

The anti-invasion defences of the Forth and Tay estuaries, eastern Scotland: 1900 to 1919

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ABSTRACT

The anti-invasion defences of the Second World War are still a prominent part of the modern landscape (Barclay 2013). The defences built during the First World War are, however, less well known. Some of these, indeed, have been misidentified as having been built in the later war, and many places were defended in both conflicts. Even less well known are the defences planned, and in some cases built, between 1900 and 1914, as set out in the Army's 'Defence Schemes' for Scotland, and in the records of individual coast defence batteries. This paper sets out the plans to defend two adjacent parts of Scotland between 1900 and 1919, the coasts of the Tay and Forth estuaries, in the wider context of the defence of the UK.

INTRODUCTION

The problem of Home defence is part of the greater problem of Imperial Defence ... it is obvious that the United Kingdom should be adequately defended, because a successful blow struck at the heart of the Empire would be more instantly fatal than any other form of attack (WO 33/2857 1912).

It was at the beginning of the 20th century that the British Army began to plan systematically against the invasion of the east coast of Scotland, at first from a range of European enemies, but increasingly in the face of a perceived growing threat from Germany. Much of what was planned and built in the Second World War reflected earlier arrangements but there is no evidence that those in charge in the later war were aware of their predecessors' work (Barclay 2013).

The defences planned in Scotland were a development of arrangements made in southern England from the 1880s, when a French attack on London was the perceived threat (Osborne 2004: 44–5). The extension of defences to the east coast of Scotland reflected growing concerns about the vulnerability to a German attack.

The Riddle of the Sands by Erskine Childers (Childers 1903) was one of a number of

'invasion novels' written between 1871 (*The Battle of Dorking*) and 1914 (with a resurgence in 1940), based on the premise that a continental power (usually Germany) was planning or had undertaken a surprise attack on the largely unprotected east coast of Britain.¹ These novels reflected, and indeed helped to fuel, the growing commercial and naval rivalry and tension between Britain and Germany, which went back to the 1860s (Osborne 2017: 23–33).

This paper sets out what is known of the defences planned and built on the coasts of the Forth and Tay estuaries, from Dunbar in the south-east, to Carnoustie in the north-east (Illus 1). It is based on a number of key sources: first; defence schemes for the main ports – the Clyde, the Forth, the Tay and Aberdeen – were prepared by the Army in 1900 (a revision of the missing 1899 scheme) (WO 33/173 1900), 1905 (WO 33/381 1905), 1907 (WO 33/444 1907), and 1909 (WO 33/491 1909). There were also two Scotland-wide defence documents for 1907 (*The Land Defence of the UK: Scottish Zone, Part 1*) and 1912 (*Home Defence: Scottish Command Scheme*). The defences of individual batteries were described on files relating to single sites, and in Fort Record Books (WO 192/100 1907–

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ILLUS 1 Location map, showing the main features mentioned in the text, against a background of the contemporary road and rail network (Authors)

27; WO 192/101 1910–16; WO 192/104 1918–39; WO 192/108 1939–44; WO 192/250 1908–53; WO 192/252 1931–55).

First World War anti-invasion defences were built at various points on the coast, particularly near the estuary ports, and these are recorded on a number of different maps, the largest collection of which is in a file in the National Archives, Kew

(WO 78/4396 1916), under the title ‘Scottish Field Defences’. Another file contains mainly maps of defences built around or near major coast artillery batteries, summary maps of the Fife anti-invasion defences and the defences of the banks of the Tay estuary (WO 78/4417 1915).

Very little survives of the defences. The few exceptional survivals are noted.

BACKGROUND

The defence of the coast of the ‘German Sea’, as the North Sea was known until 1914 (Scully 2009), was the responsibility of the navy and the army in their respective maritime and terrestrial spheres. In general, there was almost no co-ordination of their wider roles but coast defence was one of the few areas in which the War Office and the Admiralty had to work together; co-ordinated planning was achieved between 1890 and 1903 by the Joint Naval and Military Committee on Defence and, in 1903–4, by a series of joint conferences to discuss the nature and scale of defence required, mainly at naval and commercial ports (Johnson 1960; Barclay & Morris 2019). The army built and manned the coast artillery batteries while the navy managed the maritime defences – booms, patrol vessels, the Examination Service² and, later, anti-submarine and anti-torpedo nets. The oddity was submarine mining, which was an army responsibility until 1905 and then, when revived in the First World War, a naval one. To the modern eye it seems surprising that there was no permanent mechanism below Cabinet level for the co-ordination of the two armed forces until the establishment of the Committee of Imperial Defence (CID) in 1903–5. It should be remembered, however, that the Cabinet, until December 1916, governed the Empire and fought the First World War without an agenda or minutes for its meetings.

The navy and army could and did promulgate wholly unco-ordinated policies in relation to their planned activities in time of war, a situation that was only resolved in 1911, after a peculiarly embarrassing illustration of the problem in front of Dominion Prime Ministers at that year’s Imperial Conference (Johnson 1960: 160).

The first modern defences on the east coast were established after the Crimean War, in the face of a potential threat to the commercial anchorages at Aberdeen and in the Tay, and to the estuary of the Forth. In summary, forts on Inchkeith and at Kinghorn were built in 1880, followed by the establishment of a line of defences just below the Forth Bridge; the defences were developed and extended reaching their greatest

strength in 1916 (Barclay & Morris 2019). In Dundee, modern coast batteries were established in 1860–1 (‘worse than useless’ by 1887 (CAB 18/22A (1891–1903)) and subsequently rebuilt).

Government defence policy in the period from 1905 to 1910 was based on the belief that a full-scale invasion of Britain could not be undertaken by a force smaller than 70,000 men, that such a force would require 210,000 tons of shipping, which could not be gathered in secret, and that consequently Britain would have considerable notice of enemy intentions. A raid of up to 5,000 men was the most that could be expected without prior notice. (The history of these debates is most concisely laid out in Dunlop’s masterly 1938 *The Development of the British Army, 1899–1914*.) The navy was confident for a long time that it could detect and defeat any major invasion force at sea. But there was a growing concern that the expanding fleets of the other Great Powers were effectively ending absolute British naval supremacy. The strength of the coast defences in the Forth between 1902 and 1918 is summarised in Table 1.

1900–14

As already noted, the army took the threat of invasion, and of attacks on its coast batteries, sufficiently seriously that from at least 1899 it prepared and printed complex ‘Defence Schemes’ for parts of the United Kingdom. We have not found a copy of the 1899 scheme and know of it only from a reference in that for 1900.

DEFENCE SCHEMES

Although the earliest known defence scheme is that for 1900, the first instructions on how these were to be structured were promulgated in June 1901 (WO 33/193 1901); the instructions had the object, first, ‘to ensure that every possible preparation is made in peace time to enable the General Officer Commanding easily and expeditiously to place his command in a state of defence the moment he is called upon to do so’ and second, to record all preparations made, so that an officer coming newly to the command

TABLE 1
The gun defences of the Firth of Forth in 1903, 1905 and in the period 1907–14

	1902	1905	1907	1915	1917
OUTER					
Inchkeith	1 × 9.2-inch BL Mk I (obsolescent)	1 × 9.2-inch BL Mk I (obsolescent)	–	–	–
		2 × 9.2-inch BL Mk X	3 × 9.2-inch BL Mk X	3 × 9.2-inch BL Mk X	3 × 9.2-inch BL Mk X
	2 × 6-inch BL Mk VII	4 × 6-inch BL Mk VII	–	4 × 6-inch BL Mk VII	6 × 6-inch BL Mk VII
	2 × 6-inch BL Mk VI (obsolescent)	1 × 6-inch BL Mk VI (obsolescent)	–	–	–
	1 × 4.7-inch QF	–	–	–	–
Kinghorn (and Pettycur after 1916)	4 × 10-inch RML (obsolescent)	1 × 9.2-inch BL Mk X	1 × 9.2-inch BL Mk X	1 × 9.2-inch BL Mk X	1 × 9.2-inch BL Mk X
		2 × 6-inch BL Mk VII	–	–	2 × 6-inch BL Mk VII
	2 × 4.7-inch QF	2 × 4.7-inch QF	–	–	–
Leith Docks	–	–	–	–	2 × 6-inch BL Mk VII
INNER					
Dalmeny	2 × 4.7-inch QF	2 × 4.7-inch QF	2 × 4.7-inch QF	2 × 4.7-inch QF	–
Inchgarvie	2 × 12-pdr QF	2 × 12-pdr QF	–	4 × 4-inch QF	4 × 12-pdr (18cwt)
Carlingnose	2 × 6-inch BL Mk VII	2 × 6-inch BL Mk VII	2 × 6-inch BL Mk VII	2 × 6-inch BL Mk VII	–
Coastguard	2 × 12-pdr QF	2 × 12-pdr QF	–	2 × 12-pdr QF	2 × 12-pdr QF
Downing Point				2 × 4.7-inch QF	2 × 12-pdr (18cwt)
Hound Point				2 × 6-inch Mk VII	2 × 12-pdr (18cwt)
MIDDLE (after 1914)					
Cramond Island				2 × 12-pdr (Naval) 18cwt QF	2 × 12-pdr (Naval) 18cwt QF
Inchmickery				4 × 12-pdr (Naval) 18cwt QF	4 × 4-inch QF Mk III
Inchcolm				8 × 12-pdr (Naval) 18cwt QF	2 × 6-inch Mk VII
					4 × 4.7-inch QF
					4 × 4-inch QF Mk V
					2 × 12-pdr (Naval) 18cwt QF
Braefoot				2 × 9.2-inch BL Mk X	–

would know what had been done (WO 33/193 1901). It was reckoned ‘to be a great advantage to all concerned if the defence schemes in all our home districts and foreign stations are drawn up on one and the same system’ (ibid). A series of section headings and outline tables was set out to assist (ibid). A first section on ‘Strategic Considerations’ would be followed by apportionment of troops, accommodation and supply, lines of communication and advance, in each of three periods: ‘Precautionary’, ‘Emergency’ and ‘War’ (ibid). This tripartite division was very soon abandoned, with ‘Emergency’ done away with. The scheme was to be accompanied by maps, as had been set out in a War Office letter of the previous December.

The defence schemes for the main ports were formally printed books, initially over 100 pages long, and increasingly long and detailed. They were distributed within the War Office, to local army HQs, to the relevant military commanders in the areas concerned, and their senior subordinate artillery, engineer, medical and administrative officers, as well as to the Admiralty. In total, 27 copies of the 1900 scheme were distributed. All the schemes followed the outline structure set out in 1901: the strategic background to the defence; the specific strategic and tactical considerations affecting the particular port or estuary; the actions to be taken by senior officers; and details of the process of mobilising the auxiliary (after 1909, Territorial) forces who would make up most of the defence. The documents dealt with matters at a very detailed level, down to the number of shovels and kettles to be issued, the arrangements for paying the men and, in the later examples, detailed train-by-train lists of the movements of every unit to its war station.

In 1907 the General Staff published a defence scheme for the whole of the UK. Part 1 was for the ‘Scottish Zone’. In the following year the War Office published further *Instructions for the Preparation of Schemes for the Employment of Local Forces in Commands* (WO 33/468 1908) and in 1912, Scottish Command published a *Home Defence Scheme* along the lines set out above. It was the subject of detailed comments by the War Office (WO 33/2857 1912).

In 1911 the Committee of Imperial Defence published a *Memorandum on the principles governing the defence of the United Kingdom* (WO 33/515 1911), which superseded four documents published between 1906 and 1908 about the possible scale of attack the UK might have to face and the British response. The defence was to be largely in the hands of the Territorial Force (which had in 1909 succeeded the jumble of auxiliary, that is, the non-Regular, forces). The 1911 document adopted the Committee of Imperial Defence’s 1908 conclusion that: ‘so long as our naval supremacy is assured against any reasonably probable combination of Powers, invasion is impracticable’; that the size of the army in the UK was such as to compel an enemy to ‘come with so substantial a force as will make it impossible for him to evade our fleets’; consequently, and as noted already, an enemy force of 70,000 men was to be assumed (WO 33/515 1911).

STRATEGIC CONSIDERATIONS AND AVAILABLE FORCES

All the scheme documents began with a section on ‘Strategic Considerations’. These considerations originated in the November 1894 Report (No. XIII) of the Joint Naval and Military Committee on Defence (WO 32/6355 1890–5).

In all the documents referenced in the preceding section, no attack was considered likely north of the Clyde – Aberdeen line, as there were ‘no objectives worthy [of] the attempt’ to the north, and the chief commercial cities and ports (Aberdeen, Dundee, Glasgow, Greenock and Leith) were the only likely targets (WO 33/173 1900). Scotland was not seen as a likely target for a full invasion aimed at occupying the country:

It is possible, however, that a raiding expedition, consisting of two or three fast cruisers, perhaps accompanied by transports carrying from 1,000 to 1,500 men with machine guns ... by evading the vigilance of the British [naval] squadrons might appear off Aberdeen or in the estuaries of the Clyde, Forth and Tay. The object of such an expedition might be the destruction of shipping ... or the injury of docks or towns, either by bombardment or by landing armed men (WO 33/173 1900).

A ‘raid’ was defined in 1911 as: ‘a secondary operation of war, by means of which an enemy seeks to deal a blow at our naval or military power, or to influence in his favour operations taking place in a main theatre of war elsewhere’. This might particularly include damaging or destroying the key elements of defended ports (WO 33/2857 1912).

In the 1900 document, the authors stated, in their now rather archaic prose, that an attack was ‘most to be apprehended’ from Russia and/or France, perhaps allied to Denmark. Only a few vessels were expected to penetrate the defences at sea (absolute British naval supremacy being assumed in Home waters at this time). The three strands of defence were to be: to man the existing coast defence guns; to place submarine mines in the channels and to concentrate land forces near the five commercial centres listed above (WO 33/173 1900).

‘Submarine mining’ was a defensive weapon developed in the mid-19th century and implemented in the UK from the 1870s until 1905 by a Volunteer branch of the Royal Engineers. When an attack was believed to be imminent, the local mining company would arm its mines and lay them in a prearranged site. An operator on shore, keeping the minefield under observation, could set off a group of mines if an enemy vessel was detected in the minefield. The Tay, the Forth and the Clyde were all defended by minefields (Brown 1910).

The troops available to defend the Home Country were a mixture of Regular and auxiliary forces, in Scotland, a large proportion of the latter.

The 1900 scheme document (WO 33/173 1900) had a separate ‘Strategic Considerations’ section for the Forth. Edinburgh was described as ‘after Glasgow, the largest and most important city in Scotland’ which ‘might form a tempting object of attack if undefended’. The Forth at this time was not to be ‘a regular naval station’ in time of war (an 1894 report was quoted as the source for this) but was a centre for naval signalling and contained several ports vulnerable to hit-and-run attacks (ibid). Attacks on Edinburgh or Leith were expected to be for the purposes of ‘terrorising’ the population or damaging

docks, shipping or buildings, by ‘incendiarism or bombardment’ (ibid). Key installations were identified: the batteries at Kinghorn and Inchkeith; the submarine mining establishment and its attendant batteries at North Queensferry and the Forth Bridge (ibid). To repel land attacks, Edinburgh, the Forth and Fife were to have about 7,500 Volunteers (including 1,579 artillery, 120 cavalry, and 475 engineers) plus the regular infantry battalion garrisoning Edinburgh Castle (ibid). At this time, the only permanent coast defence gun batteries were those on Inchkeith and at Kinghorn, although work was in hand to increase the strength of the gun defence (ibid). The defence scheme included detailed provisions for defence, which are dealt with by area below (ibid).

The part of the 1900 scheme relating to the Tay also had its own ‘Strategic Considerations’: ‘The defence of the Tay is undertaken entirely to protect commercial interests’ (WO 33/173 1900). The possibility of damage by torpedoes (launched from surface ships – submarines were not at this time believed to be a threat) to docks and the Tay Bridge was also considered (ibid). The aims of an enemy attack included: to obtain money, booty or stores – a sort of state piracy; to destroy shipping, docks buildings etc and to create alarm and gain prestige (ibid).

The area to be defended in the Tay included the coast of Forfarshire (Angus) and of Fife, as far as Elie (geographically within the Forth estuary). The force to be defended against was stated as two to three cruisers and a landing party of between 1,000 and 1,500 men, against which the British forces in the area (almost all auxiliary) numbered 290 artillerymen (including the coast gunners), 280 engineers (of whom 130 were Submarine Miners), and 700 infantry (WO 33/173 1900).

By 1905 the Forth was a ‘Secondary Naval Base’, the estuary being defined by a line between Elie and North Berwick (WO 33/381 1905). The forms of attack to be prepared for had changed (ibid). By this date the idea of the ‘Precautionary Period’ had been developed by the CID as a period of growing tension prior to the formal declaration of war, during which there was a risk of ‘minor raids by a few daring

men for the purpose of damaging docks, lights, bridges and batteries or vulnerable points on the coast' (ibid). In the 'War Period' more determined assaults were to be expected: attack by cruisers or torpedo boats to damage docks and shipping; or an attack on Edinburgh or the batteries of the Forth by a landing party of 2,000 men, supported by cruisers (ibid).

The three possible ports of embarkation for such a raid were named as Dunkirk (France), Wilhelmshaven and Kiel (both in Germany). Land forces of 11,704 men (mainly auxiliary) were identified as being available to protect the coasts of the Forth estuary and the coast batteries. The 1905 scheme is the first with maps showing parts of the coast vulnerable to landings by enemy forces (WO 33/381 1905).

The year 1907 saw the publication not only of a revised defence scheme for the Scottish ports (WO 33/444 1907), but also the Scottish section of the General Staff's defence plan for the UK (WO 33/542 1907). The latter included a map showing the whole of the Scottish coastline, from Inverness to Berwick-upon-Tweed, and from Greenock to Glenluce, broken down into seven sectors (the east coast comprising sectors I to V), and further subdivided into Coast Sections (nos 1 to 27 on the east coast, 28 to 32 on the west). The coastline was colour-coded to reflect its vulnerability to an enemy beach landing: 'practicable for landing', 'partly practicable' and 'impracticable' (ibid). It is striking, although hardly surprising, how closely the 'practicable' and 'partly practicable' beaches conform to those, on the east coast at least, identified as being at risk from a landing in 1940 (Barclay 2013: 85).

The map also showed the defensive positions to be taken up by troops covering the approaches to Aberdeen, Dundee, Glasgow and Edinburgh. All the Coast Sections were numbered on the map and they and their hinterland were described in corresponding portions of the text (WO 33/542 1907).

