

RCHME SURVEY REPORT

BULL SAND FORT
Easington
East Riding of Yorkshire





**Bull Sand Fort
Spurn Point
Easington
East Riding of Yorkshire**

**NBR Index No. 97531
NGR: TA 3702 0909**

**Surveyed: March 1998
Report by Simon Taylor
Photography by Anthony Perry**

© Crown Copyright. RCHME 1999

**York office: RCHME, Shelley House, Acomb Road, York YO24 4HB
Tel: 01904 784411 Fax: 01904 795348 e-mail: york@rchme.gov.uk**

**Headquarters: RCHME, National Monuments Record Centre, Great Western Village, Kemble Drive, Swindon SN2 2GZ
Tel: 01793 414700 Fax: 01793 414707 e-mail: info@rchme.gov.uk World Wide Web: <http://www.rchme.gov.uk>**

ROYAL COMMISSION ON THE HISTORICAL MONUMENTS OF ENGLAND

East Riding of Yorkshire

NBR No. 97531

Easington

NGR: TA 3702 0909

Bull Sand Fort, Spurn Point

SUMMARY

Bull Sand Fort is the larger of two island forts built between 1915 and 1919 to defend the mouth of the Humber during the First World War. It consists of a four-level cylindrical steel structure built on an octagonal concrete base and was originally armed with four 6-inch breech-loading (BL) MK VII guns¹ on coastal-platform (CP) II mountings and four 90-centimetre searchlights housed in steel sponsons. During the Second World War, in response to the fort's new role as a guard against hostile motor torpedo boats entering the Humber, two new reinforced concrete searchlight sponsons were added and the two flanking 6-inch guns were replaced with two twin 6-pounder quick-firing (QF) guns. At the end of the war the fort was placed under care and maintenance and occupied by a small peace-time garrison until demilitarisation in 1956. It was finally sold to the Humber Conservancy Board in November 1964.

The fort was recorded in response to a proposal to convert the structure into a drug and alcohol detoxification centre.

REPORT²

The construction and operational history of the Humber sea forts has already been well documented by Major-General George K Scott Moncrieff, Director of Fortifications and Works during the First World War and supervisor of the construction of the Humber island forts, and latterly by Jeffrey E Dorman for Humberside Leisure Services. A fine photographic record of the construction of the forts made by the contractor, C J Wills and Sons Ltd of Westminster, is also available for consultation at the Town Docks Museum in Hull. In view of

¹ The gun required a separate shell and cartridge to be loaded via the breech.

² For a full account of the history of Bull Sand Fort and its method of construction see Jeffrey E Dorman *Guardians of the Humber: A History of the Humber Defences 1856-1956* (Hull, 1990), 75-94 and Major-General Sir George K Scott Moncrieff, 'How the Humber Was Closed', *Blackwoods Magazine* (August 1923), 300-308.

this it is the intention of this report not to dwell in detail on the structure and history but to examine the surviving fittings, equipment and layout left at Bull Sand Fort before major conversion work. The report will begin with a brief outline of the history of the site and then proceed to examine the fabric and fittings of the structure externally and then internally floor by floor. The ground floor, first floor and top floor are here referred to as the bottom floor, intermediate floor and gun floor. The cellars and magazines were flooded at the time of survey and could not be inspected.

Historical background

Bull Sand Fort (Fig 1) was begun in 1915, received its armament of four 6-inch Mk VII BL guns in October 1918, and was officially completed in December 1919.³



Fig1. Bull Sand Fort from the east (NMR AA98/02103).

The contractors were C J Wills and Sons of Westminster. It was the larger and most northerly of two island forts (the other being Haille Sand Fort) constructed to defend the mouth of the Humber and ordered in response to the perceived 'general liveliness in the North Sea'⁴ during late 1914 and early 1915, as demonstrated by the German Navy's raids on Scarborough, Whitby and Hartlepool in December 1914. Completion came too late for the fort to play any role during

hostilities.

During the inter-war years the fort was manned by a small peacetime garrison and was occasionally used by the Territorial Army (TA) for firing practice. It was reactivated during the Munich crisis of September 1938 and again in August 1939 when its main role was to support the Examination Service in inspecting suspicious vessels attempting to enter the Humber, its guns covering an examination anchorage to the south.⁵ In May 1940 the fort was modified to meet its new service role as a guard against motor torpedo boats entering the Humber. The two flanking 6-inch guns were removed and replaced with two rapid firing twin 6-pounders, and a new brick recreation and dining hall was built on the gun deck at the rear. At the end of the war the fort was again

³ Dorman 1990, 81.

⁴ Moncrieff 1923, 304.

⁵ Dorman 1990, 82.

deactivated and occupied by a small peace-time garrison until it was finally demilitarised in December 1956. It was then maintained by civilian caretakers until it was sold to the Humber Conservancy Board in November 1964.⁶

Structure

Bull Sand Fort is a four-level cylindrical structure of steel and concrete built on an octagonal base of concrete and chalk rubble with a frame of interlocking steel piles driven into the river bed in two concentric circles. Shutters were left in the concrete as it was poured to form the floors of the cellars and magazine, and the internal structure of the upper levels of the fort consists of riveted steel beams and joists supporting concrete or plate steel floors. The bottom floor, above the cellars, appears to have been devoted to the servicing requirements of the fort and the barrack accommodation at this level was probably intended for engineers. The intermediate level was for artillery personnel and fixtures and fittings were, it seems, superior at this level. All internal walls and doors are made of windowless, riveted steel to protect against blasts. The open top level was the gun floor and the Battery Command Post was constructed in the centre.

Exterior

The octagonal concrete base of the fort extends beyond the perimeter of the steel superstructure to form an apron or promenade approximately 2.7 metres wide and 1.5 metres above high water,⁷ with iron railings, now badly corroded, and narrow drainage channels, with inspection covers, formed in the concrete to take waste water from downpipes in the fort and discharge it directly into the sea. On the south-east side are four water tanks with steel covers set within the concrete, possibly to supply the boiler-room inside. Constructed around the south-west (landward) side and at a higher level than the concrete apron is a jetty, formed of timber planks on steel piles with bracing struts, with climbing ladders descending to landing stages at sea level. The jetty retains its original manually-powered crane with hawser, winding gear and crank handle. There are two 44 centimetre high tubular steel sockets on 60 centimetre square bases, with braces, positioned on the edge of the jetty, at the west and south-east ends; they may be the mounts for 'Lewis' anti-aircraft light machine guns (AALMG) installed during the Second World War.

