WINCHESTER
A CITY IN THE MAKING

Archaeological excavations between 2002 – 2007
on the sites of Northgate House, Staple Gardens and the former Winchester Library, Jewry St

Section 7

The Ceramic and Stone Building Material
by Cynthia Poole and Ruth Shaffrey
Over 7500 fragments of ceramic building material (878 kg) were recovered from the site together with 525 fragments (128.3 kg) of building stone. The assemblage from the CC site was recorded during assessment, material for discard fully recorded and diagnostic material noted but not fully recorded. The building material from NH was more fully recorded. A complete record was made of the Roman tile from the Roman levels and residual Roman tile in post-Roman deposits summarily recorded. Much of the plain tile and brick was discarded at this stage. The medieval tile was fully recorded and all diagnostic pieces retained. Post-medieval tile was recorded and a representative sample retained. The building stone was partly recorded during assessment and some material discarded at that stage. The retained building stone was recorded and analysed.

The Roman Ceramic Building Material

Cynthia Poole and Ruth Shaffrey

Introduction

The assemblage of 6788 fragments of Roman tile (806 kg) is dominated by brick and tile. Brick, flat tile, tegulae, imbrices, box flue and tesserae were identified but only a single probable voussoir. No complete example of any type was found and complete lengths or widths were rare. The range of types and quantities is summarised in Tables 1 and 2.

All forms and types (for example signature types, cutaway and flange forms) were recorded according to OA CBM recording guidelines and typology.
Table 1: ceramic building material quantified by weight and fragment count

<table>
<thead>
<tr>
<th>Form</th>
<th>Weight (g)</th>
<th>% of assemblage by wt</th>
<th>Fragment count</th>
<th>% of assemblage by count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flue incl. voussoir</td>
<td>7619</td>
<td>0.9</td>
<td>90</td>
<td>1.3</td>
</tr>
<tr>
<td>Imbræx</td>
<td>47649</td>
<td>2.5</td>
<td>529</td>
<td>7.8</td>
</tr>
<tr>
<td>Tegula</td>
<td>90025</td>
<td>0.8</td>
<td>599</td>
<td>8.8</td>
</tr>
<tr>
<td>Flat tile</td>
<td>62759</td>
<td>11.2</td>
<td>942</td>
<td>13.9</td>
</tr>
<tr>
<td>Flat/indet</td>
<td>19943</td>
<td>7.8</td>
<td>362</td>
<td>5.3</td>
</tr>
<tr>
<td>Brick and brick/flat</td>
<td>531925</td>
<td>66.0</td>
<td>2487</td>
<td>36.6</td>
</tr>
<tr>
<td>Wall</td>
<td>4448</td>
<td>0.1</td>
<td>20</td>
<td>0.3</td>
</tr>
<tr>
<td>Tegula mammata</td>
<td>6553</td>
<td>0.4</td>
<td>14</td>
<td>0.2</td>
</tr>
<tr>
<td>Tessera</td>
<td>3223</td>
<td>3.9</td>
<td>92</td>
<td>1.4</td>
</tr>
<tr>
<td>Chipped disc</td>
<td>472</td>
<td>0.6</td>
<td>6</td>
<td>0.1</td>
</tr>
<tr>
<td>Indeterminate</td>
<td>31312</td>
<td>5.9</td>
<td>1647</td>
<td>24.3</td>
</tr>
<tr>
<td>Grand Total</td>
<td>805928</td>
<td>100.0</td>
<td>6788</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 2: Roman Ceramic Building material by form and period quantified by weight (g)

<table>
<thead>
<tr>
<th>Form</th>
<th>1.1</th>
<th>1.2</th>
<th>1.3</th>
<th>2.1</th>
<th>2.2</th>
<th>2.3</th>
<th>2.4</th>
<th>4</th>
<th>4.1</th>
<th>4.2</th>
<th>5</th>
<th>6</th>
<th>8</th>
<th>Unphased</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flue (incl voussoir)</td>
<td>1848</td>
<td>2403</td>
<td>255</td>
<td>173</td>
<td>1043</td>
<td>1744</td>
<td>128</td>
<td>25</td>
<td>7619</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1170</td>
<td>47649</td>
</tr>
<tr>
<td>Imbræx</td>
<td>430</td>
<td>175</td>
<td>177</td>
<td>18340</td>
<td>9382</td>
<td>1595</td>
<td>2924</td>
<td>4549</td>
<td>6353</td>
<td>2222</td>
<td>332</td>
<td>1107</td>
<td>1170</td>
<td>47649</td>
<td></td>
</tr>
<tr>
<td>Tegula</td>
<td>1195</td>
<td>634</td>
<td>255</td>
<td>24795</td>
<td>21431</td>
<td>4069</td>
<td>4815</td>
<td>11549</td>
<td>14590</td>
<td>4915</td>
<td>536</td>
<td>1241</td>
<td>90025</td>
<td>536</td>
<td></td>
</tr>
<tr>
<td>Flat tile</td>
<td>136</td>
<td>1062</td>
<td>40</td>
<td>9321</td>
<td>11659</td>
<td>3812</td>
<td>4804</td>
<td>8662</td>
<td>15435</td>
<td>6884</td>
<td>812</td>
<td>132</td>
<td>62759</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flat/indet</td>
<td>72</td>
<td>120</td>
<td>26</td>
<td>5828</td>
<td>2003</td>
<td>1550</td>
<td>823</td>
<td>3732</td>
<td>4521</td>
<td>963</td>
<td>203</td>
<td>102</td>
<td>19943</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brick</td>
<td>465</td>
<td>10855</td>
<td>1285</td>
<td>66581</td>
<td>114022</td>
<td>38093</td>
<td>38652</td>
<td>109811</td>
<td>101854</td>
<td>41732</td>
<td>5984</td>
<td>5033</td>
<td>534367</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tegula mammata</td>
<td>1460</td>
<td>1580</td>
<td>1005</td>
<td>700</td>
<td>1220</td>
<td>588</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6553</td>
</tr>
<tr>
<td>Wall</td>
<td>106</td>
<td>475</td>
<td>215</td>
<td>331</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2006</td>
<td></td>
</tr>
<tr>
<td>Tessera</td>
<td>106</td>
<td>1375</td>
<td>499</td>
<td>91</td>
<td>76</td>
<td>375</td>
<td>542</td>
<td>154</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3223</td>
<td></td>
</tr>
<tr>
<td>Chipped disc</td>
<td>240</td>
<td>66</td>
<td></td>
<td>88</td>
<td>78</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>472</td>
<td></td>
</tr>
<tr>
<td>Indet</td>
<td>3</td>
<td>16</td>
<td>56</td>
<td>20</td>
<td>10554</td>
<td>4593</td>
<td>2852</td>
<td>1643</td>
<td>4308.5</td>
<td>5113.2</td>
<td>1677</td>
<td>180</td>
<td>148</td>
<td>31312</td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>3</td>
<td>88</td>
<td>2600</td>
<td>12782</td>
<td>2384</td>
<td>140342</td>
<td>167853</td>
<td>53653</td>
<td>54610</td>
<td>145250</td>
<td>59202</td>
<td>8207</td>
<td>7826</td>
<td>805928</td>
<td></td>
</tr>
</tbody>
</table>

Fabrics

Provisional fabrics were assigned during recording of the CC assemblage and modified when recording the NH assemblage to allow for more rapid recording (Table 3). Some sub-fabrics identified in the CC assemblage to form consistent groupings have been retained in the record, though not separately identified in the NH assemblage.

Roman fabrics were divided into broad groups, subsequently linked to the Winchester type series through detailed comparison. The Winchester Museum type series is largely based on tile from the Brook Street site (Foot 1994) which has more
fabric subdivisions than the current assemblage. As a result many of the small Winchester type series categories are subsumed within the broader categories created for NH.

Table 3: Roman CBM forms by fabric type

<table>
<thead>
<tr>
<th>Form</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>D1</th>
<th>E</th>
<th>E1</th>
<th>E2</th>
<th>E2a</th>
<th>E3</th>
<th>F</th>
<th>G</th>
<th>Unclassified</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flue</td>
<td>255</td>
<td>1188</td>
<td>741</td>
<td>26</td>
<td>135</td>
<td>198</td>
<td>2984</td>
<td>80</td>
<td>254</td>
<td>1758</td>
<td>7619</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imbrex</td>
<td>860</td>
<td>808</td>
<td>7727</td>
<td>5127</td>
<td>425</td>
<td>2029</td>
<td>4772</td>
<td>14447</td>
<td>285</td>
<td>2389</td>
<td>208</td>
<td>8572</td>
<td></td>
<td>47649</td>
</tr>
<tr>
<td>tegula</td>
<td>730</td>
<td>461</td>
<td>18012</td>
<td>7921</td>
<td>4817</td>
<td>8578</td>
<td>26986</td>
<td>1596</td>
<td>8229</td>
<td>1081</td>
<td>11614</td>
<td>254</td>
<td>90025</td>
<td></td>
</tr>
<tr>
<td>Flat tile</td>
<td>366</td>
<td>423</td>
<td>8078</td>
<td>5028</td>
<td>226</td>
<td>2560</td>
<td>6319</td>
<td>18637</td>
<td>477</td>
<td>8024</td>
<td>438</td>
<td>12183</td>
<td>254</td>
<td>62759</td>
</tr>
<tr>
<td>Flat/indet</td>
<td>162</td>
<td>2983</td>
<td>1907</td>
<td>555</td>
<td>972</td>
<td>571</td>
<td>5176</td>
<td>59</td>
<td>1615</td>
<td>5943</td>
<td>19943</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brick</td>
<td>2654</td>
<td>59383</td>
<td>41524</td>
<td>1263</td>
<td>28095</td>
<td>92816</td>
<td>135205</td>
<td>6326</td>
<td>74617</td>
<td>2051</td>
<td>7055</td>
<td>83378</td>
<td>534367</td>
<td></td>
</tr>
<tr>
<td>Wall</td>
<td>825</td>
<td>126</td>
<td></td>
<td>796</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>796</td>
<td></td>
<td>2006</td>
<td></td>
</tr>
<tr>
<td>tegula mammata</td>
<td>590</td>
<td>3378</td>
<td>1005</td>
<td>680</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>796</td>
<td></td>
<td>6553</td>
<td></td>
</tr>
<tr>
<td>Tessera</td>
<td>141</td>
<td>25</td>
<td>980</td>
<td>617</td>
<td>144</td>
<td>40</td>
<td>639</td>
<td>358</td>
<td>42</td>
<td>237</td>
<td>3223</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chipped disc</td>
<td>88</td>
<td>154</td>
<td></td>
<td>230</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>230</td>
<td></td>
<td>472</td>
<td></td>
</tr>
<tr>
<td>Indet</td>
<td>1581</td>
<td>2339</td>
<td>1263</td>
<td>58</td>
<td>2251</td>
<td>1478</td>
<td>3845</td>
<td>195</td>
<td>1534</td>
<td>27</td>
<td>16741</td>
<td>31312</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>2097</td>
<td>6369</td>
<td>102105</td>
<td>67720</td>
<td>2707</td>
<td>41003</td>
<td>115777</td>
<td>209625</td>
<td>9018</td>
<td>97020</td>
<td>2051</td>
<td>9751</td>
<td>140685</td>
<td>805928</td>
</tr>
</tbody>
</table>

A correlation spreadsheet for comparison is available in the archive and a summary provided below. Fabric descriptions are followed by the Winchester type series fabrics it incorporates. Distinct fabrics noted in the type series but not observed at the site are also noted. Samples of each fabric form a reference collection for Winchester Museums Service and OA South.

**Fabric A: Colour: pale cream-buff**

Calcareous clay with rounded chalk, equivalent to calcareous fabrics identified by Betts and Foot (1994). Distinctive maroon ferruginous moulding sand often associated with this fabric together with type F flanges in tegulae. Distribution along the south coast of England from Exeter to London. Generally forms a small proportion of tile assemblages.

(Winchester fabric type series: fabrics 11, 17 and 20)

**Fabric B: Colour: Orange**

Sandy clay matrix with red (?burnt) ferruginous sandstone inclusions and occasional clay pellets.

(Winchester fabric type series: group 2, though not all examples comparable)
Excavations in Winchester 2002-07 Ceramic and stone building material

Fabric C: Colour: orange-red, yellowish red, pinkish orange
Uniform clay matrix containing medium-coarse quartz sand, generally in moderate density.
(Winchester fabric type series: fabrics 13, 14, 15, 22, 23, 26, 27, 28. Six of these are from FG1, the others were unassigned).
Sub-type C1: very high density of well sorted medium-coarse quartz sand, sometimes white giving very distinct white speckled appearance in red clay matrix. No exact comparison seen in type series.

Fabric D: Colour: orange-red
Composition: very fine, fine sand or no visible inclusions. Homogeneous in hand specimen.
(Winchester fabric type series: type 31 - where it does not contain chalk, 38, although this can be a bit gritty, with flint inclusions).
Subtype D1: As for fabric D but containing obvious muscovite mica. Rare for site.
(Winchester fabric type series: types 12, 30/42)

Fabrics B, C and D may contain coarser grits of other rock types (angular flint, rounded chert/flint pebbles or chalk) and designated Ba, Ca, Da. All from later Phases 2.3 and 2.4.

Fabric E
Broad ranging group with several sub-categories. Specimens frequently overlap categories and were classified by dominant characteristics.
Colour: variable orange, reddish yellow, yellowish red, red
Composition: laminated sandy clay with average quantity and size of buff silty clay pellets. May also include red Fe oxide rich clay pellets.
(Winchester fabric type series: Fabric group 1)

E1: Colour variable orange; reddish yellow, yellowish red.
Composition: frequent coarse rounded clay/silt pellets, cream and/or red, generally 6-10 mm and larger in laminated clay. Less commonly, very coarse inclusions of angular unwedged clay or mudstone up to 15 mm. Equivalent to Winchester type 5 (FG2), more prevalent in the CC area.
(Winchester fabric type series: types 5 (FG2), 10, (FG1))
E1.2: Predominantly coarse red clay pellets
E1.3: Combines coarse clay pellets and distinct laminations.

