

# THE WESTERN HEIGHTS DOVER, KENT

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Report No 3: The Drop Redoubt  
19th-century artillery fortification



SURVEY REPORT



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REPORT NO 3

**THE DROP REDOUBT**

A 19TH-CENTURY ARTILLERY FORTIFICATION

ARCHAEOLOGICAL INVESTIGATION REPORT SERIES 24/2001

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*The Drop Redoubt*

*(NMR: TR 3141/17)*



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## **ABBREVIATIONS USED IN THE TEXT**

<b>AA</b>	anti-aircraft
<b>BC</b>	battery command
<b>BL</b>	breech loader
<b>CRE</b>	commanding Royal Engineer
<b>CO</b>	commanding officer
<b>IGF</b>	Inspector General of Fortifications
<b>OP</b>	observation post
<b>QF</b>	quick-firing
<b>RBL</b>	rifled breach loader
<b>RML</b>	rifled muzzle loader
<b>SB</b>	smooth bore



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## GLOSSARY

### **Artillery store (or RA store)**

A subsidiary building in a fortification, storing equipment for the operation and maintenance of artillery pieces

### ***Banquette***

A low parapet over which infantry fire

### ***Barbette***

Breastwork of a battery over which guns fire

### **Batter**

The slope of a wall face

### **Battery**

A work, either temporary or permanent, where guns or mortars are mounted

### **Berm**

Level space between the edge of a ditch and the foot of a rampart.

### **Blocked-up platform (or carriage)**

A form of traversing platform raised up so that an artillery piece could fire over a parapet rather than through an embrasure

### **Breech-loader**

A gun which is loaded from the rear of the barrel

### ***Caponier***

A sheltered passage across or projecting into a ditch; usually loopholed to provide flanking fire.

### **Carronade**

A short heavy cannon with a large bore of varying calibres

### **Casemate**

A bombproof vaulted chamber providing emplacements or loops for guns and/or troop accommodation

### **Cordon**

A stone string course at the junction of a sloping wall and the vertical wall above it

### **Counterscarp**

Exterior slope of a ditch

### **Counter-scarp gallery**

A casemate built behind the counterscarp of a ditch providing flanking fire along the same ditch





## **GLOSSARY (Continued)**

### **Covered way**

A continuous walkway, protected from enemy fire by an earthwork parapet

### **Curtain**

A section of defensive wall or rampart, the main defence of a work between bastions

### **Depression range finder**

An instrument used to find the exact position of an enemy target

### **Embrasure**

An opening in a parapet or wall through which a gun can be fired

### **Enfilade**

Fire coming from a flank which sweeps the length of the fortification

### **Expense magazine**

A small magazine in which ammunition was stored for immediate use in part of a fortification

### **Fort**

Position or building designed primarily for defence

### **Garrison Carriage**

A simple iron wheeled carriage used for artillery pieces when not in service use in a fortification. The piece would be transferred to a wooden truck or a traversing carriage for action

### **Glacis**

The external slope of a defensive work, carefully profiled and often massively reinforced with earth and other materials to absorb in-coming shell fire

### **Gorge**

Rear of a work; usually the neck of a bastion or a detached work

### **Infantry step**

The same as a *banquette* (above)

### **Loop**

An opening in a wall through which a gun can be fired

### **Muzzle-loader**

A gun which is loaded from the front of the barrel

### **Parade Ground**

A protected open area on which regular musters and exercises take place

### **Parapet**

A low wall or earthen bank protecting the front edge of a rampart



## **GLOSSARY (Continued)**

### **Magazine**

A place for the storage of gunpowder. Generally applied to any ammunition storage, the term more particularly refers to the place where gunpowder was kept loose in barrels or cases (often called a main magazine)

### **Mortar**

A short but large calibre artillery piece designed to fire shells at high angles of elevation

### **Murder hole**

A small hole, slot or loop in a fortification, looking down on an enemy and through which weapons could be discharged or projectiles dropped

### ***Pharos***

A Roman lighthouse

### **Platform**

A hard surface, sloping gently up to the rear, on which a gun was placed to provide a firm firing position and which would dampen its recoil

### **Racer**

A curved steel track set into the gunfloor. The wheels of a traversing platform engaged with the racer to ensure smooth movement of the gun about a pre-determined arc of fire

### **Ramp**

An incline on the rear slope of a rampart to allow the movement of troops and guns

### **Rampart**

The main defence of a fort on which the troops and guns of the garrison are positioned

### **Redoubt**

Small enclosed work without bastions, often used as an outwork

### **Revetment**

Retaining wall of a rampart or the side of ditch

### **Rifled muzzle-loader**

A muzzle-loading gun which has had grooves cut into the inside of the barrel which caused the shell to spin thus ensuring greater speed and accuracy

### **Salient**

An angle formed in the line of a fortification to project outward towards the field

### **Sally port**

A small door or gate, often masked or concealed, through which defending troops can make a surprise 'sally' or counter-attack



## **GLOSSARY (Continued)**

### **Shifting lobby**

A room next to a magazine or cartridge store in which men change into and out of magazine working clothes. This was to prevent metal on their ordinary clothing from sparking and thus igniting the gunpowder. Access to the magazine was generally prevented by a waist-high barrier between it and the shifting lobby

### **Side arms store**

A room for storing the side arms ie all equipment required to load and fire an artillery piece - sponge, rammer etc

### **Slit trench**

A small rectilinear trench, with spoil along the forward edge, forming a temporary defensible position for infantry

### ***Talus***

The rear slope of a rampart

### **Traverse**

An earth bank, usually placed across the terreplein, to protect troops from flanking fire and bursting shells. A traverse could also be used to bombproof structures on the terreplein

### **Traversing platform**

A mounting for an artillery piece, with small wheels which enabled it to be moved through a fixed arc on curved rails or racers.

### ***Terreplein***

Level surface behind the parapet providing a platform for guns

### **Trace**

The plan of a fortification

### **Truck carriage**

A wooden carriage for an artillery piece. It had small wheels (= trucks) for transport and recoil. The piece could be elevated and depressed though traverse was by manhandling. It was the standard carriage for guns on ships, and in forts before the late 18th century.

### **Work**

General term for any work of defence



## 1. INTRODUCTION

*Between April 1998 and April 1999 the Royal Commission on the Historical Monuments of England (RCHME) carried out survey and analysis of the earthworks, buildings and other structures of the Drop Redoubt, a 19<sup>th</sup>-century artillery fortification forming part of the extensive defences on the Western Heights, in Dover. The Western Heights Project was undertaken at the request of Kent County Council as part of an Interreg II programme relating to historic fortifications in Kent, Nord-Pas de Calais and West Flanders. The programme was co-ordinated for several partners in Kent by Kent County Council and funding for Western Heights was shared between the RCHME and the European Union. The field investigations were the responsibility of staff of the RCHME Field Office in Cambridge.*

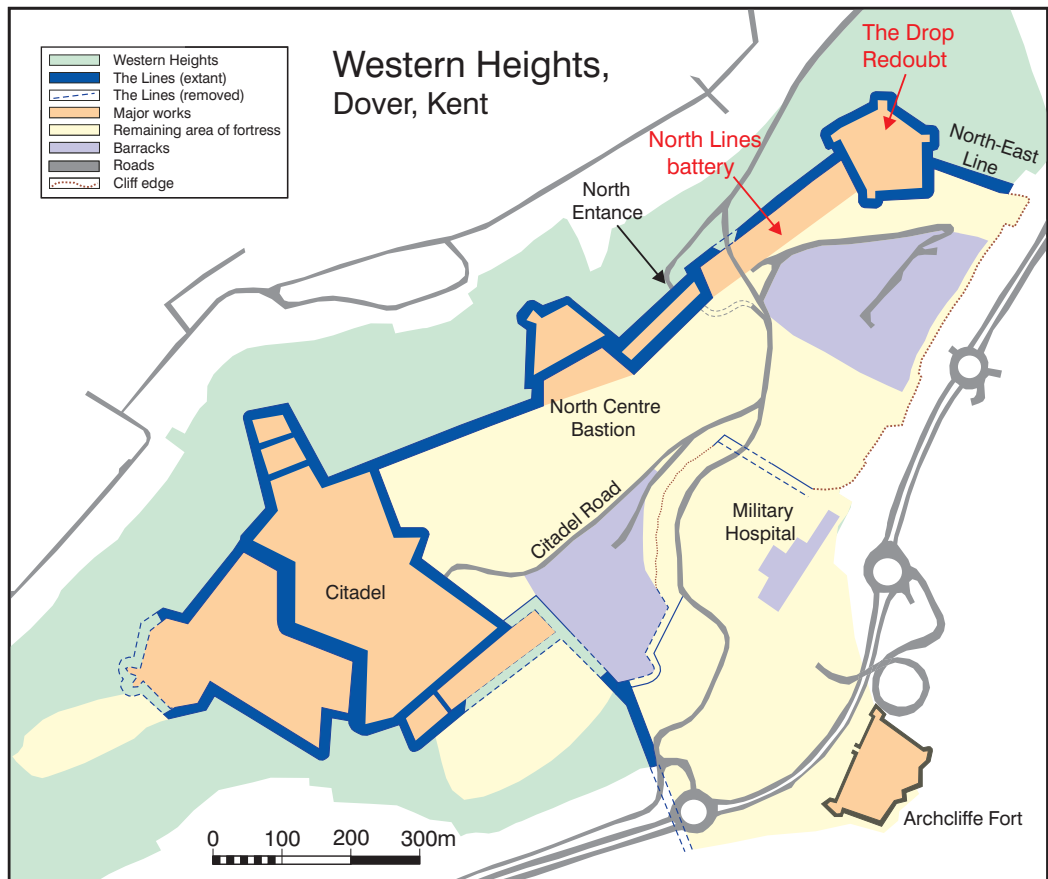
*This report is no 3 in a series of ten to be produced on the Western Heights fortifications.*





The Drop Redoubt was a key element of the Western Heights fortifications. Occupying the eastern end of the ridge and dominating the town, port and seaward approaches, it is essentially a pentagonal fort surrounded by a deep ditch (Figs 1a&b). The redoubt was designed to control the land front as a self-defensible work but was also linked to the linear defences that guarded the Heights as a whole, here called the North Lines and the North-East Line. The major phase of construction, during the war with France, was between 1804 and 1816, although work had begun from c1782. A programme of modernisation took place between 1858 and 1867, with the addition of *caponiers* in the ditch and the provision of better accommodation in accordance with recommendations of the Barrack and Hospital Improvement Commission of 1858.

In 1893 re-armament resulted in four (of six) 64-pdr RML guns being positioned in new emplacements on the ridge on the western flank of the redoubt up to the North Entrance. This was not a battery in its own right but formed part of the Drop Redoubt command.. For reasons of clarity, in this account it is referred to as the battery on the North Lines.



**Figure 1b**  
*The Western Heights, showing the Drop Redoubt and the battery on the North Lines*



The effectiveness of the Drop Redoubt as an artillery fort, capable of withstanding and repulsing a concerted attack, declined towards the end of the 19<sup>th</sup> century. At this time its old armament was gradually reduced and replaced by machine guns for local defence. However, the redoubt continued to provide barrack accommodation, possibly as an extension to the nearby Grand Shaft Barracks, for an unknown period but probably on an as-needed basis up to and including the First World War, when anti-aircraft gun positions were established. There was some small-scale activity during the Second World War, including the establishment of an artillery observation post.

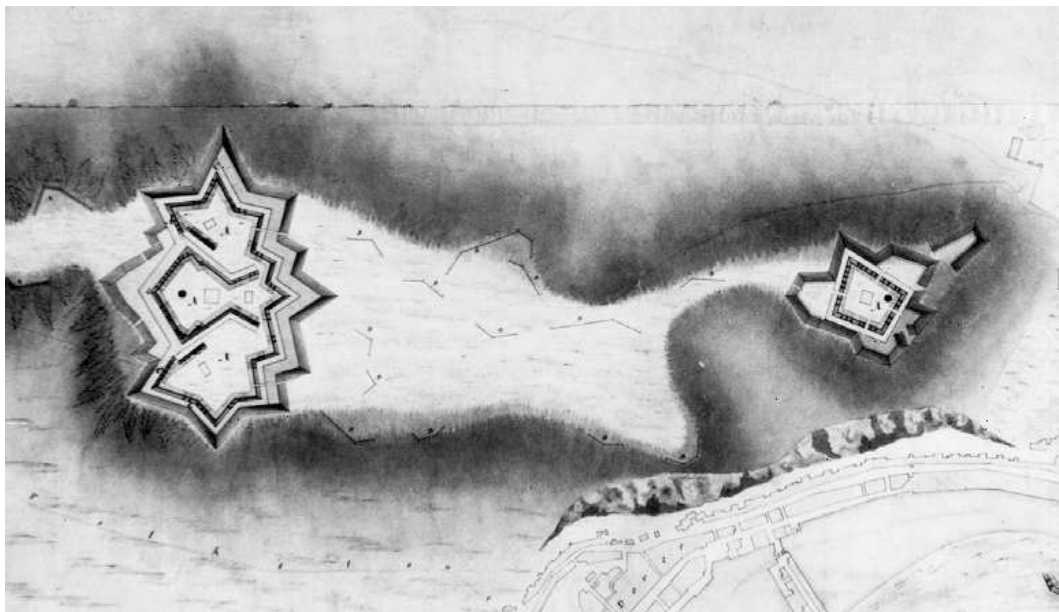


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## 2. HISTORICAL BACKGROUND

### A SLOW BEGINNING 1779-1803

Following the advent of war between England and France in 1778, attention was called to the poor state of the Dover defences. In the following year, a small sum of money was released to improve them, most of which was spent on the castle and the harbour batteries. However, some resources were expended on the Western Heights, in constructing field works for the protection of the port and the town from a flanking attack. The extent of these earthen defences, the first to be built on the Western Heights, is not clear due to the scant nature of documentation but it has been assumed that they were on a small scale. The engineer officer in charge of their construction was Lieutenant Thomas Hyde Page. He had far grander intentions, revealed on two very similar proposal plans of the 1780s, one of which is signed by him though undated (Fig 2; hereafter the 1780s plan) and the other dated 1784 (PRO: MR/1/1345). These are two slightly different versions of the same large defensive scheme, with an independent fort at each end of the ridge and smaller earthworks between them. The eastern fort - on the site later taken by the Drop Redoubt - is depicted as an irregular four-sided work surrounding a central guardhouse. The ground outside was to be scarped into an irregular work with a *glacis*, guarding the approach from the west and taking up the remaining level ground at the end of the ridge.



**Figure 2**  
*Extract from a plan of the 1780s, showing the fortifications planned by Page on the Western Heights. The fort on the right is on the site of the Drop Redoubt (PRO: MR/1/1345)*



**Figure 3**  
*Lt Lewis Hay's plan of 1787, showing the 'Eastern Redoubt'* (extract from PRO: MPH/1/248/6)

Annotation on the 1780s plan records that in 1782 work had started on the western side of the western fort - the Citadel - while the site of the eastern fort is annotated with *'works ordered to be executed'* (PRO:MR/1/1345). A survey dated 1787 by Lt Lewis Hay includes a letter of 29th August in which it is reported that *'the works [ie the Western Heights] are in a very unfinished state, nevertheless that he [Lt Hay] has traced their general outline and marked them on the*

*survey'*. This survey plan shows the four-sided eastern redoubt with a central guardhouse and notes that the ground had been broken; probably meaning that the outline of the redoubt had been roughly established (Fig 3). That the guardhouse was built is confirmed by its appearance on a land procurement plan of June 1804 (PRO: MFQ/1354/3B) and on plans of 1810 and 1811 (Figs 4 and 5). Its construction probably occurred after the resumption of



**Figure 4**  
*The Drop Redoubt in 1810* (extract from PRO: MR 1/1349)

hostilities in 1793, when the importance of Dover came to the fore again: some £4,885 was spent on works on the Western Heights before 1796 and as a result, some more progress was made on Page's scheme. The threat of a French invasion was serious between 1797 and 1801, prompting the Secretary of State, Viscount Melville, to write about the necessity of holding





the *Entrenched Height*, in 1798:

*'The possession to an enemy of Dover Castle of the opposite Entrenched Height and of the town and port, fortified in the manner that he would soon accomplish and defended by 6 or 7,000 men would establish a sure communication with France and could not easily be wrested from his hands. The conquest of this alone would be to him a sufficient object could he arrive with means of immediately attacking it. Its preservation to us is most important'*

(Coad and Lewis 1982, 154).

### **THE CONSTRUCTION OF THE DROP REDOUBT 1803-1816**

The encampment of the French Grand Army on the Brittany coast between 1803 and 1805 caused frantic activity in England. A revised plan for fortifying the Western Heights was put forward by Captain William Ford, the CRE in Dover, supported by Brigadier General Twiss, the CO of the Southern District. The plan was an enhancement of Page's design and comprised three independent fortifications including the eastern or Drop Redoubt. The scheme was approved in 1804, but authority was given to start scarping the Heights in December 1803 (Coad and Lewis 1982, 160-2).

Progress must have been rapid, as it was reported in March 1805 that:

*'the scarp of the curtain to the Drop Redoubt has been considerably deepened. The parapet of the Ditch front of the Drop Redoubt warrants about three feet. Cromwell's front about five feet; Twiss front is raised to the parapet. The town front is in the same state. The officers' barracks are in a pretty forward state...'*

(Coad and Lewis 1982, 169)

It is clear from this statement that the initial work was concentrated on the enclosing rampart and ditch but the last sentence is misleading, as the present Officers' Quarters appear to date from the 1860s; no evidence came to light for an earlier arrangement (see below).

It is of some importance to compare the older works shown on both plans of the 1780s with those of the new redoubt, first recorded on the plan of 1810 (Figs 2-4). The proportions and alignment of the north-west, south-west and south-east faces are identical on both plans, the only change being to the north-east, where two faces replace one, the new work being pentagonal. On this evidence it seems likely that between 1787 and 1804 some work had taken place to construct the eastern redoubt - even if it remained unfinished - and where practical the line of the old earthworks were reused in the new Drop Redoubt. Additionally,



**Figure 5**  
*The Drop*  
*Redoubt in 1811*  
(extract from  
PRO: MPH/1/506)

the loopholed guardhouse of the 1780s, at the centre of the redoubt, seems to have been retained until at least 1811, but was removed by 1813 (Figs 5 and 11).

By July 1805, Twiss was able to propose the construction of bomb-proof barracks for 200 men and also:

*'casemated defences under the counterscarp for the defence of the ditches,*

*between which defences and the interior of the works it will be very easy to make underground communications as the soil is chalk'*

(Coad and Lewis 1982, 172).

In March 1806, authority was given to complete the parapets, ditches, communications, lines, tanks and casemates and during that year the casemates, guard room and magazine were completed apart from paving. They were completely finished by 1808 and first occupied by a company of Royal Artillery artificers (Akers 1887, 57). In 1810, 320 barrels of powder were despatched from Purfleet to the magazine at the Drop Redoubt, the only such structure on the Western Heights which was ready to store it (Coad and Lewis 1982, 172-4). This powder was intended primarily for artillery mounted in the redoubt; in 1804, the intended armament had been twelve 24-pdr cannon and two 24-pdr carronades (Coad and Lewis 1982, 169).

At the end of the war in 1815, work on the Drop Redoubt was largely complete and there were fourteen heavy guns and nine mortars mounted and retained for saluting (Akers 1887, 62). Only the proposed counterscarp casemates and the North-East Line, which was intended to close the eastern end of the Heights between the redoubt and the cliffs, remained unfinished. However, the Drop Redoubt was the only part of the Western Heights garrisoned after the end of hostilities.



The extent of works at and around Drop Redoubt can be seen on Figs 4 and 5, and the internal detail on a plan of 1860 (Fig 6). The ridge had been completely re-shaped by extensive scarping and grading of the natural slopes to produce steep angles of approach, controlled fields of fire and to eliminate dead ground. The redoubt itself was an irregular pentagon with a dry ditch linked to the North Lines. It contained casemated soldiers' quarters, officers' quarters, a guardhouse, soldiers' privies and ablutions, and a large magazine. There was a single entrance across a swing bridge on the southern side (Coad & Lewis 1982, 177).

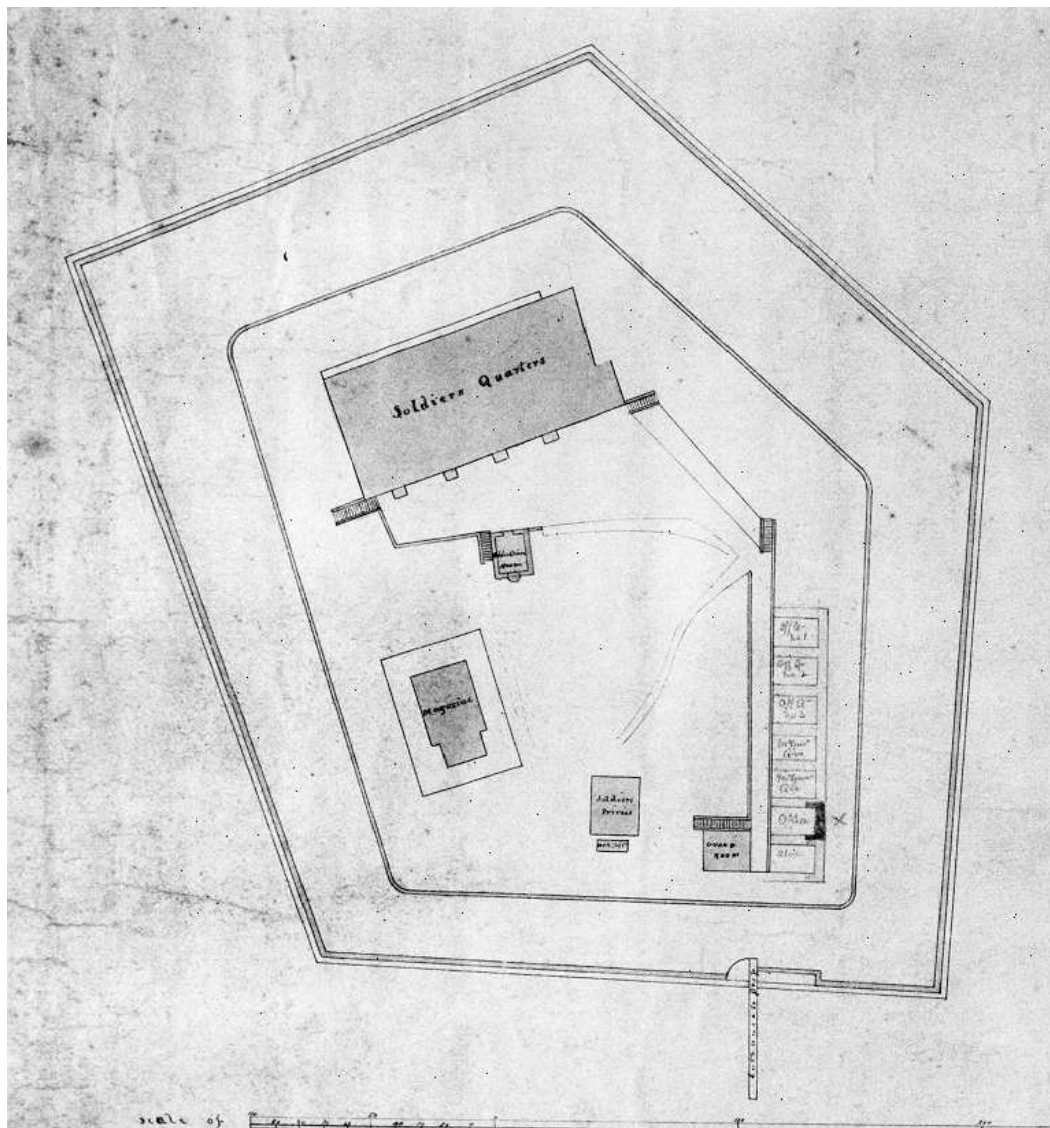
In 1823 an estimate was made for a new permanent footbridge at the entrance to the Drop Redoubt, to replace the old temporary one (PRO: WO/55/780). This probably resulted in a swing bridge, the remains of which are still visible (see description, below).

