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Second World War defences in Surrey

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The key events which have resulted, during the past twenty years, in historians and archaeologists recording and interpreting defensive and related military structures which were erected in Britain during the Second World War, are summarized. Locally, the Surrey Defences Survey played a significant role. Three aspects of the research carried out by volunteers working on this survey are discussed. The first of these is the recording of pillboxes and anti-tank ditches, particularly those associated with the GHQ Line which was constructed across the county from Farnham, through Shalford, Dorking and Horley, to Lingfield. Then the defences of two towns, Dorking and Guildford, which were selected by the Home Defence Executive as nodal points, are considered. Finally a massive wall on Hankley Common near Farnham, which is a replica of a section of the German Atlantic Wall and was built to test assault equipment, is described. In 2001, English Heritage selected the defences near Waverley Abbey to receive the first in-depth survey of such structures to be carried out. The aim was to establish national criteria for statutory protection of Second World War fortifications. However, far more remains to be done and in many cases the need is urgent.

Introduction

It was not until the BBC TV *Chronicle* award for archaeology was won in 1985 by Henry Wills for his ground-breaking study of surviving Second World War defence works that their importance and the comparative dearth of information about them came to be appreciated. Wills also wrote a book entitled *Pillboxes – a study of UK defences 1940* (Wills 1985). This was reviewed (Haveron 1987) in the newsletter of the Surrey Industrial History Group (SIHG) which prompted the Group to launch its Surrey Defences Survey. This in turn led SIHG to host, at the University of Surrey in November 1991, one of the first national conferences on the subject.

Then, in 1995, the situation changed dramatically. That year marked the golden jubilee of the Council for British Archaeology (CBA) and the project chosen to mark the anniversary was the surveying, within five years, of all the Second World War defence sites in the country – the Defence of Britain project (Lowry 1996). This had the immediate effect of recruiting a large number of new surveyors and, although the task was not completed in the allotted time, much was achieved both in the field and in archival research. The project came to an end in March 2002 when the accumulated information was deposited with English Heritage and the Scottish and Welsh Royal Commissions. It was made available on the World Wide Web (DoB 2002) and a summary was published (Denison 2002). Nearly 20,000 individual sites had been recorded, of which about 70% were anti-invasion defence sites, including nearly 8000 pillboxes, and the remainder were classified as other types of military site. These included, for example, army camps, prisoner of war camps, air-raid shelters, anti-aircraft batteries, firing ranges, Royal Observer Corps sites, radar stations, searchlight batteries and military hospitals. In Surrey about 95% of the sites are anti-invasion and of these approaching 80% are pillboxes.

In the meantime English Heritage had organized a seminar on Monuments of War in 1997 (EH 1998) and has since published a booklet summarizing its work on 20th century military sites (EH 2000). Then, as a result of the CBA project, they decided to undertake specific surveys of sites of particular importance. These would become candidates for statutory protection, a status which had not previously been granted to remains of Second World War defences. The first site to receive an in-depth survey was the area around the ruins of Waverley Abbey, near Farnham, which was visited during the field trip associated with the 1991 SIHG conference. The defence works there include particularly well-preserved examples of pillboxes and other structures and consultations are now under way as to the best form that their protection and interpretation can take. It is encouraging that a site in Surrey is the prototype for such an important scheme.

The Surrey Defences Survey

When it was founded in 1988, the Surrey Defences Survey was carried out by a small group of voluntary surveyors and soon the enormity of the task being undertaken came to be appreciated. The county was divided into 10km national grid squares and outline site lists, based on the Wills book, were issued as guidance for the surveyors. It should be noted however that Henry Wills had gathered his data mainly through letters published in the columns of local newspapers, appealing to readers for information based on their knowledge and memories. It was soon realized that this information was far from complete and more and more sites were being reported. For example, Wills lists 81 sites in the Farnham square

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(SU84) whereas 115 were known by March 2002, the end of the Defence of Britain project. Of the total of nearly 20,000 individual sites recorded nationally by that time (Denison 2002, 9) around 2,000 are in Surrey (DoB 2002).

