WROXETER PIPELINE EXCAVATIONS (WST99): FINAL REPORT
by Roger White

Summary

Introduction
As part of the on-going programme of maintenance and improvements carried out by Severn Trent Water Ltd., the water main (Atcham DMA711) that runs across Wroxeter from north to south was re-lined using a concrete grouting system. As a condition of scheduled monument consent, the work was subject to a desk-top assessment of the archaeological impact of the works on the monument (SAM 32) (White 1997). The recommendations, timetable of archaeological works and costings established in that document formed the framework of the work described here. The initial programme of work comprised the excavation by hand or machine of 19 lining pits. Due to technical difficulties, a further variation was agreed upon allowing the excavation of another four lining holes and a machine-excavated trench. The work was carried out in a single 8-week period from mid October to mid-December 1999.

Circumstances of the excavation

Methodology
The methodology of the excavation was formulated at the desk-top assessment stage. This highlighted the sensitive nature of the site and the probability of discovering substantial remains of Roman date (White 1997). Procedures were outlined in case significant structures or discoveries were made that might require a variation in the work procedures and location of lining holes.

It must be stressed from the outset that the location and size of the interventions was determined on engineering grounds and not with reference to the archaeology. These lining holes thus represent a random sample of the deposits across the Roman city. Each lining hole was to be 2m by 1.7m in size and it was agreed that the depth of each would be determined by the depth of the main itself so that the base of the intervention was to be at least 0.3m below the base of the pipe. The depth was to be increased where archaeology still survived so that a substantial timber lining might be put in place to protect the surviving remains during the relining process. The walls of the lining holes were to be lined with a glass fibre matting once full recording of the lining hole had been completed. Once archaeological work had been finished, further excavation was carried out within the line of the existing pipe trench to allow for the entry of the plant hoses and cables. After relining had been carried out, the lining holes were backfilled. The fill varied according to the situation of the lining hole so that those in open land were backfilled with the spoil that had come out of them, while those excavated in the roads or verges were reinstated in accordance with Highways regulations using sterile broken stone compacted in situ and capped with tarmac.

Recording was by pro-forma context cards that were either for positive contexts ('layers') or negative contexts. Context numbers were allocated for each lining hole in 500 or 100 blocks for positive and negative numbers respectively, starting at 1000 for positive contexts and F1 for negative contexts. Thus lining hole 1 was allocated 1000-1499 and F1-F99, lining hole 2 had 1500-1999 and F100-199, etc. Lining holes that were interpolated between existing lining holes were given suffix letters (e.g. 11A) and allocated sub-sets of appropriate numbers (e.g. 6100, F1050, *et seq.*).

Site narrative
The location of the lining holes determined to a large extent the character of the remains recovered. Those lining holes located within modern roads that coincided with roads of Roman date tended to have sequences entirely composed of road surfaces (lining holes 7, 8, 8D, 9, 10, 11). The one exception to this rule, lining hole 11A, was located within a section of the modern road that ran on a different alignment from that of the Roman period and consequently produced a number of possible archaeological features that related to the archaeology within the adjacent lining hole 12. Lining holes 17 and 18 at the southern end of the series of holes, and 19 which lay at the very beginning of the series, had no archaeological sequences of importance as these lay beyond the town defences, although there is a possibility that 19 had contained a cremation burial. In addition lining hole 3, a trench cut across the Bell Brook valley by machine, also produced nothing of archaeological interest. The remaining interventions, lining holes 1, 2, 4,

5, 6, 8C, 12, 12A, 13, 14, 15 and 16 were located within fields or verges. All produced archaeological sequences of varying complexity and date. These interventions will be discussed in detail whilst the remaining lining holes will be more summararily discussed.

Lining Hole 1

Lining hole 1 was located on the eastern side of Insula 41 and about 50m south of the northern ramparts. Geophysical evidence in this area is largely non-structural with merely a number of pits being detected (cf. Atlas, this volume). Geophysical evidence is lacking for the immediate vicinity of the lining hole, probably due to the interference of the metal fence located within the hedge immediately adjacent to the excavation. No previous work is known in the vicinity.

Evidence for three phases was detected.

Phase X: Early Roman (later 1st century)

The earliest phase consisted of a very large pit whose dimensions exceeded those of the intervention so that it must have been at least 2m in diameter. The depth of the pit was not fully determined: the excavated portion was at least 1m deep and augering of the base showed that probably at least another 0.25m remained to be excavated. The fills were variable but consisted largely of either sandy layers (1013, 1016, 1018, 1020,1022, 1026, 1027) or predominantly charcoal-rich layers (1014, 1017, 1019, 1021, 1025) that tended to be deposited alternately within the upper levels of the feature. Towards the base of the pit, the layers varied slightly and some were layered almost horizontally so as to give the appearance of a trampled surface or floor within the feature. These contexts seemed to be limited to the western side of the pit and included a thin layer of compact, chesnut coloured clay (1024) and a layer of pebbles bonded by iron panning (1023). It is possible that these contexts represent a step created within this large feature to allow access into it. The upper fills were more obviously tip layers designed to fill in the feature. The earliest layer within the pit was a clean, bright red sand without pebbles (1028) that would normally be considered to be the natural subsoil. This may indeed be the case but it should be noted that a large sandstone ashlar (1029) lay in the north-west corner of the trench and since this clearly sat within 1028 it suggests that the layer was redeposited natural. The function of the sandstone ashlar was not apparent: its minimum dimensions were 0.4 x 0.25 x 0.16m and the block was laid horizontally within the feature. It presumably acted as a support for something contained within the pit but it is not possible to speculate further on its function.

The overall function of the pit itself is also unclear. There is no reason to suppose that the fill of the pit necessarily reflected the activities carried out within it, and in any case the fills did not really supply any information on what processes had produced them, other than that it involved burning. The structural evidence within the pit suggested that the feature had remained open for a period and that access was required from a step on the western side. Further, there was a substantial support for a structure within the north-west corner of the pit and this too indicates that the pit was linked to an industrial process and was not for the disposal of refuse. The geophyscial evidence for this part of the town has highlighted a considerable number of pits on both sides of the Bell Brook of similar dimensions to that seen in trench 1 (most notably in insulae 45, 48 and 51 – cf Atlas, this volume). It has been speculated that these were for some industrial activity, perhaps involving water, such as tanning or fulling (White and Barker 1998). There was no evidence in this pit for water-related industrial activity, and the sandy base and sides of the cut would suggest that in this case such activity would be inappropriate. Nonetheless the dimensions of the feature accord well with those known from the geophysical evidence and offer a first opportunity for understanding the scale and processes evidenced by these features.

Phase Y Roman (end 1st century-2nd century)

Once the pit had been filled, the function of the site changed radically with the construction of a substantial building. Only the corner of this structure was found but its total depth was about 0.5m. The construction trench (F5) had been cut into the upper fill of the pit on the north-western side. This was initially filled with freshly quarried angular sandstone blocks up to 0.2m in size mixed with lumps of clean red clay (1015). Overlying this was a layer 0.2m thick of crushed red sandstone, sand, mortar and stone, including blocks of Hoar Edge Grit sandstone and cobbles (1012). Sealing this was a thin layer of clean red clay (1009) that formed a foundation for an irregular layer of broken stone and cobble 0.25m deep (1011) that was laid with

some care to form a faced wall. This layer, along with its bonding layer of clean red clay (1003), formed a dwarf wall that projected above the level of an adjacent, and presumably contemporary, cobble surface (1008). The wall had been severely truncated on the east side by the modern water main trench so that only 0.12m of its width survived there. Where the width was fully preserved, on the south side, the wall width was 0.75m. Since there was no sign of the wall to the east of the water main trench, it must be assumed that the wall turned north, along the line of the main itself, and that the bulk of the building thus lies to the north and west of the lining hole. In the extreme north-west corner of the trench, a possible cut was detected in the angle of the wall (F2). This was filled with sandstone rubble and silt (1004). It was not clear whether this context represented a posthole or other structural feature within the building since so little of it was seen in excavation. On the eastern side of the water main, only one context may be associated with this activity: a cobbled surface (1010) seen in the north-east corner of the trench. This was presumably contemporary with the cobbed surface 1008 that was associated with the dwarf wall, and indeed may have been part of the same surface. Presumably both contexts represent a path or surface passing to the south of the building and perhaps separating it from its neighbour, as well as allowing access to the back of the plot. Similar arrangements are seen in the houses excavated by Bushe-Fox in insula 8, and are implied by the geophysics for insulae 18-21 (see Atlas).

Parallels for the dwarf wall built in alternate layers of stone and clay are also readily forthcoming from the town. A good example was seen in the houses excavated on the western side of insula 2 during Philip Barker's excavations (1997, 156 & 169) and they are also known in Post Office excavations in the same insula (Barker and Perry, forthcoming). Barker also excavated similar walls in his excavations in insula 6 (Barker 1968). Clay and cobble layers were also used in the foundation levels of the temple excavated by Bushe-Fox (1914, 3). It must be assumed that these clay and cobble dwarf walls were the standard mode of construction for the more modest buildings in the town, but do not represent the houses of the poor. On analogy with medieval architecture, such dwarf walls may be considered to be the foundations of substantial timber-framed buildings, even if the resulting rendered building did not look like the medieval buildings familiar from Shrewsbury (Goodburn). Timber architecture could be as impressive as stone-built houses and the implication of this structure at the edge of the Roman town indicates that this part of the town was a desirable area to live in for the relatively well-off. Having said that, it is also apparent that the most prestigious areas of housing were located within the centre of the town or on its western periphery (Atlas). Perhaps the attraction of this particular spot was its proximity to the north gate, about 50m away and its access to the frontage of one of the main throughfares of the city. The existence of this building also implies that the industrial nature of this quarter changed, perhaps when the rampart was added to the town within the second century.

Phase Z Modern
Evidence for this phase was limited to root disturbance in the eastern half of the trench associated with the adjacent hedge and the cut for the water main pipe. A layer of topsoil 0.3m thick overall sealed the cut and the surviving archaeology.

