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Archaeological Evaluation at South Quay, Pembroke Final Report

March 1995

Report prepared for South Pembrokeshire District Council

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1.0 INTRODUCTION

1.1 Project background

1.1.1 South Pembrokeshire District Council intends to redevelop the existing North and South Quays at Pembroke. In response to recommendations made by the Planning Authority's archaeological advisers, a desk-based Archaeological Assessment of the area was undertaken by the Dyfed Archaeological Trust in July 1993[1]. From the results of that work it was further recommended that an Archaeological Field Evaluation of the area should be carried out.

1.1.2 In November 1994, the Glamorgan-Gwent Archaeological Trust (Contracts) was commissioned by the District Council to undertake a field evaluation of the South Quay part of the development area. It was intended that the fieldwork should comprise both an archaeological evaluation and a geotechnical site investigation.

1.1.3 The fieldwork was undertaken over a four-week period from November 23rd to December 16th 1994. This work comprised three elements: (a) the excavation of three hand-dug trenches in the gardens lying south of the town wall; (b) the excavation of three machine-cut trial pits in the car park north of the wall, and (c) the drilling of four boreholes in this car park.

1.2 Specification

1.2.1 A brief for the evaluation was drawn up by Dyfed Archaeological Trust (Curatorial Section) on behalf of South Pembrokeshire District Council. The brief was fully detailed, and it was not necessary to prepare an independent set of specifications.

1.3 Reporting

1.3.1 A preliminary report on the results of the evaluation was submitted to SPDC in January 1995[2]. The present (and final) report provides a full description of the investigations supplemented by detailed reports on the artefacts and a catalogue of excavation data. The geotechnical investigations were undertaken by Thyssen Geotechnical, and have been reported separately[3].

1.4 Acknowledgements

1.4.1 This project has been managed for GGAT Contracts by Martin Locock (Project Manager - Assessments). The fieldwork was undertaken by David Andrews, Andrew Jones, Martin Lawler, Richard Ramsey and Hubert Wilson and the report was prepared by Martin Lawler. Finds processing and analysis were carried out by Joyce Compton and Steve Sell (GGAT Central Services), with additional input from Martin Locock.

1.4.2 The Trust is grateful to the individuals and organisations who have assisted during the fieldwork. Particular thanks are due to Jeremy Evans (South Pembrokeshire District Council) and Heather James (Dyfed Archaeological Trust) for their ready co-operation and advice. We are also grateful to Colin Plumb, Paul Baldini and John Stark (Thyssen Geotechnical Ltd), to Ray George (Slowikowski, Blackshaw and Partners) and Gruff Rowlands (Consultant Engineer), and to Michael Davies

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[1] *Ludlow N 1993* North and South Quay, Pembroke: an initial archaeological assessment *Report by the Dyfed Archaeological Trust for South Pembrokeshire District Council.*

[2] *Lawler M 1995* Archaeological evaluation at South Quay, Pembroke *GGAT Report No 95/002 prepared for SPDC.*

[3] South Quay, Pembroke: ground investigation factual report *Report No A5.0150 prepared by Thyssen Geotechnical for GGAT, Feb 1995.*

(Davies Sutton Architecture). Information from the Dyfed Sites and Monuments Record was made available through the courtesy of Jenny Hall. Cathy Freeman and Dr Paul Courtney have kindly commented on the pottery.

1.5 Copyright notice

1.5.1 The Glamorgan-Gwent Archaeological Trust holds the copyright of this report and has granted a licence to South Pembrokeshire District Council to use and reproduce the material contained within.

2.0 METHODOLOGY

2.1 Trench/ trial pit numbering

2.1.1 Because the overall investigation has consisted of four separate types of investigation (ie hand-dug trenches, machine-cut trial pits, cable-tool boreholes and hand-drilled auger holes), it has been necessary to use a numbering system which distinguishes each type.

2.1.2 The numbering systems used in this report are as follows:

- *Hand-dug trenches.* These are described as Trench 1, Trench 2 etc.
- *Machine-cut trial pits.* These are always described as trial pits (rather than trenches), and are numbered TP 1, TP 2 and TP 3.
- *Cable-tool boreholes.* These are numbered BH 1, BH 2, BH 3 etc.
- *Auger holes.* These are numbered AH 1, AH 2, AH 3 etc.

2.1.3 All individual soil units and archaeological features (whether from trenches, trial pits or boreholes etc) have been given an archaeological context number. A single context series has been used throughout. The context numbers are expressed as three digit numbers, and underlined (eg 001, 002, 015, 056 etc).

2.2 Archaeological trenches and auger holes

2.2.1 The original intention of the evaluation had been to excavate a fairly extensive series of hand-dug trenches through the rear gardens of the four properties (ie Nos 4-7 Castle Terrace). These would have included three deep trenches in Nos 5, 6 and 7, ranging from 6m to 14m in length, orientated north-south and adjoining the town wall. The three deep trenches adjoining the town wall were to be supplemented by a continuous trench running east-west, and extending for 27m across almost the full width of the four gardens, through breaches in the standing garden walls[1].

2.2.2 In practice, it was found that the nature of the site (particularly the lack of access for machinery, the potential instability of the standing walls, the restricted space for spoil tipping and the substantial depth of recent deposits) presented considerable difficulties for an evaluation on this scale. It was felt that a more limited programme of hand-dug trenches, supplemented by some hand-augered holes, would provide most of the basic archaeological information required for the evaluation, while recognising that the evidence would not be as comprehensive as hoped.

2.2.3 *Trench 1 (Plot No 6)*
It was agreed at a site meeting in early December 1994[2] that the excavations would concentrate on work then in progress in the garden of No 6. A single north-south trench (Trench 1) was excavated adjoining the town wall. This trench (measuring 6m x 3m) was wider than originally specified, but was stepped inwards by 0.5m at 1m intervals, so that the excavation could be carried out safely to the required depth. It was thus possible to reach the most critical stratigraphic horizon at a depth of

[1] Pembroke South Quay: Specifications for an Archaeological Field Evaluation *(Appendix prepared by Dyfed Archaeological Trust - Curatorial Section)*. Section 5.
[2] *Meeting between Jeremy Evans (SPDC), Heather James (DAT) and Martin Lawler (GGAT).*

2.3 *Machine-cut trial pits*

2.3.1 Three machine-cut trial pits were excavated on the sites of the demolished warehouses which formerly extended along the north side of the town wall, at the level of the present car park. Because the sites of the warehouses were still largely covered by the debris of the collapsed buildings it was necessary to clear part of this material and remove it from the site before commencing the excavations. All loose debris on the sites of Warehouses IV and V was removed, but clearance in Warehouse III was restricted to the eastern side, to avoid disturbance to the surviving remains of the former listed building[1]. No material was cleared from the site of Warehouse II.

2.3.2 The three trial pits (TP 1-3) were excavated on the sites of Warehouses IV, III and II respectively, using a JCB 3CX with a toothed bucket. In each case the excavation was continued to the underlying bedrock, which varied from 2.73m (TP 1) to 0.93m (TP 3) in depth. The trench sides were recorded as conventional archaeological sections and levelled.

2.4 *Boreholes*

2.4.1 A total of four cable-tool boreholes were sunk by Thyssen Geotechnical in the area of the present car park on the South Quay (see separate geotechnical report). The location of the four holes was determined by SPDC's consulting architects (Davies Sutton), and the holes have been numbered according to the location plan provided, rather than in the order they were drilled[2]. It had been intended that a fifth borehole should be sunk in the garden of Plot No 7, but the absence of vehicle access to the gardens prevented this.

2.4.2 The boreholes were not logged independently by archaeological staff on site, but the borehole logs in the geotechnical report have been used for this report. The locations and heights of the boreholes were established by GGAT.

2.5 *Evaluation archive*

2.5.1 The archive consists of (a) the field records with post-excavation documentation and reports etc and (b) the artefacts. The bulk of the artefacts were recovered from Trenches 1 and 2 in the garden of No 6, which is owned by SPDC. A smaller quantity of finds were derived from Trench 3 in the garden of No 4, which is in separate ownership (see Appendices Two and Four).

2.5.2 It was recommended in the Specification that the finds from the evaluation should be deposited in the appropriate local museum, identified in this instance as Scolton Manor. An initial approach has been made to Dyfed County Museum Service, who have indicated that they are, in principle, prepared to accept the collection. The decision over the disposal of the finds will rest with the individual landowners but it is recommended that the finds should be donated to the museum. The finds are not expected to pose a significant conservation problem. GGAT will transfer the site records and document archive to the museum as part of the collection.

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[1] *The former warehouses along the South Quay have been numbered in this report from west to east. Warehouse I is the standing roofless building on the west side of the Quay (PRN 20043). Warehouse II was a narrow building adjoining it. Warehouse III was the former listed building to the rear of Plot No 7; Warehouse IV was the adjacent building to the rear of Plot No 6 and Warehouse V was adjacent to this, to the rear of Plots 4 and 5.*

[2] *The holes were drilled in the following order: BH 4, BH 2, BH 3 and BH 1.*

3.0 SUMMARY OF RESULTS

3.1 The town wall

3.1.1 It seems likely that much of the visible section of town wall fronting the South Quay was rebuilt in early post-medieval times, probably between 1610 and *c* 1678. The wall may have been reconstructed as part of the fortification of Pembroke during the early part of the Civil War (ie *c* 1642-3). Speed's 1610 plan of Pembroke shows a break in the line of the wall between the Northgate and the Northgate tower of the castle, and it is possible that this section of the medieval town wall may have been in a state of advanced decay by that time.

3.1.2 The base of the town wall probably lies at a depth of 1m-1.5m below the present car park surface, and it seems likely to have been built from the surface of the bedrock.

3.1.3 A medieval wall was revealed, located some 1.3m to south of the present wall, and built on a slightly different alignment. At least part of this medieval wall seems to have been destroyed during the construction of the present wall. It seems likely that the fragmentary medieval wall was either the original line of the town wall itself, or a related structure to the rear of the town wall.

3.2 Archaeological remains within the gardens

3.2.1 At the northern end of Plot No 6, there is a substantial build-up of archaeological material, including at least 1.5m of 13th-17th century deposits.

3.2.2 A substantial rock-cut ditch extends across Plot No 6 and (possibly) No 7. The ditch may be a medieval feature, but it is possible that it was an additional part of the Civil War defences.

3.2.3 A buried wall (which is probably of post-medieval date) lies on the west side of the access path in Plot No 4. This feature tends to support the suggestion that there may have been a through passage leading from what is now Castle Terrace to a minor gateway in the wall (Heather James: pers comm).

3.3 The South Quay

3.3.1 No evidence was found for an earlier quay on the west side of the present quay. It is reasonable to suppose, however, that such a quay would have been located at the eastern side of the present quay, close to the mill dam.

3.3.2 If, as seems likely, the early phases of quay were constructed on timber piles, then the bases of these will probably be preserved within the waterlogged alluvial silts and gravels beneath the construction layers of the present quay. There may also be other types of waterlogged archaeological material preserved within these deposits.

4.0 OUTLINE RECOMMENDATIONS

4.1 Introduction

4.1.1 A prime objective of the evaluation was to provide advance information on the site's archaeological resource, so that the intended development could be designed with this in mind, both to mitigate the potential damage and to reflect the historical character of the site. It is not intended to provide formal recommendations in the present report, as a future archaeological strategy for the site will be developed by SPDC in consultation with their archaeological advisors. Nonetheless, it may be helpful to offer some outline recommendations at this stage, on the basis of the present understanding of the site.

4.2 The town wall

4.2.1 Although the present wall on the South Quay site is not part of the medieval town defences, it may be of comparable historical significance, particularly if were to be proved to have been built during the Civil War period. The wall may, however, be a later non-defensive feature, provided as, essentially, a post-medieval garden wall.

4.2.2 If the wall were to be proved to be a Civil War fortification, then it would probably merit statutory protection, as a Listed Building or Scheduled Monument. This may not be appropriate in the case of a later non-defensive wall, though it should be preserved, nonetheless, for its period and its contribution to its local surrounds.

4.2.3 The fragmentary remains of the warehouses adjoining the wall should also be retained, insofar as is feasible. Although the warehouses are comparatively recent features, they represent an integral stage of Pembroke's later development, and their former presence should be reflected in what will be visible. It is understood that Warehouse I (at the west end) will, in any case, be conserved and probably reroofed. Preferably, the scheme of development should allow the scars of the warehouse walls and the edges of blocked doorways and joist slots to be visible. Clearly, there are very recent additions in breeze-block and modern brick etc that could be removed to improve the appearance of the wall.

4.2.4 A detailed drawn survey of the wall should be undertaken. The objective should be to record the wall in its present state (ie before conservation), and to decipher its development, to help to determine a conservation strategy.

4.3 The quay

4.3.1 The quay (termed the South Quay, or the Town Quay) is at present the only part of the site which has statutory protection, as a Grade II Listed Building[1]. The archaeological evidence indicates that the car park overlies a substantial levelling deposit (between 1m-3m in thickness), which was probably laid down during the construction of the quay (in 1818[2]). Beneath this layer, which is deepest on the northeast side of the quay, are earlier deposits, including waterlogged river silts.

4.3.2 Any development proposals for the quay would require Listed Building Consent. From an archaeological viewpoint, however, it is felt that any intrusion which only affected the upper levelling deposit would not be considered significantly damaging.

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[1] *Dyfed SMR PRN 20042. Warehouses I (PRN 20043) and III (PRN 20044) are no longer listed; the current status of the buildings was confirmed by Cadw, 16-3-95.*

[2] *Ludlow N 1993 North and South Quay, Pembroke: an initial archaeological assessment Report by the Dyfed Archaeological Trust for South Pembrokeshire District Council..*

Intrusion below the upper levelling deposit (which varies in depth across the site) may intrude on earlier archaeological horizons. Particular attention should be paid to the waterlogged river silts on the east side of the quay, as these deposits may preserve harbour debris including structural remains of any early quay which may have existed.

4.4 The burgage plot gardens

4.4.1 The gardens of the burgage plots on the south side of the town wall contain the bulk of the archaeological remains on the site. From an archaeological perspective, conservation of these deposits with as little disturbance as possible must be considered as the prime objective. As with the deposits beneath the car park, however, there is an overburden of recent material, which is of little archaeological interest. Where examined, the depth of the recent deposits varies greatly across the site, from about 1m at the north end of Plot 6, to 0.3m or less at the position of Auger Holes 1-9 in Plot 7.

4.4.2 It is recommended that the development scheme should, as far as possible, avoid any intrusion into the present garden surfaces, and should, preferably, seek to raise the general ground level, particularly where it is intended to place building foundations. The possibility of using less intrusive foundations, such as rafts or piles, should also be considered.

4.4.3 If it is necessary to disturb the ground surface, then the areas affected would require archaeological intervention, depending on the circumstances.

4.4.4 The evaluation has indicated that the artefacts on the site are likely to be of archaeological value. The pottery, tile and bone from the medieval horizons would be of particular significance. If excavation of part of the burgage plots is unavoidable, then detailed finds analyses would be required as part of the post-excavation programme. Comparative mortar analyses from different parts of the site would also help to relate the various structural features, including the town wall; renovation work should incorporate selective mortar sampling and analysis.

4.5 Conclusions

4.5.1 The evaluation has shown that there are significant archaeological deposits on the site. Any development proposal, therefore, will have to take the archaeology into account, and be devised to minimise the impact. It is likely that any development will require a substantial element of archaeological work before and during construction.

APPENDIX ONE: DETAILED RESULTS

The results of the archaeological side of the evaluation are described in this section. A detailed account of the three hand-dug trenches is followed by briefer descriptions of the auger holes in Plot No 4, and the machine-cut trial pits and boreholes on the quay.

