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Defence against invasion: Reigate Fort

VICTOR SMITH

Built on the crest of the North Downs, Reigate Fort is a reminder in earth, concrete and brick of the period of competition and mistrust between Britain and France that characterised the second half of the 19th century. This, it was feared, might at some stage lead to war, with the consequent risk of invasion. During one of a number of bursts of defensive effort against this perceived danger, the fort was constructed in 1898 as part of a project for the protection of London. The latter combined limited permanent construction with contingency planning for a shielding arc of fieldworks to create a vast entrenched camp. This was the last scheme of defence for a land front in Britain during peacetime and one of the more remarkable episodes in the history of anti-invasion defence. Recognising the fort's heritage importance as a distinctive element of this, its owner, the National Trust, has carried out extensive restoration and interpretation for visitors.

Historical background

With the exception of short-lived fieldworks at various outlying locations during the French Revolutionary and Napoleonic Wars, London itself had not been defended with a circuit of fortifications since the Parliamentarian Lines of Communication of the English Civil War.[1] In Continental Europe, however, the need for inland defences for capitals, towns, military centres and strategic river crossings was all the greater given that frontiers were little more than lines drawn on a map, or at best a barrier formed by a river, crossed and re-crossed by invading armies on numerous occasions. This was symbolised in the extensive system of fortifications for Paris, the capital of Britain's rival. Britain, however, had a protective moat formed by its surrounding seas, which an enemy would first have to cross. The maintenance of a strong Royal Navy and command of the sea, backed by coastal fortifications such as those at a distance protecting the Thames river approaches to London, had been the traditional defence against invasion.

Reinforced by her mastery and exploitation of industrial progress and development, Britain was transformed in the 19th century into a superpower, with an ever-expanding and mighty empire. This did not please her nearest neighbour, France. Indeed, apart from co-operation during the Crimean War in 1854–6 and occasional later episodes of political convergence, much of the second half of the 19th century was, in effect, a 'Cold War' between both countries. In part, and exemplified by the mid-19th century military revolution, this embraced an arms race to achieve naval and military technological superiority. Politically, there was competing national pride and a sense of a world mission and destiny arising from long-standing mutual mistrust and, on the British side, from a perception that the French had a hostile geopolitical agenda. This came to be exacerbated by the beginnings of tensions from colonial rivalry and the challenging expansion of the French fleet. Indeed, from as early as the 1840s and 50s an awareness of the steam warships being introduced into the French navy was considered to have increased the problems of Britain's national defence because, although during this period such vessels were also provided with sails, they were not dependent on the winds for the short journey across the English Channel.[2] Loaded with the troops of a landing force, they might, it was argued, appear with little or no warning. This was used as a justification by those who campaigned for improving and multiplying land defences, including the establishment of fortifications around London, as advocated in the schemes of George Murray in 1845, Major W F D Jervois in 1858 and Colonel Shafto Adair

[1] Smith 1997.
[2] Saunders 1989, 153–5.

in 1861 and 1863.[3] Although Jervois was the influential secretary of the Royal Commission on the Defence of the United Kingdom in 1859, the scheme as actually enunciated in its report of 1860, and which helped determine home defence policy for the next 15 years, relied upon its new fortifications at the mouth of the Thames and for the naval ports to confer protection on London by allowing more troops to be made available for an anti-invasion field army. Critics of this thinking contended that this constrained an enemy towards making a rapid dash on the capital which, they observed, had no defences of its own.[4]

Strategic significance of London

London was the heart of a worldwide empire and, within it, the political and economic life of the country and its vast and lucrative international trade were centred. The symbolic as well as practical value to an enemy of its capture and the consequent detriment to national morale was both understood and feared. In 1886 Major Elsdale, a proponent of providing defences for London, put his case, if somewhat lyrically, in the *Royal United Services Institute Journal* with his suggestion that:

> The capture of London by an enemy means that the enemy has grasped England firmly by the throat. He can force his own terms upon her wherever British interests are at stake all over the world. It means the loss of our Mediterranean fortresses, which are an object of supreme desire to the Mediterranean powers, Egypt and the Suez Canal in the hands of the French, Simons Bay and Cape Town given over to an independent South African Republic or to a foreign power, the total loss of our communication with India, and India itself gone from us. It means our empire of the sea destroyed, our enormous mercantile marine sailing under other flags, and the course of trade diverted to other channels, never to return. I do not of course assert that all these consequences will necessarily and at once follow the capture of London. But who will be bold enough to deny that they are all potentially wrapped up in it, and that any or all of them may be looked for as a natural and direct consequence of it? Like Carthage of old we have built up a vast and highly artificial edifice based not upon broad acres of fertile soil but upon maritime superiority and commercial success. Its centre of gravity lies in London. When London falls will not the whole fabric be likely to go with it […] So Carthage fell and her wide dominions fell with her[5]

This echoed the writings and speeches of a number of British campaigners in the later 19th century who, amid reduced confidence in the fleet, argued for increased defensive measures. Concern was fed by Anglophobic statements emanating from France during the 1880s, such as one from Admiral Aube, the French Minister of Marine, asserting that: 'the day is coming when Britain's shores will be assaulted and her ports burnt by the fleet of a victorious enemy'.[6] Even the assertion of General von Moltke in Vienna in 1888 that if an army of 100,000 men were landed in England it could march to London and take it without resistance was interpreted in the British press as a prediction of what the French might do.[7] The existence of a sensationalist fictional invasion scare literature also helped foment public anxiety and kept home defence alive as an issue. One of the earliest examples and most quoted, Chesney's *The Battle of Dorking* (1871), was uncharacteristic for the period in visualising a German army triumphant on the North Downs. Its object had been to urge increased preparedness for home defence. This came at the time of Edward Cardwell MP, a

[3] Transcript of the diary of W F D Jervois for July–October 1858, in the possession of the author; George Murray cited in Beanse & Gill 2000, 3–4; Adair 1861 and 1863.
[4] Beanse & Gill 2000, 6 note 3.
[5] Elsdale 1886, 601–70.
[6] TNA: WO 33/48, A138.
[7] *Ibid.*

reforming Secretary of State for War, who strove for financial savings and greater efficiency of military organisation. His withdrawal of elements of British colonial garrisons slightly increased the number of troops available in Britain itself. Measures to link regular regiments with the volunteers and the militia, as well as the localisation scheme introduced in 1872, were intended both to benefit home defence forces and, with other changes, reinforcement abroad when needed.

Although British military and naval chiefs were alert to the perceived French challenge, they had opposed views about its handling. The military (or 'bolt from the blue') lobby contended that no amount of expenditure on the fleet could guarantee immunity from invasion whereas the naval (or 'blue water') interests argued that large expenditure on the army and fortifications should be re-directed to expand and modernise the fleet. This, they asserted, would be better able to prevent invasion in the first place.[8] Within this acrimonious atmosphere few subjects were more contentious than the question of whether and how to defend London. By the later 1880s there was sufficient governmental concern at an expanding and modernising French fleet with powerful all-steam warships and public belief in Britain's vulnerability to convince the Cabinet to act. In 1888/9 it was decided to expand the fleet to counter the navies of a combination of any two other powers, the possibility that the French fleet might be joined with that of an ally – perhaps Russia – being especially feared.[9] However, this ambitious programme would take time to be completed and military solutions came to be arrived at for the defence of London itself.

