Excavations on Defence Sites

Volume 6: military remains

Stephen Beach, Simon Flaherty and Steve Thompson
with contributions by
Bob Clarke, Simon Cleggett, Mark Khan, Matt Leivers, Katie Marsden, Lorraine Mepham, Janine Rocha and Rachael Seager Smith

Excavations on Defence Sites

Volume 6: military remains

Stephen Beach, Simon Flaherty and Steve Thompson

Excavations on Defence Sites

Volume 6: military remains

Stephen Beach, Simon Flaherty and Steve Thompson

With contributions by:
Bob Clarke, Simon Cleggett, Mark Khan, Matt Leivers, Katie Marsden, Lorraine Mepham, Janine Rocha and Rachael Seager Smith

Illustrations and photography by:
Will Foster and Tom Westhead

Wessex Archaeology Monograph 47
2026

Published 2026 by Wessex Archaeology Ltd
Portway House, Old Sarum Park, Salisbury, SP4 6EB
www.wessexarch.co.uk

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN 978-1-0682716-8-7

Designed and typeset by Will Foster
Cover designs by Carrie May and Jennie Anderson
Copy-edited by Tess Millar
Printed by Bookvault

Front cover
Training at the Larkhill trench system by Carrie May

Back cover
Military encampment above Bulford Village by Jennie Anderson

Wessex Archaeology Ltd is a company limited by guarantee registered in England, company number 1712772. It is also a Charity registered in England and Wales number 287786, and in Scotland, Scottish Charity number SC042630. Our registered office is at Portway House, Old Sarum Park, Salisbury, Wiltshire, SP4 6EB.

Contents

List of figures

List of tables

Acknowledgements

Wessex Archaeology would like to thank Aspire Defence, WYG and Lovell Partnerships Ltd for commissioning the archaeological works on behalf of the Defence Infrastructure Organisation (DIO), in particular Jeff Davis, Martin Brown and David Evans (then of WYG), for their communication and assistance throughout the project. Phil Eley (DIO), Neill Page (DIO) and John Leary and Tim Mansell (Lovell Partnerships) are thanked for their drive in the management of the delivery of this project. Particular mention is due to Andrew Corcoran (DIO) in his role as Senior Project Manager, not only for his adherence to time and budgetary constraints but also for his endless enthusiasm and considerable help throughout.

The fieldwork strategy was designed and implemented with the assistance of Wiltshire Council Archaeology Service. Clare King and Martin Brown (both formerly of Wiltshire Council Archaeology Service) monitored the project on behalf of the Local Authority and provided invaluable advice. Neil Adam and Melanie Pomeroy-Kellinger (Wiltshire Council Archaeological Service) played an important role in the design of the post-excavation and publication programme and read and approved reports. The support and guidance of the ABP Steering Group chaired by Richard Osgood of DIO was also essential, and gratefully received. Wessex Archaeology would also like to thank Michael Russell in his role as Senior Estate Advisor throughout, Phil McMahon for his valuable advice and guidance in his role as Inspector of Ancient Monuments, and Deborah Williams of Historic England for her advice relating to the designation of heritage assets. The sterling work of the groundwork contractors (Readypower) is gratefully acknowledged.

Wessex Archaeology would like to offer their thanks and admiration for the consistent professionalism, guidance and commitment of Mark 'Paddy' Smith, Andy Jackson, Mark Wilson, Richard White, Neal McLeod, Jaymie Hurst and Garry 'Arty' Shore and the numerous members of Dynasafe/BACTEC Ltd for the monitoring of all excavated material for unexploded ordnance (UXO) as well as providing valuable information regarding First World War ordnance. Thanks are extended to Richard Carter and his team from 1st Line Defence and in particular Mark Watson and Bill Maskell and the 11 Regiment, Royal Logistic Corps, for support and assistance with UXO.

Wessex Archaeology would like to thank Steve Webb, Mike Shepard, Justin Gage and Paul Kilgrove of Aspire Defence Services Ltd for Health and Safety guidance as Principle Contractor and their assistance in ensuring the smooth running of the fieldwork at Bulford and on Larkhill West, and thanks are also extended to Martin Mills, Craig Thomson and Yvonne Massi of Lovell Partnerships for their assistance during the work on Larkhill East and the Stonehenge Golf Course.

The investigation of the First World War training tunnels was undertaken by Gable, Cundall and Sirius, and Wessex Archaeology would like to thank Stephen White of Gable, Chris Paterson of Cundall and Sirius in this regard. Particular thanks are extended to Stephen Dixon of Cundall and Glen Burgin, Gregg Hotham, Giles Bushell and Gemma Anderson of Sirius for making the tunnel system safe for archaeological recording during the course of their investigations.

The 3D scanning and tunnel survey was carried out by Angus Robson of Robson Survey, and his assistance during the project is gratefully acknowledged.

Thanks are due to Rob Rawcliffe for the aerial survey and video production of the henges and of the Anglo-Saxon cemetery. Wessex Archaeology are particularly grateful to farriers Simon Curtis and Steve Griffin, who shared their knowledge and enthusiasm freely, greatly enhancing our understanding of the horseshoes and associated evidence.

The excavations were directed in the field by Peter Capps, Phil Harding, Jacqueline McKinley, John Powell and Steve Thompson with Dave Murdie, assisted by Nell Barnes, Tom Blencowe, Phil Breach, Laura Breeds, Tom Burt, Elena Calabria, Rachael Capps, Mike Cepak, Diana Chard, Emma Clark, Benjamin Cullen, Tom Dawkins, Kirsten Egging-Dinwiddy, Patrick Dresch, Peter Fairclough, Neil Fitzpatrick, Simon Flaherty, Darryl Freer, Steve Froud, Alin Fuior, Cesar Perez Garcia, Moises Reixach Garcia, Elisenda Gimeno, Jess Greenhalgh, Rebecca Hall, Phoebe Hewitt, Talia Hunt, Alec Hutchings, Eva Estela Jaume, Matthew Kendall, Sarah Kennie, Briony Lalor, Eleanor Lane, Cordelia Laycock, Marion Legagneux, Eleanor Legg, Steve Legg, Jennifer Loader, Virva Lompolo, Jamie McCarthy, Bill Moffatt, George Morgan-Walcroft, Belle Nielson, Phoebe Olsen, Piotr Orczewski, James Osborne, Yohann Paci, Janine Rocha, Stuart Pierson, Vi Pieterson, Rok Plesnicar, Marion Plumer, Jamie Porter, Marijane Porter, Stephanie Ralph, Bea Ralston, Moises Reixach, Emma Robertson, Ben Roche, Dylan Duane Roche, Alistair Salisbury, Bianca San Martin, Jon Sanigar, Rachel Sawyer, Charlie Scovell, Richard Scurr, Adrian Serbanescu, Genevieve Shaw, Tom Slater, Anna Smaldone, Andy Sole, Richard Spencer, Dudley Staniforth, Mark Stewart, Robert Trevelyan, Michael Trubee, Orlagh Walsh, Nathaniel Welsby, Rachel Williams and Alistair Zochowski.

Special thinks are extended to Sheila Evans, Briony Lalor, Kate Stevens, Janine Rocha and Carlos Rocha for their considerable effort and determination in tracing the soldiers whose names adorned the First World War tunnels and trenches and to Jeremy Hawke for his research on the MG J2 motorcar.

The report on the non-military 20th-century finds incorporates some details of preliminary research on artefacts carried out by Sue Nelson and Bronwen Stone. The horseshoes from Bulford Camp were examined by local farriers Steven Griffin AWCF and Simon Curtis AWCF. The postcards of Salisbury Plain (Figures 8.1, 8.2, 8.3, 8.20 and 8.23) are reproduced by kind permission of Ashley Oates. Grateful thanks are extended to Peter Chasseaud for permission to reproduce the map in Figure 2.2.

Thanks are also due to all those that have contributed to our understanding of the First and Second World Wars, by providing research material online, of which Chris Baker's The Long, Long Trail reference site has been particularly useful.

The finds were processed by Erica Macey-Bracken, Sophie Clarke, Amy Hall, Sue Nelson, Tony Scothern and Robert Wheeldon. The samples were processed by Phil Breach, Elena Calabria, Michal Cepak, Emma Clark, Liz Foulston, Alin Fuior, Miranda Fullbright, Jenny Giddins, Becky Hall, Samira Idriss, Jenna Jackson, Eva Estela Jaume, Tom King, Eleanor Lane, Cordelia Laycock, Eleanor Legg, Virva Lompolo, Yohann Paci, Rok Plesnikar, Marijane Porter, Dylan Duane Roche, Samantha Rogerson, Jon Sanigar, Rachael Sawyer, Tony Scothern, Richard Scurr, Adrian Serbanescu, Tom Slater, Anna Smaldone, Jen Smith, Andy Sole, Dudley Staniforth, Rob Trevelyan, Michael Trubee, Mai Walker, Orlag Walsh, Nathaniel Welsby and Rob Wheeldon. The flots and fine residues were sorted under the microscope by Nicki Mulhall and Sarah Wyles, the snails identified by Nicki Mulhall and Sarah Wyles and the plant macrofossils identified and assessed by Inés López-Dóriga. The sediments were described by Richard Payne.

The *Excavations on Defence Sites* series

In 1960, W. F. Grimes, then Director of the Institute of Archaeology and Professor of Archaeology at the University of London, published 'the first of three volumes dealing with excavations, between 1939 and 1945, of some of the antiquities which were faced with destruction in the course of engineering and other activities relating to the Second World War' (Grimes 1960, v).

Excavations on Defence Sites, 1939–1945 I: Mainly Neolithic–Bronze Age was to have been followed by a second volume dealing with Iron Age sites, and a third covering the medieval period, although neither of these ever appeared. Nevertheless, the proposed series and its single published volume was a testament to the commitment of both the Ministry of Defence and the then Ministry of Works to the treatment of archaeology unavoidably impacted by the war effort.

Some 75 years later, the Army Basing Programme (ABP) was set up by Defence Infrastructure Organisation (DIO) and the Army to provide the facilities to enable more than 100 army units to relocate, reconfigure, disband or re-role and deliver the government's 2010 Strategic Defence and Security Review commitment to bring all army units back from Germany by 2020. Over 4000 personnel were to be relocated to Salisbury Plain.

The archaeological implications of the ABP were apparent from the outset. Located in an area of very great archaeological significance, not least because of the proximity of the Stonehenge, Avebury and Associated Sites World Heritage Site, the development of the new army facilities unavoidably involved the need to excavate and record very sensitive archaeological remains.

Given the scale of the work, the significance of the results, and DIO and MoD's commitment to the archaeological aspects of the project, it seemed appropriate to bring the results to publication in a manner that recognised the ongoing involvement with the archaeology of its estate. Consequently, it was decided to continue the Excavations on Defence Sites series with a further three volumes. Volume 4 repeats Grimes's chronological emphasis on the Neolithic and Bronze Age; Volume 5 deals primarily with Anglo-Saxon evidence; Volume 6 brings the series to an appropriate conclusion with the evidence for the military occupation of the area in the 20th century.

Taken as a whole, the Excavations on Defence Sites series demonstrates what can be achieved when archaeologists, local authorities and clients who understand and are sympathetic to the heritage of which they are the custodians work together with the common aim of enabling necessary development, and agreeing to take advantage of the opportunities to enhance our common heritage and sense of place that those developments present.

The Ministry of Defence is privileged to have many of its structures and training areas located in immensely important historic sites. Indeed, the nature of the work of the Department has meant that not only have these facilities been in place for considerable lengths of time – protecting locations from the challenges of deep industrial ploughing, major road schemes and other development – but they have become historic, and significant in their own right. Where change is necessary, it is important to consider the complete palimpsest – including the military elements – as these resonate with the

people that have used the estate in the past and will do so in the future; archaeology is, after all, all about people. This work will prove vital in an appreciation of the varied military legacy in the area and of the land in which it sits. Defence land is held on trust for the nation and its story is one that should be accessible to all.

Foreward

by Richard Osgood

Archaeological work on military areas presents both unusual challenges and opportunities. The requirement for new training facilities, accommodation and other elements as part of the Army Basing Programme were clear and the potential for archaeological deposits huge. It is my belief that the areas selected for development were located in one of the most important and rich archaeological areas in Western Europe. Adjacent to and within sight of the Stonehenge World Heritage Site, the sheer number of known archaeological assets in this zone would present a challenge to any proposed development work. Add to this the need to avoid disruption to military training and, of course, the high potential for the discovery of unexploded ordnance, and it almost becomes a programme manager's worst nightmare. However, the potential rewards were huge. The chance to learn much more about this astonishing landscape was rare – making links to the elements of our prehistoric past that formed the basis of the 'Outstanding Universal Value' attributes of Stonehenge. This also afforded the team an ability to uncover elements of the Army's presence on Salisbury Plain from its early days, through two World Wars to the present day; even ordnance can tell an interesting tale.

This programme was hugely innovative – the drawing together of new technologies and research to enable a story of 6000 years to be told. Regular discussions between the disparate elements of the project team enabled not only the development to proceed, but also heritage elements to be retained *in situ*, new heritage designations to be made, and a far greater understanding of the incredible archaeology of the region. This legacy is important – for the citizens of Wiltshire, students of archaeology, and the military personnel and families who live and work at Larkhill, Bulford, Tidworth and the other areas of Salisbury Plain included in the ABP. The project work has revealed henges, a causewayed enclosure, early medieval cemeteries, and the story of the people who trained here for the wars of the 20th century, down to their names and heroism.

These three volumes are a triumph; a lasting legacy of the work and a demonstration that good practice should lead to tremendous outcomes for all parties.

Chapter 1
Introduction

by Matt Leivers, Simon Cleggett and Bob Clarke

The Background to the Project

Aspire Defence Ltd, Hill Holdings Ltd, Lovell Partnerships Ltd and WYG commissioned Wessex Archaeology on behalf of Defence Infrastructure Organisation (DIO) to carry out archaeological investigations ahead of development for the Army Basing Programme (ABP). These works, undertaken between 2014 and 2019, collectively involved an ambitious project to accommodate more than 4000 additional Service personnel and their families based on and around Salisbury Plain from 2019 (Figs 1.1 and 1.2). Excavations took place in and around the existing military bases at Larkhill, Bulford, Tidworth and Perham Down, with ancillary works at Ludgershall and between Bulford and Tidworth.

Salisbury Plain saw the largest increase in troop numbers under the ABP, as it was the only place in the country that could accommodate the complex and demanding training needed to maintain operational effectiveness of the army's three high readiness Reaction Force Brigades.

Following a public consultation, the Ministry of Defence (MoD) set out how it intended to accommodate the 4300 extra army personnel and their families that would move to the area under its Salisbury Plain Masterplan (Army Basing Programme) – GOV.UK (www.gov.uk). The proposals included new build accommodation for single soldiers, more than 1,000 new service family homes and the construction, conversion or refurbishment of nearly 250 buildings such as offices, garages, workshops and mess facilities.

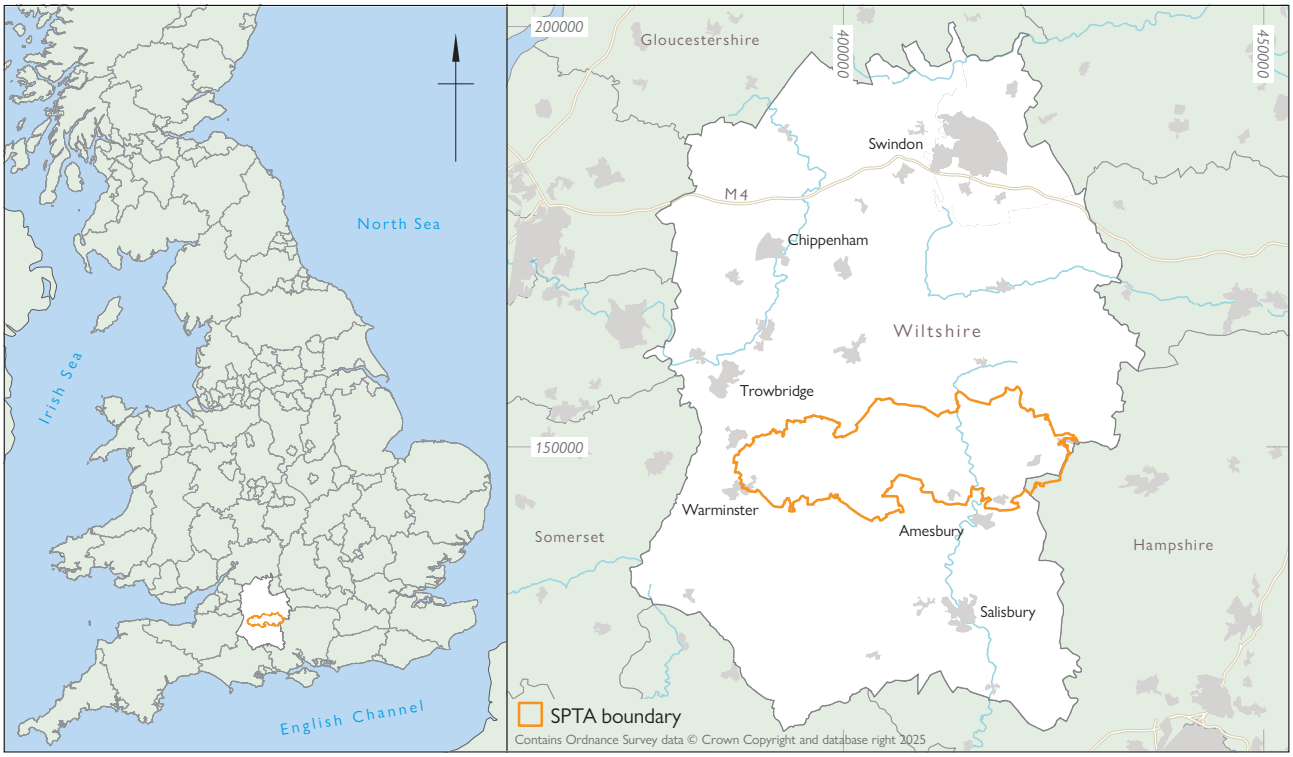


Figure 1.1 The location of Salisbury Plain Training Area (SPTA)

The archaeological aspects of the project were obvious from the outset. Consequently, Wessex Archaeology was commissioned to undertake preliminary works designed to address the archaeological implications of the proposals at four of the main military facilities contained within the Defence Training Estates on Salisbury Plain: at Bulford, Larkhill, Perham Down and Tidworth. This work involved opening evaluation trenches to assess the archaeological resource within the areas of the camps. Further interventions including archaeological evaluations, watching briefs and strip map and sample excavations were then commissioned adjacent to the Bulford, Larkhill, and Perham Down Camps and at Tidworth Camp.

The works were carried out as conditions of planning permissions granted by Wiltshire Council. The interventions were undertaken in accordance with written schemes of investigation (WSIs), which detailed the aims, methodologies and standards to be employed, for both the fieldwork and the post-excavation work, which were approved by both the client and Wiltshire Council Archaeology Service (WCAS) prior to the start of work. Where possible, designs were modified to ensure preservation *in situ* of significant archaeological remains identified during evaluation. In consequence the project did not result in the total loss of significant archaeological remains to excavation and construction.

As a whole, the ABP revealed evidence of the human use of the area from the Early Neolithic to the Second World War, with important evidence of the development of infantry warfare during the First World War being a particularly significant result from Larkhill (Brown and Thompson 2018). Preliminary results and summaries are available (Brown and Thompson 2018; Leivers 2017a; 2017b; 2021), while an Early Bronze Age possible log burial has been published in full (Powell and Legg 2020).

The Sites

Introduction

The sites investigated as part of the Army Basing Programme (Fig. 1.2) are situated on Salisbury Plain, north-east of the Stonehenge part of the Stonehenge, Avebury and Associated Sites World Heritage Site. The area is one rich in the remains of prehistoric inhabitation: in the World Heritage Site (WHS) itself are the large earth, timber and stone ceremonial structures for which the area is renowned – Stonehenge, Durrington Walls, the Stonehenge Cursus, the Avenue, the Lesser Cursus, Woodhenge, the round barrow cemeteries – as well as numerous less well-known henges and barrows and other sites that are less obvious: the pits and surface remains that indicate the more transient and quotidian parts of people's lives. Beyond the WHS boundary, the causewayed enclosure at Robin Hood's Ball, the circles, alignments and burials on Boscombe Down, the long barrows on the Plain and the less imposing pits, burials and shafts scattered among the other evidence demonstrate that this area was one that saw a continued, if intermittent, human presence over millennia.

Distinctive Beaker burials appear within the WHS, some beneath barrow mounds, others interred in earlier monuments (e.g. the 'Stonehenge Archer', and an example at Fargo Henge), or as flat graves. In some instances, barrows appear to have clustered around earlier Beaker burials. Further afield on the eastern side of the Avon, the discoveries of burials known as the Amesbury Archer (2440–2290 BC) and the Boscombe Bowmen (2460–2280 BC) have provided evidence that long distance contacts existed at this time between communities in the Stonehenge landscape and groups elsewhere in continental Europe.

Some existing monuments constructed during the preceding millennium seem to have gone out of use by the Early Bronze Age, although others appear to have continued to

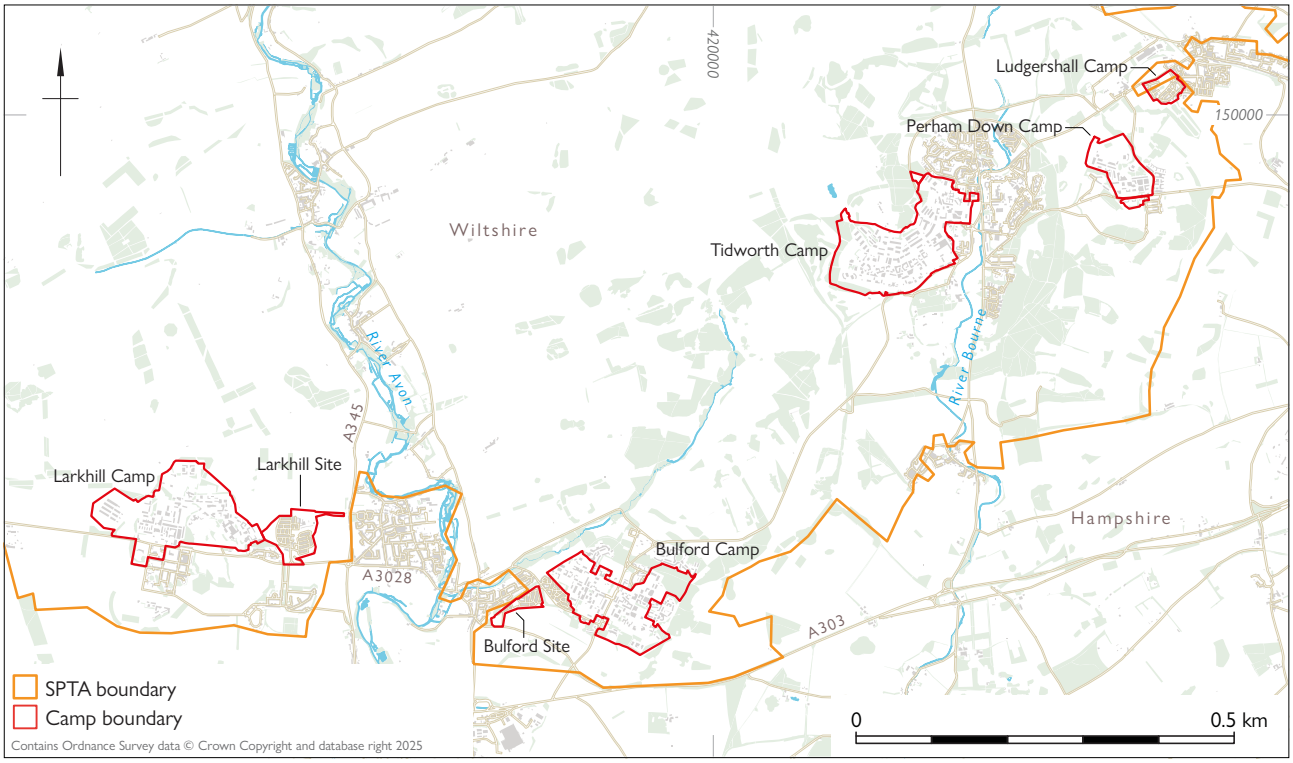


Figure 1.2 The location of all archaeological fieldwork

influence activities in this landscape. The development of a substantial round barrow cemetery – the Winterbourne Stoke Crossroads group, and its numerous outliers – around the Early Neolithic long barrow represents one of the clearest examples of the continuing influence of earlier monuments.

The appearance and proliferation of round barrows appears to represent a distinct shift in ceremonial and mortuary traditions at the end of the Late Neolithic and into the Early–Middle Bronze Age. Many of the barrows and other monuments visible in the Stonehenge landscape were excavated prior to the 20th century; very few examples have been excavated in recent times and there is a corresponding paucity of absolute dating evidence. Nevertheless, it is generally accepted that, although round barrows were being constructed earlier, the majority appear to date to between 2200 and 1520 BC, with the tradition of barrow construction persisting into the early part of the Middle Bronze Age. In many cases, there is also evidence for multiple phases of construction and sequential interments.

The Stonehenge landscape was transformed in the middle of the 2nd millennium BC when 'its sacred and ceremonial significance seems to have diminished sharply; a more mundane agricultural regime of farmsteads and fields took over or intensified noticeably' (Bowden *et al.* 2015, 66). Although the interment of burials in and around barrows continued into the Middle Bronze Age, the tradition of constructing funerary and ceremonial monuments appears to have declined and eventually ceased by, or during, this period, the Middle Bronze Age instead typified by extensive areas of co-axial field systems. Although these boundaries may have been established during multiple phases of activity and subject to episodic alteration and reorganisation, the field systems as a whole are likely to date broadly to the later prehistoric to Roman periods, following a pattern observed across large swathes of Salisbury Plain.

Large linear ditches, commonly referred to as Wessex Linear Ditches, are a characteristic feature of the fossilised prehistoric landscape contained within the Salisbury Plain area and across the wider chalklands of southern England (Bradley *et al.* 1994). Although many of these features appear to have been established in the Late Bronze Age, they are often not closely dated and certain examples may be somewhat

earlier (Bowden *et al*. 2015; Pollard *et al*. 2017). There are also indications that some linear boundaries were maintained and elaborated over prolonged periods. The tradition of constructing these landscape-scale features is frequently interpreted as the manifestation of increased territorial division and the emergence and consolidation of cultural, political and economic groups during the 1st millennium BC.

Although evidence of settlement activity during preceding periods is comparatively rare and typically insubstantial, traces of occupation become more conspicuous from the latter stages of the Bronze Age onwards. Several probable settlement sites have been identified to the west of the WHS boundary, such as those on Oatlands Hill, near Scotland Lodge (Leivers and Moore 2008) and on High Down. Although there are few indications of extensive settlement activity within the central part of the WHS during this period, significant evidence of later Bronze Age activity has been identified beneath and to the west of the current A303/A360 junction.

The remains of three small Bronze Age roundhouses were uncovered during the construction of the roundabout in 1967 (Lawson 2007, 208; Richards 1990, 208–10). The presence of Middle and Late Bronze Age burials among the barrows has also been highlighted as evidence that the earlier monuments may have retained some significance for the occupants of the neighbouring settlement (Bax *et al.* 2010). A scheduled enclosure visible on aerial photographs and confirmed by geophysical survey is bisected by the A303 to the west of Longbarrow roundabout. It is possible that the feature was associated with the nearby Bronze Age settlement; however, the enclosure has not been subject to recorded archaeological investigation.

Very little Iron Age activity is evidenced in the WHS, suggesting people may have deliberately avoided the earlier monuments (Bowden *et al.* 2015). Limited evidence suggests some settlement activity near Durrington Walls (RCHME 1979; Wainwright and Longworth 1971); and on Southmill Hill, Amesbury (Wessex Archaeology 2007; 2012b). However, more substantial evidence is present in the form of Vespasian's Camp, a large univallate hillfort on the western bank of the River Avon.

Although it is likely that some of the field systems and settlements identifiable from cropmark evidence were in use during the Iron Age and Romano-British periods, securely dated evidence for activity from these periods is rather sparse. Excavations at the former MoD headquarters at Durrington revealed a substantial defensive ditched enclosure comparable to the valley fort a further 2.5 km to the north at Figheldean, also located on a bend in the River Avon (Thompson and Powell 2018). This indicates the continued importance of the River Avon within the landscape. Prehistoric evidence is the subject of Volume 4 of the monograph series.

Elsewhere, several areas of Romano-British occupation indicate both a continuity of occupation from the Iron Age in some places and the emergence of new settlements. Settlement in the landscape around the WHS seems to have been largely rural within a wider agricultural landscape. There is little activity identified at Vespasian's Camp, although continuity of occupation has been demonstrated at other Iron Age settlements in the wider landscape, including west of Scotland Lodge (Leivers and Moore 2008) and at Druid's Lodge (Wessex Archaeology 2012a). Substantial settlement of 3rd–4th century date has also been located on the western edge of Durrington Walls close to the Cuckoo Stone (Bowden *et al*. 2015). Another focus of activity can be seen around Amesbury in the Roman period, with extensive settlement and burial activity at Butterfield Down (Rawlings and Fitzpatrick 1996) and Boscombe Down (Wessex Archaeology 2000; 2002; 2007; 2008) and further activity identified on the western bank of the River Avon and a possible Roman villa located at Countess East (Wessex Archaeology 2003; 2016c).

In common with other downland areas, there appears to have been a substantial shift in land use across the area over the course of the Anglo-Saxon period. The extensive

field systems covering the downs that were characteristic of later prehistory and the Romano-British period were replaced with a pattern of settlements on the valley floors utilising a regime of open field agriculture on the lower slopes of the river valleys and open grazing land on the intervening downs.

Amesbury Abbey was founded c. 979 AD and the town is thought to have been an important settlement by the 10th century (Baggs *et al*. 1995). Possible earlier-dated early medieval activity is suggested by the discovery of several burials near London Road (Chandler and Goodhugh 1989) and an early Saxon cemetery at Park Farm, West Amesbury (AC Archaeology 2023). The abbey was dissolved in 1177, with elements being incorporated into a subsequent priory.

A small early to middle Saxon settlement has been confirmed at Countess East, where several sunken-featured buildings were located during archaeological evaluation (Wessex Archaeology 2003). This is the only currently confirmed settlement activity of this period in the Stonehenge area, although it is likely that medieval and post-medieval occupation may overlie and obscure evidence for earlier origins.

Several intrusive Saxon burials have also been recorded within the barrow cemeteries of the Stonehenge landscape (e.g. at Lake Barrow Barrows; Winterbourne Stoke West). Although undated, several graves noted as intrusive burials within one of the barrows to the south of Woodhenge (RCHME 1979) could reflect a tradition of association between Saxon burial sites and earlier monuments. Romano-British and Anglo-Saxon evidence from the ABP excavations is reported on in Volume 5.

Much of Salisbury Plain is thought to have continued in use as pasture in the post-medieval period: the Wiltshire and Swindon Historic Environment Record contains no entries relating to post-medieval activity within the ABP area, and historic mapping shows the areas as undeveloped land or pasture.

In 1892 the Secretary of State was granted power to purchase land for military purposes under the Military Lands Act of that year. The acquisition of land for the army on Salisbury Plain began in August 1897. The results of this are the subject of Volume 6.

Lark Hill

Lark Hill is a low eminence that currently forms part of the northern boundary of the Stonehenge World Heritage Site. The Stonehenge Riverside Project identified the south-eastern end of the hill over a decade ago as a key point in the Stonehenge landscape: the spot commands 'dramatic viewsheds of round barrow cemeteries as well as the major monuments, including a midwinter sunset solstice vista along the Avenue and into Stonehenge' (Parker Pearson *et al*. 2004, 54; 2020, 26). This understandable focus on Stonehenge is perhaps what diverted attention away from Lark Hill's north-eastern slopes (from which Stonehenge is not visible), where some remarkable evidence is situated, including a newly discovered Early Neolithic causewayed enclosure (reported on in Volume 4 of this series) and an extensive First World War practice trench system, reported on here (Fig. 3.1).

The Larkhill Service Family Accommodation (SFA) is situated on land to the north of The Packway and east of Larkhill Camp, one of the main military facilities contained within the Defence Training Estates on the Salisbury Plain Training Area (SPTA). Larkhill Camp is located approximately 1 km west of Durrington and 3 km north-west of Amesbury. The site is bordered by The Packway to the south, the A345 to the east, Larkhill Camp to the west and Martinbushes Road to the north. The site was centred on National Grid Reference (NGR) 414404 144430.

The archaeological work was carried out as a condition of the planning permission

granted by Wiltshire Council (initial planning ref: 15/05540/FUL, subsequent planning refs: 17/06370/FUL, 17/03959/FUL). The development was to comprise the erection of 444 new dwellings, land for a new primary school and community facility, public open space, play areas, landscaping, internal roads and associated infrastructure works. The site was divided into several investigation areas, the main three being Larkhill West (centred on NGR 414250 144500), Larkhill East (centred on NGR 414600 144720) and the Stonehenge Golf Driving Range (centred on NGR 414577 144308). Minor areas were The Paddocks, the Golf Course carpark area, byway bypass, and Parsonage Farm to Larkhill access. In total, the works covered an area of 32.94 hectares. Excavation and watching brief followed earlier programmes of archaeological works, including four phases of geophysical survey (Wessex Archaeology 2014a, 2014b, 2015c and 2016a) and a 107-trench archaeological evaluation (Wessex Archaeology 2015b) which identified evidence of activity from the Neolithic, Bronze Age, Iron Age and Romano-British periods, along with the 20th-century military evidence.

The fieldwork comprised the excavation of five targeted strip, map and record areas (Areas A–E) positioned to investigate archaeological features identified during the trial trench evaluation. On the completion of this work a further four areas (Areas F–I) were excavated following a request by the client and WCAS specifically to investigate the military practice trenches.

The site was located at the head of a dry valley extending north-east towards the River Avon. Prior to development, the land sloped from 105 m above Ordnance Datum (OD) at the west to approximately 80 m OD in the east and was occupied by a mix of rough pasture in Larkhill West, arable and scrub land in Larkhill East, and the heavily landscaped Stonehenge Golf Driving Range. The underlying geology of the site is mapped predominantly as Cretaceous Chalk of the Seaford Chalk Formation, overlain by a dendritic pattern of Head deposits composed of clay, silt, sand and gravel, laid down during the Quaternary period (British Geological Survey).

Bulford

Excavations at Bulford covered a triangular parcel of arable land of 13.4 ha astride a ridge on the southern rim of the Nine Mile River valley, approximately 1 km east of its confluence with the River Avon, centred on NGR 417447 143550. The ridge falls sharply on the north side from approximately 99 m OD but subsides more gently into coombes on all other aspects. The coombe on the eastern boundary is a principal component of this dendritic network of dry valleys and provides an important egress point from the Nine Mile River valley onto the higher slopes.

Wessex Archaeology were commissioned to design and implement a programme of trial trench evaluation, to be conducted within the proposed ABP development area. During the early stages of the design process for the trial trench evaluation, it was established that the scale and complexity of the ABP proposals, in combination with the constraints of the development environments, imposed difficulties in terms of the delivery of any such programme of investigative works. Consequently, a bespoke strategy, which offered an iterative, proportionate and deliverable programme of preliminary archaeological investigation was developed by Wessex Archaeology, in consultation with WYG and WCAS. This strategy was outlined in a series of individual WSI (Wessex Archaeology 2014c; 2015b; 2015d; 2016) and the scheme-wide WSI (Wessex Archaeology 2018b).

A desk-based assessment (DBA: Wessex Archaeology 2013a) established the archaeological interest within and around the site, defined as the potential for the presence of buried archaeological remains, in particular relating to prehistoric funerary and ceremonial monuments, settlement and agricultural practices. A detailed gradiometer survey (Wessex Archaeology 2014a) confirmed two exceptionally clear

circular features which were plotted from aerial photographs as undated ring ditches. The geophysical survey indicated that each ring ditch comprised two concentric monuments. The inner circuits were broken by entrances on the north side, which suggested that these monuments might be Late Neolithic henges. Two monuments of this type in such close proximity is an extremely rare occurrence. A number of possible pit-like features were also recorded along with a number of weak circular and subcircular positive anomalies that were considered to be potential pits or tree-throw holes. A ditch parallel to the current northern field boundary was also observed.

In consequence, following consultation with the planning authority and WYG, a WSI (Wessex Archaeology 2014c) was prepared, using the results of the geophysical survey, for an archaeological trial trench evaluation. The WSI set out the strategy and methodology for the implementation of the evaluation.

The initial archaeological trial trench evaluation comprised 24 trenches, positioned to characterise a selection of the geophysical anomalies as well as apparently blank areas identified by the survey. An archaeological watching brief was also maintained during geotechnical investigations. The results of the trial trench evaluation (Wessex Archaeology 2015a) demonstrated that the level of archaeological material present within the site exceeded that indicated by the geophysical survey. The results included two probable Neolithic pits, at least 17 subrectangular graves, probable wartime military practice trenches and tree-throw holes. In the light of these discoveries a second phase of evaluation was requested (Wessex Archaeology 2015c).

The Phase II evaluation comprised 53 trenches, which increased the total sample area of the site to 5%. Trenches were targeted to examine the suspected henges and ring ditches; to define the extent of the cemetery and establish its relationship (if any) to the ring ditches; and to provide further definition of blank areas. The results provided data to allow the planning authority (WCAS) to assess the need for, and nature of, further archaeological mitigation.

The Phase II evaluation (Wessex Archaeology 2015c) identified additional Neolithic pits and clarified detail of the henge and ring ditch monuments, confirming that they were well preserved and contained internal features. Initial development proposals identified this area as open amenity space, thus presenting the option of listing these monuments as scheduled ancient monuments and preserving the remains *in situ*. The archaeological evaluation also provided more precise definition of the cemetery and suggested that it dated to the 7th–8th centuries AD. In addition it revealed a number of features related to military activity, a phase of evidence which was previously unrecognised.

Based on the data recovered from these two phases of archaeological evaluation it was requested that Phase III of archaeological work should be commissioned at the site. This work was undertaken as an area excavation. A WSI (Wessex Archaeology 2015d) set out the aims and methods to be employed to characterise and understand the nature of the henges and ring ditches with a view to their long-term preservation *in situ* (Wessex Archaeology 2016b), excavate all pits within the stripped area, and undertake full excavation of the Anglo-Saxon cemetery.

The archaeological investigations at the site were completed in two additional phases of strip, map and record using a single agreed WSI (Wessex Archaeology 2016d).

The underlying geology is mapped as Cretaceous Chalk of the Seaford and Newhaven Chalk Formations. This material is rubbly on the surface and interspersed with periglacial features, becoming bedded and jointed lower down, but is nowhere massive. Beds of sheet and nodular flint outcropped on the surface, which was also covered by a densely packed spread of tree-throw, scrub-bole and periglacial solution features. These were especially prevalent along the crest of the ridge but less frequent in the coombes.

Figure 2.1 Aerial photograph showing the abandoned trench system in 1923 (SACA 487 XII K Q 84 07/11/23)

Chapter 2
The Background to the First World War 'Practice Trench' System, and Military Training at Larkhill, Wiltshire

by Stephen Beach with contributions by Steve Thompson

And the place of their waiting a long burrow,
In the chalk a cutting, a steep clift-
but all but too shallow against his violence.

David Jones, In Parenthesis – Part 7 (1937)

Introduction

The construction of practice trenches at Larkhill was underway as early as 1914 (Kipling 1915, Nicholson 1962) and was expanded or modified according to the training requirements of the military units based at Larkhill through the course of the First World War. By 1916 (possibly earlier), the Larkhill trench system had effectively become a practice battlefield, where troops could be familiarised, as far as practically possible, with conditions, drill and the routine of trench warfare, before departing for the frontline and entering theatre.

These practice trench systems, primarily relating to the First World War, are not uncommon (Brown 2017; and see 'Trenches in England Gazetteer', Historic England). Indeed, where practical, some form of practice trench system is likely to be associated with many combat training camps constructed or utilised during the First World War. Practice trench systems were not limited to training or formation camps in Britain, and examples are known to have existed at depots and camps across the channel, most notably at the Royal Engineers Training School at Rouen (Chasseaud 2006).

Surviving examples of practice trench systems are prevalent on Salisbury Plain, where an ideal mix of circumstances for excellent preservation have been at play: the sheer number of troops in training in the area during the war, the proximity of Salisbury Plain to southern coastal ports, the geology (similar to large parts of the front line, i.e., Picardy), and the relative lack of development following the war due to the area's ongoing use for military training. In some cases, such as parts of the Perham Down system (McOmish, Field and Brown 2002; Wessex Archaeology 2017) trenches remain partially extant, although this is something of an exception, and ongoing changes in training or other military requirements, the expansion or abandonment of camps, and the return of some areas to farming led to deliberate backfilling of most practice systems in the decades following the end of the war. The Larkhill system experienced a similar fate and was largely abandoned soon after the First World War. An aerial photograph taken in 1923 (SACA 487 XII K Q 84 07/11/23; Fig. 2.1), shows the system in a state of disrepair and partially backfilled.

The question may arise as to why remains such as practice trench systems are important, and what value there is in the excavation and recording of these remains. After all, the construction of trench systems is understood from the military manuals and instructions from the time (*Manual of Field Engineering 1911*, reprinted 1914 – War Office 1914a), and there are also surviving personal accounts, official documents, and histories of trench warfare during the First World War. These trenches were constructed for a purely practical purpose to familiarise soldiers, as closely as was feasible, with the environment they were likely to encounter in the frontline, and therefore make them more efficient in that environment, and able to understand and

follow orders effectively in that situation. Moreover, many British citizens were possibly unaware of the existence of such developed practice trench systems on British soil, unless they were directly involved in the training, or lived nearby, although there are recorded incidences of public displays. Practice trench systems do not tend to be (or perhaps were not allowed to be) used as the subject of postcards home from training establishments, even on postcards which were permitted to depict specific military camps. Consequently, it may be safe to assume, if practice trenches were considered at all by the wider public, that they would not be seen as anything other than practical, and a necessary part of training. Once that function and purpose was no longer needed, practice systems were backfilled, and land was returned to its original function, or developed. Even on military training estates, redundant systems took up a lot of space which might be better utilised for other functions, or more relevant military training (especially near camps, which continued to be used after the war).

The value in the recognition and recording of these practice trench systems lies in comprehension and education. The rediscovery of the large-scale practice battlefield at Larkhill fired the collective imagination during 2017 and served as an opportune reminder of the enormous human effort and cost required to fight such a war, and a reminder that such efforts were not just confined to continental Europe, or perhaps, even the increasingly distant past. The emotional urge to draw a line under the events of the First World War, in the immediate aftermath, should not be underestimated: there had been so much national loss and suffering that practical and visible reminders of the brutal attritional mechanics and conditions of trench warfare were probably difficult and uncomfortable reminders to have in the landscape, and it appears most would prefer to honour the sacrifices made by so many privately, or at times of public remembrance, or by erecting and maintaining memorials.

Large-scale practice trench systems are also an overdue testament to the military leadership of the time and are undisputable evidence of attempts to prepare conscripted troops for the conditions they would face on the frontline, and to adapt training regimes based on lessons learnt on the battlefield.

But of course, like most places that have been utilised or occupied by humans, the excavation of these practice systems also provides remnants of individual human stories in the material culture that has been left behind; the accidental loss of a personal item, or an attempt to personalise, and the urge to leave behind evidence of presence and existence via graffiti, in the face of an impending and uncertain future.

Other Practice Trench Systems

Although Salisbury Plain was unquestionably important for military training during the First World War, and remains highly important for British military training now, there are many other locations across the country where practice trench systems have been identified (see 'Trenches in England Gazetteer', Historic England).

Not all practice systems were equal, either in terms of use or scale. Consequently, the Larkhill system described here is far from the only practice trench system in the locality (south-eastern quarter of Salisbury Plain), and at least two other practice trench systems have even been identified in the setting of the present Larkhill Garrison, including to the south of Alanbrooke Road, and north of The Packway (north-east of the Willoughby Road junction). Other systems and potential systems of varying scales are located at Durrington and Figheldean to the east; Amesbury, King Barrow Ridge, and North of Stonehenge to the south; and at the Bustard Inn to the west. There are multiple systems around Bulford, including the extensive Beacon Hill system (Brown and Field 2007), the large system at Halters Hole, Tidworth, another well-known large system at Perham Down (Osgood 2018; Wessex Archaeology 2017), a possible opposing system to the north of Little Perham Copse (Beach 2018), and a system at

Shipton Bellinger (Beach and Clarke 2020), as well as systems at Slay Down (Rushall), Upavon Hill, Warren Down, Chapperton Down, Knook Down, Yarnbury, and multiple potential systems at Orcheston Down (see Brown 2017 for further details).

These known and suspected trench systems range from the most basic disjointed segments of firing bay (perhaps excavated and backfilled as part of a single route march exercise) to more complex systems with features such as extended sections of forward firing bays with access/communication trenches to the rear; areas of developed front line with an array of support trenches; or almost fully formed practice battlefields with opposing fronts separated by an area of no-man's-land, which could be utilised for large-scale, battalion-level, or greater, multi-day exercises (Perham Down, the Bustard Inn, Larkhill, etc.).

A rudimentary level of tunnelling or the construction of dugouts is not unheard of, as at Shipton Bellinger (Beach and Clarke 2020). However, to date, Larkhill certainly stands out locally and nationally in terms of the scale and the complexity of its tunnelling.

Setting the Scene – a Background to Early Military Training and Training on Salisbury Plain

Infantry training in the Salisbury Plain region has a long history. The general need for improved specialised training of the old Regiments of Foot beyond familiarisation with equipment, and the learning of marching and formation commands (which probably would have been recognisable to an English Civil War soldier of the 17th century) was perhaps recognised as far back as the War of Austrian Succession (1740–1748) (McKay and Scott 1983, 162–171), where irregular French *Chasseur* or 'Hunter' units (effectively Light Infantry) were used to complement the regular forces.

This type of irregular unit was used by British colonial forces in North America during the mid-1750s, with the formation of Rogers' Rangers (1755–1761) in the New Hampshire Province during the French and Indian War (1754–1763), which later became part of The Seven Years' War (1756–1763). Irregular units such as Rogers' Rangers proved effective in the terrain encountered, and during 1757 a young Brigadier General, Lord George Howe, joined Rogers' Rangers on a scouting expedition. The following year Howe started to reform the 55th Regiment (to form and fight in woods), but this was superseded by the formation of the 80th Regiment of Light-Armed Foot, or Gage's Light Infantry ('leather caps'). Tragically, George Howe was killed in July 1758 during the Ticonderoga Campaign (David 2013; MacNiven 2021; McIntyre 2017).

The recognition of the value of Light Infantry was not immediately lost on The British Army, and William Howe, George Howe's brother, would certainly have seen the effectiveness of light or irregular units during the remainder of the Seven Years' War. Indeed, William Howe led the famous ascent from the river to the Plains of Abraham at Quebec in 1759. However, towards the end of the Seven Years' War, there must have been the feeling that the Light Infantry had served its purpose, and such units were not required outside the terrain and topography of North America. Rogers' Rangers were disbanded in 1761, and the 80th Regiment of Light-Armed Foot was disbanded in 1763 (McIntyre 2017).

There appears to have been a lapse in the use of any light infantry units by the British until 1772, when General Townsend issued a set of orders for light infantry troops in Ireland (McIntyre 2017). But it was not until 1774, spurred by the looming signs of unrest in the year before the start of the American Revolutionary War (War of Independence 1775–1783) that a formal set of orders and training (still mostly drill based) were developed, and initial training was begun on Salisbury Plain near Old Sarum, led by William Howe (McIntyre 2017).

The next major military training event on Salisbury Plain, again reaction to events in a foreign war, took place some 98 years later in 1872. The Franco-Prussian War (1870–1871) had led to the recognition that military training, specifically combined training of Artillery and Infantry units, was required for the British Army to maintain its effectiveness on the battlefield (James 1983).

By this point, the British Army had been undergoing a series of moves towards greater professionalism since the mid-1800s, accelerated by the events of the Crimean War (1853–1856). Major manoeuvres were conducted on Dartmoor in 1853 (see 'The armed forces on Dartmoor a brief history', GOV.UK), and 1855 marked the formation of the Staff College for Officers (James 1987).

In 1859, the School of Gunnery was established at Shoeburyness – prior to this only Woolwich Common/Plumstead Marshes and some coastal 'barrel target shooting' were permitted locations for live gunnery (James 1983). In 1863 the Artillery Association was formed, and in 1868 the Cardwell Reforms brought an end to purchased commissions, enabled short service enlistment, and implemented the county regiment linked to the battalion system (James 1987). The first large-scale multi-unit combined Artillery, Cavalry and Infantry manoeuvres took place in 1871; this proved to be a great success, and the following year similar large-scale manoeuvres took place on Salisbury Plain (Collier 1972; James 1983).

The War Office Committee implemented a decision to acquire land on Salisbury Plain for training in 1897, and by 1899 some 22,000 ha of land at West Down and Lark Hill had been purchased and the first Batteries were in training, initially being stationed at Bulford hut camp and marched to Lark Hill to practise (James 1983). Yet again, events further afield, this time the Second Boer War (1899–1902), were spurring developments in training.

Training Developments 1902–1914

Infantry training evidenced by the findings of the ABP excavations at the practice trench system at Lark Hill and at Larkhill Camp can be placed in the wider context of what happened before the Second Boer War, and developments during that war in the context of the ongoing 'war effort'.