***Lining hole* 2**
Lining hole 2 was located on the east side of insula 41, about 10m to the north of the Bell Brook. Topgraphically, it lies at the crest of the Bell Brook valley although the drop in levels was not more than about 3m. Geophysical evidence here is limited to amorphous areas of disturbance, and in any case the proximity of two metal fences here will have interfered with the instruments. No previous excavations are known in this area. Two phases were detected.

Phase Y: Roman
Evidence in this phase was limited to a sequence of cobbled surfaces that were presumed to be roads although an alternative suggestion is offered below. At the base of the sequence was a layer of decayed red sandstone that may well have represented the natural bedrock in a rotted condition (1510). Alternatively, this layer may have represented a rammed foundation for the overlying cobbled surface (1509) that was an extremely hard layer of densely packed small stones held together by natural iron panning. Only a small part of this surface could be removed to expose the underlying sandstone and the remainder of the layer was left in place. Sealing this was another densely packed layer of small and large stones bonded by iron panning that covered the whole base of the trench (1508). Sealing this was a layer of large and small stone

set in a yellow-brown sandy clay matrix (1507). A slight camber to this surface was detected. The fourth and last of these stone and cobble surfaces, 1506, had been damaged by the cut for the water main and did not completely cover the surface of the trench. This layer was characterised by some very large stones (up to 0.4m in size) that were incorporated within its surface. Some of these boulders had been removed during the cutting of the main and had been redeposited in its fill. The uneven surface of this layer was sealed by a sandy silt deposit 0.3m deep that presumably represents an intermingling of a natural accumulation on the surface with the overlying topsoil (1502, 1503).

Whilst there is little doubt that these four surfaces were in effect road metallings, it is uncertain whether the Watling Street extended this far west. Certainly, lining hole 2 lay at the same relative distance from the modern road as lining hole 1 and there had been no sign in that intervention of major road surfaces. Of course, the width of the road may well have varied, particularly north and south of the Bell Brook. The width of this same road between the forum and baths, for example, is known to be about 20m, but this is appropriate for what was, after all, the town centre. An increased width here would be necessary both for the greater volume of traffic and to impress those visiting the town (Laurence 1999). Such a width would surely be inappropriate for the northern stretch of this road from the north gate to the Bell Brook. One theory that may account for the existence of these metalled surfaces is that they were required to allow traffic to cross the Bell Brook. Today, the modern road is carried over this stream on a small bridge but there is no sign of a Roman predecessor to it. The Bell Brook today is relatively deep and fast-flowing, but is by no means impassible and wheeled traffic or riders will not have been impeded at all in their progress. In Roman times, the damming of the stream to create a head of water for the town's aqueduct will have further reduced the flow (Pocock 1936?) so that pedestrians too will have been able to cross the stream relatively easily. Bearing this in mind, it may be that the metallings in lining hole 2 should be viewed as a paved area on the banks of the stream to enable wheeled traffic especially to climb out of the stream and not get bogged down on the wet banks. This would explain too the increased width of the road implied by these surfaces since a natural holloway will have rapidly formed here as soon as the road came into use and the banks got broken down. The paving of the banks may thus be a measure to prevent further erosion.

Phase Z Modern
The evidence of this phase was limited to the cut for the water main and, on the east side to the cuts for two modern postholes. The lower of these was lined with complete glass bottles while the upper posthole, which directly overlay it, was lined with broken ashlar blocks. These presumably represented evidence for the predecessors of the existing fence posts on the site. These contexts were contained within the topsoil that was 0.4m deep overall.

Lining Hole 4
Lining hole 4 was also located on the eastern side of insula 41 about 20m south of the Bell Brook. The only known archaeological excavation within this area is an unlocated trench dug by Dr J. Houghton in the early 1960s. This collapsed onto the excavator and his assistant, J. Lawson, so the precise position of this trench is unknown but it is thought to lie about 100m west of lining hole 4.

The intervening 30m between lining holes 2 and 4 was linked by a machine dug trench, lining hole 3, necessitated to overcome the technical problems of crossing the Bell Brook (it proved impossible to re-line the old main and a new plastic section of the main had to be inserted). No archaeological activity was detected in the sides of this cutting since the main cut was contained entirely within the existing footprint of the water main trench. The old section of the cast iron main was left in situ.

Two phases were detected within lining hole 4.

Phase Y: Roman
The majority of the contexts in this phase consisted of deep layers of clay silt that perhaps represented naturally deposited colluvial layers associated with the Bell Brook nearby. At the base of the sequence were two silty sandy layers, 2510 to the west and 2509 to the east of the cut for the water main, that were 0.2m deep. Set within the upper surface of both contexts were angular sandstone blocks up to 0.3m in size that were confined to the northern end of the trench (F304). The similar arrangement of these blocks strongly suggest that they are part of the same feature whose extent must therefore be at least 1.5m east – west by

1m north – south. Cut into the eastern half of this area of stone was an irregularly oval feature, F303, that was filled with silt and small stones. The function of this feature in relation to the stones was unclear. Sealing this activity on the east side were further layers of silty sand (2507 and 2506), whose combined depths were 0.4m. On the western side of the trench, silt layers of similar depth incorporated another area of sandstone rubble 0.5m x 0.5m in extent (2503) that had a more structural appearance. Again, the function of this rubble was not clear. Certainly, the surfaces of the stones were unworn and these patches cannot therefore be considered as areas of paving associated with the Bell Brook.

In general, this intervention produced little information on the activities within this part of the town. The lack of structural activity is somewhat surprising in the light of the stratigraphic sequences seen in lining holes 1, 2 and 5. The sequence as recovered appeared to show that this part of the valley was subject to colluvial deposition, although this presumably relates more to the medieval period than the Roman since the geophysical survey indicated the survival of ridge and furrow within the same valley further to the west in insulae 46 and 49. Certainly, the evidence suggests that this part of the town was an open area within the Roman period, a phenomenon that may perhaps be attributable to the proximity of the Bell Brook and its waterlogged subsoil.

Phase Z: Modern
Evidence in this phase was limited to the cutting of the water main and the accumulation of a further 0.4m of topsoil and colluvium.

Lining Hole 5
Lining hole 5 was located on the eastern side of insula 40 and about 110m south of lining hole 4. There are no known interventions in the vicinity. The geophysical evidence for the area around the lining hole shows a number of small pits scattered across the insula but no obvious structures. The asymmetric location of the pipe trench within the trench meant that more archaeology was visible on the east side than on the west. Two phases were detected in excavation.

Phase Y: Roman
This phase was a relatively complex stratigraphic sequence with an overall depth of 1.2m. It may perhaps be divided into three discrete sub-phases, although the activity represented throughout was rather similar, consisting of thick dumps of sandy soil into which discrete pits and other features had been cut.

Sub-phase Y1
The lowest level, 3024, was a overall layer of light yellowish sandy silt that was 0.06m deep. This appeared to overlie the natural subsoil, although this level could not be fully examined since this would have exceeded the required depth of excavation required by the excavation specification. Sealing this was a mixed layer composed of two distinct elements: a black organic lens 0.08m deep and at least 1.4 x 0.5m in extent (3023) that was contained with a dump of light brown silty sand that had an overall depth of 0.3m (3021). On the northern side of the trench, an irregular shallow cut (F408) had been made into this mixed dump which had two distinct fills. Although it was not possible to trace the full dimensions of this feature, its minimum extent was 1.65 x 0.9m. The earliest was a layer of greenish silty material that was perhaps decayed cess (3020). This was largely sealed by a clean, chalky layer (3019). These layers may well represent human or animal waste that had been sealed by a clean layer of slaked lime to neutralise it. Cut into this feature was a small, discrete pit, F407, that was 0.5 x 0.45m in size and 0.22m deep. It contained two fills: a dark sandy clay (3022) and a light brown sand (3018). A number of sandstone blocks lay on the north side of this feature and this may represent some sort of packing for a post contained within this cut. However, these stones did not appear to be arranged around a void and they may merely be coincidental to the feature.

Sub-phase Y2
This phase consisted of another mixed levelling dump composed largely of clean sandy silt or silty clay spreads (3013, 3017) with an overall depth of 0.34m. Set within the surface of this dump were other thinner discrete dumps of similar material. These included a patchy layer of grey silty clay (3016), a lens of dark brown silty sand (3014) and another of dark brown sand (3015 / 3012). These last three contexts appeared to be have been deposited contemporarily within a shallow scoop.

Sub-phase Y3
This sub-phase was characterised by further dumps that were dominated by the inclusion of shattered micaceous flagstone roof slates. The earliest of these, 3011, was a layer up to 0.14m deep of light orange-brown silty clay with numerous small stones in addition to the broken slates. It was sealed by two other discrete layers, 3010, a layer of light brown sandy silt seen in the western part of the trench and 3009, a mid-grey silty sand. These layers had a combined thickness of 0.16m. Sealing these was a thin lens of sandy silt (3007) and then a thick dump of silty clay containing abundant broken slates and rubbles (3005, 3006) whose overall depth was 0.34m. This feature was in turn sealed beneath a topsoil that was 0.2m deep.

Although the sequence of deposits was tolerably clear within this trench, it is difficult to interpret what activities are represented. Clearly, there is little here that can be defined as structural, with only one possible feature that may be interpreted as a posthole. The majority of activity appeared to be levelling dumps but the significance of these remains hidden given the lack of information about the surrounding area.

Phase Z Post-medieval and Modern
Two features were detected in this phase. One was the cut for the water main pipe. The other was a discrete feature located in the south-east corner of the trench (F402). The full extent of this feature was not traced but it was at least 0.94m north – south by 0.5m east – west. Its full depth was 0.8m, so that it cut through sub-phases Y2 and Y3 and bottomed out onto the surface of sub-phase Y1. A small amount of post-medieval pottery and glass dated the feature.

Lining hole 6
Lining hole 6 lay about 16m north of the crossroads in the centre of Wroxeter, close to the southern frontage of insula 31. There is no known archaeological excavation within the area but a small Romano-Celtic temple set within a *temenos* is known to dominate the insula. This did not show clearly on the geophysical survey but is known from aerial photographs (see Atlas). Only a single definite phase of activity was represented.