In 1821 the soldiers' accommodation comprised four casemates calculated to contain fifty men each but were occupied by married gunners, a Keeper and offices for the Royal Artillery and Royal Engineers. By 1830 the garrison of 84 NCOs and men was commanded by a captain and this complement remained the same in 1852 (PRO: WO/55/2461; 2562; 2931). In 1835, two magazines contained powder and the saluting battery remained in place (PRO: WO 55/783).

#### **MODERNISATION 1850-1867**

The 1840s and 1850s witnessed both renewed concerns about the re-emergence of French power and significant developments in weapons technology, which together resulted in a re-appraisal of the nation's defences. A report on the Dover Defences in 1847, by Colonel Tylden, revealed that some works at the Drop Redoubt remained unfinished. He noted the scarp of the Drop Redoubt was revetted to a height of 23ft but the counterscarp remained unrevetted; the ditches were not all excavated to their full depth; the bridge across to the entrance was made of wood (Akers 1887, 62-3). In February 1851, the Drop Redoubt was manned and armed with a rag-bag collection of artillery pieces that was completely inadequate for effective defence, comprising three 24-pdrs on traversing platforms, six 12-pounders mounted *en barbette* for saluting and one 8-inch mortar (PRO: WO/55/785).

Dover's vulnerability was obvious and in 1853 work resumed to complete the Citadel, left unfinished in 1815. Most likely, improvements were also planned at the Drop Redoubt, to judge by the request made by the CRE Dover in February 1853 for a new complement of artillery comprising eight 42-pdrs on common garrison carriages (PRO: WO/55/785). In the



**Figure 6**  
*The Drop Redoubt in 1860, at the beginning of the remodelling and reflecting the work as left in 1815. Note the proposed new Officers' Quarters sketched onto the plan at right. The otherwise small number of internal buildings is apparent. Compare with Figure 7 (NMR: WD/2509)*

following year General Sir John Fox Burgoyne, Inspector-General of Fortifications, proposed that money be made available for strengthening the works on the Western Heights.

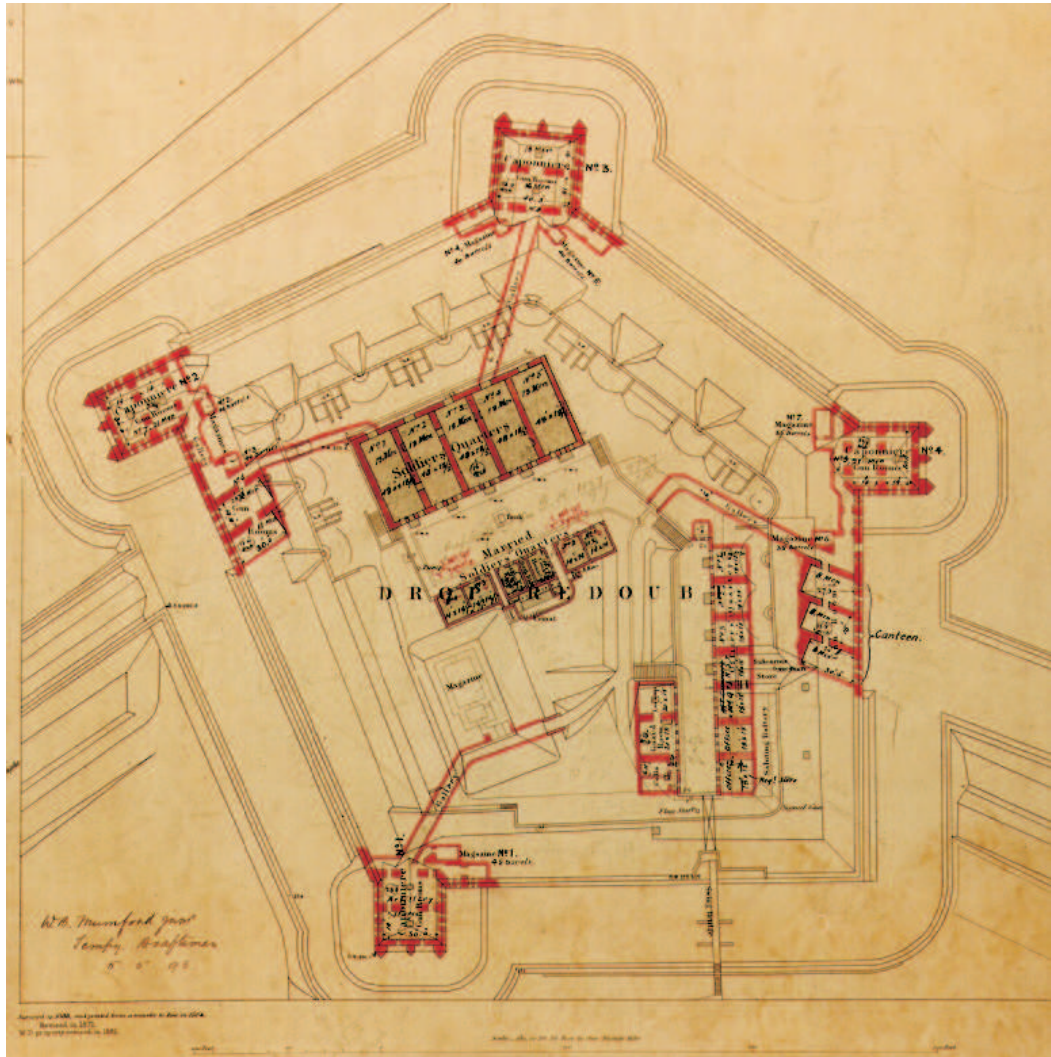
In 1858, the redoubt was still manned by a company of Royal Artillery (PRO: WO/78/581). At this time, Major Jervois, the Assistant Inspector General of Fortifications, confirmed that the completion of the Western Heights defences was a necessity, broadly as envisaged by Captain Ford earlier in the century. In February 1860, new works were in full progress on the Heights and by the middle of the decade several major modifications and additions had been made to the Drop Redoubt. The *terreplein* was remodelled for more modern guns, comprising eleven 7-inch RBLs in April 1869, sited to cover the land front along the



northern arc (PRO: WO/33/2775; WO/78/2954; Coad & Lewis 1982, 185). The North-East Line was completed in accordance with Ford's original plan, linking the redoubt ditch with the cliff face to the south-east. Another major addition comprised two-storey *caponiers* at four corners of the redoubt, for defence of the ditch itself. This also enabled new casemated gun rooms to be built behind the curtain wall, reached via the *caponiers*, to provide flanking fire along the ditches of the North Lines and the North-East Line. A sally port was provided in the curtain wall adjacent to one of the *caponiers*. The *caponiers* and gun rooms were completed by 1866, as was the bombproofing of the main magazine. Finally, changes and additions were made to many of the internal buildings, some of which failed to meet the requirements detailed in the report of the Hospitals and Barracks Improvement Committee, in 1858. Comparison of the 1860 plan with another, dated 1881, reveals the extent of these works, including a new Guard House, new Officers' Quarters, Sergeants' Quarters, Ablutions and modified Soldiers' Quarters (Figs 6 and 7).

#### **HEYDAY, DECLINE AND REUSE 1870-1945**

The 1881 plan shows the Drop Redoubt after its major modifications (Fig 7). No major new building took place after this date and as the end of the century approached, the effectiveness of the redoubt as an artillery defence was declining. However, it retained its armament, which was further modified. In 1886 there were eleven 7-inch RBL guns on the *terreplein* and fifteen 12-pounder carronades in the *caponiers* and gun rooms. However, it was recommended that most of the RBLs be replaced by six 64-pdr RMLs on blocked-up carriages, retaining only two RBLs for flanking purposes, and that the 12-pdr carronades should be replaced by fourteen of the heavier 24-pdrs (PRO: WO/33/2775). Although this proposal was approved in September 1887, the RBLs were still in place in 1892, but the heavier carronades had been mounted (PRO: WO/33/2775; Burrige 1991, 42). The installation of the 64-pdr RMLs was finally approved by the Secretary of State in August 1892, together with retention of two 7-inch RBLs and the addition of two machine guns on parapet mountings. At this date, only six of the carronades were in position; the remaining eight were dismounted and lacked carriages; it was recommended that they be sent to back to store, reinforcing a report by the Royal Artillery Committee of October 1890, which stated that effective flanking fire for the ditches could be provided by the new magazine rifles. Two of the RMLs were to be positioned in the north and north-west salients, while the remaining four were positioned in a new detached position (called here 'the battery on the North Lines') built in 1893 on the flank west of the redoubt (PRO: WO/33/2775). The ridge there had been scarped and formed into a rampart during the Napoleonic phase but not to receive artillery. A proposal plan for the RMLs, dated 1893, shows that *seven* 64-pounder RML guns were to be installed, four on the ridge and three in the redoubt, although only six



**Figure 7**  
*The Drop Redoubt; extract from a revision plan of 1881. It shows the caponiers and gun rooms added in the 1860s to provide flanking fire for the ditches and Lines (NMR: WD/2514)*

were actually emplaced (Figs 49 and 50). These guns were short-lived; by December 1902 only the two machine guns remained in the redoubt and the four 64-pdr RMLs in the battery on the North Lines; the latter were to be removed in the following year (PRO: WO/33/254).

There was no armament at all in 1910 (PRO: WO/33/488)

Annotation dated 1893 on the 1881 plan shows that minor alterations continued on the internal buildings, including the conversion of *caponiers* to barracks and the Sergeants' Quarters to Married Soldiers' Quarters (Fig 7). By 1905, the Married Quarters had been converted to form Dining, Recreation and Reading Rooms. This trend towards re-use for



accommodation probably continued until the end of the First World War, and probably reflects the change in the emphasis on the Western Heights from fortress to barracks.

During the First World War, in February 1915, one 6-pdr QF gun was placed in the redoubt to provide AA cover. This was increased to two such guns by February 1916, though both were withdrawn by January 1917 (PRO: WO/33/704; 746; 828).

It is unlikely that the redoubt was permanently occupied after the First World War and it probably operated under a care-and-maintenance regime. With the outbreak of the Second World War, it was put to several minor uses. Aerial photographs show that by 1941 an observation post had been constructed on top of the magazine mound, and it is known that a

commando unit was based here. Several slit trenches and weapons pits cut into the rampart are of First or Second World War date. The North-East Line nearby was hit by a bomb (PRO: WO/192/45; NMR: HLA/373/982-3; Fig 8).

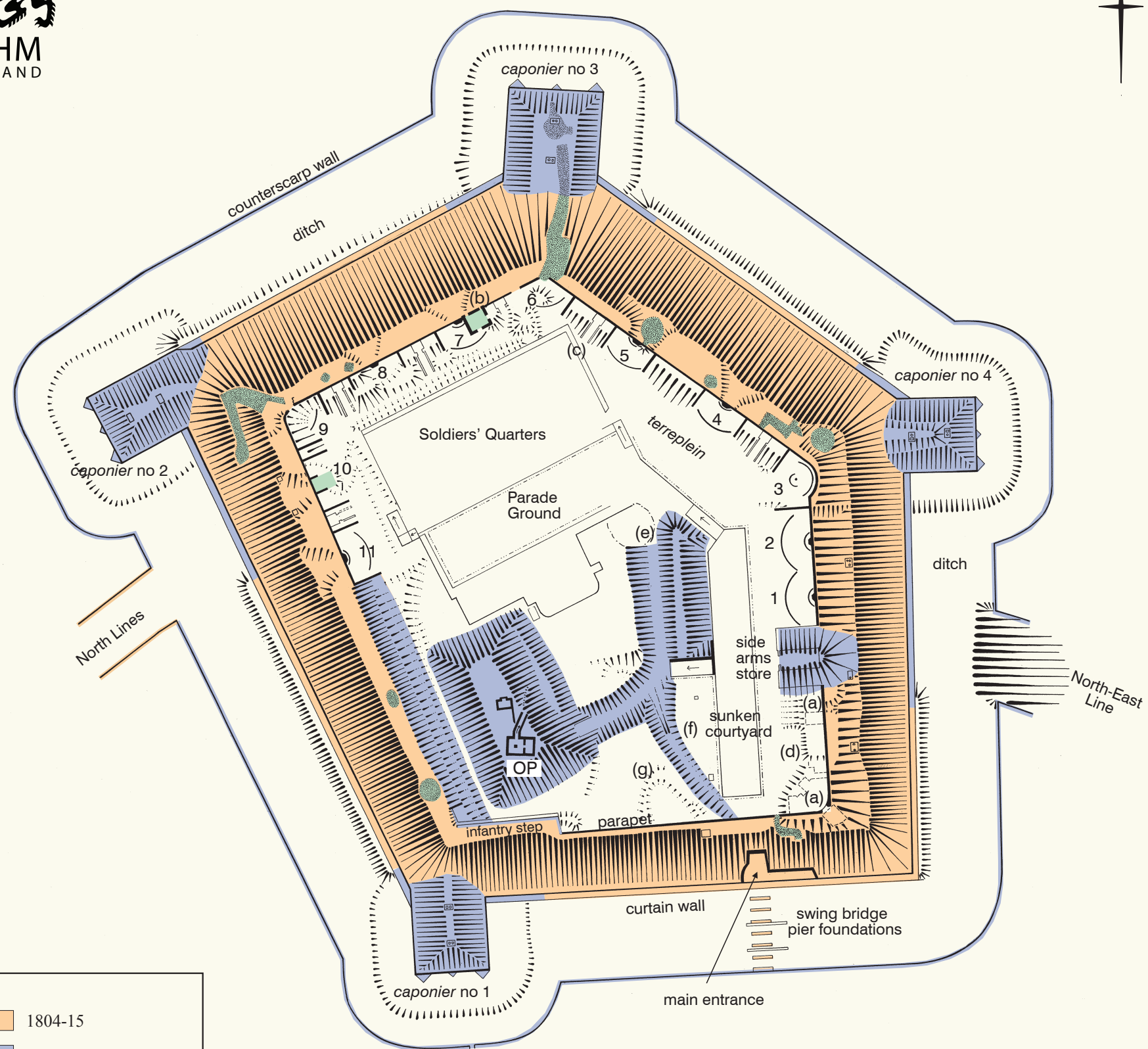


**Figure 8**  
An aerial photograph dated 1953 showing Drop Redoubt and part of Grand Shaft Barracks to the south (NMR: 3T79/613/F12/3325/119)

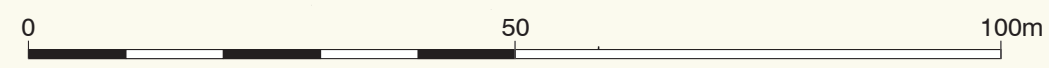
By 1953, aerial photographs show that a several internal

buildings had been at least partially dismantled, probably deliberately by the army who no longer had any use for the site. These include the ablutions block, one of the buildings flanking it and a small structure adjacent to the observation post. Trees had begun to colonise the ditch and the *terreplein* was overgrown (NMR: 3T79/613/F12/3325/118-9).

In 1967 the North Military Road was re-routed. In the process, part of the North Lines was breached to form a cutting for the new road, obliterating the western part of the battery on the North Lines (Peeverley 1996, 31; NMR: MAL/16083/235-6).



key	
<span style="display:inline-block; width:15px; height:10px; background-color:orange; border:1px solid black;"></span>	1804-15
<span style="display:inline-block; width:15px; height:10px; background-color:blue; border:1px solid black;"></span>	c. 1858-67
<span style="display:inline-block; width:15px; height:10px; background-color:green; border:1px solid black;"></span>	1st or 2nd World War



**Fig 9**  
 RCHME survey plan  
 of the Drop Redoubt,  
 showing major features  
 (reduced from original  
 at 1:500 scale)





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### 3. DROP REDOUBT: DESCRIPTION AND INTERPRETATION

In the following description words and letters that appear in bold are shown on the figure indicated at the beginning of each section. Other figure references of relevance appear in the body of the text.

#### A) THE DEFENCES

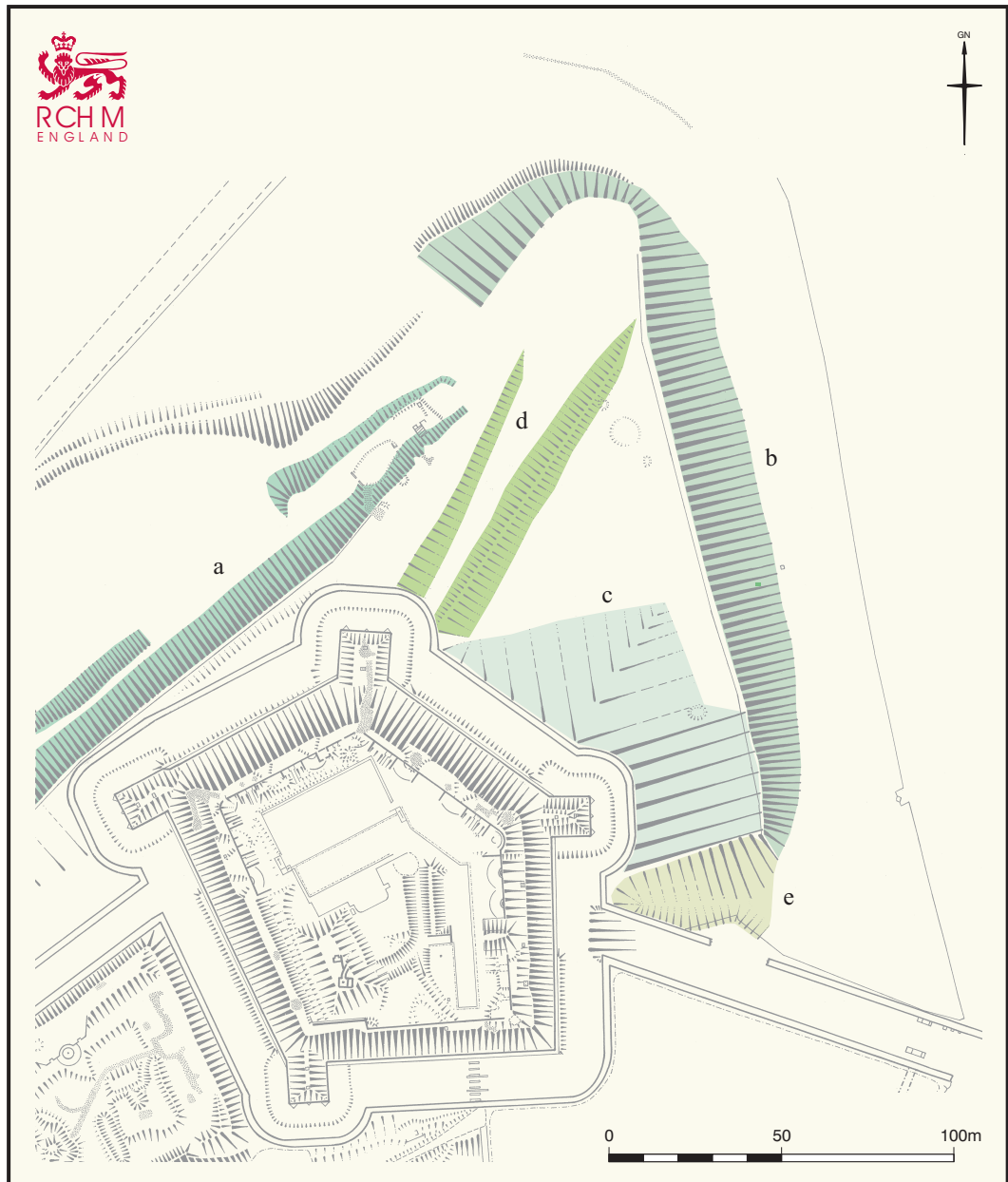
##### **The rampart and ditch** (Fig 9)

The trace of the Drop Redoubt forms an irregular pentagon comprising a **rampart** with **caponiers** at four angles and a deep ditch. The **ditch**, which is linked on the east and west to the North-East Line and North Lines respectively, is cut from the chalk bedrock to a basal width of between 13.0 and 14.0m. Its inner and outer sides, the **curtain wall** and **counterscarp wall** respectively, are lined with brickwork to a height of 9.86m, laid to English bond in a battered face, with drainage gulleys built into the stone capping courses. The rampart is partly cut and shaped out of the chalk but its upper surfaces are made with redeposited soil and chalk, carefully scarped and turfed into an even slope, rising steeply above the curtain wall to the crown of the rampart, and designed to absorb incoming fire. The crown is pierced by several gun embrasures and disturbed by numerous slit trenches and weapons pits (see below): behind it lies the **terreplein** where the greater part of the heavy artillery was mounted.

The ditch is generally level, but earthen banks have been built up against the south-west, north-west, north-east and east walls (1.1m, 0.8m, 1.2m and 0.9m high respectively), though not along the south wall. The function of these banks was to absorb artillery fire aimed at the base of the wall (in order to make it collapse) and they are shown on the 1881 plan (Fig 7). The ground in front of each *caponier* was excavated to form a drop ditch, now only 0.8m deep but originally significantly deeper and fenced off to prevent enemy access to the loopholes of the *caponier*.

##### **The scarping of the hillside** (Fig 10)

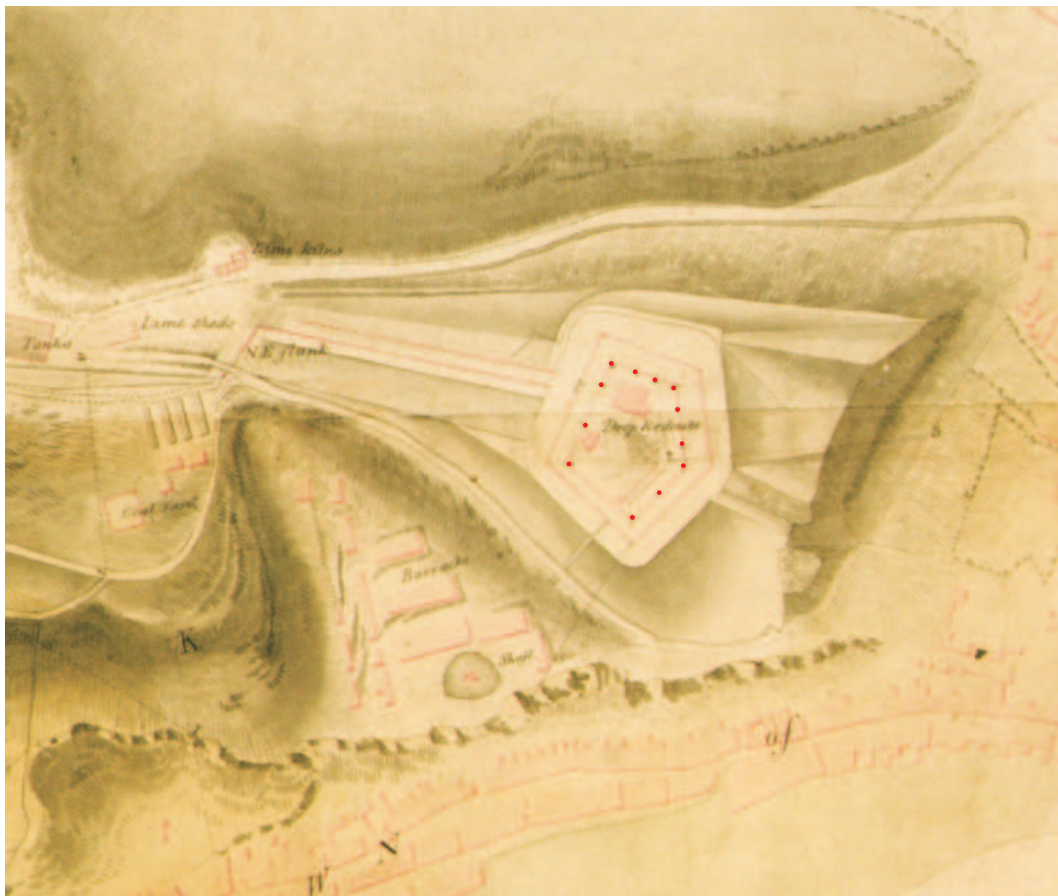
Between 1804 and 1810 at the latest, the ridge around the redoubt had been carefully scarped to produce massive slopes with steep angles to render an infantry assault hazardous and exhausting (compare Figs 4 and 11). These scarps are clearly visible on the north-west at **a**, falling to the North Military Road, and to the north-east at **b**. The ground between these scarps and the redoubt was also carefully shaped into long, gradual slopes, as at **c**, so that once the crest of a scarp was reached, an attacker would have been constantly exposed to fire



**Figure 10**  
*RCHME plan of the Drop Redoubt and its environs: reduction from the original 1:1000 scale survey drawing. This shows, in particular, the careful scarping of the ridge north and east of the redoubt, to produce steeper angles of approach for enemy infantry and to eliminate dead ground when viewed from the rampart*



from the parapet: there was no cover. Two parallel linear features, **d**, comprising a slight scarp on the north and a low bank on the south, run between the north-eastern angle of the redoubt and the apex of the ridge. Both appear quite denuded and may originally have been more sharply defined. The scarp is shown on the plans of 1810-13 and is part of the careful grading of the slope carried out for the Napoleonic works (Figs 4, 5 and 11). The bank, however, is on the line of the *glacis* of Thomas Page's outworks of the 1780s and could conceivably be of that date; the flattening was required by the later works (Fig 2). Of equal interest is an apparently natural declivity, **e**, aligned east to west and running away from the redoubt to join scarp **b**. On the plans of 1810-13 this is a sharply-defined V-shaped ditch, with a counterscarp on the southern side, effectively closing the ground between the redoubt and the scarp edge (Figs 4, 5 and 11). Guns on the *terreplein* would have looked directly along it. This feature is an earlier version of, and was replaced by, the North-East Line in the 1860s.

