

**WAKEHURST PLACE RELAY STATION, WEST SUSSEX**

**ARCHAEOLOGICAL INVESTIGATION**

**(NGR TQ 33740 31270)**

**Commissioned by  
National Trust**



**ASE Project No. 4441**

**Site Code: ZWP 10**

**Report No. 2011304**

**January 2012**

**Richard James**

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## **1.0 INTRODUCTION**

- 1.1 In September 2010 Archaeology South-East (a division of the Centre for Applied Archaeology, UCL) was commissioned by the National Trust to carry out a programme of archaeological work to investigate the subterranean WWII Relay Station at Wakehurst Place, Selsfield Road, Ardingly, West Sussex, RH17 6TN (TQ 33740 31270 – Figs 1 and 2). The investigation was required because over previous years, a portion of the structure had collapsed creating a void in the grass just a few metres from a public path, leading to a decision to stabilise and secure the site and introduce an interpretation board.
- 1.2 The programme of investigation included an oral history recording project, a landscape survey, background research, minor excavation of the collapsed entranceway and archaeological watching brief during the rebuilding of the entrance chamber.
- 1.3 The work followed a brief produced by Caroline Thackray (National Trust, 2010), adapted following discussion with the Trust as the work progressed.
- 1.4 While the oral histories used in this project have provided a great deal of useful background detail, caution should be exercised when applying this to the Wakehurst site. Much remains unclear of the activities of the Auxilliary Units/Special Duties Section during the Second World War and the information gathered within the scope of this report (while accurate at the time of publishing) should be used in conjunction with and tested against any future developments in the field.

## **2.0 SCOPE & METHODOLOGY**

- 2.1 A list of contacts with special knowledge relating to the use of the site was drawn up by Eleanor Springall (a local researcher and National Trust volunteer). Three interviews were subsequently recorded:
  - Roy Russell (aided during the interview by his wife, Barbara) - Signals Officer in charge of two Control Stations in Kent;
  - John Warwicker – author of a book on the secret army in Sussex;
  - Dave Marchant – Operations Manager at Wakehurst Place, who has worked there for many years.

The interviews and recording were carried out by Malcolm Billings in March 2011. CD copies of the interviews and interview summary forms were produced.

- 2.2 A survey of the structure was conducted using GPS to accurately plan the visible above ground features (Figures 3 and 4). This survey was guided by a landscape archaeologist (Richard James, ASE).

- 2.3 Desk-based research undertaken by personalities who were linked with the BRO (British Resistance Organisation) and made available to the National Trust was compiled and new research undertaken to try to better understand the function of the site and its comparative significance.
- 2.4 Limited exploratory excavation using a mechanical mini-excavator supplemented by hand cleaning was undertaken by Justin Russell of ASE on 30th September 2010. This work was undertaken around the entrance of the structure and above the roof of the structure in order to investigate the reason for the structural collapse and to better understand how the building was constructed. Recording of the structure (photographs, written descriptions) was also carried out at this time (Figures 3–5) as far as was possible with access restrictions (see below).
- 2.5 Following the exploratory excavation, a meeting on site with Ed Morton (structural engineer, Morton Partnerships) and George Koester (National Trust) concluded with the advice that while the main chamber appeared to be structurally sound, the entrance shaft was in very real danger of collapse. Until consolidation of the entrance had been completed and the concrete cap removed, no further work could be executed. As a result, an accurate plan of the interior, including measurements pertaining to the size of the structure, could not be produced.
- 2.6 On the 8<sup>th</sup> March 2011, a final site visit was carried out to monitor the consolidation work in progress.

### **3.0 LOCATION AND SETTING (Fig. 1)**

- 3.1 The relay station is located within the landscaped grounds of Wakehurst Place, approximately 250m to the south-west of the main house. It is located close to several mature trees (used for concealing the radio aerials) and is wholly below ground with only the main entrance hatch and escape tunnel exit visible upon close inspection.

## **4.0 HISTORICAL OVERVIEW**

### **Early origins**

- 4.1 Auxiliary Units were essentially one of nine secret services set up by the British during the Second World War (Warwicker 2008, xix). The origins are murky and complex, involving organisations such as Military Intelligence (Research) and Section D of the Secret Intelligence Service (MI6). As a response to the imminent threat of German invasion following the Dunkirk evacuation, the latter organisation set up a unit called the Home Defence Organisation, dedicated to the twin strands of sabotage and intelligence-gathering. Civilian volunteers were to operate in small groups, remaining behind enemy lines. HDO was stood down in July 1940, with Section D being

disbanded shortly afterwards (*Ibid.* 35). The reasons for this are unclear, and no doubt involved considerable inter-agency politics.