Phase Z: Post-medieval and Modern
Only two discrete layers were detected within the fill of the trench. The earliest, 3505, was a layer 0.55m thick of grey-brown sandy gravel that contained Roman pottery but also modern brick. Above this was an accumulation of topsoil (3504) 0.45m thick with further thinner layers of levelling topsoil and sand (3501, 3502). These sealed the cut for the water main. Natural consisted of a clean red-orange sand (3506).

The lack of stratigraphy within this lining hole indicates that all archaeological levels had been removed in a previously unrecorded excavation.

Lining hole 8C
Lining hole 8C was located on the extreme eastern edge of insula 1, some 10m west of the 2nd century forum colonnade. This position locates it within the 2nd century line of Watling Street, but it is likely that by the late or immediately post-Roman period the street width was much narrower, as was observed in the section dug across the nearby street between insulae 2 and 5 by Graham Webster and Charles Daniels (1962?). Only one other intervention is known in the immediate vicinity: a small pit that was dug early in 1999 to locate a new display panel. This initially bottomed out onto a stone surface causing the panel to be slightly relocated (letter in EH archive). More significantly, however, the site lay close to the forum colonnade which was initially excavated by Atkinson (1942) and then by Brown and Hey in 1997 (Hey, report in preparation). There was no geophysical or aerial photographic evidence for occupation here. The position of the pipe trench within the lining hole meant that layers were seen only on the western side of the cutting. Only two phases were located.

Phase Y: Late or Post-Roman
This phase consisted of two surfaces. The earliest, 4804, consisted of cobbles set in a sandy silt. Above this was 4802, a layer of dark brown silt with small and large stones and tile. The larger stones seemed to form

a surface over the underlying cobbles and perhaps represented a makeshift repair or renewal of that surface. The dark matrix presumably merely represented a natural accumulation over this rather uneven surface.

Although these surfaces can be readily interpreted as renewals of Watling Street, the date at which they were laid is unknown. They lay at a considerably higher level than the road contemporary with the forum and baths colonnades, yet were very similar to the latest road surfaces seen in the excavation on the baths basilica site nearby (Barker et al. 1997). It is known that both the baths basilica site and the forum courtyard were occupied into the 6th or even 7th century and these surfaces may belong to this late stage since presumably access was required between these adjacent sites (White 2000). An undated but presumably post-Roman burial was recorded by Atkinson in the roadside ditch close to this site (Atkinson 1942 pl.) but otherwise activity of this period on or immediately adjacent to the road is unattested. It is certainly the case that the road continued in use throughout the medieval period and it is possible that the higher of these surfaces relates to this period, but this is impossible to prove given the lack of dateable evidence. It should be noted, however, that lining hole 8D, which lay about 5m south-east of this lining hole, produced four road surfaces, of which the latest, 4905, was very similar to surface 4802. This surface was then sealed by three layers of silt suggesting a period of low use before the road was surfaced in the post-Medieval period.

Phase Z: Modern
Evidence for this phase was limited to a topsoil accumulation over the latest road surface that was 0.6m deep (4803) and the cut for the water main trench. Contained within the latter was a block of concrete that was clearly contemporary with the pipe (4801). This was situated over the pipe section joint and was a 'thrust block' – effectively a weight that counteracts the pressure of the water within the main and thus prevents the springing or leaking of the joint.

Lining Hole 11A
Lining hole 11A was located within the modern road just to the south of the property boundary of Topsy Cottage and immediately opposite the Old Post Office. Both of these buildings are timber-framed survivors of the Medieval village, although the buildings themselves are likely to be 17th century in date. A disused well lay immediately adjacent to the north-west corner of the trench. The modern road here diverges from the line of the Roman road and follows a route established in the post-Medieval period (Bassett 1990). The site thus lies within insula 27. Given that the lining hole lay within the modern road, there was no geophysical or other information for this area. The excavation was carried out using a toothed bucket on a JCB IV. The sections and base were then cleaned and recorded by hand, a process complicated by the severe waterlogging of the site. The anaerobic nature of the site was reflected in the gleyed condition of many of the contexts seen in section. Two phases of activity were detected.

Phase Y: Roman
Given the fact that this lining hole had to be excavated by machine, description and interpretation must be limited to what was visible in section. In the east-facing section, the visible layers were separated by a rectangular, wall-like structure 0.36m wide and 0.44m high (F1051) composed of two elements, an arrangement of large sandstone blocks (6104) with a layer of blue-grey clay above (6103). This was almost certainly a clay-and-stone wall footing of the type already discussed in lining hole 1. To the south of this, was a relatively thin layer of grey-brown silty sand (6107) with a much thicker layer, 0.4 m deep, of green-grey silty sand. To the north of the wall were three layers: a dark grey silty sand (6109) at the base, an orange-brown clay (6108) and a grey-blue clay (6105). Together these layers were 0.44m deep. Sealing these contexts was a 0.2m deep layer of green-grey clay with a large proportion of stone. Layers in the south-eastern corner of the trench had been totally removed by the pipe trench.

The west-facing section was less complex than the side just described. At the base of the sequence was a 0.26 thick layer of green-yellow sand (6115). Above this was a broad, U-shaped feature that was 1.1m wide at the top, 0.7m wide at the base and had an overall depth of 0.5m (F1052). This had a single fill of grey-green clay with abundant stone, especially against the southern side of the feature. To the south of this feature was a single dump of silty sand that was 0.4m deep (6113). To the north were two layers, a yellow-brown silty sand (6114) and a green-brown silty clay (6112) whose combined depth was 0.44m.

The east and west sections of this lining hole presented contrasting pictures that are not immediately reconcilable. However, the features within this lining hole are best interpreted in the light of the discoveries in the adjacent lining hole 12 where the corner of a stone building was found to the north of which was a succession of pebble or *opus signinum* floors. If the two wall-like features seen in section in lining hole 11A were part of the same feature, then their alignment would have been the same as the wall seen in lining hole 12. It is thus suggested that wall F1051 and its companion F1052 were the footings of an external wall for the building seen in lining hole 12 and that the surfaces seen there were thus floors in a room or corridor.

Phase Z: Modern
Evidence of this phase was restricted to the broken stone foundation for the modern road surface that sealed the layers on the eastern side of the lining hole (6110) and the cut for the water main pipe.

Lining Hole 12
Lining hole 12 was located 10m to the south of the existing property boundary of Topsy Cottage and adjacent to the roadside hedge within the modern village of Wroxeter and within insula 27. Two interventions are known from the immediate vicinity but neither are published. The earliest, Houghton's 'glasswork's' trench (Houghton 1972, 13, 15) was located 10m west of lining hole 12. This trench was an east – west cutting across the line of the Roman road leading to the ford, still visible today as an earthwork. At the base of the sequence, Houghton found an area of glassworking. What can be reconstructed of the information from this site will be published shortly (Ellis, forthcoming). The other intervention, in fact representing two episodes of work, was located within the property of Topsy Cottage itself. This was modernised in the mid-1970s, without planning consent or record. Considerable Roman remains were found but the nature of these, other than the fact that they were structural, was not recorded (Baugh 1975). In 1980, further work was carried out, including extensive stripping. This was not carried out under archaeological supervision, but some time was allowed for archaeological recording. This intervention too provided evidence for structures aligned on the Roman street. The report on both pieces of work has been completed and will be published shortly (Bird, forthcoming). In addition to these excavations, the discovery of structural remains within lining hole 12 prompted a small-scale resistivity survey that was carried out by the excavation team. These data were added to the gradiometry survey carried out by GSB Prospection over the whole field. The results of this survey will be more fully discussed in the relevant section of the report (REF) but in summary, the resistivity survey located at least two buildings on the same alignment as that found in lining hole 12.

This trench provided the most complex sequence of stratified deposits out of all of the lining holes. It was also double the normal length of the other holes, a necessity forced by the need to expose the bend in the pipe in case the lining crew needed swift access to it. For the same reason, the small part of a Roman masonry building exposed in the trench had to be removed, after consultation with the contracting engineers, Severn Trent, and the English Heritage Inspector. Three major phases were detected.

Phase X: Early Roman
This phase was characterised by a number of linear cuts that had subsequently been filled by a number of dump levels. Unfortunately, there is no way of establishing how long the linear features were open before they were backfilled, and the relationships between features were often destroyed by the pipe trench cuts. Consequently, there may be more than one sub-phase of activity within this group of contexts, as is indeed suggested by the pottery.

Sub-phase X1
The earliest feature was a north-south linear cut at least 3.2m long and up to 0.7m wide (F1111) that lay to the east of the water main. This had an asymmetrically V-shaped profile that converged with the cut for the water main trench. It had probably extended to the west of the water main trench but this end of the cut had been removed by a secondary water main trench. It was also apparent that the feature widened at this northern end too. On the western side of the trench was a broadly shelving cut at least 2m by 0.5m in size and 0.6m deep that was aligned roughly east – west (F1112). It had been truncated on the east side by the water main cut while the southern and western sides lay outside of the area of excavation. It is possible that this feature linked up with F1111 but any relationship between the two features had been destroyed by the

water main trench. The fills of these features was also varied. Within F1111 was a single fill 0.4m deep of light beige-yellow silty clay with some charcoal flecks (6544). A complete but shattered Malvernian 'tubby cooking pot' and sherds of Malvernian palaeozoic-limestone tempered ware were found within this fill (Fig.**). Cut F1112 had two fills. The earliest was a layer of light brown silty sand up to 0.22m deep (6546) that was sealed by a dump of light beige sandy silt of similar depth (6540). This fill too contained sherds of Malvernian palaeozoic-limestone tempered ware. One other context may be positively associated with this phase: a patch of dark olive-tan silty sand with some stones and flecks and pieces of charcoal (6532) that lay within the surface of 6544. This was thought to be root disturbance but could conceivably have been a cut for a small posthole.

