Research Report Series 44-2016

Fort Cumberland, Portsmouth

EXCAVATION ABOVE CASEMATES 36 AND 37

Paddy O'Hara

ISSN 2059-4453 (Online)

The Research Report Series incorporates reports by the expert teams within the Investigation & Analysis Division of the Heritage Protection Department of Historic England, alongside contributions from other parts of the organisation. It replaces the former Centre for Archaeology Reports Series, the Archaeological Investigation Report Series, the Architectural Investigation Report Series, and the Research Department Report Series.

Many of the Research Reports are of an interim nature and serve to make available the results of specialist investigations in advance of full publication. They are not usually subject to external refereeing, and their conclusions may sometimes have to be modified in the light of information not available at the time of the investigation. Where no final project report is available, readers must consult the author before citing these reports in any publication. Opinions expressed in Research Reports are those of the author(s) and are not necessarily those of Historic England.

For more information write to Res.reports@HistoricEngland.org.uk
or mail: Historic England, Fort Cumberland, Fort Cumberland Road, Eastney, Portsmouth PO4 9LD

SUMMARY

Fort Cumberland is a bastioned trace fort built between 1782 and 1812 at Eastney Spit. The Fort commands the mouth of Langstone Harbour and is in the care of the Secretary of State, and is managed on her behalf by English Heritage. This note describes the results of work undertaken on the rampart above Casemate 36 and 37, designed to understand the cause of long standing water ingress into the casemates of the curtain wall.

CONTRIBUTORS

Alice Forward and Duncan Brown

ACKNOWLEDGEMENTS

The excavator would like to thank Jim Leary for co-excavating Dave Webb for logistics support and providing a safe working environment, Michael Russell for his executive direction and general encouragement, Vicky Crosby for her Surveying skills and to John Vallender for his expert Graphic illustrations. Finally to the excavation's sponsors the Resources Department of English Heritage who provided the funding for the excavation.

CONTACT DETAILS

Historic England, Fort Cumberland, Eastney, Portsmouth PO4 9LD
02392 856700

CONTENTS

INTRODUCTION

Fort Cumberland was built upon a low lying storm gravel beach known as Eastney Point situated 4 miles ES-E from the Royal Naval Dockyard on the south-eastern corner of Portsea Island. Portsmouth's position as England's premier Naval Dockyard is well attested; it underwent rapid expansion in the late seventeenth and eighteenth centuries and its defence was of utmost national priority. It had long been recognised that the Langstone Channel leading into Langstone Harbour was a stretch of water that had to be controlled. This potential weakness was recognised by the engineer Talbot Edwards as early as 1707.

Chronology of Construction

The first fort in this location was finally ordered by the Duke of Cumberland and was built from 1747-50 to a design which appears to be the work of Captain John P Desmaretz, the Clerk in Ordinary to the Chief Engineer. An irregular star shape in plan, the fort's defences were essentially ramparts which along with the parapets were topped off with clay. The counterscarps were constructed from the digging of the dry ditch. It was constructed to prevent an attack on the dockyard from the east of the island and to provide cover to the west along the beach toward Southsea Castle, hence its principle bastions faced south and east.

The American War of Independence strained England's defensive capabilities to such an extent that the French revived their plans to invade England key to their strategy's success was the capture of Portsmouth dockyard. The appointment of Charles Lennox the 3rd Duke of Richmond as Master General of Ordnance gave the final impetus for a re-appraisal of the defences of Plymouth and Portsmouth. Built from 1782 and not finally completed until 1812, the second fort covered 24 acres

and was substantially larger than the first fort. Two buildings, The Storehouse and the Guardhouse with Gunners Barracks, are rare survivals of mid eighteenth century military architecture.

