and also from a further six deposits that were assigned to later periods or were unstratified as a result of revisions to the phasing. Summary information for the vertebrate assemblages is given in Tables 7 and 8 (for the hand-collected material and that from samples, respectively). Detailed records for the vertebrate material are presented in the Data Archive at the end of this report.

In total, 829 bone fragments were recorded, of which 665 were recovered by hand-collection and 164 fragments (from six deposits) were retrieved from the sediment samples. As can be seen from Tables 7 and 8, most of the remains came from Phases 1-2 and 4 and in particular from Contexts 532 (Phase 4) and 548 (Phase 1). However, these assemblages were enhanced by the bones recovered from the samples which, for most contexts, were very few, but for Context 548 amounted to 105 fragments; although these were largely unidentified, with many being less than 20 mm in maximum dimension and approximately a third were burnt.

Preservation of the remains was not particularly good, although the assemblages were mostly described as in 'fair' condition. Material from several contexts was rather varied, with marked in preservation noted. In some cases, the bones were quite robust but of battered appearance, whilst others showed extensive erosion of the exterior surfaces. This was particularly apparent for the material from three deposits, Contexts 409, 534 and 658 (and to a lesser degree in some others, e.g. Contexts 539, 540 and 655), where most bones were poorly preserved. Fresh breakage was also quite common and a high degree of fragmentation was noted throughout.

The poor condition of many of the bones was reflected in the large number of fragments that could not be identified to species (too fragmented/too damaged) and the prevalence of teeth amongst the identified remains (approximately 28% of the identified fragments) was a clear indication that the ground conditions were not particularly conducive to the survival of bone.

Phase 1-2 (including subphases)

Hand-collected vertebrate remains, amounting to 120 fragments, of which 92 could not be identified to species, were recovered from seven deposits of this phase. The identified bones were mainly cattle remains (22 fragments), with caprovid and pig bones also present but only in very small numbers (three and two fragments, respectively). A further four caprovid bones were recovered from two sediment samples from a single deposit (Context 548), together with two cattle fragments, a Turdidae (thrush/blackbird family) coracoid and a small fragment of rabbit/hare incisor. This last fragment is not likely to be rabbit unless it is of modern origin and intrusive to the deposit, as this species was not introduced into Britain until the 12th century.

No clear patterns were discernable from an examination of the skeletal element representation for the main species, although this is not surprising for caprovids and pigs as they were represented by so few fragments. The cattle remains included a range of elements but over half of these were from the head (horncore fragments, isolated teeth, mandible) or distal limbs (metacarpals, tarsals and phalanges), perhaps suggesting most fragments were waste from the initial preparation of carcasses. Evidence of butchery was noted on some of the cattle and large mammal bones, including four long bones (a radius, a metatarsal and two tibiae) that had been longitudinally split. This was likely to have been for the extraction of marrow. Additionally, the base of a cattle horncore had been chopped, as had a goat horncore, both occurrences indicating the collection/removal of horn sheaths, probably for manufacture.

A large proportion of the assemblage dated to this phase could not be identified although some fragments could be assigned to the broad categories of large and medium-sized mammal. These included many fragments of shaft, with some pieces of large mammal cranium and medium-sized mammal rib and vertebra. Many of the 'completely unidentified' bones were small fragments that resulted from fresh breakage damage or where pieces of a fragile bone had broken off. Scorching was noted on several of the fragments and the samples produced collections of small pieces of unidentified bone (typically less than 20 mm in maximum dimension). These last were mostly white in colour suggesting that they had been burnt at high temperatures (greater than 700 ºC) or subjected to prolonged heating.

There were few fragments available for the provision of age-at-death information. However, both epiphysial fusion and dental attrition data suggested that most animals represented in the assemblage from this phase were adult when they died.

Phases 3, 4 and 5 (including subphases)

None of the material from deposits assigned to these phases was dated sufficiently well to be of any interpretative value. However, the following is a brief summary of the vertebrate remains recovered from the main phase groupings.

Nine Phase 3 deposits produced 61 fragments of bone, of which 29 were identifiable. The latter included the remains of cattle and caprovid, with a few bones of pig and horse. Single fragments of roe deer (*Capreolus capreolus* (L.); metacarpal shaft) and goose (coracoid) were also identified from Context 540. For the main domesticates, isolated teeth and metapodials (and mandibles for cattle) were the most commonly occurring skeletal elements. The two horse bones were both poorly preserved and eroded radius fragments which probably represented the same animal. Another goat horncore, again showing deliberate removal from the rest of the skull, was recovered from Context 659.

A small collection of bones (34 fragments) came from four deposits designated as Phase 3-4. These were mostly large and medium-sized mammal shaft, rib and vertebra fragments, although five cattle and three caprovid bones were identified.

Phase 4 deposits (14 in total) produced the largest concentrations of bone, amounting to 388 fragments, with just under half of the assemblage being recovered from Context 532 (186 fragments). Caprovid remains were prevalent with cattle bones being relatively numerous, and pig and horse bones also identified. The horse remains included several cranium fragments (from Context 532) which joined to form the right part of a skull (including the orbit and occipital areas).

Remains more indicative of domestic/household refuse included a part cat skeleton from Context 525, four dog bones from Contexts 525, 632 and 648 and chicken remains from Contexts 532 and 648. There was also a roe deer radius shaft fragment from Context 532, together with three fish bones including herring and flatfish.

As seen for previous phases, bones indicative of primary butchery waste, such as mandibles, isolated teeth, metapodials phalanges and tarsals, were common amongst the cattle remains, whilst for caprovids isolated teeth were predominant, with upper fore limb elements (such as scapula, humerus and radius) also being quite numerous. The unidentified fraction consisted of many pieces of large and medium-sized mammal shaft and rib, together with large mammal cranium and mandible fragments.

Forty-three fragments of bone were recovered from seven Phase 5 deposits. Two-thirds of the bones were unidentified and, again, most of these were pieces of large and medium-sized mammal long bone shaft. The identified component comprised the remains of the main domestic mammals, including cattle, caprovid and pig. A horse incisor and third phalanx were recorded from Contexts 520 and 528; the former was from a horse that was probably at least 12 years old when it died.

Discussion

Plant remains

Most of the ancient botanical remains recovered from the analysis subsamples were small fragments of unidentified charcoal, with a few other charred plant remains, from broadly medieval deposits. Identifiable plant macrofossils were few and restricted to small numbers of charred cereal grains and hazelnut shell fragments, together with traces of crop weeds and fruit stones.

Some of the larger charcoal fragments of stemwood and roundwood from several deposits could be identified (at least in part); most were of alder/hazel, alder/hazel/birch and oak. All of the charcoal presumably represented the remains of wood burnt as fuel.

The recovered assemblages were rather small for reliable interpretation but, at least three cereal taxa were present, namely barley, naked wheat and oat, with occasional associated crop weeds such as cleavers and corn marigold. From the limited evidence available, barley and oat appear to have been the most abundant cereals, perhaps suggesting local cultivation of these crops. Archaeobotanical data from other medieval sites in Wales, suggests that oat was the main cereal crop of the time. An early medieval farmstead at Cefn Graeanog, Clynnog-fawr (Gwynedd) produced assemblages with oat as the main cereal (Hillman 1982) and, according to Jones and Milles (1984), a 15th century corn drying kiln at Collfryn, Llansantffraid Deuddr (Powys) also yielded an oat-dominated grain assemblage, as did an 11th to 13th century (?) corn drier at Parc Bryn Cegin, Llandygai, on the outskirts of Bangor (Schmidl *et al*. 2007).

Other identifiable charred plant remains were restricted to a few finds of hazelnut shell and wild/dwarf cherry/sloe perhaps representing gathered food resources collected by the inhabitants from nearby hedgerow.

Shell remains

The small shell assemblage was of rather poorly preserved edible marine shellfish, predominantly oyster, from deposits which could only be broadly dated as 13th to 18th century (Phases 3 and 4). The oyster valves (and the few other shellfish remains – chiefly cockle and periwinkle) probably all represented human food waste—though clear evidence of the oysters having been opened using tools was rather sparse, but in most cases the condition of the shell was very poor and any evidence of opening could have been destroyed by deterioration of the valves in the ground or post-excavation.

The most likely sources for the oysters are perhaps local beds around the east coast of Anglesey where they were abundant by the middle of the 18th century (Starkey et al. 2000, 88-9). Slightly further afield, large quantities of both oyster and cockle were taken off Caernarfonshire in 1712, there was a healthy oyster trade at Pwllheli (Cardigan Bay) and the oyster beds of Mumbles (Swansea Bay) were among the most prolific in Britain by the late 17th century (Starkey et al. op. cit.). However, oysters have been traded widely from the Roman period so other stretches of the British coast (e.g. Cornwall and areas along the English Channel) are not necessarily ruled out. Cockle and periwinkle are common along all coasts of the British Isles but presumably originated locally.

Vertebrate remains

The vertebrate assemblage recovered from excavations within the yard and car park areas of the Deanery, Bangor, were of relatively poor preservation and interpretation of the remains was hampered by both its poor condition and the very broad dating of some of the deposits from which it came.

The earliest material was of 11th to 13th century date and dominated by remains of cattle, although sieved samples increased the proportion of caprovid remains slightly. Pig remains were also present, as were single fragments of Turdidae and (?) rabbit/hare. As mentioned above, the latter (if it were rabbit) may represent an intrusive element in this deposit (Context 548). The composition of the assemblage from this phase suggested that most of the remains represented butchery waste with a small component of domestic refuse. Collections of very small burnt bone fragments recovered from the sediment samples from Contexts 418 and 548 may represent food or butchery waste that was being burnt as a convenient method for disposing of rather noxious rubbish.

The material from the later phases, particularly the assemblage from Phase 4, appeared to show a considerable increase in the occurrence of caprovid remains. Primary butchery waste was still indicated by the presence of heads and lower limb bones (typically the first parts of the carcass to be removed and discarded) for cattle, but a larger component of domestic/household refuse was apparent which included remains of joints of mutton, and small numbers of bones of fish, bird and minor domestic mammals such as dogs and cats. The utilization of wild resources was hinted at in Phases 3 and 4 by the presence of two roe deer bones.

Epiphyseal fusion data suggested that most of the animals represented in the deposits were adult, but, given that the delicate bones of young animals are less likely to be found where poor conditions for bone survival prevail, this may not reflect a true picture of the age of the beasts that were consumed. Several bones from juvenile individuals were noted from deposits in Phase 5 but whether or not this implies an increasing emphasis on the use of young animals for the provision of meat in the later periods cannot be confidently determined.

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Table 1. Summary of the botanical remains recovered in the washovers from the GAT processed sediment samples from excavations in the yard and car park areas of the Deanery, Bangor, with notes on any material suitable for submission for radiocarbon dating. Key: 'CN' = Context number; 'SN' = Sample number; 'Ph' = Phase; 'vol' = amount of sediment processed in litres; 'wt' = weight of washover in grammes; 'Charcoal IDs' = identifiable charcoal; 'A' = suitable material for radiocarbon dating via AMS present (NB: in most cases charcoal fragments are not considered as suitable material for this purpose).

CN	SN	Ph	Context description	vol	wt	Identifiable ancient plant remains (charred)	Charcoal IDs	Notes including modern contaminants (waterlogged)	Other components	A
418	4	1-2	fill of 'burnt mound'	43	49	a little charcoal (to 9 mm), one grain of ?barley (cf. *Hordeum distichon* L./*H. vulgare* L.), one grain of oat (*Avena*) – all poorly preserved, five awn fragments of oat, three fragments of unidentified cereal grain, five fragments of hazel (*Corylus avellana* L.) nutshell (to 6 mm)	No	mostly rootlets, a few unidentified insect remains, some seeds and fruits of elder (*Sambucus nigra* L.) and nuts of silver birch (*Betula pendula* Roth)	sand, traces of cinder (to 18 mm), a few stones (to 15 mm), a little bone (to 15 mm) and shell (to 4 mm)	Yes
535	1	4	fill of ?late medieval culvert	12	24	a little charcoal (to 9 mm), one grain of naked wheat (*Triticum aestivum* L./*T. durum* Desf./*T. turgidum* L.), one nutlet of cleavers (*Galium aparine* L.), one achene of corn marigold (*Chrysanthemum segetum* L.)	No	some rootlets, little evidence of sclerotia of soil fungus (*Cenococcum geophilum* Fr.), several earthworm egg capsules, a few unidentified insect remains, numerous fruit stones of blackberry/raspberry (*Rubus fruticosus* L. agg./ *R. idaeus* L.), a few seeds of elder (*Sambucus nigra* L.) and nuts of silver birch (*Betula pendula* Roth)	mostly coal (to 14 mm), a little cinder (to 10 mm), a few poorly preserved bone fragments (including small mammal vertebra, fish bone), traces of shell	Yes
545	2	1	fill of 'burnt mound' trough/gully	12	16	mostly silted charcoal (to 12 mm), one grain of ?barley (cf. *Hordeum distichon* L./*H. vulgare* L.), two fragments of hazel (*Corylus avellana* L.) nutshell (to 8 mm)	No	a little rootlet, a few seeds of elder (*Sambucus nigra* L.)	some sand, stones (to 8 mm), coal (to 10 mm), a little cinder (to 7 mm), traces of bone (to 10 mm)	Yes
548	3	1	fill of 'burnt mound'	24	93	mostly charcoal (to 10 mm), three grains of ?barley (cf. *Hordeum distichon* L./*H. vulgare* L.), one grain of oat (*Avena*) – all poorly preserved, three fragments of unidentified cereal grain, three fragments of hazel (*Corylus avellana* L.) nutshell (to 6 mm)	oak (*Quercus*), alder/hazel (*Alnus/Corylus*)	a little rootlet, a few earthworm egg capsules, numerous seeds of elder (*Sambucus nigra* L.) and a few nuts of silver birch (*Betula pendula* Roth)	some sediment lumps, sand, stones (to 15 mm), traces of bone (to 10 mm)	Yes
548	8	1	fill of 'burnt mound'	17	70	mostly slightly silted charcoal (to 10 mm), four grains of ?barley (cf. *Hordeum distichon* L./*H. vulgare* L.; probably hulled variety), one grain of ?oat (cf. *Avena*) – all poorly preserved, one fragment of unidentified cereal grain, two fragments of hazel (*Corylus avellana* L.) nutshell (to 6 mm), one fruit stone of wild/dwarf cherry/sloe (*Prunus avium* (L.) L./*P. cerasus* L./*P. spinosa* L.)	oak (*Quercus*)	a little rootlet, numerous seeds of elder (*Sambucus nigra* L.)	sediment lumps, some sand, stones (to 10 mm), a little cinder (to 10 mm), coal (to 10 mm), bone (to 10 mm)	Yes
657	7	3A	rubbish deposit on top of ?late medieval yard	22	37	some charcoal (to 12 mm), eight grains of barley (*Hordeum distichon* L./*H. vulgare* L.), one grain of wheat (*Triticum*), four poorly preserved cereal grain fragments, two achenes of corn marigold (*Chrysanthemum segetum* L.)	No	a few unidentified insect remains, a few culm fragments with fungal growth, some fruit stones of blackberry/raspberry (*Rubus fruticosus* L. agg./*R. idaeus* L.) and nuts of silver birch (*Betula pendula* Roth)	mostly stone (to 15 mm), some sand, coal (to 14 mm), with a little cinder (to 8 mm) and mortar/plaster (to 10 mm), one bone fragment (to 10 mm)	Yes

Table 2. Summary of the 'charcoal' (recovered from sample residues or as 'spot' samples) from excavations in the yard and car park areas of the Deanery, Bangor, with notes on any material suitable for submission for radiocarbon dating. Key: 'CN' = Context number; 'Ph' = Phase; 'wt' = weight of charcoal in grammes; 'siz' = maximum dimension of charcoal fragments present in mm; 'IDs'= identifiable charcoal; 'A'= suitable material for radiocarbon dating via AMS present (NB: in most cases charcoal fragments are not considered as suitable material for this purpose).

			Charcoal				
CN	**Ph**	**Context description**	**wt**	**size**	**IDs**	**Notes**	**A**
413	1-2	Layer associated with 'burnt mound'	<1	8	No	heavily silt encrusted deformed charcoal	No
			<1	12	ash/oak (*Fraxinus*/*Quercus*), alder/birch/hazel (*Alnus*/*Betula*/*Corylus*)	silt encrusted charcoal	Yes
			1	7	No	heavily silt encrusted deformed charcoal	No
			2	17	No	heavily silt encrusted deformed charcoal	No
			1	13	oak (*Quercus*)	slightly silted fragile charcoal	No
414	1-2	Layer associated with 'burnt mound'	3	19	No	heavily silt encrusted deformed charcoal	No
			<1	11	No	heavily silt encrusted deformed charcoal	No
508	1-2	Layer associated with 'burnt mound'	<1	17	alder/birch/hazel (*Alnus*/*Betula*/*Corylus*)	heavily silt encrusted charcoal	Yes
			1	29	oak (*Quercus*)	heavily silt encrusted charcoal	No
545	1	fill of 'burnt mound' trough/gulley	5	12	alder/hazel (*Alnus*/*Corylus*)	encrusted roundwood fragment (more than 9 years of growth; length = 12 mm, radius = 15 mm), silted charcoal with sediment lumps (pith not visible)	Yes
			1	15	poplar/willow (*Populus*/*Salix*)	one piece of silted roundwood (4 or 5 years of growth; length = 12 mm, diameter = 15 mm)	Yes
548	1	fill of 'burnt mound'	1	13	No	mostly sediment with a little charcoal	No
			3	20	deciduous wood	mostly sand with a little orange-coloured decayed charcoal	No
			2	15	deciduous wood	mostly sediment with one decayed piece of charcoal	No
			11	12	No	one sediment lump (to 25 mm) with one large decayed piece of charcoal	No
			11	35	No	one sediment lump with traces of charcoal	No
			1	13	No	sediment lumps with very deformed charcoal	No
			5	23	No	sediment lumps with very deformed charcoal	No
665	3A	unidentified burnt material in rubbish deposit on top of ?late medieval yard	26	26	No	silted poor quality coal	No

Table 3. Remains from the washovers from the GAT processed sediment samples from excavations in the yard and car park areas of the Deanery, Bangor, returned to the excavator for possible submission for radiocarbon dating.

Context	Sample	Phase	Context description	available AMS-material
545	2	1	fill of 'burnt mound' trough/gulley	two fragments of hazel (*Corylus avellana* L.) nutshell (to 8 mm) one grain of ?barley (cf. *Hordeum distichon* L./*H. vulgare* L.) three fragments of hazel (*Corylus avellana* L.) nutshell (to 6 mm)
548	3	1	fill of 'burnt mound'	three grains of barley (*Hordeum distichon* L./*H. vulgare* L.) one grain of oat (*Avena*) two fragments of hazel (*Corylus avellana* L.) nutshell (to 4 mm)
548	8	1	fill of 'burnt mound'	four grains of barley (*Hordeum distichon* L./*H. vulgare* L.) one fruit stone fragment of cherry/plum (*Prunus*) (to 8 mm)

Table 4. Remains from the sample residues/'spot' finds from excavations in the yard and car park areas of the Deanery, Bangor, returned to the excavator for possible submission for radiocarbon dating.

