Centre for Archaeology Report 76/2001

# Report on the Survey of the Cookhouse at Fort Cumberland

David Fellows

© English Heritage 2001

ISSN 1473-9224

The Centre for Archaeology Reports Series incorporates the former Ancient Monuments Laboratory Report Series. Copies of Ancient Monuments Laboratory Reports will continue to be available from the Centre for Archaeology (see back of cover for details).

## **Report on the Survey of the Cookhouse at Fort Cumberland**

David Fellows

### **Summary**

Fort Cumberland is an 18th-century fort built on the shingle spit of Eastney Point on the south eastern corner of Portsea Island. It is a Scheduled Ancient Monument (Hampshire monument no. 277) and is the home of English Heritage's Centre for Archaeology. It is described in the English Heritage's Visitors' Handbook as 'perhaps the most impressive piece of 18th-century defensive architecture in England'.

The Royal Marine Artillery Headquarters were stationed at Fort Cumberland in 1859, and at around this time the Cookhouse was constructed. The following is the report on the building survey that was undertaken of the Cookhouse prior to it being restored and conserved in preparation for its re-use.

Keywords

Survey Standing Building Post-medieval

#### Author's address

English Heritage Centre for archaeology, Fort Cumberland, Fort Cumberland Road, Eastney, Portsmouth PO4 9LD. Tel. 02392-856709. Email: dave.fellows@english-heritage.org.uk

Many CfA reports are interim reports which make available the results of specialist investigations in advance of full publication. They are not subject to external refereeing, and their conclusions may sometimes have to be modified in the light of archaeological information that was not available at the time of the investigation. Readers are therefore advised to consult the author before citing the report in any publication and to consult the final excavation report when available.

Opinions expressed in CfA reports are those of the author and are not necessarily those of English Heritage.

Summary	Page 2	
1. Introduction		
1.1 Methodology	3	
<ul> <li>1.2 Description</li> <li>1.2.1 19<sup>th</sup>-century plan evidence</li> <li>1.2.2 Photographic evidence</li> </ul>	3 3 3	
2. Survey Results	4	
2.1 Summary		
2.2 External Elevations 2.2.1 North-east elevation 2.2.2 North-west elevation 2.2.3 South-east elevation 2.2.4 South-west elevation	5 5 7 7 8	
<ul><li>2.3 Internal Elevations</li><li>2.3.1 North-western room</li><li>2.3.2 Central space</li><li>2.3.3 South-eastern space</li></ul>	8 8 9 9	
3. The Roof		
4. Results of Architectural Paint Analysis		
Bibliography		
Acknowledgements		

## Illustrations

Figure 1	Location Plan
Figure 2	North-East elevation, survey drawing
Figure 3	Photograph of the south-western side of the building
Figure 4	Photograph towards the southern corner of the building
Figure 5	Photograph showing the dismantling of the chimney stacks
Figure 6	Photograph showing the capped chimney stacks
Figure 7	South internal partition, survey drawing
Figure 8	Plan of Cookhouse Building
Figure 9	Projected plan of Cookhouse roof
Figure 10	Reconstruction drawing of late 19 <sup>th</sup> -century building

#### Summary

During 1998 a decision was made to relocate the Ancient Monuments Laboratory (AML) section of English Heritage from their current location in London to Fort Cumberland, Hampshire. The move was planned to take place in the summer of 1999, and in order to accommodate the increased number of staff, it was necessary to develop several of the unused and under-used buildings at Fort Cumberland. Owing to the historical significance of the buildings, and in order to inform the development and planning stages of the project, it was decided that surveys of the buildings be undertaken prior to the works commencing. The surveys included photographic and annotated measured surveys, with archaeological interpretation and analysis of the buildings.

This report details the results of the survey of the Cookhouse, one of the buildings that was to be modified and developed. The Cookhouse is a rectangular brick building of mid 19<sup>th</sup>- century date located to the south-east of the north bastion of Fort Cumberland. The building is first shown on a plan of the Fort dating from 1861 where it is identified as a Cookhouse, and its construction may have resulted from the transfer of the Fort from the War Department to the Board of Admiralty and the subsequent stationing of the Royal Marine Artillery Headquarters at the Fort in 1859. Internally the building retains much evidence from its use as the Cookhouse, with the remains of a large hearth with a corbelled chimney breast set into the centre of the south-western elevation.