- 4.2 Nevertheless, the basic premise was retained and given official approval when the Cabinet accepted a proposition put before them on 17th June 1940. This comprised a major and unprecedented shift in British military thought – the use of civilians in an operational role. This was potentially illegal under international law and rendered captured personnel liable to be executed as spies or saboteurs. This illustrates the extent to which the British government felt they were waging a war of national survival against a particularly ruthless enemy.

### **The Auxiliary Units**

- 4.3 The Auxiliary Units were set up as part of the main military structure (GHQ), but with strong SIS involvement, and under the command of Colonel Colin Gubbins. Under him were two staff officers: Major Geoffrey Beyts, head of operations and training, and Major Peter Wilkinson, head of administration and liaison. The headquarters was set up at Coleshill, a 17th century manor in Highworth, Oxfordshire.
- 4.4 The Auxiliary Units comprised two ‘arms’: the Operational Patrols and the Special Duties Section.

### ***Operational Patrols***

- 4.5 These were designed as guerrilla groups tasked with sabotaging the enemy communications infrastructure and killing German soldiers. Intelligence Officers were detailed to each region of the country (generally the coastal strip extending 20 miles inland) where they established Scout Patrols (of which there were two in Sussex) (Angell 1996). These were small groups of regular soldiers (1 officer and 13 Other Ranks) detailed to stay behind in the event of an invasion and operate as special forces behind the lines. They were also responsible for setting up and training the Operational Patrols, teams of civilian volunteers generally, but not exclusively, recruited from the Home Guard. Angell identifies the following structure in Sussex (Regional HQ at Tottington Manor, near Small Dole) (*Ibid.*, 7):

#### ***West Sussex***

Scout Patrol (Royal Sussex Regiment)  
10 Operational Patrols (Arundel, Clapham, Goodwood, Hurstpierpoint, Small Dole, Stansted, Staplefield, Warningcamp, West Ashling, Wiston)

#### ***East Sussex***

Scout Patrol (Queen’s Royal Regiment)

13 Operational Patrols (Abbott's Wood, Ashburnham, Bishopstone, Broadoak, Cooksbridge, Crowhurst, Ditchling, Firle, Hellingly, Icklesham, Iden, Ringmer, Rodmell)

- 4.6 These patrols operated as units of less than a dozen men, usually recruited from men with a deep knowledge of the local terrain (farmers, foresters, gamekeepers, etc. Poachers were particularly welcome). Each patrol had a well-constructed hideout, known as an Operational Base (OB), usually built by the Royal Engineers, which was essentially a buried Nissen hut with an access shaft at one end and an escape tunnel at the other (see detailed description below). They often had an Observation Post (OP) nearby.
- 4.7 The Scout Patrols were stood down in February 1943, returning to their parent regiments or transferred to Special Forces units such as the Special Air Service Brigade (SAS). The Operational Patrols continued until June 1944, when they also were disbanded.

### ***Special Duties Section***

- 4.8 The SDS comprised an intelligence-gathering organisation which contained three main elements:
- a series of local spies (usually people who could move around the locality without raising suspicion – vicars were often recruited), who would pass on information (either themselves or via intermediaries called 'cut-outs') to;
  - Out-Stations – local radio operators who hid their equipment in a variety of locations. They would then pass the information, in a coded form, to;
  - In-Stations (also called Control Stations) – teams of Auxiliary Territorial Service (ATS) radio operators who would decode the information and pass it, by direct telephone link, to the SDS HQ at Hannington Hall, Wiltshire (not far from Coleshill). These were usually associated with area Army Headquarters.
- 4.9 The structure of the SDS groups was similar to the Operational Patrols in that Intelligence officers set up small cells of civilian volunteers, although in this case individual cell members were not told the identities of their colleagues – it was expected that capture would result in torture by the Gestapo. Military support was provided by the ATS operators at the end of the chain and by regular soldiers from the Royal Corps of Signals, who were attached to a unit called Auxiliary Units (Signals). It has been stated that the RCS were responsible for maintaining the radio equipment held by the Control Stations (Angell 1996, 79), although recent research suggests that this has been overstated and that this side of the operation was carried out directly by SIS (Warwicker 2008, 189).
- 4.10 Three Control Stations were located in Sussex, at Heathfield, Shipley and Wakehurst Place (although the latter was technically a Relay Station – see below for definition), each operated by ATS operators (Angell 1996, 74). Each site comprised two elements: a surface hut (often called the Met.

