DISCOVERY AND SURVEY OF WORLD WAR I PRACTICE TRENCHES, BURBAGE, DERBYSHIRE

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SUMMARY

In 2014 distinctive earthworks were identified above Burbage near Buxton and in early 2015 a detailed survey was made. What has emerged is a site that rivals the only other extensive World War I practice trenches in the Peak District, the Scheduled remains at Redmires, above Sheffield. It is believed the Burbage trenches were dug by the Royal Engineers, who were stationed in Buxton from 1915.

The main site, at Burbage Edge, has extensive if low earthworks on the coarse grassland behind the scarp, with further remains nearby on private farmland with no public access. In contrast, a single trench just over a mile away on moorland on Watford Moor is much more obvious. Seen in plan, the most distinctive features at both are crenelated earthworks. These 'fire trenches' were designed as front-line infantry positions. There are also 'communication trenches' approaching the defensive earthworks from behind. Other recognisable features include machine-gun or lookout posts in front of the 'fire trenches' and two oval 'redoubts' designed as local front-line command and supply posts.

DISCOVERY

In 2014 Simon Crutchley of Historic England (then English Heritage) identified distinctive World War I practice trenches amongst Coal Authority Lidar survey data commissioned to monitor old coal mining remains near Buxton. A press release was made by the Coal Authority, with contributions by Simon Crutchley of English Heritage and Glynn Wilton of Derbyshire Record Office.

Two areas with trenches were identified at Burbage Edge. One is on moorland within a 19th century field with ruined wall, centred in its northern half at SK 0315 7250. A short distance east, immediately beyond the narrow Burbage Edge Plantation at the scarp crest, there is a steeply-sloping walled pasture, centred at SK 0345 7255, which contains further trenches. In both cases the World War I earthworks comprise shallow ditches and low banks (Plate 1), all features that were either always shallow and/or largely backfilled by the army shortly after they became redundant. In contrast, a single silted but un-backfilled trench exists on Watford Moor at SK 0374 7463 (Plate 2), sited about 300m west of late 19th century shooting range butts; this was identified during preparation for the detailed survey. The western Burbage Edge area and the trench on Watford Moor are both on Open Access Land, whereas, the eastern area at Burbage Edge is on private farmland with no public access. Despite the main Burbage Edge earthworks to the west having a footpath passing close by which has been followed by the author several times over the years, he did not see what now seems obvious; there is always more to learn!

Plate 1: The area 23 '*fire trench*' in the pasture below Burbage Edge, illustrating that even when the vegetation is low all that can normally be seen at the Burbage Edge trenches are shallow earthworks.

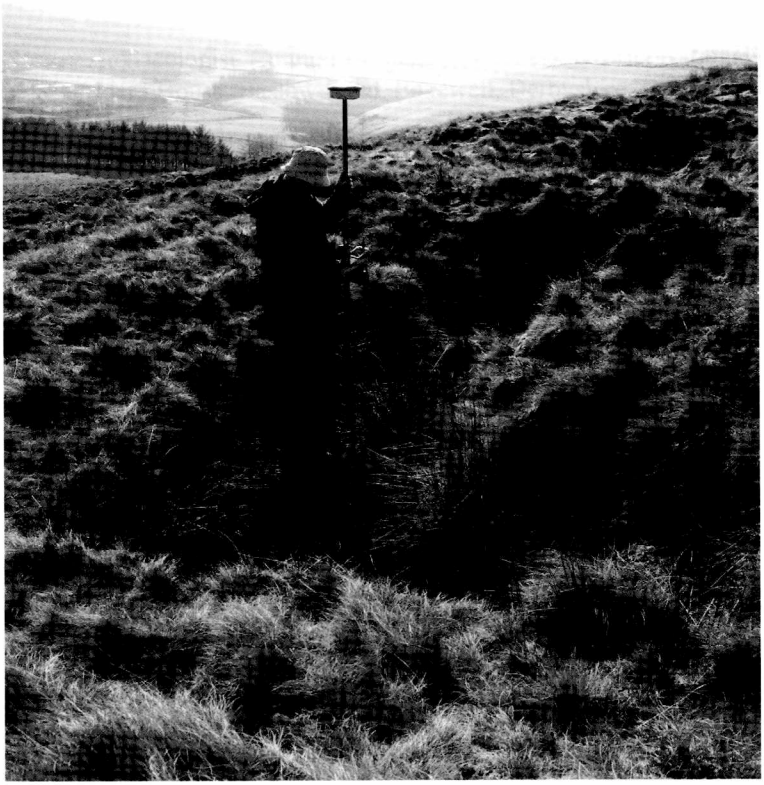

Plate 2: Surveying at the intact '*fire trench*' on Watford Moor which was never backfilled.

SURVEY

A survey of all three areas was carried out in February-April 2015 by the author for the National Park Authority. While the eastern Burbage Edge area falls just outside the National Park, survey was undertaken as this area in terms of World War I activity was obviously integral with that further west.

The survey methodology comprised plotting of features using a combination of GPS and total station surveying, with tops and bottoms of slopes measured at changes of direction; over 2000 points were logged to within +/- 0.1m. These survey lines were then converted to hachures from sketch plans made in the field, with the result later field-truthed. The south-western quadrant of the western moorland area was searched for World War 1 features without result; hence this was not surveyed except for its boundary wall.