The superstructure consists of two skins of riveted steel plates with a cavity between filled with a bursting layer of rubble and concrete, reinforced with steel grilles. This layer could be seen in one of the window openings on the north side where the side plating has been removed and a section is visible.

⁶ Dorman 1990, 82-87.

⁷ Dorman 1990, 76.

There are window openings to the bottom and intermediate floors with



Fig 2. Bull Sand Fort from the south east (NMR AA98/02100).

casements to the inner face and double steel shutters to the outer face. The eastern (seaward) side is covered with 30.5 centimetre thick steel armour plate, without windows but with two small circular portals, covering an arc of 99 degrees and rising the full height of the superstructure. Six searchlight sponsons (Fig 2) protrude from the steel skin of the fort; four are made of riveted steel with armoured shutters and are part of the first phase of the fort's

construction. They were positioned at intervals around the fort to provide a full sweep of the area covered and for the purpose of locating targets for the four 6-inch guns above. Three of the four original sponsons remain intact externally but that in the south-west position survives only as a frame against the skin. Two further searchlight sponsons one on the north side, one on the south side, made of reinforced concrete, were added as part of the Second World War modifications, probably to better meet the needs of the pair of twin 6-pounder QF guns that were installed at this time.

Internally Bull Sand Fort was served by a central staircase rising from the magazines to the gun floor and by a central electric ammunition lift, rising vertically through a rectangular steel shaft from the magazines to the gun floor. Dorman states that it was the intention of the designers of the fort to install a forced air ventilation and heating system, based on the 'plenum system', to overcome the ventilation problems expected in such a confined environment.⁸ Although no plant could be found connected with this during the survey, all the barrack rooms and living areas in the fort did contain extensive ducting fitted with elaborate ventilation grilles. Beds in the fort are made of iron and attached to the walls by L-shaped brackets which act as pivots and allow the beds to be folded away when not in use. This arrangement enabled the beds in barrack and crew rooms to be positioned one above the other, sometimes up to three high. Some of the beds, notably those in the officers' and sergeants' quarters, had elaborately cast foldable head pieces.

The bottom floor

The bottom floor of the fort is entered from its concrete apron via double, windowless, riveted steel doors on the west side. These open onto a corridor which runs straight back for two thirds of the length of the superstructure, with

⁸ Dorman 1990, 81.

electrical fuse boxes, a wooden mail box and battery notice board near the doors, and steps down to the magazine, stores, and cellars, at the far end. All the chambers on the bottom floor are reached from this corridor, and these include the boiler-room, barrack room, engine room, accumulator room, wireless operators' room, and fitters room on the south-west side, and showers and ablutions, two barrack rooms, and the battery office on the north-east side.

The boiler-room was originally reached from the corridor via double steel doors which have now been removed along with much of this section of the corridor wall. There is a central, rectangular hatch connecting with the coal cellar below and the shaft of a coal lift, rising to the mess kitchen above, positioned against the partially removed corridor wall. There was no trace of the boiler or its bed and the only machinery remaining was a small electric motor of uncertain age, probably installed to power a service lift shown on plans of 1942⁹ and evidenced by the hole for the shaft in the ceiling above. Adjacent to



Fig 3. Engine Room showing diesel generator (NMR AA98/02173).

the boiler-room is a barrack-room lit by two windows, also reached via double steel doors from the corridor, and shown on the plan of 1942 as having six beds none of which remained at the time of survey, the only fittings in the room being two coat hooks. Adjacent to the barrack-room is the engine-room which originally housed two diesel engines and one dynamo, set parallel to each other with the dynamo nearest to the outer wall. One of the engines has been removed but the dynamo and the

engine nearest to it remain (Fig 3); the latter bears a maker's plate which reads 'R A Lister & Co Ltd Dursley England'. Against the south-east wall is the control panel, rising almost three quarters of the height of the room, which bears a plate marked 'G P DENNIS LTD Year 1940'. In the floor between the control panel and the engine are two rectangular hatches, one larger than the other, connecting the room with the oil store below, and against the opposite, north-west, wall are three fuel tanks on brackets. To the left of the control panel and behind the larger of the two floor hatches is a recess containing a water pump.

A smaller corridor runs at 45 degrees from the end of the main corridor and links the three remaining rooms on this side of the bottom floor, beyond the engine room. These are the accumulator-room, bare except for an electrical fuse box on the wall, the wireless operators' room, with a bed against each of

⁹ Information taken from plans marked *Survey of Bull Sand Fort, March 1942*.

the two internal walls and a sink, and the fitters' room which is unlit except for a single portal through the steel armour and contains one bed, a workbench, and a steel tool cupboard containing nuts, bolts, and bed brackets.

On the north-east side of the main corridor the room nearest to the external doors is the ablutions containing four ceramic tiled shower stalls, urinals and seven riveted steel WC cubicles with full height riveted steel doors, the most north-easterly of which is marked 'SERGEANTS ONLY'. A rectangular hatch in the floor connects the room with the beer cellar below. Adjacent to the ablutions is the second barrack-room reached from the corridor by a steel door with louvred vents, containing three tiers of beds against the two opposed internal walls. The adjacent room is also a barrack-room with similar fittings to the last but with coat hooks also surviving. Next is the triangular-plan battery office which contains two shelves and a wooden telephone box near the door with moulded four-panelled sides, a cornice and a two panel, top-glazed door with flush beads to either side.

