# REIGATE FORT

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# A report to the National Trust

## Vol.1 The text

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## 1. INTRODUCTION

Reigate Fort was built by 1898 in a high and commanding position on the crest of the chalk ridge of the North Downs overlooking the town of Reigate and the country to the south. It is a reminder of a dangerous state of mistrust between Britain and France in the later 19th century which, at times, threatened to overspill into war, with the consequent risk of invasion.

The fort formed part of a defensive project to protect London from capture by an enemy force advancing upon it from a coastal landing and it was a distinctive element of the last scheme of fortification for a land front to be undertaken in the United Kingdom during peacetime. Its earthwork form, blended into the top of a natural slope, reflected a striving for concealment. It was this characteristic which distinguished the design of new British defences built in the later 19$^{th}$ century.

The bank and ditch of the fort, the underground magazines, casemates and a surface tool store, present an enigmatic visual package, and one which promotes considerable curiosity from walkers along the adjacent ridgeline track and those who make informal entry to the site to explore its features. This report therefore responds to a request from the National Trust for the identification and evaluation of the structures of the fort, an assessment of heritage value and for the supply of information to help the Trust present the site for the understanding and enjoyment of visitors.

## 2. HISTORICAL BACKGROUND

Unlike Paris and a number of other European capitals fortified in the 19th century, London was not the subject of a scheme of defence until the 1890s. The need to provide defences for land fronts in Continental Europe, whether for capitals, towns, military centres or strategic river crossings, was all the greater given that frontiers between potentially warring states were little more than lines drawn on a map. These had been crossed and recrossed by invading and marauding armies on countless occasions. Peacetime provision of defences was seen as a vital preparation. Britain, however, had the advantage of a protective moat formed of 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 defences and field forces on land had been the traditional approach to defence against invasion.

The introduction of steam vessels into the French navy from the 1840s and 50s increased the problems of Britain's national defence because although at first also provided with sails, such warships were not dependent on them for the relatively short journey across the English Channel. This, it was claimed by some British defence planners, including the Duke of Wellington, meant that an invasion fleet might appear with little or no warning. The emergence of this new situation was used as an argument by those who campaigned for improving and multiplying the coastal defences as well as by those who wished to see permanent defences provided for London. Various schemes for London's defence were suggested, such as those of Sir George Murray in 1845 [1], Major Drummond Jervois in 1859 [2] and Colonel Shafto Adair in 1861 and 1863 [3]. However, although it was recognised that the prime objective of an invading army would have been to seize London, those who controlled the policy for national defence did not accept the strategic need of these schemes and their very great cost was unacceptable to Parliament. Rather, it was seen that the protection of London rested on the traditional means of defence, referred to above, enhanced by Britain's own incorporation of steam warships into her fleet.

The later 19th century London Defences, whose structures may be found along the crest of the North Downs in Surrey and Kent as well as to a much lesser extent in the flatter terrain of Essex, were an anomaly for Britain. Among these little-known sites, Reigate Fort is a unique design and one of only two of the London Defences subject to heritage development [4].

*Strategic significance of London*

London was the heart of a worldwide empire and here the political and economic life of the country and its vast and lucrative international trade were centred. The symbolic value to an enemy of its capture and the consequent detrimental effect on national morale was well understood. In 1886 Major Elsdale, one of the leading proponents of the need for providing defences for London, put his case in the *Journal of the Royal United Services Institute* with the 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 into other channels, never to return. .1 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]

Such a warning was echoed in the writings and speeches of a number of British campaigners in the later nineteenth century who argued for increased defensive measures.

*Earlier defences*

Hitherto, the standing measures for the defence of London itself adopted in peacetime had concentrated upon the provision of forts and batteries on the banks of the Thames downstream at Gravesend and Tilbury to command the river approaches. These had existed since the 16th century. [6]

On a few occasions schemes of defence for London had been adopted as exigencies, such as during the French Revolutionary and Napoleonic Wars when an outlying layered succession of fighting positions was provided for between the south coast and the capital and temporary fieldworks appear to have been constructed on Blackheath and at Woolwich. [7] A similar approach had been proposed earlier by General Roy in 1765. London had been protected by a 19 km (11 miles) long circuit of defences during the English Civil War of the 1640s, (Fig. 1) but this had been chiefly against royalist land forces. [8] The city was defended by a wall and towers during the Roman and medieval periods.

*The imperative for a scheme to defend London*

Despite periods of political instability, after the Napoleonic Wars France had shown considerable powers of recovery. Suspicion of her possible hostile intentions and fear of further armed conflict continued to engage the attention of British military and naval planners. There were war and invasion scares in 1825, 1830 and 1847-8. [9] Fear of France was to be an abiding politico-military concern throughout the remainder of the nineteenth century, broken temporarily by the Franco-British alliance to fight Russia during the Crimean War (1854-6). A further scare of 1858-9 derived from a British perception of a French spirit of territorial aggrandisement, linked with a programme for the expansion and modernisation of the French fleet, interpreted as a calculated challenge to Britain. [10] A period of French weakness following the surprise German victory in the War of 1870 did not last long. Although the unification of Germany in 1870-1 had certainly upset the balance of power in Europe and discomforted the British government, it was to be more than 20 years before the arms of the Kaiser were perceived as a serious threat

In the second half of the 19th century the emergence of a growing sense of rivalry between Britain and France became exacerbated by colonial competition, especially for control of territories in Africa. At the same time, an evolving political doctrine of 'Darwinism'

introduced the idea that the fate of nations was determined by a process of selection in which only those, which made themselves the strongest, both economically and militarily, would survive and prosper. Such a situation led to the emergence of an arms race culture, which favoured the great arms manufacturers of both countries. The political relationship between Britain and France during this period somewhat resembled that of the Cold War in the 20th century.

The possibility that war might break out seemed a constant risk and statements of an Anglophobic tone were made in France during the 1880s, particularly One which the British government could not prudently ignore from Admiral Aube, the French Minister of Marine asserting:

*'that the day is coming when England's shores will be assaulted and her ports burnt by the fleet of a victorious enemy'.* [11]

Even the assertion of the German General Von Moltke in the *Vaterland* published 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. [12]

The existence of a plentiful, sensationalist and sometimes apocalyptic fictional invasion scare literature during the period was important in helping to keep home defence alive as a public issue. One of the more famous examples and most quoted, Chesney's *The Battle of Dorking* (Blackwood's Magazine 1871) was uncharacteristic for its period in visualising a German enemy triumphant on the North Downs. However, its author could hardly have used the French as an invader at the moment of his writing to justify long-standing concerns about British unpreparedness when France had been defeated by Germany the year before. This popular story was nevertheless important in encouraging the growth of an already started literary genre, which appeared in the form of a continuing flow of books as well as short-stories and serials in magazines and newspapers.

Although British military and naval chiefs accepted that the risk of war and of invasion from France existed, they and the wider service community had diametrically opposed views about how to handle this problem. The military (or 'bolt from the blue') lobby contended that no amount of expenditure on the fleet could guarantee immunity against invasion whereas the naval (or 'blue water') interests argued that large expenditure on the army and fortifications was worthless and would be better directed at expanding and modernising the fleet. This, they asserted, would be able to prevent invasion in the first place. Within this sometimes acrimonious atmosphere few subjects were more contentious that the question of whether and how to make preparations for the defence of London. [13]

By the later 1880s, there was sufficient governmental concern and public belief in Britain's vulnerability to invasion and in the need to protect London itself to convince the Cabinet that something needed to be done. In 1888/9, it was decided to expand the fleet with sufficient numbers of modern warships 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 particularly feared. But it was recognised that this ambitious

programme would take some years to achieve and military solutions were arrived at for the defence of London itself. [14]

The technology of warfare had moved on dramatically since the beginning of the nineteenth century. The most important implication of this for the defence of London was the gradually increasing ranges of guns, which now reached to almost 10 km. This meant that the earlier approach to the defence of towns or areas by the provision of a circuit of continuous lines was no longer viable, both because of the need to provide these on an enormous circumference at a very great distance out to keep the enemy artillery far enough removed and because of the huge expense this might involve. This method also provided a weak form of defence because of the vulnerability of continuous lines to the possibility of outflanking if penetrated at even one point. This, in turn, could be remedied only by the construction of ever more costly outworks and retrenchments. [15]

By the 1860s, this kind of problem had been overcome for the defence of the dockyards at Portsmouth and Plymouth by the provision of rings of mutually-supporting detached forts with interlocking fields of fire, each being defensible on all sides and able to continue firing and contribute to the defence of the position even should a neighbouring fort be lost. (Fig. 2) The distinguishing feature of these forts was their 'polygonal' form. This rejected earlier angular bastioned shapes and their complicated geometry, substituting a simpler plan of straight lines, with loopholed bomb-proof vaults called caponiers, lower in height than the rampart, projecting into the ditch for close defence (Fig. 3) 'Ring fortresses', as they were called, had appeared earlier on the Continent. They became the standard method of defence for European towns, cities and major military and naval centres, not least of Paris itself where they were built by 1840 (albeit in bastioned form) in advance of a continuous line whose circuit gave inadequate protection. The Paris fortress was attacked by the Prussians in the War of 1870. In the mid-1870s a ring fortress was also started for the land defence of Chatham Dockyard. (Fig. 4) The Royal Commission on the Defence of the United Kingdom which reported in 1860, had rejected the idea of land defences for London itself and even a modest scheme for protecting the arsenal at Woolwich was dropped on cost grounds. Given the large area now occupied by London, in the 1880s, the cost of a ring fortress for its defence had been estimated to be at least £5 million. (Fig. 5) This was an unacceptable price to pay. [16]

*A scheme of defence*

The approach actually decided upon by government in 1888 for working up into a scheme of defence for London avoided the great expense of a ring fortress but was an ingenious and pragmatic solution which blended the political advantage of demonstrating that action was being taken through the achievement of military preparedness with an extremely small estimated cost of just £480,000. [17] Astonishingly, on implementation, the actual cost was far less. This scheme was, in effect, a contingency plan for defence on a grand scale, which included limited anticipatory permanent construction.