It was known from photographs taken in the early years of the 20<sup>th</sup> century that the two chimneys serving the hearth range were partially dismantled and capped, and that the roof was repaired and re-tiled. Evidence from the roof survey showed the mortises for two louvres along the central ridge and the notches for the jointing of the timbers forming dormer windows on either hip of the roof.

#### **1. Introduction**

The following is a report on the recording and analysis of the fabric of the Cookhouse, a 19<sup>th</sup>-century building within the Scheduled Ancient Monument of Fort Cumberland, Portsmouth. The building is included in the current re-development works in preparation for the re-location of the AML from London to Fort Cumberland in the summer of 1999.

The results of this survey should be read in conjunction with the Conservation Plan written by Judith Roebuck, the Inspector of Ancient Monuments of Historic Properties South East (HPSE).

### 1.1 Methodology

Following the rectified photographic survey supplied by HPSE, the main architectural details from the photographs were digitised using AutoCAD r14. The digital record was used in conjunction with the photographs as the basis for the survey of the building, and enhancement and annotation were undertaken on site to create the analytical survey. Following the site work, the enhancements were added to the digital record and the 3D survey, annotated with descriptive and analytical text, was compiled.

### 1.2 Description

The Cookhouse is a single storey brick building, rectangular in plan. It is aligned northwest-southeast and runs parallel to the north-east curtain wall of the Fort (*see figure 1*). It was built sometime in the 19<sup>th</sup> century, although the exact date of its construction is not known. The building is shown on a plan of the Fort dating from 1861, and may thus date from the reorganisation of the Fort in preparation for the stationing of the Royal Marine Artillery Headquarters at the Fort in 1859. It is possible that the building was constructed earlier in the 19<sup>th</sup> century, although no indication of it is shown on earlier plans (dating from 1811 and 1830).

## 1.2.1 19<sup>th</sup>-Century Plan Evidence

The 1861 plan of the Fort shows the Cookhouse as a simple rectangular structure without internal divisions or external additions (see figure 8 of the Conservation Plan, Roebuck 1998). On the plan of the Fort dating from 1886 a rectangular structure had been added to the north-eastern corner of the building (see figure 10 of the Conservation Plan, Roebuck 1998). This may have been a porch corresponding to the disused doorway seen in this position (*see figure 2*).

### 1.2.2 Photographic Evidence

There is a series of photographs of the Fort dating from the early years of the 20<sup>th</sup> century that include the Cookhouse in the background (*see figures 3-6*). These are very useful in determining the original structure of the building and its subsequent alterations.

*Figures 3 and 4* show the building to have two chimneys along the south western wall, one slightly to the north of centre and towering above the building (at least twice its height), the other smaller and situated towards the southern end of the wall. The sash window that still survives is shown on the south-eastern end wall of the building. The roof appears to be slate







*Figure 3: Photograph showing Cookhouse with roof louvres and northern dormer clearly visible* 



Figure 4: Photograph showing Cookhouse (in background) from the south









a states

المتحصيص



1001

1,7

1011 14

----







covered, is hipped in style, and has two lantern louvres along the ridge. Visible on the roof hips are small dormer windows. The survey evidence for these is recorded in Section 3 - The Roof.

*Figure 5* is an interesting picture as it shows the building during a phase of dismantling and repair. The two chimneys have been taken down to the height of the wall tops, and the brick rubble from these can be seen piled up in front of the northern stack. The roof has been stripped of its slates and the photograph shows the exposed timber roof structure.

The final photograph of the sequence, *figure 6*, shows the results of the repair work, and reveals a building in a very similar state to that surviving today. The chimney visible on the photograph has been capped with a coping stone, and the re-tiled roof no longer has the louvres or dormers.

The three photographs were taken over a short time period, thought to be the first decade of the  $20^{\text{th}}$  century, and show an important sequence of events producing the building that survives today. Evidence for many of these alterations was seen and recorded during the survey and is described below.

## 2. Survey Results

## 2.1 Summary

Four phases of build have been identified, and although the dating is provisional, the sequence of works established by the survey is as follows.

## Phase I Original Construction (1859?)

The first phase is the construction of the original Cookhouse, a rectangular building with a tall chimney and cooking range along the south-western wall. The north-eastern wall had five rectangular sash windows, and the main doorway into the building was located towards the southern end of this elevation (*see figure 2*). The south-eastern wall contained a single rectangular sash window of similar form to those in the north-eastern wall. The original construction of the north-western wall is not known as it was recently rebuilt (post WWII), although it may have had a window to match that on the south-eastern elevation.

