

THE WESTERN HEIGHTS DOVER, KENT

ISSN 1478-7008

Report No 5: St Martin's Battery
19th and 20th-century coast artillery battery



SURVEY REPORT



PAUL PATTISON & DUNCAN GARROW

Photography by STEVE COLE & ALUN BULL



ENGLISH HERITAGE

ARCHAEOLOGICAL INVESTIGATION SERIES 26/2001





ENGLISH HERITAGE

**THE WESTERN HEIGHTS,
DOVER, KENT**

REPORT NO 5

ST MARTIN'S BATTERY/WESTERN HEIGHTS BATTERY

19TH-AND 20TH-CENTURY COAST ARTILLERY BATTERIES

ARCHAEOLOGICAL INVESTIGATION REPORT SERIES 26/2001

NMR No: 1317243

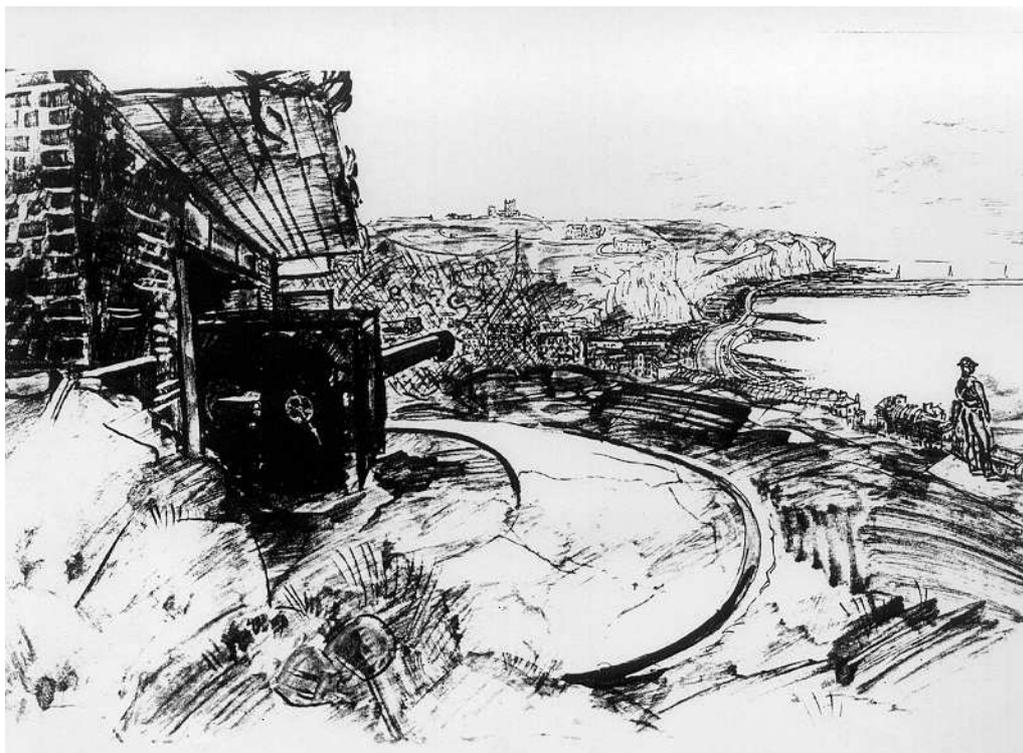
NGR: TR 3145 4077

Report by: Paul Pattison and Duncan Garrow
Survey by: Moraig Brown, Duncan Garrow, Paul Pattison and Anwen Cooper
Drawings by: Moraig Brown, Paul Pattison and Anwen Cooper
Field photography by: Alun Bull and Steve Cole

© Copyright English Heritage 2003

Applications for reproduction should be made to English Heritage NMR Services:
National Monuments Record Centre, Great Western Village, Kemble Drive, Swindon. SN2 2GZ
Tel: 01793 414600 • *Fax:* 01793 414606 • *e-mail:* nmrinfo@english-heritage.org.uk
World Wide Web: www.english-heritage.org.uk

Comments or queries regarding the content of the report should be made to the Cambridge Office:
Brooklands, 24 Brooklands Avenue, Cambridge. CB2 2BU
Tel: 01223 582700 • *Fax:* 01223 582701



*'Battery near Dover' by Anthony Gross:
Western Heights (formerly St Martin's)
Battery during the Second World War,
with a 6-inch gun guarding the harbour*

(By kind permission of the Imperial War Museum, London)



CONTENTS

	List of figures	ii
	Glossary	iii
1.	Introduction	1
2.	Historical background	3
	St Martin's Battery 1874-c1902	3
	Western Heights Battery 1940-7	9
3.	Description and interpretation	12
	St Martin's Battery	12
	Western Heights Battery	17
4.	Survey and research methods	24
5.	Acknowledgements	24
6.	Bibliography and sources	25
7.	List of photographs taken during the survey	27

ABBREVIATIONS USED IN THE TEXT

AA	anti-aircraft
DRF	direction range finder
BL	breech loader
BOP	battery observation post
LMG	light machine gun
MTB	motor torpedo boat
PF	position finding
RML	rifled muzzle loader



LIST OF FIGURES

Frontispiece: 'Battery near Dover' by Anthony Gross

1.	St Martin's Battery: location map	1
2.	Location of St Martin's Battery on the Western Heights	2
3.	Section of St Martin's Battery (not to scale)	4
4.	Record plans and sections of St Martin's Battery, dated 1877	5
5.	St Martin's Battery: plans and sections of the new cartridge store, dated 1877	6
6.	St Martin's Battery: proposal plan, dated 1878, with sketched detail of ?PF/DRF cells on the flanks	8
7.	St Martin's Battery: RCHME survey plan of the battery and surrounding area	11
8.	St Martin's Battery: RCHME plan showing the surviving visible elements of the Victorian battery	13
9.	St Martins Battery: photo of the rear of the battery, showing original porch to cartridge store E and shell store D	14
10.	St Martin's Battery: lower davit socket in eplacement no II	14
11.	St Martin's Battery: photo showing doors to lamp store (at right) and shell store A, with lamp recess between	15
12.	Western Heights Battery: RCHME survey plan of the 'emergency' 6-inch battery of 1940	18
13.	Western Heights Battery: photo of pillbox 1	19
14.	Western Heights Battery: photo of 6-inch gunhouses, rear elevation	20
15.	Western Heights Battery: photo of front elevation of 6-inch gunhouse	21
16.	Western Heights Battery: steel plate and securing bolts for the gun holdfast no I gun	21
17.	Western Heights Battery: stairs to gun detachment shelter in 6-inch gunhouse	23



GLOSSARY

Apron

A sloping concrete surface, forming the front face of a gun emplacement, designed to deflect in-coming shells over the top of the position.

Barbette

A protective breastwork or forward edge of an emplacement, over which the guns fire

Battery observation post

A position from which the area commanded by a battery is observed

Bombproof

A thick covering of earth over a vaulted room (barrack, store or magazine), providing protection against in-coming shellfire

Breech-loader

A gun which is loaded from the rear of the barrel

Cartridge store

A chamber used to store powder that was already made up into cartridges

Covered way

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

Davit

A simple crane fitted with a pulley and used to lift heavy ammunition

Depression range finder

An instrument used to work out the position of a target in order to set the range and bearing for guns to fire upon it

En-barbette

A gun mounted to fire over the forward edge of its emplacement

Glaçis

The external slope of a rampart or battery, carefully and gradually extended in a long slope to ground level, and designed to absorb in-coming shell fire.