As part of the survey process, what was being recorded in the field was compared with the Coal Authority Lidar data, a series of aerial photographs and Google Earth imagery; these were used as cross checks, in some cases identifying potential features to be visited for appraisal. When comparing the Lidar data and Google Earth with the survey information

derived from fieldwork, it became clear that while the remote methods were of great value as a first alert, these proved to identify significantly fewer features, and to have greater uncertainly of interpretation, compared with the ground-truthed information. An oblique aerial photograph taken specifically to show part of the site in early 2015, and forwarded by Simon Crutchley, again showed significantly fewer features compared with what can be found on the ground. High level vertical aerial photographs of a variety of dates were consulted, but for the most part these did not show the World War I features. One interesting exception is that the trench on Watford Moor shows very clearly on a vertical photograph taken in 1948 (English Heritage Archive; RAF/CPE/UK/2598.RP.FR:3086). Trenches on Burbage Edge are not visible on this photograph and the difference must reflect the sites' different histories, with that on Watford Moor readily seen because it was dug deep and left open, while those at the main site, backfilled or always shallow, are not seen. In 1948 the Watford Moor trench has its banks visible as very pale features standing out as if covered in short grass, surrounded by dark moorland vegetation, with near-black marshy vegetation in the bottom of the trench itself.

The report which follows provides a record of the archaeological earthworks surveyed rather than an in-depth historic appraisal following detailed archive research. The survey shows that despite the availability of Lidar, satellite data and aerial photography, in this instance there has been no substitute for careful examination on the ground.

THE EARTHWORKS

The forms the earthworks take are largely consistent with what we know of the usual designs of World War I trenches (Bull 2008; 2010; Griffith 2004). Practice earthworks created by the British army were modified through time as more effective forms were developed between 1914 and 1918, with early layouts being relatively simple (Bull 2002; 2008), compared with more refined versions in place by the end of the war (General Staff, War Office 1917-18; anon. 1933). The italicised terms used below to describe features are those used in the training manual produced by the British Army in 1914-18.

The most distinctive features at the three locations above Burbage are crenellated *'fire trenches'* dug in straight lines following the contour as front-line earthworks, each with a series of shooting *'bays'* separated by *'traverses'* (Figs 1, 2). The latter were designed as barriers to stop enemy fire when the trench was stormed reaching all troops along the trench. In at least two cases above Burbage there are also straight banks and lynchets of uncertain interpretation immediately behind and parallel to the *'fire trenches'*. They are too close for what are usually termed *'supervision trenches'* as shown in the training manuals; these also recommended such trenches were again either crenellated or sinuous in plan. At Burbage Edge there are also several *'communication trenches'*, approaching the *'fire trenches'* from a variety of angles, which were designed to allow the latter to be entered whilst staying under cover (Figs 3, 4); these have a variety of zig-zag, dogleg and straight forms. On the Western Front such trenches led back to *'supervision trenches'* and *'support trenches'*, but these are not certainly present at Burbage; while some *'fire trenches'* lie behind others, they are not directly linked by *'communication trenches'* and it may be that the *'fire trenches'* were dug at different times rather than being designed to work together. Features that can be interpreted as *'machine gun emplacements'*, *'officer posts'* and *'observation trenches'* are present. There are also two examples of oval *'redoubts'* with crenellated trenches, which were designed as strong points within trench networks for front line command, field kitchens, supply posts, etc. (Fig. 5).

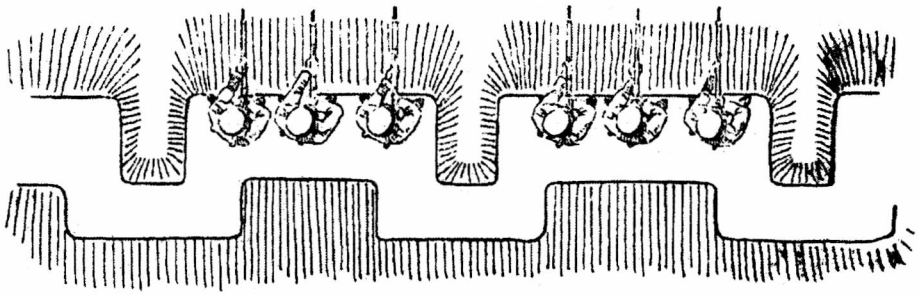

Fig. 1: A design for a small 1914-15 *'fire trench'*, showing men in *'bays'* with *'traverses'* in between (Bull 2008).

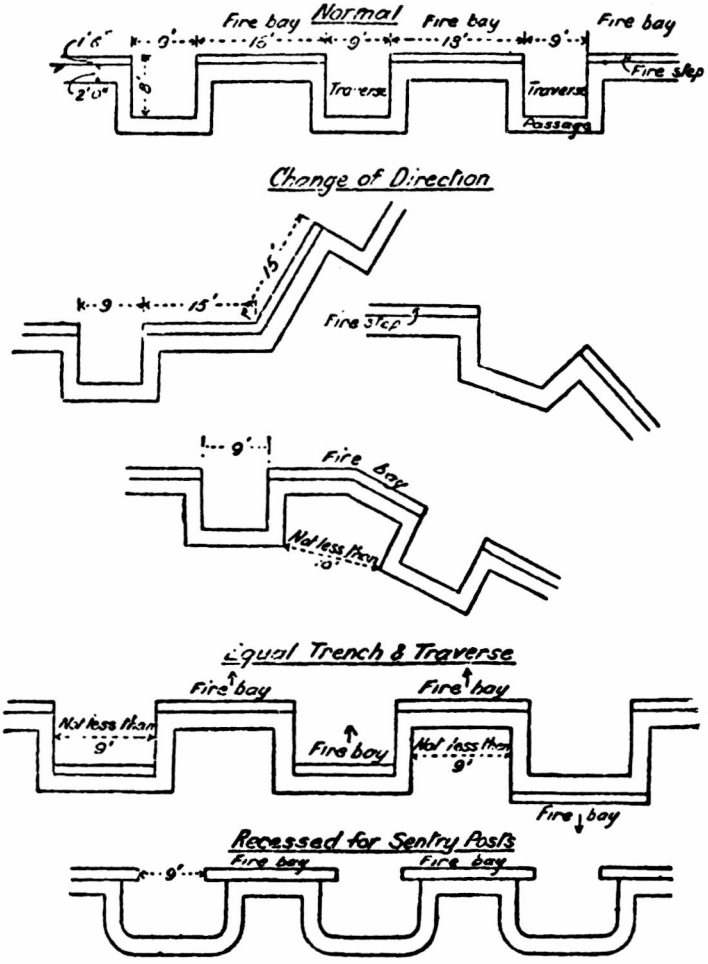

Fig. 2: Designs for *'fire trenches'* from a 1917-18 reference manual (General Staff, War Office 1917-18).