Significance

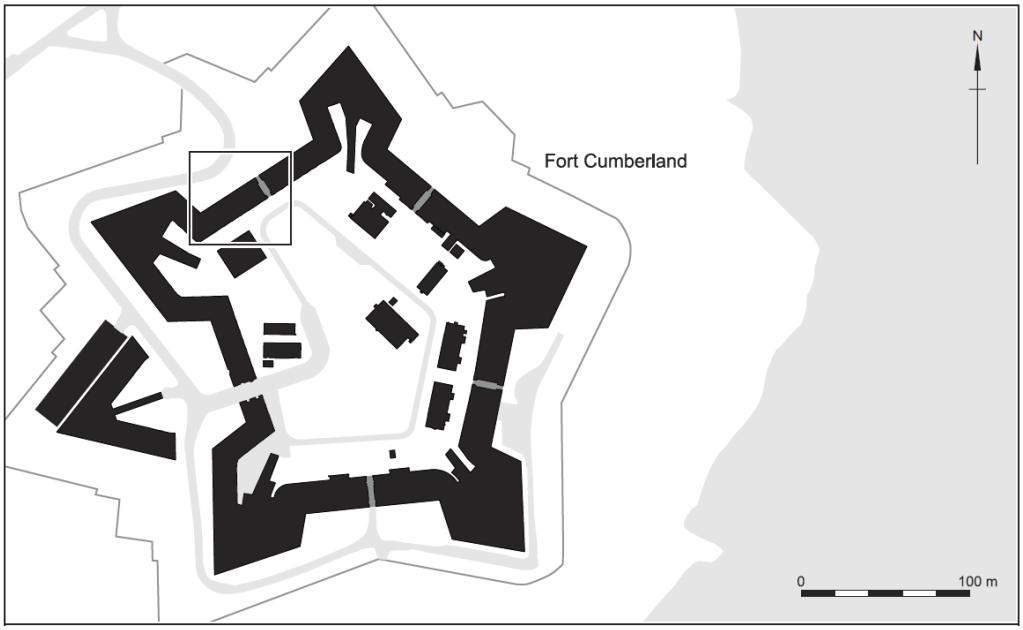
Perhaps the most impressive piece of C18 defensive architecture remaining in England' (Pevsner and Lloyd 1967:421). The original defences are well-preserved and demonstrate the important changes in bastioned fortification which took place in the later eighteenth century. The long held orthodoxy of static defence exemplified by Maréchal Vauban's system was being challenged. The Marquis de Montalembert proposed a system of active defence that deployed perpendicular firepower capable of overwhelming any attacking force. At Fort Cumberland this involved separating offensive from defensive fire, the use of bombproof casemates in the rampart for guns as well as for barracks accommodation, and active defence using ditch defences; the covered way with its places of arms and traverses is regarded as the best surviving eighteenth-century example in England (Saunders 1998). The Duke of Richmond was an advocate of this innovative theory but his engineers were more conservative. The resulting compromise saw Fort Cumberland constructed as the last fully fledged bastioned fort to be built in England and yet at the same time it was to be the first to have casemated ordnance. The second fort's defences are listed Grade II* (30 October 1969 revised 1999, PRN 160).

Conservation

Management responsibility for most of the fort was transferred from the Ministry of Defence to the Department of the Environment in 1975. It was realised from the outset that there would be a substantial resource commitment required to maintain a monument of this size. This led to a policy of maintenance being kept to a 'reasonable minimum'. The continued limited nature of resources means that this still applies today. The exception has concerned buildings repaired prior to re-use. Since 1975 parts of the site have been used by the DOE and since 1984 English Heritage now occupies the store room and hospital complex, north and south officers' quarters, cook house, garage, motor transport shed, barrack block, cleansing station, guard rooms and gunners' barracks (unrepaired) and a few casemates.

A detailed condition survey carried out at Fort Cumberland in 1996 by Broadway Malyan Architects for English Heritage highlighted water ingress and damp in the casemates, chambers and magazines due to failure of the asphalt on the mid-twentieth-century concrete slabs on the terre-plein of the land curtain and right curtain, with the water then filtering down through the shingle, which has resulted in rotten floorboards and plaster as well as corroded metalwork (e.g. original grates and coat racks/shelves); the erosion of brickwork and joinery on the fronts of the casemates etc. due to missing and defective rainwater goods.

Currently the key issue concerning the use of the site and one of its main issues overall concerns the need to find appropriate adaptive re-uses for the fort's unused buildings and structures (notably the Guardhouse with Gunners Barracks and the casemates)



The Right Curtain aligns NW-SE with its scarp wall facing landward. From the SW corner magazine casemate 31 occupies the re-entrant angle between the Right Bastion flank and the curtain wall there then follows a run of soldier's casemates 32-37. The curtain is pierced centrally to allow troop movement from the Parade Ground to the covered way through the brick arched passageway of the North sally port. A further run of soldier's casemates 38-43 follows and magazine 44 within the re-entrant angle of curtain and North Bastion completes the Right Curtain. The terre-plein of the two landward bastions Right and North are reached via broad ramps emanating from the parade ground. The bastions in turn give access the turf covered terre-plein above the casemates and to the banquette built inside the brick revetted parapet.