The intermediate floor

The intermediate floor contained the kitchen, the officers' and sergeants' quarters, and the searchlight crew rooms each of which is marked 'CASL' for Coastal Artillery Searchlight. The kitchen is square in plan and positioned at the rear of the fort, on the north-western side. It contains a large double cast-iron range positioned centre rear, just out from the outer wall, with an iron flue pipe rising through the roof. To the left of the range is the coal lift from the boiler-room below, within a rectangular riveted steel shaft, and opposite the range is another lift which may have been a dumb waiter serving the brick dining hut on the gun floor above. The kitchen also contained a large, plain wooden dresser which was still within the room. To the south of the kitchen was a large barrack-room of irregular plan, later converted to house a gas plant, with gas pipes and pressure gauges measuring kg/cm² and marked with a maker's name 'AGA', and a sign on the wall stating 'No smoking No fires'. The conversion of this room included the removal of partition walls to the southern end between it, a storeroom and the south-west searchlight crew room. The removal of the south-west searchlight sponson was also probably part of this process and a sign on the doorway replacing it reads 'DANGER GAS KEEP OFF'.

A narrow access corridor of dog-leg plan leads from the former searchlight crew room connecting the mess kitchen, where all fittings have been removed except for a large rectangular porcelain sink on two elaborate pedestals and a flue pipe in the ceiling, the officers' water closet (WC), the next searchlight crew room, the officers' bathroom which retains its bath and boarded dado, and the Battery Commander's bedroom which is wood-panelled with a cornice and contains a wash basin on brackets. Next is a searchlight crew room, which retains a board and some electrical switching apparatus along with one bed, and

a small storeroom. Opposite is the officers' mess, triangular in plan and entered through a four-panel riveted steel door. This room is fitted out with plain full-height wood panelling throughout, including cladding to an upright



Fig 4. Officers' bedroom showing holdfast in ceiling (NMR AA98/02156).

structural steel stanchion, and contains a central stove with a flue pipe rising through a roof light. There is a wooden dresser against the north-west wall with glazed doors to the shelves and drawers containing soldiers' prayer books. Built into the ceiling is the bolted holdfast ring for the 6-inch gun pedestal on the floor above. Opposite the Battery Commander's bedroom is the ration store marked 'Ration Store' in red paint on the door, which retains brackets for a padlock, and contains shelves

within. Adjacent to the officers' mess and the same in plan is the officers' bedroom (Fig 4). This room also has full-height panelling and a central stove, marked 'Byrne No 20', with a flue pipe rising through a roof light. Beds are fixed to two of the walls two high and each has an elaborately cast head piece. There are three positions for wash basins against the outside wall and one porcelain pedestal of ornate design survives. The bolted holdfast ring for the second of the two forward 6-inch gun pedestals is visible and integral with the ceiling as in the officers' mess. Next is a large barrack room with access through it to two searchlight crew rooms and sponsons, one of which is a later addition. Beds are fixed to the walls three high and here they are fitted with head pieces although intended for neither officers or sergeants. It is heated by a central stove with a flue pipe rising through a ceiling light. Beyond this barrack room is an empty rectangular-plan room entered through a steel door marked 'Sergeants' Mess' in red paint. At the far end a connecting door links the mess with the sergeants' bedroom which was heated by a stove and is positioned against an outside wall and is L-shaped in plan to accommodate an adjacent searchlight crew room. The intermediate floor was served by one ablutions room, next to the kitchen, which was reached from a narrow access corridor leading to a searchlight sponson and crew room.

The gun floor

The top floor and roof of the fort was the gun floor originally fitted with four 6-inch guns emplacements, two in closed steel casemates facing directly seawards (south east), and two in open barbettes in forward flanking positions. The two flanking guns were removed in 1940 and the emplacements modified to accommodate the pair of twin 6-pounder QF guns. Behind the gun emplacements and occupying the centre of the floor is the original two-storey

structure, housing the Battery Command Post (BCP) and Electric Light Directing Station, which contains, at gun floor level, the watch shelter for the



Fig 5. East six-inch gun emplacement showing pedestal (NMR AA98/02136).

6-inch guns, the top of the ammunition lift and the stairs down to the floor below. As part of the modifications of 1940 a rectangular brick watch shelter for the 6-pounder QF guns was built behind the BCP with a brick dining and recreation hut behind containing the NAAFI store and counter, protected with wire mesh, and a large double stove. The surviving 6-inch gun emplacements retain their circular steel pedestals (Fig 5) set within circular pits linked by a low and narrow passage way. The

steelwork behind the pedestals contains ready-use ammunition lockers, four for each gun, which would have contained cartridges or shells, each with a rectangular steel door, most of which have been detached. Each 6-pounder gun position consists of a circular concrete emplacement containing five ready-use ammunition lockers, all with steel doors, now detached, and with ammunition trolley rails around the rear and a pit with a raised centre and mounting ring for the pedestal. Ammunition for the 6-inch guns consisted of separate shells and cartridges which arrived on the gun deck via the central ammunition lift, which rose in the covered area beneath the Battery Command Post, and could be quickly transferred to the guns through two steel hatches in the forward wall. Rangefinding for the guns was originally achieved with two nine-inch Barr &



Fig 6. Barr and Stroud turret from north west (NMR AA98/02123).

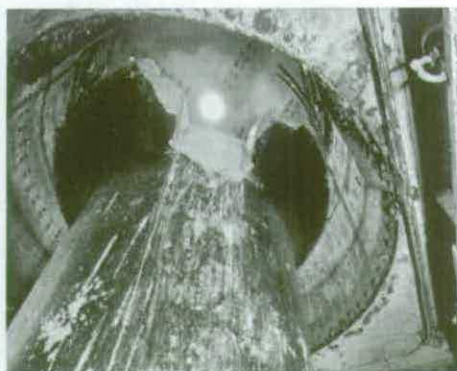


Fig 7. Barr and Stroud pedestal (NMR AA98/02129).