Its most immediate genesis may have been a set of proposals by Major Elsdale, published in the Journal of the Royal United Services Institute in 1886. [18] This envisaged the peacetime construction of magazines along a line surrounding London and the very rapid construction and manning of fieldworks between them only during an actual period of emergency. General Sir H. Hamley, MP for Birkenhead, and the author of the influential 'Operations of War' also suggested a similar approach. [19] Somewhat earlier, in 1875, a mobilisation scheme drafted by Colonel Home, envisaged an analogous scheme for a chain of fortified positions to be built during a period of emergency in a period of 6 weeks. [20]

The War Office proposals were refined in a draft of 1889 by Colonel J.C. Ardagh, the Director of Military Intelligence. [21] His report 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 through which road and rail communications to London passed. In the event of an invasion threat, these works were to be rapidly improved and supplemented by artillery batteries, redoubts and entrenchments along the entire length of the line. These, rather than the anticipatory permanent works, were to be the main defence. The military advantages of the North Downs had long been appreciated. They had been surveyed by Colonel Jervois of the War Office in 1858 for the selection of defence positions. [22] Earlier, during the Napoleonic Wars the ridgeline had been selected for the construction of a military road to link Guildford to Rochester and the Chatham fortress. [23]

Ardagh's proposals were accepted and in a speech to Parliament in 1889 during discussion of the Army Estimates, Stanhope, the Secretary of State for War, announced that the government were taking steps to adopt a scheme for the defence of London but requested members 'in the national interest not to press him for details.' [24] Whereas Col. Ardagh had recommended the purchase of some 30 sites, both along the intended line and for internal and external positions, the government decided on a less elaborate layout and bought just 13 sites, with the addition of two existing ordnance stores, making 15 sites in all. [25]

The guns to be allocated to the defence line were 112 x 16-pr. rifled muzzle-loaders, 28 x 20 pr. and 112 x 40 pr. rifled breech-loaders, making a total of 252 guns. All were described as 'guns of position' but they were moveable, being on travelling carriages. The guns were at this date divided into 7 tactical groups, and Reigate appears to have been in the Caterham one. [25a] The rifled beech-loaders were designs dating from the 1860s and the 16-pr. rifled muzzle-loaders were introduced in 1871, during a period of reversion to muzzle loading. [26]

Following the preliminary planning, in 1890 a committee of three officers was appointed to draw up a full scheme for the formation and occupation of the London defences. Their work was completed in 1892. [27] The scheme combined contingency plans on a grand scale with limited anticipatory permanent construction.

As it evolved, the contingency aspect of the scheme was a paper plan for a 116 km (72 miles) long entrenched line of infantry and artillery positions far in advance of the capital,

to be established by a combination of troops and contract labourers only in the event of an actual invasion emergency. (Fig. 6) Four days were allowed for its formation. Taking advantage of the defensive qualities of the terrain, the line was to run along the escarpment of the North Downs from Guildford to Westerham and up the Darent Valley to the Thames, resuming at Vange in Essex and continuing across country to Epping. Planning came to include the provision of outlying positions in front of the gaps in the Downs at Guildford, Box Hill and Redhill with a further position on Wrotham Hill in Kent. [28]

This would create, if need be, a huge Continental style entrenched camp with a perimeter some 18-25 km outside London and manned by a large force of troops. Although providing a part-circuit of defence, this was a wide departure from the ring fortress idea.

The ability to rely on fieldworks as the main defence must have reflected current new thinking, strongly influenced by the Turkish defence of Plevna in 1877/8 when superior attacking Russian forces armed with artillery had been impressively and strongly resisted by the fire of magazine rifles from temporary trenches. The emergence of the rapid-firing rifle and the machine gun was to transform the British approach to fortress defence. Added to this, was the increasing use of moveable artillery in fortress defence, instead of fixed guns vulnerably placed in clearly defined positions within forts. These principles were first applied several years earlier in the adaptation of the scheme for the fortress defence of the land approaches to Chatham.

South of the Thames, not only would the defence line block the passes through the Downs and the road and railway routes which an enemy advancing on London from the coast would need to take but would provide a base of operations for a field army to act against the enemy in the country between London and the coast, once the invader's line of advance had become clear. Troops at the fortresses of Dover and Chatham were to be available to attack the flank of an enemy advancing through Kent and those at Portsmouth might be similarly utilised if an advance were being made from Hampshire or Sussex.

North of the Thames, the terrain of South Essex does not possess pronounced natural defensive features such as the North Downs, only a line of low hills to be entrenched. An advance on London through Essex was seen as less likely than one from a beachhead on the south coast.

Permanent construction was to take the form of a sequence of structures along the intended line, each to combine the roles of (a) magazine to contain part of the ammunition for the artillery to be deployed along the line (b) storehouse for a reserve of entrenching and other tools for the construction of fieldworks and (c) a prepared defensive position. As the ammunition was withdrawn to field magazines for the outlying batteries to be formed during the period of actual invasion emergency, the permanent sites were to be manned and prepared for defence. However, their more important purpose was that of a ready-provided in theatre magazine and store for the troops and labourers mobilised to create the London defences. Indeed, these structures were labelled 'mobilisation centres' in contemporary parliamentary statements, although this calculated wording was probably for political

expediency and to avoid admitting that what were in effect fortifications, however mitigated by their modest scale, were also being constructed.

*The sites*

A War Office document of 1891 [29] listed the intended permanent sites as:

Henley Grove (II)
Pewley Hill (I)
Denbies (I)
Box Hill (I)
Betchworth (III)
*Reigate (I)*
West Merstham (III)
Fosterdown (I)
Woldingham (I)
Betsoms Hill (II)
Halstead (I)
Farningham (I)
Tilbury Fort (existing ordnance store)
Brentwood ( " " )

North Weald (III)

*The bracketed Roman numerals are classifications of order of importance for each site as assigned in the document*

The West Merstham structure was never built but clearance rights for the site (an agreement to regulate development around it to maintain a field of fire) were obtained. [30] In place of it, a centre at East Merstham (Alderstead), not in the list, was constructed. [31] In addition, storebuildings were erected on a barrack site at Caterham. [32]

The ordnance stores at Tilbury and Brentwood in Essex were already in government hands, further storage space being added. Most of the other sites were bought between 1890-3 but only the one, at North Weald, had been completed (in 1891). [33] The land for the Reigate site itself was purchased in two stages in 1892 and 1893. [34]

Thereafter there was a period of inaction, due to a shortage of funds. This lasted until worries about the threat to Britain arising from the Franco-Russian alliance of 1894 (renewed annually), followed by the asking of an awkward parliamentary question in 1896 about the lack of progress with the scheme, led to work on construction of the mobilisation centres being resumed and expedited. [35] The Fashoda Crisis of 1898, when Britain and France came close to war, gave impetus to the work.

The Box Hill site was not purchased until 1896 and that at Denbies in 1899, its construction not being finished until 1901-2. [36]

The year in which Reigate Fort was constructed is not known from any official documents yet found. There are, however, two plans of the fort dated 8th March, 1898 (Figs 7 and 8 in the separate tube). [37] One of these plans shows the fort as built and the other marks additions which were being considered. The status of the structures portrayed in the plans is not stated but Murray's *Handbook of Surrey* published in 1898 refers to the fort as then existing, whether complete or unfinished, as does Black's *Guide to Surrey* published in the same year.

In a recapitulation of expenditure on the London defences compiled in 1906, £3,363 was spent on land at Reigate and £11,339 on the works to build the fort, making a total cost of £14,702. [38] Land ownership at the date of purchase has not yet been discovered. Much earlier, the 1840s Tithe Map and assessment show the land to have been owned by the Countess of Warwick. [39]

*Design*

The permanent sites displayed an almost idiosyncratic typological variety, which must have had a logic at the time but this is not explained in any known surviving documents.