Sub-phase X2
These layers were then sealed by other similar dumps that had a number of smaller discrete features cut into them. On the western side of the trench, a linear cut 0.6 by 0.4 in plan and 0.7m deep (F1105) was dug into the backfilled east – west cut. This had been truncated at the east end by the pipe trench, but did not emerge into the eastern half of the trench so cannot have extended much more to the east. The western end was beyond the limit of excavation. There were two fills: the earliest was a light beige silty sand with some charcoal flecking (6537), the latest was a mid-grey silty sand with charcoal flecks and lumps as well as some stone (6521). These fills had then been sealed by a thin layer of mid brown sandy silt with charcoal (6538). Perhaps contemporary with these contexts was 6536, a dump of light beige-yellow sandy silt that was 0.6 by 0.4m in plan and 0.15m deep which lay to the north of cut F1105. This in its turn had been cut into by a linear feature, 1.4m by 0.4m in plan, aligned north – south (F1108). The fill of this cut, 6505, was a soft brown sand that once again had charcoal flecks within it. Overlying this was a thin lens of pea-gravel (6513) that may also have been part of the fill. Adjacent to these contexts was a layer of compact reddish silt (6529).

On the eastern side of the trench, three similar dumps were identified, with an overall depth of 0.7m. The earliest, a dump of light beige clayey silt with flecks of charcoal 0.2m thick (6531) sealed the underlying sub-phase. This in turn lay beneath another dump 0.3m deep of mid brown sandy silt with moderate amounts of small stone (6541). The latest dump, 6502, was of dark olive coloured sandy silt with charcoal flecks. These dumps were cut into at the southern end by a linear feature aligned roughly north-west – south-east (F1109). This lay adjacent to the southern edge of excavation and extended beneath it. The recovered extent of this feature was 0.5m east – west by 0.2-0.5m wide with a depth that varied between 0.3-0.1m. The western end of this feature had been removed by the water main trench. Two fills were identified: an olive coloured layer with charcoal flecks (6526) and a tan-coloured clay silt (6528).

Phase Y: Roman
The sequence of discrete linear cuts and dumps levels that characterised the previous phase were replaced in this phase by evidence for the construction and use of a substantial mortared stone building (sub-phase Y1, followed by its demolition (sub-phase Y2).

Sub-phase Y1
The only surviving part of the building was a fragment of mortared sandstone wall that survived on the western side of the trench 1m by 0.5m in plan and 0.36m deep (6522) built within a cut of the same dimensions as the wall (F1107). The wall was aligned north-east south-west. It did not survive on the eastern side of the trench but a linear cut of similar dimensions and depth lying at right angles to the line of the wall probably marked its robber trench (F1106). This feature is further discussed below.

To the south of the wall were two contexts that may be considered to be contemporary with this building. The first, 6523, was a thin layer of plaster and mortar with silt that may represent construction levels. Above this was a charcoal-rich layer of silt with stones that was 0.4 by 0.8m in extent and 0.1m thick (6520). To the north of the wall, there was an unmortared deposit of sandstone blocks (6511) that perhaps represented waste from the construction of the wall. Sealing this were two layers that may have been surfaces. The earliest, 6512, was a layer of yellow sandy mortar with a few stones and charcoal flecks with a maximum depth of 0.07m. Overlying this was a surface composed of horizontally-laid shattered micaeous flagstone roof slates that may either have been a path in its own right or formed the foundation of one (6509).

On the western side of the trench, the sequence was slightly more complex. At the southern end of the trench there was a small cut 0.4 by 0.2 m in size (F1103) that had been half-sectioned by the water main trench. Its fill was a dark grey sandy silt (6516). Further south there were three deposits that were of similar character to 6520, the charcoal-rich layer seen on the western side of the trench. These contexts included 6527, a thin charcoal-rich layer with plaster and stones 0.4 by 0.3m in area and 6524, a layer 0.6 by 1.8m in extent. The third context, 6525, was a compact sandy clay sit with pebbles and plaster that measured 0.9 by 0.4m in area.

The remaining contexts on the eastern side of the trench lay at the northern end and were much more structural in character, representing floors that were presumably contemporary with the wall discussed above. The foundation levels for the floor consisted of either freshly broken and crushed red sandstone (6533) or layers of mid-brown silt (6535, 6539). These provided levelling for a coarse foundation layer of loose silt with pebbles (6534) on which was laid a mortared pebble floor (6515). This was contemporary with a small fragment of *opus signinum* flooring (6517) that had largely been removed by the water main trench. These layers were roughly 1m by 0.5m in extent, although they extended eastwards out of the area of excavation and had been truncated on the western side by the water main trench.

Sub-phase Y2
The remaining contexts in this phase relate to the destruction of the building. These included 6508, a layer of shattered painted plaster 0.1m deep and 1m by 0.5m in area that directly overlay the pebble and *opus signinum* floor in the north-east corner of the trench. This plaster is presumably derived from the wall whose destruction is marked by a linear cut 0.7m by 0.45m in plan and 0.15m deep that was aligned north-west – south-east (F1106). This feature was interpreted as the robbed-out return of the wall seen on the western side of the trench. Its fill (6507) was consistent with such an interpretation since it was a pinky-brown clay with inclusions of sand and fragments of rock and mortar, all elements that might be expected in the foundation of a building at Wroxeter. Curiously, the feature did not run into the eastern edge of excavation but stopped short of it. Its line was continued, however, by a semi-circular cut seen in this section (F1102). This was 0.4m wide and 0.2m deep, dimensions not dissimilar to those of the robber trench and it certainly matched the alignment of that feature. The fill, 6510, was a dark brown sandy silt with a large amount of angular stone in it, which did not match 6507. In addition, the level at which it was cut indicated that it lay at a stratigraphically higher position, within phase Z. It is possible, therefore that two phases of robbing existed so that the earlier episode was only partial and that there was then a later episode of robbing. Elsewhere in the trench, the archaeological deposits were almost everywhere overlain by a layer of black charcoal-rich silt with small and large stones throughout (6504). A smaller area of rubble (6503) that lay adjacent to wall 6522 probably represented tumble from its destruction.

Phase Z: Modern
In addition to the possibility that there was a second phase of robbing, as noted above, there were three other activities that could be assigned to this phase. The most important of these in terms of its destructiveness was the cutting of the water main trenches. This had clearly been done as two episodes: a trench cutting was made into the field from the north-east (F1104, F1110) that joined a cutting made from the south (F1100). Unfortunately, the two cuts did not quite meet initially so that there was some overlap. This was only recognised at a late stage of the excavation and a number of contexts that had been assigned to the linear cut had to be abandoned as modern. Towards the base of the cut, some of these included blocks of intact straigraphy derived from phase X1 deposits that had undoubtedly been redeposited.

The pipe trench cuts had been made through a topsoil that was surprisingly shallow: in places only 0.1m deep and a maximum of 0.2m. This phenomenon may be accounted for by the fact that until the mid-nineteenth century, this area was part of the still-occupied village of Wroxeter. This makes it even more surprising that there was no evidence for post-Roman occupation on the site. In fact, the pottery recovered did not go beyond the 3rd century, other than a few very modern sherds from the topsoil. However, it may be possible to account for this by the local topography of this part of the field where large quarry-like scoops are still visible on the ground (see Atlas). There has clearly been extensive, and probably quite late, terracing of this roadside edge of the field and this may be associated with the (unrecorded) destruction of the village between the 1850s and 1880s. This may also account for the late, secondary, robbing of the wall

mentioned in phase Y2 since such terracing is bound to have exposed walls here. Alternatively, this robbing could have been carried out when the road was cut in the 18th century. This activity too would have exposed walls, as has been suggested in lining hole 11A.

The last activity attested is the digging of a substantial circular posthole 0.4m in diameter and 0.65m deep (F1101). The fill of this was of topsoil-like silt with some large stones for the post-packing (6506). This feature presumably related to the erection of the nearby fence.

Lining Hole 12A

Lining hole 12A was located within the gateway of the field that lies opposite the gate into the Church of St Andrew in insula 27. It was 10m to the north of the drive of Boathouse Cottage. No other intervention is known in the vicinity. Only a single phase of activity was represented.

Phase Z: Modern

The activity within this lining hole was limited to an accumulation of topsoil that was 0.2m deep. Below this was a dump of mixed topsoil and rubble 0.5m deep that came down onto the natural subsoil. Cutting into this layer were two service trenches: the water main trench and a telephone cable. At the very base of the sequence was the truncated cut for a modern fence post.

Lining Hole 13

Lining hole 13 was located in the verge of the driveway leading into Boathouse Cottage in insula 27. No other intervention is known in the vicinity. Only a single phase of activity was represented. This lining hole had to be excavated by machine since modern concrete-lined inspection chambers filled much of the available area of excavation. In addition, during the relining process, a blockage occurred that necessitated the excavation of a further 9m along the line of the existing main. The unlined section of the old main was then cut out and replaced with a plastic section. The total length of the excavation was thus 11.3m.

Phase Z: Modern

Activity in this lining hole was confined to thick dumps of clean sandy silts with varying amounts of small stone within them whose overall depth was 1.3m. These levels had been cut by the water main trench which in its turn had been sealed by a topsoil of 0.26m depth.

Lining Hole 14

Lining hole 14 was located 10m to the south of the property boundary of Boathouse Cottage and adjacent to the modern road. In the Roman period, this site will have been located on the back of the inner rampart of the town, adjacent to the road leading to the ford. There is no geophysical evidence for the area but two topographic surveys have been carried out in recent times to map the extensive remains of medieval water management systems that are perhaps associated with Wroxeter's medieval manor house (Barker 1990; Barrett, this volume). The site of the manor was excavated by Wright in the mid-19th century, but was not adequately published (Wright 1872, 101). Only one phase of activity was detected.

Phase Z: Modern

The position of the water main trench within this intervention meant that stratigraphy was only visible in the eastern half of the trench. A relatively shallow series of deposits overlay the waterlogged natural sands and gravels. A single feature of interest was noted. This was a shallow wall, aligned roughly east – west, that was 1.05m wide and 0.6m long, though the eastern and western limits of the feature were defined by two shallow cuts to the north and south. The wall, 7503, was unmortared and constructed from rough sandstone blocks and cobbles on a clay foundation (7505) to give a roughly level surface about 0.3m high. Its build was therefore less weel-structured than the examples discussed in lining holes 1 and 11A. Almost certainly, this was a dwarf wall for a timber-framed building. Post-medieval pottery recovered from the associated levels gave a date for this feature.