Although the construction of the Rosyth Naval Base had been announced in 1903, a final decision had not, by the time of the 1907 scheme (WO 33/444 1907), been made to proceed with it. The Forth estuary was therefore classed as a 'defended commercial port, the shipping in

which was seen as unlikely to tempt an enemy to launch more than a raid by an armoured cruiser, accompanied by no more than 5,000 troops' (ibid). However, 'should a ... naval base be established at Rosyth, the conditions will be different' (ibid). The objects of this limited attack were seen to be the creation of panic, the destruction of docks and shipping and the destruction of the Forth [Rail] Bridge (ibid). The total number of British soldiers of all arms available (mainly auxiliaries) was about 6,500 (ibid).

The 1909 document was a subset of a larger defence scheme, titled 'Scottish Defended Ports'. The document is split into four parts: the Forth (Part I), the Clyde (Part II), the Tay (Part III) and Aberdeen (Part IV). We consider here only Parts I and III (WO 33/491 1909).

The 'Strategic Considerations' section identified the Firth of Forth as a 'defended commercial port' and a 'port of refuge'.³ The boundary of the 'defended port' lay at the maximum range of the guns, a line between East Wemyss and Cockenzie. Because, even before the naval base was completed, the Forth would probably be used as a naval anchorage, anti-torpedo craft defences would be provided for the anchorage west of (upriver from) the Forth Bridge. Defences on a larger scale were to be provided as the naval base proceeded. As before, preparation was to be made against an attack by armoured cruisers and up to 5,000 men (WO 33/491 1909).

For the Tay, the 'Strategic Considerations' identified the estuary as a defended commercial port and the aims of any attack were likely to be the creation of panic, the destruction of shipping, docks etc, the destruction of the defence works (the fixed defences) and the destruction of the Tay [Rail] Bridge (WO 33/491 1909).

In the Precautionary Period attacks might be expected on the fixed defences, the docks or the Port War Signal Station (PWSS) at Carnoustie,⁴ and three detachments of Regular infantry were to be provided for Castle Green Battery, Dundee Docks and both ends of the Tay Bridge. Raids were expected to be by no more than a few hundred men (WO 33/491 1909).

The document reflected the continued strength of the 'Blue Water' school of defence, as it was

stated categorically that the transports and naval escort for a raiding force ‘would have to evade our Fleet in home waters’, the clear implication being that only a very small force – sufficient to carry up to a few thousand men – could evade detection (WO 33/491 1909).

SUMMARY OF THE SCHEMES

The 1900 Scheme (WO 33/173 1900)

No defence was contemplated for Scotland north of Aberdeen or the Clyde because of the ‘sparse population and absence of large towns, the difficulty of the country, and its distance from the heart of Great Britain’ there being ‘no objective worthy [of] the attempt’ (WO 33/173 1900).

The Forth 1900

Inchkeith, as the main strength of the defences, was at risk from a boat landing which ‘might be attempted anywhere round the island ... An attack would have for its object the capture of the island, and disablement of the batteries, in order to open the channel to the enemy’s ships’ (ibid). Local defences were built in the form of firing trenches overlooking the bays at the north-west and north-east end of the island. The approach from the main working harbour of the island (‘Leith Harbour’) to the West Battery was guarded by a detachment of infantry and further men would line the road between the harbour and the South Fort overlooking the bay. An attack on Kinghorn was considered unlikely so long as Inchkeith was held, and an assault on the Forth Bridge was ‘not probable’. It was considered possible (ibid) that ‘the enemy might land at several points between Gosford Bay and Portobello’ on the southern shore: Gosford Bay, Seton Sands, Cockenzie, East Musselburgh Sands, Fisherrow Sands and Portobello Sands, all of which were effectively out of range of Inchkeith’s guns. Leith, Granton and Burntisland were all considered to be at risk of motor torpedo boat attack. The naval signal stations at St Abb’s Head, Dunbar and Berwick were potentially at risk of small raids and each was to be defended by an NCO and 15 infantrymen. The defence of the estuary was largely the responsibility

of auxiliary forces with a cadre of Regulars of all arms: in Edinburgh the field forces would comprise 150 Yeomanry (that is, auxiliary cavalry), 724 Volunteer Artillery (with eight 16-pdr guns), 130 Volunteer Engineers and 1,500 Volunteer infantry. At the various coast defence batteries there were to be 1,379 artillerymen, 345 Engineers (including 130 Submarine Miners) and 850 infantrymen, of whom 200 were to garrison Inchkeith (WO 33/173 1900).

The Tay 1900

The garrison of the Tay Defences in wartime was also to be made up largely of Volunteers. At any one time it was intended to employ 290 artillerymen (of whom 10 were Regulars), 150 Royal Engineers (20 Regulars), 130 Submarine Miners and 700 infantry from the 1st and 2nd Volunteer Battalions of the Royal Highlanders (the Black Watch), 300 of whom were to be based in Dundee. Because of the importance of the coast guns and controlled minefield at Broughty Castle, and the great risk of these being neutralised by a *coup de main*, the bulk of the defence was concentrated there. Positions were also to be occupied near Monifeith by two detachments, one covering the Arbroath–Dundee road, the other at the coast. The force around Broughty Ferry was considered sufficient to repel any attack anywhere on the northern shore. There was also thought to be a risk of an attack on the southern shore by a force that would then attack northwards across the Tay Bridge, possibly using rolling stock captured at the south end. A force of 50 men was to be placed at the southern end of the bridge and otherwise the defence force was to await events, should there be a landing on the south shore. It was expected that there would be adequate steamship capacity to transport any necessary force from the north to the south shore (the lowest road crossing at that time, of course, being in Perth). If an attack was considered imminent, the Commanding Officer of the Submarine Miners was to prepare to lay the controlled minefield if ordered to do so. The defence scheme contained very detailed orders as to how the field was to be prepared and laid. Arrangements for treating up to 160 casualties were to be made at the Dundee Royal Infirmary

and the Station Hospital, Perth (WO 33/173 1900).

The 1905 Defence Scheme (WO 33/381 1905)

The defence scheme of November 1905 (explicitly 'revised' rather than newly prepared) survives as four separate documents, Part I being that for the Forth, with separate documents for the Clyde, the Tay and Aberdeen. All four parts had a preliminary set of 'Strategic Considerations' (WO 33/381 1905). Although Scottish Command was created out of the old Scottish District in the same year, the scheme was nevertheless prepared by the War Office in London.

The Forth 1905

In 1905 the Forth was classified as a Secondary Naval Base, at risk in the Precautionary Period from raids 'by a few daring men', and in the War Period to attack by cruisers and torpedo boats, or by a raid of up to 2,000 men. The Fortress Commander would have available to him (in addition to the by now very strong coast defence batteries) a force comprising 476 Imperial Yeomanry, 1,286 artillerymen (mainly on the coast batteries), 353 engineers and 9,589 infantrymen, almost all from the auxiliary forces. Throughout this period there was always a battalion of Regular infantry at Edinburgh Castle, but they would have a role only in guarding the batteries at Kinghorn, Inchkeith and Carlingnose in the Precautionary Period, a role taken over, in far greater force, by Volunteers in the War Period (WO 33/381 1905).

Inchkeith was to have a garrison of 200 infantrymen, Kinghorn battery 240, and Carlingnose and North Queensferry batteries 159 each. On the southern shore, Dalmeny, overlooked by high ground to the south, was to have a garrison of 159, and there were plans to raze cottages and Dalmeny railway station to improve the defenders' field of fire (WO 33/381 1905).

Edinburgh was to house a general reserve comprising 4,000 infantry, a force of Imperial Yeomanry, with artillery pieces. The commander of this mobile reserve (whose HQ was at Piershill barracks in the eastern part of the city) was required to familiarise himself with his likely area

of operations, that being a band 10 miles wide inland from the coast between Elie and North Berwick, and to establish sources of intelligence. The Forth Bridge was to be guarded by a force of one officer and 30 other ranks at both ends (WO 33/381 1905).

Although maps had been a prescribed element of the localised Schemes since 1901, the 1905 scheme was the first to include maps showing beaches 'practicable' or 'partly practicable' (a category abandoned in future schemes) for an enemy landing inside the estuary, as far as Dunbar on the Lothian side (WO 33/381 1905).

The Tay 1905

The Tay was classified as a defended commercial port, at risk from the generic threats faced by purely mercantile ports, by raids by one cruiser with accompanying transport, landing 2,000 men, with a few machine guns (WO 33/381 1905).

The area of the defended fortress extended from Carnoustie to the north-east to Leuchars to the south-west. In this area the beaches practicable for enemy landings were mapped for the first time (the category of 'partly practicable' beach appeared in the key but no beaches were so labelled) (ibid).

Provisions were to be made during the Precautionary Period against 'minor raids, by a few daring men, for the purpose of damaging the batteries or Tay Bridge' (ibid). During the War Period, provision was to be made against direct advance up the river, which would require the silencing of the Broughty Castle guns, attacks on docks by torpedo craft running past Broughty Castle, a landing on the coast of Forfarshire to attack Dundee from land and a landing on the coast of Fife, to be resisted by a detachment at Leuchars (ibid).

At this time there were four naval War Signal Stations to be guarded, at Usan and Carnoustie north of the river, and at Crail and Elie on the south coast of Fife (although both fell within the boundary of the Tay defences at the time) (ibid).

To guard these places and to resist a landing the Fortress Commander had at his disposal 476 Yeomanry cavalry, 414 Artillery, 137 Engineers and 2,455 infantry. All but a handful of these

men were Volunteers. The men were distributed between Broughty Castle, Castle Green and Wormit Hill, with large detachments at Leuchars (about 1,000 men), Monifeith (almost 700 men, mainly infantry) and between seven and ten other ranks at the War Signal Stations (*ibid*).

The 1907 Defence Scheme (WO 33/444 1907)

As noted above, two documents relevant to our study were published in 1907. First, there was a War Office document titled *The Land defence of the United Kingdom: Scottish Zone, Part I*, part of a series of schemes published in that and subsequent years covering the whole of the UK (WO 33/542 1907). Second, in September 1907 there was a revision of the defence schemes for the four Scottish ports, of which we consider here those for the Forth and the Tay. The *Scotland Coast defence scheme* was, for the first time, prepared locally by Scottish Command (WO 33/444 1907).

The Forth 1907

The 1907 scheme (WO 33/444 1907) was more detailed than its predecessors. The Forth had, oddly, reverted to being a defended commercial port rather than a Secondary Naval Base. During the Precautionary Period attacks were to be prepared against at Kinghorn Battery; Coastguard Battery, Carlingnose Battery and the north end of the Forth Bridge; Dalmeny Battery and its searchlight emplacements, and the south end of the Forth Bridge; and the island of Inchkeith.

Four 'projects' were set up to erect close defences at each of these four vulnerable points and the stores necessary to carry them through were to be stored locally. The docks at Leith, Granton and Burntisland were to be defended by the local police force (WO 33/444 1907).

In the War Period, the type of attack to be prepared for was very much as set out in 1905 and it was not envisaged that the shipping gathered in the river would tempt a foreign power to risk more than a raid by an armoured cruiser (WO 33/444 1907).

The forces available to the Fortress Commander were 321 Imperial Yeomanry, 232 artillerymen in the fixed defences (which had been radically reduced by the Owen Committee

in 1905–6), 232 artillerymen in two field artillery batteries, each of four 15-pdr guns, and 5,523 infantry, mainly auxiliaries. The garrison of Inchkeith was only to be 134 officers and men, reduced from the previous plan to have 200 men (WO 33/444 1907).

The scheme again included maps showing beaches practicable for enemy landings. Beaches marked only as 'partly practicable' in 1905 were combined into the sole 'practicable' category from 1907 onwards. One or two further 'practicable' beaches were also added (WO 33/444 1907).

Comments made on the scheme by the War Office in 1908 (*ibid*) noted that the section on the Forth would require amendment throughout 'on account of recent changes in the strategic condition of the Forth', consequent upon the decision taken to proceed with the construction of the Rosyth naval base. The estuary would probably be used as a fleet anchorage in war, even before the base was completed. A rebalancing of the distribution of the garrison, from the south to the north coast of the estuary, to take account of the growing importance of the naval base might be necessary and further aims of attack might be added to those listed above: attack upon the fleet at anchor or damage to works in progress at the naval base (WO 33/444 1907).

Other suggestions included the increase of the Inchkeith infantry garrison.

The Tay 1907

In 1907 the Tay was still described as a defended commercial port, liable in wartime to raids of up to 5,000 men, with light, portable artillery pieces (WO 33/444 1907).

In the Precautionary Period, minor raids or sabotage by agents might be possible. The Regular infantry battalion at Fort George would provide guards for vulnerable points, but in the War Period, a large force of Volunteers would be made available to the Fortress Commander: 80 Royal Engineers, 321 Yeomanry cavalry and 1,627 infantry of the Royal Scots (the Black Watch). The Commander also had 42 artillerymen in the coast defences and 104 men of a Volunteer artillery battery of four 15-pdr guns (WO 33/444 1907).

These troops were distributed in detachments at Colinsburgh, Fife (Yeomanry), Leuchars (Yeomanry), Arbroath (Yeomanry), Monifeith (three companies of infantry) and at Wormit (six companies of infantry). A large reserve of all arms – 1,147 men – was maintained in Dundee and ten-man guards were provided for the PWSS at Carnoustie, and War Signal Stations at Usan, Fife Ness and Elie. The 1907 map of beaches practicable for enemy landings was unchanged from 1905 (WO 33/444 1907).

As in the Forth, the scheme set out ‘projects’, laying out all the obstacles, entrenchments, loopholes and other positions that were to be prepared. The first was for the close defence of the coast artillery battery at Castle Green, Broughty Ferry. The second was for the defence of Wormit and the southern end of the Tay Bridge. Tools and materials for both projects were to be stored at Broughty Castle, ready for issue. Although a company of infantry was allotted to defend the north end of the Tay Bridge, no substantial entrenchment was considered necessary. The Intelligence Officer of the Fortress was to encourage increased watchfulness for strangers, and to ‘amplify’ his list of local guides and informants – described as being mainly shepherds and gamekeepers (WO 33/444 1907).

A defensive position was to be established on a line Monifeith – Ardownie – Laws, to protect the coast battery and Dundee from attack by forces landed to the north-east (WO 33/444 1907).

The 1909 Defence Scheme (WO 33/491 1909)

The 1909 *Defence Scheme: Scottish Ports* was once again a Scottish Command product, appended to which were War Office comments, provided in April 1910. This was the first defence scheme written after the creation of the Territorial Force that year, which would carry most of the burden of Home Defence (WO 33/491 1909).

The Forth 1909

The 1909 scheme took account of the comments made by the War Office on the 1907 revision. Thus, while the Forth was still considered a defended commercial port, it was also a ‘port

of refuge’ for shipping, and would ‘probably be used as an anchorage for the Fleet in time of war, even before the naval base at Rosyth is completed ...’ (ibid). The estuary was now at risk of a wider range of attacks in both the Precautionary Period and the War Period to create panic, destroy docks and shipping, destroy the Forth Bridge, destroy the works of defence, attack warships at anchor and destroy or damage works at the naval base (ibid).

These types of attack were to be considered possible during both the Precautionary and War Periods; during the latter, raids by up to 5,000 men were also to be prepared for (ibid).

Infantry detachments were allocated in the War Period to protect all the coast batteries. Inchkeith had the largest garrison, with 660 infantrymen (over four times larger than in 1907), while Inchgarvie had 41. A general reserve of four battalions of infantry was held in Edinburgh with 12 15-pdr field guns in two batteries (ibid).

The commander at Kinghorn and Burntisland was instructed to prepare a line of defensive positions north of Kinghorn, while the commander on Inchkeith was instructed to prepare shelter and positions for his large infantry garrison (ibid).

The beaches mapped as practicable for enemy landings were the same as in the 1907 scheme (Illus 2) (ibid).

The Tay 1909

As before, the Tay was classified as a defended commercial port, the extent of the port being defined by the maximum range of its guns, which was from Eden Mouth, near St Andrews, round the estuary to the PWSS at Carnoustie (WO 33/491 1909).

In the 1909 scheme, in the Precautionary Period, preparations were to be made to counter only the activities of ‘aliens already in the country, or other ill-disposed persons, to damage the works of the defences, the Tay Bridge, the Dundee Docks and the shipping of the Tay or the Port War Signal Station’. To meet such attacks, three detachments of Regular infantry, each of two officers and 90 other ranks, were to be placed at Castle Green Battery, at Dundee Docks and the north end of the Tay Bridge (ibid).



ILLUS 2 Beaches identified as 'practicable for landing' in the Forth, mapped in the 1909 Defence Scheme (Reproduced with the permission of the National Library of Scotland)

In the War Period, a raiding force of no more than a few hundred men was expected, or an attack by a single cruiser to damage shipping, and it was intended that the duties of defence would devolve onto Territorial units, including two battalions of Territorial infantry (40 officers, 1,312 other ranks (o/r; that is, other than officers)), a Territorial Fortress Company, Royal Engineers (to manage the searchlights at the

coast batteries) (two officers, 76 o/r) and men of the North Scottish Royal Garrison Artillery (four officers, 104 o/r). The Fortress Commander had six other officers and 29 o/r in his HQ at the Royal Hotel in Dundee. Four companies of infantry (340 officers and men) would garrison the key position on the southern shore, on Wormit Hill, while another four companies were to be stationed at Monifieth on the north shore.



ILLUS 3 Beaches 'practicable for landing' in the Tay estuary, as mapped in the 1909 Defence Scheme (TNA WO 33/491 1909)

Single infantry companies guarded the docks and the northern end of the Tay Bridge, the battery at Broughty Castle and the southern end of the bridge. The reserve force in Dundee would comprise eight companies of infantry, four each from the two Territorial battalions (682 officers and men) and a battery of four 15-pdr field guns (WO 33/491 1909).

The beaches mapped as practicable for enemy landings in 1909 were the same as in earlier versions of the scheme (Illus 3) (*ibid.*).

THE SCOTTISH COMMAND HOME DEFENCE SCHEME 1912 (WO 33/2857 1912)

The 1912 document was prepared by Scottish Command in Edinburgh and covered the whole of Scotland. The scheme concentrated on the mainland from Inverness southwards, where the main targets were, but also set out the location of local defence forces such as the Shetland Companies of infantry, and of Vulnerable Points to be guarded across the whole country (for example, the transatlantic cable landing points on Orkney). The 1909 defence schemes of the individual defended ports (the Forth, the Clyde, the Tay and Aberdeen) were explicitly referenced in, and subordinated to, this Command-wide scheme (WO 33/2857 1912).

Large-scale invasion of Scotland was not envisaged, and the precautions set out in the document were to deal with a large raid of between 5,000 and 10,000 men, equipped with light artillery. The two most important targets for an enemy were considered to be the Rosyth naval base and the Forth generally, and the Clyde and its ship-building industry. Targets of lesser importance were identified as the Tay/Dundee, Aberdeen, the Nobel Cordite Factory at Ardeer (in a vulnerable position, right on the coast), and the railway junctions, stores, magazines and fuel reserves in West Lothian, around Pumpherstons and Uphall. Thirty-seven copies of the document were circulated, 17 within Scotland and six to the Admiralty. A map of the mainland was included to show beaches practicable for enemy landing, necessarily more generalised than the detailed maps attached to the individual port defence schemes (*ibid.*).

