

Chapter Three: Results Part One – Archaeological Description of the Graves

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SUMMARY

It took a total of 16 weeks to fully excavate and record all of the graves. All graves were similar in their dimensions (approximately 10m long, 1.5m wide and just over 1m deep), but numbers of bodies in each varied: six contained a total of 250 bodies between them, with between three and 52 in each. Two graves were empty.

The bodies had been organised in a broadly consistent fashion: usually two deep and orientated across the width of the grave, although some variation was seen, in particular in Grave Five which may have been one of the last to be filled. In all graves, lower and upper backfills were encountered in relation to each layer of bodies, and these differed in their composition between those buried closest to Pheasant Wood and those buried furthest away. Fly pupae suggest that the bodies had been buried, or the graves had been backfilled, between five and 10 days after the battle.

The *in situ* positions of the skeletons' arms and legs provide some information on how the bodies were carried and placed for burial. Further, the presence of chalk lumps and lime attest to attempts to sanitise the graves before they were backfilled. Other information on the burial process is provided by groundsheets and cable, found in association with some of the skeletons. These had probably been used to maintain the integrity of bodies during their transportation and interment, as well as to make the task easier and, in the case of the former, less unpleasant. While none of these observations are of direct relevance to the identification of the soldiers, they provide important context information to the evidence – the artefacts and bodies – employed in identification.

INTRODUCTION

A total of 250 bodies were recovered from six graves (graves one to six) (Fig. 3.1). Each grave contained two layers of bodies, referred to as layer one (the upper burials) and layer two (the lower burials). In graves one to five, these body layers comprised between 44 and 52 bodies in total. Grave Six contained only three bodies in total, with two

bodies assigned to layer one and one body assigned to layer two. Graves seven and eight contained no bodies.

This chapter gives a stratigraphic description of the archaeological deposits in the graves, starting with the sondages excavated by GUARD in 2008 (the most recent deposits), followed by the modern topsoil, ploughsoil and subsoils, the 1916 backfills of the graves and the layers of bodies (Fig. 3.2). The dimensions of the graves and the organisation of bodies (alignment and posture) are also described. The chapter concludes with an interpretation of the deposits with reference to the methods employed and processes involved in burying the soldiers.

GUARD SONDAGES

The first deposits to be excavated in each grave were the backfills of the sondages, excavated by GUARD in 2008. These comprised a permeable geotextile laid over the bodies, followed by a thick layer of sand, covered by a layer of light-weight substrate (vermiculite). Clay had been deposited on top of the vermiculite to backfill the sondages to the top of the grave cuts. Each of the backfilled sondages had been covered with a steel mesh, to prevent unauthorised disturbance, and reinstated with ploughsoil and topsoil (Pollard *et al.* 2008, 18).

TOPSOIL, PLOUGHSOIL AND SUBSOILS

Topsoil

The topsoil comprised a moderately compact, mid to dark grey brown, silty clay with frequent root action. This was between 0.07 and 0.1m thick and had a diffuse horizon with the underlying deposit. The turf had been recently mowed in preparation for the excavation. This deposit was metal detected prior to removal by machine and produced a number of artefacts including shells from small arms, fragments of shrapnel and shrapnel balls. The locations of the GUARD evaluation trenches were visible as subtle, slightly darker areas of turf.

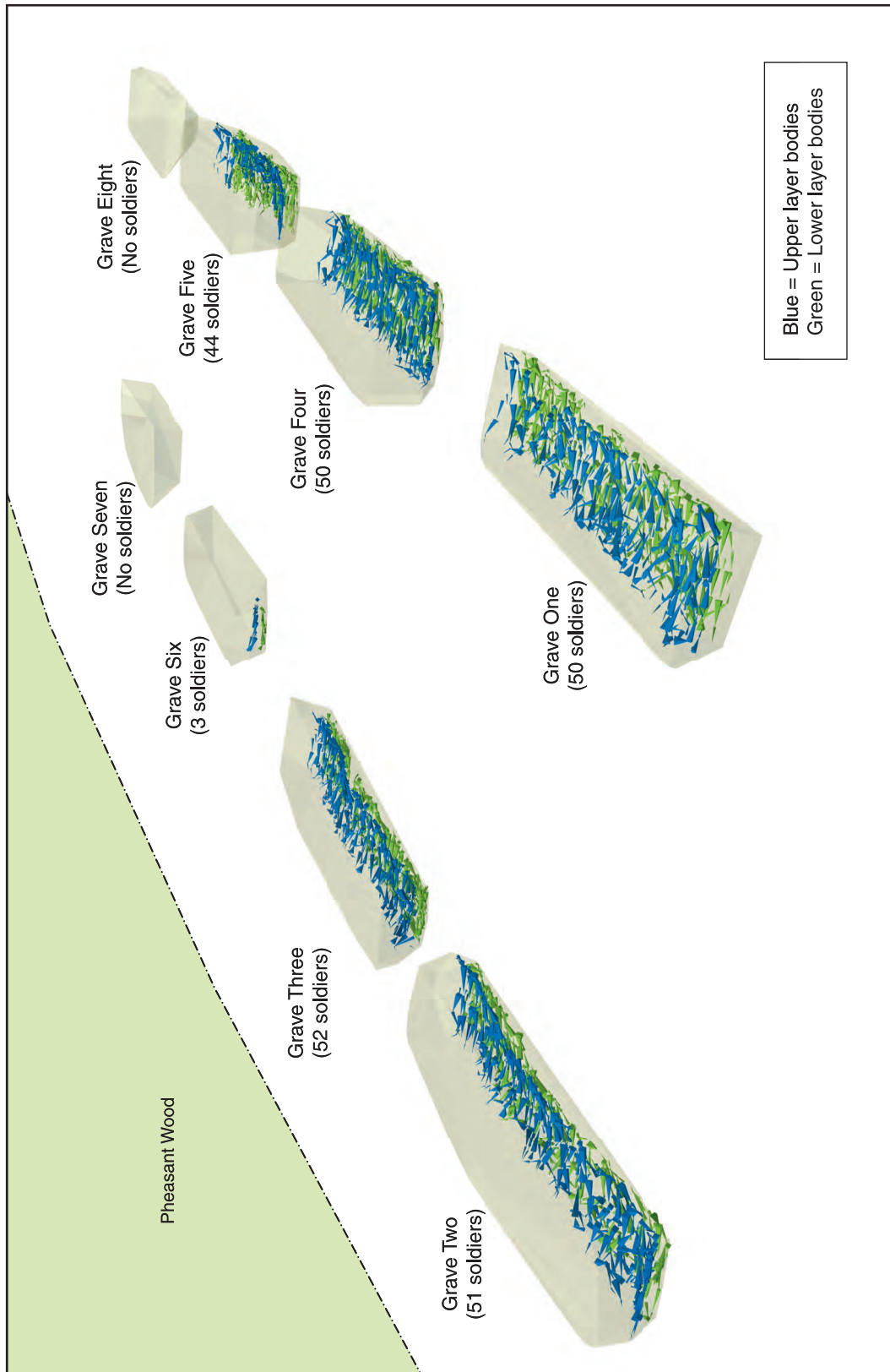


Fig. 3.1 Three-dimensional image of the graves summarising the number of soldiers recovered from each.

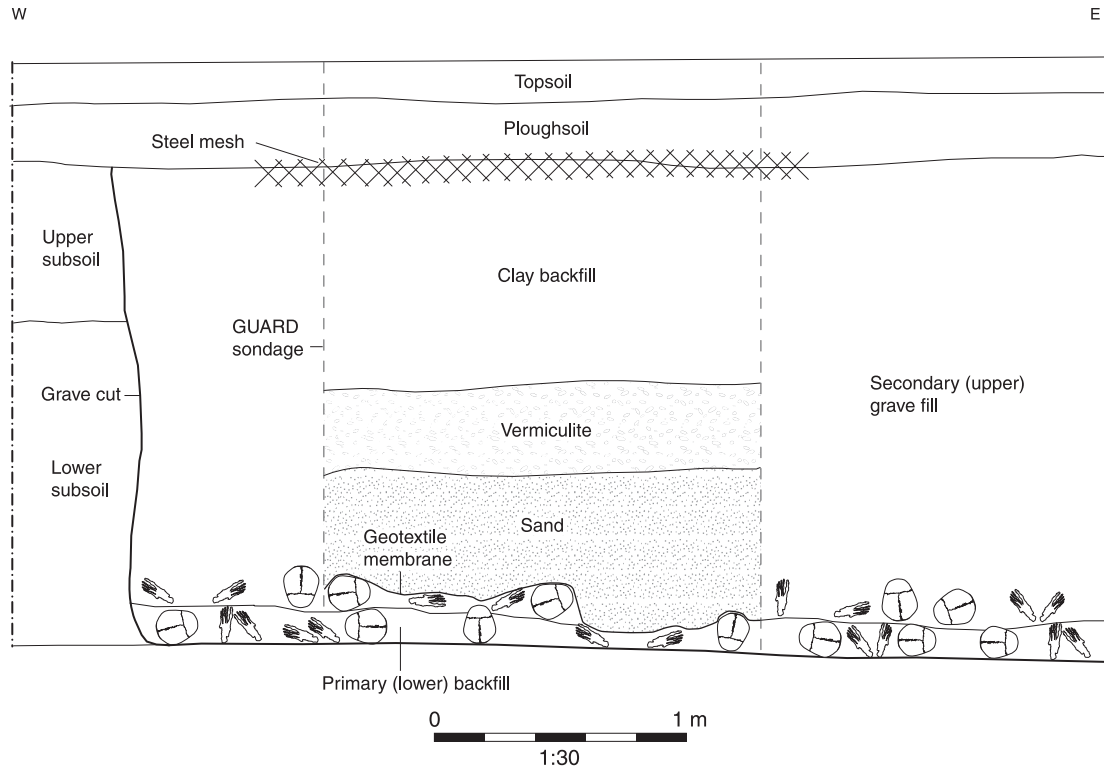


Fig. 3.2 Representative section showing the deposits encountered during the excavation of the graves

Ploughsoil

The topsoil sealed a layer of possible ploughsoil which varied in depth, from 0.22m to 0.26m. It consisted of a stiff to heavy, mid/dark brown clay silt with light brown mottling and had a clear, but uneven, contact with the underlying deposit. It appeared to have undergone significant bioturbation through frequent root action. This deposit was removed by machine in 0.05m-0.10m spits and was continuously metal-detected throughout the operation. Artefacts recovered include shell fragments and shrapnel balls.

Subsoils

The ploughsoil overlay a layer of subsoil through which the graves had been cut. Two broadly distinct clay subsoils were observed, including an upper subsoil which generally comprised heavy, light to mid brown silty clay with frequent mid yellow clay mottling, and a lower subsoil that generally comprised stiff grey-yellow silty clay with occasional lenses of blue grey clay with fine quartzite crystal inclusions. The upper layer also contained occasional bands/lenses of light orange iron rich gravel and the lower deposit become more compact and a more uniformly grey clay at the base of the graves with only very occasional mid yellow clay lenses. Root action was observed within both subsoils and they were larger and more frequent

within the graves adjacent to Pheasant Wood on the north edge of the excavation.

BACKFILLS OF GRAVES ONE TO SIX

Two layers of backfill were identified in graves one to five. The lower backfill comprised the material deposited directly over the first phase of burials (layer two), onto which the second layer of burials (layer one) had been placed. The lower backfills varied in thickness within and between graves, and in some places were very thin, barely distinguishable between the two burial layers. The upper backfill was the material backfilled over the second layer of burials, filling the grave cut to ground level.

In Grave Six only three bodies were present, all within the western end of the grave. As with the other graves a distinct lower backfill layer was observed, overlying the first of the bodies interred. The other two bodies were placed on this lower backfill layer, with the upper backfill filling the grave to ground level. Grave Six also differed from the other graves in that, according to aerial photographs, it had been left open until as late as September 1918 (Pollard *et al.* 2008, 35). The aerial photographs also show that the length of this grave was reduced during the period of the burials (*ibid.*, 36), probably by the backfilling of the western end, over the three bodies. If this was case, there was no observable distinction between the upper backfill in the western end of Grave Six, and the backfill of

the rest of the grave, which was potentially added much later.

Although the backfills varied between graves, a general summary of their properties is given below, with the main differences between them highlighted.

