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The Fortification of the Firth of Forth 1880–1977

'The most powerful naval fortress in the British Empire'

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Chapter 11

THE OUTER DEFENCES (INCHKEITH FIRE COMMAND/19 (FORTH) FIRE COMMAND)

The two original fortresses of the Outer Defences, Inchkeith and Kinghorn, were strengthened over time and were joined by the battery at Leith in 1916, when the defences of the Forth reached their greatest power. In the First World War, this was the line of the Outer Defences; in the Second World War, this was the Middle line. In April 1918, the Royal Artillery complement of No. 19 (Forth) Fire Command was 32 officers and 530 other ranks; this number did not include Royal Engineers or other arms.[1]

11.1 Inchkeith

Sources

Inchkeith is the second largest island in the Forth, after the May Island. It is *c* 1,150m long and a maximum of *c* 370m wide at the north, narrowing to the south (Fig 11.1). Much of the length of the island is occupied by a steep ridge, which reaches a maximum height of 55m at the lighthouse and falls towards the southern end of the island. The Cawcans Ridge, at the north-west of the island, reaches a height of 40m.

The island was mapped three times at a scale of 1:500 by the Ordnance Survey for the War Office, published in 1893 (surveyed in 1891), 1911 (revised 1910) and 1918.[2] The base mapping in 1893 and 1911 was accompanied by simultaneously produced 1:2,500 summary maps of the whole island; there is also an intermediate revision of the 1911 map to 1914.[3] Maps at both scales were used to draw out proposals or to record implemented schemes at dates between editions. For later periods, we have relied on a detailed plan of August 1941, a set of three low-level vertical aerial photographs taken in September 1941 (which show more than the plan) and a map of the layout of the island in 1947.[4]

There are no detailed engineering plans of the three original Victorian forts built in 1878–81, but the 1893 and 1911 Ordnance Survey maps show their general layout, and there is an early plan of the West Fort (Fig 11.5). The North Battery has been altered most but its layout in the 1880s and 1890s can be reconstructed. From 1900–3 onwards, there are Royal Engineers plans, sections and elevations of structures

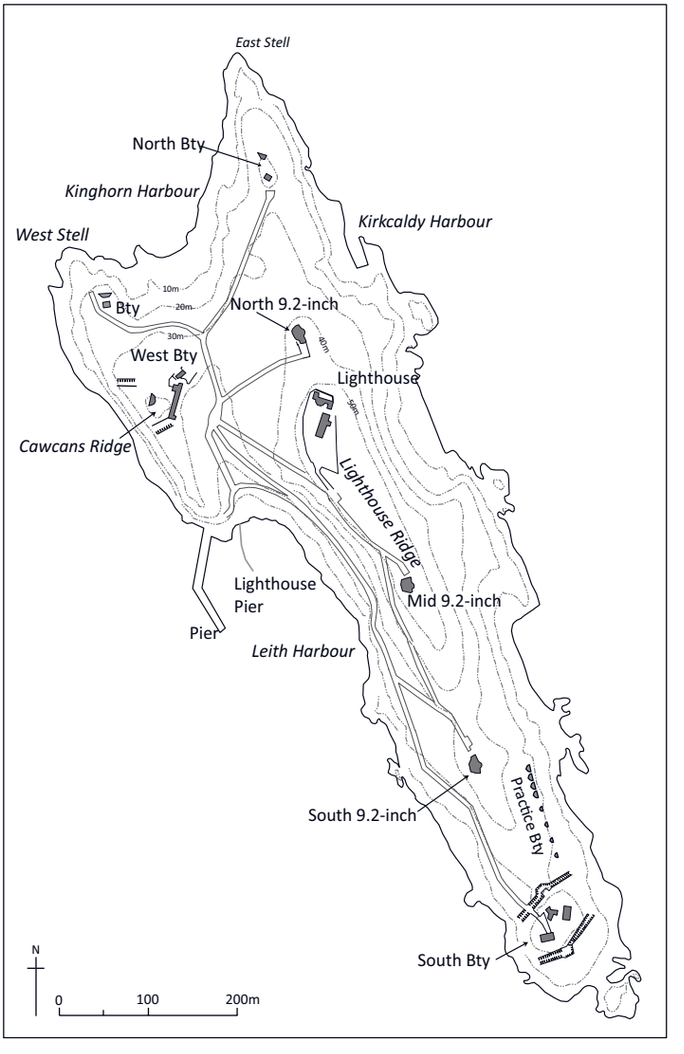


Figure 11.1
The main geographical features of Inchkeith. The location of the batteries, the practice battery and the road system are also shown. The contours are at 5m intervals (© Gordon Barclay)

on Inchkeith, either setting out proposals or recording what had been built.[5]

The forts and batteries were described using different terms throughout their lives. Before 1899 they were referred to as No. 1, No. 2 and No. 3 Forts (clockwise from the West Battery) and were also known around that time as West/North-West, North/North-East, and South/South-East Forts. As a consequence of an Army order in 1899, guns were assigned 'Group' identifications, normally in pairs, although the 9.2-inch guns each comprised their own Group. The Group identification letters of the South Battery (A Group), and the southern (B) and mid (F) 9.2-inch guns remained the same throughout the period. The identification letters for the groups north of the lighthouse were, however, changed on several occasions, which has caused confusion, especially as at least one Army document used identification codes that had been superseded years before. To avoid further confusion, we have decided to use a single set of terms throughout the text, as set out in the first row of Table 17.

Property Transactions

The island of Inchkeith passed from the ownership of the Duke of Buccleuch to the War Department in three transactions (Fig 11.2). First, on 31 December 1860, the Duke sold five pieces of ground, totalling 1.25ha, for four batteries and a barracks area. On 2 April 1879 (*after* construction work had begun), the Duke sold three further areas, incorporating

Table 17

The changing terminology for the various Gun Groups on Inchkeith, 1884–1945, with sources. That for 1921 seems to be an error, referring back to the 1916 codes, rather than those for 1918.

Our Term Date/File	South Battery	South 9.2-inch	Mid 9.2-inch	North 9.2-inch	North Battery	West Battery	West Stell Battery
1884 WO 396/2	No. 3 Fort	–	–	–	No. 2 Fort	No. 1 Fort	–
1893 WD/OS Map	(Map not available)	–	–	–	No. 2 NE Battery	No. 1 NW Battery	–
1900 FRB & **1903** WO 78/5162	A	B	F	I	L	H	–
1905 WO 33/381	A	B	F	I	L	H	–
1906 WO 78/5160		B	F	L			–
1908 WO 78/5157+8		B	F	L			–
1909 NLS I.88.34	A	B	F	L	M	H	–
1911 OS 1:2500	A	B	F	L	M	H	–
1913 WO 76/5179		B	F	L			–
1914 OS 1:2500	A	B	F	L	M	H	–
1916 WO 78/5179	A	B	F	L	M	H	H Adv
1918 OS 1:500	A	B	F	H	M	L	O
1918 WO 199/2672	A	B	F	H	M	L	O
1921 *WO 78/5179*	*A*	*B*	*F*	*L*	*M*	*H*	*H Adv*
1934 WO 192/252	A	B	F	H	M	L	O
WW2 FRB	South 6-inch	South 9.2	Middle 9.2	North 9.2	North Gun 1	West Guns	North Gun 2

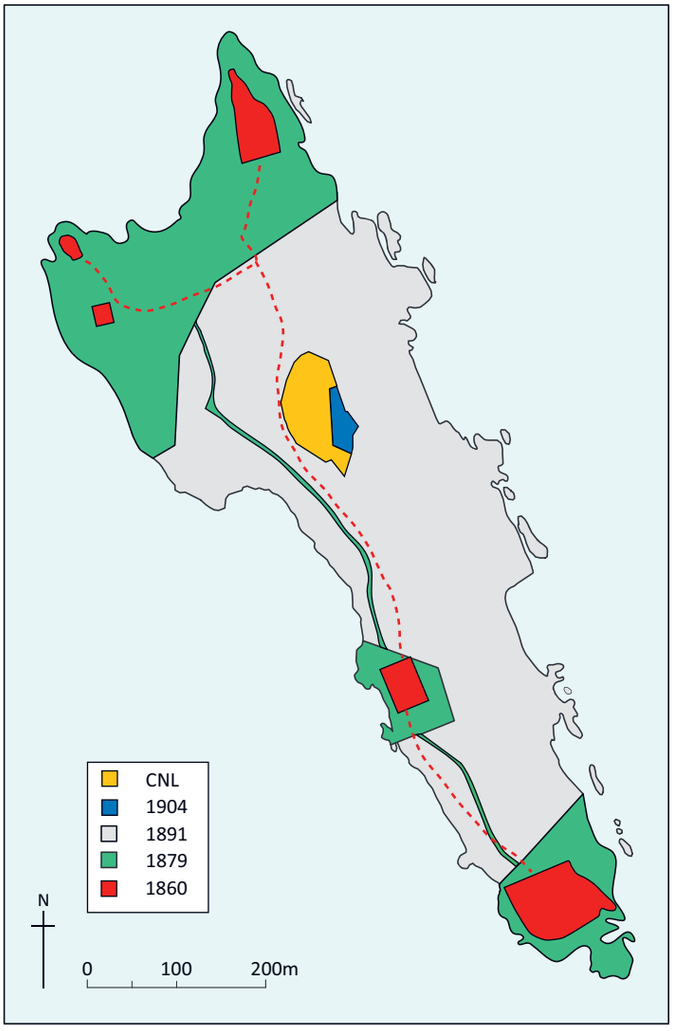


Figure 11.2
The War Department's land purchases on Inchkeith. The scattered 1860 holdings (linked by a right of way, the dashed red line) were subsumed within the larger holdings of 1879. The rest of the island, apart from the yellow and blue areas, was sold to the War Department in 1891. The blue area was sold by the Commissioners of Northern Lighthouses (CNL) to the Admiralty in 1904, to accommodate the Port War Signal Station (© Gordon Barclay)

those already purchased, totalling *c* 4.4ha. This combined the three northern areas into one. Larger areas were also bought to accommodate a more extensive barracks area and a larger southern fort. In February 1891, the Duke sold the remainder of the island to the War Department, apart from the area feued to the Commissioners of Northern Lighthouses.[6]

Having acquired the whole island, the Government decided to designate it as a fortress of the first class, and consequently the Secretary for War decided in July 1891 that picnic and other pleasure parties were no longer permitted to land on the island. That month, the manager of the Galloway Saloon Packet Company made application to the headquarters of the Royal Engineers for permission to land passengers on Inchkeith but was refused.[7]

In October 1904, the Commissioners of Northern Lighthouses sold an area of *c* 1,288 sq m to the Admiralty, an area consistent with the easternmost portion of the lighthouse ground, for the construction of the Port War Signal Station.

Inchkeith, 1878–81

The Royal Engineers surveyed the site in May 1878 and construction began in July. The site for the originally planned North-West Battery (on the West Stell) was changed to a new site on the Cawcans Ridge at the west side of the island, approximately mid-way between the main harbour and the West Stell. Single 10-inch, 18-ton Rifled Muzzle Loading

Figure 11.3
The lighthouse pier, over which most of the materials and guns for the Victorian forts were landed. The modern pier was not built until after 1892 (© Gordon Barclay)

Figure 11.4

The eastern wall of the West Battery and the southern of the two rock-cut ditches (to the left, lined with masonry). The masonry elements are of the original building; the structures built of brick date from 1916 or later. The 1941 overhead protection for the gun within the old fort is visible behind the tall battery control tower, as are the concrete cubes which probably supported the Second World War 3-inch AA gun. The Victorian entrance is off-centre in the eastern wall; to the right is a secondary door (© Gordon Barclay)

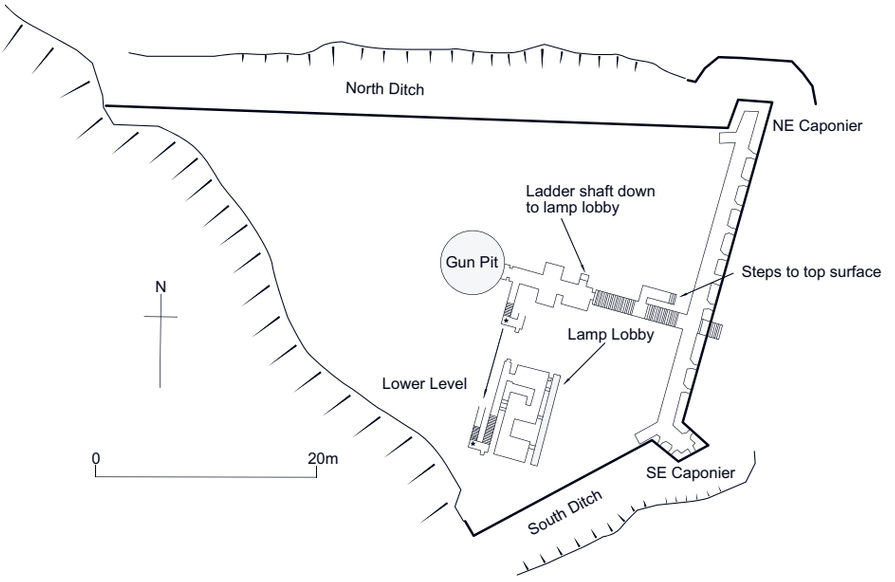


Figure 11.5

Redrawn from a survey drawing of the West Battery, apparently in its original form, annotated by us to show significant features. The element of the plan to the right shows the upper storey of the fort wall. The lower, magazine, floor and the lamp passage are shown as a detached feature below the passage to the gun; the common point in the two levels is marked with a star. The original plan was amongst papers given to RM by Bruce Stenhouse, and we do not know its original source. The plan resembles one on National Archives file WO 78/4751 but is different from it. Redrawing was necessitated by the poor quality of the original. We have taken the opportunity to correct the original's distortion of the outline of the fort

(RML) guns were to be mounted in the North and West Batteries and a pair in the South Battery.

The project was planned to take a year. A workforce of 120 men was accommodated in a series of double-lined felt-covered wooden barracks in the relatively flat area between the lighthouse and the West Stell (Fig 11.1). A ship's cook employed by the contractors prepared the meals. 'Deliciously cool and refreshing' fresh water was obtained from the island's wells, which had been cleaned out and deepened, and from an abundant spring.[8] The workmen were transported off the island to Leith from Saturday night until Monday morning.[9]

The first task was the construction of the military road, 2.4km long, which linked the three forts. The main landing at the island was the small exposed jetty mid-way down the west side, which served the lighthouse (Fig 11.1; Fig 11.3). Landing could only be effected in small boats at certain states of the tide and weather. The harbour beach was initially used to store rails, tackle and other items of equipment, and mules with panniers were used to move material, as the steep slopes of the island rendered it unsuitable for horses;[10] four two-year-old donkeys, bred on the island, were advertised for sale in July 1884.[11]

On the morning of 17 October 1879, the Duke of Cambridge, Commander-in-Chief of the Army, having inspected Leith Fort, sailed for Inchkeith to inspect the works. At the time of his visit, the military road had been completed and a tramway laid between the forts, the North Battery was nearly completed, the other two were in a forward state, and the foundations for the barracks were being laid.[12]

The newspapers of the day described the works, noting the 'new feature' of mounting of the guns *en barbette*, rather than in embrasures, thus commanding a wide field of fire.[13] The North Battery's rock-cut ditch, measuring approximately 7m wide by 7m deep, was described, along with its *caponier*, which was provided with musketry slots to defend the trench.[14] The ditch has long since been filled in and very few traces of

Figure 11.6
The corridor to the north of the entrance of the West Battery. Visible on the left are the firing loop-holes and the secondary entrance to the fort. The main entrance to the fort is beyond the wooden doors and to the left (© Gordon Barclay)

the original fort are obvious. However, part of the stone wall forming the west end of the ditch boundary survives.

The West Battery (known from early in its life as No. 1 Battery or the North-West Fort) on the crest of the Cawcans Ridge was protected by two ditches, also *c* 7m by 7m, cut through the ridge, on the north and south flanks (Fig 11.4); on the seaward side, these ditches ended at the top of high cliffs. The mound on which the gun position was sited was fronted to the east (inland) side by a thick wall, containing a vaulted passage providing access to loop-holes covering the open field of fire to the east (Fig 11.5; Fig 11.6). Above the wall, the mound of the battery sloped up steeply. The entrance to the fort was through a heavy armoured door, on the eastern wall, which faced into the island. Above the entranceway there is still a large stone bearing the inscription 'VR 1880'.

Inside the fort door, a steep stairway leads up to an intermediate landing (Fig 11.7) from which a stair to the right leads up onto the reverse slope of the battery. At the top of the stairs there is to the right a vertical shaft with a ladder down to the lamp corridor, from which light was provided through glazed apertures to the magazines. Just short of the gun, a passage and stair lead to the left from the main corridor down to the shell and cartridge stores. As there were no ready-use ammunition recesses in the emplacement, additional shell storage racks were later placed in the lobby and in the main corridor. No lifting mechanism has been detected for this phase of the battery, and it must be presumed that the shells and cartridges were brought up by hand. Smith suggests that voice-pipes, often associated with shell lifts, have been noted.[15]

The ditches and the eastern face were covered by *caponiers* at the north-east and south-east corners of the fort, which could provide enfilading fire. Their ground floor rooms were accessed along the passage through the east wall of the fort. The south-east *caponier* (to the left on Fig 11.4) is a tower, roughly square on plan, with large openings near ground level, fitted with steel bars fronting a sash-and-case window, and firing slits near the top, facing along the south ditch and along the front of the fort. The upper part of the tower's wall

Figure 11.7
The stairs within the West Battery, leading up towards the gun; the passage and stairs down to the magazine lead off from the first landing, just visible. This photograph was taken in the 1980s, when the building was less befouled by birds, vegetation and human visitors (© Ron Morris)

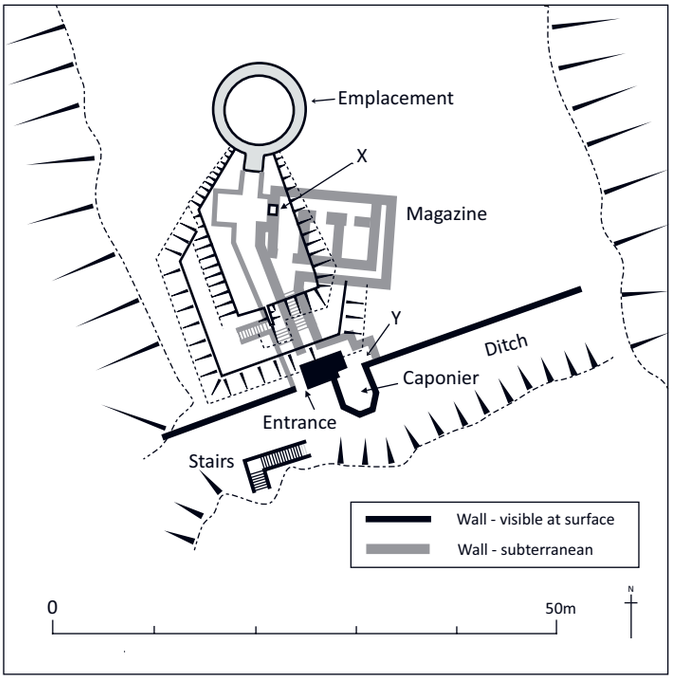


Figure 11.8
A reconstruction of the North Fort in its earliest form using the Ordnance Survey maps of 1893 and 1911, and drawings on WO 396/2 and WO 78/5180. The subterranean features are shown in a dark grey tone. 'X' marks the location of the probable lift; 'Y' the location of the surviving firing loop (© Gordon Barclay)

is in later (probably 1916) brick, and this is surmounted by a flat roof. The top of the tower seems originally to have been open.[16] The north-east position is flush with the front wall of the fort, but projects into the northern ditch, and small-arms fire could be directed along the ditch from small windows. The eastern end of the northern ditch was largely filled in by later buildings when the battery was extended in 1916, and the western part of the ditch has been partly backfilled.

The emplacement to hold the disappearing mounting, which measured 17ft 6in (5.33m) in diameter, is marked on a later war accommodation plan of 1911; there are what appear to be characteristic niches of this type of mounting at nine o'clock and three o'clock on the circumference, measured 1.37m deep, with mouths 1.54m across, widening to 1.97m at the rear.[17]

The North Battery (known as No. 2 Battery or the North-East Fort) was built on the East Stell. It is the most altered by later modifications. As built, its single 10-inch emplacement was defended by a rock-cut ditch with a *caponier*. A plan of the fort was made in connection with the HMS *Sultan* firing experiments in 1884, and there are also drawings for later work on the fort which differentiate the structures belonging to its earliest phase.[18] Careful analysis of these sources and the 1893 OS maps allows us to reconstruct the North Battery as it was in the 1880s (Fig 11.8), and again in the 1890s (see below). The fort was entered by a door just west of the *caponier*, access to the bottom of the ditch being obtained by a flight of steps. Immediately inside the door a right-hand turn led to the *caponier* and to the gated top of the stairs down to the magazine. Although the *caponier* has been removed, a single firing loop in the fort wall just to its east survives (Fig 11.8, 'Y'; Fig 11.9). Above the top of the fort wall, an earthen bank rose up

Figure 11.9
The single surviving original loop-hole in the underground fabric of the North battery. The dead-end in which its survives was at first absorbed into the reconstructed, but was later walled off. Modern explorers have broken through that wall (© Gordon Barclay)

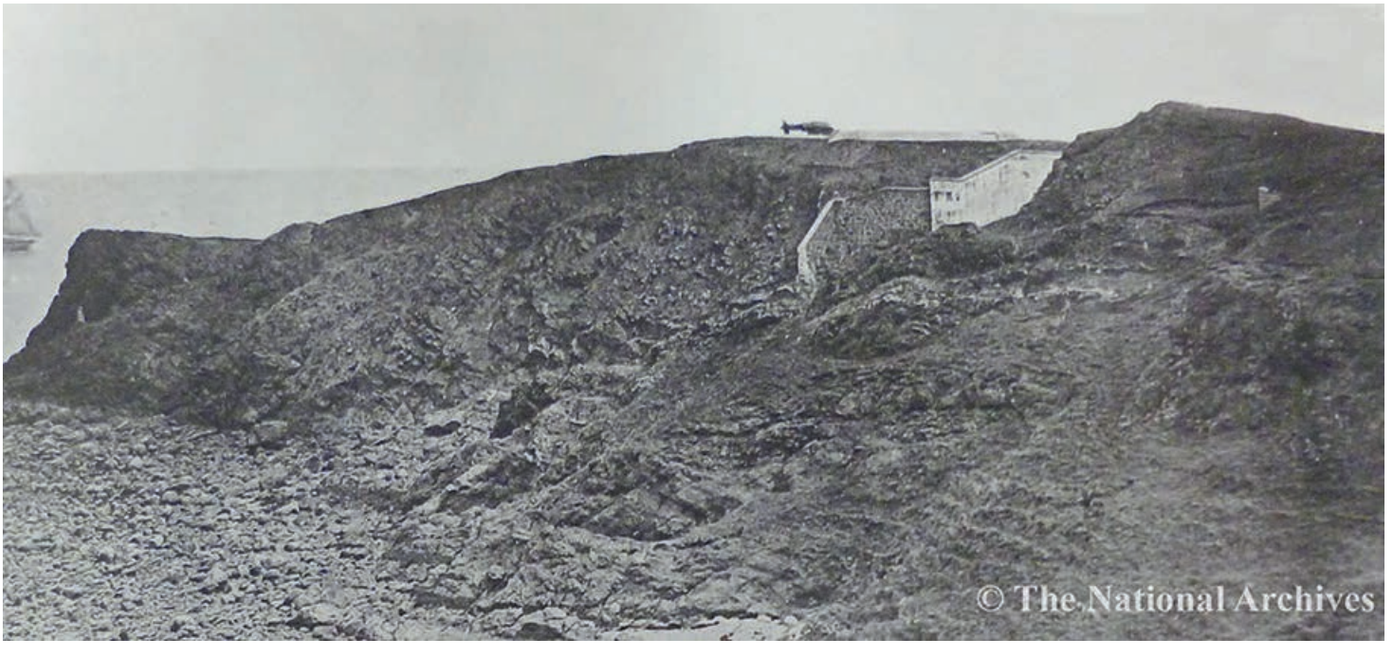


Figure 11.10
View of the North Battery in 1884 at the time of the HMS *Sultan* firing experiments. The flat platform behind the gun is clearly visible, as are the inner face and terminal of the rock-cut ditch, now absorbed into later fabric. This image demonstrates the fallacy of the need for disappearing mounts: the gun is the only feature of the battery visible, and would have been at only limited risk of a hit (© The National Archives, WO 396/2)

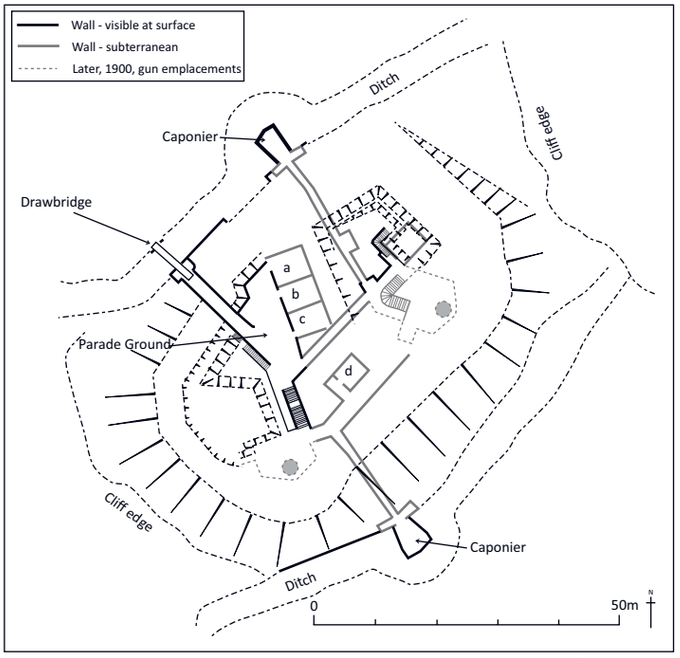


Figure 11.11
Plan of the South Battery in the 1880s, reconstructed from a number of sources. Fabric visible on or from the surface is shown using black lines; subterranean fabric is dark grey. We have not been able to provide a complete plan of the original underground fabric, where it had been removed by later expansion. We have no source for the shape of the gun emplacements – the grey dashed lines show the outlines of the 1900 6-inch emplacements. The features marked 'a'–'c' are the three casemates; 'a' was a store, while 'b' and 'c' were originally living accommodation for the small permanent garrison. 'd' is the original magazine. The earthworks on the top of the battery were shaped to provide cover for the working areas.

to a platform behind which yet a further superstructure rose, a flat-topped concrete surface to the rear of the gun pit (Fig 11.10). The gun pit itself was accessed from the underground complex.

At the magazine level, a narrow lamp passage served both the shell and powder magazines. Unlike at the West Fort, we have found evidence of a possible shell lift, at the point 'X' on Fig 11.8; the former site of the shaft is marked by patches of brickwork in the walls at both magazine and gun pit levels. At the upper level, the niche into which the shaft opened was later shelved for shell storage.

Figure 11.12
The northern of the rock-cut ditches of the South Battery, with the well-preserved musketry *caponier* (© Gordon Barclay)

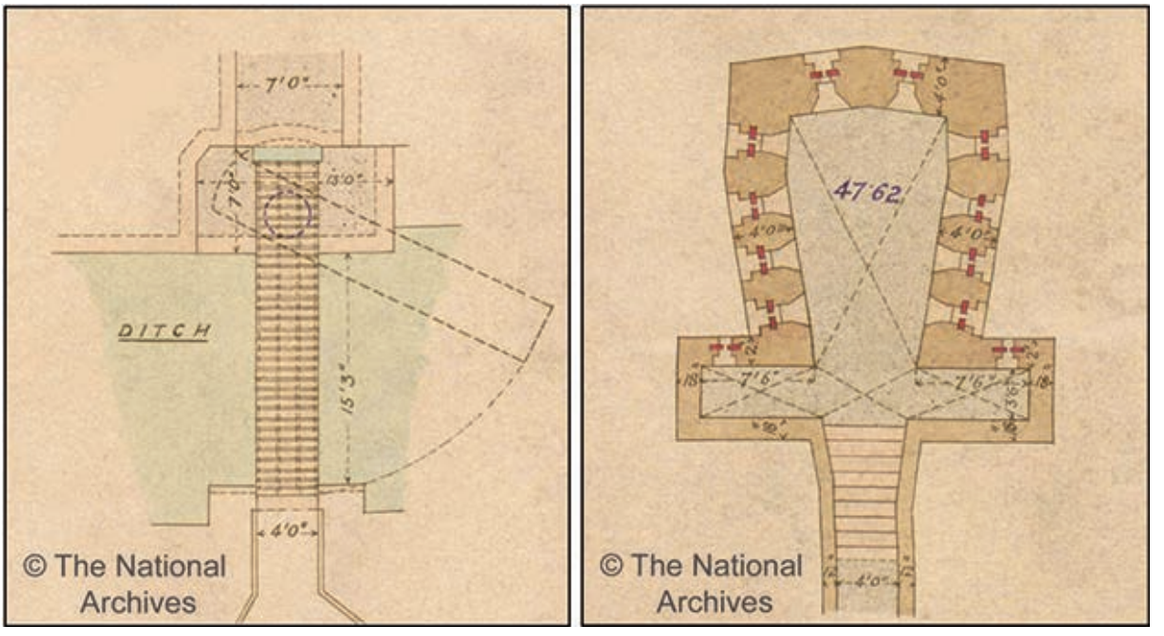


Figure 11.13
Details of the South Fort's 1880 drawbridge and the *caponier* in the north ditch, as recorded in 1900 (© The National Archives, WO 78/5159)

The South Battery was at the lowest elevation of the three, near the island's south-eastern end. Although the earliest representation of the fort (the 1893 1:2,500 map) shows little detail, the plans for the reconstruction of the battery in 1898–1900 differentiated between existing and new fabric, and it has been possible to suggest an outline plan of the battery as built (Fig 11.11).

The fort was protected by two rock-cut ditches on its north and south sides. Both ditches had a single projecting *caponier* with musketry loop-holes, which survive in good

Figure 11.14
The casemates in the South Fort, as they were in the 1980s. The gate and the passage from the drawbridge are visible to the top left. The central casemate provided the editorial offices of the First World War newsletter of the Forth defences, the *Inchkeith Lyre* (© Ron Morris)

condition (Fig 11.12). Entrance to the fort was by means of a drawbridge across the northern ditch (recorded in detail, along with the *caponiers*, in the drawings of 1898–1900 (Fig 11.13)) and then through an armoured door. As at the West Fort, above the arched entranceway the letters and date 'VR 1880' are inscribed. Immediately inside, there is a downward gradient to a small, sunken courtyard which once served as a parade ground, to the east side of which are three original casemated accommodation rooms, ablutions and so on (Fig 11.14). A covered passage led to a long winding staircase down to the deeply buried magazines. The *caponiers* were accessed through even narrower, darker tunnels.[19]

According to Grant, the two guns at this fort were placed on granite platforms with, in a hollow between, a bomb-proof subterranean magazine, where the shot, shell and cartridges were stored.[20]

Along the back of the magazines, and separated from them, was the lamp lobby, served by independent stairs, from which there was no direct access to the magazines. Here, the lights for the magazine could be safely handled and placed in niches, glazed on the magazine side. Between the guns was an open-topped passageway, which was loop-holed for musketry defence. It could also be used for safe transit from one gun to the other and to store small arms. Mid-way along it was a Gun Group Commander's post. The passageway itself has been filled in, but the GGC post survives.[21]

All three forts were originally designed to be defended by their garrisons in isolation while continuing to fire upon enemy shipping, even if the rest of the island should be captured by an enemy. It appears that each fort had its own supply of fresh water which was reported to have gushed plenteously from the rocks.[22] However, other sources suggest that an enterprising landing party armed with a few machine guns, if it gained control of Lighthouse Ridge, would probably have been able to prevent the detachments in the North and West Batteries from firing their heavy guns, which at that time had no overhead or rearward protection.[23]

Inchkeith, 1881–7

On Tuesday 27 June 1881, a detachment of two officers and 60 men from Landguard Fort in Harwich arrived at Granton and was transported out to Inchkeith in the steam tug *Express* to receive and mount the six 10-inch guns, which were expected to arrive on the Friday (four of which were to be mounted on Inchkeith, two at Kinghorn Ness).[24] It was not until 18 July, however, that the Government screw steamer *Lord Panmure* arrived from Woolwich with the guns.[25]

The original decision to erect barracks for a wartime garrison at the south-west of the island had been countermanded by the Government to save money. The planned caretaker staff of one sergeant and three or four men was billeted in two of the casemates of the South Battery, one for the sergeant and his wife and the other for the artillerymen.

The distance between the guns at Inchkeith and Kinghorn Ness was a little over 3,800m, with the guns being sighted at up to 4,800 yards (*c* 4,390m), or nearly three miles. Although it is unlikely that a 10-inch RML would engage a target beyond 2,000 yards (*c* 1,830m), mainly owing to the difficulty of observing the fall of shot,[26] the whole of the width of the channel between Inchkeith and Kinghorn could be covered by fire. The channel between Inchkeith and Leith Docks is *c* 5,500m wide and it is doubtful that the guns on Inchkeith could have fired very effectively on targets, even in that part of the channel over 10 fathoms deep (at a range of *c* 2,750m).

On 10 July 1883, the first cargo of 4cwt shells was delivered to Inchkeith. A team of 28 Royal Artillerymen from Leith Fort took over a week to get the heavy shells to the magazines. In the absence of barrack accommodation, the men were transported by tug to the island in the morning and returned to Leith at night.