TRENCH 1

Location (ctd SM 98388-01595)

Trench 1 constituted the main part of the archaeological side of the evaluation, and work on this deep trench alongside the town wall continued for the entire four-week duration. Although its stratification was fairly uncomplicated (consisting principally of a long sequence of levelling deposits abutting two successive revetting walls), the sheer volume of accumulated material was remarkable. Like all the gardens in the assessment area, the north end of No 6 is defined by the high stone wall (the existing town wall) which divides the raised area of the burgage plots from the lower level of the former quay. As with the other plots, the deposits on the south side of the wall have accumulated almost to the top of the wall, more than 4m above the level of the car park, thus considerably levelling-out the original steep gradient of the burgage plots.

Access to the garden of the No 6 is through a doorway in the town wall, originally leading from the first floor of the adjacent former warehouse (No IV) on the quay, but now suspended some 2.5m above the level of the car park, and accessible only by ladder. To the west of this opening in the wall, the present garden surface is level with the top of the wall, at 8.97m OD. Trench 1 was located mid-way between the stairwell rising from the opening in the town wall and the west property boundary wall. The north side of the trench abutted the south side of the town wall, and the trench was laid at right angles to the wall. Because the northern end of the garden had been covered by dumps of loose rubble and clay (Context 001 - see description below), it was necessary to commence by clearing a larger area surrounding the intended position of the trench, to a depth of 0.5m. After removal of the overburden, the 6m x 3m trench was laid out on the surface of the underlying garden topsoil at 8.47m OD. At a depth of 1m below that level, the trench was stepped inwards by 0.5m on its south, east and west sides. A second step was provided along the east side of the trench at 6.80m OD, and excavation continued on the west side of the trench to a depth of 6.52m OD. Excavation continued below that level as two separate box sections; that at the south end of the trench reaching a depth of 6.03m OD, and on the north side, abutting the town wall, reaching 5.30m OD.

Stratigraphy

Phase One: deposits pre-dating the medieval wall

Underlying the stratified archaeological deposits at the base of the trench was an horizon of yellowish red (5YR 4/6), stoneless, slightly sandy silt (076), which appeared to be the natural soil profile[1]. At the south end of Trench 1, the surface of the buried soil lay at 6.27m OD, overlying the presumed bedrock (reached by augering) at 5.34m OD. At the north end of the trench, this buried soil was revealed beneath the bedding deposit for the

[1] *ie, the local East Keswick brown earths series for the area (Soil Survey of England and Wales 1983,* 1:250,000 soil map of England and Wales).

medieval wall at 5.56m. The marked gradient in the surface of the soil from south to north (a fall of 0.71m over 3m) may reflect the natural ground profile, but at both ends of the trench this horizon seems to have been disturbed (particularly on the north side), and this may not be an accurate indication of the 'natural' pre-medieval ground surface.

Overlying the buried soil at the south end of the trench was a deposit of dark reddish grey (5YR 4/2), slightly sandy silt clay (028) containing frequent limestone rubble and oyster shell. This deposit filled an apparent cut feature (029) which extended south, beyond the trench limits, and could not be explored. A deposit similar to 028 overlay the buried soil beneath the medieval wall (026), towards the north end of the trench. It is possible that this material (044) was a bedding layer for the wall (perhaps lining a construction trench), but it seems unlikely that such a loose deposit would be laid deliberately as the base for substantial masonry foundations (see below). Alternatively, 044 and 028 may have been part of a more extensive dump of material laid down before the construction of wall 026, and which presumably extended north beyond the limit defined by the wall (perhaps as a slight bank ?). It was not possible to relate 028 (at the south end of the trench) directly with 044, but the two contexts produced joining sherds of glazed floor tile. The pottery from 028 was generally later 13th century in character, including a Saintonge green-glazed jug. Interestingly, a residual piece of Black Burnished ware was also recovered from 028; this was only Roman sherd from the evaluation.

Phase Two: construction of wall 026

The medieval wall 026 had been largely robbed in post-medieval times, and survived only on the west side of the trench, where it projected for 0.43m into the trench. The wall was composed of irregular limestone blocks and a rubble core, with a hard white lime mortar. The lower part of the wall formed a solid foundation, 0.65m in width, with unfaced sides. Above this level (from about 6.10m OD on the north side), the wall sides were faced, and survived for five or six courses above the foundation to a height of 6.95m OD, with a wall thickness of 0.54m. The north face of the wall was battered at its base.

Although only a short length of the wall was exposed within the trench (and even of that surviving portion the faces had been partly robbed), it was apparent that this section of wall lay at a marked angle to the adjacent section of the present town wall. By estimation, the projected alignments of the two walls would converge at a point between 10m and 15m east of Trench 1.

Phase Three: deposits abutting wall 026

Abutting the south side of the wall was a sequence of fairly uniform deposits which extended south across the trench, and accumulated to a height of 7.19m OD. These deposits (024 and 025) were predominantly dark brown (10YR 4/3) sandy silt clays with small quantities of slate and limestone fragments. The pottery from these deposits was entirely medieval, with bone and frequent shell.

Overlying 024 was a dark greyish brown (10YR 4/2), slightly sandy clay (019) which also abutted wall 026 and reached a height of 7.51m OD. The pottery from this deposit was generally late medieval to early post-medieval in character.

Phase Four: robbing of wall 026 and construction of wall 045

Wall 026 had been entirely robbed on the east side of the trench, presumably by removing the masonry from the external (north) side of the wall. It seems likely, judging by the height to which deposits had accumulated behind the wall (ie to the surface of 019), that the surviving portion of wall on the west side of the trench had also been reduced in height by at least 0.4m.

Associated with the robbing of wall 026 was the construction of the present town wall (045). The construction trench for the new wall was cut from base of wall 026 at 6.10m OD. This trench (042) widened sharply on the east side, where wall 026 had been completely robbed. Only the upper part of the construction trench was excavated (to a depth of 0.8m), but the level of the car park on the north side of the town wall suggests that the construction trench for the wall may have continued to an overall depth of 1.5m-2m, and it probably reached the bedrock.

The new wall (045) was constructed of irregular, uncoursed limestone masonry, bonded with a distinctive hard bluish mortar containing coal flecks. The inner (south) face of the wall was almost vertical, with an outward batter of only 60mm from 5.20m OD to 8.23m OD. The outer (north) face of the wall was built with an outward batter of 250mm from the present level of the car park at 4.30m OD to 7.20m OD. Above this level the outer face was almost vertical, with an estimated wall thickness of about 470mm[1]. The top of the wall at this point (at 8.97m OD) is 4.64m in height above the level of the car park, though the wall may have been slightly reduced in height during the construction of Warehouse IV in the 19th century. It is uncertain how much deeper the wall continues below the modern level of the car park, but its base is probably between 1m and 2m below that level. The overall height of the wall as constructed, therefore, was probably between 6m and 7m on its external (north) side and between 1.5m and 2m on its internal (south) side.

Infilling the space between the new wall and the remains of the old wall was a succession of tip layers (041, 027, 023, and 022), which also backfilled the void left by the robbing of wall 026[2]. These deposits were generally coarse sandy silts with high proportions of roofing slate, mortar flecks and marine shell (predominantly flat oyster and edible cockle, with smaller quantities of mussel). One layer in particular (027), was composed almost entirely of fragmented roofing slate. In addition to the shell and slate, the tip layers included medieval pottery, with a small number of early post-medieval sherds, medieval ridge tile fragments, and bone.

Overlying the surviving portion of wall 026, and also extending across the tip layers on the north side and the older revetted deposits on the south side, was a thin layer of very dark greyish brown (10YR 3/2) very sandy silt (015) with quantities of stone, mortar and slate and fragments of brick. This was overlain on the north side of the trench by a series of thin tip layers (020) consisting of predominantly dark brown (10YR 4/3) sandy silt clays, alternating with bands of mortar and pebbles. These tip layers filled up the pronounced hollow left on the south side of the town wall, providing a slightly sloping surface at about 7.50m OD. It seems likely that this levelling-up activity marked the completion of the construction of the new wall. The latest pottery from 015 and 020 was mid to late 17th century, but these contexts also included a high proportion of residual medieval material.

Later post-medieval and recent deposits

Overlying the mortar deposits (020) and extending across the rest of the trench was an accumulation of relatively uniform dark brown (10YR 4/3 - 3/3) silt clays (003), up to 0.5m

[1] *Note that the upper 0.7m of the wall has been thickly rendered on its south face.*

[2] *The robber trench backfill (043) was essentially the continuation of the upper tip layer 022.*

in overall thickness. Although undifferentiated during excavation, this material may have built up over a long period, and included 18th and 19th century pottery, as well as earlier sherds.

A distinctive tip layer (014) of very dark grey (10YR 3/1) very sandy silt with bricks, rubble and mortar, abutting the wall, presumably represents a mid 19th century levelling deposit, possibly associated with the construction of Warehouse IV.

The garden topsoil (002) was a notably fine, very dark brown (10YR 2/2), humic sandy silt loam, between 0.35m and 0.55m in thickness, which appears to be fairly uniform across the garden. The south face of the town wall (045) had been thickly rendered in concrete almost to the base of the garden loam (at 8.25m OD) where the bottom of the render formed a distinct sill. Below that level, the wall face had been left unrendered.

The uppermost deposits at this end of the garden, up to 0.5m in thickness, overlying the garden loam, consisted of a very mixed coarse silt clay, predominantly a very dark greyish brown (10YR 3/2), with frequent loose rubble. This material (001), which contained sheets of plastic etc, had presumably been tipped on the site since the disuse of the garden, probably over the past twenty years or so.

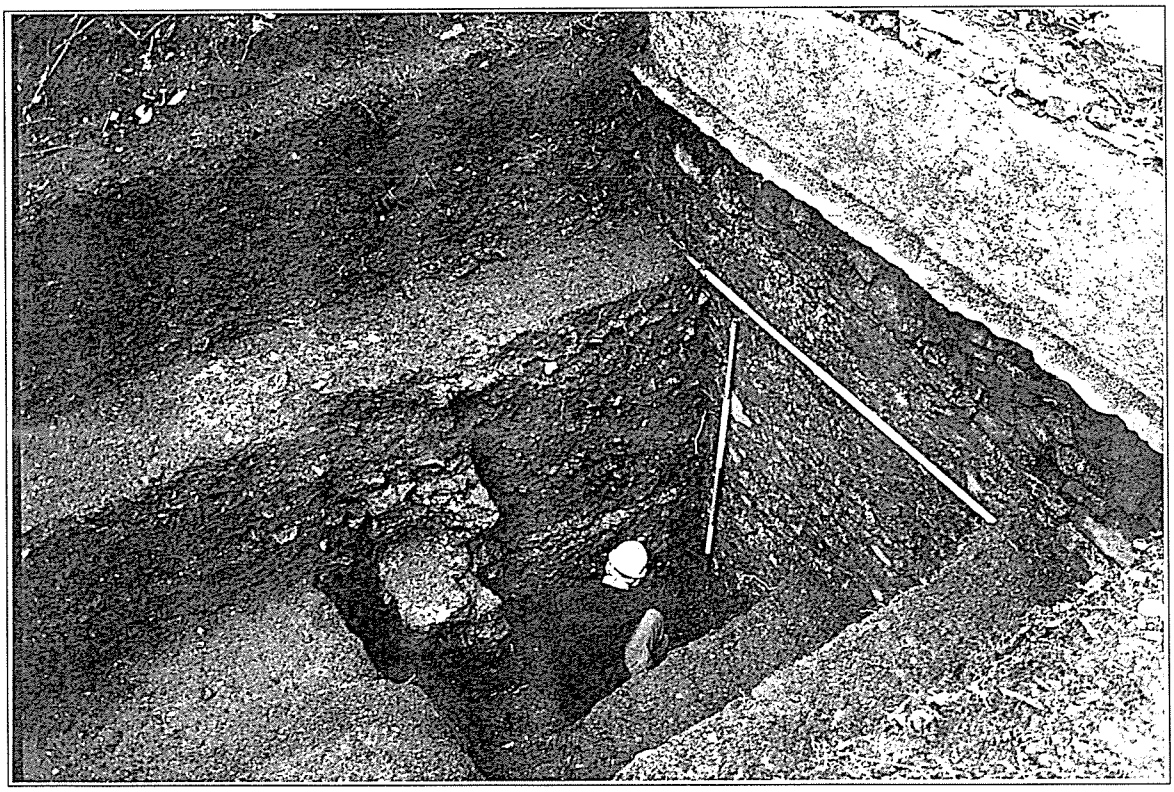

Plate One: Trench 1 (looking northwest), showing the robbed medieval wall 026 near the base of the trench (left of centre) and the south face of the present town wall 045 (right).

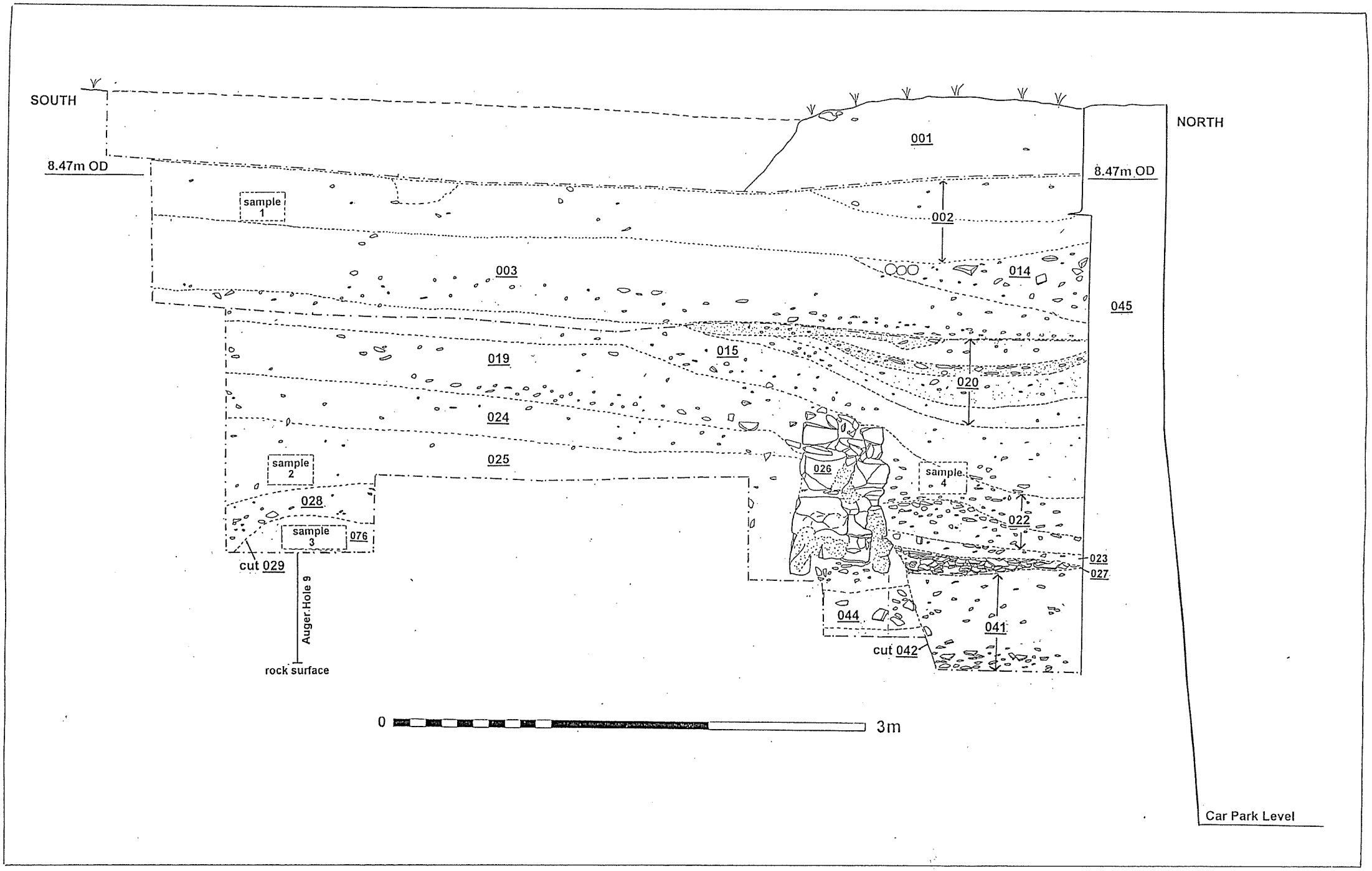

Figure Two: Trench 1, east-facing section.