A scheme of defence

A cost of £5–12 million for a conventional ring of permanent artillery forts on the very large circuit for London that the advances in the ranges of attacking artillery would have needed to keep an enemy at a distance, was politically and financially unacceptable. The approach proposed by the War Office and adopted by government in 1888/9 was ingenious, blending the political advantage of a scheme to demonstrate action through the achievement of military preparedness with an estimated price of just £480,000.[10] On completion, the costs of land and works were dramatically less, at only £160,671. The scheme was, in effect, a contingency plan for defence by fieldworks on a grand scale, which included limited anticipatory permanent construction. Its immediate genesis may have been proposals by Major Elsdale, in 1886, for combining the peacetime construction of magazines along a line surrounding London at a distance with a plan for the formation and manning of fieldworks between them during an actual period of emergency.[11] Similar approaches had been suggested earlier by Colonel Home in 1875 and in 1878 by General Sir Edward Hamley, MP for Birkenhead, author of the influential *Operations of War*.[12]

The War Office proposals were refined in 1889 by Colonel J C Ardagh, an officer with a wide understanding of Home Defence and defensive systems, then serving as the Director of Military Intelligence, who called for the peacetime building of the bare essentials of a fortified position in the form of a rampart, ditch and store buildings at a number of places along a defence line, particularly at or near strategic gaps in the North Downs and places through which road and rail communications to London passed, as at Reigate. The military advantages of the North Downs, including the hills at Reigate, had long been appreciated, having been surveyed in detail by Colonel W F D Jervois in 1858, as well as by others much earlier during the Napoleonic Wars.[13]

[8] Moon 1968, 17, 31–66 and 184–246.
[9] *Ibid.*
[10] TNA: WO 33/48, A116 and A138.
[11] Elsdale 1886, 601–70.
[12] Col Home cited by Beanse & Gill 2000, 3–4; Hamley 1878.
[13] Diary of W F D Jervois (see note 3).

In a speech to Parliament in March 1889 during discussion of the Army Estimates, Stanhope, the Secretary of State for War, announced that the government was taking steps for the defence of London but requested members 'in the national interest not to press him for details'.[14]

Whereas Ardagh had recommended the purchase of 30 sites for inner and outer rings of permanent sites, a less ambitious scheme was agreed, with just thirteen sites being bought, and the use of two existing ordnance stores and one barracks, making sixteen sites in total (fig 1). Intended deployments of troops along the line were also stated. The artillery for the line was to be 112 x 16-pdr rifled muzzle-loaders (RMLs), 28 x 20-pdr and 112 x 40-pdr rifled breech-loaders (RBLs), making a total of 252 guns, all on travelling or field carriages.[15] The RBLs were designs from the 1860s and which, in these calibres, had demonstrated their effectiveness during the American Civil War of 1861–5; the RMLs had been introduced in 1871, during a reversion to muzzle-loading.[16] These old designs and slow-firing weapons were those with which the volunteers were armed at this date, and were later to be replaced by faster-firing and more modern breech-loading guns. Infantry firepower was now considerable, and important for the defence of an entrenched line; it consisted of rapid-firing Lee-Metford repeating rifles that gradually replaced the Martini-Henry, added to which were machine-guns.[17]

The first permanent site built was at North Weald in Essex in 1891,[18] and a preliminary general operating scheme for London's defence was produced in 1892, followed by Ardagh's 'Authorised Scheme of Defence and on the defence of London, 1897'.[19] Its contingency aspect provided for a 70 mile (113km) entrenched line along the escarpment of the North Downs from Guildford, via Reigate and Westerham and up the Darent Valley to the Thames, resuming at Vange in Essex and continuing cross-country to Epping. There were to be additional contingency fieldworks to close gaps in the Downs at Guildford and Box Hill, as well as at Reigate and Redhill where communication routes also penetrated towards London. An outlying position was to be made on Wrotham Hill in Kent. As it was developed, the scheme was to act as back-stopping support, mainly manned by volunteers, for a field army operating between the capital and the coast and it was to have the ability to transfer troops north and south of the river, depending upon where the main weight of an attack might come. This was to be achieved by a pontoon bridge between Gravesend and Tilbury, but use might also have been made of ferries, as well as of tunnels and bridges further upstream.[20]

The permanent structures along the line were, in a sense, functional hybrids, intended to provide (a) a limited supply of in-theatre stores for the mobilised troops and labourers, consisting of ammunition for the artillery, 'fuzes' and small arms ammunition, as well as entrenching and other tools for the construction of fieldworks, and (b) defensible positions in their own right in the manner of redoubts. Indeed, the design of a number of them incorporated the plan and the low profile of the experimental Twydall redoubts (1885 and 1888) adopted for the north-eastern front of the Chatham ring fortress. The basis of the new system of defence was the dispersal of artillery in fieldworks between the new constructions as well as the use of a proliferation of entrenchments for the infantry.[21]

The labelling of the new constructions as 'mobilisation centres' in contemporary parliamentary statements was, at least, a half-truth but was probably guided by a combination of prudent secrecy and political expediency to avoid an admission that, as part of this scheme, fortifications, although on a modest scale, were being constructed.

[14] Hansard, House of Commons, 11 March 1889, cols 1413–14.
[15] TNA: WO 33/49, A171.
[16] Hogg 1974, 35–9.
[17] Ffoulkes 1945, 62–5.
[18] TNA: WO 33/51, ERD 4289 – Appendix A in Home Defence.
[19] Sinclair 1926, 170–3.
[20] *Ibid*, note 18.
[21] Smith 1985, 105–49.