High angle fire

The mountings of some guns were modified to fire at extreme angles of elevation (for RMLs, 75-83°). This gave the projectile more penetrative power, and enabled the engagement of, for instance, targets behind parapets on a fortification, or the relatively unprotected decks of ironclad warships

Holdfast

A metal plate fixed to the floor of an emplacement to firmly anchor a gun in position

Lamp recess

An alcove or small tunnel in a wall into which a lamp is placed. In magazines a pane of glass set into a brass frame prevents sparks from entering the chamber



GLOSSARY (Continued)

Lamp room

A chamber where lamps were cleaned, refitted and maintained

Long range mounting

A small number of RMLs were modified and placed on a mounting allowing elevations of up to 35° and a range of 10,000yds (9,144m)

Magazine

A place for the safe 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). See also *cartridge store* and *shell store*

Position finder

An instrument by which a gun can be directed onto a target, even when moving: the two main types are position finder and *depression range finder*

Position finding cell

A room on the flanks of a battery for housing the position finding equipment. There are at least two chambers – one for receiving and one for transmitting

Rifled muzzle-loader

A muzzle-loading gun is armed from the front of the barrel and in this case the barrel has grooves cut into the inside of the barrel which causes the shell to spin, thus ensuring greater speed and accuracy

Shell store

A chamber in which shells are stored

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

Slit trench

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

Trace

The overall plan of a fortification or battery

Traversing carriage

A carriage supporting a gun which enables the gun to be brought to bear on a target by moving through a fixed arc

Unclimbable fence

Usually found in the ditch of a work or defining its perimeter, an 8ft-high metal palisade with sharp spiked top to prevent it from being scaled



1. INTRODUCTION

Between April and July 1998 the Royal Commission on the Historical Monuments of England (RCHME) carried out survey and analysis of the buildings, structures and earthworks of St Martin's Battery, a coast artillery installation built in the late 1870s for the protection of Dover harbour, as part of the extensive Western Heights fortifications.

The survey formed part of the Western Heights Project, which 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 5 in a series of ten to be produced on the Western Heights fortifications.





St Martin's Battery is situated on a bluff near the cliff edge overlooking the Western Docks of Dover harbour: it commands a panoramic view of the port and approaches, from Langdon Cliffs to the north-east round to Shakespeare Cliff on the south-west (Fig 1).

The battery sits on an artificial terrace cut into the hillside just beneath the crest. Its curved trace was constructed between 1874 and 1877, with low visibility in mind, for heavy RML guns in deep concrete emplacements with integral bomb-proofed support buildings. A covered way runs alongside the trace to the rear, beyond which is a secondary cartridge store cut deep into the hillside. The covered way linked the battery with the South Military Road, one of the main service roads on Western Heights (Fig 2).

The battery was disarmed by 1902 and remained, probably in care and maintenance, until 1940. At this time, it was brought back into service and extensively remodelled to take three 6-inch guns for coast defence, remaining operational until late in 1944.

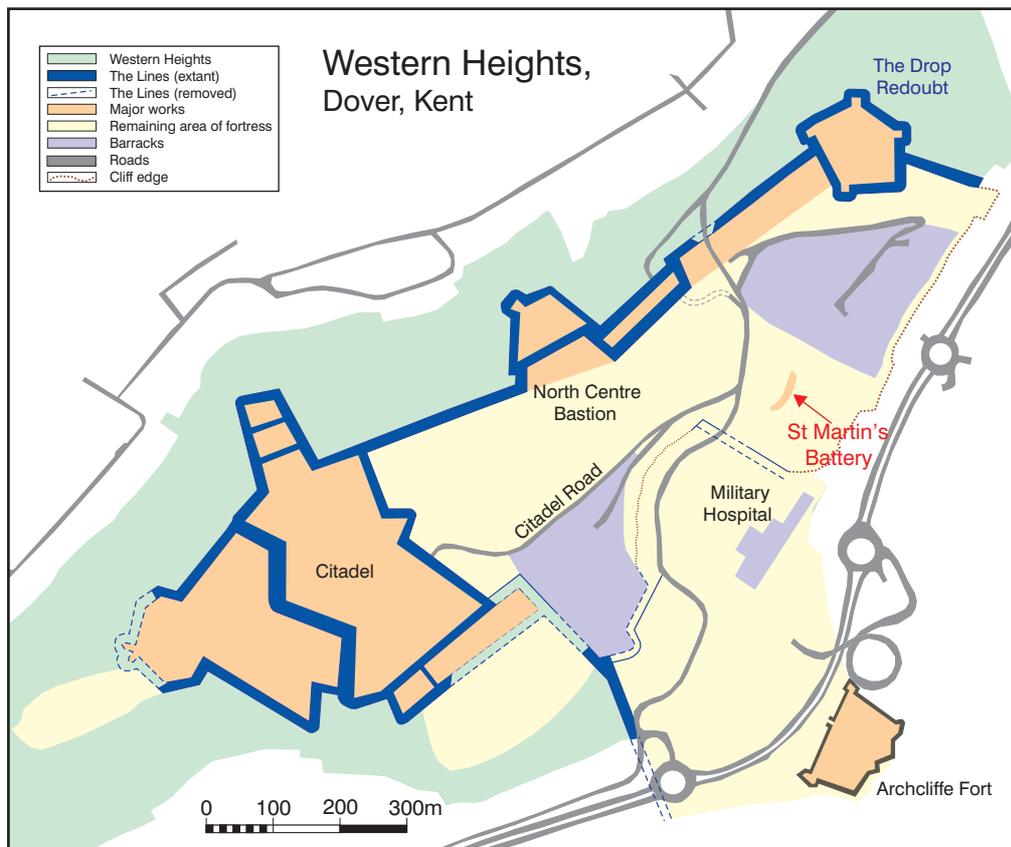


Figure 2
Location of St Martin's Battery on the Western Heights



2. HISTORICAL BACKGROUND

The visible remains are of two distinct phases, between which the battery was disused though probably maintained:

St Martin's Battery 1874-1908: the original construction for RML guns.

Western Heights Battery 1940-47: extensive alterations and additions for an 'emergency' battery of 6-inch BL guns

St Martin's Battery 1874-c1902

St Martin's was one of several new coast artillery batteries installed in Dover between 1871 and 1882. This was a period of uncertainty and experimentation in fortification, in an attempt to match and counter the threats posed by the introduction of armoured warships and powerful rifled ordnance. The fortifications of Dover were vital for the protection of the port, both for naval and mercantile reasons, and in consequence, from the late 1850s, work had progressed on completing and updating works left unfinished at the end of the Napoleonic Wars. These included modernisation at Dover Castle, completion of the Western Heights, updating the harbour defences and the construction of a new fort called Fort Burgoyne. When these works were largely completed, in the context of protecting the developing harbour and docks from seaward bombardment, several new or updated coast artillery batteries were built. In Dover Castle these included Shoulder of Mutton Battery (1871-74) with five traversing guns, Guilford Battery (1878) at the foot of the cliff with six traversing guns, and Hospital Battery (1871-4) with six RMLs. Rifled guns were also installed in Archcliffe Fort and, on the Western Heights, at St Martin's Battery (1874-7). The last major element was the construction of the Admiralty turret on the harbour itself, with its massive 16-inch RMLs between 1872 and 1882 (Coad and Lewis 1982, 181; 192-5).

By 1872, a proposal had been made to build St Martin's Battery, for three 10-inch RMLs, as a replacement for Drop Battery, an older structure further downslope to the south-east. In 1876, Drop Battery retained its armament of three 42-pdr SB cannon and three experimental 7-inch RMLs, while work on St Martin's Battery took place (PRO: WO/33/2775). Work on St Martin's Battery had begun in December 1874 but was not completed until March 1877 (NMR: WD/2359). The completed battery comprised three gun emplacements with ammunition stores between them. Each emplacement was constructed as a deep gun pit, open to the rear, containing a raised circular gun platform reached via steps from the covered way. Iron rails for small trolleys, which carried the heavy shells, ran around each gun pit from the stores. The guns were mounted *en barbette*, on 'C' pivots with circular racers that



enabled a wide arc of traverse, while the front of each emplacement was protected by a sloping concrete apron. The aprons, and a prominent earth *glacis* curving around the entire seaward front of the battery, were designed respectively to deflect incoming shells upwards over the installation or to absorb their impact (Fig 3).