Upper backfills

The upper backfills in all the graves comprised compact silty clay which was mottled in colour, predominantly light to mid orange and blue-grey. In Grave Six, this fill had more frequent lumps and discrete patches of clay, of varying colours, including greys, oranges and browns. Patches of dark orange iron staining were frequent throughout the upper backfills of all graves. The main difference in the upper backfills between graves lay in the abundance of rootlets in those graves nearest the edge of the wood (graves two, three and six) compared with those further away from the wood (graves one, four and five).

The upper backfills immediately surrounding layer one burials were generally softer, stickier, and greyer in colour, than those further away. This was most notable in the graves that were furthest from the wood (one, four and five). In addition, the patches of dark orange iron staining were more abundant immediately surrounding the burials and were most notable in the graves that were closest to the wood (two, three and six).

Lower backfills

The lower backfills comprised sticky clay and silty-clay deposits of varying compactions. These backfills were generally greyer in colour than the upper backfills, with light to mid orange mottling. In addition, patches of dark orange iron staining were noted in this backfill in graves one, two, three and six.

As with the upper backfills immediately surrounding the bodies, the lower backfills in graves one, four and five were notably darker in colour than those in graves two, three and six. Further, the lower backfills of graves one, four and five were notably wetter than those in graves two, three and six.

BACKFILLS OF GRAVES SEVEN AND EIGHT

As with Grave Six, aerial photographs show that graves seven and eight (Figs 3.3-3.6) were left open until as late as September 1918 (Pollard *et al.* 2008, 35). The backfills of these graves were very variable, indicative of rapid backfilling of up-cast material, probably representing post-war reclamation of the land. The graves appeared to have been used as an opportunity to dispose of a number of items, presumed to have been left around following the end of the war. These included large fragments of shrapnel, a fragment of narrow gauge rail track,

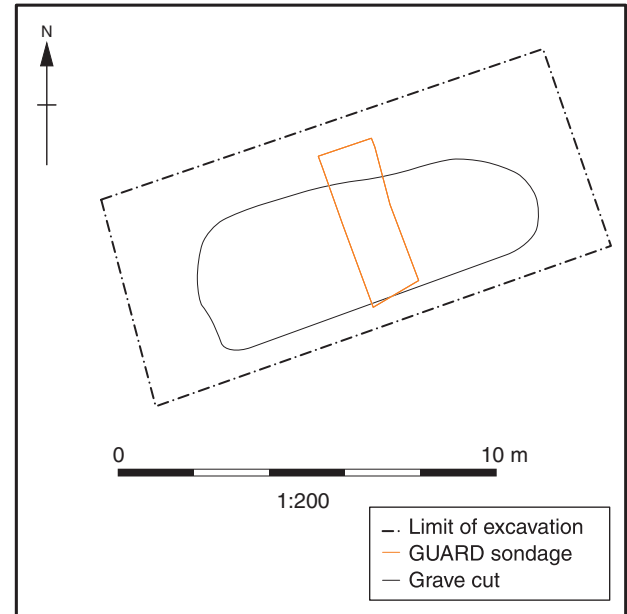


Fig. 3.3 Survey plan of Grave Seven

(most likely from the railway along which the bodies had been conveyed – see Chapter One), concreted remains of sandbags and a fragment of a wooden plank, possibly from a walkway that had been used in the base of the fighting trenches (Delbarre, pers. comm. 2009).

There were no broad differences between the backfills of graves seven and eight. These mainly consisted of stiff to heavy mixed silty clays which varied in colour from light orange brown to grey brown and blue greys. Fine quartzite particles were noted and were predominantly within the blue grey clays. Also noted were sparse amounts of orange iron rich gravels.

At the base of both graves, and predominantly along their southern edges, was a thin (0.3m) deposit of mid grey brown silt. This generally thinned towards the centres and represented erosion of up-cast deposits. In places, the erosion deposit was overlain by ill-defined patches of subsoils that had arisen from some edge collapse or erosion. This supports the fact that the graves were open until as late as September 1918, as indicated by aerial photographs (Pollard *et al.* 2008, 35).

CHALK AND LIME INCLUSIONS

Lumps of whitish chalk were present in the upper backfills of graves one to six. Analysis of a sample of these (Fig. 3.7), taken from Grave Five, suggests that this material is unlikely to have derived solely as a result of agricultural liming (it was not present in empty graves seven and eight) and probably represents chalk that was used as a substitute for lime or Chlorkalk by the German burial party to sanitise the graves (C Champness pers. comm. 2011). This observation is also supported by the stratigraphic location of the chalk lumps and the fact that fly



Fig. 3.4 (above) Grave Seven during excavation (looking east)

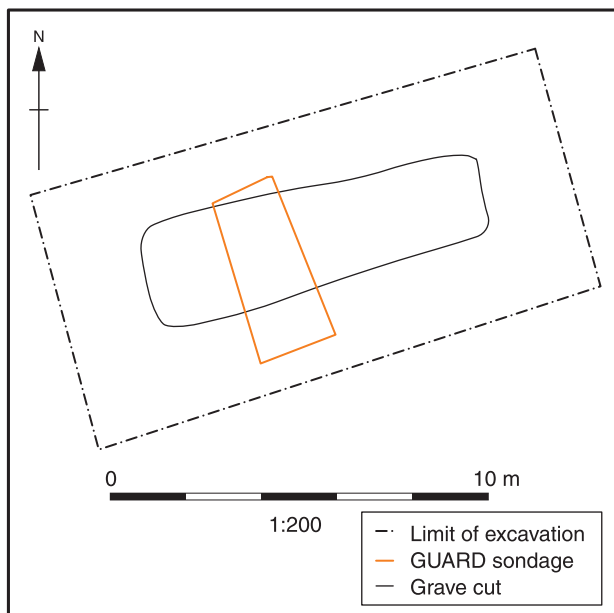


Fig. 3.5 Survey plan of Grave Eight

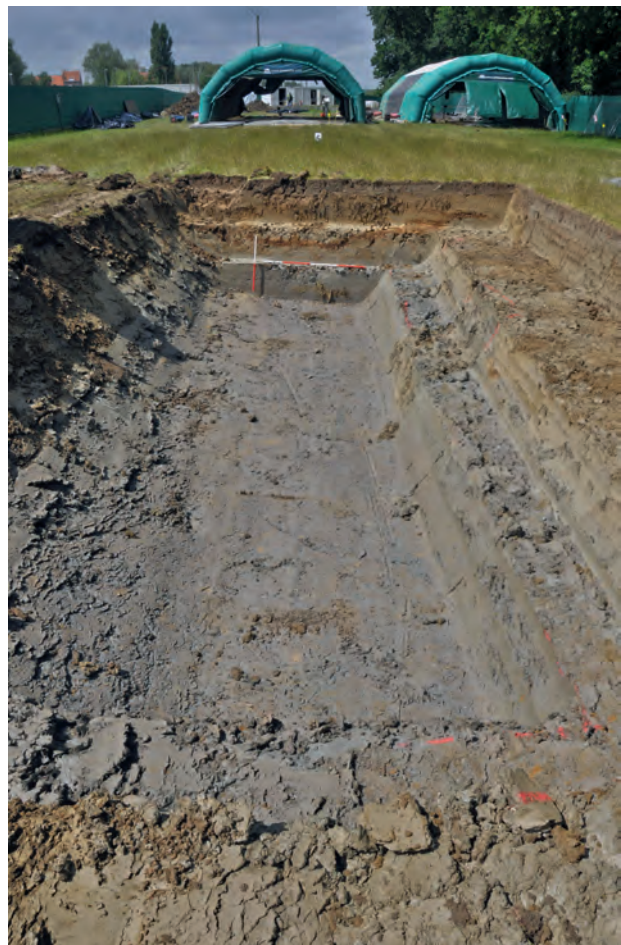


Fig. 3.6 (right) Grave Eight during excavation (looking west)



Fig. 3.7 Chalk lumps



Fig. 3.8 Fly puparia at instar (resting) stage within chalk

pupae were identified within the samples of chalk taken for analysis (Fig. 3.8). The developmental stage of these pupae indicates that the bodies were placed in the graves or the graves backfilled between five and 10 days after the battle before the fly pupae had developed into adults (Dr David Smith pers comm. 2010).

In addition to the chalk lumps, small, often greyish brown, concretions of lime were present in the backfills directly surrounding the body layers. In many cases, these had fused bones together, notably the small bones of the hands and feet (see taphonomy section in Chapter Four). There were also general scatterings of lime within all of the

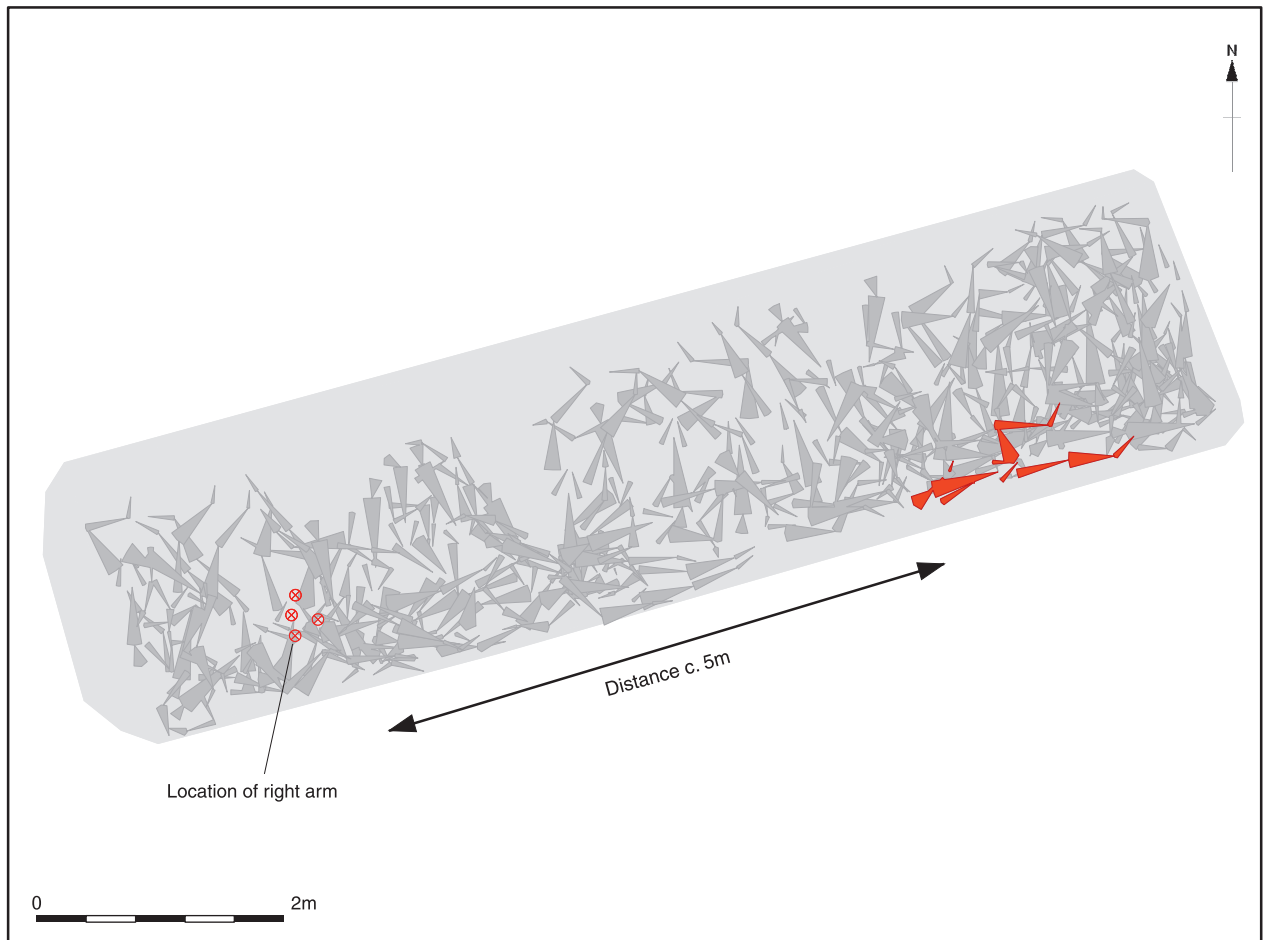


Fig. 3.9 Surveyed relationship between the right arm (2932BP) and the rest of the body (2919B) to which it belonged

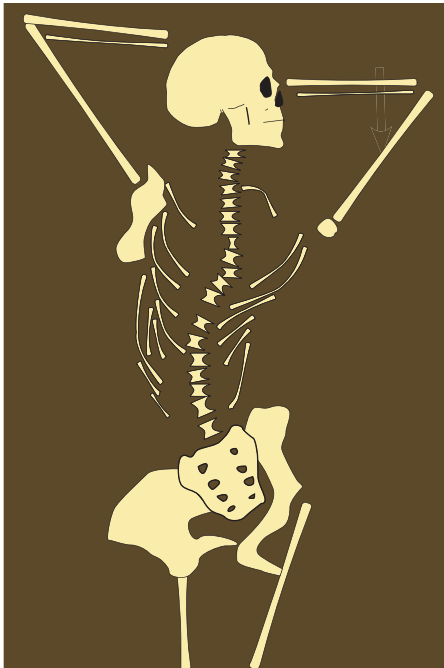


Fig. 3.10 Arm position (2511B): both arms extended superiorly



Fig. 3.11 Arm position (1682B): neither arm extended superiorly



Fig. 3.12 Arm position (0184B): one arm extended superiorly

graves in the fills surrounding the bodies. These were generally thin scatterings, with occasional denser concentrations.