Context	Phase	Context description	available AMS-material
545	1	fill of 'burnt mound' trough/gulley	one twig fragment of poplar/willow (*Populus*/*Salix*) (to 15 mm; with 4 or 5 years of growth) one twig fragment of alder/hazel (*Alnus/Corylus*) (to 12 mm; with more than 9 years of growth)
548	1	fill of 'burnt mound'	no material (only unidentifiable charcoal)

Table 5. Dates returned from material submitted for radiocarbon dating from excavations in the yard and car park areas of the Deanery, Bangor.

Context	Beta Analytic laboratory number	2-Sigma calibrated radiocarbon date	Measured radiocarbon age	13C/12C Ratio	Conventional radiocarbon age
545	255302	Cal AD 1020 to 1210	970 +/- 40 BP	-28.1 o/oo	920 +/- 40 BP
548	255303	Cal AD 1020 to 1210	930 +/- 40 BP	-23.4 o/oo	930 +/- 40 BP

Table 6. Shell from excavations in the yard and car park areas of the Deanery, Bangor, by context. Key: 'CN' = context number; 'l' = number of left (or lower) valves; 'r' = number of right (or upper) valves; 'i' = number of valves of indeterminate side; 'e' = average erosion score for valves; 'f' = average fragmentation score for valves; 'meas' = estimated number of valves intact enough to be measured; 'kn' = number of valves showing damage characteristic of the oyster having been opened using a knife or similar implement; 'fr' = number of valves showing fresh breakage; 'wm' = number of valves with worm burrowing and/or tubes; 'wt' = total weight of shell (in grammes) – weights marked with an "" include adhering sediment; 'mnv' = minimum number of valves; 'mni' = minimum number of individuals.*

			Oyster										
CN	**Phase**	**Context details**	**l**	**r**	**i**	**e**	**f**	**meas**	**kn**	**fr**	**wm**	**Notes**	**wt**
505	4	Buried topsoil	-	-	-	-	-	-	-	-	-	Remains of at least 5 periwinkles (*Littorina littorea* (L.)) – total of 10 fragments (to 28 mm)	17*
506	?3	Humic loam layer	0	5	0	3	3	0	0	4	0	Oyster valves to 77 mm, with 7 larger fragments (to 71 mm) and many mm-flakes (128 g*); also 6 cockle (*Cerastoderma edule* (L.)) valve fragments (to 35 mm; 12 g*; mnv = 4; mni = 2)	140*
506	?3	Humic loam layer	-	-	-	-	-	-	-	-	-	Separate bag labelled "shell deposit (for sieving)" – however, not sieved as mostly very soft and fragile marine shell mixed with some sediment; consequently meaningful weights could not be recorded. Taxa included oyster (to 56 mm; mnv = 1), cockle (to 33 mm; mnv = 4; mni = 2) and periwinkle (to 23 mm; mni = 3)	-
532	4	Silty clay layer	3	2	2	3	3	0	2	7	0	Two separate bags. Oyster valves to 130 mm (a very large left valve; other valves to 97 mm), with 12 larger fragments (to 80 mm) and many mm-flakes. Also five unidentified bone fragments (to 38 mm; 5 g) present	359
539	4	Silty clay layer	1	3	0	3	3	0	0	4	0	Two separate bags (one sorted from the bone by DJ). Oyster valves to 88 mm, with 10 larger fragments (to 68 mm) and some mm-flakes (111 g); also 2 cockle fragments (to 35 mm; 4 g; mnv = 1 – pieces of the same valve) and 2 unidentified marine bivalve fragments (to 40 mm; 6 g; mnv =1 – pieces of the same valve)	121
632	4	Deep humic layer	0	1	0	3	3	0	0	1	0	Valve to 65 mm, with a few mm-flakes	16
648	4	Dark humic soil layer	1	0	0	3	3	0	?1	1	1	Valve to 100 mm, with some mm-flakes. Outer valve surface heavily covered with ?keelworm (?*Pomatoceros lamarcki* (Quatrefages)/*P. triqueter* (L.)) tubes	91
738	3-4	Mixed soil layer with ferrous inclusions	-	-	-	-	-	-	-	-	-	One large-ish oyster valve fragment (to 62 mm) and a few mm-flakes only	10

Table 7. Hand-collected vertebrate remains from excavations in the yard and car park areas of the Deanery, Bangor, by phase group. Key:U/S = unstratified; NP = not phased.

Species		**1-2**	**3**	**3-4**	**4**	**4-6**	**5**	**6**	**6-7**	**NP**	**U/S**	**Total**
Oryctolagus cuniculus (L.)	rabbit	-	-	-	-	-	-	-	-	1	-	**1**
Canis f. domestic	dog	-	-	-	4	-	-	-	-	-	-	**4**
Felis f. domestic	cat	-	-	-	5	-	-	-	-	-	-	**5**
Equus f. domestic	horse	-	2	-	5	-	2	-	-	-	-	**9**
Sus f. domestic	pig	2	4	-	8	-	3	-	-	-	-	**17**
Capreolus capreolus (L.)	roedeer	-	1	-	1	-	-	-	-	-	-	**2**
Bos f. domestic	cattle	22	8	5	29	3	3	-	-	-	-	**70**
cf. *Bos* f. domestic	?cattle	-	2	-	1	-	-	-	-	-	-	**3**
Caprovid	sheep/goat	3	6	2	49	1	4	-	-	-	1	**66**
Capra f. domestic	goat	1	1	-	-	-	-	-	-	-	-	**2**
Ovis f. domestic	sheep	-	1	1	4	-	1	1	-	-	-	**8**
Anser sp.	goose	-	1	-	-	-	-	-	-	-	-	**1**
Gallus f. domestic	chicken	-	-	-	4	-	-	-	-	1	-	**5**
cf. *Gallus* f. domestic	?chicken	-	-	-	1	-	-	-	-	-	-	**1**
Unidentified bird		-	3	-	2	-	1	-	-	-	-	**6**
Large mammal		36	21	12	119	2	15	1	-	-	2	**208**
Medium-sized mammal		10	10	11	109	2	12	-	1	1	2	**158**
Unidentified		46	1	3	47	-	2	-	-	-	-	**99**
Total		**120**	**61**	**34**	**388**	**8**	**43**	**2**	**1**	**3**	**5**	**665**

Table 8. Vertebrate remains recovered from five sediment samples from deposits from excavations in the yard and car park areas of the Deanery, Bangor, by phase group.

Species		**1-2**	**3A**	**4**	**Total**
Oryctolagus cuniculus (L.)/*Lepus* sp.	rabbit/hare	1	-	-	1
Bos f. domestic	cattle	2	-	-	2
Caprovid	sheep/goat	4	-	-	4
Turdidae	thrush/blackbird family	1	-	-	1
Clupea harengus L.	herring	-	-	1	1
Pleuronectidae	flatfish	-	-	1	1
Large mammal		1	-	-	1
Medium-sized mammal		21	1	9	31
Small mammal		2	-	1	3
Unidentified fish		-	-	1	1
Unidentified		118	-	-	118
Total		**150**	**1**	**13**	**164**

12 RADIOCARBON DATING

Two charcoal samples were submitted for radiocarbon dating at Beta Anlalytic Inc., Florida. These were from the two of the lowest layers, layers 545 and 548 in Trench 2, belonging to Phase 1 (Fig. 13). These layers contained burnt stone, animal bone and charcoal but no datable artefacts. The samples were selected from flotation of bulk soil samples and after palaeo-botanical identification so that suitable material could be selected. One was a hazel nut shell, from layer 545. The other was a small twig of salix/populus from layer 548. A cattle bone from layer 548 was also submitted for dating but did not produce sufficient collagen. The samples produced the following results:

Sample Beta - 255302
Measured Radiocarbon Age 970 +/- 40 BP
13C/12C Ratio -28.1 o/oo
Conventional Radiocarbon Age 920 +/- 40 BP (1950)
SAMPLE : G187654509
ANALYSIS : AMS
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid
2 SIGMA CALIBRATION : Cal AD 1020 to 1210 (Cal BP 930 to 740)

Sample Beta – 255303
Measured Radiocarbon Age 900 +/- 40 BP
13C/12C Ratio -23.4 o/oo
Conventional Radiocarbon Age 930 +/- 40 BP (1950)
SAMPLE: G187654810
ANALYSIS : AMS
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid
2 SIGMA CALIBRATION : Cal AD 1020 to 1210 (Cal BP 930 to 740)

13 DISCUSSION AND CONCLUSIONS

*THE CATHEDRAL AND DEANERY YARD*S
This area was regarded as of high archaeological potential prior to the present excavations because it could be presumed to have been within or very close to the focus of Early Medieval activity in Bangor. The complexity of such activity was demonstrated by previous excavations on the north side of the cathedral prior to the construction of the new Deiniol shopping centre. The archaeological work there identified boundaries, structural features and burials, some as early as 6^{th}-8^{th} century AD (Longley 1995). In 2007 the line of the new culvert through the cathedral yard was evaluated by trial excavation, showing the presence of various post-medieval structural features and floors belonging to the yards and outbuildings of earlier phases of the Deanery. Below these, but unexplored, was further depth of about a metre of soil deposits that had potential to contain medieval activity. Moreover the line of the proposed excavation cut across the road-side boundary where buildings were shown on Speed's map of 1610 and which were likely to belong to the medieval Deanery. Further excavation was then carried out to record all deposits and structures prior to insertion of the new culvert. This entailed cutting a trench approximately 2m wide and 2m deep. Seven phases of activity were identified as follows.

Phase 7. The most recent layers related to the 20th century use of the Cathedral yard up to the present. The existing 3-car garage was built between 1920 and 1930 and was built on raised ground that was built up from demolition material from the previous coach house and outbuildings. The garage probably emulated the size of the previous coach house and may have also housed a car for the Canon, who occupied the south part of the Deanery. The garage incorporated a toilet, at a time when the Dean probably had a chauffeur and other help with the grounds. The rear yard at this time was still a small open area while the adjoining land to the west was a garden, separated from the main yard by the river in a

constructed channel, as it had been in 1889. This outlying garden area was accessed via a wooden footbridge.

Phase 6 (Fig. 9). Part of one room of the coach house was recorded. It had stone walls and a quarry tiled floor. It was a relatively modest building in comparison to the coach house belonging to the Bishop's Palace further north, which had fireplaces and a second storey hayloft or grooms' quarters. The Deanery coach house was only single storey and *c.* 17m by 5m overall and this would have been divided into 3 or 4 bays or rooms. Fortunately there is a detailed architectural inspection of the Deanery and its buildings made in 1921 by a notable local architect Harold Hughes at which time it was badly in need of repair (Hughes 1921). The report mentions the Coach House, Saddle Room and Stable, presumably all contained within the coach house block. It also mentioned 'the old cow house' perhaps the disused pig sty and also mentioned 'WCs in yard and garden', an ash pit as well as 'the kitchen garden at the south side of the river from wooden bridge'. The inspection was made and following his recommendations the Deanery was renovated and the outbuildings demolished and re-built as they are today.

The coach house and the outbuildings are shown in detail on the Ordnance Survey 1:2500 map of 1889 (Fig. 8). These buildings all derive from an earlier renovation of the Deanery carried out in 1863 at which time the house itself was enlarged and improved and a new coach house built (Clarke 1969). The coach house or at least that part uncovered had a quarry-tiled floor and the east wall incorporated some bricks. The west, rear wall was of stone and backed onto the road of Glanrafon, forming the outside boundary of the yard. By chance the small part of the walls of this coach house uncovered in 2008 (Fig. 9) incorporated a re-used lintel stone bearing a carved date and initials (Fig. 22). The date 1597 and the initials HR identify the stone as belonging to works carried out by Dean Henry Rowlands (Dean from 1593-8) and therefore belonging to a much earlier building since the Deanery modernized in 1863 was itself a rebuild in 1685 of an earlier ruinous building, probably that shown on Speed's map of 1610 (Fig. 3). The external yard of the coach house was a neatly cobbled surface of beach-pebbles set vertically in sand. This type of cobbling is identical to that of the yard of the Bishops Palace Coach House yard excavated in 2004 (Smith 2005). This surface extended as far as the pig sty to the north east, beyond which was an open paddock (Figs 8 and 9).

Phase 5 (Fig. 10). The coach house constructed in 1863 was a replacement for an earlier coach house of similar dimensions that lay further to the south-east on a slightly different alignment (see Figs 5, 6 and 7). The walls of the 1863 coach house had been laid directly on the on the demolished floors walls and floors of the outbuildings and floors of the earlier coach house. This had well-built walls and floors of small cobbles all set in strong lime mortar. The pre-1863 boundary wall was also present and its footings formed the foundation for the west wall of the new coach house, the angle of the boundary now moved further east to continue in a straight line from the end of the Deanery, whereas before 1863 the boundary had extended further west, as shown by comparison of the 1889 map with that of 1854 (Fig. 7).

This earlier coach house was already in existence at the time of the map of 1834 (Fig. 5). At this time its west gable was continued north by a wall forming the west side of the Deanery plot. By the time of the Tithe Map of 1841 the plot had been expanded to the west although the earlier boundary wall still survived until the 1863 changes. The footings of this wall (Wall 48) were found under the yard surface but had been totally robbed out further north.

The pre-1863 layout of the Deanery grounds included a long narrow building about 17m by 5m, oriented approximately north south, against the west side of the Deanery grounds. One corner of this building was found during excavation of Trench 4. This may have been the 'old Deanery stables' mentioned in a faculty for demolition and sale of 1821 (NLW B/F/34/F) but if so not actually demolished because the same building was still shown on the Tithe Map of 1841 (Fig. 6) and the Bangor map of 1854 (Fig. 7). The earlier coach house, outbuildings and stable were probably built to accompany the Deanery that was rebuilt in 1685 by Dean Humphreys, which was described in 1721 as 'an handsome new house' (Willis 1721, 41).

The yard surface and floors did not provide much evidence about this 18-mid 19th century period of the Deanery but in the soil of the pig yard further north were scatters of rubbish including a few pieces of wine bottle, clay tobacco pipes, animal bones, a small bronze buckle of ecclesiastical type but relatively few pieces of pottery. This was mainly of 17th century and later type including storage vessels and table wares, fairly ordinary domestic ware apart form one fragment of a large decorative German beer tankard, perhaps a souvenir or gift (see Edwards above and Fig 21).

The 1685 Deanery was clearly well designed and constructed. There were stone-built drains by which water from the yard was culverted beneath the boundary wall at the west and in the north yard (Trench 1) two large rectangular soakaway pits were found taking drainage from the garden above or possibly foul water from the Deanery itself.

Phase 4 (Fig. 11). Dean Humphreys' house replaced an earlier Deanery that was probably of Medieval date and based on a hall as was the Bishop's Palace. Between the times of Deans Henry Rowlands and Humphrey Humphreys the house and outbuildings fell into some neglect but had clearly been a substantial and well-appointed house because a survey made of it in 1649 described it as '… an old ruinous house and therein a 100 yards of wainscote, the house ready to fall as also the outhouses, with a little garden plot.' The whole was valued at £10 '…after taking down.' (NLW B/Misc Vols/23, 163). The 'wainscote' was oak panelling and such a quantity of it means that the whole house may have been panelled and was of high quality, rivalling the Bishop's Palace (where some of the 16th century panelling still survives). It is possible that the panelling could have been put in later, or added by Dean Rowlands who was generous, re-roofing the cathedral choir and building the almshouses. During the time of neglect after Dean Rowlands a deep layer of rubbish-rich humic soil built up beyond what was then the Deanery boundary, the wall of which (Wall 48) was exposed during the 2008 excavations. Within this soil build up was a variety of well-fragmented pottery some of which came from Continental imports and indicated rather high status, including a small decorative tile, probably from a wood-fired stove of German origin and of 15-16th century date and a few pieces of French and Spanish wares of similar date (Fig. 21 and Edwards above). Plant remains from a culvert fill included some grains of wheat and of weeds of cultivation, corn marigold and cleavers. The animal bone assemblage was mainly of sheep with smaller amounts of cattle and pig bones and evidence of a quite varied diet including roe deer, chicken as well as marine food of herring, flat fish, oyster, cockle and winkle. Bones of domestic dog and cat were also found.

Phase 3 (Fig. 12). The soil accumulation of Phase 4 overlay some fragmentary earlier structures, notably the footings of a wall that probably was a predecessor of wall 48, the western boundary of the Deanery in Phase 4. This earlier wall (Wall 654), of which only a small part remained at the south end of the trench, was associated with an external surface consisting of small compacted stones, within which, at the south end was a stone slab-covered drain. Further east the surface changed to a roughly-laid layer of large irregular stone slabs. These seemed to have been put down to consolidate the surface on a terrace built up above a steeper natural slope, perhaps above the river floodplain.

On this external surface was a discrete, thin layer that included patches of heavily burnt, slightly vitrified material that could have been burnt *in situ* or deposited from burning elsewhere. However, analysis of a sample of this burnt material identified it as poor quality coal (Table 2, above). The layer included one particularly significant find. This was an enamelled gilt copper alloy decorative plaque datable to the first half of the 13th century AD and belonging to a wooden altar crucifix. It was therefore likely to have been a gift or benefit from the ruler of Gwynedd, Llywelyn ap Iorwerth. However, the discard of such a fine item on the floor of a yard and associated with burnt material suggests some traumatic event. Unfortunately the layer had no other objects that could help date the deposition. The deep soil accumulation above this layer included pottery from the mid 13th to the 17th century (Edwards above). The burnt deposit could have belonged to depredations during the Dissolution but such are not known at Bangor. One traumatic event was the destruction of the cathedral by Owain Glyndwr in 1402. The burnt deposit could be the remains of burning of demolished material then or during later clearance. After Glyndwr's raid the cathedral was described as lying in ruins until about 1496 when Bishop Henry Dean funded many new works (Storer 1818). Plant remains form this period included some grains of wheat and barley and of corn marigold a wed of cultivation. Animal bone showed a rather different diet to that in Phase 4, the assemblage

dominated by cattle, with lesser amounts of sheep, goat and pig with a few bones of horse, roe deer and goose. Marine shells were, again of oyster, cockle and winkle.

The fact that the excavated trench happened to be aligned partly along the line of the earlier Deanery boundary may explain why it did not expose any earlier buildings although a line of buildings alongside the street here was shown on Speed's map of 1610 (Fig. 3). However, the presence of some fragments of mid-13th century pottery (probably associated with construction of the first boundary wall) and of one piece of imported French ware of the same period (Fig. 21) indicated high status use and the presence of a building close by. The floor levels and walls of this phase were also clearly the first structures here, with no evidence of any earlier structures or floors. However, these surfaces could have remained in use for a long period before the burnt layer was deposited and then subsequently buried by a long accumulation of soil, perhaps indicating the period of abandonment until Bishop Dean began renovations.