North of the Thames

The *Tilbury* site had coincidental defensive capability as a consequence of being within Tilbury Fort, an earlier-established Thames river defence. This expedient was no doubt to save on costs. Mobilisation store buildings were both within the fort and against the outside faces of its walls. This site was well behind the line which began lower downstream on the north side of the Thames at Vange but there were rail communications to it from an adjacent station on Tilbury's riverside.

Closer to the line but still behind it was the *Brentwood or Warley* site. Like Tilbury, storebuildings were added to an existing government establishment, in this case a barrack, but there were no works for defence at this site. The additions consisted of waggon sheds, shell store and other stores. A further shell store was built in 1904.

*North Weald Redoubt*, (Fig. 9) however, was conceived and built as a position for moveable artillery, having ramps to firing positions behind a rampart and underlying magazines with ammunition lift shafts to serve the guns. A firing step part of the way down the front slope was accessed from two tunnels from within the work. Four open casemates were provided for the storage of movable guns, recalling the similar arrangement for the nearly contemporary Fort Horsted at Chatham. Enclosing the rear and a central parade was a line of closed casemates for the storage of mobilisation tools, surmounted by a loopholed defence wall, similar to Fort Borstal's at Chatham. The position was surrounded by a defensive ditch, crossed at the rear by a bridge running along the roof of a rifle-firing close defence position known as a caponier. Something of this general approach may have been

influenced by the new design forms and tactical thinking being evolved at Chatham where an originally-intended plan for a ring of detached works armed with fixed guns of position had been modified to provide for moveable artillery in the forts and heavy guns in concealed positions within the intervals between them. The profile of North Weald, with its glacis-like front rampart sloping down to a shallow ditch containing a metal obstacle fence resembles that of the innovative Twydall infantry redoubts (whose provision was influenced by the knowledge of the Plevna experience) established on the left flank of the Chatham defences in the 1880s. [40] (Fig. 10) It may be, that in some way, the North Weald Redoubt was initially intended as a template for the other sites along the London defence line. Its title 'redoubt' must have been a measured labelling at the time to reflect its purpose. Further cartridge and shell stores were added outside the rear of the position in 1904 to provide increased magazine capacity for the armament of 4.7-in. and 15-pr. guns with which the artillery corps had re-equipped.

South of the Thames

*Reigate* (Fig. 11) -described in detail later- was unique among the designs. In its mellowed present state, as a piece of defensive imagery of hill top bank and ditch it recalls, if superficially the hillforts of the pre-Roman Iron Age, a spell broken only by the concrete and brick structures within. It was well sited to command the country to the front and would have been ideal for the mounting of moveable artillery to project either direct or indirect direct fire on an enemy approaching from the south. Without the present screen of trees, on a clear day, visibility would have extended to a distance of 16 km (9 miles), or greater.

Two other sites with distinctive polygonal shapes at *Pewley Hill* and *Halstead* (Fig. 12) most resembled forts in their conventionally recognisable sense. The provision of emplacements for machine guns and small quick-firing weapons along the rampart of Fort Halstead recalls Fort Darland, part of the Chatham land defences built in 1899. Pewley Hill may well have been similarly arranged.

Other sites such as those at *Boxhill ,(Fig. 13) Betchworth, East Merstham and Farningham* had a somewhat 'bunker-like' appearance but doubled as infantry redoubts. These semi-circular works had a rifle parapet on an earthen rampart, sloping down to a shallow V-shaped ditch containing a steel fence, again, repeating the distinctive Twydall Profile. Within, or set against the back of the ramparts, were storage magazines. The rear of each position was formed of a straight line of casemates joined by flank walls to the ends of the rampart, thus enclosing a small courtyard. Entry was through a doorway in the flank wall. The windows and doors of the casemates and the steel doors closing the entrance to the courtyards were provided with musketry loopholes for rear defence of the position.

The positions at *Henley Grove, (Fig. 14) Fosterdown, Betsoms Hill and Denbies* (the latter mostly demolished) were also infantry redoubts but they had a more pronounced courtyard or parade element at their centre.

Although originally intended to be properly defensible, *Woldingham* (Fig. 15) consists of

two detached and flat-topped magazines with a lightly embanked and fenced perimeter.

The site at *Caterham Barracks* was also not defensible and had mobilisation tool stores added within its perimeter.

A feature of most of the sites is a caretaker's cottage and a barn-like tool store outside the defensive perimeter. Unusually at Reigate the tool store is within its enclosure.

It has been suggested elsewhere [40a] that the variety of plans displayed in the permanent sites might have been to try out new designs to assess their potential for future use.

*The Handbook for the London Defence Positions*

A brief description of the rationale of the defensive scheme was given in J.C. Ardagh's 'Authorised Scheme of Defence', in 1897. [41] A detailed description is given in the more evolved 'Handbook of the London Defences Positions', prepared in 1903 for the instruction of the officers expected to establish and fight the defences in war. [42]

The Handbook shows that 10 volunteer infantry divisions and 3 yeomanry cavalry divisions were to be assigned to the London Defence Positions, together with artillery brigades and some 400 guns, including both rifled muzzle-loaders and breech-loaders. The total force for London was intended to be in excess of 150,000 men. These troops were said in the Handbook to be allocated at the rate of 2000 men per mile. A field army of 5 army corps, including 4 cavalry brigades and 8 Imperial Yeomanry Brigades, was to operate against the invader in the country between the coast and the capital, having the security of the London defence line behind it, and which it might withdraw if forced to retreat and from which it might draw forces if further manpower to press home an attack or an advantage.

The Redhill Position

The plan was to create 10 tactical defence positions along the London defence line, each one barring the principal roads between the coast and London. The one to include Reigate was called the Redhill Position and was 11 km long. The Redhill and Reigate Gap was to be further protected by a grouping of entrenchments and artillery positions enclosing the towns of Redhill and Reigate. This was a double security as the towns were a nodal point for north-south and east-west railway lines. The gaps in the Downs at Box Hill and Guildford were similarly protected.

With its clear and commanding view of the country to the south over which an enemy would be likely to approach, the Redhill Position would have been difficult for an enemy to penetrate.

The forces to be allocated to the Redhill Position on mobilisation were the East Surrey Regiment, the Sherwood Foresters, the Staffordshire Regiment, 3 Royal Engineer Field Companies (Volunteers) and 3 Royal Artillery brigades (Volunteers). The position was to

be under the command of a general officer, at a headquarters at Merstham House. A more senior general was to command the whole of the London defences south of the Thames from a headquarters at Croydon. Communications were very important and telegraph lines were to be laid in an emergency to fill gaps in the existing civilian provision.

From the information given in the Handbook it is possible to reconstruct a section of the line between Guildford and Fosterdown which includes the Redhill Position and this is at Fig. 9. The types of fieldworks to be used as well as field obstacles and the preparation of existing buildings and structures for defence are to be seen in a contemporary officer's notebook of fortification and in an extract from a manual. (See Figs. 17-28).

## Communications and supply

In rear of the defence line and making use of the radial rail system of London, ten railway stations were designated as advanced depots to provide supplies of ammunition once those stores held in the permanent works had been exhausted. These in turn, were to be re-supplied from three base depots at Woolwich and, within London itself at Bishopsgate and Nine Elms railway stations. The advanced depot for the Redhill Position was Purley Junction.

Each of the base depots was to contain 16 days supply of food, the advanced depots 6 days and at places close to the line, 3 days supply, giving a total of 25 days supplies in hand.

In the event of an attack on the London defences themselves, the internal lines of communication - both road and rail - would have allowed a degree of flexibility in the deployment and concentration of troops at vulnerable or threatened points. For this there was a worked out procedure. A pontoon bridge was to be established between Gravesend and Tilbury to allow the movement of forces across the Thames.

## The artillery

Although there must have been a capability to deploy heavier guns of position if required, all the guns described in the Handbook were, in accordance with current doctrine, of a movable nature - 30 batteries of the new 4.7-in. breech-loaders, (Fig. 29) ,70 batteries of the also new 15-pr. breech-loaders and additional batteries of obsolete 40-Pr., 20 Pr. rifled breech-loaders and 16-pr. rifled muzzle-loaders. Storage of rounds of the breech-loading ammunition per gun was as follows:

| | 4.7-in. BL | 15-pr. BL |
|---|---|---|
| On corps charge | 48 | 148 |
| In mobilisation centres | 300 | 352 |
| At Woolwich | 152 | nil |
| | 500 | 500 |

The 4.7-in. gun had a range of up to 10,000 yards and was introduced as a naval and coastal defence weapon in 1895. After having proved itself on an extemporised wheeled carriage as an effective field gun during the Boer War, it entered land service on a regularly designed carriage from 1900-1. The 15-pr. entered service in 1900 and had a range of 6,000 yards. These two weapons were then the most modern of the British field artillery in service.

The mid-Victorian rifled muzzle-loaders and the breech-loaders were soon withdrawn from service. It was for their ammunition that the magazines of the mobilisation centres had originally been designed. The appearance of the new guns, before the withdrawal of the old types (particularly the 4.7-in., with a larger round), required additional storage capacity to be provided at the mobilisation centres.

