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The Glamorgan-Gwent Archaeological Trust Ltd

Excavations at Great Pencarn Farm Newport, Monmouthshire

January 1998

A report for the Duffryn Link Partnership
by A. M. Yates

with contributions by

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Summary

Between January and February 1997 the Glamorgan-Gwent Archaeological Trust Ltd carried out excavation of a site identified by prior evaluation, in advance of road construction, at NGR ST 2814 8358 (fig 1). The site was situated on the boundary between the 'hard' geology and the alluvial peats and clays of the Gwent Levels. The remains proved to be a building of Roman date associated with a series of cobbled surfaces situated next to a road. This building was identified from the foundations of its western and southern walls, a series of loose cobble spreads comprising its internal flooring, and a single hearth. Its purpose is likely to be associated with the agricultural exploitation of the surrounding environment, the Wentlooge Level to the south in particular. Underlying these structures were a number of ditches, also of Roman date, representing a pre-existing drainage system. The Roman remains were directly overlying the waterlogged Holocene deposits of the Wentlooge Formation, within which were preserved an Iron Age peat deposit and a single Bronze Age wooden upright post. Palaeoenvironmental analysis of these deposits and others allowed for the reconstruction of the prehistoric and Roman environment.

Acknowledgements

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Abbreviations

GGAT is the acronym for the Glamorgan-Gwent Archaeological Trust Ltd. National Grid References are by quartersheet and are usually accurate to 8 figures (10m) or 10 figures (1m), and are preceded by the prefix NGR. Radiocarbon dates are identified by their laboratory number and are given as dates before the present (BP) with a standard deviation or as calibrated date ranges (cal), with calendar dates, either AD or BC. References are in the Harvard format.

1.0 Project Background and Methodology

As part of the mitigation strategy outlined in the Scheme of Archaeological Investigation for the Southern Distributor Road Duffryn Link (Marvell 1996) the Glamorgan-Gwent Archaeological Trust Contracts Section undertook a programme of archaeological evaluation along the proposed route of the road on behalf of the Duffryn Link Partnership, (a consortium comprising Newport County Borough Council, Costain Civil Engineering Ltd and Gwent Consultancy). This resulted in the discovery of a previously unknown Roman site 100m to the south of Great Pencarn Farm, Monmouthshire (Locock 1996a). As preservation *in-situ* proved to be an impractical option a programme of excavation was instituted to allow for preservation by record. Therefore an area approximately 550m^2 was opened up, encompassing the site as defined by the evaluation trenches (fig 2). This area was defined by NGRs ST 28134 33573, ST 28152 33566, ST 28155 33597 and ST 28138 33598.

This fieldwork comprised two stages. The first was designed to allow the nature, depth and state of preservation of the archaeological deposits to be assessed and the second provided for the excavation of these deposits.

The area was opened by machine using a grading bucket removing topsoil and plough soil. A layer of alluvium sealing the stratified Roman horizons was then removed by hand. This exposed a series of features of Roman date which were hand cleaned and excavated. On completion of the first stage, it was apparent that the remains in the northern part of the site would be outside the area of effect of the development; accordingly, these were not investigated further.

Recording was by written record supplemented by photographs, scale plan and section drawings. New context numbers were assigned to all deposits following on from the sequence used during the evaluation phase.

2.0 Topography and Surface Geology

The site is situated on the junction of the hard geology with the alluvial sediments of the Wentlooge Level, at the mouth of a small river valley of what is now the canalised natural watercourse of Nant-y-Moor Reen.

The Wentlooge Level, along with the Caldicot Level east of the Usk, form the Gwent Levels: 111km^2 of reclaimed saltmarsh on the South Wales coast of the Severn Estuary between the Ely and the Wye. The surface topography of the Levels is of a flat landscape whose present form can be traced back to the Medieval period and beyond. Historically the area has been divided up into small, hedged fields, although these are increasingly being replaced by larger fields and industrial developments. The field systems are drained by a hierarchy of channels and associated features. The lowest part of this hierarchy are the 'ridge and vurrow' which funnel surface water into grips; shallow spade-dug channels. In the modern period these are supplemented by, and replaced by sub-surface field drains. The grips and drains feed into field boundary ditches called reens, which in turn feed into larger collector reens. Some of these can be seen to be canalised natural water courses, such as Nant-y-Moor Reen, others are wholly artificial in nature. The larger collector reens serve to transport the water across the Levels and out through the sea wall by means of sluice gates called gouts. These allow for the disposal of fresh water at low tide whilst preventing inundation with salt water at high tide. The water level in this drainage system and the rate of flow are managed by means of a system of sluices and weirs. In addition to this system are a number of 'express' reens designed to funnel run-off from the surrounding uplands across the levels and out through the sea wall, preventing flooding of the low-lying areas at the rear of the Levels. These long, linear reens are usually embanked so that the level of the water is often above the surrounding ground surface. This drainage system has evolved over a period of centuries and although the origin of much of the present system is Medieval or Post-medieval, evidence has been found showing that a drainage system was originally constructed in the Roman period.

The sediments that form the Gwent Levels are inextricably intertwined with the archaeological record they preserve. The geological base for this sequence consists of a platform of Keuper Marl deposits cut by deeply incised river channels, sealed by river gravel deposits and glacial tills. At the end of the last Ice Age (the start of the Holocene Period), the Severn Estuary had been a dry land river valley (Rippon 1996a). The subsequent rapid rise in sea level at the start of the Mesolithic Period saw the erosion of the flood plain deposits and the deposition of alluvial clays representing a landscape dominated by mud flats and salt marshes. Human and animal footprints and animal bones have been preserved in these clays and have been observed on the foreshore beyond the sea wall, where these deposits are being eroded. An occupation horizon has been found at Goldcliff, charcoal from which has been dated to 6430±80BP (GU-2759, Bell 1993). The late Mesolithic period saw a stabilisation in the rate of sea level rise resulting in a concurrent stabilisation of the land surface and an increase in the diversity and intensity of floral cover. This period is represented in the sedimentary record by a broad band of peat covering the majority of the

Levels. This landscape was crossed by a dendritic system of natural drainage channels and was readily exploited by its human inhabitants. Several important Bronze Age sites have been identified at Caldicot (Nayling and Caseldine 1997), Rumney Great Wharf (Allen forth) and elsewhere. At the end of the Bronze Age this landscape was again subject to episodes of marine transgression, depositing further clay horizons on top of the Bronze Age land surface. Human exploitation of this landscape continued as evidenced by the settlement site at Goldcliff (Bell 1994). Analysis of samples retrieved from this site shows a landscape in a state of flux with periods of stability interrupted by episodes of inundation and consequent deposition of further sediment. The Wentlooge Formation can therefore be subdivided into three broad stratigraphic units. The Lower Wentlooge formation comprising the Mesolithic clays; the Middle Wentlooge comprising the late Mesolithic and Bronze Age peats; and the Upper Wentlooge comprising the Iron Age sediments (Allen and Rae 1987).

The immediate sedimentary regime underlying the site is simple and linear in nature. The glacial gravels form the basis of the sequence and these are overlain by a sandy silt containing large river cobbles (context 197). Overlying this is a sequence of clay horizons. The lowest of these was a smooth organic clay containing alternating lenses of clean blue clay and peaty clay containing some fragments of roundwood (196). Overlying this was a greenish-grey sticky clay again containing roundwood (195). This in turn under was overlain by another greenish-grey smooth clay again containing a few pieces of roundwood (194). At its upper interface this was cut by a shallow erosive hollow containing a woody peat with intercalated thin lenses of clay (193). This is the remnants of a natural watercourse 4m wide running north-south across the site. Overlying the peat is a layer of oxidised alluvium (163). This is the horizon upon which the site is constructed.

Analysis of palaeoenvironmental remains (see part 5 below) from the site reflects this broad pattern of events. A landscape dominated by salt marsh and mud flats (represented by contexts 196, 195 and 194), this is superseded by an environment characterised by alder woodland set in a marshy environment (alder carr, evidence for which is preserved within the peat 193). This indicates an interlude in the process of marine transgression in the mid 3rd millennium BP. The resumption of this transgressive process sees the drowning of the alder carr and the resumption of marshy conditions (163).

The Roman period saw the beginning of a systematic effort to drain the Levels artificially and the end of the major episodes of deposition of the Wentlooge Formation. First identified by Allen and Fulford (1986), a series of ditches are present on the foreshore. Several have produced unabraded Roman ceramics and other remains within stratified deposits contained by these features. Several of these features are infilled by elements of the Wentlooge Formation and sealed by a palaeosol (the Wentlooge Palaeosol) which they equate with the existing land surface within the sea wall (the Wentlooge Surface). These ditches can be seen as continuations of reens inside the present sea wall, showing that this is an area of reclaimed land since lost to the sea. Allen and Fulford (1986) and Fulford, Allen and Rippon (1994), argue that since the ditches that they have excavated

are of Roman date and that their alignment reflects that of reens inside the sea wall, the reens inside the sea wall, these must also be of Roman date. This would imply the existence of viable sea defences from the Roman period onwards, with little or no post-Roman alluviation and that the present land surface inside the sea wall equates with the Roman ground surface, and the present field pattern and reens comprise a preserved Roman landscape. It is argued that the ditches containing the Roman material were associated with a settlement and were backfilled after this settlement was abandoned preserving the artefacts *in situ*. The absence of Roman material from the bulk of the ditches examined is accounted for by their being active and regularly cleaned, removing their Roman fills. A counter to this would be that the material from the ditches is present as a result of post-depositional processes, such as erosion of Roman deposits by water flowing within them, and is residual. This may also account for the presence of Wentlooge material within these ditches. Recent work at Goldcliff (Locock 1996 and 1997) and Nash (Yates 1997) on the Caldicot Level have shown conclusively that c1.0m of post-Roman alluvium overlies a Roman drainage system, however, there have been no comparable finds inside the sea wall on the Wentlooge Level.

Although there is some doubt as to its relation to the Roman drainage system, by the end of the Medieval period the bulk of the Levels was covered by an intricate drainage network, much of which has survived to the present day. In the medieval period the area of wetlands at the northern fringe of the Levels, around the site, would have formed part of the back-fen; a low lying heavily waterlogged area of the Levels, and would have been among the last areas to have been fully drained and reclaimed. The sedimentary sequence in these areas tends to be atypical of the Wentlooge Level as a whole, and the broad stratigraphic units identified elsewhere on the levels are not so readily identifiable. This is further complicated by the position of the site at the mouth of a watercourse, Nant-y-Moor Reen.

3.0 Results

The site as a whole was in a fairly disturbed state, probably as a result of plough action. This had resulted in damage to the upper stratigraphic horizons and the almost total removal of horizontal stratigraphy in the southern area of the site, so that cut features survived well but were often not related by horizontal stratigraphic horizons. The phasing described below is therefore broad in nature and consists of the following:

Phase 1: Pre-Roman horizons
Phase 2: Roman activity (drainage features)
Phase 3: Roman activity (construction of road and building)
Phase 4: Post-Roman activity

Phase I: Pre-Roman (fig 3)

Upright post w001 (fig 4, plate 2)

The earliest evidence for human activity on site was the presence of a driven upright pile radiocarbon dated to the Bronze Age (1100-800 calBC, Beta 110826). This survived to a height of 4.81m OD and was driven to a depth of 3.17m OD and was found in isolation with no other indications for Bronze Age activity on site.

Peat 193

A shallow erosive hollow 0.15m deep ran across the site aligned east-west. This had become filled with a fibrous reedy peat containing some fragments of roundwood. This horizon has been radiocarbon dated to 495-395 BC (Beta 109345 and 109346).

Gully 229 (fig 4)

The earliest archaeological feature was a linear U-shaped gully running across the site aligned north-south (229). This was 0.33m in width and 0.20m in depth, filled with grey silty clay containing a few sub-angular and rounded stones. This feature could only be seen with reliability where it cut the peat due to the similarity between its fill and the surrounding clays. No finds were recovered from this feature and it remains undated, however, it must post-date the Iron Age peat.

Discussion

The presence of residual Iron Age ceramics in later features suggests that there was some Iron Age occupation, of which 229 may be the only surviving part.

Phase II: Drainage features (fig 5)

Three drainage ditches were detected running across the site. These were shallow clay-filled features typically U-shaped in profile.

Ditch 167 (fig 6)

This ditch was a shallow feature (0.3m deep, 1.32m wide), aligned northeast-southwest. It had shallow sloping sides with a U-shaped central 'channel'. It contained a single homogenous fill; a dark grey gritty clay-loam (168), containing some charcoal and stone. This feature produced both Roman and Iron Age ceramics.

Ditch 234

This feature was 0.45m deep, aligned north-south and filled with a dark grey clay (232), containing occasional stones. This feature cuts ditch 236, and is interpreted as forming part of the same system of drainage features.

Ditch 236

A ditch, 0.35m wide, aligned east-west, containing a grey, oxidised clay (237), containing charcoal. The alignment of this feature seems to place it running towards ditch 167, and it is probable that 237 is a continuation of it, the intervening stretch being obscured.

Discussion

All of these features contained only a single homogenous fill, with no sign of the interleaved layers of sedimentation one might expect from a feature filled by silting. It is probable that these ditches were kept clean during their active life and then deliberately backfilled when the overlying structures were constructed.

Phase III: Road and building (fig 7)

Road 243 (fig 8, plate3)

Road surface and side ditches

Only the southern edge of the road was contained within the excavation area. This feature ran northwest-southeast across the site and survived to a height of 5.60m OD in its undisturbed state. The upper part of the road surface was extremely disturbed by modern material associated with a reen crossing. The main body of the road was formed from undifferentiated river cobbles surviving to a depth of 0.35m (164). This was originally bounded on its southern side by a shallow (0.45m deep), sloped sided ditch (238). This was filled with grey plastic silty clay (239) and capped by a spread of cobbles from road surface (242). A replacement side ditch had been excavated to the south (240). This was also U

shaped with sides at 45 degrees and had become infilled with a very dark grey brown soft silty clay (241). This later ditch cut 238.

Building 244

Terrace 163

This comprised a mixed oxidised grey clay containing small pebbles and fragments of decayed sandstone (163), forming a flat terrace upon which the building was constructed. The southern end of this terrace was revetted by a layer of cobbles (031), at whose base were a series of large 'kerbstones'. This revetment had been heavily disturbed by the construction of a 19th century ceramic field drain.

South Wall

The wall rests on solid foundations constructed using backfilled cut features to form a solid base.

A flat-bottomed ditch (173) had been excavated to a depth 0.25m and backfilled with a dark grey-brown clay-loam containing large amounts of burnt material (159) and a depth of cobbles (158, fig 9 plate 4). This deepened at its western end, where it became V-shaped in profile. At its eastern end, it was cut by a shallow pit (178), reflecting the deepening of the ditch at its western end (fig 9). This containing a firm grey clay (175) underlying a firm dark grey silty clay (174). Both these contained burnt material. The feature was capped by a layer of large flat stones (160 plate 5). The deepening of the ditch to the south and the pit at the north end may have served as postholes or the deeper foundations may have been needed to support the major constructional elements (fig 10).

This wall was associated with a series of small stakeholes. These formed no clear pattern but were presumably part of the structure resting on the foundations. There was also a possible narrow beam slot coming off the main wall towards the south.

East wall (fig 9, plate 6)

A narrow flat bottomed beam slot (165, 0.6m wide, 0.3m deep). This was filled with a very dark grey clay (171), capped with large stones where it cut ditch 167 (166). It came to an end at the south some 5.6m short of the south wall and may have formed a large opening. Its northern end extended beyond the trench boundaries.

Cobble Surface (plate 6)

The interior of this building as defined by these two walls was surfaced by a loose spread of cobbles (156, 182) and contained a single hearth (188). These

cobbles were associated with a dark grey organic clay containing charcoal (185). This is seen as an occupation deposit.

Hearth 188 (fig 9)

This was a shallow scoop 0.11m deep (188). This was filled with a mixed clay loam (187) underlying reddish yellow burnt clay (186).

Foundation 190

A linear row of river cobbles (169, 0.14m deep, 1.46m wide), lay within shallow scoop (190). This feature is interpreted as the foundation for one wall of a lean-to resting against the eastern wall of the main building. It is possible, however that it may form the remains of a path leading from the road to the building or merely a scatter of stones disturbed from the road surface.

Post-pad 191

An area of flat stones forming a roughly circular pattern some 0.8m in diameter lying on the surface of the clay. The stones were all dipping towards the centre of this feature implying slumping into a feature below or the application of pressure from a localised source above. Removal of the stones and subsequent cleaning and excavation revealed no sign of a cut feature below so this feature is interpreted as a pad.

Various patches of cobbles to the east of 244 (170, 181, 189) may be the remains of a surface or ploughed out from the road.

Discussion

This building appears to use two separate methods of construction. The foundations for the east wall consist of a beam slot (165). The south wall is built on top of cut features backfilled with stony fills providing a solid base on top of which the wall was constructed. This may have also helped drain off any standing water from the base of the presumably timber structural elements. The internal cobbling is very rough and is more in the nature of a stabilisation of the existing land surface rather the construction of a floor surface.

Phase IV: Post-Roman activity

The Roman stratigraphic horizons were sealed by a layer of oxidised clay subsoil (030, 155, 0.4m deep). Overlying this was a depth of plough soil (023) and topsoil. A number of field drains crossed the site. These consisted of 19th century ceramic pipes and modern machine cut slit trenches backfilled with slag. At the northeast corner of the site was a modern reen crossing. Rubble and other material had been dumped to consolidate the surface and had subsequently been worked into the soft ground by the passage of agricultural machinery.

4.0 Finds

Pre-Roman pottery
by S. H. Sell

Five undiagnostic residual sherds of pre-Roman date, probably late Iron Age, were noted in contexts 031, 155 and 168.

Roman Pottery
by S. H. Sell

Samian (fig 11)

The assemblage was small comprising 85 sherds representing a minimum of 11 vessels, much of it heavily abraded. Over 80% by sherd count came from plough soil 022 and overburden context 155. Given the undiagnostic nature of much of the material, plain forms appeared far to outnumber decorated, with Dr. 31 and 18/31 being particularly well-represented. Dr. 37 was also noted in overburden contexts and from plough soil 022, which also produced a sherd from a mortarium, probably Dr. 45. Unusual was the rim of a Curle 15 dish from context 155. Most fabrics appear to be Central Gaulish, with South Gaul and East Gaul products only present in small numbers. The samian collection would appear to be predominantly mid-late 2nd century, but includes Dr.18/31 which was superseded by form 31 soon after the mid point of the century.