Phases 1 and 2. The first boundary wall and the yard floor were founded over a grey-coloured deep silty deposit (548) that was fairly homogeneous over a considerable area and sterile in that it lacked any artefacts, such as pottery. However, the deposit did contain fragments of wood charcoal and other plant remains, and further north-east included numerous pieces of stone shattered through being heated. The stones were all of local sources and of mixed type showing no selective use of particular rock types. A further area of burnt stones and charcoal was found at a similar depth in Trench 4 (Fig. 15). This deposit lay over natural clayey subsoil on a considerable slope that dipped to the north-west, suggesting that it was close to the edge of the river flood plain. In one place in Trench 2 a narrow channel was cut or water worn in the subsoil (Fig. 13, a-b). The silty deposit with burnt stone filled the channel and the area around it. The deposit also contained fragments of burnt animal bones. These were, like those in phase 3, mainly from cattle but with some sheep, pig and goat and identified as mainly waste resulting from primary butchery (largely head and hooves) with some evidence of domestic food use (Jaques *et al*, above). Plant remains from the deposit also included a few cereal grains of oat and barley as well as hazel nut shell (*ibid*). The wood charcoal within the deposit included ash, oak, alder, hazel and poplar or willow ((*ibid*), best interpreted as firewood.

There was a general lack of artefacts of any kind in the soils that accumulated before the construction of the first yard surface of Phase 3, suggesting that there had been no buildings or other activity here or close by between the early 12th and mid-13th century. It is difficult to interpret the earliest widespread layers containing burnt stone and animal bone but they seem likely to be the product of fairly large scale activities. This happened prior to the first structures and floors, which were suggested, above, to be before 1402 and possibly as early as mid 13th century. Two radiocarbon dates were obtained from the burnt stone layers 545 and 548 in Trench 2. These were statistically identical between cal AD 1020 to 1210 (Beta-25302 and 25303) with a middle date of *c*. AD 1120. The middle date, if valid, was at the time when Bishop David was elected and began building the first cathedral. It could be that these layers derive from extensive cooking for the work force associated with the construction work. At that time the river would have occupied a natural channel meandering past the slight promontory on which the cathedral is set. Part of this channel, with a series of natural gravely silts was exposed in 2007 at the north side of Trench 7 in the Bishop's Walk (Fig. 16). Another part was also found in 2000 during archaeological work at the south side of the Bishop's Palace (Johnstone 2000). Further excavations there in 2004, demonstrated the marshy conditions that once existed on the floor of the early river valley. The construction of the first Bishop's Palace seems to have begun at about the same time as the construction of the cathedral because two large timber piles were found in 2000, which appeared to have been put in place to consolidate the ground for the palace construction or possibly to provide a buttress for a timber bridge. These timbers were dated accurately by their tree rings as having been cut down in the late summer or winter of AD 1120-1121 and this date corresponds with those from the burnt stone layers found in 2007. It was at this time that the first attempts must have been made to control the river and utilize the valley floor, prior to which settlement was confined to the higher ground around the cathedral and present high street.

THE AFON ADDA - THE CURIOUS HISTORY OF A RIVER THAT REFUSED TO GROW OLD
It was the small stream of the Afon Adda and its tendency to flood that instigated the large engineering project by the Environment Agency. The river created a problem for the city that grew up around it,

particularly during its major expansion in the 19th century, confined within the narrow valley. The valley itself is the result not of river action but of ice sheet erosion along a line of weak Ordovician shales between lines of much harder and more ancient igneous rock, creating a trough between ridges on either side. The river runs along this trough and, being quite short and slight, has not created a valley of its own, from start to finish being only about 4km in length. In geographical terms rivers have a life, from source to sea, of rapid-running youth, gently flowing middle age and slow, meandering hesitant old age. The Adda, short in length, has never progressed much beyond its youth, still a small and rapid stream when it met its maker, the sea, and still prone to the outbursts of youth.

One of the first records of the river is in the description of the travels of John Leland in Wales in about the years 1536-1539 who said 'Bangor yn Yscurvy (Is Gwyrfai) hundred hath ii fayres a year, but skant a market a weke. There rennith a little rylle thorough Bangor' (Toulmin Smith 1906, 80-1). This 'little rylle' may not have greatly affected the earliest developments of the city, which stayed on the higher ground to the south-east, where the cathedral was built. However, probably as early as the 13th century the land on the north of the river belonged to the bishop and a palace was built on the valley floor. So must have begun a long struggle to manage the river during its spates of flood, by ditching, channelling, revetting and culverting. The river flooded the lower-lying areas of Bangor at Hirael and Dean Street at various times through the 19th and early 20th century. The Adda was once tidal at least as far as Dean Street, and there was a 'lake' or pool (Brochllyn) below Glynne Street, close to the Friary (Price Davies 1939). Price Davies also reported that 'during the last half century a ship in a gale was driven up as far as the electricity works …' (i.e. at the junction with Dean Street). The recent improvements mostly lay along the line of the existing line of the river and construction revealed a variety of earlier culverts and channels as well as earlier natural alluvial and estuarine deposits.

The most recent features identified were those relating to the existing Adda culvert. Parts of this, between Tan-y-fynwent and Dean Street have previously been replaced with concrete pipes. Another part, between The Bishop's Walk and Gwynedd Road was replaced at the time of the construction of the public library in 1907 (Ellis Jones 1973). The south end of this part was uncovered in the excavation Trench 7 and proved to be a large tube constructed of a double brick wall of oval section (Fig. 16B). This remarkable example of brick construction was still in good condition and was left *in situ* and the new concrete culvert connected to it.

Sackville Road was created between 1890-1900 when the river, which previously ran in an open channel a little further to the south at this point, was routed into a new culvert along the line of the new road, joining the earlier brick-built culvert at the east. This new culvert consisted of a large ceramic pipe. Parts of the top of the pipe lay only 0.3m below the road surface but was still in use up to the present (Fig. 17).

Preceding this culvert was that which took the river underneath Glanrafon Street and the open area to the south of it, where Sackville Road was later inserted, and shown on the town map of 1854 (Fig. 7). This crossed the new culvert trench at an angle and was built of a brick double wall laid lengthways to create a semi-circular arch (Fig. 16A).

The latest part of open river channel to survive was cut through by the new culvert trench just to the north-west of the old smithy (Fig. 8) and was visible as a rounded-bottom feature.

One part of the river was still shown as open in 1854 where it crossed from Glanrafon Street through the land adjoining the Deanery (Fig. 7). The river was presumably left as a garden feature and the garden to its north was reached from the Deanery by a small wooden footbridge. The channel and footbridge were still extant into the 1930s.

The effluents of a tannery, dye house and slaughter house at Glanrafon in the mid-19th century must have made life near the river very unpleasant. These were in addition to its use as an open sewer. The problems with the river actually caused the Bishop to move from his palace to a new house near the Menai Straits in As Bangor expanded rapidly in the early 19th century new houses were built on formerly open marshy land close to the river, near Dean Street, unfortunately without the benefit of drainage. Flooding there and in

Hirael, lower down the valley, seems to have caused serious problems leading to attempts at public drainage. Later in the mid 19th century, epidemics of cholera led to the introduction of a piped water supply and eventually to construction of a public sewerage system. However, occasional flooding still continued into the 20th century and in the 1930's many of the houses in the Dean Street area were condemned and the inhabitants moved to new council houses south of the railway station. Bishop Watkin Williams (1899-1925) was unhappy with the state of the Adda and in 1900, wishing to fund a move to a new house by the Menai Straits, sold the Bishop's Palace and its extensive grounds to local businessmen who later sold parts of the buildings and grounds to Bangor City Council and to the University College of North Wales allowing the building of a new road with library and post office (Roberts 1994, 38).

During the 19th century the route of the river in front of the Bishop's Palace was the earliest part covered over, to try to hide its smellier attributes and probably part of the landscape improvements carried out for Bishop Henry Majendie, between 1809-1830. These included a new entrance to the Bishops Palace grounds via a large ornamental gateway, still in existence today, inscribed with the motif H.B. standing for *Henricus Bangoriensis*. The rest of the Bishop's Walk was still shown as open as far as the Bishop's palace on the 1854 map (Fig. 7) but was covered over by the time of the 1889 map (Fig. 8). Part of this latter culvert section was exposed in 2008 at the east side of the cathedral yard (Fig. 16A).

The route of the river near to the Deanery and Bishop's Palace was not shown on Wood's map of 1830, even though that map is otherwise very detailed and does show the route of the river further south (Fig. 5). The Penrhyn Estate map of 1768 (Fig. 4) shows the river swinging north-west along Glanrafon Street before turning to run eastwards, approximately along the line of the Bishop's Walk. This sharp meander of the river was caused by the promontory on which the Cathedral and Deanery stand. At the time of the 1768 map the river crossed a wide open area in around Glanrafon Street, which may indicate avoidance for flooding and a shallowing of the banks for a ford there, as no bridge is shown, although Speed's map of 1610 did show a bridge. The open area had been built over with Glanrafon Terrace by the time of Wood's map of 1834, suggesting that the river had been canalized and controlled by that time.

The original wide meander of the river means that it once flowed quite close to the Bishops' Palace. A considerable sequence of river silts was exposed in the north side of Trench 7, adjoining the Bishop's Walk culvert, which had cut through the silts longitudinally. In its early history, from about the 12th century, the Bishops Palace actually lay next to river for a purpose and its outbuildings included a probable garderobe pit linked to the river. This and other features were uncovered during archaeological excavations in 2000 (Johnstone 2000) and 2004 (Smith 2004).

The new culvert trenching along Sackville Road and across Glanrafon also cut across an artificial river channel, that shown on Wood's map of 1834, and longitudinally through a sequence of approximately horizontal layers of gravely made-ground (Fig. 19) belonging to the open area where the road expanded at the bottom of Glanrafon Street prior to 1834. The gravel layers overlay a distinctive and extensive layer of silt incorporating many cockle shells. These layers are difficult to explain but belong within the period between the construction of the first cathedral in the 12th century and the early 17th century when Speed drew his map. They may be flood deposits contemporary with a deep layer of colluvium found at a similar depth during the excavations in the Cathedral Yard. Below these gravel layers were natural river silt layers, including a layer of fine gravel and at -1.8m a grey silty clay containing pieces of preserved small tree branches. These lowermost deposits are probably marshy silts associated with the valley in its natural state when the earliest ecclesiastical settlement took place. Although close to the river the settlement depended on a drinking water supply from a well, known as St Deiniol's well, which now lies beneath the Menai Shopping centre.

At about -2.6m (BS) the Sackville Road culvert trench cut into pure stiff grey clay which is probably a prehistoric marine estuarine deposit, created during rising sea-level after the last glaciation. Although a short river with little watershed the flow of the Afon Adda was ensured because it originated from springs that drain down a side valley at Tai-r Fynnon behind the Tesco store and others above Bryn Llwyd (where a flood control reservoir has now been built). The Adda actually only acquired its present name in the early 19th century, probably from a farm called Cae Mab-Adda which stood near to its source, where

Curry's store now. Why this new name became accepted is unknown, but before that time the river was known as Toronnen, Teranon or Tarannon. The diary of the travels of John Leland, 1536-1539, after describing Abergwyngregyn says '…an Bangor almost a mile above it. It stondeth on Toronnen' (Toulmin Smith 1906, 85). The name Toronnen or versions of it are also mentioned in documents of the Penrhyn Estate, as early as the 15th century. There is another river of the same name in Montgomeryshire and is believed to have the same derivation as the River Trent, with roots in a Celtic name Trisonante or Tarente, probably meaning 'The Trespasser' i.e. the river that overflows its banks (Pierce and Roberts 1999, 9). This very small river has played a large, if often unappreciated part in the life of the city and has been the subject of many efforts to control its impetuous habits, which may now be finally overcome.

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APPENDICES

1 ARCHIVE CONTENTS

Context record sheets: 235

Finds record sheets: 14

Environmental sample record sheets: 11

Drawing record sheets: 7

Photographic record sheets: 10

Photographs: 125 Digital Images
7 Colour Negative Films
Drawing sheets: 25 A2 size

Artefacts:

Special Finds:

1 CuA buckle, Context 516.
2 Possible coin, Context 516.
3 Fe and Bone table fork, Context 516.
4 CuA Object, Context 80.
5 Enamelled Crucifix decoration, Context 658.
6 Carved stone Lintel with initials and date, Context 52.

Common Finds:

Pottery 76 Bags from 51 contexts.
Clay tobacco pipe – 3 bags from 2 contexts.
Bone, 68 bags from 48 contexts.
Marine shell, 2 bags from 2 contexts.
Glass, 12 bags from 11 contexts.
Iron and Cu Alloy, 8 bags from 8 contexts.
Slag, 2 bags from 2 contexts.
Rock samples, 6 bags from 5 contexts.
Miscellaneous, 7 bags from 7 contexts.
Charcoal samples from 9 contexts.

2 **Data Archive for vertebrate remains**

Total fragment counts and weight of material recovered from each bone producing context

Key: *Id frags = total number of identified fragments; Unid frags = total number of unidentified fragments; Total = total number of fragments; NI = no information available.*

Context	Phase	Description	Id frags	Unidentified frags	Total
43	5B	Humic loam	1	-	1
56	6	Gravel surface	-	1	1
62	5A?	Rubble dump	1	-	1
409	1/2	Dark grey silt and burnt stone	5	35	40
418	1/2	Dark grey silt and burnt stone	6	71	77
504	4	Mid-brown humic loam	1	-	1
505	4	Buried old topsoil	-	7	7
506	3?	Humic loam	-	2	2
507	1	Stony clay	-	2	2
508	1-2?	Silty clay	-	1	1
520	5A	Fill of 521	7	15	22
525	4	Silty clay	11	12	23
526	4-6	General cleaning layer after machining away later walls	4	4	8
528	5	Fill of linear 527	2	7	9
531	5	Pit fill	-	6	6
532	4	Silty clay	29	157	186
534	3	Dumped? Clayey deposit	-	6	6
535	4	Silty fill of culvert	3	11	14
539	4	Silty clay	12	12	24
540	3	Silty clay	9	11	20
541	3	Gravelly clay deposit	1	1	2
542	3	Silty clay accumulation	-	6	6
543	1/2	Silty clay accumulation	5	4	9
545	1	Fill of cut associated with burnt stone deposit	-	3	3
548	1	Burnt stone deposit	19	118	137

Context	Phase	Description	Id frags	Unidentified frags	Total
619	NI	-	2	1	3
628	6	Gravel foundation for cobbled yard surface 53	1	-	1
630	4	Mixed demolition deposit	-	9	9
631	4	Mixed demolition deposit	1	1	2
632	4	Deep humic layer	11	12	23
633	4	Deep humic layer	3	1	4
636	4	Mixed demolition deposit	5	5	10
638	U/S	Cleaning layer	1	4	5
642	5A	Fill of wall foundation cut	2	1	3
643	4	Shelly, rich sandy loam	10	15	25
645	3-4	Humic soil	1	3	4
648	4	Dark, humic soil	16	29	45
649	3-4	Yellow clay	1	2	3
650	3-4	Yellow-brown loam	4	2	6
653	3	Rubbly clay layer	7	3	10
655	4	Dark charcoal-rich soil beneath cobbled yard	12	16	28
657	3A	Gravel yard surface	-	1	1
658	3B	Silty rubbish on floor 664	3	3	6
659	3	Clay below wall 654	5	1	6
735	5A	Backfill of 734	-	1	1
738	3-4	Mixed soil with ferrous inclusions	-	10	10
744	3	Dark brown loam	1	2	3
746	6-7	Dark, gritty silt	-	1	1
Total			**205**	**624**	**829**

Identified bone record

Key: Id no. = number unique to individual fragments; CN = context number; SN = sample number; Frags = number of fragments; GT50% = zones with greater than 50% present; LT50% = zones with less than 50% present; l = left; r = right; i = indeterminate; Prox = proximal fusion; Dist = distal fusion; pu = proximal unfused; pf = proximal fused; du = distal unfused; df = distal fused; j = juvenile; a = adult. Zones after Dobney and Rielly (1988) except 'X' and 'Y' which equate to Dobney and Rielly zones '10' and '11'.