E2: Colour: orange-red.
Composition similar to E1 but containing frequent small-medium red / iron oxide clay/silt pellets generally under 6 mm in laminated clay.
Excavations in Winchester 2002-07 Ceramic and stone building material

(Winchester fabric type series: types 6, 7, 16 (FG1), 19 (other groups))

E2.1: Colour: red, orange. Contains fine small red and buff clay pellets and ferruginous grits. (Winchester fabric type series: Group 2)

E2.2: Colour: red, orange, pinkish red; yellowish red; red angular-subangular clay pellets or ferruginous grits c. 2-8 mm, fewer cream rounded clay pellets 1-3 mm in laminated matrix; may contain flint pebbles up to 15 mm. (Winchester fabric type series: Group 2)

E3: Colour: orange, light-pale reddish yellow, occasionally predominantly cream (as in type series fabric 3); sometimes grey.

Colour can be paler when number of cream laminations are high. Composition: coarse sandy clay matrix, sometimes with pores or voids, characterised by strong lamination with distinctive cream banding, but generally few/no clay pellets, though occasional fine red or buff clay pellets sometimes present.

(Winchester fabric type series: types 3, 25 (FG2) 18, 36, 37, (other groups) 24, (FG 1))

E3.1 and E3.2: Colour: orange, reddish yellow, brown. Both similar fabrics of sandy laminated clay with red ferruginous clay pellets. E3.1 generally finer sand and pellets; E3.2 coarser.

(Fabric G: Colour: pinkish orange
Composition: medium-coarse quartz sand, generally moderate density, essentially same as Fabric C but distinguished by frequent rounded chalk grit up to 6 mm.

(Winchester fabric type series: types 35, 30, 41)

Most fabrics were used for a broad range of forms apart from the uncommon fabric A, used only for tegulae and imbrices (flat tile fragments in this fabric are of a thickness consistent with tegulae).

The main groups (C, D and E) occur in all phases, but certain subtypes are confined to the later phases (2.3 –2.4 and post-Roman). These are Ca, Da, E2a and E3a; C [W39], C[W46], D1, E2.1, most examples of E2.2, E[W3], E[W5] and G. Fabrics E3.1 and E3.2 are very late types, occurring only in Phase 2.4 or later.

Fabric A was found predominantly in Phase 2.3. A late 3rd-mid 4th century date for fabric A is consistent with its known period of use in the late Roman period (Betts and Foot 1994).
Forms (Table 3)

Bricks and wall tiles

Brick forms 66% of the assemblage by weight. Of the 534 kg of brick recovered 1455 fragments are definitely brick, 1032 fragments brick or flat tile and 14 brick or wall tile. Corner fragments (154) indicate a minimum number of 39 bricks. This initially appears very few for the quantity of brick but, taking the weight of a lydion (8-11 kg) or pedalis (5-7.5 kg), the total weight represents a minimum of 48-67 lydions or 71-97 pedales. Fragments have been designated brick where, in the absence of corners or other diagnostic features, the thickness is 40 mm or greater. Fragments measuring 30 - 40 mm thick and likely to be brick were designated brick/flat tile but have been included in the brick category for analysis. The majority of items recorded as brick or possible brick range from 30-60 mm thick. Most brick probably derives from bessales, pedales, and lydions, though some in the 45-60 mm thickness range may derive from sesquipedales as well as lydions. All fabrics except A were used for brick.

Original dimensions apart from thickness rarely survived. Two exceptions are probably examples of pedales or lydions >214 x 244 x 37mm and >152 x 265 x 40 mm, the former bearing a complete 'S' signature (see markings below). A complete specimen measuring 178 x 180 x 40 mm is a small square bessalis. All are in fabric E2. A few bricks measuring 65 - >70 mm are likely to be bipedales.

Another thick brick (max. 76-94 mm) varies considerably in thickness and, though possibly one of the largest bipedalis types, it is more likely to belong to a solid voussoir or cuneatus (Brodribb 1987, 44). Brodribb notes types from Ribchester tapering from 62-39 mm, whilst the thickest come from Canterbury and Wroxeter, measuring 85 mm at the thicker end.

Five tiles tentatively identified as wall tiles all have possible cramp marks on one side. They measure 30-38 mm thick but the slots may be incidental and the tiles actually normal bricks. Though a number with combing were initially identified as wall tiles, they were too fragmentary to ascertain whether the combing covered the whole face or was part of a combed signature. The coarse combing on some would be consistent with the type found on the combed bricks from the Brooks (Foot ibid.).

Brick fragments exhibited a different pattern of chronological distribution to roofing material, with large numbers present in Roman Phase 2.4 (21%) and fewer in
Phase 2.3 (12%), but with peaks in Phases 4.2 (21%) and 5 (19%). In total 63% of the
brick assemblage by weight came from post-Roman phases. Almost 10.5% of the
assemblage by weight (1304 fragments) are classified as flat tile and may be
fragments of tegulae or thinner bricks. These followed the same pattern of distribution
as the brick, with 63% recovered from post-Roman phases. The emphasis on the
deposition of brick and flat tile in post-Roman phases may reflect the increased wear
and damage to pieces over a longer period, with loss of distinguishing features. Most
fragments classified as brick, however, are unlikely to have had another function as so
the pattern suggests a greater emphasis on reuse than other Roman tile types. Foot
notes the small quantities of brick compared to other tile at the Brooks in the early
phases, suggesting this reflects their easier removal for re-use. The Roman culvert is
thought to have been dismantled during Phase 2.3 and the increased deposition of
brick fragments at this stage (particularly from Phase 2.4) could indicate that the brick
was used in the culvert.

Fourteen fragments of *tegula mammata*, some conjoining, represented nine
items, each with a single roughly formed *mamma* 36-60 mm wide and 12-20 mm
high. These are Brodribb type A (Brodribb 1987, 60-62). *Tegulae mammatae* were
used both for walls as a form of cavity walling and for floors. Type A appears to have
been designed to assist bonding in wall courses or set as flooring.

**Roofing**

*Tegulae*, *imbrices* and a small number of possible ridge tiles were identified.

**Tegulae**

A total of 599 tegulae (11% of the Roman assemblage by weight) were classified on
the basis of surviving flange elements but many fragments classified as flat tile could
also be tegulae. A width of 242 mm total at the lower end was estimated for a tegula
missing a single flange. No complete lengths were recorded. Thickness varied from
15-26 mm, with the vast majority measuring 20-25 mm. A few examples of nail holes
survived on flat tiles assumed to be fragments of tegulae. Nail holes are first noted in
Britain soon after c. AD150-160. All the major fabric types were used for tegulae.

Tegulae were apparently formed in the mould, including connecting corners
later cut away, as there is evidence for moulding sand inside the cutaways. Evidence
of extensive knife and wire trimming occur on both inside and outside edges and on
top of the flange. Trimming is also apparent on the base, inside the cutaways, and
occasionally the external underside of the tile is diagonally knife or wire trimmed to form a chamfered edge. This range of trimming suggests that the tegulae were crudely made in the mould and tidied up afterwards.

A total of 187 flange types was recorded of which 174 were clearly identifiable and 13 overlap the categories (eg A and B, D and E, E and A). Some flanges change shape along their length indicating a lack of rigid distinction between types. By far the most common type is the simple rectangular form A (78%) with other rectangular forms making up a further 3.5%. Of the curved flange types (D, D2, E and F), only D was recorded in significant numbers (14%). All the flange types measure between 15-30 mm wide, with rectangular forms tending towards the narrower end of this range (generally 15-22 mm) and curved flanges towards the wider end (mainly 23-27 mm). Flange height is also broadly consistent at 32-50 mm but with rectangular forms mainly measuring 32-40 mm and curved forms slightly larger at mainly 43-50 mm. There are no significant patterns between flange shape or size and fabric type.

Tegulae commonly have a single finger groove along the basal internal angle. Two or more grooves are relatively rare (Brodribb 1987, 16). Although single grooves dominate the site assemblages (40 examples), 29 examples with two finger grooves were identified and two with triple grooves. These features have been observed elsewhere in Winchester (Foot 1994). Three tegulae have no finger groove; at 5.5% of the assemblage, this is roughly in proportion with the 4.2% figure recorded by Brodribb (1987, 16) and is a feature also observed in other Winchester assemblages (Foot 1994). One of the grooves was apparently made with an implement and on at least two pieces the finger groove was on the inside of the flange rather than the tile itself.

A total of 70 cutaways were recorded in the tegulae corners, 30 at the top end of the tile and 40 at the bottom end. All the upper cutaways are of type A2 and although the lower cutaways are more varied, they are mostly of simple rectangular forms A1 or A3 (24) with eight diagonal C1 cuts, one curved C2 cut and six composite A3/C1 cuts. Numbers of cutaways were too low for statistical analysis but interestingly, no upper cutaways were observed on fabric C tegulae. A single tegula has no cutaway in the lower left corner, which was slightly squashed during manufacture but retains moulding sand on the end and base of the flange. This can
only have been used on the lowest course of a roof as with an example recorded in London (Brodribb 1987, 17).

The phases with the highest concentrations of tegulae are late Roman Phases 2.3 (28%) and 2.4 (24%) with 45% deposited in all post-Roman phases. This pattern of deposition is similar to that of the imbrices.

**Imbrices and ridge tiles**

A total of 529 imbrex fragment were recorded (7% of the Roman assemblage by weight). Most fragments were relatively small, but half the length of one complete tile was preserved and the taper is visible. It measures >255 mm long x 115-130 mm wide x 60-70 mm high. One imbrex has a small cutaway on the corner. The imbrices consistently measure between 14-20 mm thick (78% by weight), with the most common thickness being 16 mm. There is a marked decrease in numbers of imbrices measuring greater than 20 mm in thickness (only 7.8% of the assemblage) which suggests that these may be interpreted as ridge tile. There are at least another nine fragments that seem likely to have come from ridge tiles: these are thicker (23-27 mm thick) and the curve of the tile suggests a greater width than the normal imbrex. One large piece measures over 320 mm long, 23 mm thick and its height of 210 mm is greater than those recorded by Brodribb (ibid. 29)

Unlike the brick, a large proportion of imbrices were deposited in Roman Phase 2.3 (38%) and 2.4 (20%) deposits, suggesting that some demolition of buildings took place during Phase 2.3. A further 37% was deposited in post-Roman phases. All major fabric types were used for imbrices and in approximately the same proportions as the assemblage as a whole.

**Flue**

A total of 54 tiles were classified as flue tiles, with some designations based on the presence of combing on the surface only (see above). Evidence of vents cut through the sides is rare but includes a rectangular example, a butterfly vent and one that slopes downwards towards the centre (the side edges of the vent did not survive). All major fabric types except A were used for box flue tiles but fabric E2 was significantly more popular than for other tile forms and fabrics E1 and E3 noticeably less popular.

A single fragment of possible voussoir in fabric C was identified based on the presence of combing on adjacent faces.
Two fragments with diagonal knife scoring (Fig. 1, no. 4) on the back were recovered from Phases 2.3 and 5. One with a rectangular flange 54 mm high and 24 mm certainly appears to be a half box flue, but the other may be normal box flue with knife scoring of the type found at the Brooks. Both are early forms of 1st-2nd century date.

**Flooring**

As many as 96 tile fragments appear to have been cut for reuse as tesserae including pieces of imbrex and tegula. They include square, trapezoidal and triangular pieces. They range in size from 16-70 mm (Table 4) and most are in the orange-red colour range, though a small number in more pinkish or cream shades in fabric A were also noted.

*Table 4: number of tesserae according to size*

<table>
<thead>
<tr>
<th>Size group mm</th>
<th>count</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 &lt;10 mm</td>
<td>0</td>
</tr>
<tr>
<td>1 11-15 mm</td>
<td>0</td>
</tr>
<tr>
<td>2 16-20 mm</td>
<td>3</td>
</tr>
<tr>
<td>3 21-25 mm</td>
<td>10</td>
</tr>
<tr>
<td>4 26-30 mm</td>
<td>34</td>
</tr>
<tr>
<td>5 31-40 mm</td>
<td>17</td>
</tr>
<tr>
<td>6 41-50 mm</td>
<td>6</td>
</tr>
<tr>
<td>7 &gt;50 mm</td>
<td>7</td>
</tr>
</tbody>
</table>

The greatest number fall into size 4 category, which suggests they derive mainly from tessellated pavements rather than mosaics, though the small number of sizes 2 and 3 may derive from mosaics. The general absence of tesserae in other materials calls into question whether these are in fact tesserae, especially amongst the larger size groups (size 4 and above). Many were poorly shaped and there was little evidence for mortar or distinctive wear. There is also a tendency for tile roughly laid in surfaces to break up and crack into coarse tessera sized fragments. Thus many of the pieces may represent broken tile from yard surfaces. The smaller examples in size 2 and 3 have an appearance more convincing as tesserae.
**Reuse**

At least six tegulae have clear evidence of having been deflanged in order to facilitate reuse - all recovered from post-Roman contexts (4421, 3380, 3782, 9802, 1022, 1239). The presence of mortar on broken edges indicates tile was reused in mortared structures or foundations on both the Roman and later periods, whilst burning or sooting was relatively common suggesting tile was reused in ovens or hearths or flues of hypocausts.

**Markings**

No stamped tiles or graffiti were present amongst the assemblage.

**Signature marks:** A total of 173 tiles have signature marks, although 126 of these are short sections, generally curved but of indeterminate form. Most of the signatures represented are of simple single, double or triple arc form (Type 1). These are found on both bricks, including *tegulae mammatae* and *tegula* and on a range of fabrics including C, D and all the group E fabrics. One example is a finger swept quarter circle enclosing the corner of the brick (Type 9, fabric E3). Another single example is a double arc as in Type 1, but stretched with a single curved groove crossing them (Type 11); this was recorded on a tegula of type E2 fabric. At the Brooks site this was found on bessales and lydions made in fabric group 2. Similar signatures were found at Brading villa Isle of Wight (Tomalin 1987, 99) and at the villas of Houghton Down and Grateley (Poole 2008) to the north-west of Winchester.