[Meteorological] Hut) and an underground bunker or 'Zero' Station (so-called because the code name for each site had the suffix 'zero'). Two sets of equipment (transmitters and receivers) were issued to each station, one set in the surface hut and one in the bunker. Aerials were buried in runnels cut into nearby trees, with the bark carefully replaced to hide the cables. In the event of an invasion, the operators were to transmit from the hut until German troops approached. They were then to abandon it and continue transmitting from the bunker, hoping that the enemy would be satisfied with the surface hut. They were expected to continue transmitting until German soldiers had entered the first chamber, at which point they were required to destroy the equipment and either make their escape or take whatever measures were necessary to prevent capture by the Gestapo (Lampe 1968). It has been suggested that the ATS may not have been expected to stay until the bitter end, and that the option existed of replacing them with regular soldiers from Auxiliary Units (Signals), who had at least received basic infantry training (Warwicker 2002, 253 & 270).

### **Zero Stations**

- 4.11 Zero Stations were the underground bunkers associated with Control Stations. All were built to a common plan by the Royal Engineers, differing only in the length of the escape tunnel, the exact form of which was dependent on local topography. The bunkers were similar to those used by the Operational Units which were officially known as Home Guard Shelters or Operational Bases (OB), and unofficially known as 'hideouts', 'funkholes', 'bunkers' and even 'elephant shelters' (Warwicker 2008, 119), although the Zero Station bunkers tended to be bigger. One well-preserved example has been recorded at Shipley in West Sussex (Angell 1996). It took the form, essentially, of a buried Nissen hut, comprising a concrete base on which stood an arched corrugated iron roof with brick end walls, 22 feet long and c.8 feet in diameter. Two internal brick walls with integral doorways divided the interior into one large central chamber, with two smaller chambers at each end. One small chamber was flanked by a square entrance shaft, entered from the surface by a concealed trapdoor, while the other provided access to an escape tunnel.
- 4.12 Once the access trapdoor had been opened, often by deploying a hidden catch (one example resembled a car starting handle which was used to winch up the trapdoor – Roy Russell, recorded interview), the entrance shaft was descended by ladder, or by rungs set into the shaft walls. The small chamber at the base of the shaft was used as an explosives and weapons store, with the doorway into the main chamber concealed behind shelving and piles of boxes. A secret catch in a cantilevered false wall allowed access to the main chamber, which contained the radio sets, a few pieces of furniture and bunks for the operators. Ventilation was provided by asbestos pipes with concealed outflows. The interior was often painted beige to maximise light, with lumps of coke embedded in it to absorb moisture (Warwicker 2008, 123). Beyond lay a further small chamber, containing a chemical toilet and storage space, with an emergency exit. This usually comprised a length of 3 feet diameter concrete drainage pipes, often with dog-leg bends in it (perhaps to slow down pursuers,

who would naturally be reluctant to be the first down a narrow winding tunnel facing a desperate opponent), which led to a disguised exit, often a soil covered trapdoor or a drain cover. These details conform to a description provided by Roy Russell, Signals Officer in charge of two Control Stations in Kent (typescript in possession of the National Trust and recorded interview).

- 4.13 Due to the limitations of the wireless technology of the period, intermediate stations equipped with transmitting and receiving equipment were sometimes needed where terrain affected the signal. These were known as Relay Stations, and were usually unmanned (John Warwicker, recorded interview). A zero station at Winchester is known to have doubled as a relay station linked to the divisional HQ (presumably the 43rd (Wessex) Infantry Division) at Salisbury (Warwicker 2002, 214). It has been suggested that the Wakehurst Place zero station may also have operated as a relay station, based on the discovery of three radio aerials in nearby trees (email dated 08/10/2010 from Eleanor Springall).

#### **The Wakehurst Place Zero / Relay Station**

- 4.14 Although it has often been described as a Zero Station, Wakehurst Place appears to have operated as a Relay Station, forming an intermediate link between out-stations located on the Hampshire coast and Army HQ in Sevenoaks. This identification is based on it being too far inland and associated with a signal distance that was too great to be a standard control station. Where Wakehurst differs from other Relay Stations is in the fact that it was manned (by nine ATS officers, ostensibly attached to the Royal Corps of Signals, operating in three shifts). On this basis, John Warwicker believes Wakehurst Place served an additional purpose, possibly providing a communications link with MI6, taking advantage of its location in proximity to likely invasion areas. Consequently, it has been described as being 'unique in the United Kingdom' (John Warwicker, recorded interview).
- 4.15 The station appears to have been constructed early in 1941 as one of the earliest parts of a system which was to grow to cover the whole southern and eastern coasts from Cornwall to Scotland. It probably remained in operation until the service was stood down in July 1944, once Allied forces had established enough of a bridgehead in Normandy to neutralise any remaining possibility of an enemy invasion. Warwicker has suggested a further use for the station during this latter period; contributing to the massive deception campaign that successfully convinced the Germans that the inevitable Allied invasion would take place in the Pas de Calais area of northern France (recorded interview). Although no specific evidence for this is known for Wakehurst, other stations are known to have taken part. There is also a local tradition (David Marchant, recorded interview) that the station also formed part of the Special Operations Executive communications network with the French Resistance – RAF Lysanders are said to have used the park for ferrying agents across the Channel.