BODY LAYERS ONE AND TWO

The positions of the bodies within each layer are described below by individual grave. This considers the positions of the limbs, along with artefactual evidence (for example, wire, strapping), with reference to methods of interment. Grave Six contained only three bodies, the positions of which are also described below.

All the bodies in each of the graves were discrete, meaning that each individual skeleton could easily be distinguished from another. There was limited post-depositional migration of the bones, because the clay soil, with which the graves had been backfilled, held the vast majority of bones in place (see taphonomy section in Chapter Four). In Grave Five the bones of a single body, were recovered from two different areas of the grave, but this was a rare occurrence of such separation and had not occurred as a result of the post-depositional migration of bones within the grave. In this case, the right arm (2932BP) was found approximately 5m away from the rest of the body (2919B) at the opposite end of the grave (Fig. 3.9), having been separated as a

result of peri-mortem trauma and subsequent deposition in a different location to the rest of the body at the time of burial (see peri-mortem trauma, Chapter Four). In general, bodies did not overlie one another, although limbs frequently overlapped. Even where limbs overlapped, it was not difficult to associate them with the correct bodies.

Three general arm positions were identified and include: both arms (from the shoulder joint) extended superiorly, beyond shoulder level (Fig. 3.10); neither arm (from the shoulder joint) extended superiorly (Fig. 3.11), one arm (from the shoulder joint) extended superiorly, beyond

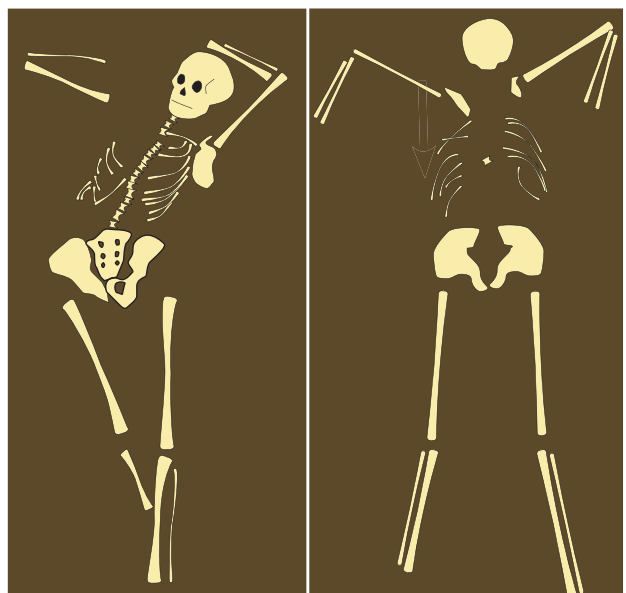


Fig. 3.13 (right) Foot position (2538B): feet close together

Fig. 3.14 (far right) Foot position (0192B): feet moderately close together

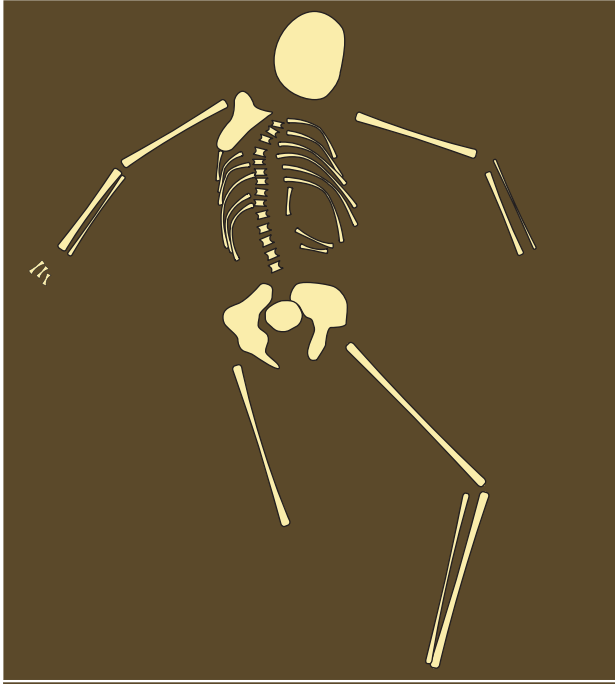


Fig. 3.15 (above) Foot position (0993B): feet wide apart

Fig. 3.16 (left) Body posture (1360B): prone

shoulder level (Fig. 3.12). These categories take into account the humerus, but not the forearm and therefore a body classed as having both arms extended could have both upper arms extended superiorly, beyond the level of the shoulder, but with the forearms, from the elbow joint, angled inferiorly. The extent to which feet (from the ankle) were apart was scored as either: close (less than hip width apart) (Fig. 3.13), moderate (roughly hip width apart) (Fig. 3.14), or wide (greater than hip width apart) (Fig. 3.15).

Four general body postures were identified including, prone (body lying face down) (Fig. 3.16), supine (body lying on the back) (Fig. 3.17), body lying on the left side (Fig. 3.18), or body lying on the right side (Fig. 3.19).

Grave One, layer one

The second phase of burials within Grave One (Figs 3.20-21) comprised 25 bodies. All but three of the bodies were lying roughly lengthways across the

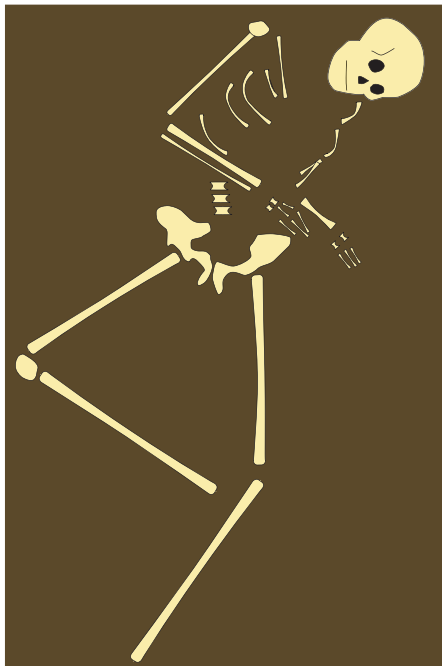


Fig. 3.17 Body posture (3095B): supine

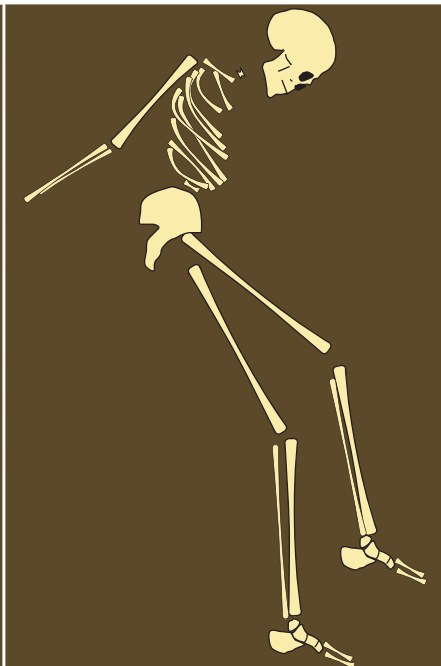


Fig. 3.18 Body posture (1357B): lying on left side



Fig. 3.19 Body posture (2397B): lying on right side

width of the grave (north-south), although the angles of the bodies varied somewhat. Most of the bodies within the eastern half of the grave were positioned with their heads to the south and their feet to the north, while most within the western half of the grave had their heads to the north and their feet to the south. Three bodies (0610B, 0486B and 0674B), broadly occupied a west-east orientation, with their heads to the west and their feet to the east. These bodies were situated along the northern edge of the grave.

Within this layer, most bodies (19) were lying in a prone position. Six bodies were lying in a supine position, and no bodies were found to be lying on their side. There was no distinct grouping of those lying in a supine rather than a prone position.

In terms of arm positions (Table 3.1), more bodies (14) were found to have one arm extended, than those with neither arm extended (eight). Far fewer had both arms extended (three) (0471B, 0673B, 0676B). A total of 12 bodies had feet that

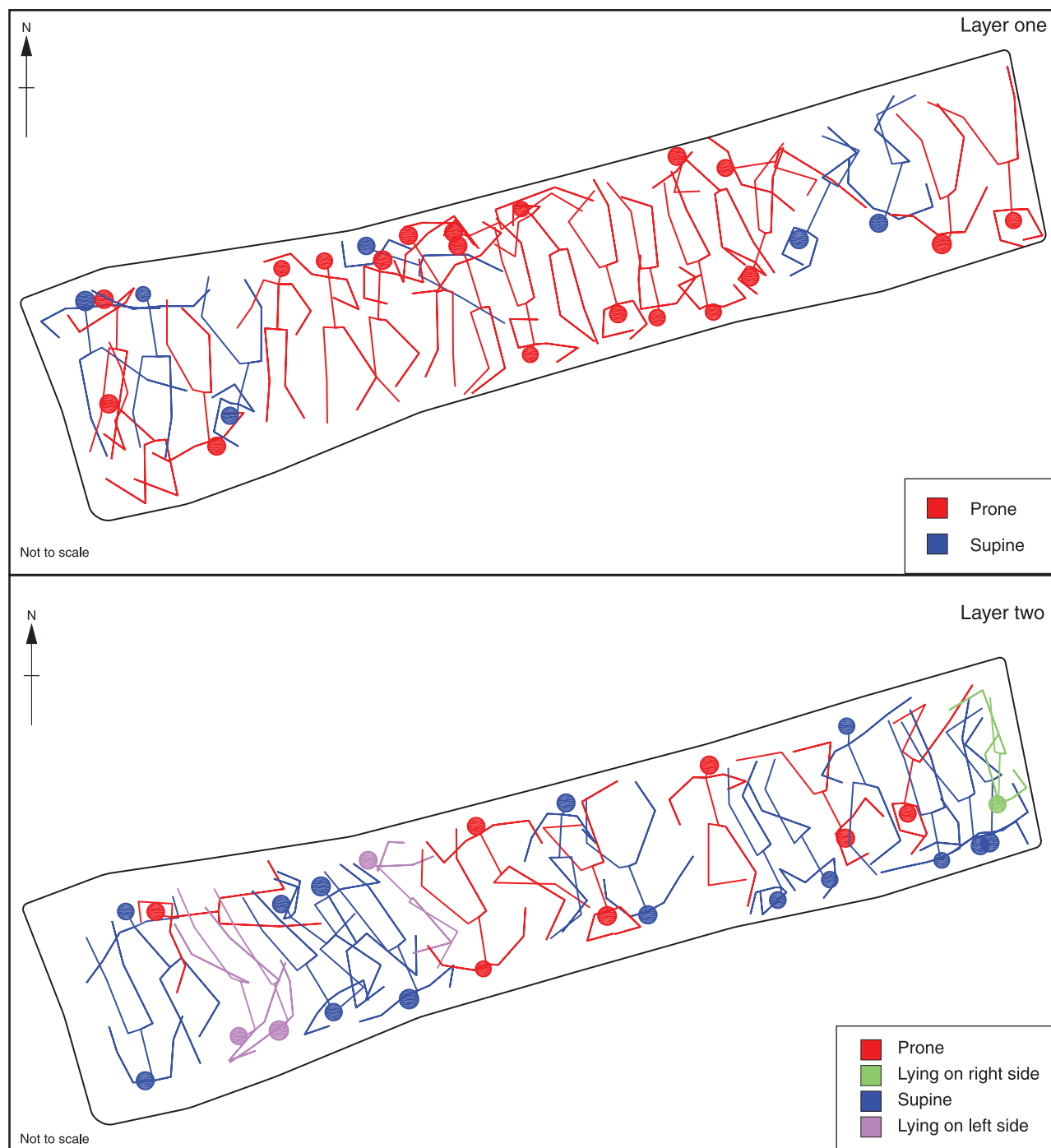


Fig. 3.20 Survey plans of Grave One, layers one and two

Table 3.1: Arm positions, Grave One, layer one

Arm position	No. of bodies
Both extended	3
Neither extended	8
One extended	14

Table 3.2: Feet positions, Grave One, layer one

Leg position	No. of bodies
Close	12
Moderate	6
Wide	7

were positioned close together, more than the number of bodies with feet that were moderately close (six) or positioned widely apart (seven) (Table 3.2).