The roof of the original building was hipped and contained two squared louvres, one at either end of the ridge, and had small dormer windows on each of the sloped hips of the roof.

There is no evidence for original internal divisions or partitions in the Cookhouse, although the current building is divided into three. The walls are plastered and painted and the floor is concrete, and this would have masked any partition evidence. Given that the plan of 1861 does show the internal divisions in the other Fort buildings, it may be fair to suggest, as none are shown in the Cookhouse, that when originally built it was a single room.

## Phase II Late 19<sup>th</sup>-Century Modifications (1860-1886)

The plan of 1886 and the Ordnance Survey map of 1890 show that there was a porch-like structure added to the northern end of the north-eastern elevation. The window at the northern end of this elevation has been converted into a doorway, and it is logical to assume that these are associated. The original doorway in this elevation was blocked at this time and the jambs removed. The threshold stone and the brick arch from the original doorway are still visible.

On the south-western elevation, a second chimney was built, probably during this phase of works. The associated internal hearth or fireplace is no longer visible, and it may be as a result of these alterations that the doorway was relocated.

## Phase III Early 20<sup>th</sup>-Century Modifications (1901-1910)

The modifications early in the 20<sup>th</sup> century are seen on the series of photographs described above (1.2.2). The chimney stacks were lowered and capped implying a radical change in use of the building from a Cookhouse. The louvres and dormer windows were removed and the roof was re-tiled

## Phase IV Later 20<sup>th</sup>-Century Modifications (Post 1910)

The internal space of the Cookhouse was divided onto three. The northernmost space was created by a brick partition up to ceiling height, with a timber door to the west of centre giving access. The southern partition was created by a combination of brickwork below and timber boarding above (*see figure 7*), and contained both a doorway and an internal window for borrowed light. The floor of the whole of the building was formed using poured concrete. In the southernmost space, the concrete floor was raised forming the platform or base for a machine. There was a circular flue knocked through the south-eastern wall, and a similar one through the south-western wall.

The north-western wall had at some time been demolished and rebuilt. The roof structure remained intact and so it is assumed that the demolition was controlled and for repair purposes. This may have been as a result of bomb damage in the Second World War, or possibly as a result of subsidence at this end of the building. The new wall contained a doorway, and at this time the main access to the building was changed from the north-eastern corner to this newly constructed door.

## 2.2 External Elevations

(A plan of the Cookhouse building is shown on *figure 8*)

## 2.2.1 North-East Elevation

The north-eastern elevation of the Cookhouse is constructed of red handmade bricks laid in English Bond. Within the brickwork there are several areas where the bonding pattern is interrupted, and these are caused by the necessity to alter the rhythm for architectural features and the corners of the wall.

The wall has a brick plinth at the base that steps out 0.06m from the face of the wall, and the





plinth can be seen for three courses down to the surrounding ground level. There are 38 courses of brickwork above the plinth to the height of the asbestos guttering and roof timbers.

The bricks used in the wall measure  $0.215-0.225 \ge 0.105-0.11 \ge 0.065-0.07m$  (82-8:  $\ge 4-43 \ge 22-2$ : inches), a range of sizes characteristic of their hand-made nature. They are a red\orange colour and have weathered unevenly, some revealing fine pebble inclusions in the clay. The whole wall surface has been heavily re-pointed with a beige sandy mortar - the original mortar being a fine pale brown lime mortar containing frequent small black inclusions.

This elevation is comprised of six bays that originally consisted of five windows and a door. The door was situated in the second bay from the southern end of the wall and was originally the main entrance into the Cookhouse. Of the doorway, the threshold stone and relieving arch survive. The threshold consists of a worn slab of Portland limestone 1.41m long x 0.08m deep. The relieving arch appears more roughly constructed than those above the windows on this elevation (although the difference is enhanced by unsympathetic repointing). The arch is segmental, spans 1.14m, and is constructed of bricks laid alternately as bull headers and soldiers.