Evidence suggests practice trenches – or perhaps more correctly, target trenches – were being constructed in the Lark Hill area by at least 1902, as noted in the *Annual Report of the School of Gunnery* for 1902, which records that three S-shaped 'Boer' trenches were filled with standing dummies and fired at with artillery (McOmish *et al.* 2002, 139, after War Office 1902).

Towards the end of the Second Boer War (1899–1902), work was underway updating the army's training programme. G. F. R. Henderson wrote a first draft of Combined Training (Provisional) 1902, and this was later developed into the Field Service Regulations (FSR) Part I (1905) and Part II (1909), revised in 1912 and later amended in 1914 (Hutchison 2021; Teagarden 1997).

The formation of the FSR and the adoption of its principles, especially Part I, was a significant moment in terms of organisation, procedure and basic tactics, and led to an extensive series of supplementary guides, manuals and handbooks published by the War Office and HMSO, specifically targeted at the diverse branches of the army (Hutchison 2021). *The Manual of Infantry Training* (War Office 1905a) is an early example of this, and details among other things a 60-day training syllabus for new recruits, based on a four-hour day including squad drill, physical training, and lectures in rifle and musketry, bayonet fighting, marching order, skirmishing, and guard and sentry duties. Other works such as the *Manual of Field Engineering 1911* (reprinted 1914) (War Office 1914a) details

the construction of entrenchments, albeit primarily based on limited closed-group trenches and redoubts.

In 1910, major Army manoeuvres were conducted on Salisbury Plain (the Great Autumn Manoeuvres, British Pathé; Crawford 2012a; Whitmarsh 2007). To provide some idea of the scale of these events, the last equally opposed Army manoeuvres before the outbreak of war were conducted in East Anglia in 1912 (His Majesty's Manoeuvres (1912), East Anglian Film Archive), and comprised two forces totalling over 47,000 men, 12,000 horses and 195 guns (artillery), and a force of military aircraft (Batten 2015). The 1912 manoeuvres comprised a Red Army (commanded by Douglas Haig) starting on the north coast of Norfolk with the goal of entering London, and a Blue Army (led by James Grierson) charged with stopping the Reds from a starting point at Cambridge. Observers of the manoeuvres included King George V, the British Secretary of State for War, the Canadian and South African Ministers of Defence, General Ferdinand Foch (French Delegation), and Grand Duke Nicholas Nikolaevich (Russian Delegation) (French 1931). Parallels between the format of these manoeuvres and events that unfolded two years later during August 1914 are hard to ignore or dismiss.

The Training and Manoeuvre Regulations 1913 (War Office 1913), further built on the principles set out in the FSR and includes additional lessons learnt during the series of Army manoeuvres (Batten 2015), stating in the first paragraph of the first chapter: 'The sole object of military training is to prepare our forces for war, success in battle being constantly held in view as the ultimate aim.'

These regulations go on to detail responsibilities for training and how training should be delivered, including individual systems of training, specialist training for officers, exercises without troops, war games (courses, lectures, essays, conferences and instructions on training NCOs and men), collective programmes of training at Company, Battalion, Regimental, Brigade and Divisional levels including Command training; this is then followed by sections on roles and responsibilities during Army manoeuvres, and details on the role of (training) umpires during exercises. The regulations also contain very specific rules for the siting of practice entrenchments (shelter trenches, redouts, and other military fieldworks) during exercises (War Office 1913, 102–103), under the Military Manoeuvres Act 1897 Appendix A, including:

> *(b) In order to avoid heavy claims for compensation, due regard must be paid to the locality in which it is contemplated to construct such works, and also to the nature of the soil and subsoil.*
> *(c) Acts of vandalism, such as entrenching on the sites of ancient Roman camps, ancient dykes, burial mounds, British villages, etc., are prohibited. These are generally shown on the map in Old English characters.*
> *(d) Entrenchments should not be constructed in private parks or gardens, nor on chalk downs, without permission from the owner.*

Infantry Training (4-Company Organisation) dated 10 August 1914 (War Office 1914b), published just six days after the declaration of war, foresightedly added entrenchment to the syllabus, indicating the General Staff were very aware that trench warfare was a distinct possibility. Indeed, there are indications that even before the so-called 'Race to the Sea' was underway, entrenching was recognised as a principal training priority.

Specific entrenching exercises included within the 1914 instructions (War Office 1914b, 96), provide an excellent insight into trench warfare training at the start of the war, and focus on construction, rather than extended occupation:

Shelter Trench Exercise –

- Troops should be practised in the use of the pick and shovel, until they can excavate without difficulty the tasks mentioned below. Men unaccustomed to digging should, if possible, be trained at first in sand or very light soil, until they are accustomed to handling the shovel. When the troops practise entrenching, the task set them should require not less than four hours' actual work, according to the nature of the soil.
- It is important that soldiers should be taught to handle their tools without noise.
- The men will, without word of command, turnabout and take 4 paces to their rear, ground arms, take off their accoutrements, and lie down until ordered to begin work.
- To avoid accidents every man must commence digging on the left of his task, and work from left to right (Manual of Military Engineering, Section IV) (War Office 1905b).

Details regarding the correct positioning of trenches are also provided (i.e., avoidance of sky-line locations (unless dummy trenches), location prone to grazing artillery fire, concealment, placement of barbed wire on 'dead ground', and the positioning of communication, cover or support trenches).

Training Developments 1914–1918

Unlike the small (by continental standards) but highly trained British Expeditionary Force (BEF) 'strike-force' (Teagarden 1997) that departed Britain during August 1914, it is probably true that many of the volunteer troops that formed Kitchener's New Armies in 1914–1915 were not wholly prepared for what they would face at the Western Front. But this situation should be seen as a product of numerous factors, not least an overwhelming influx of untrained personnel, which naturally led to a shortage of equipment and materials, and significantly, from a training perspective, a severe shortage of trained and experienced instructors (see 'Training to be a soldier' at longlongtrail.co.uk) – rather than any stagnation in the training syllabus, or any unwillingness to adapt on the part of the General Staff.

Regimental training facilities (Regimental HQ and depots, etc.) were soon overwhelmed by the sheer number of recruits, and it was very soon recognised that additional training and accommodation facilities would be needed. The recognition that large-scale training centres and hutted accommodation would be needed for the health of the new troops was almost instantaneous, and probably was in consideration before war was declared. Indeed, at Lark Hill, the order for the construction of the hutted camp (and railway) was issued on 12 August 1914 (James 1983), only eight days after Great Britain declared war on Germany, and eleven days *before* the BEF (see 'British Expeditionary Force' at Oxfordreference.com) engaged German Forces at the Battle of Mons on 23 August.

It is also worth considering that it was not until September that German forces began to 'dig-in' in any meaningful way (First Battle of Aisne), ending the Battle of the Frontiers, and sparking the Race to the Sea (October–November 1914), which finally culminated in the relative stalemate of trench warfare by late 1914, just as the first Infantry units (Canadian Expeditionary Force) started to filter into Larkhill Camp (Nicholson 1962).

The old military maxim states: '*The start of a new war is only as technically advanced as the end of the last.*' Nevertheless, any impression that development in training stopped at the end of the Second Boer War, or that General Staff stoically relied upon out-of-date pre-war regulations and manuals, should be dismissed. Certainly, the FSR and existing manuals formed the essential basis, but these were not entirely set in stone and were adapted and added to as experience at the Front increased and as circumstance dictated. This is partly demonstrated by the official publication of articles such as *Notes from the Front* (War Office 1914c), which add to the information provided in the earlier manuals by including information such as descriptions and diagrams of early German

trench designs used in the field, and statements (generally from wounded BEF Officers, back from the front) such as:

> *Due to the accuracy of the enemy artillery fire, it is desirable that ground which is to be held defensively or to assist further advance should be entrenched,*

and

> *If immunity from shrapnel fire can be obtained up to the moment of having to resist the infantry attack, no more can be hoped for (War Office 1914c, 8).*

Notes from the Front also provided additional instruction (presumably from hard-earned lessons) regarding newer technologies such as spotter aircraft:

> *Observation by aeroplane — As soon as it appears that troops have been located by an aeroplane their position should be changed, as it has been found by experience that batteries open fire directly the aeroplane report has been received.*

Notes for 1914 also openly highlights important gaps in training reported by officers back from the front:

> *We did not do enough shooting by the map at practice camps, e.g., I frequently get an order 'aeroplane has reported a 6-gun battery in action 400 yards south of the O in COURTECON, engage it', but we do not do much of this kind of shooting in camps. Map reading strikes me as being enormously important,*

and

> *Given a good map, a battery, the flashes of which are visible, can be knocked out by a concealed battery; I am proud to say I have done this on two occasions* (War Office 1914c, 13–14).

Less official manuals were also available by 1915. One of these was *From the Front: Notes for the New Armies by 'Company Commander'* (Anon 1915) which provided apparently useful information to inexperienced volunteer officers, such as: 'Trenches are never finished — A good Battalion may be distinguished in a moment from a bad, by the way it works at improving its trenches' (*ibid*., 13).

1915 also brought about the publication of *Notes from the Front Part III and Further Notes on Field Defences* in February 1915 (War Office 1915a) and *Part IV* in May 1915 (War Office 1915b), collated by the General Staff for officers. Both publications are clearly marked 'For Official Use Only – information not to be communicated to the press or to any person not holding an official position in His Majesty's Service', suggesting lessons in information control were also being keenly learnt and implemented.

Part III builds upon advice previously given in the 1914 edition, particularly regarding specialist or specialised elements of a trench system, but also adds new considerations, such as improved drainage, sanitation and latrine descriptions, advice on treating frost bite, correct practice of duties at night, and training for the immediate replacement of casualties, especially officers and NCOs, noting that the 'next rank down' should always be prepared to immediately take command, should the situation demand.

As hinted by the secrecy warning at the start of *Notes Part III* (War Office 1915a) by early 1915, secrecy was becoming more important: advice is provided on the prevention of maps falling into enemy hands and spotting the signs of German espionage behind the front; one note specifically reminds officers that 'the keeping of unregistered carrier pigeons is illegal' (*ibid*., 25).

Notes from the Front, Part IV (War Office 1915b) again adds to the information provided by *Part III*, giving instruction on the proper relief of trenches, and details further improvement to trench design and detail (with diagrams), in particular a design for a defensive machine gun 'Caponier', and machine gun posts beyond the first line of wire defence, well forward of main fire trenches (War Office 1915b, 15–16). This edition also provides instructions for specific infantry training that had almost certainly taken place at the Larkhill System, based on the military finds evidence recovered during the archaeological fieldwork:

- Practice in wire cutting – Wire entanglements should be erected near billets of Brigades in reserve, and practice carried out in wire cutting and overcoming obstacles. Men should be trained in each platoon.
- Grenades – Memorandum on the Training and Employment of Grenadiers – Issued by the General Staff at General Headquarters – comprising multiple page instructions of the use and training with grenades including:

  I. the object of grenade throwing;
  II. selection of men for training as grenadiers (best, bravest, steadiest in emergency);
  III. training and instruction (within practice trenches);
  IV. practice with live grenades;
  V. the organisation of a trench-storming party (including 'bayonet men', 'the grenadiers', and the 'sand-bag men', who are required to barricade entrances and 'machine gun proof' entrances to the trench being attacked);
  VI. methods of attack – including fire trenches, and 'island traverses';
  VII. specialist equipment to be carried by 'grenade carriers' and 'sand-bag men'; and
  VIII. notes and tips on tactics, equipment and fighting from experienced officers who have been in charge of grenadiers at the Front, such as, keeping 'supposedly' rust-proof rifle-grenade equipment from rusting, effectiveness of firing rifle grenades into sniper loopholes and parapets at short range, and the use of *points d'appui* or assembly points in attack, etc.

Notes from the Front, Part IV (War Office 1915b) also provides highly pertinent instruction for the organisation and operation of mining and tunnels, and listening units at Battalion level, which is discussed in more detail below.

Training the AIF at Larkhill – July to November 1916

The collection of First World War Papers, 1914–1918, of General Sir John Monash (Australian 3rd Division) provides a wealth of information regarding training regimes, adaptation, and development of training prior to moving troops to the Western Front. Significantly, General Monash and his troops were stationed at Larkhill between July and November 1916, and General Monash's personal papers have survived, freely available online via the Australian War Memorial (awm.gov.au).

Monash had clearly learnt from mistakes earlier in the war, where Australian Imperial Force (AIF) troops were wholly unprepared for what they were about to face, with many not having been properly trained in simple matters such as the use of the Lee Enfield rifle (Pederson 1985, 92). Monash's 4th Infantry Brigade had suffered huge casualties during the Gallipoli Campaign, during the assault on Sari Bair Ridge on 8 August 1915. This was one of the blackest days for the AIF and though unsubstantiated, it was reported that Monash broke down during the assault uttering the words, 'I thought I could command men' (Pederson 1985, 90–126).

Monash, having seen action with the 4th Infantry Brigade, was more acutely aware than most where training should be focused, and as early as July 1916, having recently been placed in command of the Australian 3rd Division and preparing to join them on Salisbury Plain, was already compiling material pertaining to lessons learnt and how to improve training. Before his arrival, Monash sent General Staff Officers (GSOs) to

inspect the existing 'digging ground' at Larkhill, and to select training areas for large-scale training, for which the Bustard Inn, not Larkhill, was selected for the largest exercises (AWM, 3DRL/2316, RCDIG0000614).

Monash set up a minimum nine-week training schedule for his AIF troops, soon extended to 14 weeks from October 1916, to ready them for the Western Front. Although this was a shorter training syllabus than detailed in *Infantry Training* (War Office 1914b), many of his troops were already battle hardened, and had seen action in the Mediterranean. The course comprised two weeks of Preliminary Training, eight weeks of Intermediate Training, and four weeks of Platoon and Technical Training (AWM25 943/7 Part III in Frederickson 2015, 63, table 23).

Relevant training for soldiers was obviously considered to be of the utmost importance by General Staff. Far from being unchanging, training regimes were adapted and potential lessons learnt by success or failure during action were being circulated to at least Brigade level during 1916 (Monash Papers, AWM, 3DRL/2316, RCDIG0000614). Indeed, even under pressing need for reinforcements, and requests from AIF commanders at the front line, Army Council Instructions No. 1103, of 31 May 1916, insisted that 'No men are to be sent forward until they have had fourteen weeks training' (AWM, 3DRL/2316, RCDIG0000615).

Monash used the trench systems around Larkhill to fully prepare his men, with the training described by Private Verdi Schwinghammer of the 42nd Battalion as 'very severe and strenuous' (AWM25 2DRL/234 page 9, in Frederickson 2015, 62). The unpleasantness of the training was epitomised by a piece of graffiti from Tunnel TJ5 (WA181) which described one listening post as 'SHITHOLE CORNER'. The training taking place at Larkhill was designed to be as realistic as possible: Allied commanders wanted their men to be prepared for what they were to face on the Western Front. Life at the training camp was strictly controlled: routine orders No.1 Larkhill, dated 7 July 1916, stated that non-commissioned officers (NCOs) or men who were not on duty, or without a pass, must not be outside a circle drawn with a radius of four miles from Divisional HQ at Larkhill (AWM25 943/7).

It has been indicated that Monash was against 'promiscuous digging, which spoils ground for other training or activities' (Brown and Osgood 2009; Brown and Thompson 2018), and that quite rightly infantry troops would more likely be involved in the day-to-day maintenance and repair of sections of the front line where they were stationed, rather than in constant excavation of new systems. However, this does not necessarily rule out expanding existing trench systems if there was a training requirement to do so, and smaller-scale trench digging was clearly on the syllabus, at least as part of Battalion marches, where troops were marched six miles or so, dug trenches for the night, and then marched back to camp the next day (AWM, 3DRL/2316, RCDIG0000614).

Some initial training (probably limited to the training of instructors), including bombing (hand grenade) and Stokes mortar training, was conducted away from Larkhill, at Perham Down (Stokes mortar), and more surprisingly at Lyndhurst (bombing) (AWM, 3DRL/2316, RCDIG0000614).

Although wide ranging, examples of initial lessons learnt by the AIF from the Front included:

- *the importance of good artillery;*
- *efficient liaison throughout the army;*
- and in attack, *trenches crossed by the first line should be thoroughly cleared of the enemy* (presumably before advancing further), *and reserves should be held well and should not swell the first line.*

Other more specific lessons were also circulated among staff, including this example from C. H. Harrington of the 2nd Army to the 1st Anzac Corps, marked secret, and

dated 7 July 1916:

a) *Assaulting troops must start from within two hundred yards of the enemy's front line. Sap heads should be pushed out and joined up, previous to the attack.*

b) *The front of attack for a division should not exceed one thousand yards if possible (measuring along the actual line of our trenches and not in a straight line).*

The results and value of these Brigade- and Battalion-level training exercises was being recognised, as a note dated 16 August 1916 details:

> *Each battalion was trained along the same lines. An exercise was carried out by day and repeated again, at night. The Brigade was also exercised as one unit. Before starting off, all ranks were made acquainted with the exercise, and at the conclusion, a little constructive criticism by the Brigadier or commanding officer in the hearing of all ranks followed. Almost every man had thrown a live Mills Bomb. Lewis guns had 5 or 6 reserved crews, all of whom had actually fired the gun on 30-yard ranges, made near billets. Rapid fire was practiced. Each Platoon had its squad.* (AWM, 3DRL/2316, RCDIG0000615)

The note goes on to suggest potential improvements to the organisation of attacks, preventing troops from advancing into rolling barrages; the distribution of Vickers guns and Stokes mortars; and aircraft signalling from the front line.

The training of troops at Larkhill was inspected on 26 August 1916 by Major-General Francis Howard, Inspector General of Infantry. Howard was impressed with the state of preparedness and reported that:

> *The aim throughout has been to make the training as uniform as possible throughout all units and throughout every part of every unit, so that the whole Division should be progressively trained on uniform lines and be brought to a state of fighting efficiency in simultaneous progressive stages; the idea being that there would be no advantage to the Division as a whole in having some units further advanced in their training than others.*

Howard further reports that:

> *The Division is being trained along thoroughly practical lines ... A brigade system of trenches is being constructed at the Bustard … Each brigade does five days turn, with 2 battalions in first line trenches and 2 in reserve – They relieve each other at night …* (AWM 3DRL/2316, page 9, in Frederickson 2015, 183).

Further descriptions of training at the Bustard Inn trenches can be equally applied to those at Larkhill. The Bustard trenches were set up at Monash's request for a Brigade-level training site, by Brigadier Jim 'Bull' Cannan, Commander of the 11th Brigade. Cannan contacted his comrades already in France requesting detail on their tactics, techniques and procedures in manning the trench systems of the Western Front, to ensure that the training would be as authentic as possible. Cannan received the system of 'Trench Standing Orders' from the 2nd Australian Division in France, which were immediately put into operation, and he replied to Colonel Jackson, 'many thanks for this copy of Trench Orders. It is proposed to issue a somewhat similar pamphlet for the 3rd Division in training; and to publish some brief extracts from *Notes for Infantry Officers on Trench Warfare* compiled by the WO' (AWM25 943/14, in *ibid*., 158 and War Office 1916).

Monash specified that:

> *each company should spend two consecutive days on its trench area digging before being relieved by the next company. A further period can be spent later putting in dugouts, etc.* (AWM G26/53, in *ibid*., 158)

while Cyril Longmore of the 44th Battalion wrote that:

> *the most memorable training scheme in which the brigade took part was the occupation for three days of a system of trenches at … a place a few miles from Larkhill. In this stunt everything had to be carried out as though it was an ordinary front-line system of trenches and with an imaginary active enemy opposite. The most persistent enemy the battalion had on this occasion (and it afterwards proved to be the same in France) was the rain. It scarcely ceased during the three days and nights in which the trenches were occupied, and what with that, the strain on the imagination in trying to 'make believe' the enemy, the working parties constructing dug-outs and digging trenches and building everything that had ever been built in trench warfare to that date, and the fact that no one excepting 'brass hats' were allowed on top, it was no wonder that the troops were heartily glad when the time came for relief. Although the battalion did not realise it at the time, those three days paved the way very thoroughly for its first 'dinkum' tour in the line at a later date'* (Longmore 1920, 26).

At the end of the war Monash stated that:

> *a perfected modern battle plan is like nothing so much as a score for an orchestral composition where the various arms and units are the instruments and the tasks they perform their respective music phrases. Every individual unit must make its entry precisely the proper moment and play its phrase in the general harmony. The whole program is controlled by an exact harmony, to which every infantryman, every heavy or light gun, every tank and aeroplane must respond with punctuality; otherwise, there will be discord which will impair the success of the operation and increase the cost of it* (Flenley 1919, 56).

By October 1917, some ten months after the 3rd Division AIF departed Larkhill, and just before the opening of the first battle of Passchendaele, the training system for British and Imperial Troops was further codified in *Army Council Instruction 1230* (1917) for Category 'A' recruits over the age of 18 years and 8 months, and was based on the 14 week programme (see the 'Syllabus of infantry training for senior Training Reserve and Reserve Garrison Battalions' at longlongtrail.co.uk, and the National Archives WO 293).

The Artillery Map – the Larkhill Trench System, Military Cartography and Aerial Photography

A vital element in understanding the Larkhill practice trench system was the discovery of an Artillery Training Map for Larkhill dated 1917, with the Larkhill practice trench system annotated on to the base mapping (Fig. 2.2).

Approximately two hundred Artillery Training Maps were printed from 1914 onwards (Chasseaud 2006, 206–207; https://charlesclosesociety.org/). The standard scale for these maps was 1:20,000, although 1:10,000 maps were also produced, and in some rare instances in even large scales (1:5,000), such as at the Bustard Inn (Chasseaud 2006, 206–207).

The Artillery Training Maps were produced by 'photo-reduction' of six inch to one mile 'County Series' maps, with contours depicted at 5 m intervals (https://charlesclosesociety.org/). Although first classified with the same series number as 1:20,000 maps of the Western Front (GSGS 2742), they were later assigned a distinct number (GSGS 2748) (*ibid.*).

Among the relatively few Artillery Training Maps that were produced, an even smaller number were annotated with trench systems, concentrating on certain training areas and preparatory defences around London (Chasseaud 2006, 206–207). Artillery Training Maps are now extremely scarce, and surviving sheets tend to be later printings (https://charlesclosesociety.org/). It is therefore extremely fortunate that the Artillery Training

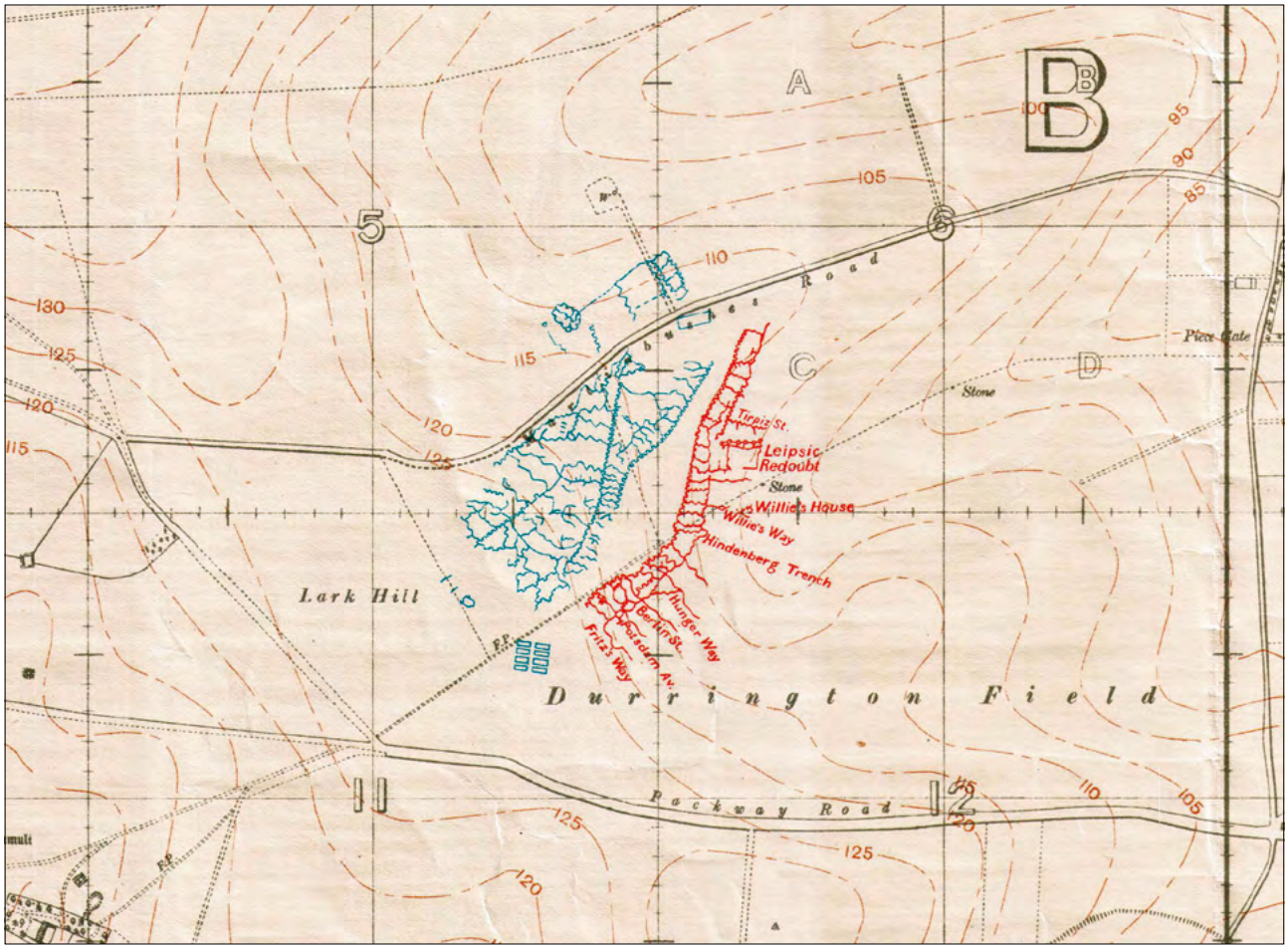


Figure 2.2 The Artillery Map Map depicting the practice trench system at Larkhill survives.

The Larkhill map has provided a wealth of information about the practice trench system, without which further consideration of the apparently opposing trench systems would have been ambiguous, detail on likely phasing (via comparison with archaeological survey data) significantly less reliable, and reflection on communication trench names impossible.

The Role of Military Aviation and Aerial Photography

An understanding of the development of military aviation and aerial photography is necessary to understand how trench locational information was added to mapping on the Western Front and on to some Artillery Training Maps. Lark Hill and nearby sites played an important role in both, particularly before the outbreak of war.

The use of aerial photography proved to be a vital part of the war effort. Although the value of military aerial 'reconnaissance' had been appreciated in the 19th century (Finnegan 2011), using balloons, and then later in the early 20th century utilising kites (such as the Cody Box), airships and aeroplanes (Clarke 2018), the value of aerial photography was initially met with some scepticism (Finnegan, 2011). This may be due, in some part, to the initial doubts that often surround many new developments or technological adaptations. It was certainly not helped by the lack of accurate base mapping of the Western Front, or the dynamic state of the conflict, at the start of the war. However, once the Battle of the Frontiers was over, the Race to the Sea ground to a halt, and more 'static' trench warfare became a reality, the true (and colossal) value of transposing aerial photographic information – to aid the production of accurate base mapping and the provision of up-to-date trench locational information – became

undeniable, not just for the artillery, but also for planning and undertaking infantry and other military operations, at every level.

By the outbreak of war, Lark Hill already had strong connections with early aviation (Brown 2013; Clarke 2008; 2018; Crawford 2012a) and the training of airmen. In June 1910 the British and Colonial Aeroplane Co. formed a flying school, with two main bases, one at Brooklands, near London, and the other at Lark Hill. This school was regarded as one of the best flying schools in the world, until its closure in August 1914 (on declaration of war), and many members of the early Royal Flying Corps (RFC) gained their requisite Royal Aero Club Aviators Certificate at the school, before being eligible to join the Flying Corps (see 'Bristol Flying School, Salisbury Plain', Graces Guide; and 'Aerial photography and the First World War', The National Archives blog).

The 1910 Autumn Army Manoeuvres were conducted on and around Salisbury Plain, and in September airships and aeroplanes were used by the British Army for reconnaissance purposes. Famously, Captain Bertram Dickson in his Bristol Box Kite No.9 aeroplane located the Blue Army and reported back, completing 'the first military reconnaissance flight in history' (see 'Captain Bertram Dickson 1873–1913', Imperial War Museums).

The RFC was established during April 1912, and inherited responsibilities for military aviation from the Air Battalion of the Royal Engineers in May (Brown 2013; Clarke 2018; and see 'The Royal Flying Corps', RAF Museum). That same month, the Central Flying School (CFS) was established at Upavon (Trenchard Lines) (Clarke 2018). The CFS trained potential pilots from both Army and Navy wings, and once potential military aviators had gained their Aero Club Certificates and were successful in gaining a place at the CFS, they were trained in engine maintenance, meteorology, navigation, signalling, and later aerial photography, during the 12-week course (Brown 2013). One of the many notable students who attended the very first courses at CFS Upavon was Major Hugh Trenchard, who would later command the RFC from 1915, become Chief of the Air Staff, and be considered by many to be 'the father of the RAF' ('The Royal Flying Corps', RAF Museum).

In June 1913 RFC Netheravon was established to the south of the CFS (Clarke 2018; and see Netheravon – Airfields of Britain Conservation Trust UK), and a year later held the accurate but rather unfortunately named 'Netheravon Concentration Camp'. The 'Camp' brought as many RFC aircraft and aviators as possible together, and essentially examined the RFC's preparedness in disciplines such as bombing, reconnaissance and aerial photography (Finnegan 2011, 27), and also conducted exercises in mobilisation and the movement of equipment and stores. This proved to be well timed: the camp ended in July 1914, just weeks before war was declared ('The Royal Flying Corps', RAF Museum).

The British and Colonial Aeroplane Co. school at Lark Hill closed just before the outbreak of war, and non-military flying was prohibited over Britain on 2 August 1914, two days before the declaration of war (Brown 2013). The hangars used by the British and Colonial Aeroplane Co. at Larkhill Airfield were soon enveloped by the construction of the Larkhill hutted camp, and during late 1914 a visiting Rudyard Kipling noted that while the camp was still being constructed the Canadian Engineers (of the Canadian Expeditionary Force) were based at Lark Hill (Kipling, 1915). The hangars used by the British and Colonial Aeroplane Co. are still standing, to the south of the Larkhill practice trench system, along Wood Road.

As previously noted, the foresighted officers of the RFC had been training and experimenting with vertical aerial photography for military cartographic purposes before the outbreak of war, despite doubts from High Command and some apparent resistance from the Mapping section of General Headquarters (GHQ) ('Aerial photography and the First World War', The National Archives blog). This outlook rapidly changed as the Western Front developed and the opposing forces became more

entrenched and static. Existing pre-war cartographic surveys of the areas occupied by the Front were proving to be very old and out-of-date. Consequently, by the end of 1914 the first RFC photographic section had been established, and from early 1915 new maps were being produced by the Geographical Section of the General Staff (*ibid*.). The pure military value of aerial photography had become irrefutable to all but the most stubborn detractor. Direct tracings of altering landscape features, and enemy and allied positions, could be captured on film, developed, traced and quickly transposed, and mapping could be rapidly updated. It had become 'the most useful source for defining the battlefield' (Finnegan 2011, 79).

Aerial photography developed rapidly during the course of the war. By September 1915 the RFC School of Photography had been set up at Farnborough to teach the processing of aerial photographs, map reading and plotting (Finnegan 2011), and by June 1916 it was demonstrated that prints could be supplied to Corps HQs within an hour of the aerial photograph being taken (*ibid*.; The National Archives AIR 1/123/15/40/144). By the autumn of 1916 training of aerial photographic and intelligence officers and NCOs was not keeping up with demand, and an Officer Training Brigade was set up to train officers already posted with active wings of the RFC (Finnegan 2011, 294).

1917 saw significant improvements in the quality and quantity of aerial photographic images, due to improvement in the processes and in equipment, both photographic and in the aircraft used (such as the RE8 and the De Havilland DH4). The strategic advantage provided by up-to-date aerial photography transposed on to accurate mapping was so important, and such a potential advantage, that supremacy in the air above the battlefield soon became a major factor in success on the ground (*ibid*., 294). This in turn led to even greater need for more training personnel and there was a corresponding 'increase in intelligence training in the UK and within the BEF' (*ibid*.). By 1918, maps were being corrected, printed and distributed directly from the rear of British sectors ('British Army WW1 Trench Maps', greatwar.co.uk).

Although the Original Larkhill airfield closed at the outbreak of war, in August 1917 airfields at Brigmerston Down (Tidworth) and Lake Down (Wilsford cum Lake) were opened, and by November 1917 RFC Stonehenge was being constructed (Clarke 2018; Airfields of Britain Conservation Trust).

It is unclear exactly why the Larkhill Artillery Training Map had the Larkhill practice trench data added, presumably from an aerial photograph transposed sometime in 1917, when most other (surviving) Artillery Training Maps have no such additions. There would certainly be plenty of other practice trench systems that could provide similar training opportunities for airmen and military cartographers on the southern edge of Salisbury Plain, not to mention nationally, and it is the case that a small number of other maps were annotated with details of practice trenches (see Brown 2017; Brown and Osgood 2009; Chasseaud 2006). It could be that the Larkhill system was transposed at a direct request for realistic mapping from units training within (or near) the Larkhill system, or simply that the map is a lucky survival and a result of a randomly selected training exercise in transposing aerial photography; it is hard to see any other valid purpose for its production. Certainly, it would seem likely that the planning and execution of an aerial photographic mission alone, leading to the production of a trench map, would be a valid training exercise: as Finnegan points out (Finnegan 2011, 294), extensive planning would be required prior to any aerial photographic mission, including selection and configuration of camera equipment, determination of the flight path and altitude of the flight, and defensive considerations (risk).

The flying elements would all have to be successfully completed before any further training opportunities provided by transposing the photographic data onto base mapping could be realised. As a training opportunity it would also have the advantage that the accuracy and success of the exercise could be safely checked on the ground, an opportunity which would be hard to replicate on an active battlefield.

Chapter 3
The Larkhill Trench and Tunnel System

by Steve Thompson with contributions by Stephen Beach

Introduction

The earliest documented evidence for the excavation of trenches at Lark Hill comes from a description of the Canadian Expeditionary Force (CEF) Engineers working at the camp in late 1914, penned by Rudyard Kipling (Kipling 1915), about the same time as the first CEF units (The Engineers and 2nd and 3rd Brigades) moved into the Larkhill hutted camp in December 1914 (Nicholson 1962). It is tempting to ascribe this digging to the very first phase of the system, but unfortunately there is not enough evidence to do so with sufficient certainty, and it must remain only an appealing possibility.

It is assumed that the main Larkhill opposing trench system (Fig. 3.1) was constructed in one broad phase (probably by divisional Engineers and Sappers) to allow effective training at the site. Piecemeal construction of such a large system therefore does not make sense from an infantry training point of view, as infantry units would be moving about, defending, attacking and maintaining trenches far more regularly than constructing whole new trench systems. However, it is highly likely that the system would be added to, or at least maintained, by consecutive infantry units undertaking training at Larkhill Camp.

Despite these caveats, it is possible to provide an approximate chronology for the construction and development of the Larkhill trench system, based on the likely training requirements, the stratigraphic, cartographic, and historic evidence (such as unit diaries), and the datable graffiti primarily located in the underlying system of tunnels. Taken together, these suggest the following scheme:

- *Stage 1* – Blue Line Phase 1 (backfilled prior to the construction of Blue Line Phase 2);
- *Stage 2* – Blue Line Phase 2 and Red Line Phase 1 (constructed before September 1915, based on the earliest datable graffiti. There is a possibility that the Blue Line Phase 2 trenches and tunnels might have been constructed up to 11 months after Red Line Phase 1 elements, if based on dating by graffiti alone. However, this makes little sense from a training perspective, especially when considering the types of training which would have occurred within the tunnels);
- *Stage 3* – Red Line Phase 2 (constructed after publication of the Artillery Map 1917).

The Red Line

The Red or 'German' line (Fig. 3.1) was recorded at 377 m long by a maximum of 140 m wide and was aligned south-west to north-east before realigning to an almost north–south orientation at the northern limit of excavation. The Red line comprised a 'front' formed of crenulated firing bays connected by right-angled traverses, with perpendicular communication trenches connected to supervision or command trenches immediately to the rear.

To the rear of the frontline and coming off the communication trenches and the supervision/command line were several specialist trenches including T-head saps, dugouts, aid stations, latrines and weapons pits. The front line was later altered with the addition of a line of forward firing bays (after February 1917), which resulted in the original frontline becoming the supervision/command trench and the original supervision/command trench becoming the reserve line. This would have been the norm on the Western Front as an army advanced into no-man's-land with new forward

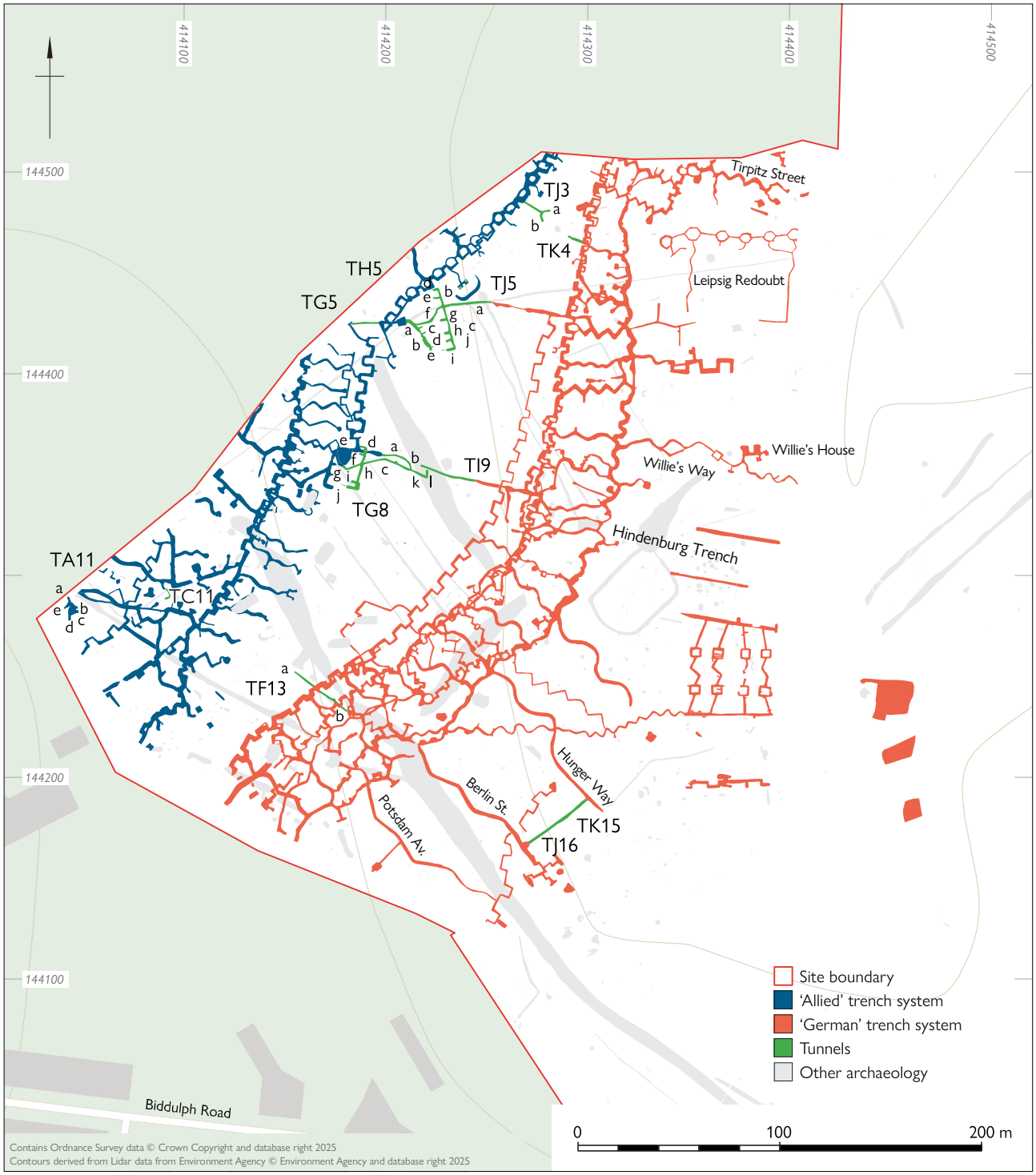


Figure 3.1 Larkhill practice trench system and tunnels

lines constructed from exploratory saps. Further communication and connecting trenches were also excavated between the supervision/command trench and the reserve line following the new front line.

Red Line – Phase 1

The Phase 1 Red front line was constructed sometime before November 1915, based on analysis of the earliest graffiti (WA155 – 'E Threlfall, 19SBKLR, Nov 1st, 1915', and WA146 – '3/11/15, 20th MANCRs') from listening post 'g' within Tunnel TJ5, which was accessed from an exploratory sap towards the northern end of the front line (Figs 3.1 and 3.2). The line consisted of at least 34 crenulated firing bays, each approximately

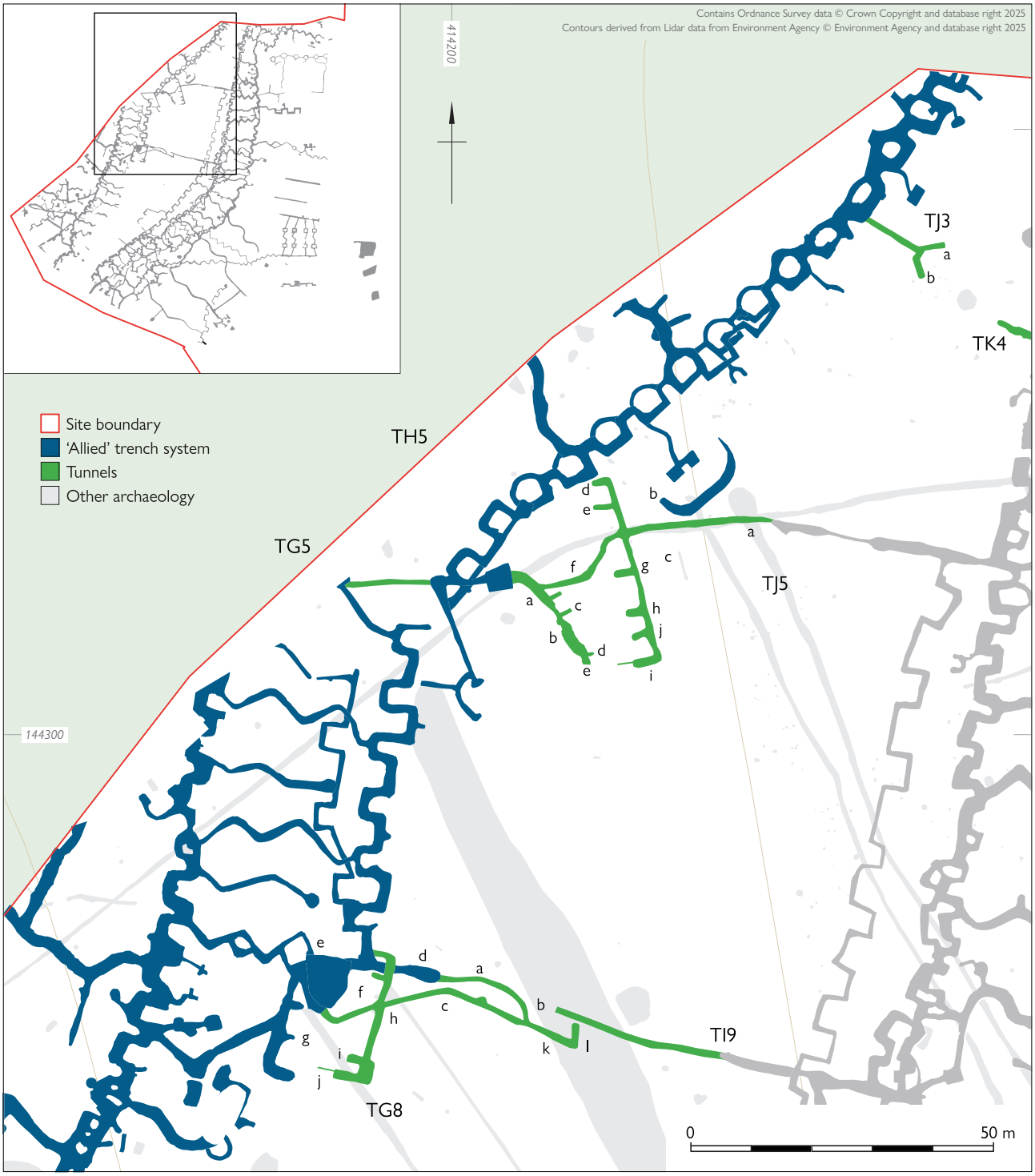


Figure 3.2 Larkhill practice trench system and tunnels NW quad

7.5 m long by 3.15 m wide. Some of the bays revealed fire steps, but in the majority steps were absent. This absence in most of the bays is considered to be due to alterations during, or after, the construction of the Phase 2 front line (the Phase 1 line being reduced to a support, or supervision/command function, following the construction of the Phase 2 front line).

The Phase 1 firing bays were relatively uniform in construction, with right-angled traverses linking the neighbouring bay, though in some instances island traverses had been constructed to add further cover and defence, although these may have been added during the Phase 2 alterations.

Two further exploratory saps were recorded leading into no-man's-land. The first sap

led to an entrance into Tunnel TI9 (Figs 3.1 and 3.2) while further to the south another potential sap led to a possible forward observation post (Figs 3.1 and 3.5). Though clearly earlier than February 1917, the exploratory saps were not recorded on the Artillery Map.

Connecting the Phase 1 front line to the rear supervision/command trench, 21 m to 26 m behind the line (east), were a series of 20 sinuous or zig-zag communication trenches. The distance between individual communication trenches averaged 16 m, but ranged from 10 m to a maximum of 30 m. For the most part the rear supervision/command trench was relatively straight with occasional sinuous sections, crenulations, and island traverse complications, with a more sustained extent of crenulated trenching observed in the central rear section.

It is possible that the more crenulated trench section of the supervision/command trench may pre-date Phase 1 and was incorporated into the larger system when it was constructed. However, it is perhaps more likely they were constructed at the same time to create what would appear to be an 'established' complex of trenches that most of the soldiers would encounter when they arrived on the Western Front, allowing for more realistic training.

Extending from the communication trenches and the supervision/command trenches were at least 17 specialist dugouts, which, from the analysis of other artillery field maps, would have been used as kitchens, latrines, officers' latrines, shelters or aid posts (The National Archives, 100th Inf Bde War Diary WO95-2428 Oct 1915, in Wessex Archaeology 2017). No remains or structures were observed within the specialist trenches to indicate function.

To the rear of the supervision/command trench, and extending for some 80 m to the east, were a series of north-west to south-east orientated communication trenches. The southernmost four of these trenches (Figs. 2.2, 3.5 and 3.6) consisting of an unnamed trench, Hunger Way, Berlin St, and Potsdam Av, and potentially a fifth trench located outside the excavation area (Fig. 2.2), Fritz's Way, were sinuous in design. The northern three, comprising Tirpiz St, an unnamed trench south of Leipsic Redoubt, and Willie's Way, were formed of island traverses and crenulated trenches.

These trenches clearly provided realistic access or exit points for any troops training in the system. It is notable that Hunger Way and Berlin St were connected by tunnel TJ15/TK16 (below) close to the termination point of both trenches. It seems plausible that such a tunnel could be utilised for infantry training purposes, be that disorientation of relief troops, or nasty surprise for offensive training.

Located at the south-eastern end of Berlin St was a 'T'-shaped dugout (Figs 3.6 and 3.8), with two further 'T'-shaped dugouts perpendicular to the main trench, arranged in a fylfot (Swastika) configuration. It is likely that this structure was a series of latrines accessed by crenulated sections of trench as shown in the Field manuals, Notes for Infantry Officers on Trench Warfare, compiled by the General Staff, March 1916 (War Office 1916). As unpleasant as it may have been from a sensory and especially an olfactory perspective, it is also probable that these latrines were subterranean, as they are not shown on the post-February 1917 Artillery Training Map.

Further evidence that subterranean latrines were constructed in the system was also identified, and two similar structures were observed off the supervision/command trench, and another attached to a communications trench, in a more 'forward' position than the Berlin St latrines.