At first the Surrey results were entered on simple forms and sent to the Surrey Sites and Monuments Record (SMR) at County Hall, either marked on maps or as simple lists of sites. Nationally at this time there were many individual surveyors at work, all with their different recording methods. The Fortress Study Group was involved but its recording system was more appropriate for larger, earlier fortifications. However, a national Pillbox Study Group was established and, mainly through its publication *Loopholes*, provided a lead to standardized recording and helped solve many mysteries by reporting results from different parts of the country (*Loopholes* 1992). Then, in 1993, the Association for Industrial Archaeology launched its Index Record of Industrial Sites (IRIS) scheme (Trueman & Williams 1993) and since then, each site in Surrey has been recorded on one of its standard forms. These have been forwarded to the SMR and thence to English Heritage.

The sites recorded include pillboxes, many of which lie along a linear defensive fortification known as the GHQ (General Headquarters) Line, anti-tank defences including dry and wet ditches and other fixed and movable obstacles, rifle, spigot-mortar, machine-gun and other gun emplacements, and barbed-wire fences. Many of these were associated with towns known as nodal points, including Dorking and Guildford. Also Surrey has a very unusual replica of part of Hitler's Atlantic Wall, which was used for testing assault equipment. The following sections of this paper provide details of some aspects of these features. Other Second World War military sites are mentioned briefly in the Discussion section.

Pillboxes and the GHQ Line

By May 1940 the threat of invasion by German forces was very real, brought into focus by the evacuation of the British Expeditionary Force via Dunkirk. Therefore, the Home Defence Executive was set up under General Sir Edmund Ironside, Commander-in-Chief of the Home Forces (Mackenzie 1995; Alexander 1999). London and the Midlands were to be protected by the GHQ Line and a succession of stop-lines between this and the coast. By the end of June plans were passed for the construction of thousands of concrete pillboxes and anti-tank blocks along beaches and at nodal points. In Southern Command the GHQ Line was about 400km long and stretched from Somerset to the Medway. It followed, where possible, features of the landscape which could easily be defended to create a continuous anti-tank obstacle and, on average, had pillboxes for rifle, machine-gun and anti-tank fire spaced at about 500m intervals. Figure 18.1 shows the route of the GHQ Line in Surrey. It entered the county from Hampshire at Farnham and then followed the Wey to Shalford, the Tillingbourne to Wotton, the Pipp-brook to Dorking, the Mole to Horley and headwaters of the Eden to Lingfield, from where it entered Kent. Figure 18.1 also shows the locations of other places mentioned in the text.

Pillboxes were designed by a branch of the directorate of Fortifications and Works at the War Office (Wills 1985, 15). The main considerations were the weapons to be used and protection from enemy fire, but standardization was introduced as much as possible. Drawings of the designs were issued to army commands who modified them, to meet local requirements and materials available, and then issued them to contractors. As a result many different variants of pillboxes were constructed. The plan, for example, could be square, rectangular, polygonal (particularly hexagonal or octagonal), circular or designed for the site, and all types are present in

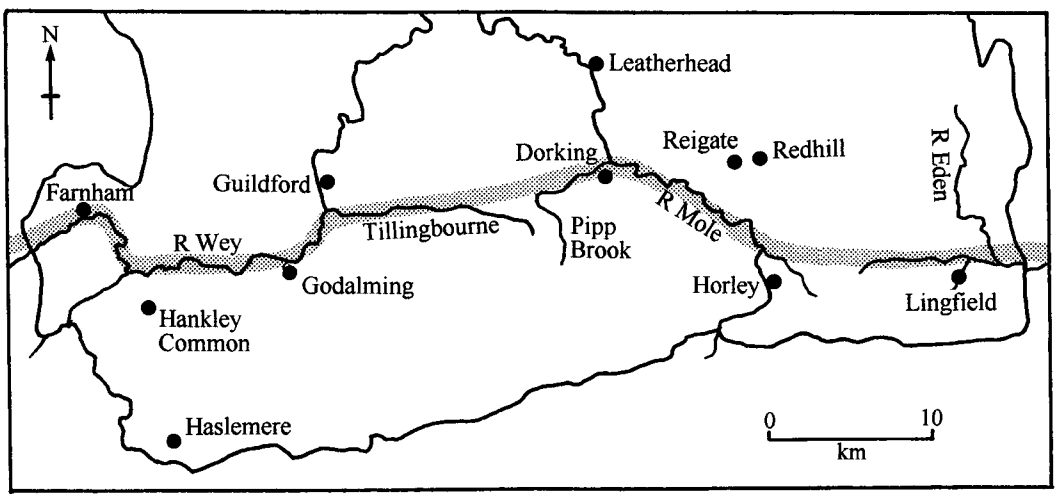

Fig 18.1 Sketch map of the southern half of Surrey showing (shaded) the route of the GHQ Line and the location of Nodal Points and other places mentioned in the text.