It was feared that landings might be attempted against the two main targets, on the Forth by landings on either shore, but more likely on the north, and on the Clyde, on the Ayrshire coast. Apart from the garrisons of the port fortresses, local defence forces and coast-watching arrangements (by men from the Cyclist Battalions), the army in Scotland was split into two groups. One force, comprising the Highland Mounted Brigade and most of the Highland [Infantry] Division, was to be held in reserve and could, if necessary, form part of the Central Force, the mainland British reserve, which would operate against any major landing. The other was the 'Local Force', which was to be based around central Scotland in places that would allow it to concentrate and move against landings either in the east or the west. The 'Local Force' comprised the Lowland Mounted Brigade, most of the Lowland Division and two Cyclist Battalions. Significant elements of this force were stationed near Stirling, Larbert and Dunfermline, from where the complex pre-Beeching rail network could move men and equipment rapidly to where they were needed. Other elements of the Local Force were based at Lundin Links, Haddington and the Berwickshire coast on the Forth, at Carnoustie on the Tay and at Kilmarnock. The Forth was provided with a reserve of Territorial troops, comprising the Lothian Infantry Brigade, Royal Engineers and Royal Artillery (*ibid.*).

Appendix A of the scheme listed, and described in some detail, the potential landing places in the vulnerable parts of Scotland, broken down by area: Firth of Forth, Southern Shore (as far west as Seton Sands); Firth of Forth, Northern Shore (Largo Bay and Methil Docks); East Coast of Fife (that is, St Andrews); Firth of Clyde; coast of Forfarshire and Aberdeen. Interestingly, the landing beaches at the mouth of the Tay (Barry Sands and Tentsmuir), described and mapped in the Tay defence scheme, were not included in the list, nor were the beaches in the inner part of the Forth (*ibid.*).

We are not aware that any of the anti-invasion defences set out in the 1905–9 plans (other than around coast batteries) were ever built prior to the beginning of the First World War. However,

what was put in place during the war reflected closely these earlier arrangements.

Pillboxes/Blockhouses

In the earlier part of the period under discussion, what were later called ‘pillboxes’ by British soldiers on the western front in the First World War, were usually referred to as ‘blockhouses’ (War Office 1911). It is clear from the contemporary documents that this term covered not only concrete-walled structures but also ‘blockhouses’ of the kind built by the British Army in the Boer War, buildings made of wood and corrugated iron, made bullet-proof by surrounding stone walls or timber ‘boxes’ filled with soil or gravel. Designs for such structures were included in the *Manual of Field Engineering* (War Office 1911). Some of the timber blockhouses in the Forth, of which many plans and cross-sections were recorded (see below), were clearly designed to accommodate a resident garrison as they were provided with stoves and bunks. In the descriptions below, ‘blockhouse’ has been used where that was the term used, and information is provided about construction materials, where these are known.

Brick and concrete blockhouses were incorporated into the original plans for the close defence of Braefoot battery in 1912 (although the battery was not completed until 1915) (WO 78/5169 1912).

Nine pillboxes were also built on Inchkeith, at some point between the 1911 War Office Special Survey of the island and 1915 (WO 78/4417 1915). A further five had been built by 1918, and were recorded on the War Office map of that year (War Office 1911–18).

An eight-sided pillbox, with the date 1919 visible over its door, was built at North Berwick (NT58SW 131: NT 53050 85410). Nothing is yet known about its construction.

DEFENCES PLANNED OR BUILT, 1914–18

Early in the First World War, anti-invasion defences were built and the batteries listed in the previous section had their fixed, landward defences put in place or extended.

Our review of the defences of the two estuaries has identified features at the following places in the Tay and the Forth:

Angus

- on the northern approaches to Dundee

Fife shore

- on the southern approaches to the Tay Bridge and near Wormit
- St Andrews
- Fife Ness (Naval Radio Station)
- Largo Bay
- Methil–Balgonie line
- around and inland from Kinghorn
- Inchkeith
- Downing Point battery
- Braefoot battery
- the Crombie Royal Naval Armaments Depot
- the northern approaches to the Forth Bridge, incorporating the defences of Carlingnose and Coastguard batteries, Rosyth Dockyard, and Castlandhill Naval Radio Station

Lothian shore

- the southern approaches to the Forth Bridge, incorporating the defences of the Dalmeny and Hound Point batteries
- Blackness Castle
- the beaches west of Dunbar
- beaches to the north and north-west of Gullane
- the coast at Prestonpans
- the approach to Musselburgh harbour
- covering the eastern side of the city of Edinburgh, from Seafield on the coast, to Meadowhead Farm, beyond the contemporary edge of the city

They are described in this order below.

THE TAY

Until 1966 the lowest road crossing of the Tay was at Perth. The current rail bridge (opened 1887, replacing that in use between June 1878 and its fall on 28 December 1879) was, however, considered both an important asset in the transport network and a potential route for enemy infantry, cavalry and artillery to cross the estuary. Consequently, it was defended in the period under consideration (as it was again in the Second World War).

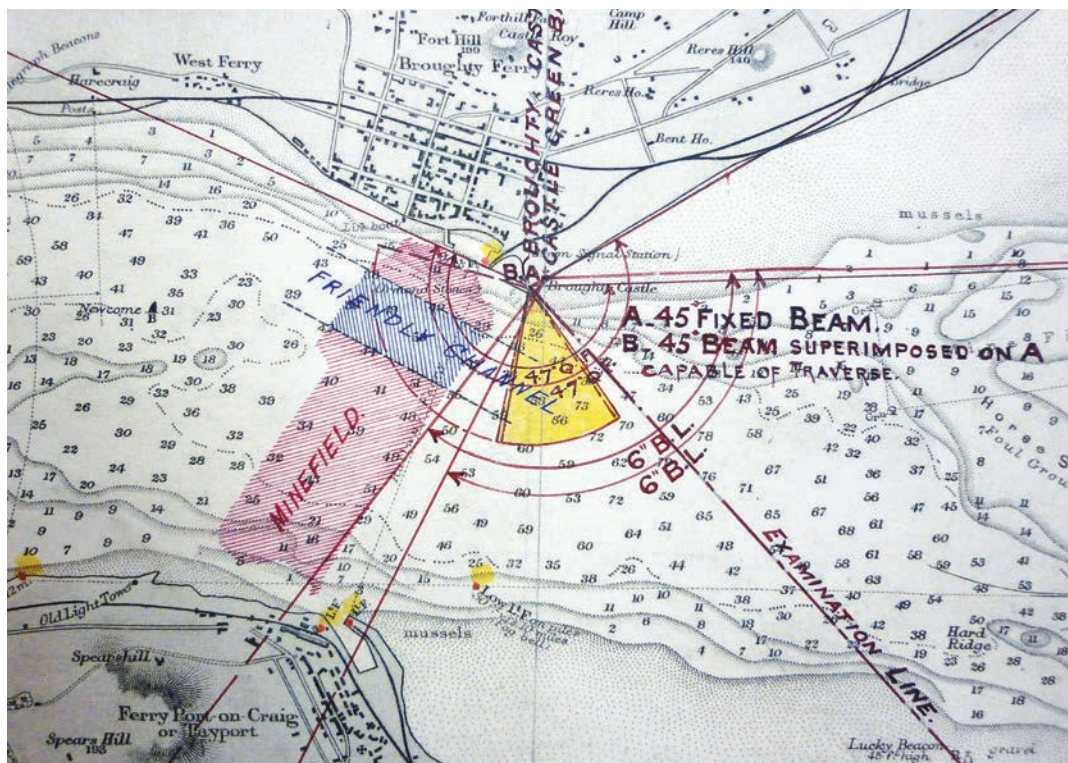
Gun defences were planned near the mouth of the estuary during the Crimean War, in 1854, when Broughty Castle was bought by the government. Work on adapting it for modern guns was undertaken in 1860–1. A unit of submarine miners was established in the Tay in 1888, accommodated in a complex of buildings to the east of the Castle. In time of war the controlled minefield was to be laid across the estuary opposite the castle (Illus 4). To cover the minefield, emplacements were built between 1888 and 1891 for two 4.7-inch Quick Firing (QF) guns; the guns were put in place in 1893 and 1899 (Mudie et al 2010).

By 1898 it had been determined by the Joint Naval and Military Committee on Defence that the defences of the Tay should be strengthened by the addition of a battery of two

6-inch Breech Loading (BL) guns (CAB 18/22A 1891–1903).

Wormit Hill and Tayport

There is only one map of the defences of the area of the mouth of the Tay (WO 78/4417 1915); although its precise date of compilation is unknown, it is marked as having been removed from its original file in May 1916 (Illus 5). North of the river, three groups of firing trenches blocked the line of approach along the coastal plain. A fourth group covered the beach at Monifeith. Six presumably defended locations were marked by hatched circles, their status uncertain: ‘Convalescent Home’; ‘Castleross’; ‘W Balgillo’; ‘RN Air Station’; ‘Esplanade Station’ and the largest, at Broughty Castle coast battery.



ILLUS 4 Chart of the defences of the Tay, around 1905, before submarine mining was abandoned. The chart shows the arcs of fire of the two 6-inch Breech Loading guns of the Castle Green Battery; the arcs of fire of the two 4.7-inch QF guns emplaced on the Castle itself; the arcs of illumination of the two moveable fighting lights (yellow area); areas of two different types of controlled mines (red and blue hatching) (TNA WO 78/5193 1913)



ILLUS 5 The defenses of the Tay in the First World War. This map is undated (except a note that it had been removed from its parent file in 1916); other maps of this kind generally record the defenses built in 1914–16. Defended localities and firing trenches are marked in red (TNA WO 78/4417 1915)

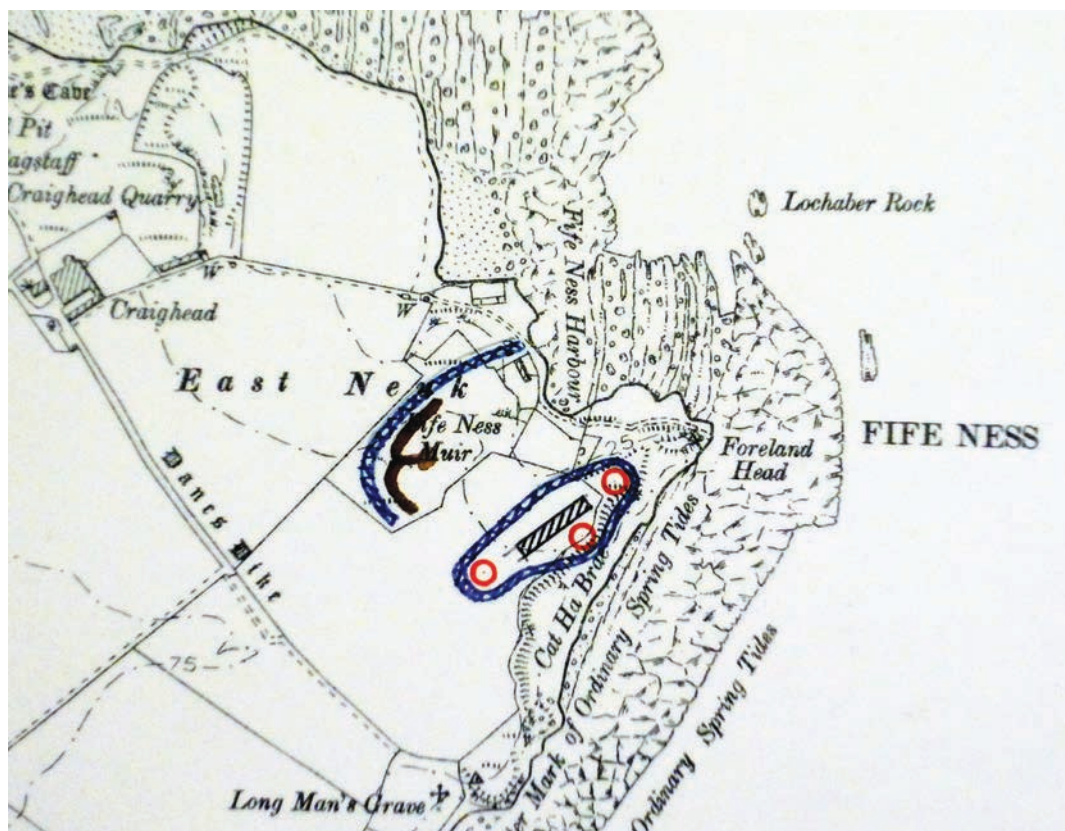


ILLUS 6 Photograph by Major F R Burnet, of the Spiershill Fort, showing the blockhouse and one of the two 4.5-inch guns on field mountings. The 4.5-inch gun was the same as used, on a different mounting, in coast batteries (Inverclyde Museums)

On the south shore of the estuary, on the summit of Spears Hill, above Tayport, across the river from the Broughty Ferry battery, was ‘Spiershill Fort’. A series of photographs in the collection of Inverclyde Museum, taken by Major

Frank Russell Burnet, includes a group of about a dozen photographs showing officers and men on a training course at ‘Fort Spiers’ (Illus 6). The main element of the fort seems to have been a blockhouse, made of what may be concrete slabs, and with numerous closely spaced loopholes (typical of the period) and a pitched roof. Beside it were two 4.7-inch guns on field carriages of a kind issued to Volunteer/Territorial artillery units after the Boer War (Hogg 1998: 31). Interestingly, before the First World War map came to light in 2013, cropmarks on the site of the fort had been scheduled as a prehistoric settlement (Canmore site no. NO42NE 40).

A line of about ten firing trenches covered the southern and south-eastern approaches to the Tay Bridge, at a distance of about 2.2km to 5.2km, between NO 3972 2405 and NO 4464 2436. Closer in to the bridge, there were eight further



ILLUS 7 The defences at the important Naval Radio Station at Fife Ness (TNA WO 78/4396 1916)

posts. Five were laid out in a line about 1km long between NO 3941 2581 ('Defended Cottage') to NO 4027 2636 ('No. 4 Post'); a further position ('No. 5 Post') was located about 870m to the ENE, at NO 4113 2657, on St Fort Hill.

St Andrews

The defences of St Andrews were limited to a single firing trench 130m long, running south-west/north-east, dug at the northern edge of the links overlooking the beach, just east of the mouth of the Swilken Burn and just over 100m north-west of the Royal & Ancient Golf Club (NO 5026 1715 to NO 5039 1716). It was broken into two unequal parts by a track through to the beach. Just over 100m to the south and about the same distance WSW of the golf club, was a machine-gun emplacement in the shape of a pair of inverted 'U's, covering the rear of the firing trench (at NO 5037 1703).

THE FORTH

Fife Ness

The Naval Radio Station at Fife Ness (NO 6368 0967) was enclosed within a barbed wire enclosure about 190m long (north-east to south-west) by a maximum of about 70m across. Three firing positions were marked, to the north-east, south-west and east. The approach to the site from the north-west was covered by a curved screen of barbed wire about 250m long, fronting a W-shaped firing trench (Illus 7).

Largo Bay

Largo Bay had been identified as a beach vulnerable to a hostile landing as early as the defence scheme of 1905. The beach to the east of the village of Largo, about mid-way along Largo Bay, is fronted by a rocky shelf and was perhaps seen as less practicable for landing. The sandier beach to the west, between Largo and Leven, was covered by a line of six discrete firing trenches on the seaward side of Scoonie Links; three between 240m and 270m long were laid out between NO 4057 0232 and NO 3977 0191. Another three, between 100m and 170m long, occupied the ground between NO 3956 0175

and NO 3914 0139. At NO 3988 0196, a further 100m-long trench had been dug in advance of one of the eastern group of trenches. There were two machine-gun positions in advance of the firing trenches, at NO 4032 0221 and NO 3929 0151 (marked as for two machine guns). The firing trenches are each shown as having one or more zig-zag approach trenches from the rear.

Methil-Balgonie line

Some 6km to the west, an east-facing defence line was drawn from just east of East Wemyss on the coast (NT 3431 9699), to a point on the River Leven, 4km to the NNW (NO 3262 0043). It comprised a discontinuous line of firing positions (about 1,700m long in total) fronted, for about 450m of its length, by barbed wire entanglements. The wall around Balfour Mains farm was loopholed. One of the three War Department maps recording the defences seems to be missing from the file (the two on file are labelled 'Markinch 1' and 'Markinch 3'); it is likely that further firing positions were marked on this missing sheet, in the area around (NT 332 983), where the main road crossed the defence line.

Kinghorn and its hinterland

The heaviest defences in Fife were built around and inland from Kinghorn. They were designed not only to protect the key coast defence battery there but also to provide a major obstacle to an enemy force moving west towards the Forth Bridge and Rosyth.

The coastal approach from Kirkcaldy was blocked by a series of barbed wire entanglements in front of firing trenches and more substantial 'redoubts' (temporary enclosed defensive positions) in the 'Highlands'/'Abden' defence area (Illus 8). The approach to the town from the north was blocked by defences at 'Candle Works'. Finally, the direct north-west approach to the battery across open country was defended by entanglements, firing trenches, machine-gun positions and a blockhouse on high ground at 'Grangehill'. The 'Abden' and 'Grangehill' defences included accommodation huts for the defending infantrymen and their officers (Illus 9).



ILLUS 8 Summary map of the defensive positions around Kinghorn, designed to protect the important coast artillery battery at Kinghorn, and to prevent an enemy force advancing along the coast towards Rosyth (TNA WO 78/4396 1916).

A map of the Kinghorn and Pettycur batteries drawn in 1922 showed the location of three blockhouses, one of which (see below) had been built in 1914. One of these survived in good condition until 2016; by August of that year it had been unroofed and partly demolished, leaving two walls to be incorporated into a new building (Illus 10).

In the General Mobilisation Scheme the 7th (Territorial Force) Battalion of the Black Watch was detailed for coast defence and was allocated to the war stations of Kinghorn and Burntisland (Wauchope 1925: 239–40). ‘Preparatory Movement’ was ordered on the evening of 31 July 1914 and a ‘Special Service Section’ of three officers and 117 other ranks drawn from C Company (Kirkcaldy) and

B Company (Lochgelly) was to be ready to occupy Kinghorn Fort. The Section arrived in Kinghorn on 2 August. Fortunately, they had conducted a test mobilisation earlier in the year. The main body of the battalion arrived at its War Stations during the evening of 7 August (Wauchope 1925).