The test-firing of the guns at Inchkeith and Kinghorn Ness was scheduled for late July 1883,[27] but the guns were not practice-fired until May 1884.[28] At the time of the forts' completion, it was considered that 'if the Forth be held at Inchkeith no further defence is necessary'.[29] The Inchkeith batteries were first used for training in July 1884, when Regular artillerymen from 51st Brigade (Scottish Division) Royal Artillery practised on the heavy guns. The guns were tested with heavy battering charges and 400 lb Palliser shot. Everything stood the strain satisfactorily and the lighthouse was not affected by the concussion.[30]

Volunteer artillerymen drilled on the Inchkeith guns for the first time in 1885; on three successive Saturdays in August and September, detachments of up to 150 men of the 1st Midlothian Coast Artillery Volunteers had a series of drills on the guns and practised signalling using flags to Calton Hill, Edinburgh and to Kinghorn.[31] The batteries on Inchkeith could be made ready for firing within half an hour after the landing of a detachment from Leith Fort.[32]

Soon after the guns had been mounted at Inchkeith and Kinghorn Ness, critics complained that, unassisted by other measures of defence, the 10-inch RML guns could do little injury to the modern, heavily armoured vessels of European navies, armed with newer, more powerful breech-loading guns. It was asserted that French warships could attack the island with impunity.[33]

On 3 June 1885, Admiral Hamilton, Colonel Malcolm, RE, and Captain Ruck, RE, enquiring on behalf of the Government into the state of the coast defences, visited the fortifications on Inchkeith. They were not in any doubt about the efficiency of the Inchkeith defences, but concluded the system of defence for an estuary like the Forth was incomplete without additional protection provided by armed cruisers and torpedo boats. As noted in Chapter 3, the Government was, in

Figure 11.15
The stone-built Drill Hall in Kinghorn Harbour, on Inchkeith, built in 1890, as it appeared about 100 years later. It later served as an Officers' Mess. The large building to the left is the First World War northern engine room; the brick-built building in front, a contemporary petrol store. The brick building to the right is a salt-water pump intake (© Ron Morris)

the 1880s, in favour of establishing a Naval Volunteer Force with the necessary vessels.

The need for a proper harbour and barracks at Inchkeith had been a regular subject of concern since the Government abandoned the original plans in 1880, as it would be difficult to land and house a large body of men and stores during an emergency. The Forth Volunteer Division Submarine Miners (RE) experienced a great deal of inconvenience unloading the heavy stores necessary for their training in 1880, as the small jetty dried out at low water and access from it to the upper parts of the island was difficult (Fig 11.3).[34] In July 1889, when 140 Submarine Miners were on Inchkeith for a 15-day training encampment, the officers' mess tent was almost blown down.[35] Finally, in November 1889, the War Office arranged to construct masonry buildings to accommodate 100 Regular soldiers and volunteers on the island.[36] Work on seven buildings was in hand by February 1890, to be ready for the summer's training season,[37] and was almost completed by 25 March, along with a stone-built drill hall at the north end of the island (Fig 11.15).[38] At the beginning of August 1891, it was reported that the War Office had determined that the construction of a pier at Inchkeith should be at once proceeded with.[39] The pier had, however, not been completed by the time the OS map of the island was prepared in 1892–3.

1887–1906

The inadequacy of the original armament of Inchkeith was acknowledged in December 1887, when the Royal Artillery and Royal Engineers Works Committee recommended that two of the 10-inch RMLs should be withdrawn and a 9.2-inch gun and two 6-inch guns be mounted in Elswick hydro-pneumatic disappearing mountings and two 12-pdrs be mounted to cover the controlled minefield in the North Channel. By 1890, it was decided that two 4.7-inch guns should be employed instead.[40]

The installation of the new guns on Inchkeith was reported upon in the press, who noted approvingly that the disappearing mountings meant that 'the element of danger to gun and gunners would be minimised as the recoil caused the gun and carriage to disappear, thus ensuring loading operations were carried out with perfect safety'. The fallacy underlying the fad for disappearing mountings has already been discussed.

Plans drawn for the later replacement of the HP disappearing mountings in the North Battery show the changes made in the size of the gun pit. The HP pit was larger, and presumably much deeper, with two substantial 'niches' on opposite sides of the gun pit (Fig 11.16); the *c* 1903 plans show these larger pits had been partly filled in to accommodate the Mk VII 6-inch guns on CP mountings.[41] *The Scotsman* reported the successful testing of 'the new breech-loading guns mounted on hydro-pneumatic carriages' under the supervision of senior Royal Artillery officers: 'The working of these guns and mountings, reported to be of a very complicated nature, was carried out in a most satisfactory manner.'[42] The work was begun on 29 July 1891 and was completed on 6 February 1893, at a cost of £8,264.[43]

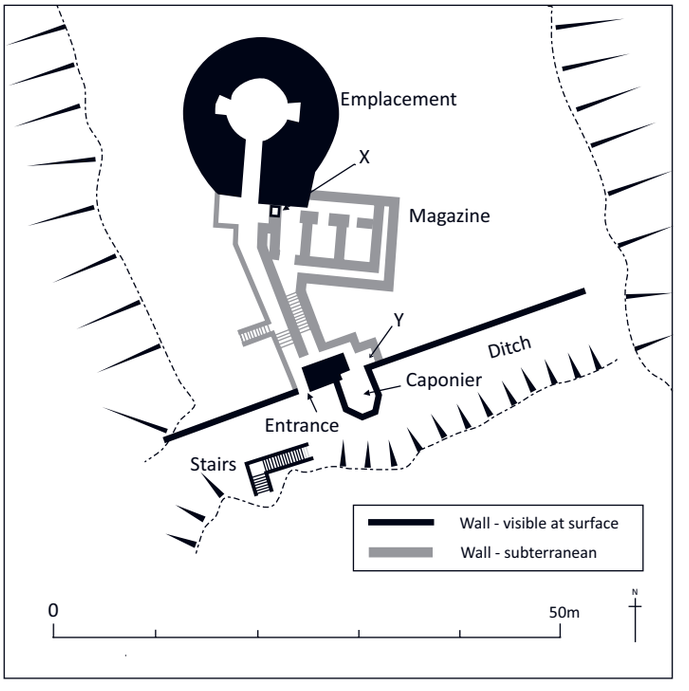


Figure 11.16
The North Battery on Inchkeith, as it was in about 1891, after the replacement of the 10-inch RML gun with a 6-inch Mk VI gun on an Elswick HP disappearing mounting. WO 78/5180; WO 396/2; OS 1:500 plan of 1893). 'X' marks the location of the probable lift; 'Y' the location of the surviving firing loop (© Gordon Barclay)

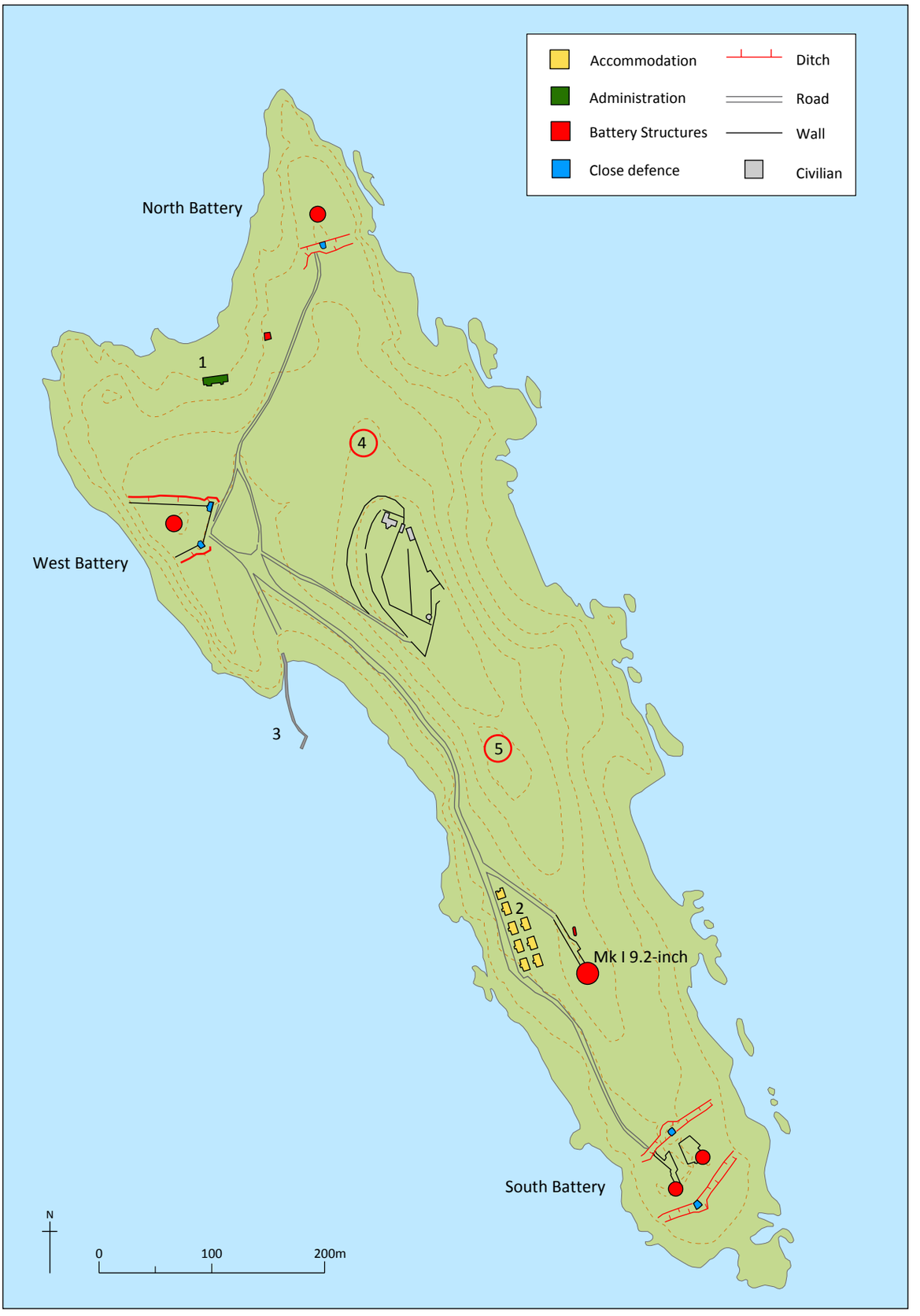


Figure 11.17

Map based on the 1893 Ordnance Survey 'Special Survey' maps of Inchkeith for the War Office, showing the main features and the metalled road linking the various complexes. (1) the Drill Shed; (2) the main complex of stone-built accommodation huts, (3) the lighthouse pier, (4) and (5) the sites of the two 4.7-inch guns, under construction at this date; they were mounted in 1895, but we have no drawings of their shape, ancillary buildings or access routes (© Gordon Barclay)

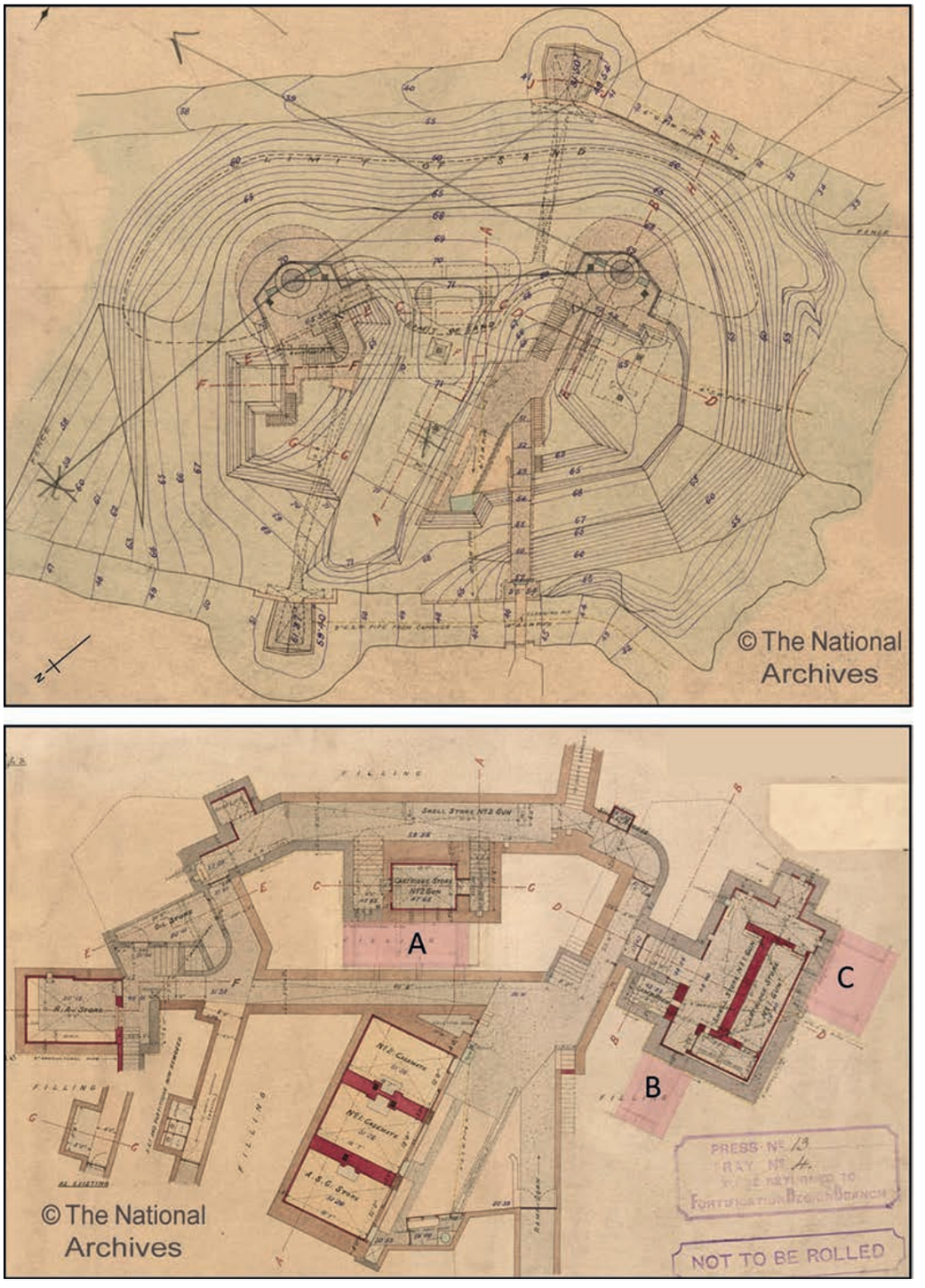


Figure 11.18

The top plan and magazine (lower) level of the reconstructed South Battery, as recorded in May 1901. They are reproduced at different scales, to allow the lower plan to be read more easily. On the lower plan, the original 1880 fabric is toned brown, while the new structures are in grey. An oddity of the lower plan is that in the newly built magazine on the right-hand side, and in the centre, beside the original shell store, three extensions are recorded in pencil. These were in place by 1918, but it is not clear when they were built. We have highlighted these areas in a pink wash on the lower drawing, and marked them 'A', 'B' and 'C' (© The National Archives, WO 78/5159)

Figure 11.19
The bottom of the obliquely angled 'ladder lift' carrying shells from the magazine to the gun platform in the South Battery (© Gordon Barclay)

The Scotsman reported that the 9.2-inch gun had been safely transported to Inchkeith in December 1892 and moved with difficulty to its position on the southern part of the crest of the island. The press reported that the gun was expected to have a range of 11 miles (almost exactly twice its actual range!) and could command the whole of the South Channel and a great part of the North Channel.[44] There is no contemporary plan of the 9.2-inch emplacement at that date and it is difficult to know how much of what was later recorded, in 1908, was original, although the total cost of the alterations then was only £820, implying the need for only relatively limited work.[45] The magazine is recorded as having been enlarged in 1904 at a cost of £400 and it is not clear whether the Depression Range Finder Post recorded in 1908 had just been built, or was built in the 1890s. This 9.2-inch emplacement is unusual in having two vertical ladders in concrete shafts, one linking the emplacement floor with the magazine level below and the other from the DRF Post down into a room below (recorded in 1908 as a RA Store). These features are almost certainly original.[46] The DRF Post was a round-ended, open, concrete-walled enclosure with a DRF pillar at both ends, and the shaft with the ladder accessed below a hatch in the centre. By 1911, it was marked as the 'Former DRF B Group', and had been replaced by a structure further north.[47]

During a busy schedule on 23 September 1893, His Royal Highness the Duke of Cambridge inspected the new fortifications on the island.[48] The 1893 1:2,500 Ordnance Survey map (Fig 11.17) shows a comparatively bare island. The North and West Forts were both mapped, showing the locations of their rock-cut ditches and the emplacements for the two 6-inch Mk VI guns in their disappearing mounts. In the bay between the two forts, the stone-built 'Drill Shed', one of the few substantial structures on the island at this date, was shown. Dug into the cliff of the same bay was the 'Test House' for the submarine miners (Fig 3.2). On the 1:2,500 map, the permanent stone-built hutments (eight buildings, one of which is marked as 'Officers' Mess') are shown, immediately beside the emplacement of the 9.2-inch Mk I gun. Finally, at the southern point, there are the double emplacements of the South Fort for the two 10-inch RMLs within its two rock-cut ditches. At this date, there were only civilian buildings on the summit of the island, associated with the lighthouse.

In January 1899, the armament of Inchkeith comprised one 9.2-inch Mk I (disappearing mount), two 6-inch Mk VI (disappearing mounts, North and West batteries), and two 4.7-inch QF guns. The two 10-inch guns in the South Battery had been dismounted between January and June 1898,[49] when work began on reconstructing the fort to accommodate two Mk VII 6-inch guns on CP mountings. This work was completed on 14 July 1900, at a cost of £5,116 (Fig 11.18).[50] Additional

Figure 11.20
The top of the 'ladder lift' where shells would emerge onto the gun platform, South Battery (© Gordon Barclay)

underground stores and shelters were built in the South Battery. The Royal Engineers 1901 plan of the underground structures differentiates between pre-existing (brown) and newly built (grey) structures but was, as our fieldwork has shown, incomplete. The original, relatively small, magazine was adapted as the cartridge store for the No. 2 gun, with the shells stored on shelving in the broad corridor outside it. The shells and cartridges had to be manhandled to new lifts (the 'ladder lift' for the shells, the 'band lift' for the cartridges) (Fig 11.19; Fig 11.20), which took them directly to the gun floor and the emplacement floor respectively.[51] The No. 1 gun, to the west, was provided with a newly constructed magazine, with the two lifts more conveniently located.[52] The 1901 plan of the magazines has, marked faintly in pencil, the outlines of three additional rooms, which were in fact built and which survive, but whose date is unclear (Fig 11.18, A, B and C). They were not recorded in a detailed plan of the battery in September 1911, but were in place by the plan of 1918, included in the Fort Record Book.[53]

At some point in the 1890s, the 6-inch HP 'disappearing' gun in the West Fort was provided with a Depression Range Finder Post of the simple kind seen elsewhere on the island – a small, concrete-walled, open enclosure containing a DRF pillar; it was linked by a staircase down the rear slope of the battery to a telephone room, which still survives, at the base of the 1916 Battery Command Post tower.[54] The top of the DRF Post's walls and the pillar are almost completely buried, but were just visible in 2016. The 1911 OS map of the island shows a similar structure to the south-west of the gun, and it is possible that this was used for range-finding in the south-east arc of firing.

The Conference on Coast Defence held in January 1899 concluded that Inchkeith's two 4.7-inch QF guns were in the wrong place in the estuary; that the northern of them should be replaced by a second 9.2-inch gun; and that the two remaining 6-inch Mk VI guns on disappearing mountings (in the North and West Forts) should also be replaced by modern Mk VII guns.

In January 1900, Inchkeith's guns were given new Group designations, which were to remain unchanged until 1905 (Table 17). Subsequently, two 9.2-inch guns replaced the two 4.7-inch QF guns, and the obsolescent Mk VI 6-inch gun in the North Fort was replaced by a pair of new Mk VII 6-inch guns (the Mk VI in the West Fort remained in place until 1906).

Modern gunnery sights were supplied to the island around the turn of the century: automatic sights for the 4.7-inch QF guns in 1897 and a Mk II Depression Range Finder were supplied to 'A' Group in 1901.[55]

Two 6-pdr Nordenfeldt QF guns were issued to Inchkeith in January 1901. The 6-pdr Nordenfeldt was a light weapon (*c* 370kg) designed for use against fast, light boats. In the following month, four 5-inch BL guns (a type superseded by the 4.7-inch QF) on Vavasseur carriages – an old-fashioned

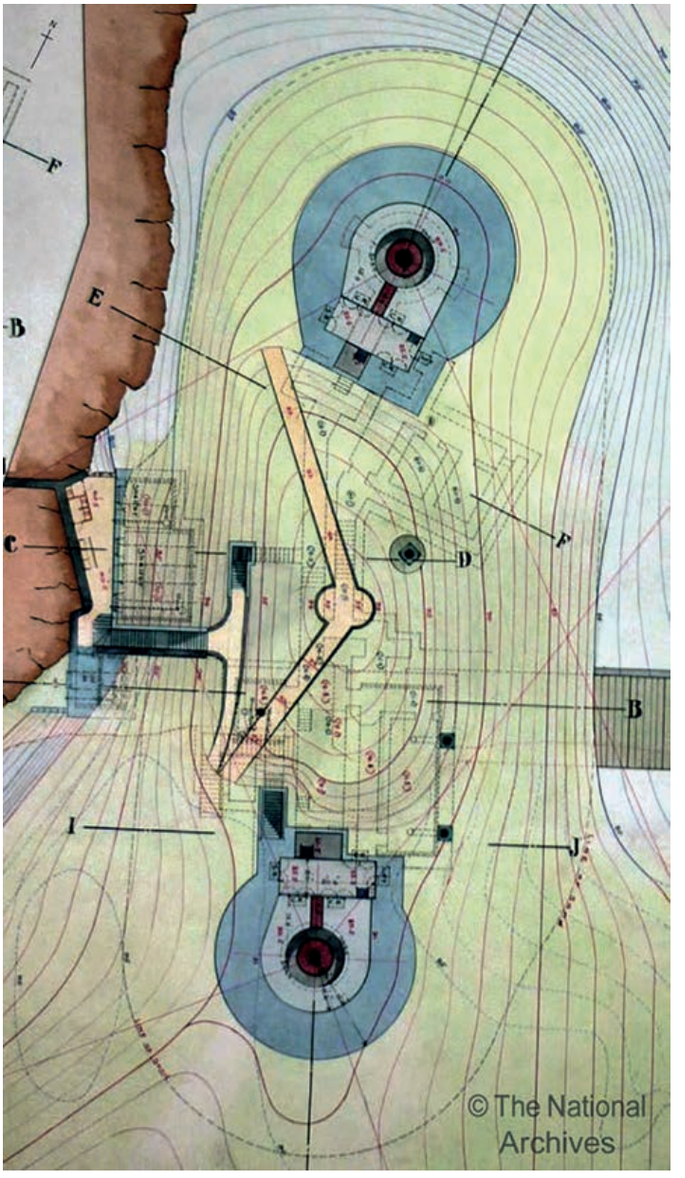


Figure 11.21
Plan of proposals, apparently implemented, for the reconstruction of the North Fort. The outline of the former Elswick HP disappearing mounting gun pit (larger than the new one) is shown lightly as a dashed line on the emplacement in the upper part of the drawing (© The National Archives, WO 78/5180)

recoil-absorbing trolley – were sent to the island explicitly to form a practice battery.[56] A 1909 list of the approved armament of the river included four 'practice' gun Groups: 'A' two 5-inch BL; 'B' two 5-inch BL; 'F' two 6-pdr QF; 'H' two 3-pdr QF.[57] These eight guns were mounted in a line along the edge of the ridge, facing east, the Groups labelled from south to north. They were mapped on the 1909–10 edition of the 1:2,500 War Department map, and also on the 1911 1:500 map, along with the battery's DRF platform, which

still survives;[58] interestingly, only the northern four emplacements (practice Groups 'F' and 'H') were marked 'Former' practice battery in 1911. It is possible that the four 5-inch guns were still in situ, although those at Kinghorn were removed in 1908. One of the 5-inch emplacements was excavated in 2001 and one of the ammunition storage huts survives.[59]

The first years of the 20th century saw the most significant phase of rearmament since the three forts were built in 1880, and detailed drawings were made of most of the emplacements and ancillary structures built in 1902–4.

The planned reconstruction of the North Battery included the removal of the old single 6-inch Mk VI gun on a disappearing mounting, and its replacement by two 6-inch Mk VII guns on CP mounts (Fig 11.21). One was on the old site, which necessitated the partial infilling of the characteristically shaped gun pit for the HP disappearing mount, to create one of a smaller diameter. The new gun of the pair lay to the south;

Figure 11.22
The northern 9.2-inch gun, from the south. The great brick 'carapace' dates from 1941. The outline of the original slightly domed *barbette* emplacement is visible under the Second World War canopy. In the distance is the North Battery; in the foreground is the Fire Command (North) building. The BCP for the northern 6-inch gun is visible in the background (© Gordon Barclay)

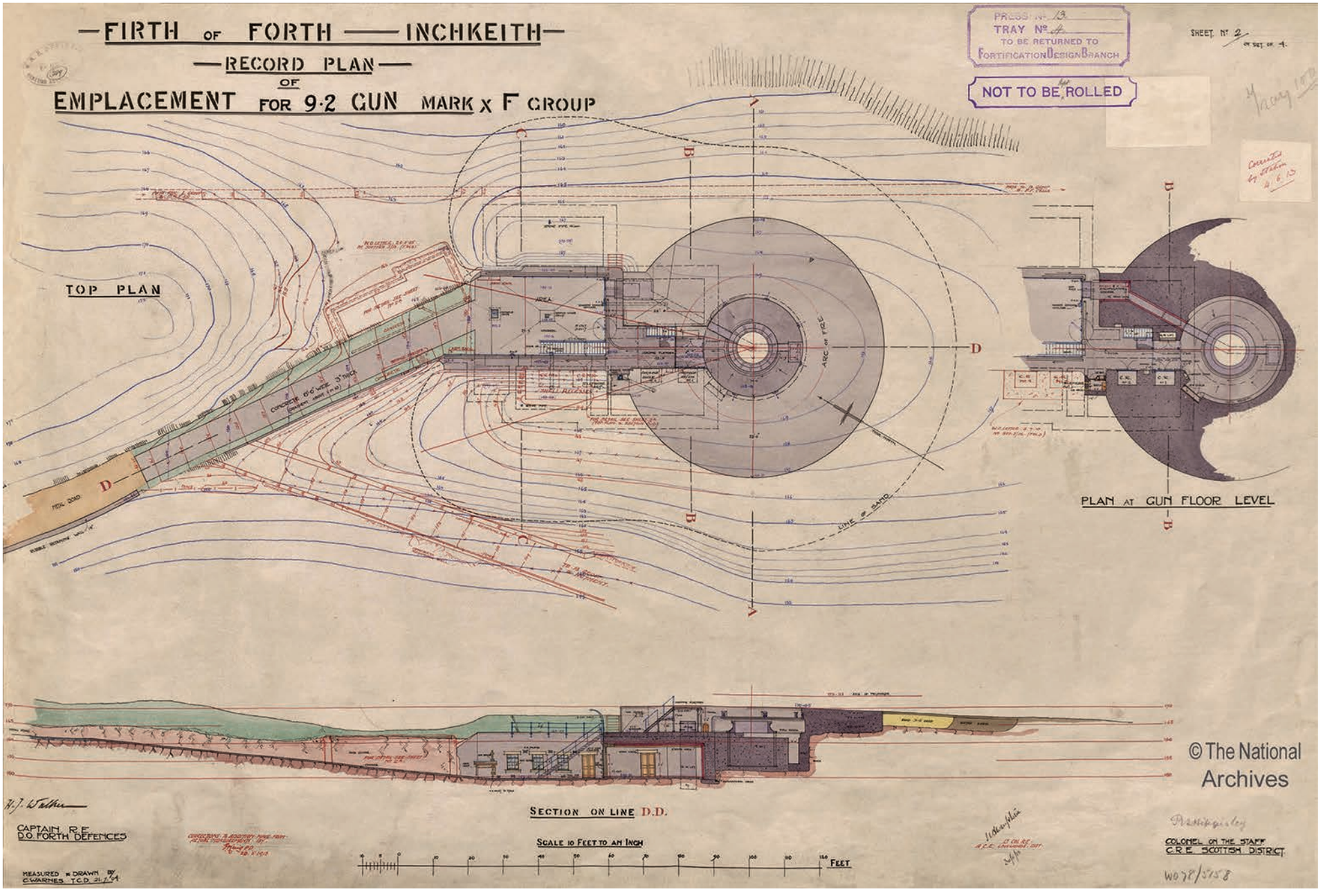


Figure 11.23

Plan and elevation of the mid-9.2-inch complex, drawn in July 1904, with additional structures planned in 1913. The plan to the right is of the gun floor level (© The National Archives, WO 78/5158)

Figure 11.24
The quick-return lift of the mid-9.2-inch gun (© Gordon Barclay)

Figure 11.25
The western observation room of the former Fire Command (North) (© Gordon Barclay)

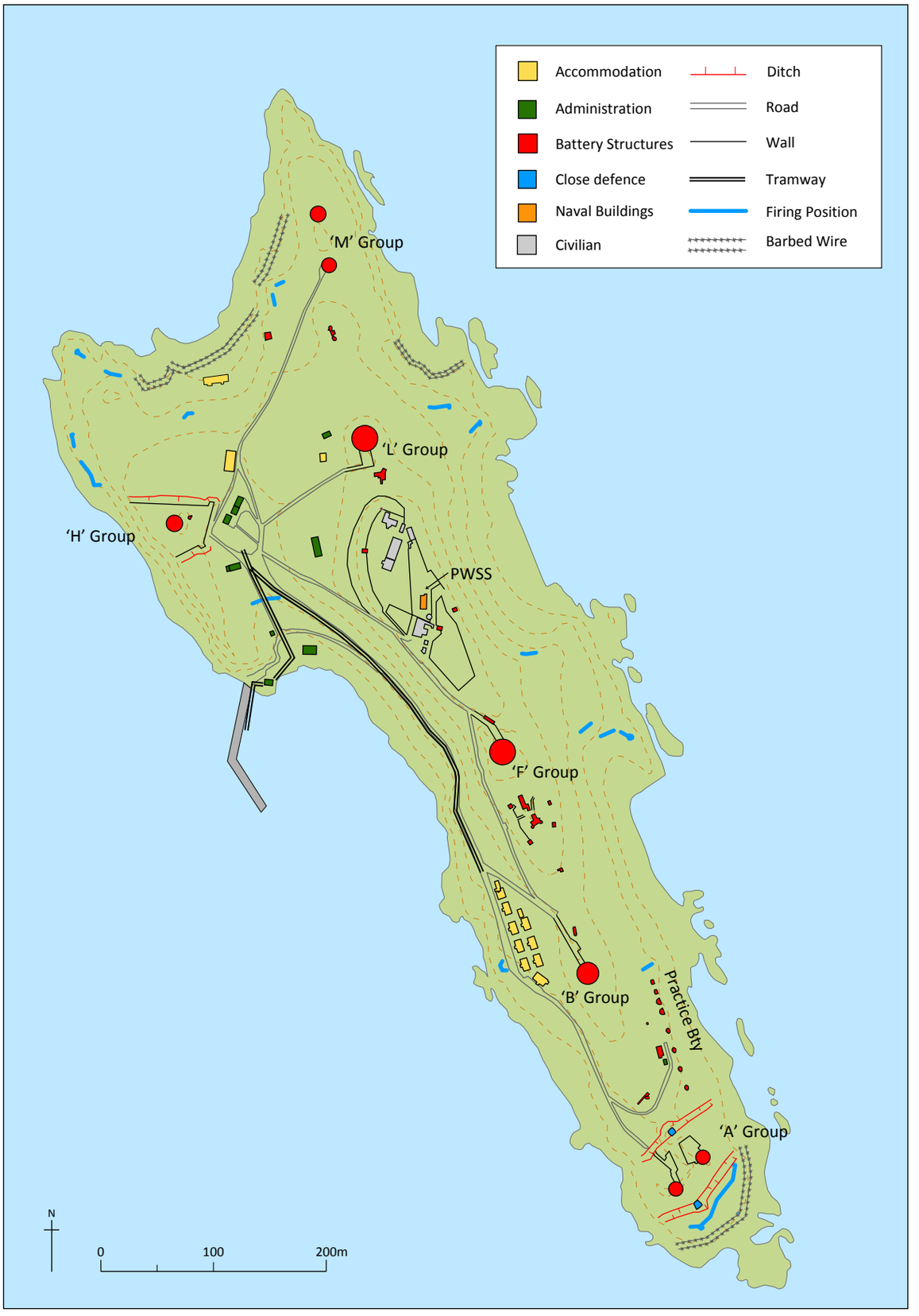
Figure 11.26
Traces of wall decoration in the Fire Command (North) Post (© Gordon Barclay)

the *caponier* in the ditch was removed; and the magazine was built partly in the rock-cut ditch and partly in newly quarried ground. An undated set of proposals for the battery is held on file and is, as far as we can tell, what was built. The new guns were included for the first time in the Armament Table for 1905.[60]

No significant alterations were made to the West Battery in this period and it continued to be armed with a Mk VI 6-inch gun on a disappearing mount until 1906.