The guns themselves appear to have been held at various depots and drill halls across the region, and indeed the country, and on Corps charge.

Infantry weapons

Infantry units were to bring 300 rounds per man with them but their weapons were not specified. These would have been the Lee-Metford magazine rifle introduced in 1897 but photographs of some volunteer units as late as 1905 show them to have been still armed with Martini-Henry single shot rifles. Machine-guns would have been provided, such as the Maxim gun and perhaps the obsolete Nordenfelt.

Uniforms

By the turn of the century, uniforms for the army and the volunteers changed from their Victorian livery to khaki service dress which was to become such a familiar sight during the First World War.

Activation of the defences

In contrast with the original intention to use a combined labour force of soldiers and civilians to construct the fieldworks, the Handbook provided for 25,500 navvies to be provided by contractors. It was hoped that 7 days warning of invasion would be possible and that the field defences could be constructed over a period of just 4 days, and for the defending troops to rendezvous and to establish themselves in the line. Despite this revised approach to the provision of labour, it seems unlikely that volunteer units would have stood around idle and waiting and would, in fact, have helped with construction. A series of 6-in. to the mile maps were prepared showing the detailed layout of the works to be constructed. Other maps identified for the defenders the most likely positions to be chosen by an enemy so that defensive plans might be adapted to them. None of these maps appear to have survived. The work of design was undertaken by a specialist team based at the Horseguards, with unlimited authority for the hiring of transport to go wherever they needed, to examine the ground.

A detailed timetable and administrative mechanism was worked out to ensure the timely activation of the defences. Among the official files of the time are papers setting out this timetable and describing the logistical and organisational arrangements. These cover such aspects as the transport of labour, tools and plant, supplies, and the housing and feeding of the labour force for which further tents were to be provided. The arrangements depended heavily on the contractors bringing their own picks and shovels with them but a reserve of 10% and a supply of all other tools and equipment required were to be stored in the Mobilisation Centres. Arrangements had been made for major catering companies to supply 7 days rations for the labourers. The Royal Engineers were to mark out the works, prepare houses and villages for defence, carry out preventive demolitions and clearances to open fields of fire, construct wire obstacles, conceal slopes and undertake other details of a supervisory military and technical nature. [43]

Not all the entrenchments were to be manned in the first instance. Some were to be left empty as positions for occupation by the field army should it be forced to retreat.

To cope with this vast influx of civilian manpower, added to which would be the defending troops, arrangements were made for various water companies to undertake the rapid laying of pipes and taps for supplying water to the various encampments. Householders in the vicinity of the line were to be required to keep their cisterns and tanks full and to keep their pumps in a condition for constant work. Most of the mobilisation centres had water cisterns for the collection of rainwater and some were connected to a water main. This was another important source of water supply for the defending forces. As a supplement to existing hospital accommodation, other buildings in London were to be requisitioned to serve as base hospitals for up to 20,000 sick and wounded. [44]

The Handbook envisaged the possibility that, in a future revision of the defence scheme, the eastern end of the defence line south of the Thames might be altered to run across country to connect with the Chatham defences.

*The end of the London defences*

By the date of the Handbook, Germany, with its recently begun programme of new naval construction, had also emerged as a possible future enemy. However, the long debate between the military and the naval lobbies had shifted in favour of naval rather than military defence. This was in fair measure because of the increased numbers of more powerful and modern warships in the fleet, resulting from the programme of naval construction initiated by the Naval defence Act of 1889. Invasion was now seen as basically a naval problem, preventable by naval supremacy. During his premiership from 1902-4, Bafour personally interested himself in this issue and showed a distinct favour to navalist thinking. [45] The naval elite claimed that the Royal Navy could maintain supremacy and that while this existed, an invasion was impossible. At the Committee of Imperial Defence on 12th December, 1903, the naval members confidently asserted that navy could counter an invasion of England and of Ireland even if they were attempted at the same time. Following a change of government in 1905, the Liberals under Sir Henry

Campbell-Bannerman showed the same inclination to navalism as Balfour. [46]

Meanwhile, the Entente of 1904 had signalled better Franco-British relations but confidence building took time. 'Reading between the lines' of Defence Committee papers, it would appear that as late as 1907 the idea of a possible French invasion threat had not entirely disappeared, although there was then much more concern about Germany and 'the marked increase of [her] port facilities which now provide the means of rapid embarkation on a considerable scale'. [47]

During Haldane's term of office as Secretary of State for War, the policy for basing the defence of the United Kingdom on the navy became more firmly established. The London defences were an early casualty. In Parliament on 9th March, 1906, the year in which the innovative and all big gun battleship HMS Dreadnought was launched, Haldane announced in relation to the London defences that;

*'These constructions had a definite origin in a time when the navy was not the navy of today and above all, when the navy had not that mobility which belongs to our splendidly organised Fleet at the present time, and when it may have been necessary to make other provisions for the defence of these shores... What an advantage it is when you can get rid of these things; root and branch... Those things were considered very carefully and in great detail; and now with the consent of the Government and of the Defence Committee and as a result of acting on a belief in the principle which we have inherited from our predecessors; they are going to disappear root and branch as fast as they can be made to disappear' [48]*

More soberly, the Committee of Imperial Defence stated its consideration that:

*'In view of the conclusion that a serious invasion of the United Kingdom is impossible, so long as our naval supremacy in maintained, the London Defences should be abolished' [49]*

In his second edition of 'Fortification' published in 1907, the influential and iconoclastic G.S. Clarke, commented that:

*In this country... an era of moderation in regard to permanent fortification appear to be dawning.. while the ill-conceived defences ofLondon are to be abandoned.' [50]*

From conception to abolition, the London defences had existed for the remarkably short period of 17 years.

The Member of Parliament for Reigate tried to secure retention of the Reigate centre and some other sites as national property 'in view of the fact that the neighbourhood is rapidly developing for building' but failed in his attempt. [51] The mobilisation centres and lands around them were gradually sold off, Reigate being disposed of in 1907. [52] A War Office document of that year had stated that Reigate Fort was connected to a water main, presumably considered to be a selling point. All its military stores were to have been removed by 30th November, 1906. [53] In some impish remarks, F.G. Green in his *The Surrey Hills* (1915), commented that 'the fort has recently been purchased by Sir Robert Inglis who must feel as proud as a feudal baron with so large a fort on his estate'. The Inglis memorial and viewing point may be seen on the edge of the south facing crest a short walk

west of the fort. There is a map of the fort and the ground around it whose annotations may refer to the transfer of a swathe of land to Inglis. (Fig. 30) [54]

*A revival during the First World War?*

After the outbreak of the First World War, the Royal Navy's optimism about their ability to prevent an invasion rapidly diminished and documents show that the London defence Scheme was in some measure resurrected against a perceived threat of a German invasion. [55] It is not clear whether this included the Reigate Position but it is thought that entrenchments were made on the crestline further to the east near the Woldingham site (where traces of fieldworks are said to remain) [56] and, from the report of a contemporary eyewitness, at Sevenoaks. [57] Emergency Scheme 'L' refers to defences connecting Halling in the Medway to Buckland Hill, northwest of Reigate. [58] A long line of trenches between the south bank of the River Swale and the country to the north of Maidstone was labelled 'London Defences' in a contemporary document. [59] An extensive photographic archive of this line exists. [60] To the north of the Thames the London defence scheme was also resurrected, with some modifications to the original plan. [61]. There is anecdotal evidence of the use of Reigate Fort as a camp for the scouting movement during the interwar years. [62] The fort was taken into the ownership of the National Trust in 1932.

*The Second World War*

During the Second World War, the Redhill Gap became an element of the inland anti-invasion defences and, a short distance to the south, the GHQ line of pillboxes and other defences ran along the north bank of the River Mole. (Figs. 31-33) The ridgeline of the Downs also received some defences.

These measures originated as elements of the schemes adopted by General Sir Edmund Ironside, for Home Defence in the months following the Dunkirk evacuation of 26th May-4th June, 1940, followed within three weeks by the surrender of France to Germany. It was in this period that invasion was most feared. As commented elsewhere:

*'Ironside's plan was largely an anti-tank strategy designed to check the penetration of armoured fighting vehicles.... His basic plan was to reorganise the existing mobile columns and add static defences based upon fortified nodal points and linear 'stops' to contain the movement if tanks. Ironside's thinking was based closely upon recent German tactics in Continental Europe, where the initial armoured advance had almost invariably kept to the main roads. Since major roads in Britain generally intersected at towns, fortification of nodal points in the communication network would place a brake on German progress. Stop lines acted similarly but served to define zones within which an enemy advancing from the coast or from an inland airborne landing would be contained, both by obstacles and by fire from static troops. The mobile reserve would then rush to the zone, and kilt, capture or expel the invading force'. [63]*

Redhill and Reigate became defended nodal points and some structural evidence of their defences remains. The GHQ Line ran from the bank of the Severn near Bristol to Maidstone and north to the south bank of the Thames, to resume northwards from the Essex shore to Yorkshire and beyond. This long line of defence protected London and the vital industrial heart of the Midlands. There are some impressive views of sequential pillboxes along the nearby Mole part of the GHQ Line. To help secure London itself were

three inner lines of defence (Fig. 34). [64] The GHQ Line and the inner lines of defence were, in a sense, a wartime successor to J.C. Ardagh's London Defence line.