The door has been blocked with bricks of a very similar nature to those used to construct the rest of the building, and it is very difficult to establish the extent of the removal cut. Following the coursing pattern in the expanse of brickwork that contained the door, it was possible to establish the position of two vertical lines of brick headers that appear to have remained undisturbed and thus indicate the positions of the door jambs. Also of interest on either side of the door there were two vertical alignments of two-thirds brick bats, and these appear to indicate the position of the bricks that surrounded the door that it was necessary to remove prior to blocking the door (*see figure 2*).

The windows, of which there were originally five, consist of rectangular timber-framed sashes with brick relieving arches and jambs and Portland limestone sills. The windows have sixteen lights, two rows of four in each sash. There are several types of windows though the differences are created by slight variations in the softwood mouldings of the sashes. It was not possible to establish which of these, if any, were replacements.

Externally the openings measure  $c.1.70 \times 1.24m$ . The relieving arches are segmental in shape and are constructed of alternating soldiers and bull headers. The sill protrudes c.0.05m from the face of the wall. At either side of the window jambs on the header courses of the main body of the wall there are brick closers inserted to create the rhythm for the openings. These are seen for the height of the window apart from in the course directly above the sill where a two-thirds bat has been used.

Between 1861 and 1886, an additional structure was added onto the north-eastern corner of the Cookhouse. There is no evidence for this surviving above ground or in the brickwork of the elevation, but it can be seen in the plan of 1886 (see figure 10 of the Conservation Plan, Roebuck 1998). It seems likely that at this time the northern-most window opening was converted into a doorway. This would have given access to the porch-like addition and it would have also been possible to block the doorway to the south. Evidence for the doorway originally being a window can be seen in the brick closers on either side of the opening down to the corresponding height of the closers of the other windows in the elevation.

Rectangles of brickwork on either side and directly above the window sills, and at the base of the northern door have been limewashed for a decorative effect.

The north-eastern quoin has been rebuilt using hard purple bricks and the extent of the north-eastern wall rebuilt at the same time is readily distinguishable, at most extending 0.50m along the wall. The south-eastern quoin has had damaged sections repaired, two areas of four and three bricks respectively, replaced with the same bricks used to construct the rebuilt north-western elevation.

## 2.2.2 The North-Western Elevation

The north-western elevation is 5.08m long and is 3.06m (38 brick courses) high to the guttering timbers. Centrally positioned along the wall is a doorway with a concrete lintel, the opening measuring  $2.20 \times 1.08m$ . The brickwork is laid in English Bond, and on the header courses at either end of the wall and at either side of the door opening the rhythm has been maintained using brick closers. The bricks used are purple in colour and are very evenly made with a sanded surface. They measure  $0.22 \times 0.105 \times 0.065m$  (8: x 4 x 22 inches) in size, and are bonded with a hard brown sandy well-mixed mortar that contains occasional black inclusions.

This wall has been constructed quite recently (post WWII), replacing the earlier wall in this position. The north end of the north-eastern wall shows evidence of being damaged, possibly from bomb damage or perhaps from subsidence. Some of the bricks are cracked and the brick courses are misaligned, and this may have been the reason for the reconstruction of the north-western wall. When this wall was built and doorway created, the doorway at the northern end of the north-eastern wall became redundant and was blocked from the inside with boarding.

### 2.2.3 The South-Eastern Elevation

The south-eastern elevation appears to be little changed from its original 19<sup>th</sup>-century appearance. It consists of red brickwork laid in English Bond (bricks and mortar the same as used in the north-eastern elevation) with a timber sash window positioned slightly to the west of the centre of the wall. The window opening measures 1.70 x 1.25m and has a brick segmental relieving arch 0.23m deep consisting of alternating soldiers and bull headers. There is a limestone sill that protrudes 0.06m from the wall face, and the sashes consist of two rows of four rectangular lights. Damage has led to some of the panes being replaced in this window. At the base of the wall there is a brick plinth that steps out 0.06m from the wall face, an original feature of the wall.

The bonding pattern of the English Bonded brickwork has been maintained using brick closers on either side of the window jambs and towards the corners of the walls.

There is an inserted circular flue (0.11m in diameter) to the east of the window at sill height and this relates to the alteration and reorganisation of the internal room arrangement and its use as a possible machine\workshop area.

The south-eastern corner has had to be repaired as noted in 2.2.1 above, and a broken gutter

has led to what appears to quite serious damage to the eastern half metre of walling, with the loosened mortar falling from the wall and the bricks spalling and cracking.