Along with the latrines, there were a further 16 specialist trenches evident in the Red Line including T-head saps, dugouts, aid stations, and weapons pits. The interpretation of many of these specialist trenches was hindered by the lack of evidence of structures

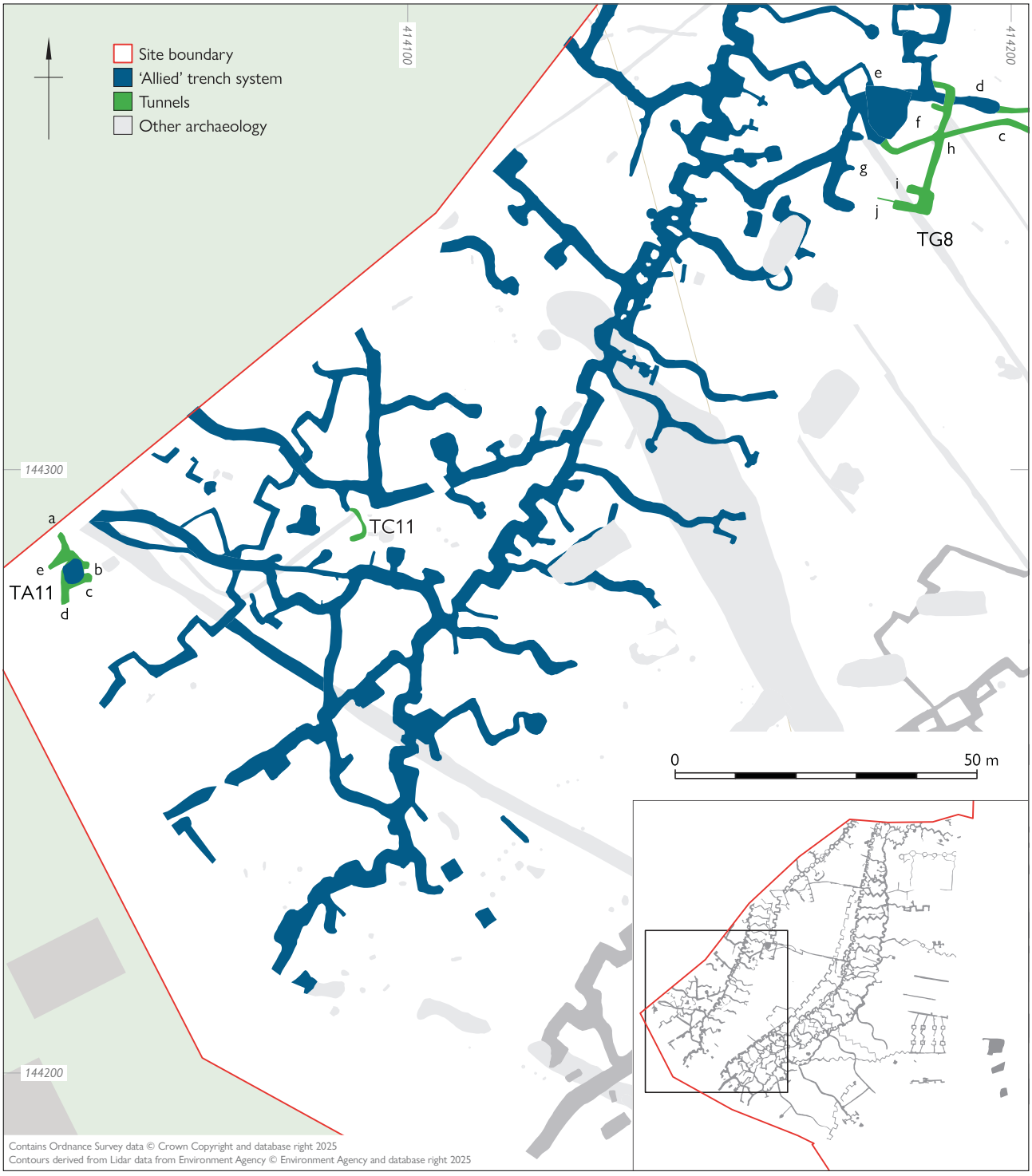


Figure 3.3 Larkhill practice trench system and tunnels SW quad

within them. Very little evidence of revetment materials, wood planking or corrugated iron sheeting (colloquially known as wriggly tin), or duck-boards was recovered, indicating these had been removed following the end of training.

Located to the rear of the supervision/command trench and attached to it by trenches was a series of six connected hexagonal trenches known as Leipsic Redoubt (Figs 3.1, 3.4, and 2.2). The hexagonal trenches would have allowed troops to move in both directions around the system with men moving either side of the island traverses. Some of the trenches illustrated on the 1917 Artillery Map were not observed because of later truncation and disturbance.

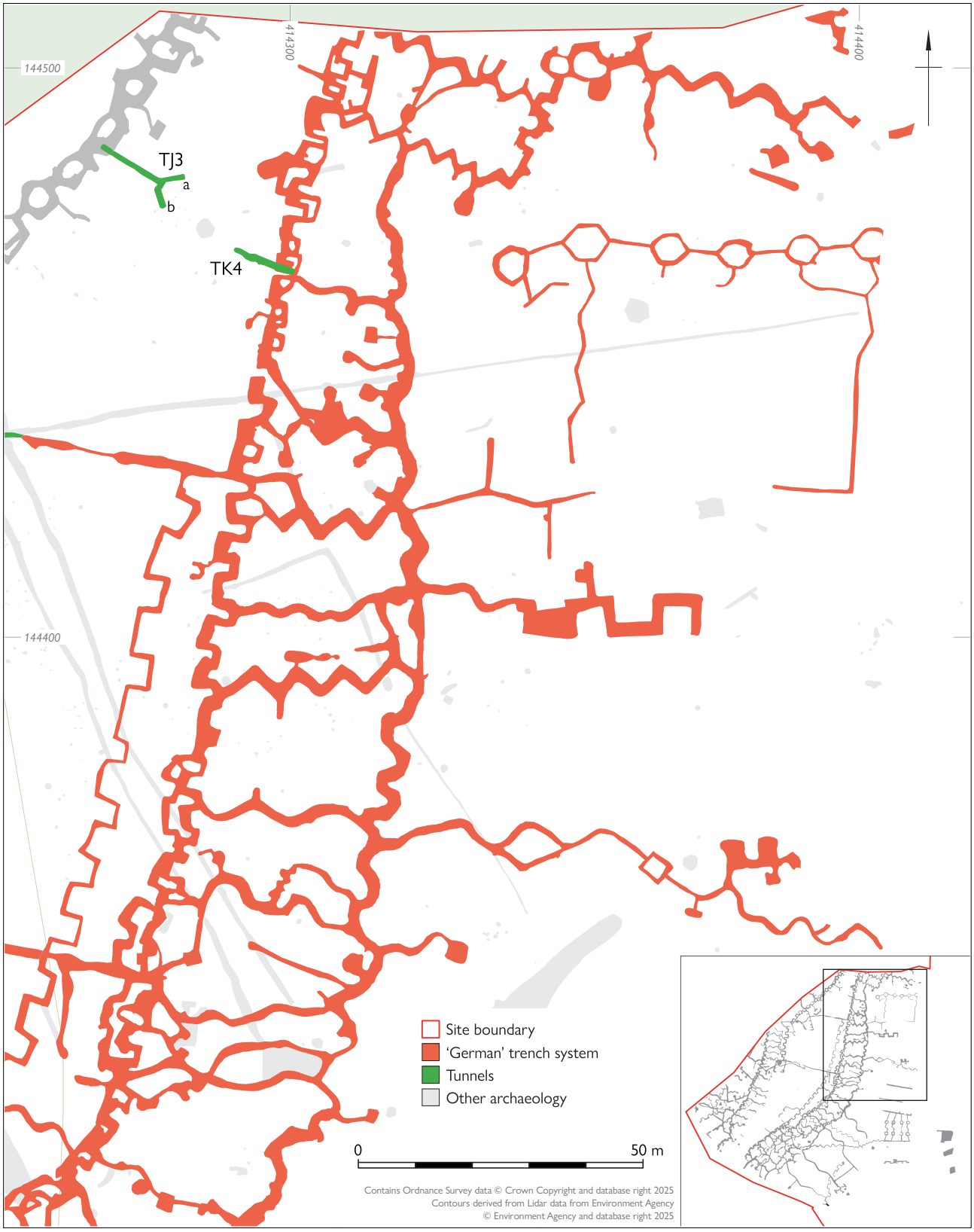


Figure 3.4 Larkhill practice trench system and tunnels NE quad

At the end of Willie's Way communication trench (Figs 3.1, 3.4, and 2.2) was a group of specialist dugouts, representing a possible Battalion Command Post or strong point composed of several dugouts which corresponded with a feature described on the Artillery Map as 'Willie's House' (Fig. 2.2).

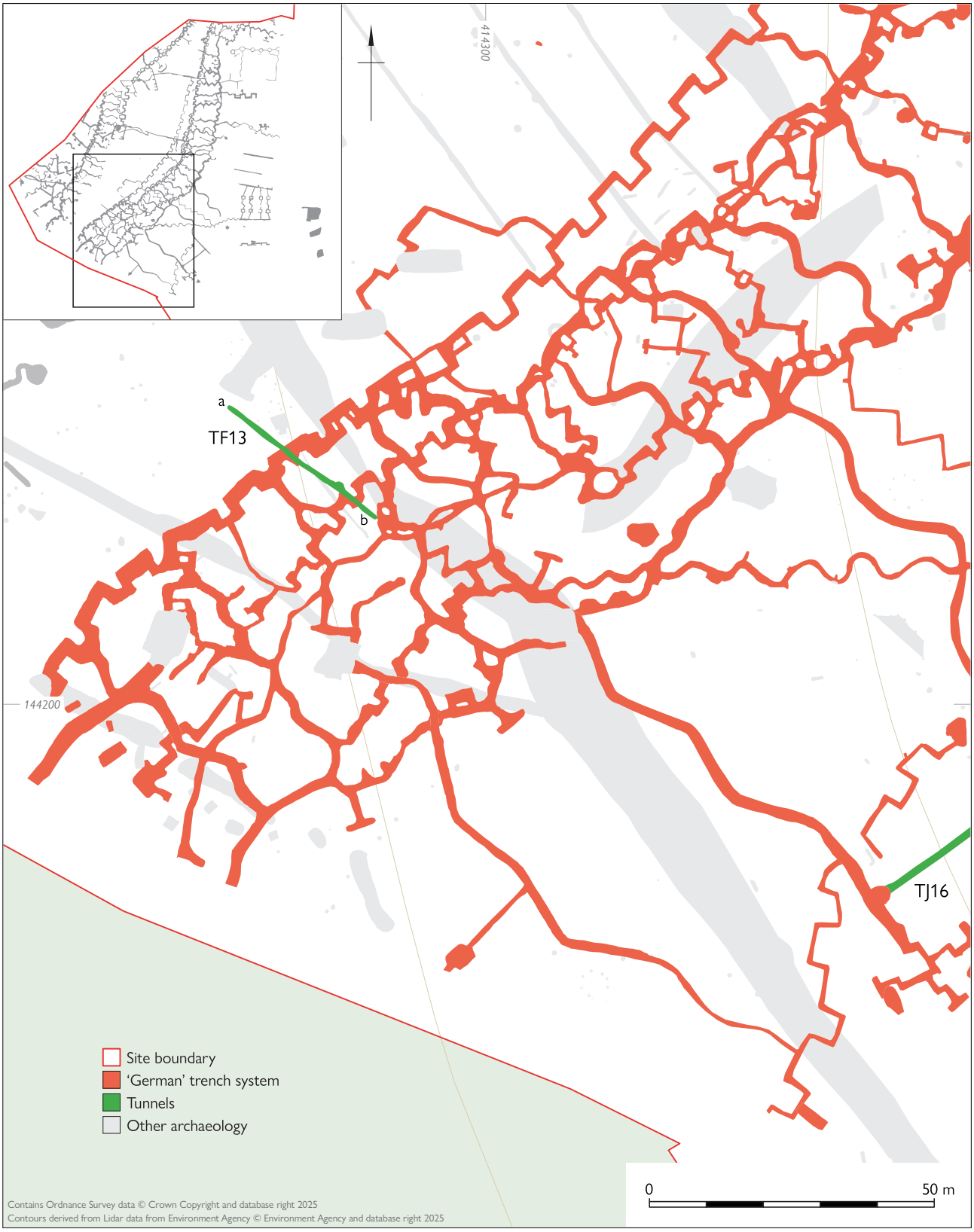


Figure 3.5 Larkhill practice trench system and tunnels SE quad

One particular specialist trench was identified from analysis of the field manuals (for example, War Office 1916; 1921) as either a possible bombing pit from which grenades could be thrown, or a trench mortar position for a Stokes mortar. This pit was constructed with 'sortie steps': footholds dug into the trench wall and parapet to allow troops to go quickly over the top in the absence of a ladder (Bull 2002, 52).

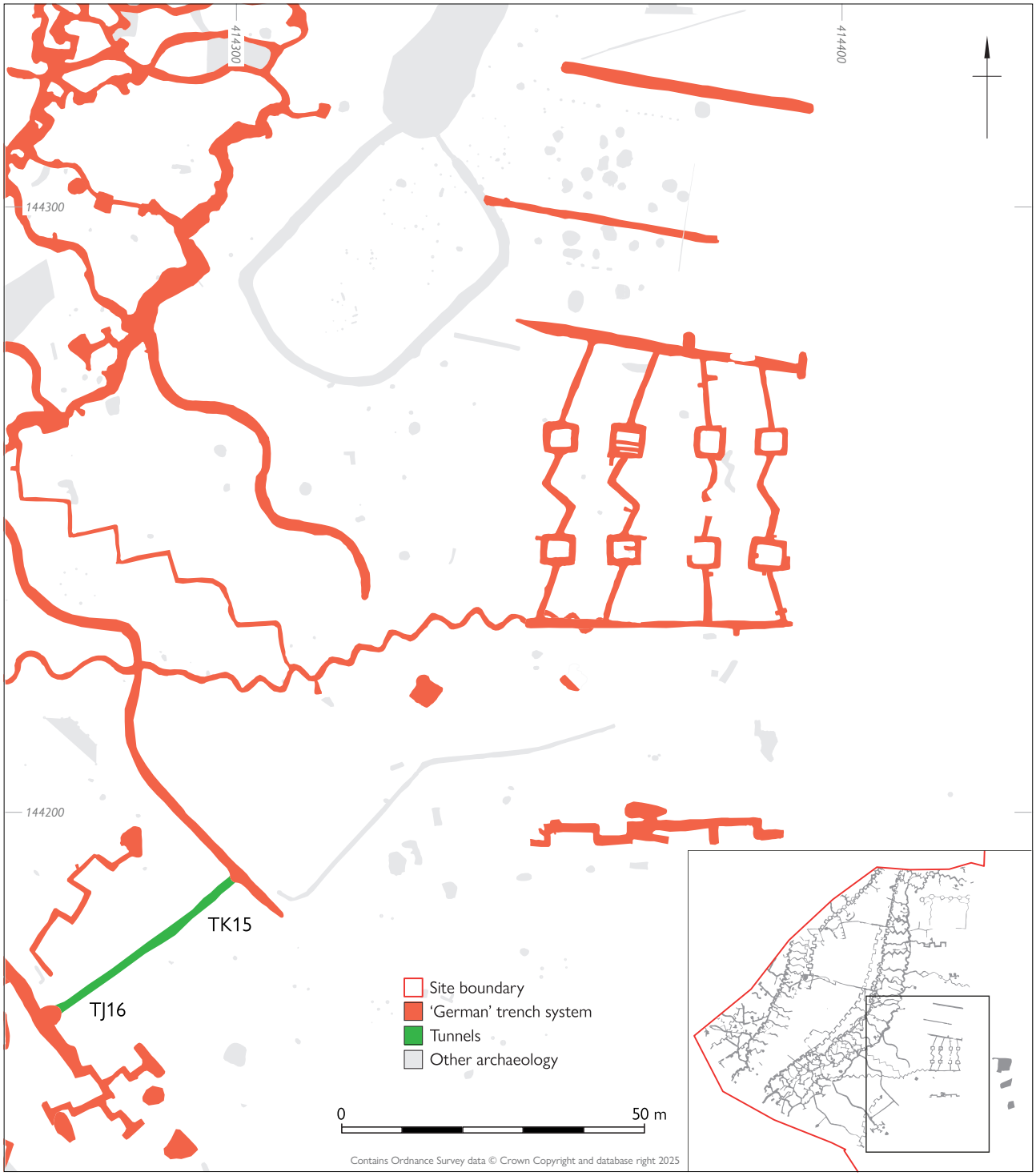


Figure 3.6 Larkhill practice trench system and tunnels SE rear section

Such features probably indicate the use of a manual, such as the *Notes for Infantry Officers on Trench Warfare* (War Office 1916), which were also being used by the Australian forces at the Bustard Inn trenches some 6 km to the north-east (Fig. 3.7). This training shows that the instructors perhaps lacked the practical experience of trench warfare as it may be assumed that troops in the front line would have known that the combination of enemy artillery, weather and wear-and-tear from the soldiers' movement would have rendered such steps of little or no use, particularly when ladders could be constructed from trench board materials. No recorded examples are known from excavations on the Western Front (Brown and Thompson 2018). Further evidence of the use of fieldwork manuals was revealed following the excavation of two machine gun positions leading from the Allied Front Line (see below).

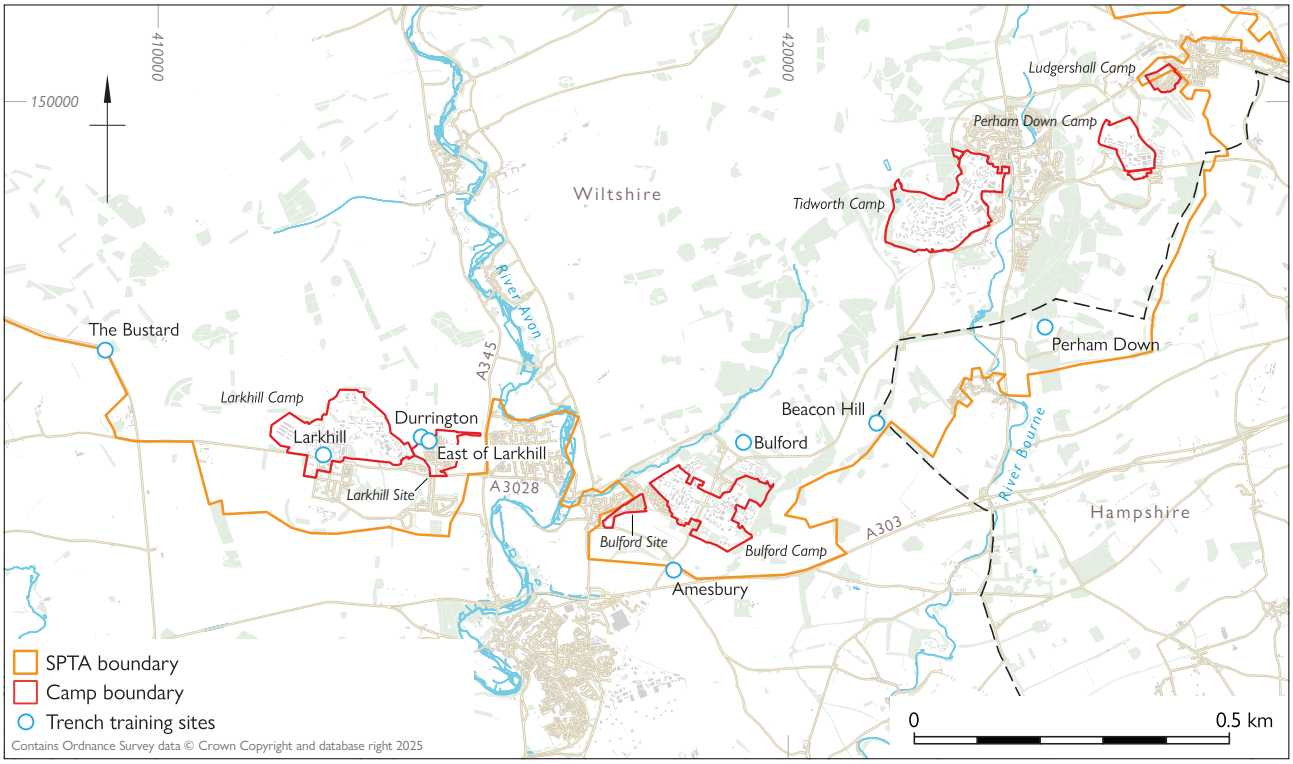


Figure 3.7 Other nearby systems

Figure 3.8 Latrine trench

The layout of the Phase 1 trench system is shown on the annotated Artillery Training Map, which was created some time after February 1917, but it is likely that the system was completed in a relatively short time frame. Work began prior to November 1915 and continued through into 1916 with the arrival of 3rd Division Australian Imperial Forces (AIF) in June 1916. During 1916 it is likely that limited further excavation took place, as the Australian commander General Monash had told the General Staff that 'Promiscuous digging teaches very little and spoils the ground for other work' (Brown and Osgood 2009, 36).

Red Line Phase 2 – Post-February 1917

Analysis of the Artillery Training Map (post-1917) indicated that several alterations and additions were made to the Phase 1 trench system. These additions appear to have been ad hoc and concentrated between the frontline and the supervision/command trench.

A completely new front line comprising 16 crenulated firing bays (Fig. 3.1), was constructed in front (west) of the Phase 1 front line and was connected to the rest of the trench system via exploratory saps. Other Phase 2 works appear to have been an attempt to train troops in the digging and creation of a variety of different trench types, which resulted in a collection of randomly positioned and orientated, apparently unplanned trenches. These trenches are in stark contrast to the well-organised and deliberately positioned features of Phase 1 and include zig-zag communication trenches and crude firing trenches between the Phase 1 front

and Phase 1 command/supervision trenches. It is possible that this element of Phase 2 represents training in the task of digging, whereas the pre-existing Phase 1 trenches would be used for training in all other aspects of trench warfare: both attack and defence of positions as well as the day-to-day routine of trench life.

The post-February 1917 Artillery Map shows the German Red Line annotated with names typical of British trench maps of the time, referencing leading Germans: Kaiser Wilhelm (Willie's House and Willie's Way), Field Marshal Hindenburg (Hindenberg Trench) and Grand Admiral Tirpitz (Tirpiz (sic) St). Other names are typically (or stereotypically) German (Berlin, Potsdam and Fritz) while others are specific to existing German fortifications from the Western Front, with both Leipsic (sic) Redoubt and Hindenburg Trench depicted. These trenches formed part of the Leipzig Salient on the Somme Battlefield. This use of names of real German positions is known elsewhere, including Bovington (The National Archive WO 153/978; Brown 2017), and it is likely that this was intended to add extra realism to the training environment, and may indicate objectives in training exercises (Brown and Thompson 2018, 9–10).

The Red Line – Trench Names

The first British trenches began to be named by the BEF as early as September 1914, first informally by the ranks, and later by their commanders in the field (Chasseaud 2006). Only the Red Line (German) trenches are named on the Larkhill Artillery Training Map (Fig. 2.2); this differs from the Bovington Map (TNA WO 153/978; Brown 2017); which provides trench names for both the British and the German trenches, including British firing bays (Roberts Trench and Gordon Trench), while at the Bustard Inn trench system, only British/Allied trench names are named (Brown and Osgood, 2009). The trench names ascribed to the Bustard Inn System, where Australian forces trained extensively, may be linked to the parts of the Western Front occupied by the AIF in 1916, around Fromelles (Chasseaud 2006, 206–207) in the Bois Grenier sector of the Western Front.

The trench names provided for the Red Line trenches at Larkhill are more comparable with the Red Line names depicted on the Bovington training map (TNA WO 153/978; Brown 2017; Chasseaud 2006, 206–207), indeed some names used at Bovington are almost analogous with the Larkhill names, albeit these being the examples of the more stereotypical variety. These include Bovington trench names such as Wilhelm Redoubt, Big Willie, Berlin Line, Potsdam Line, and Fritz Redoubt. Table 3.1 below provides a list of the trench names used at Larkhill and possible comparisons with named trenches on the Western Front.

There is also evidence that a trench used in later stages of the Battle of the Somme was named 'Larkhill'. The War Diary of the 2nd Battalion Royal Berkshire Regiment, in the entries for 22 October 1916, describes proceeding to 'Close Support Trenches'; three companies in Larkhill Trench and one in Spider Trench preparatory to supporting an attack by the 2nd Battalion Lincoln Regiment on the heavily defended Zenith Trench, the following morning (see 'War Diary', The Rifles Berkshire and Wiltshire Museum, thewardrobe.org.uk).

The Blue Line

The post-1917 Artillery Training Map (Fig. 2.2) reveals that the Blue (Allied) line had been constructed in at least two phases, in total 357 m long by a maximum of 90 m wide and orientated roughly NNE–SSW. Much of the Allied line was located outside the ABP development area and will be preserved *in situ*.

Table 3.1 Larkhill trench names, and possible Western Front parallels (after Chasseaud 2006)

Larkhill named trench N to S	*Similar trench name (Western Front)*	*Place name*	*Grid ref.*
Tirpiz Street	Tirpiz Trench	La Bassée	36cNW1
	Tirpiz Trench	Méaulte	62dNE2
Leipsic Redoubt	Leipsic Redoubt	Leipzig Salient (Somme Battlefield)	
Willie's House and Willie's Way	Willie Trench and Support	Oppy	51bNW2
	Big Willie (Hohenzollern)	Loos	36cNW3 & 1
	Bigger Willie	Loos	36cNW3 & 1
Hindenberg Trench	Hindenburg Support & Avenue	Bullecourt	51bSW4
	Hindenberg (sic) Trench	Ovillers	57dSE4
	Hindenberg Farm	St Julien	28NW2
	Hindenberg Street	Ovillers	57dSE4
	Hindenburg Line	Extensive (Siegfried Stellung)	51b 57b 57c 62b etc.
	Hindenburg Trench	La Bassée	36cNW1
Hunger Way	Hun* Alley	Longueval	57cSW3
	Hun* Street	Richebourg	36SW3
	Hun* Trench	Vimy	36cSW3
	Huns* Walk	Ploegsteert	28SW4
	Huns* Walk (1918)	Hamel–Vaire Wood	62dSE1
Berlin Street	Berlin Alley	Combles	36cSW3
	Berlin Road	Rouvroy	57cSW4
	Berlin Street	Foncquevillers	57dNE1 & 2
	Berlin Trench	Hébuterne	57dNE3 & 4
	Berlin Tunnel	Hill 60 (Zwarteleen) and Caterpillar	28NW4 & NE3
	Berlin Wood	Zonnebeke	28NE1
Potsdam Avenue	Potsdam	Zonnebeke	28NE1
	Potsdam Trench	Combles	57cSW4
Fritz's Way	Fritz Alley/Avenue	Hébuterne	57dNE3 & 4
	Fritz Folly	Le Sars	57dSE2 & 57cSW1
	Fritz Redoubt (Oct 1915)	Loos	36cNW3

Figure 3.9 Blue Line Phase 1 crenulated fire trenches

Blue Phase 1

The Phase 1 trenches were not recorded on the 1917 Artillery Map and were possibly the remains of the first training trenches at Larkhill, subsequently backfilled and replaced. They comprised a series of crenulated fire trenches, 9.5 m long by 1.8 m wide and 1.10 m deep, connected by right-angled traverses (4.5 m by 1.8 m by 1.10 m (Fig. 3.9) and revealed in three sections. The northernmost recorded section revealed fire trenches connected by curving traverses to create a frontline formed of island traverses in a 'chain link' pattern.

A date for the construction of the first-phase trenches is unclear, although it appears to pre-date September–November 1915, based on the earliest graffiti identified in the overlying Phase 2 system (WA146, WA154, and WA155). This style of trench is also more akin to the trenches depicted in the *Manual of Field Engineering 1911*, and reprinted in 1914 (War Office, 1914a). Based on this information, and assuming the earthworks do not pre-date the war, the Phase 1 Blue trenches might be tentatively attributed to the Canadian Expeditionary Force units who arrived on Salisbury Plain in October 1914 for advanced training and moved into hutted accommodation at Larkhill in December (Crawford 2012b), or potentially units of the 20th (Light Division) who were in training at Larkhill between March 1915 and July 1915.

Blue Phase 2

The Phase 2 Blue Line trenches are recorded on the Artillery Map of 1917 (Fig. 2.2) and are likely to have been constructed in a single phase to create what would appear to be an 'established' complex of trenches for more realistic training. These trenches clearly cut through the now backfilled Phase 1 trenches (Figs 3.1 and 3.2), a relationship clear in both excavated section and plan. The new Phase 2 front line was split into two sections (Fig. 3.2). The first extended roughly north-east to south-west and was composed of 13 crenulated fire trenches connected by right-angled traverses, except the northern five fire trenches, which were joined by traverses immediately to the rear, creating island traverses. The second section was located to the south and was roughly north–south-aligned and comprised six crenulated fire trenches connected by right-angled traverses. Leading away from the frontline fire trenches were seven exploratory saps. Two terminated a few metres into no-man's-land while one ended with a bombing pit. No evidence for sortie steps was observed.

Positioned to the south-west of the bombing pit (north-east of Tunnel TJ3), was a double machine gun position. This position was comprised of two raised platforms, excavated from the natural chalk, on which Vickers or Maxim machine guns would be placed. The platforms conformed to the minimum measurements stipulated by the Machine Gun School as detailed in figure 19 of *Notes for Infantry Officers on Trench Warfare* (War Office 1916). A series of wooden stakes were revealed at the base of the machine gun position indicative of pickets to hold revetment material in place.

Approximately 54 m to the south-west was a second double machine gun position. This position was connected to the front line by a 7 m-long sap incorporating a slight dogleg, which separated the two machine gun posts. The machine gun position was divided into two raised platforms onto which a machine gun would be set. In front and to the sides of the machine gun position was a 0.55 m-deep reverse 'C'-shaped ditch; upcast from this ditch would have been used to provide extra material to create a protective earthen bank for the position.

Located further to the south was a subrectangular dugout which was connected to the frontline by a sap trench (Fig. 3.2). This dugout, located at the entrance to tunnel TH5, is likely to have been a cut-and-cover shelter. Another sap trench extended east from the southern end of the Phase 2 Blue front line, and formed the entrance to Tunnel TG8.

Behind the southern section of the Phase 2 Blue front line were a series of communication trenches, which connected to the supervisor/command trenches approximately 25 m to the rear (west). The supervision/command trench was aligned parallel with the southern section of front line and was formed of approximately 16 crenulated fire trenches with traverses immediately to the rear, creating island traverses in a 'chain link' pattern. The fire trenches varied in size and had been much altered during the use of the system. Several of the fire trenches had fire steps (Fig. 3.9). Some of the fire trenches were narrow but still adhered to the minimum stipulations detailed in the War Office manual (see figure 7, Sections of Fire Trench, War Office 1916).

Leading from the southern supervision/command trench were 10 exploratory saps (Figs 3.1, 3.2 and 3.3). Each sap extended approximately 26 m into the apparent no-man's-land but remained behind or never extended beyond the line of the most eastern Phase 2 frontline. Four of the saps ended with simple termini, while three ended in bombing pits: one sap forked towards the eastern end to form two separate saps, and another terminated in a T-head, potentially indicating the beginnings of a new frontline, or perhaps an isolated forward fire trench. One sap extended into no-man's-land then almost doubled back on itself to come within 2 m of connecting with a communication trench. It appears, however, that this trench was abandoned before it was completed, as it terminated in a very irregular fashion. The identification of fire trenches within the saps leading from a supervision/command trench is possibly indicative of the evolutionary development of this trench system, with supervision/command trenches, perhaps previously front line, in the process of conversion into support trenches, and old forward saps in the process of conversion to communication trenches, which in turn provided access to a barely started 'embryonic' front line, which, if completed, would have extended along the line of the Phase 2 front to the north. If this assumed development process is correct, it would be clear indication of offensive trench digging training being conducted in the Blue trenches.

Extending to the rear of the supervision/command line was a series of six communication trenches which would have connected to the reserve line; as this lay outside the area of excavation, this reserve line was not examined during the investigation works but could be identified on the 1917 Artillery Training Map. Connected to the communication trenches were at least nine specialist dugouts (Fig. 3.10), which would have been used as kitchens, latrines, officers' latrines, shelters or aid posts, from the analysis of other artillery field maps (The National Archives

WO95-2428, after Wessex Archaeology 2017). No remains or structures were observed within the specialist trenches to indicate specific function.

Although there was a greater quantity of datable graffiti within the Phase 2 Blue Line System (amounting to 59% of the datable items, compared to 41% of the Phase 1 Red Line), the earliest date identified from the Phase 2 Blue Line via graffiti was before July 1916 (WA107 – 33rd Battalion AIF). Comparing this to a before September 1915 date for the Phase 1 Red Line system (WA146, WA154, WA155), a gap of 10 or 11 months is somewhat problematic, in terms of the system functioning as a viable 'practice' battlefield. However, attempting to date a trench system by graffiti alone is surely very far from an exact science as there are simply too many variables at play. Consequently, the working assumption throughout has been that the Phase 2 Blue Line trenches and the Phase 1 Red Line trenches are roughly contemporary, and most probably constructed sometime before November 1915. This would likely place the construction of the Phase 2 Blue Line system during the stay of the 20th (Light) Division (March 1915 to July 1915), or the 30th Division (September 1915 to November 1915).

This hypothesis would likely rule out the 62nd (2nd West Riding) Division (January 1916 to June 1916) and the 3rd Division AIF as the most likely candidates for the main construction of the Larkhill system, although it certainly does not rule out any ongoing, and perhaps significant, alterations or additions.

Figure 3.10 Specialist dugout behind the Blue Line

The Tunnels

Forehead pressed to the face, side or floor of the gallery,
one stood, knelt or lay – listening, listening, listening.
Some sounds would be heard, dull and muffled.
There was always that fraction of a second doubt –
when it might be enemy mining.
One's pulse rate would quicken and fright push to the fore in one's whole being…

Lieutenant Geoffrey Cassels, 175 Tunnelling Company, R. E. (Barrie 1961, 72)

The presence of a series of tunnel systems at Larkhill was unexpected, prior to the excavation. Small-scale underground works have been identified before on Salisbury Plain (dugouts, short sections of tunnel associated with machine gun emplacements, etc., see Beach and Clarke 2020), but nothing of this scale has been identified previously. However, it is hard to imagine, without the presence of a designated 'school' or centralised training facility at Larkhill (Barton *et al*. 2004, 104), that Larkhill was the only location this side of the channel where training in tunnel warfare, especially listening, was taking place, and although Larkhill is clearly unusual, it seems likely that other training tunnel systems await discovery, especially where ground conditions are favourable.

Over 300 m of tunnels were recorded at Larkhill (Fig. 3.1), with the majority extending into no-man's-land from both the Blue (TG8, TH5 and TJ3) and Red Lines (TK4, TJ5, TI9, and TF13), although some were located to the rear of the respective front lines, connecting service trenches (TK15/TJ16 and TG5), and others formed the beginnings of possible dugouts for aid stations or Company HQs (TA11 and TC11). Further examples appear to have been excavated to practice specific aspects of tunnel construction (TF13).

Four of the seven tunnels, TH5, TG8, TI9 and TJ5 (Fig. 3.2) extended under no-man's-land as passages, or 'adits' (Grieve and Newman, 1936), an 'adit' here being a tunnel driven horizontally from the end of an exploratory sap trench, leading away from the front line. The initial exploratory sap trenches were on average 2 m deep at the entrance to the tunnels. The openings to the tunnels measured approximately 1 m wide and 1.30 m in height, (from the crown to the base) resulting in 0.70 m of chalk overlying the crown of the tunnel at the entrance. They then sloped gently down, before levelling out at a depth of approximately 3 m below the current ground surface, leaving approximately 1.50 m of solid chalk above the tunnel crown. This was capped in some areas by a further 1 m of topsoil and colluvium.

The deepest recorded tunnels (TH5 and TK15/TJ16) were over 6 m below the current ground surface, but others were at a depth of only 3 m. The relatively shallow depth may reflect the need to train men in the creation of galleries and shallow tunnels (such as 'Russian saps'), and in the skills necessary to drive them towards the enemy line. The remaining three trenches extending into no-man's-land were accessed by vertical shafts dug straight down from the frontline fire trenches, before accessing the horizontally driven tunnel, lateral gallery, or listening posts (see Barrie 1961). The tunnels were for the most part rectangular in profile, with vertical sides and a flat roof, to aid the installation of timber supports.

The Red Line Tunnels

Tunnel TK4

Tunnel TK4 (Fig. 3.4) was a possible incomplete Russian sap, accessed by an oval shaft 1.9 m long by 1.25 m wide excavated from the base of a frontline fire trench. The shaft was 2.66 m to the base of the tunnel (at a height of 103.19m OD) and the tunnel itself

Figure 3.11 Listening post TJ5 'h'

was 1.45 m high, with the crown of the tunnel being 1.20 m below the top of the natural chalk and capped by a further 1 m of topsoil and colluvium. The tunnel extended in a north-westerly direction for 10.40 m before terminating.

Tunnel TJ5

Tunnel TJ5 (Figs. 3.2 and 3.12) was accessed via an adit from the end of a 35 m-long WNW–ESE orientated sap trench leading from the Red frontline into no-man's-land. The tunnel entrance was 1.70 m high and 0.95 m wide (with the base at 107.42 m OD) and it extended horizontally westwards for 24 m (TJ5 'a' – height 107.33 m OD) before reaching a crossroads and a 31 m NNW–SSE aligned lateral gallery (TJ5 'b' north and TJ5 'c' south) with seven listening posts (TJ5 'd'–'j') extending 3 m towards the Blue Line. Each of the listening posts were approximately 1.55 m high and 0.75 m wide. At the base of one of the listening posts (TJ5 'h'), an angled ramp of chalk had been created using packed chalk spoil (Fig. 3.11). This was probably created for the soldier to lie more comfortably on the hard chalk while spending hours training for the 'silent war': practising the methods of identifying enemy counter-mining and the art of differentiating it from the other sounds of trench warfare. The base of listening post TJ5 'd' was recorded as 108.13 m OD and the crown 1.56 m below the stripped surface at the time of excavation, while at the southern end of the gallery the base of listening post TJ5 'j' was 3.07 m below the stripped level at 108.01 m OD, with 1.52 m of solid chalk above the crown.

Extending west from the junction of adit TJ5 'a' and gallery TJ5 'b'/'c' was listening post TJ5 'f', the base of which was 3.41 m below the current stripped level at 107.51 m OD. Extending directly under TJ5 'f' from the opposing Blue Line was listening post TH5 'f', the base of which was recorded as 2.58 m below the current ground surface at a height of 104.93 m OD. With the average height of each listening post being 1.55 m, there was approximately 1 m of solid chalk from the base of TJ5 'f' to the crown of TH5 'f' (see below).

As well as training in the 'silent war' of listening and the mapping of enemy tunnels, training in offensive mining was also taking place at Larkhill with evidence of bored horizontal cylindrical holes for the setting of torpedo camouflet charges, designed to destroy enemy galleries and tunnels and kill the enemy without breaking the ground surface (Barton *et al.* 2004, 113–116). Such a hole was recorded in listening post TJ5 'j' and was 2 m long (Fig. 3.13).

Tunnel TJ5 contained 104 pieces of graffiti scratched and written on its walls, which dated from the earliest identified examples on site, through to the latest (1954).

A lack of ventilation was a real concern within the tunnel systems. No evidence of the use of bellows or rotary fans was revealed, and it appears the problem of stale air was solved by the excavation or boring of vertical air shafts in the roofs of the tunnels through to the ground surface above. Three ventilation shafts were observed in Tunnel TJ5, one at the entrance, one at the junction of TJ5 'a', 'b' and 'c' and one at the junction of TJ5 'c' and 'h'. At the end of the war when the trench systems were backfilled, which had begun by at least November 1923 (SACA 487 XII K Q 84 07/11/23), the air shafts became a convenient place to dump live ordnance, and over 40 live grenades were recovered from TJ5 alone.

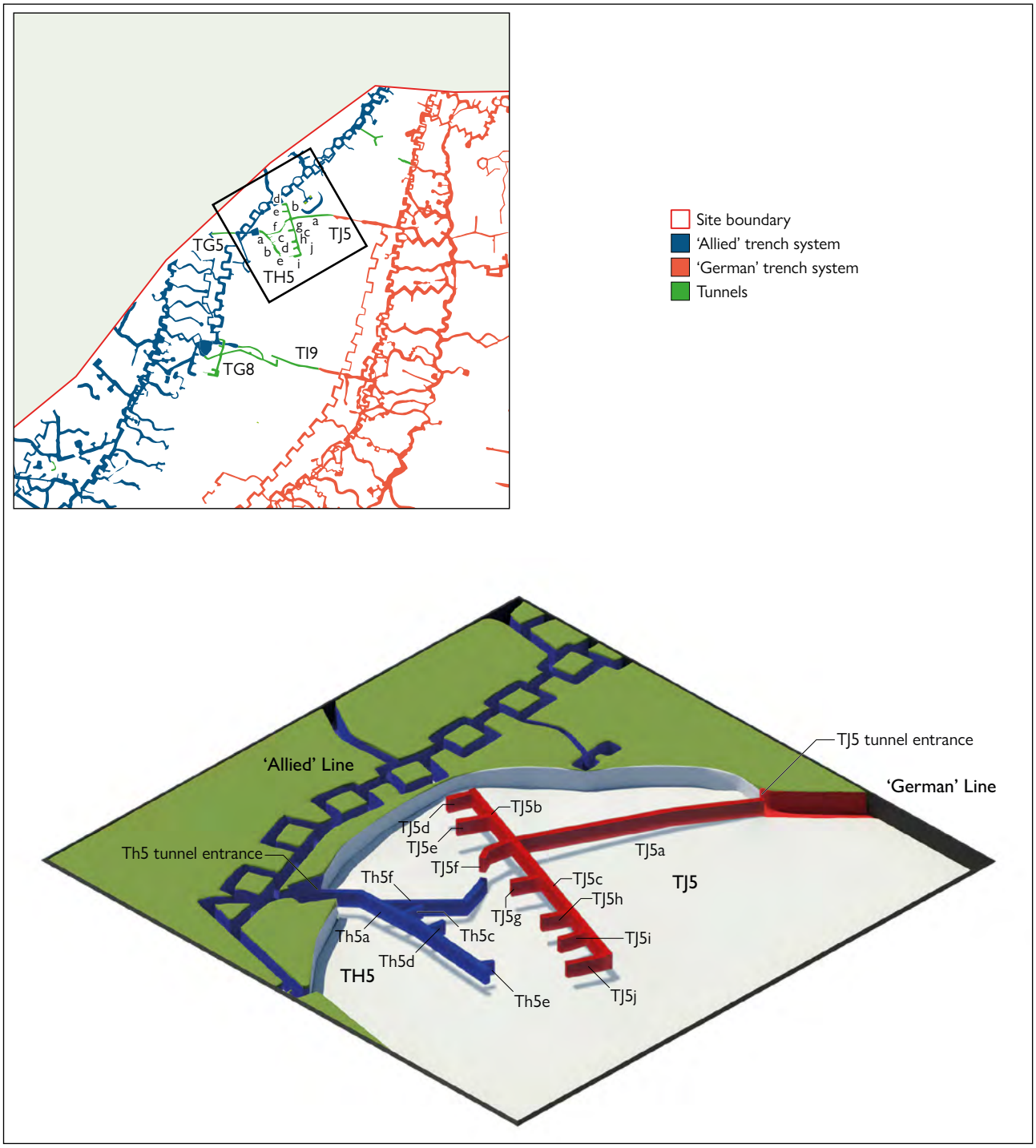


Figure 3.12 Schematic of TJ5

Tunnel TI9

Tunnel TI9 (Fig. 3.2) was accessed via an adit at the end of a 26 m-long sap trench. The entrance to the tunnel was 2.40 m high with the crown just 0.10 m below the top of the natural chalk, and this was sealed by 0.60 m of topsoil and colluvium. The tunnel reduced in size to 1.60 m high and 0.70 m wide as it sloped gently down and extended 28 m into no-man's-land towards the Blue Line TG8 tunnels. A single ventilation shaft was located close to the tunnel entrance.

A single piece of graffiti was recorded in TI9: WA 137 was inscribed 'BMH, WH 22-7-1917'. Three other pieces of graffiti were inscribed 'WH' on 22 July 1917. The initials BMH and WH were inscribed with the same date twice in Tunnel TG8 'h', and in addition, written in soot within TJ5 'j' was inscription 'BM Halls, W Halls Semper Fidelis 22-7-1917' (Semper Fidelis translating from the Latin as 'Always Faithful').

Figure 3.13 Hole for setting of torpedo camouflet charges TJ5 'j'

Figure 3.14 Vertical shaft used to access tunnel TF13

Tunnel TF13

Tunnel TF13 (Fig. 3.5) was accessed from a 2.4 m-long fire bay, located on the Red frontline, via a 0.80 m-wide vertical shaft which extended 2.6 m from the base of the fire bay to the base of the tunnel (Fig. 3.14). The tunnel was 1.47 m high and 0.81 m wide, leaving 2.68 m of solid chalk above the tunnel crown. The tunnel extended 13 m north-west under no-man's-land before terminating. It also extended 20 m south-eastwards back from the frontline under the support trenches. A shallow passing space was observed within the trench, where there were a number of small shelves intended to hold paraffin candles, as indicated by the sooty marks on the chalk above.

Located on the base of the tunnel underneath the support trenches was a horizontal timber plank (0.73 m long by 0.27 m wide and 0.05 m thick) with mortise holes in each end which was interpreted as part of a frame for a gas curtain of treated canvas, designed to impede the ingress of poison gas underground (Fig. 3.15). This frame remnant was further evidence of the realistic nature of the training taking place. Though it is unclear if training with gas was undertaken at Larkhill, training in anti-gas measures was part of the 14-week basic training regime undertaken by all British and Dominion troops following War Office Directive No. 1968 of 15 October 1916 (Frederickson 2015, 41) with 18 hours set aside for such training in weeks 1 and 2, with a further eight hours in weeks 3–10 and four hours in weeks 11–14. (ibid., 64-66).

Tunnel TK15/TJ16

Tunnel TK15/TJ16 (Fig. 3.6) connected communication trenches Hunger Way and Berlin St to the rear of the Red Line. Hunger Way was 1.70 m wide at the surface and narrowed to 1 m at the base before widening to 2.5 m to accommodate the entrance to TK15. The tunnel

Figure 3.15 TF13. A horizontal timber plank with mortise holes in each end, interpreted as part of a frame for a gas curtain of treated canvas, designed to impede the ingress of poison gas underground

entrance was 1.60 m high by 1 m wide with the tunnel crown 0.80 m below the top of the chalk. The tunnel extended in a south-westerly direction for 35 m and reached a maximum depth of 6 m below the stripped level of the site before opening out into Berlin Street. Access from Berlin Street was via a 3.3 m by 2.3 m alcove, with the entrance being 1.60 m high and 1 m wide with the tunnel crown 1 m below the top of the chalk.

The Blue Line Tunnels

Tunnel TJ3

Tunnel TJ3 (Fig. 3.2) was accessed by a 2 m-long by 1 m-wide and 1.65 m-high opening in a frontline fire trench, at the northern end of the Blue Line. The opening was a combination of shaft and tunnel. The opening in the front line was 2 m high but reduced in height to 1.65 m with the crown of the tunnel being 2 m below the top of the natural chalk, capped by a further 1 m of topsoil and colluvium. The tunnel narrowed from 1 m wide to 0.70 m and extended in a south-easterly direction for 9.75 m before forking to form a pair of listening posts or fighting tunnels, TJ3 'a' and TJ3 'b'. The main tunnel was supported by vertical timber uprights set into the tunnel wall, so as not to encroach on the tunnel space; these would have originally held horizontal timbers to support the roof to prevent 'slabbing', or the collapse of sections of roof due to faults in the chalk. The entrance to TJ3 had been blocked by a sheet of corrugated iron before the fire trench was backfilled.

Tunnel TH5

Tunnel TH5 was accessed from a subrectangular cut-and-cover shelter connected to the frontline (Figs. 3.2 and 3.12). The tunnel (0.90 m wide and 1.60 m high) extended in a westerly direction for 2.6 m (TH5 'a') before turning to the south-east, forming a 17.65 m-long gallery.

Leading from TH5 'a' was tunnel TH5 'f' which extended westward for 7 m before turning in a north-easterly direction for another 6 m. The base of TH5 'f' was 2.04 m below the stripped surface at 109.44 m OD at the junction with TH5 'a'; it then descended steeply by over 4.5 m. The base was recorded at 104.44 m OD or 6 m below the stripped level and approximately 7 m below the old ground surface. TH5 'f' terminated directly below the Red Line listening post TJ5 'f' with 1 m of solid chalk separating the crown of TH5 'f' from the base of TJ5 'f'. The morphology of TH5 'f' suggests that attempts had been made to simulate the experience of listening for the enemy from attack tunnels or listening posts, practice in counter or attack tunnelling, or for practice in preparing a 'camouflet' charge – an underground explosion which would produce a void and fill tunnels with noxious gases from the charge (Grieve and Newman 1936, 63; Jones 2024, 10). Tunnel gallery TH5 'a' had collapsed following its abandonment and was infilled with chalk rubble.

Three listening posts (TH5 'c', 'd' and 'e'), on average 2 m long by 0.60 m wide and 1.40 m high, had been excavated in an easterly direction from gallery TH5 'a' towards the Red Line listening posts of Tunnel TJ5. In the same manner as the listening posts in the opposing tunnel, angled ramps of chalk had been put down for soldiers to lie on while practising listening and recording the movements of the 'enemy'. Several pieces of pencilled graffiti were recorded indicating the function of these tunnels and alcoves as

well as identifying the men who were spending hours underground.

In TH5 'd' three pieces of graffiti by the same person were recorded –

- WA293 read 'H BADDEL…., 18 KINGS, KLR';
- WA294 read 'H BADDELEY, 18 SB, KLR'; and
- WA295 was inscribed 'H BADDELEY, 18 KINGS, LISTENING POST' (Fig. 3.16).

Corporal (No. 16793) Harry Sidney Baddeley from Wallasey was training with the 18th (Service) Battalion, the King's Liverpool Regiment, between July and September 1915 – at least eight weeks after tunnel exercises had been added to Notes from the Front Part IV in May 1915 (War Office 1915b) – before sailing to France in November. After almost a year and a half on the Western Front, Baddeley was killed on 31 July 1917 on the first day of the Third Battle of Ypres, or Passchendaele, most likely at the battle of Pilckem Ridge. He is buried in Hooge Crater Cemetery in Ypres, Plot IV.D.12. and is commemorated on the war memorial in Wallasey Hospital. (Maddocks 2014, 62–3; see 'Harry Sidney Baddeley' at www.findagrave.com; Wallasey Hospital War Memorial; 'Harry Sidney Baddeley' at IWM Lives of the First World War).