Surrey, although polygonal ones predominate. The materials used for construction could be concrete or a mixture of brick, stone, breeze blocks and concrete. Most in Surrey are a mixture of brick and concrete but there are also a large number made of concrete, some of which are prefabricated. The construction firm, John Mowlem & Co Ltd were the contractors for about twenty pillboxes between Farncombe and Albury and in 1990 one of their former employees, the late Fred Bowman of Shalford, recorded details of the work he carried out (Collyer & Rose 1999, 42–6). The procedure was to put down a concrete base and press vertical half-inch steel bars into it when it was still wet. On the next day the remaining steel parts were fixed and then steel shuttering for the walls and the loopholes (firing holes) erected. Concrete was poured into the shuttering to form the reinforced walls and then the roof beams were put in place. These had steel reinforcement bars exposed at the top, which were covered when concrete about 0.4m thick was poured over them.

The use of pillboxes depended upon them being unrecognized by the enemy until they were within effective range of the weapons being used. Many of them were therefore camouflaged. For example, one on the A25 near Silent Pool, Albury, was made to look like a petrol station and had real petrol pumps (Collier & Rose 1999, 42). Another at Elstead Mill, shown in figure 18.2, was disguised as a summer-house (Shepheard 1989).

Nodal points

A nodal point in the Second World War was defined (DoB 2002) as a defended town or village 'situated at a tactically important centre of communications which it is intended to deny to the enemy until our counter-attack can develop' and which 'may also serve as a pivot for the manoeuvre of reserves'. There were two categories of these nodal points. Type A might become isolated and have to hold out for six days before relief. Type B might have to hold out for three days. Co-ordination of military and civil plans was to be ensured by the creation of a 'triumvirate' consisting of the local military commander, the senior police officer or his representative and a civil officer, who might be the mayor or the chairman of the council. In Surrey there were category A nodal points, administered from Chatham garrison, at Dorking, Guildford and Redhill, and category B at Betchworth, Byfleet, Cranleigh, Egham, Godalming, Godstone, Haslemere, Horley, Leatherhead, Limpsfield, Newchapel and Shere.

A Home Guard outline plan of the defences of Dorking is held by Dorking Museum and a redrawn detail of this is shown in figure 18.3. The nodal point HQ was located at the Dorking Urban District Council headquarters at Pippbrook, near the centre of the figure (Knight 1989). It is shown heavily defended, with a linear fixed anti-tank obstacle on the north and east sides, four movable anti-tank obstacles on approach roads and five rifle

Fig 18.2 Photograph, taken in 1989, of an hexagonal pillbox on the GHQ line alongside the river Wey at Elstead Mill. It has rifle loopholes and the remains of camouflage which made it appear to be a summer-house. Photograph by Chris Shepheard