Between and flanking the emplacements were four low buildings, housing three shell stores, three cartridge stores and a lamp room. The northern three had porched entrances to the rear and all the roofs were bomb-proofed with concrete and earth so that they formed carefully scarped earthen mounds which projected above the level of the emplacements (Fig 4). In 1877, each shell and cartridge store had a capacity of 204 shells and 100 cartridges respectively (PRO: WO/78/2755).

There was one more structure in the original construction, situated to the north-east of the main battery, on the other side of the covered way. This was an artillery store, standing alone in an earthwork cutting, in which were kept vital spares for the guns (Fig 3).

A secure perimeter was established around the battery by a close timber fence which ran along the foot of the *glacis*, around the ends of the trace, and on the crest of the hill to the rear.

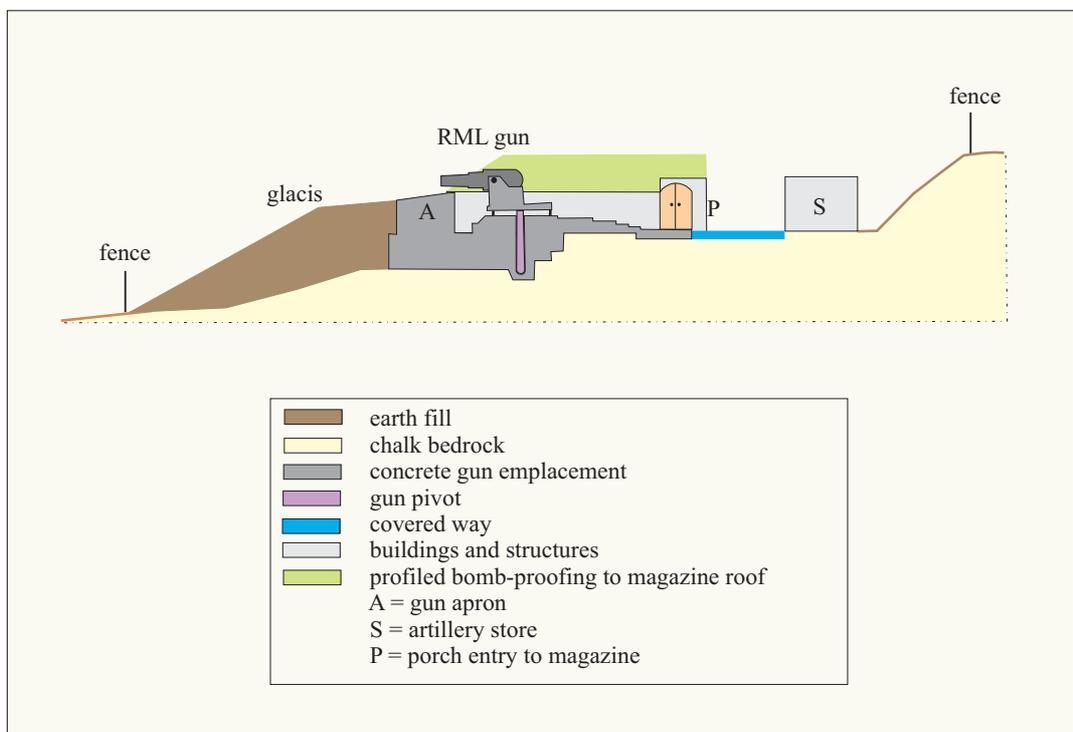




Figure 4
Record plans and sections of St Martin's Battery, dated 1877 (NMR: WD/2359 © English Heritage)



As the battery approached completion, arrangements were made for the safer storage of ammunition. A main magazine for powder was built underground in 1877, located some distance away on the other side of South Military Road, reached through a tunnel from South Entrance. This replaced a proposal of 1876 to re-use one of the casemated gun rooms which protected the bridge and ditch of South Entrance (Brown and Williams 2001; NMR: WD/2358 and 2360).

In May 1886, although there were three 10-inch RMLs mounted in the battery, it was proposed by an RA and RE Works Committee to remove no II gun from the centre emplacement in order to build a new cartridge store. This was intended to provide a larger supply of finished cartridges close to hand, given that the main magazine was some distance away. At the same time, it was suggested that the other two guns be modified for high angle fire. By June, however, it was judged ill advised to reduce the gun complement: all three

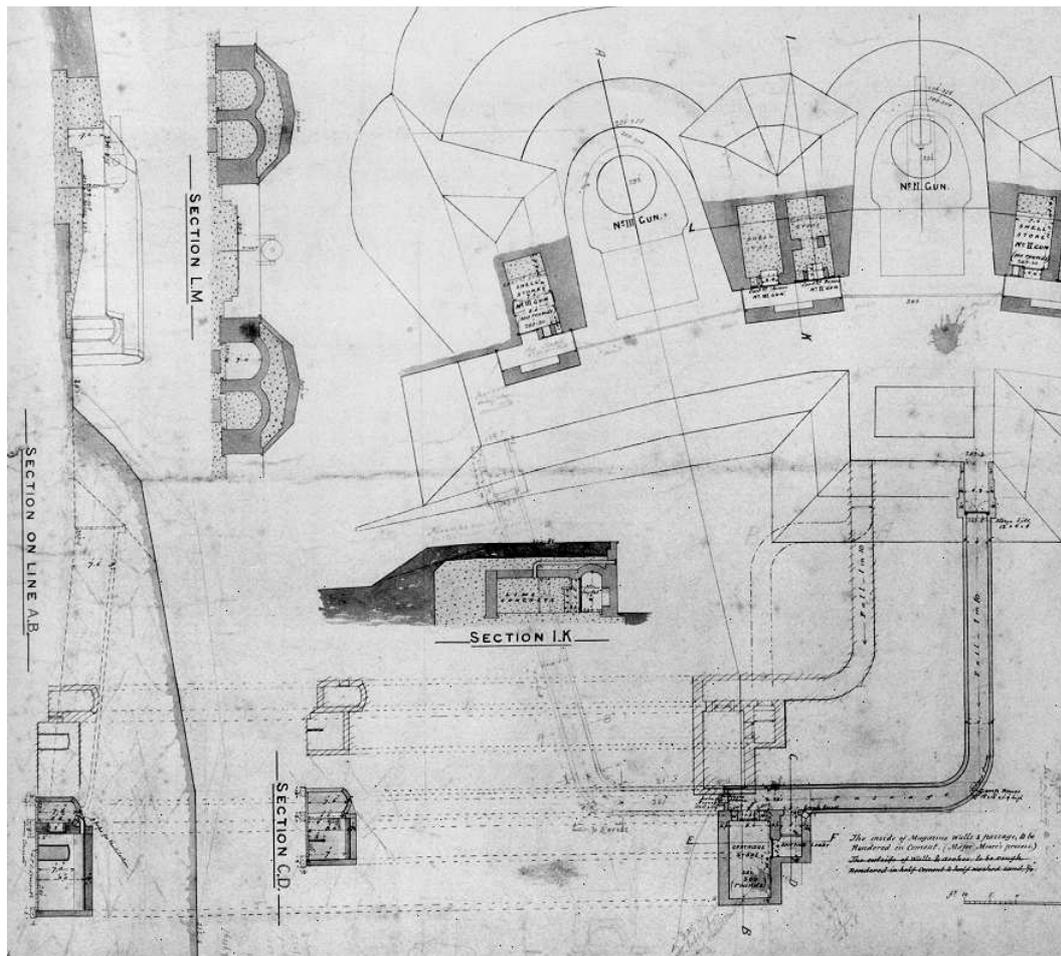


Figure 5
St Martin's Battery:
plan and sections of
the new cartridge
store, dated 1889
(extract from NMR:
WD/2363 © English
Heritage)



guns were to be retained and approval was given for their conversion for high angle fire; the new cartridge store was to be built elsewhere on the site (PRO: WO/33/2775). Subsequent plans, dated 1888-9, show that it was to be placed safely underground in the hill behind the battery, reached along a passage that opened behind the artillery store. The small shell and cartridge stores integral to the battery were to be filled with concrete, leaving small recesses for ready use, so reducing the risk to the guns in the event of bombardment (Fig 5; NMR: WD/2362; 2363). As it happened, the new cartridge store *was* constructed but the old stores in the battery *were not* infilled; whether or not they were used to their full capacities, as given in 1882, is unclear (NMR: WD/2411A).