Two examples are of straight crossed finger swept grooves (Type 14), one is of a single diagonal line (Type 12) while another is a double diagonal line that could be part of a type 14 cross or a Type 12 diagonal line. One of these types was observed by Foot (1994)

Another example is of a single vertical straight groove (Type 3). These types were all recorded on bricks and on type E2 or E3 fabrics. One example of crossed curved grooves (Type 6; Fig. 1, no. 1) was also recorded but this was on a tegula of type C fabric. Both these types have been found on tile from the Isle of Wight (Tomalin 1987, 99).

A single probable pedalis brick from a Phase 2.4 context has a complete 'S' signature. These occurred on lydions in fabric group 2 from the Brooks site and are known from other sites including Beauport Park, (Foot 1994 and Brodribb 1987, fig.5 and p.151) and Combley villa on the Isle of Wight (Tomalin 1987, fig. 21).
Most of the signatures were created by sweeping one or more fingers across the tile but two tegula have combed single arc signatures (Type 1, 1395, 2344). Eight bricks measuring approximately 40 mm thick or greater also have sections of combing on the surface. Most of these are too incomplete for the pattern to be determined. In addition there are six slightly thinner pieces classified as wall tile / brick which may also be brick. In all these cases there is no clear reason why brick should be combed for the purposes of keying or scoring (Brodribb 1987, 114) and it seems most likely that all these represent types of combed signatures of the type found for example at Silchester (Timby 2000, fig. 94). Combed signatures were only observed on tile of Foot's fabric group 2 (part of our E3 and E1) and are present on tiles of E1, E2, E3 and C fabrics in this assemblage.

The remaining combed items are box flue tiles (69) and five possible wall tiles with surfaces prepared for the application of plaster. A variety of combed patterns were used (eg. Fig. 1, no. 5) although none survive in more than small sections of combing from very fine narrow toothed combs to very coarse thick toothed combs, the latter by far the more common. At the Brooks coarse combing was associated with the early Group 1 fabrics. Only sections of combing patterns survive but these include examples with occasionally curved or wavy lines and more commonly, straight lines (sometimes parallel to the tile edges) and crossing lines at acute angles or right angles. One had two opposed arcs crossing which may have formed a figure of eight pattern similar to those found on tiles from Brading and Newport villas on the Isle of Wight (Tomalin 1987, figs. 113, 114).

In a small number of cases, surfaces also appear to have been prepared for plaster by knife scoring (a brick or wall tile 42 mm thick with a knife scored surface and a fragment of box flue with remains of two scored diagonal lines crossed by one other; Fig. 1, no. 4). One example has a roller stamped chevron pattern.

**Tally marks:** Nine tiles produced possible tally marks of which four are on tegulae, three are on bricks and two are of indeterminate form. The tally marks on the tegulae are either on the side (a single line) or on the base (two diagonal lines). The bricks have either a single line or double line incised perpendicular to the tile edge or double (possibly triple) vertical lines on one of the faces. There is no evidence in this assemblage for tally marks and signatures appearing on the same tiles.
Imprints: A total of 29 pieces have accidental imprints on them. These include seven plant impressions, three thumb impressions, 13 animal impressions and six others. The plant impressions include three of leaves, two of large seeds or nuts and one of straw. The animal impressions are often incomplete and thus difficult to assign to type but at least three appear to be of dogs and one tile has impressions of two animal footprints from an early type (Mouflon?) of sheep and a probable goat walking in opposite directions to one another. Other impressions include a circle of about 18 mm which could be from a coin and two probable sets of hobnails.

Discussion

Production and distribution
The tile fabrics and characteristics have much in common with the ceramic building material found in Winchester at the Brooks site, analysed in considerable detail by Foot (1994) in relation to patterns of production and distribution. Relevant comparisons have been made above in relation to forms and fabrics and the evidence from this site does not contradict the conclusions drawn by Foot. Although the fabrics were not recorded in the same detail they support the differences in early and late varieties consistent with those from the Brooks site.

Foot concluded that the source area for tile reaching Winchester was to the south or south-east on the Tertiary clays of the Hampshire Basin. He places the source of his group 1 (equivalent to much of Group E) in the area of Bishop’s Waltham close to the Roman road from Chichester to Winchester. The tiles in this group were of much better finish and quality than later phase material with knife trimmed edges a notable feature.

His group 2 tiles (equivalent to much of Group E, and fabrics E2.1, E2.2, E3.1, E3.2 and fabric B) are linked to the kiln at Braxells Farm, which lies about 4 km from the Group 1 tilery. The combed signatures on bricks are exclusively associated by Foot with this group and at NH/CC have been found in fabrics E1 and E2 and in deposits of Phase 2.4 or later.

Foot has linked the micaceous group to Alton/Farnham area, but only a very small quantity (fabric D1) of this was identified from the site all in Phases 2.3 and 2.4 or later. The assemblage broadly supports Foot’s conclusions but the preservation is
much poorer and varieties more limited than the Brooks material and as a result comparison of characteristics cannot be made for all forms or fabrics.

The Stratified Groups
The character of the assemblage shows little change either spatially or temporally. Brick remains dominant throughout with smaller quantities of roofing and occasional tesserae and flue tile. The flue tile must have been brought in from buildings outside the area of the excavation, as no buildings had any form of heating system or evidence of baths. Nor was any evidence of tessellated pavements found within any of the structures, suggesting these too derived from outside the area. There is no reason why one or more of the structures identified on site should not have been roofed with tile, but no one building appears to form a focus. All groups appear to be mixed dumps used as make-up or infill for levelling and yard surfaces brought in from several sources, including buildings that had heating systems and baths. Some such as the tegula mammata and knife scored flue tiles are early forms generally of 1st-early 2nd century date.

Although the assemblage is quite substantial, the quantity does not compare with the 3.7 tons from the Brooks site, where well preserved Roman town houses were found. Though it is tempting to try and assign material to individual buildings on site, the proportions of different forms both within the whole assemblage and individual groups do not conform with ones associated with definite buildings such as Northfleet Villa (Poole forthcoming) or Beauport Park (Brodribb 1979) where brick formed about a third of both assemblages, tegula c. 35-40% and imbrex c. 12%. The dominance of brick on this site has more in common with rural agricultural sites, often of low status, where brick or flat tile (probably recycled) tends to be preferred for use in hearths, ovens or similar structures. The brick hearth CC1567 and the burnt tile associated with structure NH8516 suggest similar factors may have been at play on this site. The overall impression is of a very mixed assemblage derived from numerous sources, though the possibility that the brick does derive from a single structure is discussed further below in relation to the channel CC1642.

Phase 1
A small quantity of tile was found in Phase 1, mostly from 1.3 - the subsoil layer that in some areas sealed prehistoric features and was cut by Roman features. This has
been interpreted as the remnants of the prehistoric soil, which presumably formed the ground surface at the start of Roman activity. The quantity of tile incorporated in this layer is small and included tegula, imbrex, brick. Some of the brick/wall tile had combing on the surface.

**Phase 2.1**

All material assigned to this phase was found adjacent to the Roman street (CC1703) and apart from one structure formed a low density scatter across the area of fragments, which included tegula, imbrex and brick. The majority of the tile formed part of hearth CC1567. This was constructed of bricks, three with signature marks, made in fabrics C, E1, E2 and E3 and measuring 35-40 mm thick and over 250 mm wide. The maximum surviving width indicates these were larger than a bessalis and taken with the thickness suggests probably *pedalis* bricks were used for the hearth.

**Phase 2.2**

Very little material was recovered from this phase and no significant concentrations occurred. A scatter of fragments including brick, wall tile, tegula, imbrex and possible tesserae were found. The tesserae may be fortuitous breakage as there was no clear evidence that the pieces had been used as flooring.

**Phase 2.3**

There is a considerable increase in the quantity of tile recovered in this phase. The distribution is not even with some groups producing considerably more than others. However the general character of the assemblage remains very similar throughout the groups with only minor variations apparent.

**The streets: CC1703 and NH8511-15**

These were a complete contrast in that CC1703 produced only two tiny fragments whilst NH8511-15 produced 14.5 kg of brick and tile. This reflects the materials used for construction of the road surfaces with clean flint gravel and pebbles used exclusively for the main street CC1703 and more mixed materials used for the side street NH8511-5 which included some tile mixed in with the metalling as well as in the interleaving accumulations of soil. Tile within the soily deposits may have been used to firm up more muddy hollows.
Many of the individual structures had relatively small quantities of tile associated with them. Amongst these was CC7003 (1.5 kg) and within it pit CC2481 (group CC7047) (1.3 kg) which produced a mixture of brick, *tegula*, *imbrex* and a *tessera*. Structure NH8521 produced a larger quantity (3.8 kg) mainly brick in Phase 2.3 but in Phase 2.4 a further 1.5 kg and a wider range of material occurred with the addition of *tegula*, *imbrex*, flue tile and *tesserae*. Only brick and imbrex was associated with structure NH8517/8 (2.5 kg).

Structure NH8522 also produced small quantities (2.2 kg) of brick, tegula and tesserae, but the subsequent overlying levelling deposits NH8523 contained 14 kg (plus 3.3 kg in Phase 2.4) of tile comprising brick, *tegula*, *imbrex* and *tesserae*. However whether these represent demolition debris from the burnt building or material brought in from outside to level the area is uncertain, though there is nothing to distinguish this from all the other groups of tile.

Structure NH 8516 immediately to the north of street NH8511 produced 18 kg of tile. Much of this occurred in posthole fills where it may have been used as post packing and a further large group was dumped in pit NH1413. This contained a number of overfired or heavily burnt tile suggesting it derived from a demolished flue for some type of oven or similar structure that had (re-)used tegula and brick in its construction.

The largest individual group came from pit group NH8524, which comprised dumps of varying size in pit and well fills, as well as an associated surface layer which contained mainly brick and tegula with a few pieces of *imbrex* and one *tegula mammata*. The dumps of tile within individual features ranged in size from a couple of kilograms up to 13 kg in pit NH2229 and 16.5 kg in pit NH2001. There was seemingly little difference between material deposited in each pit with all containing a predominance of brick, together with smaller amounts of tegula and imbrex, a few tesserae and occasionally flue tile usually in the larger groups.

**Phase 2.3- 2.4**

*The conduit: CC1642*

A key research question is whether the conduit may have been lined with brick to form a covered culvert. When assessed, the dominance of brick throughout the assemblage suggested that this might have been a possibility. A more detailed analysis of the tile together with evidence for aqueduct construction in Britain leaves
this issue open to interpretation. The conduit construction (CC1850) consisted of flints set in mortar and its fill, a silt consisted of robbing debris containing mortar fragments (CC1642), overlain by dark earth deposits infilling the partly silted hollow (CC7005). Only the latter two groups contained tile.

No tile was found in the construction levels nor does there appear to have been any tile found in the primary silting. The material in the robbing deposits consisted of a variety of forms including tegula, imbrex, flue and voussoir, though inevitably dominated by brick. Some brick had mortar on the surfaces, or was burnt and some had a heavily worn surface or edge. Sooting and heavy wear was also found on some of the other tiles. It is pertinent to note that one of the lower layers (CC1611) of the secondary fill is described as ashy silt with demolition debris. The assemblage found in the dark earth deposits forming the upper fill was similar to that in the underlying layers. The mix and character of forms, and the condition of the tile is not entirely consistent with its use as the structure of a culvert.

In addition some evidence of a brick lining might have been expected to survive, if only as the impression of the brick set in the mortar, though it is rare for robbing to be so thorough that every last fragment is ripped from the mortar bedding. It could also be argued that a well finished mortar lining would be more than adequate for such a purpose. If the bricks were not used as lining they may have been used to cover it. The width of the conduit at c. 2 m would be too great to be bridged by bricks lying flat without vaulting or additional support. Ordinary bricks in the absence of solid voussoirs (*cuneati*) could be used in such a structure. The single *cuneatus* found could have been used as a key stone in brick arches.

However, some consideration should be given to the character and materials normally used by the Romans in structures relating to water supply. Vitruvius (VIII.6) says that where water is conducted through channels “let the masonry be as solid as possible ….. and let the masonry structure be arched over, so that the sun may not strike the water at all.” and “If the bed … is of earth or sand, there must be vaulted masonry walls for the channel”. Frontinus (I.122) in talking of repairs to aqueducts writes “or else the concrete lining is damaged”. This suggests that the norm was a masonry structure within the channel surfaced with a mortar or concrete lining with a vaulted or arched cover. Many such structures survive throughout the Roman Empire, though evidence from Britain is on much reduced scale compared to the grandiose structures found in the rest of the empire.
At civilian settlements, apart from the ceramic piping set in mortar at Lincoln, most water was channelled along open or timber lined leats (Stephens 1985) such as that at Dorchester (Putnam 2003). In fact Winchester was the only civilian settlement with previous evidence of a masonry conduit, reputedly of Roman date, found in 1848 just south of the Durngate (Gunner 1849). It was partly lined with lead and covered with a thick layer of *opus signinum*. Though it is of much smaller size it provides some evidence of construction materials in use in Winchester for such structures.

Feature CC1642 conforms to the descriptions of Vitruvius and Frontinus – the flints set in mortar being the local equivalent to masonry walling with presumably the mortar originally forming a continuous rendered surface over the flints. A good quality mortar or *opus signinum* lining would be more usual than bricks. The flint and mortar lining is considerably more substantial than most civilian water supplies in Roman Britain.

One may conclude that a brick lining is unlikely, though some form of cover would be a reasonable supposition where the channel runs through the city (though possibly an open leat outside the city (Fasham and Whinney 1991)) and especially as it cuts across the road CC1703. No form of voussoir or vaulting tile has been identified and if tile was used, it must be assumed that any covering arch was constructed of bricks set in mortar. This would certainly account for the exceptionally large quantity of brick surviving in Phase 2.4, but a timber or *opus signinum* cover are alternatives, though the evidence for *opus signinum* is lacking. Any additional height resulting from a vaulted cover needs to be considered in relation to road levels and the impact this would have where they cross.