Catalogue of illustrated material

1: Brenda Dickinson writes: Form 31, East Gaulish, stamped VITALI(SF) between guidelines: Vitalis viii of Rheinzabern, Die 6h. The most useful piece of dating evidence for the potter is a stamp from another of his dies, which occurs at the fort of Holzhausen, founded c180 AD. There is nothing to indicate the extent of his career, so a range of c180 - 260 AD must be allowed. Context 159.

Mortaria (fig 12)

A very small amount of *mortaria* (6 sherds) was recovered; Caerleon and Oxfordshire whiteware fabrics were represented, from plough soil 022, overburden contexts 030 and 155, and ditch 159.

Catalogue of illustrated material

1: 155. Rim and flange of Caerleon *mortarium*, diameter 310mm. Fabric soft orange, friable, trituration grits angular white quartz up to 3mm. (c.f.Hartley 1993 fig 194, 2).

Amphora (not illustrated)

No more than two vessels may be represented, with a scatter 12 of sherds from overburden context 155, ditch fill 159 and cobbling layer 192; one French and one Italian wine vessel.

The coarse pottery (figs 13-15)

(The writer is grateful to Peter Webster for his help and advice in the preparation of this report).

The site has been divided into four phases, but over 50% of the coarse pottery assemblage occurred in overburden context 155 (Phase 4). These large groups, however, provided a range of vessel forms consistent with the remainder of the assemblage, the broad of dating which was not contradicted elsewhere. Ditch fill 159 provided the largest secure group from Phase 3, but quantities and variation in other contexts was small. Representation in Phase 2 is minimal. Some Roman ceramics were recovered from Phase 1 contexts but these are considered to be intrusive.

Quantification

The assemblage from Great Pencarn Farm has been divided into two main categories; local coarsewares (oxidised and reduced) and black burnished wares (BB1). Quantities are as follows:

Table 1: Quantification of coarse pottery types

Type	Sherds	Weight (kg)	Rims
Local coarsewares, oxidised	148	0.796	9
Local coarsewares, reduced	702	5.372	77
Black-burnished wares	57	3.712	94

Forms and fabrics

a) Local coarsewares, oxidised: These account for only *circa* 10% of the coarse pottery total, with over 80% deriving from residual (Phase 4) contexts. Generally they survive less well than their coarser counterparts. There is no reason to suppose anything other than a local origin for these oxidised wares, and a *mortarium* (see above) and flanged bowl (No. 78) would appear to be typical Caerleon products. Fabrics are mostly soft orange, friable and abraded, with colour coat only apparent in exceptional circumstances. Forms include flanged bowls (some of the heavier flatware sherds may be from *mortaria*), beakers and flagons.

b) Local coarsewares, reduced: Among the greywares few forms are represented apart from a wide range of jars. Bowls and dishes, frequently copied in local

fabrics from the black burnished originals, were poorly represented at Great Pencarn Farm. Fabrics varied widely but most frequently encountered were abrasive grey or brownish-grey types often with frequent grog inclusions and a little quartz, referred to in the catalogue as "standard" fabric. Some greywares were crude in the extreme, poorly fired, and comparatively few were hard-fired, well-finished products. The vast majority, however, must be loosely termed South Wales Greyware, ubiquitous in the area and with the likelihood of a number of different sources. A cream colour-coat was noted on two sherds. Decoration occurred on the necks and shoulders of a number of the jars (e.g. Nos. 47-49).

c) Black burnished wares (BB1). Jars and bowls/dishes occurred in similar numbers within the assemblage; among the flatwares plain-rimmed dishes and flat-rimmed bowls, with or without grooves, were well represented with flanged bowls almost entirely absent. Decoration took the form of obtuse lattice only on the jars, with various less regular burnishings found on the walls and bases of the bowls and dishes. The great majority of the Black-burnished assemblage is assumed to originate from the Dorset industry but a significant amount of south-western types were also noted, from Phase 2 onwards, distinctively coarser with their rough, granular surfaces with frequent shaly platelets.

Dating

It seems certain that the main occupation of the site began in the 2nd century, and most probably within the second half of that century. Flat-rimmed bowls in BB1 and their derivatives in local grey ware were also plentiful at Great Pencarn Farm and point to a significant 2nd century occupation.

Material of the 3rd century was plentiful and a few of the jars and bowls are of forms which run into the 4th century. However, the absence of more than one vessel (No. 77) of the type referred to by Gillam as "flanged bowls" (Gillam 1976, types 45-49) makes significant occupation after AD 300 improbable.

The overall date of the main Roman occupation at Great Pencarn Farm can therefore be placed within the period 150-300AD. Within that period dating for the individual Roman phases may be summarised as follows:

Phase 2. Such ceramic evidence as there is would suit a late 2nd-early 3rd century date.

Phase 3. Contexts from this phase contain both 2nd and 3rd century material. The later pieces are mid-late 3rd century with only one certainly late 3rd century item. A mid-late 3rd century date seems probable.

Residual material from Phase 4 contexts produced the bulk of the pottery, among which 3rd century material predominates, but there are also some late 3rd-early 4th century pieces. The absence, however, of pottery of certain 4th century date, BB1 jars with accentuated flanges and more particularly, of more than a single example of the late 3rd/4th century bowls indicates that this phase, and thus the

main period of occupation on the site, has a terminus no later than the end of the 3rd century.

Catalogue

The catalogue has been ordered by phase; intrusive material found in Phase 1 contexts, the two Roman phases and the single post-Roman phase. Although representation of Phases 1 and 2 is very small. Within Phases 3 and 4 the catalogue entries for each phase begin with oxidised (red) wares, followed by reduced (grey) fabrics and finally Black-burnished wares for each major form present, arranged typologically and chronologically where appropriate from hollow or closed vessels through to flatwares followed by single sherds with decoration. No attempt has been made to create a fabric series; instead a very brief description accompanies each catalogue entry noting form, fabric and any decoration, with dating based on Gillam (1976) given where appropriate, to the Black-burnished series. Note that almost all of the BB jars illustrated do not show decoration, and for convenience its absence is not mentioned in the relevant catalogue entry, unlike those for the other BB forms. The individual catalogue entries are described by context, description (including any dating), and dimensions.

Intrusive material from Phase I contexts

1 Context 163 (not illustrated). Handled jar in grey fabric with darker surfaces. Diam. 180mm.

2 163 (not illustrated). Rim of ?wide-mouthed jar, probably as No.5, in standard grey fabric. Diam. 300mm.

3 163. Bowl or dish with short flange, BB derived, in gritty grey fabric wither darker surfaces. The form imitates BB1 bowls of the late 2nd-early 3rd century and would therefore be of similar date. Diam. 200mm.

Phase 2

4 168. Jar in BB1, probably late 2nd century. cf Gillam (1976) No.4. Diam. 160mm.

5 168. Wide-mouthed jar in standard grey fabric. Diam 300mm.

6 168. Flat-rimmed bowl, BB derived, with eroded core and harder surfaces, burnished externally with deep wavy-line decoration over blackish wash, sooted. Probably 2nd century. Diam 170mm.

7 168. Plain-rimmed dish in BB1, flattened top to rim, shallow horizontal external groove below rim, trace of arc decoration. cf Webster 1993, Fig. 130, type 31.6-31.8. Diam 160mm.

8 168. Bodysherd from large jar in hard, light grey fabric with combed /brushed wavy-line decoration.

9 168 (not illustrated). Upper wall from ?flat-rimmed bowl in BB1, with large acute lattice decoration. Mid-late 2nd century.

Phase 3

10 159 (not illustrated). Flagon handle in standard grey fabric with three ribs.

11 159. Narrow-necked jar or flagon in blackish fabric, light brown externally, with sandy surfaces, wiped. Diam. 90mm.

12 159. Beaker in standard grey fabric with darker surfaces. cf Webster (1993), fig. 109, 19.4 (late 2nd - early 3rd century). Diam. 80mm.

13 158 (not illustrated). Beaker in standard grey fabric similar to No.12.

14 159 (not illustrated). Base and lower wall of small beaker or miniature cooking pot in standard grey fabric. Diam. of base 35mm.

15 159. Small jar in BB1, perhaps from a vessel as Gillam (1976), No.10-late 3rd century. Diam. 120mm.

16 159. Jar in grey fabric with sandy surfaces, cf Webster (1993) fig. 110, 22.3 (3rd century). Diam. 145mm.

17 158. Jar in BB1, with no surviving burnishing, ?burnt; perhaps 3rd century . Diam. 190mm.

18 171. Jar in standard grey fabric, ?slightly burnt. Diam. 160mm.

19 159. Large jar in standard grey fabric, interior surface brown. cf Webster (1993), fig. 112, 40.1-2 (probably 2nd century). Diam. 240mm.

20 159. Conical tankard in standard grey fabric. Diam. 100mm.

21 159 (not illustrated). As No.20 but with external blackish wash.

These vessels become progressively more flared as the Roman period advanced; cf Webster (1993) fig 113, 47.4 (2nd-3rdcentury)

22 159. Plain-rimmed dish in BB1, south western fabric, ?undecorated. Probably late 2nd-early 3rd century. Diam. 300mm.

23 159. Plain-rimmed dish in BB1. No decoration survives. Probably late 2nd-early 3rd century. Diam. 235mm.

24 159. Plain-rimmed dish in BB1 with trace of arc decoration. Probably late 2nd-early 3rd century, cf Gillam (1976), 77. Diam. 220mm.

25 159. Plain-rimmed dish in BB1 with arc decoration. Dating as No.24. Diam. 280mm.

26 158. Plain-rimmed dish in BB1, south-western fabric, with trace of arc decoration, cf Gillam (1976) 77-9 (late 2nd - early 3rd century). Diam 200mm.

27 158. Plain-rimmed dish in BB1, south-western fabric, ?undecorated. Probably early-mid 3rd century. Diam. 260mm.

28 159. Plain-rimmed dish in BB1, burnt brown. No decoration survives. Probably mid-late 3rd century, cf Gillam (1976) No.80. Diam 200mm.

29 158. Plain-rimmed dish in BB1, south western fabric. No decoration survives.

30 159. Small bowl with bead rim in gritty grey fabric burnt red. Diam. 100mm.

31 159. Flanged bowl in BB1. No decoration survives. Probably mid-late 3rd century, cf Gillam (1976) No.44. Diam. 200mm.

32 171. Flanged bowl in BB1, cf Gillam (1976) No.44 (mid-late 3rd century). Diam 200mm.

33 158 (not illustrated). Flanged bowl in BB1. No decoration survives. 3rd century.

34 159. Flange from a heavy mortar-like bowl in gritty grey fabric, wiped externally. Diam. 250mm.

35 159 (not illustrated). Colander bodysherd in gritty grey fabric with blackened interior surface and reddened externally by fire. Diam. of piercings up to 2mm.

Phase 4

36 155 (not illustrated). Flagon handle with three ribs in gritty orange fabric with grey-buff surfaces. Width 26mm, 030.

37 155 (not illustrated). Flagon handle with three ribs, in overfired gritty fabric, dark red with dark grey surfaces. Width 24mm.

38 155. Jug or narrow-mouthed jar in gritty orange fabric. Diam. 100mm.

39 155. Narrow-mouthed jar in well-fired standard grey fabric, Diam. 120mm.

40 155. Narrow-mouthed (?handled) jar with double rim in overfired gritty fabric as No.37, with large burnished lattice. Diam. 140mm.

Double rims are a feature of later South Wales Greyware, cf Barnett *et al* 1990, Nos. 3-5

41 155. Beaker in BB1. No decoration survives. Note rim is eroded and may not show true form. 2nd century. Diam. 80mm.

42 155. Beaker in standard grey fabric. Diam. 90mm.

43 155 Jar in standard grey fabric, Diam. 200mm.

44 155. Jar in brown fabric with blackish wash, slightly micaceous. Diam. 140mm.

45 155. Jar in grey-brown fabric with gritty surfaces and blackish wash. Diam 140mm.

46 155. Narrow-necked jar in hard-fired grey fabric. Diam. 150mm.

47 155. Jar in standard grey fabric with running design of oblique strokes on neck. Diam. 200mm.

48 155. Jar in standard grey fabric very similar to No.47, with erratic wavy-line decoration on neck. Possibly the same vessel as No.47. cf Robinson 1988, 41, No.118. Diam. 200m.

49 155. Jar in standard grey fabric similar to Nos. 47/8 with wavy-line decoration on neck. Diam 220mm.

50 155. Jar in BB1, cf Gillam (1976) No.7 (early-mid 3rd century.). Diam. 120mm.

51 155. Jar in standard grey fabric, cf Webster 1993, Fig. 109, 21.2 (3rd century). Diam 160mm.

52 155. Jar in BB1, probably mid-late 3rd century, cf Gillam (1976) No.9. Diam. 180mm.

53 155. Jar in BB1, probably mid-late 3rd century. Diam. 220mm.

54 155. Jar in BB1, probably mid-late 3rd century. Diam. 185mm.

55 155. Jar in BB1, probably mid-late 3rd century. Diam 160mm.

56 155. Jar in BB1, probably late 3rd century. Diam 240mm.

57 155. Jar in standard grey fabric, traces of ?wavy-line or repeated decoration on neck (not shown). Diam 200mm.

58 155. Long-necked jar in gritty grey fabric with darker surfaces. Diam 160mm.

59 155. Wide-mouthed jar(?) in standard grey fabric. Diam 280mm.

60 155. Wide-mouthed jar (?) in grey fabric with blackish external wash, slightly micaceous. Diam 320mm.

61 155. Jar with ?folded rim in standard grey fabric. Diam 280mm.

62 155. Bodysherd from jar in standard grey fabric with combed wavy-line decoration, as No.8.

63 155. Plain-rimmed dish in BB1 with arc decoration. Probably late 2nd-early 3rd century. Diam 280mm.

64 102. Very small plain-rimmed dish in BB1; no burnish or decoration apparent. Dating ?as No.63. Diam. 120mm.

65 155. Plain-rimmed dish in BB1 with arc decoration on walls and underside. Probably mid 3rd century. Diam. 200mm.

66 155. Plain-rimmed dish in BB1, no decoration apparent. Probably mid-late 3rd century. Diam. 220mm.

67 155. Plain-rimmed dish in BB1 with slight burnished groove below rim; no decoration survives. Probably late 3rd-early 4th century. Diam. 180mm.

68 155. Flat-rimmed bowl or dish, BB derived, in reddish-brown fabric with blackish wash. Probably mid 2nd century, based on BB originals.

69 155. Flat-rimmed bowl or dish, BB derived, in standard grey fabric. Dating as No.68.

70 155 (not illustrated). Flat-rimmed bowl or dish, BB derived, similar in form to No.69 but heavier, with blackish wash and 3-4 shallow external horizontal grooves, 5-6mm apart. Dating as No.68.

71 155. Flat-rimmed dish, BB derived, in grey-brown fabric, dark brown externally with blackish wash. Dating as No.68. Diam. 180mm.

72 022. Flat-rimmed bowl or dish in BB1; no decoration survives. Probably mid 2nd century. Diam 240mm.

73 023. Flat-rimmed bowl or dish with incipient groove, BB derived, in gritty grey fabric. Probably late 2nd century, based on BB originals. Diam 160mm.

74 023. Flat-rimmed bowl with incipient groove in BB1 south western fabric. No decoration apparent. Probably late 2nd-early 3rd century. Diam. 200mm.

75 155. Flanged bowl in BB1 with arc decoration. Probably late 2nd-early 3rd century. Diam. 260mm.

76 155. Flanged bowl in BB1 with arc decoration. Probably early-mid 3rd century. Diam 220mm.

77 155. Flanged bowl in BB1, no decoration survives. Probably late 3rd-early 4th century. Note rim eroded and therefore drawing may not show true form.

78 155. Mortar-like bowl (?*mortarium*) in soft fine orange fabric, c.f. Hartley (1993) fig 194, 1-2. Diam. 320mm.

Objects of Metal
by S. H. Sell

Items of Bronze (fig 16, plate 7)

Two objects were recovered.

Catalogue

1 155 (small find 001). Hemispherical bowl or ladle of sheet bronze, once gilded. The plain rim is folded with the attachment for a handle as narrow opposing plates, pierced with three rivets, between which the lower edges have been crudely punched out for decorative purposes. Diameter 100mm, depth 63mm, weight 0.054kg.

The form of this object indicates use as a ladle rather than as a bowl, but its size is too great. It has none of the properties of the *patera* and is most unlikely to have been used for any cooking or heating processes. As a ladle of this size it has no parallels known to the author 040 (001)

2 158 (005) (not illustrated). Part of a stud with oval flattened biconical head. Diameter of head 8 - 10mm.

Ironwork (not illustrated)

Of the very small quantity (10 pieces) of ironwork most were nails or fragments from context 155 (overburden). Part of a boot-heel was recovered from plough soil 022, and the head of a nail from 158, a Roman ditch fill. Ditch fill 159 produced two heavily concreted fragments probably from the same large nail or shaft with a diameter apparently in excess of 25mm.

Items of lead (fig 17)

Two objects were recovered.

Catalogue

1 182 (002). Discoidal spindle whorl, diameter 27mm, thickness 4mm, diameter of perforation 8.5mm, weight 0.020kg.

2 155. (not illustrated). Elongated subrectangular fragment, possibly part of a plug or repair patch. Surviving length 33mm, max thickness 9mm, weight 0.014kg.

Objects of Brick, Tile and Fired Clay
by S. H. Sell

Brick and tile (not illustrated)

A total of 5 brick and tile of the Roman period was recovered from at least two contexts. Fragments of *tegula* were noted in plough soil 022 and overburden context 155.

Fired clay/industrial (not illustrated)

Only ditch 159 produced any significant quantities of fired clay (0.326kg). Small quantities were also noted in overburden context 155 (0.008kg) and ditch 158 (0.044kg). Although much fragmented, the group from 159 showed no sign of wattling, and thus may have derived from a hearth or oven. Ditch 159 also produced a piece of coal, weight 0.040kg. No slag, apart from obviously modern material, was recovered from the excavations.