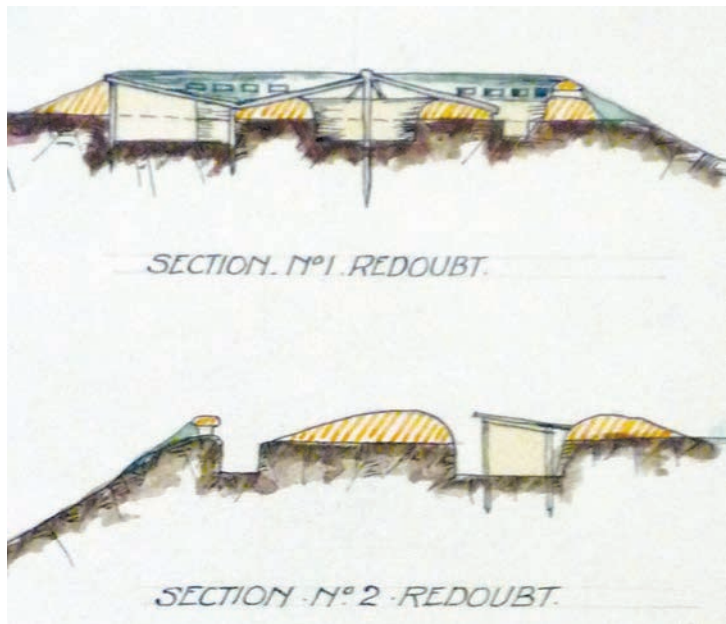
The General Officer Commanding Scottish Coast Defences visited Kinghorn soon after the battalion’s arrival and told the defending troops that an attack in force by the Germans might take place at any moment. It was assumed, he said, that any attack on the Forth could be dealt with by the Fleet and shore batteries, but it was thought 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 from behind (Wauchope 1925).

It was to foil such an attack that landward defences were built around the battery, in a semi-circle extending from the shore close to the poorhouse on the east, taking in the high ground to the north of the town, and ending on the Burntisland road west of the burgh boundary. A second, outer, line was prepared on the heights above the harbour of Pettycur and a blockhouse was established on the Crying Hill, behind the Kinghorn battery. Several large houses in rear of the Fort were commandeered and put into a state of defence, to form a 'keep' in case the first and second lines were carried.

The construction of these works entailed much hard work, but they were completed in an intensive period of 36 hours of almost continuous digging. As 60% of the men of the 7th Battalion were connected with the mining industry, this achievement becomes comprehensible (Wauchope 1925).

For the first three months after mobilisation the line was occupied in force under conditions closely approximating to those of active service. The part of the line between the coast and the Kirkcaldy road was low-lying and easily flooded in wet or snowy weather, giving a foretaste of the mud which the battalion first encountered on the Western Front in the spring of 1915. By degrees, the trenches were improved and various devices introduced to render them habitable and



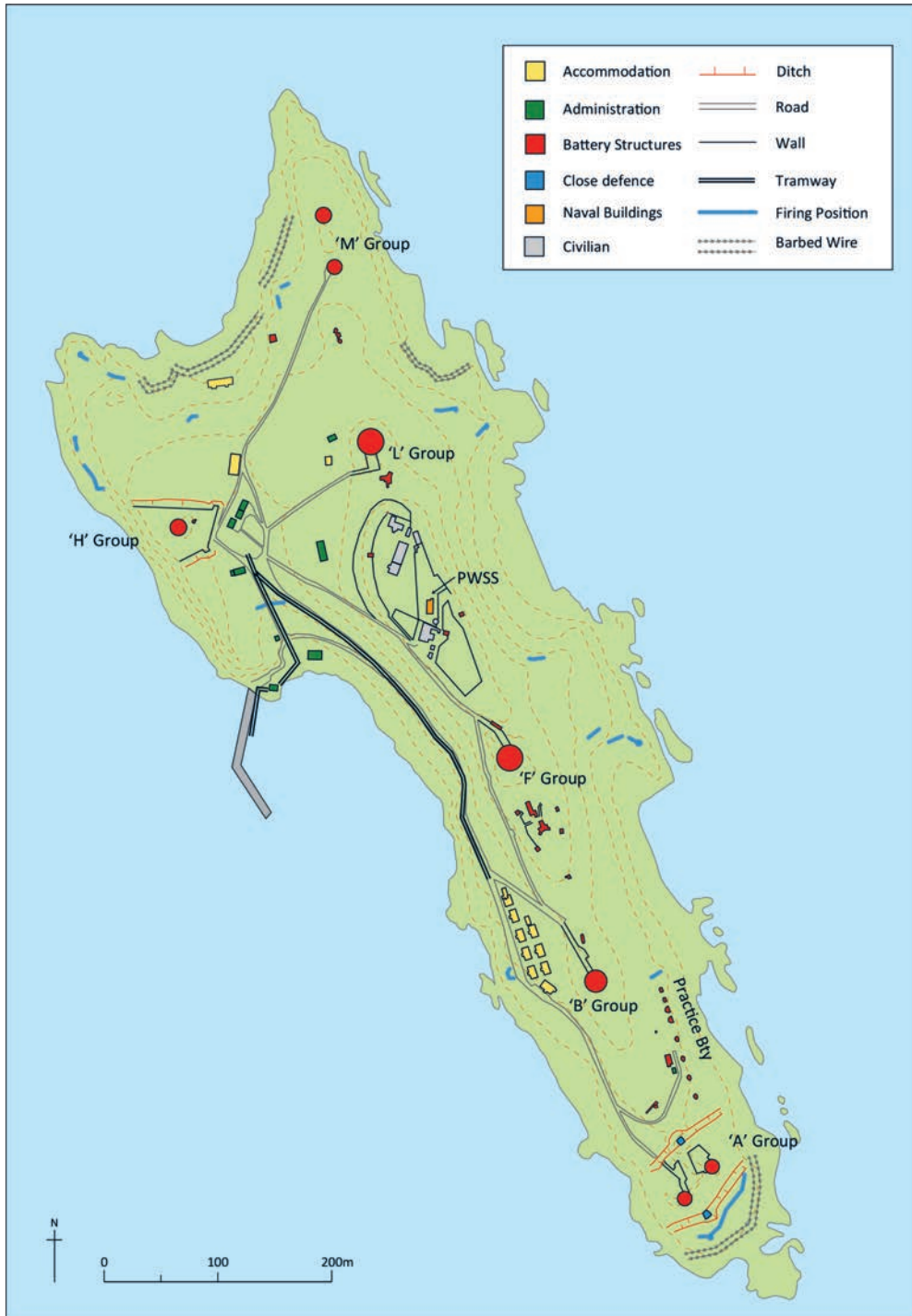
ILLUS 9 Cross-sections of two of the 'redoubts' in the Kinghorn defences (TNA WO 78/4396 1916)



ILLUS 10 The surviving blockhouse at Kinghorn/Pettycur, partially demolished and being incorporated into a modern building, 2016 (Authors)

the battalion settled down to the ordinary routine of trench duties, the different companies being relieved at suitable intervals (Wauchope 1925).

The garrison was reduced gradually to detached sentry posts by the end of December 1914, but the supposed danger of invasion was not entirely removed, nor were the trenches completely evacuated until early 1915 (ibid).



ILLUS 11 The layout of Inchkeith in 1911. The barbed wire entanglements and firing trenches are marked in blue (Authors)



ILLUS 12
Concrete-walled firing position on Inchkeith, built before 1911. A First World War blockhouse (No. 8 using the 1918 numbering) is visible behind (Authors)

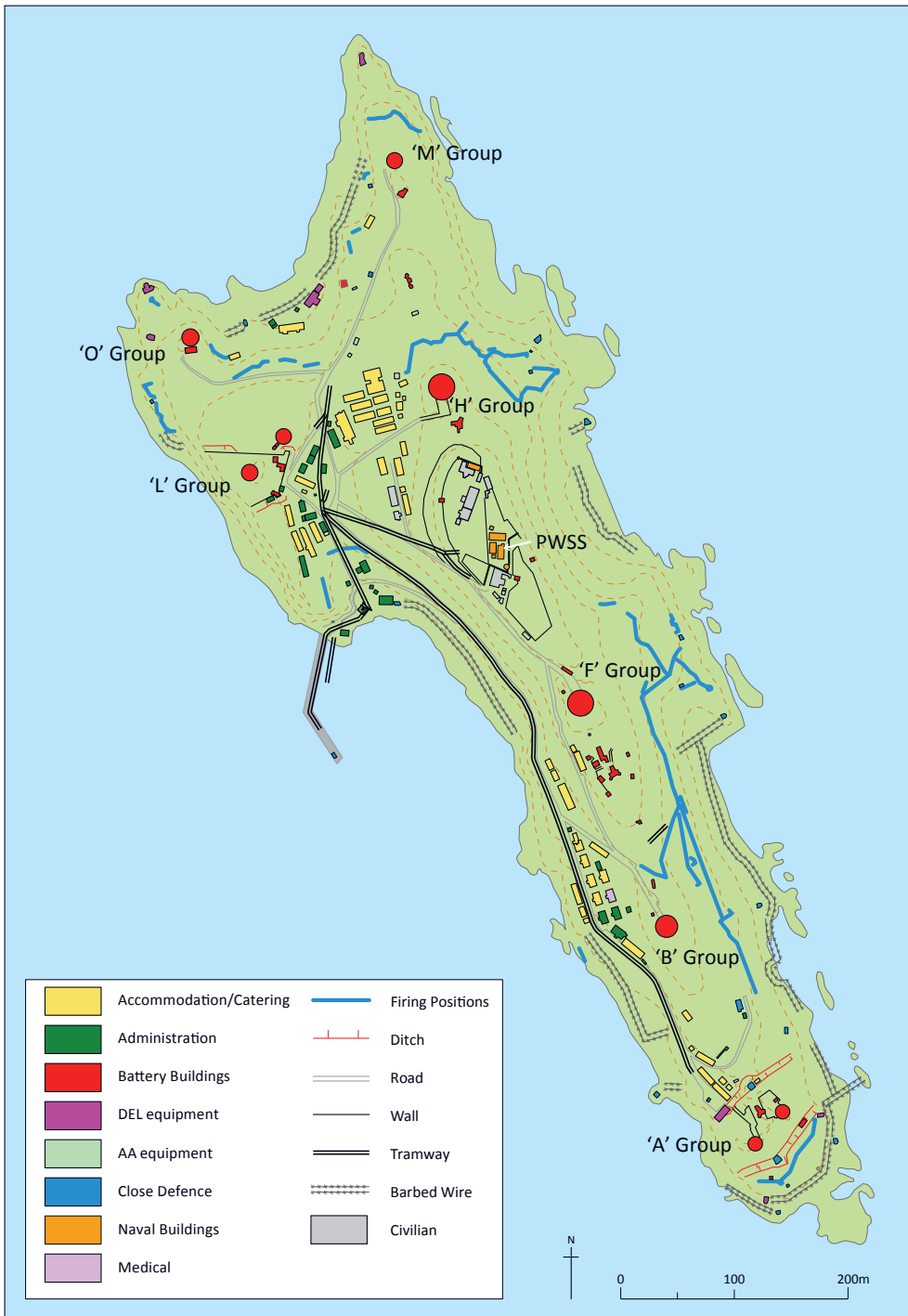


ILLUS 13 The concrete-lined, timber-roofed firing trench built across the south front of the South Fort on Inchkeith by the time of the 1911 map (Authors)

Inchkeith

Inchkeith was the only one of the fortified islands in the river large enough to have close defences built on any scale. The defences were recorded on the detailed Ordnance Survey 1:500 maps of the island, published for the War Office in 1911, and again in the edition of 1918.

In 1911, the defences comprised a triple or quadruple ‘wire entanglement’ across the north-facing beach at ‘Kinghorn Harbour’, another cutting off the access from the bay known as ‘Kirkcaldy Harbour’ and a third across the southern frontage of the South Fort (Illus 11). About a dozen firing trenches were dug, many



ILLUS 14 The layout of Inchkeith in 1918. The barbed wire entanglements, firing trenches and blockhouses are marked in blue (Authors)

fronted with concrete walls, to cover areas vulnerable to landing (Illus 12). The southern approach to the South Fort was particularly strongly defended by a concrete-lined trench about 75m long, most of which was roofed by railway sleepers (Illus 13).

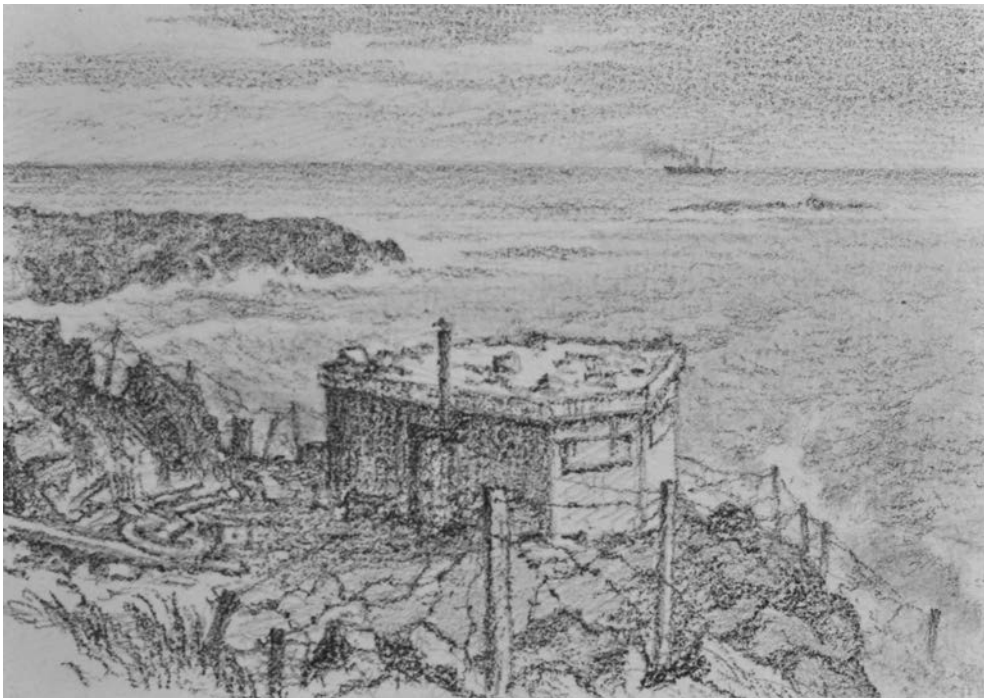
By 1918, more than half of the perimeter of the island was closed off by barbed wire entanglements and a far more complex series of firing trenches had been dug. By 1915, nine blockhouses had been built at particularly vulnerable points, and this number had increased to 14 by 1918 (Illus 14). The blockhouses were of very varied plan and one at least (No. 5) was provided with a stove for the men occupying it (Illus 15). From a sketch by 2nd Lt A Ross in the possession of his family, we know that at least one of the blockhouses was provided with a portable oxy-acetylene searchlight mounted on a tripod, presumably to illuminate the adjacent shore and cliffs.

Downing Point

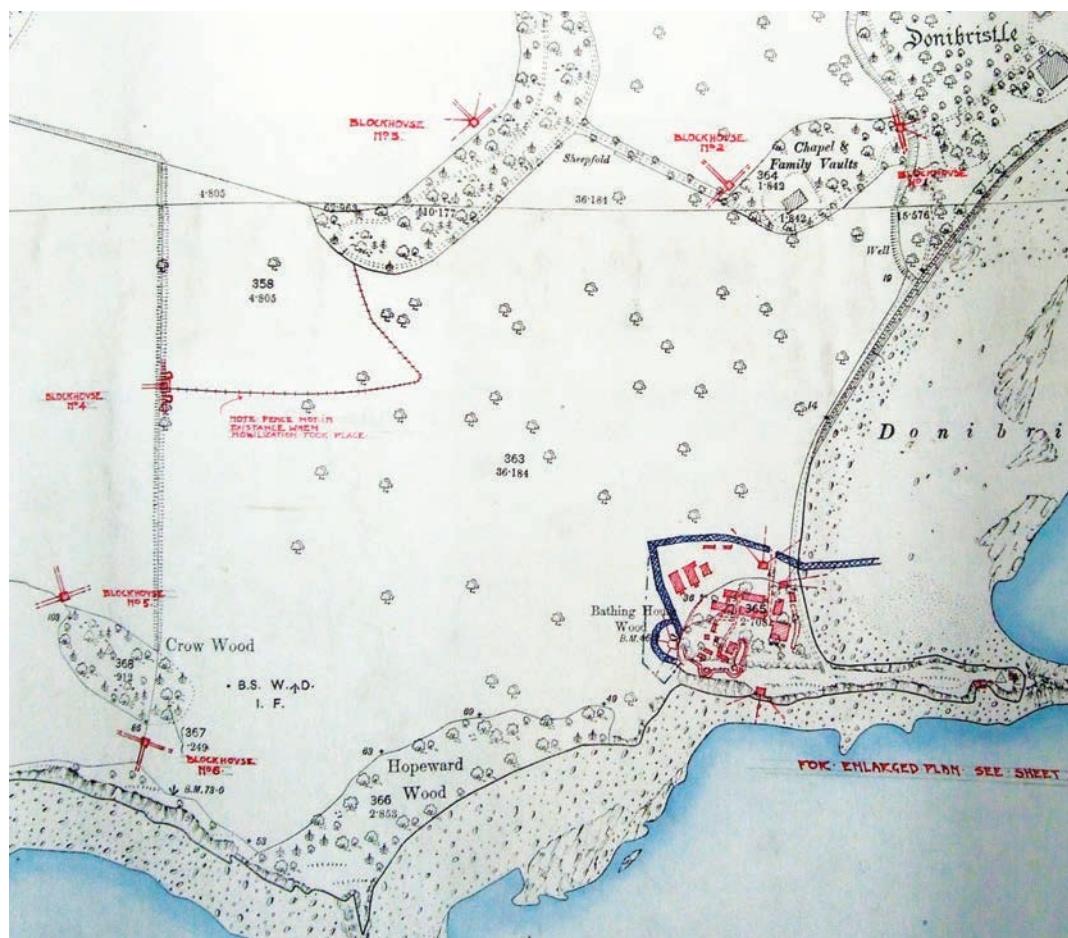
The battery was first proposed in 1912. Construction was eventually undertaken very quickly, in September–October 1914, of a very simple gun platform and ancillary structures in a protected area behind. Two 4.7-inch guns removed from Kinghorn were mounted. Plans of the battery and the camp show strong defences, comprising a close defence of barbed wire entanglements, firing trenches and four blockhouses, with accommodation for the infantry detachment that guarded it, and the garrison of Royal Artillery and Royal Engineers who operated it. There was an outer ring of six blockhouses, at about 400m from the battery (Illus 16; 17).