The emplacements for the new 9.2-inch guns, to the north and south of the lighthouse, were on a far larger scale than the

Figure 11.27
Map based on the 1911 Ordnance Survey 'Special Survey' for the War Department. It shows the defences at their greatest pre-war strength around 1905–6; in 1906 the 6-inch gun batteries ('A', 'H' and 'M' Groups) were struck off the approved armament and were shortly after disarmed (© Gordon Barclay)


Accommodation
Administration
Battery Structures
Close defence
Naval Buildings
Civilian
Ditch
Road
Wall
Tramway
Firing Position
Barbed Wire
'M' Group
'L' Group
'H' Group
PWSS
'F' Group
'B' Group
Practice Bty
'A' Group
N
0
100
200m

4.7-inch QF emplacements they replaced. The complex for 'F' Group (the middle 9.2-inch gun, just south of the lighthouse) took two years and nine months to build (20 September 1900–30 June 1903), at a cost of £7,876.

Unusually, there are no record plans of the northern 9.2-inch gun complex, but the emplacement was built to a standard plan[61]

The northern 9.2-inch complex (Fig 11.22) was approached from the south-west by a rock-cut road that gave almost level access to the southern end of the rectangular open area behind the gun. Clockwise around the parade ground, the rooms opening from it were: Lamp Room; RA Store; the Shell Store passage; entrance to the entrance lobby for the Cartridge Store; Men's Shelter; Officers' Shelter; WC; Ablutions Room. In the Shell Store passage, the door into the store-room itself lay immediately to the left; further along the passage there was a quick-return lift to the upper level, just behind the gun pit. Opposite the lift was the issuing hatch from the cartridge store. There were three lamp niches from this passage into the cartridge store, which was accessed from a

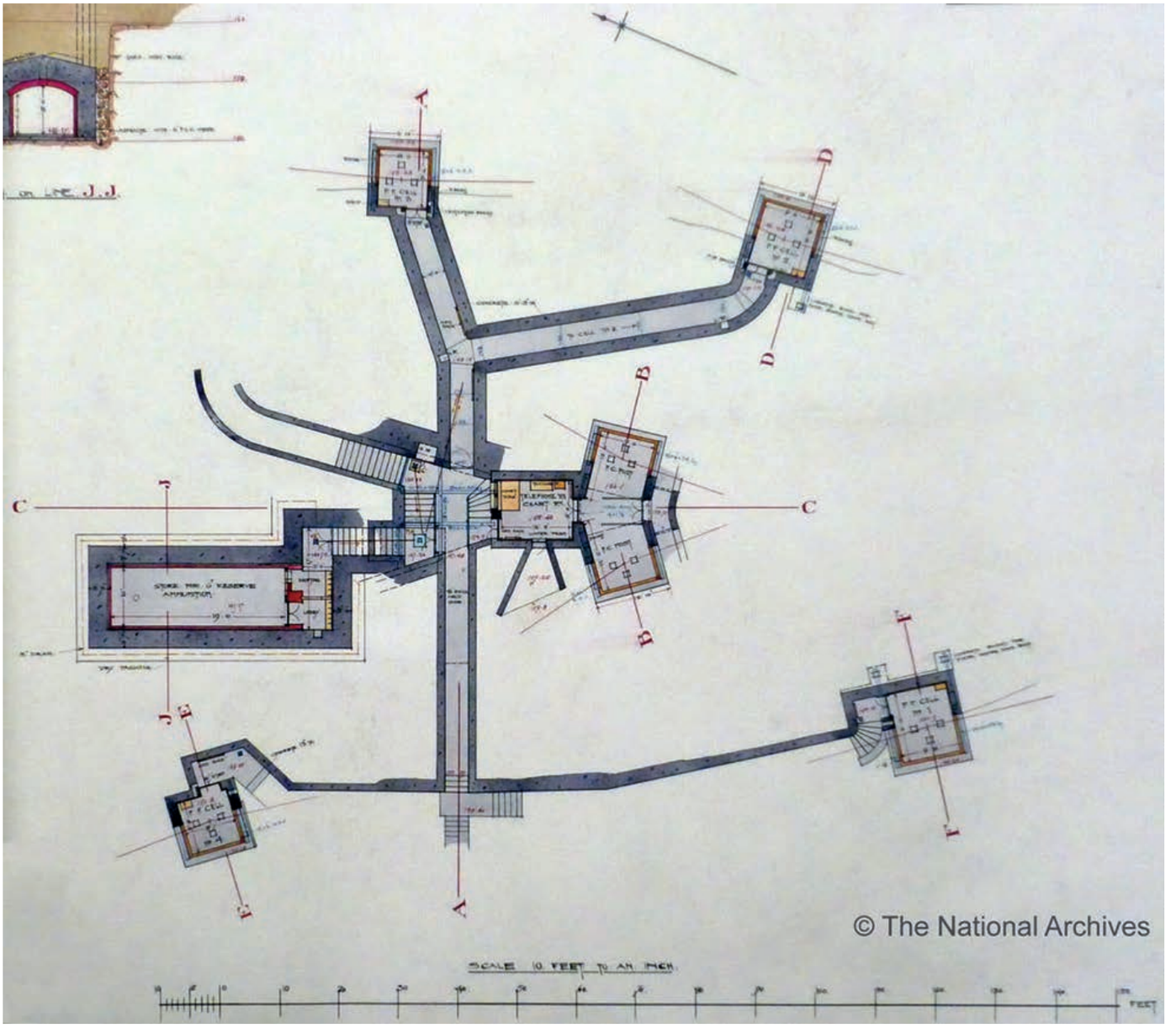


Figure 11.28
Plan of the Fire Command (South), PFC and reserve ammunition complex (© The National Archives, WO 78/5160)

Figure 11.29
PFC No. 4 on Inchkeith, facing west, to provide positional information for 'F' Group, the mid-9.2-inch gun (© Gordon Barclay)

separate entrance lobby from the parade ground. This lobby was lit by a lamp niche accessed from the Men's Shelter. The upper level was reached by a steel stair in the north-east corner of the 'area'.

The 1911 OS map records a DRF Post for 'L' Group, the northern 9.2-inch perched at the northern end of the lighthouse compound, but we do not know how this related to the Position Finding Cells built for the gun in 1902–3, also on the summit of the hill, and the new Battery Command Post (North) built in 1909 (see below).

The middle 9.2-inch gun complex was built on a similar pattern. It is approached down a shallow slope from the north into an open area (Fig 11.23). Clockwise, the rooms opening off it were: a large shelter for the men, provided with a stove; the shell store leading to the ammunition passage (with shell lift to the gun floor); cartridge store with handling lobby; RA store; and a lamp room. By 1913, the lamp room had become an officers' shelter, and a new lamp room and WC had been built along the entrance ramp. The gun was provided with a quick-return lift (Fig 11.24).

From an unknown date there were two Fire Commands in the Outer Defences: 'North' and 'South', controlling, respectively, the fire from Kinghorn and Inchkeith over the North Channel and the fire from Inchkeith over the South Channel. A North Fire Command Post was built at Crying Hill, at Kinghorn, in 1905–6. There is also a structure mapped as 'Former F.C. North' on the 1911 map of Inchkeith, immediately to the south-east of 'L' Group (the northern 9.2-inch). How the Crying Hill and Inchkeith Fire Command Posts related to each other is, as yet, unknown. The Northern Fire Command Post on Inchkeith comprises two observation rooms, facing north-east and north-west, with narrow, wide windows under sloping turf-covered roofs, and lined with pine panelling (Fig 11.25). These are linked by a large, relatively high-ceilinged room. Surprisingly, the exposed areas of plaster in this room show the remains of elaborate decorative painting (Fig 11.26).

The South Fire Command Post was located between 'F' and 'B' Groups, in the midst of a complex of structures built into the ridge between 1901 and 1905 (Fig 3.6; Fig 11.28; Fig 11.29). The Fire Command Post comprised two low-windowed observation rooms under sloping turf-covered roofs with, behind them, a chart room. In front of them were two open platforms with pillars to mount Depression Range Finders. Behind the chart room was a large lobby from which a number of passages ran, including access passages to the outside, to the north-north-east and west.

The complex included four Position Finding Cells that provided range and direction information to the middle and southern 9.2-inch guns, whether firing at targets east or west of the island. The two PFCs on the exposed eastern side were

Figure 11.30
The Port War Signal Station, viewed from the north-west. As far as can be determined the first phase comprised a the single-storey structure, with roof-top signalling post; an upper storey and parapet seem to have been added in 1916; the top floor and 'balcony' to the north seem to have been added in 1939-40 (© Ron Morris)

linked by passages to the central lobby of the complex; the two PFCs on the west were accessed along open paths.

To the north of the complex's central lobby there was a large underground magazine for reserve ammunition. Although the room was later converted to a communications centre, magazine fittings have survived, such as the standard bench for men to sit on to change their footwear and the wooden barrier controlling access to the cartridge store. Two other PFCs were built as part of the same programme of works; PFCs Nos 5 and 6, at the west and south-east sides of the lighthouse ridge, provided positioning information for the northern 9.2-inch gun.

The staff of the Fire Command was recorded in July 1916 as comprising three officers (Fire Commander and two assistants) and 22 other ranks, including eight telephonists. The men in the Position Finding Cells were not included in this number, as they were part of the battery strength.[62]

The earliest Battery Command Post for 'A' Group in the south fort was a small, open, concrete-walled enclosure with a DRF pillar and a semi-buried command post behind it, located *c* 70m north-north-west of the guns. This was in place by the time of the 1909–10 revision of the 1893 map. When the structure was excavated in 2001, stencilled lettering was noted on the wall of the command post:[64]

TRAINING
PRACTICE AREAS
A1-224 30-275 degrees
2-229-329 degrees

By 1911, the post had had telephones installed in the room behind the DRF Post.[65]

On the summit of the island, the Admiralty built the Port War Signal Station, on land that had been purchased in 1904 (Fig 11.30). The original building had a single storey, with a rooftop signal and observation station. The interior preserves a handsome corner fireplace, two telephone cabinets and even a black-out roller blind. The storey above the central part of

the building seems to have been added in 1916 and the second storey and 'balcony' in 1939–40.

The water catchment area and its complex of storage tanks was built between March and October 1903 and was extended to the north and east in 1913.[66] The 'Section Commander's Post' for 'F' Group (the middle 9.2-inch gun) was built just outside the northern wall of the lighthouse enclosure at the edge of the catchment (Fig 11.31).

1906–14

Until 1906, the gun strength of Inchkeith had continued to grow and the individual guns (apart from the 6-inch Mk VI on the West Fort and the southernmost 9.2-inch gun) had been brought up to the most modern standard. The 1905 Owen Committee, however, because of the current ideas about coast defence (described in Chapter 4 above), recommended the reduction of the fixed defences, subsequent to the abandonment of submarine mining. On Inchkeith, the consequence was that the two modern batteries, each comprising two 6-inch Mk VII guns at the north and south points of the island, and the remaining 6-inch Mk VI in a disappearing mounting at the west were struck off the approved armament. The four Mk VII guns were dismounted and replaced in June 1907 by four 6-inch BLC guns for training only.[67] These in turn were removed from the island in 1909, when the School of [Coast] Gunnery moved from Leith to Broughty Castle on the Tay. It is not clear when the 'practice battery' was disarmed; the 3-pdr and 6-pdr emplacements were marked as 'Former Practice Battery' by 1909–10; the four 5-inch emplacements were not so labelled then or on the 1911 map.

From 1907 until 1915, the only guns 'in service' on the island were the three 9.2-inch guns. These were known, from *c* 1906 as (from south to north) 'B', F' and 'L' Groups (Table 17).

The southernmost Mk I 9.2-inch gun on a 'disappearing' mount, 'B' Group, had been in place since February 1893. After the installation of the two Mk X 9.2-inch guns in 1903 and 1904, drawings dated 1904 show that 'B' Group was to

Figure 11.31
View of the water catchment area from the PWSS, in the 1980s, before it became even more overgrown. The 'Section Commander's Post' for 'F' Group (the middle 9.2-inch) is visible in the foreground. In the background is the Second World War Anti-aircraft command complex and beyond it, the middle 9.2-inch gun ('F' Group) (© Ron Morris)

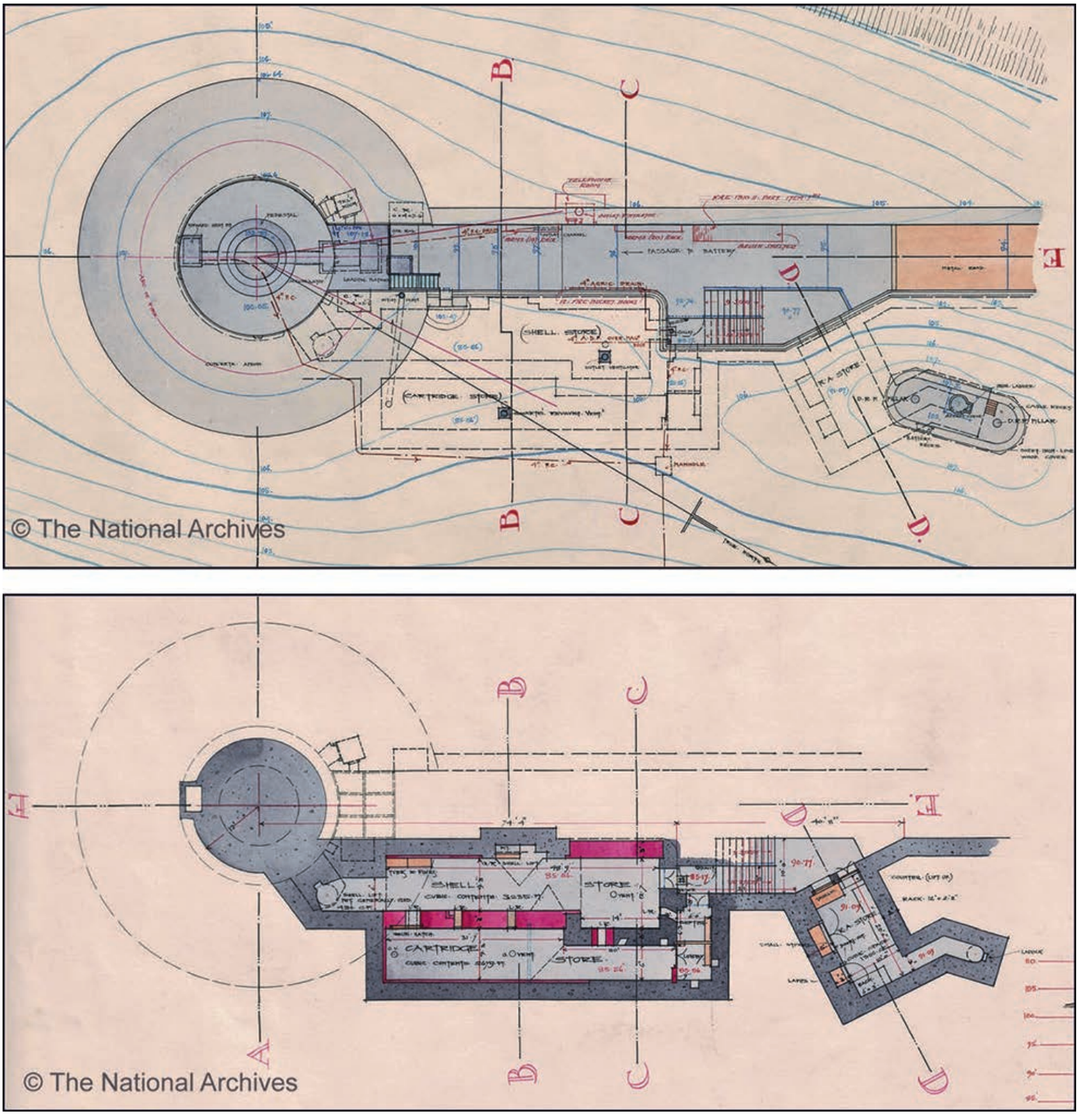


Figure 11.32
Top plan and magazine plan of 'B' Group, the southern 9.2-inch gun (© The National Archives, WO 78/5157)

Figure 11.33
View southwards along the shell store of 'B' Group. To the right is the quick-return shell lift; at the end of the passage is the vertical ladder up the other shell lift to the gun (© Gordon Barclay)

be upgraded to take a Mk X gun on a CP mounting. Royal Engineers plans for the work suggest that the adaptation for the Mk X gun required alteration only of the gun emplacement and the shell-hoist, the latter being upgraded to a modern quick-return hoist. Construction work began on 11 January 1906 and was completed on 28 March 1907 at a cost of only £820.[68] A proposal to move the Mk I gun to 'Hardines' [Harding's] Battery at Gibraltar was not carried through.[69]

On entering 'B' Group along a shallowly sloped ramp, a visitor would first find, on the left, a Royal Artillery store (Fig 11.32) linked by a vertical ladder up to the original Depression Range Finder Post. Beyond, the shell store and the cartridge store were built in parallel, accessed from a common stair down from the access ramp. The shell store had a modern quick-return lift about half-way along the west wall, with a second lift at the end near the gun, up a circular vertical shaft, equipped with a ladder (labelled 'shell lift not generally used'; this may imply that it was associated with the original 1891 layout of the magazine) (Fig 11.33). The cartridge store was

Figure 11.34
View southwards towards 'B' Group, the southern 9.2-inch gun, with its second DRF post in the foreground (© Gordon Barclay)

Figure 11.35
The Battery Command Post (North). The DRF pillar in the near emplacement has fallen. The flat roof covers the telephone room (© Gordon Barclay)

accessed only through the handling lobby and had an issuing hatch near its southern end leading into the shell store. The lighting for the cartridge store was provided by lamp niches in the common wall with the shell store.

The Depression Range Finder Post adjacent to the gun and visible on Figure 11.32 had fallen out of use by 1911, when it is mapped as 'Former DRF B Group', and a new DRF is shown 95m to the north, which comprised a DRF pillar within a simple concrete parapet (Fig 11.34).[70] The former DRF Post was marked on the 1918 map as 'Officers' Shelter'. Two-thirds of its area had been roofed over using railway sleepers, leaving a rather low and inhospitable space, and this is how it survives. It was not marked on any later maps.

In 'F' Group (the Middle 9.2-inch), new ablutions, a lamp room and stores were added to the subterranean complex in 1906.[71] A 'Section Commander's Post and DRF for F Group' was built to the north, behind the main water catchment area, only a short distance from the PWSS (the structure is visible in the foreground of Fig 11.31); a note on the drawing records that it cost £22 in the Army estimates of 1908–9. It comprises a DRF platform behind the parapet of the roof of a hut buried to about half its height. The hut (only *c* 4m by 3m internally) was subdivided into four small rooms off a central lobby; two were marked as telephone rooms.[72]

A structure labelled on the 1911 map as 'Battery Command Post (North)' was provided in 1909–10 north of 'L' Group (the northern 9.2-inch) and was linked to it and to the North Battery (at that date 'M' Group) by speaking tubes.[73] The new post took the form of two open, roughly circular spaces with a pillar for a DRF in the middle of both, with steps from both directions down to a partly buried shelter (Fig 11.35; Fig 11.36).

The details of Inchkeith's close defence were mapped for the first time in May 1907.[74] In the Precautionary Period, extensive barbed wire entanglements would bar the whole coastline, apart from where there were vertical cliffs. The three 9.2-inch emplacements were to be enclosed within two further barbed wire compounds.[75] During late February 1907, Colonel Smith Park, Commanding 1st Lanark Royal Engineers (Volunteers), received instructions that his regiment was authorised to go into camp at Inchkeith during the Glasgow Fair Week (late July), when the men would undertake the construction of permanent defensive works.[76]

By 1911, the island had a permanent quadruple-depth barbed wire entanglement covering vulnerable beaches at the south and north ends of the island, the wire itself being covered by many fire trenches (Fig 11.37).[77] These were substantial structures fronted by concrete walls and, at several places, included semi-circular observation/firing posts, many of which survive intact. The most substantial defensive structure was a concrete-lined and partly timber-roofed fire trench some 70m long covering the whole south-east front of the South Fort, outside the southern 1880 rock-cut ditch.

By 1911, the old testing room for the submarine miners, dug into the cliff overlooking Kinghorn Harbour, had become a small arms ammunition store. The drill shed in the bay had become officers' quarters. Many small buildings – especially stores and workshops for the artillery and engineers – had sprung up, and water catchment, storage and distribution infrastructure had increased in scale. A Territorial canteen,

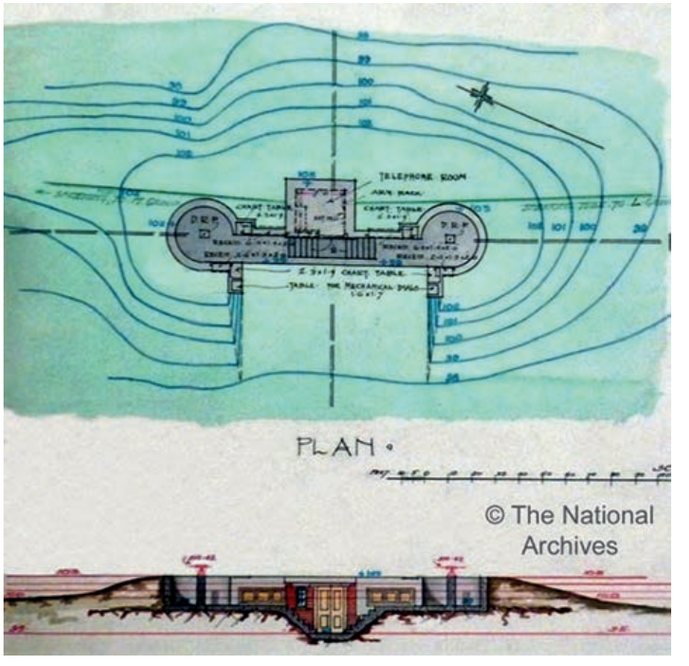


Figure 11.36
Plan and cross-section/elevation of the Battery Command Post (North) (© The National Archives, WO 78/5157)

Figure 11.37
A prepared firing position, above Kirkcaldy Harbour, Inchkeith, built before 1911; it comprises a concrete-fronted firing trench, and, at the far end, an observation post or machine-gun position, with a later brick pedestal built into it. One of the later blockhouses (No. 5 on the 1918 map) is visible beyond (© Gordon Barclay)

field kitchen (for troops under canvas) and a Royal Artillery store had been built north-west of the lighthouse and west of 'L' Group. At the top of the long straight ramp up from the harbour, an ordnance artificer's store and smithy had been erected, and just below the West Battery were three further buildings, an Examination Service and signal store, an oil and general store and a wagon shed. Down by the harbour was a large RA/RE store and a shed for repairing the gunnery targets that were towed out from the harbour. The 1911 map identified the redundant 19th-century experimental lighthouse globe as the Coastguard Watch Tower, which by that date was part of the PWSS complex.[78]

A tramway system had been built by 1911, running from the open area quarried out of the cliff behind the pier, up the steep approach path ('Heartbreak Hill' – Fig 11.38) to a turntable, and then along the low road to just short of the barrack complex. The ramp up from the harbour bisected a firing trench covering the approach from the harbour. The tramway was later much extended.

The visitors' book for the Inchkeith lighthouse contains, for 22 July 1913, the signatures of a very distinguished group: J E B Seely, Secretary of State for War; Winston Churchill, First Lord of the Admiralty; General J D P French, Chief of the Imperial General Staff; and Col M P A Hankey, Secretary of the Committee of Imperial Defence (Fig 11.39). They were accompanied by Churchill's brother 'Jack' and two people – 'Keighley' (described as 'Chief Officer') and 'Sinclair' – as yet unidentified. The visit was part of an official tour in the Admiralty yacht, HMS *Enchantress*. Within a few days, the story was spreading that Churchill, Seely and French had, quite properly, been challenged by a sentry on approaching one of the forts.[79]

Figure 11.38
The bottom of 'Heartbreak Hill' in the 1980s, with a fragment of the tramway system that then still survived (© Ron Morris)

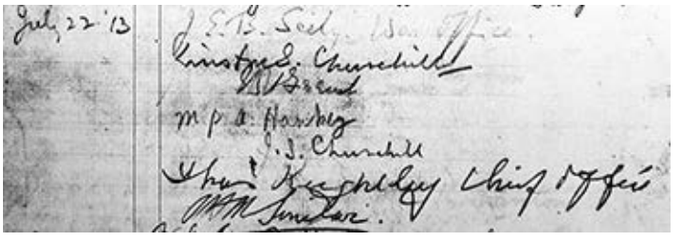


Figure 11.39
Detail of the Inchkeith lighthouse visitors' book page for July 1913, with the signatures of the distinguished party that had landed from HMS *Enchantress* (© Ron Morris)

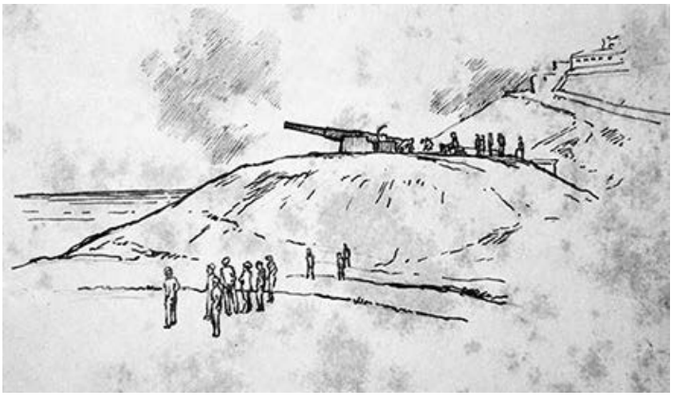


Figure 11.40
The northern 9.2-inch gun, sketched by 2nd Lt Ross In the First World War, titled '9.2 in shoot 1K' (Archibald Ross. Reproduced with permission of Fiona Buchanan)

Little was done on Inchkeith in the years leading up to the First World War. New position-finding instruments were ordered for the 9.2-inch guns, and these were installed in 1914. These were ranged up to 18–20,000 yards (roughly 16,410 to 18,300m). During late November 1913, improvements were made to improve watch-keeping in the estuary, including the upgrading of wireless communication with Inchkeith; Burntisland Coastguard Station was strengthened by the addition of two more wireless operators, who would also be available for service on the island.[80]

During the first few days of April 1914, the 1st Battalion, the Queen's Own Cameron Highlanders (at that time the Regular garrison of Edinburgh Castle), took part in defence operations on Inchkeith as part of 'certain naval exercises'. 'C' and 'D' Companies returned to the island immediately before the war, on 30 July 1914. They remained there until 8 August; at 11pm on 7 August, there was a 'scare due to a false alarm that a German flotilla was off the Forth'.

Figure 11.41
The First World War Battery Command Post in 'A' Group, the South Fort (Sgt F R Fernside. National War Museum © National Museums Scotland)

First World War, 1914–18

On the outbreak of the First World War, the approved armament of Inchkeith remained three 9.2-inch Mk X guns on Mk V mountings (Gun Groups 'B', 'F' and 'L' at this date), with four .303-inch machine guns on parapet mountings for close defence (Fig 11.40). In January 1915, Admiral Lowry, commanding at Rosyth, sought to strengthen the defence of the river against destroyer attack by the addition of four 6-inch guns on Inchkeith. The War Office approved the installation of these guns at the beginning of March 1915. Two 6-inch Mk VII guns on CP Mk II mountings were mounted on the existing emplacements in the South Battery ('A' Group – ready 12 June 1915), and another two in the existing emplacements in the North Battery ('M' Group – ready 20 June). For the first

Figure 11.42
The interior of the top floor of the BCP. Originally, this floor was the location of the DRF, with the Electric Light Directors on the floor below; once the shelters for the guns were built, the view from the lower floor was blocked. The wooden desk with circular holes, on the right, was the later ELD position (© Gordon Barclay)

time, the batteries were to be provided with Defence Electric Lights (DELs) – two at 'A' Group, with an engine room; and one each at the East Stell and the West Stell, with an engine room between them, to serve the North Battery. The date of installation and number of DELs on the island is a little confused,[81] and we try to make sense of it below. There is a map of the island dated May 1915 which shows the location of three combined Battery Command and Electric Light Director Posts at the North, South and West batteries. It is not clear why the West Battery was included, as it was not rearmed until 1916. It may be that some of the markings on the map are of a slightly later date.[82]

At the South Battery ('A' Group), the combined Battery Command and Electric Light Director Post was built just behind the two guns (Figs 11.41; Fig 11.42; Fig 11.43). The

Figure 11.43
Gun 'A2 seen by flash of A1', sketched by 2nd Lt Ross (Archibald Ross. Reproduced with permission of Fiona Buchanan)

engine room was built in the western end of the northern rock-cut ditch and an ablution block and latrine were built in the eastern part of the ditch. The underground portion of the old DRF Post to the north-west was converted into an oil store. Three accommodation huts, a cookhouse and officers' quarters were also built. The former magazine and store at the practice battery were now in use as a guard room and wood store. The two DEL emplacements (Nos 1 and 2) were built flanking the battery.

At 'M' Group, the North Battery, the combined Battery Command and Electric Light Director Post was built between the two emplacements, while the DEL (No. 3) was erected on the northernmost tip of the island, just in front of the foghorn. The engine room was built in the bay to the west. The May 1915 map also shows DEL emplacement No. 4 on the West Stell, presumably, at this date, for the North Battery, firing north and north-west.[83]

In May 1916, as part of the general revision of the defences, two further 6-inch guns were added to Inchkeith. This was to involve the rearming of the West Battery, the addition of a new emplacement there (Fig 11.45) and the building of a new emplacement on the West Stell (Fig 11.46; Fig 11.47), to receive one of the guns in the North Battery that was being removed. When the changes were being planned in June 1916, it was determined that the southern of the two guns in 'M' Group, 'M1' in the North Battery, would be moved to the West Battery, the designation of which was at this date still 'H' Group.