Objects of Stone
by S. H. Sell

Items of Stone (not illustrated)

Stone was noted in six contexts totalling 1.894kg. Almost all were flat pieces which may have derived from rooftiles or, where exposure to heat is evident, from hearths or bakestones (context 155). Three pieces which may have been utilised: A broken fragment of coarse gritstone from context 040 shows wear on one, and possibly two, of its original surfaces; a fragment of conglomerate from 168 could be from a quern but is too small for certain identification. Finally overburden context 155 produced an elongated pebble in micaceous fine-grained sandstone which, although lacking strong wear patterns, could have served as a whetstone.

Objects of Bone

by M. Locock

A small group of animal bone was recovered from the excavations. The animal bone as examined by context and recorded by species (or size where species was not diagnostic), and element. Fragments smaller than 10mm x 10mm were not counted. The assemblage was too small to permit separation of phases.

Table 2: Summary of animal bone typology

Species	Bone	Teeth	Total
Cow	3	26	29
Horse	0	8	8
Sheep/goat	0	1	1
Medium mammal	27	2	29
Large mammal	7	2	9
Unidentified	8	0	8
TOTAL	45	39	84

The bone was generally in a poor condition, with a high degree of fragmentation (no complete bones were found). The teeth were also highly fragmented, probably indicating physical damage during deposition. Seven bones (9 %) were burnt; two were digested, probably by dog but possibly by pig. With only 16 bones identifiable to species, no estimate of relative frequency is possible. Cow, horse and sheep/goat are certainly present.

The assemblage is probably the result of casual disposal around the site, with substantial damage to bones prior to final burial. The digested bones show that dog (or pig) faeces were present. The assemblage is not one that would be expected from a site where butchery, cooking or consumption was a normal activity, and therefore occupation is likely to have been temporary or transient.

Post-Roman Finds

by S. H. Sell

Post Roman Finds (not illustrated)

Post medieval pottery and glass recovered from plough soil and overburden contexts (022 and 155) ranged in date from the 17th to the 20th century. A clay pipe stem was also noted in land drain trench 179, and a boot-heel in plough soil 022 (see ironwork, above).

A minimal quantity of pottery may be assigned to the late medieval/early post medieval period. It was recovered from plough soil 022 and overburden context 155. A single sherd of possible medieval date was recovered from context 023.

5.0 Palaeoenvironmental Analysis

Palaeoecological and palaeoeconmoic investigations at Great Pencarn Farm, Newport.

by M. J. C. Walker[1], A. E. Caseldine[1], N. G. Cameron[2], S. J. Dobinson[2],J. H. James[1] & S. Johnson[1]

Introduction

This report describes palaeoecological investigations on a sediment monolith from the site, and the analysis of charred plant remains from samples directly related to archaeological features that were recovered during the course of the excavation.

The samples and their contexts

Although no traces of the original building survive, the foundations of two walls were located and these formed the basis for the excavation (Yates pers com). Samples were taken from contexts associated with these foundations from the Phase 3 building and elsewhere.

Sample 019: This is charcoal-rich deposit which comprises the backfill in a posthole at the Southeast end of the SW wall ***(174)***.

Sample 020: A second charcoal-rich deposit, containing burnt material, beneath a trench backfilled with tightly-packed river cobbles ***(159)***.

Sample 021: A shallow scoop excavated within the confines of the building. This contained two deposits: the lower one with a relatively intact pot ***(187)***.

Sample 022: Upper layer of burnt clay in shallow scoop interpreted as a hearth ***(186)***.

Sample 023: A monolith through the alluvium and peat sequence which underlies the Roman building. The stratigraphy of this sequence is as follows:

0-4/8 cm	Grey silty clay with thin (<1 cm) brown-orange lens ***(163)***. Boundary with underlying unit diffuse
4/8-13 cm	Grey clay with thin (<lcm) brown-grey organic lenses ***(193)***.
13-15/20 cm	Dark-brown silty peat ***(193)***. Boundary with underlying unit at a 45° angle

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15/20-50 cm Light grey silt/clay ***(194)*** with lenses of grey-black organic lenses towards the ***(195)*** base. Orange-brown iron-staining throughout

Laboratory methods

Pollen analysis

Samples for pollen analysis were prepared using standard techniques including digestion in 10%KOH, followed by acetolysis (Moore *et al.* 1991). Residues were mounted in safranin-stained glycerine jelly and analysed using a Vickers M15C microscope at x400 magnification, with critical identifications under oil at x1000. Pollen and spores were categorised on the basis of the key in Moore *et al.* (1991). Twelve samples were analyses and a sum of 300 land pollen was achieved at all levels. The pollen diagram (fig 18) has been drawn using the TILIA and TILIAGRAPH programs of Grimm (1991).

Plant macrofossil analysis

The samples fall into two groups. The bulk samples taken from the archaeological features for the analysis of charred plant remains varied in size according to the amount of material available (see Tables 3 & 4). The subsamples taken from the monolith for the analysis of waterlogged plant remains were 100ml in size and taken over a depth of 5cm, apart from the sample from the silty peat which was taken over a depth of 7cm because of the removal of material for radiocarbon dating. Since the samples were minerogenic hydrogen peroxide was added to all of them. After the flot had been removed the residue was washed through a nest of sieves with 2mm, 1 mm, 500 μm and 250 μm meshes. A Wild M5 microscope was used for the analysis. Plant remains were sorted and extracted from the coarser fractions but the 250 μ m fraction was scanned and the plant remains noted. Identification was principally by comparison with modern reference material, but seed atlases (e.g. Berggren, 1969 and 1981, Bertsch 1941 and Schoch, 1988) were consulted when necessary Nomenclature for the non-cereal remains follows Stace (1991).

Diatom analysis

Diatom analysis was carried out on six samples from the profile. Each sample was assessed to determine if diatoms were present or absent, the diatom valve concentrations, their state of preservation, type of assemblage and diversity of taxa (Table 5). Where the quality of preservation and an adequate concentration of valves allowed, diatom percentage counts were made. Preparation and analysis followed standard techniques (Battarbee 1986). Three coverskips, each of a differing concentration of the cleanest solution were prepared from each sample and mounted in Naphrax. Coverslips were scanned at magnifications of x400 and x1200. Where necessary, identifications were confirmed using the collection of floras lodged at the Environmental Change Research Centre, UCL. Those most commonly consulted included Hustedt (1930-1966), Werff & Huls

(1957-1974), Hendey (1964), John (1983) and Hartley (1996). The principal data source for species ecology was Denys (1992).

Data were entered into the AMPHORA database at the ESRC, where the data, slides and suspensions are available for examination. The program TRAN was used for data manipulation and diagrams were plotted using TILIA and TILIAGRAPH (Grimm 1993). The results are shown in Figure 19.

Diatoms were classified into halobian groups (fig 19) based on the criteria of Hustedt (1957). The diatoms in each group have optimal growth in water with salinity equivalent to the following ranges:

Polyhlobian >30g 1^{-1}; mesohalobian >0.2-30g 1^{-1}; oligohalobian halophilous, optimum in slightly brackish water; oligohalobian indifferent, optimum in freshwater, but tolerant of slightly brackish water; unknown, taxa with unknown salinity optima.

Radiocarbon dating

Two samples (2 cm thick) from the uppermost and lowermost peat horizons were cut from the monolith and submitted to the BETA Analytic Radiocarbon Dating Facility in Miami, USA. These were calibrated using the CALIB 3.0 program of Stuiver & Reimer (1993). The results are shown in Tables 6 and 7.

The pollen record

Three local pollen assemblage zones can be identified in the pollen diagram (fig 18):

D-1: A zone in which Cyperaceae, Poaceae and Chenopodiaceae comprise the dominant elements. *Pteridium* is also well represented. Counts of woody plant pollen are generally relatively low, but *Alnus, Quercus and Corylus* are present throughout.

D-2: This biozone is dominated by *Alnus,* with values of up to 60% TLP. Poaceae counts remain high (>40% TLP in some levels), while *Quercus, Corylus and Pteridium* are well represented. Cyperacaeae values decline throughout the zone.

D-3: A biozone dominated, once again, by open-habitat taxa, mainly Poaceae, but with significant numbers of *Cheopodiaceae*, *Lactuceae*, *Plantago* and Rosaceae. Values for woody plant pollen fall to their lowest levels in the profile. *Pteridium* counts increase, as do frequencies of *Pteropsida.*

These data suggest that, during the early part of the sequence, the area was one of salt-marsh, with grass- and sedge-dominated communities along the margins of tidal inlets (paz D-1). A relative fall in sea level led to the creation of a poorly-drained coastal wetland and the development of an alder carr (paz D-2).

A marine transgression in the upper part of the sequence resulted in the inundation of this wetland and the re-establishment of salt-marsh and/or tidal mudflats in the vicinity of the site (paz D-3). Human activity nearby may be reflected in the relatively high counts for *Plantago lanceolata*, a species which, although found today in salt-marsh communities, often occurs in grazed areas and has been frequently associated in pollen records with pastoral farming (e.g. Behre, 1986). There are, however, no clear indications in the pollen record of arable cultivation.

The plant macrofossil record: waterlogged plant remains

The lowest sample (40-45cm) clearly reflects a brackish environment with saltmarsh and swamp communities in the vicinity. The evidence suggests *Bolboschoenus maritimus* swamp growing locally. It is typical of coastal salt-marshes where it can occur at various levels, being able to withstand both occasional inundation by tidal waters and standing brackish water (Rodwell 1995). *Schoenoplectus tabernaemontani,* also present, is found in situations with similar salinity levels but can grow in standing fresh water. *Spergularia* is another plant characteristic of muddy maritime environments. Other taxa which are represented and occur in *the Bolboschoenus maritimus* community include *Apium graveolens* and *Ranunculus sceleratus. Lycopus europaeus* and *Urtica dioica* can be found in reed swamp and the *Poaceae* may reflect reed swamp, saltmarsh or adjacent 'dryland' grassland communities. The presence of alder carr in the area is indicated by *Alnus* fruits.

Bolboschoenus continues to be well represented in the next sample (25-30cm) and, along with *Atriplex,* suggests a continued brackish influence, although an increase in *Callitriche* possibly indicates a stronger freshwater influence. An increasingly freshwater environment is suggested in the following sample (7-14cm) by a stratigraphic change to a peaty deposit together with the absence of *Atriplex* and *Bolboschoenus.* Further support for this is provided by an increase in *Alisma,* a plant typically found in slow rivers and ditches. *Alnus* remains and wood fragments indicate the presence of alder carr. *Rubus* and *Solanum dulcamara,* also recorded, occur in the understorey of carr woodland. *Eleocharis palustris/uniglumis* and *Juncus* indicate a wet muddy environment with sedges and rushes. *Eleocharis* occurs in marshes frequently by the sea. The *Juncus* (not differentiated in Table 3) included *J. gerardi* and *J. bufonius.* The former is found in salt-marsh and the latter in both freshwater and brackish damp habitats. Preservation in the final sample (1-6cm) was poor and it contained few remains apart from *Juncus,* largely *J. gerardi,* which dominated. *J. gerardi* is found in salt-marsh from just below high-water mark of spring tides upwards (Clapham et al. 1987). *Eleocharis* and *Alisma* were again present and a wet muddy environment is indicated. The presence of *Sambucus nigra* is interesting because it grows on waste ground, particularly where manuring has taken place. A charred seed of *Trifolium* type and one charred glume base of spelt wheat *(Triticum spelta),* may be contemporary or intrusive from later levels, but do demonstrate human activity at the site and possible cereal growing

and crop processing locally. Further evidence for this is provided by the charred plant remains discussed below.

The diatom record

Overall, diatom concentrations were very low and only in two samples (8 cm and 30 cm) were diatom sums high enough to represent abundances as percentage values (diatom sums of 112 and 93 valves respectively). The diatom sums at 2 cm, 5 cm, 15 cm and 20 cm are, respectively, 64, 44, 72 and 44 valves. However, despite sums that are statistically inadequate, these results have been included in Figure 19 in order to provide a visual impression of changes in diatom composition downprofile. In general, preservation of valves is poor, many being fragmented and partially dissolved. As a result, many taxa could be identified only to the generic level. In all of the samples, however, species diversity was relatively high.

At depths 15 cm, 20 cm and 30 cm, *Paralia sulcata,* a marine planktonic species is the most abundant taxon, typically comprising 30-60% of the total diatom count. *Cymatosira belgica*, a marine semi-planktonic species is also common in these samples. Brackish water diatoms occur in the lower part of the sequence, in particular the mesohalobous species *Nitzschia navicularis.* Freshwater (oligohalobous indifferent) diatoms are absent at 20 cm and 30 cm, but a number of non-planktonic freshwater taxa are present at low frequencies at 15 cm.

In the upper part of the sequence, at depths of 2 cm, 5 cm and 8 cm, the abundances of marine (polyhalobous) taxa decline, although the marine species present in the lower part of the sequence continue to be common. A number of non-planktonic, brackish and freshwater taxa increase in abundance, for example, the mesohalobous and halophilous species *Navicula digitoradiata, Navicula peregrina* and *Navicula slesvicensis.* A range of non-planktonic freshwater diatoms (*Fragliaria* sp., *Pinnularia* sp., *Navicula elginensis*) occurs throughout the upper part of the sequence.

The poor state of preservation and correspondingly low counting sums, combined with a number of taphonomic factors (e.g. silica breakage and dissolution, allochthonous valve inputs, survival of heavily silicified taxa and loss of less robust taxa) that may have influenced the fossil diatom assemblages, means that only limited palaeoenvironmental inferences can be drawn from the diatom evidence. On the other hand, a relatively diverse range of taxa have survived, and it is possible to discern a general shift from a marine-brackish dominated flora to one characterised by brackish-freshwater species. The change in diatom assemblage from the lower part of the sequence, where marine planktonic species are common, to brackish and freshwater diatoms of non-planktonic habitats in the upper, suggests an overall environmental change from a tidal habitat to one that was more stable for non-planktonic diatom growth (less tidal influence), with an overall reduction in salinity enabling freshwater and brackish/halophilous taxa to thrive.

The radiocarbon dates

Calibrations of the two radiocarbon dates, Beta 109345 and 109346, show that at this point on the radiocarbon curve, there is little difference between calibrated and radiocarbon years (Tables 6 and 7). Beta 109345 (radiocarbon age 2340 ± 60BP) has a calibrated age range (2σ, 95% probability) of 2300-2475 BP, with an intercept of radiocarbon age and the calibration curve of 2345 cal BP. Because of fluctuations in the C^{14} calibration curve, however, there is a slight possibility that the age lies within the range 2165-2250 cal BP. Beta 109346 has a calibrated age range (2σ) of 2340-2735 BP, with an intercept of radiocarbon age and the calibration curve of 2455 cal BP.

The two radiocarbon dates from the profile show that the peats are of a broadly comparable age to the upper levels of buried peats found elsewhere on the Caldicot Levels (e.g. Smith & Morgan 1989, Scaife 1995 and Walker *et al* forth). The sequence of vegetational changes reflected in the Great Pencarn Farm pollen record, with the expansion and subsequent demise of alder carr, is also similar to that found in profiles at Barland's Farm, Goldcliff and Vurlong Reen. However, the Great Pencarn Farm profile is considerably truncated by comparison with these deeper peats, and the lowermost date suggests that the organic sediments at the Great Pencarn Farm site accumulated *after* the marine transgression on the northern shore of the Severn Estuary that culminated during the middle of the third millennium BP. As such, the organic deposits may reflect a short-lived marine regression around 2300-2400 C^{14} years BP, prior to further marine inundation later in the third millennium BP. A similar stratigraphic sequence occurs at Goldcliff, some 10 km to the east of the Great Pencarn Farm site, where a thin upper peat band overlies the estuarine silts and clays deposited during the mid-third millennium BP transgression. These organic sediments, which are associated with various Iron Age structures and which have been dated to *c.* 2300-2200 ^{14}C years BP, may also record a brief period of relative sea-level fall (Caseldine unpublished). Collectively, these data suggest that the sequence of relative sea-level changes along the Gwent Levels during the third millennium BP may have been more complicated than has been hitherto envisaged, with considerable variations in both space and time.

The plant macrofossil record: charred plant remains

The charred plant remains provide evidence for cereal cultivation and crop processing, which is in keeping with the interpretation of the site as part of an agricultural landscape. The assemblages from the four samples are similar although the frequency of remains and the proportions of cereal grains, chaff and other seeds varies. The richest sample from the site is 020 which is dominated by cereal remains. Much of the grain and chaff is very poorly preserved but wheat (*Triticum*), barley (*Hordeum*) and possibly rye (*Secale cereale*) are present as well as oat (*Avena*), both wild and cultivated. A variety of other seeds such as *Bromus, Raphanus raphanistrum*, *Chenopodiaceae*, *Tripleurospermum*, *Polygonaceae*, *Trifolium* type, *Bolboschoenus maritimus*, *Eleocharis palustris/uniglumus*, *Juncus* and *Poaceae* are also present and *Poaceae* culm

fragments are frequent. Less grain is present in 019 but chaff is quite frequent and a similar weed assemblage occurs. The assemblages from 022 and 021 are also similar but the remains are scarcer, particularly from 021.

The evidence suggests wheat and hulled barley, though less frequent in the assemblage, were being grown as crops with rye and oat present as contaminants, particularly as some of the oat chaff demonstrates the presence of wild as well as cultivated oat. The wheat which is determinable beyond genus level includes both emmer (*T. dicoccum*) and spelt (*T. spelta*). Given the date of the site, mid/late 2nd to late 3rd century AD, the apparent relative importance of emmer in the samples in comparison to spelt is of interest and perhaps suggests that emmer was still being grown in preference to or alongside spelt. However, given the nature of the samples, i.e. waste material, it is possible the emmer was a contaminant and hence was being discarded. Certainly by the Roman period at other sites in Wales spelt was largely dominant and emmer generally of minor significance (Caseldine 1990).

Whether cultivation was on the dry land of the gravel terraces and solid geology to the north or whether cultivation was taking place on the alluvial levels remains open to debate. The occurrence of seeds indicative of damp ground, notably a seed of *Bolboschoenus maritimus* and seeds of *Eleocharis palustris/uniglumis*, *Juncus* and *Persicaria hydropiper*, could point to the latter but these seeds could easily have become incorporated if cultivation was taking place on the dryland margin adjacent to the alluvial levels. The waterlogged plant remains from monolith 023 (see above) demonstrate that these plants had been growing locally and presumably some remnants remained even if drainage had occurred near the site. Equally reeds and rushes could have been brought on to the site for other reasons, such as flooring, and become charred if waste was used as fuel. Waterlogged seeds of *Juncus* were recovered from the charred samples themselves, but it is possible they were intrusive.