Grave One, layer two

A total of 25 bodies made up the earliest burial phase within Grave One. All but one of the bodies (1371B) were lying on a roughly north-south alignment, across the width of the grave. Of these, 16 had their heads to the south and their feet to the north, and eight had their feet to the south and their heads to the north. However, these were not specifically grouped; that is, there was no obvious sequence/pattern to whether an individual was placed with the head on the northern or southern side of the grave. Body 1371B was lying with the

Table 3.3: Arm positions, Grave One, layer two

Arm position	No. of bodies
Both extended	3
Neither extended	11
One extended	11

Table 3.4: Feet positions, Grave One, layer two

Feet position	No. of bodies
Close	4
Moderate	13
Wide	8

head to the west and feet to the east in the western end of the grave, along the northern edge.

More bodies (14) were lying supine than in any other position. A total of seven were prone. Only three were lying on their left side (1356B, 1357B, 1555B) and only one on its right side (1083B). The three bodies lying on their left side were all within the western half of the grave. The individual lying on his right side was positioned against the eastern edge of the grave.

Equal numbers of bodies had either one arm extended (11) or neither arm extended (11). Only three bodies (1566B, 1457B, 1117B) had both arms extended. The most common foot position (Table 3.3) was moderately close together (13 bodies) followed by widely set apart (eight bodies). Only four bodies (1119B, 1266B, 1585B, 1590B) had feet positioned close together (Table 3.4).



Fig. 3.21 Grave One during excavation, looking west (the white strips are labels marking evidence numbers and refer to bodies and artefacts)



Fig. 3.22 Grave Two during excavation, looking east

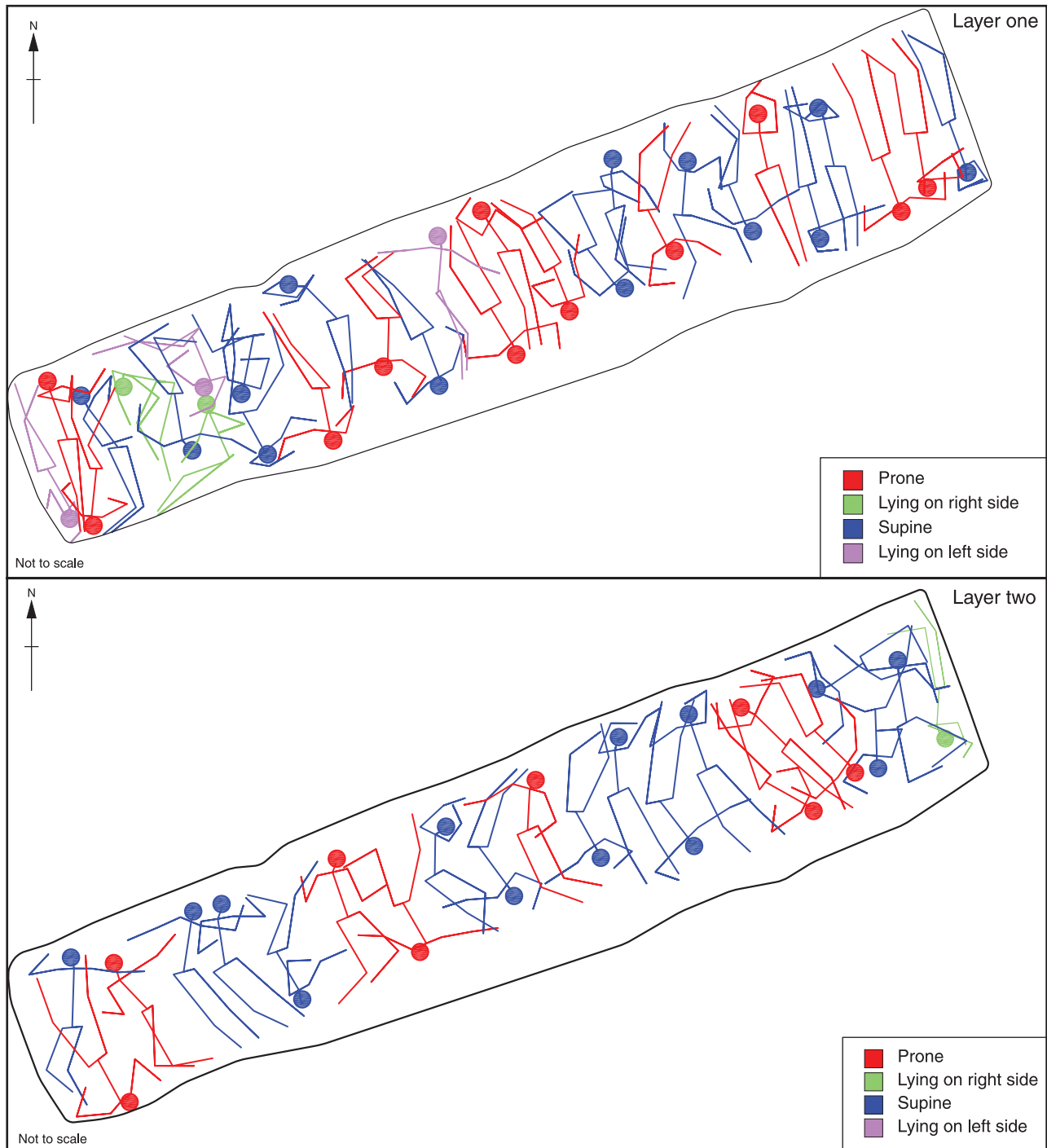


Fig. 3.23 Survey plans of Grave Two, layers one and two

Grave Two, layer one

The second burial phase within Grave Two (Figs 3.22-23) comprised 29 bodies. All the bodies were lying across the width of the grave, on a roughly north-south alignment, although four of the bodies in the western end of the grave (0636B, 0732B, 0975B, 1223B) were notably more contorted than the other bodies within the grave (Figs 3.24-25). Indeed, the western end of the grave was far more 'crowded' than the eastern end. Broadly speaking,

the bodies were placed within the grave in a 'head-to-toe' fashion, that is, a body with the head to the north and feet to the south, next to a body with the head to the south and feet to the north, and so on. There were a few inconsistencies in this pattern, however, with a few instances of two to three bodies in a row on the same orientation. A total of 18 bodies had their heads to the south, and 11 bodies had their heads to the north.

A total of 13 bodies were lying supine and 11 were prone. A number of bodies were also lying on their

Table 3.5: Arm positions, Grave Two, layer one

Arm position	No. of bodies
Both extended	6
Neither extended	10
One extended	13

Table 3.6: Feet positions, Grave Two, layer one

Feet position	No. of bodies
Close	15
Moderate	9
Wide	5

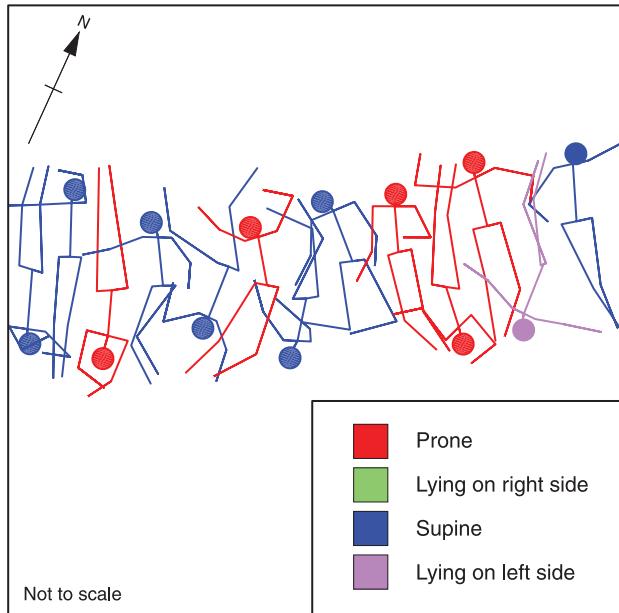


Fig. 3.24 Eastern end of Grave Two, layer one

side, three on their left side (0287B, 0568B, 0975B) and two on their right side (0732B, 1223B). Of the five individuals on their side, four were situated in the western, more 'crowded' end of the grave.

The most typical arm position (Table 3.5) for individuals in this layer was to have only one arm extended (13), followed by having neither arm extended (10). Six bodies had both arms extended. Most individuals (15) had their feet positioned close together. Fewer bodies had their feet moderately (nine) or widely (five) apart (see Table 3.6).

Grave Two, layer two

The first phase of burials within Grave Two comprised 22 bodies. All but one were orientated in a roughly north-south position, across the width of the grave. One individual, situated near the northern edge of the eastern end of the grave, was orientated with the head to the west and feet to the east. In a similar fashion to those in the overlying layer, the bodies were organised in a 'head-to-toe' sequence (Fig. 3.26), with only minor inconsistencies to this pattern. A total of 11 bodies had their heads to the north, and ten had their heads to the south.

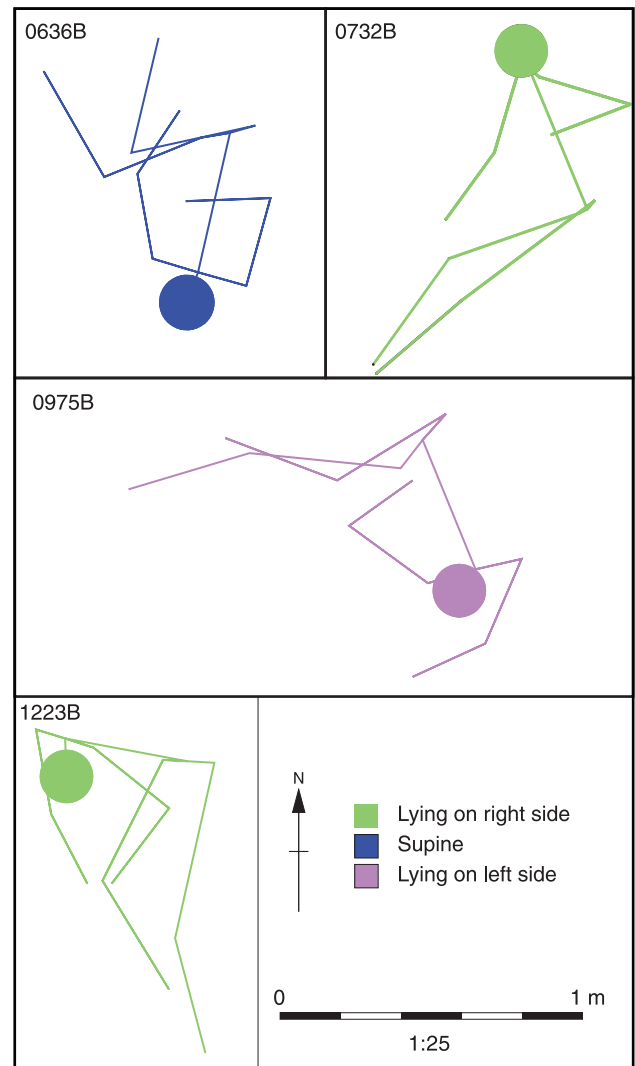


Fig. 3.25 Grave Two, layer one (0636B, 0732B, 0975B, 1223B)

As with layer one, the most common body position was supine (12 individuals). Nine bodies were lying in a prone position, and one (0647B) was lying on his right side. This individual was positioned against the eastern edge of the grave.