Phase	Id no.	CN	SN	Species	Element	Frags	Side	GT50%	LT50%	Prox	Dist	Notes
NP	189	619		rabbit	humerus	1				Pf	df	?rodent gnawed, good preservation
NP	190	619		chicken	radius	1						adult
1	30	548		cattle	radius	1	r	13456789X	DCEF	pf	df	Zone 2 and part of ulna absent but looks like modern damage to bone
1	31	548		cattle	radius	1	l	15	26	pf		split longitudinally through Zones 2, 5 and 6
1	32	548		cattle	ulna	1	l	BCDE				very eroded fragment, with rounded edges. Chopped across shaft
1	33	548		cattle	cuboid-navicular	1						eroded
1	34	548		cattle	metacarpal	1	r	1256				
1	35	548		cattle	scapula	1		45	12			juvenile individual represented
1	36	548		goat	horncore	1	r					right hand core chopped across base - tip absent
1	37	548		pig	scapula	1	r	45	23			chopped thru 2 and 3
1	38	548		pig	pelvis	1	l	Y				
1	39	548		sheep/goat	mandible	1	r	1	6			M1and M2
1	41	548		cattle	horncore	1						small fragment of horncore
1	110	507		cattle	isolated teeth	1						upper molar
1	191	548	3	sheep/goat	maxilla + teeth	1	r					tooth row includes dP3, dP4 M1, M2, M3, slight fresh breakage damage
1	192	548	3	sheep/goat	mandible	1	r	345				porous bone, immature individual
1	193	548	3	sheep/goat	isolated teeth	1	l					upper molar
1	194	548	3	sheep/goat	femur	1	l	X			du	
1	195	548	3	Turdidae	coracoid	1	r					of a size and morphology consistent with song thrush
1	196	548	3	rabbit/hare	isolated teeth	1						a small fragment of an incisor

Phase	Id no.	CN	SN	Species	Element	Frags	Side	GT50%	LT50%	Prox	Dist	Notes
1	197	548	2	cattle	isolated teeth	1	r					upper premolar, probably P4
1	198	548	2	cattle	ulna	1	l	CDE				very eroded fragment, possibly chopped across the shaft but difficult to determine whether fresh breakage damage or ancient butchery mark but seems more likely to be old
1-2	79	543		cattle	isolated teeth	2	r					upper molars
1-2	80	543		cattle	phalanx 1	1	l	123		pf		
1-2	81	543		cattle	horncore	1	l					base of left horncore, one side chopped, small
1-2	82	543		sheep/goat	tibia	1	l	56789X			df	damaged distal articulation - ?chopped, ?slightly scorched
1-2	152	409		cattle	isolated teeth	1	r					upper molar
1-2	153	409		cattle	M1/M2	1						some damage to the tooth surface
1-2	154	409		cattle	phalanx 1	1	l	123		pf		
1-2	155	409		cattle	ulna	1	l	DE	C			poorly preserved - no bone surface in places
1-2	156	409		cattle	pelvis	1	r	15				fresh breakage damage
1-2	157	418		cattle	radio/ulna	1	l	15BCDE	2			proximal radius fused, ulna dog gnawed. Possible scorching on the ulna shaft and proximal radius
1-2	158	418		cattle	pelvis	1	l	12456	2	a		
1-2	159	418		cattle	M3	1	l					
1-2	160	418		cattle	M1/M2	1	l					wear stage estimated as tooth damaged
1-2	161	418		cattle	mandible	1	l	27				
1-2	162	418		sheep/goat	M1/M2	1						broken, possibly as a result of heat damage
3	70	540		cattle	M1	1	r					probably associated with dP4, Id no. 71
3	71	540		cattle	DP4	1	r					probably associated with M1, Id no. 70
3	72	540		sheep/goat	metacarpal	1	l	125678				probably adult
3	73	540		sheep	ulna	1	r	CDE	B			proximal end dog gnawed
3	74	540		sheep/goat	humerus	1	r	345678	9		df	chopped across shaft. Distal end dog gnawed
3	75	540		sheep/goat	isolated teeth	1	r					upper molar
3	76	540		pig	radius	1	l	257	168			proximal articulation dog gnawed

Phase	Id no.	CN	SN	Species	Element	Frags	Side	GT50%	LT50%	Prox	Dist	Notes
3	77	540		roe	metacarpal	1						shaft fragment only - possibly distal fused
3	78	540		goose	coracoid	1	l	12				broken coracoid
3	109	541		cattle	mandible	1	r	27				?scorched on one side, some fresh breakage damage
3	144	659		goat	horncore	1	r					base of core, chopped from rest of skull, fresh breakage and dog gnawing damage.
3	145	659		cattle	horncore	1	l					small adult core, almost complete, with just the tip missing, probably chopped from rest of skull
3	146	659		cattle	metacarpal	1	l	125678				extensive fresh breakage damage, distal end of shaft chopped off
3	147	659		cattle	calcaneum	1	l	25	3			damaged by fresh breakage
3	148	659		pig	tibia	1	r	789	X			shaft only, proximal articulation destroyed by ?dog gnawing
3	163	653		cattle	mandible	1	r	127				P3 only, P2 congenitally absent. Chopped on Zone 7 to split from other side of jaw
3	164	653		?cattle	femur	1	l	236				chopped across mid shaft. Proximal articulation dog gnawed
3	165	653		sheep/goat	metacarpal	1	r	5678				
3	166	653		sheep/goat	metatarsal	1	l	125678				shaft slightly porous
3	167	653		sheep/goat	isolated teeth	1	r					upper M3
3	168	653		pig	humerus	1	r	78	9X			distal articulation missing or ?unfused
3	169	653		pig	metacarpal	1	i	3			du	
3	180	744		cattle	metatarsal	1	r	12345678			df	dark brown blotching
3-4	129	645		cattle	metatarsal	1	l	125678				adult, large individual represented, ?modern
3-4	130	646		sheep/goat	radius	1	r	12567		pf		
3-4	131	646		cattle	isolated teeth	1						deciduous upper premolar - dP4
3-4	170	650		cattle	calcaneum	1	l	23				possibly fused
3-4	171	650		cattle	metapodial	1	i	37			df	
3-4	172	650		cattle	isolated teeth	1	l					upper molar
3-4	173	650		sheep/goat	pelvis	1	r	125				
3-4	183	649		sheep	tibia	1	l	56X	9		df	

Phase	Id no.	CN	SN	Species	Element	Frags	Side	GT50%	LT50%	Prox	Dist	Notes
3B	126	658		horse	radius	1	r	123456789X		pf	df	preservation awful - concretions on the surface of the bone and surface absent in many places
3B	127	658		horse	radius	1	l	25		pf		rather eroded fragment, may be partner to previous bone (Id no. 126), fresh breakage damage, poor preservation
3B	128	658		?cattle	metatarsal	1	i	345678	12		df	very poor preservation, extensive surface erosion
4	1	532		sheep/goat	mandible	1	l	1				P3 to M3
4	2	532		sheep/goat	mandible	1	l	1				P4 to M3
4	3	532		sheep/goat	mandible	1	l	1				M3 only
4	4	532		sheep/goat	mandible	1	l	45	3			
4	5	532		sheep/goat	M1/M2	1	l					
4	6	532		sheep/goat	M1/M2	1	r					
4	7	532		sheep/goat	radius	1	l	125678	9X	pf		
4	8	532		sheep	radius	1	r	1256789	X	pf		
4	9	532		sheep/goat	radius	1	l	257	6	pf		fresh breakage damage
4	10	532		sheep/goat	metacarpal	1	r	12345678			df	slight damage to distal condyles - possibly chopped
4	11	532		sheep/goat	scapula	1	r	123	45		df	fresh breakage damage, blade broken off
4	12	532		sheep/goat	pelvis	1	l	12456	7X			dog gnawed
4	13	532		sheep/goat	pelvis	1	l	246				adult
4	14	532		sheep	tibia	1	l	569X			df	
4	15	532		sheep	tibia	1	r	569X	8		df	
4	16	532		sheep/goat	metacarpal	1	i	78			j	juvenile individual represented - very porous
4	17	532		pig	ulna	1	l	BCDEF				proximal end dog gnawed
4	18	532		sheep/goat	scapula	1	l	345				spine chopped, dog gnawing
4	19	532		roe deer	radius	1	l					shaft only -no articular ends. Shape and morphological characteristics details indicate roe deer
4	20	532		chicken	femur	1	r	123		a	a	part of proximal articulation broken off
4	21	532		chicken	femur	1	r	12		a		
4	22	532		chicken	sternum	1						
4	23	532		chicken	carpometa-carpus	1						juvenile individual

Phase	Id no.	CN	SN	Species	Element	Frags	Side	GT50%	LT50%	Prox	Dist	Notes
4	24	532		cattle	M3	1						surface of tooth a little broken
4	25	532		cattle	ulna	1	l	BCDEF				probably adult. Chopped in shaft (Zone F) and chopped across Zone B
4	26	532		cattle	metatarsal	1	l	1256				probably adult. Chopped through shaft
4	27	532		cattle	isolated teeth	1	r					upper molar
4	28	532		cattle	calcaneum	1	l	235	4	pu		dog gnawed
4	29	532		horse	cranium	1						smashed during excavation, fragments which could be identified as from the same skull included right orbit, part of right maxilla, right zygomatic arch, occipital area and part of frontal
4	42	539		cattle	mandible	1	r	1267	3			P3 to M3, chopped through Zones 6 and 3
4	43	539		cattle	pelvis	1	l	26	4			chopped across Zones 4 and 6
4	44	539		cattle	humerus	1	r	57	68		df	chopped through Zones 5 and 6 and down the shaft. Distal articulation dog gnawed
4	45	539		cattle	metacarpal	1	r	5678	12			
4	46	539		cattle	femur	1	i	4	5	pf		dog gnawing
4	47	539		pig	mandible	1	l	1	6			M1 to M3
4	48	539		pig	canine	1						male canine - lower probably left hand side
4	49	539		horse	pelvis	1	l	12345689Y				also a fragment of the left pelvis attached - Zones 9 and Y. Possibly chopped Zone 9
4	50	539		sheep/goat	metacarpal	1	r	15678	2			fresh breakage damage
4	51	539		sheep/goat	isolated teeth	1	r					upper molar - teeth damaged
4	52	539		cattle	metacarpal	1	r	12345678			df	appalling preservation, surface damage, bone splitting into layers
4	53	539		sheep/goat	mandible	1	r	123456				P2 to M3
4	61	504		horse	humerus	1	l	56789X			df	fresh breakage damage
4	62	525		cattle	metacarpal	1	r	1256				adult
4	63	525		cattle	astragalus	1	r	1234				adult
4	64	525		sheep/goat	M1/M2	1	r					
4	65	525		sheep/goat	isolated teeth	1	r					upper molar

Phase	Id no.	CN	SN	Species	Element	Frags	Side	GT50%	LT50%	Prox	Dist	Notes
4	66	525		sheep/goat	ulna	1	l	CDE				proximal articulation dog gnawed
4	67	525		cat	skeleton	5						calcaneum (right,complete, proximal fused); humerus x 2 (left and right, distal fused and proximal unfused); femur (left, proximal fusing, distal unfused); tibia (right, proximal and distal unfused). Probably all the same individual
4	69	525		dog	mandible	1	r					all premolars and molars present. Small dog
4	84	643		cattle	DP4	1	r					
4	85	643		cattle	DP4	1	l					broken
4	86	643		cattle	incisor	1						incisor, permanent
4	87	643		cattle	maxilla + teeth	1	r					P4 to M2
4	88	643		cattle	horncore	1	i					base of core, chopped from skull
4	89	643		cattle	astragalus	1	l	23	3			chopped diagonally through bone
4	90	643		cattle	humerus	1	l	56	3478		df	chopped across and down through Zone 7 and chopped across Zone 8
4	91	643		sheep/goat	isolated teeth	2						1 left, 1 right - upper molars
4	92	643		pig	ulna	1	l	DE	CF			fresh breakage damage - shaft only proximal articulation damaged
4	93	648		cattle	M1/M2	1	r					
4	94	648		cattle	isolated teeth	2						deciduous incisor and deciduous upper premolar
4	95	648		cattle	pelvis	1	l	246	1	a		adult, possibly chopped through Zone 6 and along Zone 4, much fresh breakage damage
4	96	648		cattle	metatarsal	1	l	12	56			split through the proximal articulation
4	99	648		dog	femur	1	l	6	5		df	small to medium-sized dog. Zones equate to those used for fox/dog see Dobney *et al.* (2007)
4	100	648		dog	calcaneum	1	l					complete
4	101	648		sheep/goat	humerus	1	l	678	35		Df	
4	102	648		sheep/goat	humerus	1	l	35678			Df	
4	103	648		sheep/goat	M1/M2	1	r					

Phase	Id no.	CN	SN	Species	Element	Frags	Side	GT50%	LT50%	Prox	Dist	Notes
4	104	648		sheep/goat	M1/M2	1	r					
4	105	648		sheep/goat	isolated teeth	2	r					two upper deciduous premolars, both dP4
4	106	648		pig	deciduous incisor	1						rather damaged but probably deciduous
4	107	648		pig	incisor	1						permanent lower incisor - no obvious wear
4	108	648		?chicken	humerus	1	l					probably chicken, proximal humerus shaft, fresh breakage damage
4	111	632		sheep/goat	isolated teeth	1	r					upper molar
4	112	632		sheep	calcaneum	1	l	12345		pf		
4	113	632		sheep/goat	metacarpal	1	r	125678				
4	114	632		sheep/goat	scapula	1	r	12345			df	
4	115	632		sheep/goat	radius	1	l	6789X	5		du	
4	116	632		sheep/goat	humerus	1	r	789X	6Y		df	fresh breakage and ?dog gnawing damage
4	117	632		sheep/goat	humerus	1	l	789X	56		df	?dog gnawing, rather battered in appearance
4	118	632		sheep/goat	pelvis	1	r	12456		a		adult, fresh breakage and dog gnawing damage
4	119	632		cattle	isolated teeth	1	r					upper molar - roots chopped or broken off
4	120	632		cattle	pelvis	1	r	38		a		chopped through acetabulum, also fresh breakage damage
4	121	632		dog	metatarsal 4	1	l					thin and gracile animal represented of medium-size
4	132	655		pig	pelvis	1	l	1238	45	a		eroded around the edges, fresh breakage damage
4	133	655		pig	incisor	1						permanent lower incisor
4	134	655		sheep/goat	isolated teeth	1	l					upper molar
4	135	655		sheep/goat	mandible	1	r		1			M3 only
4	136	655		sheep/goat	M3	1	l					
4	137	655		sheep/goat	M1/M2	1	l					
4	138	655		sheep/goat	M1/M2	1						
4	139	655		sheep/goat	phalanx 1	1	r	123		pfg		
4	140	655		sheep/goat	phalanx 1	1	r	123		pf		

Phase	Id no.	CN	SN	Species	Element	Frags	Side	GT50%	LT50%	Prox	Dist	Notes
4	141	655		horse	incisor	1						quite well worn, from an animal aged between 5 and 8 years
4	142	655		horse	isolated teeth	1						small tooth, quite heavily worn - lower
4	143	655		?cattle	metatarsal	1		5678	34		df	very eroded, no surface left
4	151	631		cattle	metacarpal	1	l	5678			du	rather modern feel to the bone, although porous and dark in colour, fresh breakage and dog gnawing damage
4	174	636		sheep/goat	radius	1	r	1256789X		pf		measured although somewhat eroded
4	175	636		sheep/goat	isolated teeth	2						upper molars
4	176	636		sheep/goat	M3	1	l					
4	177	636		sheep/goat	radius	1	l	25	7	pf		split longitudinally, although this may be recent damage
4	184	633		sheep/goat	scapula	1	r	12345			df	knife marks around edge of glenoid
4	185	633		sheep/goat	isolated teeth	1	r					upper third molar, third cusp reduced
4	186	633		cattle	M1/M2	1						broken - tooth wear is an estimate and could be more advanced
4	199	535	1	fish		3						herring maxilla fragment and flatfish quadrate and an unidentified spine fragment
4-6	122	526		cattle	metacarpal	1	r	12	56			
4-6	123	526		cattle	isolated teeth	1	r					upper molar
4-6	124	526		sheep/goat	pelvis	1	r	1234568	7XY	a		dog gnawed
4-6	125	526		cattle	phalanx	1	r	23				
5	181	528		sheep	tibia	1	r	56X	9		df	chop on side and across shaft
5	182	528		horse	incisor	1						over 12 years of age probably
5A	54	520		cattle	phalanx 1	1	r	123		pf		
5A	55	520		cattle	M3	1	l					tooth broken unfortunately
5A	56	520		horse	phalanx 3	1						
5A	57	520		sheep/goat	humerus	1	l	345678X			df	distal gnawed

Phase	Id no.	CN	SN	Species	Element	Frags	Side	GT50%	LT50%	Prox	Dist	Notes
5A	58	520		sheep/goat	M3	1	l					
5A	59	520		pig	cranium	1	l					orbit fragment
5A	60	520		pig	incisor	1						deciduous lower incisor
5A	187	642		cattle	metatarsal	1		78			j	small and porous, juvenile individual
5A	188	642		sheep/goat	tibia	1	r	789			j	porous bone, small juvenile individual
5A?	150	62		sheep/goat	femur	1	r	23456789XY		pf	df	very modern appearance, whitish fawn colour, dog gnawing of proximal and distal ends, knife marks down shaft
5B	178	43		pig	tibia	1	r	789X		j	j	neonatal/juvenile individual
6	149	628		sheep	astragalus	1	l	1234				very good preservation, fawn colour
U/S	179	638		sheep/goat	M3	1	l					

Unidentified bone record

Key: NP = not phased; CN = context number; SN = sample number; Frags = total number of fragments

Phase	CN	SN	Category	Element	Frags	Notes
NP	619		medium-sized mammal	rib	1	very porous ?rib fragment, knife marks
1	507		large mammal	scapula	1	blade fragment
1	507		unidentified	unidentified	1	
1	545		large mammal	rib	1	fresh breakage damage
1	545	2	medium-sized mammal	shaft	1	
1	545	2	unidentified	unidentified	1	
1	548		large mammal	cranium	8	including a few small fragments of horncore
1	548		large mammal	shaft	4	
1	548		large mammal	vertebra	1	
1	548		medium-sized mammal	rib	2	
1	548		medium-sized mammal	shaft	1	
1	548		unidentified	unidentified	4	
1	548	2	medium-sized mammal	rib	1	
1	548	2	medium-sized mammal	shaft	3	1 burnt white
1	548	2	medium-sized mammal	vertebra	1	pig lumbar vertebra unfused
1	548	2	unidentified	unidentified	9	
1	548	3	large mammal	shaft	1	
1	548	3	medium-sized mammal	rib	3	
1	548	3	medium-sized mammal	shaft	4	
1	548	3	small mammal	shaft	2	
1	548	3	unidentified	unidentified	74	22 fragments burnt, mostly small bones less than 20 mm
1-2	409		large mammal	axis	1	
1-2	409		large mammal	rib	2	
1-2	409		large mammal	shaft	8	includes two tibia shaft fragments - split longitudinally and femur shaft, fresh breakage damage extensive - all probably cattle
1-2	409		large mammal	vertebra	1	
1-2	409		medium-sized mammal	shaft	4	metacarpal shaft, metatarsal shaft, radius shaft
1-2	409		unidentified	unidentified	19	bone shaft fragments, mostly layers that have broken off
1-2	418		large mammal	scapula	1	blade fragment, scorched
1-2	418		large mammal	shaft	4	
1-2	418		medium-sized mammal	shaft	2	
1-2	418		unidentified	unidentified	22	small fragments

Phase	CN	SN	Category	Element	Frags	Notes
1-2	418	4	medium-sized mammal	rib	6	rounded edges, some black in colour – 'sooty' or from charcoal
1-2	418	4	medium-sized mammal	shaft	2	
1-2	418	4	unidentified	unidentified	34	approximately 20 are burnt and white in colour, mostly very small fragments
1-2	543		large mammal	shaft	2	1 split metatarsal; 1 femur
1-2	543		large mammal	vertebra	1	
1-2	543		medium-sized mammal	shaft	1	
1-2?	508		large mammal	shaft	1	fresh breakage damage, 3 fragments representing one femur shaft, rather battered
3	534		large mammal	rib	1	
3	534		large mammal	shaft	4	
3	534		medium-sized mammal	shaft	1	
3	540		bird	shaft	3	
3	540		large mammal	mandible	1	mandible fragment from juvenile individual
3	540		large mammal	rib	1	
3	540		large mammal	shaft	3	metacarpal shaft, very eroded, probably cattle
3	540		medium-sized mammal	rib	1	
3	540		medium-sized mammal	shaft	2	
3	541		large mammal	rib	1	close to articular end
3	542		large mammal	unidentified	6	few ?shaft fragments, probably same bone - fresh breakage damage, rather fragmented
3	653		large mammal	scapula	1	blade chopped
3	653		large mammal	shaft	1	
3	653		medium-sized mammal	rib	1	
3	659		medium-sized mammal	shaft	1	quite porous, possibly pig
3	744		large mammal	shaft	1	
3	744		medium-sized mammal	shaft	1	fresh breakage damage, radius fragment
3-4	645		large mammal	rib	1	
3-4	645		large mammal	vertebra	1	
3-4	645		medium-sized mammal	shaft	1	large radius shaft fragment - chopped down side of shaft
3-4	646		large mammal	rib	3	
3-4	646		medium-sized mammal	shaft	6	
3-4	649		large mammal	shaft	2	
3-4	650		large mammal	rib	1	
3-4	650		large mammal	shaft	1	