In 1879 it was proposed to add lightning conductors to the tops of the shell and cartridge stores, and onto the plan for this work were crudely sketched - at an unknown date - two small square rooms on the battery flanks. These were probably PF or DRF cells and most likely date to the 1890s (Fig 6). One of them survives (see below).

In a report by the Joint Naval and Military Defence Committee, dated April 1892, the armament table shows that, although the battery still had three 10-inch RMLs, the conversion for high angle fire had not taken place. Instead, long-range mountings had been approved for the guns. In April 1893, it was recorded that the conversion was to take place in 1893-4 (the parallel conversion of the 10-inch RMLs at Archcliffe Fort was already '*in hand*') (PRO: WO/33/2775).

By 1900, the RMLs of St Martin's Battery were effectively obsolete and they do not appear in the official armament tables for 1902. Whether or not they had been removed is uncertain. Their coast defence role had been usurped by more modern BL guns in three new batteries nearby; South Front Battery (6-inch), Langdon Battery (6-inch and 9.2-inch) and Citadel Battery (9.2-inch), which had entered service by 1900 (PRO: WO/33/254; Brown and Pattison 2001).

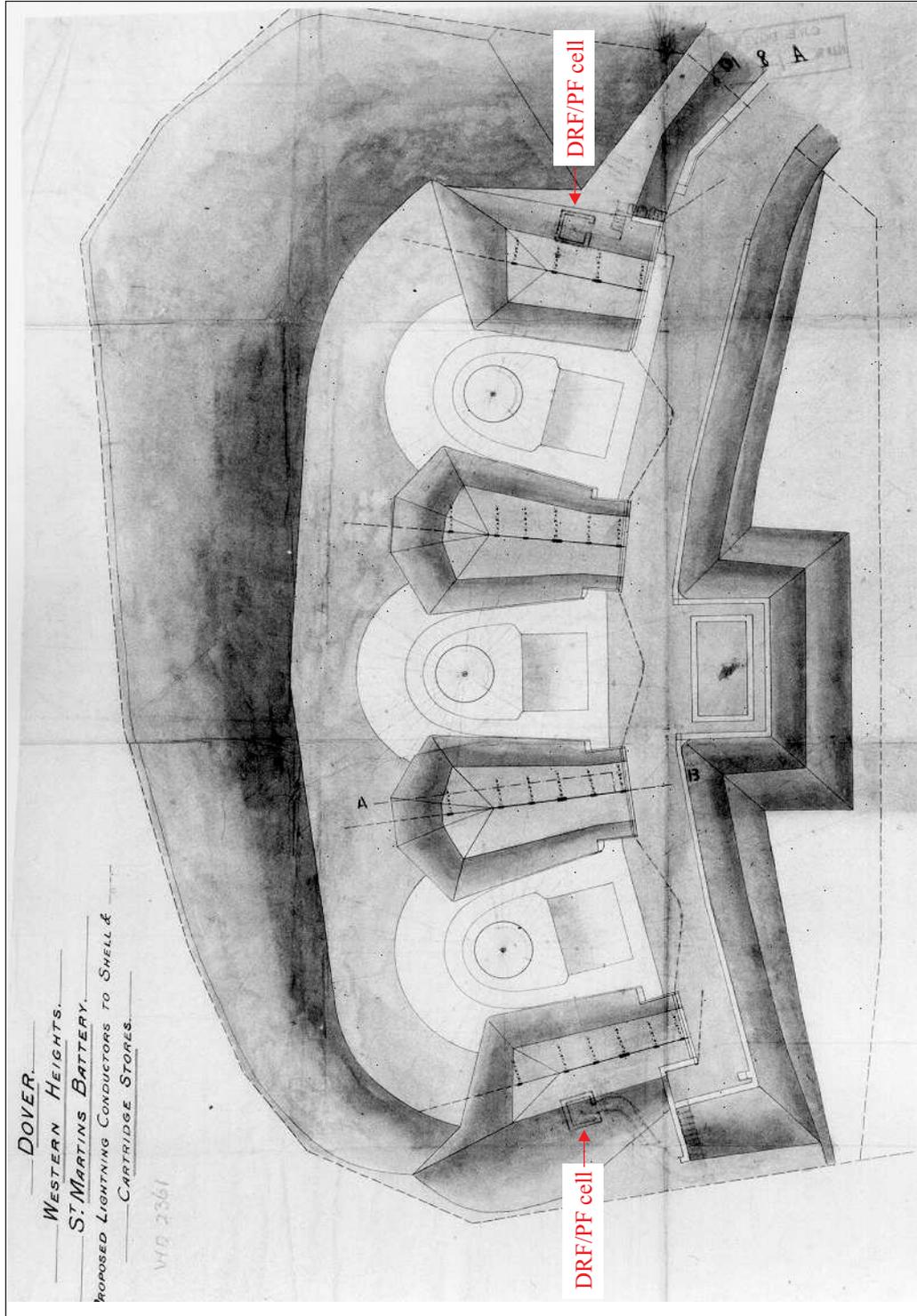


Figure 6
St Martin's Battery: proposal plan, dated 1878, with later sketched detail showing two small square ?PF/DRF cells on the flanks. Text in red is added by the authors (extract of NMR: WD/2361 © English Heritage)



Western Heights Battery 1940-47

Following the capitulation of France in June 1940, the possibility of a German invasion of the British Isles prompted Churchill to approve several emergency defence measures. One of these was the construction of a ring of fixed gun batteries around the coast. These 'emergency' batteries included one on the Western Heights, adapting the old St Martin's Battery. Work began in September 1940 and was completed in May 1941, the battery remaining operational until December 1944. Thereafter it was placed in care and maintenance until the guns were removed in February 1947. Its principal role was the close defence of Dover harbour; to engage vessels attacking or trying to gain unauthorised entry (although the guns were not capable of engaging fast-moving MTBs), but it had secondary roles in resisting landings, air raids and assault from the landward (PRO: WO/192/198).

This battery comprised three 6-inch BL guns, installed in new covered gunhouses which were built in the old open emplacements. At the front the old gun pits were filled with concrete to *barbette* level as a base for the new guns, which were protected by the brick side walls and reinforced concrete roofs of the gunhouses; broad openings at the front enabled a wide arc of traverse (Fig 15). The roofs were continued to the rear over new two-storeyed structures which filled the back of the old emplacements: their walls were built flush with the old shell and cartridge stores, creating a continuous elevation, with the old porches still projecting. The upper storeys formed gun detachment shelters and the lower floors were for ammunition storage, small arms, and other stores. The whole battery was covered with a thick layer of earth for protection against bombardment and strafing. An interesting feature are the curvilinear and undulating brick façades built on top of and flanking the gunhouses, designed to hide the hard edges of the battery when viewed from afar. Finally, a defended perimeter was established around the battery which included wire entanglements, slit trenches and two pillboxes, one on the north-east flank and one on the hill to the west.