Stroud rangefinders¹⁰ housed in revolving steel turrets above the BCP. One of these turrets appears to have been converted for use as a signal or observation turret and contained six narrow observation windows to the seaward side,

¹⁰ Dorman 1990, 81.

wooden pigeon holes behind and a narrow moving shelf or writing platform on wheels around the edge. The tower



Fig 8. Concrete pedestal in director tower (NMR AA98/02122).

was rotated by means of a spoked wheel that was turned by hand and cranked the upper half around on a rail. The other turret (Fig 6) still contained the flanged pedestal (diameter 114 centimetres) for a Barr & Stroud rangefinder (Fig 7) rising from the floor below, and could not be entered. Just below the turrets is the Battery Command Post itself with narrow observation windows to the seaward side, protected by bullet-proof top-hinged steel shutters which could be

opened or closed from inside by means of screw mechanisms. This floor also contained a wooden telephone box and a cylindrical pedestal of 40 centimetres diameter which may have been for a depression type rangefinder. Behind the BCP and built on top of the brick watch shelter is the directing tower for the pair of twin 6-pounder guns. Because of the nature of twin 6-pounder guns, needing an elevated off-mounting director's tower and range finder position, this structure had to be built along with the new gun emplacements and it is reached via an external steel staircase leading up to a 6.5 centimetre thick plate-steel door. It contains two side projections each of which is equipped with a square pedestal with mounting slots, possibly for auto-rangefinders (Fig 8).

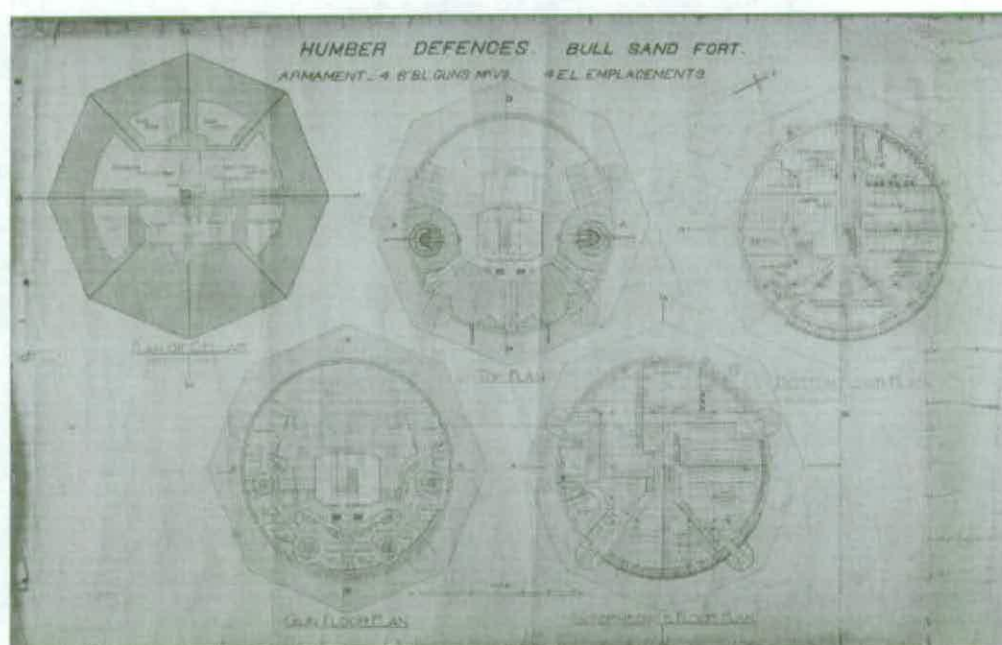
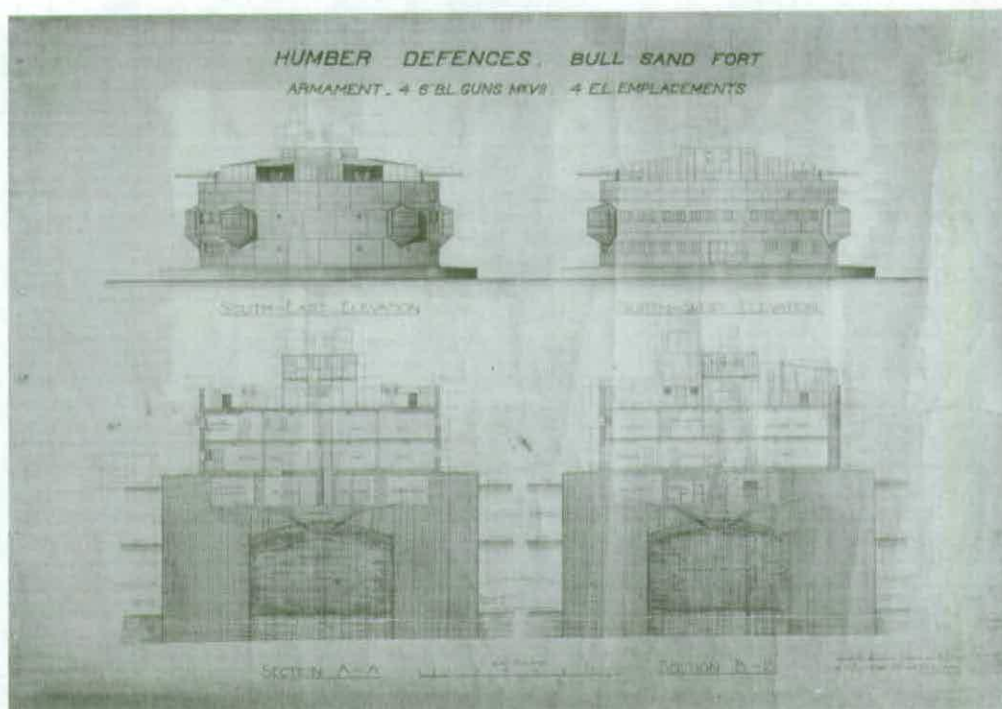
Bull Sand Fort was last used as an automatic weather station and warning light position, both set upon the roof of the director's tower. The associated equipment included a large electrically operated warning bell marked '1961 MEARS LONDON'.

Visited by Anthony Perry, Simon Taylor and Alan Williamson, 17 March 1998.

Report by Simon Taylor.

Large format photography by Anthony Perry.