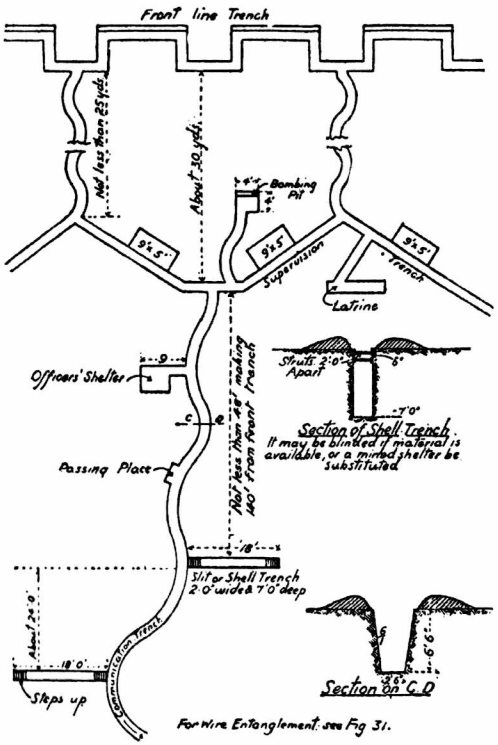

Fig. 3: Design for *'fire'*, *'supervision'* and *'communication trenches'* from a 1917-18 reference manual; no *'shelters'* for men and officers are now obvious at Burbage (General Staff, War Office 1917-18).

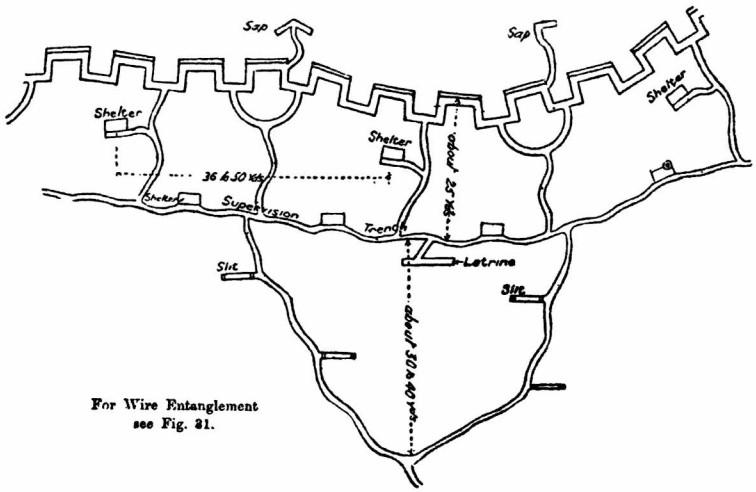

Fig. 4: Design for *'fire'*, *'supervision'* and *'communication trenches'* from a 1917-18 reference manual, including forward trenches, here shown to be used for sappers to pass the barbed wire entanglements; similarly placed forward positions were used for machine guns and lookout posts (General Staff, War Office 1917-18).

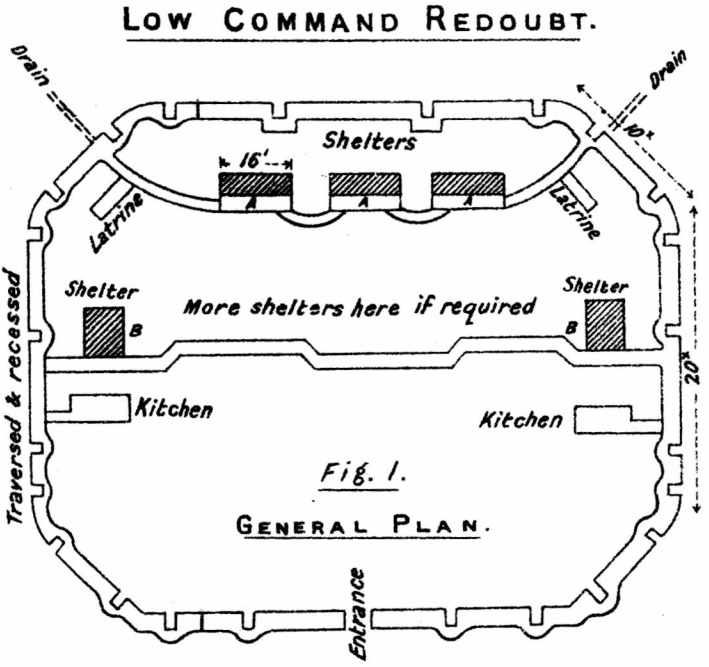

Fig. 5: Design for a 1914-15 *'redoubt'* (Bull 2008).

Given the slight earthworks at Burbage Edge, rarely more than 0.3m deep/high at most, it may be that further features once existed here which are now fully backfilled and unrecognisable.