TRENCH 2

Location (ctd SM 98385-01584)

Trench 2 was located at a distance of 7.8m to the south of Trench 1, and was positioned on the line of what was originally intended as a continuous east-west trench. The trench was initially 2m x 3m, and positioned 1m to the east of the western property boundary wall. After the discovery of a rock-cut ditch at a depth of 1.2m, the trench was extended southwards to 2.4m width, and extended westwards to the property boundary wall. Excavation continued to the base of the rock-cut ditch at 2.55m below the garden surface.

Stratigraphy

Phase One: cutting of ditch 048

Trench 2 lay entirely within the outline of a substantial ditch (048), cut through the underlying limestone bedrock. For this reason, all the deposits encountered in Trench 2 post-dated the excavation of the ditch, and there were no surviving earlier features at this point.

The rock-cut feature (which is loosely described here as a ditch, though its purpose is uncertain) consisted of a gently-sloping 'v'-shaped cut, at least 1.75m in depth and at least 4m in width. The east side of the ditch was only partly exposed, as the base of the ditch lay close to the east end of the trench. Most of the west side of the ditch profile was exposed, though the property boundary wall seems to have been built overlapping the edge of the ditch, and it is uncertain how much further the ditch side extended beneath the wall. It is also uncertain how far the east side of the ditch may have continued beyond the eastern limits of Trench 2. Given the general site gradient from southwest to northeast, it seems likely that the east edge of the ditch was lower than the west edge. This would suggest an overall ditch width of between 5m-6m, depending on the extent to which the ditch may have been cut into an existing terrace. Both sides of the ditch seem to have been cut as a series of shallow steps, across the line of the uptilted rock strata.

The ditch alignment (even within the narrow section revealed) was at a noticeable angle to the line of the adjacent property boundary wall; their respective alignments converged to the north at an angle of about 18°. Indeed, it appears that much of the property boundary wall lying to the north of Trench 2 overlies the backfilled ditch, and this seems to be reflected by the deepening of the wall foundation to the north (see below).

Phase Two: deposits infilling ditch 048

At the base of the ditch was a thin deposit, 0.17m in thickness, of reddish brown (5YR 5/4) coarse gritty silt with limestone fragments (050), whose upper surface was marked by a lens of finer, slightly clayey silt. This material was sealed by an apparent tip layer (049) of unweathered angular limestone rubble, 0.4m in thickness, which raised the base of the ditch up to the level of the first shallow step, at 8.30m OD. No artefacts were recovered from either 049 or 050.

Overlying 049 was a deposit of reddish brown (5YR 4/4) slightly sandy silt with few limestone fragments, and occasional lime flecks (021). This layer contained two medieval sherds, with oyster shell, bone and charcoal, which were found near the base of the deposit.

Intruding into the surface of 021 on the east side of Trench 2 was an apparent shallow cut feature (017), running roughly parallel with the west edge of the rock-cut ditch. The fill of this feature (018) was a reddish brown (5YR 4/3) slightly sandy silt with infrequent limestone fragments. A few late 17th century sherds were recovered from this deposit. It was difficult to detect the edge of the cut feature 017 above the surface of 021, and its relationship with the deposit overlying 021 was uncertain.

Overlying 021 was a mixed layer of predominantly dark brown (10YR 3/3) slightly clayey sandy silt (016) with frequent mortar and lime flecks, slate and limestone fragments. This deposit was 0.5m in depth, infilling the ditch up to 9.15m OD. It contained quantities of later 17th century pottery, as well as oyster shell, bone and charcoal. A pipe bowl stamped FAITH RUSSAUL (?) is likely to belong to the period 1660-1680.

Phase Four: deposits post-dating the infilling of ditch 048

Overlying 016 was a very mixed, predominantly very dark greyish brown (10YR 3/2) coarse sandy silt (013), with limestone fragments, very frequent mortar and lime flecks, coal and charcoal. This deposit included pottery of generally 18th and early 19th century date.

A small linear feature (047) was cut through 013 from a level of *c* 9.35m OD. This feature was a regular 'v' shaped linear cut, 0.26m in width and 0.35m in depth, which extended for 2.3m east-west across Trench 2, at right-angles to the line of the property boundary wall. The fill of this linear feature (011) was a very mixed deposit with quantities of wood ash, slag and coke, as well as frequent rocks up 0.2m across. This deposit also contained quantities of late 19th/ early 20th century pottery.

It is reasonable to suppose that the present property boundary wall was constructed soon after the ditch had been backfilled. As mentioned before, the section of wall exposed in Trench 2 was constructed overlying the edge of the ditch. To the north of Trench 2, the wall must overlie the deeper section of the ditch (unless the ditch alignment diverges sharply). Significantly, the base of the wall foundation even within the exposed section in Trench 2 was noticeably deeper at the north end (9.20m OD) than at the south end (9.47m OD), suggesting that the foundation material follows the oblique profile of the ditch side as it becomes progressively deeper. It was not, however, possible to relate the wall foundation to the stratified deposits within Trench 2.

The construction trench for a 150mm ceramic sewer pipe had been cut from the surface of 013. This construction trench (046) extended from southwest to northeast, truncating all the deposits in the southeast corner of Trench 2 to a depth of 8.50m OD. It is believed that the existing main sewer along the South Quay was laid in the early 1930s[1], and the ceramic pipe exposed in Trench 2 may well belong to that date.

Overlying the sewer pipe trench backfill material was a humic topsoil of fine, very dark brown silt loam (004) similar to that of Trench 1. A setting of substantial limestone slabs (005) extended across Trench 2 from northeast to southwest. These formed a shallow revetment in the surface of 004, and probably marked the line of a former rockery.

[1] *Information from SPDC.*

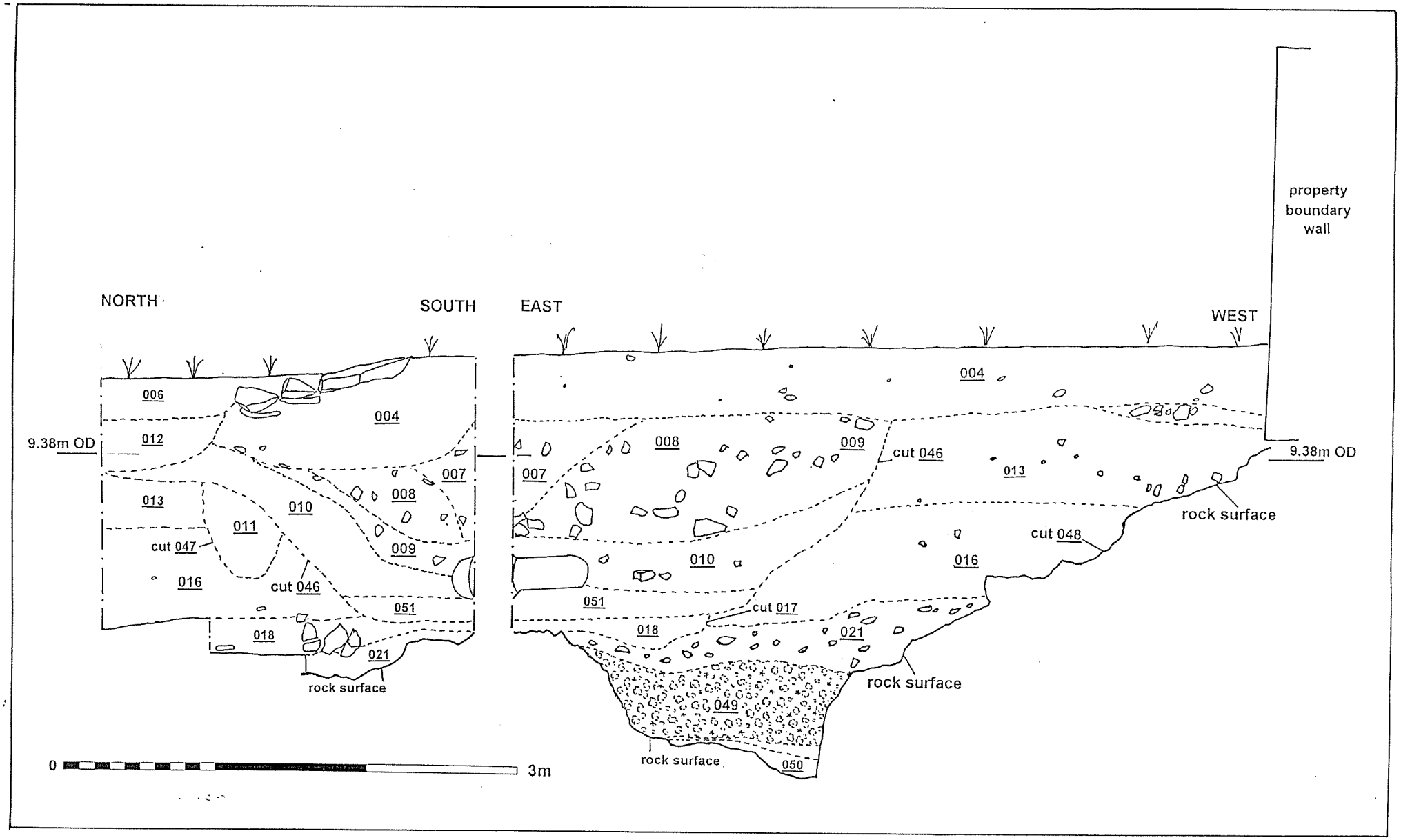

Figure Three: Trench 2, north-facing and west-facing sections

TRENCH 3

Location (ctd SM 98399-01579)

The third of the hand-dug trenches was located in the garden of No 4, close to the revetment wall for the sunken access path. Trench 3 (like Trench 2) was positioned on the line of what was originally intended as a continuous east-west trench. Trench 3 was 2m x 1m, and aligned east-west. Excavation continued to a depth of 1.65m (8.33m OD). The profile below this depth was recorded by auger from the base of the trench to the bedrock surface at 2.27m depth (7.64m OD).

Stratigraphy

Augered deposits

Overlying the rock surface was a deposit of reddish brown (5YR 4/4) stoneless, slightly clayey silt (040). This deposit, 0.19m in thickness, appears to be the natural soil profile.

Above 040 was a reddish brown (5YR 4/3) coarse sand clay with lime flecks, charcoal and pebbles (039), 0.31m in thickness, which presumably marks the base of the archaeological deposits. Above 039 was a dark greyish brown (10YR 4/2) coarse sandy clay with lime flecks and pebbles (037). This material was essentially the same as the lowest deposit revealed in the excavated section. No pottery was recovered from the augering.

Excavated deposits

The excavation continued the profile from the top of the auger hole at 8.33m OD to the modern garden surface at 9.98m OD. At the base of the trench, on its west side, was the deposit (037) revealed in the top of the augered profile, which continued to an overall thickness of 0.55m. On the east side of the trench was a wall face (038), against which 037 abutted. The wall face was of mortared limestone rubble, of which three courses were exposed, but which continued below the base of the trench. The alignment of the wall was at a slight angle to the modern revetment wall of the adjacent path, converging to the north.

Capping the wall face was a very hard cemented rubble layer (034), 0.22m in thickness, providing a level surface at 8.92m OD. This deposit was a bluish mortar with coal flecks, similar to the mortar of the present town wall (045 in Trench 1). The mortar capping overlapped the top of wall face 038, extending across the abutting deposit 037 as a thin band of loose mortar (036).

Overlying the solid mortar surface 034 was a succession of coarse, mixed sandy silts with high proportions of mortar, slate and limestone fragments, which continued to the base of the topsoil at 9.58m OD. At 9.25m OD was a thin band of burnt sand and coke, 0.04m in thickness (032). The overlying humic sandy clay topsoil (030) was somewhat deeper on the east side of the trench (0.45m) than on the west side (0.30m). The pottery from these deposits was generally post-medieval (17th to 20th centuries) with a small number of residual medieval sherds.

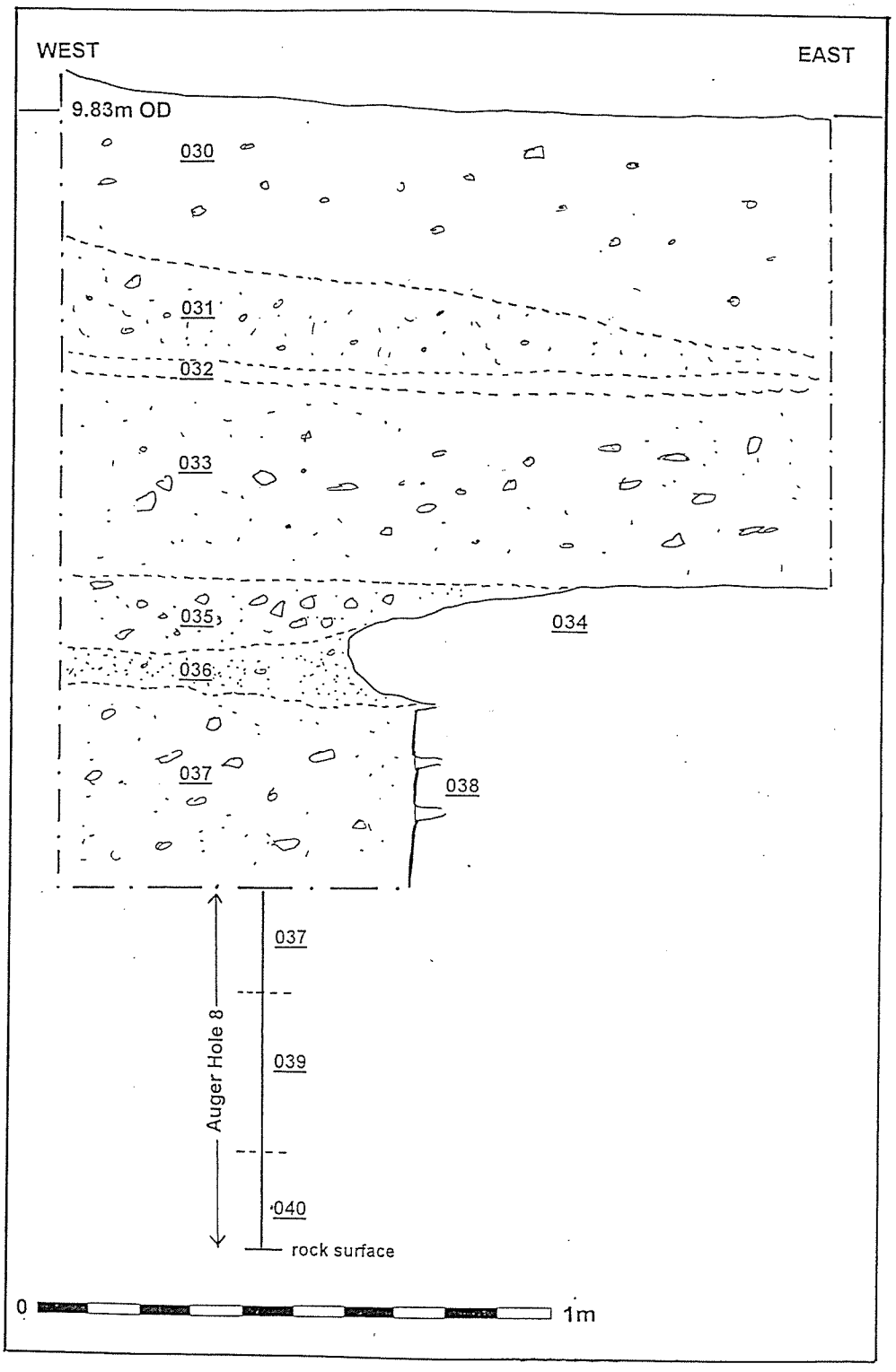

Figure Four: Trench 3, south-facing section

AUGER HOLES IN PLOT NO 4

A series of nine hand-drilled auger holes were bored in the garden of No 4. Because the holes were close together, and the profiles revealed were generally fairly similar, the holes can be adequately described as a group. Seven auger holes (AH 1 - AH 7) were located on the line of what was originally intended as a continuous east-west trench (ie, on the line of Trench 2 and Trench 3), spaced at intervals of 1.25m. A further two holes (AH 10 and AH 11) were located at 3m and 9m, respectively, to the north of this line.