Plans and elevations of Bull Sand Fort dated 1917. Originals held by East Riding Archives, Beverley.



LIST OF RCHME PHOTOGRAPHS OF BULL SAND FORT

AA98/02097 FORT FROM THE SOUTH WEST
AA98/02098 FORT FROM THE SOUTH, SOUTH WEST.
AA98/02099 FORT FROM THE WEST SOUTH WEST
AA98/02100 FORT FROM THE SOUTH, SOUTH EAST.
AA98/02101 FORT FROM THE NORTH WEST
AA98/02102 FORT FROM THE NORTH EAST.
AA98/02103 FORT FROM THE EAST.
AA98/02104 FORT FROM THE SOUTH EAST.
AA98/02105 SIX INCH GUN WATCH SHELTER AND OBSERVATION TURRET
FROM THE SOUTH AND SIX POUNDER GUN EMPLACEMENT, FROM THE
SOUTH, SOUTH WEST.
AA98/02106 SOUTH SIX POUNDER GUN EMPLACEMENT (FOREGROUND)
TOWARDS SIX INCH GUN HOUSING, FROM THE WEST.
AA98/02107 NORTH EAST SIX POUNDER GUN EMPLACEMENT (FOREGROUND)
TOWARDS BAR & STROUD RANGEFINDER, FROM THE NORTH.
AA98/02108 BAR & STROUD RANGEFINDER, FROM THE NORTH EAST.
AA98/02109 SOUTH AND SOUTH EAST SEARCHLIGHTS FROM THE SOUTH
WEST.
AA98/02110 SOUTH AND SOUTH WEST SEARCHLIGHTS, FROM THE SOUTH
EAST.
AA98/02111 SOUTH WEST SEARCHLIGHT FROM THE SOUTH EAST.
AA98/02112 WATER TANKS BETWEEN SOUTH AND SOUTH EAST
SEARCHLIGHTS FROM THE SOUTH EAST.
AA98/02113 SOUTH SEARCHLIGHT FROM THE SOUTH EAST.
AA98/02114 SOUTH SEARCHLIGHT FROM THE WEST NORTH WEST.
AA98/02115 LANDING STAGE, BOLLARD AND LEWIS GUN MOUNT FROM
WEST NORTH WEST.
AA98/02116 DERRICK AND SOUTH WEST SEARCHLIGHT, FROM THE WEST.
AA98/02117 BOTTOM FLOOR LEVEL, ENTRANCE TO MAIN CORRIDOR FROM
CONCRETE STAGE FROM THE SOUTH WEST.
AA98/02118 LANDING STAGE, LEWIS GUN MOUNT, FROM THE EAST.
AA98/02119 INTERMEDIATE LEVEL, DETAIL OF AN ABLUTIONS WINDOW,
FROM THE NORTH WEST.
AA98/02120 BOTTOM FLOOR, DRAINAGE FROM ABLUTIONS, SEWER
INSPECTION PIT WITH COVER REMOVED, FROM THE NORTH EAST.
AA98/02121 DIRECTOR TOWER LEVEL, CONCRETE MOUNT FOR BAR AND
STROUD RANGEFINDER (1 OF 2) FROM THE NORTH EAST.
AA98/02122 DIRECTOR TOWER LEVEL. CONCRETE MOUNT FOR BAR AND
STROUD RANGEFINDER (2 OF 2) FROM THE SOUTH.
AA98/02123 BAR & STROUD NORTH EAST TURRET, FROM DIRECTOR
TOWER ROOF, FROM THE NORTH WEST.
AA98/02124 BAR & STROUD TURRETS, FROM DIRECTOR TOWER, FROM THE
NORTH, NORTH EAST.
AA98/02125 NORTH, NORTH EAST SIX POUNDER GUN EMPLACEMENT FROM
THE DIRECTOR TOWER ROOF, FROM THE SOUTH, SOUTH WEST.
AA98/02126 SOUTH, SOUTH WEST SIX POUNDER GUN EMPLACEMENT, FROM
DIRECTOR TOWER ROOF, FROM THE NORTH, NORTH EAST.
AA98/02127 DIRECTOR TOWER ROOF, BELL AND TIME BALL, FROM THE
NORTH EAST.
AA98/02128 DIRECTOR TOWER ROOF, DETAIL OF BELL INSCRIPTION, MEARS
LONDON 1961, FROM THE SOUTH.
AA98/02129 CONCRETE POST IN BAR & STROUD TOWER, FROM BELOW AND

EAST.

AA98/02130 BAR & STROUD TOWER ROOM SHOWING THE CONCRETE POST FROM THE SOUTH.

AA98/02131 SIGNAL TOWER INTERIOR, FROM THE EAST SOUTH EAST.

AA98/02132 SIGNAL TOWER INTERIOR FROM THE WEST NORTH WEST.

AA98/02133 NORTH EAST SIX POUNDER GUN EMPLACEMENT SHOWING AMMUNITION LOCKERS FROM THE WEST.

AA98/02134 EAST SIX INCH GUN EMPLACEMENT, SHELL AND CARTRIDGE LOCKERS FROM WEST SOUTH WEST.

AA98/02135 EAST SIX INCH GUN EMPLACEMENT, FROM WEST NORTH WEST.

AA98/02136 EAST SIX INCH GUN EMPLACEMENT FROM THE NORTH EAST.

AA98/02137 SOUTH EAST SIX INCH GUN EMPLACEMENT, FROM THE SOUTH EAST.

AA98/02138 WEST SOUTH WEST SIX POUNDER GUN EMPLACEMENT, SHOWING AMMUNITION LOCKERS, FROM THE EAST.

AA98/02139 WEST SOUTH WEST, SIX INCH GUN EMPLACEMENT, SHELL AND CARTRIDGE LOCKERS FROM THE NORTH.

AA98/02140 PASSAGE TO REAR OF SIX INCH GUN EMPLACEMENTS, FROM THE SOUTH, SOUTH WEST.

AA98/02141 GUN FLOOR, MENS DINING AND RECREATION ROOM, SHOWING THE COAL HOIST, FROM THE SOUTH WEST.