The initial armament of the battery was three 6-inch Mk VII guns, but no II gun, the oldest of the three, was quickly removed: the other two can be seen on air photographs taken in 1945 (NMR: 106G/UK/610/IV/6360-61). These were old guns, manufactured in 1899, 1902 and 1903 respectively, brought back hurriedly into service from naval stores. Each gun was provided with a shield and all three operated in conjunction with two fighting lights (frontispiece). The two pillboxes were combined infantry and light AA posts, and there was an additional light AA post on top of the battery. The full complement of the battery was 143 officers and men (PRO: WO/192/198).



Associated with the emergency battery was a deep shelter constructed in the hillside to the north. This was reached via an extension of the tunnel leading to the 1888-9 cartridge store. Unfortunately, access could not be gained during the present survey.

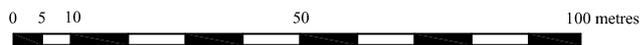
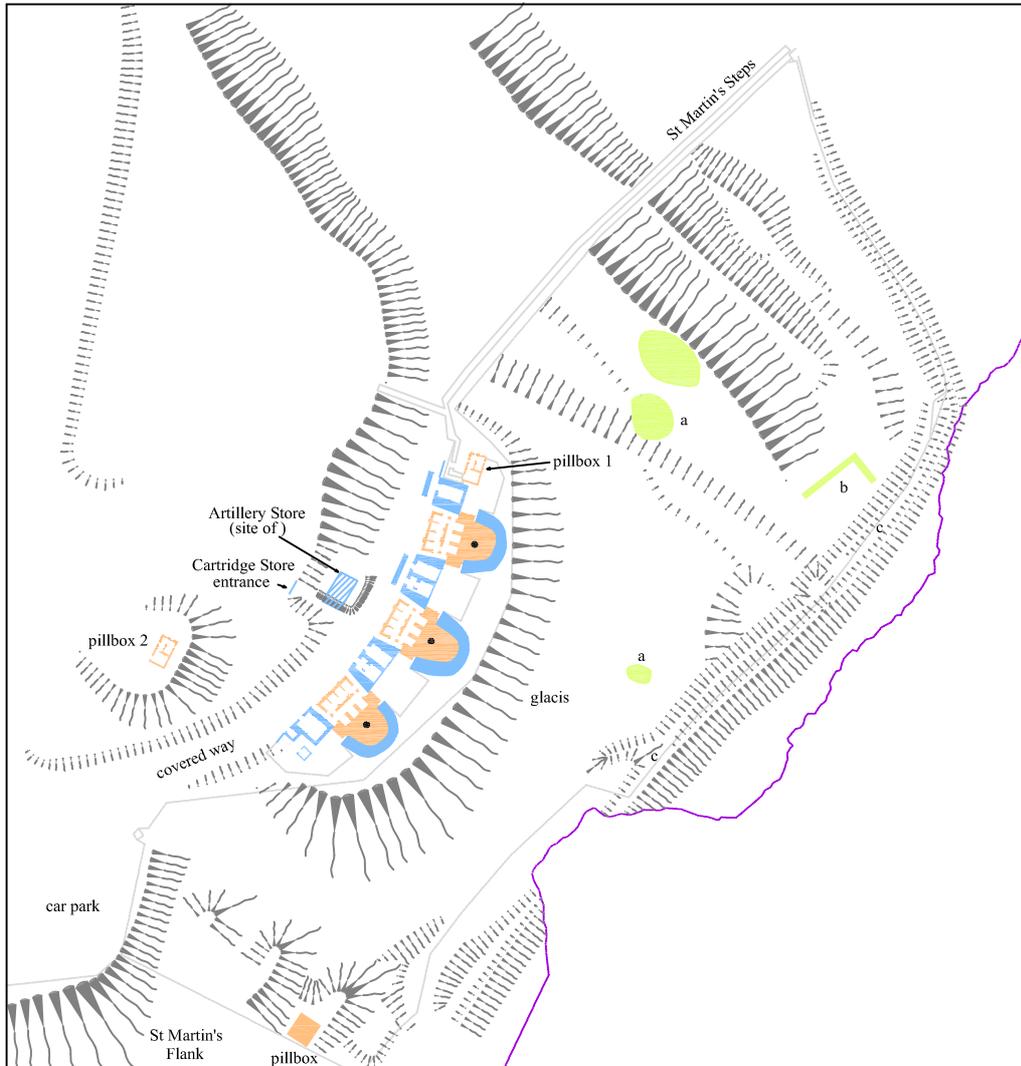
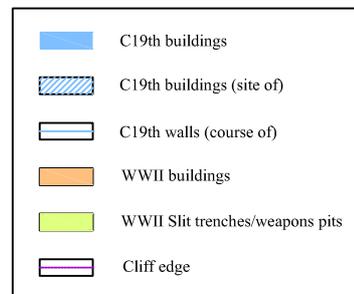


Figure 7
St Martin's Battery:
RCHME survey plan of the
battery and surrounding area





3. DESCRIPTION and INTERPRETATION

For words and letters which appear **in bold** in the following description, see the figure noted at the beginning of that particular section.

A) ST MARTIN'S BATTERY (Fig 8)

The *glacis* of the battery (Fig 7) survives in a relatively unmodified state: only at the south-west end has it been smoothed and levelled by works associated with the present car park. It is a moderate earthen slope, 1.5-3.0m (5-10ft) high, most prominent on the south-west where the natural slope falls away more steeply.

The **emplacements** were identical. The gently-sloping gun aprons, of plain concrete, are essentially complete, although disturbed by Second World War activity. The emplacements are infilled with Second World War concrete at the front, but the original walls become visible to the rear, where they are shared with the adjacent ammunition stores, in yellow stock brick, still standing to full height of 2.15m (7ft) above the original floor. The red brick of the Second World War gunhouses built over them can be clearly discerned, starting two courses above a dentilled course of 19th-century work.

Only at the rear of the three emplacements are parts of the RML gun floors visible, including short lengths of the steel shell trolley rails for no II gun.

The three guns were served by **ammunition stores** contained in four buildings of cavity wall construction, comprising a mass concrete core with a skin of yellow stock brick (Fig 4). The stores are placed between and flanking the emplacements, with entrances to the rear directly off the covered way; for each gun, there was a shell store immediately to the south-west and a cartridge store to the north-east. Three of the buildings have porched entrances and all have canted elevations (Fig 9). They are decoratively finished with a dentilled course below two projecting courses at eaves level, which was carried down and round into the emplacement walls. The porches have opposing doorways in the side walls with brick arches, formerly over strong wooden double doors, and small rendered plaques over the arches identified each store. The north-west walls of each porch had two ventilator outlets topped by shallow segmental arches of two header courses and probably originally with airbricks, but the latter have been replaced by metal vent pipes of Second World War date (see below). Inside, each porch comprises a semi-circular vaulted passage, with a cupboard recess in the north-west wall and the entrances to the stores opposite. The stores