4.16 Wakehurst Place was commandeered during the war for use as an advanced HQ by 1 Canadian Corps. The relay station was located in the grounds, away from the house and out of bounds to troops, in an area formerly used as a night paddock for the Guernsey herd when it operated as a farm (David Marchant, recorded interview). The escape tunnel exited into one of a series of former stone quarries known as the Dogkennel Pits. John Warwicker believes that a 'Met Hut' on the surface may not have been necessary at Wakehurst, as it was not a standard control station, and that the operators would have worked within the bunker (in contrast to other stations where, apart from training exercises, they would only have occupied the bunker when enemy troops were actively approaching). Although ostensibly designed to be of the highest secrecy, there is anecdotal evidence (David Marchant, recorded interview) to suggest that the ground staff at Wakehurst knew about the bunker – one of the gardeners, Bill Gold, is said to have often seen people entering and exiting the bunker, and managed to organise his day so that he passed the site when the off-duty operators were sunbathing outside.

## **5.0 RECORDING THE RELAY STATION**

### **Brief description prior to excavation**

5.1 Entrance to the structure would originally have been gained through a hatch leading to a vertical masonry shaft (approximately 2m deep). At the base of the shaft, the main chamber (approximately 4m by 8m) would be accessed. Opposite the entrance, at the south-western end of the chamber, there would be an emergency exit, which took the form of a concrete culvert tube, approximately 750mm in diameter (Figs 3 & 4). This would lead to a point just out of view from the ground level entrance position, into one of the Dogkennel Pits (quarry pits, excavated during the construction of Wakehurst House), to afford covered escape for the staff in the event of an emergency. The last 3m of the escape culvert formed the main visible element of the structure until the collapse occurred (Fig. 3.1). The precast concrete tube is set into a concrete housing of a trapezoidal shape in plan, presumably allowing for a camouflaged hatch covering. Also visible, but distinctly harder to spot, are aerial cables, hidden in four trees nearby – the cables were originally placed into a groove cut into the tree and with the bark replaced on top to conceal them. All four trees still have some element of cable surviving, mostly in the upper canopies (Figs 3 & 5).

### **Results**

5.2 Excavation revealed that the top of the entrance shaft was intact and capped with reinforced iron bars and concrete - attempts to remove the cap proved unsuccessful. Using a camera it was found that the concrete for the cap was poured onto five wooden planks resting on top of the shaft, which in turn were supported by an iron bar across the middle of the shaft. This highlighted the point that the collapse had not occurred into the shaft, but immediately on the south-eastern side (Fig. 4.1). The shaft was constructed out of breeze blocks

and at a depth of 500mm beneath ground-level these had become weakened by the pressure of roots and ultimately given way into the shaft, allowing for the ingress of a considerable amount of soil. The entrance shaft was originally supported by walls on three sides, the fourth side acting as a doorway into the main chamber and this was given only minor support by the roof. Seeing that the shaft was in a progressive stage of disrepair and that it was only supported by two remaining breeze block walls, any further work in this area was deemed unsafe (Fig. 4.2).

- 5.3 A segment of communication cable was found 300mm to the north of the entrance, but due to heavy root disturbance it could not be ascertained whether this was in in-situ piece of the cabling that extended up into the trees or merely rubbish placed in the backfill.
- 5.4 To assess the overall solidity of the roof structure, a slot was excavated adjacent to the entrance shaft. The top of the structure was encountered at a depth of 600mm below surface and was constructed of bare corrugated tin sheeting. This had been curved and jointed to form, in essence, a buried Nissan hut. Concrete had been used against the sides of the roof from 250mm down from the apex.
- 5.5 A ventilation pipe was noted emerging through the edge of the roof on its south-western side (Fig. 4.3), one of many that would originally have serviced the operatives within. A protective tin cowl, which would have covered the exposed end of one of these ventilation pipes, was found loose in the topsoil above the roof. A second ventilation pipe, this time of glazed ceramic, was noted in an area of dense laurel to the south-west (Fig. 3).
- 5.6 The interior of the Relay Station could be photographed through the collapse and the images show the condition to be fair, the roof in apparently sound condition and fragments of the collapsed shaft wall littering the floor in the north-eastern end (Fig. 4.5).
- 5.7 The watching brief visit during consolidation works revealed that due to the unstable nature of the entrance shaft, the north-eastern and south-eastern walls had been removed. The remaining north-western wall showed signs of serious failure and this too was likely to be removed during the course of the consolidation. Two wooden timbers fixed to the upper 500mm of the interior wall were exposed by this work and probably formed either part of the entrance hatch mechanism or were for the ladder support (Fig. 4.5).