Braefoot

The landward defences of the 9.2-inch battery at Braefoot were included in the initial designs drawn up in 1912 and seem to have been built, in



ILLUS 15 Blockhouse No. 5 (according to the 1918 numbering) at the south-east corner of Inchkeith, as sketched by 2nd Lt A Ross during the war. Note the stove pipe (courtesy of Mrs Fiona Buchanan)



ILLUS 16 Plan of the Downing Point battery and its outer defences (TNA WO 78/4396 1916)

1914–15, largely according to the plans (Illus 18). The battery had a defended perimeter comprising, from inside out, a firing trench, a ‘palisade’ fence and a barbed wire entanglement (WO 78/5169 1912). The barracks for the Regular garrison of the battery was incorporated in the perimeter, and the outward facing side and both end walls were loopholed for defence. The construction plan shows the location of a single blockhouse on the highest point of the perimeter (which was also the highest point on the site).

We are fortunate that in 1918 the battery site was mapped in detail by the Ordnance Survey for the War Office, even though it was by then disarmed. Although the original defensive

perimeter still existed, two large camps had been built to accommodate the wartime garrison and these were enclosed within a larger barbed wire fence. By 1918, there were ten blockhouses, four in an inner and six in an outer line (Illus 19; 20).

RNAD Crombie and Rosyth

The Royal Naval Armaments Depot (RNAD) at Crombie, west of Rosyth, was more heavily defended during the war than Rosyth itself, presumably because of the vulnerability of such a large concentration of explosives to a relatively minor raid.

The RNAD’s defences were mapped in 1915 (Illus 21). As was the norm with explosives

stores, the depot was spread out over a considerable area, comprising about 11 large sheds at the modern beach level and 21 smaller sheds on the raised beach above. Six large underground magazines were also built. Five blockhouses covered a barbed wire perimeter, which obstructed the approaches from the north and along the coast. The location of three anti-aircraft guns was also marked (WO 78/4396 1916).

The overall security of the Rosyth Dockyard relied on the defences immediately to the east, covering the northern end of the Forth Bridge, the Castlandhill radio station and the batteries at Carlingnose and Coastguard.

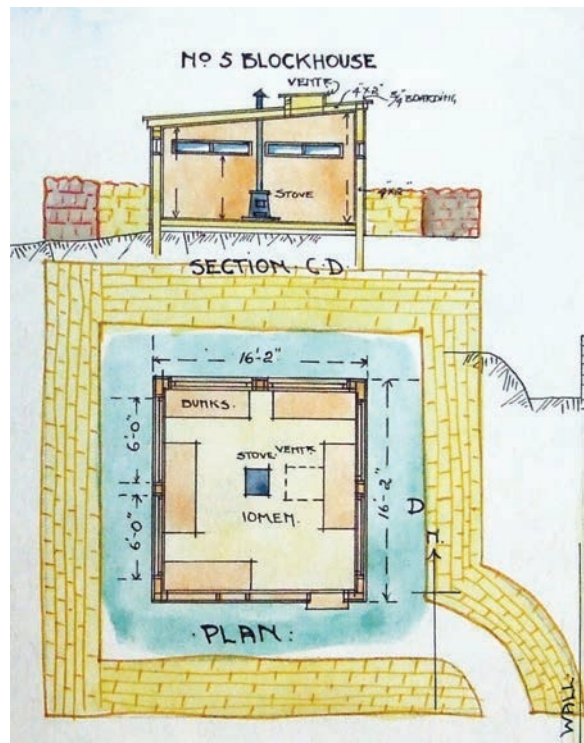
THE FORTH BRIDGE

The Northern Approaches

Until the Kincardine Bridge was opened in 1936, the lowest road crossing of the Forth was at Stirling. The Forth Rail Bridge was, however, regarded as a potential route for enemy infantry, cavalry and artillery to cross the estuary, and as a route to transport British troops. For this reason, and because it was feared that the bridge could be brought down to block the channel, it was defended during much of the period under consideration.

In the 1900 defence scheme, an attack on the Forth Bridge from the north was 'not considered probable', and the possibility of an attack from the south was not even mentioned. By the 1905 defence scheme, both ends of the bridge were to be guarded by detachments, each of one officer and 30 other ranks, from the battery guards at Dalmeny and Carlingnose. Any railway rolling stock was to be moved some distance inland, to avoid it being used by the enemy to cross the bridge.

In the 1907 defence scheme, an infantry reserve battalion was to be stationed at Carlingnose, which would take care of the security of the northern end of the bridge and the two coast batteries. The security of the southern end of the bridge was to be managed solely by the

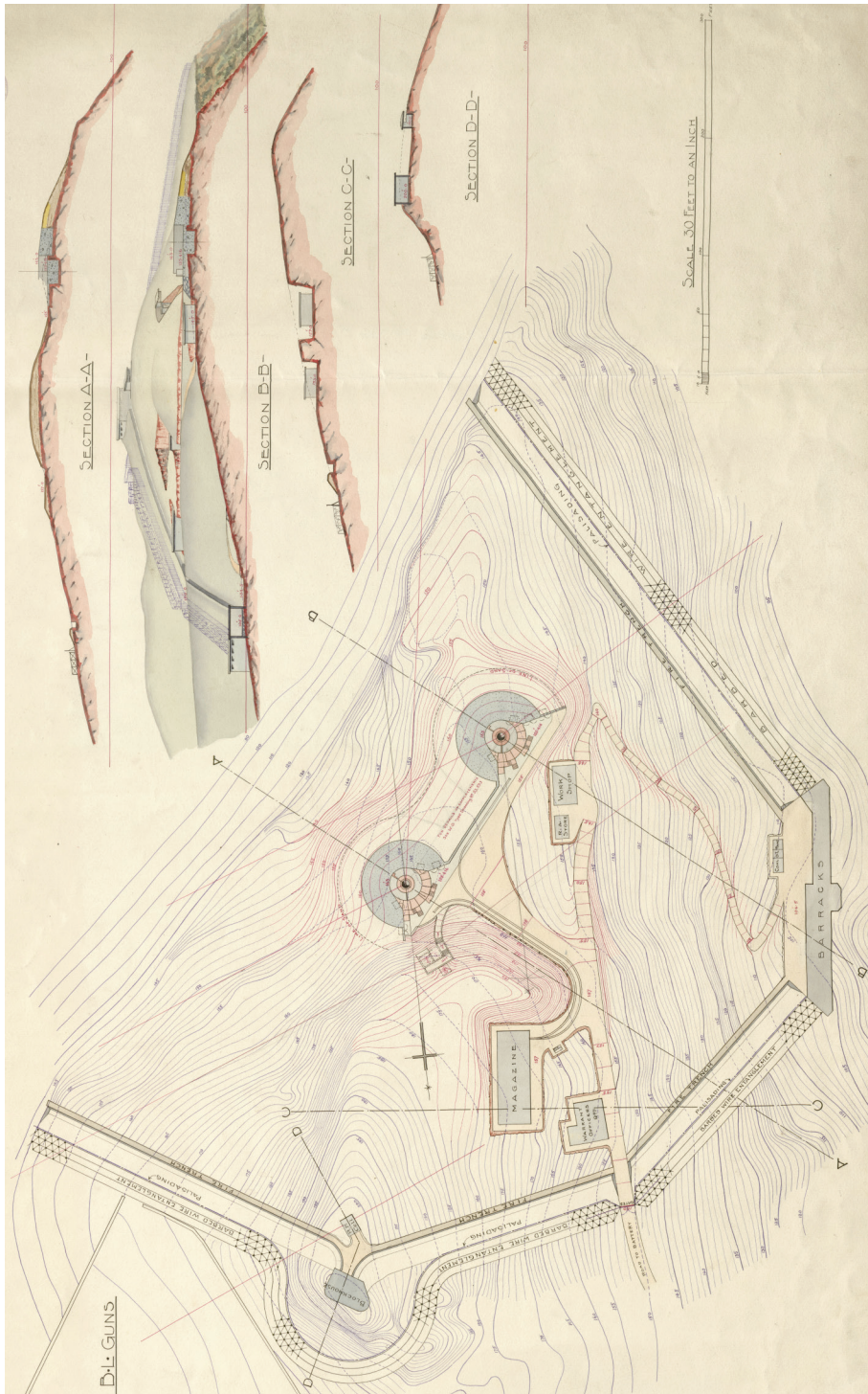


ILLUS 17 Plan and cross-section of one of the Downing Point blockhouses (TNA WO 78/4396 1916)

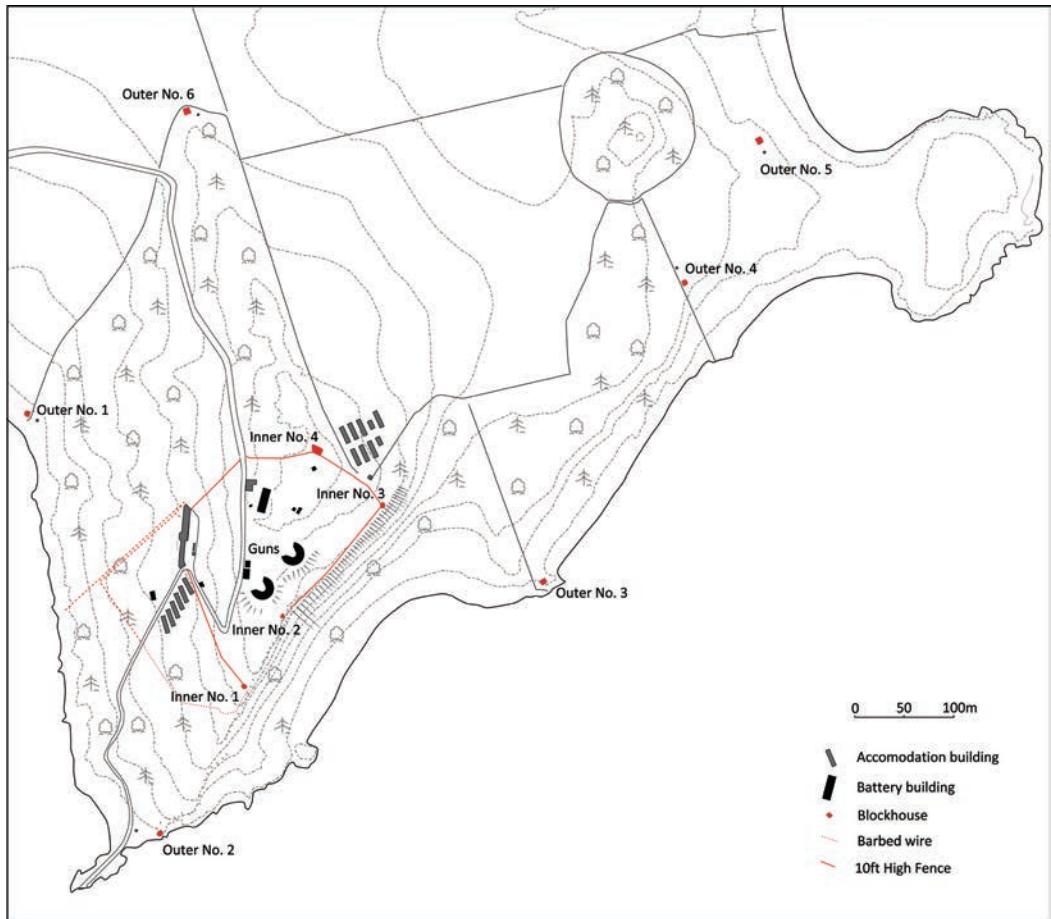
company-strength infantry garrison of Dalmeny battery (WO 33/444 1907).

By 1909, the defence of the north end of the bridge was to be fully integrated into the defence of Carlingnose and Coastguard batteries. A single company of infantry was allocated to this task with a section-sized detachment on Inchgarvie, tasked specifically with observing the piers of the bridge. The scheme specifically stated that 'the most important positions are those covering the north end of the Forth Bridge and the works at Rosyth. They must be held at all costs ...' (ibid).

The northern end of the Forth Bridge lands on a broad peninsula, on which the Coastguard and Carlingnose batteries were also sited (Illus 22). In the First World War, both batteries were provided with close defence – firing trenches; barbed wire entanglements facing the coast and inland. The northern end of the peninsula was closed off by a complex line of firing trenches, along which



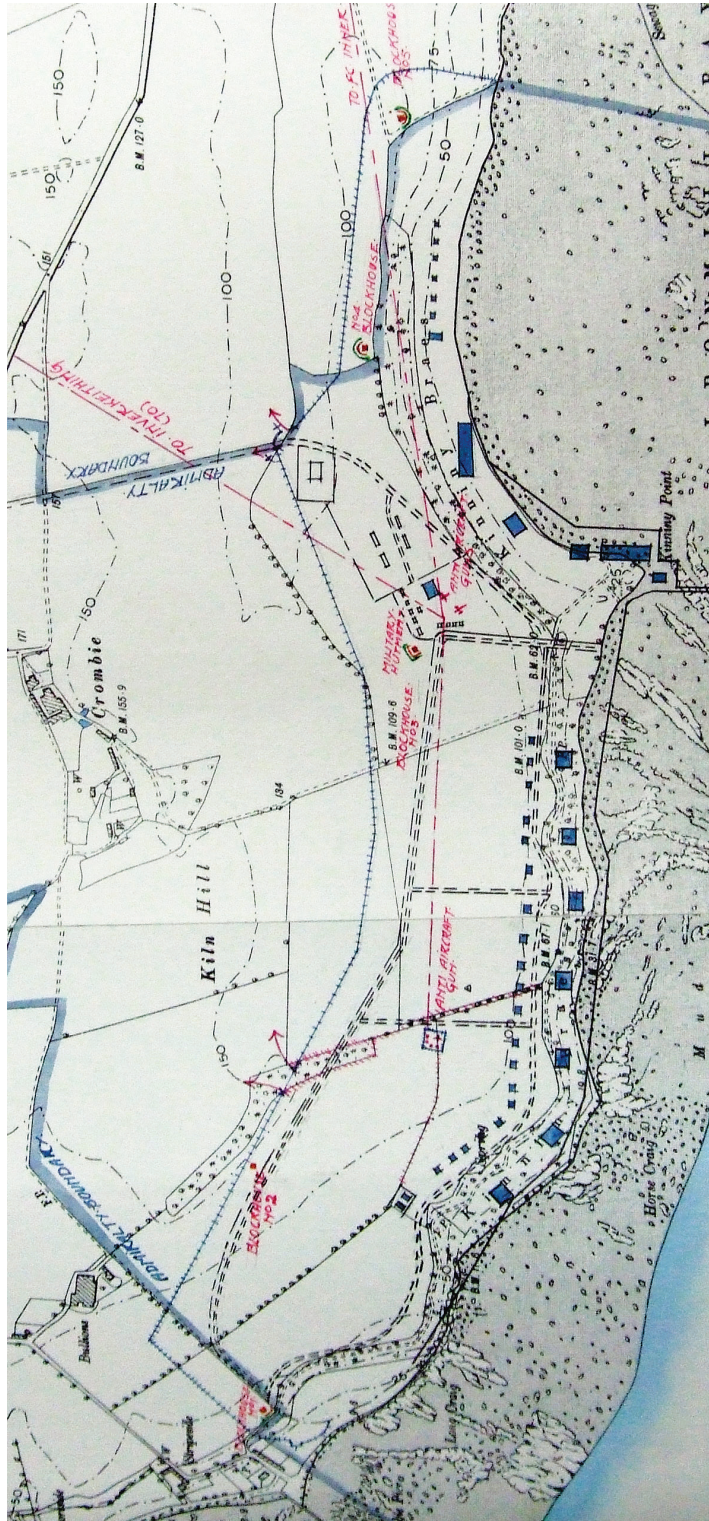
ILLUS 18 The original 1912 plans for the battery and its defences at Braefoot (TNA WO 78/5169 1912)



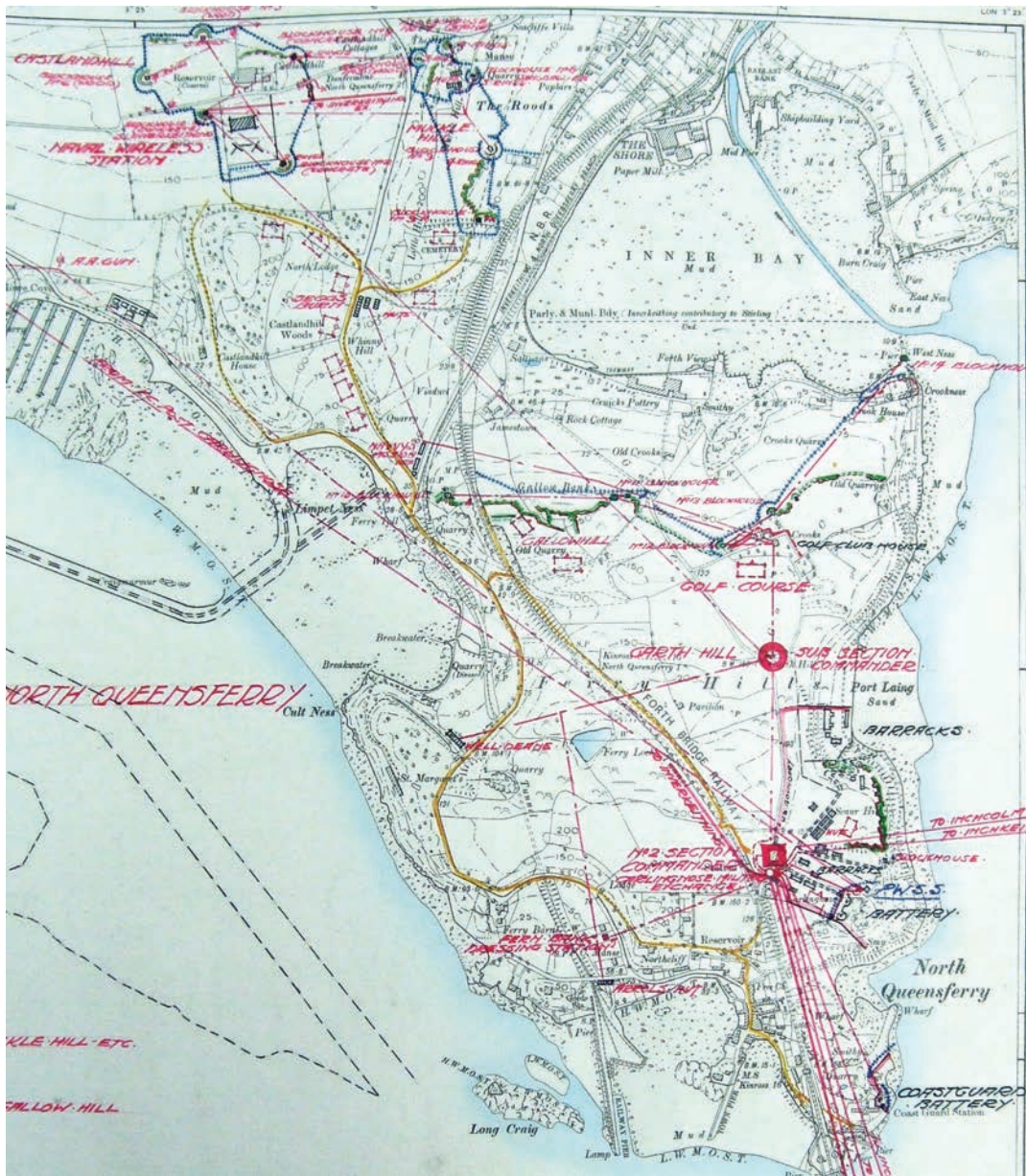
ILLUS 19 Plan of the defences of Braefoot, as they had developed by 1918 (Authors)



ILLUS 20
Braefoot blockhouse No. 2 in the
Braefoot outer line (Authors)



ILLUS 21 Extract from the map of the defences of Crombie Royal Naval Armaments Depot, c 1915, showing the perimeter defences, five blockhouses and two anti-aircraft guns. The storage sheds of the Depot were arranged along the shore. There were also six large underground magazines built into the cliff (TNA WO 78/4396 1916)



ILLUS 22 Map, dated 1916, showing the complex defences of the northern approaches to the Forth Bridge, integrated with those of the Castlandhill Naval Wireless Station (TNA WO 78/4396 1916)

there were five blockhouses (numbers 10 to 14 in the overall scheme), fronted by barbed wire entanglements. The western end of the line lay at NT 1244 8168, the eastern at the foot of the pier at Crookness (NT 1354 8201). The western end

of the line covered the road and rail approaches to the bridge.