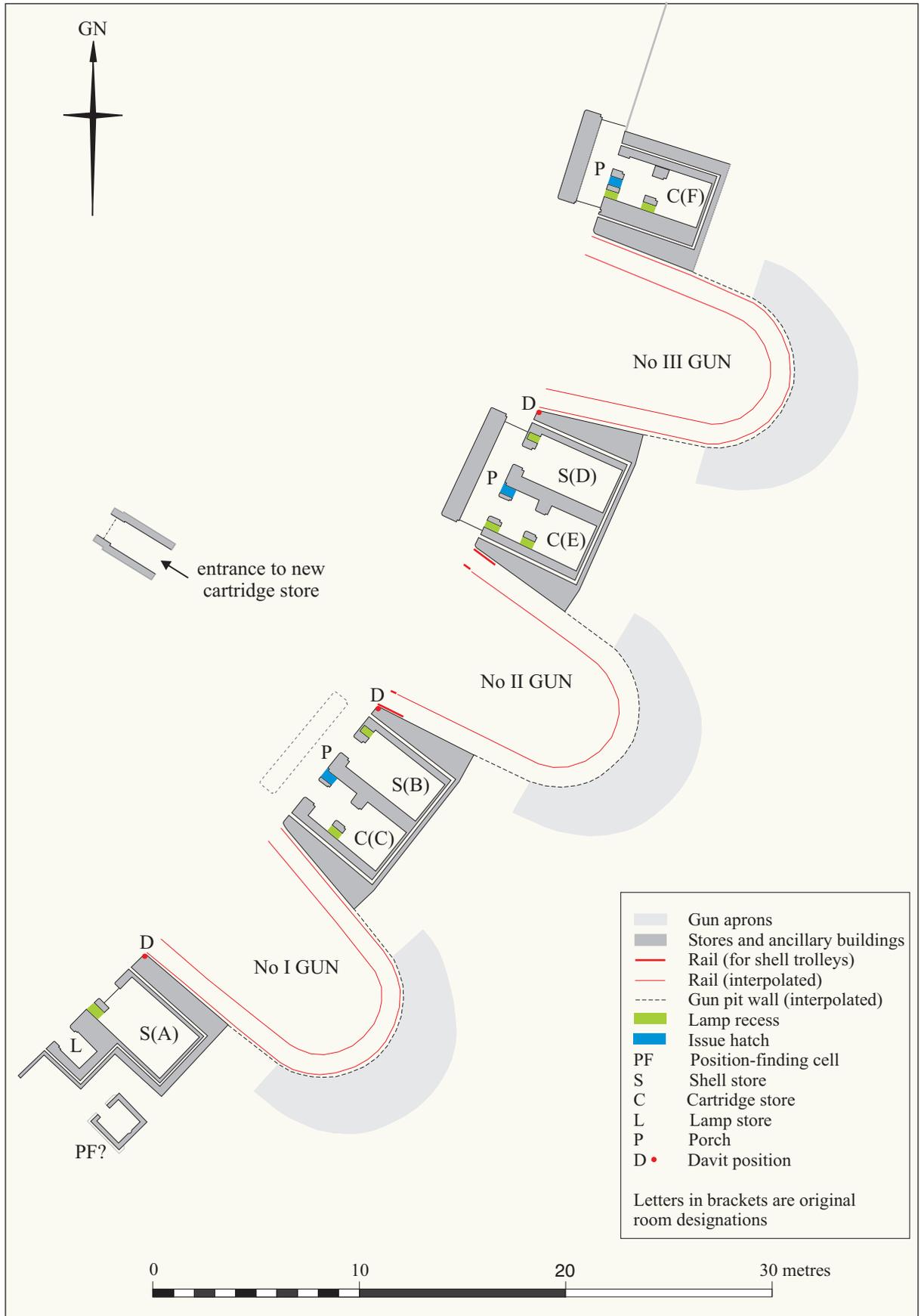


Figure 8
St Martin's Battery:
 RCHME
 plan
 showing the
 surviving
 visible
 elements of
 the
 Victorian
 battery



Figure 9
St Martins Battery:
rear of the battery,
showing original
porch to cartridge
store E and shell store
D (extract from NMR:
AA 99 09714 ©
Crown Copyright
1998)

entrances are of a uniform size (2.12m (7ft) high and 1.01m (3ft 4in) wide) and all have Portland stone lintels and corners neatly finished in rounded brickwork. The double doors were recessed and opened internally but only the frames, or scars of them, survive. Adjacent to the doors in all stores are lamp recesses running through the wall thickness, each around 0.55m (1ft 8½in) high, 0.40m (1ft 4in) wide and 0.66m (2ft 2in) deep. The cartridge stores also have issue hatches, which, like the lamp recesses, have Portland stone sills and lintels.



Figure 10
St Martin's Battery:
lower davit socket
in emplacement no
II (extract from
NMR: AA 99 09719
© Crown Copyright
1998)

Set into the curved external corner of each shell store, at the junction with the respective gun emplacement, is a shallow rebate for a small davit. The metal sockets for these davits survive for nos II and III guns, set 0.96m (3ft 2in) and 2.26m (7ft 5in) above the ground (Fig 10). The davits were for lifting the heavy shells from the stores directly onto the trolleys.



Inside, the stores are of cavity-wall construction, in yellow stock brick laid to English bond, with elaborate red airbricks at the ends of the cavities. There is a single ventilation pipe, usually ceramic, in the ceiling of each store. The walls are whitewashed and the floors are of concrete.

Lamp store and **shell store A** (letters are derived from PRO: WO/78/2755 and NMR: WD/2411A) are adjacent rooms without a porch (Fig 11). The lamp store formerly held lamps and associated spares for lighting the whole battery. It is a simple room, low and rectangular, 1.22m (4ft) by 1.35m (4ft 5in), with a flat sandstone ceiling. The entrance is 1.70m (5ft 7in) high and 0.92m (3ft) wide. Scars of shelving can be seen along the back wall. Immediately adjacent, shell store A has a doorway closed by a modern gate but above it is a small square rendered plaque painted in black with the letter “A”. From an external inspection and the original record plans, it appears to be a mirror image of shell store B (see below): it has a semi-circular vault.

Cartridge store C and **shell store B** are adjacent rooms with semi-circular vaulted ceilings and an external porch. Only half of the porch survives, the north-west wall having been removed, leaving the vault hanging; two ceramic ventilation pipes are visible in section at the top of the vault.



Figure 11
St Martin's Battery:
doors to lamp store
(at right) and shell
store A, with lamp
recess between
(NMR: AA 99 09711
© Crown Copyright
1998)



Cartridge store C is subdivided into an inner store and an outer shifting lobby. The entrance to the lobby is badly damaged and repaired on both sides with breeze blocks, although part of the original doorframe survives. Immediately south-west of the door is a recess for the issue hatch, with a brick relieving arch over. The recess, 0.80m (2ft 7½in) high by 0.46m (1ft 6in) wide, is set back 0.10m (4in) with the hatch itself, 0.46m (1ft 6in) square, in the lower half. This arrangement was to accommodate a vertical shutter which could be opened by sliding it upward into the top part of the recess. To the south-west of the hatch is a lamp recess. Internally, the shifting lobby measures only 1.22m (4ft) by 2.30m (7ft 6½in); in the south-west corner is another lamp recess which provided light for the cartridge store itself. The entrance to the cartridge store has rounded corners and chamfered stops at the top, with a brick relieving arch over. Internally, it measures 2.38m (7ft 10in) by 2.32m (7ft 7in) and has a more steeply vaulted ceiling.

Shell store B is a single rectangular room, 4.32m (14ft 2in) by 2.30m (7ft 6½in). The lamp recess is blocked by a single layer of bricks flush with the external wall. Studs in the walls are probably the remains of shelving.

Cartridge store E and **shell store D** are sealed by modern gates but appear, from visual inspection and the original plans, to be identical to cartridge store C and shell store B. The entrance porch is complete at 5.57m (18ft 3in) long and 1.22m (4ft) wide.