Stratigraphy

With one exception (AH 11), each of the boreholes reached the bedrock surface and its overlying natural soil cover. The bedrock surface from AH 1 to AH 7 followed the general site gradient from west to east. The rock surface from AH 1 - AH 3, on the west side of the garden, was fairly level at 10.98m OD - 11.05m OD. From AH 3 eastwards, however, the rock surface dipped steadily to 10.18m OD (a fall of 0.87m over a distance of 5m). The rock surface probably continues to dip to the west edge of the rock-cut ditch in Trench 2 at 9.43m OD. At AH 10 (to the north of the main east-west auger transect), the rock surface was at 10.0m OD, representing a comparable fall of approximately 0.5m over a distance of 3m on the north-south axis.

The overlying natural soil was generally a yellowish red (5YR 4/6) soft, stoneless, slightly sandy silt, varying from 0.17m to 0.35m in thickness.

Above the natural buried soil was a sequence of coarse sandy silt clays, ranging from dark greyish brown (10YR 4/2) to very dark greyish brown (10YR 3/2), with limestone fragments, mortar flecks, oyster shell and charcoal. These deposits were markedly absent from the west side of the garden (AH 1 - AH 3), where the clean natural subsoil lay close to the surface and was overlain by the humic topsoil. It is possible, therefore, that the archaeological horizons have been truncated on the west side of the garden, in the vicinity of the high revetment wall.

AH 11, further to the north than the other auger holes, had a slightly different profile. The sequence of deposits was fairly similar, but the auger failed to reach the clean natural soil, and encountered substantial limestone rocks at 1.40m depth (9.20m OD), which filled the auger chamber and prevented further augering. It seemed unlikely that the rocks marked the weathered bedrock surface - indeed, on the site as a whole, there was very little loose surface rock. It is possible, therefore, that this was simply a more stony concentration within the stratigraphy, and that the bedrock at AH 11 lay below that level.

No dateable material was recovered from the auger holes in No 4, and the stratigraphy could not be related to that of the trenches in No 3.

BOREHOLES AND TRIAL PITS ON THE SOUTH QUAY

A summary is provided here of the main results of the trial pit and borehole investigations on the car park. As has been indicated, the trial pits were recorded in the field as conventional archaeological sections, but the borehole information has been derived chiefly from the geotechnical report. Detailed stratigraphic information from the trial pits is presented in Appendix Five, with a summary of the borehole evidence Reference, however, should be made to the separate geotechnical report for the laboratory descriptions of the borehole strata..

Stratigraphy

Bedrock surface

The bedrock outcrops along the line of the town wall above the level of the car park on the western side of the site, rising to a height of about 8.50m OD - 9.0m OD to the rear of Warehouse I. This outcrop line dips progressively to the east, reaching the level of the car park (at 4.30m OD) at a point halfway across Warehouse III.

The continuation of the bedrock profile to east of that point was revealed in Boreholes 2 and 4 and Trial Pits 2 and 3. These showed a slight terrace at the point where the outcrop disappears below the level of the car park. In TP 2, excavated on the line of the terrace, the rock had been cut back to form a near vertical face, 1.5m in height, from 4.15m OD to 2.64m OD. In TP 3, the bedrock was reached at 1.54m OD, and at 1.11m OD in BH 2. In the two boreholes adjacent to the quayside (BH 1 and BH 3), the rock was reached at markedly lower depths of -0.72m OD and -1.05m OD respectively.

These results tend to agree with the evidence from other sources that the natural contour of the rock surface dips from the site of the Drill Hall to the northeast, originally providing a rock spur (now quarried back) on the west side of the quay site and a pool on the east side, in the lee of the present mill dam.

River deposits

The two boreholes adjacent to the quayside, BH 1 and BH 3, reached a very dark alluvial silty sand with gravel, occasional cobbles and shells, at depths of 4.1m (0.78m OD) and 4m (0.25m OD) respectively. BH 2, located slightly further from the river edge, produced a similar, though rather coarser, deposit at 3.3m depth (1.41m OD). This layer, which overlay the bedrock at 3.6m depth, had presumably also been derived from the river silts.

Deposits pre-dating the main quay construction

Close to the edge of the river, and on the west side of what may have been the original harbour site, TP 1 reached deposits which seem likely to have pre-dated the construction of the present quay. From 2.73m to 2.03m depth ((1.54m OD to 2.24m OD) was a rather mixed deposit of soft reddish brown silt clay with sub-angular limestone rubble and cobbles (061). This material was unlike the natural soil elsewhere on the site, and it is assumed to have been a deliberate levelling deposit. Overlying this, from 2.03m to 1.59m depth (2.24m OD - 2.68m OD) was a succession of soft, moist layers (060), predominantly greyish brown sandy clays with frequent coal flecks, with bands of darker organic material. One band at 1.69m depth (2.58m OD) contained quantities of waterlogged leather-working offcuts.

DISCUSSION

Two points of particular interest have emerged from the evaluation. These are:

- The nature of the medieval town defences
- The evidence for possible Civil War defences

The medieval town defences

Pembroke's town defences were originally examined by Cathcart King and Cheshire in the early 1980s[1], though the chronology of the town walls and the outer bailey of the castle have since been revised by Ludlow[2]. In general, the circuit appears to have consisted of a relatively thin curtain with three gates at the cardinal points (the Westgate, Northgate and Eastgate) and five or six other towers, located on the vulnerable eastern side of the circuit. At the west end of the town, the great bulk of the castle provided a balancing strong defensive zone.

Ludlow has argued, convincingly, that the town developed progressively eastwards from a nucleus on the site of the castle's outer bailey. The west end of the town, forming the parish of St Mary's, originally extended as far as the narrowest point of the peninsula, which may have been defended by a ditch. The parish of St Michael's, on the east side of the peninsula, was established as an outer suburb with its own market-place. Construction of the town's masonry defences may not have been initiated until the late 13th, or possibly early 14th century, particularly given the natural defensive position of the site. The town walls were probably completed in one general phase; their surviving features show little evidence of remodelling during the Middle Ages.

The South Quay site lies on the northwestern section of the defensive circuit, roughly mid-way between the Northgate and the Northgate tower of the castle. On this section, the natural limestone topography rises steadily from east to west (ie, from the Northgate to the castle), with a corresponding north-south rise from the Pembroke river to the crown of the peninsula. The site of the medieval Northgate lies within a former inlet or embayment on the bank of the Pembroke river (perhaps at the mouth of a stream valley), providing a deeper pool (a natural harbour) in the vicinity of the bridge. The original contours of this inlet, particularly on its west side, have been masked by the quarrying-away of the limestone bluff in the vicinity of the castle, and by the construction, successively, of the straight line of the town defences and the present quay. Levelling-up the burgage plots behind the town wall over the course of several centuries has further concealed the original contour at this point. In the 13th or 14th century, however, when the town defences were first constructed, the inlet was probably still a prominent feature. To what extent, therefore, did the early line of the defences at this point respect the natural topography of the site ?

Our direct evidence for the line of the medieval town wall at this point rests on the short, largely robbed-out section revealed in Trench 1. (It is assumed for present purposes that this section of wall was, indeed, part of the medieval defences, though the evidence was not conclusive). The section of medieval wall was located 1.3m to south of the present wall, and was laid on a slightly different alignment (the two walls diverge to the west). Clearly, however, the medieval wall did not simply continue as a straight line beyond each side of Trench 1, as its projected alignment eastwards would miss the Northgate altogether. One

[1] *Cathcart King DJC and Cheshire M 1983 The town walls of Pembroke* Archaeologia Cambrensis **CXXXI**, *77-84.*

[2] *Ludlow N 1991 Pembroke Castle and town walls* Fortress **8**, *25-30. The present interpretation of the town defences has been based on Ludlow's work except where stated.*

assumes, therefore, that the medieval wall line must have coincided (approximately) with the line of the later wall at Plots 4/5, but that to west of Plots 4/5, the two walls probably did not coincide. Beyond this, it is difficult to reconstruct the line of the medieval wall from the evidence presently available.

The medieval wall had been partly robbed at the time of the construction of its successor. The excavated portion suggested that the wall had been entirely robbed to east of Trench 1, but had been left standing a few courses in height to the west of Trench 1. It is likely, in any case, that the section of medieval wall to east of Trench 1 lay so close to the line of the new wall that it would be disturbed by the excavation of the substantial new construction trench. There is little, if any, direct evidence for the reason why a new wall should be constructed. The new wall was certainly a much more substantial feature than the old one. It is striking that the medieval wall (at this point, at least) had been built on a slight subsoil terrace, but its successor was built from a much lower level, and was probably founded on bedrock. It is also possible that the old wall was in a state of such advanced decay that refurbishment required total rebuilding of some sections.

In that respect, it is interesting that the Speed map of 1610 shows no town wall between the Northgate and the castle. The absence of this section of wall may be simply an error, but, given the amount of recognisable detail from the rest of the circuit, it is a curious omission; it is all the more interesting that this section should have been comprehensively rebuilt within a century or so of Speed's survey. One possibility is that this section of wall was in such a poor condition by 1610 that it was not depicted as standing wall; it may have been no more than a shallow revetment separating the burgage plots from the river bank. To the west, the limestone cliff below the castle would have formed a more prominent defensive line.

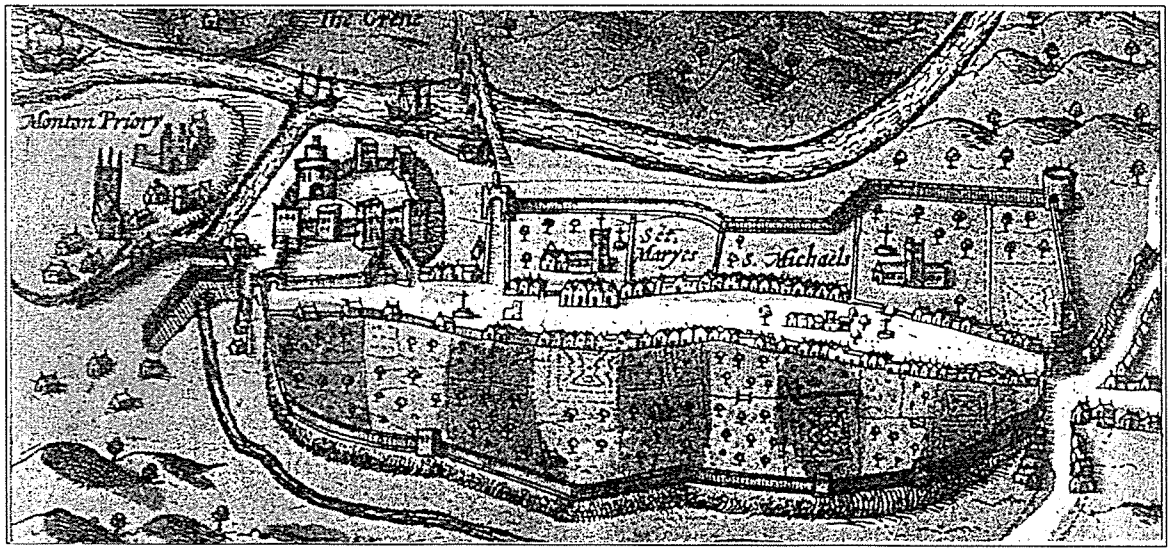

Plate Four: Plan of Pembroke, from John Speed's Map of Pembrokeshire of 1610 (reproduced from Gaunt P 1991 A nation under siege: the Civil War in Wales 1642-48 *Cadw: Welsh Historic Monuments*

This raises the question whether the town wall would be permitted to fall into such ruin by the end of the 16th century. In particular, the section of the defences lying adjacent to the bridge, and easily accessible by water, would have been highly vulnerable. Milford Haven was considered at potential risk from invasion in the earlier 16th century, when the blockhouses had been constructed at Dale and Angle[1]. Attention has been drawn, however,

[1] *Locock M 1993* Archaeological recording: East Blockhouse, Angle, Dyfed *(GGAT Report No 93/074 prepared for the Defence Research Agency; copy with Dyfed SMR).*

to the chronic decay of Pembroke in the late 16th and early 17th century, and maintenance of the town wall at that time may not have been feasible, given that the castle itself was no longer garrisoned. From an early 14th century settlement of 200-227 burgages (approximately the same number of properties within the walls as today)[1], the town had dwindled to about 110 households in 1563[2] and 89 households in 1588. By 1602, George Owen wrote that Pembroke was '*...very ruinous and much decayed, yet good for such houses as are standing*'. Speed himself commented that the town '*...had more houses without inhabitants than I saw in any one city throughout my survey*'. One of the few advantages over its neighbouring towns that post-medieval Pembroke possessed was its customs house, established in the later 16th century[3]. It is assumed that the customs house was located somewhere near the town quay in the vicinity of the Northgate, though, as Ludlow has commented, there was little available space. The removal of part of the town wall on, or adjacent to, the site of the Royal George may have allowed the construction of the customs house. No such building appears on the Speed map, unless the oddly-positioned mill depicted at the south end of the mill bridge was actually the customs house and the mill itself was located on the mill bridge. Ludlow has pointed out that the mill depicted in the Speed map is anomalous; the medieval documentation and pictorial evidence from the mid-17th century all indicate a tidal mill located on a mill dam, and powered from a weir. The actual position of the customs house cannot be identified from the existing documentation, and could probably only be located from archaeological remains. The point is, however, that the removal of parts of the town wall fronting the quay need not have been wholly a result of urban decay, but as the development of the quayside at a time when the town wall may have become an expensive encumbrance[4].

The evidence for Civil War defences

Two substantial features were discovered which, on the grounds of approximate dating and function, are thought to be possible Civil War defences. The first is the present town wall on the South Quay site; the second is the probable rock-cut ditch located in Trench 2.

Pembroke in the Civil War

It is ironic that Pembroke's significant part in the Civil War in Pembrokeshire is probably of greater historical importance than its earlier role as the centre of a Marcher barony[5]. During the First Civil War, from 1642-6, Pembroke was the main (and at times the only) Parliamentary stronghold in west Wales. Under the command of its mayor and governor, John Poyer, Pembroke was closely surrounded by Lord Carbery's Royalist forces between September 1642 and February 1643, and again, by Sir Charles Gerard, between April and June of 1644. Of particular importance was the value of the town as a base for the Parliamentary troops of Rowland Laugharne; Pembroke's resistance undoubtedly contributed to the eventual collapse of the Royalist cause in west Wales.