There is also anecdotal evidence of the use of Reigate Fort by the Canadian Army, but this has not yet been verified. Some paintings to be seen in the magazines have also been linked to a Canadian presence. Along the ridgeline at Reigate were some defences including pillboxes and trenches. There is a possible observation post m. to the west of the fort. As part of the Ironside deployments there was a Canadian infantry brigade to the rear and in front of the ridgeline. There was a military encampment at Gatton Park. The Canadian headquarters was at Merstham House, where the HQ of the Redhill Position of Ardagh's London Defences was to have been. [65] In caves a few hundred metres down the slope from the fort towards Reigate was the headquarters of SE Army Command. Under Lt. Gen. Bernard Montgomery who had a very gung ho attitude, considering that in the event of a German invasion, the best form of defence was vigorous attack, and insisted on '100% binge' from his troops. [66] The Redhill/Reigate area was one of many used for the build-up of forces needed for the D-Day invasion of Europe on 6th June, 1944. An aerial photograph of 1944 shows an apparently recently laid surface of stone chippings around the buildings at the eastern end of the fort. This indicates some form of re-use during the wartime period. [67]

In post-war years, Reigate Fort became used (or re-used) as a camp for the Scouting movement. This activity had began by he early 1950s and lasted nearly 50 years. It appears to have been greatest during the first half of this period when the catchment area of the camp was more than just local and included the greater part of SE England. Scouts were encamped in the eastern half of the fort and cubs in the western half, the two areas being divided by relocated sections of the military fence from part of the counterscarp side of the ditch. There were many and varied activities, including map reading and the construction and use of aerial ropeways for adventure training. The ramparts of the fort were dug into at several points to make pits for field kitchens. The magazine was used as a bar for Scout seniors and as a store for soft drinks and sweets. The tool store was rented for a time by a resident from Merstham for use as a garage. [68]

In the second half of the period of scouting use, the site was less intensively used and its catchment area gradually receded to that mainly of the locality itself. Scouting use ceased in 1998.

By 1972 Reigate Fort had become a Scheduled Ancient Monument.

## 3. DESCRIPTION OF REIGATE *FORT (please consult the plan at Fig. 35 when reading this)*

### General

The fort is an earthwork in the form of an elongated banked and ditched enclosure (250 x 50 m), orientated east-west. This contains two blocks of casemates behind the front rampart and, at the eastern end of the fort, a tool store and a magazine, either side of a mettled courtyard. There is a caretaker's cottage outside the perimeter, about 40-m east of the fort. The crestline road to the fort was a pre-existing track. This is likely to have been improved and widened by the War Office.

Aside from the invasive growth of trees on the ramparts and in the ditches, the fort looks much as it did when it was built just over a hundred years ago. Its quiet environment would have become a hive of activity had the London defences been activated.

The design and form of the fort is nowhere explained in contemporary official documents but it was one of three highlighted in the Handbook of 1901 as having a 'command of the country'. Its elongated shape might be explained as providing for a front of guns or howitzers, to be mounted on extemporised platforms to be placed behind the rampart or on the parade during a period of invasion alert, but the evidence for this is lacking.

### Individual features

The earthwork and entrance (Figs 36-62)

The bank and ditch of the earthwork were a modification of the crest of the hill, intended to create a defensible and secure enclosure from which troops could direct their fire against an approaching enemy. A small part of the sloping ground immediately in front of the fort was kept clear during the War Office ownership of the site.

Throughout its circuit, the earthwork takes the form of a built up rampart mound from which there is a steep slope down to the ditch of v-shaped section. The rampart originally had a properly formed and just still visible infantry fire step and parapet. Its once sharply formed and cut features have been eroded by weather and sheep grazing over the last century and display the results of a gradual process of soil slip. The clay face of the rampart probably covers a core of chalk debris. It is not known whether mechanical (steam) excavators were used in its construction but manual labour is likely to have played a significant part.

On the counterscarp (outer) side of the ditch there is a berm having a sloped riser to a glacis, which joins with the unmodified ground. Along the berm a 6-ft. (1.8 m) high metal fence was positioned as an obstacle. Part of this still exists along the rear and flank of the eastern half of the fort. It has 2 ¼-in. (56mm) centres between spiked rod steel uprights. In war, a belt of barbed wire entanglement would have been fixed against this. An enemy succeeding in penetrating this would still have found the steep escarp slope of the ditch a formidable obstacle, especially when under fire from the rampart.

A 10-ft. (2.7 m) wide road enters the fort on a parapeted causeway over the eastern end of the rear ditch. This was more than wide enough for a General Service (GS) horse-drawn waggon, the standard military cargo carrier of the time. (Figs. 63-65) The nature of the

original surface of the road is unclear. Today it presents as a compaction of pebbles, flints and brick and tile fragments set between 2-in. (50 cm) wide concrete edgings.

Where the road passes through the rampart, the cutting is revetted in concrete. A pair of 5/8-in. (15 mm) thick bullet-proof steel doors, hung from ridge-capped concrete pillars, closes the opening. The doors run on a metal roller, presumably originally on racers, as was the case with similar doors of other London defence sites. A pair of rifle loops with internal flaps pierces both leaves. The western leaf contains a small wicket door. There is no clear indication of the original colour of the doors but there is a residue of a black coating. At the counterscarp end of the entrance road are the remnants of a higher Dacoit type steel palisade fence, 8-ft. (2.4 m) high with 7-in. (179-mm) centres. This was contemporarily called 'unclimbable' because of the perceived and tested difficulty of scaling. To this, outer double gates of similar construction were originally attached, also planned to open and close on rollers. On the inner faces of the parapet wall of the causeway are iron fixtures presumably relating to these gates. The parapet wall and revetment of the parapet display both vertical and horizontal cracks and the door piers are tilted inwards. This is more pronounced in the case of the western pier.

The entrance road leads on to the surface Tool Store and the semi-underground magazine. Between the latter and the northern or rear rampart is a curved way through to the main enclosed space or 'parade' of the fort. (Figs. 66-67) The sides of this are revetted in concrete, pierced by circular ceramic lined drainage holes.

On the eastern side of the fort, the southern or front rampart displays traces of an infilled short zig-zag fire trench, probably of First and Second World War date. There are various ground disturbances of unknown date and purpose at various points along the front rampart. These may variously be traces of the fire pits for field cooking purposes during use of the site by scouts and cubs, [69] holes from the removal of trees or they might relate to interventions during the Second World War, or all three. There is a report of there having been a Second World War infantry pillbox on the front rampart but no traces of this could be found.

The glacis from the front rampart displays a number of steel pickets, which may have been fixing points for a belt of barbed wire, presumably of First or Second World War date.

The interior slope of the rifle parapet of the rear rampart, immediately to the west of the gate, is revetted with nodules of flint. This is paralleled by traces of similar revetting at the Boxhill and Farningham sites.

## The parade

'Parade' is the usual term applied to the space enclosed within a defensive work. At Reigate this flattish area is turf-covered. No evidence could be seen of the nature of the original surface. The parade is said to have been used as a pistol and rifle range during the Second World War, with targets set up at its western end.

## The horseshoe shaped mound

There is a flat-topped horseshoe shaped mound attached to the inside of the section of rampart forming the western end of the fort. This is about 38 ft. x 30 ft. (12 x 10 m) and 5

ft. 1.5 m) high but is not shown in the 1898 War Office plans of the fort but is portrayed in a 25-in. mile Ordnance Survey map, printed in 1914 from earlier surveyed information. (Fig. 67a).

The function and date of the mound is unclear. It has been suggested elsewhere that it might have been intended as a platform for field gun to fire to the flank. This would presume that it was added at some date between 1898 and 1906. There is also a tradition that it was built as a 'target mound' or butts for the alleged firing range established within the fort. It is an unlikely design and form for this but targets might have been set up on it for a time at some period.

The rectangular mound (Figs. 68-69)

This feature, just a few yards to the northeast of the horseshoe shaped mound, is not correctly positioned or portrayed on any Ordnance Survey plan of the site. It is a self-contained mound, slightly more rectangular in plan than round, about 26 ft. x 10 ft. (8 x 3 m) and 8 ft. (2.5 m) high, very close to, but not actually connecting with the front rampart. Likewise, this appears for the first time in the Ordnance Survey map of 1914. Its purpose is also unclear. It may have been added later as a traverse, a device to bar enfilade fire, or that coming from the flank which sweeps the length of a fortification. It is probably of the same date as the horseshoe shaped mound.