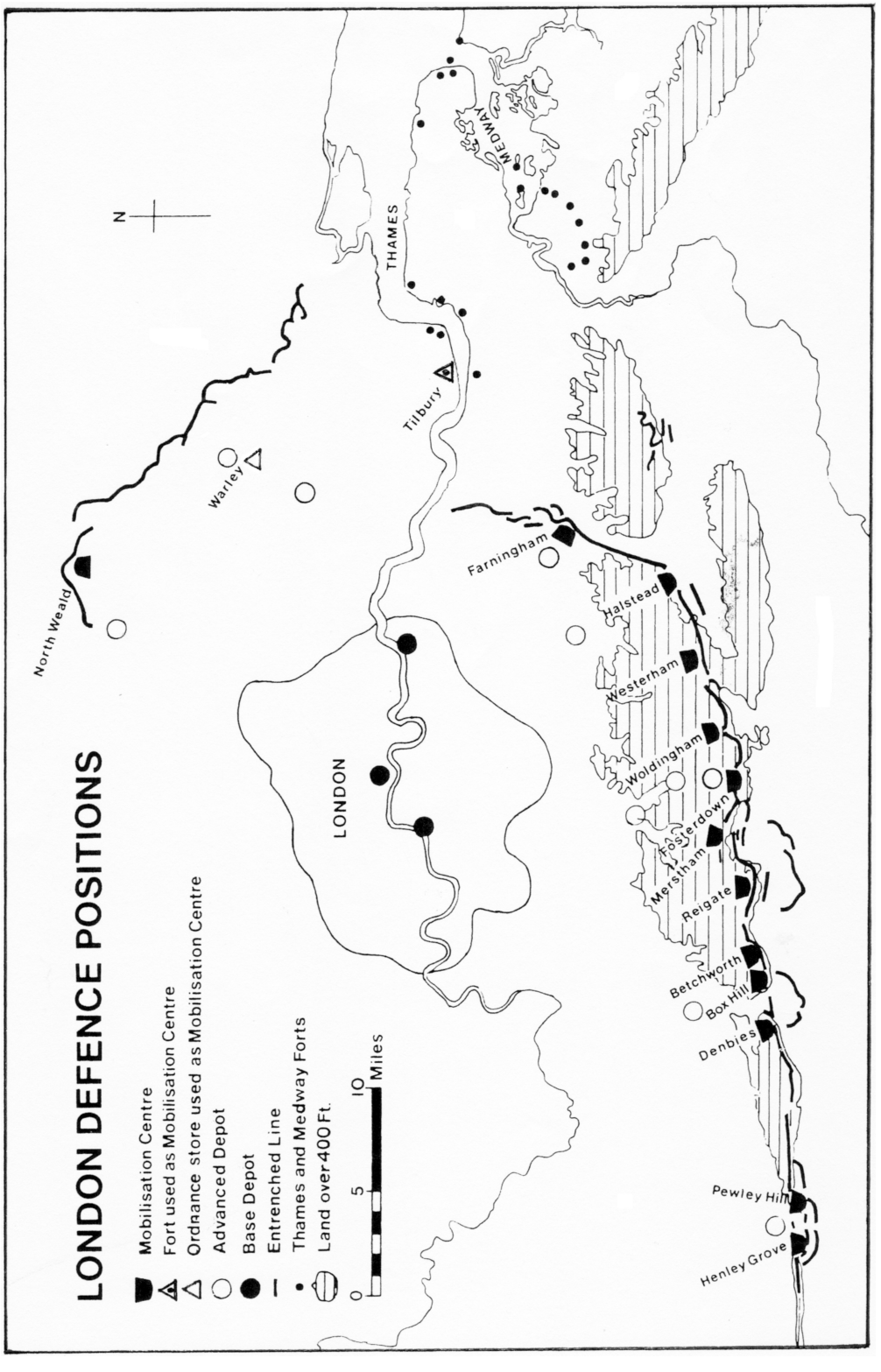

Fig 1 Reigate Fort. General map of the London defences (Victor Smith).

The building and design of Reigate Fort

After completion of the North Weald redoubt, shortage of funds led to a suspension of construction of the other mobilisation centre for some years.[22] However, in the second half of the 1890s work resumed, Reigate Fort being built and partnered to the east by smaller centres at Merstham and to the west by one at Betchworth (described in summary below). Neither could support Reigate Fort with fire, and were merely placed incrementally along the defence line. A construction date for Reigate Fort is not given in any official document yet found, but two plans dated 8 March 1898 record it as built, and contain remarks about proposed additions.[23] Murray's *Handbook of Surrey* and Black's *Guide to Surrey* published in the same year refer to Reigate Fort as existing. A recapitulation of expenditure on the London defences compiled in 1906 gives £3,363 spent on land and £11,339 on works for Reigate Fort, making a total of £14,702.[24]

Reigate Fort occupied and utilised a high and commanding position on the crestline overlooking Reigate and Redhill, with – on a clear day – views of 10 miles (16km) or more over the country to the south from which an enemy might advance.

The east–west orientated fort (figs 2 and 3) is an elongated 750 ft (230m) x 150 ft (46m) earth-banked and ditched enclosure. There are two blocks of concrete casemates under and behind the front rampart of the western half of the fort, the interior of the latter being an open space. The eastern half of the fort contains a magazine and a later tool store on either side of a once roughly-metalled courtyard. The fort is entered from a ridgeline track and over a causeway crossing the ditch. No barracks were provided. There is a caretaker's cottage outside the perimeter, about 80 ft (24m) to the east.

The following description is taken from a combination of a site examination by the author with the evidence in the 1898 plans of the fort.

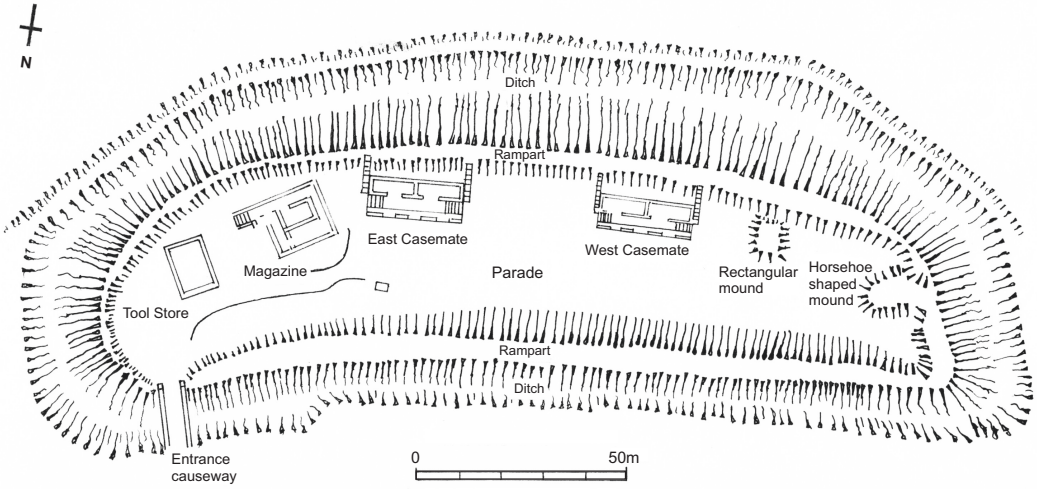

Fig 2 Reigate Fort. Plan of the fort in 2013 (Victor Smith).

THE EARTHWORKS (fig 4)

The rampart, with a still just-visible infantry fire step, slopes down to a v-shaped ditch, the features of both having been eroded over the years by the weather and sheep grazing as

[22] *Ibid*; TNA: WO 33/51, A203.
[23] TNA: WO 78/4333.
[24] Parliamentary recapitulation of expenditure in 1906 reproduced as an annex in King [nd].

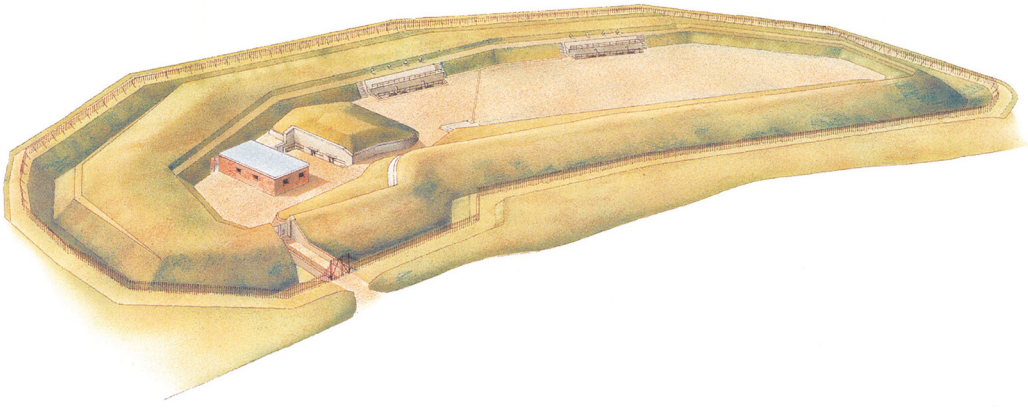

Fig 3 Reigate Fort. Artist's impression of the fort from the air *c* 1898 (Chris Forsey).