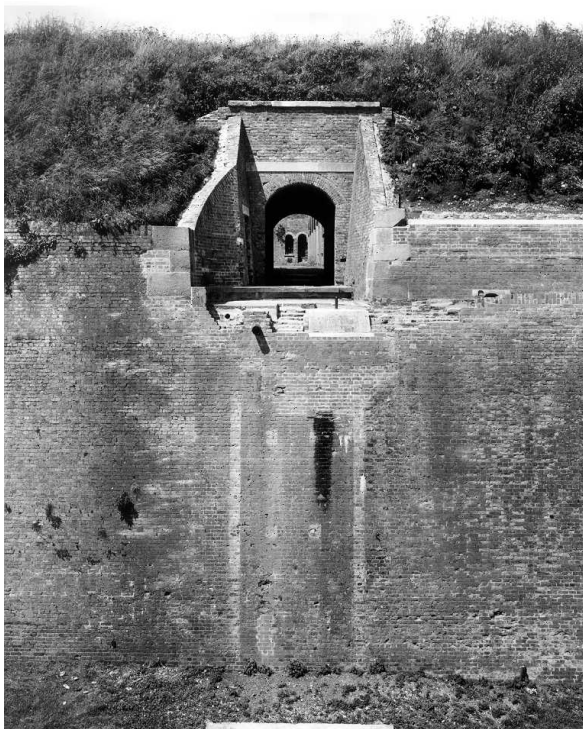


**Figure 11**  
*The Drop Redoubt in 1813, towards the end of the Napoleonic Wars. Note the gun positions, highlighted in red by the authors (extract from PRO: MR/1/1346)*



### The main entrance (Fig 9)

The redoubt was approached along a steep path from Drop Redoubt Road and the Grand Shaft Barracks. As completed in 1815, a wooden bridge of unknown form crossed the south ditch to an entrance passing through the rampart via a passage or tunnel. Although this bridge has not survived, the brick entrance and passage are relatively unaltered. Their fabric is characterised by the use of Portland stone for lintels and other details, and is distinguished from the 1860s work of the Officers' Quarters and Guard Room by structural breaks at the north end of the tunnel. In 1823, it was proposed to replace the wooden bridge with a new one and it may be that the surviving details are of that vintage (PRO: WO/55/780).



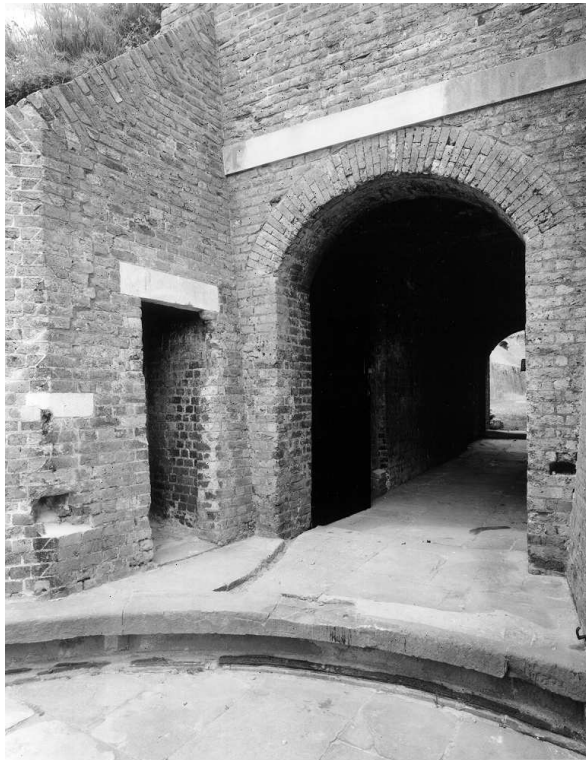
**Figure 12**  
*The main entrance:  
view across the  
ditch from the  
counterscarp. The  
recess for the swing  
bridge is visible on  
the right of the  
photograph at the  
top of the scarp  
revetment (NMR:  
BB99/15909)*

Although the bridge has been removed, the footings of brick piers in the ditch bottom show that for two thirds of its length, on the counterscarp side, it consisted of a fixed span, like the one nearby at North Entrance (Brown & Williams 2001, 35). A shorter moving span swung on a fixed pivot in front of the entrance, where it was flanked by battered brick revetments coped with tumbled brick. When not in use, or when denying access to the fort, the moving span was rotated to lodge flush with the curtain wall on a revetted shelf or recess which extended east of the entrance (Fig 12). The arc described by the bridge at the entrance end is reflected in the

curved part of the west revetment, which incorporates a Portland stone lintel and anchor block, and a brick carved with the date 1827. This is consistent with the 1823 proposal. The quoining where this curved revetment meets the curtain wall, and at either end of the bridge recess, is in gritstone. Some slight variation in the brick bond of these features reveals that, although the emplacement for the bridge is not original, it has been carefully incorporated. The pivot mount is a large block of Portland stone bearing various cuts and grooves, the purpose of which is unclear. The surrounding paving is in sandstone, and incorporates a wrought-iron racer set into a stone channel, acting both as bearing and guide for the bridge,



which may also have been counter-weighted at this end. The sandstone paving north of the racer stands above the level of the passage and may have been reset when the 1823 proposal was effected.



**Figure 13**  
*The main entrance, showing the sentry box, anchor block in the wall next to it and part of the curved runner for the swing bridge (NMR: BB99/15910)*

The approach to the main entrance was guarded by a sentry box in the west revetment, the opening to which has a Portland stone lintel. In front of this a hand-rail was set into a Portland stone anchor block at its west end, and mounted on the stone rim of the racer (Fig 13). The main entrance has a segmental brick arch (mirrored at the north end) beneath a raised Portland stone band bearing the faded lettering 'DROP REDOUBT'. The wall rises to a stone-coped parapet. Pintle-hung double doors at each end of the passage opened inwards into shallow recesses. These areas have groined vaulting, but the main body of the passage has a vault of

horseshoe-shape similar to another found in the tunnel at the base of the Grand Shaft. At the north end of the tunnel, on the west side, there is a small recess (for a lamp?) which also has a Portland stone lintel.

#### The *terreplein* (Fig 9)

Documentary sources indicate that there were three significant phases in the provision of artillery on the *terreplein*:

- **1804 - c1858.** In 1804 it was intended to provide twelve 24-pounder SB cannon on the *terreplein* and two carronades for the planned counterscarp gallery, and this is consistent with a later source which lists fourteen heavy guns, plus nine mortars in the redoubt in 1815 (Akers 1887, 62). The positions of the twelve *terreplein* guns are shown on the 1813 plan, arranged around the redoubt with a weighting towards the north (Fig 14a). The red

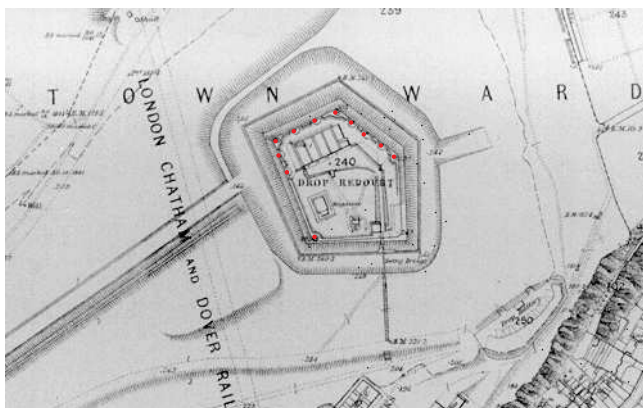


**Figure 14a**  
The Drop Redoubt  
in 1813, showing  
the terreplein gun  
positions, added in  
red by the authors  
(extract from PRO:  
MR/1/1346)

brick which forms the lower part of the parapet dates from this phase and its low height - no more than 0.92m - suggests that the guns fired over it. This observation is supported by a comment from the CRE in 1853, noting the low height of the *barbette* (PRO: WO/55/785). The gun mountings of this phase are unknown; they may have been truck or garrison carriages, or perhaps traversing platforms. A map dating to *c1860* shows that very few changes were made to the *terreplein* in the 45 years after

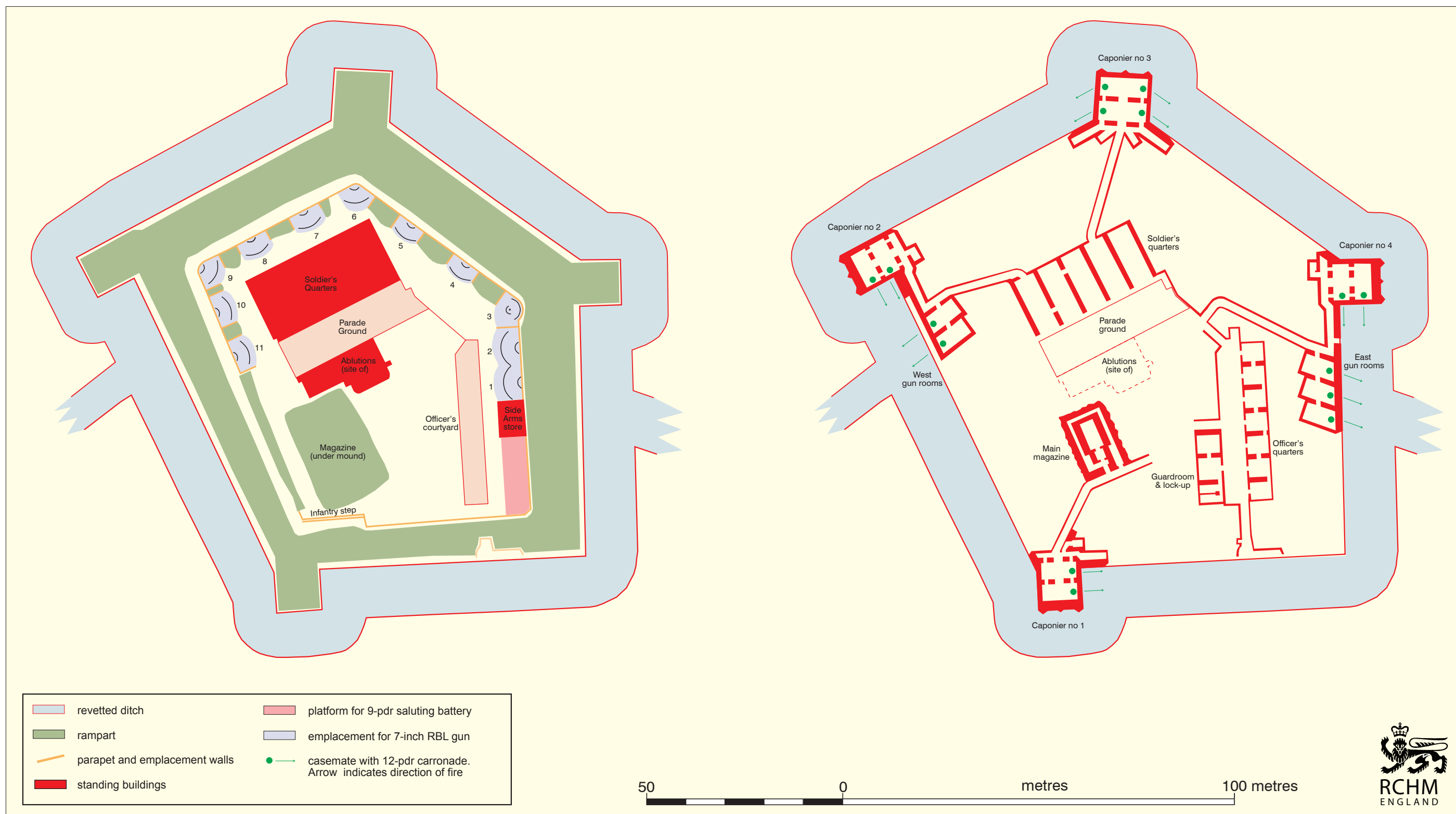
1815. Two gun positions were moved northwards from the centres of the east and south-west faces to the north-east face and northern part of the south-west faces respectively, almost totally concentrating the armament on the land front. The lack of guns on the southern side of the redoubt was covered by batteries defending the harbour,

including Drop Battery, situated 150m to the south-east and built in the 1850s. The 1860 map also reveals that by this time all of the gun positions on the Drop Redoubt had traversing platforms and there may have been a saluting battery in the south-east corner (Fig 14b).



**Figure 14b**  
Extract from a plan  
drawn *c1860* before  
alterations were  
carried out on the  
terreplein. Note the  
gun positions,  
highlighted in red  
by the authors  
(extract from PRO:  
WO/78/2555/10)

- **c1858-93.** Changes were made 1858-67, when the *terreplein* was reorganised to accommodate eleven 7-inch RBL guns on traversing carriages, once more concentrated to cover the land front (Fig 14c). The parapet was heightened to 1.95m in yellow stock brick, embrasures were made through the rampart, and ready-use ammunition lockers were installed. Most of these arrangements survive. Gun positions on the north-east face were reduced from three to two, while two entirely new positions were established at the north end of the east face. The parapet for the new positions was entirely reconstructed in yellow stock brick and the straight joint with the earlier work is clear, though curiously no ammunition lockers were provided. These two guns were required to cover the North-East Line which was built anew during the same phase; they fired *en barbette*, as



**Fig 14c**  
 RCHME interpretation plans showing, at left, artillery positions on the terreplein and at right, carronade positions in the caponiers and gun rooms, between c1858 and 1893



did the gun in the east salient immediately to the north of them; all others fired through embrasures.

- **1893 - c1900.** In 1893, all but two of the RBLs were withdrawn and replaced with six 64-pounder RMLs to cover the land front. Two of these were in the redoubt, in the north and north-east salients, while four were placed in a new battery on the North Lines, just to the west. The new guns were placed on blocked-up platforms and fired over the parapet, so that most of the redundant embrasures were infilled with stock brick.

The surviving **parapet** is a brick wall with a slight batter, running around most of the internal faces of the rampart (Fig 15). It survives at different heights around the redoubt and reflects the two main structural phases: the lower part of at least 15 courses of red brick dates to 1804-15; above is the yellow stock brick, in English bond, of the period 1858-67.

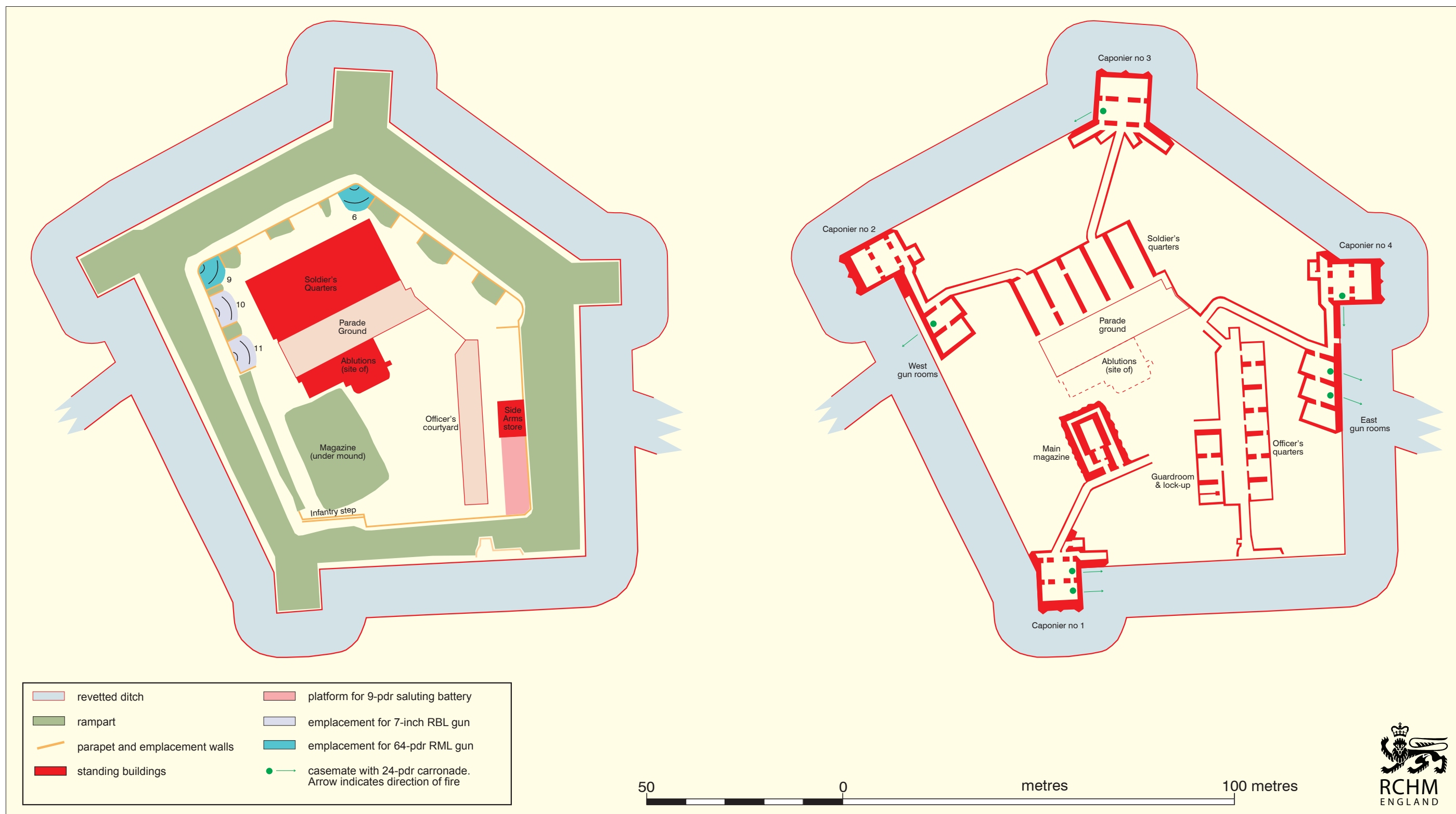
Along the southern face of the redoubt the parapet is lower than elsewhere, averaging 1.0m high, and it was probably never intended to support artillery, though it would have sheltered infantry. Adjacent to the south-west salient is an **infantry step** established c1858-67, butt-jointed and recessed into the parapet. A flight of steps leads up 1.8m to its narrow firing platform, 0.5m wide, with the parapet wall in front, 1.1m high. This was sited to cover the approach to the main entrance and replaced an earlier emplacement for a traversing artillery piece in the south-west salient, fragments of which survive.

North-west of the infantry step, there is no parapet wall along the south-west face for 38.0m. Instead, the earthwork *talus*, 1.7m high, slopes evenly to the interior. It could also have provided cover for infantry and may have been formed between 1815 and c1858, as this face of the redoubt appears to have been designed originally to support artillery (Fig 14a).

In the south-east corner of the *terreplein* is a raised platform, **a**, 0.6m high. Into it are set heavy granite and sandstone flagstones, now partially concealed, probably re-set along with the parapet to form a new **saluting battery** during the works of c1858-67. It is labelled as such on the 1881 plan but may also have been the site of the saluting battery of six 12-pdrs recorded in 1851 (PRO: WO/55/785; Fig 7).

The *terreplein* contains the remains of all eleven emplacements for guns on traversing platforms, positioned at intervals around the northern half of the redoubt (Fig 15).





**Fig 14d**  
 RCHME interpretation plans showing, at left, artillery positions on the terreplein and at right, carronade positions in the caponiers and gun rooms, between 1893 and c1900



**Figure 15**  
*The terreplein along the eastern and north-eastern faces, showing the parapet, the gun emplacements and the racers for the traversing platforms (NMR: BB99/15925)*

Some of the emplacements are partially obscured by earth and debris, making a full survey difficult, but nos **1-5, 7, and 11** are all clear. Ten are of similar type, with twin racers and ‘A’ type pivots (Fig 16). No **3** is slightly different in that it supported a gun which traversed on a central ‘C’ type

pivot to give a wider arc of traverse, as it commanded more ground. Emplacement nos **4-11** were designed for guns to fire through embrasures in the parapet while three, nos **1-3**, were for guns mounted *en barbette*.

Each emplacement comprises a concrete gun floor set between retaining walls, up to 0.9m high, built perpendicular to the parapet and ramped down to the profile of the *talus* (Fig 16). Set within each gun floor are two racers secured into a coarse, pebble-based concrete. Each racer is 6cm wide and projects 1cm above the gun floor; those of guns no **4-11** are centred on the embrasures.

The red brick early parapet survives to a height of 0.92m. It is capped by yellow stocks of the 1860s phase to a height of 1.85m and was broken at that time for the insertion of a brick pier at the centre of each emplacement. A pier is typically 1.25m high and capped by a block of millstone grit, 0.3m thick, to form the base of an embrasure. Each embrasure, let into the parapet to a width of 1.44m and height of 0.7m, is also strengthened by millstone grit quoins. The embrasures are cut through the earthwork of the rampart with outward splays enabling an arc of fire from each gun of around 70°, and angled downwards so that the guns could be depressed to rake the ground just outside the fort. The angles of fire were also arranged so that each gun could cross fire with its neighbour on the lip of the counterscarp.



Variations and alterations in the emplacements are as follows:

Emplacement **11**: disturbance to the gun floor has exposed four metal I-section beams, running between and securing the racers and set *c* 0.15m below the surface of the concrete.

Emplacement **10**: the embrasure is partly destroyed and the emplacement obscured by the remains of an undated structure built over it. This structure may have been a shelter for the AA gun crews in the First World War, or for the OP personnel in the Second World War. In brick, laid to English bond, it comprises two walls perpendicular to and abutting the parapet, with the collapsed remains of a flat concrete roof. The roof has a single layer of bricks on top, possibly forming part of an upper storey. The structure *c* 2.82m square, though accurate measurement was prevented by rubble. Some of the brickwork appears to

have been reused from an earlier phase, and also incorporates one quoin stone from an embrasure. Under this structure, the rear racer is broken. The embrasures of nos 10 and 11 emplacements are not infilled, because they retained their 7-inch RBLs after 1893 when the other nine were removed.