To the north, an additional line of defence was provided, to the west of the main road, by the heavily defended perimeter of the Castlandhill



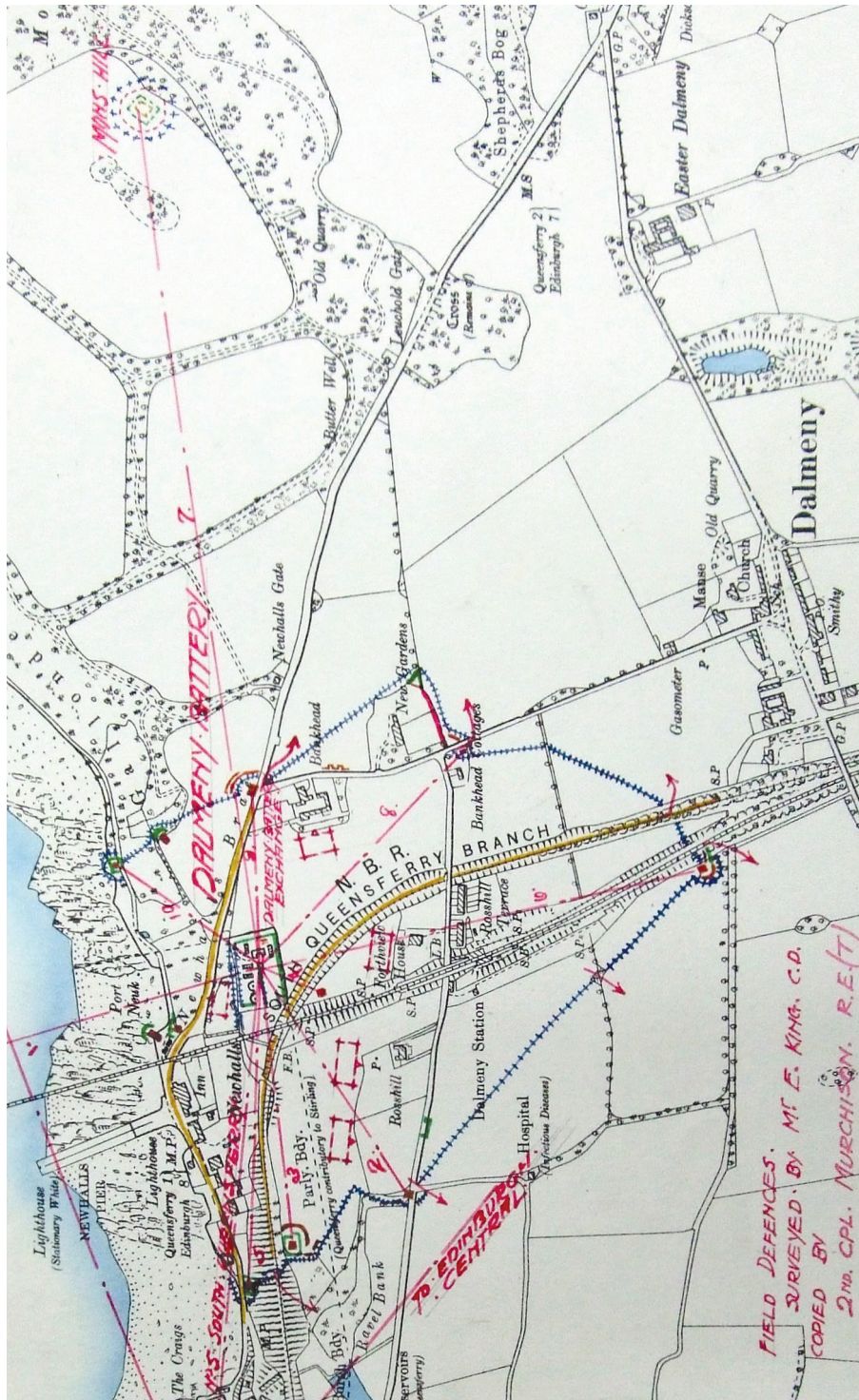
ILLUS 23 The south-eastern blockhouse at the Castlandhill Naval Radio Station, from the north-west (Authors)

Naval Radio Station, which included five blockhouses. Three were made of concrete and survive: at the south-east corner of the site (NT 18 SW 222.01: NT 12058 82551); at the north-east (NT 18SW 222.02: NT 12095 82742) and at the west side (NT 18SW 222.03: NT 11905 82635) – now very heavily overgrown. The north-east and south-east blockhouses are both about 5m square with chamfered corners and 12 loopholes (four on the sides and eight on the corners). Entrance was gained by means of a low doorway below a loophole (its top just visible slightly right of centre on Illus 23). The blockhouses were not provided with concrete roofs – instead they seem to have had timber roofs supported on six beams, for which slots were provided in the wall-tops (Illus 23).⁵

Immediately to the east of the main road there was a strong redoubt with four further blockhouses, effectively controlling access to the south; the redoubt was extended for about 350m to the south, where firing trenches and two further blockhouses covered the site of a possible landing in Inverkeithing's Inner Bay.

The Southern Approaches

The defences of the southern approaches were intimately combined with the defences of the immediately adjacent Dalmeny Battery (Illus 24). The defence of the bridge consisted of a single boundary, about 2.1km long in total, formed of barbed wire, with blockhouses and other strongly defended positions at corners and both terminals. The western end of the boundary, on the shore, was at NT 1340 7827, where a blockhouse covered the road from South Queensferry, along the front. The wire zig-zagged to the upper road along the coast, from west of Dalmeny Station, where a blockhouse at NT 1354 7801 covered a road junction. The boundary continued straight south-east across the fields to a third blockhouse, adjacent to the main rail line, at NT 1423 7791. The wire turned north-east, to Bankhead Cottage which, along with adjacent walls, seems to have been fortified to cover the road running north from Dalmeny village. The main road from Edinburgh was covered by a further blockhouse at NT 1417 7823. Two further blockhouses, at NT 1410 7836 and NT 1406 7844, closed off the



ILLUS 24 Map, dated 1916, showing the complex defences around the southern approaches to the Forth Bridge and the Dalmeny Battery, with the eastern outpost at Mons Hill. The map shows the telephone links; the defence HQ was to the west, in South Queensferry, where the three telephone lines at the western edge of the map converged (TNA WO 78/4396 1916)



ILLUS 25 Map extract showing the defences round the Hound Point Battery, and the cross-section of a blockhouse (TNA WO 78/4396 1916)

approach from the east. There was a further firing position on the shore, in front of the Dalmeny Battery searchlights, at NT 1381 7814. Four infantry concentration areas were marked within the defended perimeter.

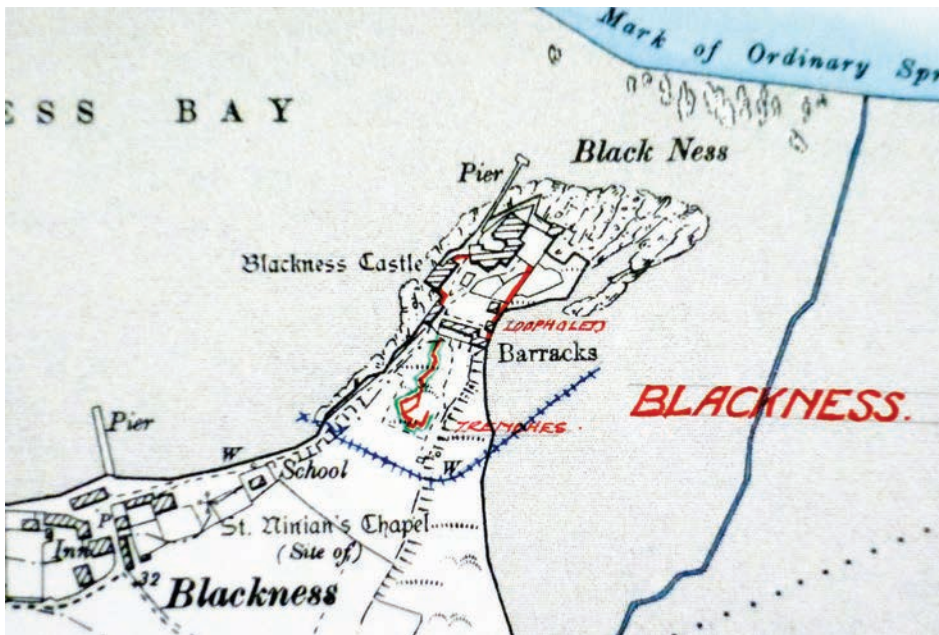
The HQ of the defences was at Dalmeny Battery, whose telephone exchange was linked to all the blockhouses and strong points, to South Queensferry and to a subsidiary defended post on

the summit of Mons Hill, 1.3km to the east of the battery.

LOTHIAN

Hound Point

The battery at Hound Point had first been proposed before the First World War and was completed in December 1914. It originally mounted two 6-inch



ILLUS 26 The defences of Blackness Castle in the First World War (TNA WO 78/4396 1916)

BL Mk VII guns, which were replaced in 1916 by two 12-pdr (Naval) 18cwt guns moved upriver from the Middle Defences. By June 1915 it was protected by a dozen blockhouses, arranged in two lines, inner and outer, each of six (Illus 25). As in most cases elsewhere, the blockhouses were made of timber.

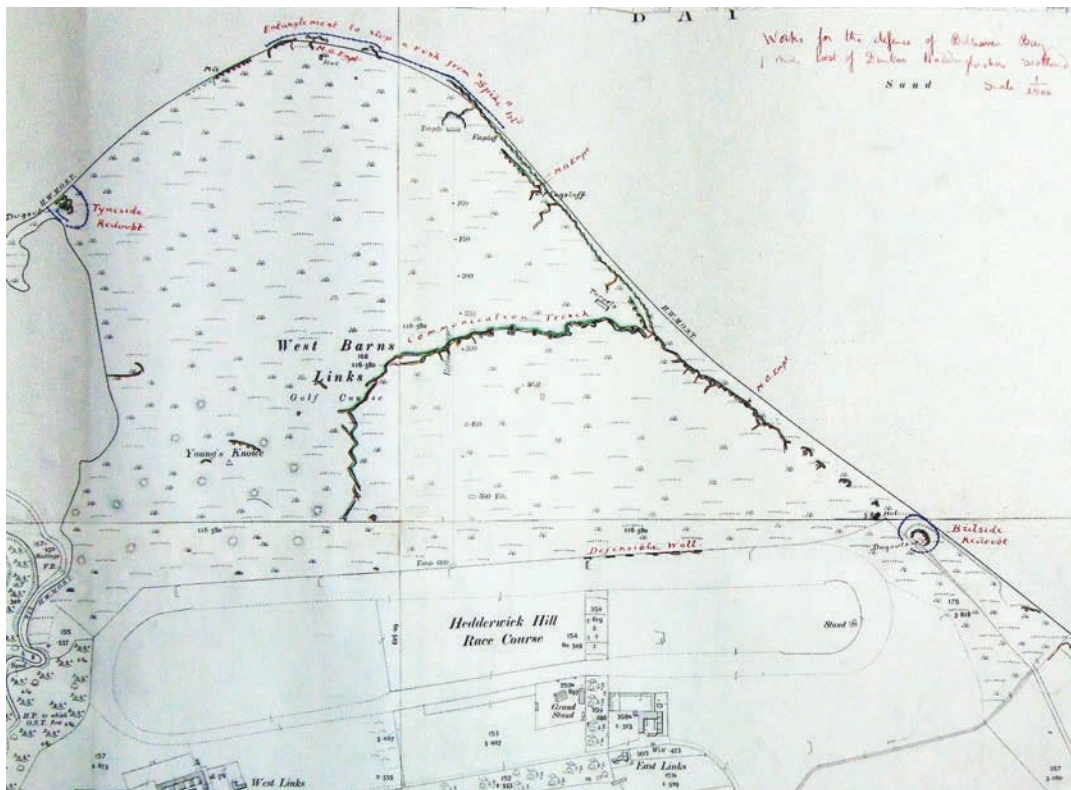
Blackness

Blackness Castle has been the property of the Scottish and then the British Crown since 1453. In 1870 the castle became the main ammunition depot for Scotland, after the risks of storing so much powder at Leith Fort, in the middle of a densely inhabited area, had been forcibly pointed out by the Town Council. The depot remained in use until 1912. It was reoccupied during the First World War, but we do not know exactly for what purpose, unless the expanded need for ammunition storage resulted in the reopening

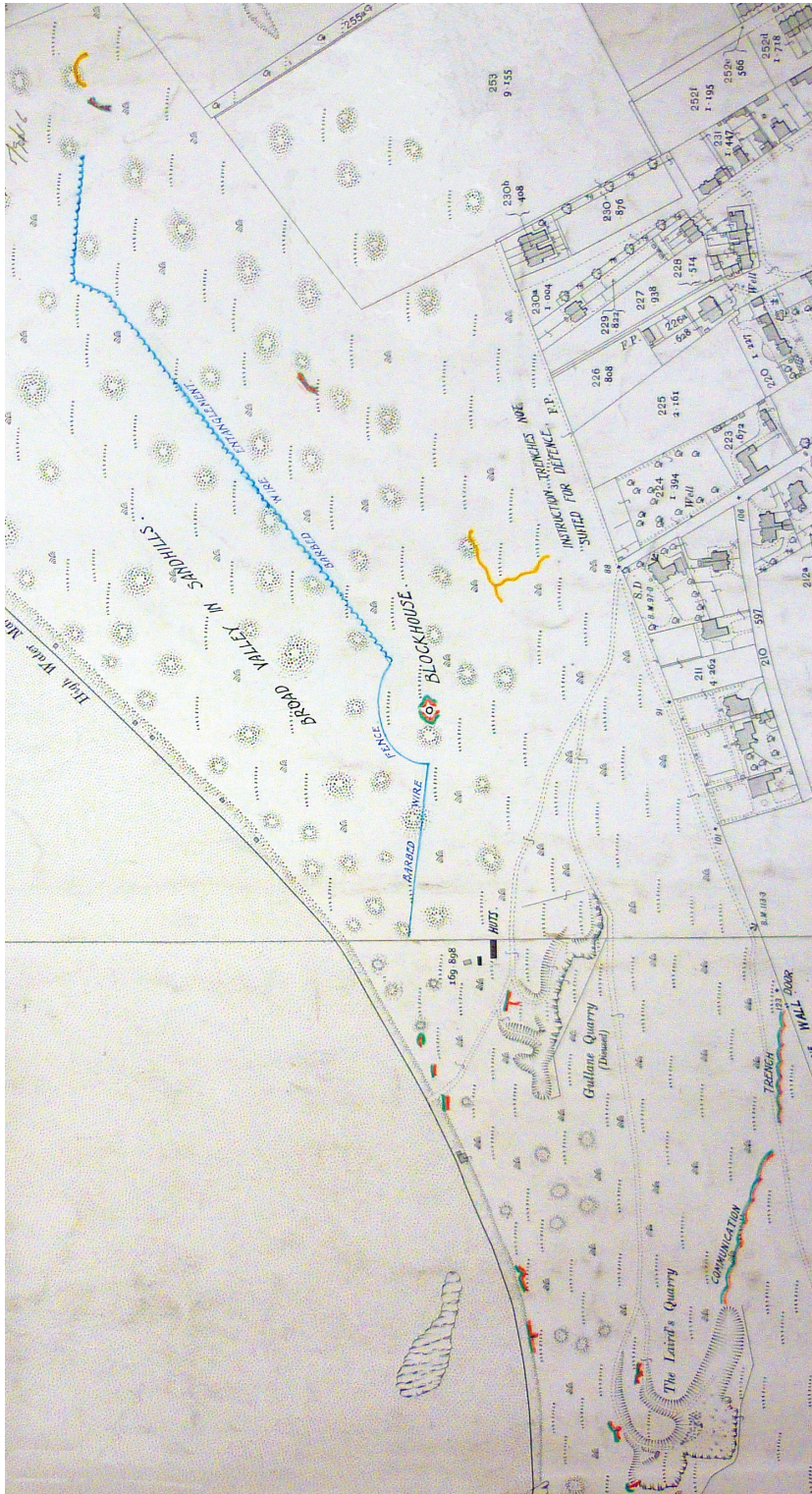
of the store. Whatever it was used for, it was defended (Illus 26). The peninsula on which the castle was built was cut off by a barbed wire entanglement, behind which complex firing trenches were dug. The east- and west-facing walls of the castle were marked as ‘loopholed’, although it is not clear if new loopholes were cut, or existing ones reused. Allan Kilpatrick (pers comm) reports one surviving loophole on the southern side of the current ticket office and shop at the castle.