At the outbreak of the Second Civil War, in 1648, Pembroke's role was of even greater significance. The war itself began at Pembroke in February 1648 as John Poyer's personal rebellion against Parliament, which became rapidly inflamed by dormant royalist support

[1] *Beresford M 1988* New towns of the Middle Ages, *569 (Alan Sutton).*

[2] *Howells B 1987 Land and people 1536-1642, in Howells B (ed)* Pembrokeshire county history **III** early modern Pembrokeshire 1536-1642, *1-31 (Pembrokeshire Historical Society, Haverfordwest).*

[3] *Dyfed Archaeological Trust 1993* North and South Quay, Pembroke; an initial archaeological assessment *(Report prepared for South Pembrokeshire District Council).*

[4] *Turner HM 1970* Town defences of England and Wales*(John Baker).*

[5] *The following summary of Pembroke's part in the Civil War has been based on these detailed accounts:*
Leach AL 1937 The history of the Civil War, 1642-1649, in Pembrokeshire and on its borders.
Mathias R The First Civil War (Chapter VI); The Second Civil War and Interregnum (Chapter VII), in Howells B (ed) Pembrokeshire county history **III** early modern Pembrokeshire 1536-1642, *159-224 (Pembrokeshire Historical Society, Haverfordwest).*
Phillips JR 1874 Memoirs of the Civil War in Wales and the Marches *(2 volumes).*

across south Wales. After the rout of the rebel forces under Laugharne and Colonel Rice Powell at St Fagan's on May 8, they retreated to Pembroke and Tenby. Cromwell himself was dispatched to west Wales to quell the rebellion, arriving outside Pembroke on May 24 with a force of 6,000. Tenby, under its governor, Rice Powell, fell after a brief siege on June 3rd. Chepstow Castle, held for the King by Sir Nicholas Kemeys, had been stormed nine days before. Pembroke was now the last point of Royalist resistance in south Wales, and prepared for a full-scale siege.

The siege of Pembroke is certainly one of the most unlikely situations of the entire war. The town that had been synonymous with Parliamentary resistance in southwest Wales had become the Royalist stronghold. Such reverses were frequent enough, but commanding the garrison for the King was Rowland Laugharne, a national hero of the Parliamentary cause, who had been commander of Parliament's forces in south Wales until a few weeks before. Alonside him, as Pembroke's mayor and governor of the castle, was John Poyer, who had also been one of the most obdurate of Parliament's supporters throughout the first war. It was rather as though, by some chance of fate, Ulysses S Grant had suddenly found himself defending Washington on behalf of the Confederates against a besieging Unionist force.

The siege of Pembroke lasted seven weeks, culminating in the surrender of the garrison on July 11. Cromwell had ordered up artillery from Gloucester at the onset of the siege, but the transport boat had sunk in the Severn Estuary at Berkeley, and the guns were not recovered until June 28. In the meantime, several abortive attacks had been launched on the defenders and a number of breaches in the walls had been made by light guns mounted on the opposite bank of the river at Monkton. An assault in late June through one of these breaches succeeded in penetrating almost as far as the castle, but a counter-attack by Laugharne from the east end of the town succeeded in beating the invaders back. Despite the strength of the castle, and the gallant resistance of the defenders, the end was inevitable once the long-awaited siege artillery was in place. Cromwell was anxious to settle the siege in order to march on the invading Scots, and agreed to the defenders' request for terms. Poyer and Laugharne, together with Rice Powell, were sent to the Tower, tried for treason in April 1649 and condemned to death. The Council of State rescinded the sentence in the case of two of the three condemned, allowing lots to be drawn to decide who should die. John Poyer was chosen and executed by firing squad at Covent Garden market on April 25.

The possible Civil War defences

The evidence from Trench 1 shows that the length of the present town wall on the South Quay site was built as a new, single-phase construction at some date between the later 16th and early 18th centuries. Detailed analysis of the pottery from the associated deposits would probably provide a closer *terminus post-quem* though it should be noted that the bulk of the ceramics from these deposits is clearly residual. If the Speed plan is to be believed, this section of the town wall was built after 1610; a town wall on the scale of the present wall appears in the Place watercolour of *c* 1678[1].

The new wall was a very substantial construction, probably founded on bedrock, and some 7m in height. The deposits back-filling its construction trench contained relatively little rubble but quantities of mortar and local roofing slate, including late medieval/ early post-medieval roof tile. It is possible, therefore, that one or more older buildings had been pulled down to provide construction materials.

John Poyer is credited with having undertaken some rebuilding of the town's defences during the earlier part of the Civil War, presumably before the arrival of Carbery's forces in late 1642. He referred specifically to his part in the repair of the town walls in his final

[1] *Ludlow N 1993* North and South Quay, Pembroke: an initial archaeological assessment *Report by the Dyfed Archaeological Trust for South Pembrokeshire District Council.*

petition to the military court in April 1649. Indeed, other Pembrokeshire towns had undertaken repairs to their town defences at the same time, and the surviving accounts for Tenby show that the refurbishments there were extensive. In the case of Pembroke, it is known that the repairs included works on the castle, which served as Poyer's own headquarters. It is thought that the inner bailey wall was dismantled at this time, perhaps to provide materials for the massive strengthening of the south curtain[1]. Undoubtedly, if there *had* been such a serious breach in the town wall fronting the quay as the Speed plan suggests, then this would have warranted rebuilding on the scale of the present wall, given the very real threat of a siege. Indeed, it must be presumed that a substantial wall along the quay had been in place by 1648, to keep the besieging New Model Army at bay for seven weeks. It must be emphasised that the archaeological evidence cannot pinpoint a precise date for the construction of the present wall; it is not inconceivable that it was erected later in the 17th century; perhaps to rectify the siege damage, or the demolition works subsequently ordered by Cromwell. Against that interpretation, however, is the substantial scale of the wall, built as a single construction along a line of burgage plots and seemingly intended for a serious defensive purpose. There remains a strong possibility, therefore, that this section of the town wall was built as part of the Poyer's repairs to the town defences in the early part of the Civil War.

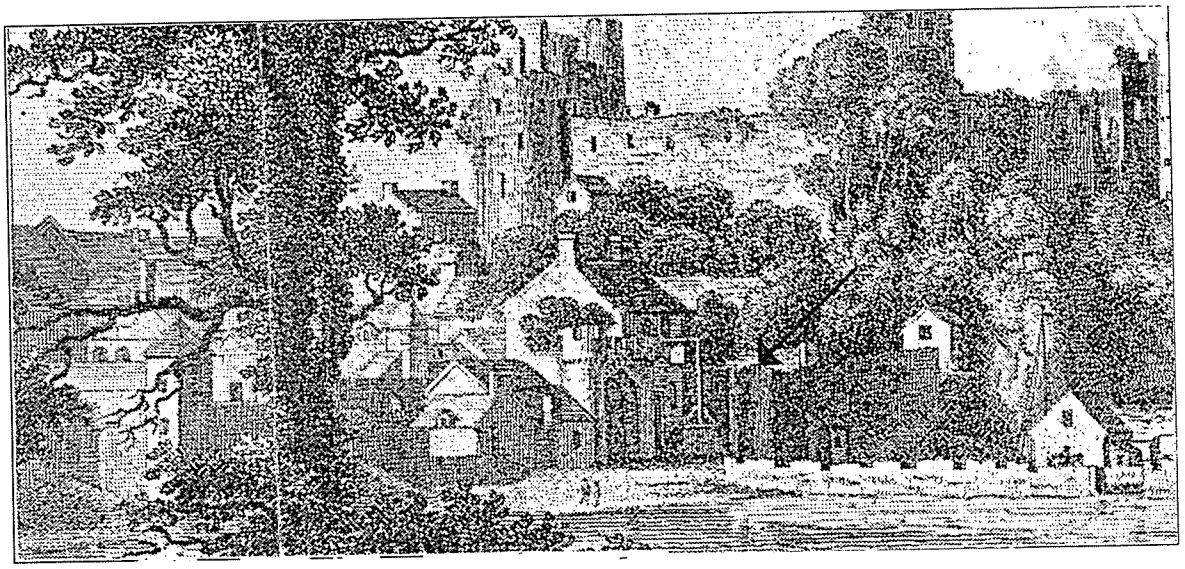

Plate Five: North-east view of Pembroke Castle: detail from an engraving of 1778 after a drawing by Paul Sandby. The position of a break in the wall on the approximate site of the present wall return is arrowed.

One aspect of additional interest is the return of the present town wall, on the west side of the cleared space now occupied by the Public Conveniences. The town wall at that point has been scarred by the removal of a 19th century building, and it is uncertain how much of the present arrangement is original. A narrow blocked opening projecting a little way above the modern car-park level may pre-date the construction of the late 18th/19th century quay. The principal extant feature is an opening to a vaulted passage which leads through the wall along the west side of Plot 4 to the rear of the buildings. It is thought that the present passage may represent the line of an earlier thoroughfare, which may have extended from the main street (ie Castle Terrace) to the quay[2]; the presence in Trench 3 of a deeply-buried earlier wall, aligned with the passage, tends to support this. If an ancient passage to the quay existed at this point, then it is assumed that a gate was provided in the town wall. The Sandby engraving of 1778 (above) shows a break in the line of the town wall at

[1] *Cathcart King DJC 1978 Pembroke Castle* Archaeologia Cambrensis **CXXVII**, *75-121.*
Ludlow N 1991 Pembroke Castle and town walls Fortress **8**, *25-30.*
[2] *Heather James pers comm.*

approximately the position where the town wall returns, immediately to east of the vaulted passage. In the preliminary report on the results of the evaluation, it was suggested that this may represent a mural tower, but on further examination, it seems more likely to show the present wall return. To the east of this corner, on the site now occupied by the Public Conveniences, stood a 3-storey late 18th/ early 19th century building, which is probably shown (rather sketchily) in the Colt Hoare engraving of 1806[1]. If, however, the break in the town wall shown in the 1778 Sandby illustration does mark the existing return of the wall, then it indicates that the wall return had existed some time before the construction of the building. There seems to be no obvious purpose for such a feature, but it is possible that the town wall was recessed at that point to provide a slightly wider frontage for the early quay.

The rock-cut ditch in Trench 2

This substantial rock-cut feature (048), which occupied all of Trench 2, is also a possible defensive measure. Because of the sheer size of the feature (which extended beyond the trench), it was difficult to determine its form. It is thought, however, to be a 'v'-shaped linear ditch, extending approximately north-south, at an angle to the line of the adjacent property boundary wall. As reconstructed from the excavated portion, the feature was probably 5m-6m in overall width, and 1.75m in depth.

The dating of this feature relies on the interpretation of the infilling deposits. The lowest pottery-containing layer (021) produced two medieval sherds, as well as some oyster shell, bone and charcoal. The overlying deposits, however, which formed the upper part of the ditch-fill, contained post-medieval pottery. As with the deposits in Trench 1, there were some residual medieval sherds, but most of the material appeared to be later 17th/ early 18th century in date.

There are three possible interpretations for this feature. If it is assumed to be a defensive ditch then it would probably belong either to the early medieval period (representing a stage in the expansion of the town's east limit) or to the Civil War. Alternatively, it may not be a ditch at all, but a feature excavated for other purposes (perhaps as a small post-medieval quarry).

If the feature was an early medieval defensive ditch, marking the contemporary town boundary, then it would probably pre-date the establishment of St Mary's Church, which is thought to be a 12th century foundation[2]. The angle of the ditch to the property boundary wall implies that the ditch also pre-dated the laying-out of the adjacent burgage plots. Clearly, such a ditch (occupying about half the width of Plot 6) would not continue long in use after the town defences had been pushed further east, and it must be assumed that the post-medieval upper fill represents a later intrusion. Such an intrusion was, indeed, suggested by the excavated evidence.

The second hypothesis interprets the feature as a defensive ditch excavated some time *after* the construction of the town's masonry defences and after the laying-out of the burgage plots. The level of physical and social disruption implied suggests that such an inner defence line would only be required under conditions of immediate threat; the Civil War is probably the most likely local emergency of this type. From such a limited section of ditch it is difficult to reconstruct a defensive strategy, but a ditch on that apparent alignment, combined with a bank on its west (upper) side, could have provided an outer breastwork for the castle.

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[1] *Ludlow N 1993* North and South Quay, Pembroke: an initial archaeological assessment *Report by the Dyfed Archaeological Trust for South Pembrokeshire District Council (Fig 15).*

[2] *Mathias AGO 1938 Church of St Mary, Pembroke* Arch Camb **XCIII.**, *290-1, quoted in Soulsby I 1983* The towns of medieval Wales, *216 (Phillimore, Chichester).*

The third, rather less interesting, possibility is that the feature is not a ditch, but a hole excavated for some other purpose (perhaps as a quarry, given the difficulty of cutting through the bedrock; the deposits did not suggest a cess-pit). Such a feature would be fairly temporary, and would be dated, reasonably, by the post-medieval upper fill. A Civil War date would still be a possibility, given the evidence that the feature may underlie the adjacent property boundary wall.

The three interpretations offered seem to be evenly balanced in probability, and it would be difficult to select a 'most-likely' solution from the present limited evidence. If the feature is a defensive ditch, of whatever date, then it would certainly be of considerable archaeological significance.

APPENDIX TWO: THE FINDS
Part (1): General description

by Joyce Compton

Introduction

Finds from twenty-seven contexts were submitted for processing and recording. All material recovered has been cleaned, bagged and catalogued. Because of the relatively large volume of material recovered, it was decided to divide the finds analysis into stages. The results from the first batch of ten contexts examined were summarised in the preliminary report; the present report describes the results from all contexts.

The finds appendix is divided into four sections. In this section (Part 1; Table 1), the results from individual contexts are summarised. Part 2 contains a table (Table 2) listing the main groups of ceramics. The bone and shell.are reported in Part 3 (Tables 3, 4 and 5), and an analysis of the mortar samples is contained in Part 4.

Overview

The results of the finds analyses are fairly consistent. The finds assemblage as a whole can be divided into three main groups:

(a) Stratified medieval and early post-medieval deposits (13th to 16th century), which are largely domestic in character

(b) Notably mixed early post-medieval deposits with a high proportion of residual medieval pottery, domestic bone groups and quantities of demolition debris

(c) Later post-medieval to recent deposits, also with some residual earlier finds

In the case of contexts in group (b), it is apparent that the rebuilding of the town wall has intruded on earlier archaeological deposits typical of group (a). The dumps of demolition debris behind the new wall (Trench 1) probably also include ceramic roof tile from older buildings. The group (b) deposits are, therefore, a rather specialised circumstance that may not be represented in other parts of the site. No sealed pit groups were recovered from the site, though the deposits filling the lower part of the rock-filled ditch in Trench 3 (contexts 013 and 016) may be their equivalent.

Central to the interpretation of the finds is the site location at the lower end of an urban burgage plot, hemmed-in by the surrounding boundary and town walls. The sharply sloping topography determined that domestic refuse which reached the northern end of the site was likely to be incorporated within the accreting backyard horizon, which became built up to a height of over 3m.

Although not a large collection (by urban standards), the finds from South Quay are of undoubted interest, as this is among the first stratified assemblages recovered from Pembroke. As part of the assessment, an examination of the medieval and early post-medieval pottery has kindly been made by Mrs Cathy Freeman, who has commented that the pottery is of sufficient merit to be reported in detail. Also of interest is the bone from the site, which is generally domestic in character, typical of urban consumption (see report by Martin Locock in Part (2) of this appendix), with no evidence for industrial functions, such as butchery or tanning.

Table 1: Finds descriptions by context

Trench 1

002 Predominantly modern, with iron and copper objects; bottle glass; wine glasses; local red earthenware; flower pots; airbrick fragments; drainpipe and modern ceramics. Also present are a small quantity of animal bone (including most of a small dog burial), cockle shell and several residual medieval sherds.