Phase	CN	SN	Category	Element	Frags	Notes
3-4	738		large mammal	scapula	1	blade fragment
3-4	738		large mammal	shaft	1	
3-4	738		large mammal	vertebra	1	thoracic vertebra
3-4	738		medium-sized mammal	shaft	4	much fresh breakage damage, femur and tibia fragments
3-4	738		unidentified	unidentified	3	
3?	506		medium-sized mammal	shaft	2	a metatarsal shaft and a metacarpal shaft
3A	657	7	medium-sized mammal	shaft	1	burnt bone fragment, white in colour
3B	658		large mammal	rib	1	
3B	658		medium-sized mammal	shaft	1	?tibia, very eroded fragment
3B	658		unidentified	unidentified	1	
4	505		large mammal	rib	1	
4	505		large mammal	shaft	4	
4	505		large mammal	vertebra	1	axis fragment
4	505		medium-sized mammal	shaft	1	tibia shaft
4	525		large mammal	sacrum	1	probably cattle
4	525		large mammal	shaft	3	radius and humerus
4	525		medium-sized mammal	shaft	8	including radius and humerus
4	532		large mammal	cranium	25	one definite cattle fragment, the rest could belong to horse skull or could be cattle
4	532		large mammal	isolated teeth	1	1 cusp of a molar, probably cattle, broken
4	532		large mammal	mandible	2	1 juvenile fragment
4	532		large mammal	rib	9	
4	532		large mammal	scapula	1	blade fragment, spine chopped
4	532		large mammal	shaft	22	includes several (at least 4) proximal femur shafts with Zone 2 - chopped across Zone 2, also few humerus fragments and ?tibia fragments
4	532		large mammal	vertebra	3	1 centrum split longitudinally, 1 cervical vertebra (centrum absent), 1 lumbar vertebra fused, one side chopped
4	532		medium-sized mammal	rib	16	small pieces of rib
4	532		medium-sized mammal	scapula	2	
4	532		medium-sized mammal	shaft	39	includes fragments of humerus, radius, femur, tibia, metapodial, ?pig radius fragment
4	532		medium-sized mammal	vertebra	2	1 spine of thoracic vertebra, 1 ?lumbar vertebra fragment
4	532		unidentified	unidentified	35	
4	535		medium-sized mammal	vertebra	1	thoracic vertebra spine, well preserved
4	535	1	medium-sized mammal	unidentified	9	

Phase	CN	SN	Category	Element	Frags	Notes
4	535	1	small mammal	humerus	1	too small for rat, has to be mouse or vole
4	539		large mammal	mandible	1	
4	539		large mammal	scapula	1	blade and spine fragment
4	539		large mammal	shaft	6	
4	539		large mammal	vertebra	1	
4	539		medium-sized mammal	rib	1	
4	539		medium-sized mammal	tibia	2	shaft fragments
4	630		large mammal	mandible	6	same mandible probably, much fresh breakage damage
4	630		large mammal	rib	2	large and very modern appearance. Some chop marks on one of the fragments
4	630		large mammal	scapula	1	fresh breakage damage
4	631		large mammal	rib	1	
4	632		large mammal	sacrum	1	
4	632		large mammal	shaft	2	
4	632		medium-sized mammal	rib	1	?polished
4	632		medium-sized mammal	shaft	6	
4	632		unidentified	unidentified	2	
4	633		large mammal	shaft	1	
4	636		large mammal	pelvis	1	chopped and dog gnawing
4	636		large mammal	shaft	2	
4	636		medium-sized mammal	shaft	2	1 tibia fragment
4	643		large mammal	pelvis	2	
4	643		large mammal	rib	1	
4	643		large mammal	shaft	6	
4	643		large mammal	vertebra	1	chopped longitudinally, lumbar vertebra, unfused
4	643		medium-sized mammal	rib	2	
4	643		medium-sized mammal	shaft	3	1 humerus fragment, 1 metatarsal shaft fragment
4	648		large mammal	mandible	1	condyle fragment, heavily chopped
4	648		large mammal	pelvis	2	
4	648		large mammal	shaft	1	metatarsal shaft fragment
4	648		medium-sized mammal	rib	2	
4	648		medium-sized mammal	shaft	13	including fragments of femur and tibia
4	648		unidentified	unidentified	10	
4	655		bird	shaft	2	
4	655		large mammal	scapula	2	

Phase	CN	SN	Category	Element	Frags	Notes
4	655		large mammal	shaft	4	
4	655		medium-sized mammal	atlas	1	split through the middle of the vertebra, also ?knife marks
4	655		medium-sized mammal	rib	1	
4	655		medium-sized mammal	scapula	2	probably same bone
4	655		medium-sized mammal	shaft	4	
4-6	526		large mammal	shaft	2	shaft fragments, 1 ?cervid metatarsal
4-6	526		medium-sized mammal	shaft	2	
5	528		bird	shaft	1	
5	528		large mammal	shaft	2	
5	528		medium-sized mammal	shaft	2	
5	528		unidentified	unidentified	2	
5	531		large mammal	isolated teeth	1	fragment of ?cow tooth, 1 cusp, ?upper
5	531		large mammal	shaft	2	proximal femur shaft, chopped and knife marks and dog gnawing, fresh breakage damage; 1 distal femur shaft, chopped across shaft
5	531		medium-sized mammal	shaft	3	1 radius shaft , probably sheep/goat - knife marks and shallow chops, also chopped across the shaft; 1 tibia shaft
5A	520		large mammal	pelvis	2	chunks of pelvis ilium and ischium chopped, probably cattle
5A	520		large mammal	shaft	6	
5A	520		medium-sized mammal	rib	2	
5A	520		medium-sized mammal	shaft	5	
5A	642		large mammal	scapula	1	
5A	735		large mammal	shaft	1	
6	56		large mammal	cranium	1	occipital condyle fragment
6-7	746		medium-sized mammal	shaft	1	
U/S	638		large mammal	rib	1	
U/S	638		large mammal	shaft	1	
U/S	638		medium-sized mammal	shaft	2	1 metatarsal shaft fragment

Mandible and tooth wear records

Key: Id no. = number unique to individual fragments; CN = context number. Tooth wear stages follow those outlined by Grant (1982) for pigs and cattle and those of Payne (1973; 1987) for caprovids. Key: CPT = tooth still in crypt; ERP = tooth erupting. Age stage 1 after Dobney et al. *(2007), age stage 2 after Payne (1973): D (1-2 years); E (2-3 years); F (3-4 years).*

Phase	Id no	CN	Species	Element	P4	M1	M2	M3	Age stage 1	Age stage 2
1	40	548	sheep/goat	mandible	-	9A	5A	-	-	-
4	1	532	sheep/goat	mandible	8A	9A	7A	2A	Adult1	E
4	2	532	sheep/goat	mandible	CPT	9A	7A	ERP	Subadult1	D
4	3	532	sheep/goat	mandible	-	-	-	11G	Adult3	F
4	53	539	sheep/goat	mandible	14S	12A	9A	9G	Adult3	F
4	135	655	sheep/goat	mandible	-	-	-	5A	-	E
4	42	539	cow	mandible	H	O	M	L	Elderly	-
4	47	539	pig	mandible	-	L	E	A	Subadult2	-

Phase	Id no	CN	Species	Element	Wear stage
1-2	153	409	cow	M1/M2	G
1-2	159	418	cow	M3	G
1-2	160	418	cow	M1/M2	J
3	70	540	cow	M1	B
3	71	540	cow	DP4	J
4	24	532	cow	M3	J
4	84	643	cow	DP4	H
4	85	643	cow	DP4	C
4	93	648	cow	M1/M2	K
4	186	633	cow	M1/M2	G
4	5	532	sh/g	M1/M2	9A
4	6	532	sh/g	M1/M2	5A
4	64	525	sh/g	M1/M2	9A
4	103	648	sh/g	M1/M2	9A
4	104	648	sh/g	M1/M2	9A
4	136	655	sh/g	M3	8G
4	137	655	sh/g	M1/M2	8A

4	138	655	sh/g	M1/M2	BKN
4	176	636	sh/g	M3	10G
5A	58	520	sh/g	M3	8G
U/S	179	638	sh/g	M3	BKN

Measurements

All measurements are given in millimetres and follow von den Driesch (1976).

Phase	Id no	Context	Species	Element	Bd	Dl	GLl
4	63	525	cow	astragalus	38.82	35.25	64.09
6	149	628	sheep	astragalus	22.37	18.79	33.98

Phase	Id no	Context	Species	Element	C	C+D	DS	GL
4	100	648	dog	calcaneum	-	-	-	34.55
4	112	632	sheep	calcaneum	10.94	22.05	16.53	51.53

Phase	Id no	Context	Species	Element	GL	SC	Bd	Dd	Bp	Dp
4	20	532	fowl	femur	79.59	6.66	14.84	11.64	-	-
4	21	532	fowl	femur	-	-	-	-	14.6	10.01
4	99	648	dog	femur	-	-	26.71	-	-	-

Phase	Id no	Context	Species	Element	45	46	BC
1	36	548	goat	horncore	36.08	20.59	96
3	144	659	goat	horncore	35.11	23.65	100
3	145	659	cow	horncore	45.49	29.26	124

Phase	Id no	Context	Species	Element	BT	HTC
4	102	648	sheep/goat	humerus	25.36	-
5A	57	520	sheep/goat	humerus	25.25	13.08

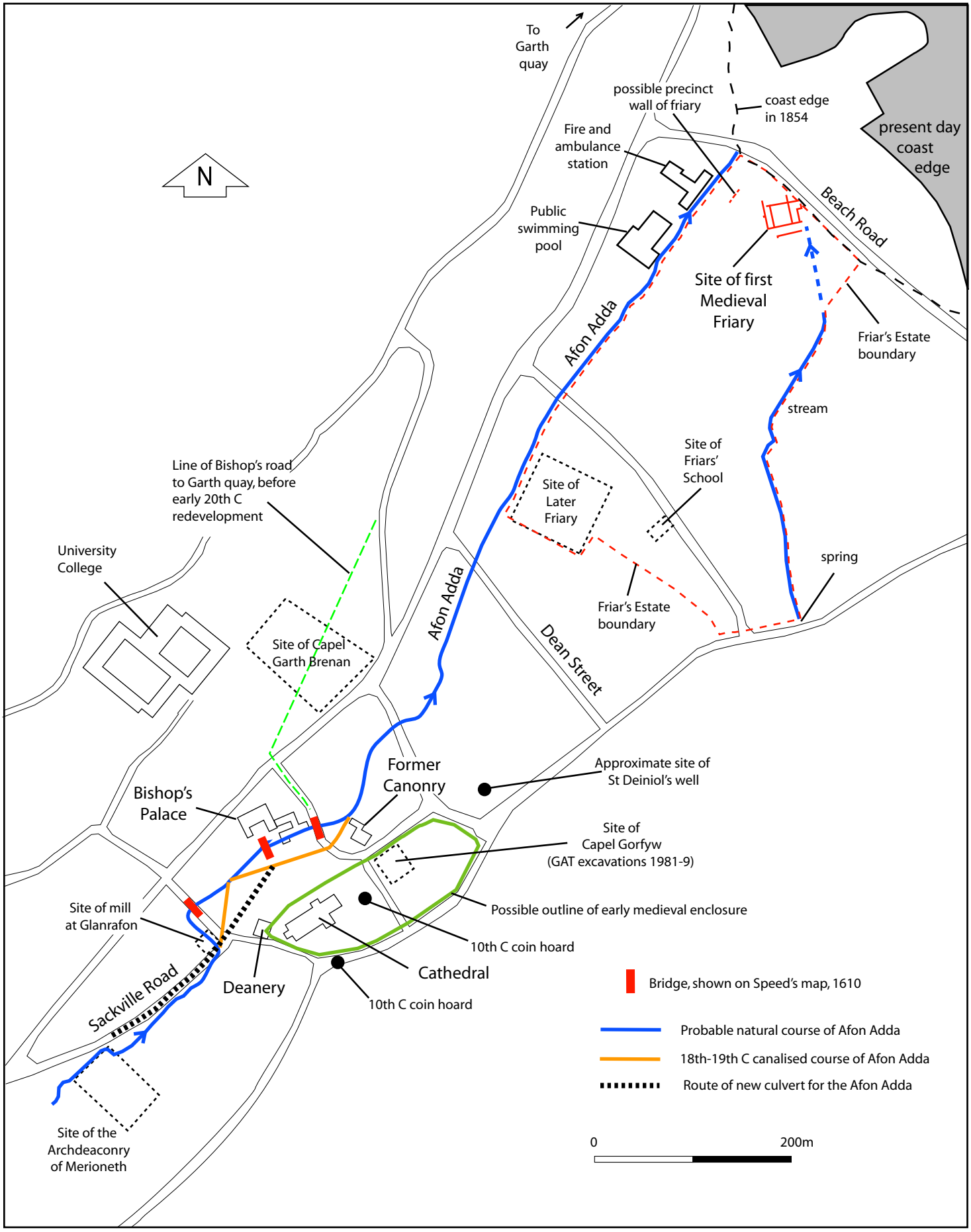
Phase	Id no	Context	Species	Element	GL	SD	Bp	Dp	Bd
3	146	659	cow	metacarpal	-	25.38	46.97	27.71	-
4	62	525	cow	metacarpal	-	-	51.64	29.36	-
3	72	540	sheep/goat	metacarpal	-	15.8	22.99	16.8	-
4	113	632	sheep/goat	metacarpal	-	13.82	22.17	15.94	-
4	10	532	sheep/goat	metacarpal	114.74	14.17	21.62	15.98	25.03
4-6	122	526	cow	metacarpal	-	-	46.83	28.53	-

Phase	Id no	Context	Species	Element	GL	SD	Bp	Dp	Bd	Dd
3	180	744	cow	metatarsal	202.05	22.69	40.82	-	45.85	24.72
3-4	129	645	cow	metatarsal	-	29.42	50.8	48.64	-	-

Phase	Id no	Context	Species	Element	Bp	BFp	SD	Ll	Bd	BFd
1	30	548	cow	radius	-	-	-	228	57.19	53.5
3-4	130	646	sheep/goat	radius	29.66	27.75	17.33	-	-	-
4	7	532	sheep/goat	radius	27.94	25.83	15.82	-	-	-
4	8	532	sheep/goat	radius	28.63	26.47	16.08	-	-	-
4	174	636	sheep/goat	radius	30.63	28.74	15.55	-	-	-

Phase	Id no	Context	Species	Element	GLP	SLC
4	11	532	sheep/goat	scapula	32.42	20.82
4	114	632	sheep/goat	scapula	29.02	15.76
4	184	633	sheep/goat	scapula	31.01	18.66

Phase	Id no	Context	Species	Element	SD	BD	Dd
3-4	183	649	sheep	tibia	12.84	22.9	17.27
4	14	532	sheep	tibia	12.87	22.35	18.02
4	15	532	sheep	tibia	12.55	22.76	17.8
5	181	528	sheep	tibia	13.77	25.84	20.16



Afon Adda Refurbishment

Fig. 1 : Location of the Afon Adda and revised culvert route in relation to historical features and previous archaeological finds in Bangor

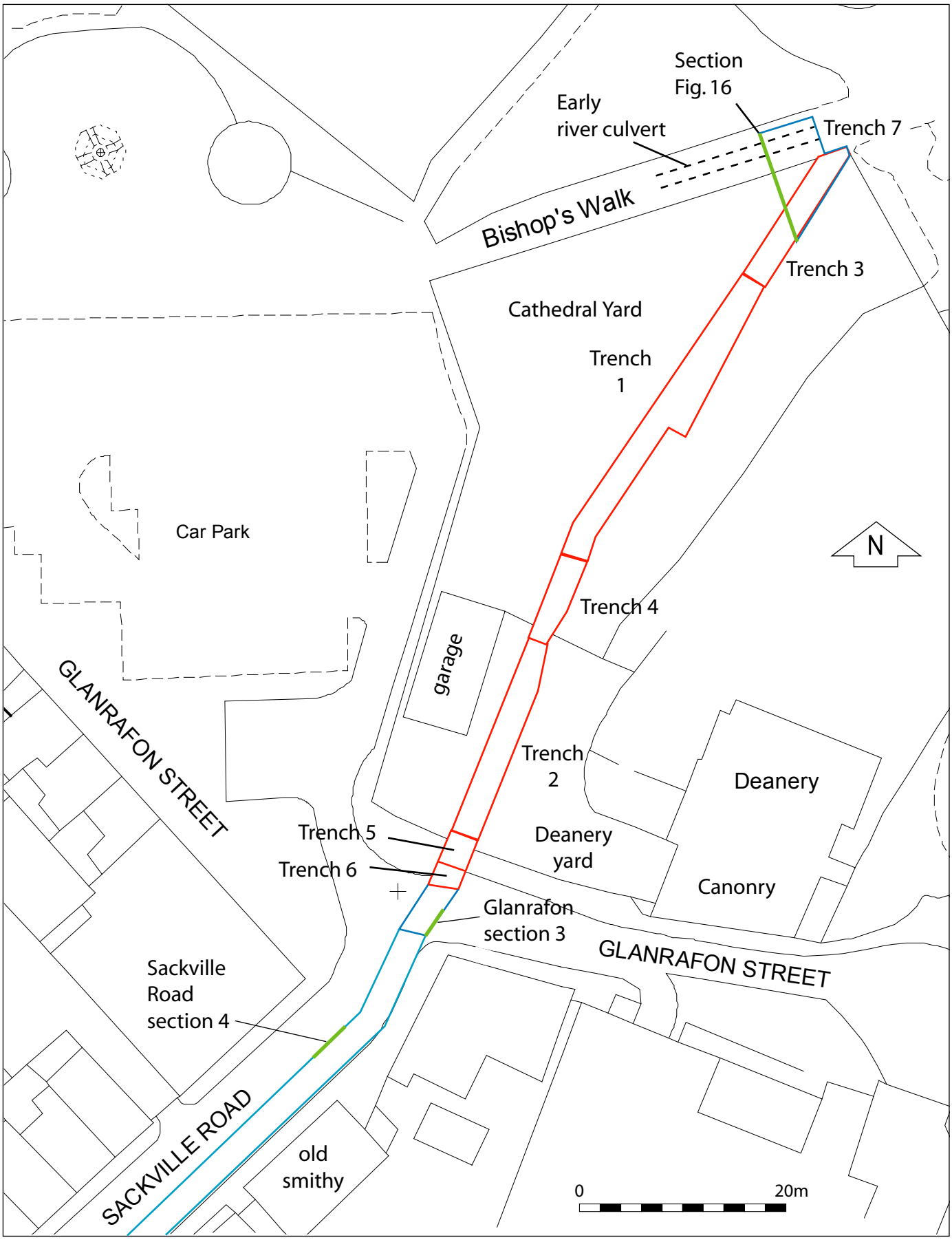


Fig. 2 Bangor Cathedral Deanery, Glanrafon and Sackville Road:
Location of the excavation (red) and watching brief (blue) trenches