The West Battery had been disarmed since the removal of the old 6-inch Mk VI in a disappearing mounting ten years before. The existing emplacement (to be known as 'L2') had

Figure 11.44
The gun emplacement for 'A2' in the South Battery as it was in the 1980s. This pit seems to preserve some features of the pre-existing fittings. The brick-built shelter was erected in 1941 to provide protection for the crew from aircraft attack (© Ron Morris)

to be reconstructed to take the more modern gun and, at the same time, a new emplacement ('L1') was built just to the north of the rock-cut ditch of the fort. On plan, the guns look as though they are side by side, but the hill falls away steeply to the north and gun L1 is much lower than L2. The subterranean

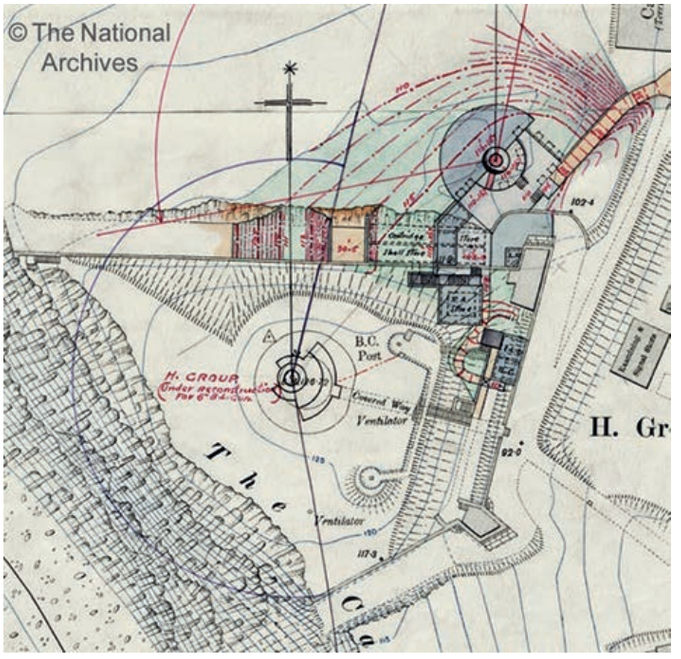


Figure 11.45
Plan showing the proposed addition of a second 6-inch gun emplacement at the West Battery, dated 1916. The ancillary buildings have been placed in the northern rock-cut ditch, thus avoiding new excavation. Although drawn on a map labelling the Fort as 'H Group', these guns would be known as 'L1' (the new emplacement) and 'L2' (© The National Archives, WO 78/5180)

magazines, stores and so on for the new emplacement were built into the northern rock-cut ditch of the old fort, although not exactly according to the Royal Engineers plan reproduced here. Gun 'M1' from the North Battery was moved to position 'L2' (inside the old West Fort) and was in action on 8 September 1916; 'L1' – the new position, to the north of the old fort – was in action on 8 December.[84]

A tower to accommodate a modern Battery Command and Electric Light Director Post for the West Battery was recorded in drawings dated August 1916, to be built above the

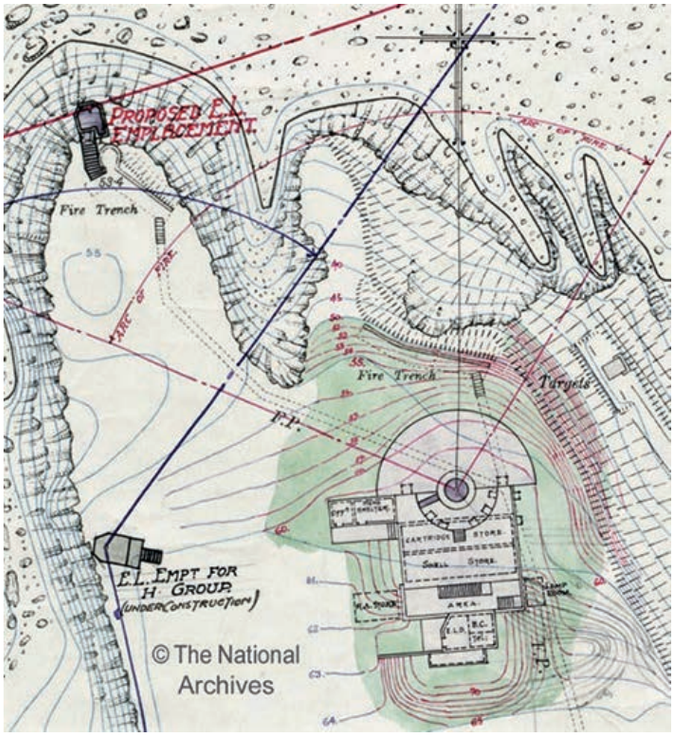


Figure 11.46
An extract from the 1911 OS map marked up with the proposed 6-inch emplacement on the West Stell, in 1916 (© The National Archives, WO 78/5180)

original fort wall: the elevation and cross-section on file show a four-storey, flat-roofed tower, with a lighthouse-like glazed signalling station on top. We do not know if it was built to its full height or whether it was provided with the glazed top storey; its surviving top level was built in the Second World War (Fig 11.48).[85]

For the second of the two new 6-inch guns, a completely new emplacement was built to the north of the West Battery, on the West Stell; it was ready for action on 23 June 1917. This emplacement was at first called position 'H Advanced', but had become Group 'O' by 1918. A new DEL was built for this gun, right on the end of the West Stell.[86] A further DEL was

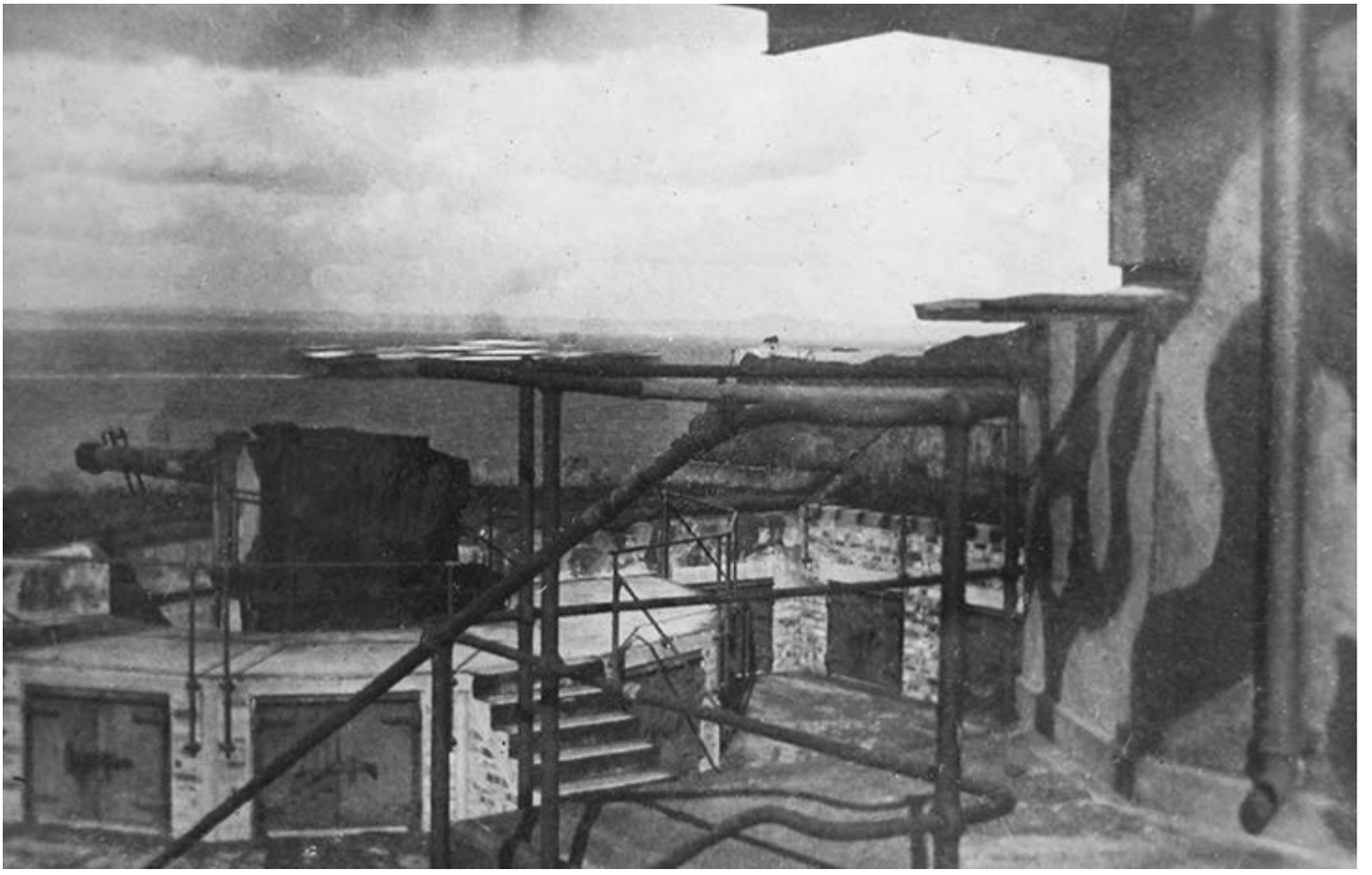


Figure 11.47
View of the new emplacement on the West Stell, at first called 'H Advanced' and, by 1918, 'O' Group (Sgt R F Fernside. National War Museum © National Museums Scotland)

Figure 11.48
The Battery Command Post for the West Battery, as it survives. The doors and stair seem to have been built to a slightly different arrangement. The concrete top storey seems to date from the Second World War, when the shelter for the guns, built in 1941, would have restricted the view from the original top floor (© Gordon Barclay)

Figure 11.49
The former experimental lighthouse, later used as a Coastguard and Naval look-out post, as it survived in the 1980s. The superstructure has since been removed to the National Museum of Scotland (© Ron Morris)

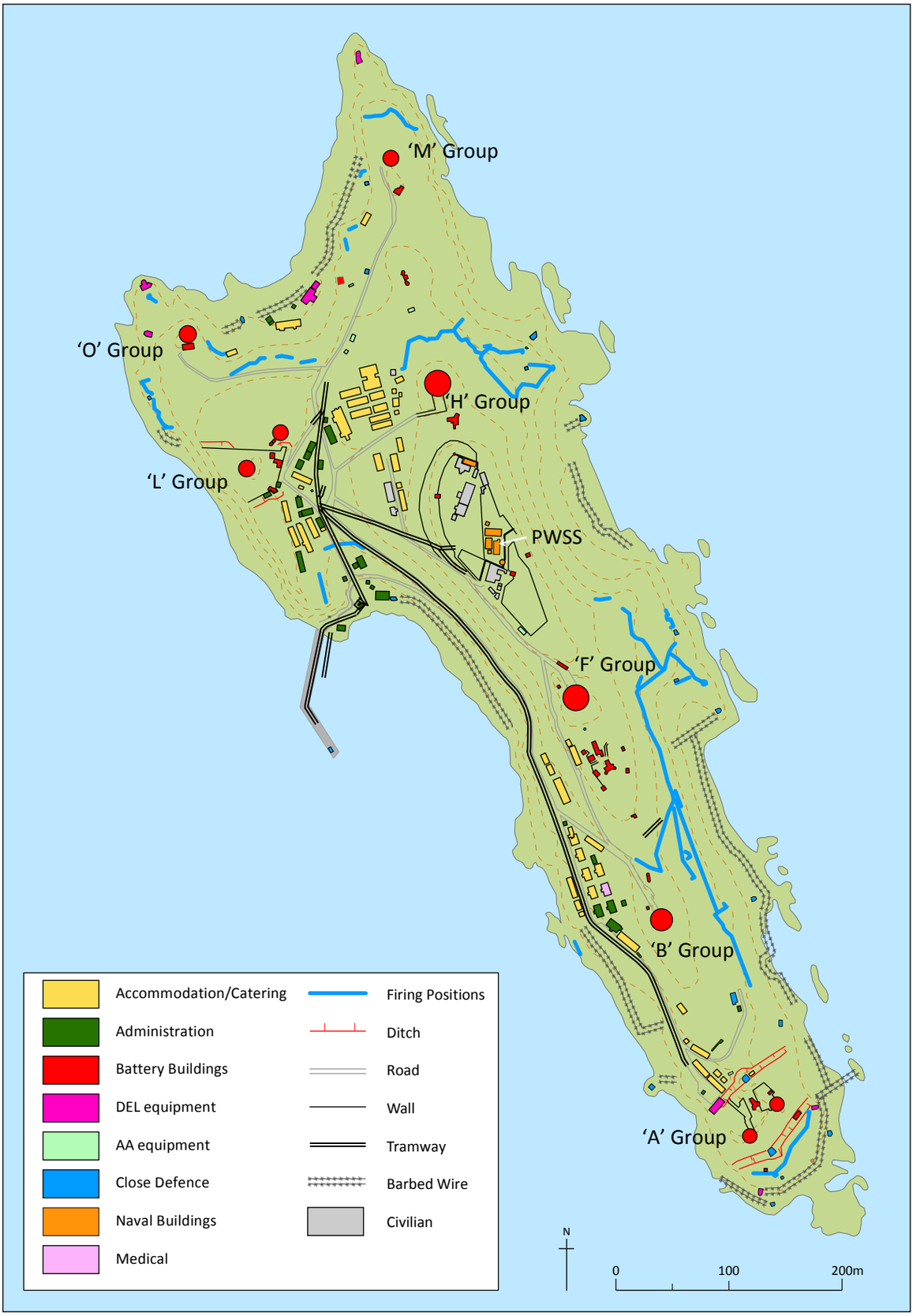

'M' Group
'O' Group
'H' Group
'L' Group
PWSS
'F' Group
'B' Group
'A' Group
Accommodation/Catering
Administration
Battery Buildings
DEL equipment
AA equipment
Close Defence
Naval Buildings
Medical
Firing Positions
Ditch
Road
Wall
Tramway
Barbed Wire
Civilian
N
0
100
200m

Figure 11.51
Inchkeith Blockhouse No. 8 (as numbered on the 1918 map) – plan and image. In the foreground of the photograph is one of the concrete firing positions shown on the 1911 map of Inchkeith, later filled in with a brick platform (© Gordon Barclay)

built immediately to the west of the gun emplacement (noted as being under construction on a plan dated June 1916).

The PWSS was also considerably extended at this time by the addition of a second-storey tower rising from the middle of the existing single-storey structure. The building resembles the 1916 Battery Command Post tower on Inchmickery, which was also built by the Admiralty. A small room on the east side straddling the ground and first floor may have been added at this time. This room contains the three pillars characteristic of a Position Finding Cell. The upper floor was reached by external steel stairs. By 1918, the PWSS site had incorporated the former Coastguard Watch Tower (the former experimental lighthouse, Fig 11.49),[87] and further naval buildings had been added: an Engine House, Wireless Station and mast, Sleeping Hut, Magnetic Hut and four other buildings to the east of the main hut.

In July 1916, the Royal Artillery garrison of the island was recorded as follows. Each of the three 9.2-inch guns had a Gun Group Commander, a six-man Depression Position Finder detachment, a three-man Depression Range Finder detachment and a telephonist. Each gun had a crew of 13 men and an ammunition detachment of eight men. In total, therefore, one officer and 39 men. The two-gun 6-inch battery had three officers (a Battery Commander, Gun Group Commander and GGC relief) and 53 other ranks (including a three-man DRF detachment and two telephonists). The gun crews totalled 22 men (with a relief of 11) and an ammunition detachment of eight men. The two single 6-inch gun batteries recorded at that date each had two officers (Gun Group Commander and relief) and 31 other ranks (including three-man DRF detachment; four telephonists; an 11-man gun detachment with six-man relief; and a six-man ammunition detachment).[88]

In October 1916, Inchkeith is recorded as having five DEL emplacements, numbered 3 to 7 at that date (Nos 3 and 4 at the South Battery ('A' Group); No. 5 at the North Battery ('M' Group); No. 6 on the West Stell for 'O' Group; and No. 7, a little to the south for the West Battery ('L' Group) (Fig 11.50).[89] (We have assumed that Nos 1 and 2 at this stage were those mounted at Leith.) The five DELs were recorded in February 1917 as having four Royal Engineer officers and 75 sappers to operate them, with an NCO and sapper for maintenance.[90] A sketch by Lt Archibald Ross shows the steep path to DEL No. 6 under construction, with a temporary DEL

Figure 11.50
Inchkeith in 1918, based on the Ordnance Survey map published in that year. The gun at the West Stell ('O' Group' had originally (1916) been termed 'H Adv[anced]', as the West Fort had been in 1916 'H' Group (© Gordon Barclay)

Figure 11.52

An extract of the 1918 map showing the complexity of the installations around the South Battery. The southern of the two Anti-Aircraft Height Finders sits on the outer lip of the north ditch. Machine gun emplacement No. 2 is marked in the firing trench south of the Battery (Reproduced by permission of the National Library of Scotland)

housing of weatherboard on the cliff above, between DELs Nos 6 and 7.[91]

By 1918, the tramway system had been extended further north to near the main accommodation area, to the south to just outside the entrance of the South Battery, and up the hill to the summit area (Fig 11.50). The line was also extended out along the pier. There were two winches to haul loads up the steepest slopes, one at the top of 'Heartbreak Hill' and one part way up the steep line to the summit;[92] elsewhere, it is presumed, the trolleys were moved by the men. At the South Battery terminus of the tramway, there is a concrete and brick structure which we believe to be the base of a third winch.

A small section of tramway was laid on the slipway for the shifting of the targets towed out to sea, and this too was provided with a winch at its head. A small detached 23m length of tramway, the purpose of which is unknown, was

mapped running north-east from the ridge at a point between 'B' Group and 'F' Group, down towards the firing trenches on the eastern coastline.

The close defence of the island was strengthened during the First World War, although it is not always clear what was built when. Pollard and Banks' excavation of a firing trench showed that it had been recut twice.[93] New firing trenches had been dug, for example, across the isthmus of the East Stell, north of 'M' Group. By March 1915, nine 'blockhouses' (concrete walled pillboxes) had been built around the coast of the island, on prominent locations closer to the water line than the firing trenches, allowing the beaches to be enfiladed (Fig 11.50; Fig 11.51).[94] Four covered the east coast; there were two at the South Battery, one on the west coast, one at Leith Harbour and the last on the north coast, overlooking Kinghorn Harbour. By 1918, a further five blockhouses had been built. A sketch by 2nd Lt A Ross depicts a portable oxy-acetylene searchlight mounted on the roof of Blockhouse No. 5 being used to illuminate the barbed wire entanglement below it; another sketch shows Blockhouse No. 3, perched on a pinnacle of rock, effectively cut off from the island by seas whipped up by gale-force winds. There were also five permanent machine gun emplacements, numbered 2 to 6 on the 1918 map (we have not found a No. 1 on the map); No. 2 was located in the concrete-lined fire trench south of the South Battery (Fig 11.52); Nos 3 and 4 were on the east coast, positioned to cover the steep slopes to the ridge; No. 5 was sited above Blockhouse 11; No. 6 was on the crest of the ridge, south-east of 'F' Group.

By 1918, the island was quite densely packed with structures (Fig 11.53), some of them associated with new forms of warfare. In the northern part of the island, between the northern 9.2-inch gun and the old BCP (by 1918 an ammunition store), was a shed labelled 'AA Light' (anti-aircraft searchlight), with what appeared to be rails to run the light into position and a telephone jack. About 60m to the west-south-west was the

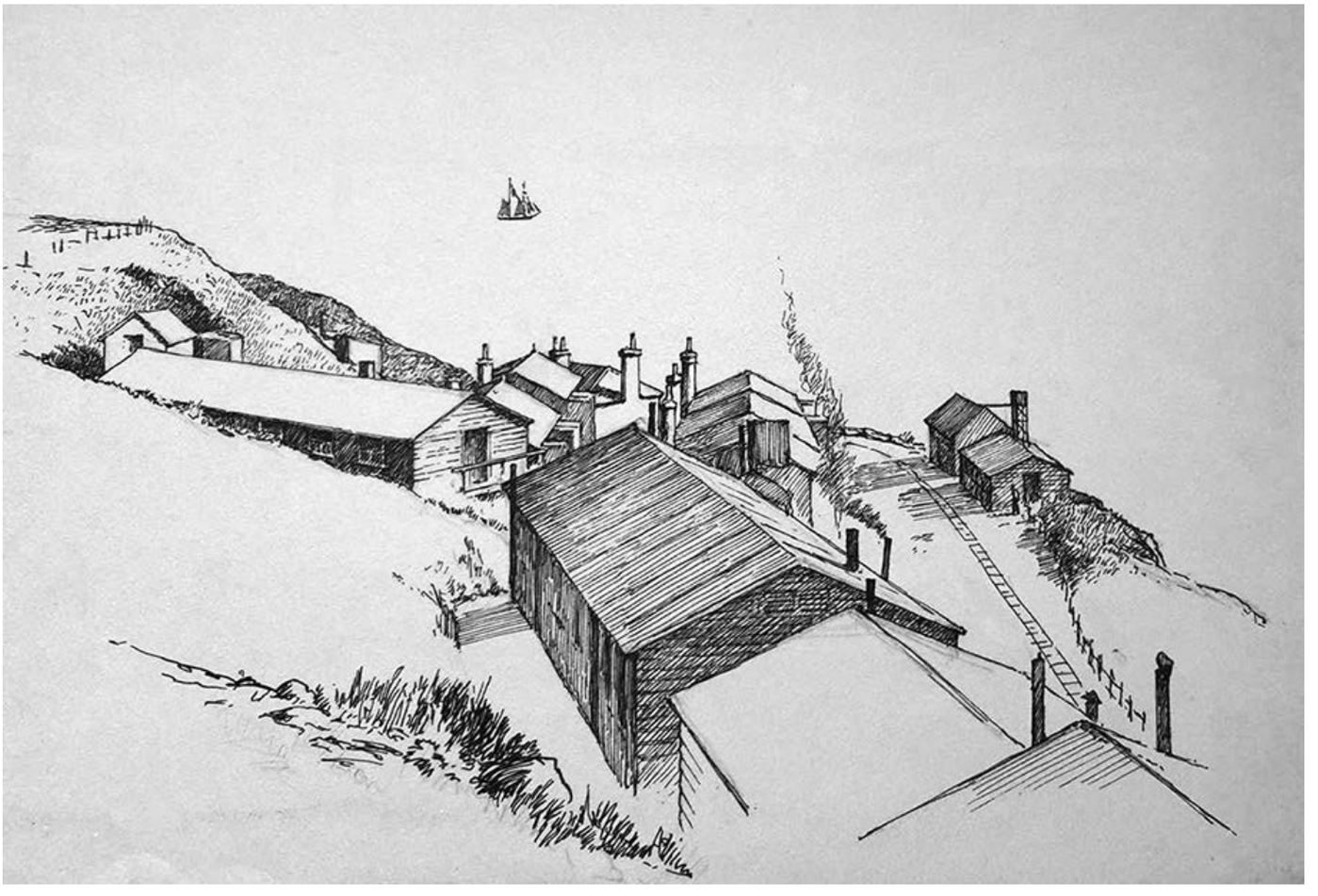


Figure 11.53
Untitled sketch by 2nd Lt Ross, showing the 19th-century barracks (in the background) and First World War timber huts in the foreground and to the left; the tram line is also shown (Archibald Ross. Reproduced with permission of Fiona Buchanan)

Figure 11.54
The concrete block, steel spindle, and slots for mounting the First World War AA Height Finding instrument, on the edge of the northern rock-cut ditch of the South Battery (© Gordon Barclay)

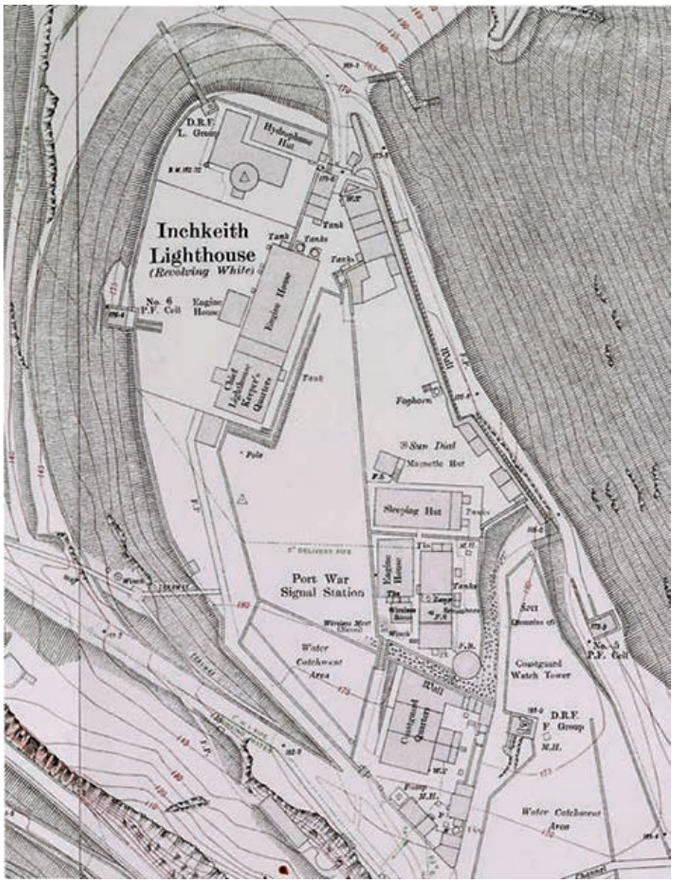


Figure 11.55
Extract from the 1918 Ordnance Survey Special Survey, showing the complexity of the Naval area on the top of the island (Reproduced by permission of the National Library of Scotland)

'AA Engine House' with a separate oil store. Some 40m to the north of the engine house was one of two 'Height Finders' for the anti-aircraft gun(s) on the island. At the southern edge of the water catchment was the 'Height Finders' Hut', either their accommodation or where their instruments were housed. A second Height Finder was located on the lip of the rock-cut ditch of the South Fort; its mounting survives (Fig 11.54).

At the end of the war, the 1918 map of the island recorded the five DELs that had been in place in 1916, now numbered one to five, anti-clockwise from No. 1 (south-west of the South Battery).[95] An undated map from a file containing papers from 1918 to 1920 records that 'Of the 5 DELs retained, one is for Training only', implying perhaps the presence of more DELs at some stage during the war.[96]

Figure 11.56
Nurses and members of the infantry garrison of Inchkeith, 1918–19, outside what is presumed to be the hospital. Photograph taken by Gunner Robert M Cochrane (National War Museum © National Museums Scotland)

In the naval area on the summit of the island (Fig 11.55), a 'Hydrophone Hut' was built just north of the lighthouse, presumably to accommodate the equipment we know was installed in 1916. The Port War Signal Station was extended with its own engine room and a naval wireless hut. A 'Magnetic Hut' was built a short distance north of the PWSS; we are not certain of the purpose of the structure, but such structures could be used in the measurement of the earth's magnetic field. A military wireless room was provided in the Fire Command Post in the southern half of the island. The greatest change was in the number of accommodation huts, dining huts, cookhouses and so on, to cope with the much larger permanent garrison. The entertainment for the men was provided in a large YMCA and an even larger 'Garrison Institute'. Curiously, a Private soldier of the 6th Royal Scots, part of the garrison of the island, was court-martialled and sentenced to 14 days in military prison in November 1914 for refusing to help erect the YMCA. He considered the task to be

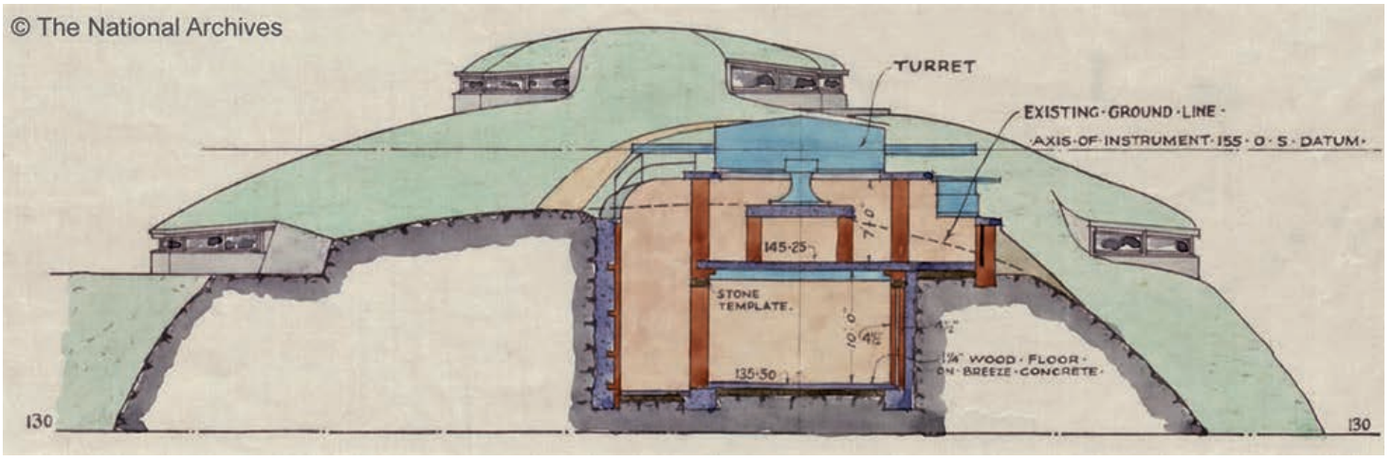


Figure 11.57
Cross-sections of the new 'B' Group Battery Command Post for 30ft Barr and Stroud range-finder, as built. The rest of the Fire Command South and PFC complex is shown in elevation behind (© The National Archives WO 78/5156)

'a civilian duty' and, as such, thought that he should receive extra pay.[97]

We know very little about the military hospitals on Inchkeith. A three-bed hospital is recorded on the island in 1899.[98] In the First World War, a 'reception hospital' is listed on Inchkeith,[99] but we know little of its operation; there is a series of photographs in the National War Museum showing the exterior and interior, with patients. In the external photographs, between three and five female nurses, one of whom is in a darker uniform and may be the sister, are shown outside the building we presume to be the hospital, in the company of kilted members of the infantry garrison (Fig 11.56). The interior, on the evidence of photographs, contained at least eight beds. The building appears to be of corrugated iron with astragalled sash-and-case windows, set up on a bank and accessed by a stair. Surprisingly, no hospital was labelled on the 1918 Ordnance Survey map of the island and we have not been able to identify which of the huts may have been used. A 'Dressing Station', however, was labelled amongst the original 19th-century barrack blocks.

In April 1918, work began on the construction of new Battery Command Posts to house 30ft-base Barr and Stroud range-finders for 'B' and 'F' Groups (the two southern 9.2-inch guns) and one 9ft base range-finder for 'M' Group (the single 6-inch gun in the North Fort). Detailed plans of the complex turreted emplacements for the 'B' and 'F' range-finders to be built, respectively, south of the South Fire Command post and between 'F' Group and the water catchment area, are preserved.[100] The 'F' Group structure would have stood where the later complex of anti-aircraft guns and AA control post was built, and we do not know if any part of the new structure was actually built. The new BCP and Barr and Stroud building for 'B' Group survives in part. It is a round-ended structure with two floors, the upper (ground) floor being dug into the hillside at the north. The southern end has subsequently been removed to allow the construction of a Second World War living hut. On the eastern wall, there was a bay window reminiscent of that on the War Signal Station on the May Island. Beneath was a large subterranean room of similar shape and dimensions, lit by windows from a narrow area and reached by a tunnel from the west side of the ridge. This was probably a communications centre, protected from gunfire (Fig 11.57; Fig 11.58). In 1920, the range-finders were removed from temporary housings and taken to storage in Leith. All the guns were put into care and maintenance.

Figure 11.58
The Battery Command Post for 30ft Barr and Stroud range-finder on Inchkeith, as it survives in 2016, looking south-east. The wall of the bay window is visible (© Gordon Barclay)

Figure 11.59
Sketch of Inchkeith, 'Sgts Mess Smoker New Years Eve 1917' , by 2nd Lt Ross (Archibald Ross. Reproduced with permission of Fiona Buchanan)

Life on the island, 1914–18

Few photographs or drawings have come to light showing daily life on Inchkeith during the war. As the text of this book was being finalised, we were put in touch with the daughter of 2nd Lt Archibald Ross, who had served in the artillery on the island and who had made many fine sketches of life there, some of which we have been allowed to reproduce (Figs 11.40, 11.43, 11.53, 11.59).[101] Another drawing shows men working on their allotments, south of 'B' Group (the southern 9.2-inch gun), with the DRF platform of the former practice battery in the background.

Provision was made for the spiritual needs of Inchkeith's garrison. Between June 1916 and April 1919, the Reverend Hannan (incumbent of St Peter's Episcopal Church, Musselburgh) made about 250 visits to the island, usually spending half a day there on Sundays when taking religious services, and on Wednesdays visiting the soldiers in their huts or at their stations. Services by the Revd Hannan, and by other chaplains for other denominations, were held in the large YMCA hut north of the lighthouse, where the Revd Hannan occasionally stayed, sharing the humble sleeping accommodation of the Superintendent and his two boys. The Revd Hannan made most trips in an old tug from Leith, which was pleasant enough in the summer, but a bit unpleasant in the winter. Occasionally he made the trip in one of the fast 'tin boats' – a motor launch. On one such occasion, it was rumoured that a hostile submarine had managed to get inside the boom and the skipper chattily informed Hannan that they had 2,000 gallons of petrol on board. His journeys back to Leith were always very cheery as he was accompanied by parties of men going on shore leave: 'It was amusing to see the haste with which the men crowded onto the pier, as if a minute would make a world of difference.'[102]

On 12 December 1914, Chaplain James Harvey made an appeal to the public for knitted woollen 'Balaclava' helmets 'for the brave fellows on the windswept island of Inchkeith'. In the early months of occupation, the weather had been comparatively pleasant but in the bitter winter days and nights

it had become hard and rigorous in the extreme.[103] Only three days later, Mr Harvey could gratefully report that every man of the 6th Battalion Royal Scots stationed at Inchkeith and Leith Fort could be furnished with one.[104]

1919–39

The garrison of Inchkeith was run down from 1919, and on 14 October 1920 two sectional wooden huts at Inchkeith were advertised for sale in *The Scotsman*.[105] In 1922, Inchkeith was listed as a wireless station and PWSS with a complement of one Grade I Warrant Officer, two Grade II Petty Officers and 13 Grade III Seamen, some of them accommodated at Burntisland.[106] In 1925, the range-finders that had been removed from the island in 1920 were restored and the guns put back into action.[107] Nothing else of significance is recorded as having been done in the 1920s.

In 1930, Inchkeith was included in the Interim Defence Scheme (also known as the Intermediate Scheme) described in Chapter 6 (Table 14).[108] The War Office file and the Inchkeith Fort Record Book are in conflict: the file suggests that all the 6-inch guns on the island were included, the FRB that only four were (A1, A2, L2 and M1). We believe that the FRB is correct, for two reasons: first, a document on the Leith Docks Fort Record Book lists L2 and M1 as being the guns of the examination battery in 1939.[109] Second, there was a great deal of activity on the island in 1931, when an Armament Withdrawal Party, under the command of Major Shrive, RA, undertook the following tasks:

- withdrawal of two 6-inch Mk VII guns and Mk II shields from 'A' Section;
- withdrawal of two 6-inch Mk VII guns from Inchcolm and mounting of them at 'A' Section with two Mk IV shields;[110]
- interchanging the guns of 'L1' and 'L2' and the replacement of Mk II shield of L2 with a Mk IV;
- withdrawal of the Mk II shield of 'M1' gun and substitution of a Mk IV;
- dismounting and checking of all the 9.2-inch guns and replacement of the air cylinders of 'F' gun.

That is, only the four guns listed in the FRB as being in the Interim Scheme were replaced or provided with modern shields. Fig 11.60 appears to show the process of gun and shield replacement at 'A' Group.

As part of the Scheme, new, more modern and effective ammunition was supplied in August 1931. In December 1932, the 9.2-inch gun in 'F' Group (the middle 9.2-inch gun) was removed and in June 1933 a new gun was mounted.[111] In October 1933, the four Maxim guns installed in 1899 were removed and returned to store, being replaced at an unknown date by obsolescent Lewis guns, which were issued in considerable numbers to coast artillery batteries for use in an anti-aircraft role; they were, however, 'relatively useless apart from their value in raising morale by allowing the troops to shoot back'.[112]

On 29 July 1931, *The Scotsman* newspaper, in making reference to naval stations that had been closed down since

Figure 11.60

The South Battery of Inchkeith, from the rear, probably recording the replacement of the shields in 1931. The Battery Command Post is in the centre. The eastern gun ('A2', left) is clearly visible in its Mk II shield. The western emplacement ('A1', right) has a hoist over it and seems to be pointing towards the photographer. In the foreground are two Mk IV shields, ready for installation (Sgt F R Fernside. National War Museum © National Museums Scotland)

Figure 11.61
The holdfast of the southern of the two 12-pdr practice guns (© Gordon Barclay)

1923, stated that the Inchkeith station 'had been completely closed down'. However, in 1933, Inchkeith PWSS was listed as a Category 'A' Port War Signal Station (although only manned in wartime by one officer and ten ratings).[113]

In the 'History of the Work' in the Fort Record Book a '12pr practice bty' was recorded as being established at some point between October 1933 and May 1939. A mid-20th-century practice battery is not marked on any map of the island, but two holdfasts of the correct dimensions (six bolts, 1m diameter) are visible, lying 17m apart within and just beyond the former practice battery (Fig 11.61).[114] There are official and personal accounts of 12-pdr drill and practice guns mounted at Leith in 1919, Inchgarvie and Coastguard in the 1930s, and at Charles Hill in 1939. It is possible that the same two pairs of drill and practice 12-pdr guns were moved around in this period. The Fort Record Book refers to the 'erection of a new Fire Command Post', but we have not identified this structure, at least not under this name.