**Figure 16**  
*Emplacement no 5,*  
*on the north-east*  
*face of the*  
*terreplein, with its*  
*ready-use*  
*ammunition locker*  
(NMR:  
BB99/15927)

Emplacement **9**: set into the north-east salient, it has been damaged to allow access to a later slit trench cut into the rampart. The surviving stone quoins suggest a wider than usual embrasure to enable a broader arc of traverse.

Emplacement **8**: the embrasure is infilled and there are three metal bolts, of unknown function, protruding from the wall below the embrasure quoins.



Emplacement 7: the embrasure is infilled. A small rectangular building, **b**, probably of First or Second World War date, is built over the eastern part of the emplacement, utilising the parapet. It sits on a concrete platform on top of the old racers and is of brick laid to English bond, with a flat concrete roof supported on cross-axial metal beams. The interior, 3.0m by 2.58m, is entered through a door, 2.0m high and 0.8m wide, in the south-eastern wall; there is a frame for an outward-opening door. There are three windows; two in the north-western wall, measuring 0.61m wide by 0.74m high and 0.30m wide by 0.27m high respectively; the third, in the north-eastern wall, is of the larger size. In the eastern corner, a circular hole in the roof was probably for a stove pipe, suggesting that at some time the building served as a small shelter. No other internal features survive.

Emplacement 6: situated in the north salient and also damaged by access to a slit trench. The embrasure is infilled and west of it, at floor level, is a small niche in the parapet, measuring 0.40m by 0.13m by 0.17m high.

Emplacement 5: the embrasure is infilled and the parapet is breached to allow access to a slit trench.

Emplacement 4: the embrasure is infilled.

The parapet from emplacement 3 south to the side arms store is of a single build, in yellow brick laid to English bond, and is entirely of the the 1858-67 phase. Behind it are:

Emplacement 3: in the east salient, this emplacement is of a different design to the others (Fig 17). The gun traversed on a central steel “C” type pivot with the longer racer at the front, where the parapet has been built into a curve to accommodate it. A second racer, with a much tighter turning circle, lies immediately behind the pivot. The parapet is 1.28m high and the gun clearly fired over it.

Emplacements 2 and 1; the parapet, also 1.28m high, is the same height as the internal piers, which are slightly larger than the others. There are no embrasures and the guns fired over the parapet. The racers have larger arcs of traverse than those in emplacements 4-11.

Between emplacements 3-11 are six ready use ammunition lockers; on the 1881 plan, they were annotated for shell storage (Figs 7 and 16). All are in yellow stock brick laid to English



**Figure 17**  
*The east face of the terreplein, showing emplacement 3 with its 'C' pivot; emplacements 10 and 11 lie beyond (NMR: BB99/15924)*

bond with sandstone ceilings and floors; their condition varies, the best example being at **c**, between emplacements 5 and 6. Each locker, sunk 0.6m below the gun floor and covered by an earth bank, is approached along a short revetted passage, 3.0-3.4m long, with a drain along one side. There was a single outward-opening door, 1.1m wide by 1.6m high, with millstone grit lintels and sills. There are iron door hinges set into stone pads, and iron pins for locks on the opposite sides. Internally, each locker is roughly 1.8m wide, 1.2m deep and 1.6m high, though the depth varies according to the batter of the parapet against which they are built. The internal walls are whitewashed but there are no indications of shelves.

Midway along the eastern face, set in a traverse at a right angle to the *terreplein*, is a **side arms store**. It comprises a single vaulted room protected by an earthen mound which projects above the top of the rampart (Fig 18). The western elevation is formed into a canted gable of yellow stock brick, laid to English bond, containing the entrance which is finished in a round arch of buff brick. This brickwork detail, together with its position, built over the rampart, demonstrates that it dates to the 1858-67 phase (see similar detail on the Guard House, below). The entrance is slightly recessed, the doorway itself 1.2m wide but damaged so that no evidence of its height and frame details survive. Inside, there is a level flagstone floor and whitewashed walls rising to a brick barrel vault with a circular vent at the north



**Figure 18**  
*The side arms store,*  
*western elevation*  
(NMR:  
BB99/15922)

end. At the far end, a recess in the floor, 1.56m by 0.48m by 0.17m deep, may have held a stove in a secondary phase; a scar in the wall above may be related. Holes in the side walls, at heights of 0.57m and 1.42m above the floor, may have been for shelving. Three large metal frames in the ceiling are of unknown function.

The remains of what is thought to be part of a Roman *pharos*, **d**, are situated to the south of the side arms store, behind the Saluting Battery.

### **The caponiers** (Figs 9 and 19)

Drop Redoubt has four *caponiers* placed at the south-western, north-western, northern and eastern salients of the trace. They are referred to here as nos **1** to **4**, following annotation on the 1881 plan (Fig 7). The principal function of the *caponiers* was to flank the ditch of the redoubt with both carronade and musketry fire to prevent an attacker gaining a lodgement next to the curtain wall or attempting to scale or mine it. In addition, to prevent an attacker gaining a position in the angles or top of the counterscarp wall, musketry loopholes in the face walls of the *caponiers* covered the top and salient angles of this wall. The walls of each *caponier* were protected from attack by enfilade fire from **musketry galleries** behind the adjacent curtain wall.

All four share the same basic design and a number of common features, with minor differences due to their position on the trace, linkage to access routes from the *terreplein*, the number and type of loopholes and embrasures, the position of **expense (ready-use) magazines** and the size of the accompanying musketry galleries behind the curtain wall.





The *caponiers* are rectangular in plan with vertical walls executed in a hard brick laid to English Bond. The walls, which rise to the full height of the curtain wall, have stone gutters behind the capping course and sandstone blocks at the corners. The tops have a steeply-scarped and profiled earth and turf bomb-proofing layer with brick-built ventilator shafts projecting through (Figs 19-21).

The flank walls (defending the curtain wall) contain embrasures and loopholes on two levels: the ground floor comprises carronade embrasures flanked by musketry loopholes, while the first floor contain only musket loopholes. Apart from tooled sandstone sills and lintels, both the carronade embrasures and the musket loopholes are of a form used throughout the Western Heights, with brick-built anti-ricochet steps. Ventilators of earthenware pipe are placed above each group of loopholes with their ends flush with the exterior wall.

The face walls contain two loopholes, each made from a single sandstone block, on each floor. Those on the ground floor are each placed under a semicircular arch and the section of face wall beneath the arch is battered back into the body of the *caponier*, creating a shallow vault which is pierced by a murder hole in the form of a narrow slot. At each corner of the face wall are triangular-shaped buttresses with sandstone capping courses; a similar smaller buttress is placed between the arches. The shape of the buttresses prevents the corners, and the area between the relieving arches of the *caponiers*, becoming a 'blind spot' and being used as lodgements by an attacker (Fig 19).



**Figure 20**  
*No 4 caponier with adjacent Sally Port and embrasures of gun rooms and musketry gallery (NMR: BB99/15890)*

The interior of each *caponier* is formed from two casemates, each of two storeys with a semicircular vault. They are of brick laid to English bond with the vaulting running at right angles to the flank walls. The two vaults meet at a heavy spine wall pierced by a tall central arch and by two semicircular, two-storey





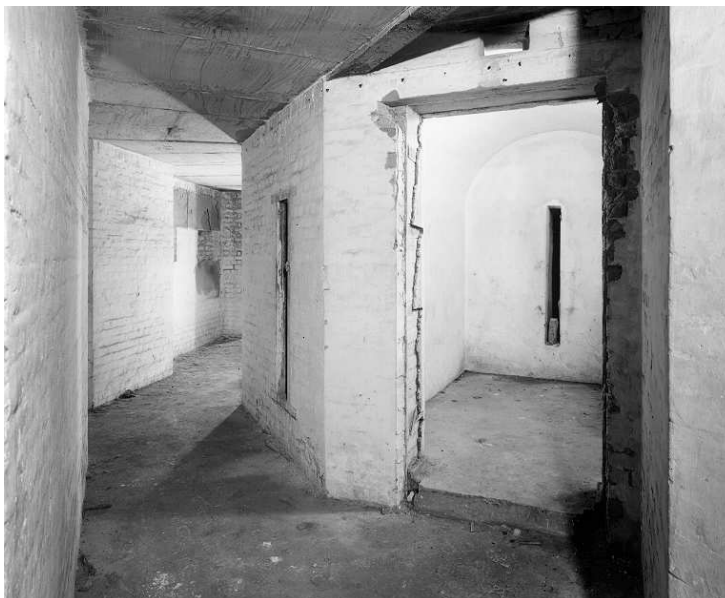


**Figure 22**  
*The interior of no 3 caponier, showing vaulting and first floor walkway (NMR: BB99/15904)*

arches allowing access between the casemates and the galleries (Fig 22). Fireplaces are in the spine wall, one per casemate.

The ground floors had suspended timber floors resting on dwarf-walls, though behind the carronade embrasures these gave way to solid brick or stone rectangular platforms to take the wear and tear caused by the recoil of these heavy weapons. The first floor comprises galleried walkways of slate slabs running parallel to the flank walls and set into the sides of the arches. The walkways are carried on wrought-iron 'I' section beams

and have cast handrail stanchions (Fig 22). The murder holes are accessible by slots in the slate floor, although as these have been sealed their exact form is not apparent.



**Figure 23**  
*The western expense magazine (door to right) in no 3 caponier (NMR: BB99/15905)*

Each *caponier* is provided with **expense magazines**, usually placed to the rear and cut from the natural chalk for additional protection against enemy fire (Fig 23). Nos 2-4 are provided with two magazines while the proximity of no 1 to the Main Magazine on the *terreplein* probably explains the provision



of only a single magazine. All these small magazines have the same basic plan with variations to the entrances according to their position in the *caponier*. They do not have a separate shifting lobby and each comprises a single-vaulted room, with plastered walls and a solid floor. Each room has ventilation slots, running from floor to springing, leading to an air passage around the outside of the magazine, usually linked to another ventilator slot, faced with air-bricks, in the galleries. Each magazine originally had a single door mounted in a stout wooden frame, with copper fittings, under a flat stone lintel. The 1881 plan notes that the magazine capacities were 35, 40 or 45 barrels of gunpowder (Fig 7).

Linked to the *caponiers* are two-storey, semicircular-vaulted **musketry galleries** constructed behind the curtain wall. They are divided internally by brick piers into bays. Generally each bay contains a pair of loopholes of the usual brick-built Western Heights type. In no 4 *caponier* some of the timber frames around the musketry embrasures survive. Further single loopholes are provided in the curtain wall to cover the salients of the counterscarp wall when these are not covered by the musketry galleries. In nos 2 and 4 *caponiers* the galleries also lead into additional casemates or **gun rooms**, set behind the curtain wall, which were designed to rake the North Lines and North-East Line respectively.

### **No 1 *caponier***

This is reached via a long gallery leading from the interior of the redoubt past the Main Magazine. The gallery contains a flight of stone steps with broad stone edges for the wheeling of small artillery pieces such as carronades. The steps emerge at the rear of the *caponier* on the first floor on a broad slate-floored landing. The landing appears to be carefully arranged so that a body of troops entering the *caponier* could split into three sections without pausing: the sections manning the first floor defences could wheel left and right from the bottom of the entrance stair and continue along the walkways, while the section manning the ground floor positions continued straight ahead and marched down the centrally placed steps to the lower level.

The ground floor contains three carronade positions. The two in the bays nearest the face wall have a large carronade embrasure flanked by two musket loopholes. The position nearest the curtain wall has a single embrasure, as the angle of the curtain wall re-entrant does not provide sufficient space for a pair. The western flank wall has only musketry loopholes in the corresponding bay as a carronade in this position would be unable to achieve sufficient traverse to flank the curtain wall. At a later date a doorway was inserted into the southeastern carronade embrasure to allow direct access from the ditch.



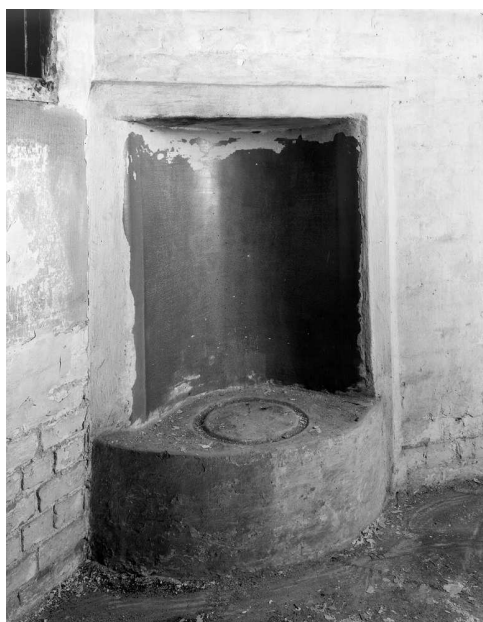
The expense magazine is located on the ground floor and reached by a dog-leg passage on the eastern side of the stairs. Presumably the sections manning the first-floor loopholes would send a man back up the entrance stair to the Main Magazine for ammunition.

The two-storey musketry gallery is located on the eastern side of the *caponier*. On the western side a single loophole on the first floor is provided to cover the top of the counterscarp. A gallery is not required in this position as the trace of the redoubt means that the *caponier*'s west-facing flank wall is mostly covered by direct fire from no 2 *caponier*. On the ground floor of the musketry gallery a low concrete plinth with three circular grooves cut into its surface may have supported fire buckets.

### No 2 *caponier*

This is reached via a gallery with a set of stone steps with the usual wheeling platforms, leading from the rear of no 1 casemate of the Soldiers' Quarters (see below). The stair emerges through a wrought-iron barred-gate on the first floor of the musketry gallery; nearby is a bucket latrine (Fig 24). A winder stair in the western corner leads down to the ground floor which has a virtually identical plan to the first floor.

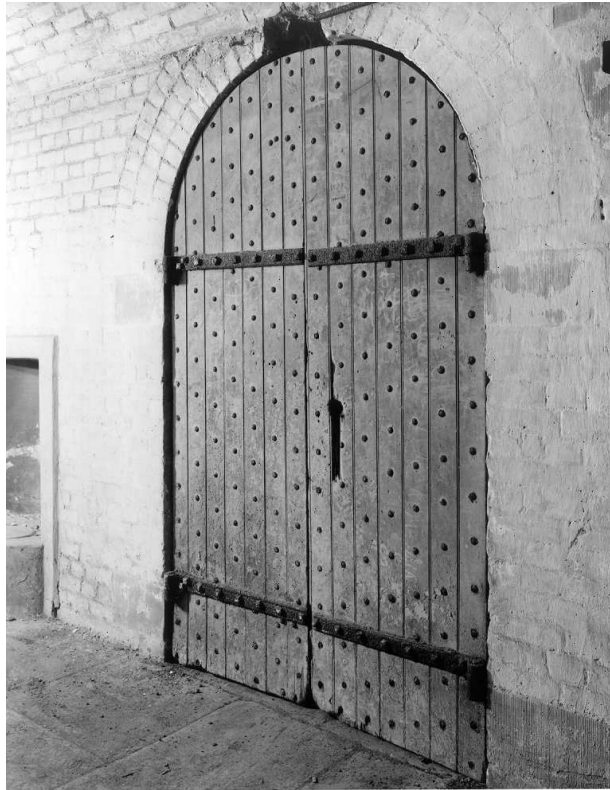
Both floors of the musketry gallery have three bays with the bay at the south end containing a single loophole covering the salient angles of the North Lines - redoubt ditch junction. The other two bays are set out in the normal manner to cover the flank wall of the *caponier*. On



**Figure 24**  
Ceramic  
splash-back for a  
bucket latrine in no  
2 *caponier* (NMR:  
BB99/15900)

the first floor, an expense magazine is located in the rear wall of the musketry gallery at its southern end, presumably to supply both the upper floors of the gallery and the adjacent Gun Rooms. A second bucket latrine is located on the ground floor of the musketry gallery.

Two gun rooms, located at first-floor level off the southern end of the gallery, are reached via a set of doors with the characteristic timber-iron-timber construction reinforced with studs, seen elsewhere on the Western Heights (Fig 25). Although the barred doors prevented measured survey, they were accessible on a later visit. Both gun rooms are



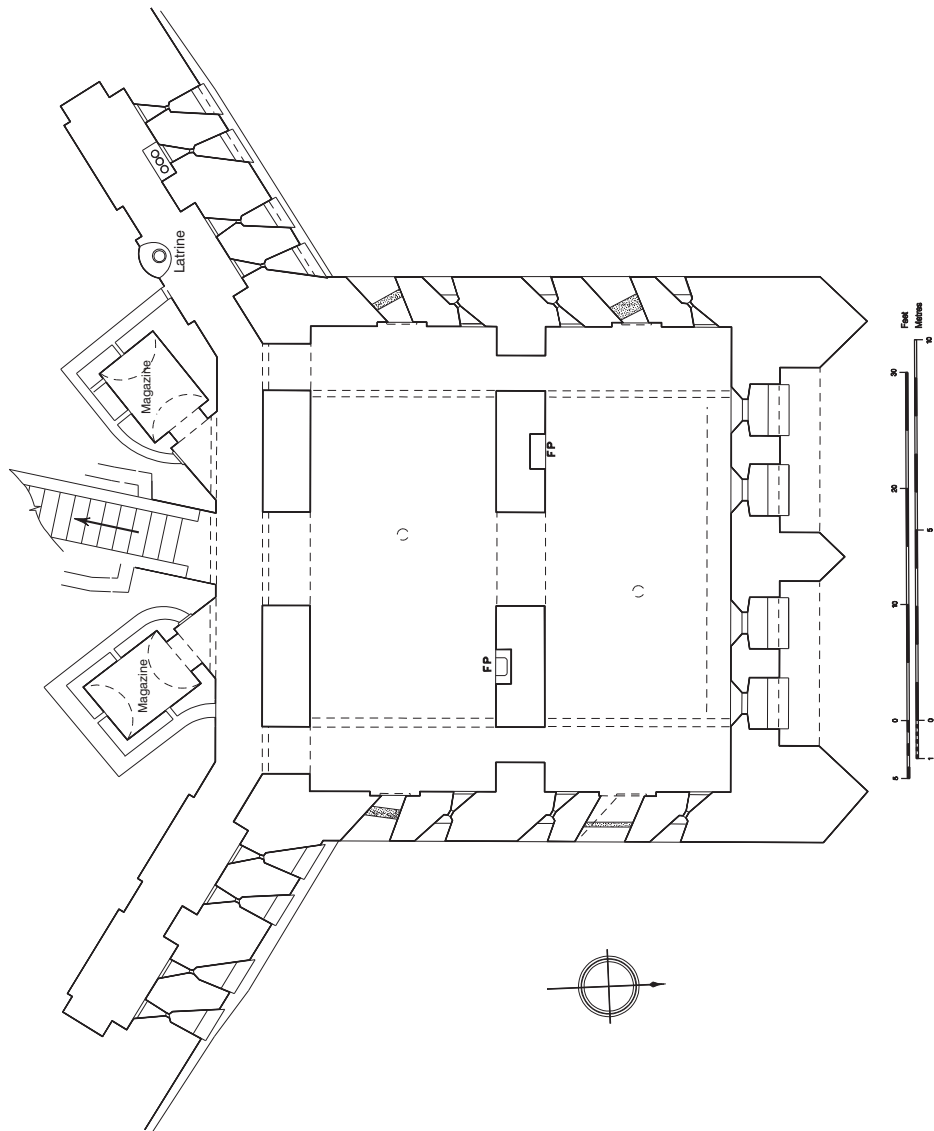
**Figure 25**  
*Heavy  
timber-iron-timber  
doors in no 2  
caponier, leading to  
the adjacent gun  
rooms (NMR:  
BB99/15899)*

angled to fire down the North Lines towards North Entrance. They are arranged in series, with an arched opening between them. Built in brick, beneath a semicircular vault, each room has a fireplace in its rear wall which was later modified. The face walls have a single carronade embrasure, now blocked, with a shallow recess for sliding shutters which have been removed. Above the carronade embrasure is a large circular ceramic vent at ceiling level. The carronade embrasure is flanked by a musketry loophole on either side, now blocked, with large stone sills and lintels. A large steel ring at the apex of the vault was for manhandling the guns.

The gun rooms are whitewashed and were provided with secondary electric lighting. The suspended timber floors have been removed.

A short dog-leg passage from the northern end of the musketry gallery enters the *caponier* at its eastern corner (the passage may be intended as ricochet protection). On the ground floor, carronade embrasures are placed in both bays of the southern wall with the northern wall entirely occupied by six musketry loopholes, three per bay. The northern wall does not have any carronade positions as it does not enfilade the curtain wall but faces the counterscarp wall at too close a range for the use of carronades. By 1893 the *caponiers* had been turned over for troop accommodation, and at some date a doorway was inserted into the north-western carronade embrasure to allow direct access from the ditch (Fig 7).

A single expense magazine is provided for the ground-floor positions, reached by a shallow lobby in the rear wall of the *caponier*. Close to the expense magazine a low concrete plinth with shallow circular grooves cut into its surface may have supported fire buckets. In the rear wall at first-floor level, directly opposite the entrance to the dog-leg passage, is an



**Figure 26** *RCHME survey of no 3 caponier; ground floor plan at 1:200 scale*

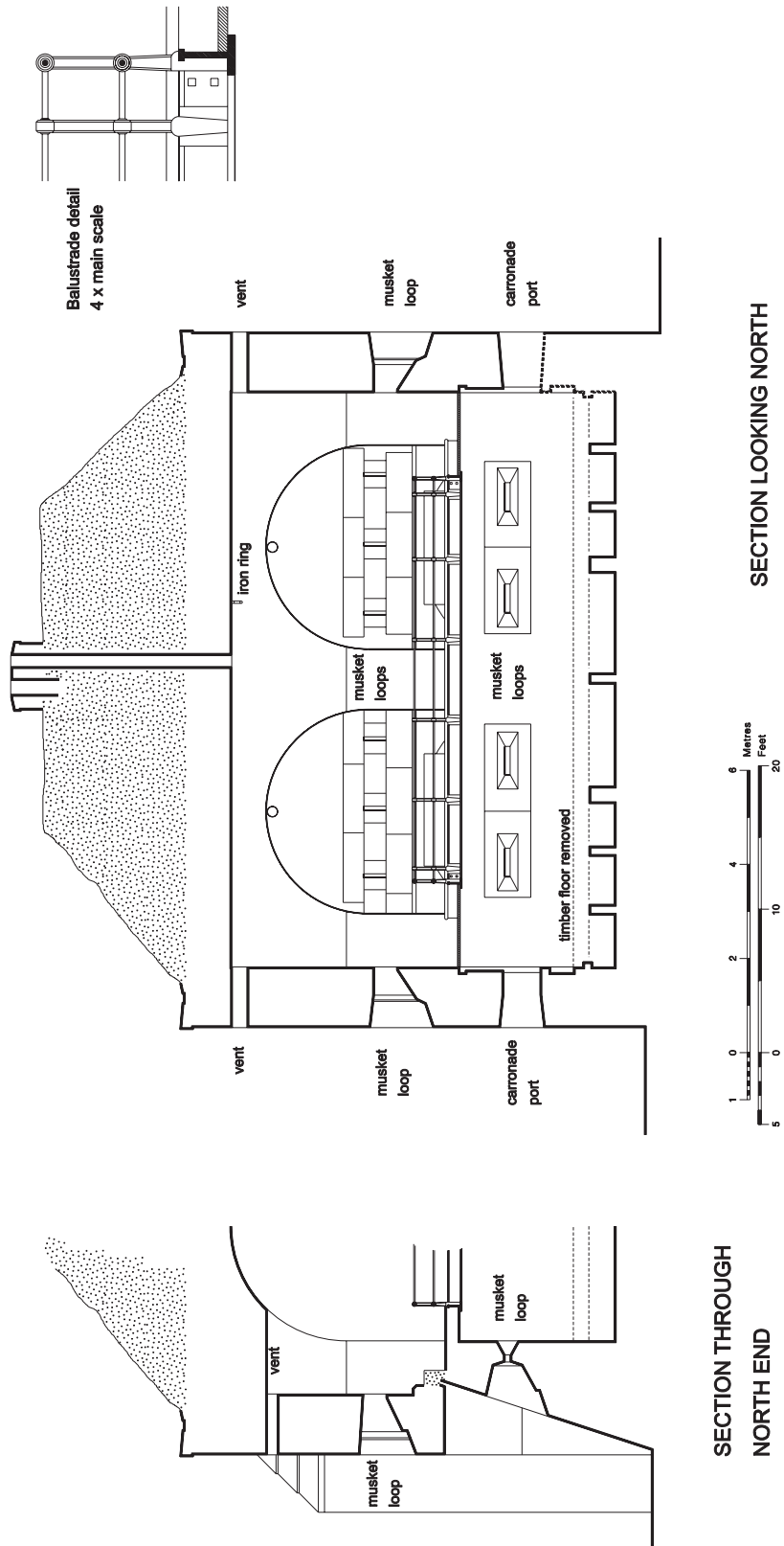


Figure 27 RCHME section through no. 3 caponier



extraordinarily long loophole running in the thickness of the curtain wall and intended to cover a blind spot on the re-entrant of no 3 *caponier* and the curtain wall.