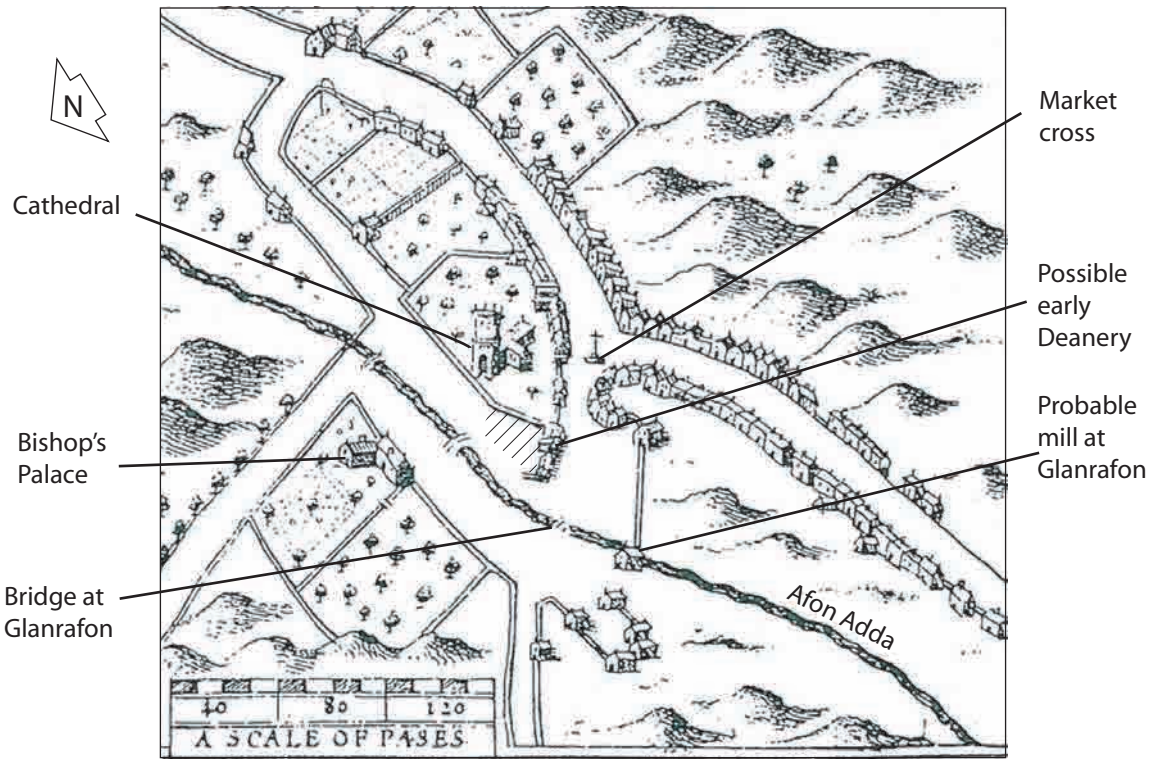


Fig. 3 Map of Bangor by John Speed 1610, features annotated.
Approximate area of 2007 evaluation hatched

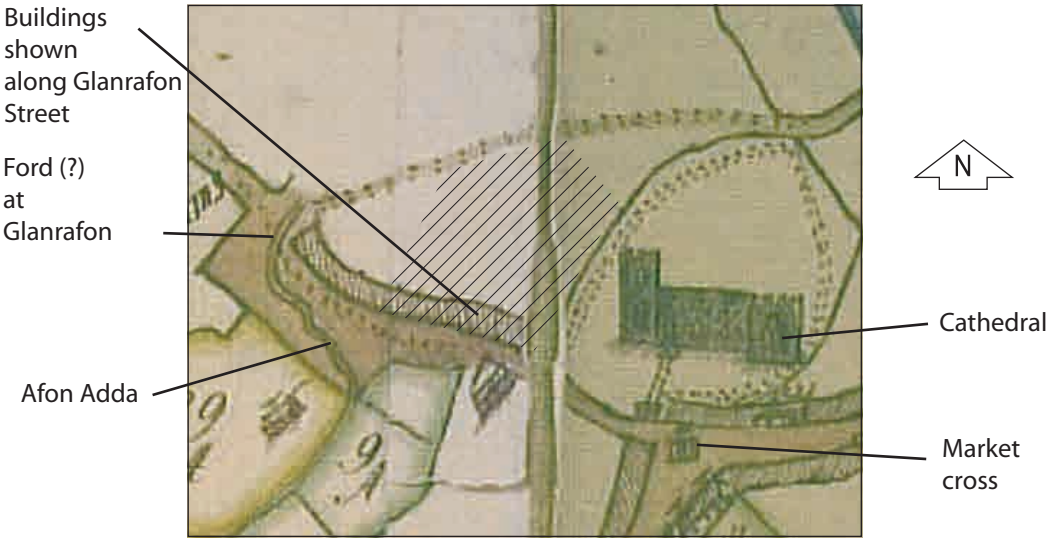


Fig. 4 Part of a map of Bangor for the Penrhyn Estate, 1768, features annotated.
Approximate area of 2007 evaluation hatched

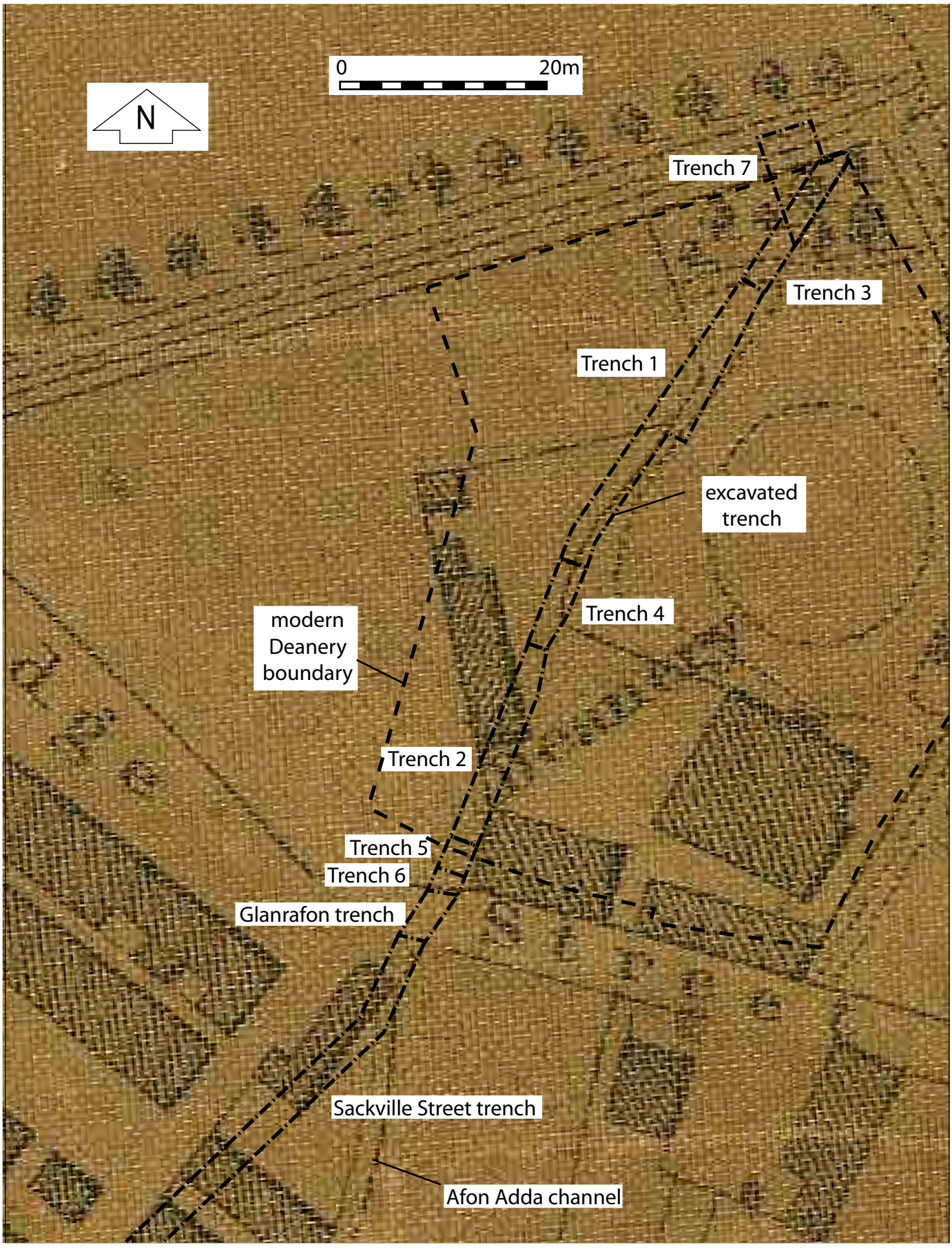


Fig. 5 Bangor Deanery: Location of the excavation trenches in relation to John Wood's map of Bangor of 1834

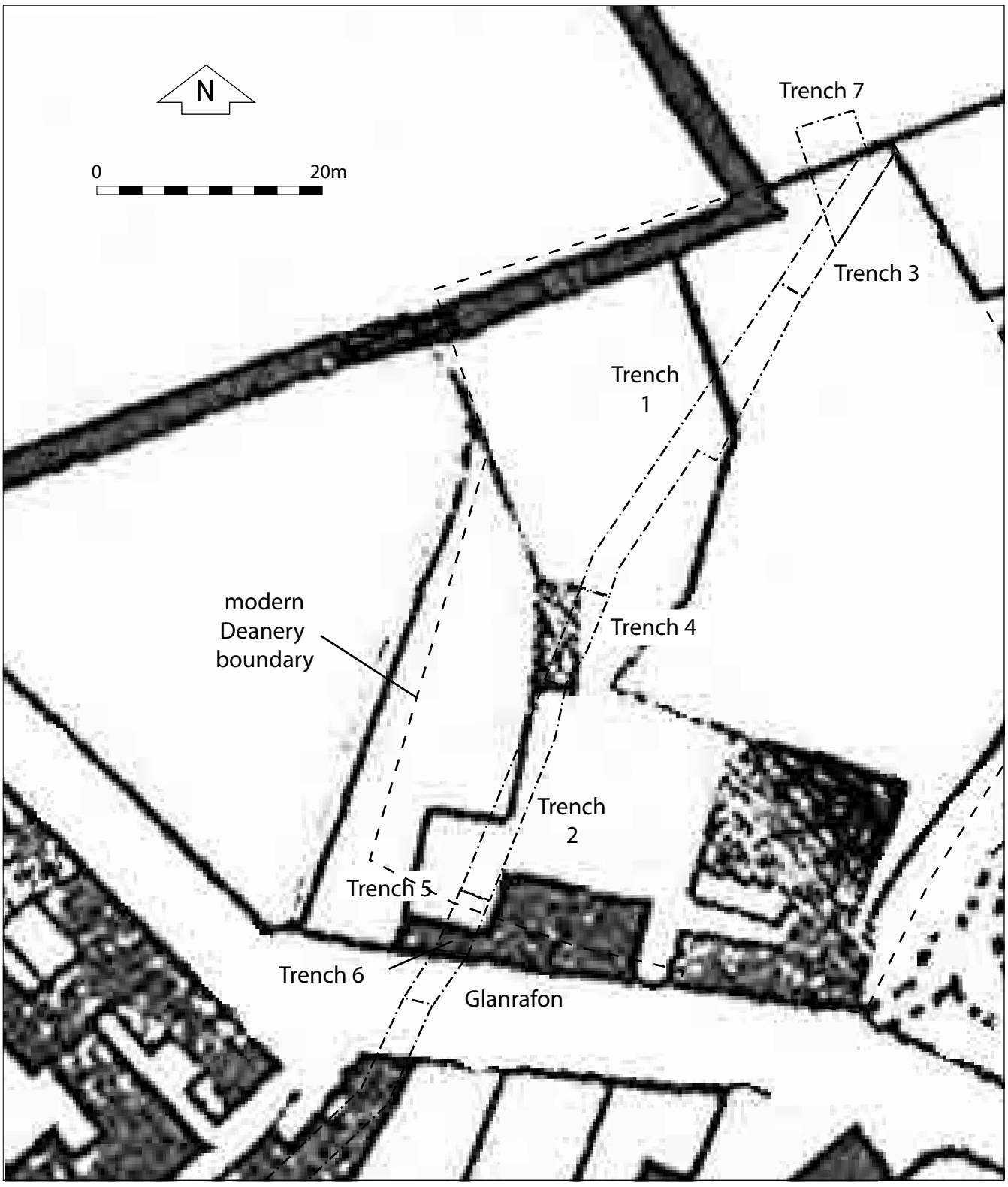


Fig. 6 Bangor Deanery: Location of the excavation trenches in relation to buildings shown on the 1841 Tithe map

Fig. 7 Bangor Deanery: Location of the excavation trenches in relation to buildings shown on the map of Bangor of 1854

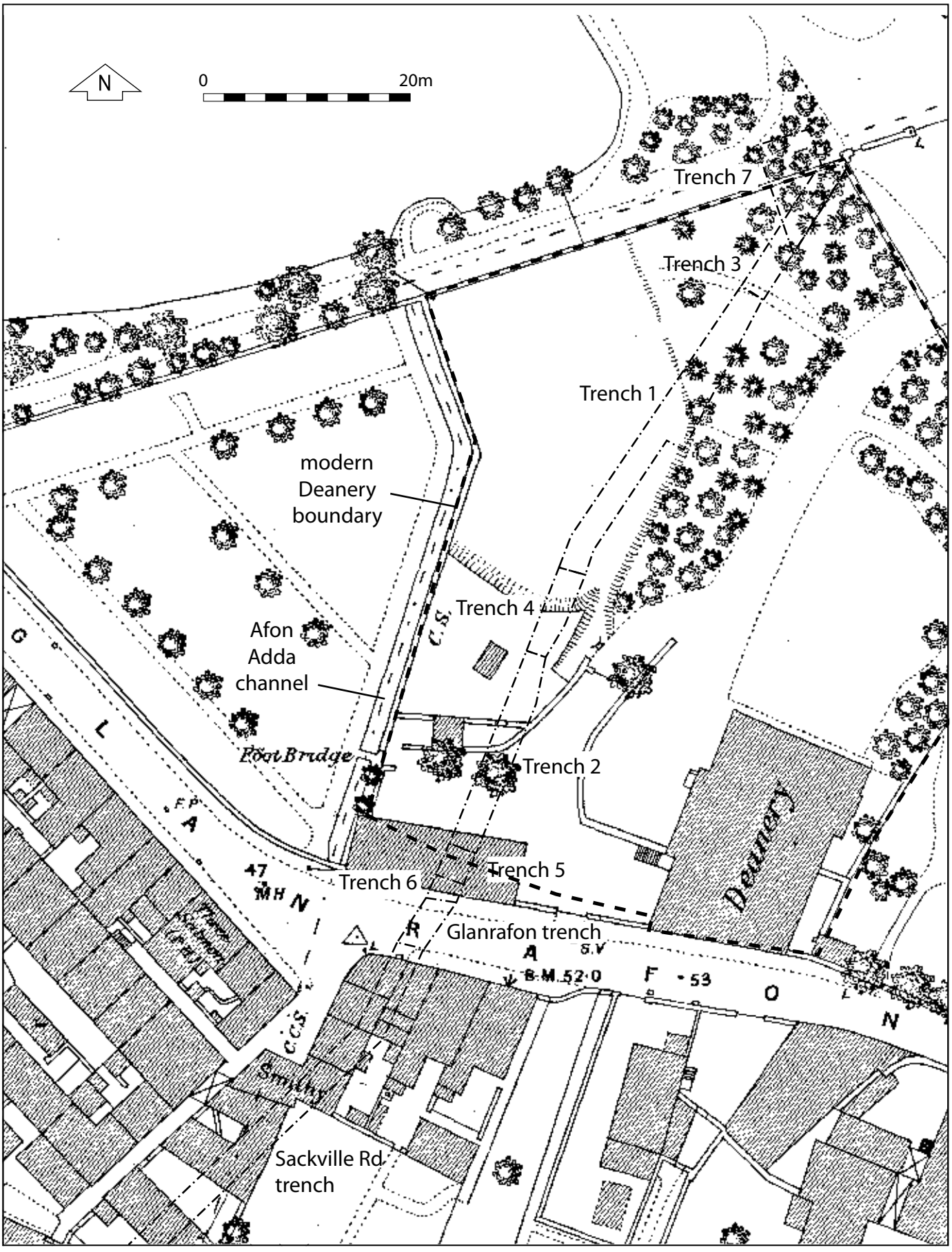


Fig. 8 Bangor Deanery: Location of the excavation trenches in relation to buildings shown on the Ordnance Survey 1:500 map of 1889