Figure 3.16 'H BADDELEY, 18 KINGS, LISTENING POST'– WA295. Located in tunnel TH5, 'd'

Tunnel TG5

Tunnel TG5 was situated directly west of tunnel TH5 and was connected to the cut-and-cover shelter used to access TH5 by a stretch of communication trench (Fig. 3.2). Tunnel TG5 was 13.80 m long, 0.86 m wide and 1.40 m high with the base recorded as 3.37 m below the stripped surface at 110.58 m OD. The western end of the tunnel, where it met a communications trench joining the front line to the south, was blocked by a sheet of corrugated iron, apparently, in this instance, prior to the final backfilling of the trench (noting that access to tunnels on the Western Front were often disguised, to limit the chances of discovery, in case of enemy raids).

Tunnel TG8

Tunnel TG8 (Fig. 3.2) was accessed from a 10 m-long sap which was 1.50 m wide at the surface, 0.70 m wide at the base and 2 m deep, extending from the Blue front line via a 1.50 m-high and 0.70 m-wide adit. The tunnel extended for 16 m into no-man's-land, at which point the base of the tunnel was 5.30 m below the current ground surface at 108.31 m OD with 3.80 m of solid chalk above. The tunnel then turned south to a T-junction (TG8 'b'), the western branch (TG8 'c') heading back towards the Blue frontline for 23 m with a small passing place before branching into a 21 m-long gallery (TG8 'd' and 'h') with four listening posts (TG8 'e', 'f', 'i' and 'j') and a second adit

Figure 3.17 Wooden horizontal lintels to shore the roof of tunnel TG8

Figure 3.18 Entrance to tunnel TC11 with six wooden beams set into the base of the sap to act as treads to aid access to and egress from the tunnel

(TH8 'g') back into the Blue front line. Horizontal timber supports were recorded throughout TG8 'a', 'b' and 'c'; these had been inserted into notches carved out of the vertical tunnel walls with the timbers inserted to form supporting lintels (Fig. 3.17). Further supporting timber was recorded in TG8 'i' and 'j', where vertical uprights and horizontal lintels were in place to prevent collapse; nonetheless it was clear that considerable 'slabbing' had occurred following the abandonment of the tunnels.

Within TG8 'j' further evidence was revealed of training in the laying of torpedo camouflet charges, with a 2.80 m-long cylindrical hole augered into the face of the listening post.

Militarily, this configuration of tunnels and trenches makes no sense, but it would have been practical for training, allowing the soldiers from the same formation to experience elements of 'silent war' training, as well as other aspects of trench life and routine in a small area. This would have aided the users of listening equipment to get immediate feedback from the men in other galleries or on the surface.

Several pieces of graffiti were recorded within Tunnel TG8, including WA107, signed by Private (later Lance Corporal) (No. 1079) Burke and dated potentially as early as June 1916.

Tunnel TC11

Tunnel TC11 was accessed by a 3.80 m-long, 1.40 m-wide and 2 m-deep sap extending from a communication trench in the southern part of the Blue Line (Fig. 3.3). At the base of the sap were six wooden beams which had been set into the chalk to act as treads to aid access and egress (Fig. 3.18). Chalk becomes extremely slippery when wet, as recorded by Private Eric Fairey of the 38th Battalion AIF, who wrote of his time on Salisbury Plain that 'Rain swept the open country and poured into the white chalk trenches. When at night several companies entered the trenches to take up their positions, men floundered through pools of whitewash, and got covered with sticky white mud' (Fairey 1920, 7).

The access into tunnel TC11 was 1.70 m high and 1 m wide and the base was recorded at 123.18 m OD. The tunnel extended east for 1 m where it turned to the south for 3.8 m before almost doubling back for 2.20 m to the south-west, terminating with the base recorded at 120.76 m OD, some 4.42 m below the ground surface. There were numerous pieces of graffiti in TC11 including two by Private (No. 2356) Harold Menson of the 4th Reinforcements of the 34th Infantry Battalion, 9th Brigade, 3rd Division AIF, who was at Larkhill from January–April 1917. WA074 reads 'H MENSON, 4/34, Newcastle' (Fig. 3.19), while WA077 reads 'N2356, H Menson, 4/34, Newcastle' (Fig. 3.20).

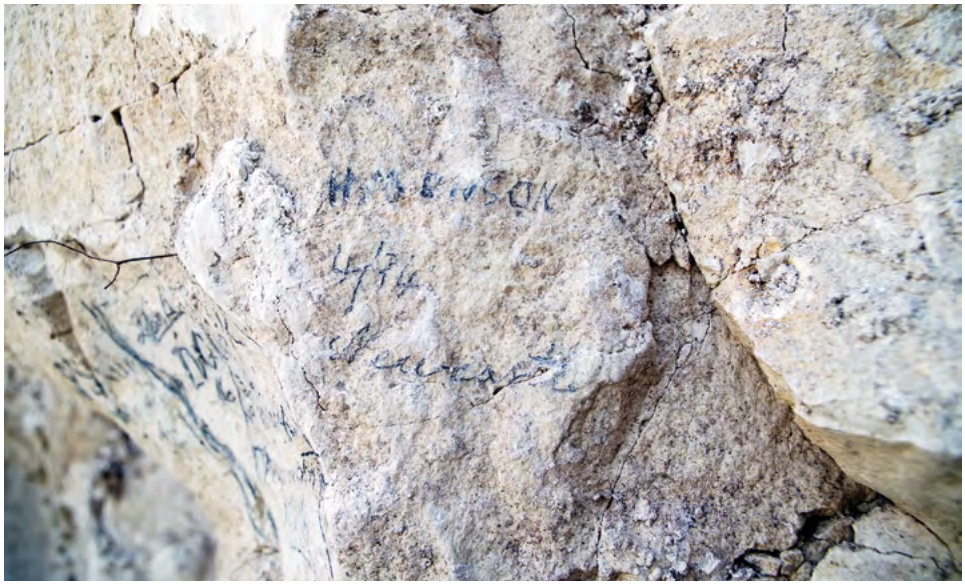


Figure 3.19 'H MENSON, 4/34, Newcastle' – WA074. Located in tunnel TC11

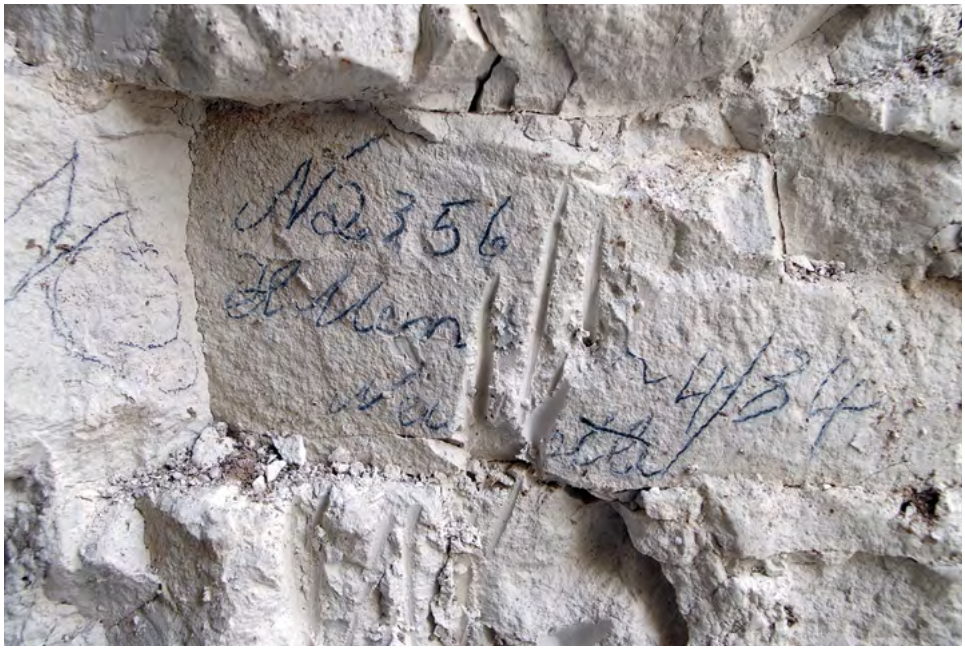


Figure 3.20 'N2356, H Menson, 4/34, Newcastle' – WA077. Located in tunnel TC11

Harold Menson enlisted at the age of 25 in March 1916, and landed in Plymouth in January 1917. At the end of April, he embarked for France. Harold was wounded in action twice, the second injury – a severe shell wound to the left foot received in May 1918 – saw Harold returned to England in June and to Australia in November. In April 1919 he was discharged from the AIF, medically unfit (see 'Harold Menson' at IWM Lives of the First World War).

Tunnel TA11

Tunnel TA11 (Fig. 3.3) was a collapsed dugout accessed from a trench and tunnel adit located outside the ABP development area in the very western corner of the site. It is assumed that TA11 'a' and 'd' were backfilled adits connecting the dugout to the trench line to the north-west and south, while alcoves TA11 'b', 'c', and 'e' were used for specific functions within the dugout. The dugout was roughly square in shape and approximately 4.5 m long by 3.8 m wide, with the base 3.24 m below the current ground surface at 124.68 m OD. Alcoves TA11 'b' and 'c' were possibly used for braziers or cooking because of the amount of sooting which was recorded on the back wall and 'ceiling'. Each alcove was about 1.5 m wide, 1.20 m deep and 1 m high. TA11 'e' is possibly the beginnings of another adit or, perhaps, a listening post.

Likely Mining and Listening Training at Larkhill

Important details on mining and listening are provided in *Notes from the Front Part IV* (War Office 1915b). The following general instructions offer a good account of the likely training exercises conducted in the tunnels at Larkhill:

Infantry Trained as Engineers:

- *One Officer and 25 men per Battalion are trained as sappers and known as 'Battalion Sappers'.*
- *One Officer in each Battalion will be the 'Engineering Officer' and will work with the Royal Engineer Officer allotted to the line occupied by his Battalion.*

Mining:

- *For mining operations to be successful they must be carried out by sappers and professional miners.*
- *Mining, like every other operation, must be carried out with a definite object and with a definite plan (i.e. to gain ground, to destroy enemy trenches or buildings, to ascertain if the enemy is mining, to stop an enemy advance, and the recapture of lost trenches).*
- *Plans of attacking should be based on accurate information of the enemy trenches, based, if possible, on aeroplane photographs.*

Further instructions state that:

- *There should be a depot of arms and hand grenades at the entrance to a mine for use in case the men on duty are attacked either below or above ground.*
- *Store of timber should be formed from which the supplies of service mining cases and frames and sheeting may be supplemented.*
- *Precautions against attack – When any section of our trenches appears to be in danger of mine attack, a new trench should be dug behind it to enclose the threatened part. This rear trench must be occupied, only such garrison as seem necessary being left in the front line. If an explosion takes place in the front trench, the men in the new trench must at once rush forward again.*

Also provided in the May 1915 edition of Notes (War Office 1915b, 17–19) are more specific instructions regarding the use of tunnels and mining, which are repeated below (minus figures and plates):

Listening – To secure any useful results from listening the following precautions must be observed:

a. *The listener must be devested of all accoutrements, for it has been found that the creaking made by these when he is in a cramped position has been mistaken for mining.*

b. *Listening should be conducted at certain specified hours, or on some pre-arranged signal, and for a definite period. During these periods everyone within the listening area, including the trenches, must remain absolutely motionless – there must be no talking, moving, working or noise of any sort.*

c. *Should a crater or enemy trench be occupied, listener galleries should be run out to protect it as soon as possible.*

d. [slightly edited] *It must not be forgotten that the gallery used to fire a mine may still be serviceable within a yard or two of the edge of the crater. Consequently, if the enemy were to make a crater, and we were able to seize it, it might be advisable in the first place to occupy the 'friendly' edge of the crater; for if the 'enemy edge' of the crater were entrenched before listener galleries were run out, it would be easy for the enemy to mine it from his original gallery.*

e. *Listener Galleries should never be left without a sentry.*

f. *The Infantry manning a trench can assist listening by digging a small pit 6 feet deep below the trench and running out a bore hole 20 feet. This can be done in 6 or 8 hours.*

g. *The enemy is always listening for indication of the direction and position of the gallery heads; work must therefore be conducted with the minimum of noise. Speaking, if necessary, must be carried out in undertones, and shouting down the shaft or in the galleries forbidden. If the enemy is heard, a report should at once be made to the officer in charge. Arrangements should be made for a signal on which all work ceases, and all attention is devoted to listening; and for another on which work is resumed.*

The importance of sound in mining was such that the Army established specific Listening Schools (Barton *et al*. 2004, 104) and by March 1916 had issued a table of

average listening distances for underground activities in different geological conditions as a provisional guide for officers. Much of this information was gathered on the Western Front, although it is possible the training at Larkhill also contributed, as accurate measurements of sound and distance could be gathered without other distractions of war. The ability to attack the enemy by surprise below ground undoubtedly saved countless Allied lives on the Western Front, epitomised by a single piece of graffiti (WA136) recorded in listening post TH5c stating: 'Listening is a Gift. All Praise…...' (Fig. 3.21).

Figure 3.21 'Listening is a Gift. All Praise…...' – WA136. Located in tunnel TH5, 'c'

Outlying Trenches Separate to the Main System

A series of trenches unrelated to the two opposing lines was revealed to the rear of the Red Line. The first group (Fig. 3.6 – middle) was composed of two roughly east–west-aligned straight trenches 44 m apart, both being approximately 45 m long by 1.80 m wide and 0.80 m deep. These two trenches were connected by four parallel zig-zag trenches each with two square island traverses. The remains of corrugated iron revetting material held in place by vertical 'L'-shaped angle iron pickets was revealed in the four parallel zig-zag trenches while a large mass of expanded metal mesh and angle iron pickets was found in the southern east–west trench, revealing the different materials being utilised within the trench system. It is likely that this small area of trenching was used to train troops in moving in an organised fashion through communication trenches.

Two linear east–west-aligned trenches (Fig. 3.6 – top) were revealed to the north. Both were approximately 41 m long by 1.60 m wide and 0.70 m deep. The purpose of these trenches is unclear.

To the south, a third section of trench (Fig. 3.6 – bottom) was recorded as 40 m long by 1.90 m wide and 1 m deep. This trench appeared to be a mix of features: fire trenches, a possible latrine or shelter, and a passing place. This feature seems to have been altered from its original construction as a series of fire trenches as indicated on an aerial photograph dated to November 1923 (Fig. 2.1).

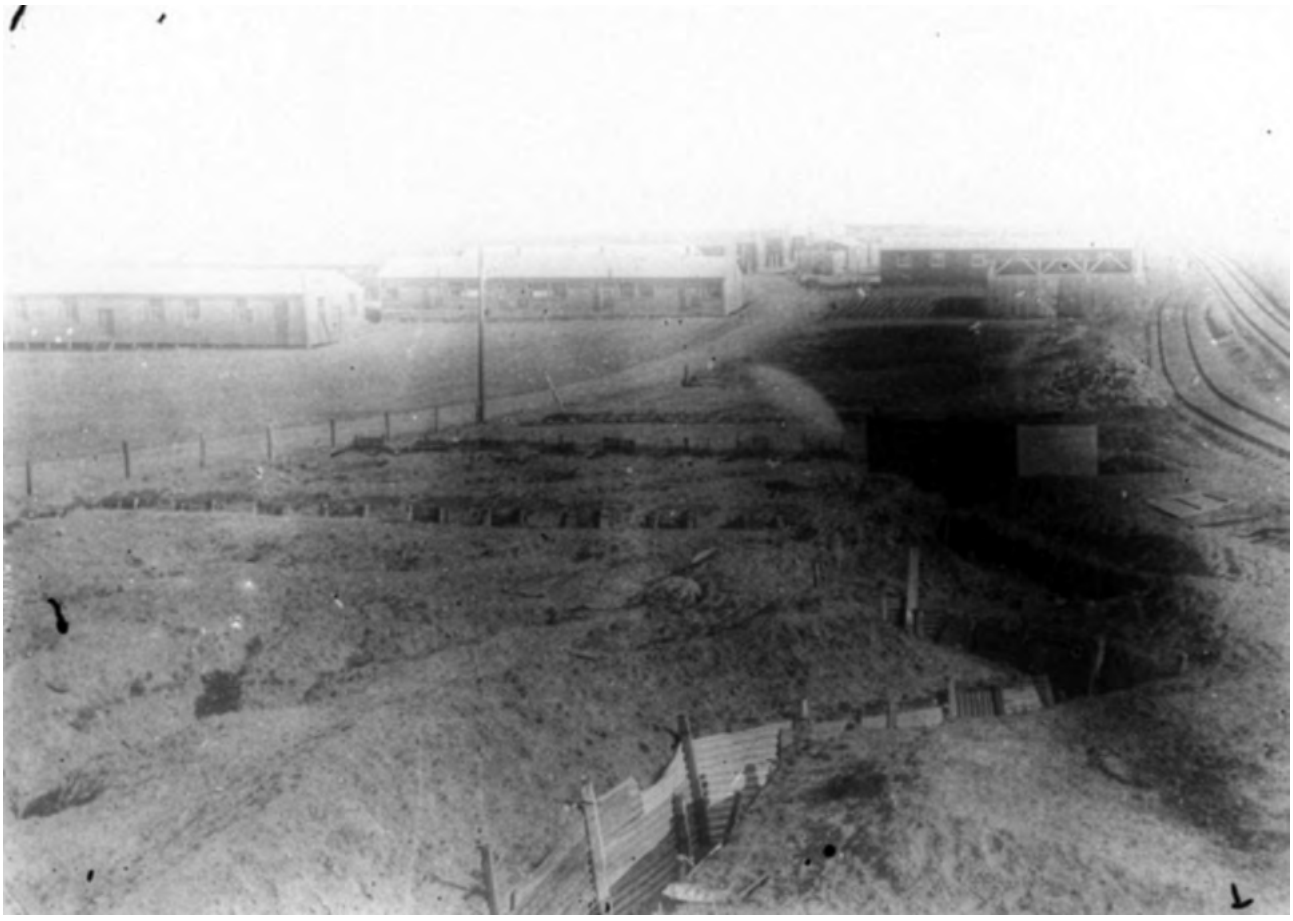
Potentially associated with these outlying trenches were a series of 22 'imitation' shell holes which were roughly circular in shape and approximately 1.50 m in diameter and

between 0.30 m and 1 m deep, located to the south of the two east–west-aligned trenches. It is possible that these outlying trenches and features may have formed part of an assault course with multiple elements to train the troops, similar to that shown in a photograph from 1918 of a bayonet assault course, at a camp on Salisbury Plain (Fig. 3.22).

Also not depicted on the 1917 Artillery Training Map were a series of three parallel rifle or small arms ranges, which had been constructed as terraces excavated into the western-facing slope of the north–south-aligned coombe which crosses the site. Only the northernmost rifle range was revealed in full; it was 27 m long by 8.20 m wide and a maximum of 1.5 m deep.

Analysis of the 1923 aerial photograph (Fig. 2.1) appears to show that much of the 'Allied' Blue Line and some of the 'German' Red Line was no longer in use and had been backfilled by the early 1920s, whereas these outlying trenches and features appear to still be in use, perhaps indicating they date to the post-1918 period.

Figure 3.22 'The bayonet assault course at a camp on the Salisbury Plain, England, constructed by the Pioneer Training Battalion, June 1918 (AWM, C00487)



Chapter 4
The Larkhill System, and Associated Military Units at Larkhill Camp (1914–1918)

by Stephen Beach

Construction and Context

An exact date for the first phase of excavation of the system at Larkhill has yet to be identified. However, a reasonable estimation can be made, by combining the known history of Larkhill Camp, unit histories, units identified via the graffiti, and graffiti containing dates found within the system (for instance, WA154 attributed to the Manchester Regiment, and WA155 ascribed to the King's Liverpool Regiment dated 01/11/1915). Although the following is by no means an attempt to provide a *definitive* list or history of units associated with Larkhill during the First World War, using this combined information, it is possible to loosely place some of the troops and units identified as using the system (and the camp) at a given time, place trench warfare training at Larkhill within the larger context of the First World War, and highlight some potential parallels with other events unfolding at that time.

Early Days

Great Britain declared war on Germany in August 1914. That same month saw the British Expeditionary Force (BEF) cross the channel, and shortly after take part in the Battle of Mons, part of what might be known as the Battle of the Frontiers (August–September 1914). That same August, an order for the construction of a hutted camp at Larkhill and a railway to aid the construction was given (James 1983). At the same time across the Atlantic Ocean, Canada was already recruiting and undertaking basic training (drills, marching, musketry, etc.) of the Canadian Expeditionary Force (CEF), and plans for the CEF to undertake their advanced training (including entrenching) at Salisbury Plain on arrival in England had already been drawn up and agreed (Nicholson 1962).

During September the German army began to 'dig-in' (First Battle of the Marne/First Battle of Aisne), which eventually resulted in a series of out-flanking attempts (moving from south to north) known as the Race to the Sea (September–November 1914), and the fighting of the Battle of the Yser/First Battle of Ypres (including the first battles of Picardy, Albert, Artois, La Bassée, Arras, Messines, and Armentières).

As the Battle of the Frontiers was morphing into the Race to the Sea during September 1914, Lord Kitchener was forming the second New Army (K2), back in Britain.

The Canadian Expeditionary Force Trains at Larkhill (October 1914–February 1915)

In October 1914 the CEF arrived at the southern edge of Salisbury Plain to undertake their advanced training (Nicholson 1962; Crawford 2012a; 2012b). Headquarters were set up at the Bustard Inn (to the west of Larkhill Camp), and troops were accommodated in tented camps at various locations, as the promised hutted camps were not ready. During November 1914, at least some of the CEF forces escaped the less-than-ideal tented accommodation, and units such as the Engineers, and the 2nd and 3rd Infantry Brigades, were finally provided huts at Larkhill (*ibid*.).

The Daily Telegraph published a series of articles by Rudyard Kipling during December 1914, which were later collated into a booklet entitled The New Army in Training (Kipling 1915). One of these articles, 'Canadians in Camp', describes a visit to the Canadian camps on Salisbury Plain, and includes the description of a visit to Larkhill, the meeting of an old acquaintance, and observing the Canadian Engineers digging trenches:

> *Lark Hill is where the Canadian Engineers live, in the midst of a profligate abundance of tools and carts, pontoon wagons, field telephones, and other mouth-watering gear. Hundreds of tin huts are being built there …*
> *… Every camp throws up men one has met at the other end of the earth; so, of course, the Engineer Commanding Officer was an ex-South African Canadian. 'Some of our boys are digging a trench over yonder' he said, 'I'd like you to look at 'em'. The boys seemed to average five feet ten inches, with thirty-seven-inch chests. The soil was un-accommodating chalk.*
> *'What are you?' I asked of the first pickaxe:*
> *'Private'*
> *'Yes, but before that?'*
> *'McGill [University] Nineteen twelve'*
> *'And that boy with the shovel?'*
> *'Queen's, I think. No; he's Toronto'*
> *And thus, the class in applied geology went on half up the trench, under supervision of a Corporal Bachelor-of-Science with the most scientific biceps. They were young; they were beautifully fit, and they were all truly thankful that they lived in these high days.* (Kipling 1915, 37–38).

Meanwhile, on the Western Front, even as early as November, the first efforts at undermining were being attempted, where opposing trenches faced (Jones 2024), and by November–December 1914 the Race to the Sea was effectively over, and the opposing forces on the Western Front were locked into trench warfare.

The hutted camp at Larkhill, and the Fargo Military Hospital – commissioned in July 1914 (see 'Hospitals: England' – Following the Twenty-Second at anzac-22nd-battalion.com') were completed by early 1915 (James 1987), and by February 1915 orders had been issued to set up a Royal Horse (RH) and Royal Field Artillery (RFA) school at Larkhill (James 1983).

In February 1915, as the campaign was getting underway on the Gallipoli peninsula, the CEF departed Larkhill and Salisbury Plain and headed to the Western Front, travelling via Avonmouth to Nazaire in the Bay of Biscay. This unusual route was taken because of submarine attacks in the English Channel at that time (Nicholson 1962).

October 1914 – The 'Tunnel Master' Visits the CEF

In an interesting, if perhaps purely circumstantial side note, the same month the CEF arrived on Salisbury Plain (October 1914) the famous First World War 'tunnel master', Sir John Norton-Griffiths (Empire Joe), visited 'Salisbury' with Field Marshal Lord Roberts to review the first of the Canadian troops (Barrie 1961; Bridgland and Morgan 2003). Quite why the ageing Field Marshal was accompanied by Norton-Griffiths, a ranked Major, and second-in-command of a volunteer cavalry regiment at the time, is unclear; they were certainly previously acquainted, and they both journeyed to Salisbury in a Rolls-Royce owned by Norton-Griffiths' wife (also accompanied by official staff cars).

Norton-Griffiths (a Member of Parliament) had been instrumental in forming one of the first colonial volunteer units, The Colonial Corps, later 2nd King Edward's Horse, in August 1914 (barracked at Langley Park, near Slough), but was also soon to be petitioning Lord Kitchener (February 1915) about tunnelling at the front, using

the 'kicking' technique employed by tunnellers from the Manchester sewage contract Norton-Griffiths owned. This ultimately led to the formation of the first Royal Engineers tunnelling companies in February 1915, and Norton-Griffiths' appointment as advisor (on tunnelling) to General Headquarters (GHQ), until December 1915 (Barrie 1961; Bridgland and Morgan 2003; Jones, 2024).

Unfortunately, no clear link has been established between the tunnels at the Larkhill system, the CEF, and the visit of the soon-to-become 'tunnel master', noting the earliest description of trench digging we have is probably from November or December 1914 (Kipling 1915), and the earliest firmly dated graffiti is almost a year later (around September 1915); consequently, this visit remains tantalising, but purely coincidental.

In another apparent twist of fate, the ageing Field Marshal Roberts succumbed to pneumonia at St Omer in November 1914, after visiting the British India Corps, only a short while after his visit to the CEF with Norton-Griffiths. In December 1914, the British India Corps was hit in their section of the front by a successful tunnelling attack by German forces at Festubert, where hand-bored charges at the end of saps were utilised to good effect (Jones 2024). In the same month (December 1914), GHQ issued orders to proceed with offensive sapping and mining and the formation of brigade mining sections, although these efforts were mostly limited to small and shallow shafts and galleries for listening posts (akin to those found at Larkhill) (Grant Grieve and Newman 1936, 29).

K2 and K4 Arrive at Larkhill (March 1915 to November 1915)

Although not represented in the graffiti, units of the 20th (Light) Division (formed in September 1914 as part of Kitchener's second New Army), including the 11th (Service) Battalion (Pioneers), Durham Light Infantry; the 11th and 12th (Service) Battalions, the King's Royal Rifle Corps; the 10th and 12th (Service) Battalions, the Rifle Brigade (the 10th occupying No. 12 Canadian Camp, Larkhill); and the 6th (Service) Battalion, the Kings Shropshire Light Infantry; and HQ and D Squadron of the 1/1st Westmorland and Cumberland Yeomanry (cavalry) moved to Larkhill in March–April 1915 (see 'The British infantry regiments of 1914–1918' in The Long, Long Trail), undergoing their training as the Battles of Neuve Chapelle and Hill 60 raged across the channel. These units remained 'in training' until landing at Boulogne in July 1915, as the Second Battle of Artois (May–June 1915) closed.

In September 1915, as the Third Battle of Artois/Battle of Loos was underway, battalions of the 30th Division, under Major-General William Fry, arrived at Larkhill. They did not stay long, but left behind the first dated graffiti (within tunnel TJ5) identified in the Larkhill training system (WA143, WA145, WA146, WA154, etc.).

Battalions of the Manchester Regiment (16th, 19th, 20th, and 22nd) represented by the graffiti, were 'Pals' battalions formed in the city between August and November 1914 (see 'Service Battalions 1914–1919' – Tameside MBC), which had been stationed at Morecambe (Lancashire) and Grantham and Belton Park (Lincolnshire), or, closer to home, at Heaton Park (Manchester), for approximately four months, before being made part of the 30th Division and moved to Larkhill in September 1915. The King's (Liverpool Regiment) 18th Service Battalion (see above for Corporal Baddeley) and the 19th (Service) Battalion (graffiti item WA155) were formed in Liverpool in August 1914 and were placed under the command of the 30th Division during April 1915 (see 'The British infantry regiments of 1914–1918' at The Long, Long Trail).

It is also likely that The King's (Liverpool Regiment) 20th (Service) Battalion, was training at Larkhill at this time, evidenced by graffiti located in tunnel TJ5 (WA203). This has been dated to 'pre-June 1916' but seems most likely to be associated with the 30th Division's stay at Larkhill during 1915 (ibid.).

Not represented in the graffiti, but known to have been in training at Larkhill at this time were also the 11th (Service) Battalion (St Helens Pioneers) of the Prince of Wales's Volunteers (South Lancashire Regiment) (ibid., and see 'South Lancashire Regiment' – mywarrington.org).

The 30th Division departed Larkhill during November 1915 (Flenley 1919, 9), and landed at Le Havre or Boulogne, just after the close of the Third Battle of Artois/Battle of Loos in October (see 'The British infantry regiments of 1914–1918' at The Long, Long Trail).

A New Year: 1916

In December 1915, Douglas Haig replaced John French as commander of the BEF. That same month Haig raised concerns about the *tactical* rather than *strategic* approach to mining at the front (Barrie 1961, 134), and in January 1916 temporary Brigadier Robert Napier 'Ducky' Harvey was appointed Inspector of Mines (*ibid.*). By January there were 25 British, 3 Canadian, 1 New Zealand and 4 Australian tunnelling companies active on the Western Front (Jones 2024).

By 1916 the war at the Western Front was in what has been described as the 'Battles of Attrition' (https://www.longlongtrail.co.uk), the Battle of Verdun had begun in February, and the Battle of the Somme was to begin in July, with preparatory bombardment beginning in June, the same month as the Battle of Fromelles and the Battle of Mont Sorrel, preceding the first day of the Somme (1 July). During the early phases of the Somme, the 30th Division captured Montauban, in a part of the Battle of Albert (*ibid.*).

A short account by an officer at Larkhill effectively describes the training situation during 1916:

> *At times one could easily imagine oneself at the front, with constant gun practice going on, and the exploding of mines, trench mortars and grenades to say nothing of the incessant rifle fire. Trenching and mining of all kinds are practiced extensively here'* (McOmish, Field and Brown 2002,139, after Guy 1981, 1–2).

Territorial Forces (Second Line) Arrive at Larkhill (January 1916 to June 1916)

The 62nd (2nd West Riding) Division, under Major-General Walter Braithwaite, were present at Larkhill between January and June 1916, and were, as one Brigadier described it: 'Having the finishing touches put on their training' (Wyrall 1919, 7).

These finishing touches are represented by graffiti left in the 'Allied' Blue Line tunnel TG8, and the Red Line tunnel TJ5, by soldiers of 2/4th Battalion King's Own Yorkshire Light Infantry, which was largely formed from woollen, worsted and cotton mill workers from Halifax (Wyrall 1919); the Duke of Wellington's, which was formed from the districts of Wakefield, including 'heavy Woollen' workers and miners (*ibid.*), and the Yorkshire and Lancaster Regiment – 2/5th Battalion Territorial Force – D Coy. Other units of the 62nd Division recorded as being at Larkhill at this time include 2/6th Battalion, Prince of Wales Own (West Yorkshire Regiment) and the 2/4th (Hallamshire), and 2/5th Battalions, York and Lancaster Regiment (https://www.longlongtrail.co.uk).

A month after the 62nd Division arrived at Larkhill further graffiti was added to tunnel TJ5. These items (WA206 and WA222) have been attributed to the Royal Engineers assigned to the West Riding Division (presumably the 62nd) and is the first evidence of Engineer units in the Larkhill system tunnels. These units moved to Flixton Park near Bungay (Boulter 2022) in June 1916 and landed at Le Havre in December after the closing of the final phases of the Battle of the Somme (July–November 1916).

Severn Valley Pioneers – to become Part of the 63rd (Royal Naval) Division

Between March 1916 and June 1916, the 14th (Service) Battalion (Severn Valley Pioneers) Worcestershire Regiment were at Larkhill. This unit was later to be attached to the 63rd (Royal Naval) Division, at Bruay on 23 June 1916 (https://www.longlongtrail.co.uk), the command of the Division having transferred from the Admiralty to the War Office during April, while the Severn Valley Pioneers were stationed at Larkhill. The Division would be involved in the Battle of the Ancre in the latter phases of the Battle of the Somme (Douglas 1923).

Duke of Cornwall's Light Infantry 1/5th Battalion

The Larkhill system may have been visited by members of the 1/5th Battalion Duke of Cornwall's Light Infantry in the spring, possibly April 1916 (perhaps evidenced by graffiti item WA005 in tunnel TA11, Private Harold Nunn; see 'Harold H Nunn' in IWM – Lives of the First World War), when they moved to Perham Down, and then Tidworth, and changed into a Pioneer Battalion (Duke of Cornwall's Light Infantry – The Long, Long Trail).

The Australian Imperial Forces Arrive at Larkhill (June 1916 to December 1916)

The Australians established headquarters at Tidworth, and Divisional Training Groups at Rollestone, Larkhill, Durrington and Codford (see 'Fargo Military Hospital – Fargo', at anzac-22nd-battalion.com). Units of the 3rd Division Australian Imperial Forces (AIF), under Major-General John Monash, arrived in England during June and July 1916 while the opening phases of the Battle of the Somme raged at the Front. Of all the units to be stationed and trained for the Western Front at Larkhill, the 3rd Division AIF's journey to Salisbury Plain must have been the most arduous.

Following the ending of the Gallipoli Campaign (February 1915 to January 1916), the AIF was reorganised in Egypt during February 1916, the 3rd Division AIF being assembled in March 1916, and 2–3 months later the earliest graffiti attributed to Australian units appears in the Larkhill trench system, including the 34th Battalion, the 43rd Battalion (A Coy) and the 33rd Battalion (B Coy). These units also left the only graffiti to be recovered from the communication trenches, rather than the tunnels (Blue Line, Phase 2 – WA230, WA231, WA322).

The 3rd Division received reinforcements at Larkhill, but even the battle-hardened troops that had survived the Gallipoli Campaign were expected to complete the minimum eight weeks' training on Salisbury Plain before being allowed to enter theatre at the Western Front, despite requests from other Australian commanders already at the Front for reinforcements. As it was, some troops were allowed into theatre 'early', but the majority remained in training until the 3rd Division landed in France, during December 1916, shortly before the German withdrawal to the Hindenburg Line between February and April 1917.

The Army Service Corps

Sometime during 1916, perhaps in a short period of hiatus between training within the system, the tunnels at Larkhill were visited by a member, or members, of the Army Service Corps (ASC) – Mechanical Transport Section, who also left a memento of the visit in tunnel TH5 (WA270).

The Non-Combatants Corps

Although clearly not represented in the practice trench system, it is worthy of note that the Non-Combatant Corps (NCC) 3rd Southern Company HQ was based at Larkhill Camp from 1916 onwards.

Australian Imperial Forces – Reinforcements (January 1917 to January 1918)

Unlike previous units that passed through Larkhill, the graffiti evidence from the practice trench system indicates that units assigned to reinforce the 3rd Division AIF continued to be trained and stationed at the Divisional Training Group Larkhill Camp, and training continued almost immediately after the 3rd Division entered theatre, throughout 1917 and into January 1918.

AIF reinforcements represented by date-apportionable graffiti include:

- 34th Battalion (4th Reinforcements) – January to April 1917;
- 35th Battalion (4th Reinforcements) – January to March 1917;
- 35th Battalion (6th Reinforcements) – January to May 1917;
- 36th Battalion (6th Reinforcements) – January to June 1917;
- 37th Battalion (4th Reinforcements) – April 1917;
- 37th Battalion (6th Reinforcements) – April 1917;
- 33rd Battalion (A Coy) – April 1917;
- 35th Battalion (7th Reinforcements) – April to November 1917;
- 38th Battalion (7th Reinforcements) – April to November 1917;
- 39th Battalion – June to July 1917;
- 39th Battalion (7th Reinforcements) – July 1917;
- 3rd Pioneer Battalion – November 1917;
- 34th Battalion (8th Reinforcements) – November 1917 to January 1918.

Other AIF units represented by graffiti include:

- 33rd Battalion (5th Reinforcements);
- 34th Battalion (5th Reinforcements);
- 34th Battalion (D Coy);
- 35th Battalion (2nd Reinforcements);
- 35th Battalion (5th Reinforcements);
- 4th Divisional Machine Gun Company;
- Light Trench Mortar Company (3rd Reinforcements).

A number of the more legible items of graffiti identified at the Larkhill System can be viewed at the Imperial War Museum's *Lives of the First World War* website (https://livesofthefirstworldwar.iwm.org.uk/)

The first main tranche of reinforcements represented by date-apportionable graffiti (predominantly 4th–6th Reinforcements) come into view at Larkhill at approximately the same time as the German withdrawal to the Hindenburg Line (February 1917 to April 1917), the Second Battle of Arras (April 1917–May 1917) and then the Second Battle of Messines (June 1917), where 19 deep mines were exploded. Perhaps ominously, evidence of the 4th and 6th Reinforcements at Larkhill ceases around May and June, as the British Flanders Offensive (June to October 1917) warmed up, before the start of the Third Battle of Ypres (July to November 1917).

The next group are represented by the 7th Reinforcements, who appear to be at Larkhill from at least April 1917 until approximately November 1917, as the Third Battle of Ypres ground to a halt in the winter. The last of the (apportionable) AIF

graffiti represented in the practice trench system was from the 34th Battalion (8th Reinforcements) who were at Larkhill between November 1917 and January 1918.

British Territorial Forces (October 1917 and into 1918)

Following the departure of the main body of the 3rd Division AIF in December 1916, there appears to have been a shift in the units utilising the practice trench system. As listed above, AIF reinforcement units were still training for the Western Front at Larkhill, long after the Division had entered theatre. However, the graffiti within the tunnels indicate that the system was not the sole preserve of the AIF, and that other units were utilising the facilities. The first evidence of the use of the training system by British Territorial Forces was dated to October 1917.

Many British Territorial Forces, particularly those designated to the 3rd or 4th lines, never entered theatre, and remained in Britain and Ireland, stationed at various locations, moving occasionally. British Territorial Forces represented by the graffiti assemblage include:

- 4th Wiltshire (Reserve) – Probably 4th Reserve – October 1917;
- Duke of Cornwall's Light Infantry – Unknown Unit – October 1917;
- Somerset Light Infantry – October 1917;
- Duke of Cornwall's Light Infantry – 4th (Reserve) Battalion – December 1917;
- 4th Wiltshire – 5th Battalion – April 1918;
- Royal Irish Rifles – April 1918 (units of the Royal Irish Rifles present at Larkhill in April included the 3rd (Reserve), 4th (Extra Reserve) and the 5th (Extra Reserve) Battalions, the 3rd (Reserve) Battalion having absorbed the 17th, 18th, 19th and 20th (Reserve) Battalions at the same time (https://www.longlongtrail.co.uk).

Other units known from unit histories to have been present at Larkhill from late 1917 and into 1918, some of which may correspond with some of the less well-defined items of graffiti, include:

- Duke of Cornwall's Light Infantry – Reserve Battalion (formally the 3/4th Battalion) – October 1917 (https://www.longlongtrail.co.uk);
- Hampshire Regiment – 4th (Reserve) Battalion (formally the 3/4th Battalion) – October 1917 (https://www.longlongtrail.co.uk);
- Wiltshire Regiment – 4th (Reserve) Battalion (formally 3/4th Battalion) – October 1917 (Army Service Numbers 1881–1918: Wiltshire Regiment – 4th Bn (TF));
- Warwickshire Regiment – 53rd (Young Soldier) Battalion, who joined the 8th Reserve Brigade at Larkhill in October or November 1917 (53rd (Young Soldier) Battalion, Royal Warwickshire Regiment in the Great War – The Wartime Memories Project);
- Prince Albert's (Somerset Light Infantry) – 3/4th and 3/5th Battalions – late 1917 (https://www.longlongtrail.co.uk);
- Devonshire Regiment – 3/4th, 3/5th, and 3/6th Battalions – early 1918 (https://www.longlongtrail.co.uk);
- Royal Irish Regiment – 3rd (Reserve) and 4th (Extra Reserve) – April 1918 – as part of the Irish Reserve Brigade (https://www.longlongtrail.co.uk).

The Army Service Corps Takes a Last Look…

The last of the attributable First World War graffiti was located in tunnel TJ5 and has been assigned to August 1918. This memento was left by a member of the Mechanical Transport section of the Army Service Corps. Like the previous ASC visit to the system, it is not clear whether the graffiti was created during a training exercise, or a less official visit.

Rediscovery of Tunnel TJ5

The end of the First World War was not quite the end of the story told by the graffiti within the Larkhill practice trench system. Approximately 32 years and 9 months after the last recorded graffiti event, left by the ASC in tunnel TJ5, the same tunnel was revisited and the final phase of memento-leaving began. There is no evidence that this graffiti was left by military units, training or otherwise, and it would seem reasonable to assume it was left behind by some of the more adventurous and daring of the local youth. The first of this material can be dated to May 1951 (WA151 and 271), and the last to 1956 (WA178 and WA275), and there are examples from every year in between.

The system was largely, if not totally, backfilled by this point and there is no further datable evidence or items of graffiti recorded within the system after 1956. It can be assumed that those visiting the TJ5 grew up and moved on, and the practice system was left largely forgotten.

Conclusion

Camps and practice trench systems in Britain such as Larkhill played a vital role in the training of volunteer and conscripted soldiers during the First World War. Assumptions about the preparations and training for the frontline that new soldiers received were, and are still, prevalent in the public imagination, such as endless drill on the parade ground, route marches, practising with dummy bullets on the rifle range, or charging dummies with a bayonet, perpetuate the belief that minimal training was provided before First World War troops were sent to the frontline.

Although these rudiments of training were a vital part of the initial preparation, and there were certainly issues with meeting training requirements because of the huge influx of new troops early in the conflict, this was certainly not the full story, and what is often perceived as 'the training' represented just the first conditioning of volunteers and conscripts from often malnourished civilian to potential soldier. This initial drilling was often undertaken (much more visibly) close to home, before units were moved away, and intermediate and advanced training was conducted away from population centres, at facilities and camps such as Larkhill.

While stationed at Larkhill, units destined for the Western Front would conduct specialised training and prepare for the routines, systems and mechanics of trench warfare. Unless already proven competent in combat, units were not released to the front until they had completed their minimum 14 weeks of training.

The rediscovery and examination of many practice trench systems, along with associated research during the archaeological process, is beginning to highlight the measures military commanders took to prepare volunteer and conscripted troops for what they would face, and how ready the Army was to adapt and improve training as lessons were learnt at the Front, and as new technologies were introduced and developed. Of course, no training outside a First World War combat situation could fully replicate the physical and mental stresses and pressures involved; moreover, the average contemporary soldier, the Press and the public were never going to be fully party to the tactical reasoning for the conducting of the war. Yet military commanders did much to prepare their troops and were fully aware of the value of advanced training, and the Larkhill trench and tunnel systems demonstrate that, far from being stagnant, training was evolving and being refined throughout the conflict.

Chapter 5
Soldiers' Stories

by Janine Rocha

Introduction

One of the most important and unexpected results of the Army Basing Programme works was the survival, discovery and recording of extensive graffiti made by servicemen during their stationing at Larkhill. The excavation of evidence for named individuals is a rare occurrence in archaeology, and restores the aspect which is most often missing, and most wished for, in all archaeological study: the direct encounter with past people.

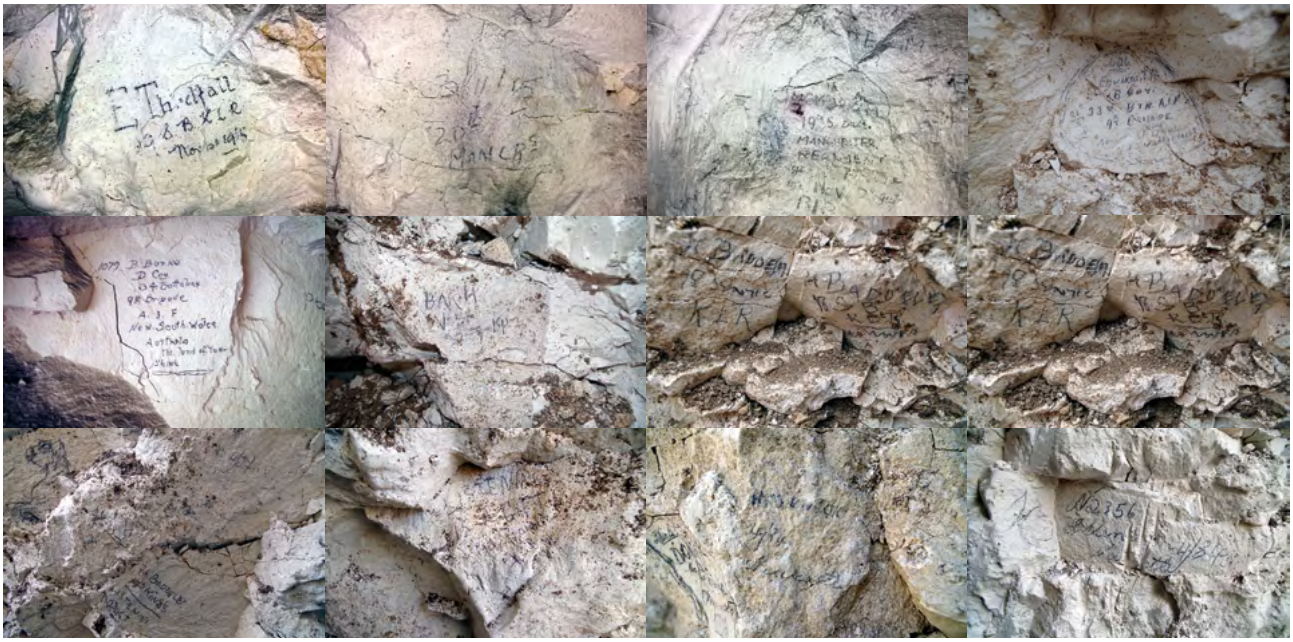
Out of the 290 individual entries of graffiti recovered during the excavations, 207 could be dated from between 1915 and the 1950s. These examples came from tunnels TA11, TG8, TH5, TI9 and TJ5, and a communications trench (see The A Company Bombers, below) and included soldiers' details (name, service number, battalion, address), initials, drawings, engravings and scribble. The media of pencil, coloured markers and soot were used.

The graffiti can be separated into First World War, post-First World War, and general graffiti.

First World War Graffiti

Overall, 179 items of graffiti could be attributed to Commonwealth soldiers who trained at Larkhill during the First World War. Of these, 88 soldiers could be fully identified, 43 from the Australian Imperial Force (AIF), of whom four were identified as signing their names more than once; and 45 from the United Kingdom, of whom seven were identified as signing their names more than once (Fig. 5.1).

Figure 5.1 First World War graffiti



The other items of graffiti contained scant information or had degraded and become illegible. Some of the soldiers, identified and unknown, also wrote their names more than once in different areas. There was one soldier with New Zealand details who could not be identified; it is not known if he served with New Zealand, Australia or the United Kingdom.

Of those individual soldiers identified, 29 Australians survived, while 10 were killed in action. Some 23 soldiers from the United Kingdom survived, while 15 were killed in action. Numbers of identified soldiers and their units are given in Table 5.1.

Table 5.1 Numbers of identified soldiers by unit, battalion, regiment and nationality

Australia		
Battalion	*Unit*	*Number*
33rd	5th Reinforcement	1
	B Company	4
34th	4th Reinforcement	1
	5th Reinforcement	1
	8th Reinforcement	1
	D Company	1
35th	2nd Reinforcement	1
	4th Reinforcement	1
	5th Reinforcement	1
	6th Reinforcement	3
	7th Reinforcement	2
36th	6th Reinforcement	2
37th	4th Reinforcement	2
	6th Reinforcement	1
38th	7th Reinforcement	1
39th	7th Reinforcement	1
43rd	A Company	12
3rd Pioneer	5th Reinforcement	1
4th Division Machine Gun Company		1
Light Trench Mortar Battery	3rd Reinforcement	1
United Kingdom		
Regiment	*Unit*	*Number*
Wiltshire Regiment (Duke of Edinburgh's)	4th Battalion	7
	U/K Battalion	1
Duke of Cornwall's Light Infantry	U/K Battalion	1
	4th Battalion	1
	1/5th Battalion	3
	U/K Battalion	1
Royal Irish Rifles	4th Battalion	2
	U/K Battalion	1
The Manchester Regiment	16th Battalion	3

	20th Battalion	1
	22nd Service Battalion	1
The King's (Liverpool Regiment)	18th Battalion	1
	19th Battalion	1
	20th Battalion	1
King's Own Yorkshire Light Infantry	2/4th Battalion	2
	2/5th Battalion	1
The Prince of Wales's Own (West Yorkshire Regiment)	2/6th Battalion	1
	U/K Battalion	1
York and Lancaster Regiment	2/5th Battalion	2
Royal Warwickshire Regiment	U/K Battalion (see Chapter 7)	1
Durham Light Infantry	U/K Battalion	1
Hampshire Regiment	U/K Battalion	1
Royal Engineers	406th(?) field company	1
	Unknown	1

Key: U/K – unknown

Some of the graffiti only referenced the unit, such as 'In memoriam 19th S Batt Manchester Regiment'. In others, the soldier was unidentified, but the unit was known (Table 5.2).