Excavation

Archaeological excavation of the terre-plein above casemates 36 and 37 and the intervening valley drainage system was undertaken with the aim of locating the nature and extent of the problem, effect repairs on the exposed gutter system and provide the much needed evidence to inform a phased programme of repairs.

An area running the full width 8.7m of the rampart and 4.5 m wide was machine stripped of its topsoil above the eastern half of casemate 36 and the western half of casemate 37. All of the layers and deposits excavated were part of the construction of the ramparts and will have been locally sourced as part of the building of the second fort or reused from the previous fort; they are not part of a soil formation process.

On the 26th August 1940 Fort Cumberland was hit by 78 bombs as Luftwaffe bombers headed back across the channel. This resulted in the destruction of two air raid proofed casemates on the Land Curtain with the loss of eight lives and considerable damage to the surrounding ramparts.

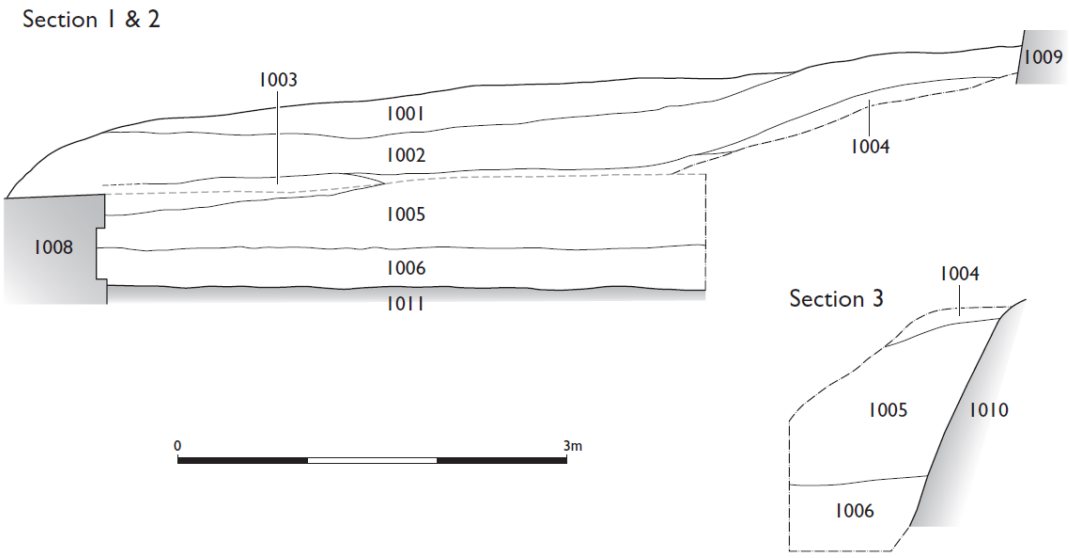
The ramparts above casemates 38-43 were similarly damaged and were repaired with concrete slabs capped with a waterproof membrane.

The topsoil and turf which was removed prior to repair was re-deposited over the rampart further to the west and can still be seen as a faint linear spread running west toward the Right Bastion. On removal of the turf the slight rise was present as a layer of dark brown loamy clay seen 30mm high in the centre of the trench. The layer has a uniform profile tapering to zero on the north and south edges of the trench. This re-deposited layer sealed a silty clay loam topsoil, the original terre-plein. Up to 40mm thick in places it thins to 20mm to the south toward the parade ground and to the north where it butts against the parapet wall.

Into this layer is cut three parallel trenches which clearly carried on beyond the excavation toward the north east. Each trench cut contained an identical precast girder of concrete measuring 65mm square. Set into each block 0.47m from their western end is a cast iron rod. Within the immediate area of the girders the remains of skeins of electric cabling were noted. Archive photography shows a prefabricated hut presumably standing on concrete girders at this location. It is assumed to be an observation platform looking into the parade ground presumably to oversee drill.
Beneath the original topsoil there are thin deposits of beach shingle at the north and south edges of the trench. These are levelling layers to provide a level surface upon which to lay the final layer of the rampart.

In the centre of the trench the topsoil sits directly above a layer of stiff grey blue estuarine clay, probably locally sourced from Eastney Lake immediately to the north of the fort. This rammed clay deposit extends across the whole of the excavation area and provides an impermeable barrier to the weather and also affords considerable protection to the casemates from incoming fire. Where the layer butts against the parapet wall it reaches a maximum thickness of 1200mm and has been mixed with beach shingle and fashioned to provide the banquette or banquette to allow musket men to step up and fire out over the parapet.