In this layer, the most typical arm position by far was to have neither arm extended (13 bodies) (Table 3.7). Far fewer bodies had one arm extended (six), and even fewer had both arms extended (three). The three feet positions were more evenly represented (Table 3.8), although there were

Table 3.7: Arm positions, Grave Two, layer two

Arm position	No. of bodies
Both extended	3
Neither extended	13
One extended	6

Table 3.8: Feet positions, Grave Two, layer two

Leg position	No. of bodies
Close	8
Moderate	8
Wide	6

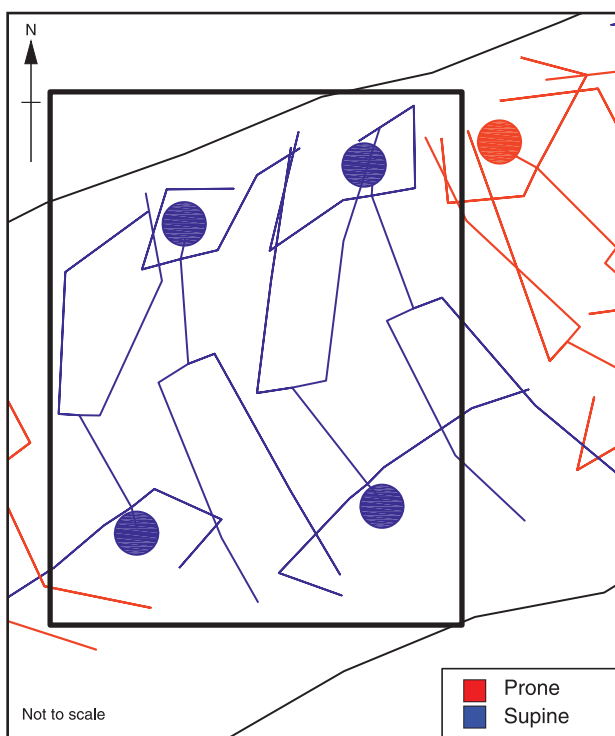


Fig. 3.26 Grave Two, layer two (note the 'head-to-toe' organisation of burial; bodies 2768B, 2792B, 2793B and 2794B orientated the same way, all prone, with their feet close to one another)

slightly fewer bodies with their feet set widely apart (six).

Grave Three, layer one

The second burial phase within Grave Three (Figs 3.27-28) comprised 28 bodies. As observed in graves one and two, the majority of the bodies were lying roughly north-south, across the width of the grave. Only two bodies (1975B, 1791B), both in the eastern half of the grave, differed in orientation. Body 1975B was laid with the head to the east and feet to the

west, and situated along the southern edge of the grave. The other (1791B) was laid with the head to the west and feet to the east, with the lower body against the southern edge of the grave and upper body angled in a more northerly direction, towards the centre of the grave. In this layer, the eastern half of the grave was more 'crowded' than the western half. Taking an approximate midpoint at the centre of the grave, the eastern half contained 17 individuals, while the western half contained 11. The 'head-to-toe' organisation within this layer was less distinctive than in other graves, with a number of cases of two, three or four consecutive bodies orientated the same way. An equal number of bodies (13) had their heads to the north and south.

A total of 12 bodies were lying supine and 15 were lying in a prone position, by far the most commonly observed positions over all of the graves. Only one individual differed (2028B), being laid on his left side. This individual was in the eastern half of the grave.

Of the 28 bodies in this layer, 13 had neither arm extended (Table 3.9). A total of nine had one arm extended, and fewer (6) had both extended. The majority of bodies had their feet positioned closely (13) or moderately close (11) together (Table 3.10). Only four (1684B, 1689B, 1803B, 1974B) had them positioned widely apart.

Grave Three, layer two

The first burial phase in Grave Three (the second layer to be excavated) comprised 24 bodies. The majority of burials occupied a roughly north-south orientation across the width of the grave, although three bodies in the western half differed. Bodies 2341B and 2529B observed an east-west orientation, 2529B close to the southern edge of the grave, and 2341B close to the northern edge of the grave. Body 2507B lay on a roughly SE-NW orientation.

The bodies within the eastern and central areas of the grave followed the 'head-to-toe' organisation seen in other graves. The seven bodies in the very western

Table 3.9: Arm positions, Grave Three, layer one

Arm position	No. of bodies
Both extended	6
Neither extended	13
One extended	9

Table 3.10: Feet positions, Grave Three, layer one

Leg position	No. of bodies
Close	13
Moderate	11
Wide	4

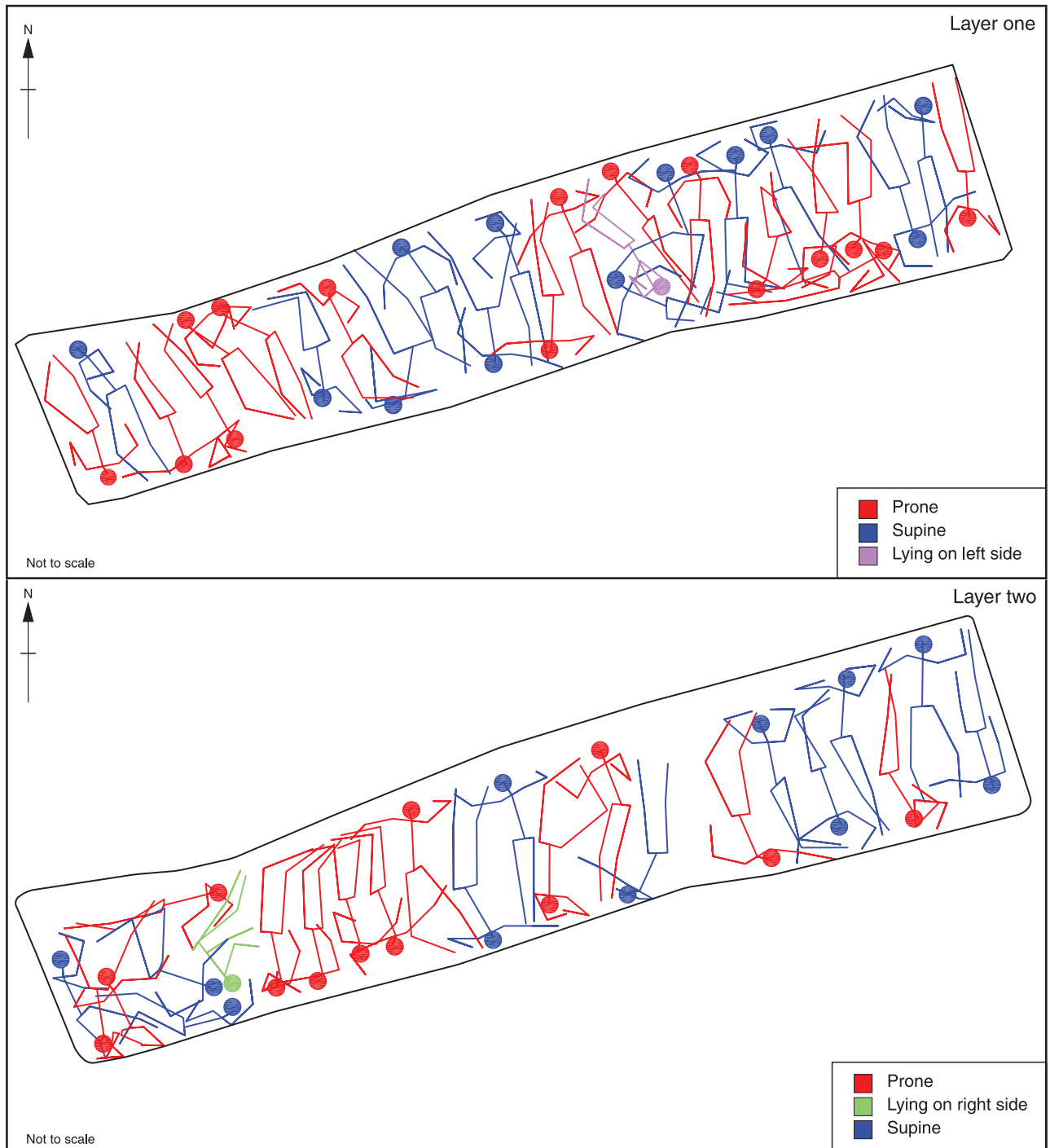


Fig. 3.27 Survey plans of Grave Three, layers one and two

end of the grave (2340B, 2446B, 2506B, 2507B, 2529B, 2341B, 2516B) were much more disorganised, and included the three (2341B, 2507B, 2529B) that were lying on a more east-west orientation (Fig. 3.29). Just eastwards of this disorganised group were four bodies that were all prone, and all had their heads to the south and feet to the north (2768B, 2792B, 2793B, 2794B). The feet of all four of these individuals were very close to one another (Fig. 3.30). A small space was present; that is, no body lay between bodies 2510B and 2508B in the eastern half of the grave,

although in the second phase of burials (layer one), this area of the grave was notably more 'crowded'.

A total of 11 bodies were lying supine, and 12 were prone. Body 2516B lay on its right side. No bodies lay on their left side. The four bodies in the western end of the grave orientated south-north, with their feet close to one another (2768B, 2792B, 2793B, 2794B), were all lying in a prone position.

Most of the bodies (15) had one arm extended (Table 3.11). A total of six had neither arm extended, and only three (2511B, 2522B, 2662B) had both arms



Fig. 3.28 Grave Three during excavation, looking west

Table 3.11: Arm positions, Grave Three, layer two

Arm position	No. of bodies
Both extended	3
Neither extended	6
One extended	15

Table 3.12: Feet positions, Grave Three, layer two

Leg position	No. of bodies
Close	12
Moderate	6
Wide	6

extended. Most of the bodies in this layer (13) had their feet positioned close together (Table 3.12). Only five bodies had their feet moderately close together, and six had them positioned widely apart.

Grave Four, layer one

The second phase burials within Grave Four (Figs 3.31-32) comprised 25 bodies. All but three of the bodies were lying lengthways across the width of the grave, in a roughly north – south orientation. Three bodies, all in the western end of the grave, were lying with their heads to the west and feet to the east. One of these, body 1525B, was adjacent the northern edge of the grave, while 1528B and 1524B were lying

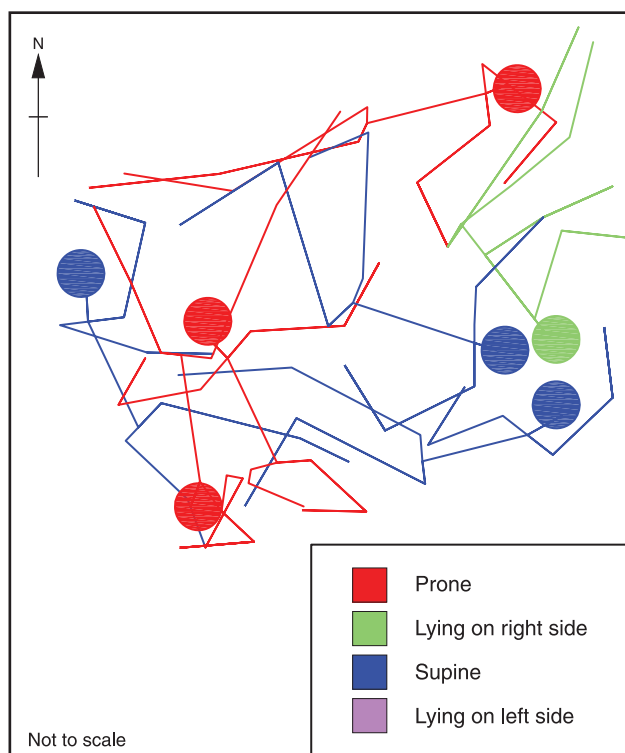


Fig. 3.29 Grave Three, layer two (western end)

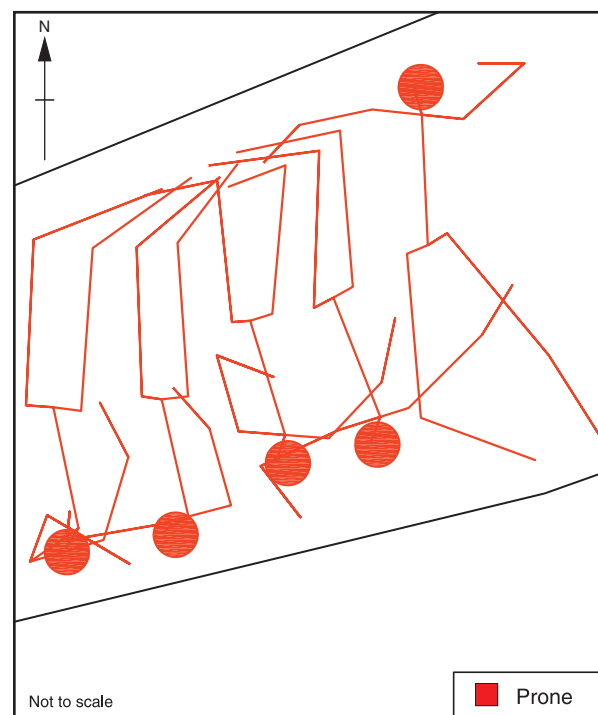


Fig. 3.30 Grave Three, layer two. Bodies 2768B, 2792B, 2793B and 2794B, oriented the same way, all prone, with their feet close to one another