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Roy and Barbara Russell, John Warwicker and Dave Marchant for agreeing to be interviewed and for providing extremely useful information  
Malcolm Billings for carrying out the interviews and recordings  
Hugh May for providing information on a zero station on his land

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Recorded Interviews (conducted by Malcolm Billings, March 2011)

David Marchant (Logistics Manager, Kew) (29/03/2011)

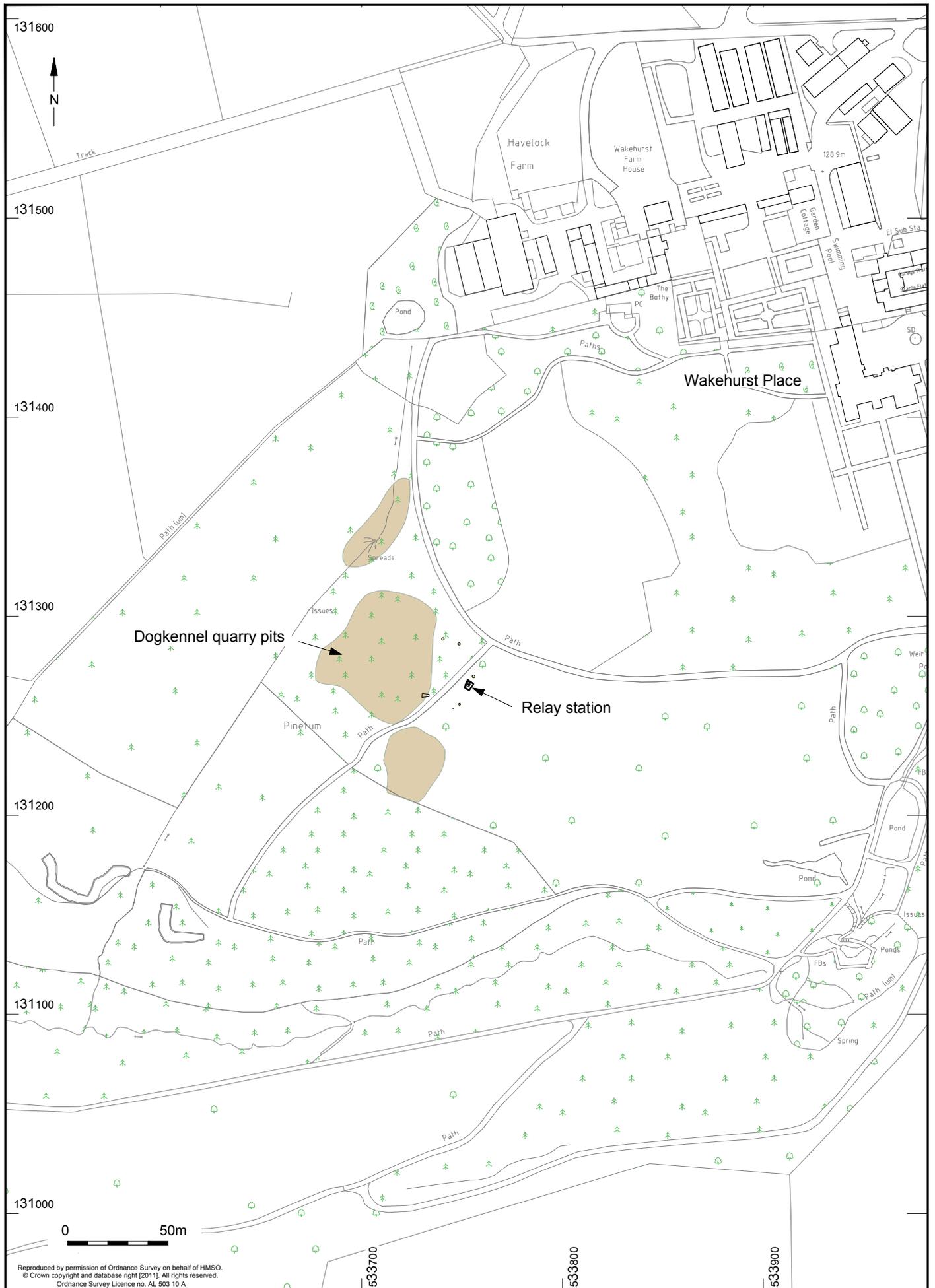
Roy Russell (Signals Officer in charge of two Control stations in Kent) (25/03/2011)