Beneath the clay and forming a very sharp horizon with it is the main body of the rampart fill. This is a deposit of clean loose fine to medium gravels containing interstitial sands and shell debris. This beach shingle layer completes the simple sequence of deposits. The layer is at it thinnest, 0.3m, where it envelops the ridges of the casemate roof but in the valley gutters it is in excess of 1.3m.

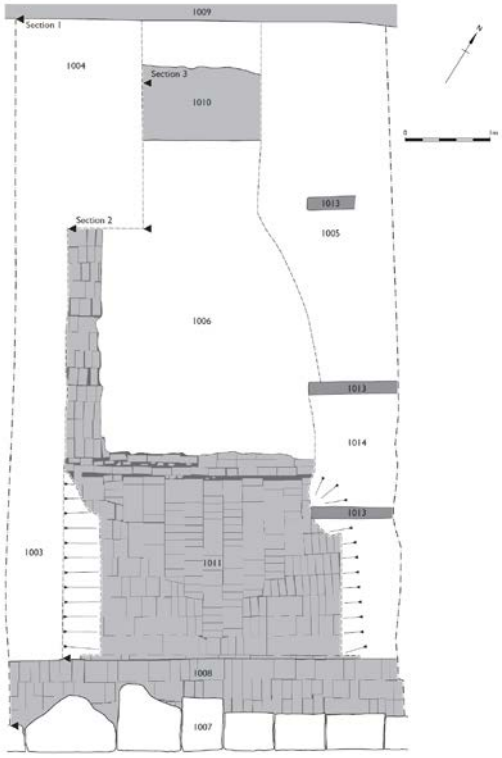


In order to reach the drainage channel it was necessary to empty the area bounded by the ridges of the vaults. The main tunnel vault of each casemate traverses NE-SW the width of the curtain wall; the roof ridge to the casemate was revealed over most of length of the excavation. As originally built each individual casemate could in extremis be connected to its neighbour via a narrow vaulted passage. This would have allowed movement around the curtain walls of the fort without coming under direct fire. This secondary passage formed a groin vault with the casemate vault. The ridge roof of the passageway was revealed across the width of the excavation and runs parallel to and at a distance of 4.7m from the casemate's parade ground wall.

The connecting passageway roof dips south whilst the opposing casemate roofs 36 and 37 dip east and west respectively. The resulting hopper shaped feature is closed off by the brick revetment wall that carries the line of the front face of the casemate. The wall rises from the lowest point of the roof to a height of 1.2m at which point there is a scarcement where the brickwork steps in 0.1m it rises a further 0.37m before stepping out to its original width 1.06m in its final five courses of brickwork. The parade ground face is enhanced a single course of Portland Purbeck Limestone slabs laid flat form a plat that runs the length of the curtain wall. The slabs are tooled to present a decorative milled edge.

In order to gain access to the drainage run in the valley between the two casemates it was necessary to empty this large hopper shaped structure of its fill of beach shingle. The beach shingle lay directly on top of un-mortared roofs. The roofs were constructed of a bright red soft brick laid on end, their integrity of the structure dependent on the weight of the brick above to key the whole together. The sponsor's agent made a small observation hole in the westerly facing roof of casemate 37 by removing four of the roof bricks. This revealed that the roof was supported on tightly spaced rows of brick on edge of a similar make to those of the roof. These ribs sat on and ran parallel up the sides of a second pitched roof which had been waterproofed with a skim of Portland cement. The valley

gutter associated with this second roof feeds the weep hole which issues into the water hoods on the casemate wall.



Between each casemate there is an un-mortared brickwork counterfort 1.4m wide which is built against the rampart wall for additional support. As built it terminated below the level of the banquette and is not visible against the rampart. Each casemate has the potential for a fire grate on either side wall and the flues are angled from the grate to enter the counterfort. The flues are then

carried to the top of the counterfort where they angle again into the parapet wall to rise vertically for a further 0.85m within a rectangle of brickwork to the top of the parapet wall. Their position on the parapet wall is picked out by means of three laid chamfered blocks of Purbeck Portland Limestone it is likely that the brickwork box too was covered by Purbeck Portland slabs cut to accommodate the insertion of ceramic chimney pots.