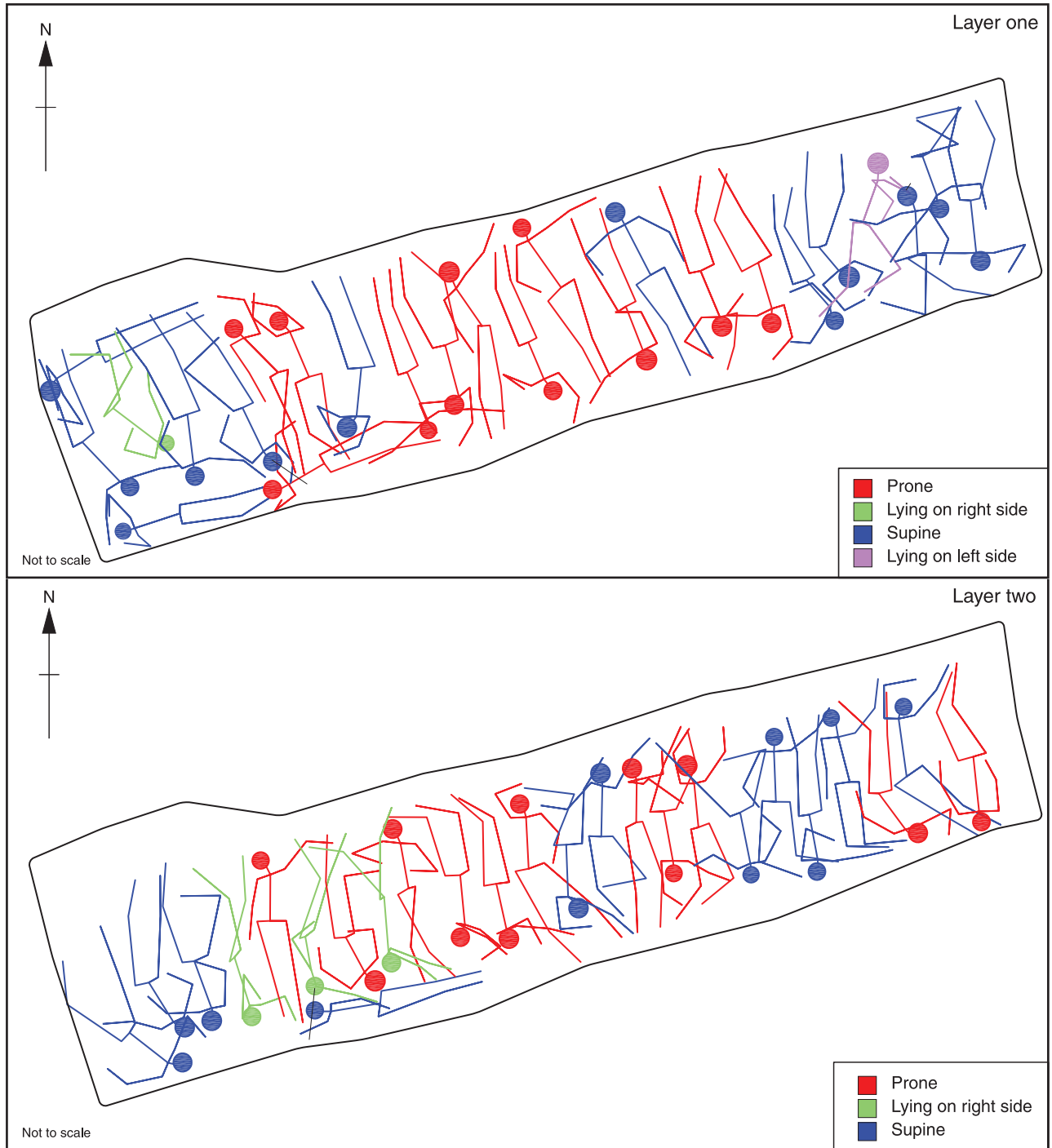


Fig. 3.31 Survey plans of Grave Four, layers one and two

against the southern edge of the grave. As in Grave Three, layer one, the 'head-to-toe' organisation within this layer was less distinct than in other graves, with a number of cases of two, three or four consecutive bodies orientated the same way. The very western and eastern ends of the graves were more 'crowded' and disorganised in terms of body positioning, than in the central section of the grave.

A total of 12 bodies were lying in a supine position and 11 were prone. Generally speaking, the bodies lying in a prone position were situated more

centrally within the grave, and those in a supine position were mostly at ends of the grave. Two bodies were lying on their side. Body 1669B was lying on its right side and situated in the western end of the grave. Body 1874B was lying on its left side in the eastern end of the grave.

As observed in other graves, arm positions varied greatly (Table 3.13), but most bodies (14) within layer one of Grave Four had one arm extended and not the other. A total of six bodies had neither arm extended, and five bodies had both



Fig. 3.32 Grave Four during excavation, looking west

arms extended. Leg and foot positions were also variable (Table 3.14), but feet positioned moderately close together was the most frequently observed position (10), followed by feet close together (nine).

Grave Four, layer two

The first phase of burials within Grave Four comprised 25 bodies. All but one of the bodies

Table 3.13: Arm positions, Grave Four, layer one

Arm position	No. of bodies
Both extended	5
Neither extended	6
One extended	14

Table 3.14: Feet positions, Grave Four, layer one

Leg position	No. of bodies
Close	9
Moderate	10
Wide	6

(2372B) were lying lengthways across the width of the grave (north-south). The first ten bodies from the eastern end of the grave were lying in a 'head-to-toe' fashion. Taking a rough central point between bodies 2115B and 2116B in the western half of the grave, ten individuals had their heads to the south and feet to the north, compared with only three (2385B, 2112B, 2114B) who had their heads to the north. Body 2372B in the western half of the grave was orientated with its head to the west and feet to the east, lying along the southern edge of the grave.

Equal numbers of bodies were lying prone and supine, with 11 bodies in each of these positions. There did not appear to be a correlation between these body positions and location within the grave. Three bodies (2397B, 2396B, 2394B) were lying on their right side. These were all within the western half of the grave. No bodies were lying on their left side.

Arm positions varied greatly (Table 3.15). The most frequently observed positions were neither arm extended (10 bodies) or one arm extended (nine bodies). Fewer (six bodies) had both arms extended. Leg positions also varied greatly (Table 3.16). Most had legs that were flexed at the knee, but the degree of flexing varied massively. The closeness of the feet also differed between individuals, with most bodies having feet positioned widely apart (11), fewer (9) having feet moderately close together, and only five with their feet close together.

Grave Five, layer one

Layer one, the second burial phase within Grave Five (Figs 3.33-34), comprised 16 bodies, a much smaller number than that observed in any of the layers in the other graves (excluding Grave Six). Orientations were very varied (Fig. 3.35). A total of six were broadly orientated across the width of the grave, four with their heads to the north (3065B, 2928B, 2721B, 2811B) and two with their heads to the south (3089B and 2799B). Seven bodies (2722B, 2719B, 2720B, 2796B, 2812B, 2930B and 2919B) were

Table 3.15: Arm positions, Grave Four, layer two

Arm position	No. of bodies
Both extended	6
Neither extended	10
One extended	9

Table 3.16: Feet positions, Grave Four, layer two

Leg position	No. of bodies
Close	5
Moderate	9
Wide	11

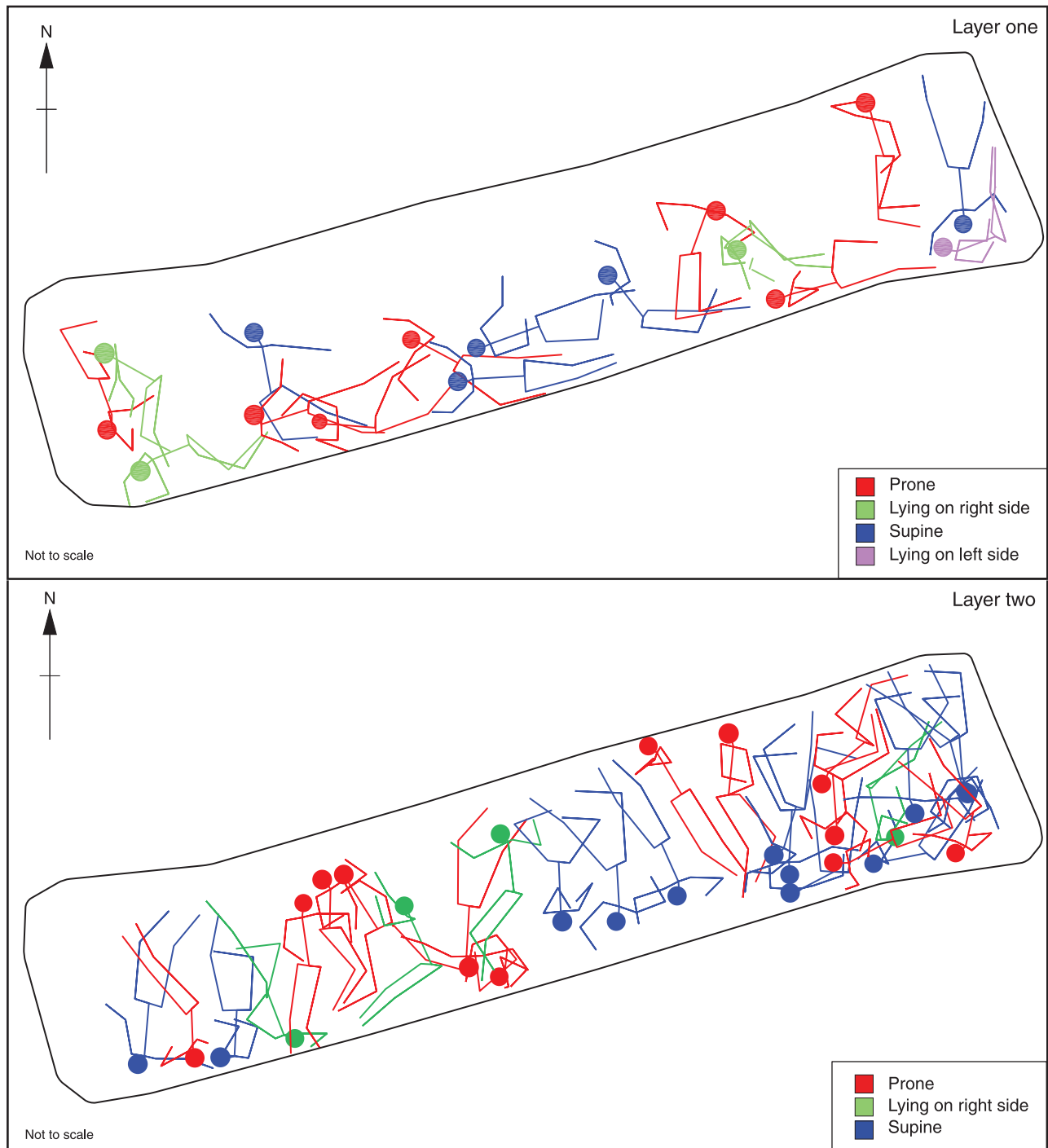


Fig. 3.33 Survey plans of Grave Five, layers one and two

orientated lengthways along the grave, with their heads to the west and feet towards the east. Bodies 2810B and 2896B were lying diagonally across the grave, their heads to the north-west and their feet to the south-east. The torso of 3091B lay against the very eastern end of the southern edge of the grave, with the legs of the individual angled approximately 90 degrees to the torso, and lying against the eastern edge of the grave.

Body positions were also varied. A total of five bodies were supine and seven were prone. As seen

in the other graves, fewer individuals were lying on their sides: three (2930B, 2811B, 2722B) were lying on their right side and one (3091B) on his left side. There was no apparent patterning in body location and orientation. In general, the bodies in this layer were fairly evenly spaced throughout the grave.