The evidence for a brick vault is equivocal. In Phase 2.4, apart from the few instances already mentioned above in relation to structures of Phase 2.3 (groups NH8521, NH8523, NH8524), which continued in some form into this phase, all the tile derived from dark earth deposits (CC7005, NH8500). The striking feature is that three-quarters of the tile was found in CC7005, the dark earth infilling the upper levels of the conduit as against 25% from NH8500, which in fact accounted for about 90% of the dark earth deposits. This incongruity in the proportions of tile in the two areas are the reverse of those in both preceding and succeeding phases. The same varieties of tile (brick, wall tile, tegula mammata, flue tegula, imbrex and tesserae) are represented in each group but brick/flat tile forms 82% of the CC7005 assemblage as compared to 61% in NH8500. The character of the tile comprises a mix of early and
late fabrics, forms and characteristics, suggesting this is a heterogeneous group of material. In the light of this it was decided to re-scan the group to establish whether there was any real unity, and it was clear that all the tile was very mixed and had derived from a wide range of sources. Evidence of re-use took the form of burning and mortar on surfaces, and the heavy wear almost invariably on the underside of tiles suggest that much had been re-used in yard or road surfaces. Though the explanation that brick derived from a vaulted covering for the conduit is very appealing, the intrinsic evidence from the brick and tile does not substantiate this conclusion. Moreover brick was not the normal material used in aqueduct construction by the Romans and there are no parallels for its use in Britain.

Alternative explanations must therefore be considered for the much higher proportion of tile in the dark earth infilling the channel. The general character of the tile in the channel does not stand out as significantly different to that in the other areas of the dark earth. Evidence of burning and ashy deposits in the channel suggest at least some of this material was brought in and dumped from elsewhere. This together with the preponderance of brick may suggest demolition debris from a hypocaust, though clearly other materials including roofing was also present. The extremely large quantity found in the conduit may have been dumped there for the simple reason that it was a convenient hole close to the road that needed to be infilled. If the conduit formed the focus for the dumping of building debris and other rubbish, it is logical that quantities would decrease further from the feature and the road. Moreover, once the material had been dumped in the conduit, there would be no further disturbance whilst the tile in the dark earth elsewhere could have been affected by other activities, including redistribution or selective removal of larger pieces during cultivation of the soil during the late or post-Roman phase. Alternatively, the reverse may have been the case, with large quantities of demolition debris being dumped with rubbish which formed the dark earth and, during cultivation, tile was regularly removed by those working the soil and dumped in the convenient hollow of the old channel. On the evidence of the building material, the exceptional quantities of brick do not appear to represent a culvert cover, though the robbed conduit may have formed a focus for dumping.
Post-Roman

As has already been noted an exceptionally high proportion of the assemblage was found residually in the Saxon and Medieval layers. The character of the residual material is essentially the same as that found in the dark earth deposits of Phase 2.4, though the distribution is not skewed to the Roman conduit but is more evenly spread across the site. The possibility of re-use in the Saxon and medieval periods is discussed in the report on the medieval tile.

Catalogue of illustrated Roman tile (Fig. 1)

3. Context NH4718: part of signature on tile deliberately chipped to triangle (probably from tegula) for use as flooring or wall inlay.
4. Context NH1321: flue tile with knife scored keying
5. Context CC3368: voussoir with combed keying design - ‘union jack’ saltire in frame and small area of combing on adjacent side.

The medieval and post-medieval Ceramic Building Material

Cynthia Poole

Introduction

The assemblage of ceramic building material found in post-Roman contexts amounts to 4881 fragments (551842 g), of which 792 fragments (79305 g) are medieval, post-medieval or modern, the remainder being residual Roman (4089 fragments, 472537 g; see above). The mean fragment weight (MFW) of the post-Roman tile is 100 g.

Table 5: Quantification and forms of medieval – post-medieval tile by phase

<table>
<thead>
<tr>
<th>Type</th>
<th>PH</th>
<th>LRB</th>
<th>LRB (LC4)</th>
<th>LSAX</th>
<th>LSAX</th>
<th>LSAX</th>
<th>AN</th>
<th>Med</th>
<th>Mod</th>
<th>Unphased</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brick</td>
<td>Nos</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>U</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>Wt (g)</td>
<td>92</td>
<td>178</td>
<td>469</td>
<td>5623</td>
<td>1603</td>
<td>1776</td>
<td>68</td>
<td>25801</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drainpipe</td>
<td>Nos</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wt (g)</td>
<td>31</td>
<td>102</td>
<td>97</td>
<td>230</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor</td>
<td>Nos</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>15</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>Wt (g)</td>
<td>832</td>
<td>95</td>
<td>335</td>
<td>525</td>
<td>2012</td>
<td>2515</td>
<td>6314</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roof: curving</td>
<td>Nos</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wt (g)</td>
<td>89</td>
<td></td>
<td>89</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roof: flanged</td>
<td>Nos</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wt (g)</td>
<td>175</td>
<td>310</td>
<td></td>
<td>485</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roof: flat</td>
<td>Nos</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>16</td>
<td>19</td>
<td>110</td>
<td>67</td>
<td>2</td>
<td>220</td>
<td></td>
</tr>
</tbody>
</table>
Ceramic building material was recovered from 94 features or layers, with pits producing two thirds of the assemblage. All material was recovered from secondary deposits with no direct relationship to primary structural features apart from some roof tile reused in a modern wall and in an Anglo-Norman foundation trench. The assemblage comprises predominantly roofing, brick and flooring of medieval date, together with small quantities of more modern material. The forms are fully quantified by phase in Table 5.

Nearly 50% (all percentages are by weight) was found in modern (Phase 8) contexts, mainly layers rather than features. A small quantity (1%) found in prehistoric and Roman contexts is all thought to be intrusive.

The assemblage has been fully recorded on an Excel file, which forms part of the archive. Material has been discarded according to the OA discard policy established for building materials.

**Fabrics**

Fabrics were characterised using a microscope at x 25 – x 40 magnification whilst a x 10 hand lens was used to define fabrics during recording when this was not readily apparent from the hand specimen (see Appendix 1). The fabrics are summarised below and quantified by phase in Table 6.

<table>
<thead>
<tr>
<th>Fabric</th>
<th>Phase</th>
<th>LI</th>
<th>MA</th>
<th>RB</th>
<th>LSAX</th>
<th>LSAX</th>
<th>LSAX</th>
<th>JAN</th>
<th>HMed</th>
<th>MOD</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wt (g)</td>
<td>Nos</td>
<td>18</td>
<td>192</td>
<td>56</td>
<td>422</td>
<td>826</td>
<td>126</td>
<td>105</td>
<td>72</td>
<td>1041</td>
<td>10146</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wt (g)</td>
<td>Nos</td>
<td>650</td>
<td>72</td>
<td>72</td>
<td>105</td>
<td>772</td>
<td>1046</td>
<td>1365</td>
<td>25400</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wt (g)</td>
<td>Nos</td>
<td>231</td>
<td>130</td>
<td>2</td>
<td>176</td>
<td>2457</td>
<td>66</td>
<td>3203</td>
<td>96</td>
<td>3384</td>
<td>11394</td>
</tr>
</tbody>
</table>

**Table 6: Medieval and later fabrics quantified by phase**
Several fabrics are the same or very similar to tile fabrics found at Southampton French Quarter (SOFQ), in particular Fabrics Med1 – Med4 categories are equivalent to the same categories in the Southampton French Quarter assemblage (Poole in prep). These resemble some of the contemporary pottery fabrics and complement the evidence from kiln sites such as Laverstock, which indicates that ridge tile and roof furniture was produced by potters. Fabric Med5 is equivalent to SOFQ:E and these
are both similar to the coarse flint gritted fabrics used for producing chimney pots in Sussex (Dunning 1961). At both Winchester and Southampton this fabric is most common in the Anglo-Norman phase or used for Anglo-Norman forms.

**Medieval and post-medieval fabrics:**

**Med1:** Buff, light yellowish red margins, pale-mid grey core (these colours apply to all the Med1 Group); moderate-frequent medium sub-rounded - rounded quartz sand.

**Med 1a:** High density of medium-coarse rounded-subrounded quartz sand

**Med 1b:** As 1a with laminated clay matrix and occasional coarser stone grits

**Med 1c:** As 1a with rounded red clay/Fe oxide pellets/inclusions c. 1-2 mm

**Med 2:** Sandy clay matrix with frequent fine sand and occasional scattered coarser rounded quartz sand and small even clay pellets c. 1 mm. In some cases the clay matrix was laminated with pale brown-cream streaks.

**Med 3:** High density of coarse quartz sand of which a fair proportion was white angular quartz (?) or flint) c. 0.5-1.5 mm creating a distinct speckled effect plus equal amounts of clear or pink Fe stained quartz (rounded-subrounded) and rare small grits of red ferruginous sandstone.

**Med4:** Reddish yellow or brown, orange margins; mid-dark grey core. High density of fine-medium quartz sand, sometimes with fine mica visible in the matrix.

**Med 5:** Very coarse quartz and angular flint sand - grit; very high density of inclusions. Equivalent to SOFQ E

**PM1a:** High density medium quartz sand plus occasional Fe ox clay pellets of similar size; very rare coarser sand grits quartz/quartzite.

**PM1b:** As 1a but distinctly laminated with coarse cream clay pellets and red Fe ox clay pellets 1-3 mm.

**PM2:** High density of fine quartz sand (sometimes a lot of white grains giving speckly effect). Coarse sand/grit [angular] up to 2 mm very rare. PM2b: Some variants with red Fe ox clay pellets up to 2 mm.

**PM3:** High density of medium and coarse angular quartz sand (white and rose).

**Fabric Group F:** High density of fine – medium - coarse poorly sorted sand (post-med brick fabric)

F: High density of medium-coarse sand. Four subcategories were identified, but it is uncertain whether these are significant in relation to production sites or merely reflect variations in the geologic source exploited.

Fabrics C, C1 and D are broadly similar to those described for the Roman tile. Modern fabrics have not been recorded in detailed but included a calcareous brick fabric, London stock, stoneware used for drainpipes and a white-cream refractory fabric.
Excavations in Winchester 2002-07 Ceramic and stone building material

The Roman tile from post-Roman contexts

The forms and characteristics of the Roman tile assemblage has been fully described and discussed above. A large proportion (58.6%) of the Roman tile (71% at NH and 42% at CC of the total tile assemblage) was found residually in post-Roman contexts. This concentration raised the question of whether the tile may have been re-used in the late Saxon and Medieval periods. Brick forms and plain tile formed 86% of the Roman tile in post-Roman contexts with tegulae adding a further 7.5%. This may suggest preferential collection of material that could be easily reused for building. However this proportion of materials is not significantly different to that found in the Roman levels. The pattern of deposition and proportion of tile across the individual tenements was very similar suggesting the Roman material is in fact residual from the dark earth deposits blanketing the site (in common with the high proportion of other roman residual material), rather than representing re-use. This contrasts with Roman tile found on tenements at Southampton French Quarter (Poole in prep.) where the densities of Roman tile were uneven mirroring later distributions of medieval tile.

The medieval and post-medieval tile

Roofing

Curved and flanged: A small quantity of curved and flanged tile was identified from Anglo-Norman and medieval deposits. These are similar to Roman tegula and imbrex in design and it is thought they were introduced by the Normans. Two pieces had rectangular-profile flanges measuring 16 mm wide by 16.5 mm high and 20 mm wide by 22 mm high. One piece, probably a flanged tile had a conical peg hole placed 84 mm from the tile (suggesting a total tile width of c. 170 mm if equidistant). Both pieces were glazed in the centre, but not extending to the edges: one had yellowish green and the other brown glaze. They were made in a coarse sandy flint gritted fabric (Med5) typical of this form. Some curving fragments in the coarser sandy fabrics, but with no glaze surviving, may have been parts of the curved tile.

The curved and flanged tiles are an early form that was replaced by the more common peg tile. They have been found at York, Scarborough, London and Reading Abbey. At York they have been dated to 11th to 13th century (Lewis 1987, 6; Betts 1985, 384) and they are increasingly being recognised as an indicator of the presence
Excavations in Winchester 2002-07 Ceramic and stone building material

of high status buildings of Anglo-Norman date. At Battle Abbey they were found in the foundations of the Chapter House suggesting they were in use here as early as c. AD1100. In Southampton examples from Quilter’s Vault (Dunning 1975) have been dated to the early 13th century and in the recent French Quarter excavations these have been found in the Anglo-Norman phase (AD1066-1250) and in some contexts associated with material dated as early as AD1070-1150 (Poole in prep.).

Flat / Peg tile
The flat tile comprises plain fragments, of which a small number could be positively identified as peg tile by the presence of peg holes. Some of the flat tile had areas of glazing in the same colours as the ridge tile and these are likely to be fragments from the flat sides of ridge tiles, but some thick pieces are probably curved/flanged tile.

No complete peg tiles were present, but a small number preserved a complete width or length. Thickness ranged from 8-18 mm. Both medieval and post-medieval peg tile was found. Nearly all the post-medieval came from a single levelling layer (CC2049).

A single fairly crudely made example from an Anglo-Norman deposit was 22 mm thick and had a circular peg hole 10 mm in diameter. The majority of the peg tile was found in Phase 6 contexts reflecting the introduction of clay tile for use as roofing. One thick crudely made fragment in fabric SOFQ:A2 with a sub-square peg hole 9 mm wide is probably an early variety. Comparable peg tiles at Southampton were found in Anglo-Norman phases.

The majority of the medieval peg tiles were made in Med1 fabrics and were fairly well finished with smooth undulating or cambered surfaces. Several from CC1520 had dribbles or splashes of glaze, but there was no examples of any deliberately glazed across the lower half. In tiles from Phase 6 thickness ranged from 10-19 mm, the maximum surviving width was >145 mm and the maximum length >175 mm. A number of probable medieval tile found in a later deposit (CC2049) included one complete width of 156 mm and a length >240 mm. One of the tiles within this group had a deliberately chamfered upper corner so the width at the tile top was 75 mm.