Many visible features at Burbage Edge are defined today by shallow ditches, often only partially visible, along the lines of presumably largely-backfilled trenches; training manuals suggest these originally should have been c. 1.3-1.7m deep with low banks to either side, usually 0.3-0.5m high (Fig. 6). Exceptions with regard to trench depth were made when the ground was wet (Fig. 7) and presumably also when there was intractable bedrock. The bank at the front was termed a *'parapet'* and gave additional protection from enemy fire; that at the back was termed a *'parados'* and protected men from shrapnel during shelling.

On relatively soft ground to either side of Burbage Edge often no banks can be seen, suggesting these have been levelled to partially backfill trenches after use. In contrast, on the crest of Burbage Edge in particular, there are low banks but only vestiges of visible trenches; the latter may have always been relatively shallow because of sandstone bedrock close below the surface. These banks are commonly about 0.3m high and spatial relationships with slight vestiges of trenches show the visible banks were often *'parapets'* rather than *'parados'* banks, although they are built much narrower than the manuals recommend. Again trenches in this area have presumably been backfilled, with the *'parados'* bank targeted for this dismantling.

In contrast to most features at Burbage Edge which are incomplete, there is one trench in the eastern field, at Area 23, which appears exceptionally well preserved. Despite the clear plan it is only shallow and may have been designed in this way as it is unclear how any substantive infilling would have been done whilst retaining the clear form. Perhaps slighting was confined to the dismantling of an upslope parapet as there is no visible bank here today. However, if

it never had a parapet bank, perhaps it was not a functioning trench, but dug only to explore in plan the design trenches should follow, rather than to be used for practice manoeuvres; whether any other features at Burbage Edge can be similarly interpreted is unclear. As a further and starker contrast, the trench on Watford Moor was never backfilled and this is deep enough to have been a functional practice trench.

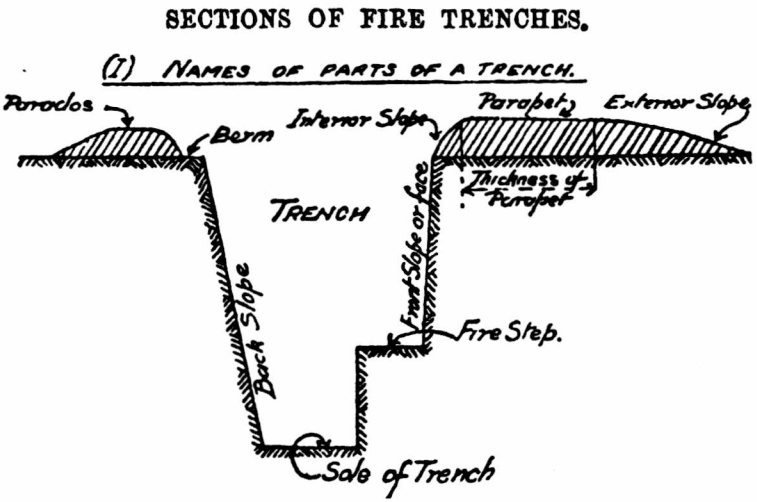

Fig. 6: Typical design for a *'fire trench'* from a 1917-18 reference manual (General Staff, War Office 1917-18).

Given these uncertainties and apparent contrasts, the original trench depths ideally need to be established at selected points by careful archaeological excavations, or survey using ground-penetrating radar.

Burbage Edge - Western Moor (Fig. 8)

This enclosed area above the scarp has partially reverted to moorland. World War 1 features are in the northern half, to the west on rough grassland (Areas 1-4) and, beyond a marsh to the east, on grassland which is more closely grazed (Areas 5-11). Topographic detail to the south-west was not surveyed as no relevant archaeological features were found here. The wartime features to the west include broad silted trenches in soft ground, whereas to the east most features comprise low banks/cairns and bedrock is close to surface.

There are seven to nine *'fire trenches'* (at Areas 1, 2 [x2], 3, 5, 6, 10, and possibly 4, 12). At Area 5 is a long linear terrace of uncertain interpretation running behind and defined to the east side by a straight bank/lynchet; at Area 7 there is a similar linear feature but set much further back. Some fire trenches point in opposite directions to each other, as at the two short examples in Area 2 which face upslope, in contrast to those adjacent in Areas 1 and 3 which face downslope. Three to the east on the scarp top all face downslope towards the marsh to the west.

Trenches at Areas 3 and/or 4 could possibly be *'supervision trenches'* or *'support trenches'* for that at Area 1, while vestiges of similar features may be present to the east end of Area 5 next to the field wall. Associated with the *'fire trenches'* there are also one to three sets of *'communication trenches'* (at 5 and possibly 3, 7). Half of one of two long trench banks in