Cartridge store F is inaccessible due to modern gates. It appears to be very similar to the other stores, except that the doorway is on the north-east side, with an issue hatch then a lamp recess to the south-west. The porch is shorter at 4.38m (14ft 4in), as it serves only one room, and above the north doorway is a small square rendered patch labelled “G” in black, over an earlier, illegible sign.

The entrance to **new cartridge store** is sealed by a modern gate, although the approach path remains, some 2.7m (8ft 10in) long, lined by ramped brick walls. The proposal plan reveals that a passage from the entrance led north-westward into the hill for about 5.1m (16ft 9in), sloping down at an angle of 1 in 10, before turning a right angle to the north-east, leading for about another 3.8m (12ft 6in) to a blind end (Fig 5). The cartridge store and shifting lobby were situated at the end of the passage on the north-west side. Three lamp recesses in the passage illuminated the store and shifting lobby; there was also an issue hatch between store and passage. The plan also shows a second entrance and passage, faintly sketched, leading from the north-east end of the covered way: it appears not to have been constructed.



Nothing remains of the artillery store above ground, although it remained in 1945 (NMR: 106G/UK/610/IV/6360-61). However, its site is marked by a sub-rectangular platform, roughly 7.3m (23ft 11in) by 7.1m (23ft 3in).

At the western end of the battery, concrete steps lead up to a small, square roofless structure let into the flank, a **PF/DRF cell**. Measuring only 1.53m (5ft) square, it is of red brick laid to English bond, standing to its original height of 1.23m (4ft); the top course is laid on edge. The entrance, 0.65m (2ft 1½ in) wide, leads onto a concrete floor with a small hole in the centre, roughly 0.17m (7in) by 0.19m (7½in). There is a roughly semi-circular recess, 0.30m (1ft) wide and 0.08m (3in) deep, let vertically into the south wall. Either of these could have related to a DRF instrument. Small holes in the lower part of the west wall are possibly for drainage, telephone or power cables.

This structure is not shown on the original record plans of the battery but it is sketched onto a plan of 1879. It was most likely built in the late 1880s or 1890s. Moreover, the plan reveals that it was one of a pair, the partner situated on the north-east flank, a site now occupied by a pillbox (NMR: WD/2359; WD/2361). Both probably functioned initially as PF cells (one for transmitting and one for receiving?). One may later have housed a DRF instrument and, during the Second World War, the surviving one acted as a BOP (PRO: WO/192/198).

B) WESTERN HEIGHTS BATTERY (Fig 12)

The emergency battery comprised three gunhouses established within a defended perimeter defined by a barbed wire entanglement, clearly visible on aerial photographs of 1945 (NMR: 106G/UK/610/IV/6360-61). Associated with it were infantry positions for close defence, their locations marked today by several shallow depressions (Fig 7, **a**) and an infilled slit-trench (Fig 7, **b**) on the slope east of the battery. Beyond the entanglement, near the cliff edge, a former sunken pathway (Fig 7, **c**), between Grand Shaft Barracks and the Military Hospital appears to have been deepened and used as a defensive position.

Camouflage netting formerly stretched from the rear facade of the battery, right across the covered way, and extended all the way back to its junction with the North Military Road (NMR: 106G/UK/610/6360).

More substantial close defence was provided against ground and air attack by two concrete pillboxes of type 23. **Pillbox 1** is built high on the north-east flank of the battery and



Figure 12
 Western Heights Battery:
 RCHME survey plan of
 the 'emergency' 6-inch
 battery of 1940-7



Figure 13
Western Heights
Battery: pillbox 1
(NMR: AA 99
09723 © Crown
Copyright 1998)

approached up concrete steps and along a path from the covered way (Fig 13). The entrance, 0.69m (2ft 3in) wide, is in the north-west wall near the south corner. There are two rooms protected by walls 0.36m (1ft 2in) thick: the south-western room, measuring 2.32m (7ft 6in) by 1.90m (6ft 3in) and 1.65m (5ft 4in) high, is open to the sky and formed a light AA position. The concrete and metal gun pedestal is in the centre and probably supported a Bren gun (PRO: WO/192/198). Two steps lead down through the north-east wall into the second room which is roofed and measures 2.32m (7ft 6in) by 2.36m (7ft 9in), although it is partly divided by a wall, 0.22m (9in) thick, extending 1.40m (4ft 6in) out from the south-west wall. There are four rifle/LMG embrasures, each with external anti-ricochet stepping and internal splays, one in each of the north-west and south-west walls and two in the north-east wall (one of which has a groove cut into the top, presumably for wiring of some kind). Underneath the embrasures are timber battens for folding shelves. **Pillbox 2** is of identical type and is positioned on top of the hill behind the battery, reached up a long flight of concrete steps. It exhibits only minor variation in size and features, principal among which is an embrasure in the west wall of the AA compartment. The walls of the AA compartment and the roof of the whole pillbox are painted black.



The entire upper surface of the battery was protected from bombardment by a thick layer of earth whose surface is now undulating and pitted, with few clear features. However, there is a shallow squarish pit, roughly 3.0m (9ft 10in) across and 0.8m (2ft 8in) deep, in which a low concrete gun pedestal survives, with a small metal housing for a pintle. This is also a light AA mounting, probably for a Bren gun. A sunken path, 1.0m (3ft 3in) wide and 0.7m (2ft 3½in) deep, links the pit with pillbox 1.

The walls of the three **gunhouses** are in red brick built onto and against the older emplacement and ammunition store walls: to both front and rear they can be seen riding over the asphalted sloping faces of the Victorian ammunition store roofs. The rear elevation of each gunhouse is provided with two plasters, a rendered plinth and two small square windows at first floor level; new doorways at ground floor level have large concrete lintels (Fig 14). Several iron rungs inserted into the rear walls of the old ammunition stores resemble ladders, as if enabling access to the roof of the battery, but their true purpose is unknown.



Figure 14
*Western Heights
Battery: 6-inch
gunhouses, rear
elevation (NMR: AA
99 09713 © Crown
Copyright 1998)*



Figure 15
*Western Heights
Battery: front elevation
of 6-inch gunhouse.
Note the undulating
parapet, designed to
break up the outline of
the battery from a
distance (NMR: AA 99
09707 © Crown
Copyright 1998)*

The gunhouse roofs have a slight slope to the rear: they are of reinforced concrete, supported on large concrete and metal axial beams, with further metal beams running cross-axially. There is an overhang at the front, forming a canopy over part of the gun floor (Fig 15).

In each emplacement, the gun floor retains the ring of securing bolts for the gun holdfast and, in no I, the steel baseplate survives. There were 18 bolts forming a ring *c* 1.04m (3ft 5in) in

diameter, but in all three emplacements the rear bolts are missing, possibly removed with the holdfasts themselves. On either side of the holdfast are the stubs of two small circular metal pipes, each 0.08m (*c* 3in) in diameter (Fig 16).



Figure 16
*Western Heights
Battery: steel plate and
securing bolts for the
gun holdfast, no I gun
(NMR: AA 99 09710 ©
Crown Copyright 1998)*

At the edges of the gun floors at the front are single metal sockets, matched above by others of identical size in hinges which are attached to the steel girders supporting



the roof canopy. These appear to be sockets for vertical poles of uncertain function; perhaps they formed the pivots for shutters to close the front of the gunhouses on the flanks of the guns, or supported camouflage netting.

The upper halves of the interior walls defining the gun floor are painted cream/yellow. For no I and III guns, there is a narrow horizontal black band beneath the yellow, which is carried into recesses, of unknown function, in the side walls. The main ready-use ammunition recesses were built into the rear face of the gun floors, on an intermediate level reached from the floors of the Victorian battery by steps up from the rear and by steps down from the new gun floors. Each emplacement has three recesses, 1.03m (3ft 4½in) high, 1.35m (4ft 5in) wide and 1.73m (5ft 8in) deep, with slightly raised, flat concrete floors which stop 0.35m (1ft 2in) short of the openings. The recesses for no III gun have scars from the hinges of heavy metal doors. Some of the other recesses show signs of alteration: those of no I gun have lines of yellow stock brick across the front, flush with the entrance and there is internal rendering in those of no III gun.