Fig 4 Reigate Fort. Photograph of part of the front rampart looking west, July 2013 (Victor Smith).

well as having suffered gradual soil slip. The rampart probably has a chalk debris core. On the counterscarp side of the ditch there is a berm having a sloped riser to a glacis, which joins with the steeply descending slope of Reigate Hill. Along this, a 6 ft (1.8m)-high metal palisade fence was erected as an obstacle. In war, a barbed-wire entanglement would have been fixed against this and probably in the ditch itself. The entrance to the fort was secured by loopholed steel doors (one wicketed), in front of which was a gated palisade fence, as an additional obstacle. The ground immediately around the fort was to be kept clear to maintain a field of fire.

Internally, a 40 ft (12m) x 30 ft (9m) x 5 ft (1.5m)-high flat-topped horseshoe-shaped mound is attached to the western front rampart. Not shown in the 1898 plans, this appears to be a later feature. It has been suggested that it might have been intended as a platform for a field-gun to fire to the flank. A few yards to the north-east is a second, more rectangular 26 ft (8m) x 10 ft (3m) x 8 ft (2.4m)-high self-contained mound, perhaps added as a traverse against enfilade fire, although this is not certain.

THE CASEMATES (figs 5 and 6)

As represented in the plans of 1898, the casemates were for the storage of mobilisation tools, but following their extraction in war they would have become available as shelters and for possible use as a local command post. The later construction of the tool store mentioned below freed the casemates for additional ammunition storage for when the volunteer artillery was re-equipped with 4.7-in and 15-pdr breech-loading guns.

Each casemate is an elongated 71 ft (22m) x 13 ft (4m) buried concrete box, its roof partly covered with the earth of the front rampart. Access is down steps at either end of a

Fig 5 Reigate Fort. Photograph of the steps down the eastern casemate, with the mound of the magazine in the background, July 2013 (Victor Smith).

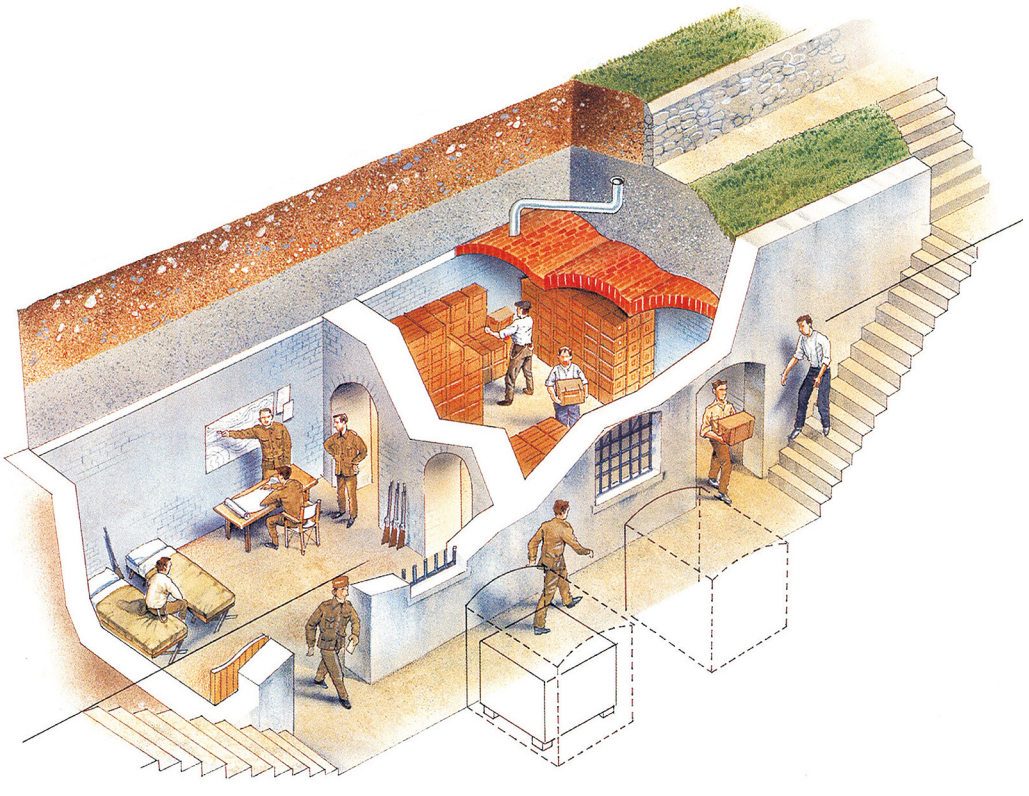

Fig 6 Reigate Fort. Reconstruction of the eastern casemate as it might have appeared if activated as a command post (Chris Forsey).

sunken way, from which two wide doorways give entry. Windows flank the doorways and these display remnants of Crittall steel frames with an upper opening flap. The eastern casemate preserves the window frames and glazing bars complete. Each casemate is divided transversely into two by a wall breached by two semi-circular arches. In the eastern casemate the inner arch, which had been infilled later with a brick wall, is pierced by a hatchway. The ceiling is formed of three linear jack-arches, consisting of rolled steel joists (RSJs) between spans of flattish curves of brick. Four pipe vents may be seen in the ceiling. The walls and ceiling are painted white.

The parapet wall above the parade side of the sunken way of the eastern casemate is surmounted by a protective tubular safety fence consisting of vertical standards and top and middle horizontal bars. At the bottom of the wall are two recesses with galvanised pipework for access to a water supply. At the foot of the eastern staircase is a sump pit. Access to the western casemate was later blocked by filling in the sunken way.

The 1898 plans projected two further casemates under the front rampart to increase storage of tools. Instead, by around 1903–4, a detached surface tool store was constructed.

THE SURFACE TOOL STORE (figs 7 and 8)

Uniquely for the mobilisation centres, the tool store as a self-contained structure is located inside the defensive enclosure. It is a rectangular 41 ft (12.5m) x 29.25 ft (9m) building of red brick in English Bond with an overhanging flat concrete roof and a poured concrete floor. It is separated from the front rampart by a narrow gap.

Fig 7 Reigate Fort. Photograph of the surface tool store, July 2013 (Victor Smith).

Fig 8 Reigate Fort. As the tool store might have appeared when being unloaded during preparation of the field defences (Chris Forsey).

Its two wide entrances are in the western elevation and are flanked by window openings. The entrances are hung with, on the one side, modern copies of double-leaf timber doors and on the other by see-through metal bar gates, which allow the visitor to view the interior. A protruding stone in each window appears intended as a stop for the outer leaves of the original doors and wooden plugs set in the walls between the doors holding points for the inner ones. The remaining three sides of the tool store are each pierced with two windows, which display remnants of cast iron glazing bars.

The roof is reinforced with parallel RSJs, supported by a transverse joist on a central pillar. Originally an open space, after the Second World War the store was divided into two compartments, the resulting partition later having been removed.