The chaff in the samples indicates on-site processing as do the seeds from plants which are weeds of cultivation such as *Chenopodium album*, *Raphanus raphanistrum* and *Persicaria maculosa.* These taxa are also indicative of waste ground. Other taxa, for example *Rumex* and *Trifolium* and *Vicia* types, may represent rough ground or grassland. The occurrence of these taxa and Poaceae remains could suggest hay and, with the chaff, the possibility that some of the remains represent waste from fodder. Alternatively grass could have been collected and used as tinder.

There is insufficient evidence to say with certainty to what extent the economy of the settlement was based on cereal growing or pastoralism or a combination of both, but the plant remains do demonstrate cereals were being cultivated locally and the presence of habitats suitable for pastoralism. Elsewhere in the Levels charred cereals and cereal type pollen are recorded from Romano-British ditches at Goldcliff (Caseldine in prep.), whilst at Rumney Great Wharf the evidence from a Roman well suggests a predominantly pastoral landscape but cereal type pollen indicates some arable activity in the area (Fulford *et al.* 1994).

Conclusions

1. The lithological and biostratigraphic record from the Great Pencarn Farm sediment monolith shows evidence of an initial phase of tidal mudflats/salt marsh conditions in the vicinity of the site. This is reflected in the pollen, plant macrofossil and diatom records, and also in the silt/clay deposits in the lower section of the monolith.

2. A relative fall in sea-level was followed by the local development of alder carr. Dating of this phase is difficult, but radiocarbon evidence shows that the alder carr was in existence by the middle/later part of the third millennium BP.

3. Subsequently, the alder carr was inundated by rising sea levels, and the various records show that salt-marsh and/or tidal mudflats became re-established in the vicinity of the site. However, the diatom data point to a significantly greater freshwater influence than in the lower part of the sequence. A radiocarbon date immediately below the lithostratigraphic transition from peat to overlying silt/clay, and which marks the end of the *Alnus* phase in the pollen diagram, shows that this event occurred around 2350 ^{14}C years BP.

4. The sequence at Great Pencarn Farm is considerably truncated by comparison with the records at sites elsewhere on the Gwent Levels, and may record a later phase of alder carr development associated with a short-lived fall in relative sea-level following the main episode of marine transgression that culminated along the northern shore of the Severn Estuary during the middle part of the third millennium BP.

5. Cereal cultivation was taking place locally, probably on the solid geology rather than the alluvial levels. It is likely both wheat and barley were grown as crops. The relative importance of arable activity and pastoralism is uncertain, although the evidence suggests the levels were more suitable for grazing rather than for cultivation.

Table 3: Plant macrofossils from monolith sample 023

Sample depth (cm)	**40-45**	**25 -30**	**7-14**	**1 -6**
Context	195	**194**	**193**	**163**
Sample size (ml)	**100**	**100**	**100**	**100**
Waterlogged Taxa				
Ranunculus sceleratus L. (celery-leaved buttercup)	*5*	*5*	8	3
Ranunculus Subgenus *Raitunculus* sp. (buttercuP)	1	-	-	-
Ranunculus Subgenus *Batrachium* (crowfoot)	-	-	8	-
Batrachium (crowfoot)				
Urtica dioica L (common nettle).	1	3	2	-
Almus glutitiosa (L.) Gaertner (alder)	2	*5*	1	-
Almus glutiitosa (L.) Gaertner cone-scales	-	1	8	-
Atriplex sp. (orache)	1	13	-	-
Spergularia sp. (sea-spurrey)	13	-	-	-
LysimachialAnagallisIGlaux (loosestrife/pimpemel/sea-milkwort)	1		-	-
Anagallis minimal Samolus veleradi (chaffiveed/brookweed)	-	1	-	-
Rubus fruticosus (bramble)	-	-	4	-
Potentilla anserina L. (silverweed)	-	-	1	-
Hydrocotyle vulgaris L. (marsh pennywort)	-	-	1	-
cf. Aethusa cynapium L. (fool's parsley)	1	-	-	-
Apium graveolens L. (wild celery)	1	-	1	-
Apium nodifloruml inundatum (fool's water-cress/lesser marshwort)		-	4	-
Solanum dulcamara L. (bittersweet)	-	-	1	-
Myosotis sp. (Forget-me-nots)	-	1	-	-
Lycopus europaeus L. (gypsywort)	1	-	-	-
Mentha sp. (mint)	-	-	3	-
Callitriche sp. (water-starworts)	1	227	1	-

Plantago major L. (greater plantain).	1	1	-	cfl
Sambucus nigra L. (elder)	-	-		1
Cirsium sp. (thistle)	1	3	3	-
Alisma sp. (water-plantain)	4	4	*15*	3
Juncus sp. (rush)	35	*5*	250+	500+
Eleochatis palustrisl uniglumis (common/slender spike-rush)	1		2	*5*
Bolboschoenus maritimus 16 (L.) Palla (sea club-rush)	21			
Schoenoplectus tabeni-aemontani (C. Gmelin) Palla (grey club-rush)	7			
Carex sp. biconvex (sedge)	*5*	2		
Carex with utricle	2	3		
Poaceae >1.5mm			*5*	2
Poaceae <1.5mm	27	6		
Typha sp. (bulrush)	-		1	
Bud scales	-	1	7	
Leaf scar	-		1	
Charred Taxa				
Trifolium type	-			1
Triticum spelta glume base (spelt wheat)	-			1

Table 4: Charred plant remains from archaeological features

Sample	**19**	**20**	**21**	**22**
Context	**174**	**159**	**187**	**186**
Sample size kg	**57**	**58**	**15**	**41**
Charred Taxa				
Cereals				
Triticum monoccumITdicoccum (einkorn/emmer) spklt fks	-	2	-	-
T dicoccum grain	-	28	-	-
(emmer) glume bases	-	lcfl	-	-
spklt fks	-	efl	-	-
rachis	cfl		cfl	-
T dicoccund T. spelta grain	-	34	-	-
(emmer/spelt) glume bases	4	-	-	-
spklt fks	6	-	-	-
T. spelta grain	-	7	-	-
(spelt) giume bases	1.3	cf3	-	3cfl
spkit fks	-	cf2	-	1
rachis		-	-	cfl
T. speltal T. aestivum s.l. grain (spelt/bread/wheat)	-	2	-	
Triticum sp. grain	2	41	-	-
(wheat) glume bases	27	39	4	17
spklt fks	-	22	-	2
rachis	4	11	-	6
awn	1	-	-	1
cf *Secale cereale* grain (rye)	-	-	-	-
Secale cereal/Hordeum (rye/barley) rachis	-	-	-	-
Hordeum vulgaree grain straight	-	2	-	-
hulled (barley) twisted	-	3	-	-
indet.		17	-	
rachis	1		-	1
cf *Hordeum* sp. grain	1	1	-	-
Avena strigosa/A. sativa (bristle oat/oat) floret base	-	1	-	-
Cereal indeterminate	27	459	-	13
Detached embryos	4	7	-	2
Other plants				
Chenopodium album L. (fat hen)	46	4	-	1
Atriplex sp. (oraches)	9	4	-	-
Suaeda matitima (L.) Dumort (annual sea-blite)	-	1	-	-
Chenopodiaceae (goosefoot)	27	4	-	1
Stellatia media (L.) Villars (common chickweed)	2	-	-	-
Caryophyllaccae (pinks)	1	-	-	-
Persicaria maculosa Gray (redshank)	2	3	-	-

Persicaria cf. lapathifolia (L.) Gray (pale persicaria)	-	-	1	-
Persicaria hydropiper (L.) Spach (water-pepper)	1		-	1
Polygonum aviculare L (knotgrass)	2	-	1	-
Fallopia convolvulus (L.) A. Love (black bindweed)	1	1	-	-
Rumex sp. (docks)	12	14	1	1
Raphanus raphanistrum L (radish) silqua	2 frags	1.3 frags	-	1 frag
Potentilla sp. (cinquefoils)	-	-	-	1
Vicia sp (vetches).	10	5	cf1	1
VicialLathyrus type (vetch pea)	-	1	-	-
LotusITrifolium type (birds-foot-trefoils/clovers)	16	7	1	2
MedicagolTrifolium type (medicks/clovers)	4	11	1	1
Apium graveolens L (wild celery).	2	1	-	-
Mentha sp. (mints)	-	-	-	1
Plantago major L. (greater plantain)	-	2	-	1
Tripleurospennum sp. (mayweeds)	2	1	-	-
Juncus sp. (rushes)	61	28	2	20
Juncus sp. capsule	7	-	-	-
Eleocharis palustrisluniglumis (common/slender spike-rush)	7	7,1 silicified		
Bolboschoenus maritimus (L.) Palla (sea club-rush)	-	1	-	-
Cyperaceae (sedges)	1	-	-	-
Avenafatua caryopsis (wild oat) floret base	-	2	-	-
Avena sp. (oat) floret base indet.	3	3	-	-
awn frags.	16	68	2	7
AvenalBromus (oat/brome)	-	33	-	-
Bromus sp. (bromes)	-	3	-	-
Avena/Large Poaceae (oat/grasses)	2	10	-	2
Large Poaceae (grasses)	-	5	1	-
Small Poaceae	43	57	4	4
culm frags	102	493	13	29
rhizme frags		2	-	-
Leaf bud	1	-	-	-

Flower	1	-	-	-
Pteridium aquilinum (L.) Kuhn (bracken) leaf frags	1	-	-	-
Waterlogged Taxa				
Juncus sp. (rushes)	100+	100+	100+	100+

Table 5: Assessment of diatom assemblages

Depth	diatoms present	diatom species	assemblage type	preservation	counting potential
2cm	Y	Tlhalassionerna nitzschioides Caloneis bacillum Navicula sp. Navicula peregrina Diploncis interrupta Paralia sulcata Gyrosigma sp. Pinnularia viridis Navicula menisculus Pinnularia brebissonii Nitzschia sp. Hantzschia amphioxys Pinnularia sp. Synedra ulna Diploneis smithii Surirella augusta Navicula veneta Campylosira cymbelliformis Pinnularia rnicrostauron Nitzschia navicularis Cymatosira beigica Pinnularia rupestris	b f m	poor	N
5cm	Y	Paralia suicata Navicula sp. Cymatosira belgica Fragilaria sp. Navicula sclesvicensis Amphora sp. Cymbella cuspidata Navicula digitoradiata Nitzschia sp. Fragilaria pinnata Synedra sp. Pinnularia borealls Navicula elgenensis Pinnularia sp. Diploneis smithii Synedra ulna Gyrosigma sp.	b f m	Poor	N

8cm	Y	Navicula sp Paralia suicala Cymatosira belgica Fragilaria sp. Navicula digitoradiata Pinnularia sp. Stauroneis anceps Navicula elegensis Diploneis smithii Hyalodiscus scoticus Diploneis sp Coconeis disculus Navicula peregrina Pinnularia borealis Fragilaria elliptica Amphora sp. Gyrosigma sp. Rhaphoneis amphiceros Anomoeoneis sphaerophora Navicula elginensis Gophonema acumnaturn	b m f	Moderate	Y
15cm	Y	Navicula sigma Eunotia pectinalis var undulata Thalassiosira sp Cymatosira belgica Paralia sulcata Achnanthes sp Gophonerna sp Cyclotella striata Nitzschia navicularis Navicula mutica Navicula sclesvicensis Navicula eiginensis Pinnularia borealis Pinnularia sp Navicula capitata var capitata Gyro sima sp Pinnularia viridis	m b	poor	N
20cm	Y	Nitzschia sigma Paralia sulcata Nitzschia navicularis Navicula sp Cymatosira beigica Melosira westii Navicula mutica Actinoptychus undulatus Rhaphoneis amphiceros Thalassiosira sp	m b	poor	N

30cm	Y	Diploneis smithii Fragiliaria elliptica Pinnalaria borealis Cyclotella striata Gyrosigma sp. Rhaphoneis amphiceros Paralia sulcata Actinoptychus undulatus Navicula sp Pinnularia sp Cymatosira belgica Melosira westii Nitzschia navicularis	m b	Moderate	Y

m - marine b - brackish f - fresh

Table 6: Radiocarbon dates from peat 193

Sample depth (cm)	Measured ^{14}C age	$\delta^{13}C$ ratio	Conventional ^{14}C age
7	2370 ± 60 BP	-26.8‰	2340 ± 60 BP
14	2470 ± 60 BP	-26.8‰	2440 ± 60 BP

Table 7: Calibration of radiocarbon dates

Sample	Laboratory number	Uncalibrated ^{14}C date	Calibrated age range (2δ; 95% probability)	Intercept of ^{14}C age and calibration curve
7	Beta- 109345	2340±60 BP	2300-2475 BP 2165-2250 BP	cal BP 2345
14	Beta- 109346	2440±60 BP	2340-2735 BP	cal BP 2455

6.0 Discussion

The prehistoric remains demonstrate the presence of human activity in the area from the Bronze Age onwards. There is no clear indication as to the immediate nature or extent of this activity, but excavations on the foreshore at Goldcliff (Bell 1994), Redwick (Neumann and Bell 1997) and Rumney Great Wharf (Allen forth) have shown that the Gwent Levels were extensively exploited during the later prehistoric period. Prehistoric settlements on the uplands overlooking the levels have been excavated at Thornwell (Hughes 1996) and Caldicot (Vyner and Allen 1988).

The earliest evidence for this is the Bronze Age post. This is physically co-located with the shallow erosive hollow containing the peat, however, the peat formation is dated to at least 300 years subsequent to the date of the pile, and so cannot be considered to be related. It may be that the presence of the peat improved the preservation of the Bronze Age wood. Further evidence for Iron Age activity was found in the drainage features which produced relatively unabraded Iron Age (as well as Roman), pottery (see below). This must be residual in nature but nevertheless demonstrates human activity in the immediate environs of the site in the late Iron Age.

The Roman ditches underlying the site are part of a drainage system constructed prior to the building and the Road. A recent watching brief which has taken place immediately to the north of the site on the glacial gravel terraces has produced evidence of a more extensive ditch system of which the features examined during the excavation are considered to be part (Roberts and Sell 1998). The Roman structures excavated in 1996 are likely to form a a peripheral part of a larger more extensive settlement associated with this ditch system, evidence for which has also been seen during the watching brief and evaluation (GGAT 1997). The drainage ditches were probably constructed in the late 2nd/early 3rd century and the building in the early/mid 3rd century. The site seems to have reached an apogee in the mid 3rd century AD and an apparent decline in the late 3rd century with abandonment occurring no later then the start of the 4th century.

The situation of the building on the alluvium may reflect the lack of a suitable space for construction on the gravels to the north of the site, as this seems to be the preferential location for construction. Alternatively, the fact that it is constructed upon the alluvium may represent a conscious shifting of perspective away from the uplands towards a more intensive exploitation of the Levels, the construction of the road allowing improved access to the alluvial lowlands to the south. There is no evidence for occupation of the building itself or for any industrial or other activity taking place within it. The structure can only be interpreted, therefore as a barn for either animals, produce or storage of materials. It would probably have formed an outlying part of a larger settlement or farmstead, probably situated on the glacial terraces to the north and east of the site. The large amounts of pottery recovered are presumably debris from this settlement. The form of this building seems to be of a large structure probably timber framed in construction. No evidence was uncovered for internal

partitions. Internally this building was floored by a layer of cobbles laid directly upon the underlying clay. The only direct evidence of activity within the building is in the form of the hearth. This represents as a single event and should not be seen as part of the normal functioning of this structure; it may be that this hearth is an artefact of the construction process. To the east of the building the faint traces of a lean-to can be detected in the foundation 169 and post-pad 192. This again seems to have been floored by a layer of rough cobbling, although it is difficult to distinguish between those cobbles which may have formed a surface and those disturbed from the road. The presence of sandstone roof tiles would suggest the presence of other more substantial structures nearby, as the building excavated would not be strong enough to support such a heavy roof. The function of the building itself was probably as a store, either for livestock, crops or materials. The faunal remains indicate casual disposure, at least partly after digestion by animals (Locock above). This makes the structure an unlikely location for food processing or consumption or as a desirable place for prolonged human occupation.

The present understanding of Roman settlement patterns on the Levels identifies two distinct *loci* for settlement location (fig 20). The first of these is on the margin of the solid geology. Sites on the interface between the 'hard' and 'soft' geology have been identified at Rogiet (Williams 1996), Portskewett (Lawler 1995) and Stoop Hill, south of Caldicot (Ferris 1994). Other farmsteads have been excavated at locations on the uplands close to and overlooking the Levels, positioned so that the resources of the lowlands could be exploited. Those that have been excavated are typically compact farmsteads such as at Thornwell Farm (Hughes 1996) and Caldicot (Vyner and Allen 1988). The second favoured location is along of watercourses, such as at Magor Pill (Allen forthcoming), Nash (Yates 1997) and Goldcliff (Locock 1997), although this last cannot be counted as typical due to the proximity of the bedrock outcrop at Goldcliff Island. All these sites appear to have been agricultural in nature, often with some degree of iron working taking place. The exception being the pottery kiln complex excavated at Caldicot (Barnett et al 1990). The site at Great Pencarn Farm can be seen to belong the group of immediate fen-edge settlements such as Rogiet, Portskewett and Stoop Hill. The sites at Rogiet and Portskewett have not been excavated but the fringes of the Stoop Hill settlement were excavated prior to the construction of the approaches to the Second Severn Crossing. This represents the closest typological parallel to the site at Great Pencarn Farm; the portion excavated consisting of a number of shallow gullies overlain by the remains of a cobbled surface, representing an outlying portion of a larger settlement which can be clearly identified from aerial photographs. The pottery assemblage indicates a 2nd Century date for Stoop Hill with abandonment in the 3rd Century, clearly earlier than the Great Pencarn Farm site.