### **No 3 *caponier*** (Fig 26 and 27)

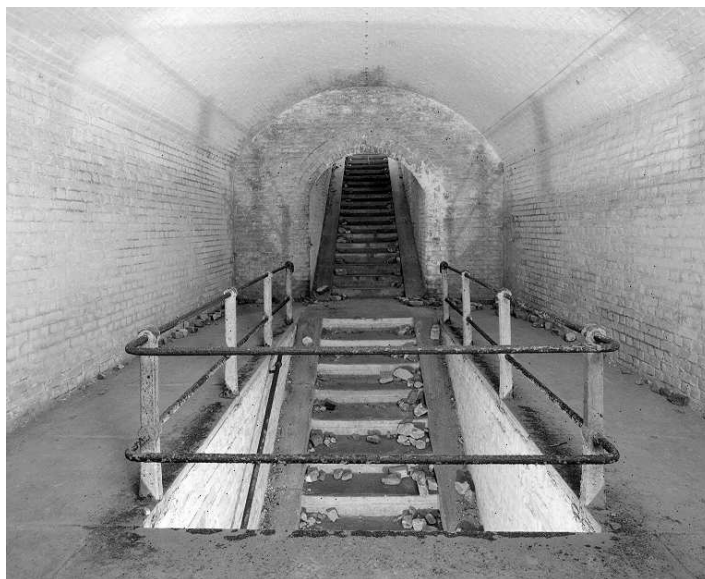
No 3 *caponier* is reached by a gallery containing a long flight of steps leading from the rear of casemate no 4 of the Soldiers' Quarters (see below). The steps emerge on the first-floor landing and use the same design for troop dispersal as those in no 1 *caponier* (Fig 28).

The *caponier* is flanked on the eastern and western sides by the usual two-storey, two-bay musketry galleries behind the curtain wall, both of which are reached from the rear of the *caponier*, a broad landing being provided for this purpose at first floor level. In the western gallery a low concrete plinth with shallow circular grooves cut into its surface may have supported fire buckets; nearby is a bucket latrine.

There are two expense magazines on the ground floor with their entrances in the rear wall flanking the entrance to the stairs. The placing of both magazines on the ground floor is unique to this *caponier* and may be linked to the doubling of the carronades as they would require more powder than muskets.

This *caponier* is broader than the others, probably to allow extra working space for the crews of four carronades, two each in the eastern and western walls. This extra width also enabled

the provision of two pairs of musket loopholes in the face wall, each pair placed under single semicircular arches, with a pair of murder holes.



**Figure 28**  
The first floor landing at the entrance to no 3 *caponier*, with the base of the stair from the Soldiers' Quarters (NMR: BB99/15906)

### **No 4 *caponier***

This is reached by a long stair gallery leading from the eastern end of the Parade Ground. The semicircular arched entrance to this gallery is





set in the retaining wall for the *terreplein* and can also be reached via the covered way from the Main Magazine and the steps from the Officers' Quarters (see below).

The steps emerge through a wrought-iron barred gate in the rear wall of the southern end of the musketry gallery. A stone-flagged landing gives access to the first floor of the musketry gallery and, through a door in the southern wall, to the gun rooms. Winding steps provide access to the ground floor and incorporate another smaller landing for the user of a loophole covering the top of the counterscarp salient.

Three interlinked gun rooms are reached from the landing via a set of timber-iron-timber doors barred from inside. The gun rooms are exactly as those in no 2 *caponier*, but there are three in series. At the springing of the vault there are sawn-off steel girders at regular intervals along both sides, possibly for racks or hinged brackets. Close to the door to the gun rooms is a bucket latrine, and a second one is located on the ground floor of the musketry gallery.

At the foot of the steps to the ground floor is the **Sally Port**, originally provided with two sets of double doors, on hinges set into large stone blocks, probably of the same timber-iron composite construction as those elsewhere in the redoubt. They were barred from the inside and opened into a shallow vaulted recess in the curtain wall. This recess provided some protection for an emerging foray, although its main purpose was probably to protect the doors, as the chief protection for a foray party would come from the adjacent gun rooms and the *caponier* (Fig 20).

Beyond the Sally Port the *caponier* is reached via the usual two-storey, two-bay, four-loophole musketry gallery. On both floors an additional loophole is provided at the southern end of the gallery to cover the counterscarp salient. A single expense magazine is provided at the southern end of the gallery on the first floor, a location which might mean that it also served the gun rooms which have their entrance on the other side of the landing from the magazine. Close to the expense magazine a low concrete plinth with shallow circular grooves cut into its surface may have supported fire buckets.

The *caponier* is connected to the gallery via a dog-leg passage that emerges in its south-western corner. There are carronade positions in both bays of the southern wall, with loopholes in the northern flank wall covering the counterscarp salient, as the curtain wall at



this point is flanked by the carronades of no 3 *caponier*. The expense magazine for the ground floor is located at the north-western corner of the rear wall. This position places it very close to the curtain wall: presumably the local geology dictated this position rather than a better protected position in the natural chalk at the rear of the *caponier*.

### **Modifications to the *caponiers***

In common with the other fortifications on the Western Heights, the Drop Redoubt was modified for other purposes as its usefulness as a fortification declined in the late 19th century. There were fifteen 12-pdr carronades in the *caponiers* and gun rooms in 1887, which were to be replaced by the heavier 24-pdrs. However, although these had all been delivered by 1892, only seven were mounted. This *de facto* reduction was formally approved in 1893 and was probably linked to the adaptation of the *caponiers* and gun rooms for additional uses, around this time (PRO: WO 33/2775). The 1881 plan shows that by 1893 no 1 *caponier* was in use as an Artillery Store, while the other three and the gun rooms were providing barrack accommodation and a canteen, the plan recording the number of men in each (notably, *caponier* no 2 had no armament mounted in 1892). In 1897, there was accommodation for 21 men in no 2 *caponier*, 34 men in no 3, 21 men in no 4, and 21 men in the western gun rooms. The eastern gun rooms still formed a canteen, but it had formerly supported 24 men. However, a note on the same plan records that both *caponiers* and gun rooms had been condemned for peacetime use by the Medical Officer in May 1899 (PRO: WO/78/2426/10). Also, by 1902, there were no guns at all in the *caponiers* and gun rooms (PRO: WO/33/254).

Further evidence of adaptation is provided by the conversion of two carronade embrasures to doors (by removing the sill and anti-ricochet angles), one each in a flank wall of *caponiers* 1 and 2. These doorways are not shown on the 1881 plan and it is likely that they post-date the armament reduction of 1893; by this date the defence of the ditch by carronades was unnecessary - close defence being possible with magazine rifles. The work was crudely executed and may have been to effect temporary use in an emergency, possibly the First World War or later. It may be linked to evidence for the widespread installation of electric light in both the *caponiers* and adjacent gun rooms.

The musketry galleries and magazines do not seem to have received electric light and presumably they were abandoned at the same time - unlike similar galleries in the Citadel, the Western Outworks and North Centre Bastion, which were partially re-used as latrines and ablutions. However, in all the *caponiers*, set into the wall of a gallery or passage, there is



an identical piece of glazed earthenware, about 1.5m high with a semicircular section (Fig 24). The earthenware is of sanitary-ware quality and this, along with a moulded recess in the base about the size of a bucket bottom, suggests that they are splash-backs for bucket urinals (it is difficult to see what other function they could have served; stands for drinking water, water for the guns or firebuckets would be better placed in the *caponiers* or main access galleries). The primitive nature of this arrangement might be taken to suggest that they belong to the original construction phase but close examination of the surrounding brickwork suggests that they are later additions: they lack closers, have a thick mortar course around the splash-back, and in one broken example, the brickwork behind is roughly cut back to make a recess in which to set the splash-back. The location of some of them - beneath a musket loophole or exposed and obstructing a passage between a *caponier* and musketry gallery - also suggests that they are later additions. Why such primitive arrangements were installed when flushing lavatories and urinals have been used in similar locations elsewhere in the Western Heights is not clear. It is particularly unusual given the Army's obsession with good drainage and ventilation after the 1858 reports into the state of barracks and hospitals. Perhaps these urinals are also an extemporised solution to a short-term emergency during one of the two World Wars.

## **B) THE INTERNAL BUILDINGS**

The buildings inside the redoubt fall into three blocks:

- The Guard House and Officers' Quarters lining a sunken elongated courtyard
- The Soldiers' Quarters and Ablutions/Staff Sergeants' Quarters facing across the Parade Ground;
- The Main Magazine.

The arrangement of the three blocks leaves an open area at *terreplein* level in the south central part of the redoubt. The centre of this area is the site of the loopholed guardhouse of the 1780s, which still stood in 1810; this included a water tank for 19,026 gallons (Fig 4). Crossing this area today is a covered way (Fig 9, e) linking the Parade Ground with the entrance of the Main Magazine. It is sunk 1.8m for protection and has a large earth bank along its eastern side. From it, a flight of stairs leads down to the Guard House and Officers' Quarters, and a slightly recessed path (Fig 9, f) branches off to the Saluting Battery on the south-eastern side of the *terreplein*. The Soldiers' Privies of the Napoleonic redoubt formerly stood in the area immediately south-west of this path, a position marked today by uneven, disturbed ground (Fig 9, g; Fig 6).

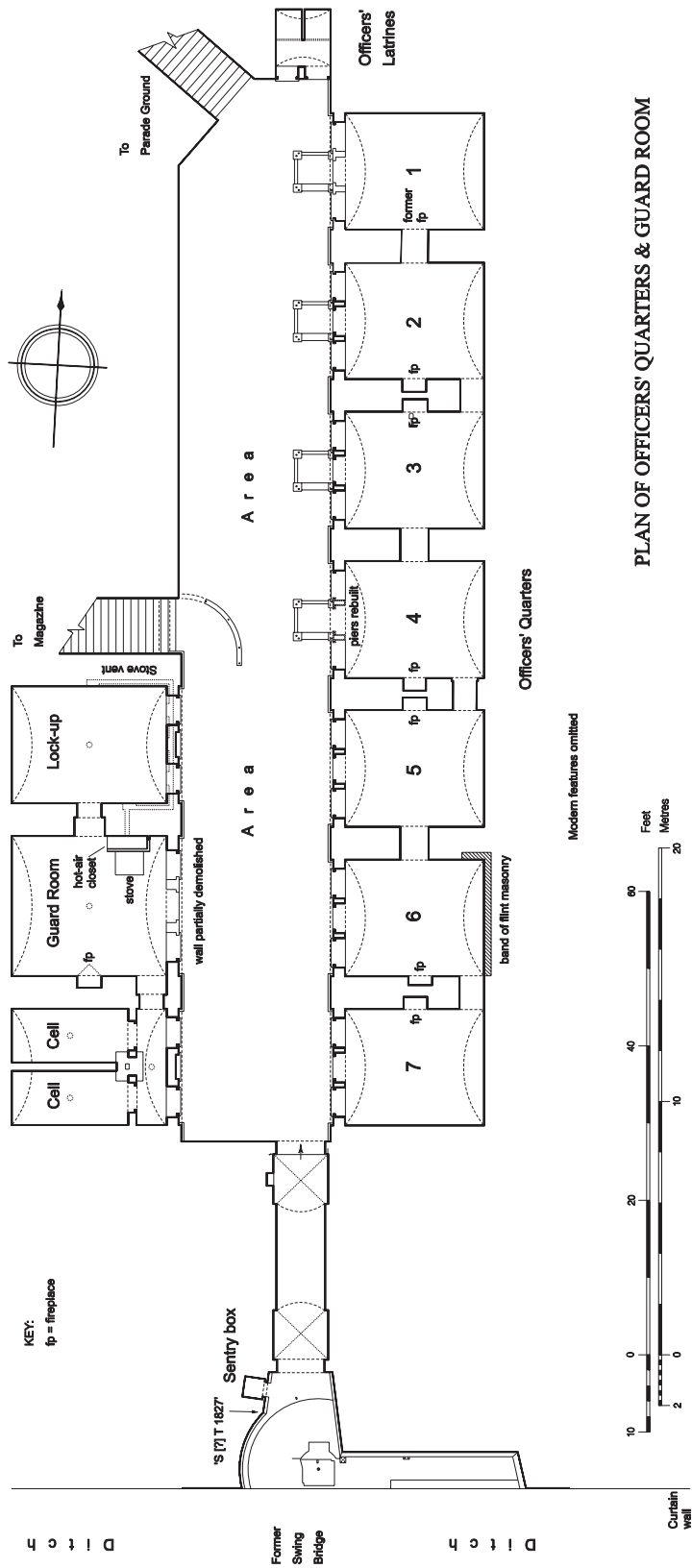


Figure 29 *RCHME survey plan of the Guard House range and Officers' Quarters*



### The Guard House (Fig 29)

The vaulted passage from the main entrance emerges into an elongated courtyard, the western and eastern walls of which incorporate the front elevations of two facing ranges of bomb-proofed casemated buildings, the Guard House and Officer's Quarters respectively.

The southern part of the western wall of the courtyard forms the front elevations of three adjacent casemates which comprised the Guard House (Fig 30). A single Guard Room was provided as part of the construction of the redoubt during 1804/5, and is shown on the 1810 and 1860 plans occupying approximately the position of the southernmost casemate of the present three, with steps to the Main Magazine against its northern wall (Figs 4 & 6). However, the present Guard House is set back further west than the original, to accommodate a courtyard rather than a sunken passage. The surviving buildings are, therefore, part of the 1858-67 remodelling, a fact reinforced by the Interim Report of the Barracks and Hospitals Improvement Commission of 1858 which records *'the guard room and lock-up place... are small, dark and imperfectly ventilated... we understand that they are to be reconstructed, which we recommend'* (PRO: WO/33/581).



**Figure 30**  
*The Guard House  
range from the  
north-east (NMR:  
BB99/15911)*



The three casemates are constructed in English bond with the semicircular vaults picked out in buff brick, which is also used for door and window jambs. As there are no obvious changes in brickwork, colour or coursing and no apparent joints, it is reasonable to assume that they are of a single build. The inclusion of identical fittings like cast-iron flap ventilators in the front and rear walls of all the casemates lends support. Each casemate has three high-set small windows with sandstone sills; the central windows are blind and were probably always so, as the brickwork courses through. The central casemate has had the majority of its courtyard wall demolished but traces of jambs or their seatings suggest that it contained a door flanked by two windows. All the casemates contain set-backs and dwarf walls for suspended timber floors.

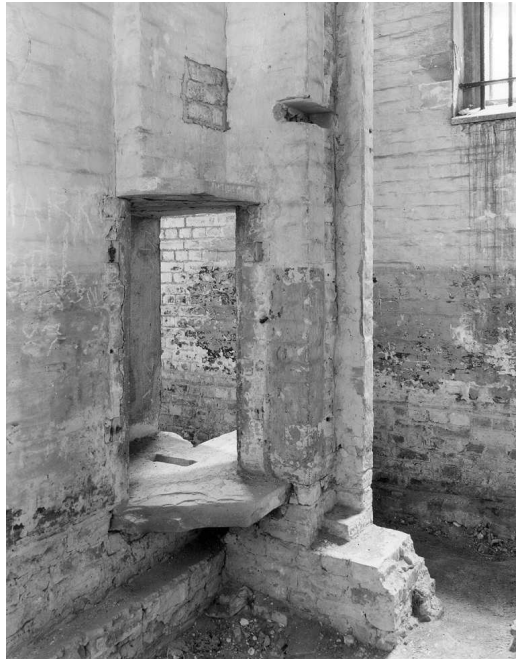
Functions for each casemate are given on the 1881 plan (Fig 7). The central one is labelled as the Guard Room: it has the only entrance to the courtyard, the only fireplace (in the south wall) and the remains of wrought-iron equipment racks attached to all the walls except the front one. This suggests that this room formed the headquarters of the guard and guard commander, with the off-duty guard accommodated in beds under the wrought-iron equipment racks. Heating is provided by a stove against the north wall (Fig 31). This may be an example of the hot air closet as shown on a record plan of 1861; there is another

example of this type of closet in the North Entrance (NMR: WD/2306). This had a wrought-iron clothes horse which fitted into a separate heated compartment at the rear of the stack. Hot air passed into the Lock-up via an intramural vent and fine adjustable outlets set just below window-sill height.



**Figure 31**  
*Remains of the stove and hot air cupboard in the Guard Room*  
(NMR: MF99/01348/16)

The southern casemate is labelled **Cells**. It is reached by a doorway with a barred fanlight and a substantial timber doorframe in the southern wall of the Guard Room. The interior is divided into two cells served by a passage against the courtyard wall. A rotating serving hatch is built into the dividing wall between cells, allowing food to be given to the prisoners without opening the doors (Fig 32). The moving section of the hatch was probably made of wood and rotated around a



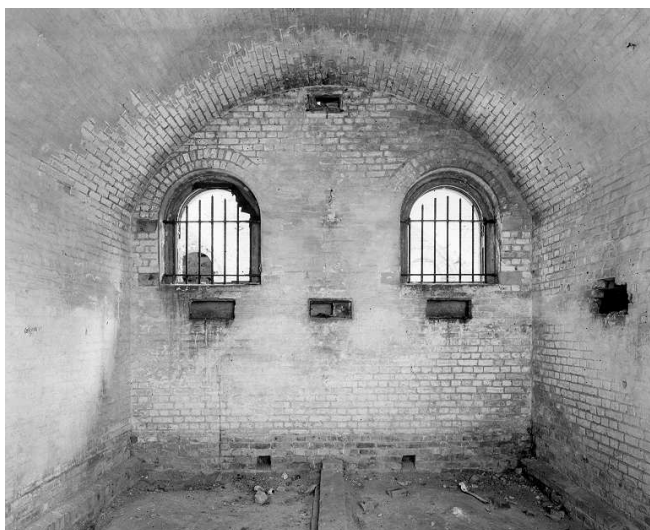
**Figure 32**  
*Setting for a rotating serving hatch built into the wall between the cells in the Guard House (NMR: BB99/15915)*

central pivot, set in a circular depression cut into the tooled stone sill. The only light for the cells came through barred fanlights over each cell door and ventilation was by cast-iron flap ventilators in the crown of the vault and the partition wall.

The northern casemate is described as a **Lock Up**, which probably refers to a secure area for holding soldiers guilty of minor misdemeanours or awaiting appearances before the orderly officer. To provide security there is a substantial door from the Guard Room, with set-backs to accept a heavy timber frame in the jambs of the doorway and stone mounting blocks for substantial pintle hinges. As a further

security measure the two high-set, small windows in the courtyard wall have bars on the inside (Fig 33). Heating was provided by the stove-vent system located in the Guard Room. The lack of any iron equipment racks set in the wall shows that it was not used as a barracks.

The Guard House range has received relatively few alterations. At some time the serving hatch in the northern cell was bricked up, probably late in its life as the brickwork is not covered in a thick layer of whitewash like the Cell walls. Whitewashing was considered a



**Figure 33**  
*Interior of the Lock-Up in the Guard House (NMR: BB99/15913)*

hygienic covering that could be repeated annually, providing a convenient punishment for the occupants of the cell. Incised into this whitewash are various pieces of graffiti, the only legible and period examples being one from a member of a Fusilier regiment in 1939 and a sentence written in German apparently complaining about the food!



### **The Officers' Quarters (Fig 29)**

This consists of a range of seven adjacent casemates on the eastern side of the courtyard, directly opposite the Guard House, with a smaller eighth casemate in the northern wall forming the Officers' Latrines (Fig 34). Officers' Quarters were apparently being built in 1805 but their location is unknown (see above). The present range is not depicted on plans of



**Figure 34**  
*The Officers' Quarters: general view from the south, also showing the side arms store on the terreplein above*  
(NMR: BB99/15918)



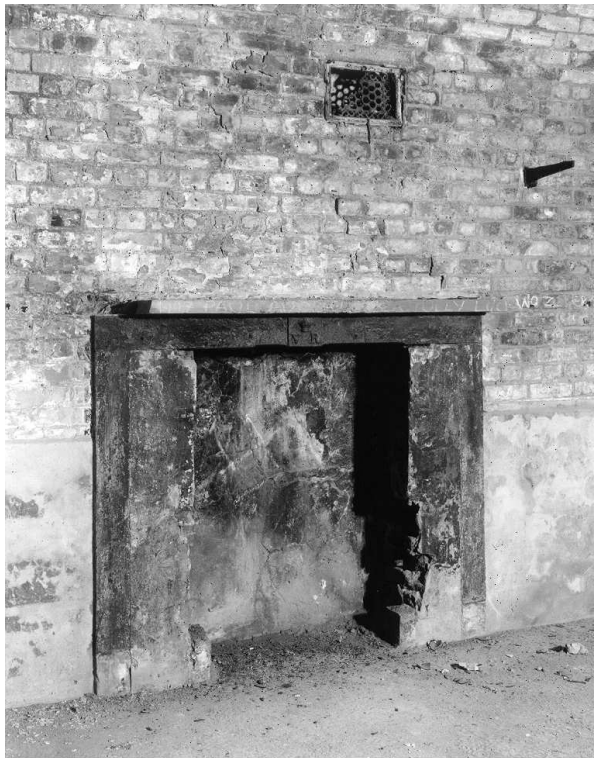


1810-13, nor one of shortly before 1860 (Figs 4, 5, 11 & 14b). However, close examination of another plan made around 1860 shows both that the range has been added in pencil and then inked over, and that the courtyard had not been built (Fig 6). Additionally, a flight of steps is shown in the position now occupied by the Officers' Latrine. These facts, together with the use of buff brick in the same manner as the Guard House, show that the Officers' Quarters were also part of the 1858-67 remodelling. The 1881 plan labels the Officers' Quarters 1 to 7 from north to south and this sequence is followed below.

Each casemate originally had two windows flanking a central doorway and, although some casemates have suffered partial demolition of their front walls, the footings for jambs are still clearly visible. The vaults are semicircular and built in English bond brickwork. The rear walls are built against chalk, except in no 6, where the remains of what may be part of the Roman *pharos* are visible. Set-backs and dwarf walls are provided for suspended timber floors.

Bootscapers for each door, plastered walls and marks in the plaster left by skirting boards in casemates 3, 5 and 7 point toward the higher standard of decoration and fittings associated with officers' accommodation. Casemates 2-7 are heated by back-to-back fireplaces in

alternate crosswalls, while no 1 was served by a fireplace in the south wall. No 6 contains what appears to be the original form of cast-iron fireplace surround, with beaded edges and the royal initials (V R) cast in the lintel, above which there is a stone mantel shelf (Fig 35).