003 A mixed context, containing animal bone; oyster, cockle and limpet shell; a large quantity of post-medieval pottery; some modern ceramics; bottle glass; brick and tile fragments, and clay pipe stems. Also present are a few sherds of transitional and medieval pottery.

014 Small amounts of animal bone and cockle shell. The dateable finds are all post-medieval or modern. These consist of window glass; pantile; flower pots; the rim from a North Devon gravel-tempered vessel; a clay pipe bowl dated to *c* 1660-1680, and a selection of modern ceramics - some blue transfer-printed.

015 Predominantly medieval, with a small amount of early post-medieval pottery (mostly from one vessel) and tile, and two or three later post-medieval pieces. The medieval pottery consists mainly of Dyfed gravel-tempered ware, common in south-west Wales. Llansteffan ware was also identified. Also a quantity of animal bone, coal and slate fragments, a small piece of daub and oyster, scallop and limpet shells.

019 This context contains similar material in smaller quantities, but with no later post-medieval finds present. There is a small amount of animal bone and oyster shell, plus one scallop.

020 This context contains a large amount (almost 4kg) of shell; mostly oyster, but also limpet, winkle and scallop. The excavators reported that the shell recovered represents a sample of around 40% of the overall amount of shell from this context. In addition, there are 2kg of animal bone; slate fragments with mortar attached, and fired clay. The dateable finds are medieval or early post-medieval, including roof-tile fragments (one with an unusual crest); a sherd of Raeren (?) stoneware; a large sherd from a storage jar and a selection of pottery types which included Dyfed gravel-tempered ware; micaceous Iberian (?) ware and white fabrics, including Saintonge.

022 The finds are mainly medieval, including pottery and tile fragments. There is also animal bone; oyster, limpet, cockle and snail shell, and part of an iron prick spur.

024 Medieval pottery, plus animal bone, oyster, cockle and snail shells, and slate and coal fragments.

025 This context produced over 1kg of medieval pottery. In addition to the local fabrics already identified, there are sherds of imported wares including Saintonge. One sherd of intrusive local red earthenware, a large quantity of animal bone, oyster, cockle, scallop and whelk shells, and coal fragments.

027 The dateable material is medieval or early post-medieval. This includes one sherd each of stoneware and blackware; roof-tile; a fragment of glazed floor tile (as in 028); glazed and unglazed pottery. Also present are animal bone; oster, limpet, cockle and scallop shell; a pieced slate; mortar and coal.

028 A medieval context. A fragment of glazed floor tile augments the pottery, which has a sherd with unusual incised decoration. There is one early post-medieval sherd (akin to the pottery in 015); animal bone, oyster and cockle shell and a coal fragment. Also present is a bodysherd from a Black Burnished ware jar; this has an obtuse lattice and is probably 3rd century.

027 A context similar to 027. Most of the pottery is medieval, including a micaceous rim sherd. There is also a sherd of stoneware; a quantity of animal bone; eight types of shell, and slate.

044 A medieval context. A piece of green glazed floor tile which joins the fragment in 028; roof tiles and pottery; animal bone; oyster shell; slate with mortar adhering, and mortar.

Trench 2

004 Small quantities of animal bone; oyster and cockle shell; modern ceramics; post-medieval glass and pottery and one sherd of medieval pottery.

006 Small quantities of animal bone; oyster and cockle shell; modern ceramics; a modern airbrick fragment; post-medieval pottery.

011 All the dateable finds are post-medieval or modern, with a quantity of animal bone, oyster and cockle shell and coal fragments.

012 One fragment each of animal bone and oyster shell; a selection of post-medieval and modern pottery, including flower pots; one glazed medieval sherd.

013 A similar context to 011, with a date range up to *c* 1850. Also present is a large sherd of early post-medieval pottery and an unglazed medieval sherd.

016 Most of the finds are post-medieval; the absence of mass-produced pottery indicates a late 17th century date. A stamped clay pipe bowl can be dated to *c* 1660-1680. Also present are four medieval sherds.

018 Only four sherds were recovered; they suggest an 18th century date.

021 This context contains two sherds of medieval pottery in calcitic Llansteffan fabric, plus small amounts of animal bone and oyster shell.

Trench 3

(All the contexts from this trench contain modern or post-medieval material, except for 031. This has possibly been mis-numbered, as it was separated from the context labels during washing).

030 A small amount of animal bone and shell; one sherd each of local red earthenware, tin-glazed earthenware and white earthenware; two sherds of North Deven gravel-tempered ware and a sherd from a Merida (?) jug.

031 There is a range of post-medieval and modern material, including local red earthenware, tile, glass, buffwares, stoneware, modern ceramics and clay pipe stems. The small quantity of medieval pottery includes white fabrics.

033 This context contains animal bone; oyster and scallop shell; a brick fragment; tile fragments; clay pipe stems; local red earthenware; North Devon pottery and stoneware.

035 This includes animal bone; oyster and snail shell; slip-decorated local red earthenware; North Deven gravel-tempered ware; a tin-glazed jug rim sherd and Westerwald stoneware.

037 The few finds consist of animal bone with three sherds of North Devon gravel-tempered ware.

Trial Pit 1

059 An iron cauldron fragment; local red earthenware (all post-medieval).

060 A number of folded and torn scraps and waste pieces of waterlogged leather, probably of post-medieval date.

APPENDIX TWO: THE FINDS

Part (2): The ceramics

Table 2: Summary list of ceramics .

The following summary list of the ceramics from all contexts has been grouped by numbers of individual sherds/ items and by weight. The early tile (column 8) includes both medieval and early post-medieval material, as these are generally difficult to distinguish.

Context	MEDIEVAL POTTERY			EARLY POST-MED POTTERY			NORTH DEVON (?) AND TRANSITIONAL			POST-MEDIEVAL COARSEWARES			POST-MEDIEVAL BUFF/ FINEWARES			BTPW/ CREAMWARES AND MODERN			CLAY PIPES			MEDIEVAL/ EARLY P-M TILE		P-M/ MODERN BRICK AND TILE	
	Nos of sherds	Rims	Weight (kg)	Nos of sherds	Rims	Weight (kg)	Nos of sherds	Rims	Weight (kg)	Nos of sherds	Rims	Weight (kg)	Nos of sherds	Rims	Weight (kg)	Nos of sherds	Rims	Weight (kg)	No	Weight (kg)	Comments	Weight (kg)	Comments	Weight (kg)	Comments
TRENCH 1																									
002	5	1	0.040	-	-	-	-	-	-	24	15	1.148	3	-	0.030	22	19	0.438	5	0.012	stems	0.074	water pipe (?)	0.292	inc pantile/ airbrick
003	9	1	0.180	2	2	0.052	9	-	0.168	32	7	1.410	4	1	0.082	7	5	0.108	5	0.022	stems	0.188		0.094	brick and tile
014	-	-	-	-	-	-	-	-	-	11	3	1.044	-	-	-	16	5	0.302	1	0.008	stamped bowl	-		0.180	pantile
015	37	4	0.732	14	2	0.308	-	-	-	3	1	0.280	2	1	0.056	-	-	-	-	-		1.260		0.098	tile
019	12	2	0.130	3	-	0.066	-	-	-	-	-	-	-	-	-	-	-	-	-	-		0.154		-	
020	26	3	0.416	16	-	0.258	-	-	-	-	-	-	-	-	-	-	-	-	-	-		0.850		-	
022	11	-	0.122	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		0.030		-	
024	32	2	0.472	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		0.026		-	
025	102	4	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		0.008		-	
027	8	-	0.090	5	-	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-		0.241	inc floor tile	-	
028	39	6	0.536	1	-	0.012	-	-	-	-	-	-	-	-	-	-	-	-	-	-		0.134	floor tile	-	
041	45	5	0.588	3	1	0.328	-	-	-	-	-	-	1	-	0.018	-	-	-	-	-		0.238		-	
044	10	2	0.328	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		0.432	inc floor tile	-	
TRENCH 2																									
004	1	-	0.008	-	-		-	-	-	6	1	0.134	-	-	-	3	1	0.042	-	-		-		-	
006	-	-	-	-	-	-	-	-	-	2	1	0.034	5	-	0.070	4	3	0.062	-	-		-		0.010	airbrick
011	-	-	-	-	-	-	-	-	-	10	-	0.074	1	-	0.006	9	7	0.082	2	0.004	stems	-		-	
012	1	-	0.006	-	-	-	1	-	0.232	5	1	0.082	3	-	0.010	14	4	0.116	-	-		-		0.010	airbrick
013	1	1	0.012	1	1	0.084	-	-	-	16	-	0.278	-	-	-	15	15	0.114	4	0.010	stems	-		-	
016	4	-	0.028	-	-	-	-	-	-	6	1	0.108	1	-	0.022	-	-	-	3	0.020	stamped bowl	-		-	
018	-	-	-	-	-	-	-	-	-	1	1	0.034	-	-	-	-	-	-	1	0.006		-		0.016	tile
021	2	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		-		-	
TRENCH 3																									
030	-	-	-	1	-	0.032	-	-	-	3	-	0.118	1	-	0.004	1	1	0.028	-	-		-		-	
031	16	3	0.144	1	1	0.012	-	-	-	34	3	0.598	2	-	0.020	11	7	0.094	11	0.050	stem	0.046		0.094	pantile and brick
033	-	-	-	-	-	-	-	-	-	9	1	0.316	1	-	0.020	-	-	-	4	0.016	stems	-		0.208	tile and brick
035	-	-	-	-	-	-	-	-	-	3	-	0.024	2	1	0.034	-	-	-	-	-		-		-	
037	-	-	-	-	-	-	-	-	-	3	-	0.058	-	-	-	-	-	-	-	-		-		-	
TRIAL PIT 1																									
059	-	-	-	-	-	-	-	-	-	3	-	0.082	-	-	-	2	1	0.04	-	-		-		-	
Totals	361	34	4.848kg	47	7	2.202kg	10	-	0.400kg	171	35	5.822kg	26	3	0.372kg	104	68	1.426kg	36	0.148kg		3.682kg		1.002kg	

APPENDIX TWO
Part (2): Animal bone

by Martin Locock

Summary

The animal bone assemblage reflects an origin in kitchen waste from the medieval-early post-medieval household; apparently, the meat was purchased from commercial butchers with access to specialised herds producing young adult sheep and cow for meat. The diet was predominantly sheep and cow, with a small component from other animals.

Assemblage summary

Animal bone was recovered from 24 contexts, yielding a total of 752 fragments (10.3kg). All animal bone was cleaned, counted and weighed. Of the 24 contexts, 11 were clearly residual or of recent date (containing 217 fragments), and were not studied further (this included an articulated young dog skeleton from 002). The remaining bone was recorded by context. For analysis, the contexts were divided into two groups: medieval (019, 021, 024, 025, 028, 044) and early post-medieval (015, 020, 022, 027, 035, 037, 041). Table 3 (below) shows the breakdown of the assemblage by species. Table 4 is a catalogue of the bone examined and Table 5 provides a comparative list of the overall quantities of bone and shell.

Table 3: Species present (by numbers of bone)

	Medieval	Post-medieval	Total
Sheep/goat	38	45	83
Cow	14	28	42
Pig	5	8	13
Deer	2	4	6
Horse	1	3	4
Rabbit/hare	2	0	2
Subtotal identified	62	88	150
Unidentified	155	226	381
TOTAL MAMMAL	217	314	531
Bird (not identified)			4
TOTAL BONE			535

The medieval assemblage is dominated by sheep/goat (61%) and cow (23%), with fewer pig (8%), deer (3%) and rabbit/hare (3%). The post-medieval assemblage is similar to the medieval assemblage: sheep/goat (51%), cow (32%), pig (9%), and a few deer (5%) and horse (3%).

Taken at face value, these results are surprising for the dominance of sheep over cow, and the low level of wild species. However, it is notable that almost all of the bones are incomplete: those of large mammals have been cut to small-size fragments, while the medium mammal bones consistently show butchery comprising a diagonal chop across the diaphysis (shaft) close to the mid-point of the bone. The low degree of fragmentation and good condition of the bone surfaces implies that the bone was buried rapidly and then not disturbed. Few of the bones are those elements discarded upon slaughter. Thus the

assemblage displays all the characteristics of kitchen waste, rather than butchery or table waste, implying that the household was obtaining much of its meat by purchase from commercial butchers, and then disposing of the waste in the back garden. This being the case, the proportions of species present cannot be taken to represent either the population in the hinterland supplying the town, or the diet of the household, with any accuracy.

The age structure of the animal population can be established from the tooth-wear observed and the state of fusion of the epiphyses. For this site, almost all of the bones are adult; the majority of teeth are permanent teeth just coming in to wear. This combination reflects an age-at-death of young adulthood for the vast majority of animals: this pattern is a classic meat-maximising husbandry practice, again showing the commercial basis of meat provision in the hinterland.

The wild animals are very rare. It is unlikely that they were hunted by the household: rabbit/hare may have been farmed by the Earls of Pembroke, who presumably also had a monopoly on (legal) access to deer. The association of deer with land-owning and manorial rights meant that venison was a powerful symbol of power in medieval society; the gift of venison by a lord to a vassal was therefore a mark of favour. It is tempting to hypothesise the Earl of Pembroke returning to Pembroke Castle with the carcasses from hunting in the area, and then distributing the meat to some of the townsfolk. Little weight should be attached to the number of post-medieval deer bones: all are in fact from a single context, and comprise a fragmentary mandible and loose teeth. The bird bones are a duck-type, presumably reflecting the estuarine location.

Table 4: Individual bone catalogue

The following table provides details of all bones examined. Size classes have been used for bones which could not be assigned to species; unidentified mammals are thus described as large (lge) or medium (med), following the definitions in Shackley M 1981 *Environmental Archaeology*, 170.

Completeness: 1 proximal - 5 distal; fr = fragment. Teeth have been assigned to type (m, m3, pm, i, c) except where diagnostic, followed by wear stage (estimated).