Both circular or oval and square peg holes were identified. Circular peg holes measured 10-12 mm diameter, apart from two of 18 and 22 mm, and were frequently encircled by a ridge of surplus clay on the underside. Square or sub-square peg holes
measured 9-12 mm; one 8 x 9 mm tapered to 3 mm wide at the base. The peg holes were centred between 7-28 mm from the tile top and 38-60 mm from the edge.

A large group of mainly post-medieval roof tiles was recovered from context CC2049, a post-medieval levelling layer. The tiles measured 9-14 mm thick and several preserved complete widths of 150-2, 158, 161-2 and 164 mm. No complete lengths survived, the maximum measuring >200 mm.

Ridge Tiles

No complete ridge tiles survived and the only complete dimension was thickness, which ranged from 6-18 mm, though 7-11 mm was most common. A half profile survives on three tiles and the height could be estimated as c. 90 mm and on two as 120 mm. Most pieces survived only as parts of the glazed flat sides sometimes with a part of the curving apex. The glazes were in shades of green, yellow green, amber, brownish green or brown sometimes with dark green or brown speckles from copper or iron in the glaze. In some examples the glaze was patchy, often not extending to edges.

The crest survived to some extent on 16 examples and as just a crest spur scar on a few. The limited numbers of crest shapes recovered have been assigned to types devised for the Southampton French Quarter tile. The majority were type 1: varieties of triangular crest spurs of various sizes and profiles. One example of sub type 1b had a small circular perforation piercing the centre base of the spur. Other types included type 3a, where the spur has a flattened apex; type 12 a thumb pressed examples and type 11 with small pyramidal spurs. Several examples had knife stab marks at a diagonal along the base of the crest. One of these may be a type 7 crest. The stab marks often appear to occur with applied crests and may relate to the method of attaching the strip as well as having a decorative effect. It could be seen on several examples that the crest had been attached as an applied strip, whilst others were clearly an integral part of the ridge. The individual triangular spurs ranged from 35 to 90 mm long , most had a slightly tapering cross section of 10-20 mm, though the pyramidal spurs were up to 35 mm wide at the base. The height of the spurs ranged from 10-42 mm.

Most ridge tile was made in fabric Med1 or 1a, with smaller quantities in Med1b and 1c, 2, 3 and 4. Some of the forms have close parallels from excavations in Southampton: triangular varieties equivalent to type 1 are common (Dunning 1975 fig 216. 1416 fig. 217 nos 1429, 1432, 1433). There was one example comparable to type
Excavations in Winchester 2002-07 Ceramic and stone building material

1b with the base of the crest pierced by a small perforation from High Street, Southampton (Dunning 1975, fig. 216 no. 1422). The thumb pressed variety type 12 are also found in Southampton (Dunning 1975, fig. 213 no. 1401), where they are dated to the 13th-early 14th century. Ridge tiles with knife cut triangular crests were in use at Portchester Castle from the early 13th century through to the post-medieval period.

Tiles of this sort were being produced at the Laverstock kilns, where all the ridge crests were of the same form with five cut spurs 38 mm in height. None of identical design were found in the excavations and evidence for material coming from the Laverstock kilns is limited though written records attest to trading between Southampton and the West country via Salisbury and Winchester (VCH Wilts vi, 126). Another source, situated between Winchester and Southampton, may be Michelmersh, which is recorded as a source of rooftile (Hare 1991) as well as being a site of medieval pottery kilns (Addyman et al. 1972).

**Brick**

Only a small amount of the brick has been definitely identified as of medieval origin. Much of it is post-medieval or modern and the 18th-20th century brick found in earlier phase deposits must be intrusive deriving from the service or other modern trenches cutting the archaeology.

The only near complete brick came from CC2049, which also produced the largest group of brick in a dump of post-medieval building rubble used as levelling during Phase 8. Some of these bricks have clear pressure marks from stacking whilst drying typical of 18th and 19th century date. The near complete brick measured 210 x 100 x 60 mm, a fairly typical standard size brick. The post-medieval brick measured 60-65 mm thick by 100-110 mm wide. Two unusually thick bricks measuring 70-73 mm were found in a Phase 5 context, but they and the charcoal flecked mortar coating them looked more post-medieval in character and they may be intrusive, possibly relating to the period of the brick tax in the late 18th century, when larger bricks were made. There were also a number of thinner bricks measuring 50-55 mm thick by 108-115 mm wide with a length in excess of 185 mm. These were more roughly finished and probably date between the late 15th and 17th centuries; one was found in a medieval (Phase 6) occupation dump (NH3286). Also from a Phase 6 pit was an unusual small brick measuring 44 mm thick by 65 mm wide by >60 mm long. This
was made in fabric D, together with another medieval brick, but the majority of bricks were made in fabric F or SOFQ: A.

Floor
Floor tile formed only 8% of the assemblage. Several pieces identified in late Saxon phases may in fact be Roman, but a few clearly glazed medieval floor tiles are likely to be intrusive. Most of the medieval floor tile was plain glazed green or brown or unglazed and heavily worn. Thickness ranged from 20-44 mm, though most were between 20 and 30 mm. One of the thicker tiles was rectangular measuring 65 mm wide by >81 mm long.

Three fragmentary decorated bichrome tiles had inlaid pipe clay infilling a stamped design overlain by an amber lead glaze, resulting in a yellow pattern and reddish brown ground. They were made in fabrics Med1a and 1c. One had a scoop cut in the base for keying. This had a pattern which appears to be the head (facing R) of a spread eagle within a circle with trefoil at the angle. The position of the head suggests a double headed eagle, rather than a single headed eagle found on a very similar tile from the St George’s street excavations in Winchester (Cunliffe 1964, fig. 56. 2).

Several of the plain floor tiles came from Anglo-Norman deposits, though the majority of the floor tile was found in Phase 6 deposits. The decorated tiles normally date from the 12th-14th century. This type of decorated floor tile was used by religious establishments, still visible in the floors of Winchester cathedral and the Hospital of St Cross.

Three floor paviours were found in Phase 8 contexts. All are of 18th-19th century date. One measured 30 mm thick and two 48 mm thick by 116 and 129 mm wide. They were made in fabric C, F and London stock.

Drainpipe
A small number of brown or cream glazed stoneware drain/sewer pipes of 19th-20th century date were found in Phase 8 deposits or intrusively in some earlier deposits. They had bores between 80 and 280 mm

Markings
Markings are uncommon on medieval tile. An animal paw print was recorded on a peg tile and a slightly sinuous finger groove on a ridge tile. A single vertical line on
the side of a floor tile may have been a tally mark. A 19th-20th century frogged brick had the letters C and B or R forming part of the maker’s name stamped in the frog.

Discussion

The Medieval Period

Medieval building material occurred in low density and was poorly preserved, perhaps reflecting the level of use of ceramic materials for building, roofing and floors, though other factors such as truncation or the excavation levels may have distorted the overall distribution observed. Brick is very poorly represented, suggesting buildings used timber as their main component. Where brick was present it was used in limited ways to provide greater strength or durability, or where fireproof materials were needed such as in fireplaces, hearths or ovens. Roofing is the most common material, comprising peg tiles and crested ridge tiles. An increase in the use of ceramic roofing to decrease fire risk was encouraged by most city authorities during the medieval period, but it is clear from the quantity found that only a limited number of buildings in the area used roof tile. The pattern needs to be viewed in conjunction with other building materials as documentary sources indicate slate from Devon and Cornwall was more prevalent in Winchester than roof tile (Hare 1991). There is also a notable absence of unusual roof furniture such as chimneys, louvers and finials, normally associated with higher status buildings, suggesting that those structures that did utilise tile did not house the wealthiest merchants of the city. Floor tile is sparse and was used in only a few residences. However, the decorated floor tiles (though it could be argued they derived from the Archdeacon’s residence) appear to relate to specific plots utilising more tile, and so may indicate that the owners of certain properties were successful people wishing to display their wealth.

The distribution of tile across the site when related to individual properties suggests few properties used tile, as several produced none or only a few fragments. A number of properties which stand out as producing relatively more material in Phases 5 and 6 are discussed in more detail, whilst the others are summarised. A note on Phase 4 material is included where more than one or two small fragments or obviously intrusive material occurs. The possibility that variations in the quantity of tile recovered on each property was merely a reflection of levels of truncation or excavation has been considered (CBM: Appendix 2). The main areas where material
is concentrated does not solely coincide with those that were best preserved or subject of intensive excavation and so the broad patterns observed are taken to reflect variations in building construction on the different properties. It is also noteworthy that those properties producing most ceramic building material also produced most stone flooring and roofing, indicating the more prestigious buildings were utilising a variety of materials.

Ceramic brick and tile was not normally in use before the Conquest, unless re-using Roman materials. Although some high status sites associated with the church or nobility may have had early access to these materials, it is unlikely that ordinary domestic properties were sufficiently wealthy to utilise ceramic tile. There were two possible establishments which, during the Anglo-Norman period, may have been the first to start using tile on any scale. These were centred on properties BE2-BE3 and BW3-BW4. The evidence suggests the buildings were initially roofed with Anglo-Norman curved and flanged tiles, and some rooms were floored with plain floor tiles, probably during the 11th-12th century. Subsequently the roofs were refurbished during the 12-13th centuries with peg tiles and glazed crested tiles and some floors retiled with decorated encaustic tiles. At this stage a third property, BE5, started using ceramic roofing and glazed, decorated floor tile.

Property BE1
Phase 4: Flat roof tile, possible medieval floor tiles and brick. Some may be misidentified Roman. Alternately some features may be phased too early; but if not this would suggest unusually early use of tile.
Phase 5: One fragment each of floor and roof tile.
Phase 6: Two fragments each of brick and roof tile

Property BE2
Phase 5: Moderate quantity of ceramic building material including roof tile and brick. A small fragment of drain is intrusive, as is almost certainly the brick.
Phase 6: Significant quantities of material form one of the largest property groups. This is composed of brick including the unusual small narrow brick, plain worn floor tile, peg tile and green and brown glazed ridge tile, probably crested. All the material was discarded in pits and possibly indicates a period of refurbishment of the building on this plot. It suggests that the building had been roofed with ceramic tile and at least one room had a tile floor. The function of the small brick is uncertain, but it was possibly burnt and may have been used as part of a hearth, wither as the surface or a
kerb. One of the brick fragments had mortar or chalk cob adhering, suggesting it had been used in a wall. Brick was probably used in a very limited capacity where strength or durability was important.

The presence of a few pieces of roof tile in Phase 5 suggests the use of ceramic materials began in the preceding phase.

**Property BE3**

Phase 5: A moderate quantity of ceramic building material was found including some pieces of Anglo-Norman curved and flanged tile. Other materials included flat roof tile, floor and brick.

Phase 6: A single fragment each of floor and roof tile.

If curved and flanged roof tile was indeed used on a building on this plot it suggests a building of some status. However, the decrease in tile in the high medieval phase suggests a distinct decline in fortunes, unless plots BE2 and BE 3 were connected in some way with the debris of earlier building activity discarded in plot BE3, and material from later changes dumped in BE2.

**Property BE4**

Phases 5 and 6: A small quantity of flat roof and peg tile was found in both phases, (also in Phase 4.2). Some glazed fragments are probably from ridge tiles. A very worn floor tile with remnants of a plain amber glazed surface was found in slumped deposits in a late Saxon pit. A brick fragment had been reused as post packing in a Phase 5 post-hole.

**Property BE5**

Phase 4: Flat roof and peg tile, ridge tile and brick was present in greater quantity than most properties. However, most is intrusive post-medieval.

Phase 5: The only identifiable fragment in this phase was a piece of heavily worn floor tile with some possibly incised lines on the surface.

Phase 6: Several floor tile fragments of different thicknesses occurred in this phase: most were plain worn tile, some with amber or brown glaze surviving patchily and one was an encaustic tile with inlaid pipeclay pattern to create a bichrome decoration.

A quantity of flat roof tile was recovered. The green and brown glazed fragments probably derive from ridge tiles, which were also present. Two pieces of crested ridge tile were green glazed and one had a type 12 thumb-pressed crest spur. Peg tile and brick was also identified.
The quality and variety of ceramic material from this property is of a broader range and slightly higher quality than other properties. The decorated floor tile is normally associated with high status structures and it seems the building had both ceramic roofing and tiled floors in some rooms. Brick only formed a minor component of the structure in common with all the properties.

**Property BW1**

Phase 6: No tile dating to before the high medieval phase was recovered, and then only crested ridge tile. This was glazed green or amber and one piece had part of a type 3 ridge crest. The absence of other roof tile may indicate that the ridge tile was used in conjunction with stone or slate roofing. However, the small quantities of material recovered from what is clearly a substantial town house no doubt reflects the restricted area of this property within the excavation.

**Property BW2**

Phase 4: Approximately half of the peg tile and a crested ridge tile present on this property was phased to the late Saxon period though most pieces are more typical of the high medieval period. This included green and amber glazed ridge tile with a type 1 ridge crest.

Phase 5: A single plain heavily worn floor tile with a possible tally mark was recovered.

Phase 6: Roofing similar to that described in Phase 4 was recovered. The material assigned to the earlier phase fits better with this period and it is more likely that changes to the roof of the property took place in this phase.

**Property BW3**

Phase 4 and 5: A fragment of floor tile was found in the late Saxon phase and a small piece of peg tile in the Anglo-Norman phase.

Phase 6: This property produced the largest quantity of tile from the site. Apart from a single piece of brick and another floor tile, this was all roofing. The floor tile was an encaustic bichrome decorated tile with an amber glaze. This was the only floor to have a conchoidal scoop cut in the base.