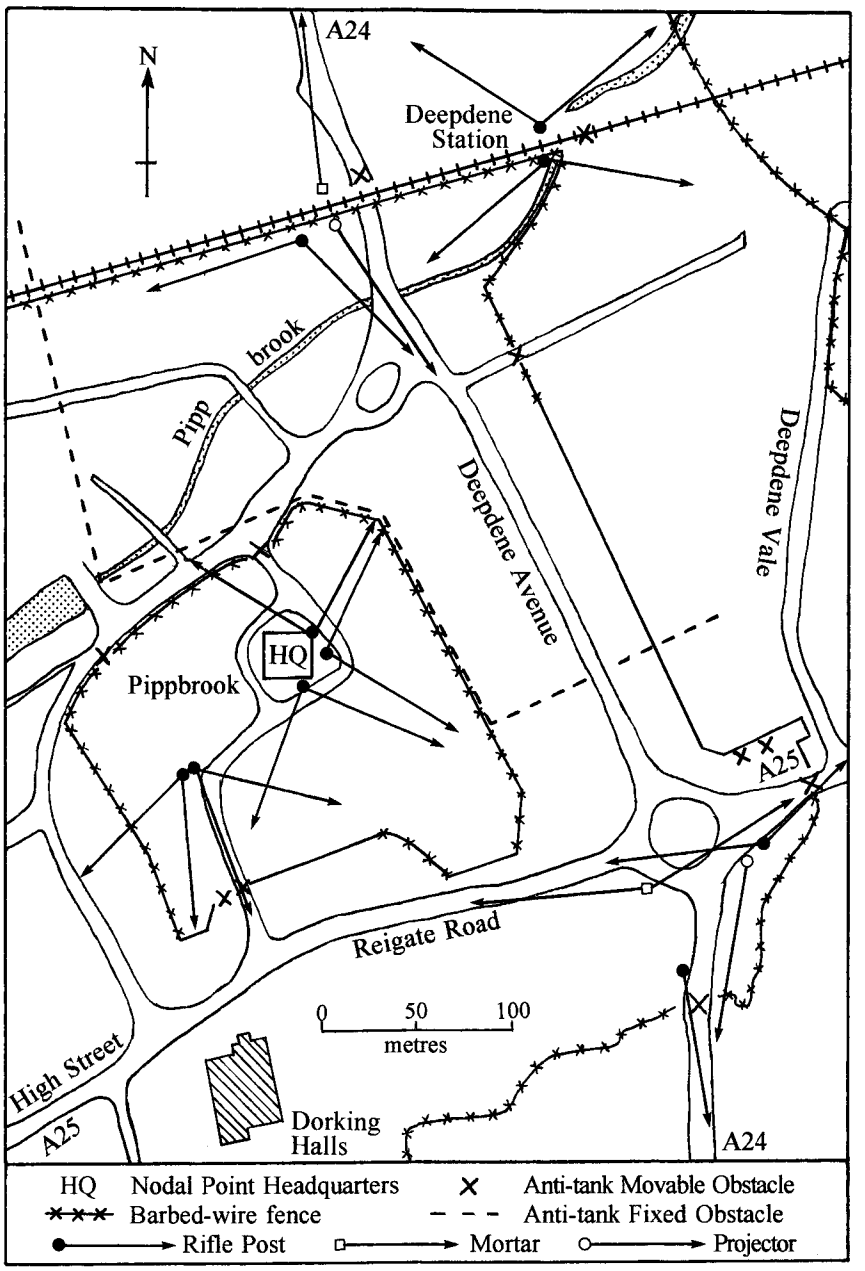

Fig 18.3 Redrawn detail of a plan of the proposed defences around the Type A Nodal point of Dorking during the Second World War. The headquarters, located at Pippbrook, Deepdene railway station and the junction of the A24 and A25 roads are all well-defended.

points at key positions. The site was also surrounded by barbed-wire fencing, except for small sections where presumably there were other barriers. At the east end of the town, the junction of the north–south A24 and the east–west A25 roads is shown protected by movable anti-tank obstacles, a barbed-wire fence, two rifle posts, a mortar post and a projector post. Again, to the north, Deepdene station and the adjacent railway bridge over the A24 are shown heavily defended. In particular there is a movable anti-tank obstacle across the railway track. At the north-east corner of figure 18.3 is shown a small section of a barbed-wire fence which surrounded most of the town. Within this, to the south of Pippbrook but outside the area shown, was Deepdene House, which was the wartime headquarters of the Southern Railway, with radio communication controlling the southern network as far as Exeter. This had four movable anti-tank obstacles and barbed-wire fencing but no armaments are indicated. A major part of the town, from the vicarage in the west to the A24 in the east and from the railway in the north to Rose Hill in the south, was divided into eight separately protected sectors and it appears that all the roads surrounding this area were either blocked or protected by movable anti-tank obstacles. In all, 28 of these obstacles are shown, eleven of which are present on figure 18.3. An example of an anti-tank obstacle being tested at an unknown location in Surrey is shown in figure 18.4.