The underground water tank (Figs.70-75)

At the foot of the inside slope or talus of the rear rampart near the north eastern corner of the Parade is a rectangular 19-ft. x 11 ft. (5 x 3.3 m) concrete walled enclosure. This defines an underground water tank for the storage of rainwater.

The tank is marked on the plan of 1898 as having a capacity of 5,000 gallons. It was fed from rainwater draining off the inside slopes of the rear, front and west ramparts into a gully called a Pitcher Channel. Its walls are 2 ft. (60 cm) thick and it contains infilled material to within 12-16-in. (30-40 cm) of the tops of the walls. At its western end is a smaller concrete rectangular settling tank with an inspection cover, having an inlet from the Pitcher Channel. As shown on some contemporary drawings, the clean water overflowed from this into the main tank through a ceramic pipe. There is a similar overflow pipe through the thickness of the eastern wall of the tank. Water was drawn off by means of a hand pump on top of a thin concrete roof, which originally covered the tank.

The interior of the tank was apparently accessible in the 1950s and 60s when scouts are said to have used it as an impromptu bathing pool, entering it via a hatch down a steel ladder fixed to the inside of the structure. [71]

As well as this tank, there was a mains water supply as an early or original feature. This entered the fort by pipe under the entrance road and ran via a hydrant sited just to the east of the magazine, on to tanks within the casemates. When the later Tool Store was built, the hydrant was shifted to a new position, just to the west of the entrance to the fort. Here there is a small concrete surround containing a stopcock and the seating for a standpipe.

The casemates (Figs.76-83 ) (See also the National Trust's own record drawings)

The two underground casemates were built behind the middle section of the front rampart, spaced about 100-ft. (30 m) apart. Their purpose was to provide space for the mobilisation tools allocated for storage at this site. It is unclear whether special racking was provided for this purpose. In wartime, and on issue of the tools, the casemates would have become available, if needed, as a shelter for that element of the military force assigned for defence of this position. The eastern casemate is almost intact but the entrance to the western one has been blocked by an infilling of earth, a small hole remaining through which it is possible to gain access to the interior.

There is no known inventory of tools and materials stored at Reigate but at Annex A [to be provided in the definitive version of the text] is a statement of the items stored generally in the London defences, of which the fort would have had its due proportion. The items listed give us a glimpse of the types of operation to be carried out in creating the entrenched line: axes and saws to clear areas of trees to be occupied by works, to make clearances 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 provided to create protective structures for the defending troops. Barbed and plain wire was stored to make wire obstacles in front of and around defence positions. Rules, tapes and lines were included for marking out the works. In addition, gunpowder was also stored, presumably for use in connection with construction works.

All these items and more, presenting a great variety of shapes and sizes, some in boxes and some not, would have been crammed into every space available within the casemates.

Either casemate was, in effect, an elongated 71 ft. x 13-ft. (22 x 4 m) buried concrete box, its roof being partly covered with earth. Access was down steps at either end of a sunken way running along a 2-ft. 7-in. (80-cm) thick front wall, through which two wide doorways give entry to the interior. Two windows flank the doorways, whose openings are minus their double timber leaves. The windows contain remnants of Crittal steel frames, with an upper flap. The western casemate was found to preserve the Crittall steel window frames and glazing bars, complete.

Internally, either casemate is divided transversely into two compartments by a wall breached by two semi-circular arches. In the eastern casemate the inner arch, which had been later infilled with a brick wall, is pierced by a hatchway. The ceiling is formed of three linear jack-arches, consisting of rolled steel joists with spans of flattish curves of brick. Four pipe vents may be seen in the ceiling. The walls and ceiling are painted in white. The floors are of poured concrete.

Timber-framed three-level bunk beds with wire mesh for the receipt of mattresses remain against two of the walls of the western compartment of the east casemate. These have been said to be remnants of use of the site by the Canadian Army during the Second World war but a former Assistant Scout Warden at the site remembers installing these in the late 1950s or early 60s for use by cubs in camp at the fort. [70]

The parapet wall of the sunken way of the eastern casemate is surmounted by a protective tubular fence consisting of vertical standards and top and middle horizontal bars. At the bottom-centre of the parapet wall are two recesses for water supply delivered from the

already referred to main. These display galvanised pipework. At the foot of the eastern staircase is a sump pit to form a drain for rainwater.

Until removal at an unknown date, a similar fence existed along the parapet at the western casemate.

Outside the ends of either casemate is a flight of steps giving access from the parade to the infantry firing step of the front rampart.

The Tool Store (Figs.84-91) (See also the National Trust's own record drawings)

In the 1898 plans there was an abortive proposal to add two further casemates under the front rampart to increase the space for the storage of tools. Later the detached surface Tool Store was constructed. This is doubly unique among ther mobilisation centres in being within the fortified perimeter whereas the others were outside and, in having a flat roof, in contrast with the usual pitched one.

As in other cases, by the time this tool store was actually built, its may have been intended to free space in the casemates to allow them to be used as additional magazines for the storage of the ammunition for the new 4.7-in. and 15-pr. breech-loaders which were entering service and were assigned to the London defences. The ammunition for the new guns was safer, and although safety continued to be of paramount importance, the precautions for magazines of earlier years could be slightly relaxed to allow storage in other classes of accommodation. The tool store may have been added around 1903-4. An undated pencilled rectangle on the plan of 1898 indicates that a site for this in rear of the west casemate had originally been considered.

The Tool Store is a rectangular building 41.27 x 29.25 ft. (12.7 x 9 m) constructed of red brick laid in English Bond with a slightly overhanging flat concrete roof and a poured concrete floor. It is separated from the front rampart by a narrow space. As with the casemates, there is no evidence of there having been storage racking fixed to the walls as was provided for in designs for the tool store at the Henley Grove site. Freestanding racking may have been used. The interior would have presented as a varied assortment of stores.

Two wide entrance doorways, flanked by two window openings, are in the western elevation of the building. These are hung with modern replacement double-leaf doors. There is a single window opening on either side of them. The remaining three sides are each pierced with two window openings, with the remnants of cast iron glazing bars. A protruding stone on either window frame in the western elevation appears to have been intended as a stop for the outer leaves of the double doors. These features are repeated at several of the other mobilisation centres. Wooden plugs set in the walls between the doors were probably holding points for the inner leaves. The doorways were wide enough to admit a General Service waggon, should this have been necessary.

The concrete roof is reinforced with parallel rolled steel joists, crossed underneath by a transverse joist resting on a central pillar. The original internal arrangement appears to have been an open space. During the post-Second World War period, the interior was divided into two compartments but this division has recently been removed. Inside may be found the original entrance doors and a single leaf removed from the magazines.

The roof has been recently repaired by the National Trust.

Next to the Tool Store, a staircase of unknown but possibly post-Second World War date, leads to the top of the front rampart.

The magazine (Figs.92-110) (See also the National Trust's own record plans)

This was for the storage of that proportion of the shells, cartridges and fuzes held in-theatre for issue to the artillery elements of the defending forces assigned to the Redhill Position. It incorporated the latest safety measures, such as safety lighting to avoid a naked flame being taken directly into an area of explosives and the omission of the use and admission of materials or substances which might cause dangerous sparks, if struck.

The magazine is a semi-underground concrete and brick building, containing separate rooms for shells and cartridges. It is covered within an earthen mound. The external walls are constructed of concrete and are externally protected by dry packing against the penetration of moisture. The arched ceilings of the passage are in brick and the internal walls constructed either of brick or concrete. Through a gloom lit only by candle lanterns, reflecting off whitewashed walls, a visitor would have seen hundreds of stenciled boxes of ammunition stacked on the floor, probably with walking spaces between stacks. The temperature and humidity of the magazine as represented in the readings of wet and dry thermometers were checked daily and the ventilators opened or closed depending upon the ambient conditions outside.

Railed steps down from the courtyard outside give access to the magazine. These lead into a brick-arched entrance passage running the length of the south side of the building. From this three doorways sequentially give entry to (a) an ammunition-handling lobby (b) a shell store and (c) a shifting lobby which leads into the cartridge store. On the south side of the passage are two shallow arched recesses in which candle lanterns were stored on shelving, ready for use to provide safe lighting of the magazine. The painted labelling 'LAMPS' may be seen within the arches in either case and there are slight traces of where storage shelving had existed. (See Figs. 111-114 for an example of the type of lamp used) The passage itself was illuminated from a candle lamp placed in a wall recess at its end. This is minus its metal frame and glazing. Like most of the other recesses, the fumes and smoke from the candle were vented through tubes in the walls.