Table 5.2 Unidentified soldiers by unit, battalion, regiment and nationality

Australia		
Battalion	*Unit*	*Number*
33rd Battalion	A Company	1
35th Battalion	U/K Company/Reinforcement	1
Trench Mortar Battery		2
United Kingdom		
Regiment	*Unit*	*Number*
Wiltshire Regiment (Duke of Edinburgh's)	4th Battalion	6
Duke of Cornwall's Light Infantry	2/4th Battalion	3
	U/K Battalion	2
Royal Irish Rifles	4th Battalion	2
The Manchester Regiment	19th Battalion	3
	20th Battalion	1
	Unknown	1
King's Own Yorkshire Light Infantry	2/4th Battalion	3
The Prince of Wales's Own (West Yorkshire Regiment)	2/6th Battalion	1
	Unknown	1
Army Service Corps Mechanical Transport		3
York and Lancaster Regiment	2/5th Battalion	1
	Unknown	1

Post-First World War Graffiti

There were 28 items of graffiti which were identified as being created after the end of the First World War. Some are names, some are initials; one was a 13-year-old boy called Billy (WA267), who wrote his details in 1952. The number in each tunnel is presented in Table 5.3.

Table 5.3 Post-First World War graffiti by tunnel

Tunnel	*Date*	*Total number*
TJ5	1951 (4)	26
	1952 (8)	
	1953 (7)	
	1954 (1)	
	1956 (2)	
	Unconfirmed post-WW1 (4)	
TG8	Probably 1945 (1)	1
THJ	1952 (1)	1

One person wrote their name in two different tunnels (TJ5 and THJ) in 1952, while another wrote their name in the same tunnel (TJ5) in 1951 and 1952. This seems to indicate that the trench systems were accessible by the public for some time after they were initially constructed, and TJ5 was the favoured and most probably easiest tunnel to access.

Several items of graffiti were just initials, and excluding the ones above, were not dated so have not been included in any category.

General Graffiti

When soldiers didn't feel like writing their names or initials, they drew or wrote other things: portraits, objects, scribbles and general comments, such as 'Shithole corner'. There are 28 examples of this type (Table 5.4); the dates of when they were created are not known.

Table 5.4 General graffiti

Tunnel	*Number*
TA11	4
TG8	3
TH5	13
TJ5	8

The types of graffiti can be grouped into three categories (drawings, scribbles, and comments) as shown in Table 5.5.

Most of these items have no associated date, so cannot be attributed to the First World War or later. Consequently, they are not included in the 'First World War' or 'Post-First World War' sections above.

Table 5.5 Drawings, scribbles and comments

Tunnel	*Drawing*	*Scribble*	*Comment*
TA11		carved lines possible drawing	Rat Billy
			SHY ARNOLD
TG8	crosshatches within an oval shape		
	arrow pointing up		
TH5	star with wings	scored rectangular border	MY LITTLE HOME IN THE WEST
	triangle pointing down with line through	scribbles like feathers	
	drawing like a net/fence and an A		
	rectangle with S?		
	profile of a bald-headed man, facing to the left		
	profile of a man		
	triangle with a line through it		
	drawing like a net/fence		
TJ5	union flag and scribbles		XX
	phallus		SOS
			SHITHOLE CORNER
			PATH FINDERS
			FUCK THE ?AISER (KAISER)

Three unidentified First World War soldiers included a drawing or comment with their inscription, two in TH5 and one in TA11 (Table 5.6).

Table 5.6 Drawings and inscriptions

Tunnel	*Graffiti*
TH5	SAP(?), 8RGT, M?J??
(WA116)	HEWET
	HERE LIES
	AN OLD
	SOLDIER
	Sketch of person lying down
(WA136)	LISTENING
	IS A GIFT
	Cpl P?a????
	?/2 BN ??
TA11	'Crossed flags' above
(WA063)	Sig ????
	2nd Batt
	????????

The Soldiers

Although the graffiti are remarkable survivals in themselves, their true value lies in the fact that many of them include servicemen's names and other details. Because of this, it has been possible to positively identify many individuals who trained or were stationed at Larkhill, and in several instances to trace their subsequent lives and deaths.

The Boomi Brothers

Some of the Australian soldiers identified in the graffiti came over on the same troop ship and were from the same town; some were friends or brothers. Two such brothers were Private George Henry Richards (service number 601) and his younger brother Private John Alfred Richards (service number 602) from Boomi, a small town in New South Wales (Fig. 5.2).

Figure 5.2 The Boomi brothers

The Richards brothers enlisted on different days in March 1916 into the 33rd Battalion, B Company, and both embarked the same day in May 1916. While George survived the war, John died of wounds at the 2nd Canadian Casualty Clearing Station in Belgium, on 28 October 1917, aged 17.

The A Company Bombers

On 26 August 1916, a group of soldiers calling themselves the 'A COY BOMBERS' ('A Company Bombers') wrote their names (WA277 to WA288) on an irregular chalk tablet found in one of the communication trenches (Fig. 5.3). They were members of the 43rd Battalion, AIF, and embarked from Australia together. One of these men was Private Lawrence Carthage Weathers, service number 1153 (WA27).

Lawrence (Fig. 5.4) was born in New Zealand on 14 May 1890 and moved to South Australia when he was a child. He enlisted in the AIF on 8th February 1916, aged 25, and was married with two children.

While in training in Adelaide, Lawrence spent around four weeks in the Torrens Island Venereal Hospital for gonorrhoea. He transferred units a couple of times and made his way to the 43rd Battalion. While undergoing further training in Keswick, South Australia, he was hospitalised for a couple of weeks with the flu. A short time later, the unit left Australia and arrived in Southampton in July 1916.

Lawrence was sent to France in November 1916 and in January 1917 he spent a couple of weeks in the General Hospital, Étaples, with VD. Back with his unit, Lawrence sustained a gunshot wound in his left leg during battle in June 1917, which resulted in a compound fracture to his left fibula. This was severe enough for him to be transported back to England where he spent a couple of months at Southwark Military Hospital. After his return, he was promoted to Lance Corporal in March

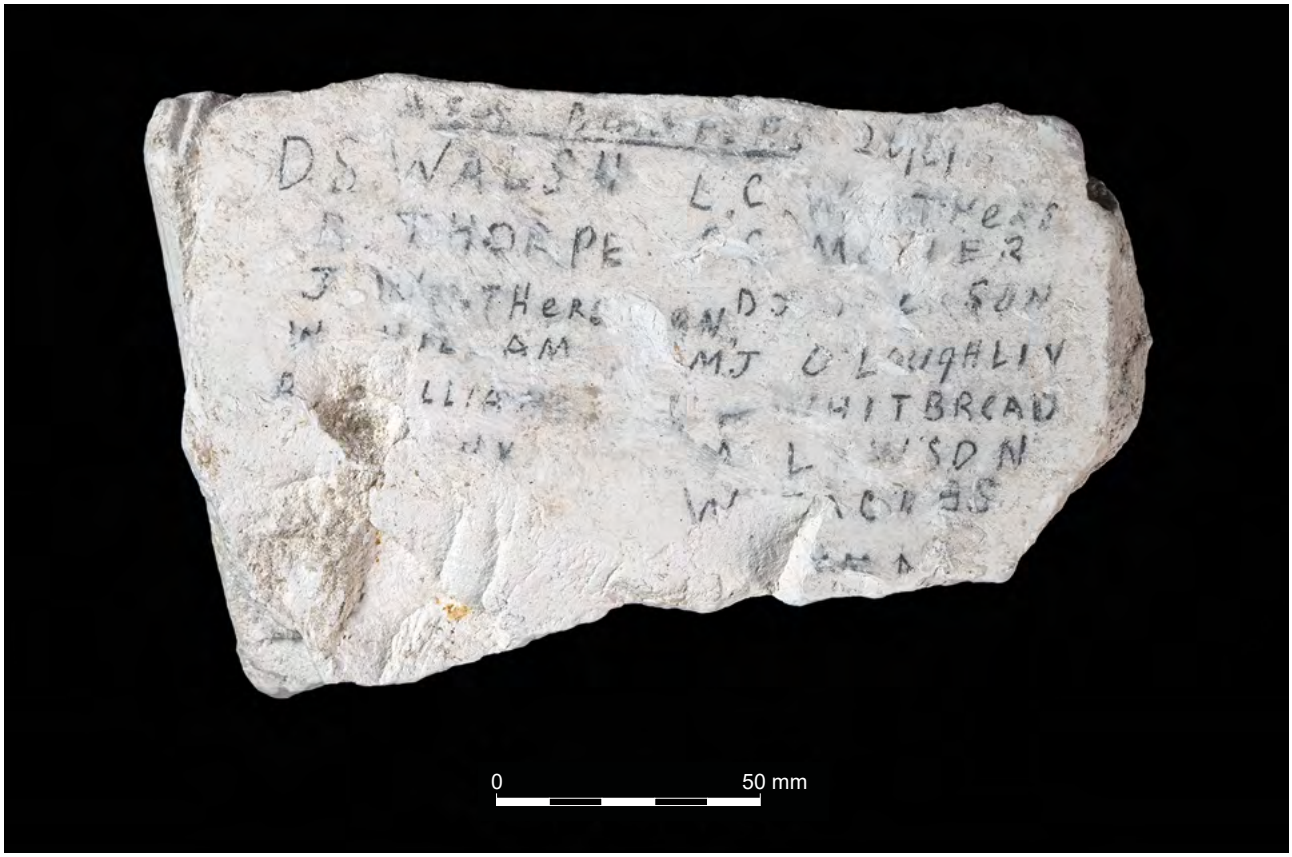


Figure 5.3 A Coy Bombers

Scan this QR code to view a 3D model of this object on Wessex Archaeology's Sketchfab page

Figure 5.4 Studio portrait of 1153 Private Lawrence Carthage Weathers (AWM H06789)

1918, before being gassed in May 1918. Another promotion to Temporary Corporal was forthcoming in September 1918.

Not long after the second promotion, on 29 September 1918, Lawrence was injured by a shell blast when the battalion attacked Bony, and he died of his wounds the same day. Lawrence was posthumously awarded the Victoria Cross (VC) in December 1918. The *Commonwealth Gazette* (23 May 1919) reported his actions as follows:

> *For most conspicuous bravery and devotion to duty on the 2nd September 1918, north of Peronne, when with an advanced bombing party. The attack having been held up by a strongly held enemy trench, Corporal Weathers went forward alone, under heavy fire, and attacked the enemy with bombs. Then, returning to our lines for a further supply of bombs, he again went forward with three comrades, and attacked under very heavy fire. Regardless of personal danger, he mounted the enemy parapet and bombed the trench and, with the support of his comrades, captured 180 prisoners and three machine guns. His valour and determination resulted in the successful capture of the final objective, and saved the lives of many of his comrades.'*
> (It appears the *Commonwealth Gazette* misreported the date)

Lawrence was buried near a Regimental Aid Post near Hargicourt, France. After the war in 1919, his body was exhumed and reburied in Unicorn Cemetery, France. There was no cross on his grave, and he was identified from his identity disc. Lawrence is commemorated on the Roll of Honour at the Australian War Memorial in Canberra, like all Australian soldiers killed in battle, and also in New Zealand. An inquiry into his death in November 1918 concluded the following:

> *Supporting the 41st Battalion, 43rd were at Quennet High Trench between Rosuoy and Bony. Between 5 and 6pm a shell burst killing Private Sais and wounding about six others including T/Cpl L C Weathers and L/Cpl J J Weathers (his cousin). Pte Pahl reported L C Weathers was wounded through the temples and had a broken arm,*

while J J Weathers was wounded in the back of the head. Both were taken to the RAP (Regimental Aid Post). The Chaplain was on duty at the RAP in sunken road near Bony and reported that Weathers had severe wounds to the head and that Captain Miller the MO (Medical Officer) regarded his injuries so severe that his case was 'hopeless'. (National Archives of Australia, NAA: B2455)

L/Cpl John Joseph Weathers, (CWGC has the surname spelt Wethers) service number 5770, 43rd Battalion, also died the same day and is commemorated on the Villers-Bretonneux Memorial.

As well as being awarded the VC, Lawrence was also awarded the British War Medal and the Victory Medal. The VC was kept by the Weathers family until it was sold at auction in Sydney in 2016, for the equivalent of £266,000 at the time. After fees, the overall price paid was £318,000.

Lawrence had four siblings, one of whom also enlisted in the AIF: Trooper Thomas Francis Weathers, service number 204, of the 9th Light Horse Regiment. Thomas died of wounds on 15 June 1915 at Gallipoli, and is buried at Ari Burnu Cemetery, Anzac, Turkey.

Of the other members of 'A Company Bombers' recorded in the Larkhill graffiti:

- Private Michael Joseph O'Loughlin, service number 788, survived the war and returned to Australia in January 1919;
- Private George Henry Whitbread, service number 207, survived the war and returned to Australia in July 1917;
- Private Andrew Lawson, service number 1042, survived the war and returned to Australia in March 1919;
- Private John Weatherspoon, service number 801, was killed in action on 19 February 1917 and is buried at Cité Bonjean Military Cemetery, Armentières, France;
- 2nd Lieutenant D'Arcy Stuart Walsh, service number 1734, was killed in action on 4 October 1917. Commemorated on Menin Gate Memorial;
- Sergeant Raymond William Thorpe, service number 188, survived the war and returned to Australia in December 1918;
- Driver Willie Thomas Hillam, service number 1147, survived the war and returned to Australia in May 1919;
- Private David John Jackson, service number 782, was killed in action on 10 June 1917 at Messines and is commemorated on the Menin Gate Memorial;
- Private Stafford Claude Moller, service number 120, survived the war and returned to Australia in May 1919;
- Lance Corporal Walter Swanton Jacob, service number 1148, survived the war and returned to Australia in September 1917;
- Private Robert Lawrence Williams, service number 803, survived the war and returned to Australia in September 1917.

Private Albert Fleming

Australian soldiers under the age of 21 needed their parents' or guardians' permission to enlist and countersign their attestation papers; however, a few underage soldiers snuck through after adding a few years to their age.

On 1 November 1916, Albert James Gordon Fleming, a young lad from the state of Victoria, enlisted into the AIF (Fig. 5.5). He stated he was 18 years old on his enlistment papers, but records show he was born on 21 February 1902, making him only 14 years old at his enlistment. Private Albert Fleming was assigned the service number 2825 and attached to the 6th Reinforcement, 37th Battalion. He arrived in England in February 1917.

At the end of March 1917, shortly after arriving at Sutton Mandeville in Wiltshire, Albert was admitted to the military hospital at Parkhouse Farm on Salisbury Plain with the mumps. He was discharged and arrived for training in Larkhill on 7 April 1917 where he wrote his name in one of the tunnels (TA11 WA001).

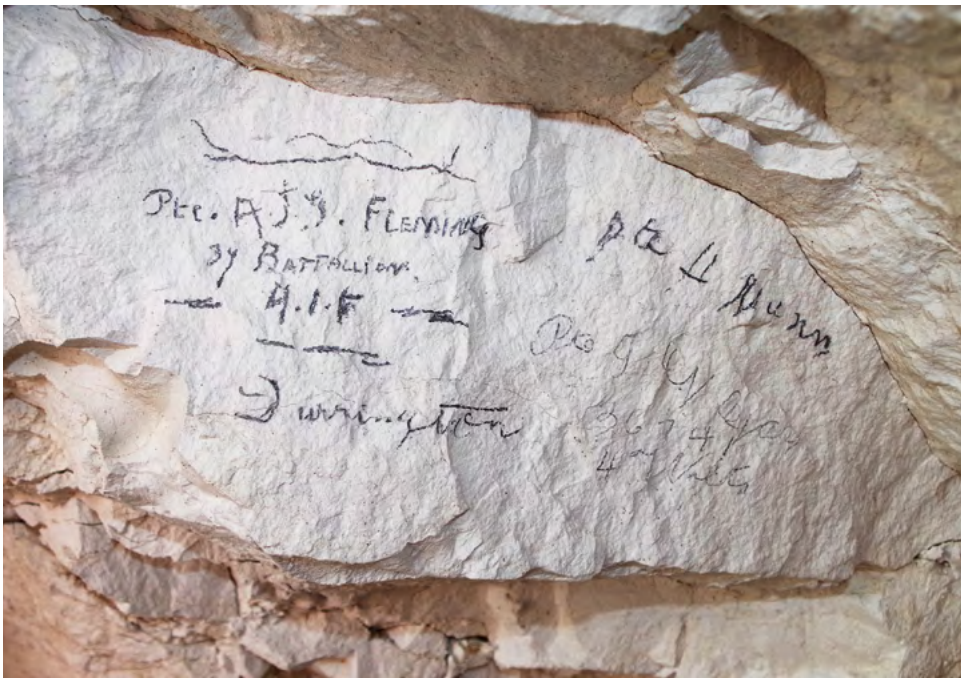


Figure 5.5 Private Albert Fleming

Army life wasn't for Albert, and his service record has him as being absent without leave (AWOL) from Durrington Camp from 26 April to 23 May 1917. As punishment he received 27 days in detention and forfeited 53 days' pay. The punishment did nothing to stop his distaste for army life and Albert was again AWOL on 23 August 1917. This time he never returned. On 21 September 1917 a military court of inquiry declared him an 'illegal absentee' and he was discharged from the Australian Army on 21 July 1920.

On 16 April 1923 a letter was sent from AIF Base Records to Albert's father John, asking about his son's whereabouts so that records could be finalised. Albert's mother Sarah telephoned the AIF and informed them her son had returned to Australia under his own steam and would be in touch 'in a few days'.

After Albert made his way back to Australia, he married Mabel Austin in December 1920 in Victoria. Prior to this, Albert had travelled to Canada and married 21-year-old Charlotte Richards in March 1918 in Toronto. Albert stated he was 19 on the marriage certificate but in fact he was only 16. The marriage didn't last long, and Albert returned to Australia shortly thereafter. He and Mabel had two children together and Albert died in 1976, aged 74.

As a consequence of 'leaving' the Australian Army, Albert forfeited 'all rights of repatriation to Australia. All service medals, leave and gratuity monies'.

Driver John Chisholm

On 6 March 1912, John Arthur Chisholm from Rotherham enlisted into the Territorial Force, 2/5th Battalion, York and Lancaster Regiment (Fig. 5.6). He was born on 4 February 1898, making him 14 years old at the time. Private John Chisholm was assigned the service number 1463.

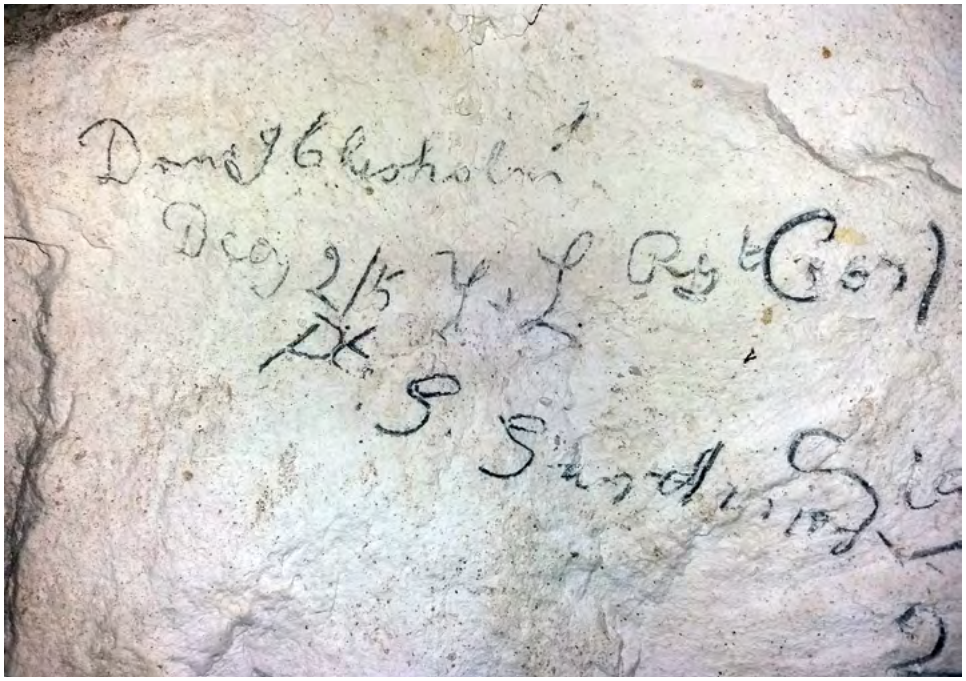


Figure 5.6 Driver John Chisholm

In 1916 John was stationed at Larkhill as a Driver and it was during this time that he wrote his name in the tunnels (TH5 WA239). In May 1916 John recorded the first of many infractions; he was admonished for insolence to an NCO.

In September 1916 John moved to the Cadet Battalion in Newmarket. While here, between December 1916 and August 1917, the young 19-year-old recorded the following infractions, some of which seem quite petty:

- nine days confined to barracks for being drunk in camp at 9.45pm;
- three days' extra guard duty for being improperly dressed while on duty;
- four days (illegible) for neglect of duty;
- punished (illegible) for being improperly dressed while on duty;
- two days confined to barracks for failing to dust the commanding officer's room; and
- seven days confined to barracks for failing to dust articles for the commanding officer's table.

These infractions didn't stop him from receiving a 'bounty allowed under A.O. 209 of 1916, credited for present issue £5'.

Prior to embarking for France, John was transferred to the 4th Reserve Battalion and was assigned the service number of 203976. In June 1918 he was wounded and spent a couple of weeks in hospital before joining the 2nd Battalion. He was wounded again in July, sustaining shell wounds to his eye and arms. John rejoined his unit at the end of September 1918. Unfortunately, it was third time unlucky for John and he was killed in fighting between Méricourt and Beauregard, France, on 8 October 1918, aged 20. He was identified from his field medical card.

John was buried at Busigny Communal Cemetery extension, Nord, France. He was awarded the Territorial Force War Medal, British War Medal and Victory Medal, and his mother Elizabeth was listed as his beneficiary.

These are only some of the many soldiers recorded in the Larkhill graffiti. A comprehensive database containing all the recoverable details of the lives and careers of identifiable servicemen was compiled and is available as part of the project's archive. Details of some of the soldiers identified can be found on the Imperial War Museum's website, https://livesofthefirstworldwar.iwm.org.uk/ww1-life-stories

Chapter 6
The Second World War and Beyond

by Simon Flaherty

Introduction

Development of military sites continued throughout the interwar years, and evidence of archaeology from the Second World War and beyond was found at both the Bulford and the Larkhill sites. During the interwar years, Larkhill camp changed from a sprawl of huts to a camp with a number of brick structures, giving it a more permanent presence on the Plain. At the same time, Larkhill was to become the centre for artillery, with the Chapperton Down Artillery School and the Heavy Artillery Gunnery School merged with the School of Instruction for Royal Horse and Royal Field Artillery. The new School of Artillery was established in 1920 (Buckton 2015, 69; James 1983, 54–5). It had four main aims: to provide qualified field artillery instructors to train regular and territorial units, to carry out trials of new equipment, to write artillery instruction manuals and pamphlets, and to stage firepower demonstrations (Buckton 2015, 69–70; James 1983, 56).

Bulford

During the course of the works at the Bulford Service Family Accommodation site, evidence for modern military activity was uncovered (Fig. 6.1). Eleven features thought to be military or modern in origin were encountered, including slit trenches and pits dug for the disposal of Unexploded Ordnance (UXO).

Slit Trenches

Three subrectangular features, possibly representing slit trenches, were located towards the western side of the site within Trenches 34–36 (Wessex Archaeology 2015a) (Fig. 6.1). The features measured between 2.8 m and 4.2 m long by 1–1.2 m wide and were filled with mixed chalk rubble; barbed wire and metal straps/pieces were identified on the surface of three features. Although undated, these features are thought to relate to military activity on the site.

A fourth feature was partially exposed within Trench 46. Possibly a pit, earlier geophysical survey (Wessex Archaeology 2014a) suggested that it may have been more curvilinear in shape than the slit trenches found within Trenches 34–36. A similar feature was also detected to the northeast during the geophysical survey. Because of the risk of UXO none of these features were subject to excavation.

During the first phase of evaluation (Wessex Archaeology 2015b), a similar but larger subrectangular feature, 903, measuring 5.41 m by 1.57 m and 0.73 m deep was uncovered in Trench 9 (Figs 6.1 and 6.2). A section of iron pipe was found within the pit. The pipe was 170 mm long and formed two tubes, one fitting over approximately half the length of the other with one end flaring out and a reinforced 'string-rim' at the other. It is thought to belong to agricultural or military machinery.

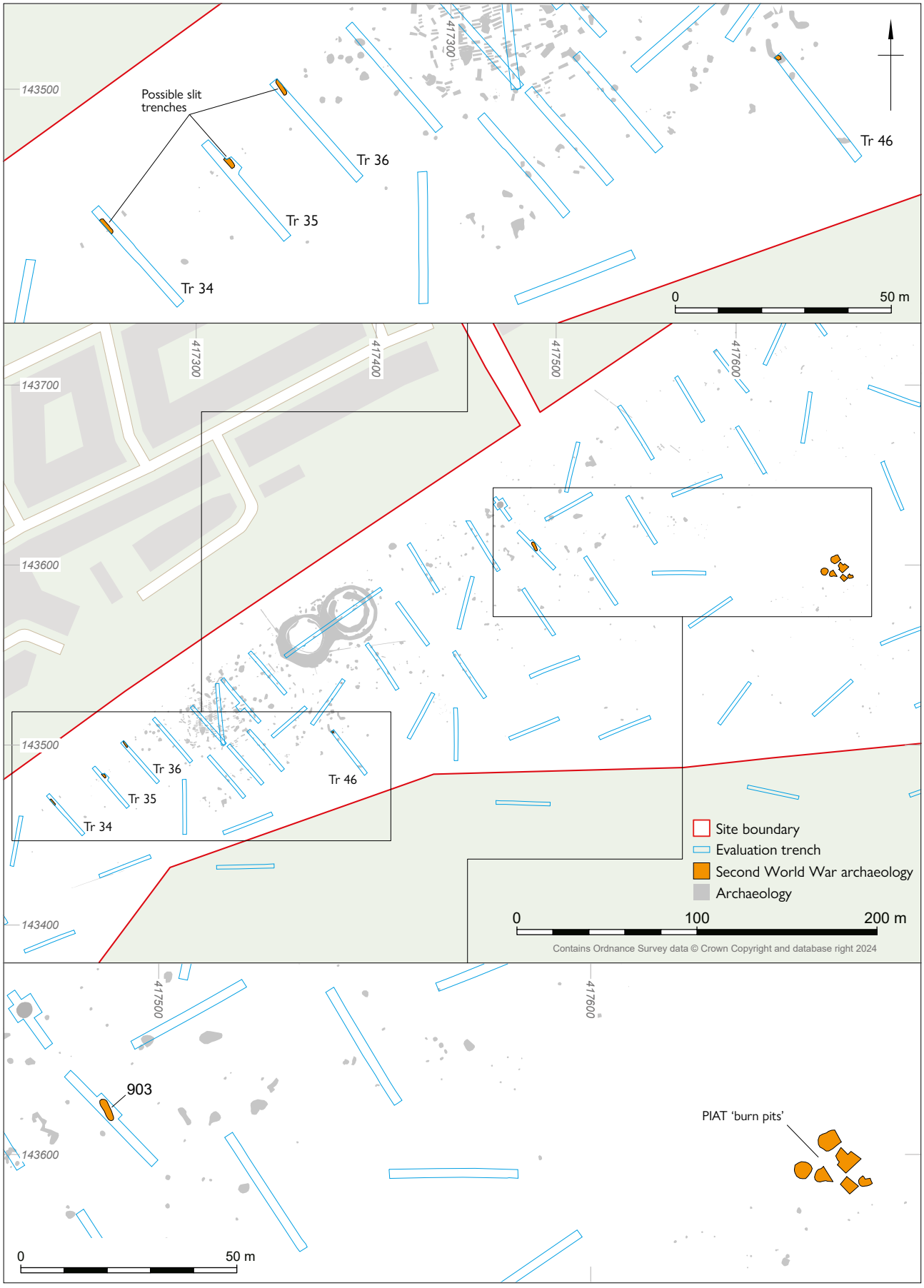


Figure 6.1 Plan for Second World War Archaeology, Bulford Camp

Figure 6.2 Modern feature 903 found within Trench 9, view from the north-west (1 m x 0.5 m scale)

PIAT Training

The remnants of at least 800 launched, fired or spent Projector Infantry Anti-Tank (PIAT) bombs (Fig. 6.3), along with hundreds of flare, smoke and phosphor rounds, were discovered primarily towards the eastern area of the site and were visible in the geophysical survey (Fig. 6.4; Wessex Archaeology 2014a). Along with the ammunition, elements of a tank or other vehicles and a chain possibly used for towing were found.

The impact area for the firing of these PIAT rounds was centred on a number of 'burn pits' (see below) visible on the geophysical survey as an area of white with black dots at its centre (Figs 6.1 and 6.4). The geophysical survey suggests an area of broadly 90 m by 40 m as the epicentre of where most of the PIAT rounds landed. The impact

Figure 6.3 Uncovering PIAT rounds and other metal objects at Bulford

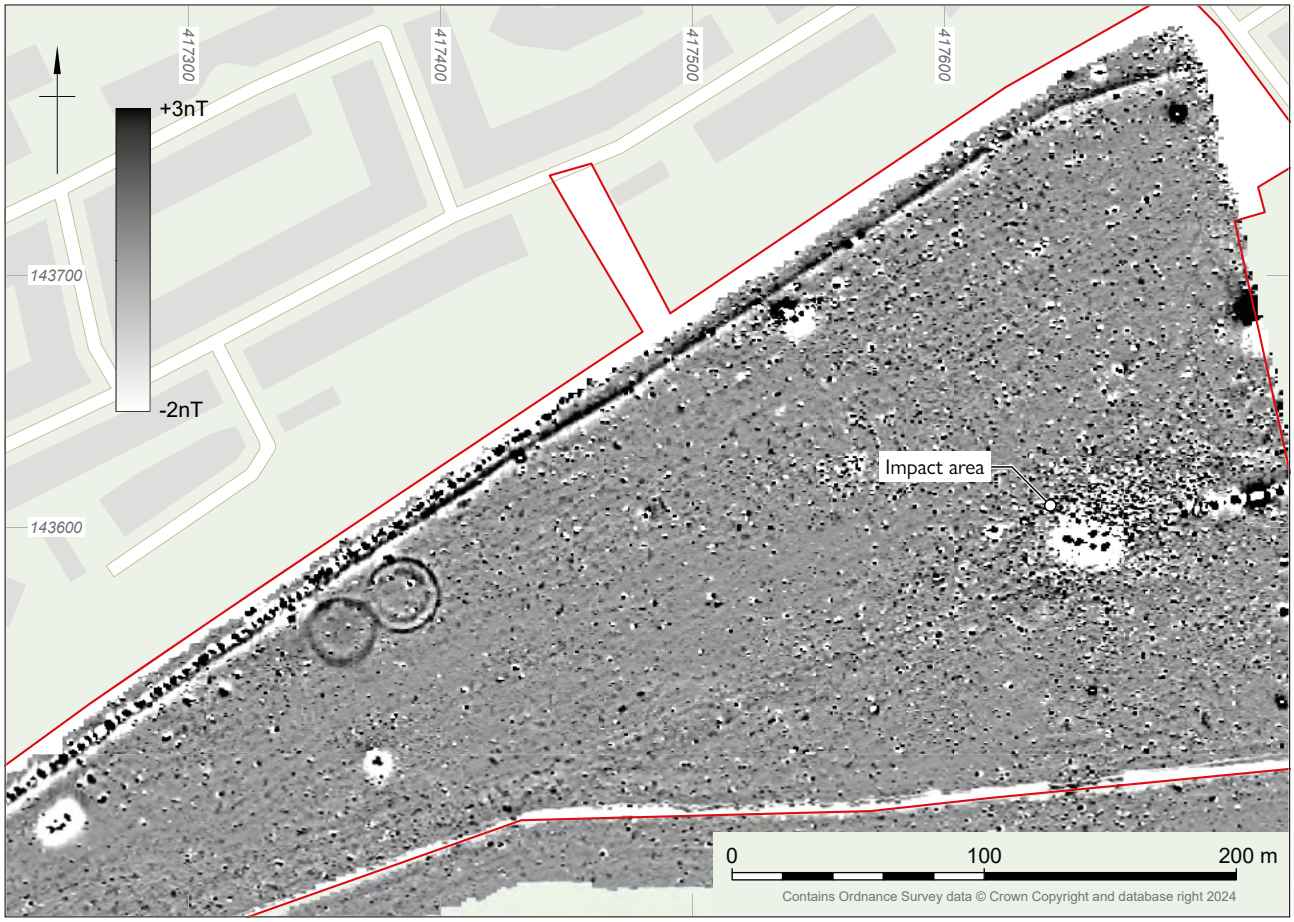


Figure 6.4 Geophysical survey showing the PIAT impact zone within the eastern side of the excavation area

zone can clearly be seen within aerial photography of 9 August or 8 September 1943 conducted by the American military (Fig. 6.5). Interestingly, the PIAT was first issued to British troops and saw action in the later stages of the Tunisian Campaign (November 1942–May 1943) and later had its first confirmed successes during the campaign in Sicily (July–August 1943). The date of the aerial photograph suggests training with this new weapon was taking place at Bulford around the time of these campaigns.

The Small Arms Training Volume 1, Pamphlet No.24, Projector, Infantry, Anti-Tank (PIAT) (War Office 1943) states training on the PIAT required three lessons: 1. Maintenance of projector and description of bomb; 2. Loading, Aiming and Firing; and 3. Handling. The training was designed so that each lesson was split into two 40-minute periods to allow sufficient time for practice. The training manual stated that 'more practice would be needed in likelihood before the men become proficient' and 'as much time as possible, therefore, should be dedicated to firing practice' and 'Moving targets should be introduced later if possible' (*ibid*., 1). The evidence noted above, including armour pieces from a tank and a towing chain, suggests that moving targets were used during training and practice firing at Bulford.

The PIAT was based on the spigot mortar system and its primary function was as an anti-tank weapon (Fig. 6.6). It was 39 inches long and weighed 32 lbs. The main body of the PIAT launcher was tube-shaped with a small trough at the front end for placing the shell. The main body of the tube contained the spigot mechanism, firing spring and the trigger mechanism. The PIAT was designed so that when it was fired the spring would push the spigot rod through the hollow projectile tail, igniting the propellant charge, which launched the round and pushed the spigot back against the pin. This meant the weapon didn't need to be re-cocked – an otherwise time-consuming and prohibitive process during combat. Initial cocking of the weapon could be done in a lying or standing position. The soldier had to put his feet against the shoulder padding and twist and turn the tube to unlock it, before pulling it upwards to load the spring and attach

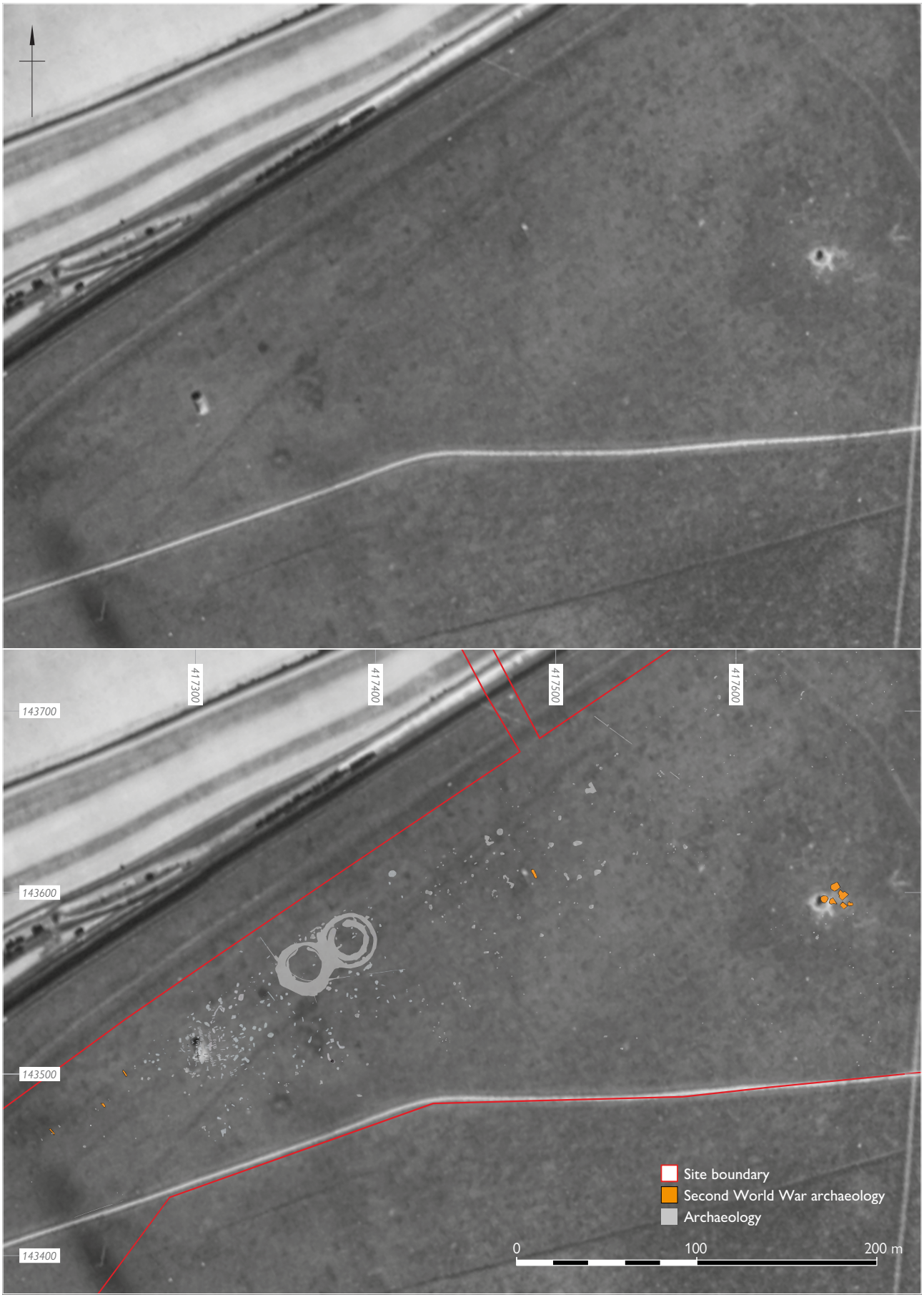


Figure 6.5 Aerial photography of the Bulford site

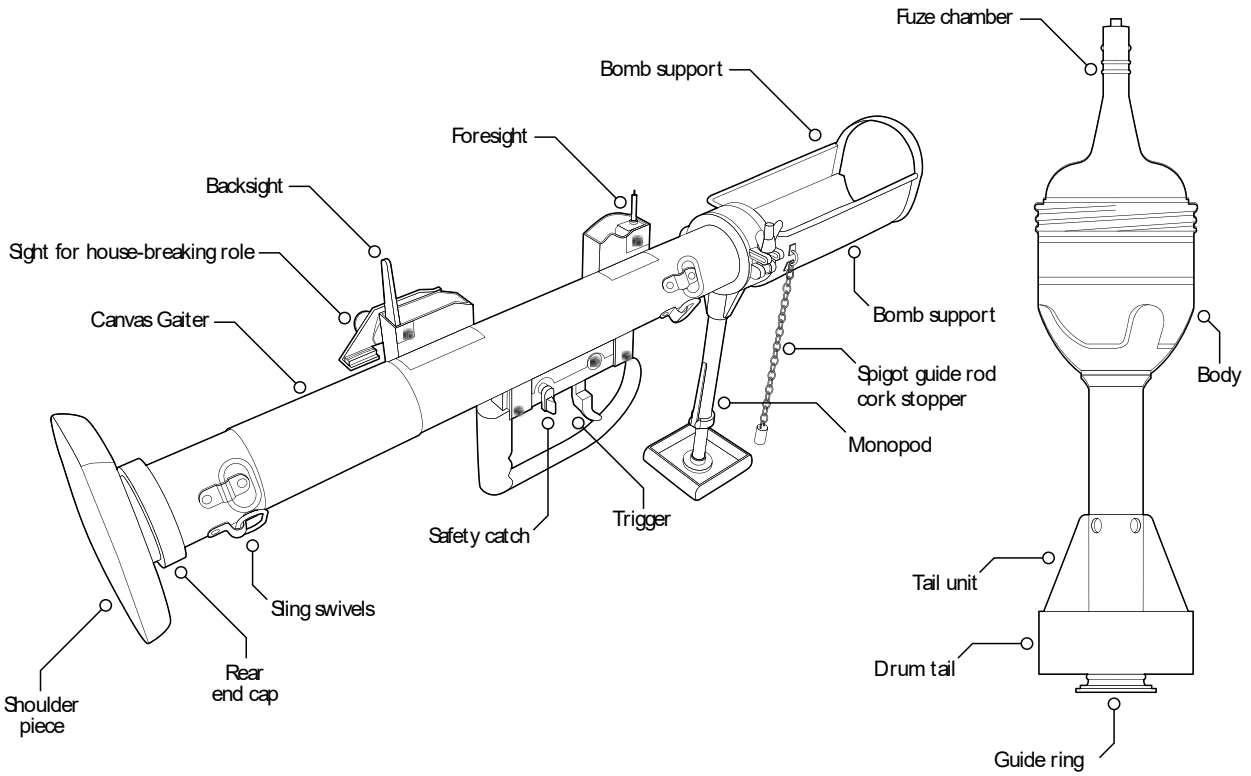


Figure 6.6 PIAT (anti-tank weapon)

it to the trigger mechanism. The tube was then pulled down again and turned to lock it. The spring was particularly strong, making cocking difficult, and it was suggested that the weapon should be already cocked, but not loaded, prior to combat. The PIAT's secondary function, to be used for indirect fire as a mortar or house breaker, meant it had a bipod and later a monopod attached to it. The PIAT required a two-man team to fire it, the first person to fire and the second person to load and assist the firer (War Office 1943, 12).

Within the second lesson, the PIAT training manual (War Office, 1943) describes the preferred way of firing the PIAT from a concealed position, from a slit trench if there is time to dig one, making the PIAT easier to manoeuvre and fire at a moving target, which was preferable given the limited range of the weapon. However, this tactic is only described in the training manual when being used in its primary role as an anti-tank weapon. In its secondary role as a house breaker, no mention of firing from a slit trench is made.

This raises the question of whether the possible slit trenches at Bulford and the remains of the PIAT training area are related. The evidence would suggest possibly not. The PIAT had two different ranges, which depended on how it was being used. The maximum firing range of the PIAT when used as an anti-tank weapon was 115 yds (105.16 m) and when being used as a house breaker, like a small mortar, 350 yds (320 m) (War Office 1943, 1). Initially the PIAT had two rear sight apertures for 70 yds and 100 yds. Attempts were made to improve the PIAT's accuracy and range, and a three-aperture rear sight for ranges 50,80 and 100 yds was added and subsequently altered to have a maximum aperture of 110yds. The PIAT underwent 70 design changes from 1942 to April 1942, the majority to develop its secondary role as a light mortar and improve the PIAT's quadrant sight to 370 yds (338.39 m). Three of the possible slit trenches discovered within the evaluation suggest they were not part of the same training exercise, as the distances exceed the maximum range of the PIAT when being used as a light-grade mortar, Trench 34 being 507 yds (464 m) away, Trench 35, 470 yds (430 m), and Trench 36, 448 yds (410 m). Trench 46 (330 yds or 302 m distance) and Trench 9 (181 yds or 166 m) could both potentially reach the Impact Area with a PIAT

round when used in its secondary function as a light-grade mortar, but it is unknown if a slit trench would have been used when firing a PIAT in this role. It is possible that the slit trenches were being used for PIAT weapon practice, using non-explosive training rounds, which were usually recovered, leaving no archaeological evidence

Normal training involved the use of practice shots consisting of a screw-on steel head to allow a charge to be placed within it. These dummy shots could be recovered and reused. Inert Bombs with non-explosive material were also issued for practice. They had no fuse but were cartridged and could only be fired once. These were the same size and shape as live bombs, so they would fire on the same trajectory. Interestingly and somewhat unusually, practice at Bulford appears to have been predominantly with live rounds. Drill Bombs, issued with a drill fuse but not cartridged, were also utilised and used for exercise purposes (War Office 1943).

Topographically, the impact area for the PIAT shells was located within a coombe towards the eastern edge of the site, at 86.8 m OD. All the potential slit trenches were in an elevated position above this. Trenches 34–36 (96.2, 97.3 and 97.4 m OD, respectively) were located to the west of the excavation area's high point (98.2 m OD); this lack of intervisibility furthers the argument that these slit trenches were not associated with the impact area. Trench 46 (97.5 m OD) and slit trench 903, in Trench 9 (95.25 m OD), were both located to the east of the high point, overlooking the impact area. From these trenches, the impact area was within range of the PIAT's secondary use as a mortar, suggesting that they may have been used for live firing.

Burn Pits

Beneath the epicentre of the PIAT impact area were six discrete irregular features that varied between 2.84–5 m in length and 2.48–4.6 m in width (Fig. 6.1). The full depth of the features was not ascertained because of the presence of UXO. The pits were covered with fragments of metal, including the previously mentioned pieces of a military vehicle or tank, probably used as target practice. It appears the pits had been set on fire, and the metal possibly helped contain any explosions caused by this. The pits likely represent an episode of clearance of the firing range, although the spread of UXO across the impact zone suggests clearance wasn't always undertaken.

If this is what had taken place, it deviated from the advice within *Small Arms Training Volume 1, Pamphlet No. 24 Projector, Infantry, Anti-Tank (PIAT)* (War Office 1943, 20) which states: 'When live bombs are used for training, blinds must be destroyed. The demolition set described in Pamphlet NO.13 is suitable. All instructors supervising such training must be familiar with lesson 10 of that Pamphlet, also the relevant parts of Appendix II'. Within the earlier pamphlet *Small Arms Training Volume 1, Pamphlet No.13: Grenade* (War Office 1942) it explains that should a grenade fail to explode it is called a 'blind', and blinds were not to be left and must be destroyed. This was done through the use of a safety fuse and detonator. The detonator used for the demolition set was the No.8 Mark VII, or No.27. The fuse was meant to be cut to 13 inches. The fuse burned at a rate of 1 inch every 2.5 seconds, giving the user 30 seconds to get behind cover (War Office 1942, 39). In the appendix of the pamphlet, it states that 'Every blind will be accounted for and destroyed before the party leave the range' (War Office 1942, 45). When blinds occurred, all personnel were to stay in cover while the officer in charge approached it alone and detonated it with the detonator and fuse placed up against it. It was also the officer's job to carry out an inspection after the detonation to make sure that it had exploded. The guide states that it is 'absolutely essential that all blinds are dealt with as they occur and not left to the end of practice' (War Office 1942, 48). These rules appear not to have been adhered to at Bulford, as the burn pits appear to have contained many accumulated shells, many of which had not been checked to ensure they had been destroyed.

The History of the PIAT

The Projector Infantry Anti-Tank was developed during the Second World War to help give infantry the ability to defend themselves against German Panzer tanks. British infantry previously used the Boys Anti-Tank Rifle and the British 2-pounder anti-tank gun against enemy armour. The Boys Anti-Tank Rifle, the more mobile of the two weapons, was deemed ineffective by the early 1940s due to improvements in enemy armoured vehicles. The British army sought to develop further anti-tank weapons for infantry. The initial successor to the Boys Anti-Tank Rifle was the Blacker Bombard. The Blacker Bombard was initially designed by Lieutenant-Colonel L. V. S. Blacker and later developed with the assistance of Military Intelligence Research. It was based on the spigot mortar system. The weight of the Bombard meant it was not very transportable and was largely a defensive weapon used mainly by the Home Guard, who received 18,000 of the 32,195 manufactured in total (Moss 2020, 10).

A more offensive anti-tank weapon was required and from 1941 Lieutenant-Colonel Blacker continued developing the hand Bombard. Lieutenant-Colonel Millis Jefferis found a prototype in Ministry of Defence 1 (MD 1) and asked Blacker if he could continue developing it. Both men carried on independently and by February 1942 both designs were taken and tested. Imperial Chemicals Industry (ICI) took over the development and production and used elements of Blacker's and Jefferis's designs and made further modifications. The first 1000 PIAT Mk 1s were delivered in November 1942 (Moss 2020, 18). Some of the many later design changes included painting a white line along the casing to assist indirect fire, removing the bipod and replacing it with a monopod, and putting in a quadrant sight to a range of 370 yds, along with improving the lifespan of the spring for firing the PIAT.

The PIAT in Combat

It is difficult to ascertain the effectiveness of the PIAT and it appeared to have received mixed reviews from soldiers. The PIAT accounted for 7% of all the German tanks destroyed during the initial fighting after D-Day (Moss 2020, 71). However, its overall accuracy may be called into doubt as it only scored 57% in short-range tests conducted in England (Hastings 2016, 237). Along with a number of other awards, seven Victoria Crosses were awarded for actions that directly involved the PIAT (Moss 2020, 72).

The views of the soldiers using the PIAT varied. Sergeant Thornton of D Company of the 2nd Oxfordshire and Buckinghamshire Light Infantry (Ox and Bucks), which was part of the Air Landing Brigade of the 6th Airborne Division that took Pegasus Bridge on the Orne River, said, 'The PIAT is actually a load of rubbish, really. The range is about 50 yards and no more. You're a dead loss if you try to go farther. Even 50 yards is stretching, very much so. Another thing is that you must never, never miss. If you do, you've had it, because by the time you reload the thing and cock it, which is a bloody chore on its own, everything's gone, you're done. It's indoctrinated in your brain that you mustn't miss' (Ambrose 2003, 129).