The old emplacement aprons were retained but show evidence of minor disturbance: in all three guns there are shallow, narrow radial grooves cut through the *barbette* and along the apron for a short distance.

There are numerous scars from electrical cabling which has been removed from all three gunhouses.

Behind the emplacements each gunhouse comprises a two-storeyed structure, with the gun detachment shelters on the upper floor and storage facilities on the ground floor: each room is trapezium-shaped, being fitted into the splaying walls of the Victorian emplacements. The shelters are approached from the ends of each gun floor by short upward flying stairs with modern metal railings. In each shelter, the wall facing onto the gun floor has a small rendered recess, 0.62m (2ft ½in) high, 0.29m (11½in) wide and 0.27m (10½in) deep. Adjacent to each recess, four protruding bolts are arranged in a rectangle, and there is also scarring from the removal of cable runs. All of these features are probably associated with an electric light which illuminated the gun floor (Fig 17).

All of the entrances to the gun detachment shelters are barred by modern gates. However, each shelter is a single room with a black-painted concrete floor and whitewashed walls.



Figure 17
*Western Heights
Battery: stairs to gun
detachment shelter in
6-inch gunhouse (NMR:
AA 99 09708 © Crown
Copyright 1998)*

The north-west walls each have two small square windows, with wooden casements. A circular hole in the same wall, above a square concrete plinth on the floor, is the site of a stove and flue pipe.

Under the shelters at ground floor level, reached by steps up from the rear of the battery, are storage rooms. Each one has a corridor along the south-west side, leading to doorways in the end walls, while the north-east side is divided by walls into four equal bays. The back wall of each bay is rendered while the floors and ceilings are painted black. Two further doorways, in the south west wall, gave direct access to the ready-use ammunition lockers of the emplacement, a strong indication of what was stored in the bays. Unfortunately, there is no evidence of any fittings, shelving or lighting; only one coat-hook board remains.



4. SURVEY AND RESEARCH METHODS

The archaeological survey was carried out by Moraig Brown, Duncan Garrow, Paul Pattison and Anwen Cooper. Control points and some hard detail were 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 software and a Designjet 750C plotter. Further details of the battery itself were surveyed at 1:100 scale, and its surroundings at 1:1000 scale, using measuring tapes and conventional graphical methods.

All photography is by Steven Cole and Alun Bull: finished drawings are the work of Paul Pattison, Anwen Cooper and Moraig Brown.

This report has been researched and written by Paul Pattison and Duncan Garrow.

The site archive and a copy of this report have been deposited in the archive of English Heritage at the National Monuments Record Centre, Kemble Drive, Swindon SN2 2GZ (NMR Number TR 34SW 500, HOB UID1317243).

© Crown copyright. RCHME

5. ACKNOWLEDGEMENTS

The authors wish to thank the following for their help in this project:

John Iverson and the staff of Dover Museum

Paul Johnson of the Public Record Office.



6. BIBLIOGRAPHY AND SOURCES

PUBLISHED SOURCES

Brown M and Pattison P, 2001 *The Western Heights, Dover, Kent; Report No 8; The Citadel Battery, a late 19th-early 20th-century coast artillery battery*

Brown M and Williams A, 2001 *The Western Heights, Dover, Kent; Report No 6; The Entrances to the Fortress*

Coad, J G and Lewis, P N (1982) 'The later fortifications of Dover' *Post-Medieval Archaeology* **16**, 111-200.

UNPUBLISHED SOURCES:

National Monuments Record Centre, Swindon:

a) Plans

WD/2358 *Dover District, Dover. Plan showing proposed Main Magazine for St Martin's Battery, 1876.*

WD/2359 *Dover Defences, Western Heights. St Martin's Battery record plans and section, 1877.*

WD/2360 *Dover. St Martin's Battery. Record Plan and Sections of Main Magazine, 1877.*

WD/2361 *Dover Western Heights. St Martin's Battery. Proposed Lightning Conductors to Shell and Cartridge Stores, 1878.*

WD/2362 *St Martin's Battery. Sections of Ground in Rear. Site for proposed New Cartridge Store, 1888.*

WD/2363 *Dover. St Martin's Battery. Plan shewing proposed New Cartridge Store and alterations to present Ex(pense) Shell and Cartridge Stores, 1889.*

WD/2411A *Dover Western Heights. Plans and Elevations of Magazines and Cartridge Stores, 1882.*

b) Aerial Photographs

106G/UK/610/ IV/6360-61, 5th August 1945



Public Record Office, Kew

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

WO/78/2775 *Precis of Correspondence relating to the Defences of Dover, prior to April, 1893*

WO/33 /254 *Approved Armaments, 1st December 1902*

WO/192/198: *Western Heights Battery Fort Book 1940-47.*



7. LIST OF PHOTOGRAPHS TAKEN DURING THE SURVEY

AA 99 09704	Front of battery viewed from the south, showing Second World War 6-inch gunhouses
AA 99 09705	Second World War 6-inch gunhouse, showing gun holdfast and concrete apron, from the south-east
AA 99 09706	Second World War 6-inch gunhouse from the south-east
AA 99 09707	Second World War 6-inch gun emplacement and gunhouse, from the south-east showing curvilinear parapet as camouflaging
AA 99 09708	Second World War 6-inch gunhouse, detail showing steps to gun detachment shelter
AA 99 09709	Second World War 6-inch gunhouse, detail showing gun holdfast
AA 99 09710	Second World War 6-inch gunhouse, detail showing gun holdfast and view to Dover harbour
AA 99 09711	Rear of battery, south-western end, showing entrances to lamp room and shell store A (barred)
AA 99 09712	Rear of battery from the south-west
AA 99 09713	Rear of battery from the north-east
AA 99 09714	Rear of battery from the south-west, showing porch to cartridge store E and shell store D
AA 99 09715	Porch to cartridge store E and shell store D from the south-west
AA 99 09716	Detail showing the entrance to cartridge store E, with lamp recess, issue hatch and cavity wall ventilation bricks
AA 99 09717	Porch with entrance to cartridge store F, from the south-west
AA 99 09718	No II emplacement, detail showing upper socket for davit
AA 99 09719	No II emplacement, detail showing lower socket for davit
AA 99 09720	No III emplacement, detail from the north-west, showing davit sockets and cavity wall ventilation
AA 99 09721	No III emplacement, detail showing upper socket for davit
AA 99 09722	Top of the battery, showing Second World War light anti-aircraft gun pedestal, and Dover harbour beyond



- AA 99 09723 Second World War type 23 pillbox on the eastern flank of the battery, viewed from the north-east
- AA 99 09724 Second World War type 23 pillbox on the eastern flank of the battery, viewed from the south-west, with the harbour beyond
- AA 99 09725 Second World War type 23 pillbox on the eastern flank of the battery, viewed from the north-east, detail of AA gun pit
- AA 99 09726 Second World War type 23 pillbox on the western flank of the battery, detail of the entrance viewed from the AA gun pit
- AA 99 09727 Second World War type 23 pillbox on the western flank of the battery, detail of the AA gun pit
- AA 99 09728 Second World War type 23 pillbox on the western flank of the battery, detail of embrasure in the AA gun pit



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

World Wide Web: <http://www.english-heritage.org.uk>
National Monuments Record enquiries: telephone 01793 414600
National Monuments Record Centre, Great Western Village, Kemble Drive, Swindon SN2 2GZ