*Shifting Lobby*

Next to this lamp recess is the doorway to the Shifting Lobby, an arched passage forming an ante room to the Cartridge Store, and labeled with its name above the still surviving double doors. The latter retain their original mustard colouring. The Shifting Lobby was part of the safety precautions for the magazines. Here, before entering the Cartridge Store, soldiers detailed to work inside were stopped by a moveable wooden barrier. (See an example of magazine regulations as displayed in shifting lobbies at Fig. 115). In front of the barrier, they were required to take off their potentially spark-making hobnailed boots and their outside clothing which might carry grit in folds which, however remote the possibility, might result in a spark if accidentally struck inside. These measures were considered to be prudent in an area of potentially dangerous explosives. Once the soldiers

had removed their uniforms, and hung them on a pegboard on the wall of the lobby, they passed through the barrier and put on special magazine clothing and shoes. After this they were clear to enter the cartridge store itself. This procedure was reversed on leaving.

On the walls of the shifting lobby may be seen the labelling 'UNIFORMS' (outer side of the barrier) and 'MAGAZINE CLOTHES' (inner side). These were called respectively the 'dirty' and 'clean' areas. There are also wall traces both of the bench seating used by the soldiers when changing their clothes and of the pegboards for the hanging of clothing. Of the barrier itself, all that remains is a wall socket on the western side of the lobby and a receptacle on the eastern side into which the lifting bar was lowered after the soldiers had passed through. The shifting lobby was illuminated from a glazed recess at the side of its entrance from the magazine passage. As another part of the safety precautions, this recess was served with its lantern from that passage. The recess retains its bronze framing but is minus its originally existing ¼-in. (5 mm) thick plate glass. Inside is a shaped metal stop for the front of the magazine lantern. A 9-in. (23-cm) ceramic pipe rises from the arch of the shifting lobby to the top of the magazine mound.

The entrance to the Cartridge Store retains one of the leaves of its double doors.

*Cartridge Store*

The 32 ft. x 12.35 ft. (10 x 3.8 m) cartridge store is a vaulted chamber illuminated from two (now blocked) safety lighting recesses in its eastern end wall, both served externally from the ammunition handing lobby. These retain their bronze frames, each with a horizontal safety bar. The latter was to prevent a lamp accidentally falling through into the cartridge store, should the glazing be smashed as a result of rough handling. Next to the recesses is a timber-framed issuing hatch from the cartridge store into the handling lobby. This was fitted with a sliding door, of which part remains. The door was opened for the passing through of boxes of cartridges into the lobby, afterwards being closed as part of the safety precautions for the magazine.

The walls of the cartridge store are decorated with later painted pictures: at the eastern and lips, the lower part of a nose and a chin; on the west wall a spider's web and on the south wall two spindly boys either side of a girl with flowers, with another partly formed figure on one side. Anecdotally, these originated from possible use of the fort by the Canadian Army during the Second World War. Stylistically, however, these images appear later and may date from the use of the fort in the post-war period by the Scouting movement. A former scout commented that when he visited the magazine in the 1950s these paintings did not then exist. [72] There is a Bakelite lamp fitting in the ceiling of possibly Second World War or later date.

*Shell Store*

The parallel 25 ft. x 11.7 ft. (7.7 x 3.6 m) shell store is entered from half way along the entrance passage and is without an intervening shifting lobby, it being considered that even filled projectiles did not represent as great a safety risk as cartridges. It retains its door frame but is minus its doors. It too was illuminated externally from two lamp recesses, in this case through its southern wall and served from the entrance passage. The shell store also has a hatchway into the ammunition handling lobby. This retains its frame only. The hatch itself is filled with later blockwork.

*Ammunition handling lobby and distribution platform*

The ammunition handling lobby is reached via steps from the entrance passage. Like the latter, it was illuminated from a recess in its end wall.

Boxes of shells and cartridges passed through the hatches from the shell and cartridges stores, momentarily rested in the lobby before being passed through either of two complementary (and now blocked) hatchways in the east wall to an external distribution platform, just below the surface of the courtyard outside. The 3-ft. 10-in. (118-cm) drop from the latter is protected by a tubular steel safety rail, formed of standards and a top rail, all with a diameter of 2-in. (5-cm). Opposite the hatchways are two gaps through the safety rail for the movement of boxes to and from the courtyard.

Access to the platform is via steps at its northern end.

*Fuse Store*

A puzzling feature is the placement of the small Fuse Store externally under the southern end of the distribution platform. Fuses are particularly sensitive and are normally subject to the stringent safety precautions of the magazine and usually stored within them.

The Caretakers Quarters (Fig. 116)

These were proposed in the plan of 1898. An oblong single-storey bungalow- like building was erected at a date yet to be determined. This was constructed of red brick and was provided with a slate-pitched roof. It was divided in two by a transverse party wall, one side being a living space and sleeping area for the supervising caretaker and the other for his subordinate labourer and, in both cases, any associated family. Porched entrances gave entry from the road or track leading to the fort. There were separate outside toilets attached to the rear of the building and enclosed back gardens. The quarters have been mutilated by conversion into holiday accommodation. Several other residential buildings have been built on either side since the military use of the site.

Little is revealed in documents about the tasks performed by these resident staff but they must have included the following:

- security of the premises and control of access.
- Monitoring of the structures and premises.
- Inspection and care of ammunition and stores, including daily recording of temperatures and humidity within the magazines, opening or closing of ventilators depending upon conditions, cleaning and, if necessary oiling, of the tools to ensure their continued good condition.
- General record keeping.
- Ground maintenance, including cutting of grass within and around the fort and the control of weed infestation.

Some of these duties may well have been shared but the broad division is likely to have been those of a more technical nature being vest in the caretaker and lesser duties, especially those involving lifting and physical exertion being performed by the labourer.

*Boundary stones*

Finally, should be noted a number of War Department boundary stones around the site. These are marked as they existed in 1896, prior to construction of the fort, at Fig. 30. A photograph of one of them is at Fig. 117.

## 4. COMMENTS AND SUGGESTIONS

Somewhat paradoxically for a Britain at the height of her imperial power, Reigate Fort symbolised a sense of insecurity against the perceived threat from her main rival, France. It also exemplified a new and innovative British approach to the defence of land fronts and freeze-framed the last scheme of such fortification undertaken in the United Kingdom during peace time. This fully justifies its Scheduled Ancient Monument status and the focus which the National Trust have decided to give to its conservation and presentation.

It is understood from conversations with Paul Redsell and Andy Wright that the Trust have already decided on the main thrust of a regime for future conservation and management of the fort and have settled on something of the overall approach to its presentation. The following remarks are therefore supplementary to any baseline decisions that have already been taken.

- The Trust will already have recognised that there needs to be a clear understanding at the outset of what the end-product of heritage development should be and then to build a scheme round that. Ideally, the result should be to 'bring the fort back to life' in the minds and imagination of the visitor and to explain why it came to exist, the manner in which it was intended to function in its various elements and why it was discontinued. However, this would have to be approached within the constraints which it is understood have been set by the Trust of (a) the absence of a manned presence at the site and (b) a wish to keep the number of information and interpretation panels in the open air spaces to the minimum, perhaps no more than one. The Trust will have already recognised and weighed the limitations implicit in this approach.

- The manner in which the visitor enters and is introduced to an historic site greatly influences their attitude to and understanding of it. The accepted modern method is to route visitors through initial orientation, usually provided at a visitor centre. In the case of Reigate Fort, this will need to be achieved by providing an orientation panel at or near the entrance. This should consist of a combination of strong pictorial images with a very brief and simple text to answer the 'what', 'why', 'when' and 'how' questions which, typically are the first asked by any visitor. There should also be something of a 'story' element to the presentation. The panel should include a map of the defence line, with Reigate Fort highlighted and a plan and birds-eye view of the fort so that the visitor can achieve an immediate and unequivocal sense of its shape, form and size. More detailed explanation and interpretation could then be provided as the visitor explores the site, whether within one of the buildings (it is understood that both the magazine and the Tool Store have been considered for this purpose by the Trust) or by other display panels. It is further understood that should incorporation within a building be decided upon, given the intended unmanned nature of the site, this would be opened on a limited number of occasions when supervision can be specially provided.

- As the Trust has spent, and will spend, considerable sums of money on the fort, it will no doubt wish to maximise recognition of what has been achieved and the promotion of the existence of the site. This will inevitably attract more visitors and those who come will have hopes and expectations of being able to see and learn more about the fort. The Trust may have to accept that further panels will need to appear within the fort itself, such as next to the magazine and tool store, and the eastern casemate. These

could usefully contain cut-away drawings of the buildings concerned showing their interiors as they would have originally appeared, complete with their furnishings and stores as well as the necessary explanation. The author would be happy to work with a graphic artist to help bring this about. Another and usual form of information provision would be a history and guide to the fort, available through both local bookshops and outlets and the National Trust itself. Again, the writer would be willing to help take that forward.

- Careful security-handling of the magazine, certainly the most interesting building within the fort, might permit unsupervised access along the entrance passage and views of the interior by providing see-through gates at the entrances to the ammunition handling lobby, shell store and Shifting Lobby through to the Cartridge Store. This would assume the provision of low-level lighting within the building. Such a situation might favour some degree of refurnishing behind the gates, such as the replication of the interior of the Shifting Lobby and the display of ammunition boxes in rooms. Panel displays in the entrance passage would allow more detailed interpretation and perhaps could include the pre-fort history of the site and the later use by the scouting movement. This approach is equally applicable to a regime of supervised access. The writer could help with advice to take this forward.