The last addition to the 'History' of the battery on the Fort Record Book (in manuscript, in ink) was to the effect that 'All pieces on the island were replaced in May and June 1939 under the supervision of Major R Shrive MBE, MC, RA'. A typed document, 'Mounting and Dismounting Armament', has, as a pencil addition, 'Major Shrive MBE, MC, RA, changed all the guns on the island in May June 1939'. The lining tubes of the three 9.2-inch guns had been replaced only in October and November 1938 and it seems certain that the 9.2-inch guns were not replaced at this time. Also, Bruce Stenhouse (pers comm) remembered that only the inner sleeves of the 6-inch guns had been replaced. The Fort Record Book has an official table – 'Details of Equipment' – identifying the 9.2-inch guns and their mounts by their Ordnance reference numbers and giving their dates of manufacture, installation and calibration; the three 9.2-inch guns were the same as those emplaced in (from the south) 1907, 1903 and 1904.[115]

The Scotsman on 25 May 1936 described another structure, probably the former experimental lighthouse:

> The Fortress Observation Post was a little, round, glass-windowed room, perched high above the surrounding water which was kept warm by a stove. Contact with the island's batteries and searchlights and with Kinghorn was made by three telephones. In the Battery Observation Posts, lower than the main observation post and close to their respective batteries, officers, telephonists and Depression Range Finder specialists were stationed.[116]

In October 1935, the role of Inchkeith in the defences was set out explicitly:

> Inchkeith forms the central link in the chain of Defences across the Forth from KINGHORN to LEITH DOCKS. Chief points to be defended: Rosyth Dockyard; Naval anchorage off Rosyth; Depots at Crombie, Bandieth [sic], and Grangemouth; Port of Leith; Donibristle Air Station; Castland Hill Wireless and Telephone Station; Rosyth and Crombie water supply; Ports of Alloa and Bo'ness; Batteries, lights and communications of the anchorages; Examination and convoy anchorages; and the Forth Bridge[117]

Attacks by destroyers, coastal motor boats or submarines (by minelaying or torpedoes), and by minelaying by armed merchantmen, were to be prepared for on the naval installations and shipping, while Edinburgh was believed also to be at risk of long-range bombardment.

There is a 1936 chart of the Forth that shows not only the defences actually in place, but also works that were not implemented (for example, the Canty Bay Battery). On this chart, Inchkeith is recorded as having six DELs[118], their locations recorded on a 1939 map on the Fort Record Book: the DEL additional to the five recorded in 1918, is that a little to the north-west of the West Battery, approximately on the site of First World War blockhouse No. 14.[119]

As part of the March 1939 German naval intelligence survey of the installations, ports, communications and defences of the Forth, Inchkeith was illustrated by a map and a series of annotated photographs taken from sea level (Fig 11.62).

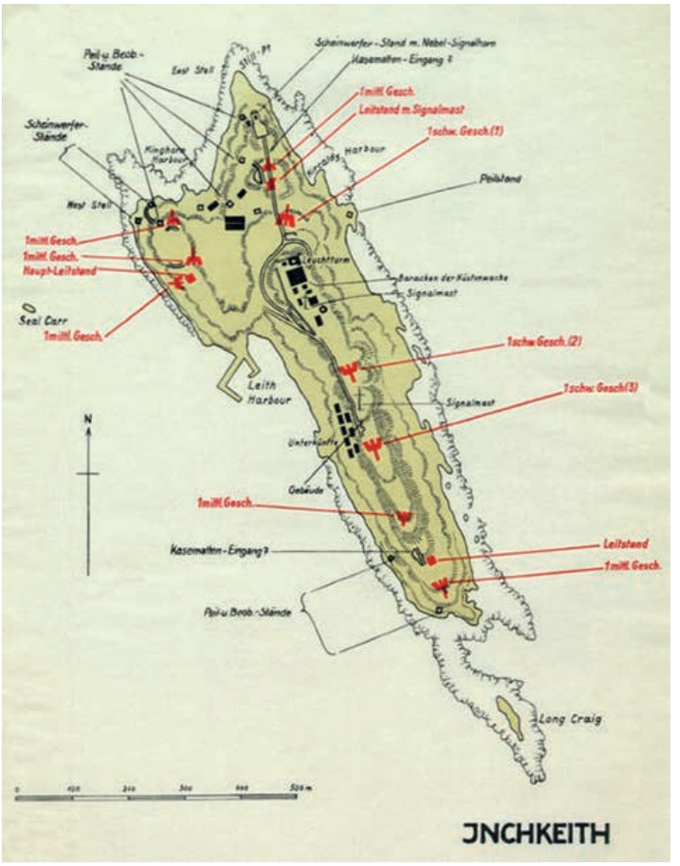


Figure 11.62
Map of Inchkeith published by German Naval intelligence in March 1939 (Oberkommando der Kriegsmarine, via Andreas Liebold)

The Second World War, 1939–45

During the early years of the Second World War, considerable additional building work took place on the island, including additions to the PWSS building; a new top storey was built as the look-out room and a 'balcony' was built out of the northern side, straddling the first and second storeys. Other buildings and huts were constructed, some traces of which are still visible, but because these were in the naval area, they were not shown on the Army maps. The former DRF Section Commander's post for 'F' Group, on the edge of the water catchment, close to the PWSS, was adapted for use as a telephone exchange. Additionally, a subsidiary Naval Signal Station was built onto the upper south-west corner of the 6-inch gun Battery Observation Post at the North Battery; this was necessary because the lighthouse building blocked the view from the look-out room at the top of the PWSS (Fig 11.63).[120]

It was announced that from noon on 15 November 1939 the channel south of Inchkeith Island was to be closed to all traffic and that all vessels proceeding to ports or anchorages to the west of Inchkeith were to proceed through the North Channel.[121]

Shortly after 9.30 a.m. on Wednesday 21 February 1940, the requisitioned trawler HMT *Peter Carey*, converted to a minesweeper, was seen heading into the Firth on a course which would eventually take her into the South Channel minefield. The trawler engaged in some erratic changes of course, as if unsure of its direction, but eventually resumed its original course, showing it was committed to entering the mined area.[122] Efforts were made to contact the trawler, which appear to have been misunderstood by its Skipper, Graham Smith Burr, Royal Naval Reserve. At South Battery, Charles Grant and some other artillerymen were cleaning their two 6-inch guns in preparation for a practice shoot when the alarm was sounded and they received the order to implement the 'bring to' procedure.[123] By now, however, HMT *Peter Carey* was approaching a zone of fire prohibited for the 6-inch guns, because of the danger of an overshot hitting the mainland. Consequently, a detachment manning an anti-aircraft gun further up the spine of the island was ordered to fire a shot across the trawler's bows, but the gun could not be depressed to a low enough angle. Having no time to consult higher authority, the young officer in charge of the South Battery ordered a sand-filled dummy 6-inch shell to be loaded in No. 1 gun and fired across the bows of the trawler.[124] 'Bring to' rounds were fired on a half charge. The gun was fired and seconds later a plume of spray rose up from the sea ahead of the trawler, causing her to turn and make for the North Channel. The gunners at South Battery congratulated themselves on their expert shooting and the prevention of disaster for the trawler and her members of crew. Meanwhile, three and a half miles away, the ricocheting dummy shell first passed through the roof of the Neptune Mills on Salamander Street in Leith, before bursting through

Figure 11.63
The Battery Command Post at the North Battery, Inchkeith, as it was probably from the later part of the First World War to the 1930s. The odd extension at the upper left side is the subsidiary naval War Signal Station, necessary because the lighthouse blocked the view northward from the Port War Signal Station (Sgt F R Fernside. National War Museum © National Museums Scotland)

the 18-inch-thick stone wall of a tenement flat at number 118, passing through the front room into the kitchen, narrowly missing the householder, Mrs Cairns, before coming to rest against some sandbags built around an Anderson shelter in the back green. Mrs Cairns and her son, suffering minor injuries and shock, were taken to Leith Hospital for treatment, from which they were discharged later in the morning.[125] An official statement issued that afternoon by Scottish Command described the dilemma faced by the young artillery officer on watch: 'He saw one of our trawlers heading straight for one of our minefields. The only possible way to stop her instantly to save the ship and the lives of the crew, was to fire a warning round across her bows. The officer had therefore, no choice as to line of fire … The presence of mind of the young officer undoubtedly saved the ship and the lives of those on board.'[126]

A handful of buildings of those mapped in 1918 survived to be mapped in 1941, including administrative, craft and storage buildings in the area between the West Battery, the lighthouse and the harbour. The area north and north-west of the lighthouse is the largest available piece of relatively flat ground on the island, and it was filled up in the Second World War with living huts, officers' messes, dining huts, the ATS canteen,[127] cooking huts and food stores, as well as the Garrison NAAFI and the Church of Scotland recreation hut. Further living huts were built near the batteries at the West Stell and north of the South Battery, presumably for their crews. Half a dozen living huts even had to be sited on a slight platform east of the 'F' Group 9.2-inch gun, on the flank of the island facing the enemy. These buildings are recorded only on a 1941 aerial photograph.

An Operational Order dated 28 November 1939 for 51 Light AA Brigade (TA) stated there were no Light AA defences on Inchkeith and the coast defences there were very exposed to attack by enemy aircraft. Two naval Vickers 2-pdr AA guns were to be sent to the island to provide protection against low-flying enemy aircraft and to deter their laying mines in the Forth. These guns were to be in action by 1 December or as soon as possible thereafter. In January 1940, two further Vickers MK II naval 2-pdr pom-pom guns were loaned to Inchkeith by the Commander Fixed Defences Edinburgh.[128] It is unknown exactly how many of these guns were actually delivered and installed on the island, though we believe most, if not all of them, were.

The defences were, however, reduced only a month later. On 25 February, Inchkeith AA Battery was to be reduced by one MK II 2-pdr gun[129] and on 31 July a single Vickers MK III gun was on order to replace two Vickers 2-pdr MK II equipments withdrawn.[130] In May 1940, the Commander-in-Chief Rosyth advised that Inchkeith's AA defence of 'two or three' pom-pom guns, was inadequate.[131]

About 2.30 a.m. on 25 October 1940, the island's anti-aircraft defences engaged an enemy minelaying aircraft passing over the island. Two parachute mines were dropped close to the south end of the island. The plane was later reported to be losing height rapidly and was believed to have crashed in the sea some miles to the east of Inchkeith. So far, we know no further details of this incident, and no aircraft was officially recorded as lost on that date.[132] According to Stenhouse, during the latter part of 1940 and possibly into 1941, the only AA defences on Inchkeith were some Lewis machine guns manned by the coast gunners and a single 2-pdr pom-pom and AA searchlight manned by one officer and about 20 men.[133] The island's AA defences were again called into action about 2.40 p.m. on 24 January 1941 when they engaged an enemy bomber flying westwards over the South Channel, without success.

In March 1941, it was decided that the AA defence of Vulnerable Point [VP] 370 (Inchkeith) would be strengthened by guns of greater range to tackle aerial minelayers in the estuary, and four 3-inch AA guns were in place by April.[134] The August 1941 map and aerial photographs show two searchlight emplacements and a pair of Lewis guns in the

Figure 11.64

View from 'B' Group (the southern 9.2-inch gun) southwards. The emplacement of the 3-inch AA gun (right of centre) has not yet been built around it. The sand-bagged emplacement was probably the AA searchlight emplacement. The BCP of the South Battery is visible (behind centre). To the left, gun A2 has not yet got its protection; to the right, gun A1's protection is under construction (© Bruce Stenhouse Collection))

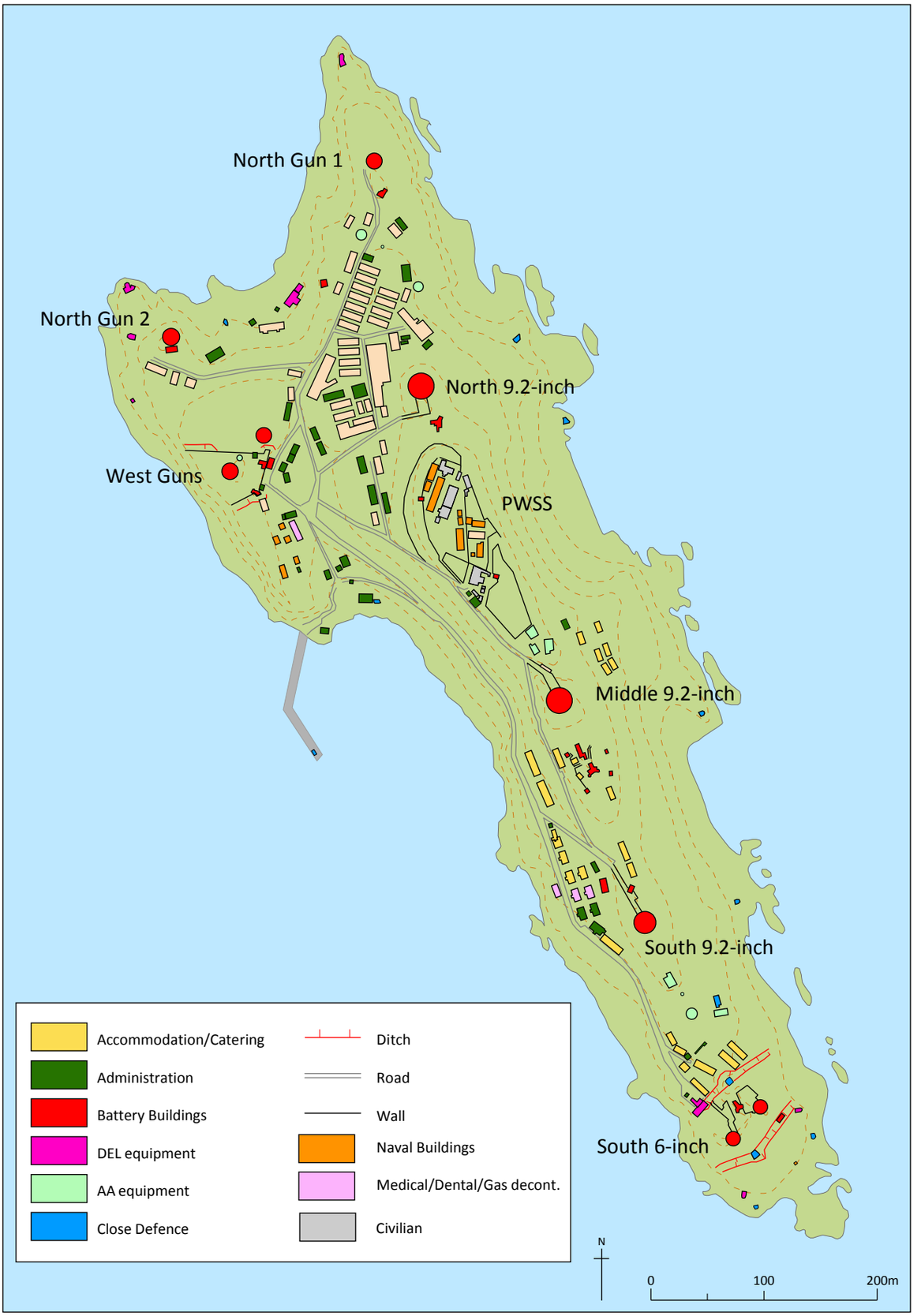
Figure 11.65
The southern 3-inch AA gun emplacement. The cube with the steel plate on top is a later alteration for a 2-pdr pom-pom or Bofors gun (© Gordon Barclay)

north; two 3-inch AA emplacements beside the AA Command Post; a 3-inch gun site immediately to the north-east of West Gun No. 2 (the southern emplacement of the West Battery); and the fourth 3-inch emplacement, a pair of Lewis guns and a searchlight were located at the south.

The AA Command Post had three levels; the bottom level comprised (on the west) a seawater cistern and, on the east, a deep-level magazine; the middle tier, still below ground level, had the unit's office, stores and rest-room. The topmost level had a cabin for the Gun Position Officer and a plotting room.[135] The two 3-inch emplacements on the surface comprised a gun holdfast on a concrete platform, surrounded by waist-high, flat-topped ammunition stores. One of the two emplacements was altered later by the addition of a large concrete block to mount a Vickers 2-pdr or a static Bofors gun.

The third 3-inch AA emplacement was positioned south of 'B' Group, the southern 9.2-inch gun. It appeared on a photograph taken in 1941 from the top of the shield of 'B'

Figure 11.66
Painting by Edward Ardizzone of the northern 9.2-inch gun on Inchkeith in 1941, prior to the construction of the overhead protection (© Imperial War Museum LD 001267)


North Gun 1
North Gun 2
North 9.2-inch
West Guns
PWSS
Middle 9.2-inch
South 9.2-inch
South 6-inch
Accommodation/Catering
Administration
Battery Buildings
DEL equipment
AA equipment
Close Defence
Ditch
Road
Wall
Naval Buildings
Medical/Dental/Gas decont.
Civilian
N
0
100
200m

Group (the southern 9.2-inch gun), looking south (Fig 11.64; Fig 11.65); the southernmost 3-inch AA gun appears on its standard static mount, but its emplacement has not yet been built around it. The sandbagged enclosure to the left may protect an AA searchlight.

At the West Battery, the only sign of the recorded 3-inch AA site is a set of eight large concrete cubes, which could have supported a raised baulk platform (a feature referred to in the 36 AA Brigade orders) that would have allowed the gun to fire above the overhead cover of the 6-inch gun.

As elsewhere in the Forth, Unrotated Projectile AA projectors were installed on Inchkeith. In June 1941, it was proposed to mount 16 'Z' Projectors (a term more commonly used for the single-rocket version of the weapon).[136] We have found the settings of six projectors, although RM believes he saw up to a dozen in the 1980s.[137] Men from Inchkeith were trained on the projectors at Fernieness naval firing range in East Lothian.[138]

In January 1943, it was reported that Inchkeith was 'now fully defended by 4 × 40mm [Bofors] equipments', and by March the four 3-inch Case I AA guns were withdrawn. In August 1943, there was correspondence that concluded that 'the suggested installation of 40mm Bofors equipments on INCHKEITH ISLAND is not recommended'.[139] In September 1943, orders were received to withdraw all anti-aircraft personnel from Inchkeith, leaving two of the 40mm guns to be manned by coast defence personnel. Late in the war, in April 1945, a single 40mm Bofors gun was listed as being retained for the local defence of Inchkeith, after the winding down of the larger-scale anti-aircraft system in the area.[140]

A War Office pamphlet setting out the establishment of the whole of the Inchkeith Fire Command was published in December 1942, showing it as 598 officers and men.[141] This number did not include Royal Engineers, naval personnel or other non-Royal Artillery or Royal Army Ordnance Corps personnel, and numbers of men involved in Coast Defence had already begun to reduce. The peak garrison was 'over 1,000' according to a number of service personnel interviewed by RM.

The accommodation on the island was more complex than in the earlier conflict. Medical and related functions occupied five huts, including a dental centre, a hospital and two gas decontamination buildings (Fig 11.67).

Nine of the 15 blockhouses marked on the 1918 map were shown on the 1941 map, but it is not clear if any of these were still used as guard posts. Surprisingly, Inchkeith had a 75mm field gun of the kind issued for close defence elsewhere in the Forth. The commencement of a 'local 75mm Gun course' is recorded on 8 October 1943, when detachments from 255 and 256 Coast Batteries practised.[142] As noted above, we suspect that these field guns were issued to coast batteries not only for close defence, but to familiarise men with the very different drills for firing field guns, as many of these men were to be 'combed out' for transfer to such batteries. As early as October 1943, men from Inchkeith were recorded as having been posted away to Field Artillery units or the infantry. In January 1944, during the 'Flood Tide' reduction in coast artillery, the North Battery was still shown as manned by Regular artillerymen; Inchkeith West and South were in care and maintenance, although the DELs of the South Battery were still manned by Regulars. The 9.2-inch guns were in care and maintenance.[143]

In the Second World War, there were more buildings marked as being in naval use than occupied the naval enclave on the summit of the island; there was also a group of half a dozen 'Naval Buildings' on the Cawcans Ridge, including the Guard and Mine Loop control stations and stores. The 'Naval Lookout Hut' near the southern end of the island (built by 1911) was still in use in the Second World War, and survives today.

Until 1941, the coast artillery emplacements were open to the sky, as they had been built. This meant that the guns had a very large field of fire, restricted only by the higher ground of the island and ancillary structures. In 1940, the war artist Edward Ardizzone painted a number of watercolours of the guns and men on Inchkeith, now in the Imperial War Museum (Fig 11.66). In 1941, it was decided to provide all coast defence guns with rear and overhead cover, to protect the crew from attack by aircraft and from splinters.[144] There was some resistance to restricting the field of fire of the guns, but all the emplacements were protected. The vast hangar-like shelters for the 9.2-inch guns are still very impressive structures, albeit now structurally compromised. They were provided with many small holes for ventilation and, nearer ground level, loop-holes for close defence. The shelters were built of brick, with heavy steel beams to take most of the weight of the reinforced concrete roofs. The roofs had uneven edges and stones set into the concrete to aid with camouflage. The aprons of the guns, originally plain concrete, were covered with a skim of rough cement with inset stones for the same purpose, and the aprons were extended outwards to create uneven edges (Fig 11.22).[145]

In the Second World War, there were six DELs, of which five were in First World War emplacements. The additional light was on the site of Blockhouse No. 4.

Life on Inchkeith in the Second World War

During November 1940, a correspondent from *The Scotsman* newspaper reported on Army life on the fortified islands in the Firth of Forth;[146] one of them was Inchkeith. He described the life of the soldiers on the islands as like that of a sailor aboard a ship, although it tested morale to be within sight of the mainland and all its attractions. Morale on the island was

Figure 11.67
Map based on the 1941 map and aerial photographs (© Gordon Barclay)

high because, it was reported, the Colonel commanding the Forth Fixed Defences and his officers clearly understood the problems and devoted a great deal of time, with the support of the civil authorities, to supplying as much entertainment as possible. Concert parties visited the islands (and were sometimes seasick during the crossings) and cinema films were also supplied. On 31 March 1944, the famous actress Dame Sybil Thorndyke made the crossing to Inchkeith, apparently in gale-force winds, to give a 'recital', presumably dramatic readings.[147] There were about 50 wireless sets distributed through all the messes. *The Scotsman* correspondent noted good relationships between the officers and men, which were reflected in a practice shoot held during the correspondent's visit. Immediately after such practice shoots, the gun teams, observation post personnel and everyone else connected with it gathered in a lecture hut where the commanding officer went over the results, detail by detail, with explanations sought without blame for anything that went wrong, in order to prevent recurrence.[148]

The guns were manned night and day. In order to keep the men in practice, there was a practice room (probably the 'Aiming Drill Shed' built in the southern ditch of the South Battery, first recorded on the 1918 OS map of the island) which was rather like a large toy theatre representing part of the Firth, with artificially produced moonlight and sunrise effects and model ships silhouetted against the background. On the floor was another model of the Firth, with two model searchlights with which the men were taught to keep a beam fixed on a target while the instructor operated a tiny model ship at the back of the room in total darkness, with the searchlight operator endeavouring to keep his spotlight concentrated on it.[149]

One young doctor had responsibility for three of the islands (presumably Inchkeith, Inchcolm and Inchmickery); he reported that the health of the men was very good, there being too much fresh air and too many strong winds to make the spread of infectious disease likely. However, accidents did sometimes happen, and one night during a black-out a soldier fell and hurt his spine. At that time, the doctor was on another island, but he prescribed action by telephone and, later, had the man bound on a stretcher and taken to a hospital on the mainland, where he made a good recovery.[150]

In 1986, a further account of life on Inchkeith, by Douglas Allan, a former Sergeant-Instructor posted there in July 1941, was published in the *Edinburgh Evening News*.

The garrison on the island at that time was over 1,100 men, and in addition, a searchlight unit and a Royal Naval detachment. The military personnel were granted overnight leave on the mainland every ten days. Sometimes the drifter could not sail, cancelling all leave if the decision not to sail was taken at the jetty at Inchkeith. On the other hand, if the cancellation took place at Leith Docks, the lads gleefully accepted another night in the city. One incident during a rough crossing was recalled, when Andy, the boat policeman, was seasick and lost his false teeth overboard. When reporting his loss, he was charged with losing Government property.

The island had two canteens, one run by the NAAFI and the other by the Church of Scotland Huts Committee. Both were popular, but the Church Hut had a Quiet Room for study and an occasional church service of prayer and meditation conducted by ministers of the church. Every Sunday morning, a full parade of the batteries brought a large congregation into the main hall of the Church of Scotland Hut where the Army Chaplain took the service. This service was attended by naval personnel, including, on many occasions, Captain Lang, brother of Archbishop Lang. For these services, there was a choir and, for a spell, the choirmaster was Gunner Duncan from Edinburgh, assisted by expert pianist Gunner Tonge, a Londoner.

The extensive tramway system had fallen out of use by 1939. The roads were relaid with tarmacadam and, in 1940, a tractor with a trailer arrived on the island to pull loads. From time to time, the batteries had target practice. On one occasion, when one of the 'nine-twos' fired a shell, practically every window in the NAAFI canteen was blown in. As it went off, Sergeant Allan happened to be entering the Sergeants' Mess and got such a fright that he committed the cardinal sin of going into the mess with his cap on, which cost him five drinks, the penalty for such an offence.

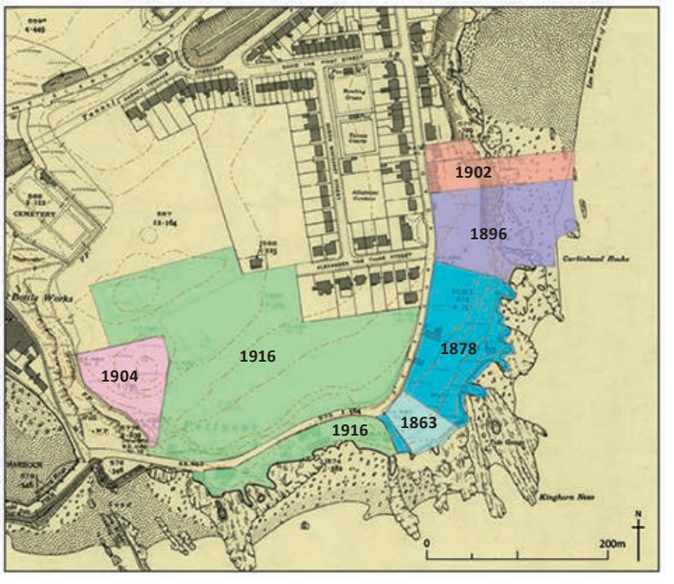


Figure 11.68
Diagram showing the different land purchases between 1863 and 1916, that made up the Kinghorn and Pettycur battery site. Map base 1947 OS 1:2500 map (© Gordon Barclay)

Post-war

The final map of Inchkeith was drawn in 1948. A few buildings shown on the 1941 map had been removed by then, but most were labelled with the same functions. We suspect that structures on this map may have been 'carried over' by a draughtsman without the benefit of site inspection: for example, the 1948 map showed 3-inch AA emplacements, which had been rearmed with lighter guns in 1943 (see above).

The Fort Record Book contained an eyewitness account, dated May 1952, of the removal, four years earlier, of the two 6-inch Mk VII and Mk VII+ guns and mountings from the West Battery.[151] The front part of the overhead protection had first to be removed and the various parts were loaded on sledges and lowered down Heartbreak Hill, which had been covered with a temporary planked surface for the purpose. By March 1953, all the remaining guns had been placed in the 'heaviest state of preservation', as they were all surplus to the 'Basic and Reserve Scales of Defence'. The 9.2-inch guns were detailed for disposal for scrap, while the 6-inch guns were to be removed to Ordnance storage.

What was by then the near-deserted state of the island was described in the *Edinburgh Evening News* of 17 July 1953:

> It bears the aspect of a deserted village, with barrack huts and battlements, canteens and cookhouses, workshops and water tanks, hydrants, cables and ventilators all waging their unequal struggle against a common enemy – the weeds. Thistles stand high for instance, like purple-capped commissionaires at the door of the main, brick-built NAAFI canteen. Here for Inchkeith's war-time garrison of some nine hundred men, was the very hub of conviviality. But now the noise of beery banter is supplanted by the chirping of sparrows through the broken windows, and by the rustle of copious vegetation outside.
>
> The footlights are still there, and the blue-painted sets, relics of ENSA parties and smoking concerts. But the stage is empty. And so it is for the rest of this huge, sprawling Army camp. Empty that is to say, but for the formidable-looking artillery maintained by Bombardier Harry Brown and Lance-Bombardier Jack Horsfield. Englishmen and Regulars both, who are – together with one National Serviceman – the only military potentates still in residence on the island.
>
> Harry Brown has been there for six years, and likes it, devoting his spare time to the cultivation of his flower garden and to the knitting of elaborate jumpers in Fair Isle and other styles. Jack Horsfield on the other hand, goes in for crab and lobster catching – with no small success, as your reporter's diet during the past few days can amply confirm.[152]

The remaining 6-inch guns were removed between 1 September and 7 November 1953.

11.2 Kinghorn and Pettycur

Introduction

These two batteries occupied one headland at Kinghorn Ness. Kinghorn was established in 1880 and Pettycur in 1916, on adjacent sites with shared facilities.