015 (Trench 1)

cow	ulna R 2-3 chopped at 3
cow	radius L 1-2 chopped at 2
cow	metapodial L 4-5
cow	ulna R 2-3 chopped at 3
cow	calcaneum L
cow	tooth (m) worn
cow	radius L 4-5 chopped at 4
pig	humerus R 4-5 chopped at 4
s/g	radius R 1-3 chopped at 4
s/g	radius L 1-5
s/g	tibia L 4-5 chopped at 4
s/g	metatarsal R 3-5 chopped at 3
s/g	scapula 1-3
s/g	tibia L 4-5 chopped at 4
lge	un x 15
lge	vertebra x 2
lge	femur
lge	rib x 4
med	vertebra x 4
med	un x 10
med	rib
un	un x 8
	total mammal 58

019 (Trench 1)

cow	metacarpal 4-5 chopped at 3
cow	humerus L 3-5 chopped at 3 cut at 5
cow	horn core
s/g	horn core
s/g	humerus L 4-5 chopped at 4
s/g	tibia L 1-2
s/g	scapula R 1
deer	scapula L 1
r/h	tibia L 3-5
med	vertebra
med	rib x 2
med	un x 3
lge	patella
lge	rib x 2
lge	un x 5
un	un x 2
bird	1
	total mammal 25; total bird 1

020 (Trench 1)

cow	calcaneum
cow	PII
cow	PII
cow	tooth (pm)
cow	scapula 1
cow	scapula 1
cow	scapula 1-2
cow	metatarsal R 4-5
cow	astralagus
cow	metatarsal R 4-5 chopped at 4
s/g	humerus R 4-5
s/g	humerus L 4-5 chopped at 3
s/g	radius L 1-4
s/g	radius L 1-5
s/g	metatarsal R 1-4
s/g	metacarpal R 1-4
s/g	tooth (d)
s/g	radius R 1-4
s/g	humerus L 4-5 chopped at 4
s/g	tibia R 4-5 chopped at 4
pig	mandible L 3 pm2 pm3 m1 (worn) m2 (unworn)
horse	PII horse
horse	tooth (m)
horse	skull (part maxilla)
lge	scapula fr
lge	rib x 2
lge	un x 41
med	scapula fr
med	vertebra x 3
med	un x 18
med	pelvis fr
	total mammal 91

021 (Trench 2)

s/g	pelvis 2
s/g	pelvis 5
	total mammal 2

022 (Trench 1)

s/g	radius R 1-4
s/g	humerus R 4
s/g	humerus L 4
s/g	tooth (m) c
med	un x 3
med	vertebra fr
lge	rib
	total mammal 9

024 (Trench 1)

cow	PII 1-5
cow	metacarpal 4 chopped at 3
cow	metatarsal 4-5 chopped at 3
cow	metatarsal R 1-3 chopped at 3
cow	ulna L anterior epiphysis unfused
s/g	PII 1-5
s/g	humerus R 4-5 chopped at 3
s/g	tooth (m) c
s/g	tooth (m) d
s/g	femur R 2-3 chopped at 3
s/g	humerus L 4-5 chopped at 4
r/h	tibia L 1-5
pig	tooth (i)
med	rib
med	femur 4 unfused epiphysis chopped at 3
med	vertebra x 2
med	un x 7
lge	vertebra x 3
lge	rib x 3
lge	un x 7
un	un x 2
	total mammal 39

025 (Trench 1)

cow	metatarsal L 1-3
cow	ulna L 1-2
cow	tooth (m)
pig	tooth (c) male
pig	tooth (c)
pig	mandible L 3 m3 unerupted
pig	tooth (i)
s/g	tibia R 4-5 chopped at 3
s/g	tibia R 1-3 unfused proximal epiphysis chopped at 3
s/g	tibia L 1-2 chopped at 4
s/g	tibia L 1-2 chopped at 2
s/g	astragalus L
s/g	mandible 3 d3 c
s/g	scapula R 1-2
s/g	tooth (m) c
s/g	tooth (m) b
s/g	tooth (m) e
s/g	tooth (m) d
s/g	metatarsal L 1-3 chopped at 3
horse	tooth (m)
deer	humerus L 4-5 chopped at 4
med	vertebra x 2
med	rib x 6
med	pelvis fr
med	un x 14
lge	rib x 4
lge	un x 11
un	un x 35
	total mammal 94

027 (Trench 1)

cow	skull/horn core fr x 8
deer	humerus L 4-5 cut at 5, chopped at 4
pig	humerus R 3-4 chopped at 3
pig	radius L 1-3 chopped at 3
s/g	humerus L 4-5 chopped at 3
s/g	humerus R 4-5 chopped at 3
s/g	humerus L 2-5
s/g	humerus R 4-5 chopped at 3
s/g	radius R 1-3
s/g	radius L 1-3
s/g	ulna R 2-4
s/g	metatarsal L 1-3
s/g	metatarsal L 1-4
s/g	tibia R 1-4 chopped at 4
s/g	scapula L 1-3
s/g	tooth (m) a
med	scapula L fr
med	radius 3
med	un x 5
lge	rib x 4
lge	pelvis fr
lge	un x 15
	total mammal 50

028 (Trench 1)

cow	femur fr (dist artic only)
cow	tooth (i)
s/g	tibia L 2-4
s/g	radius L 1-3 chopped at 3
s/g	ulna R 2-3
s/g	humerus L 4
s/g	metacarpal L 1-3 cut and gnawed
s/g	metatarsal L 4-5 chopped at 3
s/g	metapodial 4-5
s/g	metapodial 3
s/g	metacarpal R fr
s/g	radius fr 1
s/g	radius L 2-4 cut diagonally at 2
s/g	tooth (m) c
s/g	tooth (m) b
s/g	scapula R 1
med	skull fr x 2
med	rib
med	astragalus R 1-5
med	un x 6
lge	skull fr x 3
lge	rib x 4
lge	un x 17
	total mammal 50

035 (Trench 3)

lge	un x 2
med	rib x 2
	total mammal 4

037 (Trench 3)

pig	humerus 4-5 chopped at 4
lge	rib
med	un
	total mammal 3

041 (Trench 1)

cow	mandible L 2-4 pm1 worn
cow	metatarsal L 4 chopped at 3, cut, gnawed
cow	tooth (m2) b
s/g	skull/horn core L 1 horn core turns ventrally, ?malformed
s/g	radius L 3-5
s/g	radius R 3-5
s/g	radius R 5
s/g	metatarsal R 1-3 damaged (?cut)
s/g	tibia R 5 unfused epiphysis
s/g	tibia L 2-4 chopped at 4
s/g	femur L 3-4
s/g	femur R 4-5 chopped at 4
s/g	tooth (m3) b
s/g	tooth (m2) a
s/g	tooth (m1) a
s/g	tooth (pm2) b
pig	phalange II 1-5
pig	phalange II 1-5
pig	tooth (i)
deer	mandible L 1-2 m3 unerupted small cervid
deer	tooth (pm2) b
deer	tooth (d) b
lge	pelvis R 3 cut, chopped, gnawed
lge	vertebra 2-4 (epiphyses unfused)
lge	vertebra 2-4 (epiphyses unfused)
lge	humerus 4 chopped at 3
lge	skull fr
lge	long bone 4 chopped at 3
lge	rib x 10
lge	un x 9
med	vertebra 2
med	vertebra fr (dist unfused)
med	vertebra 2-4 (eps unfused)
med	vertebra fr
med	long bone 2-4 cuts on shaft
med	rib
med	un x 26
un	un
bird	4

total mammal 4; total bird 4

044 (Trench 1)

cow	astragalus R 2-3
med	un x 3
med	humerus 2-4
lge	pelvis fr
lge	rib
lge	un x 2

total mammal 9

Table 5: Comparative quantities of bone and shell

The following table lists the overall quantities of bone and shell from each context.

Context	ANIMAL BONE			SHELL		
	No	Weight (kg)	Comments	No	Weight (kg)	Type(s)
TRENCH 1						
002	59	0.372	not studied	2	0.008	cockle
003	34	0.770	not studied	54	0.765	oyster, cockle, whelk
014	1	0.002	not studied	1	0.004	cockle
015	58	1.360		33	0.400	oyster, scallop, limpet
019	26	0.570		20	0.520	oyster, scallop
020	91	2.000		*c* 250	3.845	oyster, limpet, winkle, scallop
022	9	0.072		58	0.735	oyster, limpet, cockle, snail
024	39	0.545		5	0.036	oyster, cockle, snail
025	94	0.990		42	0.468	oyster, cockle, scallop, whelk
027	50	0.645		115	1.890	oyster, limpet, cockle, scallop
028	50	0.462		26	0.388	oyster, cockle
041	104	1.115		38	0.364	oyster, cockle, limpet, scallop, whelk, mussel, snail
044	9	0.208		2	0.148	oyster
TRENCH 2						
004	3	0.044	not studied	-	-	
006	2	0.138	not studied	2	0.014	oyster, cockle
011	68	0.402	not studied	13	0.124	oyster, cockle, scallop
012	1	0.012	not studied	1	0.012	oyster
013	18	0.242	not studied	13	0.030	oyster, cockle, scallop
016	-	-		-	-	
018	-	-		-	-	
021	2	0.016		4	0.024	oyster
TRENCH 3						
030	3	0.078	not studied	1	0.008	oyster
031	22	0.126	not studied	21	0.122	oyster, cockle, scallop
033	6	0.058	not studied	6	0.054	oyster, scallop
035	4	0.042		4	0.040	oyster, snail
037	3	0.064		-	-	
TRIAL PIT 1						
059	-	-		-	-	
Totals	**750**	**10.333**		**711**	**9.999kg**	

APPENDIX TWO
Part (3): Mortar analysis

by Martin Locock

Excavation context

During the excavation of Trench 1, in the back-plot of No 6, two separate mortared stone walls were revealed on the presumed line of the town wall.

Description

Two mortar samples were retained: from the robbed earlier wall (026 - Phase Two), and from the base of the existing town wall (045 - Phase Four).

026 Hard white lime mortar with occasional angular stones and lumps of lime.

045 Moderately hard grey mortar with lumps of lime and coal.

Discussion

The general sequence of post-Roman mortars found in archaeological contexts in South Wales can be summarised as:

Table 6: Mortar types

Type	Dating	Description
1	pre-1700	Sandy mortars with little lime.
2	1700-1750	Lime-rich mortars with few inclusions.
3	1750-1850	Lime-rich mortars with lumps of solid lime and sand, sometimes with ash.
4	1850-1920	Lime-rich mortars with coal and ash used as bulking agent, making a dense black mortar.

On this basis, the mortar from wall 026 would appear to be Type 2, and that from wall 045 Type 3 (or possibly an unusual use of ash in Type 1). Both of these types are significantly later than would be expected on the basis of stratigraphic relationships.

The dating of mortars is essentially an indication of the availability and price of lime. The widespread lime-burning of the late 17th and early 18th centuries was responsible for a general reduction in price, leading to its use in high proportions of buildings. Later, the poor structural qualities of solid lime led to the use of various bulking agents.

There are, therefore, two explanations for the apparent dates of the mortars: either the dates are correct, and the walls are later than is suggested by the pottery, or else the dating sequence in Pembroke diverges from that in the Swansea-Monmouth area. This latter is a real possibility, given that Pembroke is built on limestone, and so lime would have been plentiful from an early period; also that the chosen construction method for Pembroke's town wall (a thin, well-coursed wall rather than a thick, self-supporting wall) would necessitate the use of lime.

In order to decide this question, it is recommended that any further work on the town wall should include a programme of comparative mortar sampling from stretches of wall of known (or attributed) date.

APPENDIX THREE: CONTEXTS SUMMARY

A summary of the contexts within each trench, trial pit, borehole etc is presented here. Note that the borehole data have been taken from the driller's logs and were not recorded separately. The depths and OD levels quoted refer to the top of each unit.

(A) HAND-EXCAVATED TRENCHES

Trench 1

Context	Below	Above	Depth	OD Level	Description
001		002	0.0m	9.00m	Very mixed silt CLAY, with frequent limestone and some sandstone rubble and modern debris. Loose surface material overlying the garden loam.
002	001	003	0.5m	8.57m	Humic sandy silt LOAM topsoil.
014	002	003	0.9m	8.05m	Loose, very dark grey very sandy SILT with limestone fragments, slate, brick etc.
003	002	015 020	0.82m	8.20m	Dark brown silt CLAY with occasional limestone rocks, mortar, shells.
020	003	015	1.50m	7.51m	Very dark greyish brown slightly sandy SILT with high proportion of mortar, slate, limestone rocks, pebbles and charcoal.
015	003 020	019 026 022	1.30m	7.72m	Dark greyish brown, very sandy SILT, with stone, mortar, slate and brick.
022	015	023	2.11m	6.87m	Dark greyish brown sandy CLAY with slate, mortar and limestone fragments. Abutts wall 045.
043	015	027 026	2.10m	6.86m	Mixed dark greyish brown sandy SILT with mortar, limestone rocks and slate. Abutts wall 045.
023	022	027	2.80m	6.21m	Dark greyish brown sandy clay SILT with slate, mortar and occasional limestone fragments. Abutts wall 045.
027	023	041	2.90m	6.09m	Layer of fragmented slate, with mortar and limestone rocks. Abutts wall 045.
041	027		3.20m	5.94m	Mixed, dark greyish brown coarse sandy clay SILT with limestone rocks, slate, mortar and shells. Abutts wall 045.
045	041	042	0m	8.97m	Present town wall.
042	027 041	044 076	2.90m	6.10m	Construction trench for wall 045.
019	015	024	1.52m	7.37m	Dark greyish brown slightly sandy CLAY with oyster, limestone fragments and charcoal flecks.
024	019	025 026	1.84m	7.19m	Dark brown sandy silt CLAY with limestone fragments, slate, charcoal and mortar.
025	024	028 026	2.11m	6.90m	Reddish brown slightly sandy silt CLAY with limestone fragments, shells and mortar.
026	024 025	044	2.10m	6.95m	Wall of irregular limestone blocks with rubble core.
044	026	076	3.20m	5.83m	Reddish brown sandy silt CLAY with limestone rocks, mortar flecks and some shell.
028	025	029 076	2.51m	6.46m	Dark reddish grey slightly sandy silt CLAY with frequent limestone rocks.
029	028	076	2.72m	6.25m	Possible cut feature at south end of trench.
076	028 044	(Rock)	2.72m	6.25m	Yellowish red slightly sandy SILT.
Rock	076		3.63m	5.34m	Limestone (presumed bedrock) reached in AH 9 at south end of trench.

Trench 2

Context	Below	Above	Depth	OD Level	Description
004	005	007 008 009 010 046 013	0m	9.98m	Garden topsoil. Very dark grey humic, slightly sandy clay LOAM.
005	006	004	0m	9.92m	Setting of limestone and sandstone slabs extending across trench (rockery ?).
006		005	0m	9.78m	Dark brown very sandy SILT with frequent mortar and occasional charcoal flecks.
012	006	010 013	0.22m	9.57m	Dark greyish brown coarse sandy SILT with mortar and limestone rocks.
007	004	008	0.35m	9.58m	Fill of sewer pipe trench 046. Reddish brown gritty sandy CLAY.
008	004 007	009	0.50m	9.42m	Fill of sewer pipe trench 046. Reddish brown, coarse sandy CLAY with frequent limestone rocks, coal and mortar.
009	004 008	010	0.52m	9.40m	Fill of sewer pipe trench 046. Reddish brown mottled with dark reddish grey very mixed sandy SILT with occasional limestone rocks.
010	012 009	051 011 013	0.35m	9.42m	Fill of sewer pipe trench 046. Loose, mixed very dark greyish brown sandy silt CLAY with occasional limestone fragments, shells, coal and charcoal.
051	010	046 018	1.29m	8.68m	Basal fill of sewer pipe trench 046. Firm reddish brown sandy SILT.
046	004 012 007 008 009 010 051	013 016 011 018	0.37m	9.58m	Cut for sewer pipe trench.
011	011 012	047 013 016	0.63m	9.28m	Loose, mixed coarse sandy SILT with high proportion of charcoal, coal, coke, slag and limestone rocks.
047	011	013 016	0.63m	9.28m	Shallow linear cut filled by 011.
013	004 046	016 048	0.31m	9.63m	Very mixed, predominantly very dark greyish brown coarse sandy silt, with limestone fragments, very frequent mortar and lime flecks, coal and charcoal.
016	013 047	018 021 048	0.83m	9.15m	Dark brown slightly clayey sandy silt with frequent mortar and lime flecks, slate and limestone fragments.
018	046 051 016	017 021 048	1.39m	8.55m	Reddish brown slightly sandy SILT with infrequent limestone fragments.
017	018	021 048	1.39m	8.55m	Shallow cut within fill of rock-cut ditch, filled by 018.
021	016 017 018	049 048	1.32m	8.64m	Reddish brown slightly sandy SILT with few limestone fragments, and occasional lime flecks
049	021	050 048	1.56m	8.38m	Layer of unweathered angular limestone rubble.
050	049	048	2.06m	7.88m	Reddish brown coarse gritty SILT with limestone fragments.
048	013 016 018 021 049 050		0.54m	9.45m	Cut of ditch through limestone bedrock.