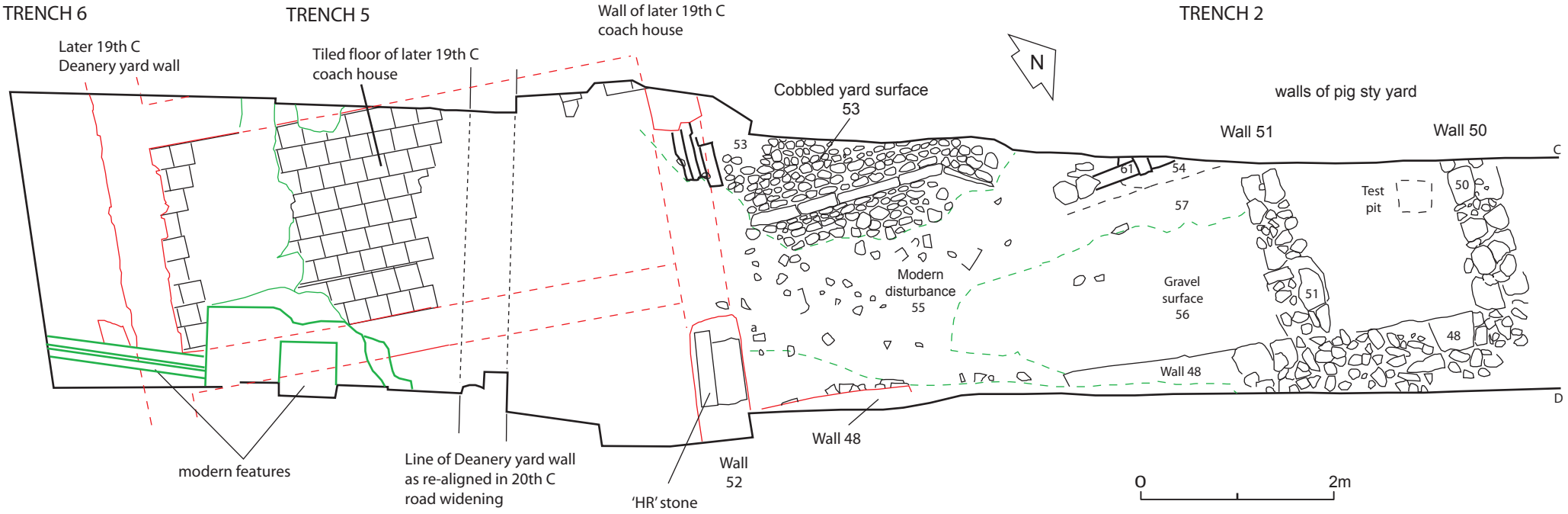


Fig. 9 Bangor Deanery: Trench 2 west, Tr 5 and Tr 6. Phase 6 plan

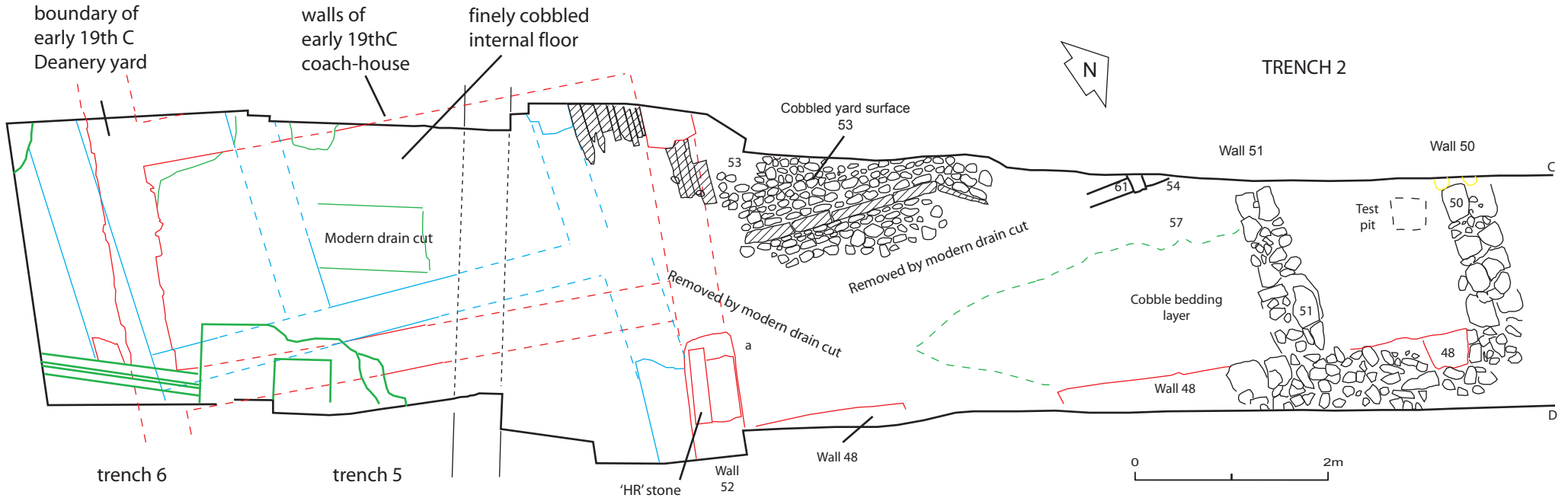


Fig. 10 Bangor Deanery: Trenches 2, 5 and 6, Phase 5 plan.