John Warwicker (author) (26/03/2011)



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© Archaeology South-East		Wakehurst Place Relay Station		Fig. 1
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Project Ref: 4441	Jan 2012	Location of Relay Station		
Report Ref: 2011304	Drawn by: JLR			

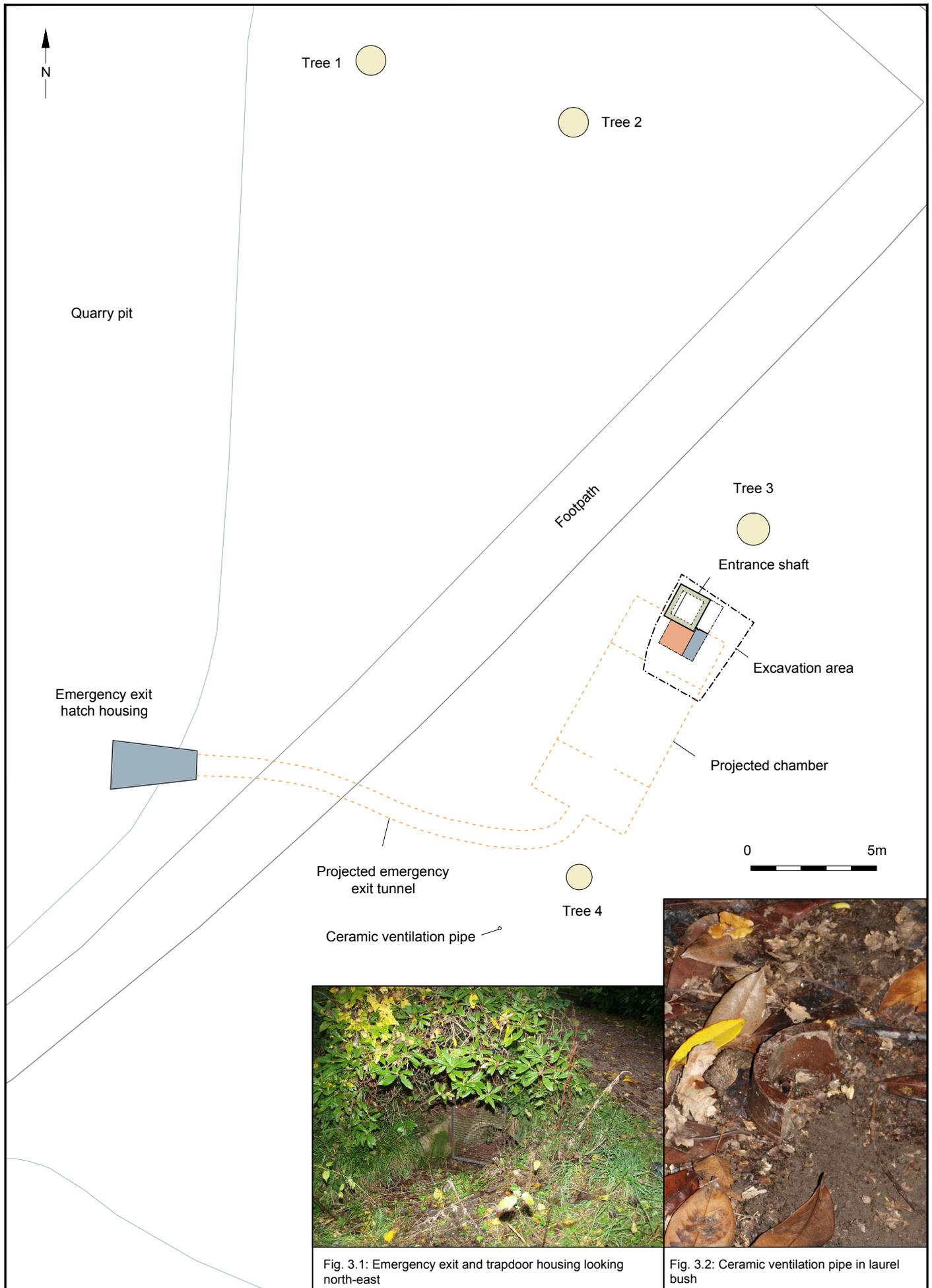


Fig. 3.1: Emergency exit and trapdoor housing looking north-east

Fig. 3.2: Ceramic ventilation pipe in laurel bush

© Archaeology South-East		Wakehurst Place Relay Station	Fig. 3
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Report Ref: 2011304	Drawn by: JLR		