Lining Hole 15

Lining hole 15 was located within a dip in the rampart of the town wall, 40m south of lining hole 14 and adjacent to the modern road. As with lining hole 14, there is no geophysical evidence available here but the area has been topographically surveyed by Barker (1990) and Barrett (this volume). The lining hole was

located in the base of a shallow depression that cuts across the rampart at this point. The origin and function of this feature is unknown but it is thought to be a medieval holloway leading down to a mill pond formed during the medieval period by damming the natural stream that runs down to the River Severn in this area (Barker 1990). On excavation, the trench was found to be severely waterlogged with water actively draining into the hole during the work necessitating pumping to permit work to continue. This made observation of the stratigraphy difficult and the collection of finds extremely problematic. Given these problems, the phasing is rather tentative but two phases may be suggested.

Phase Y: Roman / Medieval
Only four contexts could be assigned to this phase. All appeared to be contained within a feature whose extent lay beyond the area of excavation and whose size could not be ascertained. It was also clear that the layers within this feature continued beneath the base of the trench but the full depth could not be gauged. The lowest fill identified was a grey silty sand with occasional very small stones (8006). This was at least 0.4m thick but its limit exceeded the depth of excavation. Overlying this was a distinctive horizon 0.14m thick of greenish sand with pea grit (8005). Above this were two deposits that were a virtually identical dark brown silty clay which differed only in the amount of stone they contained. The lowest layer (8004), which was 0.32m thick, contained a large amount of ashlar sandstone and other stones that, however, did not appear to form a coherent surface (Fig.**). The overlying layer, 8003, was less stony and was only 0.18m thick. The combined depth of the deposits was about 1m.

Phase Z: Modern
Only two activities were identified in this phase: the accumulation or dumping of a topsoil that was 0.7m thick, and the cutting of the water main trench and its associated concrete thrust block.

Whilst the sequence of deposits in the lining hole were clear, the significance of the levels was difficult to interpret, almost certainly an outcome of the small sample taken. The layers within the cut were laying virtually horizontally and this implies that if they were filling a feature, then that feature was very large. It is possible that the feature was in fact the holloway itself. If so, then the width of this on the surface today is about 10m while its depth is unknown. Sadly, the date and origin of this holloway remain mysterious. Very clean, unabraded Roman pottery came from the fill but this is hardly surprising given the location of the excavation and all of this may be residual and this feature could equally be medieval in origin.

Lining Hole 16
Lining hole 16 was located towards the crest of the town rampart, 30m south-east of lining hole 15. As with the other lining holes in this field (14 and 15) nothing is known of the archaeology here except for the topographic surveys. Only two phases were identified.

Phase Y: Roman or Medieval
The earliest context identified was a small area of sandy silt in the north-east corner of the trench (8508). This overlay solid red clay that may have been the natural subsoil here or was the remains of the rampart dump. Its solidity suggested that it was natural. Cutting this small patch was a circular feature (F1503) that had been half-sectioned by the water main trench. Its fill was a loose sandy deposit with stone (8507). A similar cut (F1502) lay on the eastern side of the trench and this too had been cut by the water main so there is a possibility that they were once part of the same feature. Certainly, the fill of this feature (8506) was a sandy silt similar to 8507. Overlying these contexts were thin horizons of light brown sandy silt (8503-8505, 8509) whose overall depth was 0.2m. These perhaps marked a ploughsoil developing over the rampart.

Phase Z: Modern
Only two activities were identified in this phase: a layer of topsoil that had accumulated over the phase Y deposits to a depth of 0.36m, and the cut for the water main trench.

Lining Holes 7, 8, 8D, 9, 10, 11
These lining holes were all cut within the existing road surface and all but one (lining hole 11) coincided with the known position of the main Roman road running through the town on its north – south axis (i.e.

The Watling Street). The sequence in all of them was rather similar and thus they are examined together. All were excavated by machine but cleaned and recorded by hand.

Lining hole 7 lay at the modern crossroads at the very centre of the Roman town, 30m south of lining hole 6. This will have been close to the Roman crossroads of insulae 31 and 32 to the north and 1 and 2 to the south. Only two definite road surface were noted: 4004 and 4011, but there were other layers that appeared to make up for roads and these hint at another two road surfaces that were not seen in section. The overall depth of these surfaces was 0.6m. On top of these was an accumulation of topsoil-like material and then layers of road foundation and tarmac.

Lining hole 8 lay 75m south of lining hole 7 and immediately adjacent to the modern farm building occupying the south-east corner of the farmyard. Its position within the Roman town would be roughly at the crossroads of insulae 1 and 2 to the north and 4 and 5 to the south. The deposits here had been severely damaged by the water main trench and by an even larger cut for the insertion of a sewer pipe. Only a small surviving island of archaeology was left, and it was decided to retain this in situ. Two road surfaces were seen in section whose overall depth totaled 0.75m.

Lining hole 8D was located 5m south-east of lining hole 8C and thus lay on the street between insulae 4 and 5, occupied by the forum and baths respectively. A relatively straight-forward sequence of four successive road surfaces of small pebbles set in sand and often concreted with iron pan was detected here. These had conventional foundations of crushed red sandstone or silty layers. The overall depth of these various levels was 0.56m. Overlying these was an accumulation of dark brown silts that probably represent post-Roman disuse of this part of the road.

Lining hole 9 was located 80m south of lining hole 8D, near the north-eastern corner of insula 8. This will have been at the northern end of the area excavated by Bushe-Fox in 1914, his Site VI (Bushe-Fox 1916). A total of four successive road surfaces was excavated in this lining hole. These were of the usual fine pebble in sandy matrix composition and had foundations of silt or crushed sandstone. The overall depth of these layers was about 0.75m. Overlying this was a thinner deposit of post-Roman silts that had accumulated to a depth of 0.25m.

Lining hole 10 was located 150m south of lining hole 9, towards the southern end of insula 8 and probably close to Sites I-III as defined by Bushe-Fox (1912). The sections within this lining hole may be held as typical of those excavated within the road (Fig.**). In this case, there were four succesive road surfaces of pebbles, often concreted with iron-pan. Some of these had foundations of crushed fresh red sandstone, a common foundation for both roads and other surfaces at Wroxeter (Barker et al. 1997). The total depth of these layers was about 1m. Overlying these was the cut for the water main and the modern road foundation and tarmac layers.

Lining hole 11 was located 110m south-west of lining hole 10 at the junction of the modern roads outside the Wroxeter Hotel. Within the Roman town, this would have been south of the main road passing down to the ford, at the northern tip of insula 27. Although the Roman road is visible as an earthwork within the modern field adjacent to the road, there is a possibility that the road running along the river cliff existed in the Roman period too (Bassett 1990). If so then this trench may well have coincided with its road surfaces. Unfortunately, the road here had been trenched severely in modern times both by the water main and by substantial field drains. These latter features could be dated by their form to the 18th century since they consisted of substantial horseshoe-shaped tiles. The remaining archaeology within the lining hole was confined to a narrow strip on the eastern side and its excavation was made more problematic by the high water table. In the event, all that was visible in the section were layers of sand, none of which were convincing as road surfaces.

Lining Holes 17, 18, 19

Lining holes 17 and 18 lay south of the Roman town wall and beyond the scheduled area. Lining hole 17 was located within the valley of a small stream that effectively runs in the outer ditch of the town wall and forms the southern limit of the town. It lay adjacent to the road and 50m south-east of lining hole 16. The fill of the trench consisted entirely of humic silts that had naturally accumulated within the valley and there

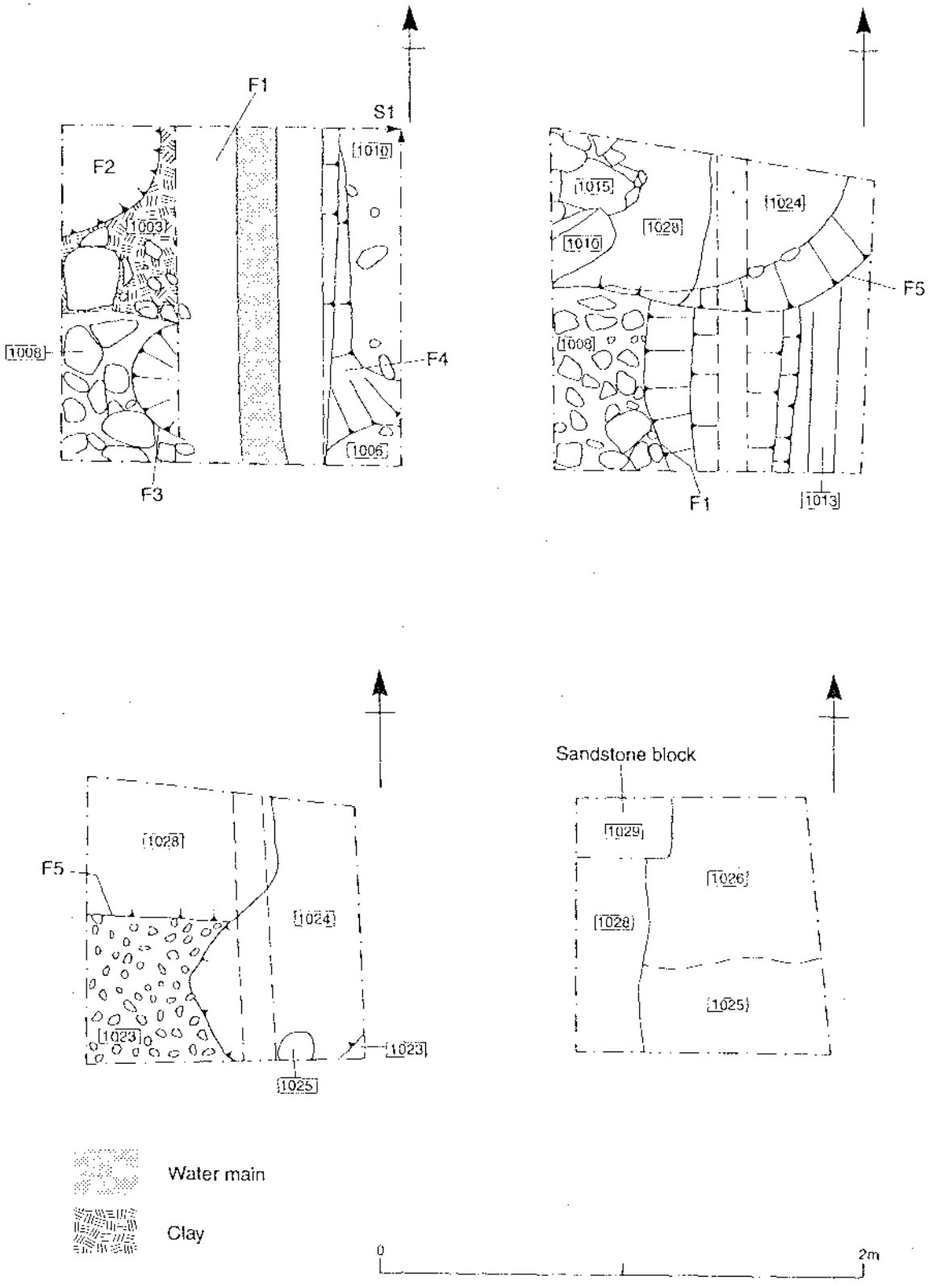
was no sign of anthropogenic activity, with the exception of the cut for the water main. Lining hole 18, located at the end of the main and 140m south-east of lining hole 17, was almost entirely filled by the modern concrete inspection chamber required here. No archaeological contexts survived.