Sources

The sparse Fortress Record Book has a useful three-page 'history of the work' written in 1949, and some maps and drawings.[153] There are sets of fine Record Plans of 1890, 1902 and 1906 in the National Archives, including most of the ancillary buildings, and drawings from 1904–5 of the Fire Command Post and Position Finding Cell, which were built

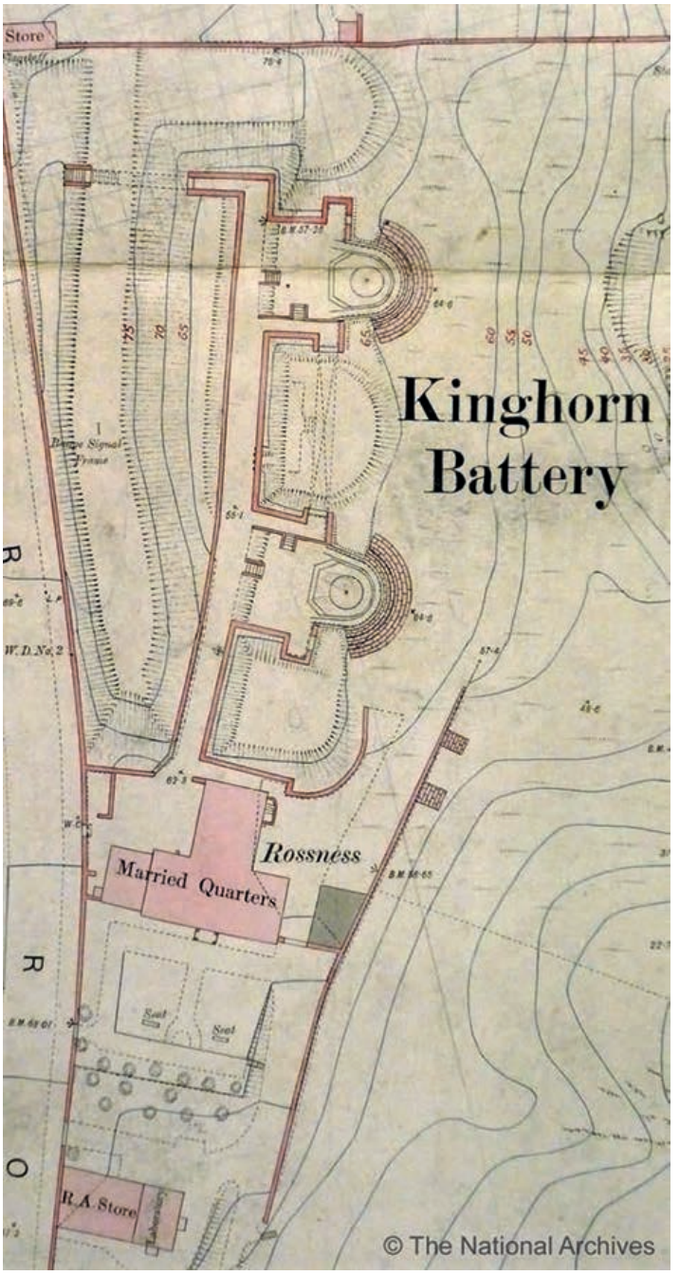


Figure 11.69
Detail of a large-scale plan of the Kinghorn Battery, drawn in 1890 (© The National Archives, WO 78/4173)

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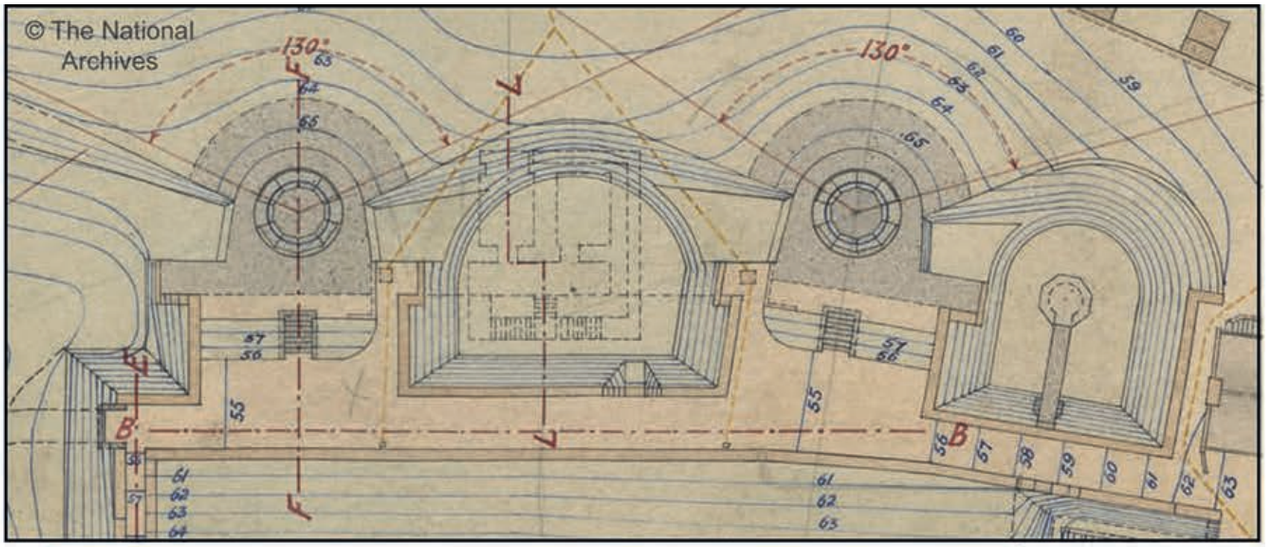
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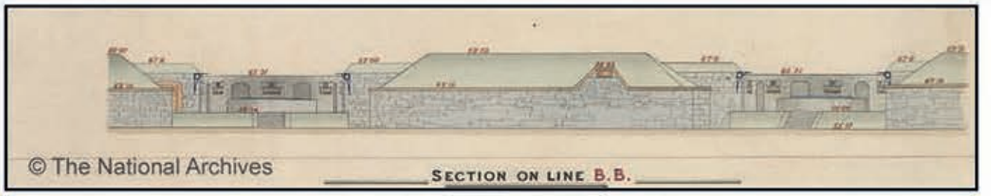
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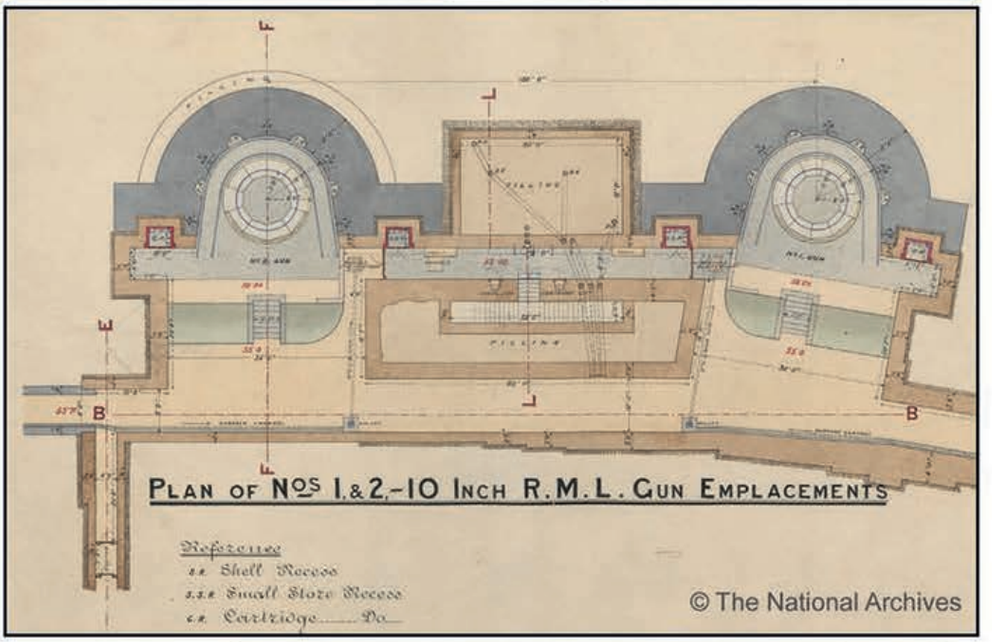
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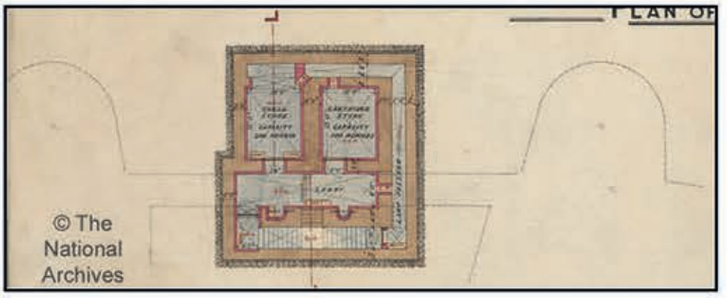
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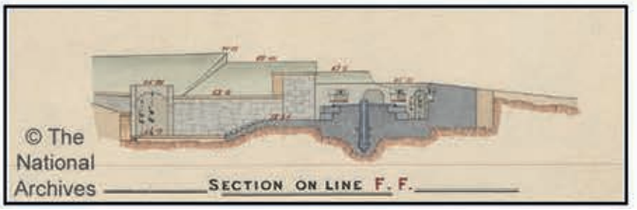
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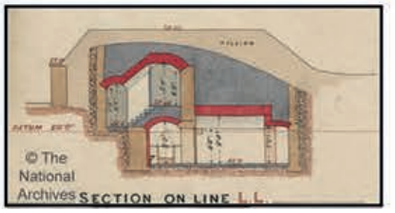
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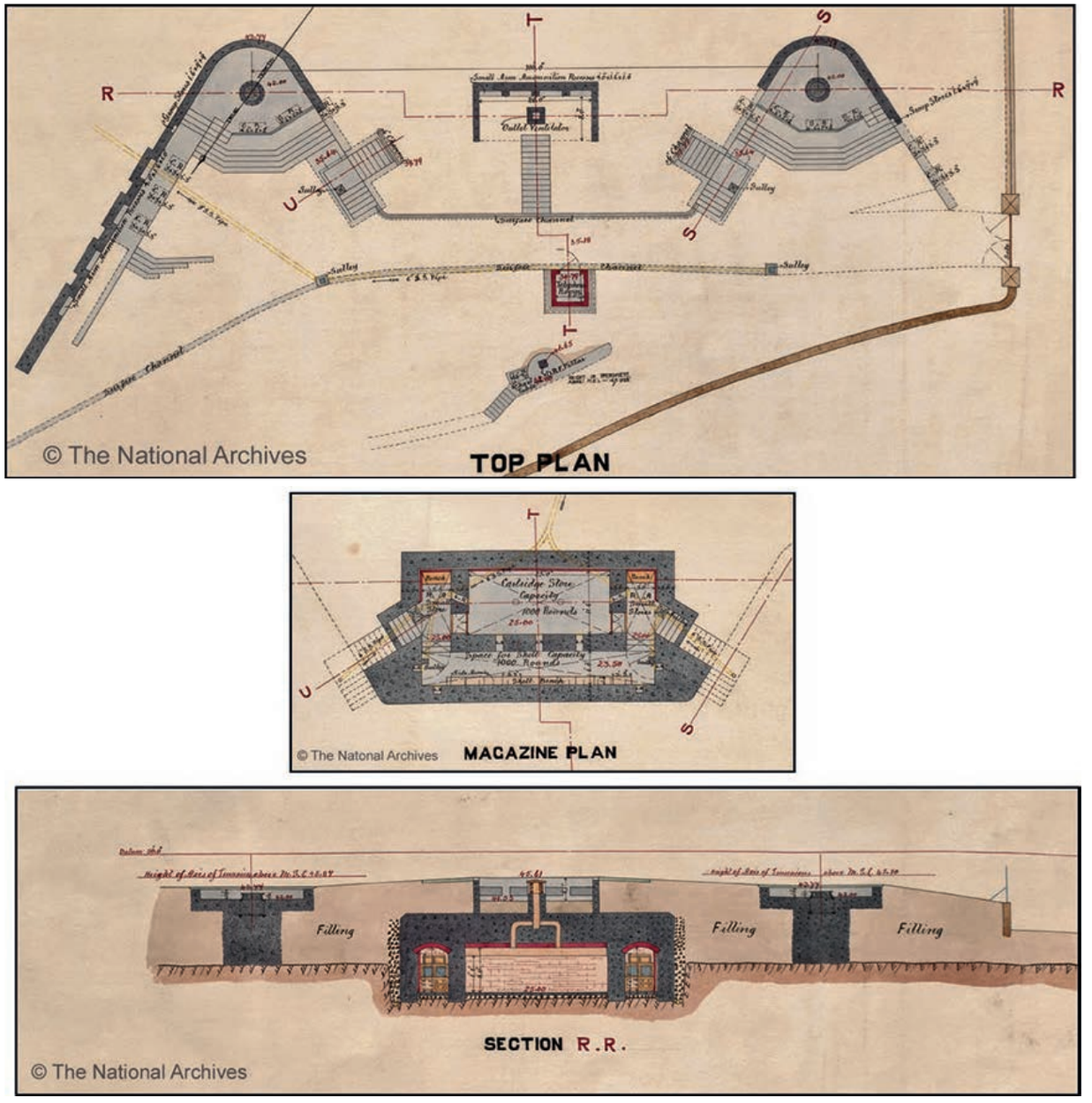


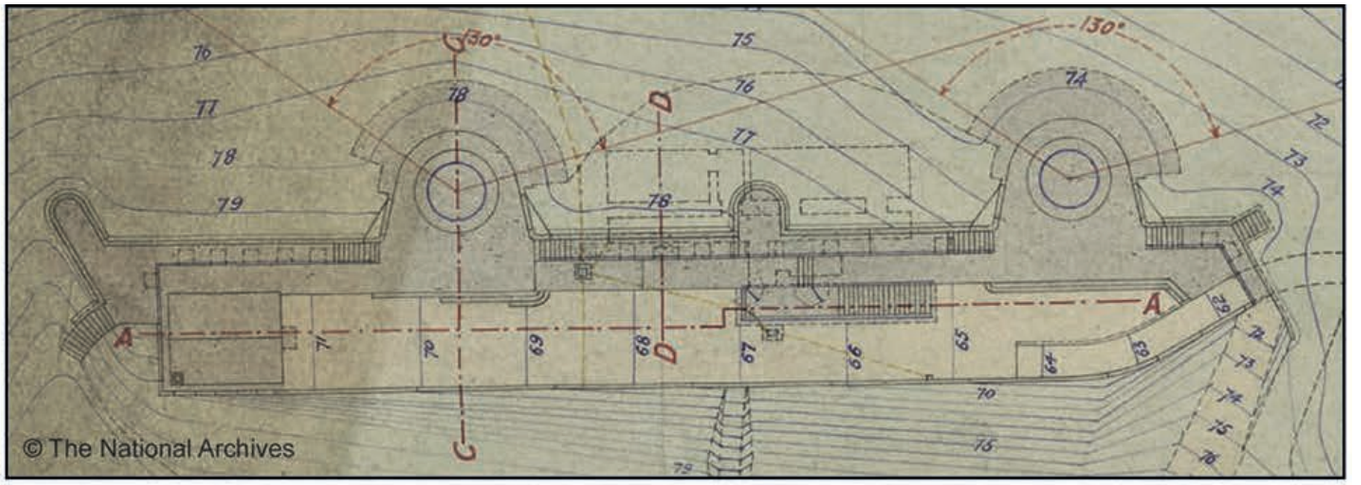
Figure 11.71
The 1906 record plan of the 1892–3 4.7-inch QF battery. The top, magazine level and cross-section are shown. The telephone room was marked as a shelter on the 1902 plan; the DRF platform was added between 1902 and 1906 (© The National Archives, WO 78/5178)

Figure 11.70
Composite record of the Kinghorn battery for two 10-inch guns, in 1880 created from the record plan of 1902, on file WO 78/4250: 'A', the 'Top Plan' showing the emplacements sunk between a central mound of soil covering the magazine and, to the south (right on the drawing), the DRF platform. The two emplacements were linked by a tunnel under the central mound, from which a stair led down into the magazine. 'B' shows the rear elevation on the line B–B. 'C' shows the ground floor plan of the battery, including the passage linking the two emplacements. The shell and cartridge lifts opened into this passage, flanking the staircase opening. 'D' shows the ground plan of the subterranean magazine, while 'E' and 'F' show, respectively, the cross-sections of the northern emplacement and the connecting passage and magazine. A DRF position had been added between the dates of the two plans, on the mound to the south of the southern gun (© The National Archives, WO 78/4173)

on a new site to the west (see below).[154] There is a plan in the Fort Record Book of the main structures of Pettycur, dated 1918, and a detailed plan of both batteries dated 1922. The best source for the Second World War is a near-vertical 1941 aerial photograph (Fig 11.84).[155]

Kinghorn, 1863–1902

The early development of this coast defence site was closely inter-linked with Inchkeith and much within the history of that site is not repeated here. The War Department bought a small parcel of land on the foreshore as early as 21 March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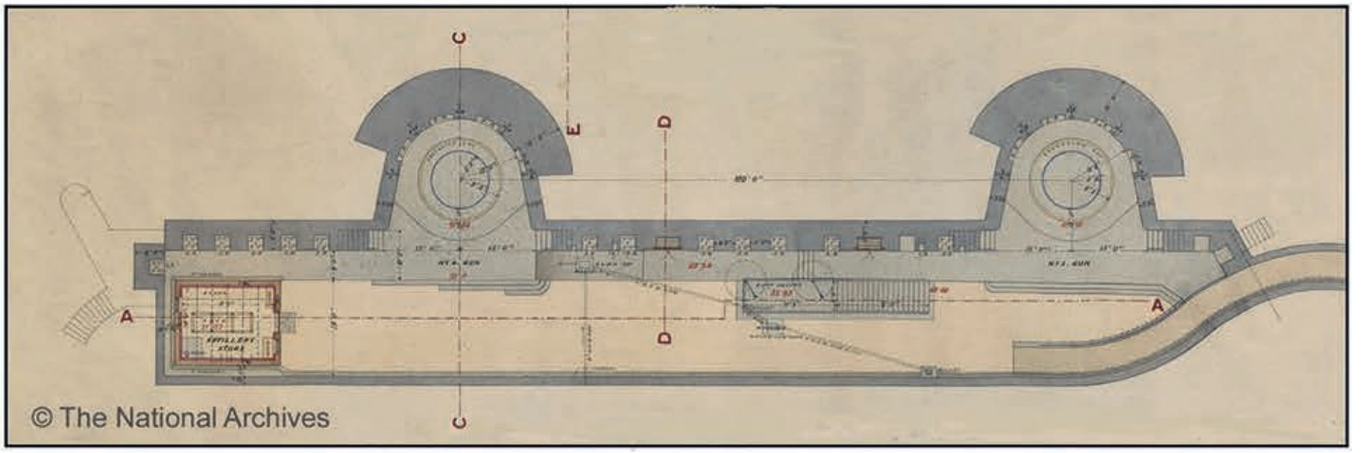
A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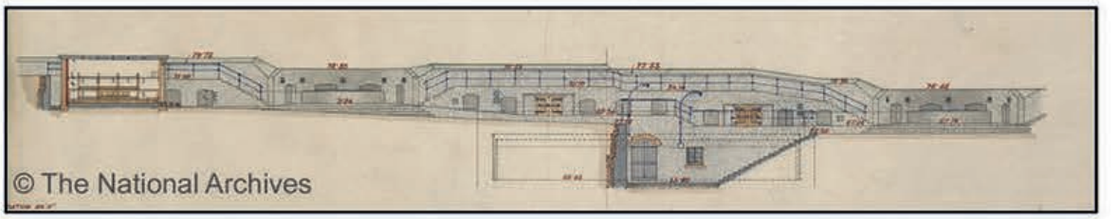
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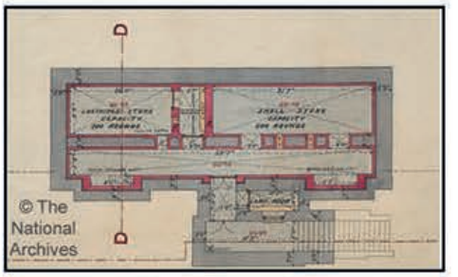
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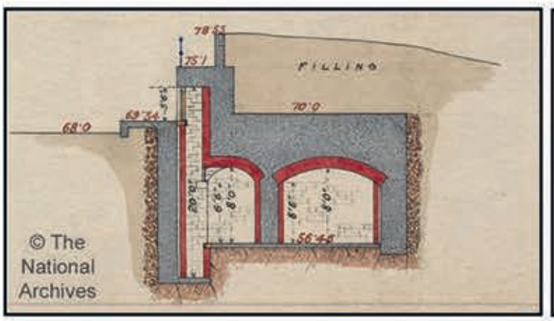
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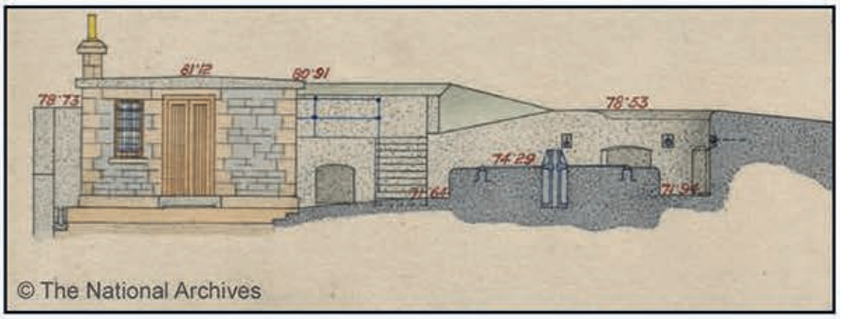
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F

1863 for a volunteer battery. The land for the main battery was purchased on 8 June 1878 (Fig 11.68).[156]

The construction work was undertaken by the same contractor as Inchkeith, Mr Hill of Spithead Fort Works.[157] The situation and terrain were far more accommodating than on Inchkeith, and despite the inclement and frosty weather during the autumn and winter of 1878, it was almost complete by June 1880.

The battery site incorporated Rossness House, which was used to provide accommodation for the gunners (Fig 11.69). When, on Friday 4 November 1881, a captain and 56 officers and men from the same detachment that had mounted the guns at Inchkeith arrived at the fort to mount the two 10-inch RML guns, they were quartered at Rossness House and Hayfield Cottages, nearby in Pettycur village. A further building in the garden of Rossness was also adapted for military use. A building at the south end of the battery compound (not shown on Fig 11.66) was marked 'Men's Quarters' on the 1890 map, and had an adjacent cookhouse.[158]

In 1880, the area to the north of the battery (that is, not the area bought in 1863) was occupied by an Artillery Volunteer (that is, field artillery) drill ground with, at its eastern edge, three gun platforms for muzzle-loaders on old-fashioned carriages fronted by a stone wall with an adjacent 'expense magazine'. A fourth gun platform occupied the north-west corner of the site, next to the 'Whitehouses' building. This land was bought in 1896.

The 1880 10-inch emplacement was surveyed in 1902 and it seems to have been altered only in detail in the intervening two decades. Figure 11.70 shows the different levels of the 1880 emplacement.

During early December 1886, *The Scotsman* reported that work was due to begin on erecting 'bomb-proof' barracks for over 100 men on an adjoining site, each costing £650. Only one barrack for 20 men was built, presumably the building mapped in the southern part of the battery compound in 1890. In 1902, Rossness House was recorded as a two-storey building with basement and attic in use as married quarters. A further barrack block had been built just south of the house by 1902.

The *Edinburgh Evening News* reported on 16 October 1891 that two of the 10-inch RML guns 'which had recently been removed from Inchkeith' were lying at Kinghorn Ness 'prior to being mounted on the high ground immediately adjoining the existing fort' (the Volunteer drill ground to the north).

Figure 11.72
Record plans, cross-sections and elevations drawn in 1902, showing the emplacements, built in 1899, to mount 10-inch Guns Nos 3 and 4. (A) Top Plan (damaged); (B) gun floor plan; (C) elevation of rear of battery (on line A-A shown on (A); (D) plan of the magazine; (E) cross-section of the magazine and the shafts of the quick-return lifts (on line D-D); (F) cross-section (on line C-C) through the northern gun pit ((C) The National Archives, WO 78/4250)

Figure 11.73
Surviving portion of the loop-holed boundary wall on Pettycur Road (© Gordon Barclay)

The dismounting and removal of the guns to Kinghorn was also recorded in the History of the Work on the Fort Record Book.[159] As it turned out, this second pair of 10-inch guns was not mounted until 1899. The two 10-inch guns removed from the South Fort on Inchkeith in 1898 are supposed to have been moved from Inchkeith to Montrose and Aberdeen.[160]

As described in Chapter 3, coast defence had to be able to deal with a new threat in the 1880s – the fast torpedo boat – and, between February 1892 and August 1893, an emplacement was built at Kinghorn for two 4.7-inch QF guns (Fig 11.71). Two similar guns were emplaced on Inchkeith in 1895. The 1902 Record Plan recorded what had been built at Kinghorn in 1893. Two inverted 'V'-shaped emplacements were set 30m apart, approached by broad stairs from the rear and incorporating many ready-use gun ammunition and small arms ammunition lockers. Between the two emplacements was a three-sided rectilinear enclosure sunk into the earthen carapace of the battery, with, on its seaward side, four lockers for small arms ammunition. Both gun platforms had their own stairs to a buried magazine. The staircases led into small lobbies which led on into the shell store. Both lobbies were also provided with hatches into the cartridge store. Both shell and cartridge store had capacity for 1,000 rounds.[161] As was usual in QF batteries, the ammunition was carried to the guns by hand. A separate building behind the guns provided shelter for the crews. When planned in 1902, the battery does not seem to have had a Depression Range Finder. By 1906, however, a separate DRF platform had been built behind the shelter, which by that date had been converted into a telephone room.[162] Local information suggests that the magazine of the battery still survives as the cellar of a house along the shore.[163]

The first practice shoot on the 4.7-inch QF guns – the first mounted in Scotland – was on 11 August 1894, and many officers in Scotland attended, including Major-General Hugh Rowlands, Commander of the Troops in Scottish Area, and Colonel Hobart, Commanding the Royal Artillery in Scotland. A large crowd of local people had also gathered to watch. The target was placed on the water at a distance of *c* 3,500 yards

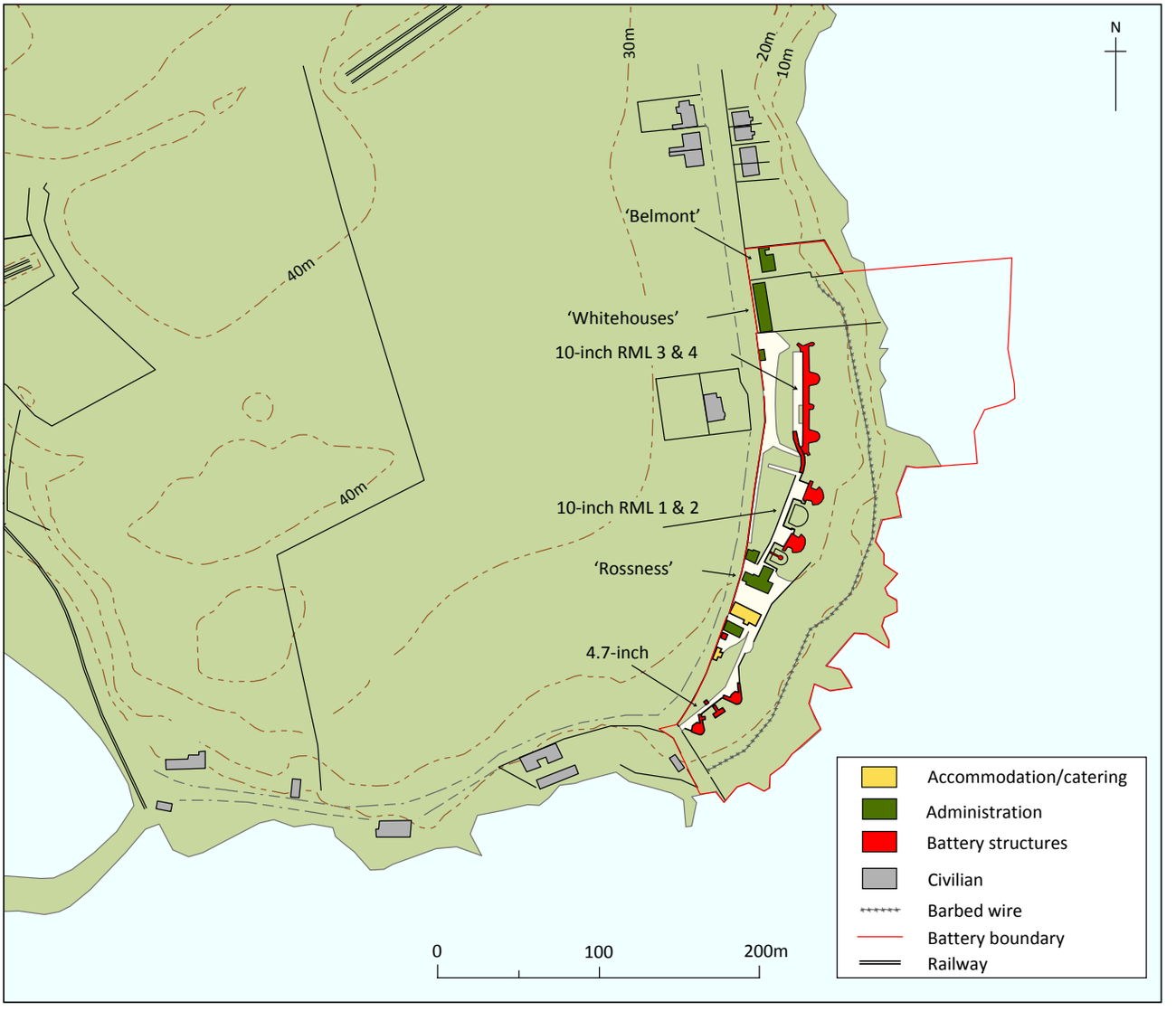
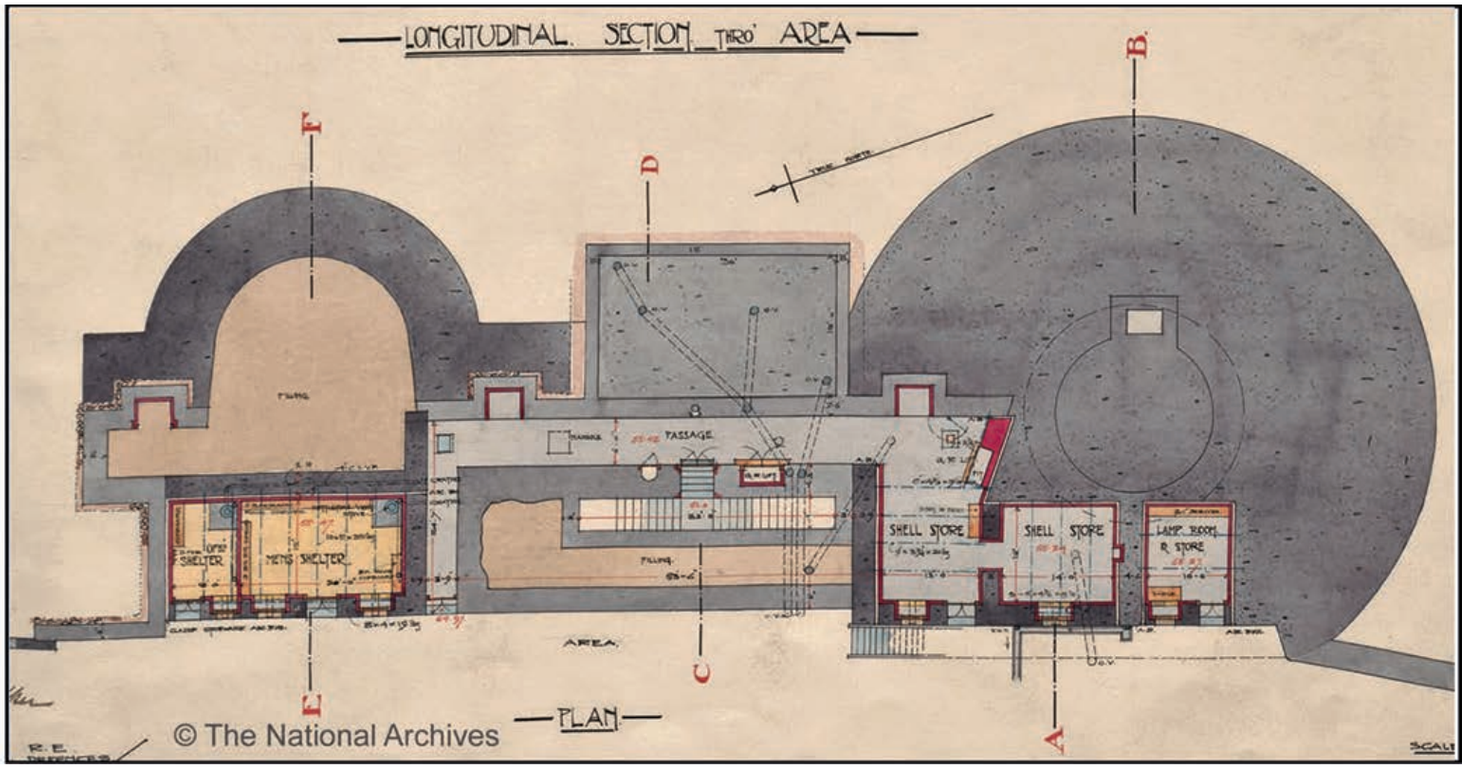


Figure 11.74
Plan of the whole battery complex in 1902 (© Gordon Barclay)

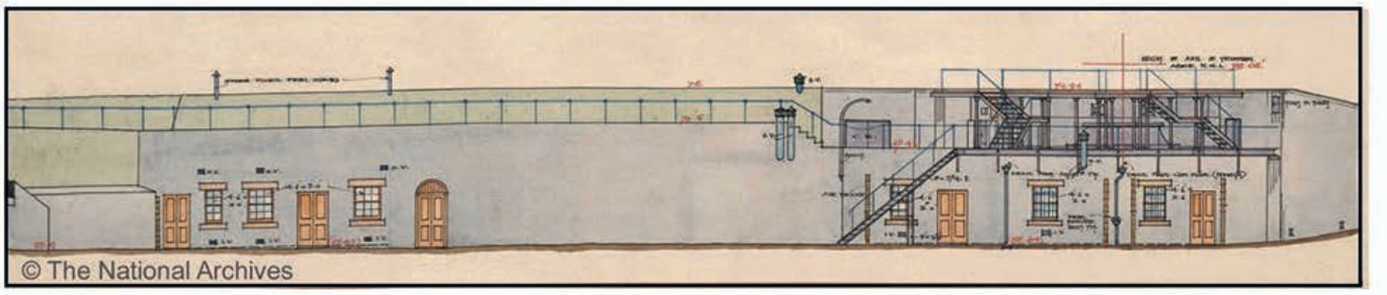
(3,200m), at which 24 shots were fired (with 'very satisfactory' results) from each gun over a period of 1¼ hours.[164] Although it was decided in 1899 that the 4.7-inch QF guns on Inchkeith were in the wrong place in the estuary, both the Kinghorn 4.7-inch guns remained in place (although dropping off the 'approved armament' in 1906) until 1914, when they were removed to arm the new battery at Downing Point.