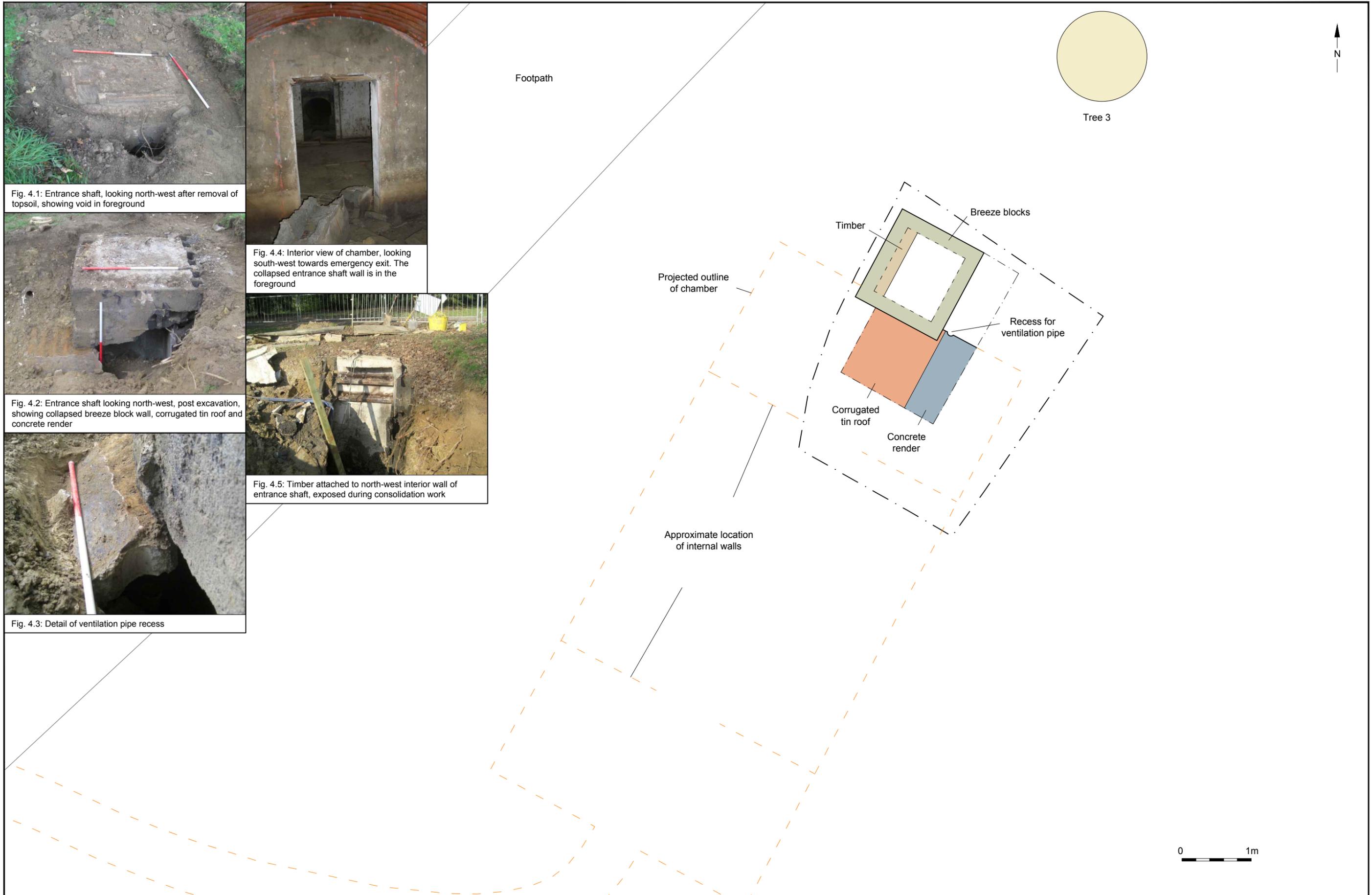


Fig. 4.1: Entrance shaft, looking north-west after removal of topsoil, showing void in foreground

Fig. 4.4: Interior view of chamber, looking south-west towards emergency exit. The collapsed entrance shaft wall is in the foreground

Fig. 4.2: Entrance shaft looking north-west, post excavation, showing collapsed breeze block wall, corrugated tin roof and concrete render

Fig. 4.5: Timber attached to north-west interior wall of entrance shaft, exposed during consolidation work