Dunbar

The defences at Dunbar covered the beaches to the west of the town, in the area of dunes known as West Barns Links. Two ‘redoubts’ were built at the west (‘Tyneside’, overlooking Belhaven Bay) and the east (‘Bielside’). Between the two the coastline was defended by discontinuous firing trenches and barbed wire



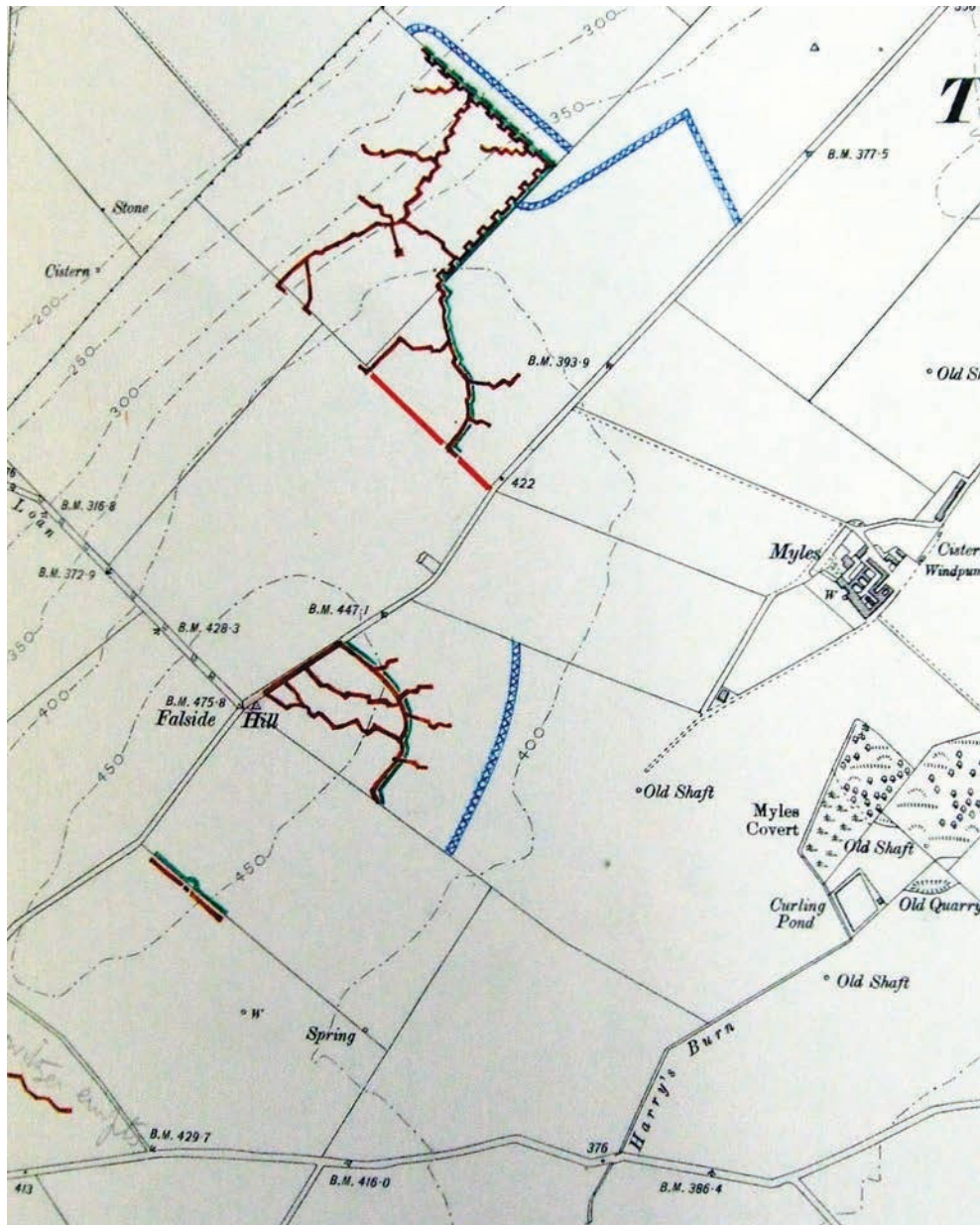
ILLUS 27 The defences west of Dunbar (TNA WO 78/4396 1916)



ILLUS 28 The defences north of the village of Gullane (TNA WO 78/4396 1916)

entanglements, incorporating four machine-gun emplacements. The coastal firing trench was reached by a long communication trench towards the south-west. A 'defensible wall' along the northern boundary of Hedderwick Hill

race course provided a second line of defence. Allan Kilpatrick (pers comm) reports that some trenches are extant. This area was defended again in 1940–1 (Barclay 2013: 280–5) (Illus 27).



ILLUS 29 The east-facing defences on Falside Hill, east of Edinburgh (TNA WO 78/4396 1916)

Gullane/Aberlady

The defences at Gullane covered the beaches to the north of the town and the beaches forming the east side of Aberlady Bay. These were defended again in 1940–1 (Barclay 2013: 278–80). The First World War map showed the location of existing parapets and trenches and ‘proposed additions’, in yellow (Illus 28) (WO 78/4396 1916).

Covering the north of the town was a blockhouse with a wire fence to its north and west, and a barbed wire entanglement to the north-east. In the same area, trenches are marked as ‘instruction trenches not suited for defence’. A stone wall to the north-west of the town was marked in such a way as to imply that it was to be used as a firing position. To the west of the blockhouse was a series of nine firing trenches, one at the Gullane Quarry, three at the Laird’s Quarry (linked by a communication trench to a stone wall) and five just above the beach. Two huts were marked, probably to accommodate the garrison.

Covering the east shore of Aberlady Bay were four widely spaced firing trenches overlooking the north-west corner of the dune system (as well as three further ‘Instruction trenches’, not illustrated).

The ‘Aberlady Group’ of defences comprised two lengths of barbed wire fence and entanglement running west to east, inwards from the coast. About nine firing trenches were positioned behind and between them, facing out to sea, with another group of three huts, probably to accommodate the garrison.

The Prestonpans area

A discontinuous defence line was built inland from Prestonpans. At the coast, the eastern wall and half the length of the southern park walls of Prestongrange House were prepared for defence, a length of about 860m from NT 3791 7408 to NT 3791 7341. The wall is now above head height, but shows signs of having been raised from waist height. The eastern side was fronted by a barbed wire entanglement. These firing positions covered the minor road along the coast (to the north), and the

more significant road from Preston towards Edinburgh.

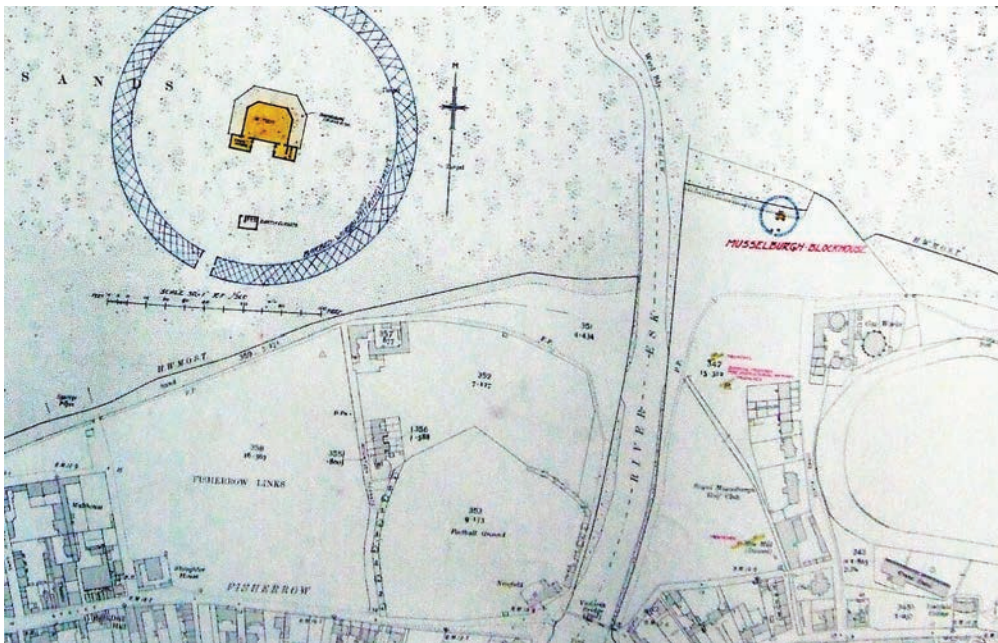
Firing positions were placed beside the main A1 road, just west of Tranent, and a 430m-long barbed wire entanglement ran south from the road, at Dolphingston Toll (NT 3754 7270 to NT 3777 7232).

The most heavily defended road was what is now an unclassified road running south-west from Tranent towards Falside Castle, along the ridge of Falside Hill, which commands the coastal plain to the north. Very extensive and complex firing positions, with equally complex communications trenches, were constructed to the north (at NT 3844 7201) and south of the road, the southern positions being set about 260m farther west (at NT 3832 7136). Two further backup firing positions were situated 250m and 650m farther south-west. The western was labelled on the map as ‘Howitzer empts’ [emplacements] at NT 3789 7081 (Illus 29).

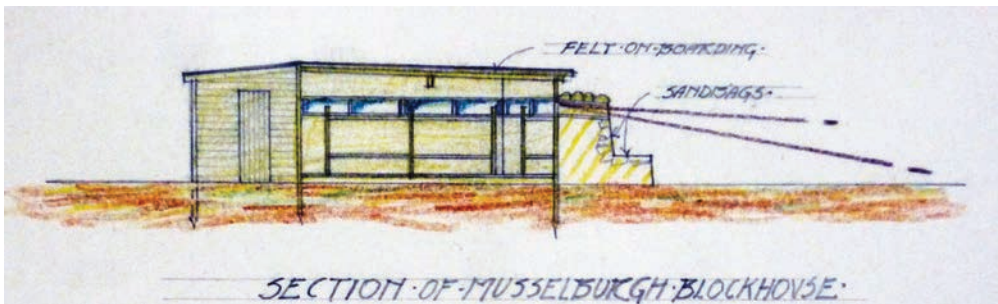
The southernmost element of the defence comprised infantry positions 480m west of Elphinstone Tower, south of what is now the B6414 road, from Tranent to Dalkeith (at NT 3855 6979).

Two blockhouses on this stretch of coast, at Musselburgh and Westpans, were recorded in May 1916 (WO 78/4396 1916). The mouth of the River Esk at Musselburgh was guarded by a blockhouse, which was no more than a simple timber hut with a shallow pent roof, and made bulletproof by an embankment of sandbags on its vulnerable sides. The file (*ibid*) contains a 1:10,560 map showing the location of the blockhouse and, as an inset, a larger scale plan (Illus 30); a different map has an inset of a cross-section (Illus 31).

The Westpans defences were more complex. Once again, the blockhouse was a simple wooden hut with sandbags built around it, except at the rear. It had beds for 12 men and they were provided with a separate cookhouse and store behind the blockhouse. There were three firing trenches, to the west, north-west and north-east of the blockhouse, and a sentry box, all fronted by a barbed wire entanglement along the top of the beach. Earth closets for the garrison were located at the south-west edge of the complex.



ILLUS 30 1:10,560 map showing the location of the Musselburgh blockhouse and, inset to the left, a larger-scale plan. See Illus 31 for a cross-section (TNA WO 78/4396 1916)



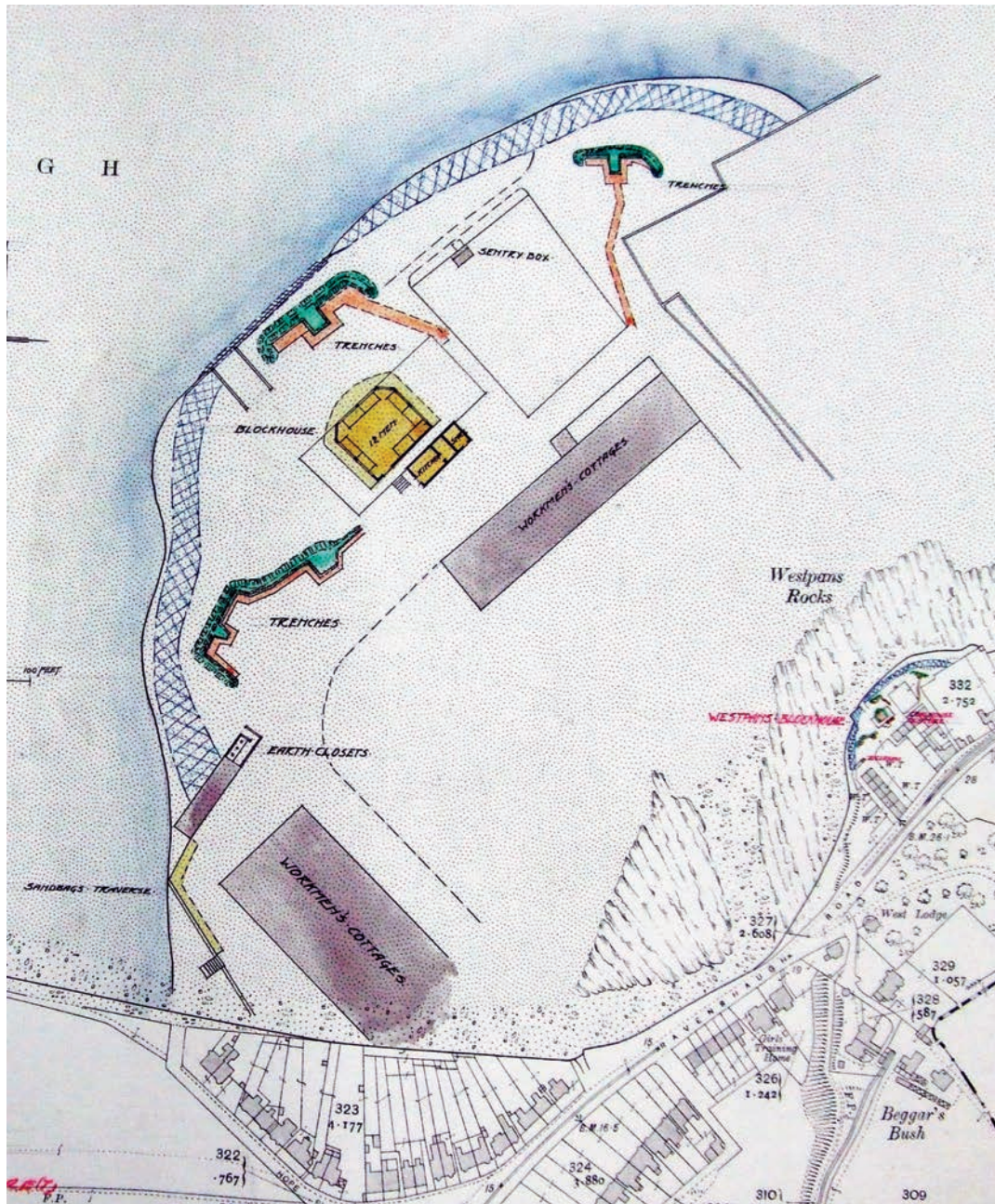
ILLUS 31 Cross-section of the Musselburgh blockhouse (TNA WO 78/4396 1916)

A larger-scale plan and cross-section were also provided (Illus 32; 33).

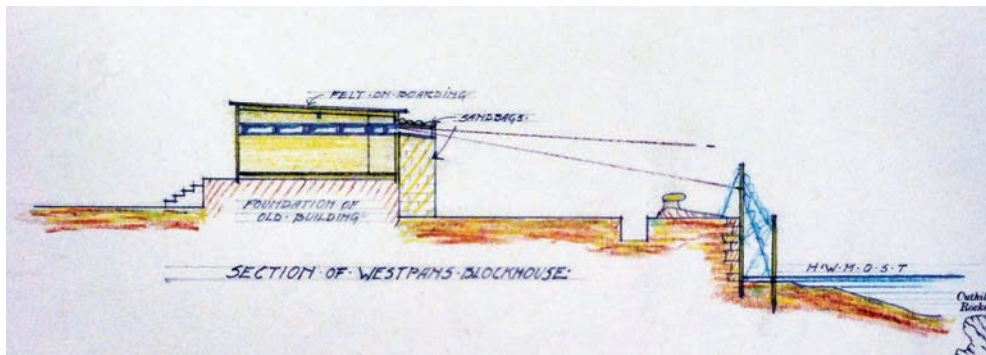
Edinburgh

A series of six War Department maps dated 1916 (on file WO 78/4396 1916) shows the location of a complex of defences protecting Edinburgh from attack from the east. The defences comprised barbed wire entanglements, firing trenches (some of considerable extent and complexity) and defended walls. Some of the firing positions were approached from

the rear by complex communication trenches. The defences ran from the coast at Seafield to Duddingston and round the south side of Holyrood Park to Craigmillar, to Liberton Tower and ending just north of Mortonhall. The northernmost section of the defence, at Seafield, had a forward line of defence to its east, at Craigentenny. The defence line was split into three sections. Section 1 covered Seafield to Duddingston. Section 2, Duddingston Loch to Mayfield Road, beside what is now the King's Buildings of the University of Edinburgh,



ILLUS 32 1:10,560 map showing, in the right and bottom edges, the location of the Westpans blockhouse and its associated firing trenches and service buildings. Most of the image is occupied by a larger-scale inset showing more detail of the complex (TNA WO 78/4396 1916)



ILLUS 33 Cross-section of the Westpans blockhouse and the firing trench in front of it (TNA WO 78/4396 1916)

and Section 3, from there to the southern terminal.

Section 1 of the defences covered the eastern side of the city from the coast at Seafield to Duddingston (Illus 34). The Section 1 commander was based at Piershill Barracks and was linked by telephone to HQ at Leith Fort and to seven subsidiary command positions on the defensive line.

At the coast, along which an enemy force might be most likely to advance, there were two widely separated lines of barbed wire entanglement, touching the coast to the south-east and north-west of the Edinburgh Marine Gardens at Seafield (an area now occupied by a mass of car sales sheds).⁶ The eastern barrier was backed by a near-continuous trench with strong points. The former Chocolate Works (subsequently the W M Ramsay Technical Institute), still standing at the junction, was clearly a strong point. Most of the length of the beach between the two defence lines was also blocked off by a barbed wire entanglement.

Where the wire entanglements crossed the next main road (Willowbrae Road) there was a major strong point formed by interlocking trenches. The wire entanglement ran south-west for about 750m to the eastern edge of Duddingston Village. The south and south-east approaches to the village were obstructed. A final length of wire closed the gap between the village and Duddingston Loch. This formed the south-west end of Section 1 of the defences.

A major hutted camp, the base for the 3rd (Reserve) Battalion King's Own Scottish Borderers from 1916, lay a little to the east of the defences, in Duddingston Park.