As noted above, two additional 10-inch RML guns, withdrawn from Inchkeith, were mounted at Kinghorn in 1899 on the former Volunteer Artillery drill ground to the north, which had been purchased in July 1896 (Fig 11.72).[165] By 19 August 1899, the strengthened Kinghorn Battery was reported to be complete and ready for action. Although these two extra 10-inch guns had been part of the 'approved armament' for Kinghorn since at least 1894, the replacement of these obsolete weapons was recommended in January 1899 and they were off the Approved List by 1 December – the four 10-inch guns were to be replaced by a 9.2-inch and two 6-inch BL guns.[166]

Figure 11.75
Extract from the record drawings of the 9.2-inch emplacement at Kinghorn. (A) ground floor plan, showing the new buildings erected between 1902 and 1906, including new shell stores (the outline to the left is of the pre-existing 10-inch emplacement, which was buried); (B) rear elevation; (C) plan of the original 10-inch magazine, re-purposed; (D) cross-section A-B through the emplacement (© The National Archives, WO 78/5178)


LONGITUDINAL SECTION THRO' AREA
PASSAGE
SHELL STORE
SHELL STORE
LAMP ROOM & STORE
MEN'S SHELTER
AREA
PLAN
© The National Archives

A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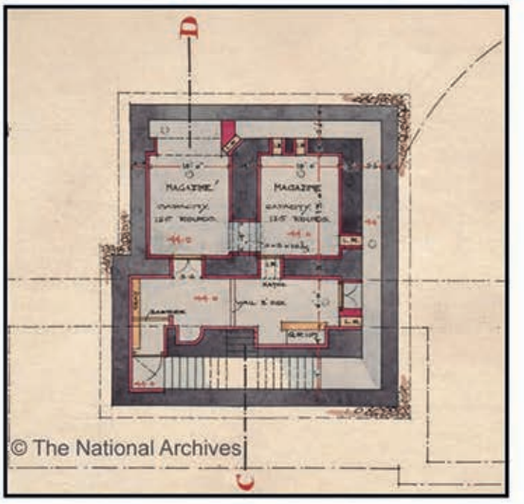
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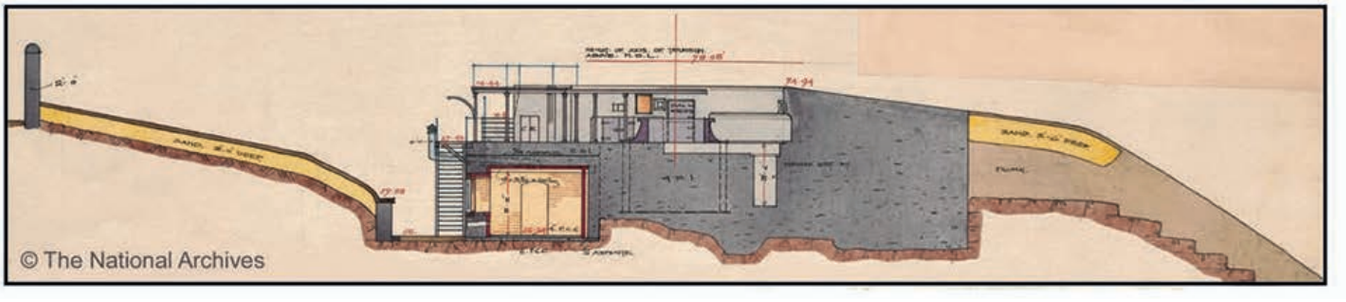
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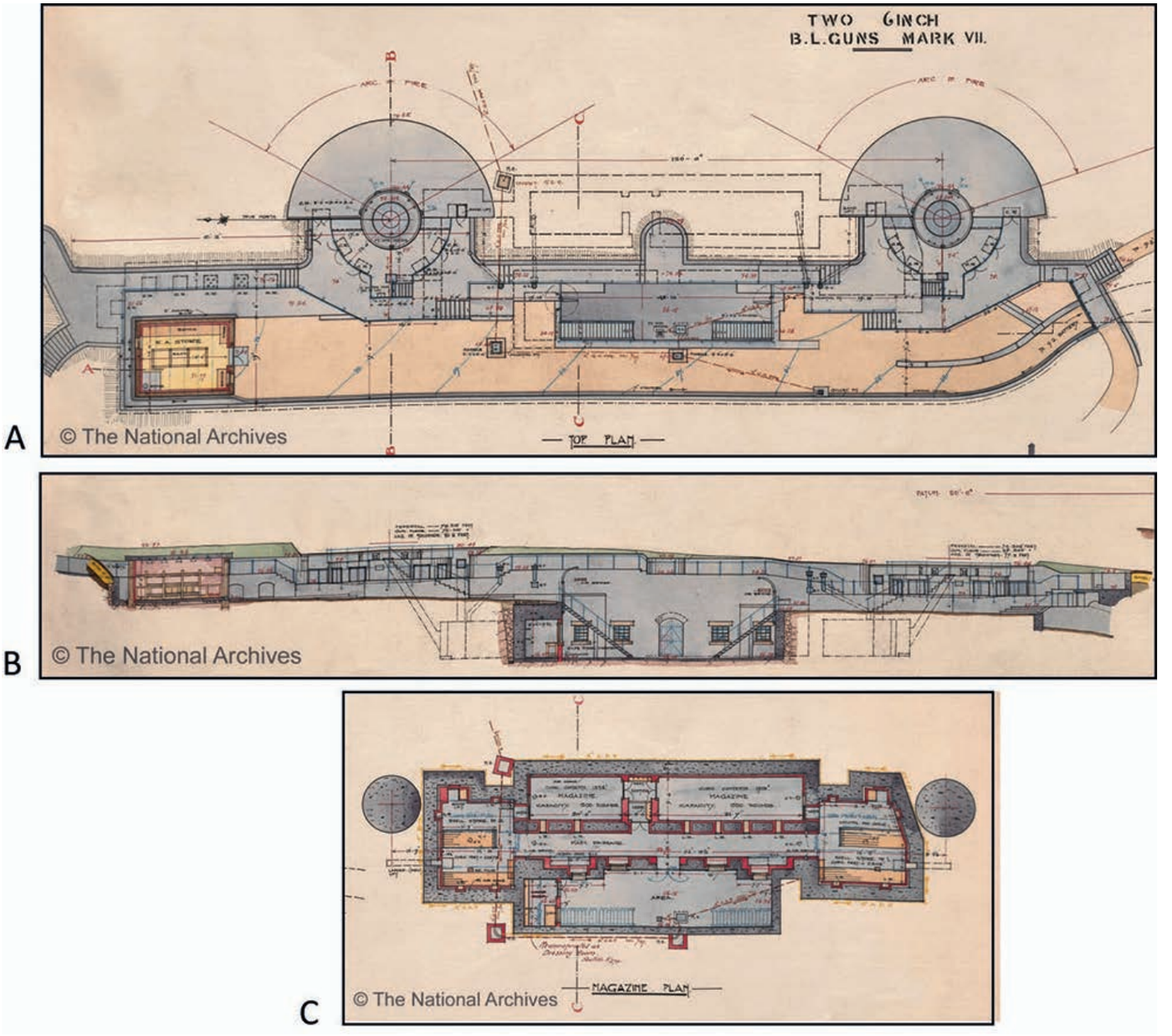

Figure 11.76
Extracts from the Record Plan of the 6-inch emplacements, as recorded in 1906. (A) emplacement level plan; (B) rear elevation; (C) plan of the magazine (© The National Archives, WO 78/5178)

The emplacements for the second pair of 10-inch guns (guns 3 and 4, which lay to the north of guns 1 and 2) were simple inverted 'U'-shapes with their open sides attached to a straight parapet. Behind the parapet and in the gun pits there were over 20 recesses for the storage of ready-use ammunition (Fig 11.72 (B)). A single stair led down to the underground magazine (Fig 11.72 (D)). At the bottom there was a lobby, from which the lamp room could be entered. The lobby led into a passage running the whole length of the magazine from south to north. This passage had two quick-return lifts, one for cartridges, one for shells. The shell store (capacity 200 rounds) was entered directly from this passage, while the cartridge store was entered through a shifting lobby. There was an issuing hatch into the passage, almost opposite the lift. A Royal Artillery store occupied the northern end of the emplacement at ground level. There was a Depression Range Finder position on the lobe at the northern end of the emplacement. The similar lobe near the centre of the battery may have been a

position from which to observe the fall of shot. The *Fife Free Press* reported on 19 July 1902 that the Fife Royal Garrison Artillery Volunteers were encamped at the Crying Hill, Kinghorn for the first time. The camp for a period of three weeks consisted of about 100 tents with hospital, guard room and canteen. The reporter described the Kinghorn Battery as 'one of the best equipped batteries or fortifications in Great Britain, where all the newish types of guns were mounted'. This was hardly a very accurate description of a battery armed with four obsolete, 30-year old, 10-inch RML guns and two 4.7-inch QFs. Instruction was given on the 4.7-inch QF and 10-inch RML guns, while others trained on the DRF, on signalling and telephoning.[167]

Provision was made for the close defence of the battery from the earliest days, when a high masonry wall, loop-holed for musketry defence, was built along Pettycur Road. A short section of the wall survives, with some of the loop-holes visible (Fig 11.73).

1903–14

The modernising and redevelopment of the battery began with the acquisition of additional property in June 1902, when the War Department bought two existing houses at the north edge of the site, known as 'Whitehouses' and 'Belmont', which were adapted as battery accommodation and offices. Work on the new 9.2-inch and 6-inch batteries began on 14 August 1903, and was completed on 31 October 1904. By 1906, a Battery Command Post had been built in advance of the front elevation of Whitehouses.[168]

The 9.2-inch emplacement was built over the emplacement of 10-inch gun No. 1, which was absorbed within a much larger concrete foundation, fronted by soil and sand (Fig 11.75). The old gun pit for 10-inch gun No. 2 was deeply buried under soil topped by sand, while the old magazine and its lift to the gun level continued in use to store cartridges; the two rooms of the structure were marked as, 'Magazine capacity 120 rounds'. A new two-room shell store and lamp room were built and there was a lift straight up to the gun pit from the passage outside the new shell store.

Fitting out the emplacement that had held 10-inch guns Nos 3 and 4 to take the two 6-inch guns involved more work than a superficial comparison of the 1902 and 1906 plans might suggest (Fig 11.72; Fig 11.76). A much larger sunken area was provided outside the magazine, and new windows were punched through the old shell and cartridge lifts. The old shell/cartridge stores were now cartridge stores, and separate shell stores for the two new guns were built at both ends of the underground complex. The shell stores were provided with 'ladder lifts' for the shells and 'band lifts' for the cartridges.

Uphill and slightly north from the 9.2-inch gun was its Battery Command Post, which had the appearance on the plans of a simple DRF platform. The 1906 plan was annotated in 1915 to show the replacement of the BCP by a more substantial structure.

As was normal, the concrete *glacis* of the 9.2-inch and 6-inch emplacements were fronted by soil topped off by *c* 1.1m of sand, so that almost nothing but the gun was visible from the front.

The final new element on the site was the provision of a battery of four 5-inch guns, for drill and practice, situated immediately in front of the main group of battery buildings but at a very much lower level, not far above sea level (Fig 11.77). Recent building work in the area has shown that the easternmost emplacement was bolted straight onto a flattened platform of the natural whinstone. It is now under a modern garage, but the owner has marked its location at the surface. The next emplacement to the west was located during the digging in of services.[169] The ammunition store for the 5-inch guns was on the shore, linked by a track to the 5-inch battery; this building survives, albeit in poor condition. The retaining wall behind the 5-inch guns was topped by concrete loop-holes for close defence; it survives.

The 1906 Record Plan (Fig 11.77) shows that the main group of buildings around Rossness House had been remodelled. Most strikingly, Rossness itself had been reduced to a single-storey, flat-roofed building.

At the end of the reconstruction programme in 1904, the battery was heavily armed with modern guns and was well equipped both for the defence of the river and for training, with adequate accommodation and all the necessary ancillary buildings (Fig 11.78).

In October 1904 (Fig 11.68), the War Department bought from the burgh the piece of ground on the promontory known as the Crying Hill, to build a new Fire Command Post and, above it, a Position Finding Cell, both partly buried (Fig 11.78).[170] The ground lay *c* 400m west of the battery, and was the highest point on the headland of Kinghorn Ness, reaching a height of 45m (that is, 10m above the battery), and had a commanding view. The site had been considered but rejected as the site of the 6-inch guns of the Kinghorn Battery.[171]

The Crying Hill structures (recorded in 1906) were of the kind familiar in the Forth – rooms provided with low, wide windows dug into the hill slope with the forward sections under sloping, turf-covered roofs. The role of the Fire Command Post here is not clear as there was also a structure mapped as 'Former Fire Command North' on Inchkeith by 1911. There were two Fire Commands in the Outer Defences until around this time, when they were combined on Inchkeith. The Scottish Defence Scheme for 1905 notes that the Fire Command Post at Kinghorn was not yet complete on 1 November.[172]

The test-firing of the new 9.2-inch and 6-inch breech-loading guns took place on 9 March 1905. It had been rumoured beforehand that the concussion of the 9.2-inch gun would be very heavy, but the firing caused no noticeable damage and the concussion was reported as not so violent

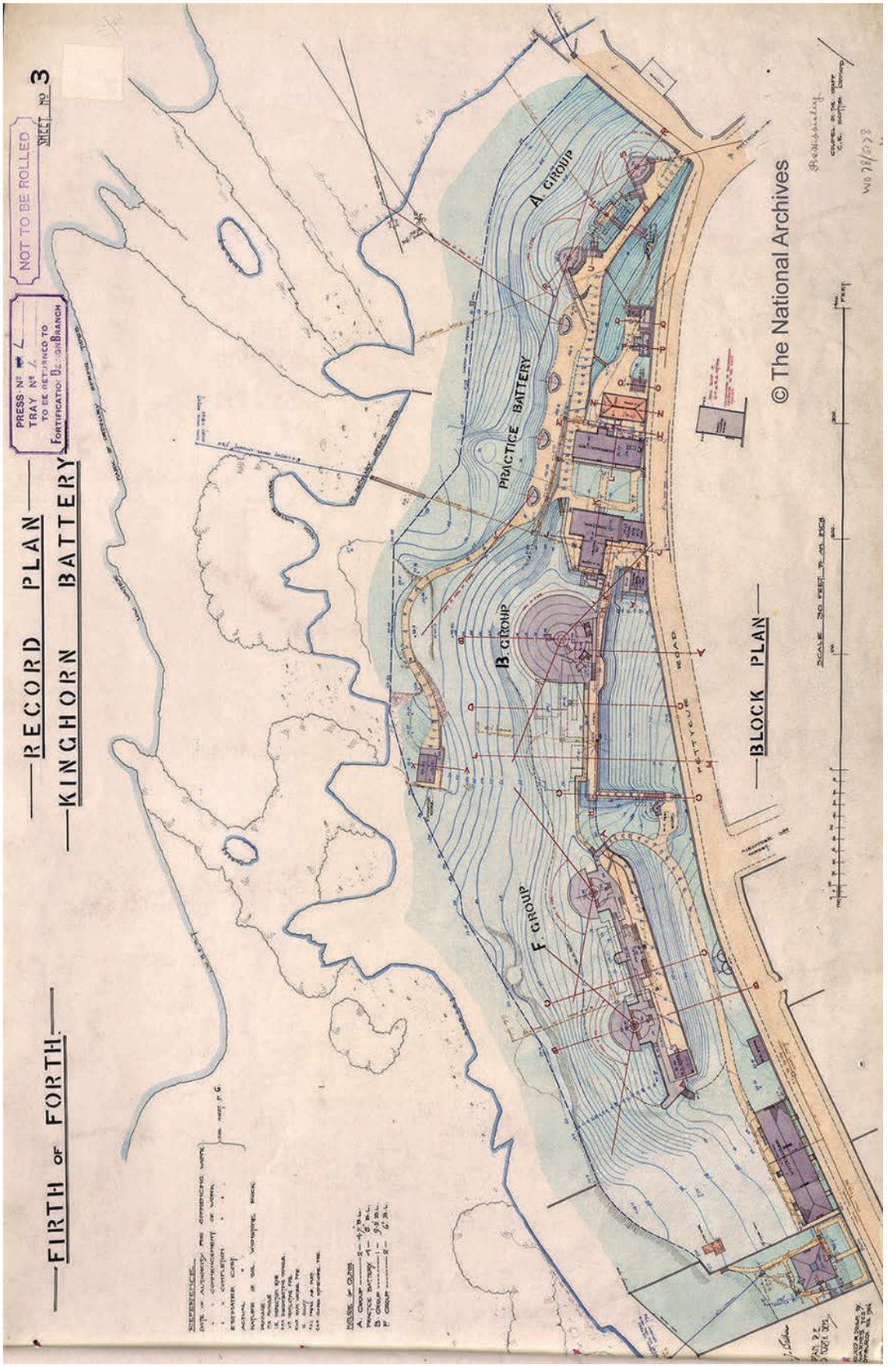

Figure 11.77
Royal Engineer plan of the whole extent of the Kinghorn battery in 1906 (© The National Archives (WO 78/5178))

as the old 10-inch RML gun.[173] Despite this sanguine report, the following collective letter from residents of Kinghorn appeared in the *Fife Free Press*:

> Two years ago … very much heavier guns were mounted, and every summer big gun practice is carried on, causing damage, for which no reparation is made. Our windows and our doors are smashed, the plaster of our ceilings is thrown down, our walls are cracked, our cisterns are shaken from their fixtures, the paving of our lobbies and the slates on our roofs are displaced and broken, but we can obtain no redress. We are told we must bear it, and pay for it, all for the good of the nation …[174]

The results of the 1905 Owen Committee on coast defence have been described in Chapter 4; at Kinghorn, by September 1907, the two 6-inch and two 4.7-inch guns had been removed from the 'approved armament' (although left in situ and listed for 'drill and practice' in 1913), leaving only the 9.2-inch gun. The 5-inch practice battery at Kinghorn (referred to as 'H' and 'L' Groups in the 1909 armament chart) was removed in 1908, at about the same time as that on Inchkeith. The Fort Record Book records that a Depression Range Finder for the 9.2-inch gun was delivered from the Ordnance Depot in Stirling in September 1913.

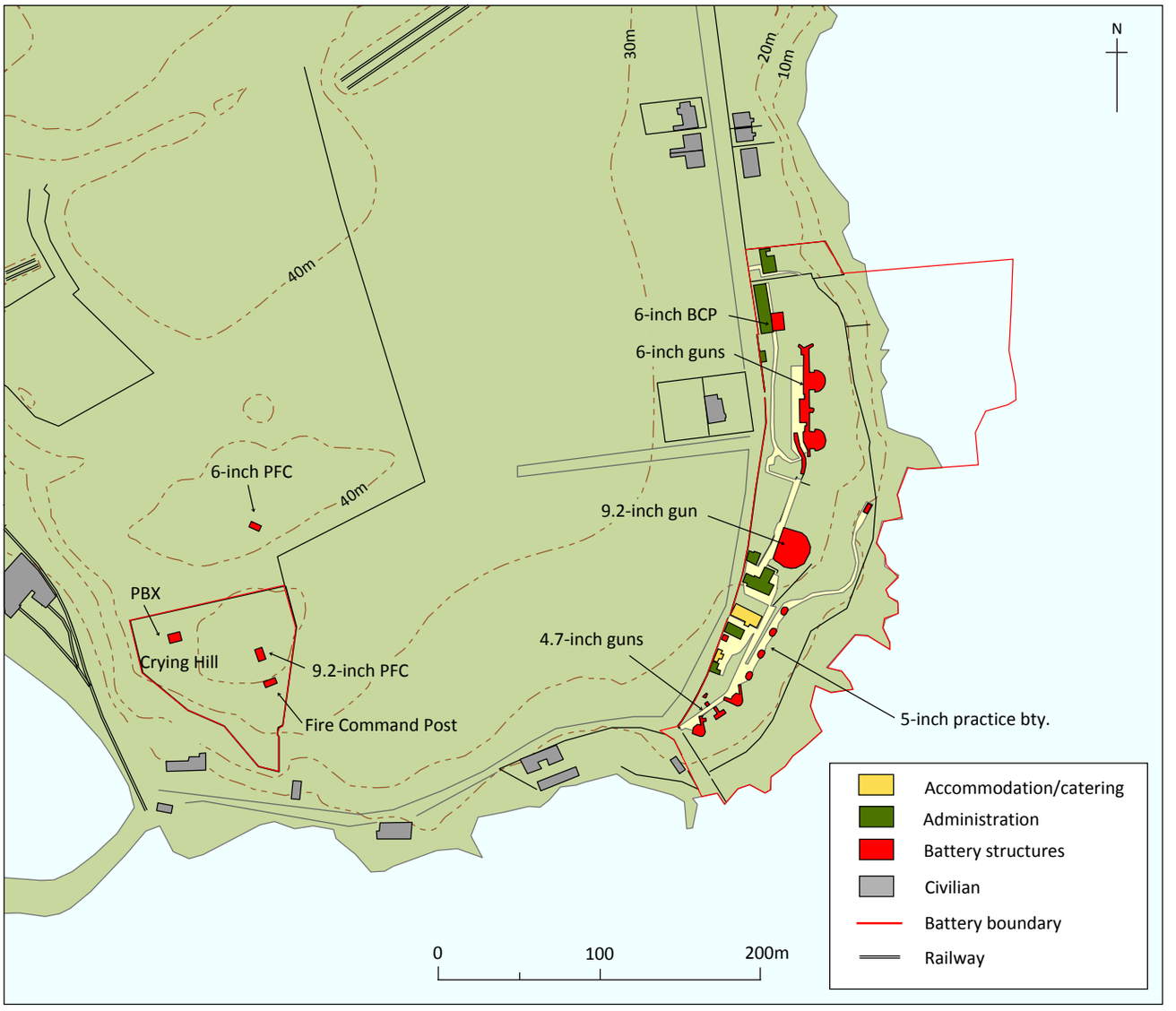

Figure 11.78
The layout of the Kinghorn battery in 1906, with the newly built Crying Hill structures. Oddly, the Position Finding Cell for the 6-inch guns is recorded as lying outside the War Department boundary (© Gordon Barclay)

Close defence: 1900–9

In 1900, provision was made in the Scottish Defence Scheme for the landward defence of the Kinghorn Battery and the adjacent shore, to prevent an enemy capturing it and pressing on to the Forth Bridge. The planned defences were to run in a line west-south-west to east-north-east from the north edge of the town to the high ground to the north-west. An infantry force of 240 was detailed to defend the Kinghorn Battery.[175] The Fort Record Book contains detailed plans (dated May 1907) for the close defence of the battery, showing that the Crying Hill site was to be surrounded by a barbed wire entanglement, and another would cover the entire front of the Kinghorn Battery at High Water Mark. Firing trenches were to be established on the boundaries of the battery and within and to the north of the Crying Hill site. Interestingly, the three houses at that date built in Alexander the Third Street were marked as to be put into a state of defence. In 1916, these three buildings were in War Department use, one as an officers' mess.

First World War

On the outbreak of war, the approved armament of Kinghorn comprised only the 9.2-inch BL Mk X on Mk V barbette mounting and two .303-inch machine guns on parapet carriages. The two 6-inch BL Mk VII on CP Mk II mountings were brought back into the approved armament on 8 August 1914, and were ready for action, with ammunition delivered from Woolwich, on the 13th.[176] On 5 September 1914, instructions were issued for the removal of the two 4.7-inch QF guns to Downing Point; they were sent in November.[177] The 9.2-inch gun was at that time known as 'R' Group while the 6-inch battery was 'S' Group.

The 1906 Record Plan was annotated to show that the original Battery Command Post (a simple platform for the Depression Range Finder) had been replaced by a more substantial structure, the change being annotated with the date of approval, '10-2-15'. The BCP and Electric Light Director Post for the 6-inch guns ('S' Group) was still situated adjacent to the 'Whitehouses' buildings in a plan of January 1918. The northern DEL was directed from this BCP. The former Fire Command Post on the Crying Hill was, by 1918, a Position Finding Cell for 'R' Group (the 9.2-inch gun).

Work was completed in 1916 on the installation of two DELs to the left and right of the batteries, and an engine room built behind a house, then owned by the Gibson family, in a bite dug into the cliff face at the south end of the Pettycur site. A second building, in front of the engine house, was built as a RA store. It is possible that this building adapted the earlier house. The Gibsons seem to have retained ownership, as the current owner's family bought it from them after the closure of the battery.[178] On the plans dated 27 January 1918, 'S' Group (the Kinghorn 6-inch battery) is shown as having its own BCP and ELD post just next to 'Whitehouses'. The north-east searchlight emplacement survives in very good condition, albeit with its roof now failing. Uniquely in the Forth, the sliding arced steel shutters survive, in the closed position (Fig 11.79).

The military were inconsistent in their recording of naval buildings on the battery sites, and, as far as we knew, the Naval Signal Station built near the southern edge of the Kinghorn Battery was not marked on any of their maps. The two-storey building, resembling an enlarged DEL emplacement, survives and has been incorporated into a modern house (Fig 11.80).

Figure 11.81 shows the layout of the battery in 1916–18; the three houses then standing in Alexander the Third Street and a further house on Pettycur Road were in War Department occupation, serving as the officers' mess, as men's quarters, and a dressing station; the fourth, the large house on the corner of Alexander the Third Street and Pettycur Road, was 'occupied by O[officer] C[commanding]

Figure 11.79
The northern DEL housing, with its steel shutters surviving
(© Gordon Barclay)

Figure 11.80
The two-storey naval signal station incorporated into a modern house
(© Gordon Barclay)

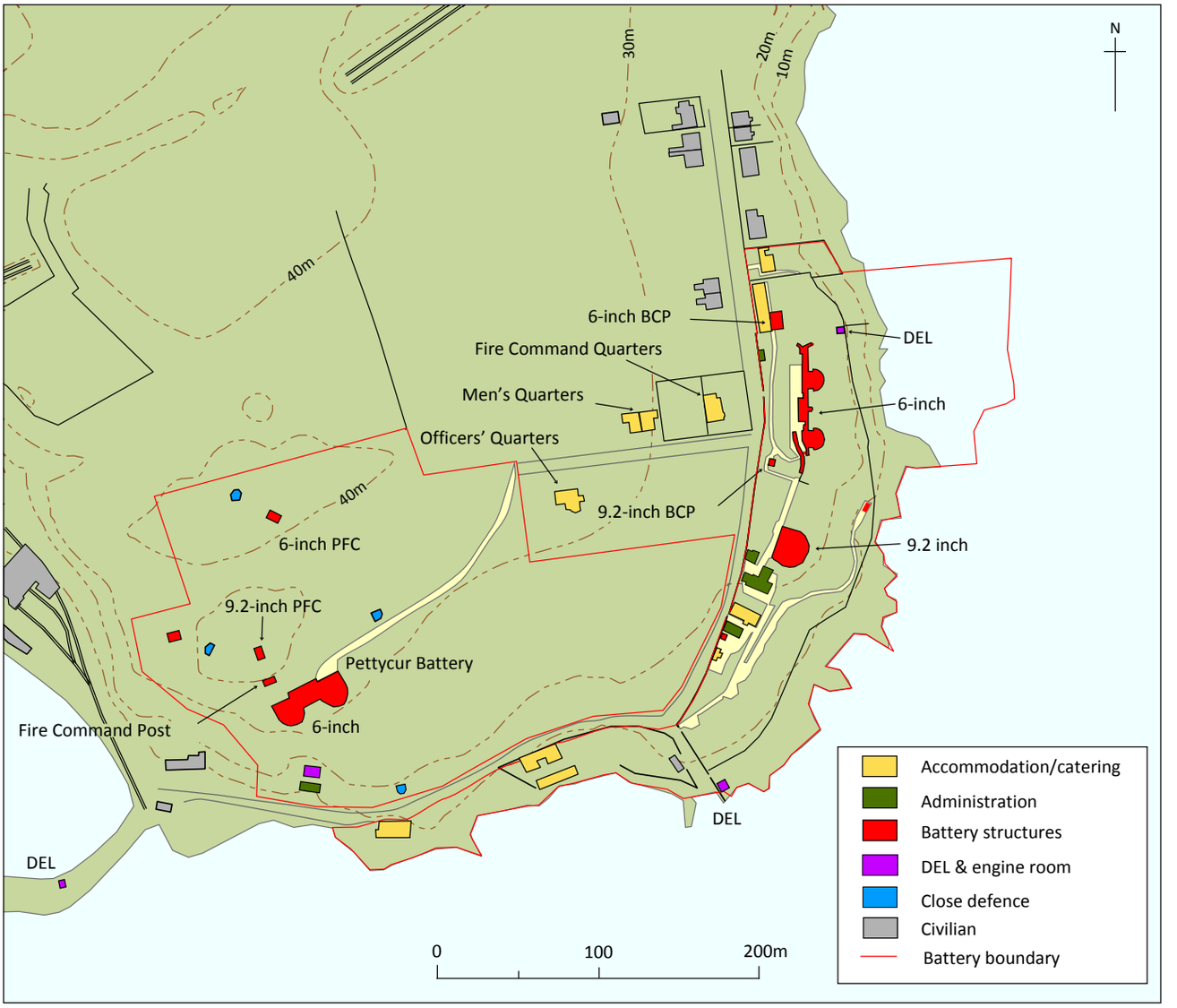

Figure 11.81
The Kinghorn/Pettycur complex in the second half of the First World War (© Gordon Barclay)

No. 3 Dist. Forth defences (Kinghorn) and staff'– that is, the Fire Commander.

In July 1916, before the revision of the Forth's defences, the 9.2-inch gun had two officers (a Battery Commander and Gun Group Commander) and 36 other ranks (the DRF and DPF both had three-man details; four telephonists; gun detachment of 13 men; ammunition detachment of eight men; storeman; lamp-man; two officers' servants). The 6-inch guns were manned by three officers (Battery Commander, Gun Group Commander and relief) and 55 other ranks (including a three-man DRF detachment; 22 man gun detachment with 11 reliefs; eight-man ammunition detachment; a Master Gunner; Artificer; storeman; lamp-man).[179]

The general revision

In the general revision of the defences, a new battery was added on the headland, incorporating the existing Crying Hill site and to be known as Pettycur. It was armed with two 6-inch guns transferred from the battery at Carlingnose. The land for the battery seems to have been bought as early as May 1914.[180] The guns were ready for action on 7 January 1917. An additional DEL was provided for the Pettycur Battery in 1917, on the corner of Pettycur pier; it survives in good condition (Fig 11.82).[181] The three Kinghorn/Pettycur DELs were recorded in February 1917 as having three RE officers and 45 sappers to operate them and the engine room, with an additional officer and sapper for maintenance work.

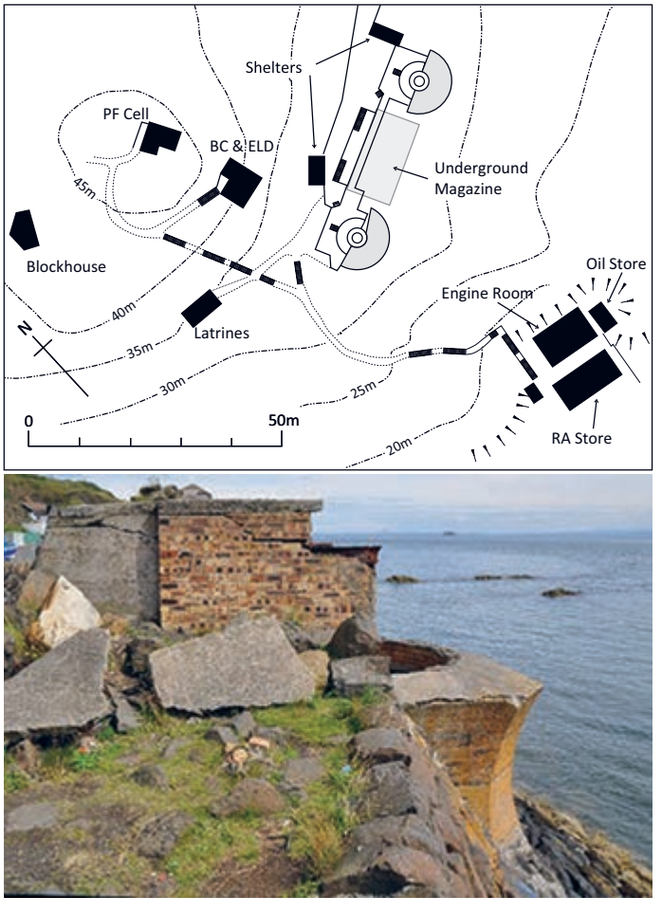

Figure 11.82
The Pettycur battery in 1922, based on a plan on the Fort Record Book (WO 192/250), showing the guns ('Q' Group), the BCP and the PFC for 'R' Group (the Kinghorn 9.2-inch), shelters, latrines, engine house and RA Store. Below is a modern photograph of the DEL housing on Pettycur Pier (© Gordon Barclay)

There are no detailed drawings of the Pettycur structures, but the layout seems to have been of a fairly standard design: the two 6-inch guns ('Q' Group) in circular emplacements with, between them, a buried magazine accessed by two stairways into an open area. There were also two shelters and a latrine. The Battery Command Post lay just behind the guns, converted from a pre-existing Position Finding Cell. The PFC for 'R' Group, the 9.2-inch gun, was in the former Fire Command Post immediately behind this, and a new PFC for 'S' Group (the Kinghorn 6-inch guns) was added. Part of the gun pit for gun 'Q1' (the southern gun) survives in the garden of the care home now occupying the site; the latrine building survives just outside the garden, apparently in good structural condition; the Battery Command Post also survives, albeit in an inaccessible position on an unstable slope visible from the gun pit.

The Fort Record Book records that one of the Mk VII 6-inch guns at Kinghorn was dismounted and sent to Calais on 11 July 1917; the battery was left only partly armed until 11 May 1918, when a replacement gun was sent up from Woolwich.

Landward defences

Elaborate landward defences were built during the First World War.[182] The coastal approach from Kirkcaldy was blocked by a series of barbed wire entanglements in front of firing trenches and more substantial 'redoubts'. The northern and north-western inland approaches to the town were also blocked.

A map on the Fort Record Book, dated 27 January 1918, shows the location of five machine gun posts round the battery site; three were distributed to the north-east and west of 'Q' Group at Pettycur; one was positioned on the clifftop below Whitehouses; the third was on the clifftop in front of 'S' Group (the Kinghorn 6-inch guns). The 1922 map of Pettycur shows the location of three blockhouses, one of which (see below) had been built in 1914. One of these survived in good condition until 2016, but by then had been unroofed and partly demolished, with two walls being incorporated into a new building (Fig 11.83).

In the General Mobilization Scheme, the 7th (Territorial Force) Battalion the Black Watch was detailed for coast defence and was allocated to War Stations at Kinghorn and Burntisland. 'Preparatory Movement' was ordered on the evening of 31 July 1914 and a 'Special Service Section' of three officers and 117 other ranks arrived in Kinghorn on 2 August. The Special Service Section had conducted a test mobilisation earlier in the year and occupied Kinghorn Fort for two days, when, together with the Regular artillery, it took part in firing practice and night manoeuvres in conjunction with the fleet. The main body of the battalion arrived at its War Stations during the evening of 7 August.[183]

The General Officer Commanding Scottish Coast Defences visited Kinghorn soon after the battalion's arrival

Figure 11.83
One of the Crying Hill blockhouses, in course of transformation, 2016 (© Gordon Barclay)

and announced that an attack in force by the Germans might take place at any moment; it was possible that a landing might be effected somewhere on the east coast of Fife, with the object of taking Kinghorn Fort, the defences at Rosyth and the Forth Bridge in rear. It was to foil such an attack that the landward defences were built; the construction of these works was completed in an intensive period of 36 hours of almost continuous digging by the 7th Battalion, 60 per cent of the men being connected with the mining industry.

For the first three months after mobilisation, the line was occupied in force under conditions closely approximating to those of active service, although it was not until into 1915 that the battalion could appear, fully equipped, in the full Black Watch kilted uniform.

The supposed danger of invasion was not entirely removed, nor were the trenches completely evacuated till early 1915, but by degrees the garrison was reduced and, at the end of December, consisted only of detached sentry posts.