As with the casemates, the tool store would have contained a variety of items. A generic listing of them for the London defences indicates the types of operations to be carried out in creating the entrenched line: axes and saws to clear areas of trees to be occupied by trenched works and for lines of fire and to make timber structures to hold earth in place; gabions to be filled with earth to make revetments; picks and shovels for digging trenches and mounding earth, with wheelbarrows to carry the latter. Sandbags were to create protective structures for the defending troops and barbed and plain wire for obstacles in front of and around defence positions. Rules, tape measures and lines were for marking out the works. These stores were just a proportion of the total requirement and many other items would have been brought by contractors and troops assigned to the defences. Gunpowder was also stored (probably in the magazines), presumably for use in connection with rapid clearance of obstructions from the areas to be defended.

THE MAGAZINE (figs 9 and 10)

The magazine contained part of the ammunition needed for issue to the artillery elements of the forces assigned to the Redhill Position. It is an earth-covered rectangular semi-underground concrete and brick building with separate rooms for shells and cartridges. The external walls are of concrete with dry packing against the penetration of moisture; the internal ones are either brick or concrete, the ceilings being arched in brick. Safety measures

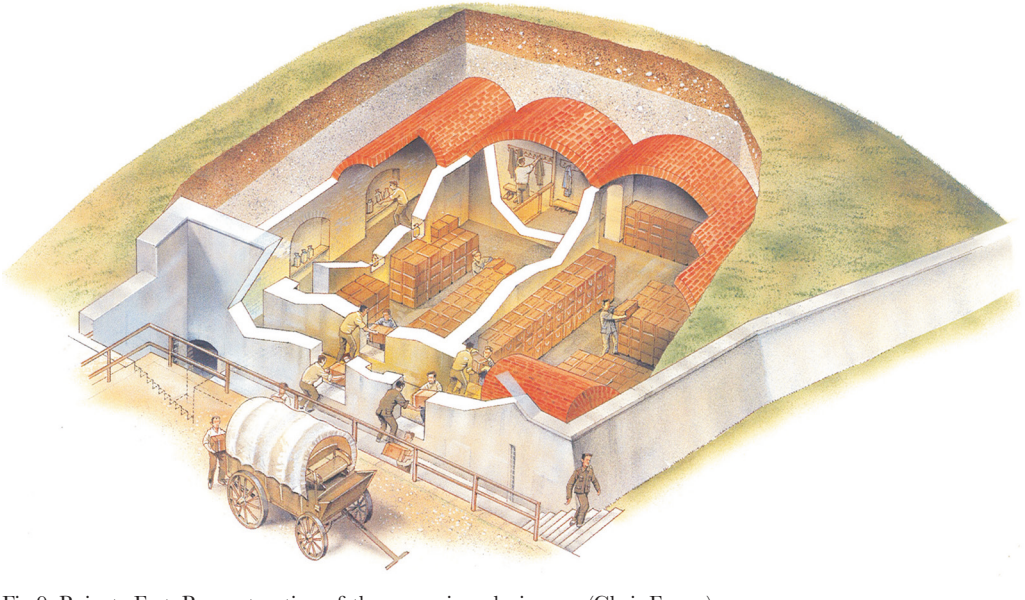

Fig 9 Reigate Fort. Reconstruction of the magazines during use (Chris Forsey).

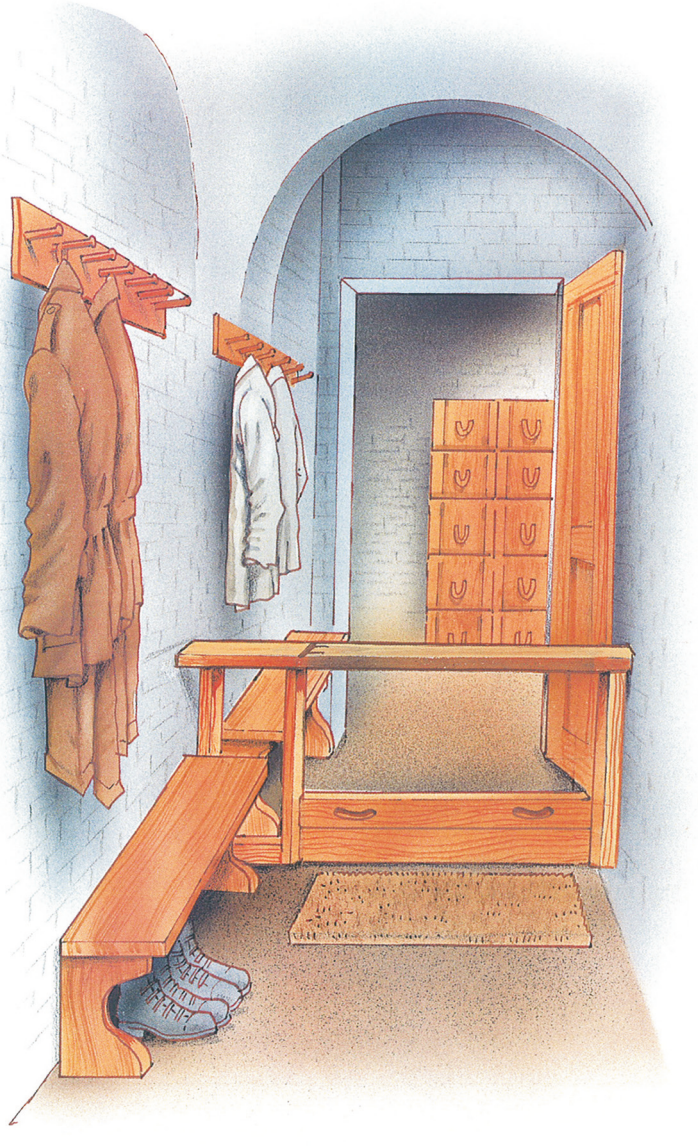

Fig 10 Reigate Fort. Reconstruction of the shifting lobby in the magazines (Chris Forsey).

were incorporated, including special lighting to avoid a naked flame being taken directly into an area containing explosives and the omission of the use of materials or substances which, if struck, might cause dangerous sparks.

Entry is down railed steps from the courtyard and into an entrance passage along the south side of the building. Sequentially, this gives access to (a) an ammunition handling lobby for the transit of ammunition through the issuing hatches outside, (b) a shell store and (c) a shifting lobby leading into the cartridge store. Within two shallow arched recesses in the entrance passage were stored candle lanterns, one of which illuminated the passage from within a safety lighting recess at its end.

The shifting lobby has a restored transverse lifting timber barrier with benches and wall-mounted clothes pegs. This feature was a reminder to soldiers to remove their outside clothing, which might contain grit and potentially spark-making hobnailed boots and put on

special magazine clothing and slippers. The cartridge store, with which it connects, is a 32 ft (10m) x 12 ft (3.6m) chamber illuminated from two (now blocked) lamp recesses served, no doubt with the exercise of extreme care, from the ammunition handling lobby. The cartridges were in wooden boxes that would have been passed through a timber-framed issuing hatch into the handling lobby. The parallel 25 ft (7.7m) x 11 ft (3.3m) shell store was illuminated from two lamp recesses served from the entrance passage. Its contents, also in wooden boxes, were to be passed through a second hatchway into the handling lobby. From the latter, both shells and cartridges were passed through counterpart hatchways to an external distribution platform next to the courtyard, where an ammunition wagon could be parked for loading.