**Figure 35**  
A cast iron  
fireplace in the  
Officers' Quarters  
(NMR:  
BB99/15916)

Several other fireplaces show pieces of an elaborate flue system which is typical of the concern with air circulation exhibited in military accommodation built after the 1858 Commission report. As no single fireplace retains a complete set of these fittings the following description is a composite. An earthenware pipe, placed at the top



of the hearth above the smoke flue, allows warm air to enter without the combustion products which rise into the smoke flue. Warm air rises through the pipe and out of a wrought-iron grilled vent at springing level, thus heating the top of the casemate. Cold air is drawn into the grate by a further earthenware pipe that runs under the floor from a vent in the front wall. This system has all the characteristics of the Anglo-American Stove and Ventilating Grate which was adopted as standard in military accommodation after 1857 (McDonald 1983, 201).

The 1881 plan shows that by 1893 some of the Officers' Quarters had been converted to a variety of other uses (Fig 7): nos 4 and 5 are successively labelled as *Mr* (Master) *Gunnery Quarters* (struck out) and then *Md* (Married) *Quarters*; nos 6 and 7 are labelled as *Offices*. Casemates 4 and 5 are linked by a doorway with a segmental head and a sill at the level of the suspended floor; this doorway is also shown on the 1881 plan, suggesting these casemates were linked together to form two-room Married Quarters. No 4 also has a slate mantelpiece which may be connected with this remodelling. The doors to Nos 1-4 (still shown as Officers' Quarters on the 1881 plan) received lightweight porches with concrete bases and a roof line that cut across the springing of the door head. The porches were entered from the south, where the thresholds remain *in situ*: the footings are exposed to varying degrees.

Further changes of use are recorded on a drawing of 1897: while nos 1-3 remained as Officers' Quarters, nos 4-5 had been converted to a single Married Quarters, no 6 was the Armament Office and no 7 the Royal Artillery Company Store. There followed, by 1911, the conversion of nos 1 and 2 to Lecture Rooms, no 3 to a Signalling Store, nos 4 and 5 to Band Stores, no 6 to a Company Office and no 7 to the Regimental Store (PRO: WO/78/2426/10).

Subsequently all of the casemates were linked by doorways, cut through the dividing walls, with flat, reinforced-concrete lintels suggesting a mid-20th-century date for their insertion. One of these doorways obliterated the fireplace originally heating no 1. Nos 2, 5 and 6 appear to have been converted to ablutions and latrines, with concrete floors poured to the level of the removed timber floors. Nos 2 and 6 have drainage channels and the footings of stalls for latrines against the front wall; their doors and windows are blocked using Fletton bricks. No 5 has no obvious signs of latrines and may have been a wash room.

In the northern wall of the courtyard is a small casemate containing two latrines. Once again, the use of buff brick for the jambs of the single door and window suggests that it was built at



the same time as the Officers' Quarters and Guard House, probably as the **Officers' Latrines**: it is shown as a WC on the 1881 plan and again in 1897 (Figure 7; PRO: WO/78/2426/10). The semicircular vaulted casemate is divided into two cubicles by a central brick-built partition wall that extends to three-quarters of the height of the vault. Pipework in the western room suggests the position of a latrine stall. The other room contains the brackets for a cistern high on the rear wall. Marks in the plasterwork of both rooms suggest the position of wooden modesty screens across the front of each cubicle.

Access from the courtyard to the Soldiers' Quarters and Main Magazine is provided by two flights of stairs: one next to the Latrine at the northern end and the other next to the Guard House in the western wall. The northern stairs have stone treads between brick retaining walls and emerge onto the courtyard of the Soldiers' Quarters. The western stairs rise through the wall of the courtyard via a segmental arch, emerging in the covered way leading to the Main Magazine. A curved brick footing at the base of these stairs marks the position of a dwarf wall supporting a railing, which separated the business of the Guard House from the northern end of the courtyard, where by 1881 the Officers' Quarters were concentrated - the southern end had been given over to offices. This wall is clearly shown on the 1881 plan and effectively divided the courtyard into officers' private space and an area for military business. It may also be connected with the rigid no-fraternisation policy between officers and other ranks laid down in the King's Regulations of this era.

### **The Soldiers' Quarters** (Fig 36)

The ordinary soldiers were accommodated in a range of five casemated barracks sunk beneath the level of the *terreplein* (Fig 37). Along all but the south front, a narrow dry area, in parts vaulted over, separates the range from the *terreplein*, which is reached by external stairs at the western and eastern ends of the range. Two of the *caponiers* are reached directly from two of the casemates, via inclined galleries or stairs descending from their northern ends. To the south of the range, there is a small Parade Ground. Annotation dated 1893 on the 1881 plan numbers the casemates **1** to **5** from the west, and this scheme is adopted in the following description (Fig 7).

Although the Soldiers' Quarters date from the Napoleonic phase of construction, and are shown on plans of 1810 and 1811, their present regular plan represents modifications carried out in the 1860s (Figs 4 & 5). When first built, casemate 1 presented a flush front to the Parade Ground, as now, but was roughly one-third the length of the other four. This original arrangement is shown on the 1810 plan, when there was also another building, of a

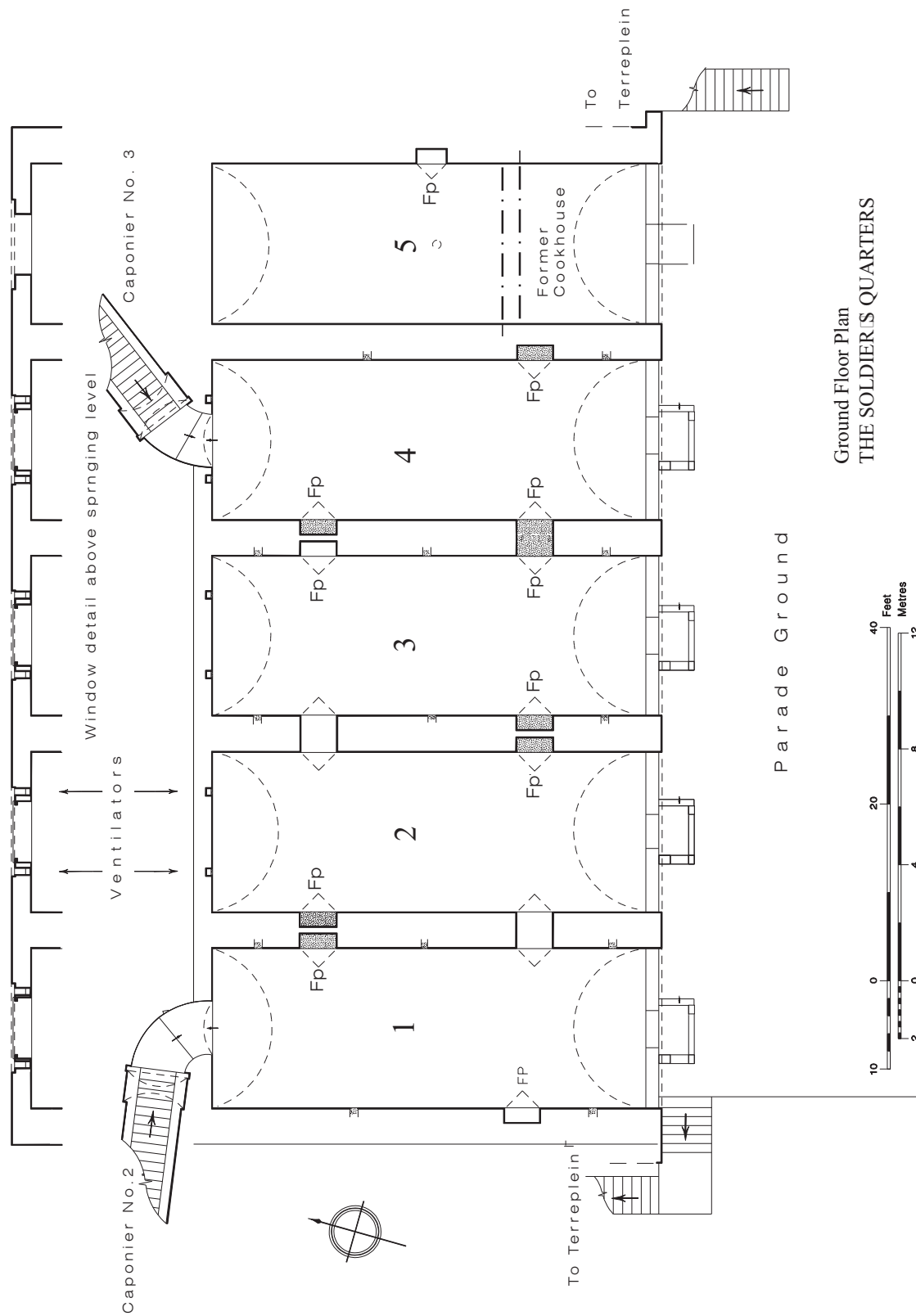


Figure 36 RCHME survey plan of the Soldiers' Quarters



temporary nature, built behind casemate 5 and against the external wall of casemate 4. A trace of the short casemate 5 survives in the form of straight-joint evidence and from the upstanding remains of a gable on the present roof, rendered on its northern face. Curiously, however, the wall of the adjoining casemate 4, where it extends beyond its shorter neighbour, shows severe deterioration of the brickwork, possibly consistent with it having been back-to-earth for some considerable period.

The range is constructed of orange-brown brick faced externally in Flemish bond, with buff brick dressings. The parabolic vaults extend to the front, where they are finished in buff brick; the recessed front wall of each casemate is, in structural terms, an underbuilding of the vault. Nearly all the buff brick, and most of the facing bricks above springing level have been lost. A copy drawing, dated 1867, indicates that the front wall was carried up as a parapet, with pitched ends and stone copings; this survived until recent times (Figs 38 & 39).

Beneath the vaults the front walls are recessed by half a brick and are in English bond. Only the lowest courses of the recessed fronts survive, sufficient to indicate a central doorway and flanking windows. These had flat brick arches. The 1867 drawing also indicates that



**Figure 37**  
*The Soldiers' Quarters: general view from the south*  
(NMR: BB99/15930)



Figure 38 Record plans, elevations and sections of the Soldiers' Quarters, dated 1867 (NMR: WD/2516)



**Figure 39**  
*The Soldiers' Quarters prior to removal of the south elevation detail (Dover Museum: D07905; reproduced by kind permission of Dover Museum)*

there was a large window placed directly above each doorway. Given the existence of a slot in the soffit of the vault in this position, the upper windows appear to have been original. A bracketed stone canopy above each entrance doubled as the sill of the upper window. To the rear, each of the four long casemates was lit by a lunette set high up under the crown of the vault, with a shelving internal sill. Externally the revetment of the dry area rises high enough to shield the lunettes. The vaults were originally covered with earth and either sand or concrete, beneath a series of pitched slate roofs of which nothing now survives. These drained to stone-lined valleys between the casemates. Stacks rose originally from each valley, and from the western wall, but have been dismantled to vault level. The dry area along the greater part of the rear wall appears to have been an original feature, but to the east and west the external walls were originally back-to-earth. This is particularly apparent to the west, where the wall retains a coat of cement render such as has been encountered elsewhere in back-to-earth contexts, and where the half-vault built to cover the dry area springs from above the cement line.

The interiors of the four long casemates form two mirror pairs (Fig 40). Each of the casemates have two fireplaces (now blocked) under a segmental arch. These are in a staggered arrangement, one on each long wall, giving back-to-back fireplaces on each party



**Figure 40**  
*The Soldiers' Quarters: interior detail of casemate 4 showing parabolic vault and entrance to gallery leading to no 3 caponier*  
(NMR: BB99/15931)



wall. The fireplaces drew air in from outside each of the buildings. Originally there were doorways with semicircular arches in the party walls, alternating with the fireplaces. Sub-vaults provide the necessary headroom for both fireplaces and internal doorways. Narrow slots, rising from floor level almost to the vault springing, with a stone lintel and three

stone anchor-blocks at intervals in the jambs, appear to be original features, but their function is unclear. Two are marked on the 1867 plan in casemate 1, and by this date do not appear to form part of either the water or the gas supply to the building. The original floors have been replaced by concrete.

Other details of the building are revealed in the Interim Report of the Barrack and Hospital Improvement Commission, dated 1858. The report describes the building as consisting of three casemates for 25 men each, and another reserved for married quarters - an arrangement achieved by blocking the doorway linking Nos 3 and 4. The figures of 443 ft<sup>3</sup> per man and 675 ft<sup>3</sup> per family are described as *acceptable*, though the ventilation was considered unsatisfactory (PRO: WO/33/6A).

The short casemate no 5 was originally a cookhouse and is referred to as a kitchen on a plan of 1844 (PRO: WO/55/2751 plan 2). The original fireplace does not survive but the 1867 drawing shows a ridge-mounted stack which appears to have survived the removal of the rear wall (Fig 38).

The plans of 1810, 1811, 1830 and 1844 show a small structure to the rear of the cookhouse; the latest reveals that it was a wash house (Figs 4 & 5; PRO: WO/55/2562 plan 8; WO/55/2751 plan 2). On the two earlier plans it is depicted backing onto casemate 4 and, separated from the cookhouse by a narrow space, is distinguished by grey shading in





contrast to the normal pink colour used for buildings on these plans. Grey is used to denote temporary structures, probably of timber. On the two later plans the wash house is shown detached, free-standing and coloured pink, suggesting that it was rebuilt in more permanent form prior to 1830. Another plan, made in 1851, suggests that casemate 5 had been extended to match the length of the other four, requiring a new wash house to be built immediately south of the Soldiers' Quarters (PRO: WO/55/2931 plan 2). There is no reason to doubt that casemate 5 continued to function as a cookhouse after this date and it remained subdivided in 1860, with the area formerly occupied by the wash house perhaps forming a dining area (Figs 6; 14b).

Alterations in or shortly after 1861 resulted in the conversion of casemate 5 to provide a fifth regular barrack, identical in dimensions to the other four. At the same time both external stairs to the *terreplein* level appear to have been altered. Gas lighting, one light in the centre of each vault, may have been introduced at the same time. The remodelled building is depicted on the 1867 plan (Fig 38), which has pencil annotations suggesting a further series of works, including the extension of the dry areas to encompass the eastern and western ends. After 1861, cooking was carried out in part of a new range erected on the southern side of the Parade Ground (see below)

The conversion of casemate 5 was executed in a brownish-buff brick laid to English bond, with a cream-coloured gauged brick for the arches. The new eastern wall has a sandstone coping, and is closed against the earlier structure. The vault is block-bonded with the original work. A single fireplace was built into the eastern wall, associated with a sub-vault in the usual way, with a slender sandstone lintel and a louvred iron ventilator. Unlike the earlier casemates the extension has no slots in the walls, either original or inserted, but there is a single clay-pipe vent in the crown of the vault. The suspended timber floor, on twin axial dwarf walls, has been removed.

Perhaps of a similar date were the storm porches on the front of all five casemates. These have been demolished and only the stone-quoined blue-brick footings and floors survive, together with vestigial evidence for lightweight, probably timber walls. The 1867 plan shows light boarded walls, including an internal partition closing off a small closet or cupboard: the entrances were on the eastern sides, where the stone thresholds remain. Earlier porches - referred to as *sheds* protecting the entrances in the 1858 report - were themselves secondary as the original canopied form of the casemate entrances suggests that porches were not part of the initial design.



19th-century barrack rooms were simply furnished with beds and storage racks for personal possessions. The casemates retain numerous traces of fixtures along the walls, where beds would have been ranged. The earliest are probably indicated by timber plugs set in the mortar courses, but no other indications of their form survive. Simple wrought-iron wall fixings with slots for the attachments of brackets survive in casemates 1-3, but as these overlie some of the slots mentioned above they must be secondary. Intervals are left for fireplaces and doorways, with the result that the numbers vary slightly, casemate 1 (which has no doorway in its west wall) having nineteen, while casemates 2 and 3 have eighteen each - precisely the occupancy recorded in 1893 and 1897 (Fig 7; PRO: WO/78/2426/10).

Another type of fixing is confined to casemates 4 and 5, and overlies the blocking of the doorway between casemates 3 and 4. Each consists of two distinct elements: a pair of brackets on which rails or some other support were laid, and a hangar slung between the brackets from which three pegs protruded. Those in casemate 4 are arranged continuously, giving 28 places in all; in casemate 5 there are just eighteen. Whether this variation indicates varying levels of occupation or a more generous allocation of storage space in casemate 4 is unclear.

On either side of the lunettes at the rear of casemates 1-4 there are vertical ventilation shafts which occur in two forms. They have been cut into the original walling (leaving brick slivers in the sides) and then covered with a thin brick skin. In casemate 1 the shafts turn inwards at an angle of 45 degrees at the foot, and stop short of the entrance to the *caponier* gallery. In the other three the slots continue in a straight line to floor level. In all cases they rise through the wall to inlets placed on either side of the lunettes. The air bricks at the base of the shafts have mostly been destroyed, but they were of the same geometrical form as occurs in the Officers' Quarters, helping to confirm that they represent improvements to the ventilation introduced in the wake of the 1858 report. Casemate 5, created at the same time, was provided with a vent in the vault top; additional shafts in the end wall were evidently deemed unnecessary.

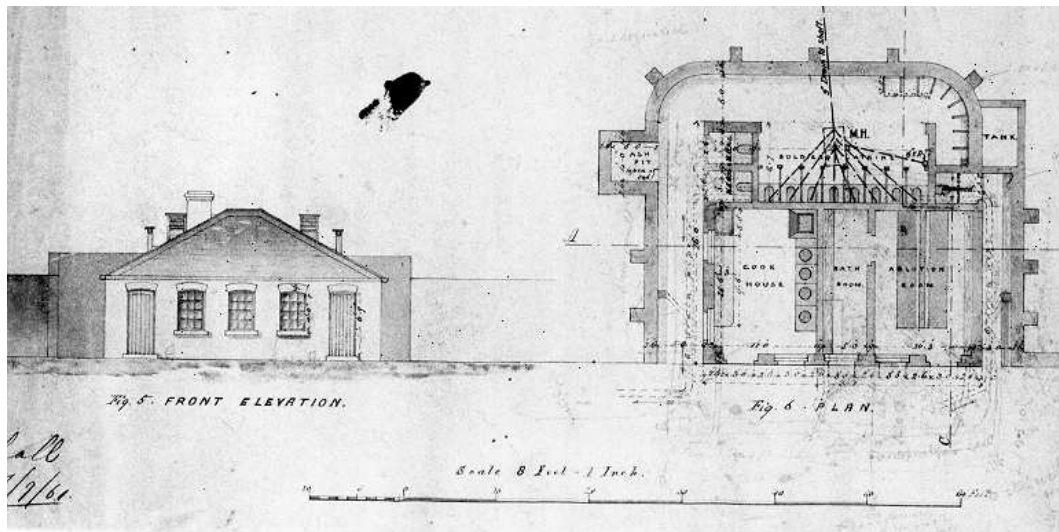
### **The Parade Ground** (Fig 19)

In front of the barracks is a **Parade Ground** or yard, a small rectangle of 36m by 11.5m, now mostly covered in grass. It appears to have been paved with large brick-shaped cobble stones, though areas have been patched with concrete. Encircling the Parade Ground is a stone pavement and gutter. A water tank stood in the centre.

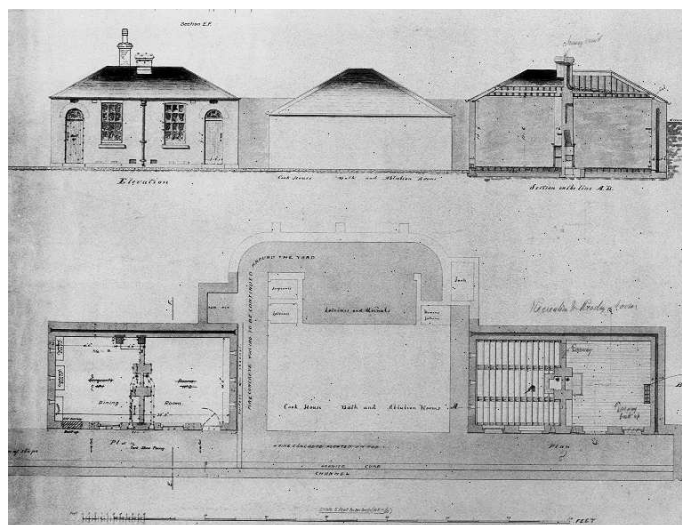


### Ablutions, Latrines, Bath Room, Cook House and Staff Sergeants' Quarters (Fig 19)

In 1860, alterations were proposed to a small Ablution Room, opposite the Soldiers' Quarters, which had been erected between 1844 and 1851 as a replacement for the wash house behind casemate 5 of the Soldiers' Quarters (Fig 6; PRO: WO/55/2751 plan 2; WO/55/2931 plan 2). The proposal was aborted in favour of a new range of three buildings, parallel to and facing the Soldiers' Quarters across the Parade Ground, for which proposal drawings were approved in 1861 (Figs 41 & 42). These comprised, in the centre, a single building in which were combined Ablutions, Latrines, Bath Room and Cook House and, on each side, Staff Sergeants' Quarters. The latter had been converted to Married Soldiers' Quarters by 1881 and remained in 1897, comprising two buildings of two identical units, in common with some of the Officers' Quarters (Fig 7; PRO: WO/78/2426/10; see above).



**Figure 41**  
Extract from an approved proposal drawing, dated 1861, showing a plan and elevation of the Ablutions building (EH: WD/2507)



**Figure 42**  
Extract from an approved proposal drawing, dated 1861, showing a plan and elevation of the Staff Sergeants' Quarters (EH: WD/2508)

Today, the range is largely ruinous (Fig 43). However, one building stands at the western end, a rebuild of 20th-century date. It is built in yellow stock brick laid to English bond, with a flat concrete floor and roof, the latter supported on cross-axial metal beams. The single room, 8.97m by 4.48m internally, is entered



**Figure 43**  
Remains of the  
Ablutions building  
and adjacent Staff  
Sergeants'  
Quarters, with the  
20th-century  
shelter at extreme  
right (NMR:  
BB99/15932)



through a doorway in the northern wall, 0.98m wide by 2.17m high, with a stone sill and concrete lintel. Adjacent are two identical windows, each 1.05m wide by 1.33m high, with wooden frames, concrete lintels and tiled sills. A blocked doorway in the eastern wall has a concrete lintel. There are five circular vents in the roof, one of which was probably for a stove pipe. Two metal struts in the wall between the windows are

probably later insertions. It may have served as a **shelter** or communications room during the First and/or Second World Wars..

#### **The Main Magazine (Fig 44)**

The principal magazine for Drop Redoubt is a bomb-proof vaulted structure covered by an earth mound, the latter some 3.5m high (Fig 45). Access is gained along a covered way which splits into three, the branches leading to the Parade Ground, Officers' Quarters and the southern part of the *terreplein*. The covered way enters the magazine and becomes the gallery leading to no 1 *caponier*. A pair of doorways in the northern wall of this gallery lead into the magazine and the passage that surrounds it.

The magazine has two distinct elements: the magazine itself and a narrow vaulted passage enclosing it. The current arrangement includes an original free-standing magazine completed in 1806 and depicted on all plans between 1810 and 1860; in 1810 it had a capacity of 320 barrels (Coad and Lewis 1982, 172; Figs 4 and 6). The vaulted passageway, which supports a layer of bomb-proofing, was added during the re-modelling of the redoubt in the 1860s and is shown on a plan of 1882. On plans dated 1871 and 1882 it was called F Magazine, capable of storing 328 barrels (PRO: WO/78/2755; NMR: WD/2411A).