The roofing was predominantly a combination of peg tile and crested ridge tile, but some fragments of Anglo-Norman flanged roof tile suggests this type of roofing may have been used in the preceding phase, to be replaced by peg and ridge tile in the High Medieval phase. The peg tile was thick and quite crude, suggesting this was produced quite early in the medieval period. The ridge tiles were glazed in
shades of green, yellowish green, amber and brown and a high proportion retains evidence of the ridge crest, which indicate several different types were in use including types 1a, 1b, 1c, 11 and possibly type 7.

The range of crest types suggest that the roof was of some complexity to utilise the differing types. The presence of a decorated floor tile suggests any building on this plot had some pretensions to status. It seems odd that there is so little indication in the previous phase of changes or improvements to the property in respect of materials, with such a swift change in status during Phase 6. As with properties BE2 and BE3, it is possible that BW3 and BW4 should be viewed as a related pair.

Property BW4
Phase 4: Two small fragments of flat roof tile.
Phase 5: Virtually all the ceramic building material from this property was found in deposits, mainly pit fills, of this phase. A few pieces of flanged roof tile represent the earliest roofing, probably replaced by peg and ridge tile later in this phase. An unusually large number of brick fragments recovered included two particularly thick examples.
Phase 6: A small quantity of peg and green and brown glazed ridge tile was found in the medieval deposits.

The pattern of deposition on this property appears to complement BW3 and the two properties should perhaps be viewed as a single establishment. The presence of Anglo-Norman flanged roof tile together with the 13th-14th century decorated floor tile are both indicators of high status. This is consistent with these properties forming part of the archdeacon’s residence and no doubt reflects changes in construction taking place to the buildings that formed part of the archdeacon’s residence.

Property BW5
Phase 4: A few small fragments of brick, a possible floor tile and peg tile are present.
Phase 5: The only contemporary tile was a yellowish green glazed Anglo-Norman flanged roof tile. A sewer pipe was intrusive 19th-20th century.
Phase 6: A couple of pieces of yellowish green glazed ridge tile and a floor tile fragment was the sum of building material in this phase.

Property BW6
Phase 6: A single tiny indeterminate tile fragment was found on this property.
Property SE1

Phase 5: Two pieces of modern brick (one frogged) were clearly intrusive. Only a few small flat roof tile fragments are contemporary.
Phase 6: A few further small fragments of flat roof tile, the green glazed pieces probably being ridge tile.

Property SE2

Phase 5: A fragment of thick plain tile, possibly flanged roof tile and a small piece of flat roof tile occurred. A small fragment of modern brick must be intrusive.
Phase 6: A small fragment of curved ridge and an indeterminate tile was all that was found.

Property SE3

Phase 4: Two small pieces of flat roof tile occurred in this phase.
Phase 5: A plain green glazed tile could be either a floor tile or part of curved/flanged roof tile. A small fragment of intrusive modern brick was the only other piece.

The Post-medieval Period

Much of post-medieval building material came from a single dump (CC2049) containing predominantly brick and peg tile of 17th-19th century date together with some medieval pieces. The material was unexceptional and typifies the brick and tiled buildings that presumably occupied the area before modern development. Much of the other post-medieval and modern brick and drain pipe was intrusive within earlier deposits, no doubt deriving from 19th-20th century service trenches and foundations cutting through earlier deposits.

Catalogue of illustrated post-Roman tile (Fig. 2)

6. Context NH3234: medieval crested ridge tile: crest type 1
7. Context NH3234: medieval crested ridge tile: crest type 1c
8. Context NH3234: medieval crested ridge tile: crest type 1c
9. Context NH3234: medieval crested ridge tile: crest type 1c - applied crest spur
10. Context NH3234: medieval crested ridge tile: crest with stab marks at base (?type 5 or 6)
11. Context NH3234: medieval crested ridge tile: crest type 11
12. Context CC6013: medieval crested ridge tile: crest type 11c
13. Context NH3236: floor tile encaustic tile with bichrome decoration: head (facing R) of a spread eagle (probably double-headed) within a circle with trefoil at the angle. 13th-14th century.
14. Context CC2101 floor tile encaustic tile with bichrome decoration
The Structural Stone

Ruth Shaffrey

Phase 1
A fragment of possible wall veneer of Paludina limestone, the only piece of structural worked stone recovered from a Phase 1 context (NH6507), was probably intrusive.

Phase 2: Roman
The wide variety of stone types represented in the small Roman assemblage includes both local and imported materials. Slabs of various types of shelly limestone, mainly from the Purbeck beds, were probably used for roofing, as evidenced by examples retaining original edges and perforation (eg NH4742). Other slabs were probably used as wall courses or in flooring, although none has significant wear except one roughly trapezoidal slab of Purbeck limestone (NH2619). Tooled fragments of shelly limestone and locally available chalk indicate that stone structures were located nearby.

More exotic imported stone took the form of thin slabs, probably best interpreted as wall veneer. One fragment of dark green and white marble is probably Campan Vert from the Hautes Pyrenees (fill CC2251 of pit CC2249). A pinkish variety of Yellow Lez Breccia from Lez, Haute Garonne, France (NH6160) came from a late Saxon pit NH6158 but is almost certainly residual from Roman activity. Although French marbles are generally less common than those from eastern Mediterranean areas, Campan Vert has been found at Silchester and Dorchester (Pritchard 1986, 187) and both varieties were found at Fishbourne palace (Cunliffe, 1971, 17). These marbles suggest that a high status Roman building with ornamental marble inlay, probably wall veneer, was located nearby. Both pieces were identified by Monica Price of Oxford University Museum.

Phase 4: Late Saxon
Most of the stone from late Saxon contexts is limestone slabbing, used either for roofing, (at least 3 kg) flooring (at least 1 kg) or as wall courses, although few (11kg) retain distinguishing features. Deposits of this phase also produced four pieces of neat triangular limestone shapes with one worn face (eg NH1262). These may be the reused ends of pointed roof-stones, although similar shaped pieces of ceramic
building material also occur. These triangular pieces may also have been used as large tesserae. Late Saxon deposits also produced a Purbeck marble slab, probably wall veneer, smoothed but not polished on both faces (NH4365). As there is currently no evidence for the use of Purbeck marble between AD 400 and 1100 (Blair 1991, 47), this presumably dates to the later part of the period or is residual Roman. Another fragment of wall veneer, an exotic piece of Yellow Lez Breccia from Lez, Haute Garonne, France (NH6160), is almost certainly residual from Roman activity (see phase 2).

Saxon contexts produced very little imported stone, the structural stone being mainly chalk. Context HH3346 produced 17 blocks of soft chalk, most retaining tool marks on at least one face, and several are slightly curved. The predominance of chalk suggests the presence of mostly domestic structures nearby, as previous excavations highlighted a clear difference between the use of imported stone, such as Bath stone and Quarr, for large scale building projects and local sources of chalk and flint for domestic buildings (Biddle 1990, 318).

**Phase 5: Anglo-Norman**

Anglo-Norman contexts produced large quantities of structural material. The blocks and architectural fragments are mainly chalk, most of it quite soft. Many of the blocks have one or more dressed faces (NH3128) and two pieces of chalk voussoir were used to line well CC3043 (CC3044). The softer pieces were clearly from nearby outcrops, but some of the harder chalk (NH3236) was probably been imported and may be Beer stone from Devon, a hard chalk used in the cathedral (Anderson 1990, 309).

A number of other lithologies previously identified in Winchester were present, including Quarr stone (NH2107, NH2606, NH4447), a creamy coloured shelly limestone consisting of dissolved clam moulds surrounded by a strong calcite cement (Bishop 2001, 34). This was exploited until the main deposit was exhausted by the end of the 12th century (ibid., 167), and so the recovery of six fragments from Anglo-Norman and medieval contexts here is appropriate. It adds to at least 578 other pieces recorded in Winchester (Anderson 1990, table 52). In addition to Quarr stone there are other imported limestones, including a few blocks of Oolitic limestone, probably Bath or Portland stone. Neither limestone is common in Hampshire but both are known from Cathedral Green and Wolvesey Palace in Winchester (Anderson 1990, 311). Various other shelly limestones were also recovered. The structural stone
includes some moulded architectural pieces that may be fragments of columns (NH3083 and NH3399).

The presence of imported building stone in Anglo-Norman contexts is in keeping with the major building projects which took place during that phase. Stone masons are known to have been more numerous in the 12th century than in later medieval Winchester (Keene 1985, 283) and, as a result, more private houses were built of stone than at a later date (*ibid*).

A diamond-shaped white limestone fragment (NH2278, SF 959) and a fragment of Purbeck marble slab (NH5183) are both wall veneer. Purbeck marble was most intensively worked between 1250 and 1350 but was popular from about 1170 to 1550 (Blair 1991, 41) and is thought to have been worked on site at the Cathedral from the 13th century (Anderson 1990, 313).

As with Phase 4, a number of slabs were recovered. Some have only worked edges, suggesting they were utilised as courses in wall construction (NH3356), and one (NH4728) has mortar adhering. Others have worn surfaces, suggesting they were used as flooring, including some large stone tesserae in neat triangular shapes, each with one worn face (eg NH1194). Approximately 2.5 kg of these slabs are roof-stones (eg NH1395 reused as a whetstone and NH4742) while a further considerable number (7.7 kg) retain no evidence of working but are likely to have been used or intended for one of these functions. Most are limestone, probably Purbeck and one is a fragment of a moulded architectural piece (NH1155), probably from the top of a column.

In addition there are two pieces of more exotic stones. One thick slab of marble may be Campan Vert as seen in earlier phases and a second piece of probable wall veneer is of Sussex 'marble'. Both of these may be residual from Roman phases or may have come from Wolvesey Palace which has produced more fragments of exotic imported stone than other excavated sites in Winchester (Biddle 1990, table 54).

**Phase 6: medieval**

Medieval contexts produced a number of chalk and limestone blocks retaining tool marks, including several blocks of Quarr stone and Bembridge limestone (presumably brought in association with the Quarr stone), as well as oolitic limestone. As Quarr stone cannot have been obtained in any quantity from the quarry after the 12th century (see Phase 5), it must date to earlier activity and indeed one of the pieces was found in
demolition layer NH4102. This context also produced a hard chalk hood mould. This use of stone probably relates to earlier larger scale building projects somewhere rather than the 13th and 14th century extensions made to the archdeacon's house.

Medieval contexts produced the bulk of the stone roofing material - 15 kg in total. Most of medieval stone roofing is slate (11 kg), probably imported from Devon or Cornwall. Slate was being shipped from the Devon ports to Southampton as early as the 12th century and over 800,000 slates were imported for the king’s buildings at Winchester between 1171 and 1186 (Wood 1983, 295).

Other roof-stones, mainly Purbeck limestone and Pennant sandstone were used. Tilers and slaters were quite common in Winchester (Keene 1985, 283) and slated roofs not out of the ordinary. Many properties produced some stone roofing material, but properties BW 3 and BW 5 produced significantly more slates than other properties (6.6 kg and 4.5 kg respectively), suggesting that slate was used for roofing there.
References


Betts, I. and Foot, R. (1994) A Newly Identified Late Roman Tile Group from Southern England Britannia 25, 21-6


Brodribb, G, 1979 A Survey of Tile from the Roman Bath House at Beauport Park, Battle, E Sussex, Britannia 10, 139-156

Brodribb, G, 1987, Roman Brick and Tile Alan Sutton


Cunliffe, B W, and Poole, C, 2008a The Danebury Environs Roman Programme A Wessex Landscape during the Roman Era Volume 2 – Part 1 Houghton Down, Longstock, Hants, 1997 EH and OUSA – Monograph No.71

Cunliffe, B W and Poole, C, 2008b The Danebury Environs Roman Programme A Wessex Landscape during the Roman Era Volume 2 – Part 2 Greateley South, Greateley, Hants, 1998 and 1999 EH and OUSA – Monograph No.71


Gunner 1849 no title Archaeol J 6, 397-8 and 408-9


Keene, D, 1985 Survey of medieval Winchester. Oxford


Poole, C, in prep Ceramic Building Material in Brown, R, Trade and Prosperity – Poverty and War Excavations and historical research in Southampton’s French Quarter, Southampton, Hampshire

Pritchard F A, 1986 'Ornamental stonework from Roman London', Britannia 17, 169-190


Stephens, G R, 1985 Civic Aqueducts in Britain Britannia 16 197-208


Vitruvius Pollio, Marcus, 1st century BC *De Architectura*

Wacher, J, 1974 *The Towns of Roman Britain* Batsford, London, 284

Appendix 1

Winchester Joint: Northgate House and Discovery Centre CBM Fabric series

Descriptions of the fabric series devised for the NH and CC assemblages appear below forming the first half of this appendix. The second half lists the Winchester Museum fabric series with descriptions where available from the unpublished Brooks report (Foot 1994) and additional comments recorded during comparison with the NH/CC type series.

Win:NH/CC Fabric A
Colour: pale cream - buff. Calcareous clay with rounded chalk and rare subangular clear quartz sand 0.2-0.5 mm; equivalent to the calcareous group of fabrics identified by Betts and Foot (1994). Distinctive maroon ferruginous moulding sand is often associated with this fabric together with type F flanges in tegulae.

Equivalent to Win:cm: Fabric 11 and 17
Fabric 11 is directly equivalent to A, whilst 17 is a slightly pinker version and slightly sandier with pink moulding sand.

Win:NH/CC Fabric B
Colour: orange, reddish brown. Fine sandy clay, sometimes laminated with fine cream streaks; high density of fine sand and moderate density of medium quartz sand, subangular-subangular rounded, and common maroon/reddish brown/purple burnt ferruginous grits (sometimes clearly ferruginous sandstone) [R] 2-5 mm, plus occasional buff silty clay pellets and rare flint grit [A-SA] 4 mm.

This is not very different from some of the E group fabrics, especially E2.2.

Win:NH/CC Fabric C
Colour: orange, red, yellowish red, pinkish orange, reddish brown
Uniform clay matrix mostly, but occasionally laminated containing moderate density of medium quartz sand (subangular-subrounded) 0.2-0.5 mm, ell sorted and evenly distributed. Some examples include diffuse red and buff clay pellets up to 5 mm size.