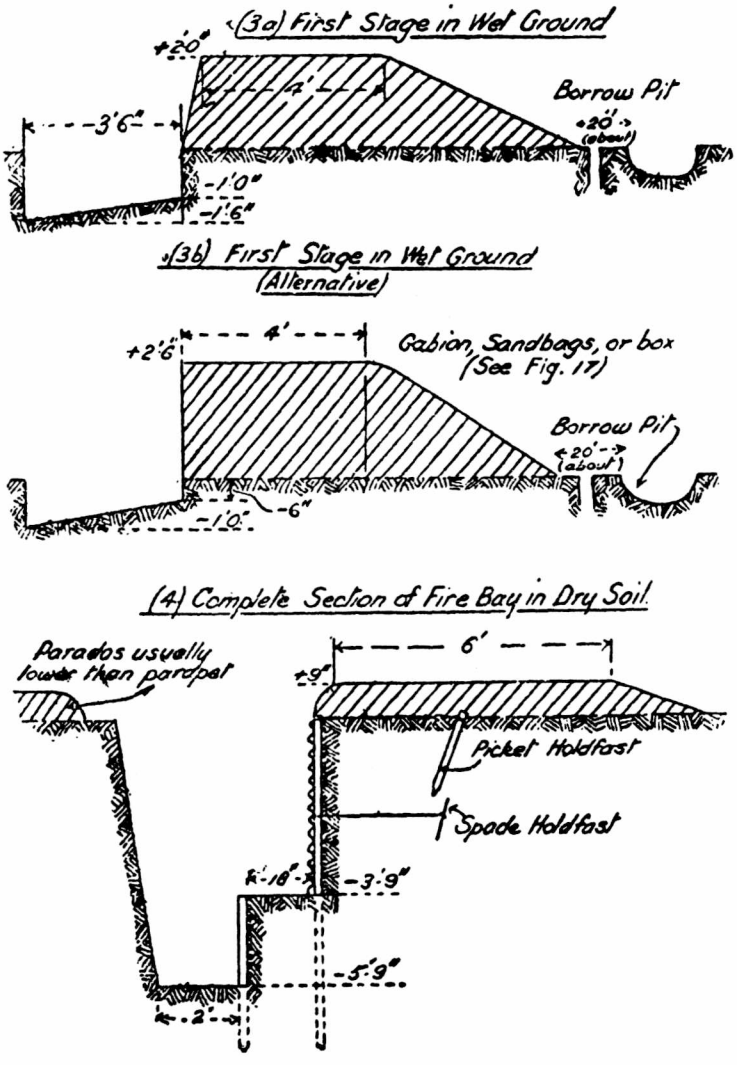

Fig. 7: Design details for *'fire trenches'* in wet and dry soils, from a 1917-18 reference manual (General Staff, War Office 1917-18)

Area 5 has classic zig-zag form. There are also between three and six recognisable *'forward observation trenches'* or *'machine-gun emplacements'* (at 3, 6 [x2] and possibly 5 [x2], 9), while another feature is possibly a small *'officer post'* and/or a complex *'machine-gun emplacement'* (at 12).

Two distinctive crenellated ovals are *'redoubts'* (at 7, 8); whether internal divisions belong with this phase or to different phases of activity is unclear. In Area 7 some banks appear to cross-cut the oval earthwork. In Area 8 internal banks and lynchets define small internal sub-rectangular areas, while outside the main 'redoubt' line there are traces of further small sub-rectangular features extending short distances to north and south.

To the south there is a series of small cairns which appear to be field clearance features of

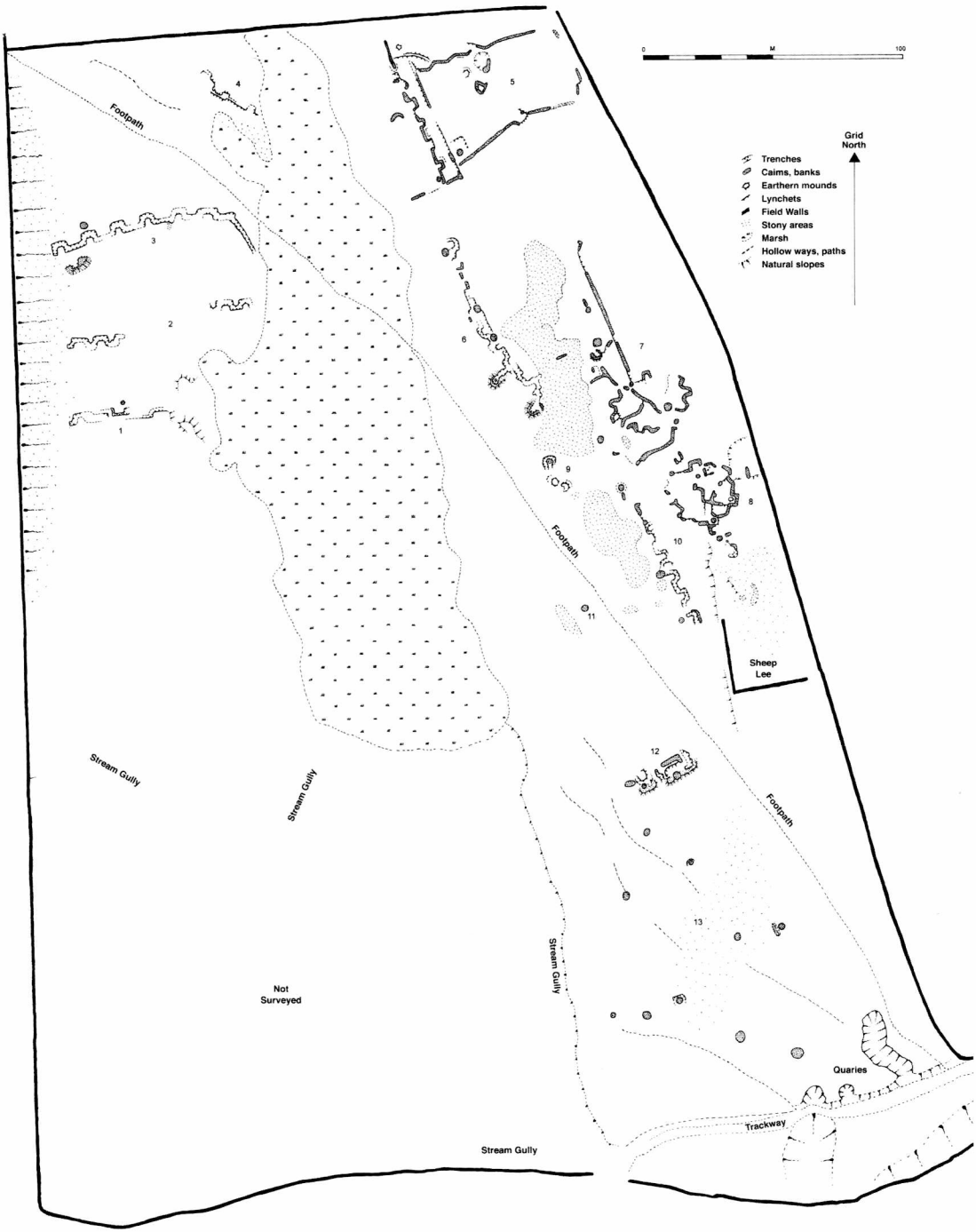

Fig. 8: The western area of the Burbage Edge practice trenches.