Fig. 4.3: Detail of ventilation pipe recess



Fig. 5.1: Aerial cable scar in Tree 3

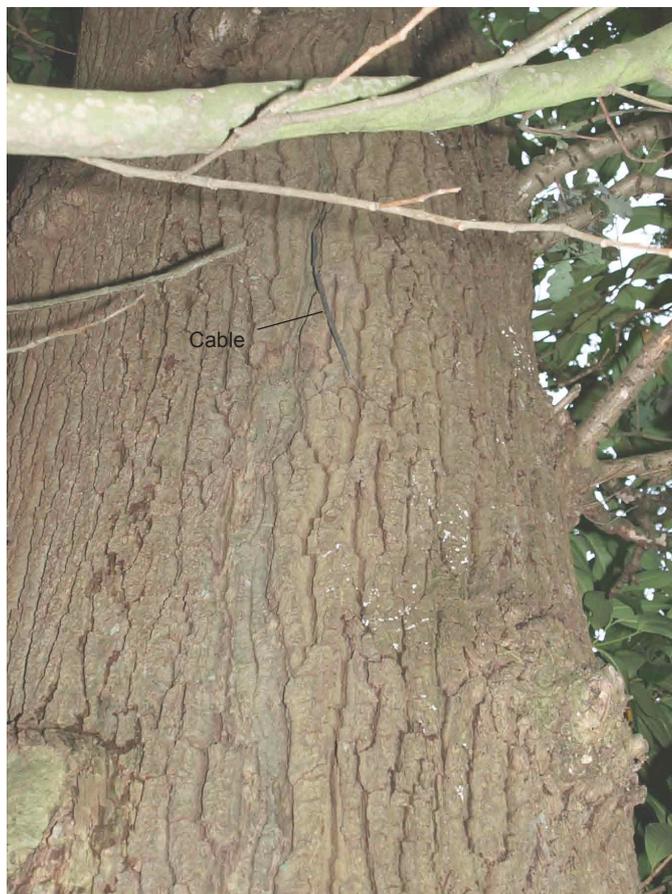


Fig. 5.2: Detail of aerial cable scar and surviving cable

© Archaeology South-East		Wakehurst Place Relay Station	Fig. 5
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Report Ref: 2011304	Drawn by: JLR		

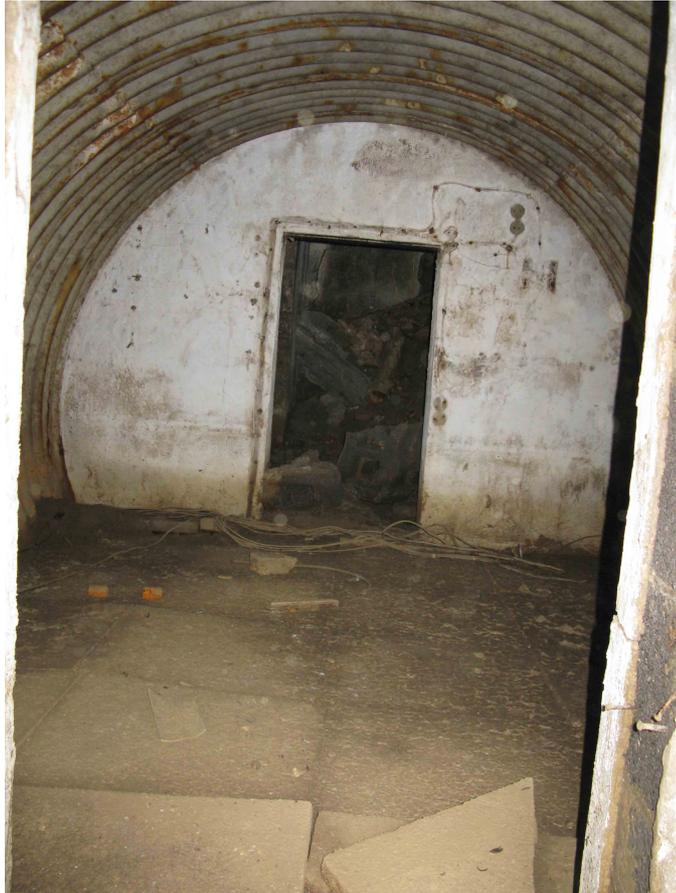


Fig. 6.1: Central chamber, looking north-east to internal wall and rubble filled entrance shaft beyond



Fig. 6.2: Entrance shaft showing collapsed south-eastern wall on the right, with the ventilation pipe centre foreground

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Fig. 7.1: Emergency exit tunnel facing south-west, with a potential sump in foreground

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