Lining hole 19 was located immediately south of the southern perimeter of Norton Farm, and 150m north of lining hole 1. This positioned the trench in or near an area that was excavated by Thomas Wright in 1860 when he found a number of cremations (REF). This was also an area where surface collection had taken place as part of the Wroxeter Hinterland Project. This latter survey had located a dense scatter of Roman material in this area but without any particular concentrations (see this volume). Two possible phases were detected.

Phase Y: Roman ?
At the very base of the lining hole, a cut was observed in the east-facing section that was located within the red sand subsoil. The cut, F1906, was 0.26m deep and 0.4m wide but its shape in plan could not be determined. The top of the cut as identified lay 0.6m below the modern ground surface. No cut was visible in the layers above this feature but since these were of black loam, this fact is unsurprising. The fill (10009) was of dark reddish-brown sand with what appeared to be a very small amount of charcoal within the base.

It was thought that this feature might be a cremation, in the light of the discoveries of Wright in the same area, but conclusive proof was lacking since the majority of the feature had been removed by machine during an earlier phase of excavation.

Phase Z: Modern
The remaining contexts were all modern and were associated either with the original cutting of the water main trench or with the relining episode associated with the large water main running along the old A5. An exception to these events was a burial seen in section in the south-west corner of the excavation. It was initially believed that this was a human burial whose size suggested a neo-natal fatality. Clearance from ground level down to the burial showed that the burial was actually that of a lamb and that this too was a modern feature.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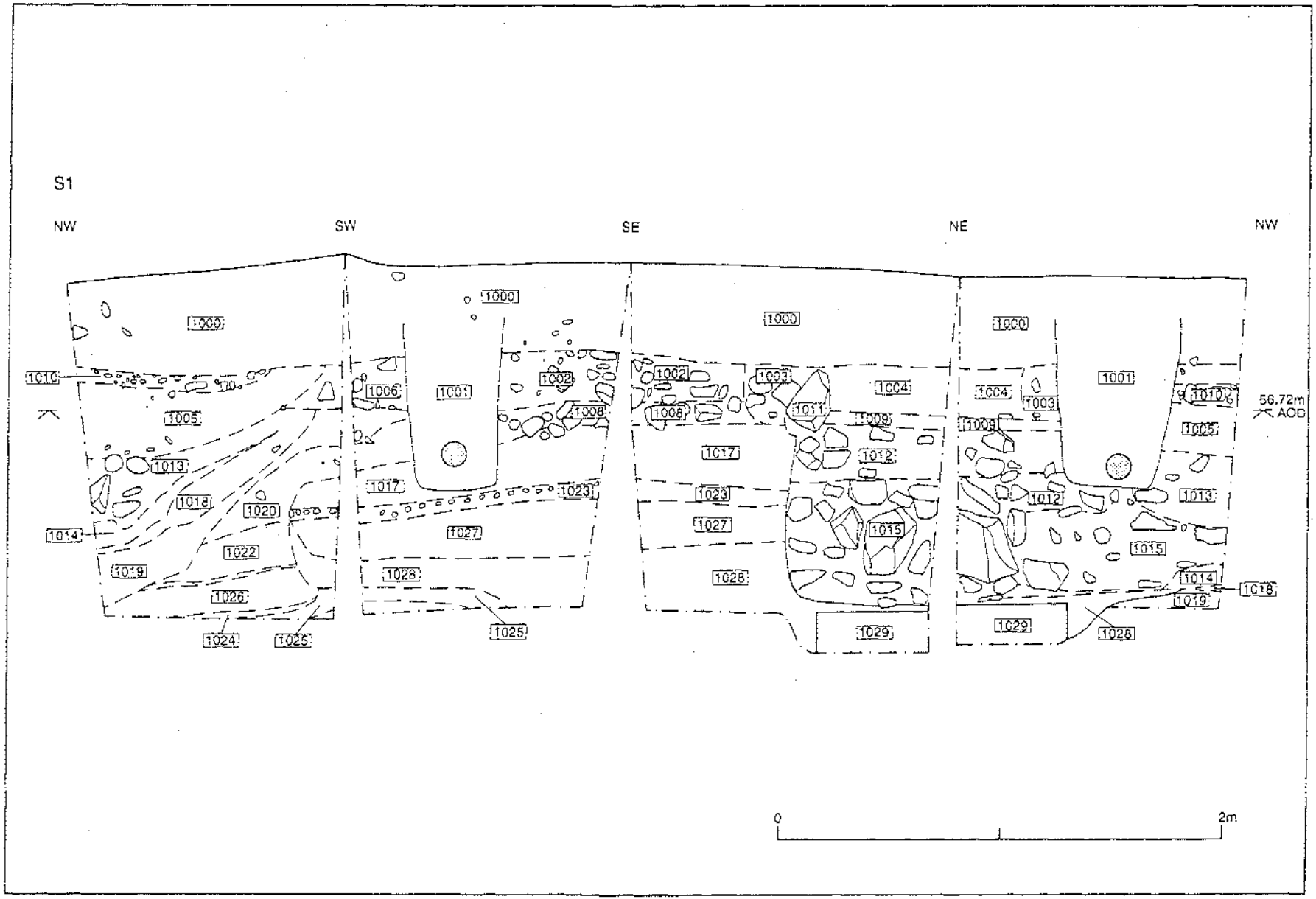
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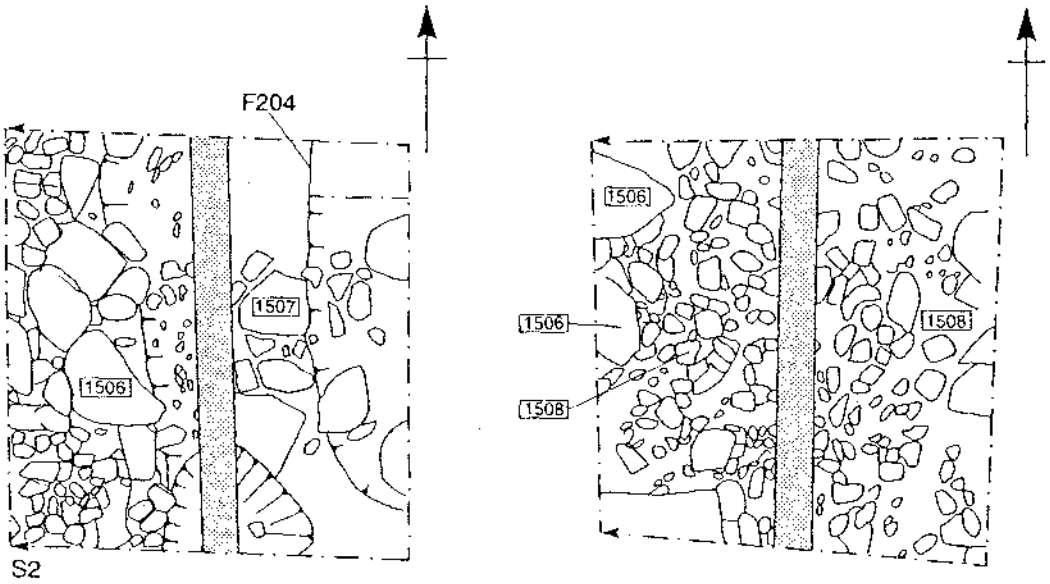