The magazine is rectangular in plan with a square-plan shifting lobby at the southern end (Fig 46). Both the magazine and lobby have parabolic vaults and thick walls standing on a rendered plinth, all built in a red-brick laid to English bond. As originally built the magazine

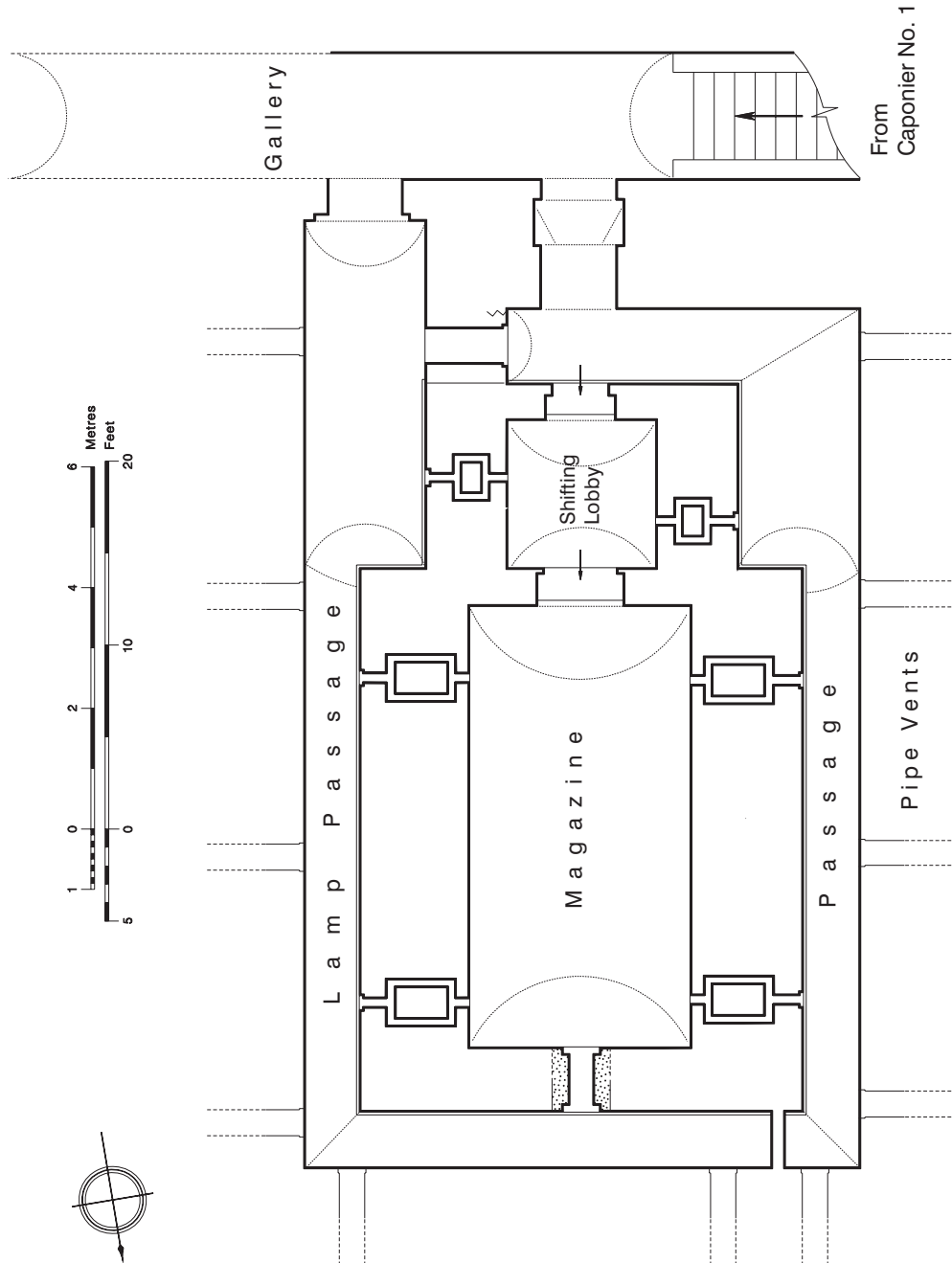


Figure 44 *RGHME survey plan of the Main Magazine*

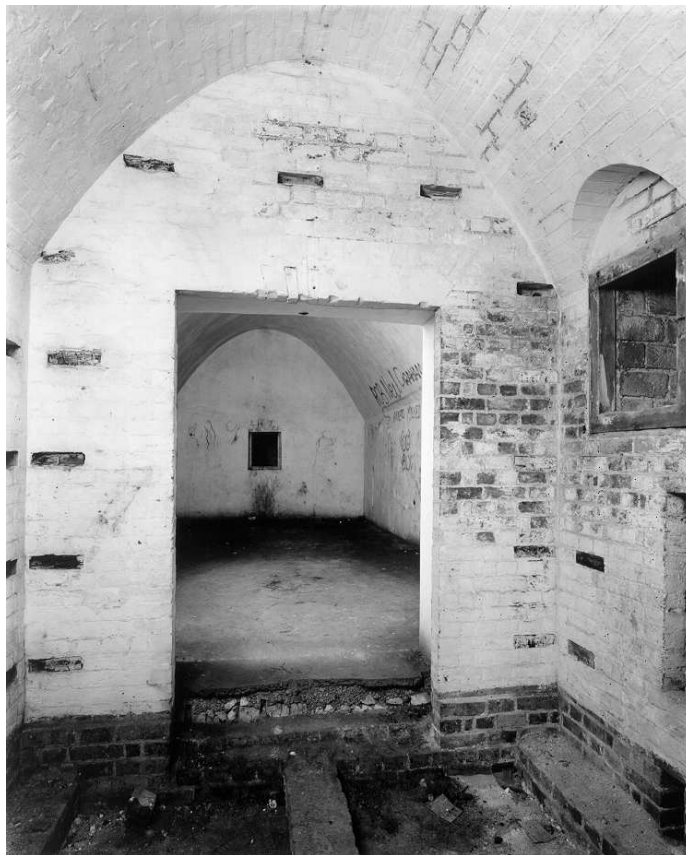


might have resembled a single casemate of the Soldiers' Quarters with gables rising above the vault and a pitched slate roof. The construction of magazine buildings to this plan with thick walls, vaults and pitched slate roofs was a standard practice of the Board of Ordnance at this time. A plan in the drawings file for the Royal Ordnance Depot at Weedon Bec, Northants (built 1804-08), at the Library of the School of Military Engineering at Chatham appears to be a standard design supplied for magazine construction at this time (RE Library, Chatham: W143-0119). Extant magazines at Weedon Bec and a demolished example at the Royal Ordnance Depot, Great Yarmouth, Norfolk both resemble it. The Weedon Bec examples are, however, of vastly different proportions (Williams & Menuge 1999).

Various details on what were the exterior walls of the magazine appear to support this theory. The door and window heads are of a distinctive triangular form, the Portland stone used for the surround of the single window in the rear wall, another feature in common with the examples at Weedon Bec, and the lintels and sills of the ventilation slits - two in each side wall - all suggest that they were meant to be seen.



**Figure 45**  
*The Main Magazine mound and entrance, from the east (NMR: BB99/15934)*



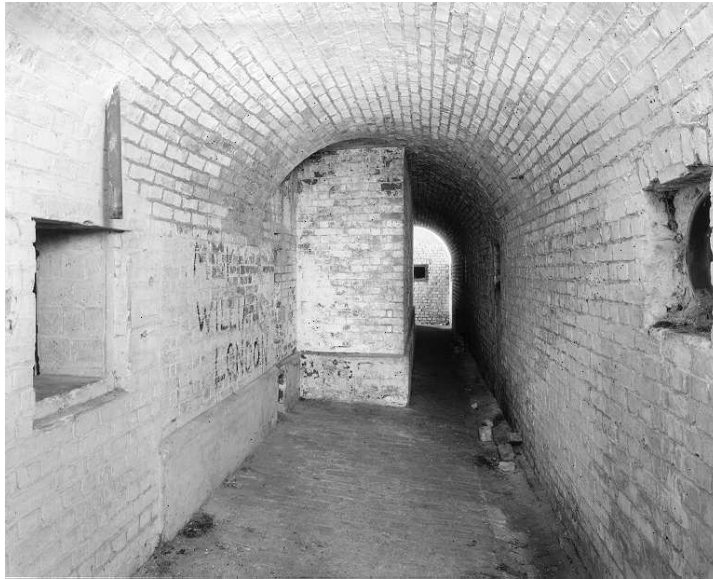
**Figure 46**  
*Interior of the Main Magazine, viewed through the shifting lobby (NMR: BB99/15939)*

The ventilator slits in the external walls lead to a single channel which bifurcates in the wall thickness, forming a baffle, and then rejoins into a single slit in the internal wall. This form of ventilator appears to be common in Board of Ordnance magazine design in the Napoleonic period (Williams & Menuge 1999). The openings to the ventilator slits are set back in the wall, leaving a half-brick deep rebate for a shutter. Some of the slits retain copper hinges and catches for these shutters. Shutters were provided to control the flow of air through the magazine or to

stop rain entering, problems that might occur only if the exterior of the magazine were exposed to the weather.

The shifting lobby exterior doorway appears to have been reached by a single step and to have had a stout timber frame with copper fittings for a pair of inward-opening doors. The doorway between the lobby and the magazine appears to have been of the same design. The inward opening doors are another feature associated with magazines, causing less obstruction to people working in the magazine moving barrels or issuing powder.

The lobby had suspended timber floors resting on dwarf walls, as at Weedon Bec, the void under the timber floor ventilated by slits in the side walls. The magazine has a solid concrete floor which may be a later addition.



**Figure 47**  
*The magazine passage, with a lamp recess to left and a ceramic ventilation pipe to right (NMR: BB99/15938)*

The 1860 survey, made prior to the remodelling, appears to show that the magazine was enclosed by a perimeter wall, another standard feature of Board of Ordnance magazine design in the Napoleonic period, partially intended to absorb any blast not contained by the vaulting and thick walls of the magazine (Fig 6).

The remodelling of the 1860s was to improve the protection given to the magazine in line with current thinking. In this period it became commonplace to protect gun rooms and magazines beneath a thick earth and sand bomb-proofing layer. Here, it probably resulted in the removal of the roof and the perimeter wall of the magazine, while the low height of the new surrounding passage suggests that the original exterior walls were reduced to the springing height of the vault, allowing the bomb-proofing layer to be compacted over the top of the magazine vault in accordance with the current practice. The cut-down magazine walls were also used as springing for the semicircular vault of the new passageway (Fig 47) while the original perimeter wall was not: the difference in mortar colour and consistency - hard and dark grey in the magazine, soft and sandy in the passageways - shows that these walls are not of the same construction phase and suggests that the perimeter wall was demolished and replaced. Moreover, the current passage wall appears to be closer to the magazine than the perimeter wall depicted in 1860.

The principal reason for the construction of the passageways would have been to maintain the circulation of air around the magazine once it had been buried. Air flowed in through earthenware pipes of a large diameter (0.30m) which were incorporated into the passage walls at shoulder height; four pipes in each side wall and three in the rear wall. The brick passage floor slopes gently to a drain along the outer wall.





The 1882 plan shows a single doorway leading from the gallery to the magazine (NMR: WD/2411A). This doorway is opposite the former exterior doorway of the shifting lobby, maintaining direct access to the magazine from outside, and closers in the jambs show that it was part of the 1860s remodelling. The doorway incorporates several features that suggest it was also used as an issue hatch: tie-back recesses are provided in each jamb so that the doors to the passage could be opened inwards and secured out of the way – a refinement on the doors of the original building. Also, in the sections of wall between the recesses and the passage, corners slots are placed at chest height, suggesting the position of a bar across the doorway or the support for a counter. This may be evidence of the strict system for the issue of ammunition from magazines which was always passed over a physical barrier from a magazine worker to the recipient who never entered the magazine. If this was the case then the passage also acted as an extension of the shifting lobby.

A second doorway, closer to the main entrance, also leads from the gallery to the magazine, providing separate access to a passage on the eastern side for the maintenance of three lamp recesses: one in the section of wall between the gallery and the front wall of the shifting lobby, a second inserted into a ventilator position in the eastern wall of the shifting lobby and a third in the original window position in the rear wall. All of these recesses are of roughly the same design and size with soldier-course heads, rebates for glass panes at each end and a steel vent pipe inserted through the wall from the passage side to the top of the recess. A wall built between the rear wall of the magazine and the passage wall, completely separates the eastern and western passages. This separates the eastern (lamp) passage from the western (shifting) passage, and would seem to be implied by the provision of a separate doorway.



**Figure 48**  
*Second World War  
observation post on  
top of the Main  
Magazine (NMR:  
BB99/15943)*

#### **Observation post (OP) (Fig 9)**

An OP with integral shelter, of Second World War date, is set into the top of the magazine mound (Fig 48). Its position is indicated on a wartime plan when it was an artillery observation post (PRO: WO/192/45). The square observation pit is approached along a brick-lined passage, 0.65m wide, down a flight of five steps; it comprises a brick



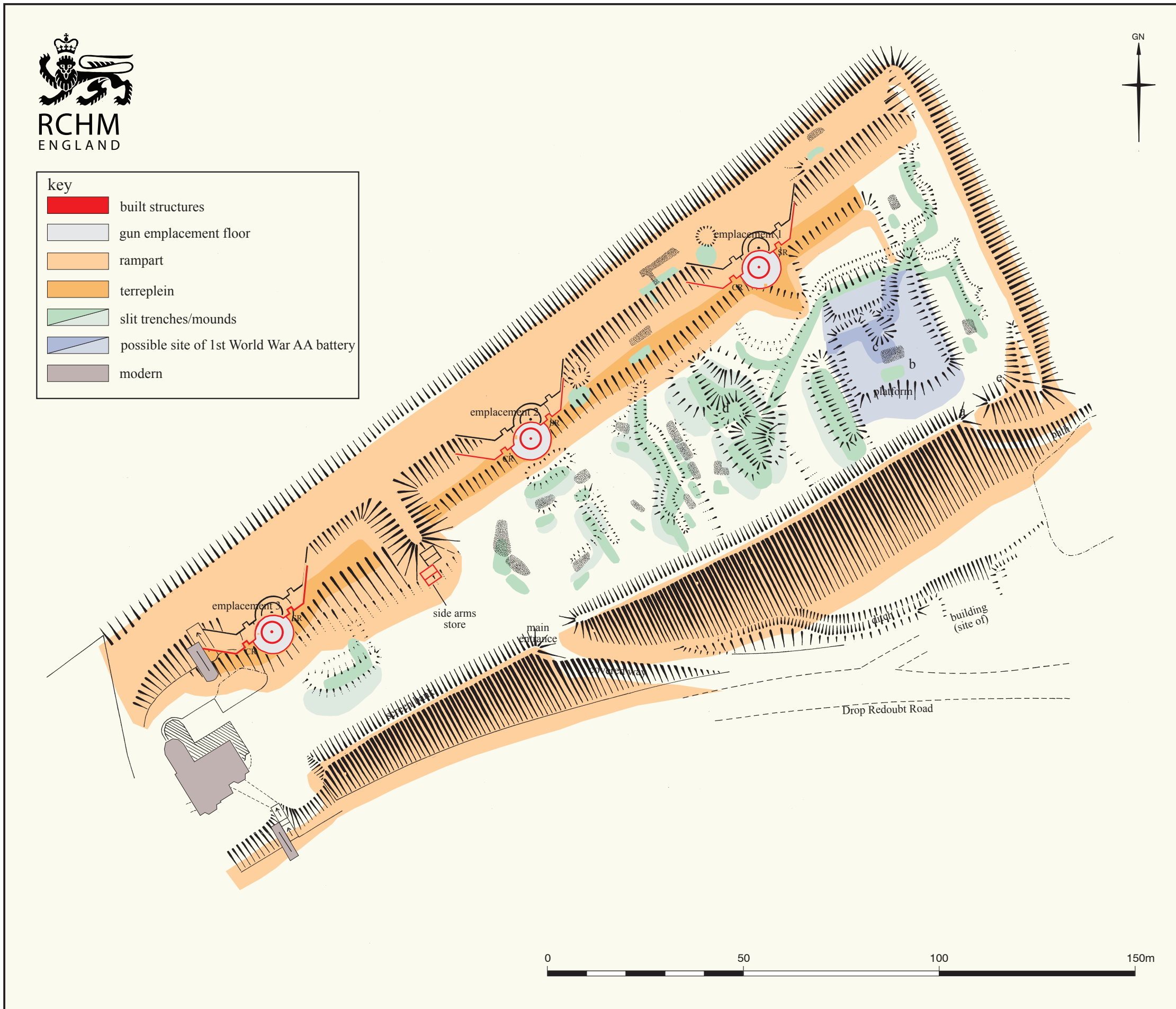
chamber 2.45m square by 1.5m deep with a flat concrete floor. In the centre is a concrete pedestal, 0.3m in diameter by 1.5m high, onto which an optical instrument was mounted (although it resembles a mounting for a light AA gun). Attached to the eastern side of the pit, reached down three steps, is a brick shelter, 2.43m by 1.24m, with a sloping concrete roof and a flat concrete floor. A hole in the roof in one corner was possibly from a stove, and there are remains of a brick parapet wall along the front of the roof.

Also on the magazine mound, slightly north of the OP, are the brick foundations of another small structure. It measures 2.19m by 1.30m internally, sunk at least 0.4m into the mound, with a small recess on the north side which measures 0.75m by 0.37m. Its purpose is unknown but may be part of an AA gun position known to have been in the Drop Redoubt during the First World War.

#### **Slit trenches and weapons pits (Fig 9)**

There are slit trenches and weapons pits cut into the rampart of the redoubt at various locations. These may be of either First or Second World War date, since some of them look quite old on aerial photographs taken during the late 1940s. They are sited to command a wide expanse of ground around the redoubt, including the ditch. In several places the parapet wall and embrasures are damaged to enable access to them. There are two forms, the first of which are linear trenches, either straight or dog-legged, averaging 1.5m in width and up to 0.8m deep. Some of these are quite large, like those above nos 2 and 3 *caponiers*. The second group take the form of subcircular pits, the largest 3.5m across, of similar depth to the trenches. It is possible that the latter were machine gun positions, dating from the late 19<sup>th</sup> century onwards.

Outside the breached parapet at the south-eastern salient angle, the rampart slope has an irregular patch of concrete, possibly from a Second World War position.



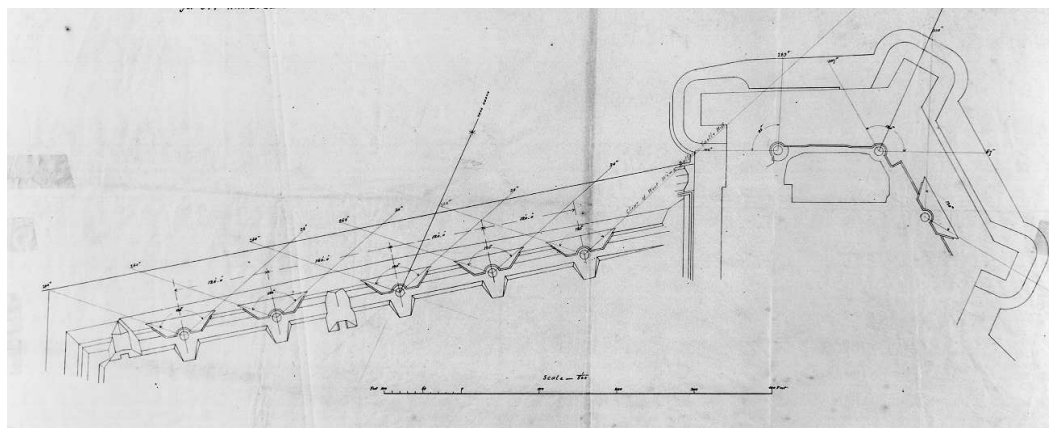
**Fig 49**  
 RCHME survey and interpretation plan of the battery on the North Lines (reduced from original at 1:500 scale)



#### 4. DESCRIPTION AND INTERPRETATION: THE BATTERY ON THE NORTH LINES

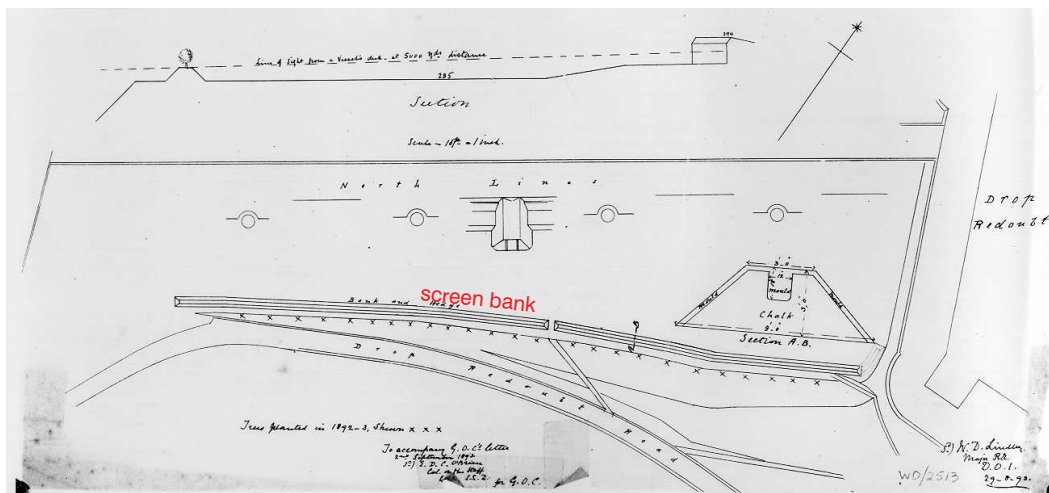
(Fig 49)

Plans for a battery west of the Drop Redoubt were being drawn up in 1892. A design of June 1893 depicts positions for five 64-pdr RML guns but a revision plan made in August of that year shows only four: this was the design adopted (Figs 50-1). It was not a battery in its own right but rather, formed part of the Drop Redoubt defences, occupying the ridge between the Drop Redoubt and the North Entrance and commanding the valley to the north. These guns were short-lived and were removed in 1903 (PRO: WO/33/254).



**Figure 50**  
Proposal plan for the installation of a new battery of 64-pdr RML guns at the Drop Redoubt, dated 1893 (NMR: WD/2512)

The ridge west of the Drop Redoubt is flattened into a broad top, along the north side of which four gun emplacements stood on a *terreplein* behind a **rampart**: three emplacements survive along with a **side arms store** towards the centre; a fourth emplacement and expense



**Figure 51**  
Plan of the battery on the North Lines, dated 1893, showing proposed screen bank. Text in red is added by the authors (NMR: WD/2513)

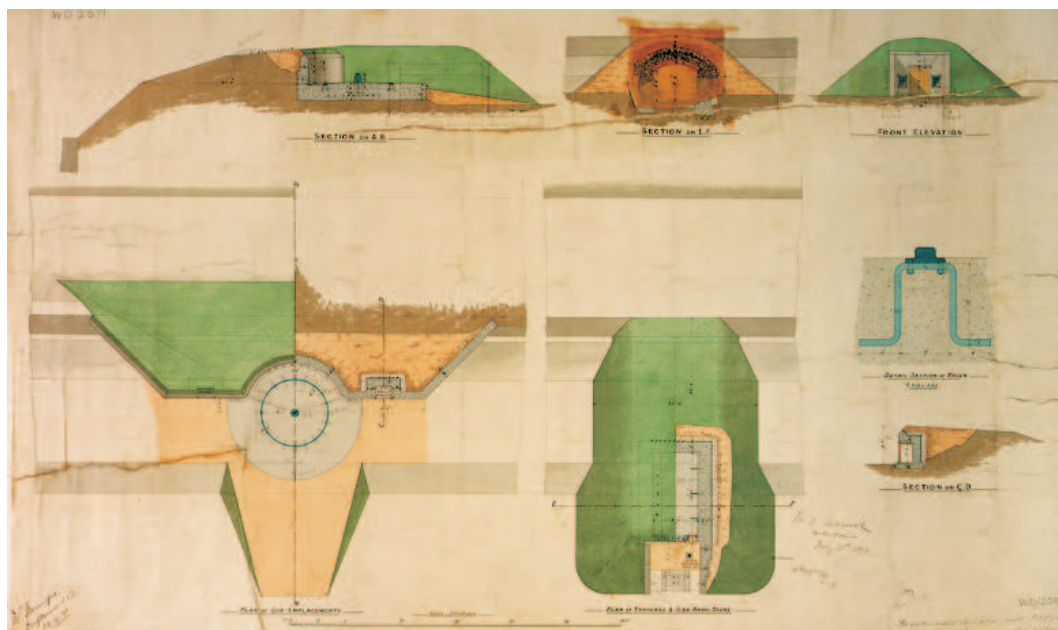


magazine at the western end were destroyed during construction of the modern course of the North Military Road. The rear of the battery was protected by a **screen bank** along the southern side of the ridge, planted with a hedge and trees, through which a covered way provided access.