Equivalent to Win:cm:
Group 1 Fabrics 13, 14, 15, 22, 27
Fabric 15 / 31
Fabric 28: equivalent to Win:NH/CC Fabric C fine end of spectrum

Fabric C1: Colour: red, orange. Fine sandy-silty clay matrix containing very high density of well sorted medium quartz sand (subangular-angular) 0.2-0.5 mm, also with infrequent red-maroon ferruginous clay grits c 1 mm.
No exact comparison for this was seen in the type series. Closest equivalent to Win:cm: Fabric 26:
High density of medium quartz sand

Fabric C2: Colour: orange-red, orange. Micaceous clay matrix containing a moderate density of evenly dispersed coarse – very coarse quartz sand (R-SR) 0.5-1.5 mm
Equivalent to Win:cm:
Fabric 23: Medium - coarse quartz sand
Fabric 39: Common-frequent poorly sorted coarse angular quartz, cream silty clay pellets - sand size to 4 mm in low- moderate density. Equivalent to Win:NH/CC Fabric C1
Fabric 43: Coarse quartz sand. One piece has sand size red Fe oxide grits, looks more like E than C, but in same box with Fabric 43 marked tile.
Fabric 46: equivalent to Win:NH/CC Fabric C2
Very coarse quartz sand, high density SA-SR. Also a scatter of coarse stone grits: flint, red iron stone/ferruginous stone.
Equivalent to: Micaceous Group
Excavations in Winchester 2002-07 Ceramic and stone building material

**Fabric 1**: coarse quartz sand and gritty
**Fabric 9**: coarse quartz sand. Fabs 1 and 9 looked as though they were really the same fabric.

******************************************************************

**Win:NH/CC Fabric D**
Orange, red, reddish yellow, light reddish yellow; well refined, homogenous clay matrix with hints of lamination; fine sand; small ferruginous red clay pellets 0.5-3 mm and rare buff clay pellets of same size.

Colour: orange-red
Composition: very fine - largely no visible inclusions or fine sand only. Appears homogeneous to the naked eye.
Equivalent to **Winem**:
**Fabric 31**: This may include fabrics with a low density of chalk grit equivalent to WINSGA Fabric G.
**Fabric 41**: Low density of scattered coarse quartz sand (white/clear, SA) and occasional cream silty clay pellets [R], but otherwise overwhelming character is fineness. Akin to Fabric D with a little quartz and rare red Fe oxide grits.
**Fabric 38**: Very fine fabric, few inclusions in matrix, occasional small chalk, rare calcareous cream silty lenses or pellets; rare angular flint grit.
**Group 1 Fabric 6**: which covers the very fine end of Win:NH/CC Fabric Gp E verging on Gp D in character.

**Fabric D1**: Colour: pinkish brown. Very homogenous, fine micaceous clay. Very rare coarser quartz sand, well rounded, 0.5-0.8 mm. As for fabric D but containing obvious muscovite mica.
Equivalent to **Winem**: **Micaceous Group**
**Fabric 30** and **Fabric 42**: Both have fine fabric equivalent to D, but with very fine mica, sometimes not easily visible, possibly only with microscope.
**Fabric 33**: not sure if the pieces in box were correctly labelled - they look more like fine fabric E (Group 1 or 2).

**Fabric D1c**: Colour: pinkish brown, buff; deep reddish brown. Fine – very fine highly micaceous sandy clay containing occasional scattered well rounded chalk grit 2-6 mm. Scattered small rounded voids, may be from dissolved chalk. Some varieties also contained shell and small fine-grained grit-gravel (?chert/flint) and sometimes diffuse dark red ferruginous grits 0.5-1 mm.
Equivalent to **Winem**:

******************************************************************

**Win:NH/CC Fabric E**
Colour: variable orange, reddish yellow, yellowish red, red
Composition: laminated sandy clay with average quantity and size of buff silty clay pellets. May also include red Fe oxide rich clay pellets.

**Win:NH/CC Fabric E1**
Colour variable orange; reddish yellow, yellowish red.
Composition: characterised by frequent coarse rounded clay/silt pellets, cream and /or red in colour and measuring generally 6-10 mm and larger in laminated clay. There were also, less commonly, examples where the clay inclusions were very coarse in the form of angular unwedged clay or mudstone up to 15 mm. This was equivalent to Winchester type 5 (FG2).
Excavations in Winchester 2002-07 Ceramic and stone building material

**Win:NH/CC Fabric E1.2**
E1.2: Contain predominantly coarse red clay pellets

**Win:NH/CC Fabric E1.3**
E1.3: Combines coarse clay pellets and very distinct laminations.

**Win:NH/CC Fabric E2**
E2: Colour: orange - red. Composition is similar to E1 but containing frequent small-medium red / iron oxide clay/silt pellets generally less than 6 mm in size in laminated clay.

**Win:NH/CC Fabric E2.1**
E2.1: Colour: red, orange. Contains fine small red and buff clay pellets and ferruginous grits.

**Win:NH/CC Fabric E2.2**
E2.2: Colour: red, orange, pinkish red; yellowish red; red angular-subangular clay pellets or ferruginous grits c. 2-8 mm with fewer cream rounded clay pellets 1-3 mm in laminated matrix; may contain flint pebbles up to 15 mm

**Win:NH/CC Fabric E3**
Orange, light orange-brown, with cream or buff streaks. When reduced pale grey streaks in darker grey ground. Less refined and poorly mixed or prepared. Laminations in clay very distinct. May contain red or buff fine rounded clay pellets and coarse sand. Some pores and voids, occasionally large up to 10 mm. (?Do some result from burnt out organic matter?) May be oxidised or reduced (red ferruginous turn black in reduced examples.)

**Win:NH/CC Fabric E3.1** and **E3.2**
E3.1 and E3.2: Colour: orange, reddish yellow, brown. Both similar fabrics of sandy laminated clay with red ferruginous clay pellets. E3.1 was generally finer sand and pellets; whilst E3.2 was coarser in its characteristics.

Equivalent to:

**Group 1**
Fabric 6, 7, 10, 16, 24 equivalent to Win:NH/CC FabE, esp. E1 and E2
Fabric 7 & 16: equivalent to Win:NH/CC Fabric E2
Fabric 10: equivalent to Win:NH/CC Fabric E3
Fabric 24: equivalent to Win:NH/CC Fabric E3

**Group 2**
Fabric 3: equivalent to Win:NH/CC Fabric E3
Fabric 5: equivalent to Win:NH/CC Fabric E1 very coarse
Fabric 4: equivalent to Win:NH/CC Fabric E: including E with red ferruginous grits and also very coarse versions of Win:NH/CC Fabric E1. Essentially very mixed covering all versions of E
Fabric 8: two samples both very overfired with distinct differentiation of core and surface. One has moderate - low density poorly sorted sand, rare small chalk grit [R] 1-2 mm and occasional fine lamination.
Fabric 12: micaceous; rare coarse quartz sand [R], some red ferruginous pellets, slight fine laminations, equivalent to Win:NH/CC Fabric D with mica
Fabric 20: distinctive light mushroom brown colour, with moderate density of medium quartz sand and scattered fine chalk. Quite fine calcareous fabric. One piece has fine reddish moulding sand. ? equivalent to Win:NH/CC Fabric A.
Excavations in Winchester 2002-07 Ceramic and stone building material

Fabric 18: laminated, pale pinkish brown, some red ferruginous grits, but not common; infrequent/rare sand. equivalent to Win:NH/CC Fabric E3 (laminated).
Fabric 25: equivalent to Win:NH/CC Fabric E3
Fabric 37: equivalent to Win:NH/CC Fabric E3
Fabric 50: equivalent to Win:NH/CC Fabric ? - not found?

**********************************************************************

Fabric 29: equivalent to Win:NH/CC fine Fabric E verging on D
Very fine some with laminations.

Fabric 2: equivalent to Win:NH/CC Fabric E2 / B

Fabric 19: equivalent to Win:NH/CC Fabric E2

Fabric 32: equivalent to Win:NH/CC Fabric E
Laminated, red Fe oxide grits, coarse quartz sand [R]

Fabric 36: equivalent to Win:NH/CC Fabric E3

Fabric 48: equivalent to Win:NH/CC Fabric E
Porous, laminated, occasional cream silty clay pellets.

*********************************************************************

Win:NH/CC Fabric G
Fabric G: Colour: red, orange, pinkish orange, reddish brown; may have grey or greyish brown core.
Composition: frequent - moderate density of medium-coarse quartz sand, rounded-subrounded, generally similar to Fabric C but is distinguished by common-frequent rounded chalk grit 0.5 up to 8 mm. Also occasionally observed were dark red ferruginous pellets and clusters of quartz sand in ferruginous matrix (?crushed ferruginous sandstone).

Equivalent to:
Winchm Fabric 35:
Moderate density of medium quartz sand and common chalk grit 0.5-7 mm. A rather variable fabric, very mixed broadly equivalent to E2 & B. Some has cream silty clay pellets [R] 1-5 mm. But others with coarse maroon ferruginous sandstone grit up to 10 mm and siltstone pellets and streaks. Some pieces finer, just laminated equivalent to E3.
Winchm Fabric 40: Coarse sandy with chalk

************************************************************************

Winchester Museum Services Type Series
The fabrics are numbered 1 to 50, but they have been arranged here in the groups described by Foot (1974) in the Brooks report. The authors (CEP & RLS) did not make detailed descriptions of the Winchester Series, but in the time available to them compared them to the NH/CC fabric samples and made minimal notes.

Group 1

Win Brooks (Foot): “Group 1 - Comprising fabric nos. 6, 7, 10, 13, 14, 15 (some), 16, 22, 24, 27, 28, 31. A large number of fabrics have been included in this group as all are fairly similar in composition. This is by far the largest fabric group of the early Roman deposits. The principal differences between fabrics lie in the relative abundance and proportions of the inclusions described below. The significance of this variation is not yet known and they may represent products of several tileries or merely reflect the variability of the clay source supplying a single tileworker. Fabrics 13/14 are more likely than the rest to be products of a different kiln, but share the characteristic forms of the group and so have been included here.
The products vary in colour between light red (Munsell 2.5 YR 6/6) and yellowish pink (5 YR 8/4) but the majority are of a red-orange (around 5 YR 7/8).

The clay matrix often appears streaked or mottled with cream-coloured clay distributed as lines and rounded pellets. The degree of mottling differs considerably between individual tiles.

Iron-rich (ferruginous) inclusions occur as rounded pellets scattered throughout the matrix. These are generally reddish-brown in colour (occasionally purple or black) and fine-grained (silty) in texture. The clay is slightly micaceous with minute flecks of white mica (<0.1mm. across) visible under low power magnification. Rounded pebbles of flint are occasionally found embedded in the fabric.

The intrinsic sand content of the clay is generally very low. Where sand has been added as tempering it consists of relatively well-sorted sub-angular quartz grains. These are transparent or translucent white in colour but their surfaces are sometimes lightly stained with iron compounds.”

equivalent to Win:NH/CC Fabric Group E

Fabrics 6, 7, 10, 16, 24 equivalent to Win:NH/CC FabE, esp. E1 and E2

Win Brooks (Foot): Fabric 16 contains chaff/vegetation in addition to sand
Fabric 7 & 16: equivalent to Win:HC/CC Fabric E2
Fabric 10: equivalent to Win:HC/CC Fabric E3
Fabric 24: equivalent to Win:HC/CC Fabric E3

Fabric 6: equivalent to the very fine end of Win:HC/CC Fabric Gp E verging on Gp D in character.

Fabrics 13, 14, 15, 22, 27: equivalent to Win:HC/CC Fabric Gp C
Win Brooks (Foot): Fabrics 13 and 14 are included in this group but differ somewhat in that they contain abundant fine-medium sand which may be an inherent component of the clay. In this respect they are similar to some of the late fabrics of group 2.

Win Brooks (Foot): Moulding sand is almost invariably found on the edges and undersides of Group 1 products and is similar to the tempering sand.

<table>
<thead>
<tr>
<th>FABRIC</th>
<th>COLOUR</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Pinkish orange or yellow buff.</td>
<td>Fairly abundant sub-angular quartz sand &lt;0.4mm. Scatter of fine grained ferruginous inclusions &lt;6mm. Lines and rounded pellets of whitish clay(pellets &lt;10mm).</td>
</tr>
<tr>
<td>6</td>
<td>Red, orange, pink. Munsell 5 YR 7/8</td>
<td>Very infrequent sub-angular quartz sand &lt;0.4mm. Scatter of silty ferruginous inclusions. Varying amounts of whitish clay streaks and pellets. Fine grained matrix, slightly micaceous(flecks &lt;0.1mm).</td>
</tr>
<tr>
<td>7</td>
<td>Red, orange, pink.</td>
<td>As Fabric 6 but moderate scatter of quartz sand (sub-angular &lt;0.4mm).</td>
</tr>
<tr>
<td>10</td>
<td>Pinkish red, pinkish orange.</td>
<td>Infrequent sub-angular quartz sand &lt;1.0mm transparent or translucent white. Scatter of silty ferruginous inclusions and white clay lines and pellets. Some white clay inclusions characteristically partially coloured purple by ferruginous compounds.</td>
</tr>
<tr>
<td>13</td>
<td>Yellow buff</td>
<td>As Fabric 14 (probably a firing variant).</td>
</tr>
<tr>
<td>14</td>
<td>Pinkish orange</td>
<td>Sandy fabric. Similar to Fabric 4 but sand is finer (some</td>
</tr>
</tbody>
</table>

---

Excavations in Winchester 2002-07 Ceramic and stone building material
Excavations in Winchester 2002-07 Ceramic and stone building material

<table>
<thead>
<tr>
<th></th>
<th>Colour</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Pinkish orange, reddish orange.</td>
<td>Similar to Fabric 7 but fairly abundant voids due to burning out of organic temper.</td>
</tr>
<tr>
<td>22</td>
<td>Pink.</td>
<td>Scatter of sub-angular quartz sand &lt;0.4mm. Homogeneous matrix. Very occasional red-orange ferruginous inclusions.</td>
</tr>
<tr>
<td>28</td>
<td>Pink.</td>
<td>Similar to Fabric 22. Inclusions very rare. Lacks quartz sand content of 22 apart from very rare grains.</td>
</tr>
</tbody>
</table>

**Group 2**

**Win Brooks (Foot): Fabrics 3,5,25,37,50.**

These show a rather greater degree of diversity than group 1 fabrics. Whitish silty clay occurs as streaks and bands in many tiles. The fabric series can be divided into two broad groups depending upon the degree of mottling. Products of Fabrics 3 and 37 are light buff in colour as a result of the amount of white-cream clay. The larger group consists of fabrics 5, 25 and 50 which are reddish in colour and contain fairly abundant ferruginous inclusions. Fabric 5 is particularly distinctive as it contains abundant large tabular fragments of whitish siltstone within it. Most of the fabrics are fairly sandy and this may be intrinsic in the clay rather than deliberately added temper.