The results from the analysis of the charred deposits recovered from the fills of the foundations of the southern wall demonstrate the production and processing of grain crops in the immediate vicinity of the site. The use of waste from this process, as evidenced by the charred seed remains and fired clay, in the construction process indicates that this material was already to hand by the time the building was constructed. It is therefore likely that this structure was an

extension to pre-existing settlement situated within an established agricultural landscape, in which the agricultural infrastructure had already been established. This is supported by the existence of an established drainage system underlying the building. The palaeoenvironmental analysis also indicates the presence of pasture in the immediate vicinity, however, the bone assemblage at Great Pencarn Farm is too poor to assess the nature of any animal husbandry. The economy of the site was based on mixed farming, and can be seen in the context of other farmsteads with a similar economic base identified in southern Monmouthshire such as Thornwell and Caldicot. These settlements are usually of a low status and poorly Romanised, stone buildings are a rarity and pottery assemblages are dominated by coarsewares. It is these assemblages that the pottery from Great Pencarn Farm most closely reflects, with the abundance of Black-burnished 1 wares, rather than the assemblage from the closer physical parallel at Stoop Hill, with its high proportion of Severn Valley wares. Given the earlier *terminus ante quem* of the assemblage from Stoop Hill (although this only totalled 88 sherds and so may not be considered statistically viable), it is therefore possible to see the increase in proportionality of BB1 as a function of time. Allen and Fulford (1996) have plotted the distribution of Romano-British pottery types, specifically BB1, in South-Western Britain. This shows a high proportion of BB1 is to be expected on the Wentlooge Level in comparison to all other coarseware types (40% plus) and around 20% on the Caldicot Level as a percentage of the total assemblage. The pottery from Great Pencarn Farm fits comfortably within these guidelines being slightly over 40% by sherd count.

The floral remains show that immediately prior to the building's construction, a mixed agricultural economy was in existence. The floral remains indicate a landscape which includes both cultivated grasses and species associated with a pastoral landscape. In the historic period the land use reflects the nature of the soil. The 1844 Tithe Map of Bassaleg shows that the gravel terraces were used predominantly for arable crops, the alluvial lowlands for pasture, the divide between the two being the alluvial interface. It does not seem unreasonable to postulate a similar division in the Romano-British period; the drier well-drained soils on the gravel terraces being more suitable for arable crops, the heavier clay soils on the Levels being used for pasture. Drainage of land used for pasture would not need to be nearly as intensive as that for arable crops, nor would periodic inundation be anywhere near as disastrous, cattle and horses being quite at home in boggy environments. Thus any initial drainage systems would not need to be very extensive, and may merely have consisted of shallow features designed to funnel off surface water into existing natural watercourses. Such a system appears to be in existence at Nash (Yates 1997). It seems likely that at least initially this divide between arable dryland and pastoral wetland would have been apparent, however, as drainage increased in intensity and reliability, a more mixed approach to agricultural activity on the Levels may have been possible, and settlements on the alluvium itself become viable. Any Roman drainage system would not then need to be constructed in a single large endeavour but can be seen as evolving over a period of time. This process would result not in large coherently planned landscapes, but smaller episodes of enclosure of individual land parcels and would bear a similarity to the medieval drainage and enclosure systems seen on the levels today.

As stated above it is argued that the present drainage system is either Roman or Medieval origin. Rippon (1996), argues that the post-Roman period saw a degree of flooding and alluvial deposition, the vector for this event being the River systems feeding into the Severn Estuary; the Ely, Usk and Wye. This resulted a greater depth of material being deposited on the fringes of the levels, decreasing in proportion with distance from the water courses. The results from Great Pencarn farm would seem to fit in with this hypothesis, as only 0.4m of post-Roman deposits overlay the site, a minimal amount of post-Roman alluviation can have occurred. This is in contrast to the sites identified on the southern fringes of the Levels, at Nash and Goldcliff, where up to 1.2m of alluviation overlies the Roman drainage features.

In conclusion, the building excavated at Great Pencarn Farm is an outlying part of a larger farmstead whose focus lies on the solid geology to the north and east. The analysis of samples indicates a mixed arable and pastoral economy and the ceramics show that this was a site towards the lower end of the of the hierarchy of Roman rural settlements, being typical of such sites in south-east Wales. The occupation began in the late 2nd Century and ended by the early 4th, and in this respect it is similar to other Roman sites on the soft alluvium (Nash, 2nd-3rd Century, Sell 1997; Rumney Great Wharf, 2nd Century-4th Century, Allen et al 1986; Goldcliff 2nd-4th Century, Locock 1997 and Brennan 1994), rather than sites such as Caldicot and Thornwell which show a continuity of occupation from the prehistoric period to the end of the Roman occupation. The closest typological parallel is the site at Stoop Hill, which is somewhat earlier than Great Pencarn Farm. Thus, although parallels can be drawn with a number of sites, Great Pencarn Farm cannot be said to be the same as any of them, but rather incorporates features common to several of the sites identified above. The area excavated only form a small outlying part of a larger settlement, and until the rest of this is excavated it is not possible to say whether the site belongs to the tradition of farmsteads on the solid geology or to the sites identified on the levels. It may be that this site is a bridge between the two, situated on the very fringe of the solid geology and the alluvium, its construction may reflect part of a movement towards a more intensive exploitation of the Wentlooge Level in the 2nd and 3rd Centuries AD.

Appendix 1: Site context data

Table 8: Summary of site context data

Context	Type	Date	Description
022	L	P-M	Plough soil
031	L	R	Cobble revetment
040	L	Post-R	Post-Roman Alluvium (=155)
155	L	Post-R	Post-Roman alluvium
156	L	R	Cobbled surface-building interior
157	L	R	Fill of 167 = 168
158	L	R	Cobble wall foundation, fill of 173
159	L	R	Fill of 173- lower
160	L	R	Flat stones -post pad- fill of 178
161	C	mod	Field drain cut
162	L	mod	Fill of 161
163	L	PreH	Alluvium immediately below roman features
164	L	R	Road cobbling
165	C	R	Cut for beam slot
166	L	R	Fill of beam slot 165
167	C	R	Drainage ditch cut
168	L	R	Fill of 167 =157
169	L	R	Cobble fill of foundation trench 190
170	L	R	Cobble patch- remains of surface or ploughed out from road.
171	L	R	Fill of beam slot 165
172	L	R	Post Roman alluvium leached into 165 =155
173	C	R	Foundation trench
174	L	R	Fill of pit 178
175	L	R	Fill of pit 178
176	L	R	Natural sandy/silt = 197 =233
177	L	PreH	Natural alluvium = 194
178	C	R	Pit- part of foundation for S wall of 244
179	L	mod	Fill of land drain 180
180	C	mod	Land drain cut
181	L	R	Linear band of stone- plough damage/ feature
182	L	R	Cobble patch/ building floor
183	C	mod	Field drain cut
184	L	mod	Fill of 183
185	L	R	Occupation horizon associated with cobbles internal to building
186	L	R	Burnt clay fill of hearth 188
187	L	R	Fill of hearth 188
188	C	R	Scoop for hearth
189	L	R	Cobble patch- remains of surface
190	C	R	Possible foundation trench
191	L	R	Possible post-pad
192	L	R	Cobble patch, plough damage
193	L	PreH	Peat = 231
194	L	PreH	Alluvium = 177
195	L	PreH	Alluvium
196	L	PreH	Peaty clay
197	L	PreH	Sandy silt =176 =233
198	L	PreH	Alluvium
199	L	R	Fill of stake-hole 219

200	L	R	Fill of stake-hole- no cut seen
201	L	R	Fill of stake-hole -no cut seen
202	L	R	Fill of stake-hole -no cut seen
203	L	R	Fill of stake-hole -no cut seen
204	L	R	Fill of stake-hole 220
205	L	R	Fill of stake-hole -no cut seen
206	L	R	Fill of stake-hole 221
207	L	R	Fill of stake-hole 222
208	L	R	Fill of slot 223
209	L	R	Fill of stake-hole 224
210	L	R	Fill of stake-hole 225
211	L	R	Fill of stake-hole -no cut seen
212	L	R	Fill of stake-hole -no cut seen
213	L	R	Fill of stake-hole -no cut seen
214	L	R	Fill of stake-hole 226
215	L	R	Fill of stake-hole 227
216	L	R	Fill of stake-hole -no cut seen
217	L	R	Fill of stake-hole -no cut seen
218	L	R	Fill of stake-hole 228
219	C	R	Stake-hole filled by 199
220	C	R	Posthole filled by 204
221	C	R	Stakehole filled by 206
222	C	R	Stakehole filled by 207
223	C	R	Slot/gully filled by 208
224	C	R	Post/stakehole filled by 209
225	C	R	Stakehole filled by 210
226	C	R	Stakehole filled by 214
227	C	R	Stakehole/slot filled by 215
228	C	R	Stakehole filled by 218
229	C		Ditch filled by 230, only seen where cutting peat 193
230	L		Ditch fill of 229
231	L	PreH	Natural peat = 193
232	L	R	Fill of drainage ditch 234
233	L	PreH	Natural sandy-silt = 176 = 197
234	C	R	Drainage ditch filled by 232
235	L	PreH	Natural alluvium
236	C	R	Drainage ditch filled by 237
237	L	R	Fill of drainage ditch 236
238	C	R	Roadside ditch filled by 239
239	L	R	Fill, of ditch 238
240	C	R	Roadside ditch filled by 241
241	L	R	Fill of ditch 240
242	L	R	Road material spilled from road surface 164
243	S	R	Group No for road assigned post-ex, comprises 164, 238, 239, 240, 241, 242
244	S	R	Group No for building comprising 031, 156, 165, 173, 178, 188 and possibly 170, 181, 169, 190, 191

Appendix 2: Summary of finds archive

Roman Pottery

	Context	*No*	*Wt (kg)*		*Description*
Samian	022		11	0.070	including ?Dr.45
	031		1	0.020	
	155		80	0.440	16 (13?)
	156		1	0.002	
	158		4	0.030	
	159		5	0.208	
	168		1	0.010	
	171		1	0.006	
	182		1	0.004	
	187		1	0.006	
	Totals		106	0.796	
Mortarium	022		1	0.018	Caerleon
	155		4	0.302	1 Caerleon, Oxford white
	159		1	0.014	Oxford white
	Totals		6	0.334	1
Amphora	155		10	0.156	
	159		1	0.002	
	192		1	0.042	
	Totals		12	0.200	

Brick and tile

Context	*No*	*Wt (kg)*
022	2	0.096
155	3	0.674
Totals	**5**	**0.770**

Fired clay

Context	*No*	*Wt (kg)*
155	3	0.008
158	5	0.044
159	52	0.326
Totals	**60**	**0.378**

Pre-Roman pottery

Context	*No*	*Wt (kg)*
031	1	0.004
155	2	0.018
168	2	0.008
Totals	**5**	**0.030**

Ironwork

Context	*No*	*Wt (kg)*	*Description*
022	2	0.018	include boot-heel, see below
155	5	0.140	4 nails
158	1	0.006	1 nail
159	2	0.080	shaft
Totals	**10**	**0.244**	

Items of bronze

Context	*No*	*Wt (kg)*
158	1	0.001
163	1	0.054
Totals	**2**	**0.055**

Items of lead

Context	*No*	*Wt (kg)*
155	1	0.014
182	1	0.020
Totals	**2**	**0.034**

Items of stone

Context	*No*	*Wt (kg)*	*Description*
022	1	0.068	
155	9	1.262	includes ? whetstone
163	1	0.310	? rubber
168(003)	1	0.250 ?	quern fragment
192	1	0.004	
Totals	**13**	**1.894**	

Post-Roman finds

	Context	*No*	*Wt (Kg)*
Pottery	001	1	0.012
	022	12	0.080
	155	4	0.020
	179	7 (?1)	0.042
	Totals	24(?18)	0.154
Glass	022	12	0.180
	155	1	0.024
	101	1	0.018
	155	1	0.008
	Totals	15	0.230

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Plate 1: General view over site during excavation view to west