- Turning to the repairs of buildings and conservation of the site, the writer has been advised by a representative of the Trust that structural advice on the state of the various buildings has already been received. A handling strategy for repairs has therefore presumably been determined. On the landscaping side, Andy Wright has advised that there is a programme for the removal of many of the trees growing on the ramparts and in the ditch, to allow a clearer view and understanding of the earthwork structure. This is to be commended. If at all possible, it might be helpful and informative to reproduce a short length (perhaps 10 m) of part of the firing step on the inside slope of the rampart.

- It is understood that in the longer term the western casemate is to be dug out and exposed. If so, replication of the safety railing as survives in the eastern casemate would be necessary. Public access to both casemates ought to be possible, obviating the unsightly chestnut fencing of the one and the infilling of the other. The doors of the Tool Store might be replaced with replicas of the originals, of which one leaf survives inside.

- The report contains sufficient information for the replication of the outer entrance gates which it is understood the Trust is considering. This might be a focus for the restoration of the original security fence on either side of the entrance.

- The writer has offered to investigate the nature of the original surface of the entrance road, the courtyard and the parade and awaits the Trust's advice about proceeding with this investigation. Advice about paint schemes for railings and doors will be given separately.

- No further advice is offered here, given the understanding that the Trust have already made some basic decisions but the writer would be willing to participate in a meeting with management to discuss the ways forward, should this be considered helpful.

The extent of any further research would be led by the extent of the conservation and management objectives and decisions of the National Trust.

## 5. ACKNOWLEDGEMENTS

The writer is grateful to the National Trust for the confidence they have shown in asking him to complete this study. He also thanks the management staff for their assistance throughout the project. He is grateful to Alec Beanse, defence historian, for his comments on a draft of the report and for his suggestions. Roger Gill kindly consented to the inclusion of his artist's impressions. The Surrey History Centre was unstintingly helpful in facilitating the writer's study of their archive collection. Malcolm Tadd of Subterranea Britannica provided comments on the report. Several people telephoned in their recollections of the fort during its use by the scouting movement. Their names are in the footnotes.

## 6. FOOTNOTES

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4. The other site is Henley Grove near Guildford, as part of an initiative of Surrey County Council.
5. Major H. Elsdale, 'The Defence of London and of England', *RUSI Journal* XXX (1886), 601-70.
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7. Andrew Saunders, *Fortress Britain*, Liphook (1989), 144.
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9. H.R. Moon's thesis on anti-invasion planning from the later 19th century to the First World War, King's College, University of London.
10. *Op. Cit.* In note 7.
11. Reported in PRO WO33/48, A138.
12. *Ibid.*
13. V.T.C. Smith, 'Chatham and London:the changing face of English land fortification, 1870-1918', *Post-Medieval Archaeology* 19 (1985), 105-149.
14. *Op. Cit.* In note 1, 3.
15. *Ibid.* note 13.
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18. *Ibid.* note 5.
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20. *Op. Cit* in note 1.
21. PRO WO33/48, A116 and A138.
22. Transcript of part of Jervois survey in the possession of the author and *'Op. Cit* in note 1.
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27. H. Sinclair, *Camp and Society (*1926),170-3.
28. *Op. Cit.* In note 1..
29. *PRO WO33/51/ERD/4289..*
30. *Op. Cit.* In note 1.
31. *Ibid.*
32. *Ibid*
33. Appendix A in 'Home Defence' in PRO WO 33/51, ERD/4289.
34. Parliamentary statement of expenditure of 1906 reproduced as an annex to DW King's Note on the Surrey Defence Works of the Nineties, War Office Library. (undated but before 1957) and as part of L.B. Timmis, Notes on the History of the Old Fort [Halstead] and the London Defence Positions, War Office (1957, reprinted 1978).

35. *Hansard*, 17th April, 1896.
36. *Op. Cit* in note 1..
37 PRO WO78/4333.
38. *Ibid.* note 34.
39. Reigate Tithe Map B1, Surrey History Centre.
40. *Ibid.*note 13 and 40a *Op. Cit.* In note 1..
41. *Ibid.* note 33 and PRO WO33/63/A453.
42. *Handbook for the London Defence Positions, War Office (1905).* There is a copy in the Ministry of Defence Library in London.
43. *Ibid.* and PRO WO33/188/A672, WO32/6374.
44. *Ibid.*
45. *Ibid.* Note 13.
46. *Ibid.* and PRO CAB2/1/69. See also CAB38/2/5 and CAB38/2/9.
47. PRO CAB 38/13/27.
48. *Hansard*, 9th March 1906.
49. PRO CAB38/11/11.
50. G.S. Clarke, *Fortification,* New York (1907), 3.
51. Ibid. note 34 (DW King's note)
52. *Interim Report of Committee on Condition of Tenure of War Department Lands and Properties* (1907), Ministry of Defence Library.
53. *Ibid..*
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57. Information supplied by Dartford Historical and Antiquarian Society, 1980.
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59. Two albums of record photographs dated 1916 at the Royal Engineers Library, Chatham.
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62. Pers. Comm.from Mr. A. Aldridge, May, 2000.
63. *Twentieth Century Fortifications in England Vol. II– Anti-invasion defences of WWII,* CBA (1996).
64. *Ibid,57..*
65. C.W. Preston, *The Borough of Reigate in Wartime, 1939-45* (undated) at Surrey History Centre.
66. *Op. cit. i*n note 63.
67. Supplied by Mr. Andrew Wright of the National Trust in whose archive it is stored.
68. Pers. Comms. Messrs. A. Aldridge, J. Hoskin, P. Mitchell, E. Waller and M. Wheeler (May and June, 2000).
69. *Ibid.*
70. Pers. Comm. From Mr. P. Mitchell.
71. *Ibid.*
72. *Ibid.*

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The relevant primary source series at the Public record Office are WO32, 33, 78, CAB 7, 16, 37, 38 and ZHC.

Figures in red ink represent the numbers of these stored which are also shown in Monnett Reserve.

Statement of Tools and Materials stored in the London Defences.

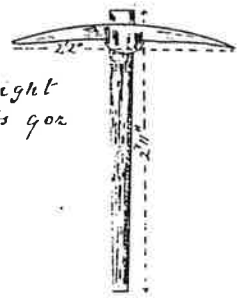
| | | |
|---|---|---|
| Axes, felling, G.S., Mark III, curved helve. | 6365 | 500 |
| Axes, hand, Mark II. | 1680 | |
| Saws, cross cut, 5 ft: | 1160 | |
| Saws, hand, 26 in: | 800 | |
| Picks, 4½ lb, 36 in:, ferruled helve. | 16820 | 5000 |
| Shovels, R.E., 4¾ lb. | 27110 | 5000 |
| Spades, N.P. | 2605 | 100 |
| Billhooks. | 16575 | 500 |
| Hooks, reaping. | 5370 | 100 |
| Crowbars, 4 ft: 6 ins:, 19¾ lb. | 1455 | |
| Cutters, wire, 8 in:, Mark I. | 1575 | |
| Augers, 1 in: | 340 | |
| Gimlets, ½ in: | 180 | |
| Chisels, 2 in: | 168 | |
| Adzes. | 225 | |
| Measuring rods, 6 ft: | 1190 | |
| Rules, 2 ft: | 120 | |
| Lines, 100 ft: | 1390 | |
| Drag ropes. | 3610 | |
| Measuring tapes, 50 feet. | 100 | |
| Hammers, hand, 3 lb. | 1070 | |
| Grindstones, 18 in:, F.S. | 375 | |
| Stones, rag. | 1650 | |
| Stones, rub, scythe. | 1650 | |
| Helves, pick, 36 in:, ferruled. | 2000 | |
| Helves, felling, axe, 34½ inch curved. | 510 | |
| Barrows. | 3110 | |
| Cold chisels. | 805 | |
| Gabion knives. | 2405 | |
| Roadmakers' rakes. | 33 | |
| Gravel screens. | 30 | |

Material.

| | | | |
|---|---|---|---|
| Gabions, Willesden paper. | | 3950 | |
| Dogs, sawyer, 12 in: , to 15 in: | | 9140 | |
| Spikes, 8 in: | | 5700 | 4000 |
| Sandbags. | | 1000000 | 100 000 |
| Wire, 14 S.W.G. | yds. | 181500 | 118 272 |
| Wire, barbed. | yds. | 176000 | 70 400 |
| Gunpowder. | lb. | 11680 | |
| Fuze. | ft: | 1505 | |

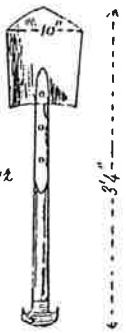
# Intrenching Tools

Pick Axe




Weight
7 lbs 9 oz

Shovel




6 lbs 2 oz

Wallace shovel


2 lbs 13 oz