Fabric 3: equivalent to Win:NH/CC Fabric E3 paler colour, with more cream clay; sometimes almost entirely cream with reddish streaks.

Fabric 5: equivalent to Win:NH/CC Fabric E1 very coarse

Fabric 4: equivalent to Win:NH/CC Fabric E: including E with red ferruginous grits (E2. & E3. ) and also very coarse versions of Win:NH/CC Fabric E1. Essentially very mixed covering all versions of E

Fabric 8: two samples both very overfired with distinct differentiation of core and surface. One has moderate - low density poorly sorted sand, rare small chalk grit [R] 1-2 mm and occasional fine lamination.

Fabric 12: micaceous; rare coarse quartz sand [R], some red ferruginous pellets, slight fine laminations. equivalent to Win:NH/CC Fabric D with mica

Fabric 20: distinctive light mushroom brown colour, with moderate density of medium quartz sand and scattered fine chalk. Quite fine calcareous fabric. One piece has fine reddish moulding sand. ? equivalent to Win:NH/CC Fabric A.

Fabric 18: laminated, pale pinkish brown, some red ferruginous grits, but not common; infrequent/rare sand. equivalent to Win:NH/CC Fabric E3 (laminated).

Fabric 25: equivalent to Win:NH/CC Fabric E3

Fabric 37: equivalent to Win:NH/CC Fabric E3

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Micaceous Group

Win Brooks (Foot): Fabrics 1, 9, 33.

Clay type: Microscopic examination and thin sectioning reveals the principal features of this group as the micaceous character of the clay and the large well-rounded grains of sand added as tempering and/or moulding sand. The visible mica is white (muscovite) mica although some dark biotite is also present (Williams D.F. 1990(b). The quantity present varies between fabrics, being lowest in Fabric 9. Ferruginous material tends to be distributed as small rounded grains rather than the larger inclusions of the Reading Beds groups.

Some fragments contain visible inclusions of greensand or chalky material. There are similarities between these tiles and some of the Alice Holt pottery fabrics.

David Williams regards fabric 30 as essentially similar to fabric 1 in thin section and suggests the Gault clays to the east of Winchester as a possible source area for both (Williams D.F. 1990(b). For reasons given below, fabric 30 and the very similar fabric 42 are provisionally treated as a separate group.

Sand content: The sand content and moulding sand of fabrics 1 and 9 is very distinctive, consisting of poorly sorted rounded grains. These are mainly colourless or translucent white with a small proportion iron-stained on their surface to various shades of orange. Occasional opaque black grains appear to be flint.

Fabric 1: coarse quartz sand and gritty
Fabric 9: coarse quartz sand

These looked as though they were really the same fabric to me.

Fabric 33: not sure if the pieces in box were correctly labelled - they look more like fine fabric E.

None identified at Staple Gardens/Library - define as new fabric if found (?have we found any)

Fabric 30 and Fabric 42: equivalent to Win:NH/CC Fabric D
Both have fine fabric equivalent to D, but with very fine mica, sometimes not easily visible, possibly only with microscope. D1 – is micaceous variety.

Win Brooks (Foot): Fabric 30 & 42.

These two micaceous fabrics are regarded as outliers from the main group as they have not, as yet, been noted outside Winchester at sites where fabrics 1 and 9 occur in abundance. Furthermore, the sand characteristic of the other fabrics is absent either within the fabric or as moulding sand.

Sussex-London Group Fabric 21

Fabric 21: equivalent to Win:NH/CC Fabric -

High density of coarse quartz sand with common chaff temper; chaff is quite fine and is often only visible as very thin curved voids.

Win Brooks (Foot): Fabric 21
Clay type. Tiles of this group are orange or orange-brown (between 2.5 YR 6/8 and 5YR 7/8) and are less variable in colour than the group 1 products. The clay matrix is relatively homogeneous and distinctive in colour and texture (Appendix I).

Tempering. A mixture of sand and chaff forms the characteristic tempering of this group (Appendix I).

******************************************************************************

CALCAREOUS FABRIC GROUP.

Fabric 11 and 17: equivalent to Win:NH/CC Fabric A
Fabric 11 is directly equivalent to A, whilst 17 is a slightly pinker version and slightly sandier with pink moulding sand.

Win Brooks (Foot): Fabrics 11,17,34.
The characteristics of this group have been described in a report which concentrates entirely on these fabrics (Betts & Foot, 1994*). The main points are summarised here together with some observations specific to the Brooks. The quantity of calcareous tile from stratified Roman deposits of the Brooks is extremely small (1.5 kg.). There are, however, sufficient quantities from other sites within Winchester to support the conclusion that they are not merely 'strays'.

Clay type. The main features of these fabrics are the presence of varying amounts of sub-rounded cryptocrystalline limestone fragments, small pieces of shell and rounded clay pellets in a matrix which is often light pink or buff in colour. Fabric 11 is particularly distinctive as it is a white/cream colour. The red colour of the iron-stained moulding sand on many tiles contrasts with the light colour of the clay fabric. David Williams has provided petrological analyses (Williams D.F. 1990 (a)).

******************************************************************************

Fabric 15 / 31: equivalent to Win:NH/CC Fabric Gp C

Win Brooks (Foot): Fabric 15/31
This rather indistinct fabric group occurs throughout the Roman period (fig.22). Variations in the clay type do occur which may be of chronological significance, but it has not been possible to define these satisfactorily with the techniques used. They are broadly comparable with the group 1 fabrics with an abundant fine sand content and "grainy" texture. Fabric 31 seems to be more definable as early Roman than the rest of the fabric variants subsumed under Fabric 15.

Fabric 31: equivalent to Win:NH/CC Fabric D
This may include fabrics with a low density of chalk grit equivalent to WINSGA

Fabric 23: equivalent to Win:NH/CC Fabric C
Medium - coarse quartz sand

Fabric 26: equivalent to Win:NH/CC Fabric C
High density of medium quartz sand

Fabric 28: equivalent to Win:NH/CC Fabric C fine

Fabric 39: equivalent to Win:NH/CC Fabric C
Common-frequent poorly sorted coarse angular quartz, cream silty clay pellets - sand size to 4 mm in low- moderate density.

Fabric 43: equivalent to Win:NH/CC Fabric C
Coarse quartz sand. One piece has sand size red Fe oxide grits, looks more like E than C, but in same box with Fabric 43 marked tile.

**Fabric 46:** equivalent to Win:NH/CC Fabric C (coarse end of spectrum)

Very coarse quartz sand, high density SA-SR. Also a scatter of coarse stone grits:
flint, red iron stone/ferruginous stone.

**Win Brooks (Foot): Fabric 46**

*A very sandy fabric with certain resemblances to both fabrics 26 and 39. Thin sections by D.F. Williams reveal flint fragments as a common inclusion (Appendix).*

******************************************************************************

**Fabrics 29/35/41**

**Fabric 35:** equivalent to Win:NH/CC Fabric G

Moderate density of medium quartz sand and common chalk grit 0.5-7 mm

A rather variable fabric, very mixed broadly equivalent to E2 & B. Some has cream silty clay pellets [R] 1-5 mm.
But others with coarse maroon ferruginous sandstone grit up to 10 mm and siltstone pellets and streaks.

Some pieces finer, just laminated equivalent to E3.

**Fabric 29:** equivalent to Win:NH/CC fine Fabric E verging on D

Very fine some with laminations.

**Fabric 41:** equivalent to Win:NH/CC Fabric D

Low density of scattered coarse quartz sand (white/clear, SA) and occasional cream silty clay pellets [R], but otherwise overwhelming character is fineness. Akin to Fabric D with a little quartz and rare red Fe oxide grits.

**Win Brooks (Foot): Fabrics 29/35/41**

*This small group of somewhat micaceous fabrics with coarse moulding sand occurs in later Roman contexts at the Brooks, but there is some evidence that they are early fabrics present as residual material.*

******************************************************************************

**Fabric 38:** equivalent to Win:NH/CC Fabric D

Very fine fabric, few inclusions in matrix, occasional small chalk, rare calcareous cream silty lenses or pellets; rare angular flint grit.

**Win Brooks (Foot): Fabric 38**

*A calcareous fabric. The brown colour of this fabric sets it aside from the other calcareous tiles.*

******************************************************************************

**Fabric 2:** equivalent to Win:NH/CC Fabric E2 / B

**Fabric 19:** equivalent to Win:NH/CC Fabric E

**Win Brooks (Foot): Fabric 19**

*The fabric contains a small amount of tabular siltstone, but is clearly distinguishable from the later fabric 5.*

**Fabric 32:** equivalent to Win:NH/CC Fabric E

Laminated, red Fe oxide grits, coarse quartz sand [R]
Fabric 36: equivalent to Win:NH/CC Fabric E3

Fabric 48: equivalent to Win:NH/CC Fabric E
  Porous, laminated, occasional cream silty clay pellets.

****************************************

Fabric 40: equivalent to Win:NH/CC Fabric G
  Coarse sandy with chalk

Fabric 34, 44, 45, 47, 49: Not found.
Appendix 2

Quantification of CBM and properties

An attempt was made to establish whether the distribution of CBM in relation to properties reflected variations in the building construction on each property, rather than merely a reflection of the amount excavated or truncation. The excavated quantities were compared to the projected total assemblage for each property by using the percentage of the property excavated to establish the potential total assemblage for each property.

The results are shown in the table and in charts for each group that allow comparison based on count and weight. It is clear from the charts that the relative proportions do not significantly change and that it is possible to draw some valid conclusions from the distribution.

<table>
<thead>
<tr>
<th>% Property excavated</th>
<th>BE 1</th>
<th>BE 2</th>
<th>BE 3</th>
<th>BE 4</th>
<th>BE 5</th>
<th>BW 1</th>
<th>BW 2</th>
<th>BW 3</th>
<th>BW 4BW 5</th>
<th>BW 6</th>
<th>SE 1</th>
<th>SE 2</th>
<th>SE 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Properties</td>
<td>12.6%</td>
<td>25.1%</td>
<td>22.7%</td>
<td>44.0%</td>
<td>44.2%</td>
<td>24.6%</td>
<td>47.8%</td>
<td>73%</td>
<td>74.3%</td>
<td>63.7%</td>
<td>72.9%</td>
<td>50.8%</td>
<td>40.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>100% CBM frags</th>
<th>159</th>
<th>625</th>
<th>79</th>
<th>25</th>
<th>118</th>
<th>21</th>
<th>30</th>
<th>385</th>
<th>37</th>
<th>14</th>
<th>2</th>
<th>14</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Properties</td>
<td>BE 1</td>
<td>BE 2</td>
<td>BE 3</td>
<td>BE 4</td>
<td>BE 5</td>
<td>BW 1</td>
<td>BW 2</td>
<td>BW 3</td>
<td>BW 4BW 5</td>
<td>BW 6</td>
<td>SE 1</td>
<td>SE 2</td>
<td>SE 3</td>
</tr>
<tr>
<td>Excavated Nos</td>
<td>20</td>
<td>157</td>
<td>18</td>
<td>11</td>
<td>52</td>
<td>5</td>
<td>19</td>
<td>184</td>
<td>27</td>
<td>10</td>
<td>1</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>100% CBM Wt</th>
<th>11786</th>
<th>47151</th>
<th>4648</th>
<th>1350</th>
<th>7244</th>
<th>4569</th>
<th>836</th>
<th>26673</th>
<th>4917</th>
<th>1018</th>
<th>24</th>
<th>2012</th>
<th>736</th>
</tr>
</thead>
<tbody>
<tr>
<td>Properties</td>
<td>BE 1</td>
<td>BE 2</td>
<td>BE 3</td>
<td>BE 4</td>
<td>BE 5</td>
<td>BW 1</td>
<td>BW 2</td>
<td>BW 3</td>
<td>BW 4BW 5</td>
<td>BW 6</td>
<td>SE 1</td>
<td>SE 2</td>
<td>SE 3</td>
</tr>
<tr>
<td>Excavated Wt</td>
<td>1485</td>
<td>11835</td>
<td>1055</td>
<td>594</td>
<td>3202</td>
<td>1124</td>
<td>526</td>
<td>12750</td>
<td>3590</td>
<td>756</td>
<td>15</td>
<td>1467</td>
<td>374</td>
</tr>
</tbody>
</table>

100% CBM count
Excavations in Winchester 2002-07 Ceramic and stone building material

Excavated Wt

[Bar chart showing excavated weights by different locations and periods, with BE, BW, SE, and 1, 2, 3, 4, 5, 6 indicated on the x-axis and weight on the y-axis.]
Section 7 Figure 1: Illustrated Roman tile (1–5)
Section 7 Figure 2: Illustrated medieval tile (6–14)
WINCHESTER
A CITY IN THE MAKING

Archaeological excavations between 2002 – 2007
on the sites of Northgate House, Staple Gardens and the former Winchester Library, Jewry St

This is one of the
19 specialist reports
provided with
the above publication

Oxford Archaeology
Monograph