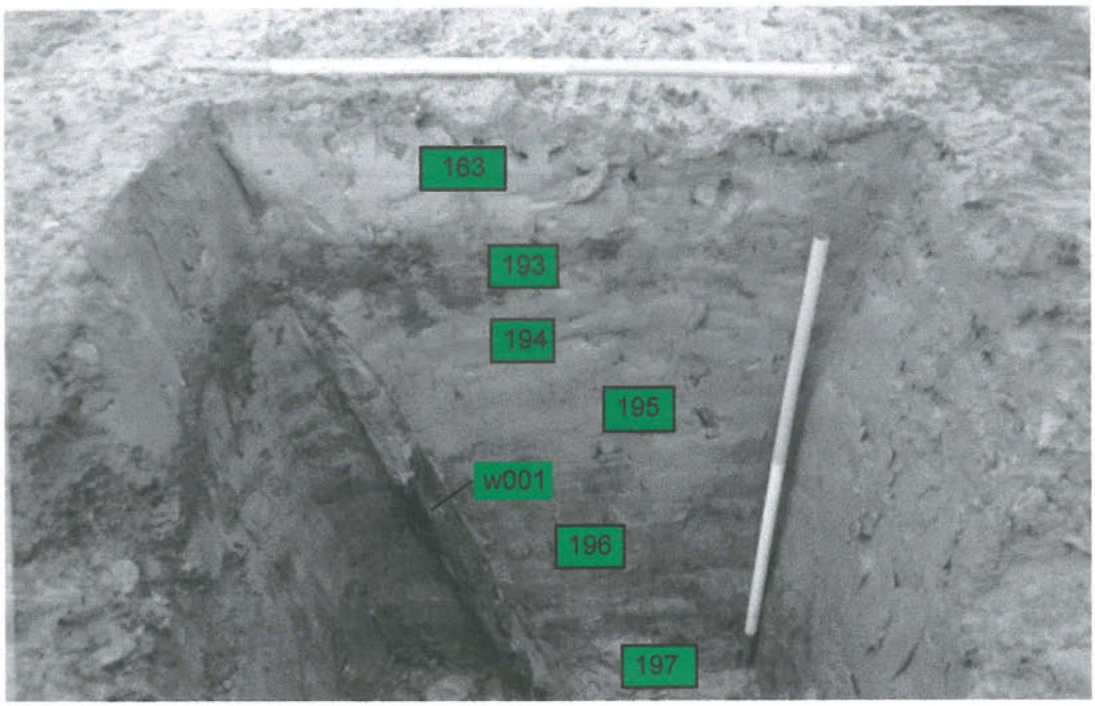


Plate 2: Upright post w001 *in situ* view to south

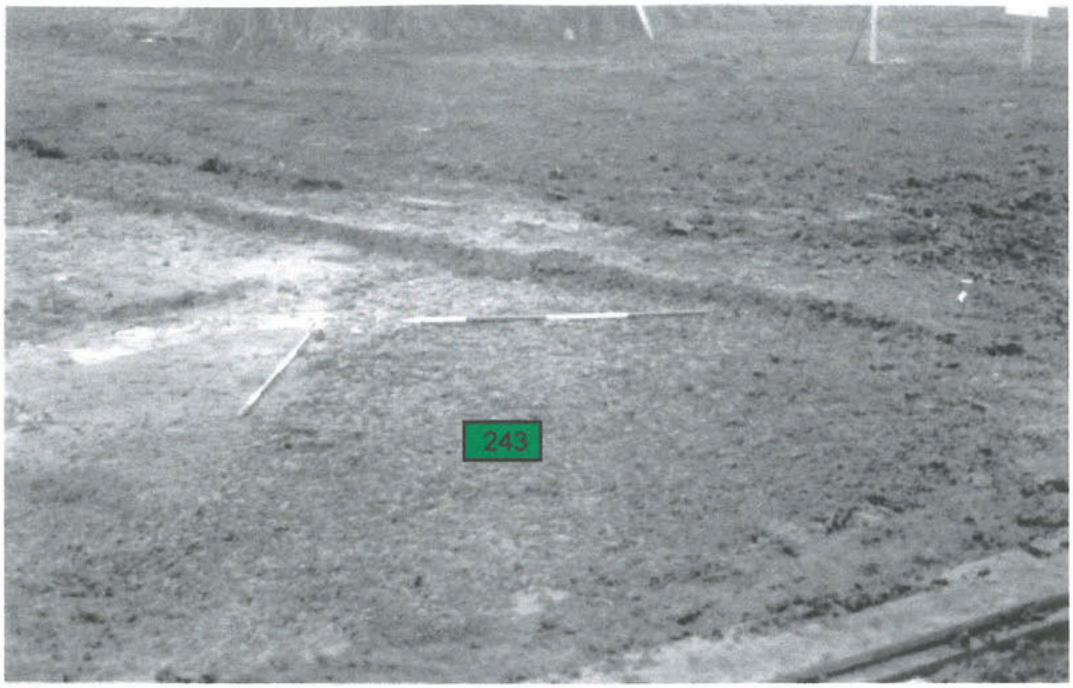


Plate 3: Road 243 view to northeast

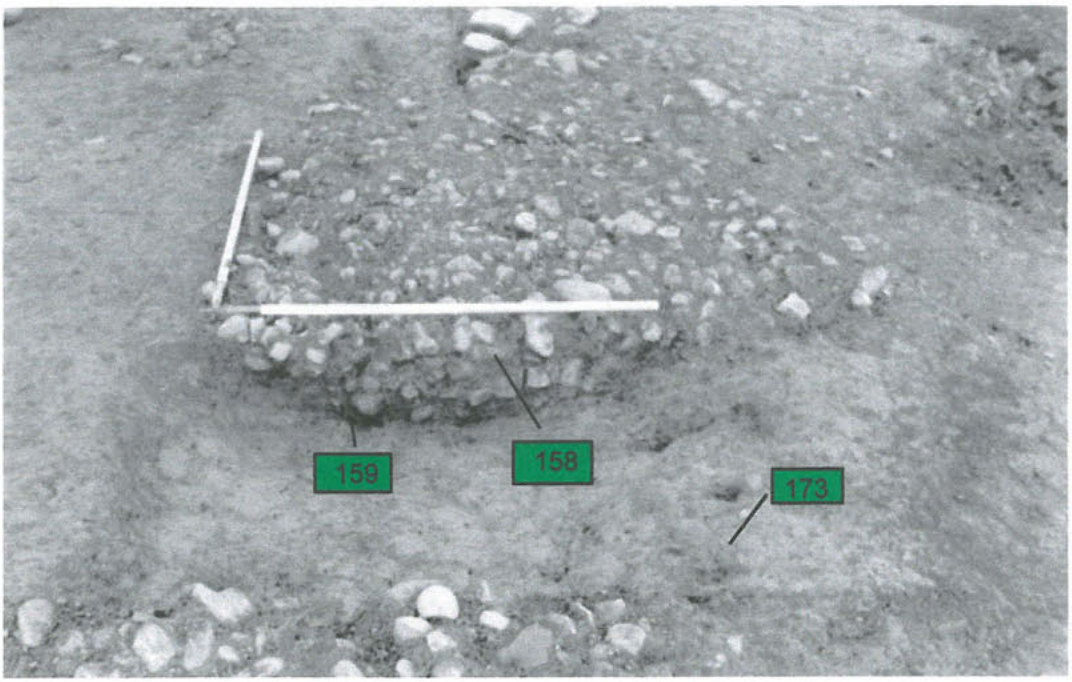


Plate 4: Ditch 173 view to southeast

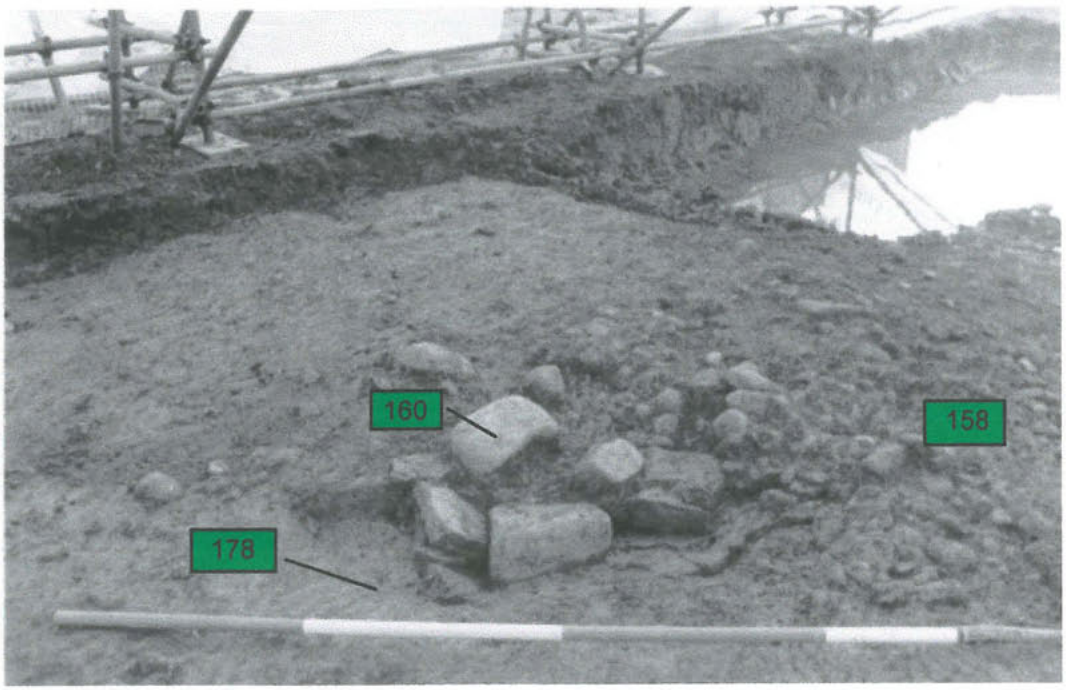


Plate 5: Pit 178 view to southwest

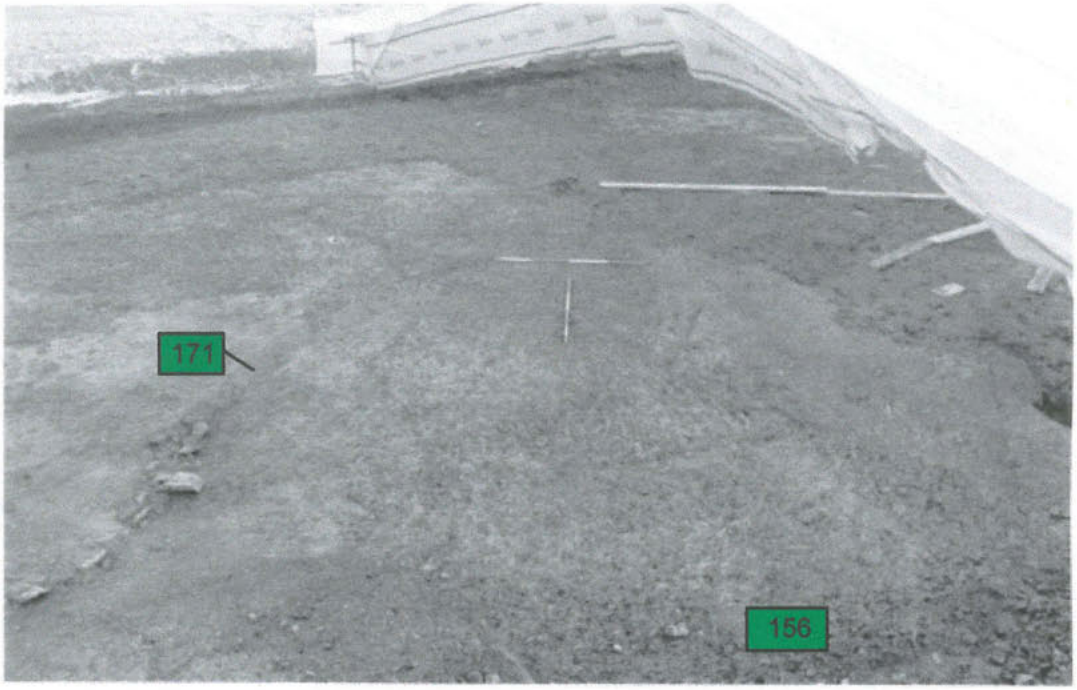


Plate 6: East end of site Phase 3 features view to southwest

Plate 7: Copper bowl at 1:1

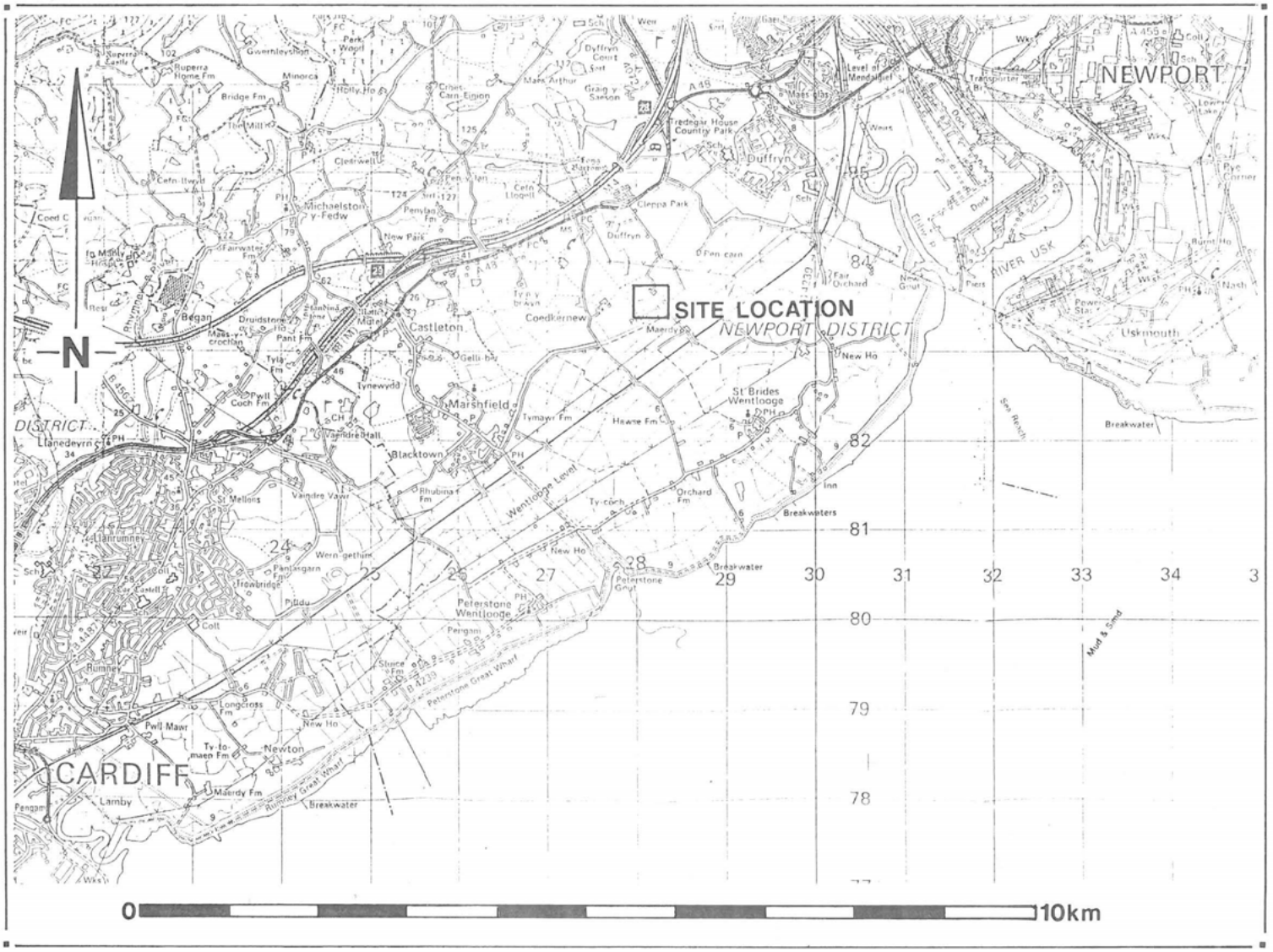


Figure 1: Site location

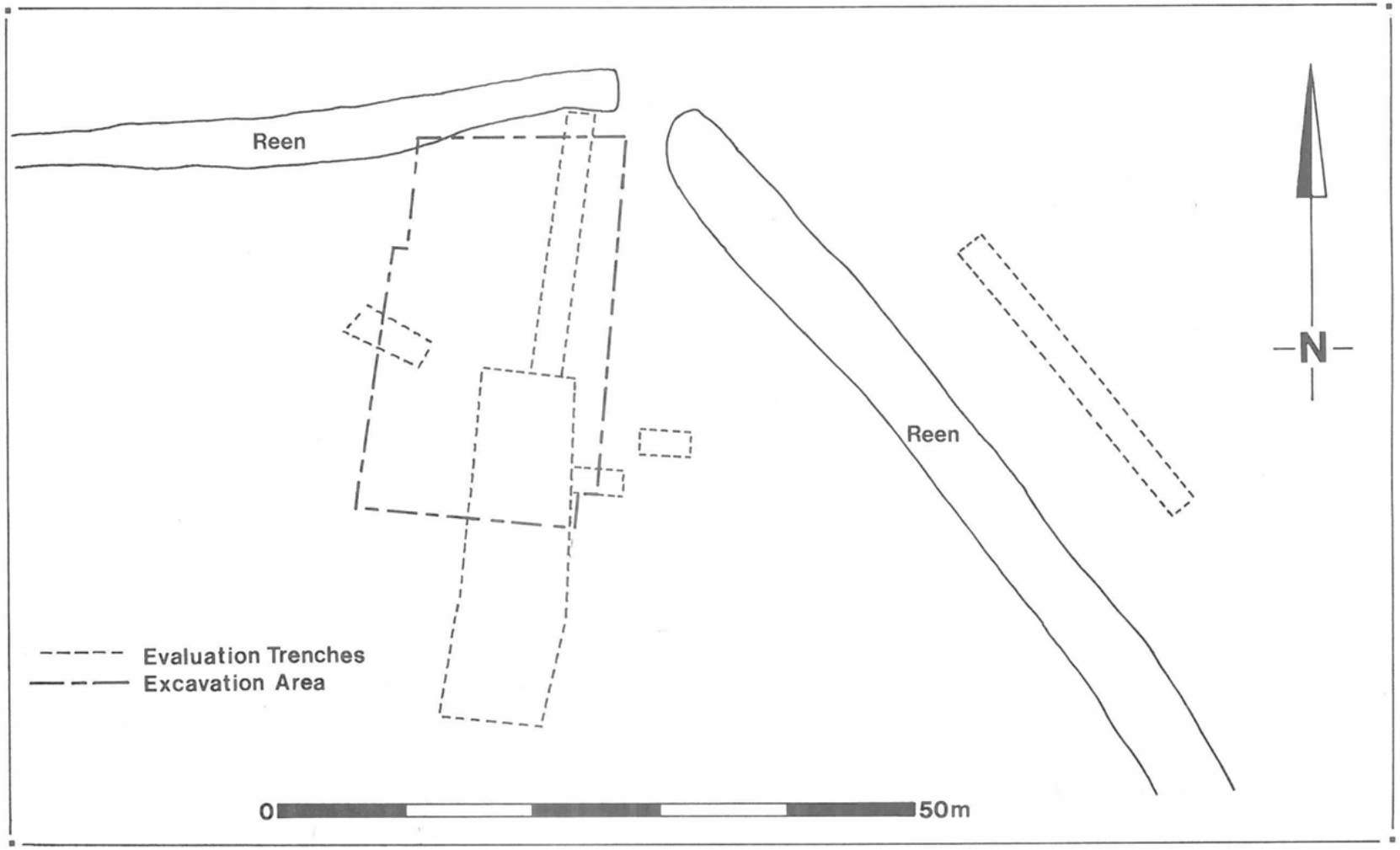


Figure 2: Trench location

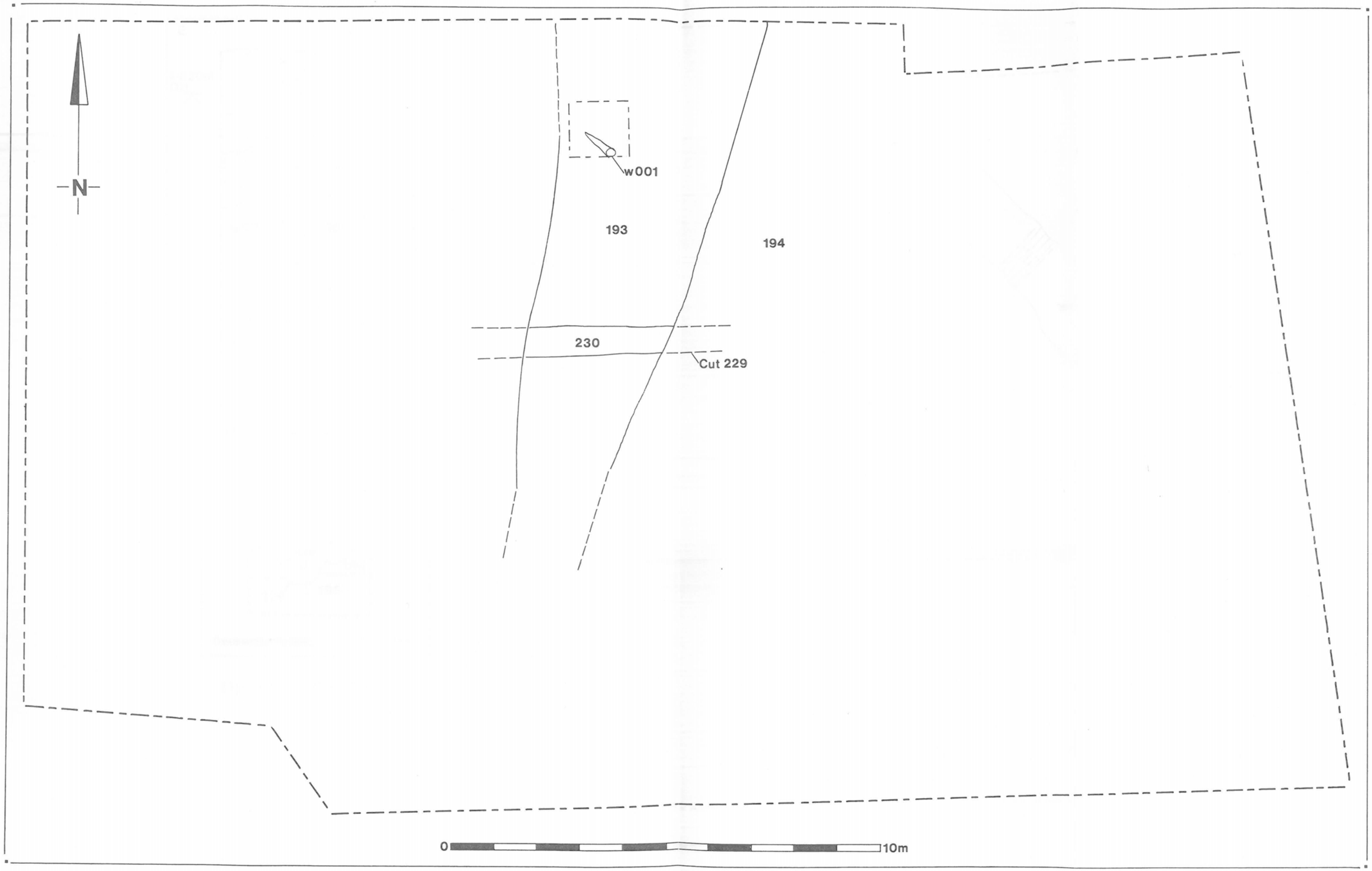
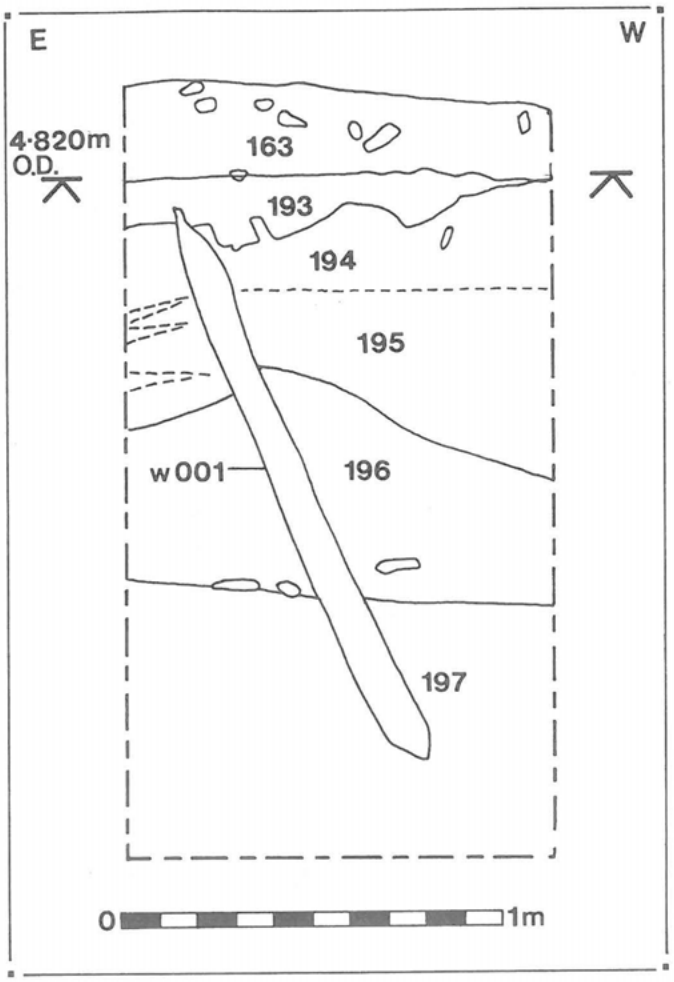