In terms of arms (Table 3.17), the least frequently observed position was both arms extended (four). Most bodies had neither arm extended (six), or just one arm extended (six). The most commonly



Fig. 3.34 Grave Five during excavation, looking east

Table 3.17: Arm positions, Grave Five, layer one

Arm position	No. of bodies
Both extended	4
Neither extended	6
One extended	6

Table 3.18: Feet positions, Grave Five, layer one

Leg position	No. of bodies
Close	4
Moderate	5
Wide	7

observed foot position (Table 3.18) was wide apart (seven), followed by moderately apart (five), then close together (four).

Grave Five, layer two

The first burial phase within Grave Five comprised 28 individuals, many more than in the second burial phase (layer one). The eastern end of the grave contained a particularly dense concentration of burials (Fig. 3.36). Dividing the length of grave into

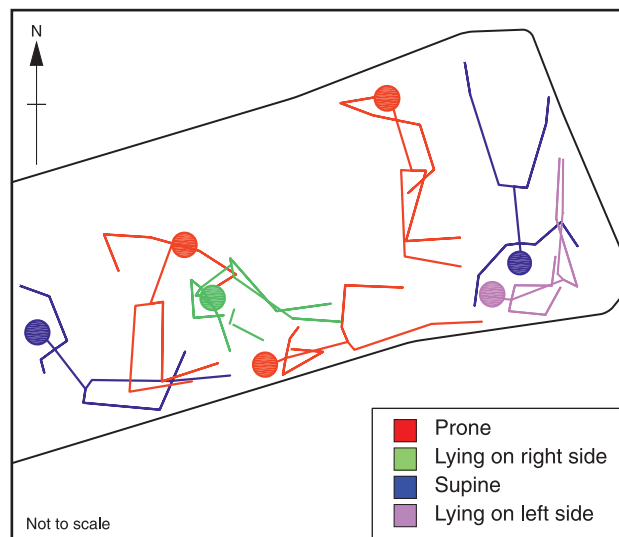


Fig. 3.35 Grave Five, layer one (note the varied body orientations, not the typical N-S alignment)

approximate thirds, the western third (up to and including 2724B) contained six bodies and the central third (up to and including 3214B) contained eight bodies, while the eastern third contained 14 bodies. Most bodies in this layer were lying across the width of the grave in an approximately north-south orientation. The main variation to this was the bodies at the eastern end of the grave, where they were much more densely concentrated, notably the 12 eastern-most bodies (3216B, 3246B, 3217B, 3228B, 3237B, 3236B, 3271B, 3272B, 3238B, 3270B, 3310B, 3215B). In total, 16 bodies were lying approximately south-north and seven were lying approximately

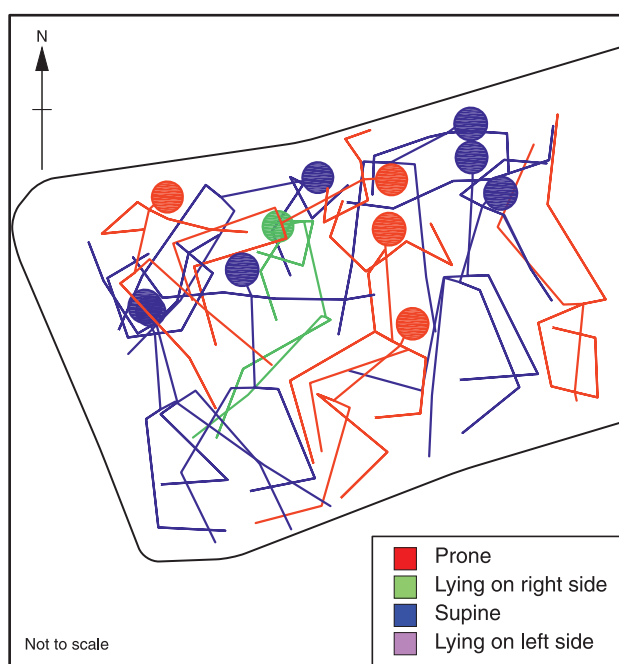


Fig. 3.36 Grave Five, layer two (eastern end), showing dense concentration of burials

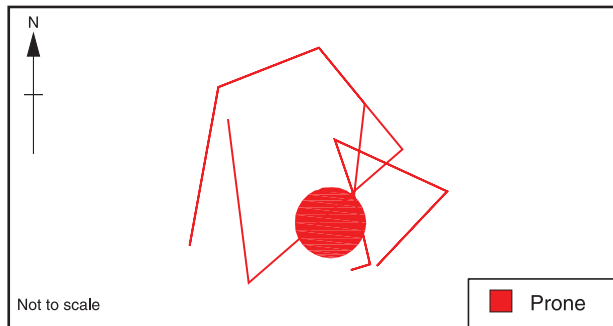


Fig. 3.37 Grave Five, layer two, body 3147B (note unusual body position, 'rolled into a ball')

north-south. In the eastern end of the grave, bodies 3271B and 3228B were orientated with their heads roughly to the west and their feet towards the east, and bodies 3237B and 3217B were orientated with their heads to the south west and their feet towards the north east. It was not possible to comment on the orientation of body 3147B, situated fairly centrally within the grave close to the southern edge. The arms and legs of this individual were tightly flexed, and overlay the torso, almost giving the appearance that this body was rolled into a ball (as described by the excavator) (Fig. 3.37). This individual had sustained substantial peri-mortem trauma (see peri-mortem trauma section in Chapter Four).

Equal numbers of bodies within layer two were lying supine and prone, with 12 bodies in each position. Only four individuals (3110B, 3211B, 3157B, 3272B) were lying on their side, and all four were on their right side. No bodies were lying on their left side. There was no obvious grouping or patterning in the locations of the different body positions.

Regarding limb positions, very few bodies (two) had both arms extended (Table 3.19). Fairly even numbers had neither arm extended, or just one arm extended, with 13 and 12 bodies in each position respectively. Feet were most commonly positioned widely apart (13 bodies; see Table 3.20). Fewer bodies had their feet positioned close together (seven) or moderately close together (seven). The arm and feet positions of body 3147B are not included here, because the body had been rolled into a ball.

Grave Six

Grave Six (Figs 3.38-39) contained just three bodies (2159B, 2131B and 2147B), all of which were

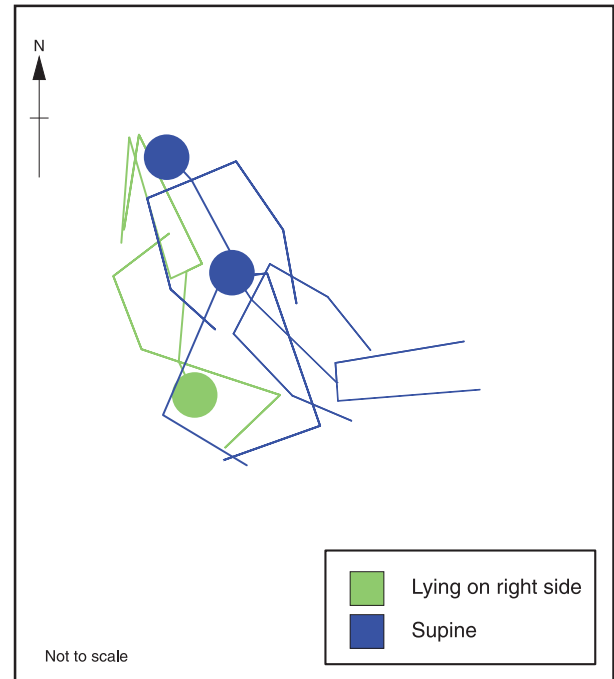


Fig. 3.38 Survey plan of Grave Six

located in the very western end. Body 2159B was the first to be buried, followed by an episode of backfilling. Bodies 2147B and 2131B were lying upon this backfill, with no backfill horizon between them. Bodies 2131B and 2159 were orientated across the width of the grave, 2131B with its head to the south and his feet to the north, and 2159B with the head to the north and feet to the south. Body 2147B was angled slightly, with its head towards the north and his feet towards the east. Bodies 2159B and 2147B were lying supine, and 2131B was lying on its right side. In terms of limb positions, the supine bodies had neither arm extended, while 2131B had one arm extended. The feet of body 2147B were positioned moderately apart, while the other two bodies had their feet lying close together.

ASSOCIATED EVIDENCE AND METHOD OF BURIAL

A number of artefacts was recovered from the graves which may reflect how the bodies were carried and placed within them. These include the remains of groundsheets, which may have been used to wrap or cover the bodies, and wire or cable, which may have

Table 3.19: Arm positions, Grave Five, layer two

Arm position	No. of bodies
Both extended	2
Neither extended	13
One extended	12

Table 3.20: Feet positions, Grave Five, layer two

Leg position	No. of bodies
Close	7
Moderate	7
Wide	13



Fig. 3.39 Grave Six during excavation, looking east (top) and west (bottom)

been used to bind limbs, or bodies, together. All other artefacts are detailed in Chapter Five.

Evidence for groundsheet comprised eyelets, which occasionally incorporated fragments of the groundsheet material, and material with no eyelets attached. Eyelets from British/Australian issue groundsheet were found in all six of the occupied graves with a total of 28 bodies, numbering between one and 21 associated with each body. German groundsheet eyelets were found with a total of 29 bodies from graves one, five and six, and varied in number from between one and 30 with each body.

A total of four bodies (one from Grave Two, two from Grave Three and one from Grave Four) had associated British/Australian issue groundsheet fabric without any eyelets attached. In addition, one body (1673B, Grave Three, layer one) was found wrapped within a well preserved groundsheet (1744A), although it is not known whether this was a German or British/Australian issue groundsheet.

Artefacts of cable or wire were found with a total of 19 bodies from graves one, two, three and four, and predominantly comprised telecommunication cable. In most cases, these consisted of small fragments or lengths of cable only, although a few comprised larger amounts, observed with 0647B/1062B, 1683B/2010B, and 1668B or 1528B. Body 0647B had telecommunication cable (1153A) around his head/neck region, which was also wrapped around the ankles of adjacent body 1062B. A large quantity of cable (1820A) was recovered from the vicinity of bodies 1528B and 1668B, although it was unclear with which of the bodies it was associated. A large length of cable (2336A) was found to be wrapped around the head/neck area of 1683B, and around the leg of 2010B. Cable (1604A) was also found around the necks of 1356B and 1357B.

DIMENSIONS OF GRAVES AND GUARD SONDAGES

The dimensions of each of the graves, the GUARD evaluation sondages, and the depths of the burial layers are detailed in Tables 3.21-3.23. It should be noted that the orientations given here have been limited to north, south, east and west, with the graves orientated west to east (with Pheasant Wood to the north). In reality, the graves were orientated in a more west-south-west to east-north-east direction, with Pheasant Wood to the north-north-west.

Table 3.21: Grave dimensions; lengths and widths taken at the top of grave cuts

Grave no.	Length (W-E)	Width (N-S)	Height of grave base (m NGF)	Depth of grave
1	8.74 m	2.22 m	West	19.97 m
			East	20.16 m
2	9.79 m	2.60 m	West	19.80 m
			East	19.82 m
3	9.65 m	2.18 m	West	19.65 m
			East	19.69 m
4	9.37 m	2.68 m	West	20.15 m
			East	20.11 m
5	9.53 m	1.92 m	West	19.98 m
			East	19.98 m
6	9.58 m	2.06 m	West	19.54 m
			East	19.40 m
7	9.36 m	3.42 m	West	19.68 m
			East	19.68 m
8	9.18 m	2.83 m	West	19.81 m
			East	19.84 m

Lengths, widths and depths of graves

The graves were generally of similar lengths, measuring between 9.79m and 8.74m, with an average of 9.4m (Table 3.21). The widths of the graves measured between 1.92m and 3.42m, giving an average of 2.49m. The widest two were graves seven and eight, those found not to contain burials. This may relate to the fact that these two graves had been left open longer than the others, with subsequent weathering and erosion of the edges, as discussed by Pollard *et al.* (2008, 37-38). Grave Four was the deepest grave, with a depth of up to 1.57m. The shallowest was Grave One, with a depth of 0.98m at the eastern end.

Depths of burial layers

This refers to the depths of each of the burial layers, measured from the tops of the grave cuts at the western and eastern ends of the graves (Table 3.22). Burial layer thickness was calculated by using the upper- and lowermost heights surveyed within a burial layer. These varied from 0.60m (Grave Four, layer one) and 0.20m (Grave Six, layer one), with an average thickness of 0.38m.