AA98/02142 GUN FLOOR, MENS DINING AND RECREATION ROOM WITH COAL HOIST TO RIGHT FROM THE SOUTH, SOUTH EAST.

AA98/02143 GUN FLOOR, AMMUNITION HOIST, FROM THE EAST SOUTH EAST.

AA98/02144 GUN FLOOR, MAIN STAIRS TOWARDS HOIST, FROM THE EAST SOUTH EAST.

AA98/02145 INTERMEDIATE FLOOR, KITCHEN FROM THE NORTH EAST.

AA98/02146 INTERMEDIATE FLOOR, KITCHEN FROM THE NORTH.

AA98/02147 INTERMEDIATE FLOOR, ABLUTIONS, URINALS FROM THE WEST.

AA98/02148 INTERMEDIATE FLOOR, ABLUTIONS, WATER CLOSETS FROM THE NORTH EAST.

AA98/02149 INTERMEDIATE FLOOR, NORTH SEARCHLIGHT CREW ROOM FROM THE NORTH EAST.

AA98/02150 INTERMEDIATE FLOOR, INTERIOR OF NORTH SEARCHLIGHT HOUSING FROM THE SOUTH.

AA98/02151 INTERMEDIATE FLOOR, NORTH EAST BARRACK ROOM, FROM THE NORTH EAST.

AA98/02152 INTERMEDIATE FLOOR, NORTH EAST BARRACK ROOM, FROM THE SOUTH WEST.

AA98/02153 INTERMEDIATE FLOOR, NORTH EAST BARRACK ROOM CEILING, HOLDFAST FOR ORIGINAL SIX INCH GUN, FROM THE SOUTH.

AA98/02154 BOTTOM FLOOR, INTERIOR OF NORTH EAST SEARCHLIGHT HOUSING FROM THE NORTH WEST.

AA98/02155 INTERMEDIATE FLOOR, OFFICERS BEDROOM FROM THE EAST.

AA98/02156 INTERMEDIATE FLOOR, OFFICERS BEDROOM, FROM THE WEST.

AA98/02157 INTERMEDIATE FLOOR, OFFICERS BEDROOM CEILING SHOWING THE HOLDFAST FOR THE ORIGINAL SIX INCH GUN, FROM THE SOUTH.

AA98/02158 INTERMEDIATE FLOOR, OFFICERS MESS, FROM THE NORTH WEST.

AA98/02159 INTERMEDIATE FLOOR, OFFICERS MESS SHOWING VENTILATORS FROM THE SOUTH WEST.

AA98/02160 INTERMEDIATE FLOOR, SOUTH EAST CORRIDOR, R.A. STORE TO THE LEFT, FROM THE SOUTH EAST.

AA98/02161 INTERMEDIATE FLOOR, SOUTH EAST SEARCHLIGHT CREW

ROOM, FROM THE EAST.

AA98/02162 INTERMEDIATE FLOOR, BATTERY COMMANDER'S BEDROOM FROM THE NORTH

AA98/02163 INTERMEDIATE FLOOR, LEFT-RIGHT OFFICER'S BATHROOM SOUTH SEARCHLIGHT CREWROOM AND OFFICER'S WATER CLOSET.

AA98/02164 INTERMEDIATE FLOOR, SOUTH SEARCHLIGHT CREW AND OFFICER'S W.C. FROM THE NORTH.

AA98/02165 INTERMEDIATE FLOOR, OFFICER'S BATHROOM FROM THE NORTH, NORTH WEST.

AA98/02166 INTERMEDIATE FLOOR, SOUTH WEST SIDE TOWARDS MESS KITCHEN WITH DOOR TO SOUTH WEST SEARCHLIGHT BATTERY. FROM THE NORTH WEST.

AA98/02167 FORMER SOUTH WEST BARRACK ROOM, FROM THE SOUTH EAST.

AA98/02168 FORMER SOUTH WEST BARRACK ROOM, FROM THE NORTH EAST.

AA98/02169 INTERMEDIATE FLOOR, CENTRAL CORRIDOR TO THE MAIN STAIRS, WITH AMMUNITION HOIST TO THE LEFT FROM THE NORTH WEST.

AA98/02170 BOTTOM FLOOR, ENGINE ROOM, FROM THE NORTH.

AA98/02171 BOTTOM FLOOR, ENGINE ROOM FROM THE NORTH WEST.

AA98/02172 BOTTOM FLOOR, ENGINE ROOM, ELECTRICAL TRANSFORMER GEAR, FROM THE NORTH.

AA98/02173 BOTTOM FLOOR, ENGINE ROOM, DIESEL GENERATOR FROM THE NORTH EAST

AA98/02174 BOTTOM FLOOR, SOUTH WEST BARRACK ROOM, FROM THE NORTH EAST.

AA98/02175 SOUTH WEST BARRACK ROOM, NORTH WEST WALL, RIFLE RACK, FROM THE SOUTH EAST.

AA98/02176 BOTTOM FLOOR, MAIN ENTRANCE CORRIDOR, BOILER HOUSE TO THE RIGHT, FROM THE NORTH WEST.

AA98/02177 BOTTOM FLOOR, BOILER HOUSE, FROM THE NORTH.

AA98/02178 BOTTOM FLOOR, SHOWER ROOM, FROM THE NORTH EAST.

AA98/02179 BOTTOM FLOOR, ABLUTIONS FROM THE SOUTH, SOUTH WEST.

AA98/02180 BOTTOM FLOOR, ABLUTIONS, WATER CLOSETS FROM THE NORTH WEST.

AA98/02181 BOTTOM FLOOR, ABLUTIONS, URINALS FROM THE NORTH, NORTH EAST.