The defences of Stoke Park, Guildford (Collyer & Rose 1999, 45) are shown on the redrawn plan of figure 18.5. They were to be manned by members of the Home Guard from the Dennis motor vehicles factory, which had more than doubled its workforce to about 3000 and was manufacturing trucks, tanks, trailer fire-pumps, bombs and small parts for aircraft (Collyer & Rose 1999, 120). The defences were located on either side of the Guildford and

Fig 18.4 An anti-tank obstacle, consisting of concrete blocks and steel girders, being tested somewhere in Surrey. Courtesy of The National Archives (PRO: WO 179/15)

Godalming by-pass road, which had been opened in 1934 (Clark 1999, 49). It appears that they were aimed at protecting Stoke Park mansion house from attack from the east. Part of the house, which was demolished in 1977 (Clark 1999, 49), is shown heavily shaded at the left of the figure. The linear defences consisted of wet and dry ditches, barbed-wire fences and road blocks. A photograph of a ditch, but at Farnham and not Guildford, is shown in figure 18.6. The weapons indicated in figure 18.5 include four spigot-mortars or Blacker bombards, which could be used against either tanks or personnel, depending on the type of mortar bomb adopted. The spigot was a steel rod which fitted snugly within the tail of the bomb and acted as a launching guide. These weapons were designed originally to be fired from a base with four metal legs but later they were mounted on a fixed concrete pedestal within a pit. The maximum range was about 400m (Collyer & Rose 1999, 181). There were also three Northovers or Northover projectors which looked like sections of drain pipes on legs. They had a smooth-bore barrel 46 inches long, weighed 74lb and fired self-igniting phosphorous grenades. There were also two pits for BMGs or Bren machine guns, one for a BAR or Boys anti-tank rifle (Wills 1985, 15; Mackenzie 1995) and over twenty rifle pits. It is striking that most of the weapons were located in wooded areas.

Unfortunately little information is available at present on the third category A nodal point at Redhill or on the twelve category B nodal points listed above.

The sea wall on Hankley Common near Farnham

The Second World War has left other types of physical remains in Surrey, especially because there was such a large number of troops billeted in the county just prior to D-Day (Ogley 1995). Of particular interest is a reinforced concrete wall, approximately 100m long, 3m high and 3.5m wide, near the Lion's Mouth (SU 883 413) on Hankley Common between Elstead and Tilford (Wood 1988, Shepheard 2002). This is a replica of part of the very long defensive Atlantic Wall built by the Germans along the coast of France and Belgium. The replica was built by Canadian troops, who were stationed nearby, and was used to test assault equipment on obstacles thought likely to be found during a landing in Europe. In order to make it as realistic as possible, raiding parties were sent across the Channel to measure accurately the German wall and bring back samples of the concrete to ensure that the training version was as realistic as possible. In the centre of the wall was a gap, 6m wide, closed by a three-section heavy steel girder gate running on rollers. At the ends and behind the wall were several types of tank traps, including pimples or 'dragon's teeth', lengths of railway track set in concrete and barbed-wire entanglements. A reconstruction sketch of the wall is given in figure 18.7.

Most of the obstacles were to be attacked with rockets hauling lengths of explosive-filled tube, known as 'Bangalore Torpedoes', and 'carpet laying devices' for the barbed wire. However, during the summer of 1943, a Churchill Mk II tank from the Fighting Vehicles Proving Establishment at Chertsey