Much of the battery is beneath heavy tree cover and undergrowth which has colonised since the end of the Second World War. However, one emplacement has been incorporated into a residential garden, while the side arms store is used as a tool shed.

### **The terreplein** (Fig 49)

The emplacements are set into a rampart along the southern side of the North Lines, with the *terreplein* forming a 10.0m wide terrace behind the rampart. The emplacements are for guns mounted *en barbette* and traversing on a 'C' type pivot: they are identical and of a single phase: there are no signs of any alterations to accommodate new weapons. No **1** is the best preserved, while nos **2** and **3** have been damaged by tree roots and vegetation growth. Each emplacement is built in concrete formed into a high *barbette*, incorporating two ready-use ammunition lockers, one on each side of the gun position; that to the east for shells and that to the west for cartridges. The concrete gun floor is circular and recessed slightly into the *barbette*, with a shallow drainage gully around the front and three others radiating from the centre. A circular steel racer, 8cm wide and projecting 4cm above the floor, enabled the



**Figure 52**  
*Proposal plans, elevations and sections of a gun emplacement and side arms store for North Lines Battery, dated 1892 (NMR: WD/2511)*



heavy RML guns to traverse on a central steel pivot. The gun floors were originally ramped down to the south and part of the ramp for no 3 gun survives; the others have been cut away.

The **side arms store**, located centrally to the original four emplacements, survives in good condition, much as shown on the 1892 plan (Fig 52). It is set slightly below ground level into a large earth mound, 34.0m long, 22.0m wide and 2.7m high, set across the *terreplein* at right angles to the rampart. The only visible elevation is that to the south: it is in concrete, with a central entrance flanked by windows. The door has a wooden frame for an outward-opening door, approached down a flight of four steps. On each side of the door is a small opening with a wooden frame for an inward-opening four-light window, originally glazed but replaced by two vertical steel bars (those of the eastern window are missing). Inside, the single chamber has a brick barrel vault above concrete walls, with no form of ventilation. It is whitewashed and has no obvious signs of shelving.

Behind the *terreplein* the ridge is flattened into a broad platform, broadening towards its eastern end. The edge of the platform is demarcated by a sharply defined earth **screen bank**, 1.9m high, designed to conceal the battery from the south. The bank was surmounted by a hedge and along its southern side there was formerly a narrow berm and a screen of trees (Fig 51). The berm is no longer extant and the southern face of the bank gives straight onto the steeply and artificially scarped fall of the ridge itself. The bank has two breaks in its length. The western break, some 5.5m wide, is roughly central to the original battery and was its principal **entrance** on the 1893 plan; there are remains of a metal fence on its fringes. From this entrance, a **covered way** leads down the scarp to Drop Redoubt Road, in the form of a terrace 6.0m wide: this would have allowed access for heavy transport. A **ditch** branches eastward from it, following a gentler course along the hillside, the line of which is shown on the 1893 plan extending towards the entrance of the Drop Redoubt. Let into and disturbing its southern side at is a rectangular **building** platform, some 23.0m long by 8.5m wide. A building stood here in 1941, probably a Second World War control point for entry to the Drop Redoubt along the track branching off from Drop Redoubt Road (NMR: HLA/373/931-3). The ditch itself is probably an original feature for which there are two possibilities: first that it was a path connecting the Drop Redoubt with the battery in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries; second that it carried an unclimbable fence preventing access to a potential weak point between the battery and the ditch of the redoubt.

The second break in the screen bank, **a**, only 1.2m wide, is near the south-eastern corner of the battery. It is not shown on the 1893 plan but a **path** led up onto the berm towards its



position at that time. The break was made later and may be concerned with access to trenches and possible AA battery site at the eastern end of the battery (see below). The path leads from it towards the entrance of the Drop Redoubt.

### **Trench earthworks** (Fig 49)

For much of the 19<sup>th</sup> century, the broad platform behind the *terreplein* of the North Lines was probably open ground. However, it contains a complex of **trenches**, many of which are probably associated with First and Second World War activity on the site of the battery. Many are small **slit trenches**, rectilinear pits, measuring on average 8.0m by 4.0m by 0.6m deep, sometimes with a small upcast bank. Three more are cut into the rampart.

However, there are several other earthworks which appear to form part of a larger system of trenches focused particularly on the broader eastern end of the ridge. They look like a series of entrenched positions, linked by trench communications and focussed on a large platform, **b**, at the eastern end. This platform incorporates a trench access with a rectangular hollow, **c**, off one side - possibly the site of a command post or temporary magazine- and it is possible that the whole represents the site of the documented First World War anti-aircraft gun battery. East of it are a series of earthworks which could be defended one at a time against an attacker: particularly striking is a substantial symmetrical trench, **d**, up to 10.0m wide by 1.4m deep, incorporating a square traverse against flanking fire: there are upcast banks on both sides of the trench, up to 0.7m high. This feature seems to be an infantry strongpoint or redoubt. Other trenches lie to the east of **d** and west of **c**, and there is also a bank, **e**, at the south-eastern corner of the battery. The latter is probably of similar date to the trenches as it does not appear on the 1893 plan: it serves to protect the nearby entrance and path approaching from Drop Redoubt.

These trenches appear on photographs of December 1941 but appear to be old at that time. It is likely that they are of earlier origin, probably the First World War (NMR: HLA/373/931-3). Their location suggests that they were for training purposes, perhaps for troops in the nearby Grand Shaft Barracks, or more likely the location of the AA battery.



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## 5. SURVEY AND RESEARCH METHODS

The archaeological survey was carried out by Moraig Brown, Paul Pattison, Duncan Garrow and Anwen Cooper of the RCHME. Control and some hard detail was supplied using a Wild TC1610 Electronic Theodolite with integral EDM. Data was captured on a Wild GRM 10 Rec Module and plotted via computer using Key Terra Firma and AutoCad Map 2 software on a Designjet 750C plotter. Archaeological detail was supplied at 1:250 scale using conventional graphical methods.

The architectural survey was carried out by Andrew Williams and Adam Menuge of the RCHME. Control was derived from the archaeological survey, and architectural detail was recorded using conventional graphical techniques. No 3 *caponier* was subject to full EDM survey, and the data was plotted and worked up using MicroStation software.

Site photography was carried out by Steve Cole and Alun Bull of the RCHME.

Archaeological plans are by Moraig Brown; architectural plans are by Andrew Williams and Adam Menuge. Research in the Public Record Office and Dover Museum, was carried out by Paul Pattison, Moraig Brown and Anwen Cooper. The report was written by Moraig Brown, Andrew Williams, Paul Pattison and Adam Menuge and edited by Paul Pattison; it was collated and produced by Moraig Brown using CorelDraw and CorelVentura software.

The site archive (NMR Number TR 34 SW 16) and a copy of this report are in the National Monuments Record, the central archive of the RCHME, at the National Monuments Record Centre, Great Western Village, Kemble Drive, Swindon SN2 2GZ, to where further enquiries should be directed.

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## 6. ACKNOWLEDGEMENTS

The authors wish to thank John Iveson of Dover Museum, staff of the Public Record Office and staff of the Works Department at Dover Castle for their help with this project.





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## 7. BIBLIOGRAPHY AND SOURCES

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## UNPUBLISHED SOURCES

### A) National Monuments Record (NMR), Swindon

#### Aerial photographs

HLA/373/931-3	(11/12/1941)
HLA/373/982-3	(11/12/1941)
106G/UK/1087/3152-3	(20/12/1945)
106G/UK/1303/0280-1	(26/03/1946)
106G/UK/1442/4100-1	(30/04/1946)
106G/UK/1443/4344-5	(30/04/1946)
CPE/UK/1829/3133	(05/11/1946)
541/508/4100-1	(22/04/1950)
3T79/613/F12/3325/118-9	(26/06/1953)
MAL/80066/105	(05/12/1966)
MAL/20079/239-40	(25/06/1979)
MAL/16083/235-6	(01/07/1983)
TR 3141/13	(30/06/1994)
TR 3141/17	(30/06/1994)
TR 3141/18	(30/06/1994)

#### Historic maps and drawings

WD/2306 *Dover Defences North Centre Bastion Guard Room Sketch showing Proposed Hot Air Closet, dated 1861*

WD/2411A *Dover Western Heights, record Plans and Elevations of Magazines and Cartridge Stores, dated February 24th 1882*



- WD/2507 *Dover Defences, Drop Redoubt, Plans, Sections and Elevations of Cook House, Ablution Room, Bath Room and Latrines*, proposal drawings approved 30th September 1861
- WD/2508 *Drop Redoubt, Plans, Sections and Elevations Shewing Proposed Sergeants' Qrs*, proposal drawings approved 19th October 1861
- WD/2509 *Drop Redoubt, Dover, Plan, Sections and Elevation Shewing Proposed Alterations And Additions To Ablution Room*, to accompany Barrack Annual Estimate for 1860-61
- WD/2510 *Dover Defences, Western Heights, Drop Redoubt – Record Plans of Caponieres*, dated January 1866
- WD/2511 *Dover, Drop Redoubt, Details of Gun Emplacements & Side Arms Store – North Lines*, proposal drawing dated 27th September 1892
- WD/2512 *Dover, Western Heights, Drop Redoubt, Plan shewing alternative positions for 64pr RML Guns*, tracing of 12th June 1893
- WD/2513 *Dover, North Lines, Plan Shewing proposed Bank and Hedge, to secure Guns from Sea View*, proposal drawing, dated 29th August 1893
- WD/2514 *Dover Drop Redoubt Plan Shewing Occupation*, on Ordnance Survey sheet surveyed 1858, revised 1871 & 1881, War Department annotation dated 1893
- WD/2516 *Dover Defences, Western Heights, Drop Redoubt Soldiers' Quarters*, copy plan dated 16th February 1867

## **B) The Public Record Office (PRO), Kew**

- MPHH/1/118 *Survey of King's land on Dover Heights shewing the situation of the Works carrying on during the War*, by Lt Hay, dated July 1787
- MPHH/1/248/6 *A Survey of King's Land on Dover Heights shewing the situation of the Works carrying on during the War*, by Lt Hay, July 1787
- MR/1/1345 *Plan of the Works, and Environs, of Dover*, dated 1784
- MR/1/1346 *Sketch Of The Fortifications erected on the Western Heights of Dover, with Sections through the principle points, to accompany Captain Thompson's Report to General Mann*, drawn 30th August 1813 by Alfred Rae



- MR/1/1349 *Plan of the Fortifications and Ground In and About Dover*, surveyed in part and delineated by EB Metcalf, Royal Military Surveyor and Draftsman, 1810
- MFQ/1354/3B *A Survey of the Grounds on, and adjoining, the Western Heights of Dover, Shewing those parts which belong at present to the Ordnance, And those which it is proposed to purchase*, dated June 26th 1804
- WO/33/6a *Interim Report on South-Eastern District Barracks and Hospitals*
- WO/33/254 *Approved Armaments*, dated 1st December 1902
- WO/33/488 *Dover Defence Scheme* revised to February 1910
- WO/33/581 *Barrack and Hospitals Improvement Committee, Interim Report on the Dover Western Heights*, dated 1858
- WO/33/704 *Approved Armaments and Anti-aircraft Guns*, 28th January 1915
- WO/33/746 *Approved Armaments and Anti-aircraft Guns*, 1916
- WO/33/828 *Approved Armaments and Anti-aircraft Guns*, 1917
- WO/55/780 Box of Ordnance Board Papers *Dover District 1820-7*, including a letter from Captain Henry Smart RE to RE Office Dover, 27th June 1823
- WO/55/783 Box of Ordnance Board papers *Dover District 1832-6*, including letters from the Board of Ordnance to officers at Dover, including one of 9th March 1835
- WO/55/785 Box of Ordnance Board papers *Dover District 1846-53*, including a memo from the CRE Dover to the IGF, dated 24th February 1851; an armament return, dated 24th February 1852; and a letter from the CRE Dover to the IGF, dated 3rd February 1853
- WO/55/2461 Ordnance Board volume *Dover 1821*, item no 9 *Statement of Ordnance Barracks at Dover etc*
- WO/55/2562 Ordnance Board volume *Dover 1833*, plan no 8 , *A Statement of the Storehouses, Magazines, Workshops etc* and item no 9 *Statement of Barracks at Dover*, dated 14th May 1830
- WO/55/2751 Ordnance Board volume *Dover Ordnance and Barrack 1841*, plan 2 and *A Statement of the Storehouses, Magazines, Workshops etc in September 23rd 1844*
- WO/55/2775 *Precis of Correspondence relating to the Defences of Dover prior to April 1893*



WO/55/2931 Ordnance Board volume *Dover and District 1851*, plan 2 and item no 9 *Statement of the Barracks at Dover*, dated 5th April 1852

WO/78/1779 *Survey of the Environs of Dover with Works upon the Heights to the NW of the Town*, undated but of the 1780s, signed by T H Page, Engineer

WO/78/2426/10 Untitled tracing at 1:500 scale showing accommodation in the Drop Redoubt, dated 21st May 1897

WO/78/2555/10 *War Department 1:2500 Kent Eastern Division sheet LXVIII.14*, revised 1871, signed 1st March 1877

WO/78/2755 *List of Powder Magazines, Stores etc on Western Heights, Dover*, dated 1877

WO/78/2954 *Dover Defences and Armament* OS 6" map showing positions of artillery and their roles, dated 22nd April 1869

WO/78/5102/2 *Dover Defences* OS 6" map showing gun ranges and armament table, undated, but superceded by 31/12/1909

WO/78/5102/5 *Dover Armament Chart*, based on Ordnance Survey sheet (undated), War Department annotation undated but superceded by 1907

WO/192/45 *Dover Western Heights, Citadel Battery Fort Book*, loose map for 295 Battery Royal Artillery OP no 8, showing positions of observation posts, pillboxes, spigot mortars, Bofors guns and 4.5 Howitzer, undated, but Second World War

### **C) Royal Engineers Library, Chatham**

W143-0119 *Plan of single magazine*, dated 1806 In the archives for Weedon Bec, Northamptonshire, but appears to be a pattern supplied by the Board of Ordnance, dated 1860

McDonald, RH 1983 *Barrack furniture and fitments of the British Army 1830-1870* (Unpublished typescript)

### **D) Dover Museum**

D07905 *Photograph of the exterior of the Soldiers' Casemates*, undated, but 1950/60s



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## 9. PHOTOGRAPHS TAKEN DURING THE SURVEY

- AA99/02023 Exterior. View from the south at St Martin's Battery (B&W)
- AA99/02024 Exterior. View from the north (Colour)
- AA99/02025 Exterior. View from the east in the Keep of Dover Castle, with the Citadel beyond (Colour)
- AA99/02026 Exterior. View from the east on Dover beach (Colour)
- AA99/02027 Exterior. Wall to ditch; detail showing corner brickwork (B&W)
- AA99/02028 Exterior. *Caponier* 3, detail (B&W)
- AA99/02029 Exterior. Brick chimney at foot of the scarp to the east (B&W)
- BB99/15871 Exterior. View of the ditch and the North-east Line from the top of Drop Redoubt (B&W)
- BB99/15872 Exterior. View of *caponier* 4 along the ditch from the top of *caponier* 3 (B&W)
- BB99/15873 Exterior. View from the top of the redoubt, showing Dover Castle in the background (B&W)
- BB99/15874 Exterior. View from the top of the redoubt, showing Dover Castle in the background (B&W)
- BB99/15875 Exterior. View from the top of the redoubt, showing the North-east Line and Dover Harbour in the background (B&W)
- BB99/15876 Exterior. *Caponier* 4; view from the east (B&W)
- BB99/15877 Exterior. *Caponier* 3; view from the south-east (B&W)
- BB99/15878 Exterior. *Caponier* 2, view from the north-east (B&W)
- BB99/15879 Exterior. View showing *caponier* 3 in the foreground and the ditch along to *caponier* 2 (Colour)



- BB99/15880 Exterior. View from the top of *caponier* 4, showing the ditch and *caponier* 3 beyond (B&W)
- BB99/15881 Exterior. View showing *caponier* 3 in the foreground and view along the ditch to *caponier* 4 (B&W)
- BB99/15882 Exterior. View showing *caponier* 3 in the foreground and view along the ditch to *caponier* 4 (Colour)
- BB99/15883 Exterior. View showing *caponier* 3 from the north-west (B&W)
- BB99/15884 Exterior. View along the ditch to *caponier* 4 from the south-east (B&W)
- BB99/15885 Exterior. View along the ditch to *caponier* 4 from the south-east (Colour)
- BB99/15886 Exterior. *Caponier* 1 from the south (B&W)
- BB99/15887 Exterior. *Caponier* 1 in the foreground; view along the ditch to *caponier* 2 from the south (B&W)
- BB99/15888 Exterior. *Caponier* 1 in the foreground; view along the ditch to *caponier* 2 from the south (Colour)
- BB99/15889 Exterior. *Caponier* 4 in the foreground and the ditch beyond, from the east (B&W)
- BB99/15890 Exterior. *Caponier* 4 and sally port; view from the south (B&W)
- BB99/15891 Exterior. Ditch between *caponier* 4 and *caponier* 3, from the east (B&W)
- BB99/15892 Exterior. *Caponier* 1 from the east, showing the doorway inserted into a carronade embrasure (B&W)
- BB99/15893 Exterior. *Caponier* 1 from the south-east; view from the top of the south wall to ditch (B&W)
- BB99/15894 Exterior. *Caponier* 1; detail from the south-east (B&W)
- BB99/15895 Exterior. *Caponier* 3 in the foreground; view along the ditch to *caponier* 2, from the north-east (B&W)
- BB99/15896 Exterior. *Caponier* 2; view from the south-west (B&W)
- BB99/15897 Interior. *Caponier* 1, stepped passage; view looking up (B&W)



- BB99/15898 Interior. View showing a bucket latrine in the gallery leading to *caponier* 4 (B&W)
- BB99/15899 Interior. View showing the doors to casemated gun rooms next to *caponier* 2 (B&W)
- BB99/15900 Interior. View showing a bucket latrine (B&W)
- BB99/15901 Interior. *Caponier* 3; view showing the upper gallery from the south (B&W)
- BB99/15902 Interior. *Caponier* 3; view looking up, showing the vaulting and the upper gallery from the south (B&W)
- BB99/15903 Interior. *Caponier* 3; view looking up, showing the vaulting and the upper gallery from the south (B&W)
- BB99/15904 Interior. *Caponier* 3; view showing the upper gallery (B&W)
- BB99/15905 Interior. *Caponier* 3; view showing the magazine and musketry gallery (B&W)
- BB99/15906 Interior. *Caponier* 3; view showing the stepped passage leading up to the *terreplein*, from north (B&W)
- BB99/15907 Interior. *Caponier* 3; detail of a railing to the stepped passage leading to the *terreplein* (B&W)
- BB99/15908 Exterior. The main entrance and housing for a swing bridge; from the south-west in the ditch (B&W)
- BB99/15909 Exterior. The main entrance from the south, at the top of the ditch (B&W)
- BB99/15910 Exterior. The main entrance from the south-east, showing the sentry box and part of the housing for the swing bridge (B&W)
- BB99/15911 Exterior. View showing the broken entrance to the Guard House and steps leading up to the covered way on the *terreplein*, from the north-east (B&W)
- BB99/15912 Exterior. View showing the Lock-Up and steps leading up to the covered way on the *terreplein*, from the south-east (B&W)
- BB99/15913 Interior. The Lock-Up from the west (B&W)
- BB99/15914 Interior. The Officers' Quarters; detail showing the cover to a ventilator (B&W)





- BB99/15915 Interior. The Cell from the west, showing detail of a delivery hatch (B&W)
- BB99/15916 Interior. The Officers' Quarters fireplace (B&W)
- BB99/15917 Interior. The Officers' Quarters fireplace; detail (B&W)
- BB99/15918 Exterior. The Officers' Quarters and the Side Arms Store above; from the south-west on the *terreplein* (B&W)
- BB99/15919 Exterior. The *terreplein* showing the Side Arms Store, gun emplacements and covered way on the east side; view from the west on top of the Magazine (B&W)
- BB99/15920 Exterior. The *terreplein* showing the Side Arms Store, gun emplacements and covered way on the east side; view from the west on top of the Magazine (B&W)
- BB99/15921 Exterior. The *terreplein* showing the Side Arms Store and an iron railing from the south-west (B&W)
- BB99/15922 Exterior. The *terreplein* showing the Side Arms Store and an iron railing from the south-west (Colour)
- BB99/15923 Exterior. The *terreplein*; view showing 20th-century building (B&W)
- BB99/15924 Exterior. The *terreplein*, east side; view showing the gun emplacements and the Side Arms Store from the north-west (B&W)
- BB99/15925 Exterior. The *terreplein*, east side; view showing the gun emplacements from the south (B&W)
- BB99/15926 Exterior. The *terreplein*, east side; gun emplacement and ready use locker from the east (B&W)
- BB99/15927 Exterior. The *terreplein*, east side; gun emplacement and ready use locker from the north-west (B&W)
- BB99/15928 Exterior. The *terreplein*; view from the east showing the vaulting to the casemated Soldiers' Barracks and gun embrasures (B&W)
- BB99/15929 Exterior. The *terreplein*; casemated Soldiers' Barracks from the south (B&W)
- BB99/15930 Exterior. The *terreplein*; casemated Soldiers' Barracks from the south-west (Colour)



- BB99/15931 Interior. Casemated Soldiers' Barracks, no 4, showing the entrance to the passage leading to *caponier* 3; view from the south (B&W)
- BB99/15932 Exterior. Site of the former Sergeants' Quarters and Ablutions Block, with intact 20th-century shelter; view from the north (B&W)
- BB99/15933 Exterior. Site of the former Sergeants' Quarters and Ablutions Block, with intact 20th-century shelter; view from the north-east (B&W)
- BB99/15934 Exterior. View showing the casemated Soldiers' Barracks and the entrance to the Main Magazine; view from the east (B&W)
- BB99/15935 Interior. The Main Magazine; view showing the entrance to the shifting lobby, from the north-west inside the magazine (B&W)
- BB99/15936 Interior. The Main Magazine; passage from the east (B&W)
- BB99/15937 Interior. The Main Magazine; passage, detail showing a lamp recess with a wooden surround and ventilation pipe (B&W)
- BB99/15938 Interior. The Main Magazine; passage from the south (B&W)
- BB99/15939 Interior. The Main Magazine; view from the south in the shifting lobby (B&W)
- BB99/15940 Interior. The Main Magazine; passage, detail showing a ventilation opening (B&W)
- BB99/15941 Interior. The Main Magazine; passage, detail showing a ventilation opening (B&W)
- BB99/15942 Exterior. View showing the Infantry Step (B&W)
- BB99/15943 Exterior. View showing the Observation Post on top of the Main Magazine (B&W)



NATIONAL  
MONUMENTS  
RECORD

The National Monuments Record contains all the information in this report - and more: original photographs, plans old and new, the results of all English Heritage and RCHME field surveys, indexes of archaeological sites and historical buildings, and complete coverage of England in air photographs.



ENGLISH HERITAGE

The Royal Commission on the Historical Monuments of England (now part of English Heritage) gathers information on England's heritage and provides it through the National Monuments Record

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