AA98/02182 BOTTOM FL. MAIN CORRIDOR S-E END LFT-RGT DOORS TO BARRACK ROOM BATTERY OFFICE AND QUARTERMASTERS STORES FROM THE SOUTH WEST

COPIED FROM 'THE ISLAND FORTS OF THE HUMBER'

- AA98/02235 "ISLAND FORTS OF THE HUMBER" TITLE PAGE.
- AA98/02236 1. WHITAKER CANTILEVER PILING MACHINE, PILING OUTER GANTRY. 2. PART OF OUTER GANTRY WITH WHITAKER PILING MACHINE.
- AA98/02237 1. STAGING WITH WHITAKER PILING MACHINE. 2. MAIN STAGING WITH WHITAKER PILING MACHINE.
- AA98/02238 1. TIMBER FRAMING & GUIDE WALLING FOR STEEL PILING. 2. TIMBER FRAMING SHOWING TEMPORARY SUPPORTS TO MAIN PILES.
- AA98/02239 1. WHITAKER PILING MACHINE ON CENTRAL STAGING. 2. TIMBERING IN COMPARTMENTS.
- AA98/02240 1. EXCAVATING IN THE COMPARTMENTS. 2. TIMBERING IN THE COMPARTMENTS.
- AA98/02241 1. GRAVEL STAGE IN CONSTRUCTION. 2. GRAVEL STAGE LOADED.
- AA98/02242 1. WHITAKER COMPLETING RADIAL ARM. 2. GANGWAY FOR WHITAKER PILING MACHINE TO COMPLETE RADIAL ARM.
- AA98/02243 1. CONCRETING IN COMPARTMENTS. 2. CONCRETING IN COMPARTMENTS, SHOWING AUTOMATIC SKIP.
- AA98/02244 2 VIEWS. DISMANTLING AND REMOVAL OF ACCESS GANTRY TO CENTRAL STAGING.
- AA98/02245 2 VIEWS. GROUP ON THE STAGE INSPECTING THE GRILLAGE.
- AA98/02246 1. GRILLAGE COMPLETE. 2. TWO VIEWS OF A GROUP ON THE STAGE.
- AA98/02247 1. COAL & BEER CELLARS. 2. CELLAR FLOOR.
- AA98/02248 1. CELLAR FLOOR. 2. CELLAR FLOOR (PART OF MAGAZINE AND SHELL STORE) 3. GENERAL VIEW OVER STAGING.
- AA98/02249 1. FLOOR OF MAGAZINE, SHELL STORE AND COAL & BEER CELLARS. 2. GENERAL VIEW OF THE CELLAR WALLS.
- AA98/02250 1. VICTORIA MIXER CONCRETING CELLAR WALLS. 2. SHUTTERING FOR CELLAR WALLS (LIME WASHED). 3. SHUTTERING FOR CELLAR WALLS.
- AA98/02251 2 VIEWS. SHUTTERING FOR CELLAR WALLS.
- AA98/02252 1. SHUTTERING FOR CELLAR WALLS. 2. COMPLETING CONCRETING IN SEAWARD BAYS. 3. CELLARS READY FOR COVERING IN.
- AA98/02253 1. MAIN FLOOR PARTLY CONCRETED. 2. STAIRWAY TO MAGAZINE & SHELL STORE. 3. SHUTTERING FOR MAIN FLOOR.
- AA98/02254 1. MAIN FLOOR LEVEL PARTLY CONCRETED. 2. MAIN FLOOR LEVEL PARTLY CONCRETED 3. MAIN FLOOR LEVEL CONCRETING COMPLETE.
- AA98/02255 2 VIEWS. MAIN FLOOR LEVEL CONCRETE COMPLETE.
- AA98/02256 1. PART OF MAIN FLOOR. 2. VIEW OF MAIN FLOOR, MR A.S. WILLS IN THE CENTRE. 3. MAIN FLOOR.
- AA98/02257 1. MAIN FLOOR. GRILLAGE FOR MAIN STANCHIONS 2. MAIN FLOOR. CRANE ROADS FOR ERECTING STEELWORK 3. STEELWORK PLACING CRANES 4. CRANE ROADS
- AA98/02258 2 GENERAL VIEWS SHOWING CRANES FOR STEELWORK ERECTION.
- AA98/02259 3 VIEWS. ERECTION OF STEELWORK (STANCHIONS)
- AA98/02260 1. GENERAL VIEW OF ERECTION OF STEELWORK. 2. ERECTION OF STEELWORKS (INNER SKIN)
- AA98/02261 1. STEELWORK TOP FLOOR. 2. CENTRING IN POSITION.
- AA98/02262 1. CENTRING FOR FLOORING BETWEEN JOISTS. 2. ENGINE ROOM.
- AA98/02263 1. THIRTY TON GOLIATH CRANE & BLOCKYARD AT HAVENSIDE.

2.BLOCKYARD AT HAVENSIDE.

AA98/02264 1.BLOCKS & MOULDS AT HAVENSIDE YARD. 2.ERECTION OF STEELWORK.

AA98/02265 1.ERECTION OF STEELWORK. 2.TOP FLOOR PARTLY CONCRETED.

AA98/02266 1.TOP FLOOR CONCRETE AND SHUTTERING. 2.PART OF STAGING AT LOW TIDE.

AA98/02267 1.ERECTION OF STEELWORK 2.BARRACK ROOM R.G.A.

AA98/02268 1.FINISHED CONCRETE IN ROOF OF BARRACK ROOM. 2.ERECTION OF STEELWORK OUTER SKIN.

AA98/02269 2 VIEWS. TOP FLOOR WITH GUN SHELTER & EMPLACEMENT.

AA98/02270 1.CRANES AND STAGING. 2.STOCK OF 20 TON BLOCKS AT HAVENSIDE.

AA98/02271 1.JETTY FOR LOADING BLOCKS AT HAVENSIDE YARD. 2.LOADING JETTY AT HAVENSIDE YARD.

AA98/02272 2 VIEWS.LOADING CEMENT AT HAVENSIDE YARD.

AA98/02273 1.TWENTY TON JIB CRANE SECURED TO FORT. 2.CRANES ON STAGING.

AA98/02274 CONCRETE MIXER AND GANTRY, HAVENSIDE YARD.

AA98/02275 TWENTY TON BLOCKS AND CRANE AT HAVENSIDE YARD.

AA98/02276 TUG "CHESTER" TOWING BLOCKS TO SITE OF FORT.