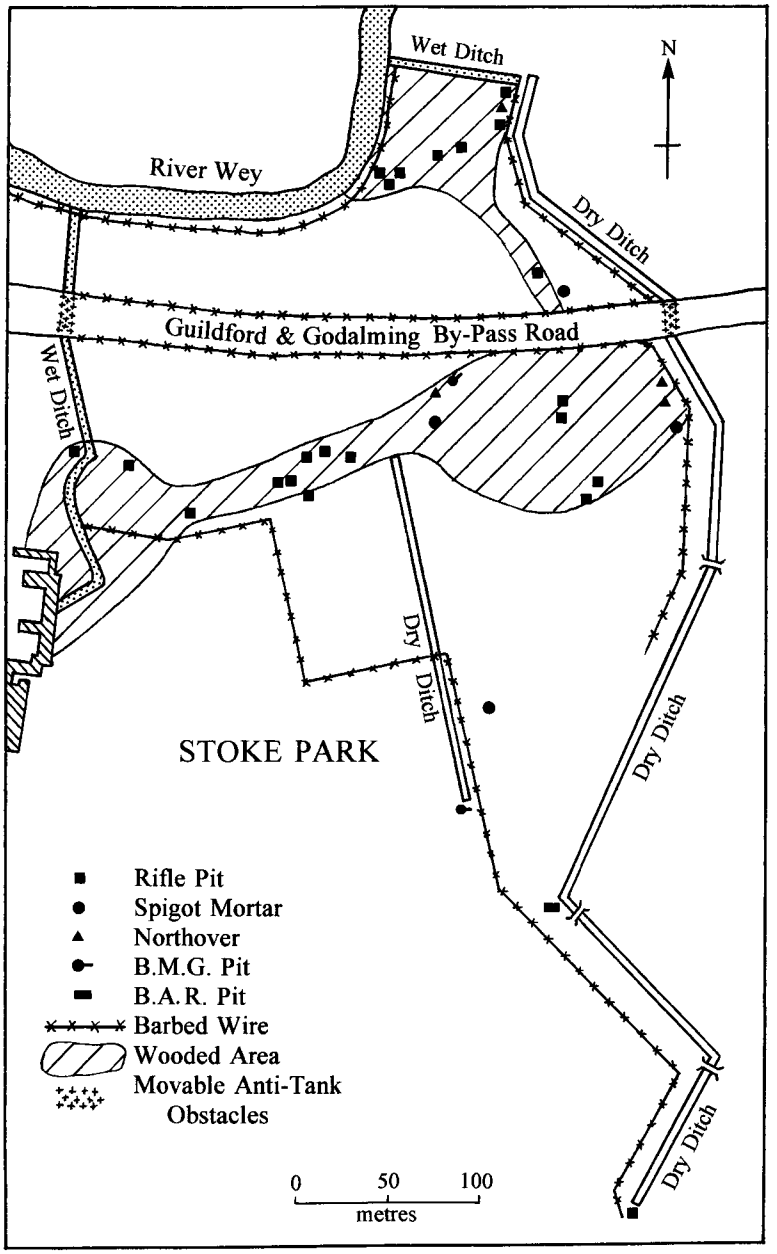

Fig 18.5 Plan of Second World War defences in Stoke Park, Guildford, on either side of the Guildford and Godalming by-pass road, which was opened in 1934. There are 22 rifle pits, four spigot mortars, four Northover projectors, two Bren machine gun pits, one Boys anti-tank rifle pit, about 2km of barbed wire fencing, nearly 1km of dry ditch and about 300m of wet ditch.

was sent to Elstead to attack the wall itself and the steel gates. The tank was equipped with a device called 'The Onion' or 'Double Onion' which was a steel frame measuring about 3m wide by 2m high, fitted vertically at the front and mounted on arms attached to the sides (fig 18.8). On this framework were hung boxes containing some 450kg of explosive. The tank was driven towards the wall and, on arrival, the framework was lowered to the ground against the obstruction. The vehicle was then backed off to a distance of some 30m, paying out an electric detonating cable as it went. The explosives were then detonated by the driver and the result can still be seen in the remains of the wall. Two breaches about 3.5m in width were created. There are also many marks made by shells spalling off concrete and snapping and twisting the reinforcement near to the surface (fig 18.9). Otherwise, the wall is very much as it was built, even though several generations of troops have been active in the area, which has provided a site for military training since the inter-war period. A similar but smaller example of an inland section of the 'Atlantic Wall' exists on the Sherrifmuir battlefield in Stirlingshire (NN 838 037), and this was also used in demolition tests (Shepheard 2003).