Figure 3: **Plan of Phase 1 features**



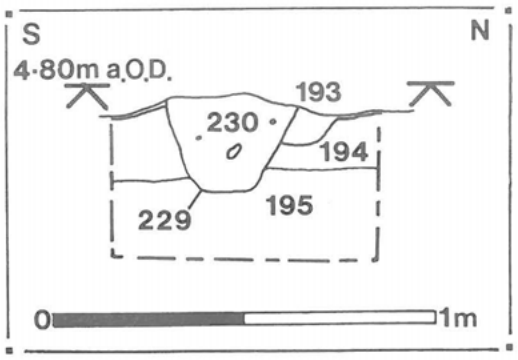


Figure 4: Phase 1 sections

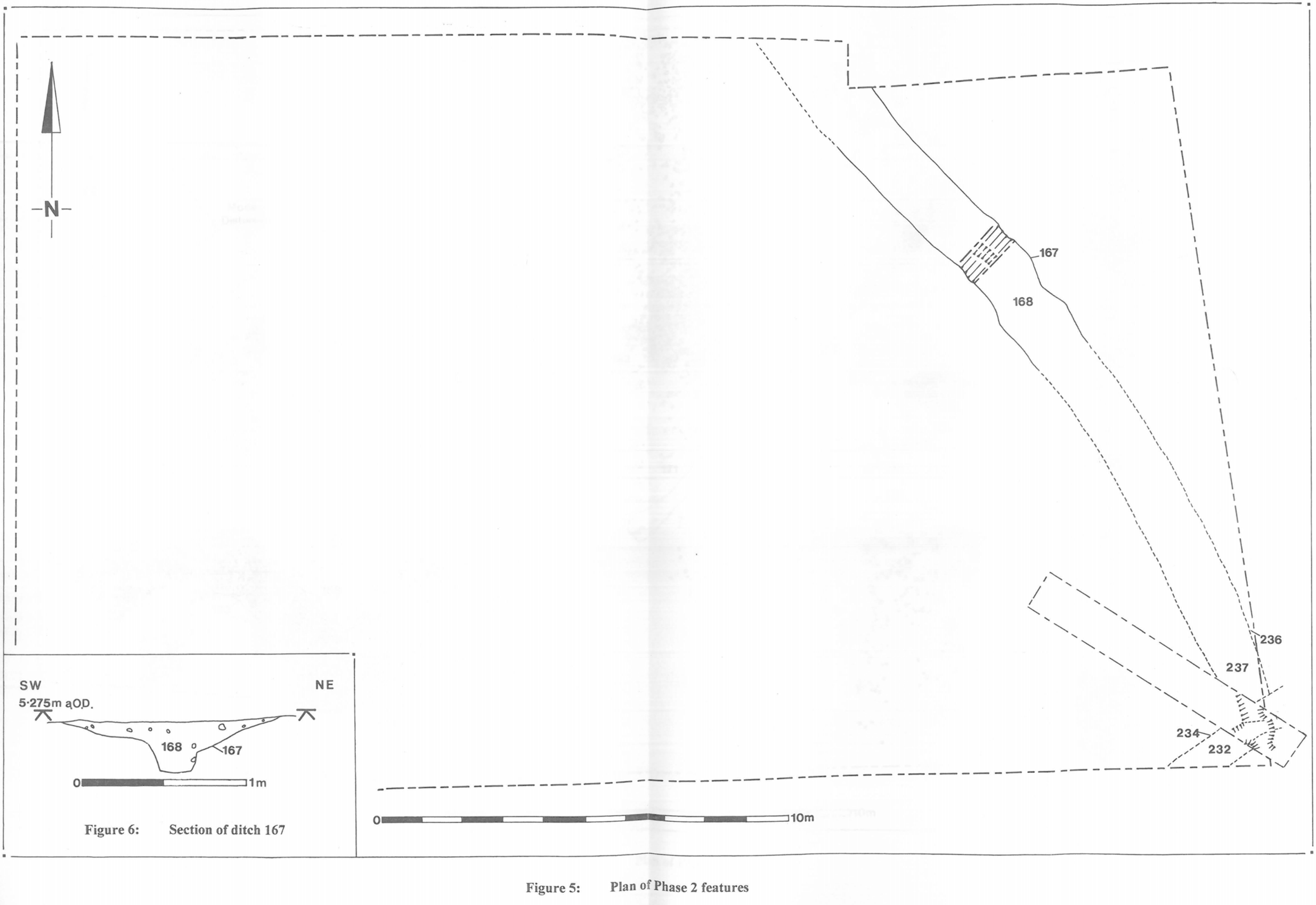


Figure 5: Plan of Phase 2 features

Figure 6: Section of ditch 167

Figure 7: Plan of Phase 3 features

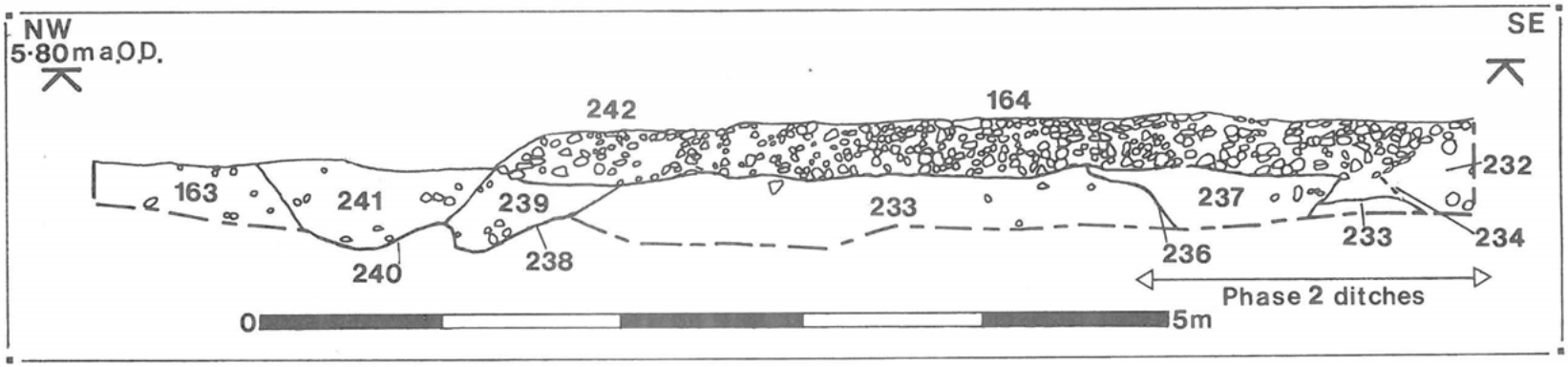
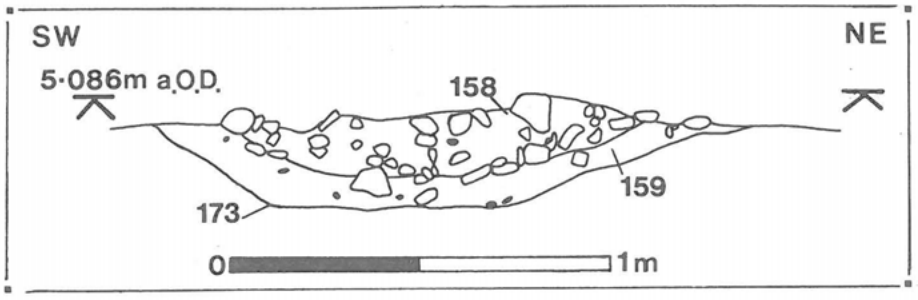
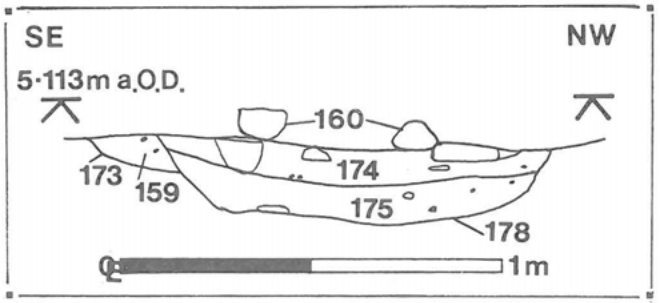
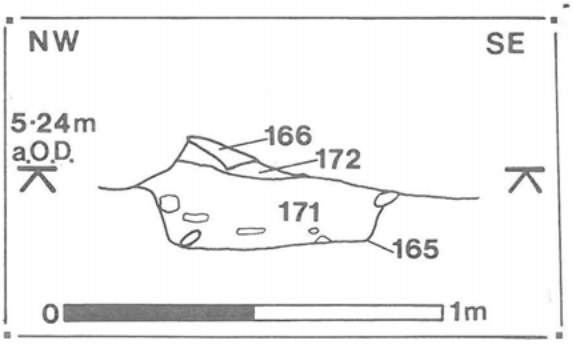


Figure 8: Section through road 243







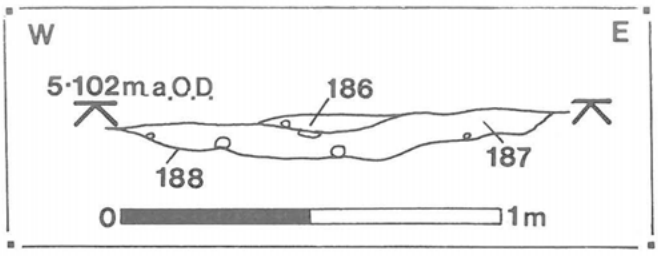


Figure 9: Phase 3 sections

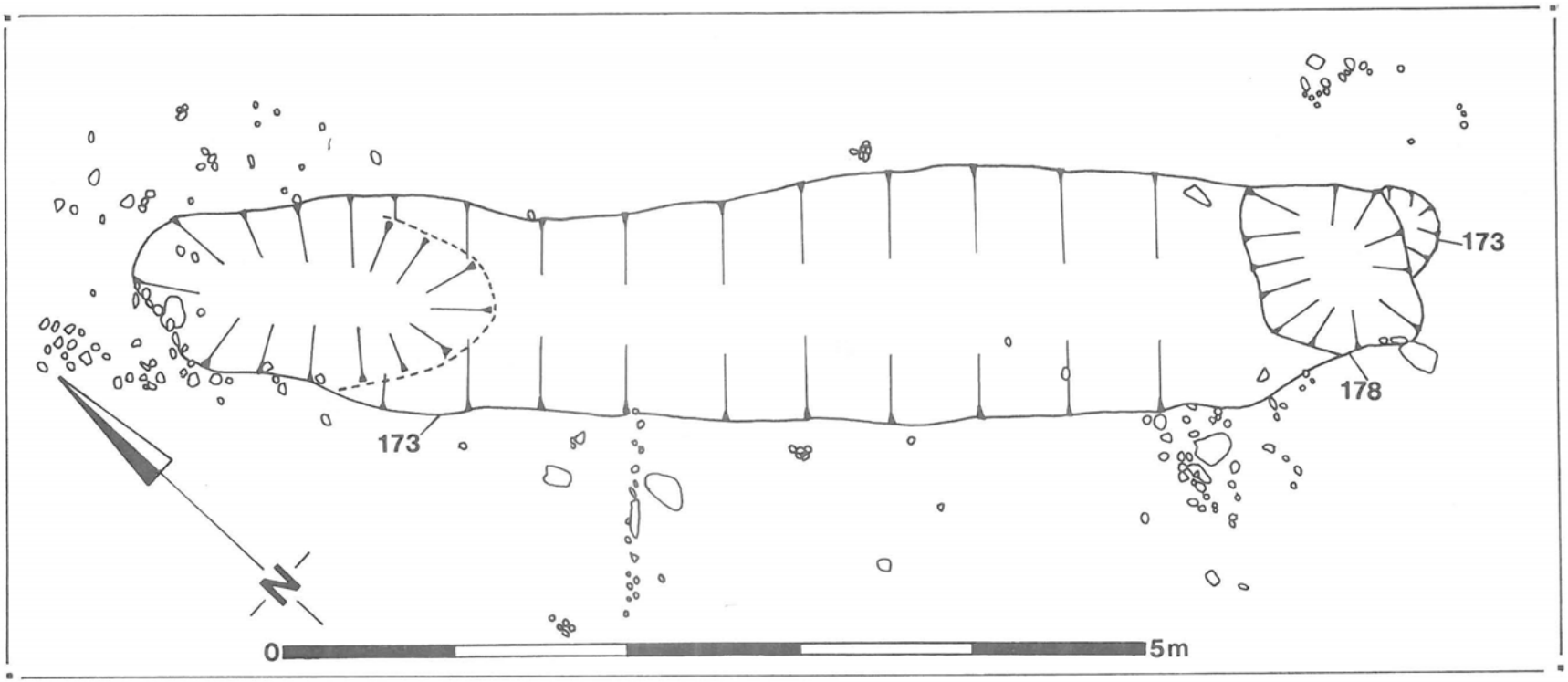


Figure 10: Ditch 178 and pit 173 post-excavation

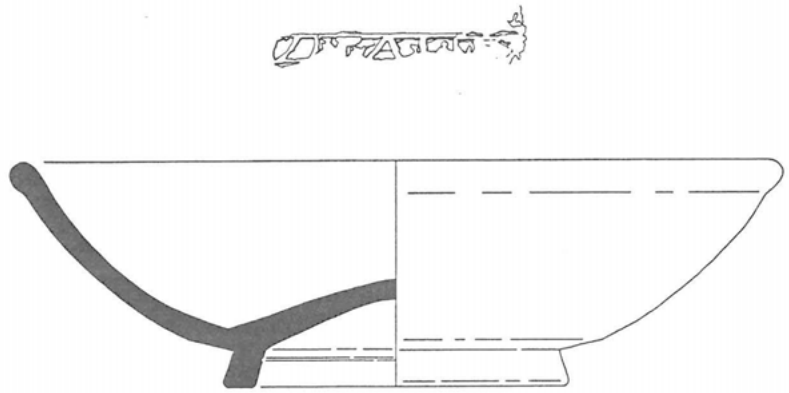


Figure 11: Samian ware at 1:2 (stamp at 1:1)