AA98/02277 GOLIATH CRANE LOADING A BLOCK INTO A BARGE AT HAVENSIDE YARD.

AA98/02278 1.LIFTING A BLOCK FROM THE BARGE. 2.LAYING A BLOCK IN THE WATER.

AA98/02279 1.LIFTING ARMOUR PLATE FROM THE BARGE. 2.RAISING THE ARMOUR PLATE TO THE VERTICAL. 3.BOGIE FOR ARMOUR PLATE.

AA98/02280 1.PLACING THE ARMOUR PLATE ON THE BOGIE. 2.DRAWING THE ARMOUR PLATE INTO POSITION AROUND THE FORT.

AA98/02281 1.RAISING THE ARMOUR PLATE BY WORM SCREW BLOCKS.2.RUNNING INTO POSITION BY OVERHEAD TRAVELLER. 3.OVERHEAD TRAVELLER.

AA98/02282 1.JIB CRANE AT REST ON THE TRESTLE. 2.TAKING SOUNDINGS NEAR CONCRETE BLOCKS.

AA98/02283 1.CROSS CUT SAW FOR CUTTING OF PILES UNDERWATER. 2.GENERAL VIEW OF FORT AND STAGING.

AA98/02284 1.ARMOUR PLATE & ELECTRIC LIGHT (SEARCHLIGHT) EMPLACEMENT. 2.DUMPING CHALK NEAR THE BLOCKS.

AA98/02285 1.FORT PAINTED NAVY GREY. 2.ARMOUR PLATING PAINTED.

AA98/02286 1.INTERIOR OF ENGINE ROOM. 2.SWITCH-BOARD IN ENGINE ROOM.

AA98/02287 1.LOWER FLOOR B.C. (BATTERY COMMAND) ROOM. 2.EXTERIOR OF B.C. POST, (SHOWING BARR & STROUD RANGEFINDER).

AA98/02288 1.JIB CRANE WITH LAST 5 BLOCKS. 2.BLOCK LAYING BY THE JIB CRANE.

AA98/02289 1.BLOCK LAYING. 2.SIX INCH GUN IN POSITION.

AA98/02290 FORT COMPLETED.

PLANS

- BB98/05295 HUMBER DEFENCES, BULL SAND FORT, COPY OF PLAN OF FLOORS, DATED 1917.
- BB98/05296 HUMBER DEFENCES, BULL SAND FORT, COPY OF PLAN OF CELLAR.
- BB98/05297 HUMBER DEFENCES, BULL SAND FORT, COPY OF PLAN OF BOTTOM FLOOR.
- BB98/05298 HUMBER DEFENCES BULL SAND FORT, COPY OF PLAN OF INTERMEDIATE FLOOR.
- BB98/05299 HUMBER DEFENCES, BULL SAND FORT, COPY OF PLAN OF GUN FLOOR.
- BB98/05300 HUMBER DEFENCES, BULL SAND FORT, COPY OF PLAN OF TOP FLOOR.
- BB98/05301 HUMBER DEFENCES, BULL SAND FORT. COPY PLAN OF SOUTH EAST & NORTH WEST ELEVATIONS WITH SECTIONS A-A & B-B.
- BB98/05302 HUMBER DEFENCES, BULL SAND FORT, COPY DRAWING OF NORTH WEST ELEVATION.
- BB98/05303 HUMBER DEFENCES, BULL SAND FORT, COPY OF DRAWING OF NORTH WEST ELEVATION SECTION B-B.
- BB98/05304 HUMBER DEFENCES BULL SAND FORT, COPY OF DRAWING OF SOUTH EAST ELEVATION.
- BB98/05305 HUMBER DEFENCES, BULL SAND FORT, COPY OF DRAWING OF SOUTH EAST ELEVATION SECTION A-A.
- BB98/05306 HUMBER DEFENCES, BULL SAND FORT, COPY OF PLAN:- EXAMINATION IN THE VICINITY OF BULL SAND FORT.
- BB98/05307 HUMBER DEFENCES, BULL SAND FORT, COPY OF PLAN OF FLOORS, DATED 1917.
- BB98/05308 HUMBER DEFENCES, BULL SAND FORT, COPY OF PLAN OF CELLAR.
- BB98/05309 HUMBER DEFENCES, BULL SAND FORT, COPY PLAN OF BOTTOM FLOOR.
- BB98/05310 HUMBER DEFENCES, BULL SAND FORT, COPY PLAN OF INTERMEDIATE FLOOR.
- BB98/05311 HUMBER DEFENCES, BULL SAND FORT, COPY PLAN OF GUN FLOOR.
- BB98/05312 HUMBER DEFENCES, BULL SAND FORT, COPY PLAN OF TOP FLOOR.
- BB98/05313 HUMBER DEFENCES, BULL SAND FORT, COPY PLAN OF SOUTH EAST AND NORTH WEST ELEVATIONS WITH SECTIONS A-A AND B-B.
- BB98/05314 HUMBER DEFENCES, BULL SAND FORT, COPY DRAWING OF NORTH WEST ELEVATION.
- BB98/05315 HUMBER DEFENCES, BULL SAND FORT, COPY OF DRAWING OF NORTH WEST ELEVATION SECTION B-B.
- BB98/05316 HUMBER DEFENCES, BULL SAND FORT, COPY OF DRAWING OF SOUTH EAST ELEVATION.
- BB98/05317 HUMBER DEFENCES, BULL SAND FORT, COPY OF DRAWING OF SOUTH EAST ELEVATION SECTION A-A.
- BB98/05318 HUMBER DEFENCES, BULL SAND FORT, COPY OF PLAN:- EXAMINATION IN THE VICINITY OF BULL SAND FORT.



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



*The Royal Commission on the Historical Monuments of England gathers information on England's heritage
and provides it through the National Monuments Record*

World Wide Web: <http://www.rchme.gov.uk>

National Monuments Record enquiries: telephone 01793 414600

National Monuments Record Centre, Great Western Village, Kemble Drive, Swindon SN2 2GZ