CONCLUSION

A series of probes were captured by CCTV which demonstrated that all tested drainage runs appeared to be blocked to a greater or lesser degree. The survey was, however, partial in that it documented the drainage run up to the blockage, usually up to about 2m in from the outlet on the parade ground face; there was no evidence for the extent of the blockages or the reason that they had occurred.

It is clear from the above that the probes were halted not because of any blockage but because they had encountered the rising brick roof of the corridor vault. Excavation further revealed that rainwater would not permeate the thick layer of impermeable clay that capped the shingle and that the whole area was completely dry. It can be concluded that the weep hole drainage system is not built to remove rain water but merely removes any condensation forming on the cement skim of the brickwork vaulting. In winter there would be a steep temperature gradient between the occupied casemate and the cold flint shingle above. Until the middle of the C19th the soldiery were accommodated in the casemates with fireplaces used for cooking and warmth.

It was clear from excavation that the upper body of the counterfort was skimmed in a protective Portland cement mix, this has deteriorated over time and the brickwork close to the surface is vulnerable to the elements. The limestone capping at the top of the parapet had failed at some point as this had been replaced by a C20 coarse mortar. Sometime after WW2 the chimney pots were removed leaving a scar in the mortar housing. In addition it can be seen that the flue lining has broken away exposing the brickwork Damage is further exacerbated as plant growth takes hold in the bricks interstices lower down the throat of the flue. The ramparts of the fort are particularly exposed to the prevailing south westerly winds.

This investigation strongly suggests that the problem of water ingress is not one of penetration through the various bombproofing elements above the casemates. Instead it seems highly probable that rainwater runs down the interior of the flue casing, soaking into the porous brick and in time compromising the interior of the casemate.

A simple remedy would be to make waterproof the mortar covered box and to reinstate ceramic pots local Fareham chimney pots (as the original fort would have had) have been used in conservation work elsewhere in the Fort and are still available. A further measure would be to make good the protective skim on the top of the counterfort and to seal off any gaps between it and the rampart. Many of the casemates have been little used since WW2, and a new use would greatly help their conservation it is to be hoped that in part this excavation can help in that endeavour.

BIBLIOGRAPHY

English Heritage 2005, Making the Past Part of Our Future

English Heritage 2006 (revised 2009) Archaeological Recording Manual

English Heritage 2008a, Procedures for Excavation and Assessment

English Heritage 2008b, SHAPE 2008 A strategic framework for historic environment activities & programmes in English Heritage

English Heritage 2009, Heritage at Risk Register

Gibbs Liv, 2003Fort Cumberland Conservation Plan adopted

Magrath P.A. 1992 *Fort Cumberland 1747-1850 Key to an Island's Defence* Portsmouth Papers 60

Roebuck J 1998 Fort Cumberland Draft Conservation Plan for Parade Ground Buildings

Saunders Andrew, 1977 *Hampshire Coastal defence since the Introduction of Artillery* The Royal Archaeological Institute.

APPENDIX 1: THE FINDS FROM THE CASEMATE EXCAVATION PR5890, FORT CUMBERLAND

Alice Forward and Duncan Brown

Introduction

The assemblage from the Casemate excavations at Fort Cumberland is small and can be generally dated to the 19th century.

List of finds

Context	Material	Object	Date	No of fragments	Weight (g)
	Ceramic	Chimney - Fareham	19th	9 including one slip decorated	856.5
	Ceramic	Sherd of blue and white pottery	19th	1	6.5
	Glass	Brown bottle neck	19th	1	4.7
	Ceramic	Pottery - redware	19th	1 - internally slipped and glazed.	1.7
	Ceramic	Pottery – Verwood	18th/19th	1	7.5
	Slag	Waste		1	129.7
	Ceramic	Clay pipe stems	18th	2	4.1
	Bone	Animal bone		5	46.6
	Ceramic	Brick	19th	2	656.6
	Ceramic	Roof tile	19th	2	290.2
	Sand?Stone	Worked block		1	2435.7

Discussion

The finds are all early-modern in date. They were mostly retrieved from the post-WW2 re-deposited topsoil, removed from above the casemates to the east. The Fareham chimney fragments are exactly the same as the existing chimneys seen in the grounds of Fort Cumberland today. The brick fragments are also representative of the bricks used in the building of the structures currently standing within the Fort. The pottery is all 19th-century tablewares and contemporary with the … phase of the Fort.