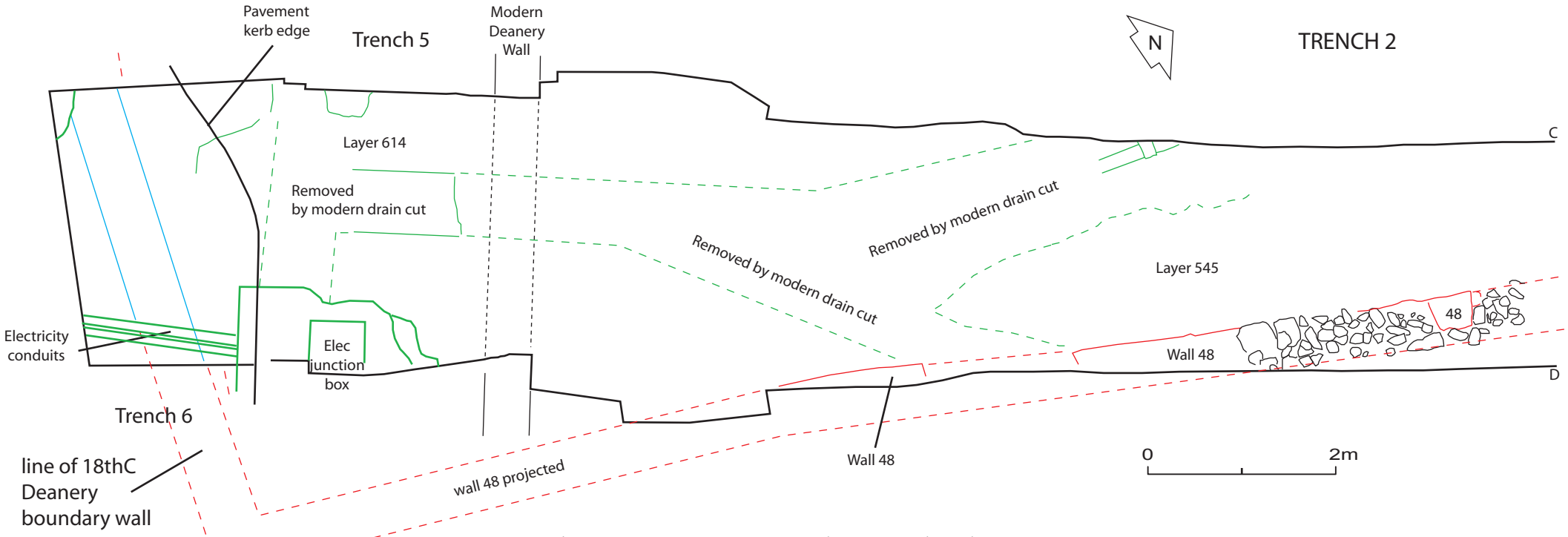


Fig. 11 Bangor Deanery: Trenches 2, 5 and 6: Phase 4 structures

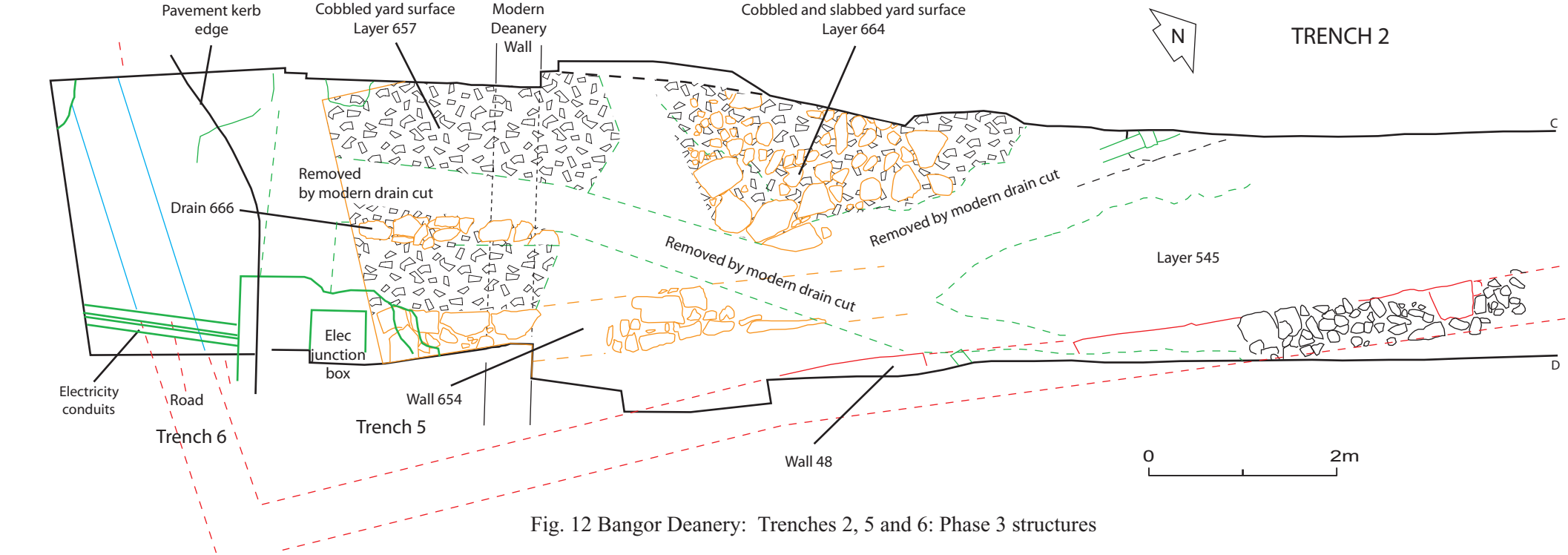


Fig. 12 Bangor Deanery: Trenches 2, 5 and 6: Phase 3 structures

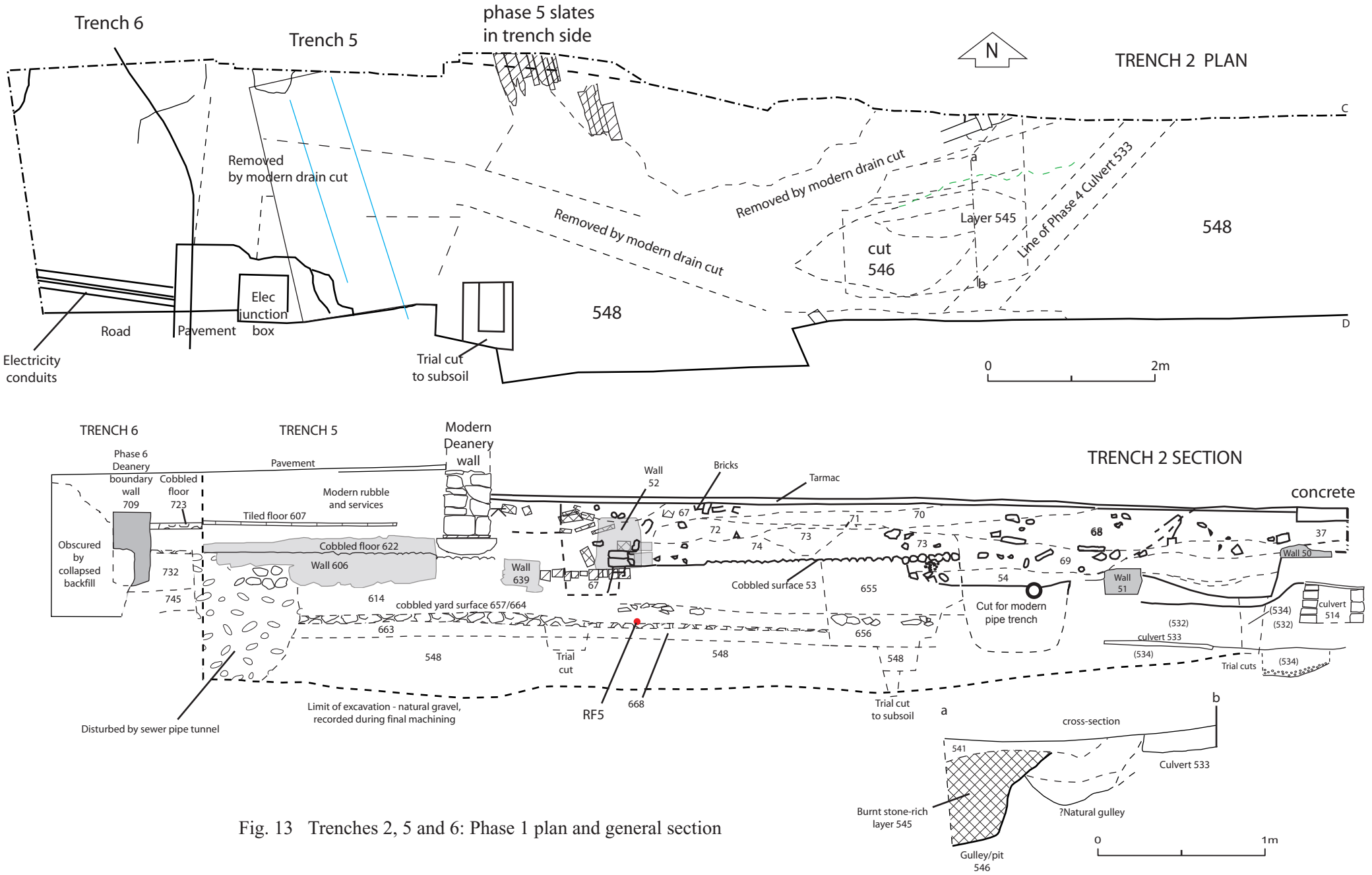


Fig. 13 Trenches 2, 5 and 6: Phase 1 plan and general section

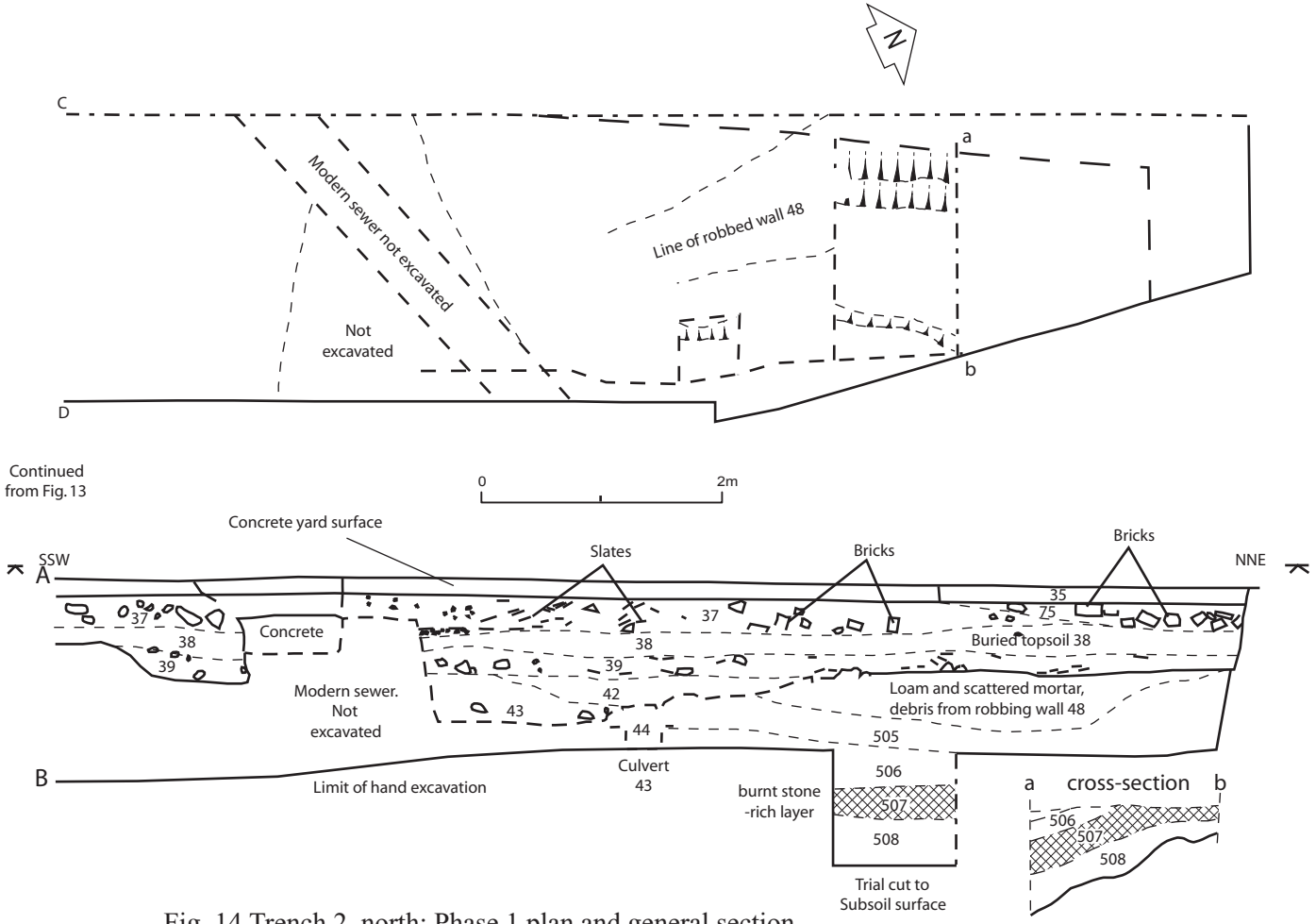


Fig. 14 Trench 2, north: Phase 1 plan and general section

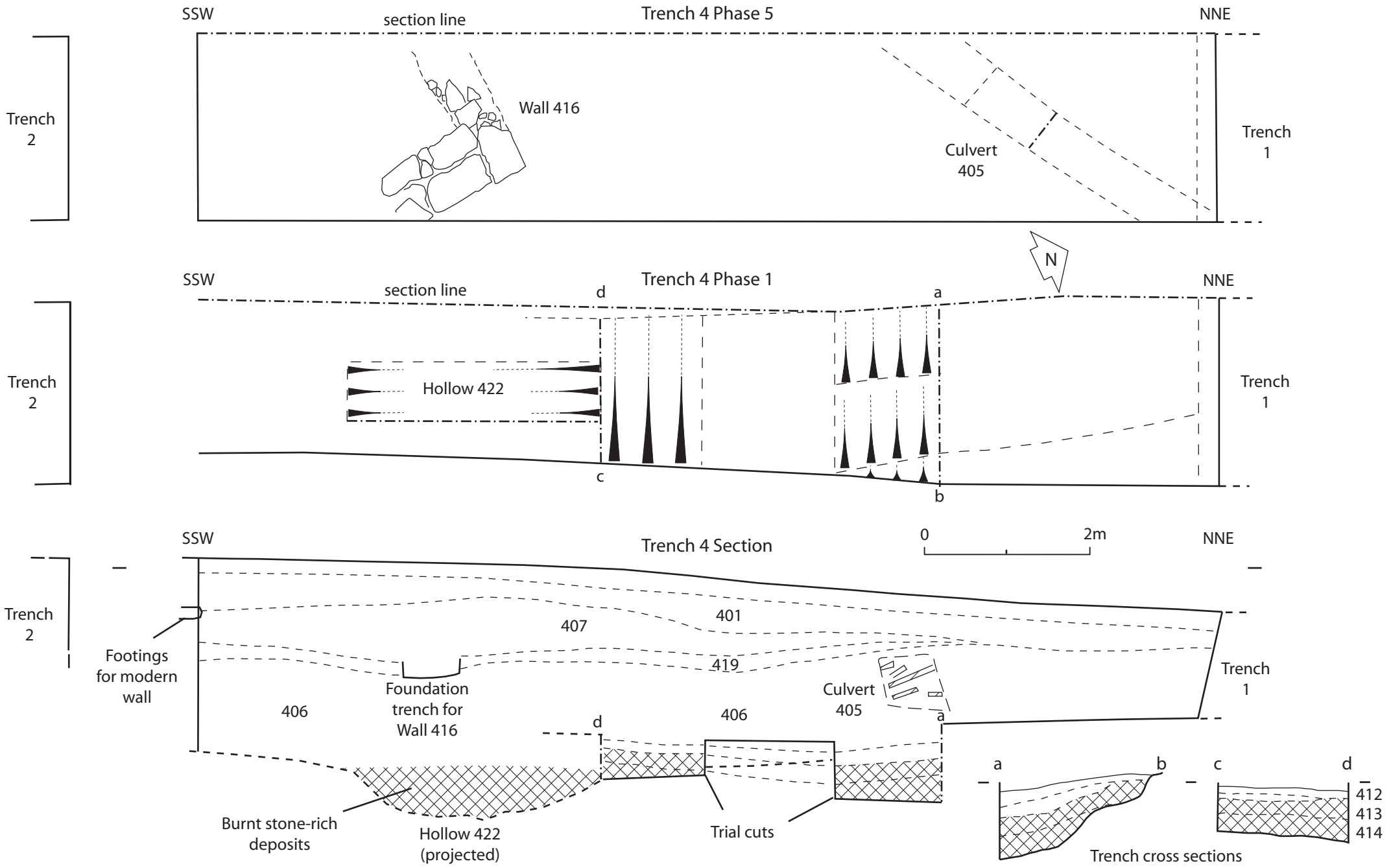
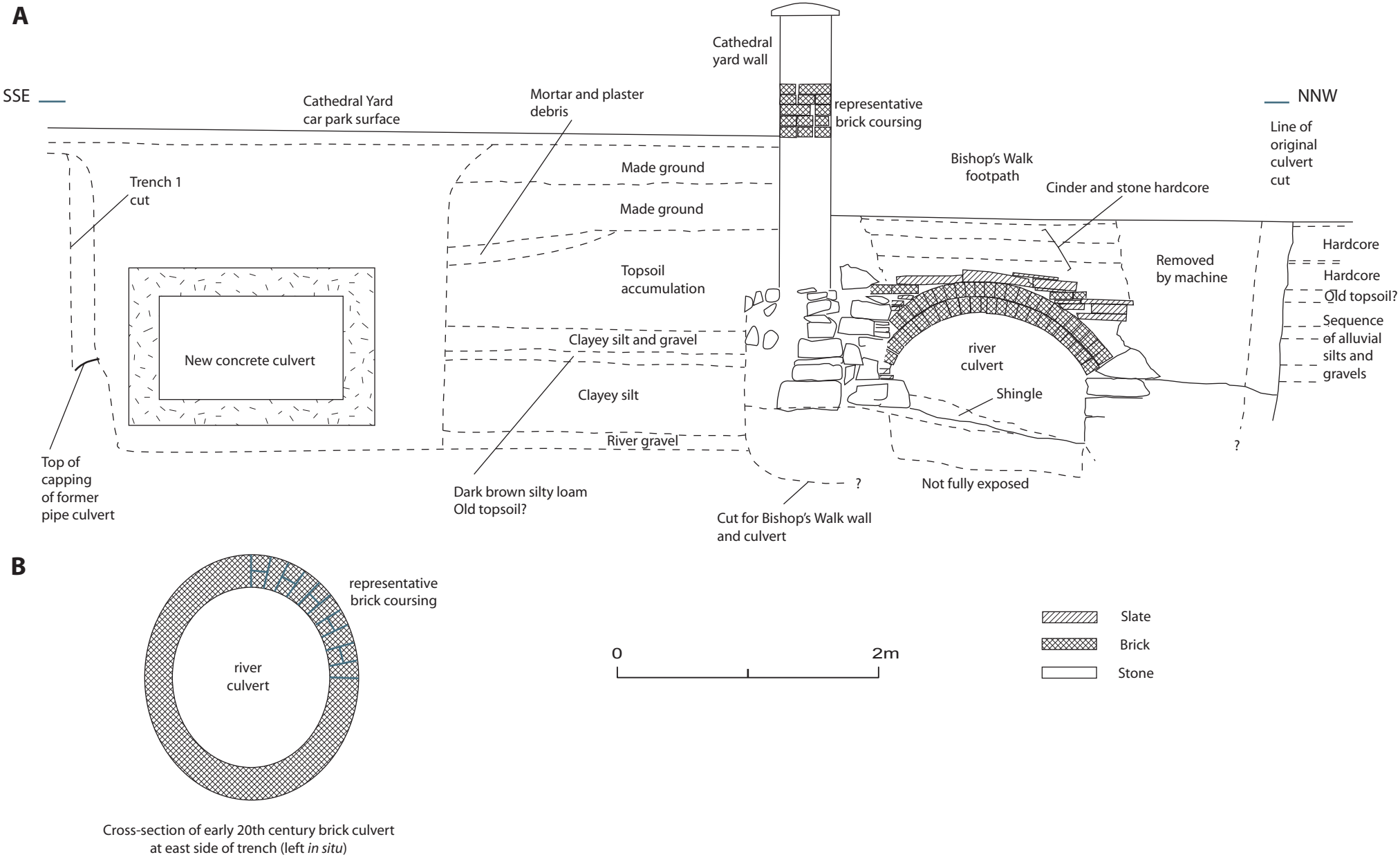


Fig. 15 Trench 4: Phases 5 and 1 plans, general section and cross sections



Cross-section of early 20th century brick culvert at east side of trench (left *in situ*)

Fig. 16 Trench 7, A Bishop's Walk, section and elevation (for location see Fig. 2). B Cross section of early 20th century culvert

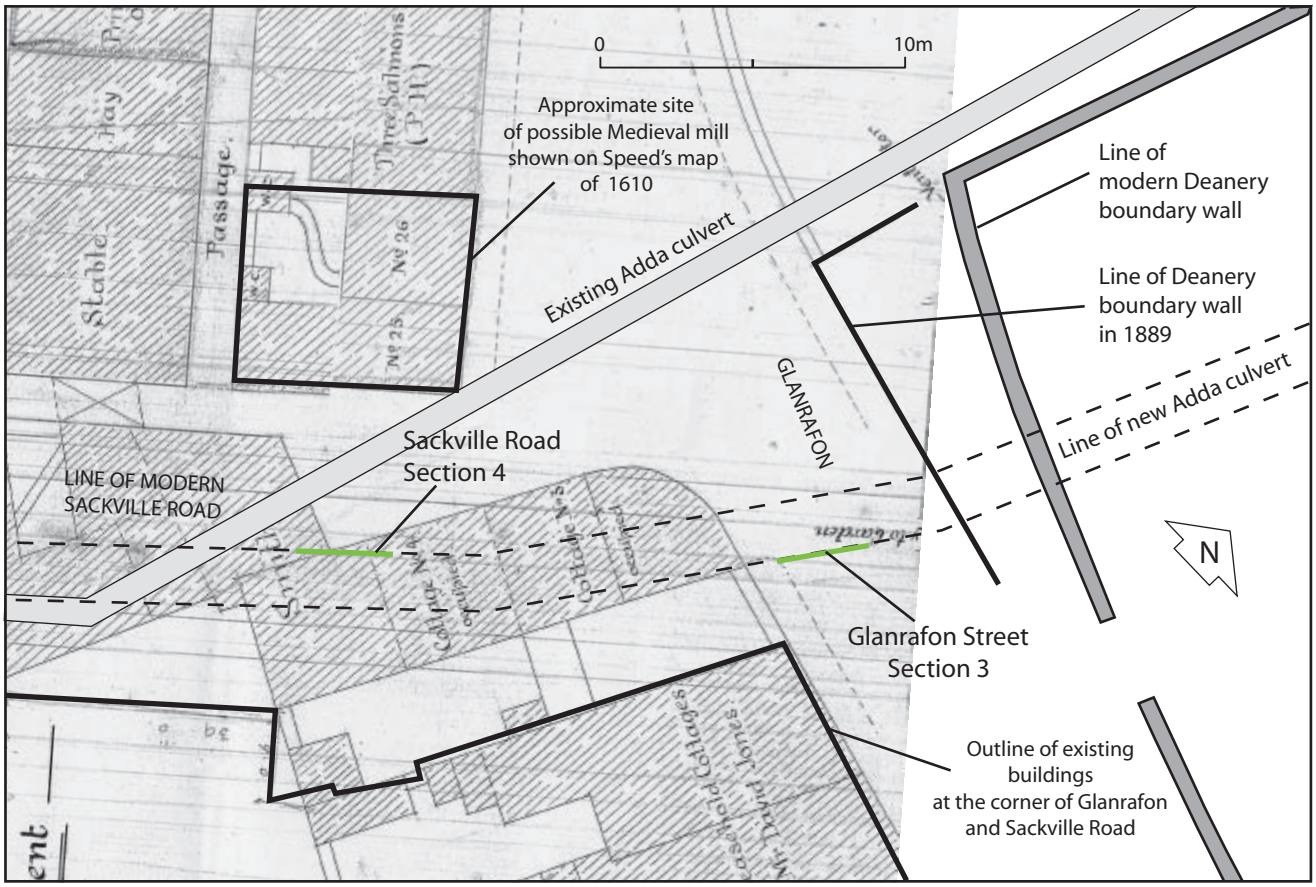


Fig. 17 The relation of the new Adda culvert to the buildings that existed prior to the creation of Sackville Road, as shown on a detailed Penrhyn Estate survey of c.1906

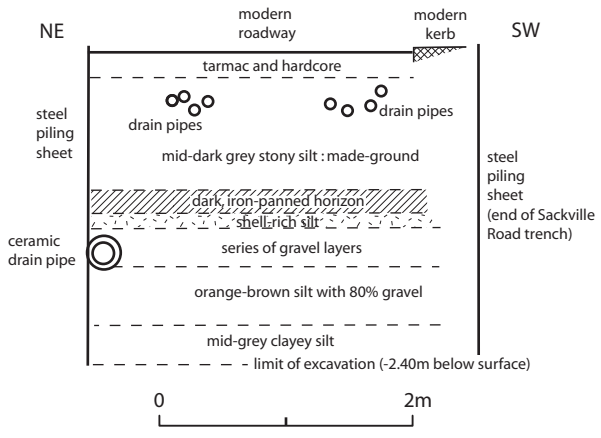


Fig. 18 Glanrafon Street Watching brief, Section 3

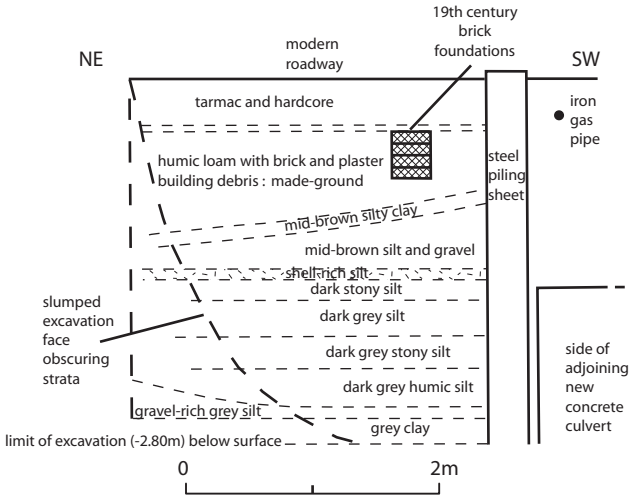


Fig. 19 Sackville Road Watching brief, Section 4

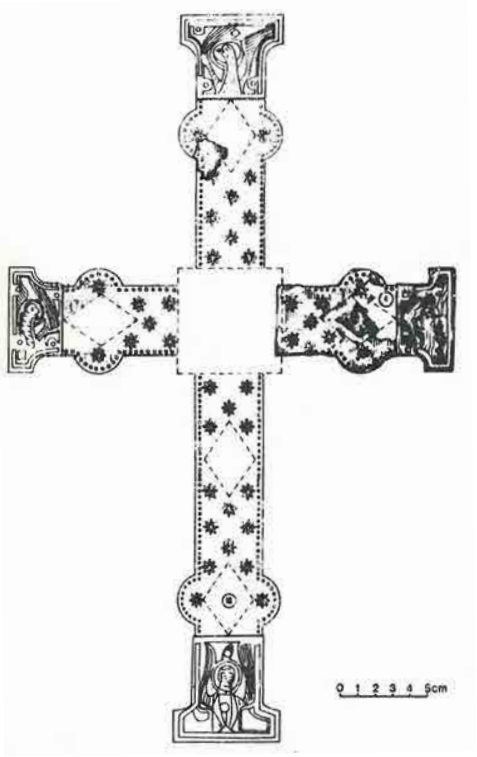


Fig. 20 The Bangor enamelled plaque
Comparative example of reconstructed cross fragments from Ospringe, Kent, based on complete example from Womersley, Yorkshire (showing rear of crucifix)
Photo: (P. Parkes, University of Cardiff, plaque after cleaning (scale with cm divisions)

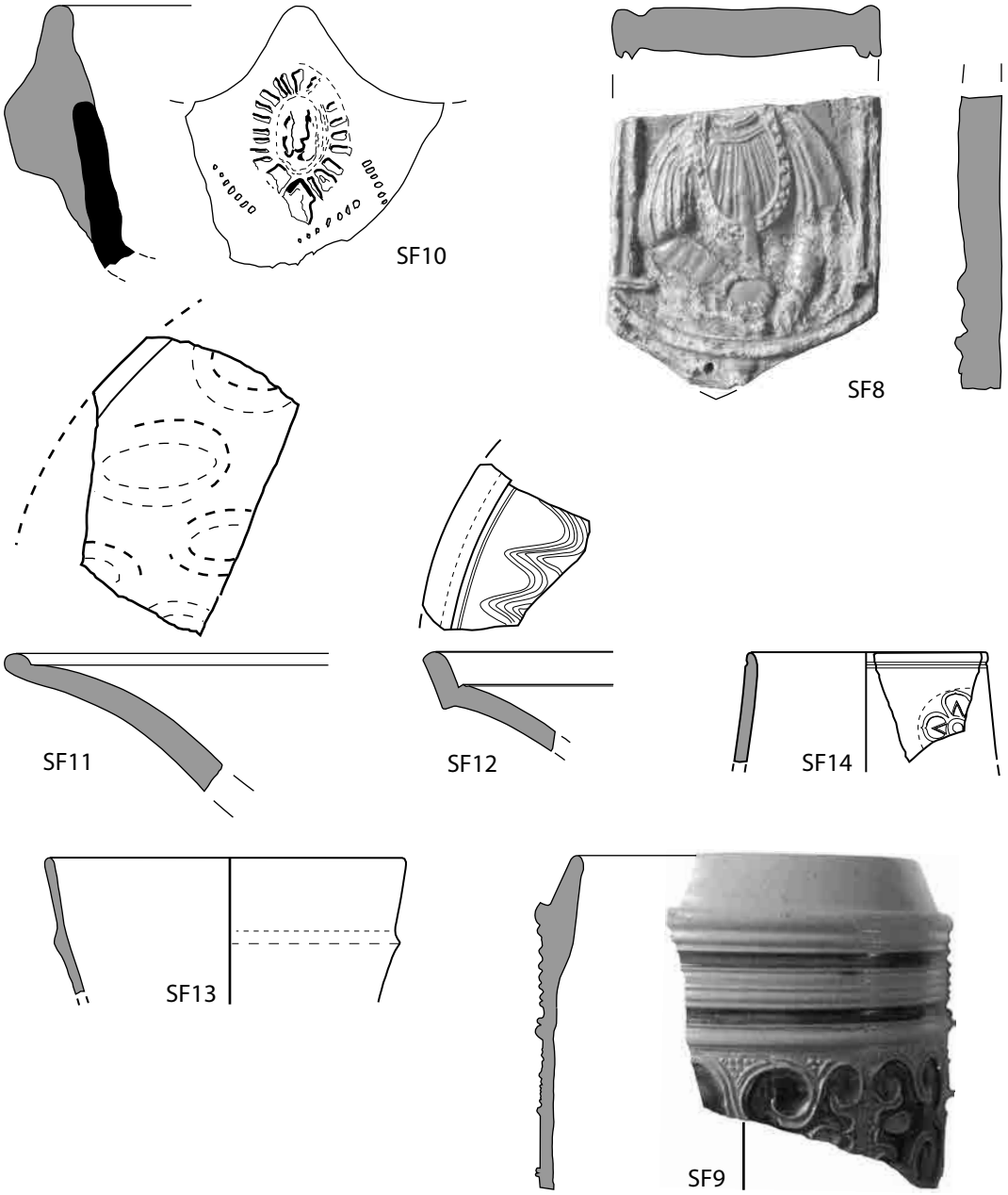


Fig. 21 Pottery. Phase 3 -SF10. Phase 4 - SF8,11, 12 13, 14. Phase 5 - SF9
Scale : SF8 1:1, Rest 1:2

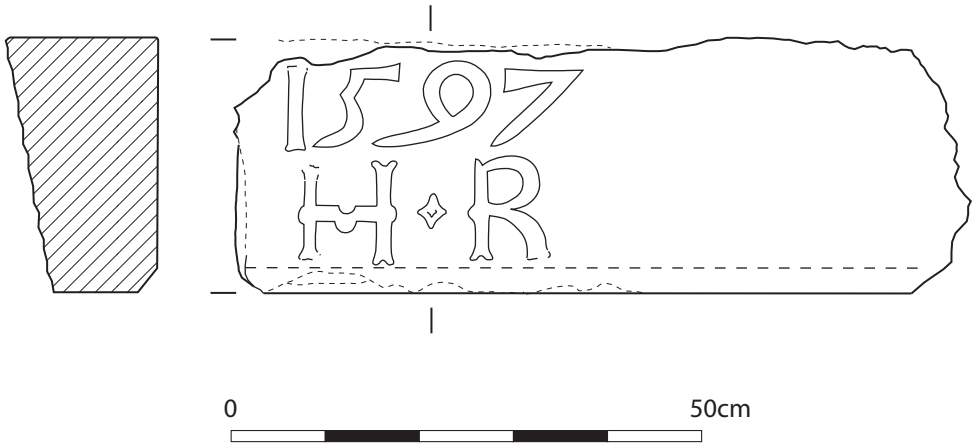


Fig. 22 Carved stone lintel

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Gwynedd Archaeological Trust

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