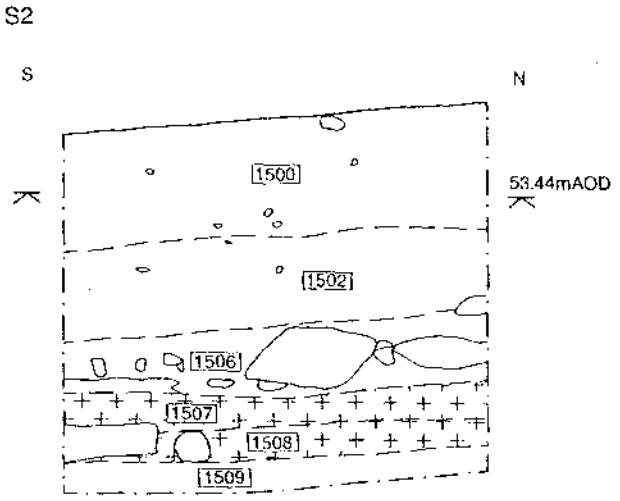

Densely packed pebbles

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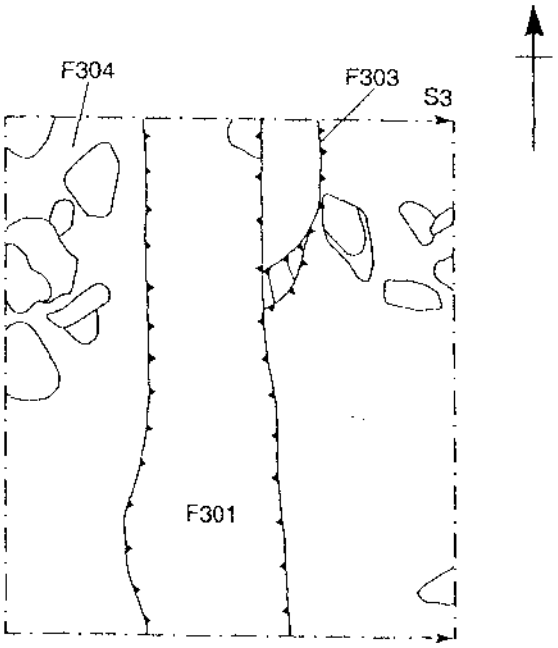
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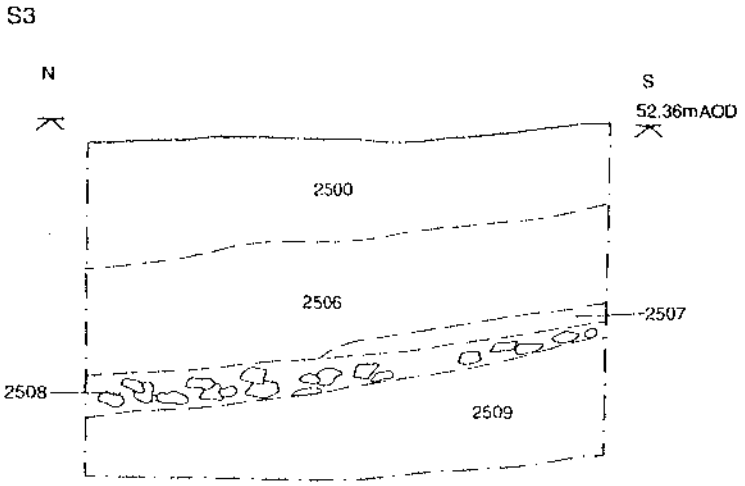
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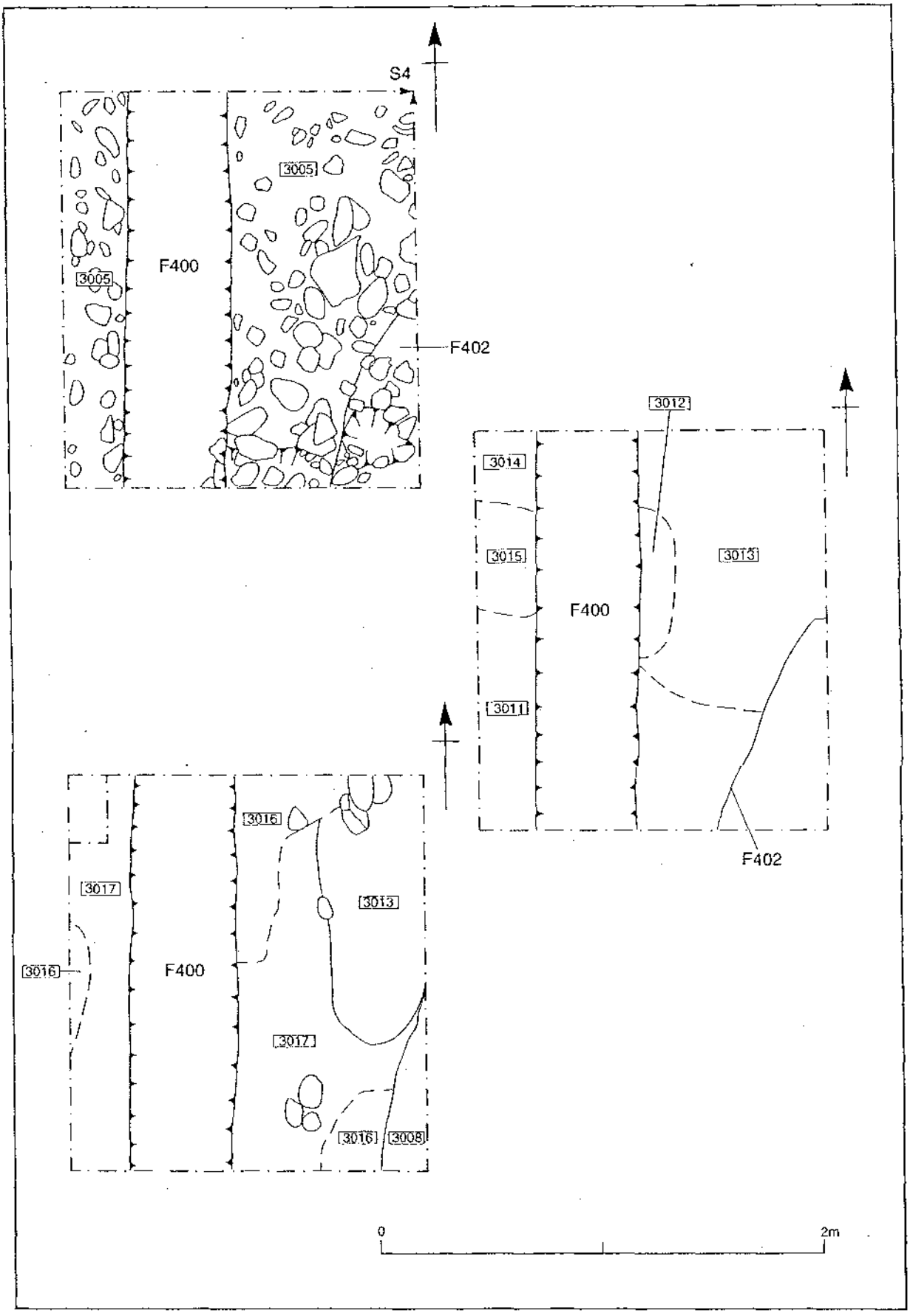
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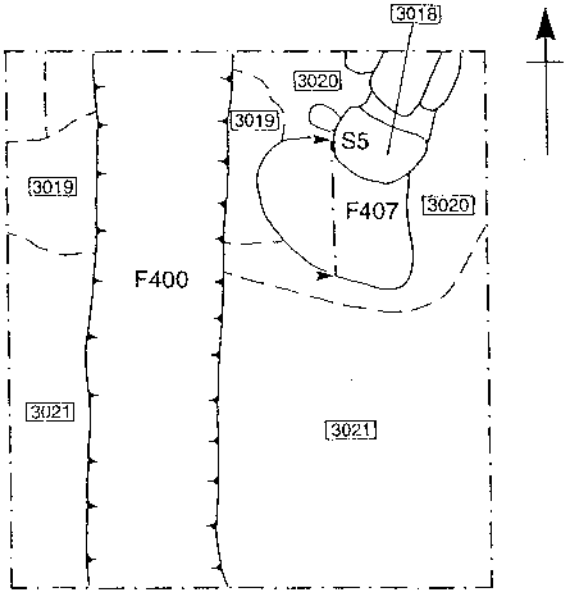
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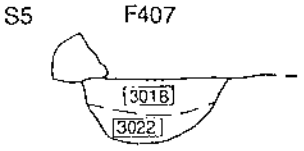
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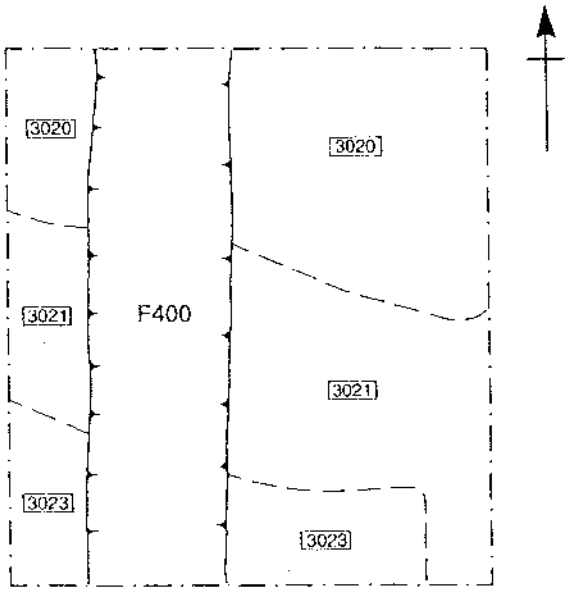
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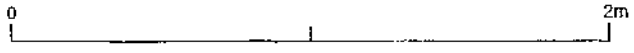