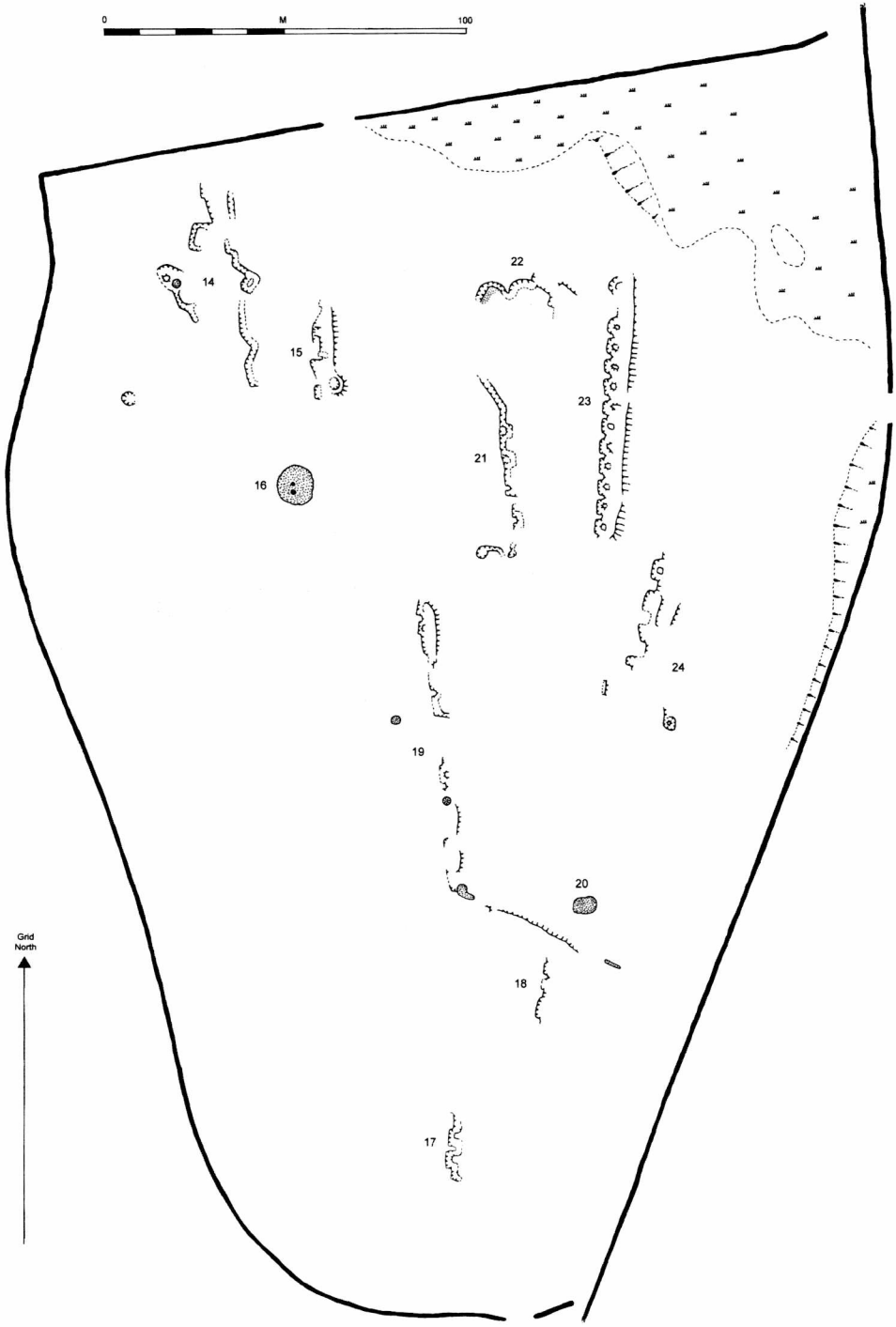

Fig. 9: The eastern area of the Burbage Edge practice trenches.

presumed 19th century date (at 11, 13). However, at the few cairns where the turf is absent, they have many small stones that could be argued to be atypically small in size for field clearance. In addition, two cairns have possible surrounding trenches which could indicate they have a now-obscure military explanation. Another has a short bank adjacent, which may be alternatively explained as a hollow-way related feature. Similar small cairns are commonly found associated with the trenches (at 1, 3, 5, 7, 8, 10, 12); some at least, and probably most or all, may well have been created as part of the wartime activity. There are no clear indicators that Areas 11 and 13 once had World War 1 trenches now fully levelled and this seems unlikely as further visible vestiges would be anticipated.

In Area 5, between the two *'communication trenches'* on the highest point, there is what appears to be a small and part-backfilled stone-getting pit and upcast heap, while a penannular bank nearby to the south may be a robbed waste heap or a small, embanked, *'machine-gun post'*. A third feature, comprising a curved 'ditch', may be fortuitous.