Between the Wars

On 17 April 1918, approval was given to move the Depression Range Finder from the disarmed battery at Braefoot to the Crying Hill at Kinghorn, for the 6-inch guns ('S' Group). This work was completed on 14 November 1919. In May 1920, Pettycur was put into care and maintenance, while the 9.2 and 6-inch guns at Kinghorn were to be retained for drill and practice. However, a map of 1919, amended in 1922, marks the Pettycur Battery as for training only. A new battery telephone exchange was built at that time in the north-west corner of the Pettycur site; this seems to have been part of a wholesale upgrading of telephone communications between the coast defence and signal stations in the first half of the 1920s.[184] On 9 July 1920, the 9.2-inch gun was condemned, and could in future only be used for a 'half series' of firing. Later that month, the two .303-inch Maxims issued in 1917 for close defence were returned to the Stirling Ordnance Depot. Two Vickers .303-inch machine guns were issued in March 1930 and withdrawn again on 10 July 1933. Lewis guns were issued in April 1937.

The 'History of the Work' on the Fort Record Book[185] tells a rather confusing story of the replacement of the old Mk II shields on the 6-inch guns with the larger Mk IV. There is an undated photograph, sadly too blurred for publication, which shows the Pettycur Battery with the eastern gun mounting a Mk II shield, with the other in a Mk IV, as part of the Interim Defence Scheme. This pattern of replacement is the same as on Inchkeith in 1931. The Fort Record Book also records the withdrawal and reallocation of all the sighting equipment in the battery in April 1931. As the international situation deteriorated, 'Q' Section (the Pettycur guns) was brought into the Approved Armament of the Forth in March 1938. 'R' Section (the 9.2-inch) was included in the reserve armament of the Forth in the same month. 'S' Section (the Kinghorn 6-inch guns) was nominated as Examination Battery in January 1939.[186]

Complaints from the residents of Kinghorn about the noise continued to be a regular thing over the years. In 1929, Kinghorn Town Council requested their local MP, Mr Tom Kennedy, to take the matter up with the Government. The response from the War Office was that practice was only carried out once a year and that it was essential that the guns should be kept in a serviceable condition. They went further, however; hitherto, the Territorial Army had practised on Kinghorn Battery, but they would henceforth use only Pettycur, in conjunction with Inchkeith, and there would be no full-charge firing. The resumption of heavy gun practice in 1938 prompted more complaints, and Mr Kennedy again raised the matter in the House of Commons on 21 June.[187]

Second World War

In October 1939, a War Office file recorded a proposal to provide a second DEL and a third generator at Pettycur. Given that there were three surviving DEL housings on-site from the First World War, it is not clear which of these might have been in use, and what was to be added.[188]

A high-resolution aerial photograph dated 6 April 1941 shows the layout of the battery, clearly in a state of transition (Fig 11.84). 'S' Group (the two 6-inch guns of Kinghorn Battery) are shown as having their overhead protection in place. The 9.2-inch emplacement is shown as without overhead protection, and apparently empty.[189] Of the two 6-inch guns of 'Q' Group (Pettycur), the western ('Q/1') appears to have its overhead protection in place, while the other looks very much as though it has had only its rear protection built, not its overhead cover. In the south-east part of the Pettycur site, the photograph shows a dog-legged line of 14 Nissen huts, with a water tank at the angle change. Behind the Pettycur guns, the photograph shows the walls, or more probably the brick bases, of over a dozen incomplete buildings. A close-defence plan on the Fort Record Book, dated August 1942, shows that only eight of the completed Nissen huts were then in place, although it also marked which private houses were in military occupation. It is recorded that, like the batteries of the Inner Line, Kinghorn was provided with a 4.5-inch howitzer, and practice firing was noted in the War Diary from May 1943 onwards.[190]

By June 1942, Home Guard personnel from the 5th and 8th Fife Battalions were involved in crewing the guns, and the numbers of trained men increased, by September, to one officer and 81 other ranks.[191] In January 1944, Kinghorn was recorded as being in care and maintenance, while Pettycur was manned by Home Guard (apart from Regular manning on the DELs).[192]

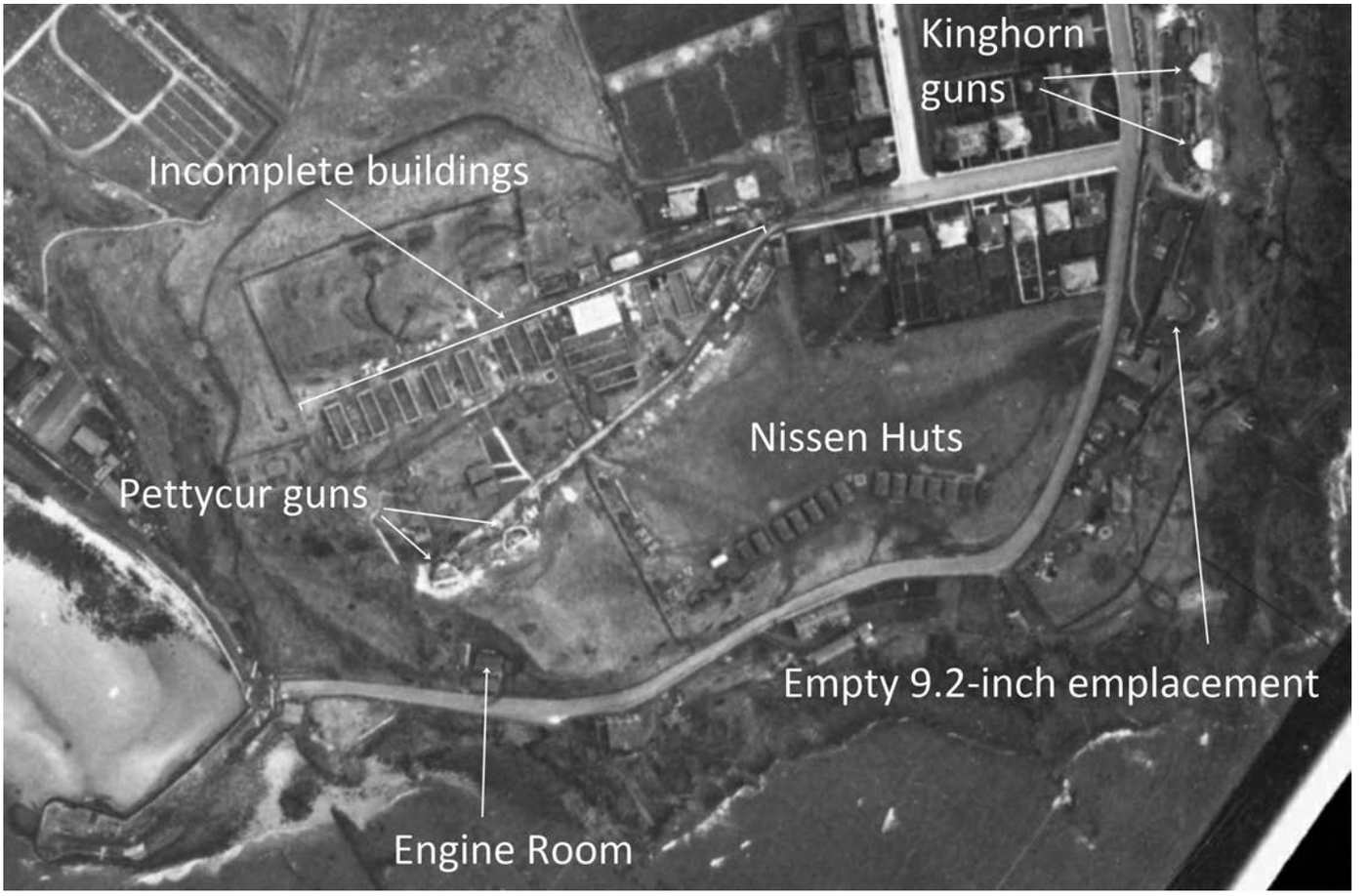

Figure 11.84
Aerial photograph taken on 7 April 1941 (© National Collection of Aerial Photographs www.ncap.org.uk)

Post-war

The 'History of the Work' on the Fort Record Book was written up to March 1949, with a single manuscript addition for the following month noting that the 120cm searchlights had been removed and replaced by 90cm Mk 5 lights. Notice was given in the *Fife Free Press* issue of 3 October 1953 that the naval authorities advised that a Bofors gun would be fired from Kinghorn Battery point, between 9 a.m. and 4.30 p.m. from Monday to Friday of the following week. We have no further information.

Survival

Very little remains from the original fort: the loop-holed boundary facing Pettycur Road; the original vehicle gate with its pedestrian gate; and a brick-built shed near the north end. All three searchlight emplacements remain in good condition. The northern still has its steel shutters; the middle is now a summer house; and that on the pier has been made safe by the removal of its overhanging roof. Retaining walls within the battery and most of the concrete uprights of the security fence survive. The latrine and PFC on Crying Hill survive. Of the guns, only the gun pit of gun 'Q1' at Pettycur and the front glacis of the 9.2-inch survive. However, it is reported that underground parts of the battery survive under (or incorporated within) later structures.[193]

11.3 Leith Docks

First World War

Batteries on the southern shore were planned to the west of Leith, at Granton, between 1888 and 1898.[194] In 1888, 1889 and 1894, batteries were proposed at Leith,[195] but nothing was built there until the 1916 revision of the defences. The battery was established on the north-eastern flank of Leith Docks, on reclaimed land at a corner of the sea-wall, giving an arc of fire of almost 180° (Fig 11.85). The relative height of the ground

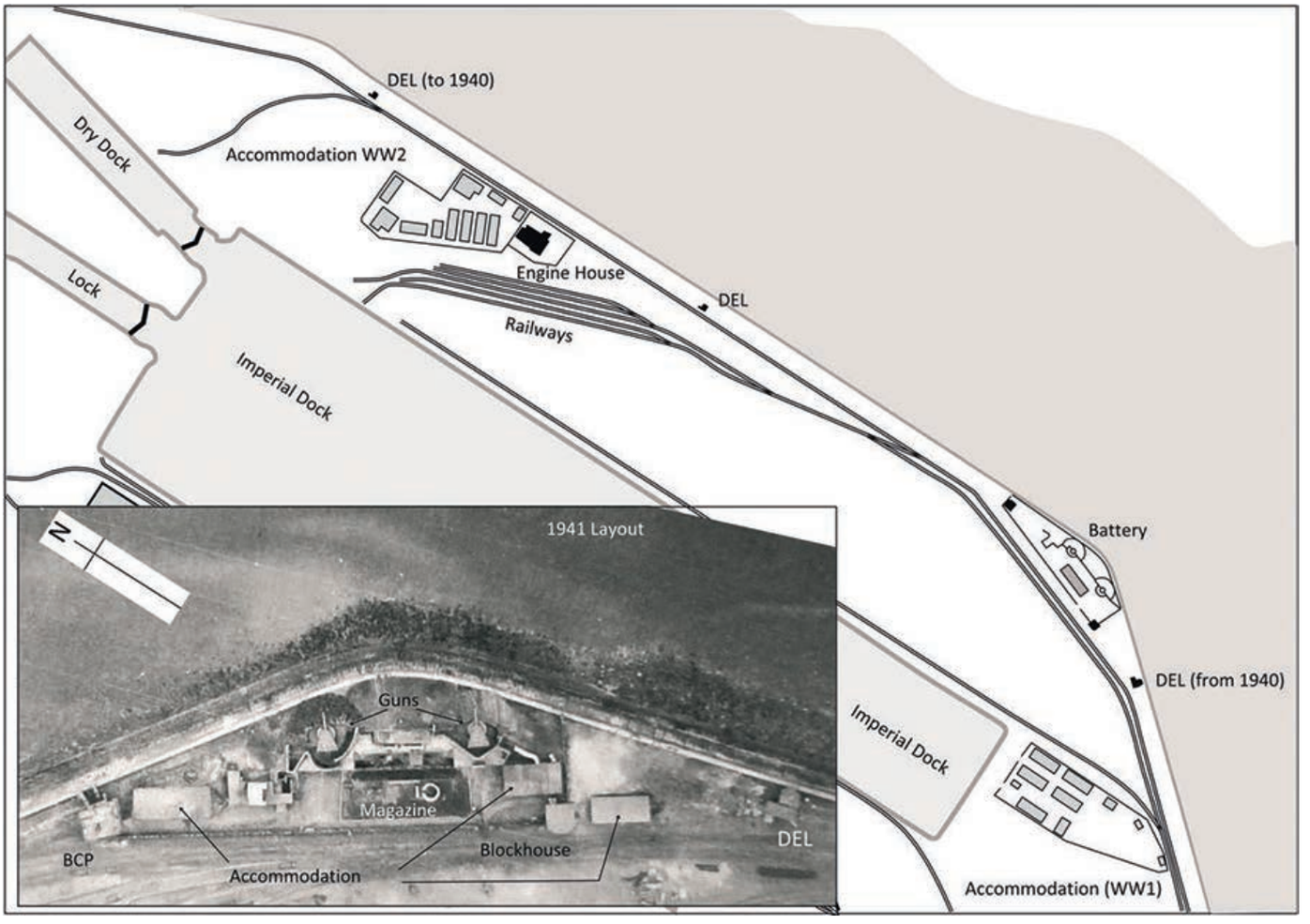

Figure 11.85
Leith Docks. The location of the First and Second World War features and, inset, an annotated aerial photograph from 1941, before the overhead protection was provided (RAF. Out of copyright)

level to the sea level beyond the wall meant that the depth to which structures could be buried before hitting the water table was limited.

Many of the papers on the Leith Docks Fort Record Book, even though the book was in use until the 1950s, date from the inter-war period. Two very useful plans of Leith Battery for the Second World War were unexpectedly found in the Fort Record Book for Coastguard Battery.[196] A set of drawings dated 27 June 1916 shows the location and design of the proposed battery, the Defence Electric Lights, the engine room and the encampment for the men.[197] A combined Battery Command and Electric Light Director Post was built just to the west of the guns.[198]

The gun platforms were built on deeply set drums of concrete, under which pilings had been necessary in the made-up land. The guns were fronted on the seaward side by a sloping glacis rising from the top of the sea wall. The magazine was built behind and below the gun platforms, excavated partly into the made-up ground behind the wall. All ammunition had to be manhandled. There were shell and cartridge recesses built into both gun emplacements.[199]

The guns for the battery, two 6-inch BL Mk VII, on Central Pedestal mountings, were transferred from Hound Point and were mounted and 'in action' by 5 December 1916. Two .303-inch Maxim machine guns were approved as an addition to the armament and arrived in October 1917.[200]

The emplacements for the moveable fighting lights both lay along the sea-wall to the north-west, 230m and 485m from the battery. The engine room was built between the lights, 350m from the battery and 30m behind the sea-wall, dug in to half its height, the upper part of the building being protected by an earthen embankment.[201] The lights and engine room were manned by two RE officers and 30 other ranks.[202]

An 'unclimbable fence' was built around the site, and a blockhouse was built in the southern corner. A separate fence was built around the engine house compound, with a machine gun emplacement on the west corner.[203] The encampment for the garrison of the battery lay due south of the guns, tucked into space left amongst the railway lines.[204]

Between the wars

Between the wars, there were plans to reclaim more land at the docks, which necessitated planning a new battery on the line of the new sea-wall.[205] However, the land was not reclaimed until after the battery was dismantled in the 1950s.

A proposal in 1930 to build a new Battery Command Post to a similar design to that on the West Fort at Inchkeith was not carried through.[206] The two Mk II shields were replaced by Mk IV shields in 1931, as part of the work undertaken to implement the Intermediate Defence Scheme and, as elsewhere in the Forth, more modern HE Mk XXb shells were issued. With a full charge, the guns (recorded on 7 May 1935) could achieve effective ranges of 3,425 yards (*c* 3,130m) (against a battleship), 3,075 yards (*c* 2,810m) against blocking ships, 2,100 yards (*c* 1,920m) against destroyers and 1,775 yards (*c* 1,620m) against motor boats.[207]

An aerial photograph of the docks dated 3 September 1935 shows the battery in its cramped and insalubrious situation, between the sea-wall and a dense pattern of railway sidings for the adjacent coal loading port, with the two DELs, the engine room and the Battery Command Post. It cannot have been a pleasant posting.[208] A photograph taken by a German spy in the 1930s shows the guns and BCP from nearby (Fig 11.86).

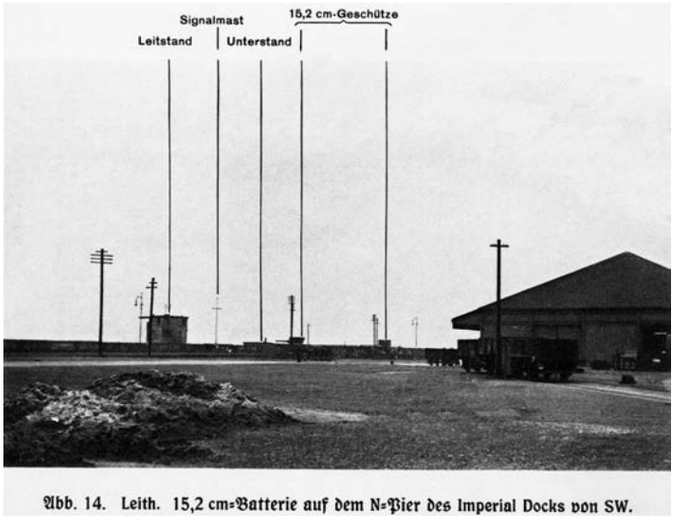

Figure 11.86
A photograph of the Leith Docks battery taken in the 1930s, by a German sailor or agent (Oberkommando der Kriegsmarine, via A Liebold)

An undated sketch plan on the Fort Record Book of the main part of the battery shows the locations of two Lewis guns mounted for anti-aircraft defence, one on top of the Battery Command Post, the other on the roof of the defensive blockhouse at the south corner of the enclosure. The Fort Record Book of Kinghorn records the installation of Lewis guns in April 1937, and this may be the same time as Leith.[209] The ground floor of the BCP building also had a loop-hole facing north-west along the sea wall.

The Second World War

Two very clear RAF aerial photographs, dated April 1941, show the two guns in their enveloping Mk IV shields (Fig 11.85); the emplacements had no overhead protection at this stage.[210] In January 1940, it was decided that one of the two DELs at Leith (the western one, farthest from the battery) would be shifted to a new position east of the battery, as the former position had been found 'for some time past to be unsatisfactory, owing to the fact that both lights are on the same flank of the battery …'.[211]

In the Second World War, the battery accommodation was split between a main camp, with messes and so on, just west of the engine room, and a few huts within and just adjacent to the battery.[212] By early 1942, 60 Home Guard volunteers were receiving training at the Leith Battery, and it was believed that they would form a valuable resource, as the men had agreed to give full-time service.[213]

In June 1943, as part of the 'Flood Tide' reduction in coast artillery, the Leith Battery was listed as part of 505 Coast Artillery Regiment, RA, as a 'Close Defence' battery, to be reduced to 'cadre'.[214] A list of January 1944 shows the battery as manned by Home Guard, with Regulars manning the DELs.[215]

Post-war

In 1952, instructions were issued for the dismantling and disposal of the two 6-inch guns and their mountings. The work was undertaken between 21 September and 2 October and they were removed by road to Woolwich. The DELs were dismantled in October and sent off by road to storage at Donnington. In November, further instructions were received at the battery to place all remaining equipment under 'heavy care and protection', as the battery had been listed as surplus to the 'Basic or the Reserve Scale of Defence' for the Forth. This had been completed by April 1953.[216]

The battery, including the engine room and DEL emplacements, were 'finally handed over to Commanding Royal Engineer Lowland District' on 31 August 1955. Work began immediately on dismantling the works and no trace is believed to remain.[217]

Notes

1 WO 33/873.
2 WO 78/5162; WO 78/5160; WO 192/251. The surveys of 1911 and 1918 survive in their entirety, each of seven sheets, in the collections of the National Library of Scotland (C18:13(4)) and the British Library (X.4961) respectively. The 1893 edition survives only in sheets used to mark up later proposals and as preserved on War Office files; the southernmost sheet has not yet been located. The maps are very detailed, with most structures labelled as to their purpose; many redundant structures were also marked and identified.
3 Copies of the 1:2,500 maps of 1893 ('Photozincographed at the Ordnance Survey Office, Southampton, 1893') survive on four War Office files: WO 78/5159, WO 78/5160, WO 78/5180, WO 78/5158. The 1911 map ('Surveyed in 1891. Revised in 1909–10') survives in its original form on WO 78/5157 and in an edition revised to 1914 on WO 78/5156. Also in the National Library of Scotland. We did not locate a 1918 1:2,500 map.
4 WO 192/251.
5 Aspects of the fortifications of Inchkeith itself have been the subject of four articles: the water supply, by Ruckley (1984); the record of a short visit by members of the UK Fortifications Club, in 2004 (UK Fortifications Club 2005); the record of survey and excavation on the island in 2001 (Pollard and Banks 2008); and an account of the Inchkeith batteries that had their origins prior to 1914 (Stevenson 2014).
6 A number of modern writers state that the whole island was sold to the War Department in 1879. The Registers of Scotland, however, record the sale in 1891; RHP2704; RHP48586; RHP93657.
7 *Fife Free Press*, 11 July 1891.
8 *The Scotsman*, 23 August 1878.
9 Grant 1884: 292.
10 *The Scotsman*, 23 August 1878 and 4 July 1881.
11 *The Scotsman*, 1 July 1884.
12 *The Scotsman*, 18 October 1879.
13 *The Scotsman*, 30 July 1884.
14 *The Scotsman*, 14 October 1880; Grant 1884: 293–4.
15 Smith 1985: 92.
16 UK Fortifications Club 2005.
17 WO 78/4751.
18 WO 396/2; WO 78/5180.
19 Pollard and Banks (2008: 123–4) report a door in the southern rock-ditch of the South Fort, 'which had clearly come from inside the *caponier*'. We believe that the differentiated fabric is too irregular to have formed any sort of formal entry and that it is more likely that the undoubted hole may represent an access made for the introduction of a piece of equipment; two holes have been made in the lower parts of the walls of the *caponier* to route cables, we believe, from the engine house to the defence searchlights. They also reported the presence of a doorway through the wall of the fort into the northern rock-cut ditch. We could not find such a door, which could only have been accessed through a tunnel cut through the rock, and no such tunnel has been located.
20 Grant 1884: 294.
21 WO 192/251.
22 Grant 1884:293.
23 Smith 1985: 93.
24 *The Scotsman*, 4 July 1881.
25 *The Scotsman*, 19 July 1881.
26 Bill Clements, pers comm.
27 *The Scotsman*, 19 July 1883.
28 Smith 1985: 95.
29 WO 32/5528.
30 *Evening Telegraph*, 19 July 1884.
31 *The Scotsman,* 24 Aug 1885.
32 *The Scotsman*, 16 April 1885.
33 WO 33/5.
34 *The Scotsman,* 25 July 1888.
35 *The Scotsman,* 27 July 1889.
36 *Edinburgh Evening News*, 11 November 1889.
37 *Fife Free Press*, 1 Feb 1890.
38 *Edinburgh Evening News*, 25 March 1890.
39 *Fife Free Press*, 1 August 1891.
40 CAB 18/22A.
41 WO 78/4328; WO 78/5180.
42 *The Scotsman*, 9 June 1892.
43 WO 78/5157.
44 *The Scotsman*, 24 December 1892.
45 WO 78/5157.
46 The West Battery also has a vertical ladder down into the lamp passage of the 1880 magazine.
47 WO 78/5157; Ordnance Survey 1911 *War Office. Fifeshire, Inchkeith 1:500* 1911.
48 *The Scotsman*, 25 September 1893.
49 The guns were still recorded as mounted on 1 January 1898 (CAB 18/19).
50 CAB 7/6.
51 Pollard and Banks's (2008: 114) mention of the ladder lifts, in a paragraph dealing with the 1880 fort, can be read as implying that the lifts were part of the original design; however, they run directly to, and are integral with, the 1899–1900 6-inch gun platforms.
52 WO 78/5159.
53 WO 78/4751; WO 192/251.
54 WO 78/4328.
55 WO 192/251.
56 WO 192/251.
57 Stevenson (2014: 81) suggests that four of the practice guns were muzzle-loaders. The armament chart attached to the Scottish Defence Scheme of 1909 (WO 33/491), however, lists the practice guns as four 5-inch, two 6-pdr QF and two 3-pdr QF guns, all breech-loaders.
58 Ordnance Survey 1911 *War Office. Fifeshire, Inchkeith 1:500.*
59 Pollard and Banks 2008: 130–1. Some confusion has arisen about the earliest date that the practice batteries were mapped. Pollard and Banks (2008: 130) suggest that they were marked on the 1891/1893 1:2,500 map. It is, however, only shown on the edition of this map revised to 1909–10 (which is reproduced as fig 2 in their report). Both editions of the map are on the same War Office file (WO 78/5158).
60 CAB 18/19; WO 33/381.
61 WO 78/4328.
62 WO 33/766.
64 Pollard and Banks 2008: 124.
65 Ordnance Survey 1911 *War Office. Fifeshire, Inchkeith 1:500.*
66 WO 78/5159.

67 'BLC' – breech-loading converted – guns were Mk IV and Mk VI 6-inch guns whose breech mechanisms had been modernised to the Mk VII standard and extended to take a more powerful charge. It has been suggested (UK Fortifications Club 2005; Stevenson 2014: 81) that the BLC practice guns were mounted on the 5-inch practice emplacements. The Armament Table attached to the Scottish Defence Scheme of 1909, however, explicitly states that the four 6-inch BLC guns were mounted in 'A' and 'M' Groups (the North and South Batteries); Ordnance Survey 1909 *War Office. Maps to Accompany the Scottish Coast Defence Scheme*; WO 33/491.
68 WO 78/5157; WO 78/4328.
69 WO 78/3856.
70 Ordnance Survey 1911 *War Office. Fifeshire, Inchkeith 1:500.*
71 WO 78/5158.
72 WO 78/5158.
73 WO 78/5157.
74 WO 192/251.
75 WO 192/251.
76 *The Scotsman*, 26 February 1907.
77 Ordnance Survey 1911 *War Office. Fifeshire, Inchkeith 1:500.*
78 *The Scotsman*, 28 October 1911; Ordnance Survey 1911 *War Office. Fifeshire, Inchkeith 1:500*; Morrison-Low 2010: xxiv.
79 *The Scotsman*, 29 July 1913.
80 *The Scotsman*, 28 November 1913.
81 Unfortunately, the 'History of the Fort' on the Fort Record Book does not mention any of the DELs.
82 WO 78/5162.
83 WO 78/5162.
84 WO 78/5180.
85 WO 78/5180.
86 WO 78/5180.
87 Morrison-Low 2010: xiv.
88 WO 33/766.
89 WO 78/5179.
90 WO 33/810.
91 By the time of the 1918 map of Inchkeith, the DELs at the South Battery were numbered Nos 1 and 2; those on the West Stell, Nos 4 and 5.
92 Ordnance Survey 1911–18 *War Office. Inchkeith, Fifeshire. 1:500.*
93 Pollard and Banks 2008: 126–9.
94 WO 78/4417
95 Ordnance Survey 1911–18 *War Office. Inchkeith, Fifeshire. 1:500.*
96 WO 78/5156.
97 LP/WNC/31/4/56–76 1914–1915 (Labour History Archive and Study Centre, University of Central Lancashire).
98 Light ND.
99 Baker ND. A 'reception hospital' was for the 'temporary reception and detention of lighter cases pending their distribution to hospitals throughout the country, or their discharge to duty' (Macpherson and Mitchell 1921: 180).
100 WO 78/5156.
101 2nd Lt Archibald Hugh Houston Ross (later CBE, 1896–1969) served with the Royal Garrison Artillery on Inchkeith. It is possible that he also served with the Royal Engineers. He later served with the Indian Forest Service and the Forestry Commission, rising to become the Director of the Forestry Commission in Scotland. We are grateful to Lt Ross's daughter, Mrs Fiona Buchanan, for permission to reproduce his beautiful and informative drawings.
102 *The Scotsman*, 31 August 1931.
103 *The Scotsman*, 14 December 1914.
104 *The Scotsman*, 17 December 1914.
105 *The Scotsman*, 31 August 1920.
106 In correspondence, Department of Transport.
107 WO 192/251.
108 ADM 116/2493.
109 WO 192/252.
110 The UK Fortifications Club account suggests the 'A' Group guns went to Inchcolm, not the other way round. We know, however, that Inchcolm was disarmed in 1930–1 (WO 192/108).
111 WO 192/251.
112 Hogg 2002: 116.
113 CAB 13/8.
114 The southern 12-pdr holdfast takes the form of a steel plate 1.22m in diameter with, concentric to it, an outer ring of six bolts 97cm in diameter, and an inner one of 18 bolts 70cm in diameter. The two holdfasts are at NT 29565 82380 and NT 29570 82362. The northern holdfast is largely concealed by turf; it was discovered only by a remarkable piece of field observation by RM.
115 The closure of the Royal Artillery Museum in 2016 meant that we were unable to check Ordnance records for the Forth.
116 *The Scotsman*, 25 May 1936.
117 ADM 1/9848.
118 WO 78/5179.
119 WO 192/251.
120 Bruce Stenhouse, pers comm.
121 *The Scotsman*, 13 November 1939.
122 Finlayson 1983: 46–8.
123 Charles Grant, pers comm.
124 Finlayson 1983: 46–8.
125 *Edinburgh Evening News*, 26 December 1974.
126 *Fife Free Press*, 24 February 1940. There are two versions of a story about what happened next: first, that on the following morning the Master Gunner travelled round to Salamander Street, not to apologise, but to collect the dummy shell (J A Potter, pers comm); second, that the shell was returned to Inchkeith with a note 'We believe this belongs to you' (Jeffrey 1992: 137). What is certain is that the shell did return to the island, and Charles Grant kept a piece of its driving band.
127 No women were stationed permanently on Inchkeith in the Second World War, but a detachment of about a dozen ATS was sent out daily by boat to the island from Leith (*The Scotsman*, 15 November 1940).
128 WO 166/2296.
129 Fold 3/Admiralty War Diaries.
130 WO 166/2128.
131 WO 199/1171.
132 Taylor 2010: 130.
133 Bruce Stenhouse, pers comm.
134 WO 166/2362.
135 UK Fortifications Club 2005.
136 WO 199/2818.
137 We were able to locate six in 2017: NT 29568 82375 (beside practice battery); NT 29139 82822 (Cawcans Ridge); NT 29285 82910 (by Fire Command North); NT 29385 82699 and NT 29390 82715 (both beside AA guns on ridge of island); NT 29540 82282 (South Fort). RM believes that he saw others many years ago, when the island was less vegetated.

138 WO 166/11408.
139 WO 199/1171.
140 WO 166/2362; WO 166/11210; WO 199/1137.
141 War Office 1942.
142 WO 166/11408.
143 WO 199/954B.
144 WO 199/1171.
145 WO 287/78.
146 *The Scotsman*, 15 November 1940.
147 WO 166/15002.
148 *The Scotsman*, 15 November 1940.
149 *The Scotsman*, 15 November 1940.
150 *The Scotsman*, 15 November 1940.
151 We believe that the 'Mk VII+' may be the Mk VII^{v} described in 1913, being differentiated by a thicker tube and a 'Single Motion Breech Mechanism' (Royal Regiment of Artillery 1913a).
152 *Edinburgh Evening News*, 17 July 1953.
153 WO 192/250.
154 WO 78/4173; WO 78/4250; WO 78/5178.
155 The battery structures were omitted from publicly available Ordnance Survey maps published in 1920 and 1947 (both surveyed immediately before the respective wars) and, in a post-war Ordnance Survey photo-mosaic published in 1950, the battery complex was 'painted out' with false fields and buildings.
156 WO 192/250. The map of land purchases has been built up from information in the Registers of Scotland (Search Sheet 9669; SS 0620; SS 14771; SS 0121), files in the National Records of Scotland (E886/98), and a Treasury file in the National Archives, Kew T 1/15865.
157 *The Scotsman*, 23 August 1878.
158 WO 78/4173.
159 WO 192/250.
160 WO 192/251; CAB 7/6; CAB 18/19.
161 Unlike smaller-calibre QF guns, which had propellant and shell in a single piece, the 4.7-inch shell and propellant were stored separately and loaded sequentially.
162 WO 78/5178.
163 David Wilson, pers comm.
164 *Fife Free Press* 18 August 1894.
165 WO 192/250.
166 CAB 18/19; CAB 7/6.
167 *Fife Free Press*, 26 July 1902.
168 WO 78/5156.
169 David Wilson, pers comm.
170 Registers of Scotland. Fife, Search Sheet 14771.
171 WO 78/4173.
172 WO 33/381.
173 *Fife Free Press* 11 March 1905.
174 *Fife Free Press* 25 August 1906.
175 WO 33/173; WO 33/381; WO 33/444; Barclay and Morris forthcoming.
176 WO 192/108.
177 WO 192/108.
178 Owner, pers comm.
179 WO 33/766.
180 Registers of Scotland Fife Search Sheet 14771.
181 WO 192/250.
182 WO 78/4417; WO 78/4396.
183 Wauchope 1925: 239–40.
184 ADM 1/8667/164.
185 WO 192/250.
186 WO 192/250.
187 *Fife Free Press* 13 April 1929 and 25 June 1938.
188 WO 199/1171.
189 The Fort Record Book notes that the 9.2-inch gun of 'R' Group, and its Position Finder, had been dismantled between February 1939 and the date of the entry, in March 1949. The 1941 aerial photograph seems to show the gun emplacement empty.
190 WO 166/11409.
191 Osborne 2009: 197–8.
192 WO 199/954B.
193 David Wilson, pers comm.
194 CAB 7/6; CAB 18/19
195 *Fife Free Press*, 30 June 1888; *The Scotsman*, 10 December 1889; CAB 18/22A.
196 WO 192/104.
197 WO 78/5176.
198 WO 78/5176.
199 WO 192/252.
200 WO 192/252.
201 WO 78/5176.
202 WO 78/5179.
203 WO 78/5176.
204 WO 78/5177.
205 WO 78/5176; CAB 13/3; CAB 12/5.
206 WO 192/104.
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