## 2.2.4 The South-Western Elevation

The main features visible in this elevation are the two chimney stacks. These are both disused and were capped in the early years of the 20<sup>th</sup> century, see 1.2.2 above. Originally only the northernmost chimney existed. This served the main hearth and cooking range along this elevation, the remains of which can be seen inside the building. In the late 19th century the second smaller chimney was added to the south. This was much lower than the earlier chimney, and nothing remains visible internally of the hearth it served.

The wall is constructed of red bricks laid in English bond, as are the other original elevations, and is 17.3m long and 3.1m high. Brick closers have been used at either end of the wall to retain the coursing rhythm. The original northernmost chimney is constructed of the same red bricks as the wall. The southernmost chimney is constructed of bricks of much the same colour and texture but of a slightly greater size, ranging from  $0.225-0.23 \times 0.10-0.11 \times 0.065 \text{m}$  (8:-9 x 4-43 x 22 inches). This has caused there to be a slight mis-match in the levels of the coursing. This chimney has been inserted into the wall, although repointing obscures the accurate cut line up the edge of the stack. The tops of the chimneys have been capped with sloping limestone slabs mortared to the angled brickwork left at the top of the stacks following dismantling.

In the 1930s the large garage structure was built directly to the south-west of the Cookhouse, and a linking structure was built between the two encompassing the original chimney stack. This now retains the latest internal paint scheme of the linking structure, a cream paint for the lower 1.5m of the wall, with the rest of the wall covered in white paint. Although the two buildings were linked, there was no direct access between them.

## 2.3 Internal Elevations

The Cookhouse is divided internally by two partition walls into three cells. These divisions appear to be secondary in nature, and may date from the reorganisation and refurbishment that took place in the early years of the 20th century (*see figure 8*).

## 2.3.1 North-Western Room

This room is formed at the north-western end of the Cookhouse by a brick partition built up to the ceiling. The ceiling consists of plyboard nailed to the members of the roof structure. The partition wall is a single brick thick, and detail of the brickwork and bonding is obscured by the render finish. The room is c.3.1m long and 4.25m wide, and has access through to the central area to the south via a four panelled timber doorway located at the south-western side of the partition wall. The upper two panels of the door are glazed.

The paint finish to the wall is in two colours, the c.1.17m high dado picked out in a green paint, with the upper section of wall being a creamy yellow colour. The door is painted in the same green colour as the wall.

### 2.3.2 Central Space

The central section of the building, the main body of the Cookhouse, contains a wealth of detail regarding the former use of the building as a Cookhouse. Along the south-western wall there are the remains of the arched fireplace\cooking range, although this has been truncated to the south. The central chimney breast is stepped out from the face of the wall, and there is simple but effective corbelling detail where the range starts. The location of the chimney breast, asymmetrical to the plan of the building, is dictated in part by the location of the timber roof trusses with the chimney respecting the truss positions. To the south of the chimney breast, the arch of the hearth has been removed.

During the course of the renovation works, a doorway was cut through the south-western wall to enable access between the Cookhouse building and the garage to the south-west. The cutting of the doorway exposed part of the southern end of the kitchen fireplace range. This revealed that the base of the range did not extend down to the floor, finishing 0.62m above the current concrete floor level. The fireplace opening had been blocked with later brickwork, and following the removal of the blocking heavy sooting was evident on the surface of the original brickwork.

On the north-eastern elevation, the three sash windows can be seen in their original positions and apparently unaltered. A description of the windows is included in 2.2.1 above.

The paint finish to the wall is in two colours, the c.1.17m high dado picked out in a blue\grey (battleship grey) paint, with the upper section of wall being a creamy pink colour. The dado continues uninterrupted around all of the elevations. The doors are painted battleship grey, as is the window joinery, although externally the window joinery is painted a cream colour. The battleship grey dado is a secondary paint finish, and in places the flaking grey paint has revealed the earlier dark green finish.

#### 2.3.3 South-Eastern Space

The partition creating the south-eastern room is constructed of bricks and timber weather boarding (*see figure 7*). The position of the partition is in alignment with the second roof truss from the south-east, and creates a room c.5.2x 4.25m in size.