Burbage Edge - Eastern Field (Fig. 9)

This large field on the lower scarp has a wide scattering of visible World War 1 remains and other features (Areas 14-24). All trenches are now slight and with one exception appear to be only partially visible. Somewhat smoothed profiles suggest the field has been harrowed for reseeding. There are six to eight *'fire trenches'*, all facing upslope (at 17, 18, 19, 21, 23, 24 and possibly 14, 15). That at Area 23 is well preserved, with 11-12 small bays, although it is also slight; behind is a long linear terrace with downslope a lynchet of uncertain interpretation running parallel to the main trench; further possible examples of these back lynchets are seen elsewhere (at 15, 19, 24). Associated with the *'fire trenches'* there are also two to four *'communication trenches'* (at 14, 22 and possibly 19, 21), and a possible forward *'observation trench'* or *'machine-gun emplacement'* (at 21).

There is a large clearance cairn of presumed 19th century date (at 16), with a smaller example (at 20), and small cairns associated with the trenches (at 14, 19). To the north-west is what may well be a small isolated stone-getting pit, with features at trenches nearby of obscure interpretation (at 14, 15), while a small penannular feature further downslope is also un-interpreted (at 24).

Watford Moor (Fig. 10)

The only feature here is a well-preserved crenellated *'fire trench'*, on a flat area at the top of a north-east facing slope to the valley below. It lies next to and parallel with a public footpath which follows an old hollow-way braid running across the moor. The wartime trench faces north-east and has three *'bays'* and two *'traverses'*, with a substantive but low *'parapet bank'* on the downslope side, and a slighter *'parados bank'* behind (Plates 3, 4). A short break at the centre of the 'parapet bank' may indicate a machine gun position. Today the trench is about 1m deep including the upcast banks to either side; the original depth before silting is unknown. The trench is on peaty ground and the base may have filled with water as it was dug, which would explain why further features were not created nearby. A now-shallow drainage trench runs downslope from the south-east corner into another hollow-way braid. To the south-east, beyond a drystone wall, are the butts of a shooting range, built in the 1880s-90s, but perhaps also used in World War 1.

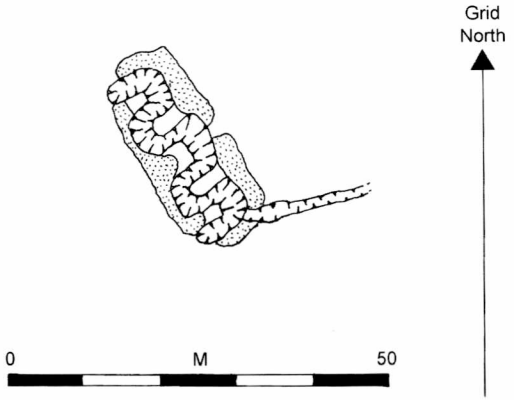

Fig. 10: The Watford Moor practice trench.

TOWARDS UNDERSTANDING

Information on the trenches has been provided by local informants. Elizabeth Barton, who used to live at Beet Farm (SK 0368 7422), remembers that the land with the Burbage Edge trenches used to belong to nearby Plex Farm (SK 0367 7338) and that these were used for live firing exercises as well as digging practice. She also knew of the trench on Watford Moor and the nearby firing range butts. John Carr remembers that the trenches were dug by the Royal Engineers and later by Canadian Sappers who were billeted in the former Empire Hotel in Buxton. He noted that as well as the trenches themselves, there are small cairns of stones that they removed when digging trenches. He remembers that '*in the last field on the top side of the railway there were trenches and dugouts where he used to play as a child*'; this is presumably what is recorded here as the eastern field at Burbage Edge. Jean Simper has suggested that there were once possibly more trench lines running along the back gardens of houses further downslope; from inspection at a distance, these appear now to have been destroyed.

The British army's Royal Engineers were billeted at the Empire Hotel and elsewhere in Buxton, and were in the town from 1915 to 1919; published photographs show them training, including building pontoon bridges on the lake in the Pavilion Gardens and marching on the A537 road where it crosses Axe Edge Moor (Taylor 2014, 49-53). Canadian troops were also present in large numbers in Buxton from early 1916 but these were primarily invalided men, and staff of the Canadian Army Medical Core, all based at the hospital set up by the Canadian Red Cross. This was centred at the Peak Hydro Hotel on Terrace Road, but also used the Buxton Hydro Hotel on Hartington Road and the Palace Hotel on Palace Road; the Canadian Discharge Depot was established at the Empire Hotel in late 1916 (Taylor 2014, 102-07). Records of the Canadian Engineers, who were normally stationed in France after being moved here soon after initial disembarkation in Southern England following the Atlantic crossing, do not record that they were training in Buxton (www.canadiangreatwarproject.co/warDiaryLac/wdLacP15.asp - accessed 23 March 2015).

Given that some, or more probably all, the trenches were dug by the Royal Engineers, this raises the question were they created for their own training in how to construct and use different types of trenches, or were some of the earthworks experimental trench designs that were being tested? Currently this cannot be answered.

Plate 3: Detail of the Watford Moor practice trench, showing a single firing '*bay*'.

Plate 4: Detail of the Watford Moor practice trench, showing a '*traverse*' and the south-eastern firing '*bay*'.

One of the more obvious variations in form at Burbage is the size of *'bays'* and *'traverses'* at *'fire trenches'*; those at Area 3 are exceptionally long, while those at Areas 17, 18 and 23 are very short. Similarly, while most trenches where visible are narrow, those at Areas 1, 2 and 3 are noticeably wider, although this may just reflect differences in soil type on this softer ground with underlying shale beds. The relationship of *'fire trenches'* to topography varies, with eight to eleven facing upslope and five to six downslope. The two *'redoubts'* are on a locally high spot. One of the most curious feature-types are the straight linear features immediately behind some *'fire trenches'*, most clearly seen at Area 5 as a bank/lynchet, with a similar feature at Area 7 in a set-back position that may suggest this was a *'support trench'* (it is unlikely to be a *'supervision trench'* as the *'fire trench'* and this are not inter-visible). A variation on a theme is the setting of upslope-facing *'fire trenches'* on a terrace with straight downslope lynchet, as at Area 23 and possibly Areas 12, 15, 19 and 24. Perhaps the straight banks and lynchets simulate the positions of hedges that early manuals suggest were to be used as supervision points before *'supervision trenches'* proper became the norm (with the exception of that at Area 7).