Trench 3

Context	Below	Above	Depth	OD Level	Description
030		031	0m	9.91m	Humic grey-brown gritty sandy CLAY with pebbles, charcoal and coal.
031	030	032	0.32m	9.59m	Mid brown gritty sandy silty CLAY with pebbles and a high proportion of mortar flecks.
032	031	033	0.51m	9.40m	Thin band of light red-brown burnt sand and coal.
033	032	035	0.55m	9.36m	Mixed predominantly mid-brown gritty sandy SILT with high concentration of mortar, slates, limestone, pebbles and occasional oyster shell.
034	037 038	033 035	0.92m	8.99m	Very hard, mixed mortar and stone. Bluish-grey mortar with flecks of charcoal and limestone fragments. Similar to the render covering wall 045.
035	033	034 036	0.92m	8.99m	As overlying deposit 033, but more stony.
036	035	037	1.11m	8.80m	Thin band of loose mortar and stone.
037	036 034	039	1.19m	8.72m	Coarse sandy CLAY with stones and lime flecks. Abutts wall 038.
038	034 036		1.16m	8.68m	Mortared wall face.
039	037	040	1.72m	8.14m	Coarse sandy CLAY with lime flecks, charcoal and pebbles.
040	039	(Rock)	2.04m	7.83m	Reddish brown slightly clayey SILT.
Rock	040		2.27m	7.64m	Limestone (presumed bedrock).

(B) AUGER HOLES

Auger Hole 1

Context	Below	Above	Depth	OD Level	Description
077		078	0m	11.69m	Dark brown humic clay LOAM. Garden soil.
078	077	079	0.30m	11.39m	Reddish brown soft plastic, slightly sandy SILT.
079	078	(Rock)	0.60m	11.09m	As above, becoming coarser and slightly more mixed.
Rock	079		0.71m	10.98m	Limestone rock (bedrock ?).

Auger Hole 2

080		081	0m	11.57m	Very dark brown, humic slightly gritty clay LOAM. Garden topsoil beneath turf.
081	080	(Rock)	0.21m	11.36m	Reddish brown soft slightly sandy SILT.
Rock	081		0.56m	11.01m	Limestone rock (bedrock ?).

Auger Hole 3

082		083	0m	11.42m	Very dark brown, humic slightly gritty clay LOAM.
083	082	(Rock)	0.20m	11.22m	Gradual change to reddish brown soft slightly sandy SILT.
Rock	083		0.37m	11.05m	Limestone rock (bedrock ?).

Auger Hole 4

084		085	0m	11.34m	Very dark brown, humic slightly gritty clay LOAM.
085	084	086	0.20m	11.14m	Dark greyish brown clay SILT with mortar, oyster shell and charocoal flecks.
086	085	(Rock)	0.35m	10.99m	Yellowish red slightly sandy SILT.
Rock	086		0.57m	10.77m	Limestone rock (bedrock ?).

Auger Hole 5

087		088	0m	11.29m	Very dark brown, humic clay LOAM
088	087	089	0.30m	10.99m	Mixed, very dark greyish brown sandy silt CLAY with mortar flecks, pebbles, charcoal.
089	088	090	0.56m	10.73m	Dark greyish brown clay SILT with mortar, oyster shell, charcoal flecks.
090	089	(Rock)	0.65m	10.64m	Yellowish red slightly sandy SILT with occasional limestone fragments.
Rock	090		0.76m	10.53m	Limestone rock (bedrock ?).

Auger Hole 6

Context	Below	Above	Depth	OD Level	Description
091		092	0m	11.22m	Very dark brown, humic gritty clay LOAM.
092	091	093	0.30m	10.92m	Very dark greyish brown silt CLAY with mortar, oyster shell, pebbles, charcoal.
093	092	094	0.62m	10.60m	Becoming dark greyish brown clay SILT with mortar, charcoal, oyster shell.
094	093	(Rock)	0.84m	10.27m	Reddish brown slightly sandy SILT.
Rock	094		0.96m	10.26m	Limestone rock (bedrock ?).

Auger Hole 7

095		096	0m	11.14m	Very dark brown, humic gritty clay LOAM.
096	095	097	0.28m	10.86m	Mixed, very dark greyish brown sandy silt CLAY with frequent mortar, pebbles, charcoal flecks.
097	096	098	0.68m	10.49m	Mixed, dark greyish brown clay SILT with mortar, oyster shell, pebbles, charcoal.
098	097	(Rock)	1.10m	10.04m	Reddish brown slightly sandy SILT.
Rock	098		1.12m	10.02m	Limestone rock (bedrock ?).

Auger Hole 10

099		100	0m	10.99m	Very dark brown gritty humic clay LOAM.
100	099	101	0.35m	10.64m	Very dark greyish brown coarse sandy CLAY with pebbles, mortar flecks and charcoal.
101	100	102	0.50m	10.49m	Dark greyish brown slightly sandy silt CLAY with mortar, charcoal, burnt clay flecks.
102	101	(Rock)	0.80m	10.19m	Sharp change to yellowish red soft slightly sandy SILT.
Rock	102		1.0m	9.99m	Limestone rock (bedrock ?).

Auger Hole 11

103		104	0m	10.60m	Very dark brown gritty humic clay LOAM.
104	103	105	0.50m	10.10m	Loose, mixed, very dark greyish brown very sandy CLAY with frequent mortar, some slate, charcoal, pebbles, limestone rocks.
105	104	106	0.85m	9.75m	Very mixed dark brown coarse very sandy CLAY with mortar, charcoal etc (as above).
106	105		1.40m	9.20m	Substantial limestone rocks filling auger chamber. Base of augering.

(C) MACHINE-CUT TRIAL PITS

Trial Pit 1

Context	Below	Above	Depth	OD Level	Description
053		054	0m	4.27m	Loose, unconsolidated, very mixed SAND.
054	053	055	0.12m	4.15m	Single layer of uniform, rounded COBBLES, less than 120mm across, with some broken red brick.
055	054	056	0.20m	4.07m	Slightly silty SAND with 25% loose mortar, cobbles and angular limestone fragments.
056	055	057	0.50m	3.77m	Thin continuous layer of black charred material. Undulates slightly, with lenses up to 30mm in thickness, but generally 10-15mm.
057	056	058	0.51m	3.76m	Moist, coarse grey silty SAND with mortar, occasional potsherds and bones.
058	057	059	0.55m	3.72m	Reddish, coarse sandy CLAY with heavy proportion of angular limestone fragments, bone, oyster shell and mortar flecks.
059	058	060	1.03m	3.24m	Very mixed coarse sandy CLAY with high proportion of slate, mortar and limestone rocks.
060	059	061	1.59m	2.68m	Soft, moist, plastic greyish brown sandy CLAY with lenses of dark grey/ black material. Leather-working scraps at 1.69m depth.
061	060	Rock	2.03m	2.24m	Plastic, reddish brown silt CLAY with sub-angular limestone rocks and pebbles. Shap contact with overlying deposit.
Rock	061		2.73m	1.54m	Fractured limestone bedrock.

Trial Pit 2

062		063	0m	4.40m	Loose rubble set in a coarse reddish SAND. Overlain in some areas by concrete.
063	062	064	0.10m	4.30m	Very coarse reddish SAND.
064	063	065	0.18m	4.22m	Very dark band with charred material.
065	064	066	0.23m	4.17m	Light brown coarse sandy CLAY with a high proportion of angular limestone rubble, occasional potsherds and bone.
066	065	067	0.60m	3.80m	Light reddish brown coarse sandy CLAY with a very proportion of angular rubble and slate. The rubble is very clean and mortar-free (perhaps quarry material ?).
067	066	068	1.10m	3.30m	Very mixed coarse sandy CLAY with mortar and limestone fragments. Occasional potsherds and bone.
068	067	(Rock)	1.56m	2.84m	Soft, plastic yellowish red silt CLAY with high proportion of angular limestone fragments.
Rock	068		1.76m	2.64m	Fractured limestone bedrock. On the east-facing side of the pit, the rock commences at 0.25m depth (4.15m OD), immediately beneath the charred layer 064. The bedrock has been cut back to form a near-vertical face.

Trial Pit 3

Context	Below	Above	Depth	OD Level	Description
069		070	0m	4.35m	Paving of roughly-dressed limestone blocks up to 500mm across and 200mm deep. At the south side of the pit, where the flagstones overlie the natural clay and rock, the flags are reduced to 100mm depth.
070	069	071	0.20m	4.15m	Thin band of black humic material with charcoal. Undulates locally to 300mm thickness.
071	070	072	0.30m	4.05m	Moderately firm yellowish red CLAY with angular limestone fragments.
072	071	073	0.43m	3.92m	Loose light grey SAND with high proportion of mortar and horizontally-bedded fractured slate.
073	072	074	0.65m	3.70m	Soft, friable, dark grey slightly silty CLAY with angular limestone fragments.
074	073	075	0.75m	3.60m	Very mixed grey brown coarse sandy CLAY with fractured rocks (possibly derived from underlying bedrock).
075	074	(Rock)	0.93m	3.42m	Yellowish red sandy silt CLAY.
Rock	075		0.98m	3.37m	Fractured limestone bedrock. On the north side of the trench, the rock rises sharply as an inclined face to a height of 4m OD, where it is overlain by a yellowish red sandy clay (as 075), which in turn is overlain by the dark humic band (070).

(D) BOREHOLES (information summarised from geotechnical report)

Borehole 1

Context	Below	Above	Depth	OD Level	Description
107		108	0m	4.88m	MADE GROUND. Very dense grey sand with gravel (hardcore).
108	107	109	1.2m	3.68m	Dark brown sandy very clayey GRAVEL with cobbles and some shell.
109	108		4.1m	0.78m	Black clayey very silty SAND with occasional cobbles and shell fragments. Continues to base of hole at 5m depth (-0.12m OD)
Rock	109		5.60m	-0.72m	Limestone rock. Continues to base of hole at 6.5m depth (-1.62m OD).

Borehole 2

110		111	0m	4.71m	MADE GROUND. Dense dark grey slightly clayey very sandy gravel with some cobbles (hardcore).
111	110	112	0.8m	3.91m	Dark brown coarse sandy very clayey GRAVEL with occasional cobbles.
112	111	(Rock)	3.3m	1.41m	Dark grey/black clayey, very sandy, very silty GRAVEL with occasional cobbles, shell fragments and coal particles. Organic odour.
Rock	112		3.6m	1.11m	Limestone rock. Continues to base of hole at 4.2m depth (0.51m OD)

Borehole 3

113		114	0m	4.25m	MADE GROUND. Very dense dark grey slightly clayey sandy gravel with frequent cobbles.
114	113	115	0.70m	3.55m	Dark brown sandy very clayey GRAVEL with occasional shell fragments, brick fragments and flakes of copper..
115	114	(Rock)	4m	0.25m	Black/ dark grey gravelly very silty SAND with occasional cobbles. Organic odour.
Rock	115		5.3m	-1.05m	Slightly weathered limestone rock with occasional clay infill. Continues to base of hole at 6m depth (-1.75m OD).

Borehole 4

116		117	0m	4.23m	MADE GROUND. Very dense dark grey slightly clayey sandy gravel with occasional cobbles.
117	116	(Rock)	1.1m	3.13m	Mottled reddish brown and greenish grey sandy silty CLAY with gravel and some shell fragments.
Rock	117		2m	2.23m	Limestone rock. Continues to base of hole at 2.7m depth (1.53m OD).

APPENDIX FIVE: EVALUATION ARCHIVE CATALOGUE

The evaluation archive (which, for present purposes, includes both the Site Archive and the Research Archive as defined by MAP 2[1]) has been catalogued according to the NMR (RCAHMW)/ GGAT categories for excavation archives.

B ***Site Data***

(a) Context records and database
(b) Notebook
(e) Computer-generated list of contexts

C ***Non-publication Data***

(a) Catalogue of plans and sections
(b) Site drawings

D ***Photographs***

(a) Catalogue of photographs
(b) Colour slides
(c) Black and white negatives

E ***Finds Data***

(a) Catalogue of boxed finds
(c) Context finds records
(n) Unpublished finds analyses

F ***Documentary***

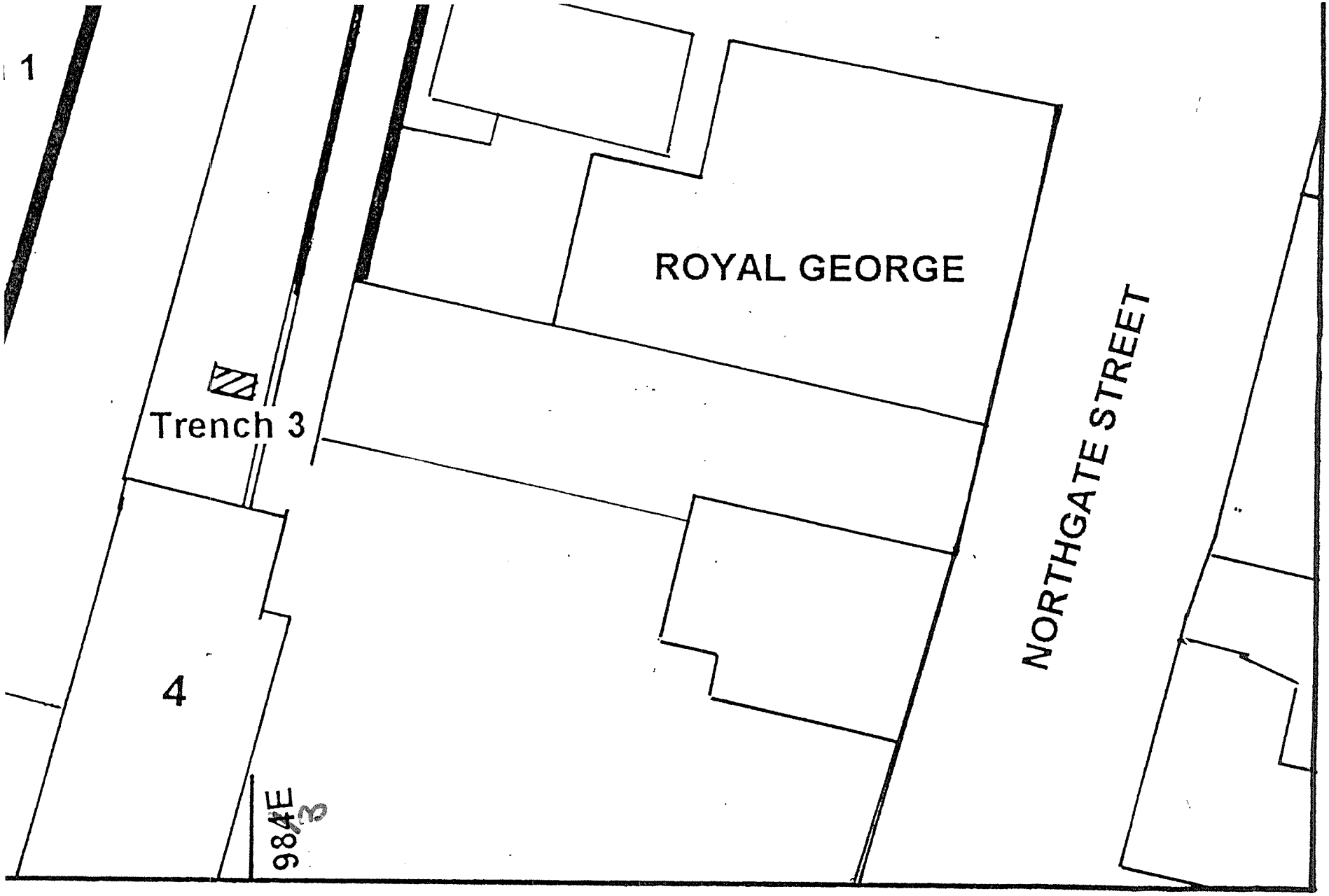
(a) Correspondence on archaeological matters

I ***Draft Report***

(b) Archive report - word-processed copy
(c) Archive report - computer disc

There are no items from Categories A, F, H, J, K, L, M or N.

[1] *English Heritage 1991* Management of archaeological projects *(revised edition), Appendix 3: Site Archive Specification) and Appendix 6: Research Archive Specification).*



itions of archaeological trenches,