The partition is formed by brickwork laid in running bond up to the height of the roof truss. Above this, the partitioning of the truss apex continues in the form of overlapping weather boarding nailed to the truss. The bricks used measure 0215-0.22 x 0.105 x 0.06-0.065m (82-8: x 4 x 2 $\delta$ -22 inches) in size, and appear to be fairly consistently sized and shaped with sharp arrises suggesting machine manufacture. It was not possible to see the colour of the bricks or the mortar due to the painted surface.

The partition contains a doorway and window, the window to the west, the door to the east. The door consists of independently hinged timber halves, each with two timber panels opening out to the north. Above the door there is a panel with three glazed rectangular lights, and these fill the space between the head of the door and the base of the tie beam of the truss. The door appears much earlier than its current location suggests and was probably moved there from elsewhere in the Fort during the period of refurbishment in the early years of the 20<sup>th</sup> century.

The window is timber-framed, and comprises three rows of four rectangular lights. The lintel for the window is comprised of twenty eight two-thirds size brick bats laid upright as soldier bricks.

The north-eastern elevation contains the sash window seen externally, but all evidence for the original doorway in the second bay has been obscured internally by later plaster and paint.

The south-eastern elevation shows the reverse of that seen externally, with the sash window and the circular flue. The detail of the brickwork could not be seen due to the internal painted surface.

Any evidence for the hearth associated with the chimney visible on the external face of the south-western elevation has been completely obscured or removed by later works including the plastering and painting of the surface. There is a small circular flue cut through the wall, associated with the later use of this room as what appears to be a workshop or other space for heavy machinery. Evidence for this could be seen in the poured concrete floor in this room, and along the south-eastern side of the room this had been formed into a rectangular raised area. Incorporated into the concrete at the pouring stage were a variety of iron bars and posts (now cut down to floor level) that may have been used for supporting and fixing machinery.

The paint finish in this room is the same as the central room of the Cookhouse, battleship grey below and cream above, although there is no evidence for the earlier dark green dado seen in the central room. The floor level in this room is 0.08m above that of the rest of the building, and consequently the dado level is raised the same amount (the height of the dado above the floor remaining constant).

### 3. The Roof

The Cookhouse roof is a simple king-post structure with hipped ends. The roof is c.17.15m long in six bays and spans a width of c.4.5m. One bay at either end forms the hip of the roof (*see figures 9 and 10*).

The king post, with a cross section measuring  $0.103 \ge 0.095 \text{m}$  (4 $\chi \ge 3$ : inches), splays to a width of 0.22m (8 $\epsilon$  inches) at the roof apex where it is joined by the principal rafters, the rafters being tenoned into the king post. These measure  $0.175 \ge 0.095 \text{m}$  (6 $\phi \ge 3$ : inches) in section, and are cut to form a sloped joint when meeting the tie beam (joint not visible, though almost certainly mortise and tenon). The tie beams measure  $0.193 \ge 0.095 \text{m}$  (7 $\epsilon \ge 3$ : inches) in section, and at either end the underside of the beams have been notched to take iron plates. These are the lower plates of a series of tensionable iron straps and plates that pass around the tie beams and the principal rafters. The king post is connected to the tie beam by a large tensionable bolt with a screw thread, the nut positioned on the underside of the tie beam.

The common rafters were notched to enable them to sit and be fixed (nailed) onto the timber wall plate. The wall plate measures  $010 \times 0.08m$  (4 x 3 $\chi$  inches) in size, and runs the length





of the four walls. The common rafters,  $0.12 \ge 0.05 \text{m}$  (4:  $\ge 2 \text{ inches}$ ) in section, were also nailed to the ridge pieces.

There are varying numbers of common rafter pairs in the six bays of the roof. The hipped bays at either end have six pairs, but the four central bays have (from south-east to north-west) six, eight, seven and six respectively, corresponding to the uneven spacing of the bays.

The ridge pieces measure  $0.05 \ge 0.12m (2 \ge 4: inches)$  in section, and were mortise and tenoned into the king posts.

To form the hips of the roof angled rafters were used spanning from the top of the king post to the top of the wall plate at the corners of the building. A central rafter was also used, continuing the alignment of the roof ridge piece, sloping down from the top of the king post to the wall plate where it was notched and nailed into place. These three rafters were mortise and tenoned into the king post, the complex jointing secured using nails. Common rafter pairs were then used to go from the wall plate up to the diagonal rafter, and then down to the perpendicular wall plate. Nails were used to join the common rafters to the angled rafters, and at the wall plate the bases of the rafters were crudely notched. Close fitting softwood boarding\planking was nailed to the rafters, onto which the slates were attached.