Discussion

The present paper has discussed only a few examples of the many Second World War Defence complexes in Surrey. Two of these, pillboxes and nodal points, come under the category of anti-invasion defence sites and the third, the sea wall, is an example of one of the other types of military site. Many other cases could have been included such as airfields, of which twelve were active in Surrey: Brooklands, Croydon, Dunsfold, Fairoaks, Egham, Gatwick, Horne, Hurst Park, Kenley, Lingfield, Redhill, Stoke d'Abernon and Wisley (Masefield 1993, 32; Pilkington 1997). A survey has also been carried out of the remains of the large Canadian-built Tweedsmuir Camp at Thursley

Fig 18.6 Patrolling a dry anti-tank ditch (containing some rain-water) behind Barfield School, Runfold, Farnham (SU 868 472). This is an example of a 'one-way' ditch with one vertical and one sloping side. The recommended dimensions were 15ft (4.6m) wide at the top, 6½ft (2m) wide at the bottom and 5ft (1.5m) deep (Wills 1985, 40), which appear to have been well-adhered to in this case. Photograph courtesy of the Imperial War Museum, London (H2473)

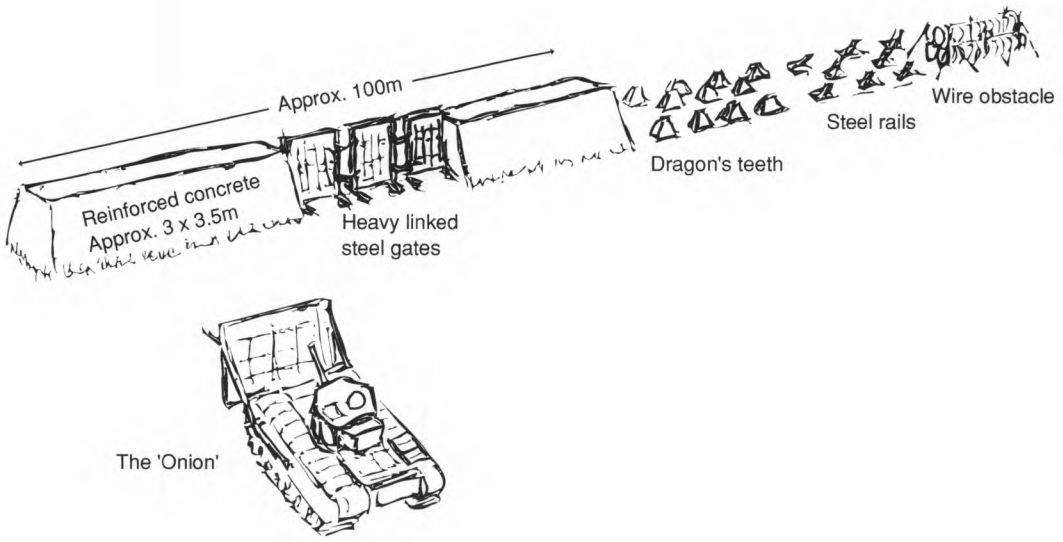

Fig 18.7 Reconstruction sketch of the Atlantic Wall and associated defences at Hankley Common, together with a Churchill tank and its steel frame, 'The Onion'. This sketch is based on one prepared by the driver of the tank (Wood 1988).

(Shepheard 2003). Some sites have also been discovered as a consequence of archaeological excavations primarily aimed at investigating earlier periods, such as a spigot-mortar position and an air-raid shelter in Farnham Park (Graham 1998) and an anti-tank ditch at Seale (Hall 2002).

A far more detailed survey of the defences in the neighbourhood of Waverley Abbey was conducted by English Heritage in 2001 and when the report becomes available it should provide a prototype for other surveys to be carried out nationally and in Surrey in particular. It is recognized that English Heritage considers that particular sites can only be protected once their importance in the context of the whole county has been assessed. This will prevent the listing of inferior structures when a better-preserved example of that particular type still exists. To this end, the completion of the Surrey