Fuses are particularly sensitive and they were normally subject to stringent safety precautions, commonly being stored within magazines. At Reigate Fort, however, a combined fuse and small arms store was placed externally at the foot of the entrance steps and under the ammunition distribution platform.

THE WATER TANK (fig 11)

Water supply was essential. Pipework in the sunken way of the casemates has already been mentioned. The main reserve was a 19 ft (5.8m) x 11 ft (3.3m) concrete tank at the foot of the slope of the rear rampart. It had a capacity of 5000 gallons, being fed by Pitcher Channels

Fig 11 Reigate Fort. Photograph of the water tank, July 2013 (Victor Smith).

that collected and directed rainwater into a smaller settling tank, from which water passed into the main tank. However, a mains water supply was an original feature. Its pipe came into the fort under the entrance road, running to a hydrant just to the east of the magazine. When the later tool store was built the hydrant was shifted to a new position, to the west of the entrance to the fort where there is a stopcock and seating for a standpipe. This supply linked to the tanks behind the sunken way of the casemates.

THE CARETAKER'S QUARTERS (fig 12)

Security and maintenance inspections were undertaken by caretakers for whom the externally-placed cottages were provided. These were proposed in the plan of 1898 and built shortly after. They are an oblong red-brick single-storey bungalow with a pitched slate roof, divided in two by a transverse wall, one side being a living space and sleeping area for the supervising caretaker and the other for his labourer and, in both cases, any associated family. Outside toilets were attached to the back where there were also enclosed gardens. Now in private ownership, the building has since been modernised with roof dormers and a western extension.

Other than brief general references in memoranda to the supervision of stores, little is revealed in documents about the tasks to be performed by these resident staff. Typically, the needs of routine maintenance of forts, magazines and their contents included:[25]

- Security of the premises and control of entry
- Inspection of the structures

Fig 12 Reigate Fort. Photograph of the later modernised caretaker's quarters, July 2013 (Victor Smith).

[25] TNA: WO 32/6374 and, eg War Office 1892, 429–32.

- Care of ammunition and stores, including daily recording of temperatures and humidity within the magazines, opening and closing of ventilators depending upon ambient conditions, cleaning and, if necessary, oiling of the tools to ensure their continued good condition
- General record keeping
- Ground maintenance, including grass cutting, although grazing of animals may have assisted this.

BOUNDARY STONES

It was usual for the War Office to mark the limits of its properties with inscribed stones, a number of which had been placed around the Reigate site, at least as early as 1896, and before the construction of the fort.[26]

The Redhill Position (fig 13)

Reigate Fort was originally to have been within the Caterham Position, one of seven proposed tactical groupings for the London defences. By the time of its construction, however, it became part of the 11km (7 miles) Redhill Position, one of ten redesignated groupings, to be commanded by a general based at Merstham House.[27] The Position's outlying group of fieldworks to enclose Redhill and Reigate secured a nodal point for important railways. Behind the defence line, Purley Junction was the advanced railhead for the Position, being resupplied from base depots at Woolwich, Nine Elms and Bishopsgate. The guns allocated by 1903, to be brought to the Position from depots elsewhere when needed (fig 14), were the more modern and rapid-firing 4.7-in (in service from 1895) and 15-pdr breech-loaders (either the British pattern of 1900 or the imported German gun of 1901).[28] Both were on

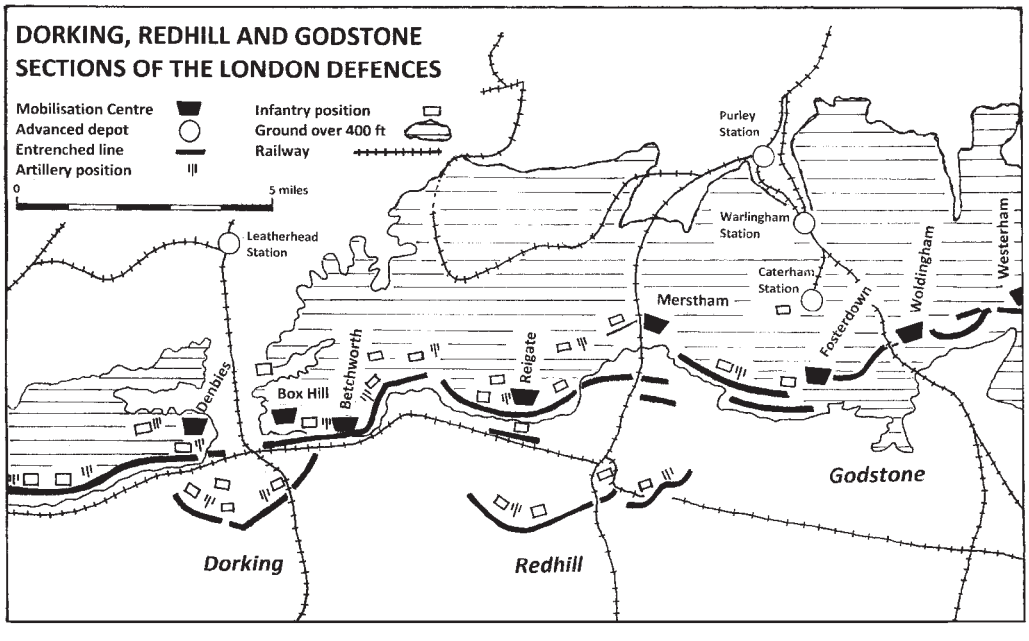

Fig 13 Reigate Fort. Map of the Dorking, Redhill and Godstone sections of the London defences (Victor Smith).

[26] OS 25-inch map XXVIII, 1896.
[27] TNA: WO 106/6188, 22.
[28] The origins and development of these guns is discussed in Hogg & Thurston 1972, 70–7, 110–11.

field carriages (the 4.7-in being available so mounted after 1901) and could, if necessary, be moved from one place to another. The London defences were to be manned and defended by over 150,000 men, mainly volunteers and yeomanry, with a larger field army of over 200,000 between them and the coast.[29]

The troops allocated to the Redhill Position were the East Surrey Regiment, the Sherwood Foresters, the Staffordshire Regiment as well as three Royal Engineer Field Companies (Volunteers) and three Royal Artillery brigades (Volunteers), all wearing recently introduced khaki service dress.[30] They would have been armed with the new Lee-Metford magazine rifle introduced in 1889 or with the Lee-Enfield of 1895, although some volunteers might still have had the Martini-Henry single-shot rifle, originating in 1874. Infantry firepower was enhanced by the Maxim machine gun introduced in 1889, probably with some Gardners of 1881 and Nordenfeldts of 1885, also present.