Vickers Light Tank Mk VII, A17, Tetrarch Tank

During the removal of UXO within the eastern side of the site, parts of vehicles were recovered from around the impact area of the PIAT shells. These included vehicle parts from the six burn pits, likely from a destroyed British armoured tank with shrapnel damage. Among these were the remains of the serial number of the tank (Fig. 6.7). The first line of the number plate appears to have read 'Light Tank Mark VII'. The second line was obscured but may have consisted of a stamped number reading 'M 301' or '2', then the letters W.D.M (likely to mean War Department Ministry), followed by the serial number of the tank, which although unclear may have read 'T9345' or possibly '6'.

Figure 6.7 Serial number plate for Light Tank Mk VII 'Tetrarch'

The final line of the serial number plate is the date and is stamped '1941'.

The serial number plate relates to the British Light Tank MK VII also known as the A17, which later became known as the 'Tetrarch'. Research into the tank with this number unfortunately revealed little, and it is entirely possible that the tank recovered at Bulford may have been used solely for domestic training (Kyle Thomason, pers. comm.). The British Army's record keeping for vehicles in the Second World War was incomplete, meaning that it is not possible to trace individual vehicle movements, a comprehensive system not being introduced until the late 1960s (Jonathan Holt, pers. comm.).

The History of the Tetrarch

The Light Tank Mk VII (A17) 'Tetrarch' (Fig. 6.8) was a light tank originally started as a private venture. It followed on from the Light Tank Mk VI and was designed and built by Vickers-Armstrong. The original prototype was finished in 1937 and would have been designed to fulfil roles such as reconnaissance, observation screening and fire support. The tank was different from the light tanks that came before as it carried a heavier main armament, rather than just a machine gun. It was equipped with a 2-pounder gun and a co-axial Vickers .303-inch machine gun, although the latter was replaced with a 7.92 mm Besa machine gun before production began.

The most notable part of the Tetrarch was its steering system and suspension. It had four large road wheels on each side with teeth fitted to the back wheelset to act as the drive sprocket. Previously, Vickers light tanks had used Horstmann-type sprung bogies but now had a suspension system that used pockets of air for springing and cushions of oil for damping (Flint 2010, 10). The tank had a dual steering system with a steering wheel that not only turned all the wheels but also tilted to bend the tracks

Figure 6.8 Light Tank Mk VII (A17) 'Tetrarch'

(Chamberlain and Ellis 1967). The tank also used the more traditional skid brake turning mechanism for tighter turns. Because of its limited size, the tank only had three crew members: driver, gunner and commander. This meant that either the commander or gunner had to double up as the loader, limiting the tank's usability in combat.

The tanks were made by Metropolitan-Cammell Carriage and Wagon Company. Seventy tanks were initially ordered, increasing to 120 in November 1938 on the provision that they were delivered by 1940. However, after the losses at and withdrawal from Dunkirk, it became clear that light tanks were ineffective against the heavier German tanks. British military focus changed towards larger cruiser and infantry tanks to counter the German Panzers, and the consideration of armoured cars for reconnaissance roles (Chamberlain and Ellis 1967, 5). In the end, 100 Tetrarchs were ordered and a subsequent order for another 120 was made. The exact number of Tetrarchs produced is not known, with most published sources suggesting 177 being the final number (Chamberlain and Ellis 1967, 5–8). However, some official documents suggest a lower figure of only 100 tanks produced and it is thought that this is a more accurate figure (Flint 2010, 12; Knight 2022). The final Tetrarch was produced in May 1942, by which time it was starting to be considered superfluous and outdated.

Twenty Tetrarch tanks were sent to the USSR as part of the Lend-Lease Scheme in early 1942. The British offered to supply 250 tanks a month to the USSR, although this was never fulfilled (Knight 2022, 74). Further Tetrarchs were not offered to the USSR because of their relative scarcity and their growing importance as an airborne tank (Knight 2022, 75). The Tetrarchs did, however, take part in the Battle of Kuban in the Caucasus in 1943. The tanks were generally thought of poorly by the Russians, who considered them complex, clumsy and poorly armoured (Knight 2022, 117; Pasholok 2016).

The Tetrarch did, however, contribute to the war effort in a number of ways and was involved in three operations throughout the war. It was principally used by the 'C' Special Services Squadron as part of Operation Ironclad, the British invasion of Madagascar to stop it from potentially falling into Japanese hands. 'C' Special Services Squadron would eventually become the 6th Armoured Reconnaissance Regiment but was initially formed with two other squadrons to fulfil special operations overseas with an emphasis on an amphibious role. Half of B and C Squadron were merged for the operation and six Tetrarch tanks were taken from 'C' squadron (Flint 2010, 66).

The Tetrarch holds the distinction of being the first tank ever to be flown into combat mounted in a glider, as part of the 6th Airborne's operations during D-Day, (Operation Mallard, a smaller part of Operation Overlord). In June 1942 the 'C' Special Service Squadron became the Airborne Light Tank Squadron (later the 6th Airborne Armoured Reconnaissance Regiment). It had been chosen for this role as the Tetrarchs it used were the only tanks that would fit into a Hamilcar glider. From August 1942 the squadron moved to Salisbury Plain to Tinkers Firs Camp, where they were furnished with 12 more Tetrarchs by the end of September, and then on to Larkhill in October 1942, which would remain their base for the rest of the war (Flint 2010, 78–9).

This is the most likely reason for the Tetrarch tank serial number being found nearby at Bulford. It seems likely that it was the remains of an unserviceable vehicle, as Tetrarchs were in short supply. The aerial photography evidence suggests that the firing range was in use by the late summer of 1943, although it is unclear when the Tetrarch was specifically used as target practice.

A photograph (Fig. 6.9) shows the Commander-in-Chief of the British forces, General Sir Bernard Montgomery, inspecting a Tetrarch tank being unloaded from a Hamilcar at Bulford. The photograph is dated 08 March 1944 and was probably taken on Montgomery's tour of the troops during the preparations for D-Day. Montgomery described his reasoning behind the tour:

> *by the middle of May I had visited every formation in the United Kingdom. I had been seen by practically every officer and soldier who was to take part in the invasion of Normandy, and they had heard me talking to them. I must have inspected and been inspected by, well over one million men. In this way I strove to gain the confidence who were to serve under my command* (Montgomery 1958, 224).

A total of 20 Tetrarchs were flown into Normandy on the evening of 6 June 1944 in Hamilcars, with the objective of aiding the 6th Airborne Division's role to protect the left flank of the Allied forces on the Normandy beaches. Two of the Tetrarchs were lost during the landings and 11 Tetrarchs were immobilised within five minutes of landing, where the canopies of parachutes from the earlier airdrops got wrapped around the tanks' tracks and sprockets (Flint 2010, 116). The Tetrarchs and the 6th Airborne Armoured Reconnaissance regiment were deployed to help protect the airborne bridgehead and then used in the breakout to help push towards the Seine. The Tetrarchs were largely replaced with Cromwells on 6 August, although some may have remained with HQ and Regimental HQ squadrons (Brown 2013). On 27 August, the 6th AARR was withdrawn and shipped back to the UK.

One further contribution the Tetrarch tank made to the war effort was its use for early experiments by Nicholas Straussler to develop amphibious tanks. His design for floating tanks used a collapsible canopy that contained 36 rubber tubes filled from bottles of compressed air. The tank was fitted with steerable propellers powered from the tank engines. When the tank was out of the water the canvas could be quickly dropped and the tank would be ready for battle. This method was given the name Duplex Drive or 'DD'. The amphibious Tetrarch took its maiden voyage in June 1941; later tests were completed on the heavier Valentine tank and the design was then used for Sherman tanks on D-day, which was considered one of the most important elements of the D-Day landings (Chamberlain and Ellis 1967, 12; Fletcher 2006, 43).

Figure 6.9 Commander-in-Chief General Sir Bernard Montgomery accompanied by airborne officers watching a Tetrarch tank being driven out of a glider at Bulford Camp

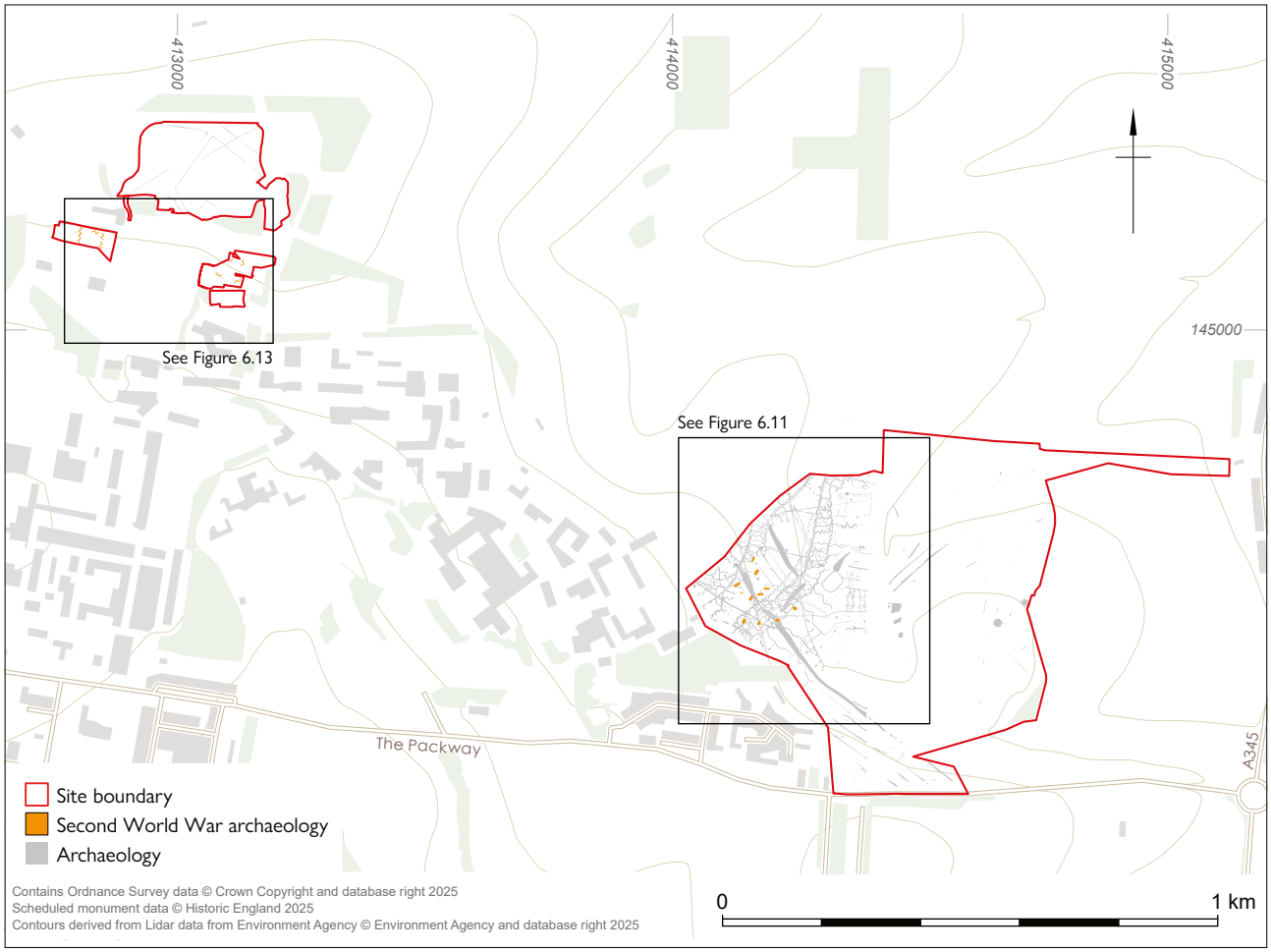


Figure 6.10 Plan for Second World War Archaeology Larkhill Camp

Larkhill

Introduction

From the end of the First World War the practice trenches and tunnels at Larkhill (Fig. 6.10) had begun to be backfilled. The backfilling was underway from 1923, although access to at least some of the tunnels was still possible until the 1950s, as shown by the graffiti in tunnel TJ5 from 1951 and 1956. Once the trenches and tunnels had fallen out of use, the area was taken into use for artillery gun emplacements.

Artillery Emplacements

Eleven emplacements (Fig. 6.11) of varying sizes were located on the western side of the ABP Larkhill development area within the very south-east corner of the Larkhill artillery ranges (Table 6.1). The emplacements consisted of rectangular platforms terraced into the eastern-facing slope. They were lined with corrugated iron sheeting held in place by 'L'-shaped angle iron pickets driven into the chalk. Access to each emplacement was from a ramp generally located upslope, although some had access ramps at both ends. The bases of the emplacements were formed from crushed and compacted chalk, with the addition of crushed cinders and clinker, which appeared to have derived from the clearing out of ovens or furnaces.

No evidence of the artillery weapons that were being used in the emplacements was found during the excavations. However, information on the courses and training that were undertaken at Larkhill during the Second World War suggest a variety

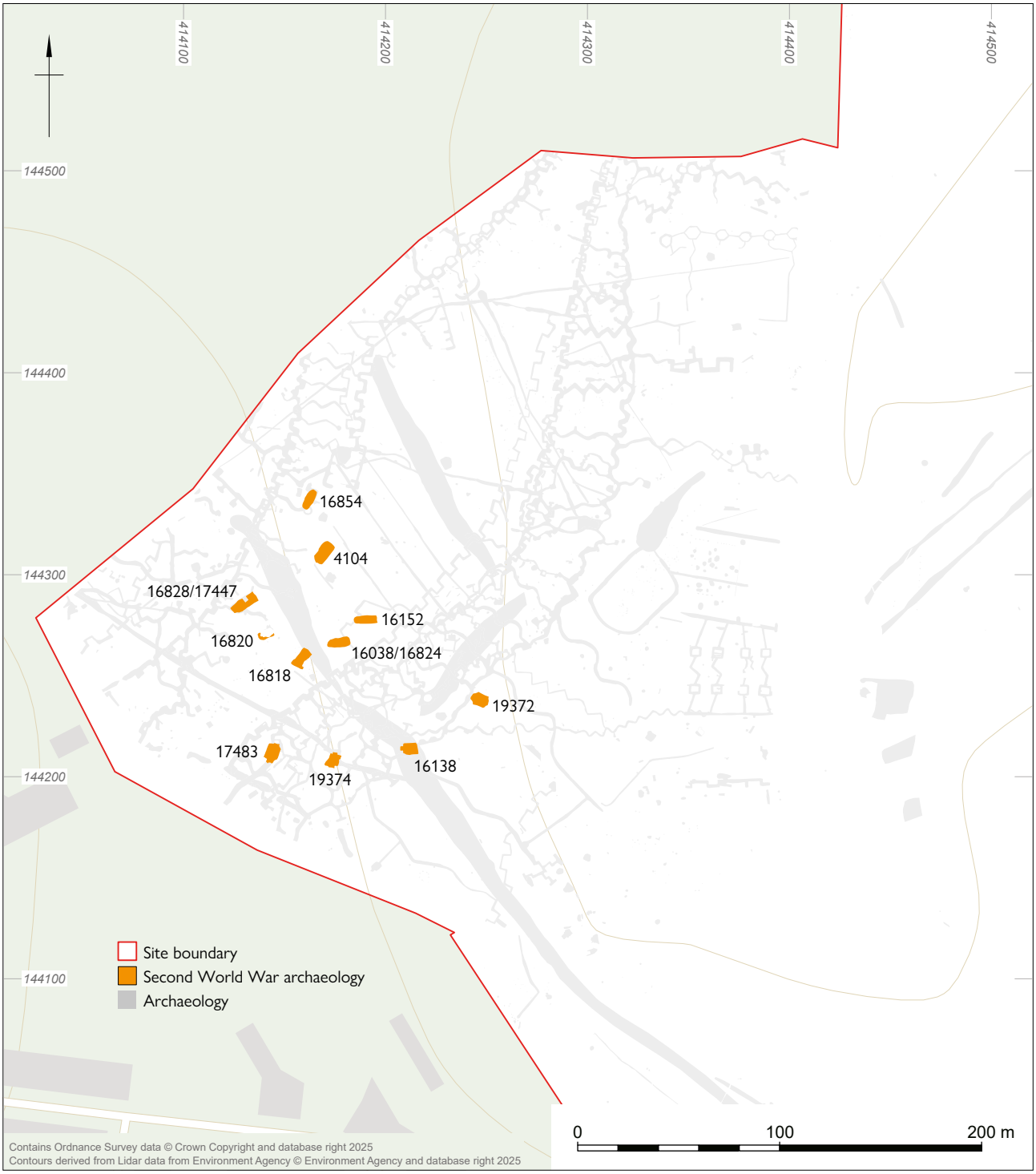


Figure 6.11 Artillery emplacements

of weapons, including 17- and 25-pounder gun-howitzers, 4.5-, 5.5-, 9.2- and 12-inch howitzers, American 75 mm guns, and British Mark 1 18- and 6-pounder anti-tank guns.

Artillery emplacement 17483 contained a dump of modern finds including 37 bottles and vessels and 12 window glass fragments. Numerous modern finds were also recovered from the deliberate infilling deposits (17494 and 17496). These included a Paterson's Camp Coffee bottle (a Glasgow-based company), along with a tin of Romac tyre paint (ON 103).

Table 6.1 Artillery emplacements

Feature number	*Length (m)*	*Width (m)*	*Depth (m)*	*Access ramp*
16854	11.46	3.40	1.50	South-west
4104	12.00	7.30	0.45	South-west
17447/16828	17.00	3.70	1.20	South-west
16820	7.40	3.90	0.40	West
16818	10.60	5.30	1.10	South-west
16038/16824	11.27	4.60	1.20	West
16152	11.45	4.10	0.60	West
17483	10.55	6.60	0.70	South-west and north-east
16138	8.62	5.91	0.50	West
19372	9.00	6.40	0.48	North-west and south-east
19374	7.83	6.21	0.4	North-east and south-west

Prior to be being backfilled, east–west artillery emplacement 16038/16824 had the remnants of an Ariel motorcycle placed within it. Only the fuel tank, exhaust, headlight and front and rear mudguards survived, with licence plate KUC 834. Information provided by an Ariel motorcycles enthusiast group suggest the KUC registration marks were issued in London between May 1949 and November 1950, with the 834 dating from the mid- to late 1950s. The general consensus is that the remains come from an NG Deluxe or an NH Hunter 350 cc machine, although an Ariel Square 4 was also suggested. The headlight is perhaps of a slightly later date and could be a modification made by the owner. The evidence suggests that it was deposited at some point in the 1950s or later, when the gun emplacement was still open.

The dismantled remains of a 1932 MG J2 sports car (Fig. 6.12) were found within emplacement 19372. The MG (chassis stamp J2192) left the factory in 1932 and was owned by a Mr J. H. Howard of Retford in July 1934. No other owners are known. The car survived until probably the mid-1960s and the introduction of the MOT, at which point many cars that had been 'patched up' in the 1950s were scrapped. The engine found with the car was non-MG, possibly a Ford side valve, fitted at some point by welding extra brackets to the chassis and mating it to the MG gearbox. There was also frequent evidence of common 'bodged' repairs, which support the theory that the car was disposed of at the introduction of the Ministry of Transport's Test.

It is possible that the original intention had been to carry out further work on the vehicle: the engine and gearbox had been removed and were placed alongside the car, along with the seats and prop shaft. The car still had its standard bodywork and metal chassis in place. The tyres were of 1950s /60s date (Hawkes pers. comm. – MG J2 REDISCOVERED - Classics World). Only 2083 MG J2 sports cars were ever produced.

Patrick Shannon related the story of how the MG sports car ended up in the artillery emplacement to classicandsportscar.com:

> *As a child, we came to live at Larkhill in the mid-1960s. Larkhill was mostly tin huts and the gun pits lined with tin. In the winter they would fill with snow, and we would jump in them for fun.*
> *The camp at the time was open and we could wander anywhere we wanted. Near to our*

Figure 6.12 MG J2 sports car

houses were some huts and well behind them, out of view to most people, was an old sports car. It was open top, and I think it was red. Our gang of boys used to play in it because it was easy to get into and we would jump in, push it down a hill and push it back up again. One day some of the bigger boys decided that the small hill was too tame, and we decided we would go for the big hill right across the fields towards the sports field. I don't really know how we were ever going to push it back up, but we small boys just did as we were told. The big boys steered, and we pushed off with all of us trying to jump in it as it gained speed. As it got faster it hit bumps, things fell off and boys jumped or fell out. I was walking along behind it because I had fallen off and I saw it go into one of the gun pits and sort of crash into the side of the pit. No one was hurt and we did try to push it out a few times, but we just could not do it so in the pit it stayed. No more rolling it down the hill but we still played in it. No one came looking for it and no one even seemed to notice that it was no longer at the back of the huts. Sometime afterwards the old huts were knocked down and the new build started. The old gun pits were filled in and I seem to remember that the car was still in the pit when they filled it in.
(MacLeman 2017: https://www.classicandsportscar.com/news/mystery-salisbury-plain-mg-solved).

Scan this QR code to view a 3D model of the car on Wessex Archaeology's Sketchfab page

Excavations north of Larkhill Camp

Excavations to the north of Larkhill Camp (Fig. 6.13; Wessex Archaeology 2018a) revealed further 20th-century remains. A partially revealed structure in Area 2003 (20215) consisted of three larger rooms that were the width of the building, and a smaller fourth room that was located in the south-west corner of the westernmost room. The building was approximately 11.5 m long and 6.35 m wide and survived as a series of concrete footings overlain with cement-bonded red brick. The eastern room was 4.2 m wide internally, while the central and western rooms had internal widths of approximately 3 m. The small internal room within the western room had internal dimensions of 2.6 m by 1.8 m. The concrete footing of the building measured between 0.65 and 0.72 m wide. No evidence remained of an entrance.

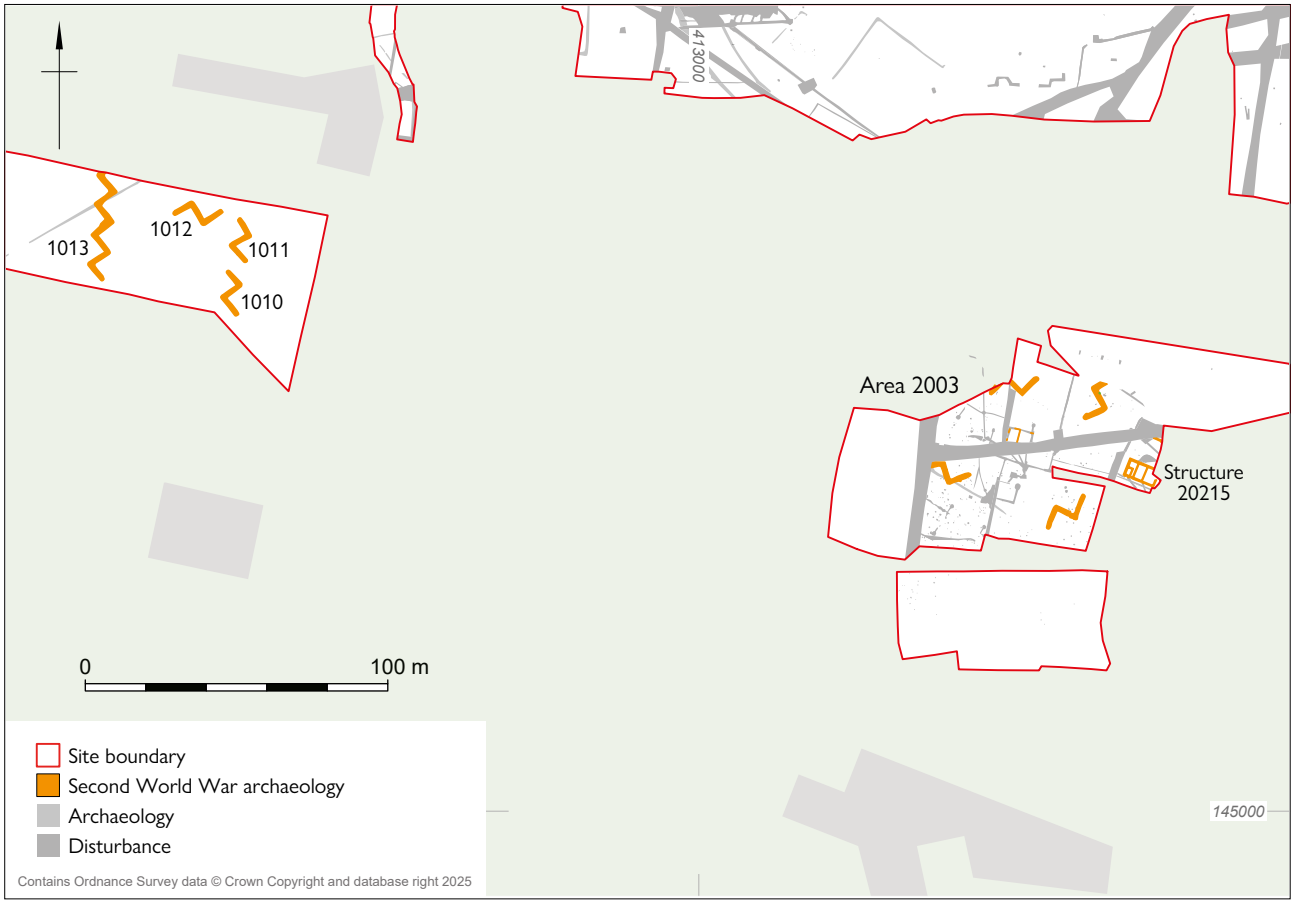


Figure 6.13 Excavations north of Larkhill Camp

The partial remains of a second building were located approximately 32 m to the north-west of structure 20215. Very little of the structure survived, although it had a close resemblance to structure 20215. The 1925/26 Ordnance Survey (Wessex Archaeology 2014b) depicts the area as open ground, with a series of buildings to the south and a recreation ground to the north. By 1948, the Ordnance Survey (Wessex Archaeology 2014b) shows the area occupied by a series of buildings of which these two structures are a part, located around an open space. It seems likely this is evidence of the development of the camp with more permanent structures in the interwar years or during the Second World War, when the camp became the focus of artillery training and had begun to expand.

A group of four nearly identical military 'dog-legged' trenches was identified within this same area. Three similar trenches (1010–1012) were also identified 200 m to the northwest during a watching brief in 2005 (Wessex Archaeology 2005), along with a much longer north–south-aligned zig-zag trench. The trenches were 1.6 m wide and approximately 16 m long (with a total length of 22 m), while the long zig-zag trench was visible for approximately 42 m within the excavated area. Because of their modern origin the features were not excavated but investigation revealed they were straight sided. This, coupled with their width of 1.6 m (approximately the width of a mechanical digger bucket), suggests they were machine-excavated trenches. It seems likely they represent machine-cut emergency air-raid shelter trenches (Martin Brown, pers. comm.), positioned to provide rapid and accessible shelter to the occupants of the buildings depicted on the 1948 mapping. The 'dog leg' would have prevented the blast from a direct hit extending through the entire trench, therefore offering more protection for the occupants. Similar examples of Second World War trenches have been identified in Savernake (Bob Clarke, pers. comm.).

Evidence for athletic activity was found in Area 2002 to the north of Area 2003. The remnants of a runway take off and sand pit for long jump were discovered along with a

9 m-diameter circle of square postholes that match the dimensions for a discus/hammer cage. Although undated, these are thought to post-date the First World War.

Conclusions

The evidence uncovered during the archaeological investigations revealed small snapshots of the undertaking of the Second World War. Training was ramped up and developed, shown by the changing function of the sites since the First World War. Training for new technologies such as the PIAT were undertaken on Salisbury Plain at Bulford, before the weapon was deployed across multiple theatres of operation. The gun emplacements at Larkhill were the archaeological signs of training being undertaken, although some defensive purpose cannot be fully discounted. These new technologies were used to a greater and lesser extent in theatres of war, the Tetrarch tank being the first tank to be flown into combat, as well as being used to help develop amphibious tanks, although ultimately the tank was seen as obsolete by the time it went into service. A small window into post-Second World War activities illustrated the abandonment of the sites, with Bulford returning to pasture, while at Larkhill the gun emplacements at least were left open and became repositories for unwanted machinery and a playground for mischievous children.

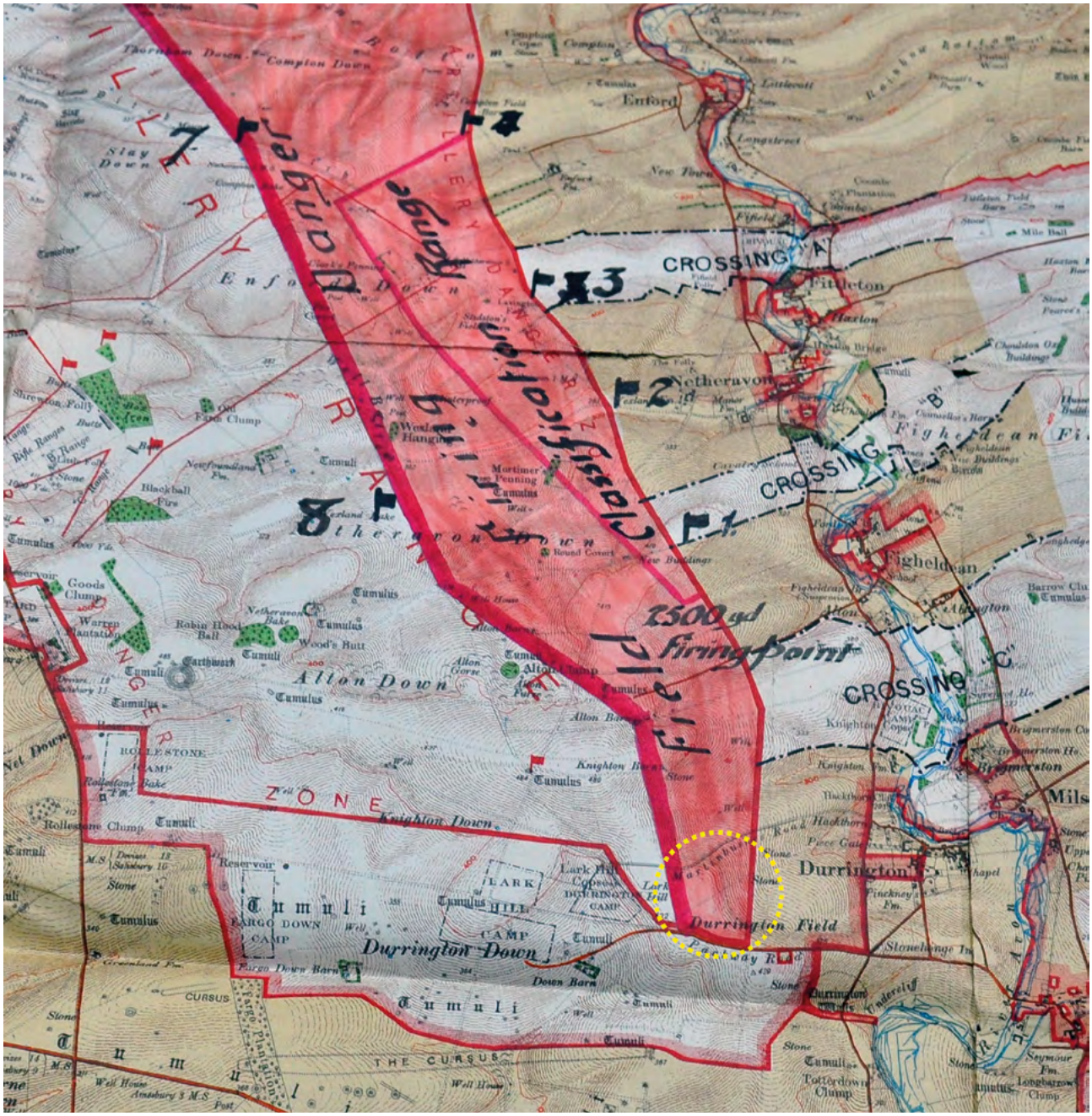


Figure 7.1 The site area (marked by a yellow dotted circle) in the context of a 1923-dated map showing War Department (WD) boundaries (TNA, WO 32/21838)

Chapter 7
Military Artefacts

by Mark Khan AIExpE

Introduction

This chapter details the military finds resulting from archaeological excavations that took place on the First World War training trench system at Larkhill, as part of the Army Basing Project in Wiltshire during 2016–2018.

The majority of the military finds comprised of spent .303-inch ammunition cartridges, predominantly rifle grenade cartridges and blank practice cartridges. A small assemblage of .303-inch cartridges from 'live' or ball ammunition, and inert 'drill' rounds were also recovered. In addition to .303-inch rifle cartridges a small number of fired .455-inch Webley Revolver bullets were also recovered.

Site Area – Militarised Landscape

To help place the military finds in context, an analysis of the historic military use of the landscape and environs related to the site has been undertaken. The site area has been in military use since 1899 and is located within a 1923-dated War Department (WD) map (Fig. 7.1; TNA WO 32/21838) defined as part of a field firing area. Mapping dated 1923 details five disused rifle range butts located approximately 1 km north of the site area. Analysis of LiDAR imagery details linear firing points located at distances of 200 and 300 yards in context to the butt locations. The fifth disused butt located to the east does not evidence any firing points.

Figure 7.2 The varying condition of three .303 copper-alloy cartridge cases

Finds Condition and Methodology

The condition of both ferrous and copper-alloy finds varied; some were extremely corroded and some remarkably well preserved. The copper-alloy finds evidenced heavy accretion which made cleaning (when required) extremely labour intensive. Detailed in Figure 7.2 are three .303-inch calibre (7.7 mm) cartridges evidencing the different stages of preservation. The cartridge on the left shows the most extreme example of accretion, the cartridge in the centre evidences better preservation and the cartridge on the right is an extremely well-preserved example – the brass of which the cartridge is made can be clearly seen.

All artefacts were examined, and when necessary, light mechanical cleaning was used to reveal any identifying features. Artefacts were recorded within context and photographed to create the images used in this chapter.

Small Arms Ammunition

Ammunition can be identified using different methods, including analysis of shape, size and form. For British ammunition this is aided by markings applied to the base of the cartridge (Fig.7.3). This includes headstamp marking, which includes details of the manufacturer, year of manufacture and ammunition type, and the colour added to the annulus (the groove surrounding the primer).

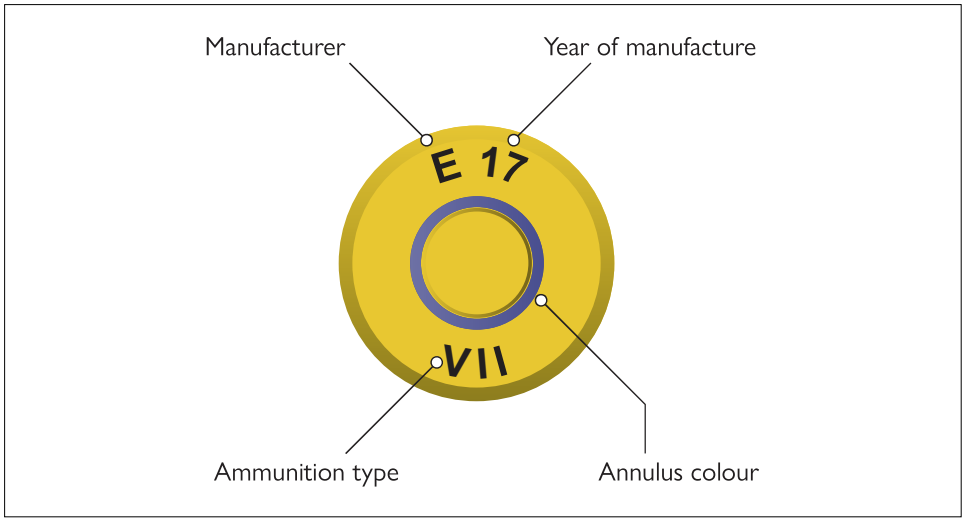


Figure 7.3 Explanation of information as marked on British small arms ammunition

.303-inch Cartridge Assemblage

The .303-inch cartridge assemblage comprised 245 examples. Each was examined and detailed accordingly by identity, maker, type, context and number of each type found.

Three types of .303-inch cartridge were represented:

- blank cartridges (76 or 31% of total);
- rifle grenade cartridges (149 or 61% of total);
- ball cartridges (20 or 8% of total).

The majority (94%) of the .303-inch cartridges in the assemblage were date-stamped between 1914 and 1917. Of these, 60% were date-stamped to 1917, and 21% to 1915 (21%). Notably only 4% were dated to 1916, and 8% were stamped 1914. Pre-war cartridges comprised four date-stamped to 1913 (2%), eleven marked 1912 (4%) and one cartridge stamped 1910. There were no .303-inch cartridges in the assemblage date-stamped to 1918 or later (Khan 2023).

Ball Ammunition

Ball ammunition (Cartridge, S.A., Ball, .303-inch, Mark VII. Approved 3/11/1910) represents the standard bullet as fired by rifles and machine guns during the period. It comprises of a metal jacket with a lead filling, with a tip inserted at the front of the bullet composed of differing materials.

Mark VII ball ammunition cartridges found at the site were manufactured between 1912 and 1916 and originated from a variety of locations in England and North America:

- Dominion Arsenal, CANADA, 1912 (8 cartridges) and 1913 (2 cartridges);
- Birmingham Metal and Munitions Company, 1915 (2 cartridges);
- US Cartridge Company, USA, 1916 – US commercial contract ammunition – American First World War Contact Pattern (2 cartridges);

- Rudge Whitworth Ltd, Coventry, 1916 (4 cartridges);
- Kynoch, Birmingham, 1916 (1 cartridge);

(after Labbett and Mead 1988).

Blank cartridges (.303-inch calibre)
These are used for dry training; they emit a loud report when fired and simulate live firing with weapons. Blank ammunition is non-lethal but can cause injury if fired at close range. They are clearly identified by the crimped case mouth. Some do feature the proper design designation marked on the headstamp, but most were made from rejected Mark VII cases originally destined for other types of .303-inch ammunition and retain this information. Some examples evidence no headstamp at all. If the neck of the cartridge is missing it is possible to identify whether the round was blank by examining the firing pin strike on the primer. When live ammunition (with a bullet) is fired, extreme pressure is exerted on the bolt face of the gun as the bullet leaves the barrel. This is evidenced by a 'flat' primer. When a blank is fired, as there is no bullet, the pressure on the bolt is much less and this normally leaves a primer strike which is much more 'dished' in appearance.

Blank ammunition cartridges found at the site were manufactured between 1910 and 1917 and originated from a variety of locations in England:

- Birmingham Metal and Munitions Company, 1910 (1 cartridge – Mark VI ball case);
- Birmingham Metal and Munitions Company, 1912 (1 cartridge);
- Royal Laboratories (Woolwich Arsenal), 1913 (1 cartridge);
- King's Norton Metal Company, Birmingham, 1913 (2 cartridges);
- Greenwood and Batley Ltd, Leeds, 1914 (3 cartridges);
- King's Norton Metal Company, Birmingham, 1914 (3 cartridges – 2 of which were over-stamped with D 'broad' arrow);
- Eley Brothers, Edmonton, 1914 (58 cartridges);
- Royal Laboratories (Woolwich Arsenal), 1914 (12 cartridges);
- Greenwood and Batley Ltd, Leeds, 1915 (5 cartridges);
- Eley Brothers, Edmonton, 1915 (28 cartridges);
- Birmingham Metal and Munitions Company, 1915 (8 cartridges);
- Royal Laboratories (Woolwich Arsenal), 1915 (10 cartridges);
- Birmingham Metal and Munitions Company, 1916 (1 cartridge);
- Birmingham Metal and Munitions Company, 1917 (1 cartridge);
- King's Norton Metal Company, Birmingham, no date stamp (1 cartridge).

The majority of the blank ammunition cartridges recovered were manufactured by Eley Brothers (64%), with the Royal Laboratories (17%) and the Birmingham Metal and Munitions Company (9%) being the next most prevalent manufacturer.

By far the most common period of manufacture for the Larkhill assemblage of blank ammunition cartridges was 1914–15, of which 57% of the cartridges dated to 1914 and 38% to 1915.

Grenade blank cartridges
Grenades projected from a rifle barrel were introduced in 1915. Two types were utilised (Landers 2001):

- A steel rod was fitted to the base of the grenade, enabling it to be inserted into the barrel of the rifle. A blank cartridge was then used to project the grenade from the barrel. Various types were adopted. When this method was used to fire a Mills grenade, a special fitting (a grenade cup) was used to hold the grenade and hold the safety lever in place until the rifle was fired.
- For grenades not fitted with a rod, a cup discharger was fitted to the end of the rifle.

Grenade blanks designed to fire grenades fitted with a rod or fired from a cup discharger are similar in construction to bulleted (ball) cartridges but do not have any stab crimps in the neck that secure the bullet to the cartridge case. The blanks recovered came from three manufacturers:

- Eley Brothers, Edmonton, 1914 (6 cartridges);
- Eley Brothers, Edmonton, 1917 (2 cartridges);
- Royal Laboratories (Woolwich Arsenal), 1917 (130 cartridges);
- Birmingham Metal and Munitions Company, 1917 (12 cartridges, stamped J 17 VII);
- Birmingham Metal and Munitions Company, 1917 (7 cartridges);

(after Temple 1986).

Figure 7.4 An example of a grenade blank showing the chemical blackening of the top part of the cartridge (left) and two found cartridge cases showing the same chemical blackening

Figure 7.5 Drill rounds found during the excavation

The clear majority of the grenade blank cartridges recovered from Larkhill were manufactured at the Royal Laboratories (Woolwich Arsenal) in 1917. Six cartridges date-stamped to 1914 (Eley Brothers) were recovered, but the remaining 96% of cartridges were stamped 1917.

Some examples of grenade blanks were in exceptionally good condition and after light cleaning were able to be identified specifically as Cartridge S.A. .303-inch Rifle Grenade 30 Grains Ballistite Mark I, because of the evident chemical blackening of the top of the cartridge case and the absence of neck stab crimps (Fig. 7.4).

Drill Rounds

Drill rounds are inert rounds used for training. They consist of an empty case and empty primer socket with a bullet fitted (Fig. 7.5).

Only three drill rounds were recovered from the site:

- Eley Brothers, Edmonton Cartridge, S.A., Dummy, Drill, .303-inch, Mark III, Re-used Cartridge S.A., Ball, .303-inch Mark VI case;
- Cartridge, S.A., Dummy, Drill, .303-inch, I.P, Kirkee Arsenal, India, July 1914. Re-used Cartridge S.A., Ball, .303-inch Mark VI case;
- Cartridge, S.A., Dummy, Drill, .303-inch, Mark III, Birmingham Metal and Munitions Company/Nobel Explosive Co., 1915. Re-used Cartridge S.A. Ball, .303-inch Mark VII case;

(after Labbett and Mead 1988).

.303-inch Charger

A single .303-inch charger was found. These chargers held five .303 rounds, which enabled them to be inserted into a charger guide above the magazine of a rifle, allowing the rounds to be pushed into the magazine. Ammunition issued in chargers was stored in cotton bandoliers which held 50 rounds.

Figure 7.6 The .445 bullets, shown with a reference example (right)

.455 Webley Revolver Bullets

Seventeen fired .455-inch Webley Revolver Mark II bullets were found at the excavation. Rifling marks (seven grooves, right-hand twist) on the bullets indicate they were fired from a Webley pistol (Fig. 7.6).

The bullets recovered were in excellent condition with minimal signs of impact deformation, suggesting they were fired into a relatively soft medium, such as a sand constructed butts; consequently, it is probably reasonable to assume they are associated with the miniature range known to have existed at the site, situated to the rear of the southern Red Line practice trenches.

.455-inch ammunition (Enfield Mark II .455-inch) was introduced with the Webley Revolver in 1887. The earlier Enfield rounds were succeeded by Webley Mark I .455-inch rounds in 1891; these initially employed black powder as the propellant, but within a few years this was replaced by cordite, and by 1897, Webley Mark II .455-inch cordite ammunition was in service. By the later part of the 1920s, .455-inch ammunition was being replaced by .380-inch rounds, and by 1932 the smaller-calibre .380-inch Webley Revolver had become the primary service side arm and remained so until after the Second World War (Maze 2012).

Consequently, although there is no fixed date for the bullets recovered, we can suggest these Webley Revolver rounds were most likely fired sometime between 1897 and 1932.

Light Weapons

Grenades

A number of Mills grenade parts were found during the excavation. The Mills grenade is actually a collective term for three separate marks of grenade, all of which look very similar and function in the same way. The No. 5 grenade was designed to be thrown by hand. It was followed by the No. 23, introduced in summer 1916. The No. 23 (Grenade, .303-inch rifle, No. 23 Mark I) was introduced to enable it to be fired from a rifle over much longer distances, by utilising a 5 1/2-inch-long rod which was screwed into a strengthened base plug (made of solid brass or iron). The rod could then be inserted into the barrel of the standard service rifle and fired by means of a specially manufactured cup holder fitted to the rifle or simply supported by the standard sword

SYLLABUS OF TRAINING

1st. 2nd. and 3rd weeks.

Physical-training	6	hours per week.
Musketry	10	" "
Drill, Close order and rifle exercises	10	" "
Bombing	5	" "
Bayonet Training	5	" "
Anti-Gas	1	" "
Fitting equipment	1	" "
Route marching	2	" "
TOTAL	40	

Figure 7.7 An excerpt from the war diary of the 10th Australian Training Battalion who were based at Durrington in August 1917. The weekly training syllabus details five hours per week allocated to bombing training

bayonet or a combination of both. The grenade was fired by means of an un-bulleted .303 cartridge. Initially the standard .303 ball cartridge was utilised by removing the bullet and using 45 of the cordite propellant strands with the case mouth sealed with candle wax. Later a special grenade blank cartridge was introduced and packed separately in boxes of 120 with the firing rods. The No .23 could also be thrown as an ordinary hand grenade.

The grenade that would become the best and longest serving was the No. 36. Introduced in the middle of 1917 as the Grenade, .303-inch rifle, No. 36 Mark I, this grenade was to meet a requirement to increase the range of the rifle-projected grenade. With the No. 23 grenade, the short rod only achieved a relatively short range (95 yards). A longer rod would have produced greater range but increased the recoil and the stress on the firing rifle would have been too great, so a new design of discharger cup was introduced, along with a different method of firing the grenade.

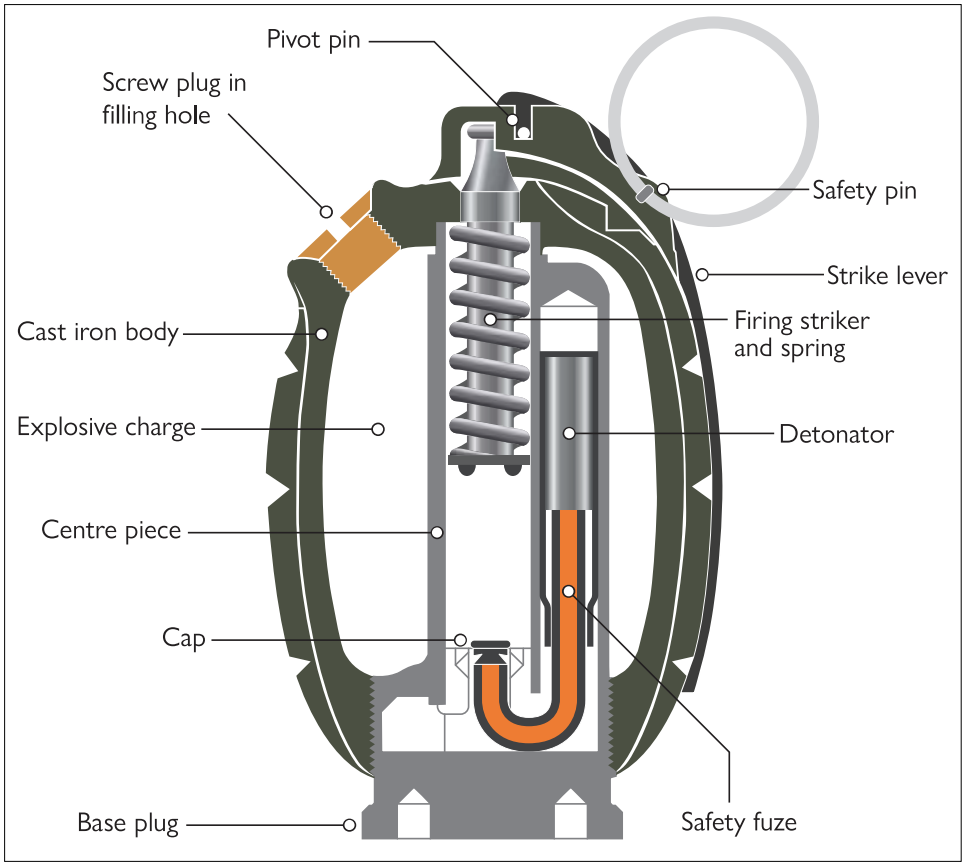


Figure 7.8 The structure of a Mills grenade

Figure 7.9 Grenade pins found during the excavation. All were ferrous construction and in varying condition – (left) poor, (centre) partial, (right) complete

A circular steel plate was enabled to be screwed onto the base plug of the grenade. When dropped into the discharger cup, this acted as a seal (or gas check) and enabled the grenade to be successfully projected over increased ranges (up to 200 yds) without the disadvantages of the long rod.

Training with grenades was taught to soldiers by instructors specially trained in the use of grenades. These instructors were taught at what were known as Bombing Schools, of which a number were set up around the country (Fig. 7.7).

Mills grenade parts were made by different manufacturers, then assembled and filled with explosive at a number of factories in the UK. A number of Mills grenade parts were found during the excavation; an overview is provided here to show the context of these parts (Fig. 7.8).