In Areas 7 and probably 8 nearby, and at *'fire trenches'* in adjacent Areas 6 and 10, the earthworks have complexities that invite speculation that they are of phased construction, with additions or replacements made as usage of the areas changed. More generally, the distribution and variable alignment of trenches across Burbage Edge suggests that while some may go together, others were added over time; it may well be some features had already been backfilled before others were added. Backfilling of trenches after they were finished with may have been done at the insistence of the landowner (presumably the Duke of Devonshire, who was Lord of the Manor and described in Kelly's Directory of 1895 as the principle landowner at Burbage).

The numerous small cairns associated directly with the trenches seems best explained as heaps of stone found during trench digging, as suggested by John Carr, for they are not usually at strategic points which could indicate they were designed to support machine-guns or any other specific form of equipment. However, caution is needed in some cases because it seems very probable that there are also stone-clearance features associated with agricultural improvement across both of the 19th century enclosures at Burbage Edge, presumably made decades before the trenches were dug, and which are now most-clearly identified away from the trench positions (although, as noted above, some small cairns here are open to alternative explanation).

Taking an overview, distribution of the earthworks gives the impression that they were dug over time, with some parts out of use before others were created, rather than the whole being an integrated front-line training ground. On Burbage Edge the trenches and flanking banks are very slight; what is unclear is the extent to which they have silted or been purposefully demolished as they became redundant. They may have always been shallow, as a response to bedrock close to surface. However, on Watford Moor the trench is deeper and both banks are clear, suggesting those on Burbage Edge have indeed been slighted.

PRACTICE TRENCHES ELSEWHERE

The only other known World War I practice trench site in the Peak District is at Redmires west of Sheffield, located relatively close to a training camp at Lodge Moor (Sidebottom 2005; Ullathorne with Sterling 2006). This practice trench site was scheduled in 2014 (List Entry Number 1417488). It is centred at SK 255 859 and runs over two adjacent hills, with a

complex series of earthworks in five focal areas. There are many similarities with the Burbage site, with both not only having multiple foci but also including what today are shallow ditches and low banks that define crenellated *'fire trenches'*, as well as *'communication'* and other trenches, and also small cairns. At Redmires three test trenches have been dug which show that infilled trenches lie next to visible banks, and one published *'schematic section'* shows the bank investigated was about 0.3m high, while the ditch was not much more than 0.6m deep. It is known that these trenches were dug by the Sheffield 'Pals' Battalion in 1914-15, and the Sherwood Foresters and Royal Engineers in 1915. Whether other sites await discovery elsewhere in the Peak, presumably located relatively close to urban centres around the fringe, remains to be seen.

Eight practice trench systems across Britain were recorded several years ago by the Defence of Britain Project (archaeologydataservice.ac.uk/archives/view/dob), all but two in southern England. Only those at Clipstone in Nottinghamshire and Shipton Bellinger in Hampshire were noted as in good condition. Other research has identified important surviving earthworks for example at Rothbury in Northumberland and Watson Road Park in Blackpool (Cocroft 2013), while further examples to north and west include a trench system at Barry Buden Camp in South Angus, and three sites in Wales at Bodelwyddan Castle in Denbighshire, Maesdu golf course at Llandudno near Conwy and Penally in Pembrokeshire. At Rugeley on Cannock Chase quarter-scale models of trenches were made for instruction purposes (www.staffspattrack.org.uk/exhibit/chasecamps/archaeology.html). Recent new work has included survey and excavation of well-preserved trenches at Gosport in Hampshire (CBA 2014) and Walney Island in Cumbria (Nash, Nicholson and Wellicome 2015). The discoveries at Burbage further highlight the strong possibility that further important sites across Britain await adequate documentation. It is widely recognised that practice trench sites currently are poorly represented in the archaeological record and this has started to be addressed via the Council of British Archaeology's ongoing 'Home Front Legacy Project' (www.homefrontlegacy.org.uk). To date (April 2015), further trench sites have recently been recorded at Giggleswick in the Yorkshire Dales, at Low Moor in York, at the Bustard Trenches in Wiltshire and at Hawley Common in Surrey.

ACKNOWLEDGEMENTS

The site was brought to my attention by Phil Broughton and Alan Hines of The Coal Authority, after Simon Crutchley of Historic England recognised the earthworks on a Lidar survey commissioned by them to monitor nearby historic coal mining remains; the Authority kindly allowed this survey data to be used under licence to compare what was found on the ground with what was visible on the Lidar.

Many thanks to Robert Hall ('New Plex Farm') and Kristian Garlick (Longhill Farm), who kindly gave permission to survey the features on their land. Nigel Sharpe provided the sub-metre accuracy survey equipment and operated this; with particular thanks to him for working on the high moorland in sometimes adverse weather in February and March 2015. Angie Johnson and Mark Hamilton helped process the survey and Lidar data. Simon Crutchley of English Heritage kindly forwarded memories of the trenches from Elizabeth Barton, John Carr and Jean Simper, passed to him after a BBC press release and article in the Buxton Advertiser on the discovery of the trenches. Nikki Manning and Glynn Wilton, of Derbyshire County Council provided useful liaison points. Phil Pritchard forwarded a digital copy of the 1933 training manual.

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