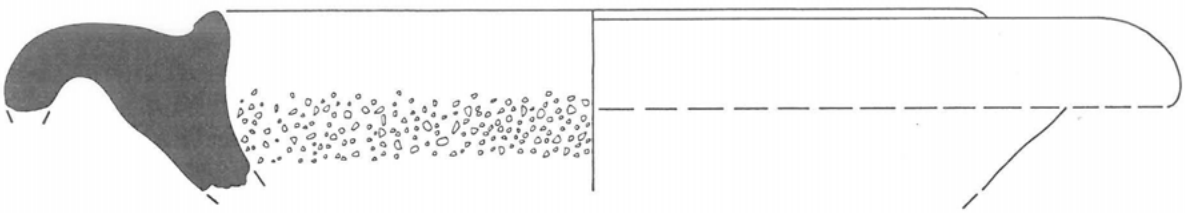


Figure 12: Mortarium at 1:2

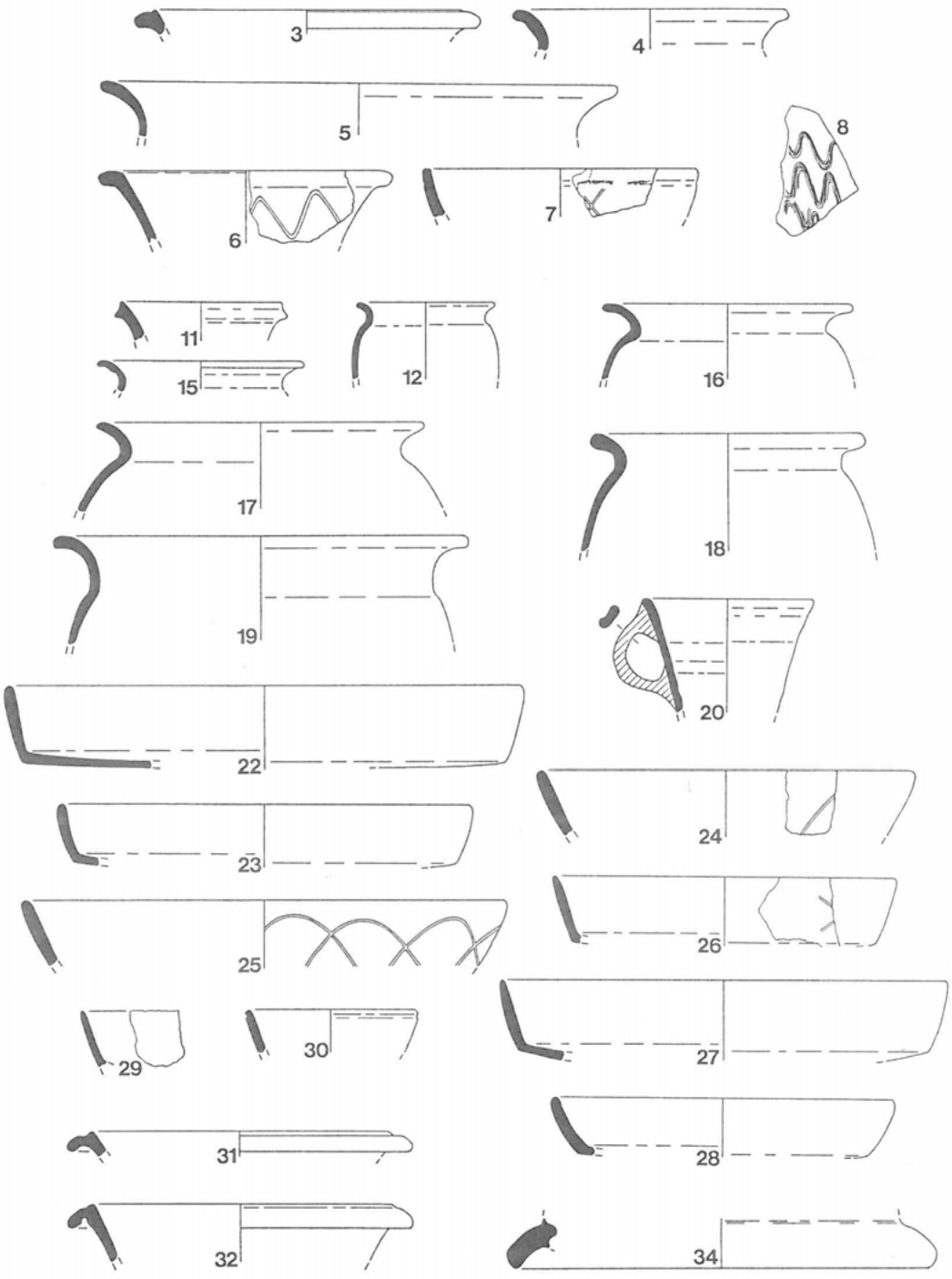


Figure 13: Coarse pottery at 1:4

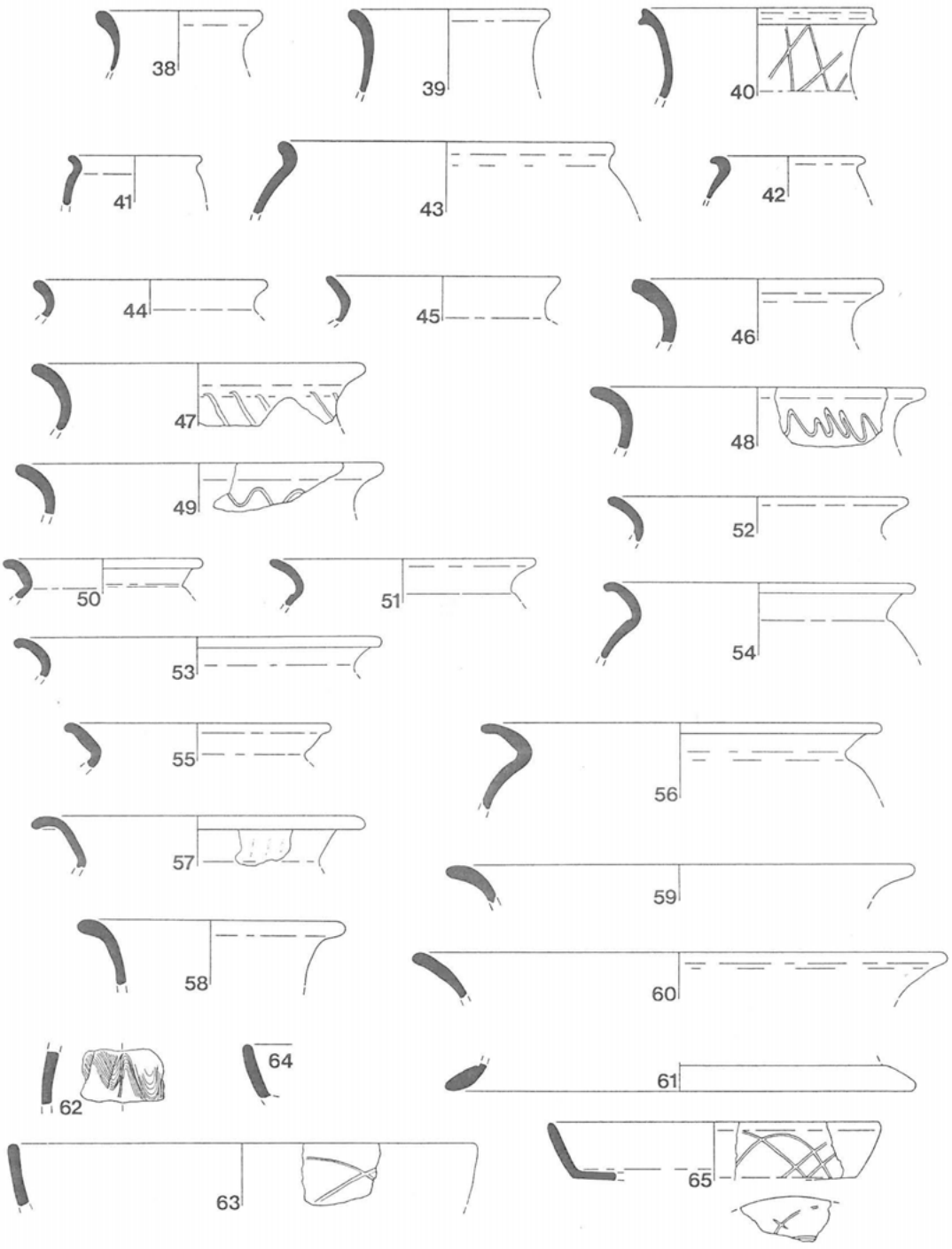


Figure 14: Coarse pottery at 1:4

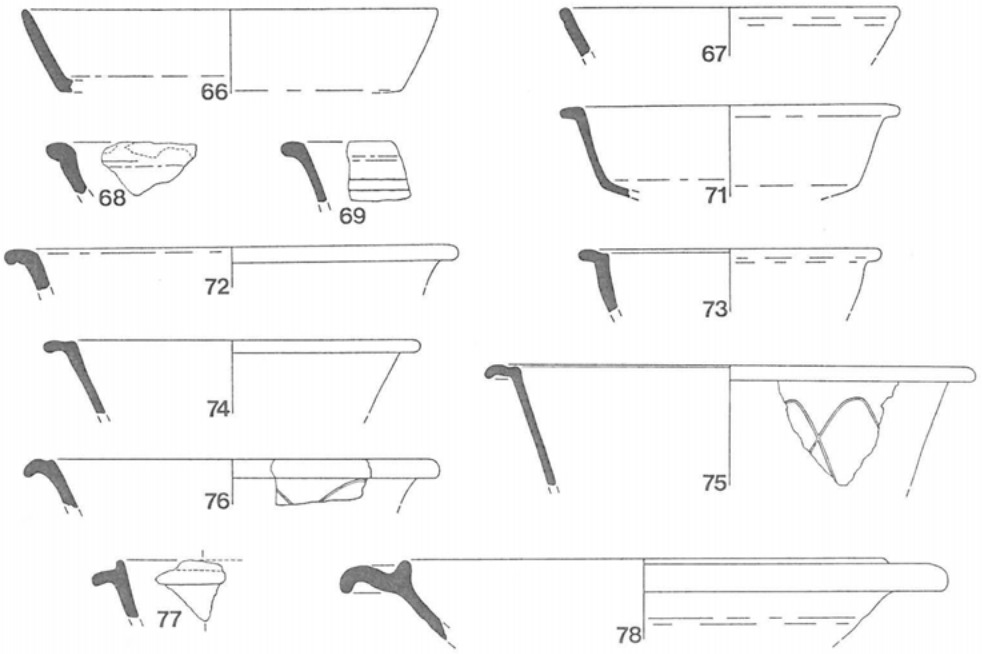


Figure 15: Coarse pottery at 1:4

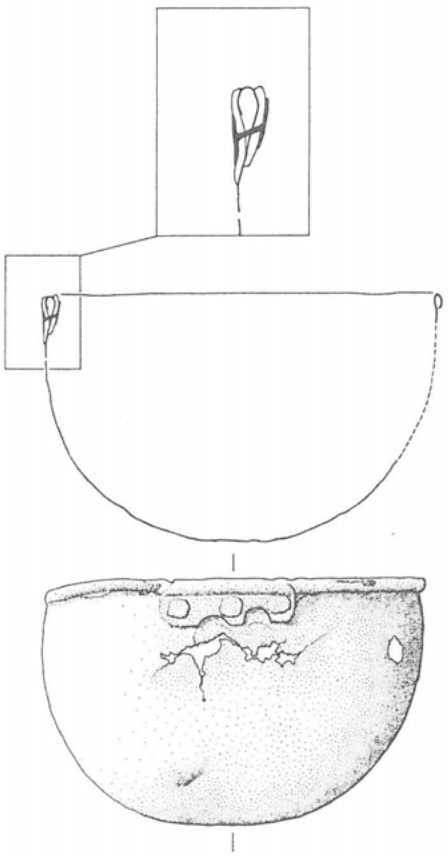


Figure 16: Items of bronze at 1:2 (inset at 1:1)

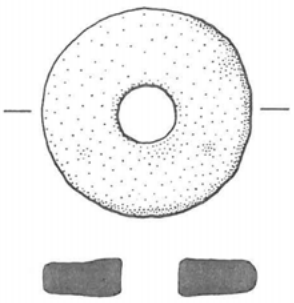


Figure 17: Items of lead at 1:1

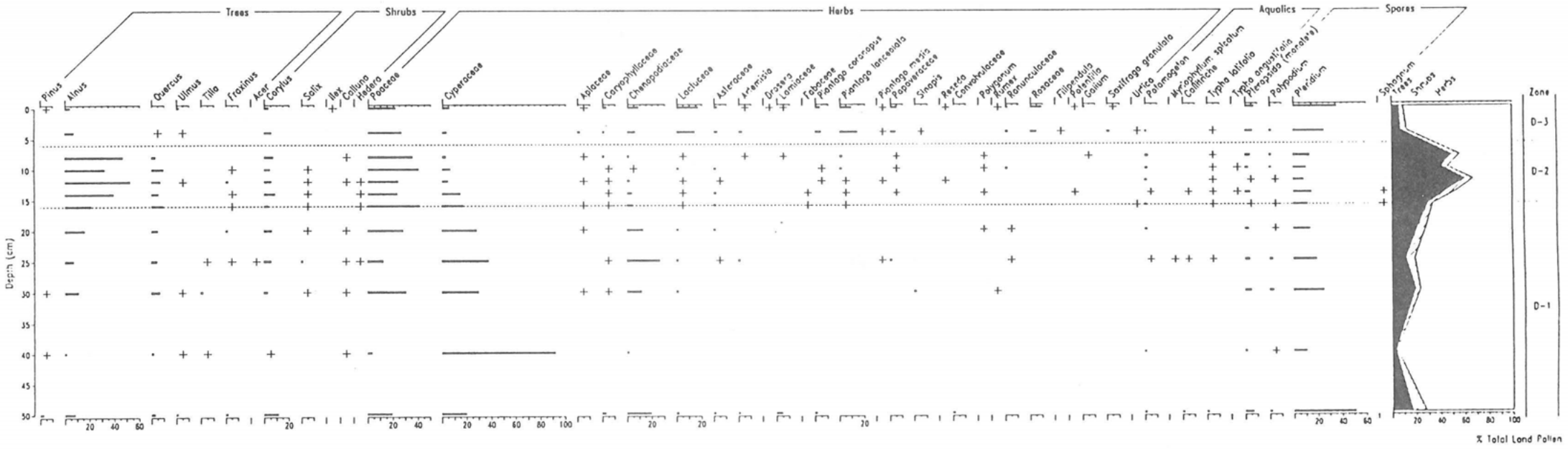


Figure 18: Pollen diagram

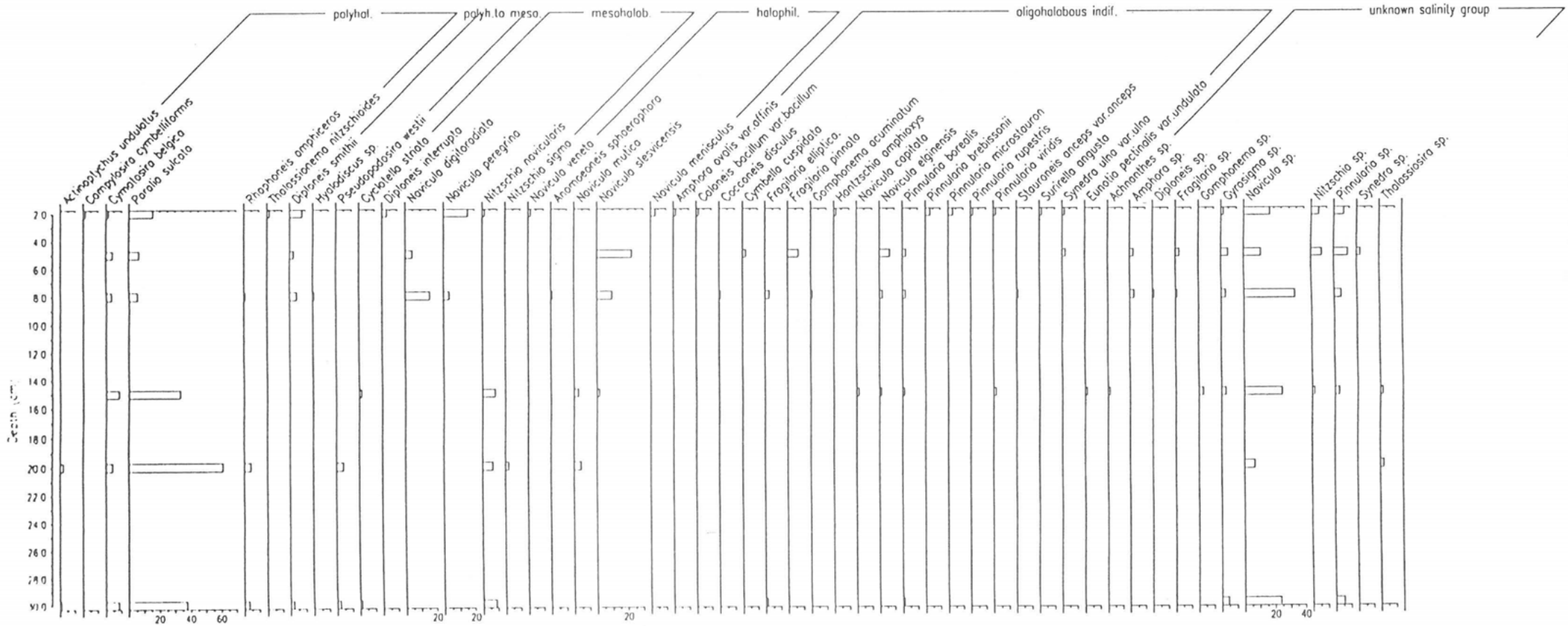


Figure 19: Diatom diagram

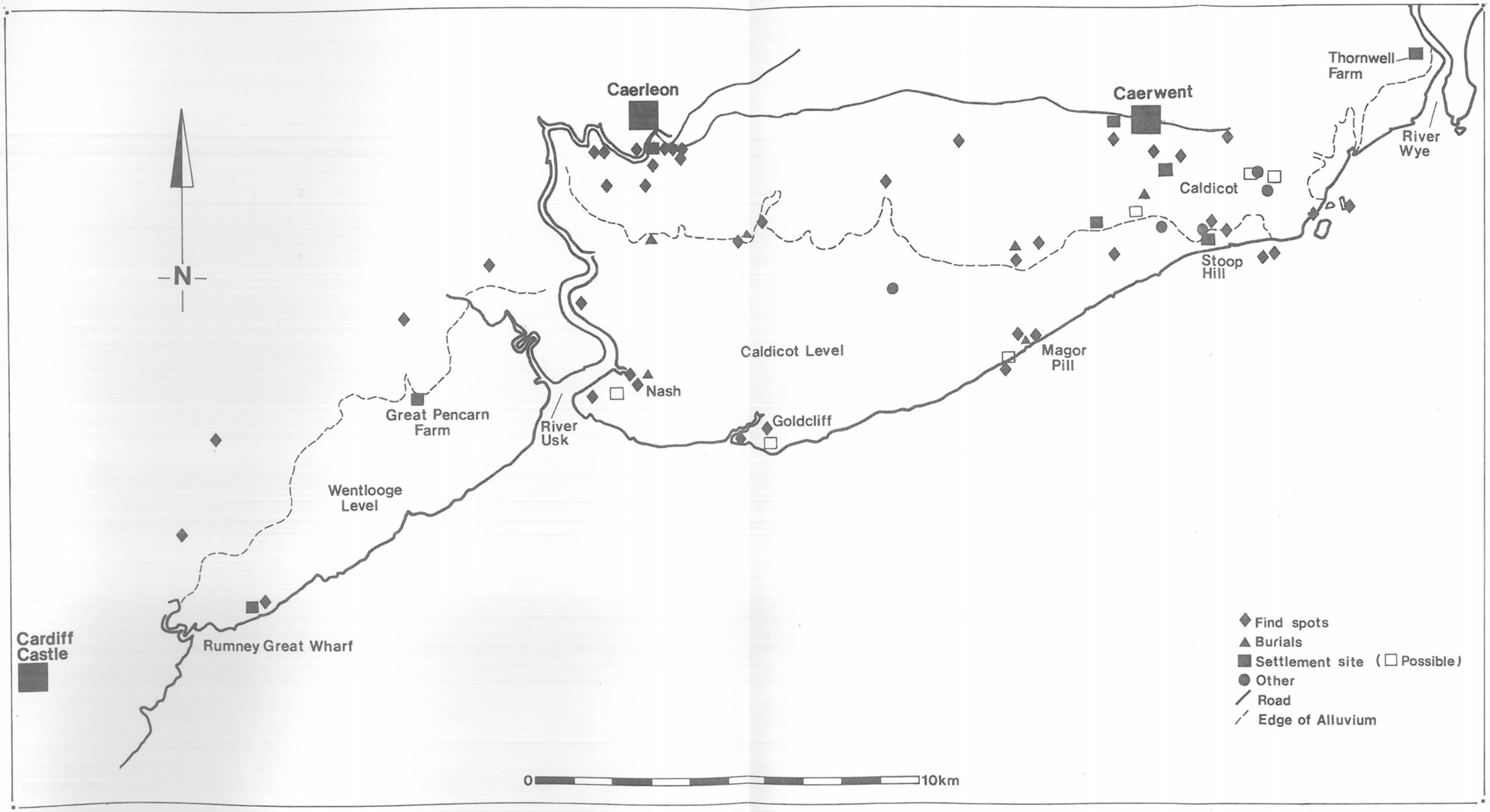


Figure 20: Roman sites in south-east Wales