Grenade safety pins
Thirty-four grenade safety pins were recovered from a single context with the site. All were ferrous in construction and were recovered in varying states of decay (Fig. 7.9).

Grenade fly-off levers
A number of different types of grenade fly-off lever were recovered, including types common to both the No. 5 and No. 23 grenade, as well as the type used with the No. 36 grenade. The finds were generally in good condition. The No. 5/No. 23 grenades were represented by three different types, one of which represents an early type with a pierced hole through which the safety pin was inserted (Fig. 7.10).

Grenade cup discharger gas checks
At the excavation site a number of cup discharger gas checks were found. These steel discs are screwed on to the base plug. The No. 36 grenade was specifically intended to be fired from a cup discharger, and the base plugs were all bored and threaded to allow the gas check to be fitted.

Grenade striker and striker spring
Only two examples of these were found. These are contained within the striker sleeve. When the safety pin is removed and the grenade thrown, the striker which is held under spring tension is released and strikes the detonator, initiating the grenade's fuze.

Figure 7.10 The different types of grenade fly off levers. The early version is on the left. In the centre are two different No. 5/No. 23 designs, with a No. 36 lever on the right

Grenade gas checks, base plugs and rods

All the base plugs were from No. 5 Mark I grenades and were manufactured in either August, October or November 1916, by Morum & Company, at the Clock Tower Works, Lewisham. These base plugs are notable as they are drilled and threaded to allow a rod to be fitted. The No. 5 grenade was not officially designated as a rifle grenade, so this type is an unusual find.

The rods recovered comprised different lengths, and it is possible from the rod length to define which type of grenades they were associated with. The different rod lengths were 5.5 inches, 10 inches and 15 inches (Landers 2001):

- the 5.5-inch rod was used with the No. 23 grenade and with No. 5 grenades fitted with a base plug drilled and threaded to allow a rod to be fitted;
- the 10-inch rod was used with the No.3 grenade and the No .20 grenade;
- The 15-inch rod was used with the No. 22, the No. 24, the No. 27, the No. 31, the No. 32, the No. 35, the No. 38, the No. 39 and the No. 51 grenades.

Figure 7.11 The base plug tool found during the excavation, with a reference example

Mills-type grenade – base plug tool
One example of this elegantly simple tool was recovered (Fig. 7.11). The base plug tool comprised a bent metal bar forming a 'U' shape, the ends of which were tooled to fit the base plugs of No. 5, No. 23 and No. 36 grenades, and were used to remove or tighten the plug which sealed the detonation mechanism (see Fig. 7.8). Base plug tools were supplied one per box of grenades, attached to the inner side of the hinged lid.

No. 27 smoke grenade
The partial remains of two No. 27 grenades were found – a grenade body and the top of a second example. The No. 27 grenade was announced in the list of changes on 12 December 1916. It could be used as a hand-thrown grenade or projected as a rifle grenade. A striker initiated a flash which then ignited the phosphorus contents, producing a dense cloud of smoke that could be used to screen troop movements from the enemy (Landers 2001).

Figure 7.12 Royal Warwickshire Regiment cap badge

Badge, Button and Shoulder Title

Cap Badge

A Royal Warwickshire Regiment cap badge was found (Fig. 7.12). This badge has no specific context in relation to a particular period as it was used over a long historical timeframe. However, a unit known to have been at Larkhill during the First World War was the 53rd (Young Soldier) Battalion. Originally a basic recruit training unit based at Chisledon, it was part of 22nd Reserve Brigade. On 31 October 1917, when that Brigade was broken up, it went to 8th Reserve Brigade at Larkhill (see 'Royal Warwickshire Regiment' at the Long, Long Trail).

Button

An Army Service Corps (ASC) button was found at the site (Fig. 7.13). The ASC provided vital logistics support to the Army. The Corps was given the royal prefix in 1918

Figure 7.13 Army Service Corps button

in recognition of its service during the First World War and the descendant regiment today is the Royal Logistic Corps. The button has smooth surfaces indicating wear from repeated polishing. It is marked on the rear 'Firmin & Son London'.

Shoulder Title

Two brass shoulder titles marked 'Canada' were found at the site (Fig. 7.14). These were worn on the shoulder straps on service jackets. The titles found were very degraded – usually associated with brass items having been in a fire or being burned.

Figure 7.14 a. The shoulder titles found; b. A First World War Canadian soldier pictured wearing a 'Canada' shoulder title. Image: Canada. Ministère de la défense nationale/Department of National Defence. Bibliothèque et Archives/Library and Archives Canada, PA-002352

Figure 7.15 The remains of the torch

Other Finds

20 mm Oerlikon Cartridge Case

A single fired case was found at the excavation site. It was extremely degraded and the headstamp markings could not be ascertained. The 20 mm Oerlikon gun was not widely used in a land role, being mostly a naval weapon and such a find on land is out of context ('Oerlikon 20 mm/70' – NavWeaps.com)

Signal Pistol Cartridges

Signal pistols were used for communication and signalling. They are fired from a special type of pistol. Signal pistol cartridges are similar in appearance to a large shotgun cartridge and can eject various coloured signals or be used to project an illuminating flare which is suspended on a small parachute. During the First World War cartridges were constructed of solid brass or cardboard with a brass base. The cartridges recovered from Larkhill comprised bases of Cartridge Signal 1 Inch Mark V type, which were constructed of cardboard with a brass base. All examples were manufactured by Eley London.

Vest Torch

These small torches, sometimes referred to as vest torches, were used during the First World War. The example recovered at Larkhill comprised the front (with lens) and rear only (Fig. 7.15). An example of a complete torch can be seen in the Imperial War Museum collection: https://www.iwm.org.uk/collections/item/object/30082520.

Use of electric torches by infantry units would be strictly controlled on the Western Front. Reminders in contemporary handbooks such as *From the Front: Notes for the New Armies, by 'Company Commander'* (Anon 1915), clearly state that lamps are never to be used at night, noting 'the "service electric lamp" can be read at 1,000 yards with the naked eye'. However, the same publication says lamps can be useful for 'sending messages rearwards from Battalion HQ to the artillery, during day-light hours, if telephone wires have been cut by shell-fire' (*ibid.*).

Figure 7.16 a. Crown-marked petrol cap (left), Shell marked (centre) and a reference example (right); b. A First World War postcard showing petrol tins in use

Petrol Can Cap

Petrol tins were widely used for carrying different types of liquids during the First World War. Two brass petrol tin caps were found during the excavation, one marked 'CROWN' and one marked 'SHELL') (Fig. 7.16).

Fuze Covers

Two fuze covers and a fuze cover collar were found at the excavation. These are used to protect fuzes and are removed before firing. The covers found were for a Fuze No. 221B time and percussion graze fuze, which is a mechanical time fuze used with the 25-pounder base ejection (e.g., smoke, illumination) shell/high explosive (HE)/chemical shell, the 5.5-inch gun base ejection/chemical shell, and 6-inch Howitzer HE chemical shell. Both examples were flattened.

The first cover was marked '221B MK 4 43 – CY – 66. The 'CY' marking indicates it was filled with flash and burning powder components at the Royal Ordnance Factory, Chorley. The second was found with the securing collar (Fig. 7.17) and was marked 'Fuze 221B UH -2-43 LOT – 013'. The collar is marked 'No 5 I', indicating the fuze cover type, and 'W&W', indicating the manufacturer. The blue star marking indicates the make-up of specific internal fuze components.

Figure 7.17 Fuze example (with securing collar) is marked 'Fuze 221B UH -2-43 LOT – 013. The collar is marked 'No 5 I' indicating the fuze cover type and 'W&W' – the manufacturer. The blue star marking indicates the make-up of specific internal fuze components

Figure 7.18 Fuze collar marked 'No 1 – 1, indicating the type, and 'DFM', indicating the manufacturer

A second fuze collar marked 'No 1 – 1' and 'DFM' – indicating the type and manufacturer, respectively, was also recovered (Fig. 7.18).

Ammunition Storage Containers and Fuze Plugs – Post Second World War

Various examples of ammunition containers related to artillery ammunition were found along with a number of fuze plugs. Fuze plugs are fitted to artillery shells that are unfuzed. Prior to firing, projectiles which are issued separately with fuzes are fitted according to type and the required use for the shell.

No. 117 fuze ammunition containers and fuze plugs

Three fuze containers for No. 117 fuzes were found (Fig. 7.19), and four No. 5 plugs (for shells with 2-inch plug hole), dated between 1954 and 1956. The No. 117 fuze was fitted to shells fired by the 60-pounder gun, 6-inch gun (Field Service), 9.2-inch gun (Field Service), 9.2-inch gun (Coast Defence), 9.2-inch Howitzer, 12-inch Howitzer, 3-inch Howitzer, 18-pounder gun, 25-pounder gun and the 4.5-inch Howitzer.

Figure 7.19 No. 117 fuze containers (right) and a No. 5 fuze plug dated 1954 (left)

Finds of Particular Interest

Some of these finds comprise examples already listed in this report but the following have been selected as items of particular interest, namely .303-inch cartridges with newsprint attached, as well as one with cloth material still attached. These finds are shown below in Figures 7.20 and 7.21.

Figure 7.20 Two .303 cartridge cases with newsprint attached

Figure 7.21 The .303 cartridge case with cloth attached. Pictured right is a close-up image showing the weave of an original .303 bandolier

Figure 7.22 The unidentified finds

Unidentified Finds

A number of finds were not able to be identified; these are shown in Figure 7.22.

Conclusions

First World War Material

By interpreting the finds at this site, it is possible to conclude that the type of training carried out in the trench system was 'dry' training (i.e., training with blank ammunition) and training with live hand grenades. The location of the site, close to habitation, is not conducive for training with live small arms ammunition. The trench systems ('British' and 'German') were on an east–west orientation, located in a shallow valley, and were bounded to the west and south by military camps and to the east by the village of Durrington. Training with live grenades was possible at the site as they were either hand thrown (short distances) or fired as rifle grenades – maximum effective range 200 yds (182.88 m). A small number of live (ball) rifle calibre cartridges were found. These likely related to the wider military use of the site area and potentially the rifle ranges located to the north of the site. A small number of pistol bullets were also found and may be related to miniature ranges located on the site.

Chapter 8
Other 20th-century Finds

by Lorraine Mepham and Katie Marsden, with Rachael Seager Smith

Introduction

Excavations carried out as part of the Army Basing Programme have resulted in the recovery of a significant assemblage of early 20th-century material. Finds came primarily from Larkhill but also include a small group from Bulford, and in both cases represent activity in the years surrounding the First World War. This report considers all the non-military finds, including catering equipment, containers for foodstuffs and other goods, horse equipment and personal effects. This is the largest assemblage of early 20th-century finds as yet recovered from the Salisbury Plain training area and as such provides an invaluable insight into daily life in the camps and how they were serviced.

While the individual finds are to a large extent the types of objects found in any waste deposit from the early 20th century, the character of the assemblage represents the waste produced by a particular group of individuals – armed forces preparing for war in the country's major training area. The population was predominantly male (apart from those servicing the camps) and the supply routes were not necessarily the same as, say, for the local villages on Salisbury Plain. Troops arrived on Salisbury Plain from all over the Empire, answering the call to arms – the Canadian Contingent occupied several camps, including Larkhill, from October 1914 and the Australian Imperial Forces were the major occupants of Larkhill camp by mid-1916. What can we learn of their daily lives – diet, medical care, personal hygiene? How was the camp supplied with what must have been, in the local and regional context, huge quantities of foodstuffs and the equipment to prepare and consume them? The First World War stimulated production of all kinds of goods to an unprecedented level, and we can see in this assemblage from Salisbury Plain how supply changed from fairly ad hoc arrangements to more formal contracts.

Another narrative arc concerns the goods supplied to the camps, which give a snapshot of material culture at a point where the widespread recycling of rubbish, as immortalised in Dickens's portrayal of the dustheaps of London in *Our Mutual Friend*, was giving way to a more 'throwaway society' – the years between approximately 1875 and 1914 saw a burgeoning mass market and packaging revolution (Service 2015, 10–17). Household self-sufficiency in many everyday requirements such as cleaning products, preserves and self-medication was superseded during the Victorian period by an increasing array of ready-made products with their own disposable (but carefully branded) packaging. New products appeared (some, such as Bovril, still familiar today) and targeted new consumers, as middle-class wages rose. Food preparation at home now involved disposable vessels – for example, bottled tea and coffee extract replaced dry goods sold in paper bags, and shop-bought jam replaced home-made preserves. Building on the development of the canning industry during the Victorian period, the war accelerated the shift in consumption away from traditional products to processed foods, as it proved easier to provision troops with the latter.

In glassware, the patent bottle moulds of the Victorian era gave way to semi-automatic machines in the early 1900s, which increased the production of glass bottles exponentially. By the 1910s, handmade bottles were used interchangeably with machine-made; interestingly, the assemblage from Larkhill shows a decided bias towards handmade bottles. Mass-produced glass superseded stoneware, which had been the

preferred packaging for household goods and carbonated beverages, and stoneware declined steeply in the first two decades of the 20th century. In the early 1910s, stoneware and glass containers were sold together, but thereafter glass prevailed, and use of tins also increased.

The assemblages from Larkhill and Bulford, then, might be expected to reflect at least some of these societal changes. Camp refuse is likely to represent mass-produced (and mass-prepared) food for the troops, with little recycling but with many branded products. Alongside this there may well be an element of self-supply in the form of goods brought in by (or sent to) the troops themselves or bought by them locally – the Empire Stores was established in Larkhill by 1915, and a number of other shops were erected on the edge of the Packway (the main road running through the camp). These included Bollens Fruit Stores and Valters & Co, newsagents (James 1983, 40). An article in the *Sydney Morning Herald* from January 1917, based on the account of an Australian soldier stationed at Larkhill, notes the presence of 'many business places situated on the main road through the centre of the camp. At one or the other of these places you can purchase almost any article, paying very often substantial prices' (The Sydney Morning Herald, 3 January 1917).

There is also the question of the mechanisms for supplying the camps with food and equipment. Supply lines that were probably largely locally based to the pre-war camps on Salisbury Plain clearly could not cope with the later large-scale influx of troops. The organisation of food production and distribution passed to the War Office, and we might expect to see evidence on Salisbury Plain of more centralised supply lines, at least for some goods, although others (in particular, beer and soft drinks) remained in the hands of local suppliers, albeit under military contracts. W. E. Chivers & Sons of Devizes, for example, were awarded one such contract in 1914, including the haulage of baggage and equipment – at one period they were conveying 10 tons of bread every night from Salisbury to Tidworth (James 1983, 42–3). The outbreak of war immediately disrupted traditional supply channels and the control of food – specifically, attempts to starve populations into submission – became a legitimate war aim. While the Central Powers suffered under this, Britain could still count on the enormous (and still accessible) resources of its Empire, from which it could acquire wheat, canned and frozen meat, sugar, tea, coffee and canned milk – as well as men. An idea of the range of suppliers to Larkhill is given by Table 8.1, although this of course can only consider the surviving containers.

At the beginning of the war, soldiers' canteens were largely in the hands of the Canteen and Mess Co-operative Society until civilian contractors were engaged on a not-for-profit basis to increase the provision – one pre-war example of a civilian-operated 'refreshment bar' is shown in a postcard from Bulford Camp, postmarked 1913 (Fig. 8.1). This arrangement was open to abuse and corruption, and from 1915 regulations were put in place to restrict the supplying of troops to approved contractors. However, despite continuing problems it was not until January 1917 that the Army Canteen Committee (ACC) was set up to oversee and run canteens for soldiers, taking over from the civilian contractors. The ACC was very short-lived, being subsumed into the Navy and Army Canteen Board (NACB) in June 1917. This board would eventually become the NAAFI in 1921, still in operation today. Stamps on some of the crockery found on First World War training camps elsewhere in Britain illustrate the succession (Barker 2017, figs 31–2). The Young Men's Christian Association (YMCA) also operated tents (later huts) at military camps, providing refreshments (hot drinks, cakes and confectionery, but no alcohol) and recreational facilities for the troops with the aim of serving the 'mind, body and spirit' (Figs 8.2 and 8.3). The Sydney Morning Herald article from 1917 notes that 'four or five large canteens' were run by the YMCA at Larkhill, and these did very good business in the evenings – see 'Larkhill' – Our Contribution (birtwistlewiki.com.au). The Salvation Army also had a building at Larkhill, while other welfare facilities included the 'Soldier's Home' and the Military Cinema, which doubtless showed wartime propaganda as well as more escapist comedies and dramas (James 1983, 40).

Table 8.1: Suppliers of foodstuffs and other products to Larkhill Camp

Manufacturer/Product	*No. containers*
Beverages (beer)	
Allsopp, Burton-on-Trent	3
Firmin S. Bradbeer, Salisbury	3
H. & G. Simonds Ltd, Reading	1
J. Lovibond & Sons Ltd, Salisbury	2
Lovibond, Salisbury	10
Richardson Bros, Salisbury	3
S. Ruddle & Son, Bradford on Avon	2
Stratton Sons & Mead, Melksham & Devizes	2
Strong & Co., Romsey	3
Wadworth, Devizes	11
Whitbread & Co., London	5
Beverages (soda)	
Allen & Lloyd, Aldershot	9
R. White & Sons	1
Schweppes	1
Wadworth, Devizes	3
Beverages (spirits)	
Beckford Blend	1
Benedictine	1
H. & A. Gilbey Ltd	1
Walkers, Kilmarnock	88
Foodstuffs (coffee and coffee essence)	
Paterson, Glasgow	16
Symington & Co., Edinburgh	1
Walter [?Williams], London	1
Foodstuffs (condiment)	
Brand & Co, The "A1" Sauce	19
Daddies Sauce	1
Escoffier Diablo Sauce	1
Garton's HP Sauce	9
Goodall Backhouse Yorkshire Relish	3
Hayward's Military Pickle	9
Heinz & Co	1
Keddie Limited	4
Lea & Perrins Worcestershire Sauce	4
Ship Brand Chutney	1
Foodstuffs (confectionery)	
Cadbury, Birmingham	1
Cleeves, Limerick	1

Manufacturer/Product	*No. containers*
Hoadley, Melbourne, Australia	1
Mackintosh, Halifax	1
Pascall, London	2
Foodstuffs (dairy)	
Maclaren's Imperial Cheese, Canada	1
Diploma condensed milk	2
Foodstuffs (meat extract)	
Bovril	2
Oxo	1
Foodstuffs (paste)	
Shippam's	4
Foodstuffs (preserves)	
W. H. Hartley, Liverpool	94
James Keiller, Dundee	1
Foodstuffs (syrup)	
Tate & Lyle	10
Foodstuffs (tinned fish)	
?Canadian	1
?Norwegian	1
Household (glue)	
Edward Auld, Montreal	1
Household (ink)	
Chas M. Higgins & Co., Brooklyn NY	1
Pharmaceutical	
?Vicks Vapour Rub	1
4711 cologne, Rue de la Cloche	1
Angier's Emulsion	2
Ashton & Parsons	1
Boots Cash Chemist	1
Chesebrough Vaseline	1
Elliman's Embrocation	2
Eno's Fruit Salts	2
Ferris & Co	1
Owbridge's Lung Tonic	2
Veno's Lightning Cough Cure	3
Veterinary	
Day, Son & Hewitt	2
Elliman's Royal Embrocation for Horses	1
Total	365

Figure 8.1 'The Refreshment Bar' at Bulford camp, postcard sent in 1913

Figure 8.2 Postcard, postmarked Bustard Camp 1912, showing YMCA tent

Figure 8.3 Postcard, undated and unknown location but pencil-marked as 'YMCA Salisbury Plain, Sling Camp'

The crockery itself was also supplied under military contracts. The war had a dramatic effect on British manufacturing industries and trade, not least the ceramics industry. On the other hand, it also offered opportunities for the expansion and development of British ceramic manufacturers. An industry that had suffered from under-investment, a complacent over-reliance on colonial markets and threats from cheaper European (primarily German) ceramics before the war was stimulated to maintain production and to extend its trading network (Barker 2017). A large number of pottery manufacturers, mostly but not exclusively based in north Staffordshire (The Potteries), benefited directly from the war by being able to service a major new customer – the military. The typical output that can be seen in assemblages from First World War training camps including Larkhill comprises utilitarian earthenwares and stonewares (both tablewares and kitchenwares), and many bear War Office stamps.

Provenance and date

Although small groups of objects relating to First World War activity were found at camps at Bulford, Tidworth and Perham Down, by far the largest assemblage (and the largest so far from Salisbury Plain) came from Larkhill Camp. Here there were a number of large deposits from rubbish pits, and finds were also recovered from the practice trenches and other features. The assemblage has been assumed to result from First World War activity unless definitely datable as earlier or later on typological or stratigraphic grounds – Larkhill was established as a tented camp in 1899, so some finds may be pre-war, and some clearly relate to post-war activity, extending into the late 20th century. Some of these later finds are considered here; details of all can be found in the project archive. The discussion here, then, focuses on the finds from Larkhill Camp, with one specific group from Bulford camp.

Food Containers

While some foodstuffs would have been marketed in paper or cardboard containers that would not have survived (e.g., tea, sugar, biscuits, confectionery), there is plenty of evidence from Larkhill in the form of ceramic and glass bottles and jars and tins for a range of foodstuffs, including beverages (Fig. 8.4), although these show some biases which are perhaps not typical of a 'standard' domestic assemblage of the period, reflecting mass catering for a large number of soldiers.

Figure 8.4 Foodstuffs: Hartley's jam jars, paste jars and food cans

Figure 8.5 Hartley's backstamp

Meat and Fish

Sardine and corned beef tins are common, represented as both containers (15 sardine, 18 corned beef) and as the separated keys which were provided to open them. Both provide long-life nutrition so their presence here is unsurprising. In fact, corned, or 'bully', beef was a regular part of the serviceman's diet in the First World War, and by the height of the Second World War, 16 million cans were exported from one town in Uruguay alone, after the Fray Bentos firm passed into British hands in 1924 (Mac Con Iomaire and Gallagher 2011).

Preserves

Jam was apparently supplied exclusively by W P Hartley of London and Liverpool, as evidenced by at least 94 cylindrical jars in feldspathic-glazed stoneware (in 1 lb, 2 lb and 4 lb sizes; Fig. 8.4, rear), but these preserves may not belong entirely to the First World War period. The company was founded in 1871, moved to Liverpool in 1886 and a second factory was opened in Bermondsey, London, in 1901. One of the major suppliers of the stoneware jars was the Caledonian Pottery in Glasgow, and at least some of the backstamps seen on the Larkhill jars are paralleled there (Jarrett et al. 2016, fig. 8), but these include stamps that are dated subsequent to the war years, from the early 1920s – of the 84 identifiable stamps, only six date from the period c. 1900–20 (Fig. 8.5). It is likely that other preserves were used at Larkhill (there are 17 glass and 10 ceramic preserve jars, all unmarked) but in the absence of marked containers these cannot be identified, or closely dated to the war period.

Hartley's monopoly seems to have excluded the usually ubiquitous products of James Keiller of Dundee, but the firm is not completely unrepresented here. A tin marked 'James Keiller & Son Ltd, Dundee, Gooseberry', suggests a possibly catering-sized jam (the container weighs 94 g). While most who are familiar with Keiller products would recognise the stoneware and, post-1928, the glass jars, tin cans were being made at Keiller factories in St Peter Port, Guernsey, by 1873 (Mathew 1998, 52). This would be a far more practical supply for the British forces, with whom Keiller & Son clearly had a long-standing relationship, with the War Office ordering 216,000 packages of jam for troops in South Africa in 1900 (History of Keiller's Dundee Marmalade – baybottles.com).

Also under the heading of preserves come fish and meat pastes and potted meat. As well as two marked paste jars from Shippam's of Chichester, there are 15 other small glass jars of various forms (Fig. 8.4, centre). It is uncertain, however, how many actually belong to the First World War; certainly at least one of the Shippam's jars is of a type only introduced from the 1920s.

Condiments

In contrast, condiments (sauces, pickles, chutneys, ketchups, etc.) came from a number of different suppliers (Fig. 8.6). Condiment jars (mostly glass, with some ceramic) are noticeably numerous and surely attest to attempts to enliven the monotonous and otherwise rather tasteless diet of the period (not a problem confined only to the military). A postcard of 1913 showing 'The Refreshment Bar' at Bulford Camp appears to show a row of condiment jars behind the counter (Fig. 8.1). Hayward's Military Pickle might be supposed to have been introduced for just such a purpose and the large jars seen here suggest catering-sized supplies, but in fact this condiment appeared before the war, becoming the highest-selling pickle in Britain by 1911 (it continued to be made until the 1990s). Lea & Perrins Worcestershire sauce, Garton's HP Sauce, Goodall Backhouse's Yorkshire Relish and Brand & Co.'s A1 Sauce were also popular, while Keddie, from the jar type, were probably supplying a pickle similar to Hayward's (Keddie also made anchovy paste). Heinz is noticeably scarce (only one example), as is Daddies Sauce, another popular brand established at the beginning of the 20th century. More exotic condiments (Ship Brand Chutney, made in Bombay, and Escoffier's Diablo Sauce) may have been brought in by individuals, as might the jar of Moutarde de Maille from Paris (the latter may be pre-war as it carries a backstamp dating c. 1875–1900: https://www.porcelainmarksandmore.com/related/lorraine/saargemuend-01/index.php). Other glass bottles and jars were more tentatively identified as having contained condiments on the basis of form (long-necked bottles in particular, including a group of small bottles with 'burst-off' lips, a feature of the cheapest handmade bottles: Fig. 8.6, centre) and their contents could have included anchovy sauce and capers.

Figure 8.6 Condiments: assorted glass bottles and jars

Alcoholic Beverages

The serving of alcohol to soldiers proved an issue from early in the war. Well before the First Canadian Contingent's arrival on Salisbury Plain in October 1914, the authorities had stipulated that inns in the area should close by 9pm because of 'the large number of undisciplined recruits … at the various camps'. But the problem continued and in the case of the Canadians was exacerbated by the fact that their camp canteens were 'dry' – that is, they did not serve alcohol. The Canadian Contingent's CO, General Alderson, had received 'serious complaints from local authorities' and telegraphed Southern Command to stress that 'it is absolutely necessary that there should be canteens for sale of beer in camps', pointing out that men were going to the neighbouring villages, getting 'bad liquor' and becoming quarrelsome. On 21 October, he announced that 'wet' canteens would be allowed, but a week later there was 'considerable disorder' in the canteen at West Down North, despite the beer on sale being relatively weak. The wet canteens were opened at midday, accounts differing whether it was for one or two hours, and for three hours in the evening. Only beer was sold and non-commissioned officers were always on duty to supervise (Nicholson 1962, 38; 'Licensing, drinking & temperance' – The Great War (1914–1918) Forum).

Prior to this, alcohol consumption had been affected by the Chancellor Lloyd George raising distillery licence fees and increasing the rate of duty on spirits by a third in 1909, arguing for temperance. By 1910, the total UK spirit consumption had fallen by a third (Service 2015, 39–40). At the same time, there was a move towards Prohibition in Canada (which finally went 'dry' in 1918) and the behaviour of Canadian troops both at home and abroad was particularly scrutinised (Wilson 2016).

This sets the scene for the evidence for alcoholic beverages found at Larkhill, where beers and spirits were well in evidence (Figs 8.7 and 8.8). Almost all of these were in glass bottles with a variety of closures (cork, crown cap, vulcanite screw stopper); one stoneware beer bottle is a late survival (or a residual pre-war bottle). Local breweries seem to have had most of the business here, with Lovibond of Salisbury and Wadworth of Devizes well represented, as well as Firmin S Bradbeer and Richardson Brothers, both of Salisbury, Ruddles of Bradford-on-Avon and Stratton Sons & Mead of Melksham and Devizes. From further afield came Strong (Romsey), Simonds (Reading) and Whitbread (London), and there are three bottles from a Burton-on-Trent brewer (Allsopp). Loose vulcanite stoppers add a couple of names to this list: Brandon's Brewery (Putney, south London) and Truman, Hanbury & Buxton (London, East End). Wadworth was one of the first suppliers to the Army Canteen Committee on the outbreak of war in 1914, while Simonds had a depot at Ludgershall, which was the largest in terms of its overall business during the years 1914–17 (Lewis 2001, 38); one of the vulcanite stoppers is labelled 'Simonds Ludgershall'.

Whisky seems to have been the almost exclusive preserve of Walker's of Kilmarnock (later Johnnie Walker) (Fig. 8.8, far left). This might not be unconnected with the fact that the managing director at the time, James Stevenson, was made Surveyor-General of Supply during the war and later made a Baronet for his service ('John Walker & Sons history' – scotchwhisky.com). Other spirits were obviously present although from unidentified manufacturers, and many were sold in the smaller bottle sizes, including the 'coffin flask' type, more suitable for individual consumption (Fig. 8.8, third from right). All spirits were in glass bottles.

Non-alcoholic Beverages

Wadworths also supplied 'sodas' (mineral waters and other carbonated drinks) and there is one stoneware ginger beer bottle from Hardy & Sons of Salisbury, but the majority of these beverages came from Allen & Lloyd of Aldershot (all in glass bottles with patent Codd closures: Fig. 8.7). The dominance of this non-local company (listed

in Kelly's Directory between 1911 and 1920 as mineral water manufacturers) might be considered surprising, but the firm's motto was 'We follow the troops' and indeed Allen & Lloyd bottles are often found in waste dumps near army establishments across southern England. The company moved to Shipton Bellinger in 1900 when Tidworth Garrison was built, and one of the bottles from Larkhill is in fact labelled as Allen & Lloyd of 'Aldershot and Shipton' ('Shipton Bellinger – Old Pop Factory' – geograph.org.uk and 'Bordon mineral water business "followed the troops" before it dried up' – Farnham Herald).

Figure 8.7 Beverages: beers and soda

Figure 8.8 Beverages: spirits (Walker's whisky, Benedictine and unmarked flasks and bottles)

Hot Drinks

For those preferring a more wholesome beverage, facilities were set up, for example by the YMCA (see below, Ceramic Tablewares), to provide the troops with coffee and other hot drinks. Paterson of Glasgow had the monopoly on coffee and chicory essence (16 glass bottles) with just one example from their rivals, Symington of

Edinburgh. Ground coffee could be bought at this time, but some preferred the taste of coffee with chicory, which strengthened the flavour (hence the popularity of Paterson's and Symington's products). Tea would have been sold in paper or cardboard packets so does not appear here, and Horlicks Malted Milk is represented only by the ceramic mugs in which it was served (see below, Ceramic Tablewares).

Beef tea was another popular hot beverage thanks to the introduction of Bovril, which raised this once nutritional drink of the poor to consumption across the social spectrum. Registered in 1888, early advertising pushed the idea that Bovril built up muscle, bone and flesh. More than 1,250,000 bottles were sold in the first five months of 1914 (Service 2015, 11), which perhaps makes it surprising that so few bottles were found at Larkhill (two glass Bovril jars). In contrast, Oxo, another meat extract, was regarded during the First World War as emergency rations for troops in the trenches; 100 million Oxo cubes were sent out to the British armed forces as part of their emergency rations, all individually hand-wrapped ('Oxo' – The Great War (1914–1918) Forum). They would have been held in cardboard boxes or tins, but one Oxo glass jar was found at Larkhill.

Other Foodstuffs

Ten golden syrup tins were recorded, including 1 lb (450 g) and 2 lb (900 g) examples (Fig. 8.9). One was opened with a can opener from the base, rather than via the lid as standard. This suggests the contents were used for a catering-sized dish, rather than personal use. All these are Tate & Lyle brand. Some examples were 'By Royal Appointment', marking them as post-1922 manufacture. Condensed and evaporated milk cans were also present (28 condensed, 4 evaporated), again probably served in catered environments where the whole tin could be used (such as the YMCA and other canteens). The condensed milk tins include two 'Diploma' brand (Fig. 8.10); this was a product of Wiltshire United Dairies (from 1915 United Dairies), a company formed at the end of the 19th century by the amalgamation of several dairy companies. The company ran several factories across the West Country, including one at Melksham, which in 1902 or 1903 concentrated on the production of condensed milk, of which 'Diploma' was their chief proprietary brand (Crittall 1959, 220–53).

Scan this QR code to view a 3D model of this object on Wessex Archaeology's Sketchfab page

Figure 8.9 Tate & Lyle's Golden Syrup

Figure 8.10 'Diploma' brand condensed milk tin

Confectionery tins were also present, including Cadbury's, Pascall's, Mackintosh's (toffee) and Cleeves Limerick (toffee). Another example is from the Australian firm Hoadley's of Melbourne. Abel Hoadley emigrated from Sussex to Melbourne in 1865, where he established a jam factory before Hoadley's Chocolates Ltd was formed when he retired from the business in 1913 (Lack 1983).

Other foodstuffs occur as just one or two examples and could be considered as 'luxuries'. One opaque white (milk) glass jar contained MacLaren's Imperial Cheese. Introduced in 1892, this Canadian product was made from ground cheddar and sold in small porcelain containers, and was one of the first soft, processed cheeses to be commercially distributed. It quickly became phenomenally popular and within a decade was exported worldwide (see MacLaren, Alexander Ferguson – Dictionary of Canadian Biography). This item may have been brought with, or sent to, a Canadian soldier posted to Larkhill.

There were also two stoneware jars of 'Rich Preserved Cream' from the Wigtownshire Creamery Company of Stranraer, a stoneware 'ginger jar' and a glass jar with the mark of Pascall's of London, one of the largest confectionery businesses in the country, employing over 2000 people by 1915 ('Life-saver – James Pascall' in Let's Look Again).

Ceramic and Metal Eating and Catering Equipment

A substantial ceramic assemblage was recovered from Larkhill, spread across a number of features. Excluding the ceramic containers that have already been discussed, the quantity that can definitely, or probably, be assigned to First World War-period use (give or take a few years either side) is 670 sherds (weighing 20,632 g). This consisted entirely of refined white earthenware (whiteware) and included tablewares (plates, cups, etc.) and kitchen wares (e.g., pudding basins) (Fig. 8.11). Some sherds were not retained for analysis (mostly plain and undiagnostic), but those that were retained were assigned to vessel form where possible and any marks or decoration noted – the latter was, unsurprisingly in an assemblage designed for mass catering, quite scarce. Table 8.2 gives the breakdown of the retained assemblage by vessel form using Estimated Number of Vessels (ENV) as the means of quantification, counting conjoining sherds or almost certainly same-vessel sherd groups as 1.

Figure 8.11 Crockery: canteen-use plate, bowls, cup, etc.

Vessel form	*ENV*
Plate (dinner)	50
Plate (side)	1
Saucer	5
Cup	14
Cup/mug, indeterminate	1
Mug	17
Bowl	9
Jug	5
Tea/coffee pot	3
Lid (tea/coffee pot)	2
Serving dish	1
Pudding basin	10
Pie cup	1
Total	119

Table 8.2 Quantification of identifiable ceramic vessel forms (ENV = Estimated Number of vessels)

Vessel forms show a clear bias towards tablewares, and among these, large (dinner) plates and drinking vessels (cups and mugs) are most prevalent. Most of the tablewares are very plain and clearly 'institutional' in quality; the mugs in particular are thick and heavy (but ideal for robust use). Transfer-printed wares are very much in the minority, but sherds of a maximum of 16 dinner plates in two patterns ('Belgrave' and 'Pansy', makers unknown) were found spread across five features (pits 15983, 16803, 16846, cut 16020) and must surely belong to the same sets. These transfer-printed wares (including the single serving dish already mentioned) may have been reserved for the officers' mess. A dinner plate with the rim picked out in gold lustre, with a backstamp identifying it as a product of Booth's of Tunstall 'Manufactured for Harrod's Ltd, London' seems a little out of place but may also have had a more restricted use.

Given the high numbers of cups and mugs, the relative scarcity of other vessels used to serve hot drinks (tea- or coffeepots) is perhaps surprising. There is also only one serving dish, transfer-printed.

From the backstamps identified, a number of different pottery manufacturers are represented (see Table 8.3), mostly from Staffordshire but also including one from Bristol and one from London. All the examples from Grindley of Tunstall, Staffordshire, are 'Grindley Hotel Ware', an offshoot of W. H. Grindley formed in 1908 to produce exclusively hotel and catering wares; this company was therefore well placed to supply the military. Three of the manufacturers used the War Office marks of government-approved contractors (Adderleys, Burslem Pottery and Doulton), dating between 1914 and 1917 (Fig. 8.12). The appearance here of a mark dated 1914 is of particular interest as elsewhere it is stated that Government contracts issued for the War Office to ceramics manufacturers did not start until January 1915 (Barker 2017, 235).

Table 8.3 Pottery suppliers (ENV = Estimated Number of Vessels)

Pottery manufacturers	*Location*	*ENV*	*Comments*
Booths	Tunstall, Staffs	1	
Adderleys	Longton, Staffs	1	1914 War Office mark
Alfred Meakin	Tunstall, Staffs	12	
Burslem Pottery	Burslem, Staffs	2	1916 & 1917 War Office marks
Doulton	Lambeth, London	5	1917 War Office mark
Dunn Bennett	Burslem, Staffs	2	
Grimwades	Stoke, Staffs	2	Mark dated 1930s+
Grindley	Tunstall, Staffs	7	All examples are 'Grindley Hotel Ware'
J & G Meakin	Hanley, Staffs	1	
Pountney & Co Ltd	Bristol	5	
Wilkinson Ltd	Burslem, Staffs	1	
Total		**39**	

Figure 8.12 War Office marks

As well as the backstamps of the pottery manufacturers there are other marks. Three mugs are marked 'Horlicks Malted Milk'. The YMCA stamped their crockery, in this case including three mugs and a jug (Fig. 8.13). There are no marks here from the Army Canteen Committee (ACC) or its successor, the Navy & Army Canteen Committee (NACB), but three cups carry the mark of Richard Dickeson & Co, one of the main civilian contractors involved in provisioning troops in this country (Fig. 8.14); these examples must presumably date prior to the formation of the ACC in January 1917. At least two of the three were made by the same manufacturer, Dunn Bennett of Burslem, Staffordshire, although Dickeson also used other manufacturers such as the Soho Pottery of Tunstall (Barker 2017, 237).

Figure 8.13 YMCA-marked crockery

Figure 8.14 Dickeson's cup

The use of ceramic tablewares is likely to have been restricted to the civilian canteens. Enamel plates were commonly used in military field kitchens and permanent camps, with billy cans and mess tins used when out on operations. The remains of at least 18 billy cans and 19 mess tins (Fig. 8.15), one found nested within another, were recorded, alongside fragments of at least eight plates, two of which were marked 'O J & E Co. Made in England', although this company has not been identified. An aluminium plate, which replaced the easily chipped enamel plates, is therefore probably later in date than the enamelled examples, although still recovered from a First World War-era feature.

Enamel mugs were used in barracks but were not issued as personal kit to soldiers, who nonetheless did occasionally 'liberate' them. Six examples were recorded, two with green handles rather than the more usual blue trim (Fig. 8.16).

Ceramic kitchen wares are limited to six pudding basins and a pie cup. The latter is an interesting item, stamped with the mark 'The Gourmet Pie Cup' (Fig. 8.17). The patent for this design was granted in 1901 and is described as an 'improved crust holder and vent for pies, tarts and the like'..

Other food preparation and serving items were supplied in metalware, including bowls, saucepans and cutlery. Enamelled dishes and pie tin or roasting dish types were

Figure 8.15 Mess tin and billy can

Figure 8.16 Enamel mug

Figure 8.17 Gourmet Pie Cup

Figure 8.18 Enamel bowls

also recorded. Four saucepans were recovered, including a shallow type with hanging loops, probably for attaching to kit bags, and enamelled types in grey, blue and brown. Somewhat surprisingly, a set of three nested, enamelled jelly or blancmange moulds were topsoil finds, which while difficult to date probably belong to the first half of the 20th century, with plastic varieties becoming increasingly popular from the 1930s onwards.

Prior to the formation of the Army Catering Corps in 1941, cooks were organised on a regiment-by-regiment basis, which included the use of civilian contractors (see Army Catering Corps | National Army Museum (nam.ac.uk)), which probably explains the disposition for 'normal'-sized food containers seen here, rather than the expected catering sizes.

Metal bowls were of sizes for washing and serving (Fig. 8.18). Two enamelled bowls were manufactured by Lalance and Grosjean, an American company that issued the United States Army with mess tins in the Spanish–American war of 1898 (see Lalance & Grosjean Manufacturing Company). It is not unreasonable to suggest Lalance and Grosjean continued to supply the US Army and that these bowls came over with troops. While more is known about the Canadian, New Zealand and Australian forces stationed at Larkhill and nearby Bulford, camps on Salisbury Plain were known to have housed US troops in 1917 before their deployment to the Western Front and these bowls suggest some at least spent time at Larkhill and the military presence developing as a staging post for Allied forces.

Cutlery was not particularly well represented, but five spoons (two tablespoons, three teaspoons) and two forks were recovered, as well as a set comprising a knife, fork and spoon. Other knives are discussed below as possibly used as personal knives and/or for craft activities (see General Maintenance and other Activities, below) A meat skewer was also found.

The range of enamelled kitchenware that the Army had at its disposal during the First World War is depicted in a 1916 artwork by George Kenner entitled 'Waiting For Dinner In The Huts' (IWM catalogue no. Art.IWM ART 17056), which accords with the range seen Larkhill. German-born Kenner moved to London in 1910 and was registered as a 'alien enemy' less than a month after the outbreak of the First World War. He was interned in Prisoner of War camps from 1915 until being deported to Germany in March 1919 as part of a prisoner exchange. As a trained artist, he was allowed to continue to practise his craft during this time, eventually creating the most extensive collection of First World War internment scenes, most of which have been acquired by the Imperial War Museum and museums local to the camps where Kenner was interned. Internment camps, often former Army bases and part of a new 'militarised environment' run by guards (Grady 2019, 3), were the responsibility of the War Office.

Health and Hygiene

In a pre-National Health Service era, there was an emphasis on self-medication and a corresponding proliferation of proprietary remedies of varying effectiveness; some were actively dangerous, but many continued to be marketed well into the middle of the 20th century. 'Quack' medicines offered cures for every possible disease or condition (and sometimes whole lists of these), including cancer, consumption and baldness, but on the basis of the rather banal ingredients revealed in tests carried out by the British Medical Association, 'it is impossible to believe that the extravagant claims and absurd statements made could be put forward by persons having any knowledge of disease' (British Medical Association 1909, 117). Nevertheless, quack medicines were often the only recourse open to people who could not afford to call in a doctor. All the items in this section are likely to have been brought in by individuals, with the exception of some of the post-First World War remedies, which could be the result of official issue.

There are some familiar names here among the glass bottles recovered, including Veno's Lightning Cough Cure, Eno's Fruit Salts (for digestion), Vaseline (for all skin diseases including scurvy and ringworm), Angier's Emulsion ('heals the lungs, helps digestion') and Owbridge's Lung Tonic ('it never fails') were also popular remedies of the period, as was Elliman's Embrocation for aching muscles and joints (Fig. 8.19). A blue bottle probably containing Vick's Vaporub is almost certainly post-war. The unregulated nature of early advertising is amply demonstrated by Angier's claim that their Emulsion, sold as a cough mixture, also helped with 'consumption, all lung affections, stomach and bowel disorders, ulcers, chronic indigestion, diarrhoea, dysentery, nervous dyspepsia and constipation'.

Overall, the picture from Larkhill is one of frequent respiratory complaints, probably exacerbated by less-than-ideal living conditions in the camps, combined with the inevitable aches and pains of an active life; contemporary reports indicate that the 'sick list' was increased by the conditions. The autumn of 1914 was notoriously wet (Fig. 8.20), and some troops remained under canvas for several months before huts were provided. Another account of conditions in the camps, however, declared that respiratory (and intestinal) complaints only became a serious issue after the move into crowded huts (Nicholson 1962, 36). With typical camp humour, coughing was referred to as the 'Bustard Whisper' or the 'Pond Farm Particular', depending on which camp the sufferers occupied ('The First Contingent – Life on Salisbury Plain' – canadiangreatwarproject.com).

Figure 8.19 Pharmaceutical containers: proprietary and unmarked glass jars and bottles

Figure 8.20 Postcard showing muddy conditions at Larkhill

'Trench fever' was identified as a particular problem in the First World War, causing headaches, dizziness, back aches and pain and stiffness in legs. While rarely fatal, infected soldiers were too sick to fight and occupied valuable hospital beds. By 1917, 'trench fever' had been identified as being caused by bacteria living in body lice, but control of the lice was hit and miss throughout the First World War. By the time the Second World War arrived in 1939, work had begun on a delousing powder which could be issued to individuals, with the aim of protecting against infestation, killing existing lice and preventing reinfestation. This formula was used throughout the war, being replaced by DDT in 1944 (Craufurd-Benson and Macleod 1946, 294). Sprinkler-topped metal containers (five examples), probably for dispensing delousing powder, were recovered from two features likely to be of post-1939 date.

Alongside the proprietary remedies there are likely to be others provided by dispensing chemists. These glass bottles would have carried paper labels on which pharmacists would have written the contents and instructions. There is one bottle from Boots Chemists, one from Ferris & Company of Bristol (founded in 1770 as a pharmaceutical house) and one from Ashton & Parsons, an apothecary established in London in 1867 trading in homeopathic remedies. Ashton & Parsons developed dry medicine tablets during the First World War to convey medicine more easily to the front line ('Follow our history' – ashtonandparsons.co.uk).

Figure 8.21 Calvert's tooth paste jar lid

Two pottery lids survive from small cylindrical pots of toothpaste. Both these contained Calvert's Carbolic Toothpaste (Fig. 8.21). Calvert's was one of the most popular toothpaste brands of the early 20th century – by around 1906, it had the largest sales of any dentifrice in the world. These may be pre-war items as the Science Museum dates a similar lid as 1870–1910 ('Ceramic pot lid for Calvert's carbolic tooth paste' – Science Museum Group).

Other pharmaceutical products (e.g., Eau de Cologne) are more cosmetic in nature. A jar of Brylcreem is clearly later as the product did not appear until 1928. Six small pill or 'chachou' (breath-freshening pastilles) metal boxes were found; no evidence for brand or content types remains and these tins are not closely datable. A round tin, probably once containing an ointment, was also recovered as well as two shaving soap tins.

Writing Equipment

The 11 glass inkwells found are of the disposable kind (Fig. 8.22); most are of the cheapest sort with 'burst-off' rims, comprising seven octagonal, two cylindrical and two rectangular (including a 'boat' ink bottle with pen rests either side). Only one bottle carries a proprietary mark, of Chas M Higgins & Co of Brooklyn, New York. These ink bottles would have been in much demand among the inhabitants of the camp, not least for the huge amount of correspondence they would have generated. Some may have been supplied by the YMCA, who provided stationery for the troops as well as refreshments (Nicholson 1962, 37). Postcards could be sent for one halfpenny and letters for one penny; each camp franked its own outgoing post. An undated postcard of the period, which may or may not have been photographed on Salisbury Plain, shows two non-commissioned officers engaged in some administrative task with their writing equipment on display, including glass inkwells (Fig. 8.23).

Figure 8.22 Inkwells

Figure 8.23 Postcard, unknown location, possibly Salisbury Plain, showing non-commissioned officers in tent with writing materials, including inkwell

Veterinary and Transportation

Elliman also produced embrocation for use on horses – indeed it was originally developed as a horse rub. Marketed as Elliman's Royal Embrocation (one bottle from Larkhill), its composition was apparently identical to the embrocation sold for human use ('Elliman's Embrocation' – Museum of Health Care at Kingston).

Day, Son & Hewitt's Gaseous Fluid (two bottles) was a favourite remedy for horses, cattle and sheep, and the company, based in London, claimed to be the largest horse and cattle medicine manufacturers in the world ('Vet's Bottle' – What the Victorians Threw Away).

Horseshoes

by Rachael Seager Smith

The use of horses by the military is well illustrated by a group of 228 horseshoes from Bulford Camp, recovered from three deposits (one posthole and two gullies) and from the topsoil (Fig. 8.24). These were fully recorded, details including the equine species, position (front/hind, left/right), manufacturing details, form and width (to the nearest 0.25 inch).

The collection includes shoes for donkeys and mules as well as horses of a variety of sizes and types; basic quantification is shown in Table 8.4. The shoes vary from 3.75 (donkey) to 7.25 (substantial horse) inches wide, although the vast majority fall into the 5.5–6.5-inch range. Although size of the hoof and therefore shoe is not necessarily linked to height/type/use of horse, comparisons with a lady's riding horse (15-2 hands high; 5-inch shoes front, 4.75-inch behind), a heavy-weight cob suitable for riding and light haulage (15-3 hands; 7-inch front shoes, 6.25-inch behind), a former King's Troop charger (16-2 hands and considered to have big, flat feet by her farrier; 6.25-inch front shoes, 6-inch behind) and a group of show-quality Shire horses (18 hands plus) who wear 8–9-inch shoes provide some indications of the size and type of the horses represented.