The ceiling was formed using horizontal braces between the common rafter pairs. These were lapped and nailed to the rafters, with boarding nailed to the rafters and the braces creating the ceiling. This arrangement without the ceiling boarding was visible in the south-eastern room where the boarding had been removed or had possibly never been attached (no evidence of nail holes). The central room shows the arrangement with the boarding in-situ.

Located in the second bay from the south-eastern end of the roof was an interesting arrangement of replaced common rafters. The two sets of common rafter pairs to the southeast of the second truss consisted of less substantial timbers than the other visible common rafters  $(0.10 \times 0.05 \text{ cf}, 0.12 \times 0.05 \text{ m}, 4 \times 2 \text{ cf}, 4: \times 2 \text{ inches})$  and were not notched to accommodate the wall plate. The next set of rafters were more substantial (0.15 x 0.075m,  $5\phi$ x 3 inches), and on each was a mortise. These had corresponding mortises in the principal rafters in the roof truss to the north-west. The location of the mortises and the separation of the truss and rafters formed an opening measuring c.1.25m square, initially perplexing but solved by the early photographic evidence described above (1.2.2). The space had originally been a louvre through the roof, and it had been dismantled when the building was reorganised in the early years of the 20<sup>th</sup> century. The two sets of less substantial common rafters could not have coexisted with the louvre structure as they were between the mortise positions, and so were obviously part of the repair to the roof prior to reinstatement of the tiles following the removal of the louvres. The photographic evidence shows a second louvre in the corresponding position to the north although the intact ceiling boarding meant evidence for this was not accessible.

The photographs also show a small dormer window in the hip of the south-eastern bay of the building. Evidence for this was located during the survey in the form of two angled notches into the common rafters on either side of the central ridge piece of the hip. The timbers forming the dormer sat in the notches and were nailed to the rafters, the nails still being

visible. Identical evidence for a corresponding dormer was found in the rafters of the north-western hip.

### 4 Results of Architectural Paint Analysis

(information from Crick&Smith, Architectural Paint Researchers)

The following is a summary of the relevant sections of the paint analysis report. Although the report identifies only two paint schemes on the internal elevations when there are at least three sets visible (see 2.3.1-2.3.3 above), much of the detail regarding the woodwork is very informative.

On the internal walls of the Cookhouse there are only two paint schemes identifiable. These consist of a pale green oil paint overlying an off-white oil paint applied directly to the plaster surface. It is suggested that the walls have been rendered and thickened, perhaps as bomb proofing, and this has resulted in the earlier paint finishes being obscured.

The internal joinery showed a greater array of finishes, with the most interesting being the north face of the south partition door, exhibiting a total of seventeen different finishes. This door is thought to pre-date the Cookhouse, with many of the schemes relating to its previous location. The window joinery exhibited a total of seven schemes.

The joinery on the exterior of the Cookhouse appears to have been heavily cleaned back to the woodwork, on top of which there are only two schemes. Fortunately a small sample of the earlier finishes was located from the window in the south-eastern wall, and the analysis of this showed there to be a total of eight schemes. Cross-referencing these to the chronology and stratigraphy of the samples taken from the hospital buildings, they match with schemes that have been numbered 8 through to 16. Scheme 8 is dated to the latter end of the first phase of hospital paint schemes, between 1747 (paint scheme 1) and 1860 (paint scheme 10), dating the Cookhouse to pre-1860.

### Bibliography

CfA	1998	Centre for Archaeology recording manual (draft), English Heritage
Crick Smith	1998	Fort Cumberland, Southsea, Hampshire. Hospital Buildings, Cookhouse and Security Casemate, Interiors and Selected Exteriors – Architectural Paint Investigations, Client Report
Magrath P.A.	1992	Fort Cumberland 1747-1850 Key to an Island's Defence, Portsmouth Paper Number 60

Roebuck J. 1998 Fort Cumberland Conservation Plan for Parade Ground Buildings (draft), English Heritage

### Acknowledgements

Thanks to Patrick O'Hara and Brian Kerr of CfA for their help in the project and for comments on the text, and to Judith Roebuck for her comments. Thanks also to Vincent Griffin for his work on the illustrations, and to the other members of the project team.