Activation of the defences and the role of Reigate Fort

Ardagh's description and working up of the defence scheme in 1897 was succeeded by a fuller account in the Handbook of the London Defences (1903).[31] This assumed that military intelligence would be able to provide 7 days' warning of an invasion and that the entire system of entrenchments for the London defences could be formed in just 4 days by 25,500 labourers provided by contractors who would bring many of the necessary tools with them. Although use of troops for making entrenchments is not mentioned as it had been in an earlier plan, it is difficult to imagine that they would not have been involved. Detailed maps and plans had been prepared for the works. Although not definitely known to have survived, a possible section may have been traced and is being investigated.[32] The Royal Engineers would, on activation, arrive at Reigate Fort – as at the other mobilisation centres – to draw tools for the purpose of marking out the entrenchments and obstacles and for clearing ground. At the same time, contractors would withdraw other stored tools to add to their own. As the fieldworks were under construction outside, so the infantry would arrive according to a carefully worked out train and marching timetable and occupy tented camps nearby.[33] Likewise the Royal Artillery, with their guns and ammunition, the latter to be supplemented as required from the magazine of Reigate Fort, a place that would then probably have been occupied by troops. Although there is no proof that artillery was to be fired from the fort, it may be significant that it was one of only three of the mobilisation centres stated in the Handbook as having a 'command of the country' (the others being Halstead and Pewley Hill), a reference to suitability for the positioning of guns. It therefore seems possible that field guns or howitzers would have been deployed there as well as an infantry force.

While all this was going on, water companies were to lay pipelines rapidly and the householders along or close to the defence line would have been required to keep their pumps in constant working order to contribute to the availability of water for labourers and troops. Within London itself, hospitals and other accommodation were to be requisitioned, sufficient to receive and treat 20,000 battle casualties.[34]

Although a protection against an enemy advance on the capital, it is important not to see the London defences in too static a sense. Together they constituted, in effect, a strategic entrenched camp to provide active support in the event of an invasion. It was envisaged that battles would be fought by field forces outside them to challenge, and if possible, stop and drive back an enemy advance from the coast, with troops being available

[29] TNA: WO 106/6188, 17.
[30] *Ibid*, Appendix C, Table C.
[31] TNA: WO 106/6188, 1–61.
[32] Paul Bowen, pers comm.
[33] TNA: WO 106/6188, 8, 29–30 and 38.
[34] *Ibid*, 36.

inside the perimeter to strike out and press home an advantage. A retreating British field force could also withdraw into the London defences from which, if possible, to launch a counter-attack.[35]

The end of the London defences and the later history of Reigate Fort

Despite the great effort devoted to the preparation of the defence scheme and to its preparatory core of permanent construction, no sooner had its operational handbook appeared in 1903 than its whole rationale began to be questioned. Primarily this was because of revived confidence in the ability of the navy, with its greatly increased power and numbers, including the introduction of the *Majestic* and *King Edward VII* classes of battleship (to be followed by the launch of the revolutionary *Dreadnought* in 1906), with a profusion of cruisers and other vessels. All this came to be seen as a surety against invasion even, as the Admiralty contended, if mounted against Britain and Ireland at the same time.[36] Thus, on 8 March 1906, and utilising his characteristic rhetoric, Lord Haldane, the Secretary of State for War, announced in Parliament that the London defences were to be abandoned:

> Anyone who knows Surrey, and goes down into the neighbourhood of Dorking, will find there certain curious structures, inherited by my right hon. friend opposite and handed over to me. You will find there large wire fences surrounding seven to nine acres of land, and a large construction that looks more like a water tank than anything else, containing ammunition of various sorts. I stumbled upon one the other day when taking one of my reflective walks abroad, and going in I found some 3,300 rounds of ammunition, cordite, Lyddite, shrapnel, the latest pattern of gloves for people working with intrenching tools, and the latest pattern of mark 3 axes, which had come down from Woolwich to replace mark 2 axes. I estimated with an eye not wholly unpractised in these matters that there was no less than £25,000 worth of stores there, and I afterwards ascertained I was very nearly right. I asked one in charge how many men had been there for work, and the answer was "I never saw a unit in the three years I have been here." I asked when the gun had last been there, and was told they had always been at Woolwich. I asked whether there were any more of those constructions, and was told that from a neighbouring hillock I could see a dozen more with the naked eye. These constructions had a definite origin, in a time when the Navy was not the Navy of to-day, when people had not the confidence in the Navy that they have in it to-day, and above all when the Navy had not the mobility which belongs to our splendidly organised Fleet at the present time, and when it may have been necessary to make other provision for the defence of these shores.
>
> What an advantage it is when you can get rid of these things, root and branch, by the aid of the firm principle. Those things were considered carefully and in great detail; and now, with the consent of the government and of the Defence Committee and as the result of acting on a belief in the principle which we have inherited from our predecessors, they are going to disappear root and branch and as fast as they can be made to disappear[37]

This move was celebrated in the approval expressed by the influential and iconoclastic writer G S Clarke in his *Fortification* of 1907.[38] Reigate Fort was sold off the same year, having been emptied of its stores. In the meantime, the Entente of 1904 had improved relations with France, leaving Germany as the perceived greater threat, prophesied by Erskine Childers in his *Riddle of the Sands* (1903).

[35] *Ibid*, 11–13.
[36] Moon 1968, 184–246; TNA: CAB 2/1/69, CAB 38/2/5.
[37] Hansard, House of Commons, 8 March 1906, col 659.
[38] Clarke 1907, 3.

Yet soon, confidence in the capability of the Royal Navy to prevent invasion began to be weakened by knowledge of the expansion of the German fleet. Soon after the outbreak of war with Germany in 1914, this confidence was reduced by the sinking of three British cruisers in one day in September by a single U-boat. This drove a new impetus for measures of defence on land including, by 1915 – and under the direction of General Sir Leslie Rundle – the partial activation of the London defence scheme,[39] with the digging of trenches, perhaps including use of Reigate Fort, and certainly to the east at the Westerham and Halstead Positions. Indeed, pictorial and historical evidence of such works under construction near Woldingham by the United Arts Volunteer Rifles is provided in the history of that regiment.[40] Although exact locations for the trenches have yet to be identified, potentially contemporary earthworks are extant running east–west to the north of the M25 at Margery Woods near Lower Kingswood and on Gravelly Hill, Caterham.[41] Recent LiDAR[42] plots suggest that the Wrotham Hill Position was also prepared with trenches, a line of them being found to extend north-east along a ridgeline. General Sir Francis Lloyd assumed responsibility for the London defences in the spring of 1916 and gave defensive preparation added stimulus, especially utilising the services of the new London volunteer regiments.[43] The slowness of progress was very different from the expectations of speedy execution set out in the Handbook of 1903, but with the military situation on the Continent at a stalemate, invasion did not seem to be an immediate threat, the activation of the London defences being prudently precautionary. The Home Defence Emergency Scheme 'L' of 1918 referred to defences extending from Halling at the side of the river Medway to Buckland Hill, north-west of Reigate.[44] By now, the threat of land attack on London had been augmented by possible attack from the air, which became an uncomfortable reality, evidenced during the raids of Zeppelins and bomber aeroplanes. So, added to the trenches, was the innovative London Air Defence Area, consisting of concentric rings of anti-aircraft gun batteries, balloon barrages, searchlights and fighter interceptors.[45]

There is anecdotal evidence of the use of Reigate Fort as a camp for the scouting movement soon after the end of the war, but this and adjoining areas were taken into the ownership of the National Trust in 1932, after which the site was certainly so used. During the Second World War, the fort was within the zone of Canadian forces having anti-invasion responsibilities, including the establishment of defences along the ridgeline and part of the GHQ Line along the river Mole.[46] Post-war the fort resumed use as a scouting camp. Meanwhile the historic importance of Reigate Fort became better appreciated, being designated as a Scheduled Ancient Monument in 1972.