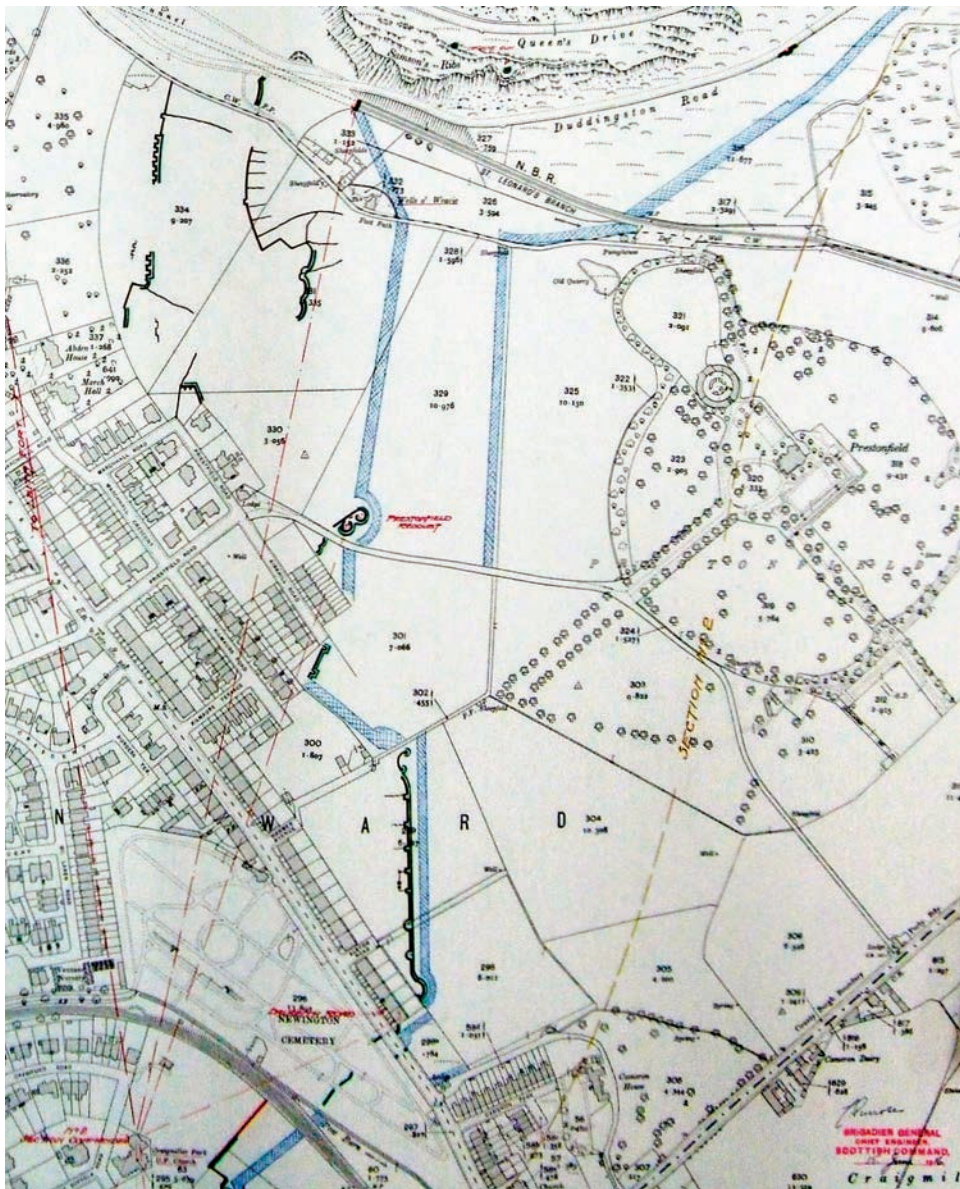
Section 2 of the defences ran from Duddingston in the north-east to Liberton (Illus 35). The Section Commander was based in the United Free Church at Craigmillar Park and was linked to the Fortress Commander at Leith Fort and to six subsidiary posts on the line.

This section of the Edinburgh defences started at the west end of Duddingston Loch and ran, as a double line of barbed wire entanglement, across what is now Prestonfield golf course. Behind (west of) the inner line were complex firing positions with communications trenches and, near the western end of the drive to Prestonfield House, a fortification labelled 'Prestonfield Redoubt'. Two machine guns were mapped as sited on Samson's Ribs.

The entanglement continued southwards, behind the tenements of Dalkeith Road, with a continuous firing trench behind it. There were firing trenches in Newington Cemetery and the barbed wire resumed on the south-west side of the railway line, covering the front of the United Free Church in Suffolk Gardens (NT 2713 7140), which was the Section Commander's HQ. The stone wall along the south side of Lady Road was loopholed. Firing positions were placed along Hallhead Road, at that time the southern edge of the built-up area. This marked the south-west end of Section 2 of the defences.



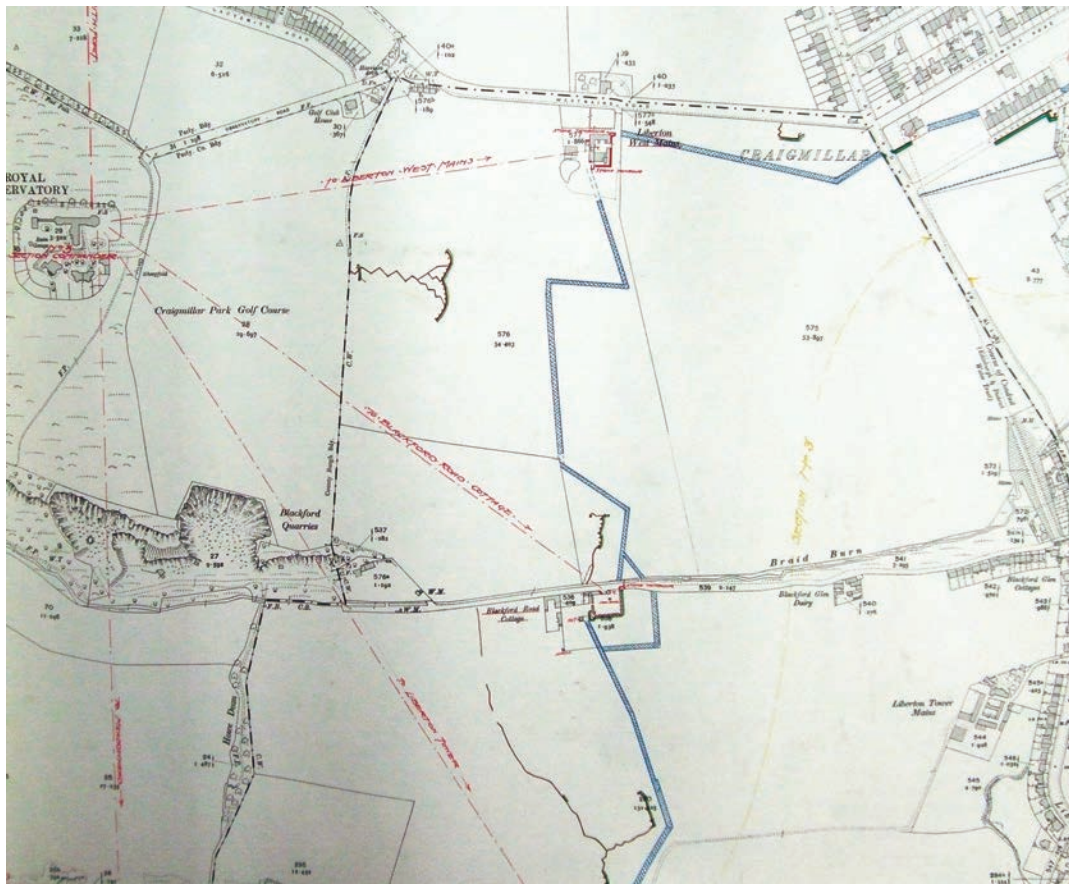
ILLUS 34 Extract from two of the maps of the defences of Edinburgh in 1915, showing the double line of defences and coastal barrier, at Seafield, at the northern end (TNA WO 78/4396 1916)



ILLUS 35 Extract from one of the maps of the defences of Edinburgh in 1915, showing the barbed wire barriers, firing and communication trenches running south from Holyrood Park. The Section Commander's post was in the United Free Church, at the bottom left. Two machine-gun positions are marked on Samson's Ribs (TNA WO 78/4396 1916)

Section 3 of the defences ran from Liberton at the north-east to the southern end of the defensive line, at Meadowhead Farm (Illus 36; 37). The Section Commander was based at the Royal Observatory at Blackford Hill. The commander

was linked by telephone to Leith Fort and to four subsidiary posts; the southernmost was in Liberton Tower. The barbed wire entanglement resumed against the west end of the houses on Hallhead Road, running westward across



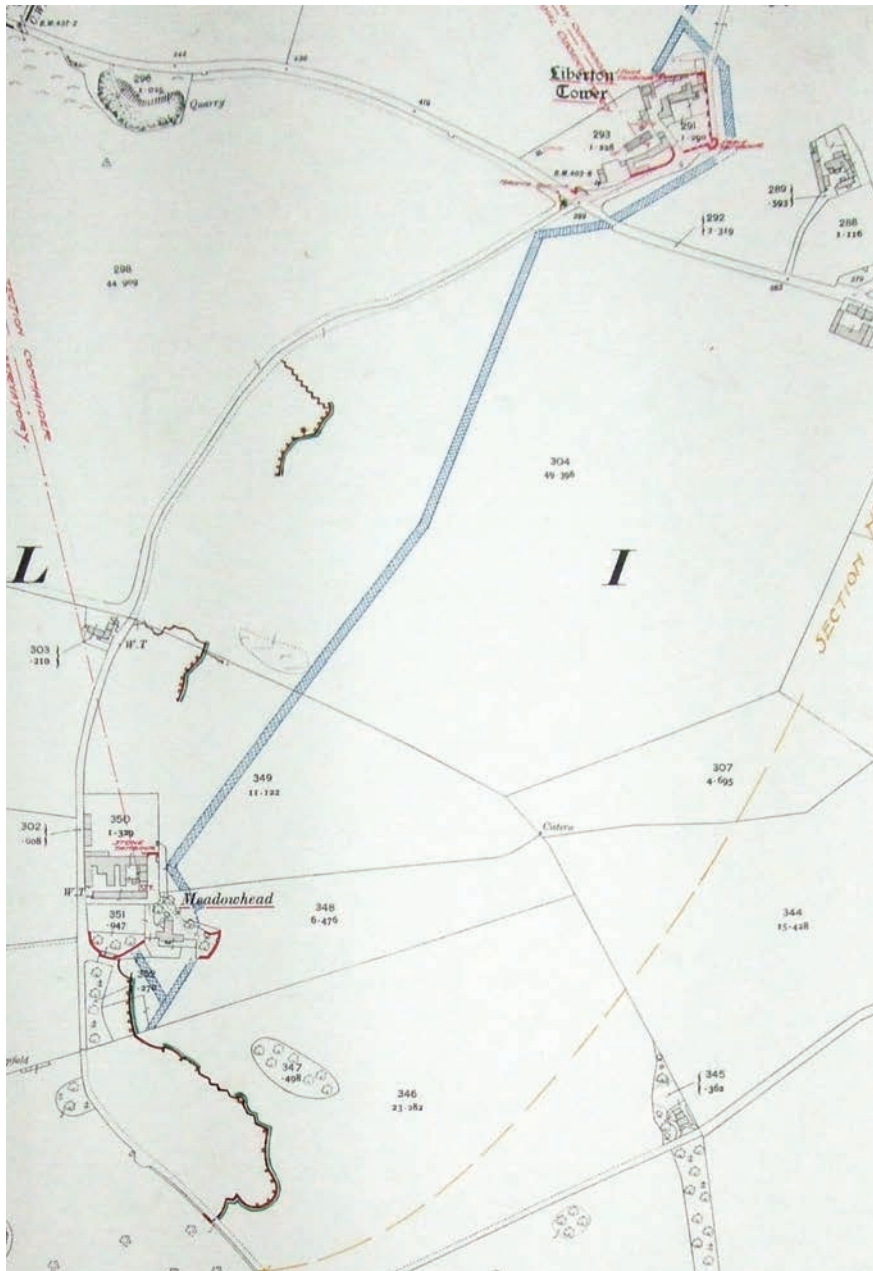
ILLUS 36 Extract from one of the maps of the defences of Edinburgh in 1915, showing the barbed wire barriers, firing and communication trenches. The Section Commander's post was in the Royal Observatory (TNA WO 78/4396 1916)

open fields to Liberton West Mains farmhouse, whose walls were prepared for defence. The entanglement turned southwards from the farm; 130m west of the barbed wire there was a complex firing position (NT 2631 7061 to NT 2629 7052), accessed by a 110m-long zig-zag approach trench (still visible on the ground: Allan Kilpatrick, pers comm). The barbed wire entanglement continued south with a firing position behind its central point (at NT 2657 6989) and crossed the Braid Burn at Blackford Road Cottage, around which there were firing positions. The barrier continued to Liberton Tower, the courtyard walls of which were used for defence. It turned SSW for about 650m, with two firing positions about 100m behind, to Meadowhead Farm, which was heavily fortified. It is of this point that we have

our single known image of the defences in 1914, a photograph in the collection of Major David Huie of the 9th Battalion, The Royal Scots (Illus 38). The barbed wire entanglement ended about 60m south of the farm, and the southern end of the defences comprised a single continuous, curved firing trench, about 250m long.

DISCUSSION

Only one photograph has so far been found of any of the First World War entrenchments dug in eastern Scotland (Illus 38 below). This shows a trench fronted by a parapet made of sandbags. This conforms in principle if not in detail with the instructions provided in the then current *Manual*



ILLUS 37 Extract from one of the maps of the southernmost section of the defences of Edinburgh in 1915, showing the barbed wire barriers, firing and communication trenches. The defences immediately south of Meadowhead are also shown in Illus 38 (TNA WO 78/4396 1916)



ILLUS 38 A photograph of the defences immediately south of Meadowhead farm, Liberton. The firing positions take the form of a trench fronted by a loopholed sandbag parapet. They are exactly as shown on the contemporary map (Major D Huie)

of *Field Engineering* (War Office 1911: 25–8). The *Manual* (ibid: 29) also laid down that fire trenches vulnerable to flanking fire were to be set out with traverses – that is, the trench was to be broken up into segments by walls of undug soil between them; traverses are visible on Illus 38 and on the maps of the defences of Edinburgh (eg Illus 35 – the traverses are marked by the notches in the trench line). As noted above, many of the fire trenches were provided with communication trenches, to allow the firing trenches to be approached safely from the rear, protected from enemy fire; this conforms with the instructions in the *Manual* (ibid: 29). The only information on the detailed construction of the trenches is that provided by Illus 38. The plans and cross-sections of some of the timber blockhouses built around the coast defence batteries and on some of the other defensive positions were recorded (eg Illus 17). Two ‘redoubts’ near Kinghorn were also drawn (Illus 9). These and other elements of the defences, where recorded (eg wire entanglements), are recognisable from the illustrations in the *Manual of Field Engineering* (ibid: plates 16–30). The *Manual* explicitly states that ‘the works illustrated in the plates should be

regarded as types only and should be varied to suit local conditions, every effort being made to save time, labour and material ...’ (ibid: 25).

The defences described here, whether merely planned or actually built, reflected growing concerns about the vulnerability of the east coast to raids by a continental power. The defensive systems built to protect London and its approaches were designed to deal with large-scale invasion (Osborne 2017: 84); those around the Forth and Tay were designed to deal with raids by a few thousand men. It is reasonable to ask if the defences were needed: was such a ‘raid’ a credible threat? We suspect that no such threat existed. An oddity of British military planning before the 1930s was that it took no account of the possibility that the armed forces of a potential enemy might have a different basic ethos and ‘exercises were conducted on the assumption that enemy forces would be organised and equipped, and would operate, in the same way as the British’ (French 2000: 45–6). Dildy (2007: 20) has argued that, as a primarily continental power, Germany did not fully understand the possibilities offered by maritime power: while they understood the capacity of surface raiders

and U-Boats to disrupt supply lines, they were not, unlike Britain and the USA, 'expeditionary minded' in the sense of being able to project military force across long distances by sea. That is, the UK was planning to defend itself against the sort of large-scale raid that Britain launched during the Second World War on the Lofoten islands, for which the Germans had neither the psychological or military capacity to undertake (Barclay 2013: 30).⁷

Thus, while it was shown that traditional coast defence guns were needed, by the German bombardment of English coastal towns in 1914 and 1916, the anti-invasion defences built in the Tay and Forth, and at Cromarty, were never going to be needed.

As noted above, we have found evidence that the defences were fully manned only in the early months of the war. Thereafter it is possible that they were only lightly manned by locally based troops. The fact that they were mapped in 1915–16 suggests that they were not, however, abandoned. Osborne (pers comm) in his work on the Volunteer Training Corps (the nearest First World War equivalent to the Home Guard) has noted that two battalions were raised in Dundee, one in Edinburgh, one in East Lothian and two in Midlothian (around 12,000 men). It is possible that these troops, in addition to their other duties, replaced the first- and second-line Territorial units which had manned the defences early in the war, in their anti-invasion role.

CONCLUSION

We wished in writing this paper to shed new light on the plans for the defence of eastern Scotland before and during the First World War, and the planning in earlier years that informed what was eventually built, in addition to the better-known coast defence batteries (Barclay & Morris 2019). The military role of the estuaries is slipping from the popular memory. While much remains of the defences built in 1940, very little remains of those built in the First World War. Much of Inchkeith's close defence still stands, but elsewhere, the blockhouses at Braefoot, Castlandhill, Inchkeith, Kinghorn and earthworks like Spiershill Fort,

are rare survivals. The records of the defences both planned and built attest to the importance of the naval infrastructure in the Forth, and the importance of the ports in both estuaries.

ACKNOWLEDGEMENTS

We are very grateful to Allan Kilpatrick for providing information on a number of sites, for alerting us to the existence of Major Burnet's photographs, and for reading an earlier version of this paper. Mike Osborne provided invaluable advice. We are also grateful to the staff of Inverclyde Museum for copies of Major Burnet's photographs, and Neill Gilhooley for a copy of Major Huie's photograph.

NOTES

- 1 Childers' novel has been retrospectively credited with waking up a somnolent government to the risk of such an attack, and even of identifying the need for a naval base on the east coast. Neither is true: the government was already aware of the risk, having been preparing defence schemes since at least 1899, and announced the building of Rosyth some two months before Childers' book was published. The most concise and readable summary of the 'invasion novel' genre is in Osborne 2017: 23–6.
- 2 The 'Examination Service' was operated by the Royal Navy at defended ports. Any suspect vessel could be held for examination in a designated anchorage under the guns of the 'Examination Battery'.
- 3 A harbour providing shelter for vessels in distress or in severe weather.
- 4 A Port War Signal Station (PWSS) was a naval installation, the main function of which was the identification of shipping approaching or within sight of the port. The naval Extended Defence Officer responsible for the floating defence (anti-submarine precautions and patrol vessels) would be based there.
- 5 The position of the surviving south-east blockhouse does not coincide with the position marked on the First World War map on WO 78/4396. Close inspection of the modern and older maps suggests that a mapping error was made at the time, locating the blockhouse in

relation to an older fence line, not that defining the radio station's compound.

- 6 The buildings of the Marine Gardens were requisitioned as barracks and were, for a time, the base of the 3rd (Reserve) Battalion of the King's Own Scottish Borderers.
- 7 The German expedition against Norway, a surprise attack against a poorly prepared, ill-armed and nearby neutral power, does not, we believe, undermine the argument.

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