For layer one burials, Grave Three showed the greatest difference between western and eastern ends of the grave. Here, the top of layer one was 0.41m deeper in the eastern end than it was in the western end. The depths of layer one were most even within graves two and four, with just 0.03m and 0.02m difference between the eastern and western ends respectively.

For layer two burials, the greatest difference in depth between the western and eastern ends was seen in Grave Four. In this grave, the top of layer two was 0.20m deeper in the western end than in the eastern end. The depths of layer two were almost even within graves one and two, with just 0.01m difference between the western and eastern ends in Grave One, and no difference at all in Grave Two.

The depth between the two burial layers within each grave was also calculated. Where a positive distance between the two layers was definable, this ranged from 0.005m (Grave Four, western end) to 0.18m (Grave One, western end). Elsewhere, burial layers overlapped by up to 0.43m.

Dimensions of GUARD sondages

The GUARD sondages were stepped by the mechanical excavator in order to comply with health and safety regulations and to facilitate access into the graves (Pollard *et al.* 2008, 14-15). In some cases, these steps went beyond the limits of the grave cuts (*ibid.* 2008, 15). The maximum and minimum lengths and widths of the GUARD sondages are given here (Table 3.23). Maximum dimensions relate to the outermost areas of the stepping and minimum dimensions refer to the deepest part of the sondages. By area, the largest GUARD sondage was within and beyond the edges of Grave Three (3.05m x 5.08m). The smallest GUARD sondage, by area, was in Grave Four (2.39m x 2.02m).

Table 3.22: Burial layers; depth and thickness

Grave no.	Layer no.	Depth below top of grave cut		Layer thickness	Depth between bottom of layer 1 and top of layer 2	
1	Layer 1	West	0.17m	0.39m	West	0.18m
		East	0.33m			
	Layer 2	West	0.73m	0.25m	East	0.06m
		East	0.72m			
2	Layer 1	West	0.76m	0.27m	West	0.03m
		East	0.79m			
	Layer 2	West	1.00m	0.30m	East	0.06m (overlap)
		East	1.00m			
3	Layer 1	West	0.47m	0.45m	West	0.07m
		East	0.88m			
	Layer 2	West	1.00m	0.21m	East	0.23m (overlap)
		East	0.88m			
4	Layer 1	West	1.02m	0.60m	West	0.00m
		East	1.00m			
	Layer 2	West	1.38m	0.44m	East	0.43m (overlap)
		East	1.18m			
5	Layer 1	West	0.54m	0.45m	West	0.07m (overlap)
		East	0.46m			
	Layer 2	West	0.83m	0.53m	East	0.18m (overlap)
		East	0.73m			
6	Layer 1	West	0.60m	0.20m	West	0.16m (overlap)
	Layer 2	West	0.52m			

Table 3.23: Dimensions of GUARD sondages

Grave no.	Max. W-E dimension	Max. N-S dimension	Min. W-E dimension	Min. N-S dimension
1	3.25m	2.45m	1.71m	2.22m
2	2.13m	2.70m	1.46m	2.41m
3	3.05m	5.08m	0.53m	0.62m
4	2.39m	2.02m	1.35m	2.98m
5	3.40m	4.16m	1.30m	1.93m
6	1.99m	2.96m	0.47m	1.68m
7	1.48m	4.25m	1.45m	3.23m
8	1.98m	4.51m	1.77m	3.92m

INTERPRETATION OF ARCHAEOLOGICAL DEPOSITS

Consideration of the deposits encountered during the excavation of the graves, the positions of the bodies, and some of the associated artefacts, may provide clues regarding the thought processes and methods involved in the movement and burial of the dead soldiers. Although not directly relevant to the primary goal of recovering all bodies and artefacts and recording and interpreting evidence for identification, this information serves to contextualise the evidence and therefore facilitate this process.

Understanding in detail how the graves had been backfilled was not an aim of the project (unlike more traditional archaeology projects), and therefore all the graves were excavated in plan, with only a basic record of soil types created. Thus, none of the backfills that were encountered were observed in section and descriptions of soils were made during their excavation. This means that evidence for more complex backfilling episodes, as may have occurred in Grave Six, was not observed.

Two backfill layers were observed in all the graves, including a lower one which overlay the first layer of (layer two) burials and an upper one which overlay the second layer (layer one) of burials, and filled the graves to the tops of the grave cuts. The composition of these fills was similar in all the graves, although two significant differences were noted, both relating to the proximity of the graves to Pheasant Wood. Firstly, the backfills of the northernmost graves (graves two, three and six), closest to the edge of the wood, contained an abundance of rootlets, while the backfills of the southernmost graves (graves one, four and five) contained very few. Secondly, the backfills within graves one, four and five, furthest from the wood, were notably wetter and stickier than those in graves two, three and six, which were closest to the wood. This difference was most notable in the lower backfills, and in the upper backfills where they were in direct contact with the bodies. These fills were also noted to have given off a strong, pungent smell. The reason for the abundance of rootlets in the graves closest to the wood is clear, and it is certain that the wood, a vast concentration of trees and other vegetation/flora, was responsible for drawing

away much of the groundwater within these graves.

The chalk lumps, present within all the graves were probably added by the German burial party in an attempt to sanitise the graves, the chalk acting as a disinfectant. Standard German army practice required the deposition of lime, but in the absence or shortage of lime, the chalk was probably sourced as an alternative (or in addition to the lime) by the Germans from locally occurring, natural outcrops (C Champness pers. Comm. 2011).

The maturation stage of fly pupae, identified within the samples of chalk, indicates that the bodies were placed in the graves, or the graves filled in, before the pupae had developed into adults and therefore between five and 10 days after the battle. This evidence cannot confirm whether the chalk was placed on the bodies before their burial, perhaps during transportation, or at the time that they were interred in the graves. However, the distribution of the chalk within the graves indicates that at least some of it was added during the burial process. For example, as suggested by Pollard *et al.* (2008, 32), the general scatterings, and the occasional concentrations may represent single bags or shovelfuls.

Lime inclusions were also present within the graves and varied depending on whether they were in close contact with bodies, or were further up in the grave fills. These differences probably reflect the relative effect of decaying bodies on the lime, in which the by-products of decomposition caused concretions to form around the bodies.

The dimensions of the graves were similar, with lengths ranging from 8.74m (Grave One) to 9.79m (Grave Two), and widths from 1.92m (Grave Five) to 2.68m (Grave Four). These dimensions are similar to those illustrated in a photograph of a German dug mass grave (Fig. 6.1), and it is likely that the Fromelles graves were dug to a standard size, as specified by the German Army. The lengths of graves seven and eight were within the range of the other grave lengths, but the widths were greater, at 3.42m (Grave Seven) and 2.83m (Grave Eight). These graves were probably intended for bodies and were most likely dug to the same dimensions as the others, their greater widths perhaps a result of their remaining open, long after the other graves (with the exception of Grave Six) had been backfilled, leaving the sides exposed to weathering and erosion.

The presence or absence of bodies, the numbers of bodies and the organisation of bodies within each grave may bear some significance on the order in which they were filled. Given that graves seven and eight contained no bodies, and Grave Six contained only three bodies, it is tempting to suggest that the Germans started burying the dead in the westernmost graves (graves one and two) and worked eastwards, through graves three and four, and finally graves five and six. Graves one to five contained between 44 and 52 bodies each, with the lowest number (44) within Grave Five. The notion that Grave Five was one of the last graves to be

filled is further supported by the fact that layer one, the second layer of burials, comprised only 16 bodies, far fewer than in any of the other graves. In addition, the layer one bodies in Grave Five were more widely dispersed than the bodies in other layers and body orientations varied greatly compared with other graves. The bodies in graves one to four appear to have been placed in the graves in a more or less orderly fashion; that is, they were generally placed side by side across the width of the grave (although limbs frequently overlapped). Only in Grave Five was this pattern not observed. These findings give the impression that Grave Five was indeed the last to be filled during the main burial process, perhaps in a more hurried manner.

Given that Grave Six was left open until much later than graves one to five, it seems likely that the three bodies within Grave Six were the very last to be buried, perhaps having been found after individuals had been interred in the other graves and after Grave Five, which would have been able to accommodate further burials, had been backfilled. However, the aerial photographs of the graves show that the length of Grave Six was reduced, probably by the backfilling of the western end of the grave 'during the period of burials' (Pollard *et al.* 2008, 36). So, even if the Grave Six burials were the last in the sequence, there may not have been a prolonged period of time between them and those in the other five graves.

Even though only three bodies were present in Grave Six, two episodes of burial were identified, because the first body to be interred (2159B) was overlain by a layer of backfill. The other two bodies (2131B and 2147B), probably buried at the same time, were lying upon this backfill. If these were in fact the last bodies to be buried, this sequence of deposition suggests that they may have been found/discovered and brought to the Pheasant Wood grave site on two separate occasions.

The method of placing the bodies within the graves has also been considered. Although it is difficult to interpret this kind of information from skeletal remains alone, body positions, including positions of arms and feet, may provide some insight. These suggest a likely scenario in which two members of the burial party had carried each body to the graveside, with one individual holding the body by the feet, and the other holding the body at the hands/wrists, or under the arms. It may be tentatively suggested that the bodies with both arms extended represent those who had been held by the hands/wrists (for example, 2118B in Grave Four, layer two). The bodies with feet positioned widely apart may represent those having been held by three burial party members, one holding the upper body, and two holding each leg (for example, 0993B in Grave Two, layer two). However, considering the weight of a body, two burial party members, one at each end, should have managed. In addition, if the bodies were dropped into the graves from ground level, limb positions

could easily alter from the way in which they were held. This may also account for the numerous bodies with only one arm extended.

The presence of cable in four of the graves, in some cases wrapped around body parts, is good evidence that bodies were bound, in some cases two bodies bound together. The cable may have been used to maintain the integrity of bodies that had received particularly significant trauma. However, of those bodies with good evidence of having been bound with wire, none exhibited particularly high levels of peri-mortem skeletal trauma (although it is not always possible to say how extensive soft tissue trauma may have been based on skeletal changes alone). Whether due to significant trauma or not, the cable was probably used for ease of movement or transportation. If this had been the case, there does not appear to be a correlation between legs/ankles being bound, and foot position; that is, bodies found with cable around the legs/ankles, did not necessarily have their feet positioned closely together. Bindings may have loosened, either by the time the bodies were placed in the grave, or perhaps as they entered the grave, if dropped in from the ground surface.

In at least one case (1673B) a well preserved groundsheet, which could not be identified to army, had been used to wrap the body of an individual who had suffered substantial peri-mortem trauma, suggesting that groundsheets may have been used to preserve the integrity of badly wounded individuals during transportation and disposal and/or make the task less unpleasant than without it. The only other evidence for groundsheets had survived in the form of remnants of fabric and/or eyelets and therefore the reason for their presence is less certain. Of those attributed to the British and Australian armies, it is more likely that, in most of these cases, they were present because they had been carried onto the battlefield by the soldiers, especially considering their presence in all occupied graves. However, the presence of German issue groundsheet remains, found in three of the graves suggests that they had been used to wrap the bodies with which they were associated. In some cases (for example, 2799B, 2896B, 3157B, 3272B) these bodies showed significant peri-mortem trauma, like 1673B, suggesting that the German groundsheets had been used to maintain the integrity of these bodies, while others bodies associated with groundsheets (for example, 0314B, 1360B, 2723B, 2724B, 3194B, 3238B) did not. Again, soft tissue lesions cannot always be determined from skeletal remains, so this mixed picture neither lends support or refutes the suggestion that groundsheets had been used to preserve the integrity of bodies. Using the groundsheets to cover bodies or possibly to lower them into the graves are two other possibilities that could explain their presence.

It is interesting to note that, aside from Grave One, German groundsheets were only present within graves five and six, and that graves five and six were the only graves in which no cable, or other

evidence for binding, was present. If Grave Five was in fact the last of the graves to be filled during the main burial phase, perhaps in a more hurried manner, groundsheets may have been used as a way of quickly moving bodies to the graveside, rather than binding individuals' limbs, or individuals together.

Variation in the thickness of burial layers and deposits in between burial layers reflects the extent

to which limbs overlay each other and the positions of the bodies in each of the graves. Although soil (lower backfills) had been deposited on top of the bottom layer of burials, this was often very thin to the extent that burial layers were barely distinguishable from each other in places. Where they were observed, they were very slight. This is probably the result of limbs extending upwards/downwards into the overlying/underling burial layer.