Discussion

If, superficially, the bank and ditch of Reigate Fort somewhat resemble the hillforts of the Iron Age, this impression is dispelled by the concrete and brick structures within. Its design is certainly unique among the mobilisation centres which, although possessing the required common components of magazines and tool stores, display an almost idiosyncratic variety, having a logic that has not come down to us in the record. The first fort built in 1891 at North Weald in Essex was an artillery and infantry redoubt and it just might have been

[39] Morris 2009, 97–129.
[40] Potton 1920.
[41] Paul Bowen, pers comm.
[42] Light Detection and Ranging (LiDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground. It can 'see' through the forest canopy to the ground surface, revealing any evidence of man-made features.
[43] Morris 2009, 97–129.
[44] TNA: WO 33/877.
[45] Wood 1992, 9–16.
[46] Alexander 1998, 21–2, 63 and 73.

intended as a template for the others. However, and as earlier mentioned, a funding shortage led to a delay in building the others. The sites subsequently built at Box Hill, Betchworth, East Merstham and Farningham were compact, having a bunker-like appearance, without positions for artillery but with an infantry fire step. Henley Grove, Fosterdown, Betsoms Hill and Denbies were similar but, as at North Weald, had a pronounced courtyard element. Their low relief ramparts and ditches, the latter containing unclimbable Dacoit fencing, repeat the Twydall Profile. This relatively inexpensive design was possible because of the defensive potency of the new rapid-firing small arms. Most of the mobilisation centres were, therefore, unquestionably also infantry redoubts in the same vein, integrated into the planned pattern of trench systems, which were the main defence, or rather the troops who were to fight from them. Woldingham, however, was a fenced and lightly embanked pair of magazines. Caterham and Warley consisted of storage buildings within an existing military depot, without real defensive capability. The centre at Tilbury had coincidental defensive provision arising from its location at an existing river fort. Most resembling forts, in their conventionally recognisable sense, were Pewley Hill (which appears to have been intended to mount field-guns) and Halstead near Sevenoaks (the latter with positions for light artillery and machine-guns). With their concrete-revetted ditches, these reflected the approach adopted for the contemporary forts at Chatham. Their polygonal plans might be explained by adaptation to the shape of the hilltops that they occupied. These, like Reigate, had a command of the country. The use of concrete in the mobilisation centres generally expressed how this had become the preferred hard material for the structures of permanent defence works.

As for the other permanent sites, the design of Reigate Fort, which does not repeat the Twydall Profile, is nowhere explained in any official document yet found, but its positioning and distinctive shape appear well adapted to the ground of its ridgeline. With extemporised work on occupation by troops, its elongated plan could have provided the space for a battery of field artillery which, if of the heavier 4.7-in breech-loaders, would have been able to

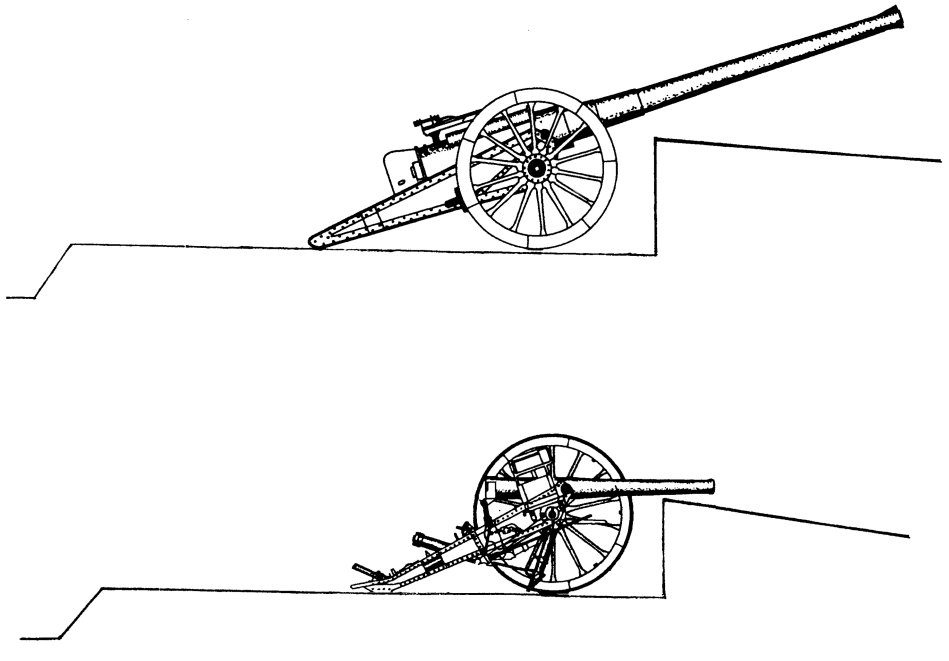

Fig 14 Reigate Fort. The guns allocated to the London defences: 4.7-in BL (above) and 15-pdr BL (below) (Victor Smith).

reach out to a range of 4½ miles (7km), adequate enough to support the outlying Reigate/Redhill fieldworks. There were certainly to have been batteries of 15-pdr guns in positions on either side of the fort. Against localised infantry assault up the forward slope of the crestline, magazine rifles and machine guns could have brought a withering fire to bear, in association with the entrenchments and field redoubts on the flanks to be formed in the vaunted 4-day scheme of preparation. Indeed, it should again be emphasised that the fieldworks were the essence of the London defence scheme, reflecting the emerging age of the spade, the rifle, machine-gun and movable artillery that had become the basis of new British fortress doctrine. Partly born during the evolution of the Chatham ring fortress from permanent forts with fixed guns to dispersal and fieldworks, this anticipated the Western Front of the First World War which was, in a sense, fortress warfare on a grand scale, with defensive movements, counter-attacks and advances mounted from areas secured by trenches. The speed by which the London fieldwork elements of the defences were to be formed, armed and manned was optimistic. It is at least questionable whether all could have been achieved in the allocated time. The invasion threat during the First World War was less immediate and, therefore, the activation of the scheme could be conducted over a longer period.

Conservation and public access

Following the production of an historical and conservation study in 2001,[47] the National Trust began a phased programme for the enhanced repair and presentation of the site to visitors. The results are outstanding, with replication of the entrance gates and, adjoining them, sections of the perimeter fence, stabilisation of the magazines – including the reintroduction of its shifting lobby – restoration of the surface tool stores and the eastern casemate. A striking feature is the effective way in which the site has been interpreted for visitors through the use of a range of coloured reconstruction drawings. Their general external views have benefited from the model-making and graphical skills of the late Roger Gill, re-rendered by the heritage artist Chris Forsey, who also drew an important series of cut-away explanatory views of the component parts of the fort, materially improving the visitor's understanding of their function. The National Trust has also produced a lively interpretative historical booklet on the site. Finally, as a result of a successful application to the Heritage Lottery Fund in 2011, the National Trust, Surrey County Council and other partners are undertaking further ongoing research and archaeological investigations into the fort and the other 20th century defence structures along that part of the North Downs with a view to producing permanent records and establishing their function, all to be set within the context of an interpretive, educational and commemorative framework under the designation Front Line Surrey Hills.

Thanks to the efforts of the National Trust and Surrey County Council the mobilisation centres at Box Hill and Henley Grove respectively have received varying degrees of heritage safeguarding attention and interpretation but Reigate Fort is the star attraction.

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[47] Smith & Beanse 2001.

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