Figure 8.24 Group of horseshoes from Bulford Camp

Table 8.4 Basic quantification of horseshoes and other items associated with farriery

	Shoes						
Feature	*horse*	*mule*	*large donkey /mule*	*donkey*	*unidentifiable*	*Other items*	*Total*
Gully 5603	13	3	1	-	1	3	21
Gully 9566	22	-	-	1	-	1	24
Posthole 9548 of group 8839	20	1	-	1	-	-	22
Topsoil	148	14	2	-	1	-	165
Total	**203**	**18**	**3**	**2**	**2**	**4**	**232**

Both hand- (116 examples) and machine-made (91 examples) shoes are represented. Identifiable front and hind shoes are almost equally represented (106 and 110 shoes respectively), while those from the right side (117 shoes) are more numerous than those from the left (88 shoes). One pair of hind shoes probably worn by the same horse came from gully 9566. The collection includes examples suiting a wide range of purposes, from hunting and general riding or pack animals to driving and traction, as well as use on a range of surfaces, such as cobbled roads ('Roadster' shoes) and soft, muddy ground, requiring extra grip from studs or calkins. From the style of shoe, and wear patterns visible on some of them, it is also possible to identify the use of animals suffering from musculo-skeletal conditions, such as curb, bone spavin, tendon and navicular problems, and the efforts the farriers had gone to in order to help them and keep them working. Deep-seated shoes (five examples) were used to relieve sole pressure, one had been given a spiral lift, perhaps to ease movement for a horse with sidebone (more common in older horses and the heavier breeds), while others had been designed to slow the movement of a limb and/or to reduce its impact on landing. Conformational features evidenced by the shoes include the presence of a big-chested horse, this feature causing it to be even more pigeon-toed than is usual for horses, resulting in distinctive scuff marks on the outside heel of its front shoe. Shoes worn by animals with gait problems, such as brushing (often narrow-chested horses, or horses that are base-narrow behind) and forging or over-reaching (hind hoof striking front) causing frequent loss of shoes, were also identified.

The shoes include examples of high-quality craftsmanship and some very sloppy work (such as one nail driven into the horse's hoof and left with its point intact inside), as well as unfinished 'practice' pieces probably made by apprentices. All the deposits contained shoes adapted by hand to fit particular animals, either to suit individual requirements or because more materials were in short supply. Heels had sometimes been cropped off or drawn backwards, changing the proportions of the shoe beyond the norm, and there are five examples of shoes which have had side clips hammered flat and a new toe clip drawn, including one from the topsoil which had been changed from a hind shoe into a front.

The four other items associated with farriery include an off-cut from a square-sectioned, slightly irregularly tapering bar probably left over from the manufacture of handmade shoes, an anvil fitting, three chain links and a trace hook. The anvil fitting – a tooling (or swage) block – slides into the Hardy hole and is used to shape (and fuller) a bar to the correct profile for shoe-making. This block has an asymmetrical channel, so the fullered groove (and therefore the clench holes too) are positioned towards the outer edge of shoe and hoof, making it easier for the farrier to nail into the horn/white line of the hoof rather than the sensitive tissues inside. These blocks are used to make typical hunter-type shoes. The chain links are part of the standard farrier's repertoire, and the resulting chain could have served a wide variety of agricultural, industrial and military purposes. The fourth object is a hand-forged, fire-welded trace hook; manufacture of

these items is still part of an apprentice farrier's forging exams today.

Typologically, this group of objects cannot be particularly closely dated. Although the first US patent for a horseshoe manufacturing machine was issued to Henry Burden in 1835, the use of such shoes took far longer to catch on in Britain. Early examples of machine-made shoes, such as those present in this assemblage, began to appear from around the 1920s, but the use of handmade shoes continued as 'standard' until the 1960s or 1970s, when factory-made shoes began to be imported in quantity. Even today, all farriers are trained to make shoes by hand and frequently practise this art – at home, in competitions and, in certain circumstances, for their clients. However, given the known history of the area, it seems certain that these shoes belong within the first half of the 20th century, and were probably associated with the use of Bulford Camp by cavalry regiments and the School of Mounted Infantry in the early decades of the 20th century.

The abandonment of such a large number of horseshoes is interesting, given the scrap metal drives of the Second World War, where members of the public were encouraged to donate metal items like saucepans, and iron railings and suchlike were removed and recycled to further the war effort. Several reasons for their deposition could be suggested. The First World War saw the peak of horse, donkey and mule use by the British Army – 470,000 horses were purchased by the Remount Service over the course of the war and by 1917 the Army employed over 368,000 horses on the Western Front alone (Making horses for war: the Army Remount Service – The National Archives blog). For a sense of scale, at least 2.5 million horses were hospitalised in France during the war, with 2 million being successfully treated and returned to duty (History of the Royal Army Veterinary Corps – The Museum of Military Medicine). A fair assumption therefore would be that the shoes were made during this peak, either for use by service animals or as training for farriers, which might accord with the variety of quality seen in the assemblage. Once demand for horseshoes dropped after the war, the remaining stock could have been discarded, and presumably not returned to for the scrap metal drives of the following war.

One other transportation item was found at Bulford: a wheel fragment, of which approximately half of the diameter and three spokes remain. At 400 mm in diameter, the wheel is probably from a cart, trolley or similar, a variety of which were used both by the military in both world wars (e.g., ammunition carts) and also domestically, for example on wheelbarrows.

Leisure

Apart from the facilities provided by the YMCA and other civilian-operated canteens, leisure time on camp did not offer much in the way of entertainment, although there was a cinema. Reading, writing letters or postcards (see above) and smoking are likely to have filled many spare hours.

Fragments of 30 containers of tobacco, cigarette and cigar tins were recovered from First World War features. Smoking was a common leisure pastime, one actively encouraged by the War Office, who distributed 2 ounces of tobacco of Wills's Capstan brand tobacco per soldier, per week (Daniels 2015, 13). It was seen to calm soldiers and steel resolve before advancing in battle and was associated with bravery and military masculinity (Reeve 2018). The group of smoking-related packaging is particularly useful for assessing Army supply lines. W. D. & H. O. Wills, along with 12 of the largest British tobacco companies, joined forces in response to an American takeover threat and this partnership became the Imperial Tobacco Company (Imperial Tobacco Türkiye). Despite producing 45–50% of all cigarettes sold in the pre-war years and their ubiquitous presence (Daniels 2015, 21) on the front lines during the First World War due to their Army contract, Wills brands were poorly represented at Larkhill, limited

Figure 8.25 Tobacco tins: Hyman's and Dill's

to a Three Castles brand tin from a single First World War feature. Other Imperial Tobacco Company brands were represented, however, including Player's Navy Cut, the latter probably being of Canadian manufacture. Lambert & Butler products comprise a Warlock brand flake tobacco tin from a First World War feature, possibly of 1920s or 1930s date. A 'Tom Thumb' cigar packet is of much later (1970s) date.

Independent products include Coral Flake packaging, produced by W. T. Davies & Sons of Chester between 1900 and 1940 (Cigarette Brands Index – tobaccocollectibles.co.uk) and a Bishop's Move tin, probably made by Cohen, Weenan & Co. from a practice trench. Other North American imports included products of Hyman Ltd, who operated from New York and Montreal, and a J C Dill's 'Best Cut Plug Tobacco' (for pipe smoking) tin (Fig. 8.25), a brand of the American Tobacco Company in production until the 1950s. Cigarette brand 'Craven A' packaging dates between 1920 and 1950 and was made by Carreras Ltd, who remained independent of the Imperial Tobacco Company and were especially popular with soldiers in the Second World War (Packet of Craven 'A' cigarettes by Carreras Ltd | Science Museum Group Collection). Finally, a straw-like substance, possibly the remnants of tobacco, was found stored in an oval Cadbury's confectionery tin.

The means of smoking the tobacco were also found, in the form of a small number of clay pipe fragments and two synthetic mouthpieces from briar pipes. At least some of the clay pipes could be pre-War – by 1914 clay pipe manufacture in the UK had virtually come to an end. The datable fragments found (six bowls, three of them decorated, and one stamped stem) all fall into the 19th–early 20th-century range. The stamped stem is from a London pipe, but the manufacturer is unknown. One of the decorated pipes is in a 'thorn' design, one of many elaborately moulded pipes of the later 19th and early 20th centuries (e.g. Hammond 2009, fig. 7), while a second carries a harp motif (Fig. 8.26). While there was undoubtedly a market amongst Irish labourers employed in England for 'Irish-themed' pipes, at first made in Ireland but later copied by English pipe-makers, moulds for these pipes must have been supplied to many makers all over the country as they occur everywhere, and the pipes were not necessarily bought by those of Irish extraction (Atkinson 1977, 267).

Apart from tobacco products, the only other leisure item was a child's toy, a fragment of a 'Lone Star' pistol handle, from a First World War feature. The 'Lone Star' brand was made by the Die Cast Machine Tools Company between 1950 and 1983 (The Brighton Toy and Model Index). A child's toy may seem incongruous at a military

Figure 8.26 Clay pipe with harp motif

installation; however, in the 1950s and 1960s, the older huts formerly housing up to 40 soldiers were, in parts of the camp, converted to service family homes (Richards 2013, 13).

Reading has left little trace, but fragments of newspaper were found in the base of a metal coal scuttle found in rubbish pit 16803. These small fragments, some partly charred, reveal the somewhat incongruous details of horseracing results, theatre listings and adverts for domestic servants wanted; at least one appears to date to 1915. A least two newspapers are represented here, one British and one Canadian (doubtless brought in by, or sent to, a Canadian soldier posted to Larkhill). A few fragments can be combined to indicate a title of *Herald and Daily Telegraph*, a Montreal newspaper owned in 1914 by Hugh Graham, later Lord Atholstan (see Montreal at war).

Personal Items

Even more personal to the occupants of the camps are items of clothing and other effects. The most obvious of these are boots, both leather and rubber. One leather shoe was definitely not a military issue, but a minimum of five (from rubbish slots or pits), possibly two pairs and single, appear to be standard eight-hole 'ammunition boots' of the type issued to the British Army from at least the mid-1860s until their replacement in the 1960s by rubber-soled boots. None have the iron heel- and toe plates with which these boots were normally fitted, but all are in pretty poor condition and the soles at least are incomplete. One sole is nail-studded. Officers' boots lacked toe plates and sole studs (as they could afford to have the soles replaced) but still retained the heel plates. Fragments of heels and soles were found in several other contexts, as well as a four-hole upper, but these cannot be attributed to specific footwear types.

Fragments from two rubber boots (again, possibly a pair) were found with the leather pair in one of the rubbish slots; the construction consists of a series of alternating rubber and textile (canvas?) layers, but the overall form is unknown. Two fragments from the back of the heel bear the stamp of the Canadian Rubber Company of Montreal, more evidence of the Canadian presence at Larkhill. The use of rubber is intriguing here, as the standard boots issued to Canadian troops were of leather. In fact, Canadian-pattern boots issued early in the war turned out to be unequal to the rigours of service life – the soles were prone to dissolving in wet conditions. By 1916 the Canadian-made boots were relegated for issue to troops in training in the UK and replaced by British boots when troops were sent to the Continent ('Boots' –

canadiansoldiers.com). These rubber boots, then, are not standard. They may, instead, be an officer's rubber trench boots – a type of footwear privately purchased by officers of the Canadian Expeditionary Force.

Nine small four-hole buttons (eight mother-of-pearl and one bone) are most likely to have belonged to items of underwear, but there is one piece of khaki fabric with two buttons attached, probably from a uniform, from pit 16832, a slit trench next to practice tunnels. Two metal buttons were also found. One is a trouser button is embossed with the French phrase 'ne plus ultra', which translates roughly as 'the ultimate' – the phrase was featured on British, American and Australian buttons in the 19th and early 20th centuries to suggest quality, rather than indicating a French origin.

Rectangular framed buckles (three examples), in both copper alloy and iron, are common in military uniforms, on straps for kit and suchlike, but their simple design means that they cannot be closely dated. Copper alloy eyelets, studs and an aglet (shoelace end) from a shoe or boot represent further clothing items, while a possible metal button hook could have been used for dress uniforms.

The means of looking after footwear and uniforms was also in evidence. This includes two tins of leather protector (dubbin), one possibly made by Caswell's Ltd of Kettering and London, several of shoe polish, including one from Joseph Pickering & Sons of Sheffield, and Brilliant Shino Liquid Metal Polish.

An iron pocket watch case with copper alloy fob and a probable wristwatch bracelet were recovered. Other personal effects comprise four bone toothbrushes (Fig. 8.27) and four synthetic combs, a good illustration of how the synthetic revolution was uneven in its advance. Celluloid, the first commercial, man-made plastic, was developed in the late 19th century and was useful for producing cheaper jewellery, hair accessories and many items that would earlier have been manufactured from ivory, horn or other expensive animal products. Bakelite, the first truly synthetic resin, was patented in 1909. Toothbrushes, on the other hand, continued to be made in bone well into the 20th century, although plastic handles did appear from the 1890s.

Heating and Lighting

Items associated with lighting include lamp and candlestick fragments. The iron candlestick suggests a prosaic use in unlit buildings, rather than formal or decorative tableware (more common in brass or precious metals like silver). The form has a push-up lever for when the wick burns down. Hurricane lantern parts in copper alloy, and an aluminium lamp base, came from First World War features. Manufacturer information can be seen on an iron oil well fragment marked J. Hinks & Son, Makers, Birmingham.

Figure 8.27 Bone toothbrush

A carbon rod from an arc lamp carries the manufacturer's mark 'C Conradty Nuernberg'. These rods were used in searchlights, probably for use within camp security, but they were also used in cinematography and projection, so could have been utilised for more leisurely pursuits; the Military Cinema had opened in the camp during the First World War (James 1983, 40), while the Globe cinema operated there from 1926 (Richards 2013, 11).

Components of stoves were recovered from eight features (one from a later, Second World War date). Most appear to be 'Beatrice' stoves, small, portable paraffin cookers which were also capable of heating a small room. These were a trademarked by the company John Harper and Co. of Willenhall, Walsall in 1899 (John Harper and Co – blackcountryhistory.org) and were a popular product continuing to be produced well into the 1960s. A stove plate from a second manufacturer, George Wright Ltd, marked London, was also recovered. George Wright had three works between 1905 and 1920, one in Rotherham and in two in London (Rotherham Metropolitan Borough Council Record Ref. 63-B/5/B/32). Pipes from larger stoves were probably for larger-scale catering activities, as seen at Princess Royal Barracks (Marsden 2017, 10) or for heating larger rooms, such as those used to heat Quonset-type huts at Aldbourne, Wiltshire, in the Second World War (Malarkey and Welch 2008, 67). Other finds related to heating include two galvanised buckets stabbed with holes, probably used as makeshift braziers, one of which was found in a practice trench. A coal scuttle is nicely dated by the presence of British and Canadian newspapers, at least one of which is from 1915 (see above). A 'Tommy's Cooker' portable spirit stove came from a Second World War trench.

General Maintenance and other Activities

Four knife fragments, including one example with a bone handle, are from relatively small knives which may be for domestic use or for craftworking. One is from a German pocket knife, marked 'Wasserturm Solingen ans Rostfrei'. Other types, such as a torch case, could be related to security patrols or just kept in case of emergency (and power outages). A shovel and a pickaxe head, both with parts of the wooden handles surviving, may have been utilised in construction of the camp, or in practice trenches. Other objects include buckets, a billhook blade, a triangular lead bar repurposed as a hammer (with nail impressions) and a file. A paint tin, retaining the congealed remains of the paint inside and marked 'Temple Br[…], 2lb Hand Mixed', and a tin of Romac tyre paint from the 1950s, hint at the ongoing maintenance within the camp that must have been continuous.

Other

Perhaps one of the most intriguing finds from Larkhill was a large glass bottle with decorative diagonal fluting, embossed with the mark of Edward Auld, Montreal. Edward Auld was a manufacturer of glue and mucilage (another type of adhesive) and is listed as such in an 1888 Directory for the city (*The Commerce of Montreal and Its Manufactures*, 117). It is tempting to see the connection as via one of the Canadian soldiers at Larkhill, but equally it is difficult to know what he might have wanted with such a large quantity of adhesive – it was more usually, like ink, sold in small bottles.

Bibliography

AC Archaeology 2023. *Pole Barn at Park Farm, West Amesbury, Wiltshire: summary statement on results of a 'strip, map and record' excavation*. Salisbury: unpublished report ref. ACW1282/3/0.

Ambrose, S. 2003. *Pegasus Bridge – D-Day: The Daring British Airborne Raid*. London: Pocket Books.

Anon. 1915. *From the Front: Notes for the New Armies by 'Company Commander'*. London: Harrison and Sons.

Atkinson, D. R. 1977. '19th-century Marked Pipes from Maverton Road, Bow', *Transactions of the London and Middlesex Archaeological Society* 28, 258-268

Baggs, A. P., Freeman J. and Stevenson, J. H., 1995 'Parishes: Amesbury', in *A History of the County of Wiltshire Volume 15, Amesbury Hundred, Branch and Dole Hundred*, 13–55. London: Victoria County History.

Barker, D., 2017. '"Business as usual": the impact of the Great War on the British ceramics industry', *Post-Medieval Archaeology* 51, 209–60

Barrie, A. 1961, *War Underground: the tunnellers of the Great War*. London: Tom Donovan Publishing.

Barton, P., Doyle, P. and Vandewalle, J. 2004 *Beneath Flanders Fields: the tunnellers' war 1914–18*. Staplehurst, UK: Spellmount.

Batten, S. 2015. 'A school of the leaders – what did the British Army learn from the 1912 army manoeuvres?' *Journal of the Society for Army Historical Research* 93(373), 25–47, Society for Army Historical Research.

Bax, S., Bowden, M., Komar, A. and Newsome, S. 2010 *Stonehenge World Heritage Site Landscape Project – Winterbourne Stoke Crossroads: archaeological survey report*. Swindon: Historic England Research Report Series no. 107/2010.

Beach, S. 2018 'Military practice trenches and a dump of United States Army sunburn cream tins on the Salisbury Plain Defence Training Estate', *Wiltshire Archaeological and Natural History Magazine* 111, 51–58.

Beach, S. and Clarke, B. 2020. 'A multi-phase 20th-century military landscape near Shipton Bellinger, Salisbury Plain', *Hampshire Studies* 75(1), 140–163.

Boulter, S. 2022. *Living With Monuments: excavations at Flixton volume 2*. East Anglian Archaeology 177

Bowden, M., Soutar, S., Field, D. and Barber, M. 2015 *The Stonehenge Landscape: analysing the Stonehenge World Heritage Site*. Swindon: Historic England.

Bradley, R., Entwistle, R. and Raymond, F. 1994 *Prehistoric Land Divisions on Salisbury Plain: the work of the Wessex Linear Ditches Project*. London: English Heritage.

Bridgland, T. and Morgan, A. 2003 *The Norton-Griffiths Story – Tunnel-Master and Arsonist of the Great War*. Barnsley: Pen & Sword Books.

British Geological Survey. BGS Geology Viewer. https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/

British Medical Association, 1909. *Secret Remedies, What They Cost and What They Contain*. London: British Medical Association (reproduction published by Forgotten Books, London).

Brown, G. and Field, D. J. 2007. 'Training trenches on Salisbury Plain', *Wiltshire Archaeological and Natural History Magazine* 100, 170–180.

Brown, M. 2017. *First World War Fieldworks in England*. Swindon: Historic England Research Report Series no. 61/2017.

Brown, M. and Osgood, R. 2009. *Digging Up Plugstreet – The Archaeology of a Great War Battlefield*. Yeovil: Haynes Publishing.

Brown, M. and Thompson, S. 2018. '"A Matter of Holes and Ditches": the archaeology of Great War training, Larkhill, Wiltshire, *Wiltshire Archaeological and Natural History Magazine* 111, 6–20.

Brown, P. 2013. '6th Airborne Armoured Reconnaissance Regiment and the Tetrarch', Warhistoryonline.com. https://www.warhistoryonline.com/articles/article-6th-airborne-armoured-reconnaissance-regiment-and-the-tetrarch-by-peter-brown.html (accessed 26 June 2024).

Brown, T. 2013. *Flying with the Larks – The Early Aviation Pioneers of Lark Hill*. Cheltenham: The History Press.

Buckton, H. 2015. *Salisbury Plain: home of Britain's military training*. Stroud: Phillimore & Co.

Bull, S. 2002. *World War I Trench Warfare (1): 1914–16*. Oxford: Osprey Publishing.

Chamberlain, P. and, Ellis C. 1967. *Light Tank Mk. VII Tetrarch*, Armour in Profile Series No. 11. Windsor: Profile Publications.

Chandler, J. and Goodhugh, P. 1989. *Amesbury: history and description of a south Wiltshire town*. Amesbury: The Amesbury Society.

Chasseaud, P. 2006. *Rats Alley – Trench Names of the Western Front 1914–1918*. Staplehurst, UK: Spellmount.

Clarke, B. 2008. *The Archaeology of Airfields*. Stroud: Tempus.

Clarke, B. 2018. ''Wiltshire's World War I Airfield Landscape: a focus on the landscape of aircrew training, *Wiltshire Archaeological and Natural History Magazine* 111, 21–38.

Collier, J. B. 1972. 'The Autumn Manoeuvres of 1872', *Journal of the Society for Army Historical Research*, 50(204), 221–236.

Copp, T. and Maavara, A. 2021. *Montreal at War, 1914–1918*. Toronto: University of Toronto Press.

Craufurd-Benson, H. J. and Macleod, J. 1946. 'A.L. 63, the original British Army louse powder', *Journal of Hygiene* 44, issue 4, 294–306

Crawford, T. S. 2012a. *Wiltshire and the Great War, Training the Empire's Soldiers*. The Crowood Press.

Crawford, T. S. 2012b. *The Canadian Army on Salisbury Plain, The First Canadian Contingent October 1914 – February 1915*. Halsgrove.

Crittall, E. 1959. *A History of the County of Wiltshire: Volume 4*. London: Oxford University Press for the Institute of Historical Research

Daniels, H. 2015. 'When the smoke cleared: tobacco supply and consumption by the British Expeditionary Force, 1914–1918', *French Journal of British Studies* 20/1. https://doi.org/10.4000/rfcb.218

David, S. 2013. *All The King's Men: the British Redcoat in the era of sword and musket*. London: Penguin.

Douglas, J. 1923. *The Royal Naval Division*. London: Hutchinson & Co.

Fairey, E. 1920. *The 38th Battalion AIF: the story and official history of the 38th Battalion AIF*. Bendigo: 38th Battalion History Committee.

Finnegan, T. 2011. *Shooting the Front – Allied Aerial Reconnaissance in the First World War*. Staplehurst, UK: Spellmount

Flenley, R. 1919. *A Brief History of the 30th Division from its Reconstitution in July 1918 to the Armistice, 11th November 1918*. London: War Narratives Publishing.

Fletcher, D 1993. *The Universal Tank: British armour in the Second World War, part 2*. London: HMSO.

Fletcher, D. 2006. *Swimming Shermans: Sherman amphibious tank of World War II*. Oxford: Osprey Publishing.

Flint, K. 2010. *Airborne Armour: Tetrarch, Locust, Hamil Car and the 6th Airborne Armoured Reconnaissance Regiment 1938–50*. Solihull: Helion & Company.

Frederickson, L. 2015. 'The Development of Australian Infantry on the Western Front 1916-1918: an imperial model of training, tactics and technology'. Sydney: UNSW, https://doi.org/10.26190/unsworks/2850 (accessed 24 June 2025)

French, G. 1931. *The Life of Field Marshal Sir John French*. London: Cassell & Company.

Grady, T., 2019. 'Landscapes of internment: British Prisoner of War camps and the memory of the First World War', *Journal of British Studies* 58, 543–564

Grieve, W. G. and Newman, B. 1936. *Tunnellers: the story of the tunnelling companies, Royal Engineers, during the World War*. London: Herbert Jenkins. Reprinted by The Naval & Military Press.

Grimes, W. F. 1960. *Excavations on Defence Sites, 1939–1945. 1: Mainly Neolithic–Bronze Age*. London: Her Majesty's Stationery Office/Ministry of Works Archaeological Reports No. 3.

Guy, R. 1981. *A History of the Gunnery Wing, Royal School of Artillery 1929–1980*. Larkhill: Royal School of Artillery.

Hammond, P. J. 2009. Ebenezer Church: clay tobacco pipe manufacturer of Pentonville, London, *Transactions of the London & Middlesex Archaeological Society* 60, 225–48

Hastings, M. 2016. *Overlord: D-Day and the Battle for Normandy 1944*. London: Macmillan.

Hutchison, D. 2021. 'Field Service Regulations 1909 (FSR), Revised 1912 (London, War Office): an analysis'. https://fieldserviceregulations.co.uk/

James, N. D. G. 1983. *Gunners at Larkhill: a history of the Royal School of Artillery*. Newport: Gresham Books.

James, N. D. G. 1987. *Plain Soldiering – A History of the Armed Forces on Salisbury Plain*. Salisbury: Hobnob Press

Jarrett, C., Cross, M. and Robertson, A. 2016. 'Containers and teapots: archaeological evidence for the exported wares of the Caledonian Pottery, Rutherglen, and its role in Glasgow's ceramic international trade and industry', in Brooks, A. (ed.), *The Importance of British Material Culture to Historical Archaeologies of the Nineteenth Century* 69–106. Lincoln (NE): University of Nebraska Press and Society for Historical Archaeology.

Jones, D. 1937. *In Parenthesis*. London: Faber and Faber.

Jones, S. 2024. *The War Underground 1914–18: tactics and equipment*. Oxford: Osprey Publishing.

Khan, M. 2023. *Army Basing Programme Post-Excavation Analysis and Reporting – Analysis and Reporting of Military Artefacts*. Unpublished report for Wessex Archaeology.

Kipling, R. 1915. *The New Army in Training*. London: Macmillan.

Knight, P. M. 2022. *A17 Tetrarch Tank a Technical History*. Morrisville (NC): Lulu Press.

Labbett, P. and Mead P. J. F. 1988. *.303 Inch: a history of the .303 cartridge in the British service*, Hendon, England: Forensic Ammunition Service.

Lack, J. 1983 'Abel Hoadley', in *Australian Dictionary of Biography, Volume 9 [https://adb.anu.edu.au/biography/hoadley-abel-6687 accessed 08/09/2025]*

Landers R. 2001. *Grenade: British and Commonwealth hand and rifle grenades*. Dural, Australia: Landers Publishing.

Lawson, A. J. 2007. *Chalkland: an archaeology of Stonehenge and its region*. Salisbury: Hobnob Press.

Leivers, M. 2017a. 'Robin Hood's other ball? A newly discovered causewayed enclosure at Larkhill, Wiltshire', PAST 85, 12–13. https://www.prehistoricsociety.org/sites/prehistoricsociety.org/files/publications/past/past85.pdf

Leivers, M. 2017b 'The Army Basing Programme: new discoveries at Larkhill and Bulford', *Historic England Research* 6, 36–40. https://historicengland.org.uk/images-books/publications/historic-england-research-6/he-research-6

Leivers, M. 2021 'The Army Basing Programme, Stonehenge and the emergence of the sacred landscape of Wessex', *Internet Archaeology* 56. https://doi.org/10.11141/ia.56.2

Leivers, M. & Moore, C., 2008 *Archaeology on the A303 Stonehenge Improvement*. Salisbury: Wessex Archaeology

Lewis, J. O. 2001. *At the Sign of the Hop Leaf: the rise of H & G Simonds Ltd, a Berkshire brewer*. University of Leicester, unpublished MA thesis (accessed online, 3 January 2024. https://simondsfamily.me.uk/wp-content/uploads/2021/09/Sign-of-the-Hop-leaf-2003.pdf)

Longmore, C. 1920. *'Eggs-a-Cook!' The Story of the Forty-fourth*. Perth: Colortype Press (reprinted London 2002).

Mac Con Iomaire, M. and P. Gallagher (2011) 'Irish corned beef: a culinary history', *Journal of Culinary Science and Technology* 9(1), 27–43

MacLeman, G. 2017. 'Mystery of Salisbury Plain MG solved', classicandsportscar.com. https://www.classicandsportscar.com/news/mystery-salisbury-plain-mg-solved (accessed 16 June 2024)

MacNiven, R. 2021. *British Light Infantry in the American Revolution*. Oxford: Osprey Publishing.

Maddocks, G. 2014. *Liverpool Pals: a history of the 17th, 18th, 19th and 20th Service Battalions, the King's Liverpool Regiment 1914–1918*. Barnsley: Pen and Sword Books.

Malarkey, D. with Welch, B. 2008. *Easy Company Soldier*. New York: St Martin's Griffin

Marsden, K. 2017. 'The finds', in Cotswold Archaeology, *Princess Royal Barracks, Deepcut, Surrey, phase 1 archaeological evaluation.* Cotswold Archaeology unpublished report series no. 17161, 10–11

Mathew, W. M. 1998. *Keiller's of Dundee. The rise of marmalade*. Abertay Historical Society Publication 38

Maze, R. 2012. *The Webley Service Revolver*. Osprey Publishing.

McIntyre, J. 2017. *The Development of British Light Infantry*. Point Pleasant (NJ): Winged Hussar Publishing.

McKay, D. and Scott, H. M. 1983. *The Rise of the Great Powers 1648–1815*. London: Routledge.

McOmish, D., Field, D. and Brown, G. 2002. *The Field Archaeology of the Salisbury Plain Training Area*. Swindon: English Heritage

Montgomery, B. L. 1958. *The Memoirs of Field-Marshal the Viscount Montgomery of Alamein*. London: K. G. Collins.

Moss, M. 2020. *The PIAT: Britain's anti-tank weapon of World War II*. Oxford: Osprey Publishing.

Nicholson, G.W.L. 1962. *Official History of the Canadian Army in the First World War: Canadian Expeditionary Force 1914–1919*. Ottawa: Department of National Defence (accessed online, 5 January 2024: https://publications.gc.ca/collections/collection_2009/forces/DA3-4462E.pdf)

Osgood, R. 2018. 'Ghosts on the Plain', *Wiltshire Archaeological and Natural History Magazine* 111, 2–5.

Parker Pearson, M., Richards, C., Allen, M., Payne, A. and Welham, K. 2004. 'The Stonehenge Riverside Project: research design and initial results', *Journal of Nordic Archaeological Science* 14, 45–60.

Parker Pearson, M., Pollard, J., Richards, C., Thomas, J., Tilley, C. and Welham, K. (eds) 2020. *Stonehenge for the Ancestors. Part 1: landscape and monuments*. Leiden: Sidestone Press.

Pasholok, Y. 2016. 'Tetrarch in the USSR', Tank Archives. https://www.tankarchives.ca/2016/06/tetrarch-in-ussr.html (accessed 19 June 2024)

Pederson, P. 1985 *Monash as a Military Commander*. Carlton South, Victoria: Melbourne University Press.

Pollard, J., Garwood, P., Parker Pearson, M., Richards, C., Thomas, J. and Welham, K. 2017. 'Remembered and imagined belongings: Stonehenge in the age of first metals', in Bickle, P., Cummings, V., Hofmann, D. and Pollard, J. (eds), *The Neolithic of Europe. Papers in Honour of Alasdair Whittle*, 279–97. Oxford: Oxbow Books.

Powell, A. B. and Legg, S. 2020. 'An Early Bronze Age "log burial" and other features along the Bulford to Tidworth cable trench, Defence Training Estate Salisbury Plain, 2017', *Wiltshire Archaeological and Natural History Magazine* 113, 56–84.

Rawlings, M. and Fitzpatrick, A. P., 1996 'Prehistoric Sites and a Romano-British Settlement at Butterfield Down, Amesbury', *Wiltshire Archaeological and Natural History Magazine* 89, 1–43.

Reeve, M., 2018. 'Smoking and cigarette consumption', in Daniel, U., Gatreel, P., Janz, O., Jones, H., Keene, J., Kramer, A. and Nasson, B. (eds), *1914–1918 online. International Encyclopedia of the First World War*. https://doi.org/10.15463/ie1418.11265

Richards, J. 1990. *The Stonehenge Environs Project*. Swindon: English Heritage.

Richards, J. 2013. *Larkhill, 5000 Years of History*. Amesbury: Layers of Larkhill Project

Royal Commission on Historical Monuments (England) 1979. *Stonehenge and its Environs Monuments and Land Use*. Edinburgh: Edinburgh University Press.

Service, T., 2015. *What the Victorians Threw Away*. Oxford: Oxbow Books.

Teagarden, T. M. 1997. 'Management lessons to be learned from the Old Contemptibles', *Journal of the Society for Army Historical Research* 75(302), 119–132.

Temple, B. A, 1986. *Identification Manual on the .303 British Service Cartridge. No.1: ball ammunition and No. 2: blank ammunition*. Burbank, Australia.

Thompson, S. and Powell, A. B. 2018. *Along Prehistoric Lines. Neolithic, Iron Age and Romano-British Activity at the Former MOD Headquarters, Durrington, Wiltshire*. Salisbury: Wessex Archaeology.

Wainwright, G. J. and Longworth, I. H. 1971. *Durrington Walls Excavations 1966–1968*. London: Society of Antiquaries.

War Office, 1902. Annual Report of the School of Gunnery. Unpublished, Royal School of Artillery, Larkhill.

War Office, 1905a. *The Manual of Infantry Training*. London: HMSO.

War Office, 1905b. *Manual of Military Engineering*. London: HMSO.

War Office, 1913. *The Training and Manoeuvre Regulations 1913*. London: HMSO.

War Office, 1914a. *Manual of Field Engineering 1911*, repr. 1914. London: HMSO.

War Office, 1914b. *Infantry Training (4-Company Organisation)*. London: HMSO.

War Office, 1914c. *Notes from the Front – Collated by the General Staff*. London: HMSO.

War Office, 1915a. *Notes from the Front Part III and Further Notes on Field Defences – Collated by the General Staff*. London: HMSO.

War Office, 1915b. *Notes from the Front Part IV and Further Notes on Field Defences – Collated by the General Staff*. London: HMSO.

War Office, 1916. *Notes for Infantry Officers on Trench Warfare, compiled by the General Staff, March 1916*. London: HMSO, republished by The Naval and Military Press.

War Office, 1921. *Manual of Field Works (All Arms)*. London: HMSO.

War Office, 1942. *Small Arms Training. Volume 1, Pamphlet No. 13*. Grenade. London: Keliher, Hudson & Kearns.

War Office, 1943. *Small Arms Training. Volume 1, Pamphlet No. 24. Projector, Infantry, Anti-Tank (PIAT)*. London: Keliher, Hudson & Kearns.

Wessex Archaeology, 2000. *Amesbury phase 1 housing, Boscombe Down, Wiltshire: excavations on the line of the spine road 1996, excavations at New Covert 1997, and watching brief 1996–7*: assessment report. Unpublished client report.

Wessex Archaeology, 2002. *New School Site, Boscombe Down, Wiltshire: excavations in 2002: assessment report*. Unpublished client report.

Wessex Archaeology, 2003. *Stonehenge Visitor Centre, Countess East, Amesbury, Wiltshire – Archaeological Evaluation: results*. Unpublished client report.

Wessex Archaeology, 2005. *Development of New Football Pitch, Allanbrooke Barracks, Larkhill, Wiltshire: archaeological watching brief*. Salisbury: unpublished report ref 60660.01.

Wessex Archaeology, 2007. *Southmill Hill Boscombe Down, Wiltshire: geophysical assessment – archaeological evaluation of geophysical data*. Unpublished client report.

Wessex Archaeology, 2008. *Boscombe Down Phase VI Excavation, Amesbury, Wiltshire, 2006-7. Interim Assessment on the Results of The Byway 20 Romano-British Cemetery Excavations*. Unpublished client report.

Wessex Archaeology, 2012a. *Druids Lodge Polo Club, Salisbury, Wiltshire: archaeological mitigation report*. Unpublished client report.

Wessex Archaeology, 2012b. *Land at King's Gate, Boscombe Down, Amesbury, Wiltshire: report on additional trial trench evaluation at Southmill Hill and Swale*. Unpublished client report.

Wessex Archaeology, 2013a. *Project Allenby/Connaught, Bulford, Wiltshire: archaeological desk-based assessment*. Salisbury: unpublished report ref.101480.31.

Wessex Archaeology, 2014a. *Army Rebasing: Bulford SFA South West Site, Salisbury, Wiltshire: detailed gradiometer survey report*. Salisbury: unpublished report ref. 104151.02.

Wessex Archaeology, 2014b. *Project Allenby/Connaught, Larkhill, Wiltshire: archaeological desk-based assessment*. Salisbury: unpublished report ref:101480.41.

Wessex Archaeology, 2014c. *Bulford South SFA, Bulford, Wiltshire: written scheme of investigation for an archaeological evaluation*. Salisbury: unpublished report ref. T19606.03.

Wessex Archaeology, 2015a. *Bulford South SFA, Phase II Investigations, Bulford, Wiltshire: archaeological evaluation report*. Salisbury: unpublished report ref: 107943.02.

Wessex Archaeology, 2015b. *Bulford South SFA, Bulford, Wiltshire: archaeological evaluation and watching brief report*. Salisbury: unpublished report ref: 107940.01.

Wessex Archaeology 2015c. *Army Basing Programme (ABP) Bulford, Larkhill, Perham Down and Tidworth Military Camps: written scheme of investigation and project design for archaeological works*. Salisbury: unpublished report ref. 106920.01.

Wessex Archaeology, 2015d. *Bulford South SFA, Phase III Investigations, Bulford, Wiltshire. Written Scheme of Investigation: method statement for a programme of archaeological excavation*. Salisbury: unpublished report ref. 107945.01.

Wessex Archaeology, 2016a. *Larkhill East and West SFA Further Work, Salisbury, Wiltshire. Detailed Gradiometer Survey Report*. Salisbury: unpublished report ref. 107947.01.

Wessex Archaeology, 2016b. *Bulford South SFA, Bulford, Wiltshire. Written Scheme of Investigation for an Archaeological Strip, Map and Record.* Salisbury: unpublished report ref. 113930.

Wessex Archaeology, 2016c *A303 Stonehenge Amesbury to Berwick Down Geophysical survey report Phase 1*. Unpublished client report ref. HE551506-AA-EHR-SWI-RP-YE-000003

Wessex Archaeology 2016d *Bulford South SFA, Bulford, Wiltshire. Written Scheme of Investigation for an Archaeological Strip, Map and Record*. Unpublished Client Report ref 113930

Wessex Archaeology, 2017, *Perham Down World War I Practice Trenches, Salisbury Plain, Hampshire*. Salisbury: unpublished report ref. 113940.

Wessex Archaeology, 2018a. *Army Basing Programme (ABP) Larkhill Areas 2002 (ABHGEN) and 2003 (ABJGEN): post-excavation assessment*. Salisbury: unpublished report ref. 109516.11.

Wessex Archaeology 2018b. *ABP Bulford, Larkhill, Perham Down and Tidworth Military Camps WSI and Project Design for Archaeological Work*. Salisbury: unpublished report ref. 106920.01.

Whitmarsh, A. 2007. 'British Army manoeuvres and the development of military aviation, 1910–1913', *War in History* 14, 325–346.

Wilson, F., 2016. 'Booze, temperance and soldiers on the home front: the unraveling of the image of the idealised soldier in Canada', *Canadian Military History* 25, article 16 (accessed online, 5 January 2024: https://core.ac.uk/download/pdf/143687833.pdf).

Wyrall, E. 1919. *History of the 62nd (West Riding) Division 1914–1919: volume 1*. London: John Lane The Bodley Head.

Aerial Photographs

SACA 487 XII K Q 84 07/11/23 - Historic England Archive CCC/8603/1689

Trade Directories

The Commerce of Montreal and Its Manufactures, 1888. Montreal: George Bishop Engraving & Printing Co. https://public-content.library.mcgill.ca/digitization/978-1-926748-67-2.pdf (accessed 3 January 2024).

Online Sources

Aerial photography and the First World War – The National Archives: https://blog.nationalarchives.gov.uk/aerial-photography-first-world-war/

Airfields of Britain Conservation Trust: https://www.abct.org.uk/

Allen & Lloyd: https://www.geograph.org.uk/photo/1108646 (accessed 3 January 2024), and https://www.farnhamherald.com/news/bordon-mineral-water-business-followed-the-troops-before-it-dried-up-630251 (accessed 2 January 2024).

Army Catering Corps: https://www.nam.ac.uk/explore/army-catering-corps (accessed 5 April 2023)

Artillery Training Maps: https://charlesclosesociety.org/

Ashton & Parsons: https://www.ashtonandparsons.co.uk/about/ (accessed 2 January 2024).

Bristol Flying School, Salisbury Plain – Graces Guide: https://www.gracesguide.co.uk/Bristol_Flying_School,_Salisbury_Plain

British Army WW1 Trench Maps –The Great War 1914–1918: http://www.greatwar.co.uk/research/maps/british-army-ww1-trench-maps.htm#mapdevelopment

British Expeditionary Force – Oxford Reference: https://www.oxfordreference.com/display/10.1093/oi/authority.20110803095528214

Calvert's tooth paste: https://www.gracesguide.co.uk/F._C._Calvert_and_Co (accessed 3 January 2024) and https://collection.sciencemuseumgroup.org.uk/objects/co102072/ceramic-pot-lid-for-calverts-carbolic-tooth-paste-pot-lid-carbolic-toothpaste (accessed 3 January 2024).

Canadian soldiers' uniforms: https://www.canadiansoldiers.com/uniforms/boots.htm (accessed 15 February 2024).

Captain Bertram Dickson 1873–1913 – Imperial War Museums: https://www.iwm.org.uk/collections/item/object/205021867

Canadians on Salisbury Plain: https://canadiangreatwarproject.com/articles/life_on_salisbury_plain.php (accessed 5 January 2024).

Cigarette brands: https://tobaccocollectibles.co.uk/cigarette-brands-index (accessed 11 April 2023)

Commonwealth of Australia Gazette: https://trove.nla.gov.au/newspaper/article/232511575/25024758

Corporal Harry Sidney Baddeley: https://www.findagrave.com/memorial/12533083/harry-sidney-baddeley

Craven A cigarettes: https://collection.sciencemuseumgroup.org.uk/objects/co8102858/packet-of-craven-a-cigarettes-by-carreras-ltd-cigarette-packet (accessed 11 April 2023)

Day, Son & Hewitt: https://www.whatthevictoriansthrewaway.com/project/vets-bottle/ (accessed 2 January 2024).

Drinking during the First World War: https://www.greatwarforum.org/topic/172634-licensing-drinking-temperance/ (accessed 3 January 2024)

Duke of Cornwall's Light Infantry: https://www.longlongtrail.co.uk/army/regiments-and-corps/the-british-infantry-regiments-of-1914-1918/duke-of-cornwalls-light-infantry/

Elliman's Embrocation: https://mhc.andornot.com/en/permalink/artifact8188 (accessed 2 January 2024)

Gazetteer of First World War practice trenches by Historic England: Trenches in England Gazetteer_Issue-01_formatted.xlsx (historicengland.org.uk)

Harry Sidney Baddeley – Lives of the First World War, Imperial War Museums: https://livesofthefirstworldwar.iwm.org.uk/lifestory/119086

His Majesty's Manoeuvres (1912) – East Anglian Film Archive: https://eafa.org.uk/work/?id=1878

Horses in the First World War: https://webarchive.nationalarchives.gov.uk/ukgwa/20250613143642/https://blog.nationalarchives.gov.uk/making-horses-war-army-remount-service/ (accessed 5 April 2023)

Hospitals: England – Following the Twenty-Second: https://anzac-22nd-battalion.com/hospitals-england/

Imperial Tobacco: https://www.imperialtobacco.com.tr/en/tarihce.php (accessed 11 April 2023)

James Keiller – History of Keiller's Dundee Marmalade: https://baybottles.com/tag/history-of-keillers-dundee-marmalade/ (accessed 7 August 2024)

James Pascall: https://letslookagain.com/2015/03/a-history-of-james-pascall/ (accessed 3 January 2024)

John Harper & Co: https://www.blackcountryhistory.org/collections/getrecord/GB146_BS-JH (accessed 5 April 2023)

Lalance and Grosjean: https://theclio.com/entry/119117, accessed 6 April 2023

Larkhill Camp: Larkhill - Our Contribution (birtwistlewiki.com.au) (accessed 10 January 2024)

Lives of the First World War – Imperial War Museums: https://livesofthefirstworldwar.iwm.org.uk/

MacLaren's Imperial Cheese: Dictionary of Canadian Biography, Volume XIV (1911–1920) http://www.biographi.ca/en/bio/maclaren_alexander_ferguson_14E.html#:~:text=Roughly%20a%20year%20later%20he,factory%20was%20opened%20in%20Detroit (accessed 3 January 2024)

Montreal at war: https://www.amazon.com/Montreal-War-1914-1918-Canadian-Experience-ebook/dp/B09L5G9SCC (accessed 15 February 2024)
Netheravon airfield – Airfields of Britain Conservation Trust: https://www.abct.org.uk/airfields/airfield-finder/netheravon/
Oxo: https://www.greatwarforum.org/topic/13117-oxo/ (accessed 2 January 2024 [this site references the Oxo website but the text cited no longer appears there])
Royal Army Veterinary Corps: https://www.museumofmilitarymedicine.org.uk/about/corps-history/history-of-the-royal-army-veterinary-corps (accessed 5 April 2023)
Salisbury Plain Masterplan (Army Basing Programme) – GOV.UK: https://www.gov.uk/government/consultations/salisbury-plain-training-area-master-plan-army-basing-programme
Sarreguemines pottery marks: https://www.porcelainmarksandmore.com/related/lorraine/saargemuend-01/index.php (accessed 2 January 2024)
Scotch whisky – John Walker & Sons: https://scotchwhisky.com/whiskypedia/2630/john-walker-sons/ (accessed 2 January 2024)
Service Battalions 1914–1919 – Museum of the Manchester Regiment, Tameside MBC: https://www.tameside.gov.uk/museumsgalleries/mom/history/service1914#19th
South Lancashire Regiment – My Warrington: https://mywarrington.org/south-lancashire-regiment/
Sydney Morning Herald, 'Salisbury Plain. The Lark Hill Camp': https://archive.org/details/The_Sydney_Morning_Herald_03_01_1917/page/n5/mode/2up, (accessed 13 March 2025)
Syllabus of infantry training for senior Training Reserve and Reserve Garrison Battalions – The Long, Long Trail: https://www.longlongtrail.co.uk/soldiers/a-soldiers-life-1914-1918/training-to-be-a-soldier/syllabus-of-infantry-training-for-senior-training-reserve-and-reserve-garrison-battalions/
The Brighton Toy and Model Index, ISSN 2399-1798: https://www.brightontoymuseum.co.uk/index/Main_Page
The British infantry regiments of 1914–1918 – The Long, Long Trail: https://www.longlongtrail.co.uk/army/regiments-and-corps/the-british-infantry-regiments-of-1914-1918
The defence training estate – GOV.UK: https://www.gov.uk/guidance/defence-infrastructure-organisation-and-the-defence-training-estate
The Great Autumn Manoeuvres – British Pathé: https://www.britishpathe.com/asset/92471/
The Long, Long Trail – Researching soldiers of the British Army in the Great War of 1914–1918: https://www.longlongtrail.co.uk/
The Royal Flying Corps – RAF Museum: https://www.rafmuseum.org.uk/research/online-exhibitions/rfc_centenary/the-rfc/
Training to be a soldier – The Long, Long Trail: https://www.longlongtrail.co.uk/soldiers/a-soldiers-life-1914-1918/training-to-be-a-soldier/
Wadworth Brewery: https://www.wadworth.co.uk/about-us/history (accessed 2 January 2024)
War Diary, The Rifles Berkshire and Wiltshire Museum: thewardrobe.org.uk
War memorial, Wallasey, Cheshire: http://www.carlscam.com/warmem/wallaseyh.htm
Wiltshire Regiment – 4th Bn (TF) – Army Service Numbers 1881–1918: https://armyservicenumbers.blogspot.com/2020/12/wiltshire-regiment-4th-bn-tf.html
53rd (Young Soldier) Battalion, Royal Warwickshire Regiment in the Great War – The Wartime Memories Project: https://www.wartimememoriesproject.com/greatwar/allied/battalion.php?pid=7365

National Archives

Australian War Memorial Collection

awm.gov.au

AWM 3DRL/2316
AWM 3DRL/2316, RCDIG0000614
AWM 3DRL/2316, RCDIG0000615
AWM 25 943/7
AWM 25 943/14
AWM G26/53
AWM25 2DRL/234
AWM25 943/7
AWM 3DRL/2316

National Archives of Australia (NAA)

NAA: B2455, WEATHERS LAWRENCE CARTHAGE, Item ID 1935408. Pp 46–48, https://recordsearch.naa.gov.au/SearchNRetrieve/Interface/ViewImage.aspx?B=1935408

The National Archives (TNA)

https://www.nationalarchives.gov.uk/

Photography in the RFC – reports on progress: AIR 1/123/15/40/144
100th Infantry Brigade War Diaries – WO 95/2428
The Bovington Artillery Training Map - WO 153/978,
A 1923-dated map showing War Department boundaries - WO 32/21838

Index

Nicola King

Page numbers in *italic* font denote images, those in **bold** denote tables.

The Army Basing Programme facilitated the relocation of over 4000 British Army personnel to Salisbury Plain from Germany. Given the scale of these works and the archaeological significance of the area, not least the proximity of the Stonehenge, Avebury and Associated Sites World Heritage Site, it was recognised from the outset that the works would require the excavation of sensitive archaeological remains.

This book, concentrating on military remains identified at Lark Hill and Bulford, is the last of three volumes on the results of the Army Basing Programme. It reports on impressive and extensive First World War practice trench and tunnel systems with accompanying graffiti, and a multitude of diverse military and civilian artefacts. Second World War artillery emplacements, structures and associated air-raid shelter trenches were also identified at Lark Hill. At Bulford, slit trenches, evidence of training with the Projector Infantry Anti-Tank (PIAT) weapon system, and parts of a Vickers Light Tank Mk VII, A17, Tetrarch Tank, complete with shrapnel damage, were investigated.

A wholly archaeological approach would not have done the subject matter justice. Therefore, where possible, attempts have been made to provide a sense of the personal experiences and stories of the people and units who trained and lived, for a while, at these sites.

ISBN 978-1-0682716-8-7

wessex archaeology

Defence Infrastructure Organisation