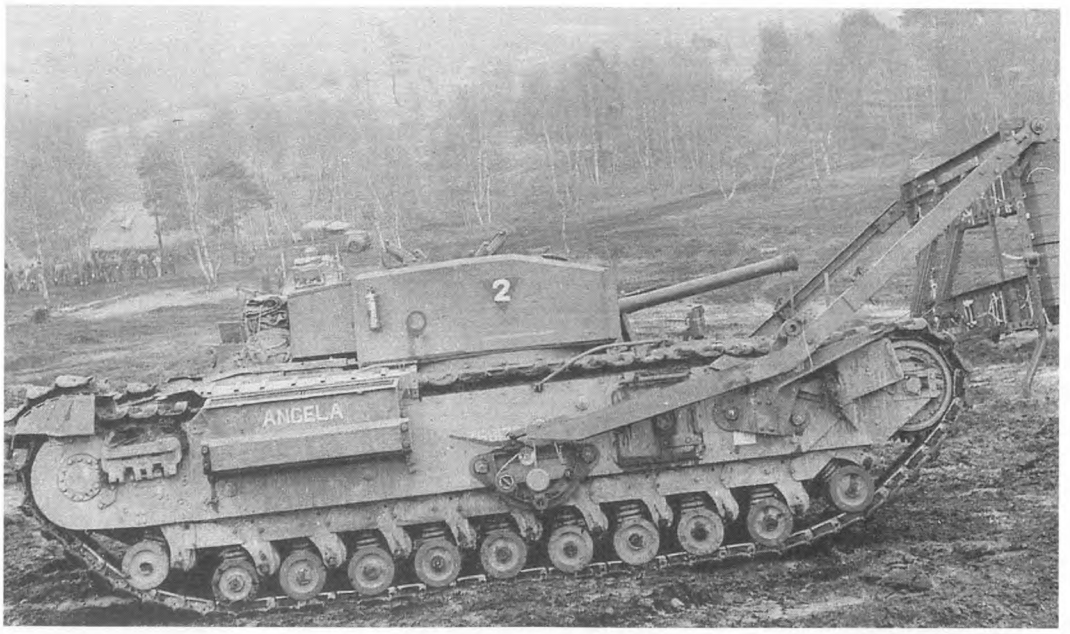

Fig 18.8 Churchill tank equipped with a steel frame capable of placing demolition charges at heights of up to about 4m. Courtesy of the Tank Museum, Bovington, Dorset

Fig 18.9 Part of the replica Atlantic Wall on Hankley Common, between Elstead and Tilford, showing one of the breaches created by explosives deposited against it by a Churchill tank in 1943. Note the broken iron reinforcement bars and the defensive platform on the near side of the wall. Photograph by Glenys Crocker

Defences Survey is very important and the longer it takes, the more structures are at risk from deterioration and development. Only when the whole picture can be seen can the importance of each individual part be understood. In the meantime, when a planning application involves a particular site which the SMR shows contains a defence structure, SIHG is consulted as to its importance. This information is taken into account when determining the outcome of the application. Examples have included a pillbox threatened by a new golf course and a concrete roadblock in the way of a cable television installation.

When Henry Wills started his work in the late 1960s, he could find very few written records from the war years. Now more and more information is being discovered in unlikely locations within the national and local archives. These help to explain the planning and location of the defence lines and play a vital part in understanding the scheme.

The work of the Surrey Defences Survey should continue to take two courses: one in the field, recording existing remains, and the other searching the archives for documentary records of buildings and their use. In addition it is important to trace and interview more people who were involved in building and patrolling the defence lines, but this is now a rapidly diminishing resource.

In particular, further research is needed on the organization of the construction of the defences, including the extent to which decision making was delegated to a local level. Further information is required on the contractors used, and differences in the nature and quality of the work they carried out should be recorded. Many pillboxes are associated with the GHQ Line and were constructed in the summer of 1940. By September 1941 pillboxes were only being built for special purposes and in February 1942 it was directed that no more should be constructed (Wills 1985, 14). The dating of Surrey pillboxes would therefore make an interesting project. However, much effort has already been made to understand pillboxes and, by comparison, other structures have been neglected. Examples of these have been listed above and all need to be recorded and interpreted more thoroughly. Again the criteria which were used to decide upon the choice of Surrey nodal points should be researched. In particular it is strange that Farnham was not included in the list. No details are available on the category B nodal points and some of these, perhaps Horley, Shere and Byfleet, which are, respectively, outside, on and inside the GHQ Line, should be researched. Much work is also required on the social impact of building and manning and servicing these defences. Finally it is important to place the Second World War defences of Surrey in their regional and national context. As noted above, the proportion of various types of defences in Surrey is different from the national average. It would be more significant to establish the differences between Surrey and its neighbouring counties, which share its proximity to London but differ in having coastal defences.

In conclusion it is striking that it is so difficult to obtain detailed information on such a recent and important period in the history of the county and country. This indicates the importance of recording present day structures of all kinds, most of which may be swept away within a few generations.

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