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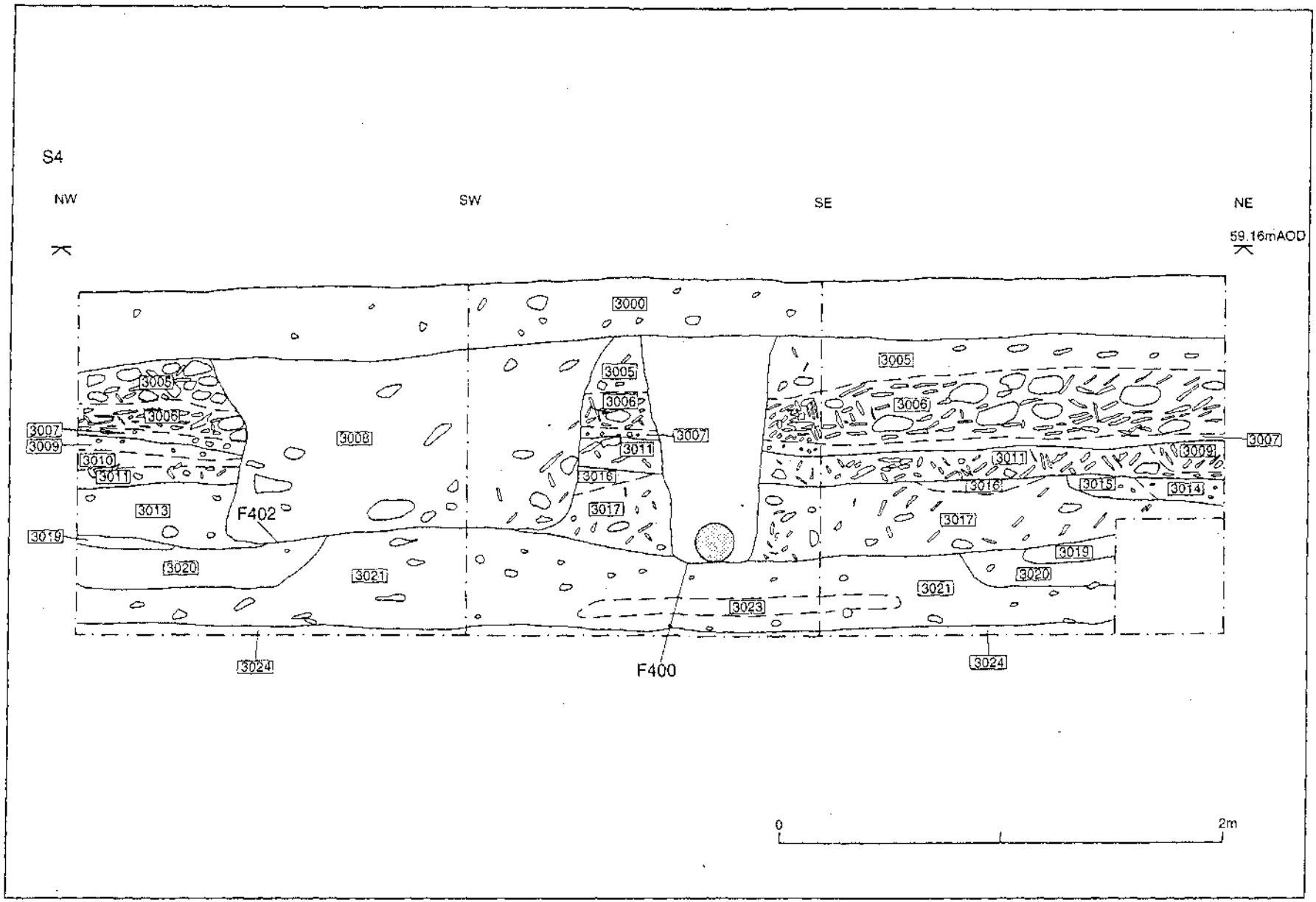
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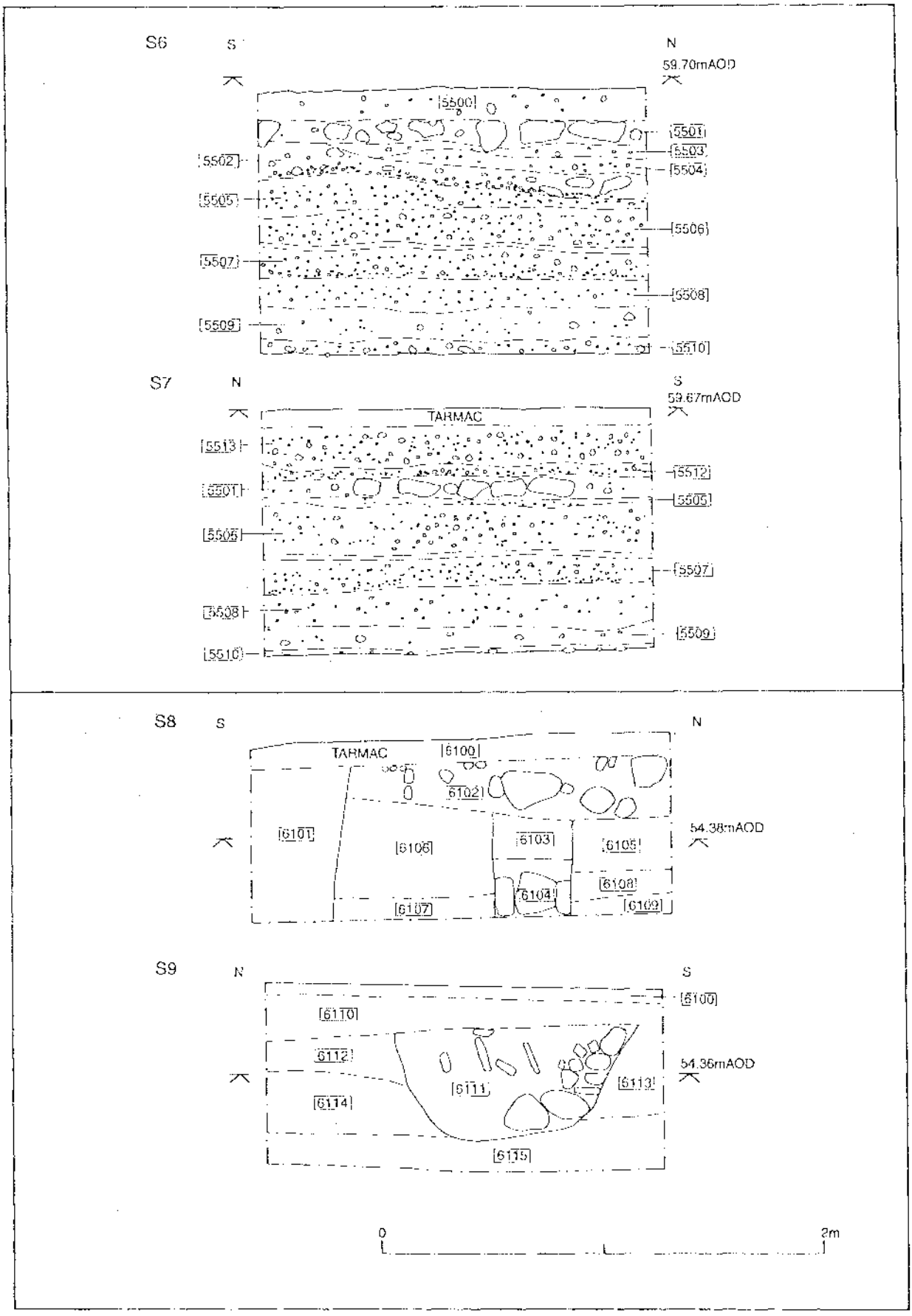
S6
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59.70mAOD
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S7
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S
59.67mAOD
TARMAC
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S8
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TARMAC
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S9
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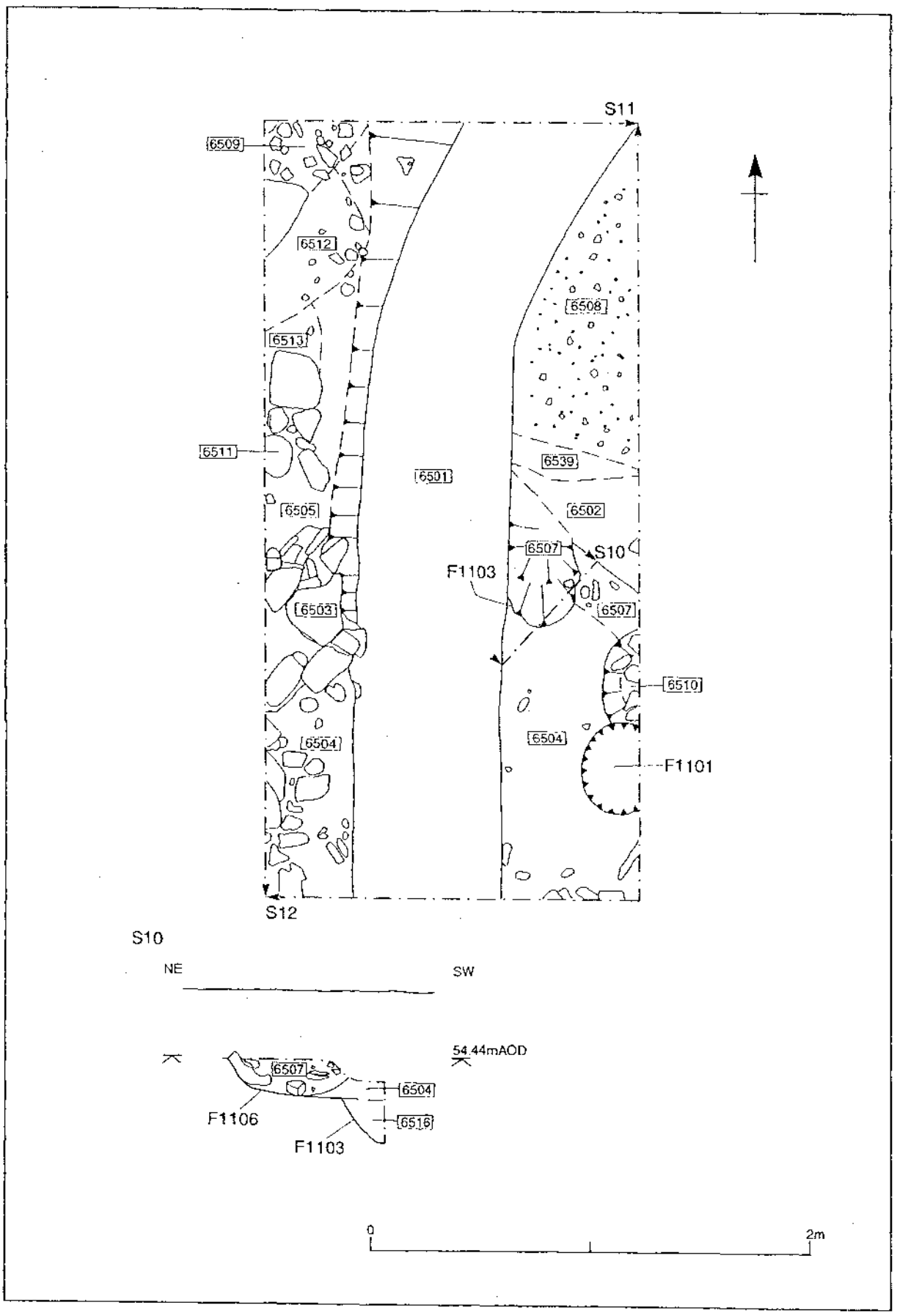
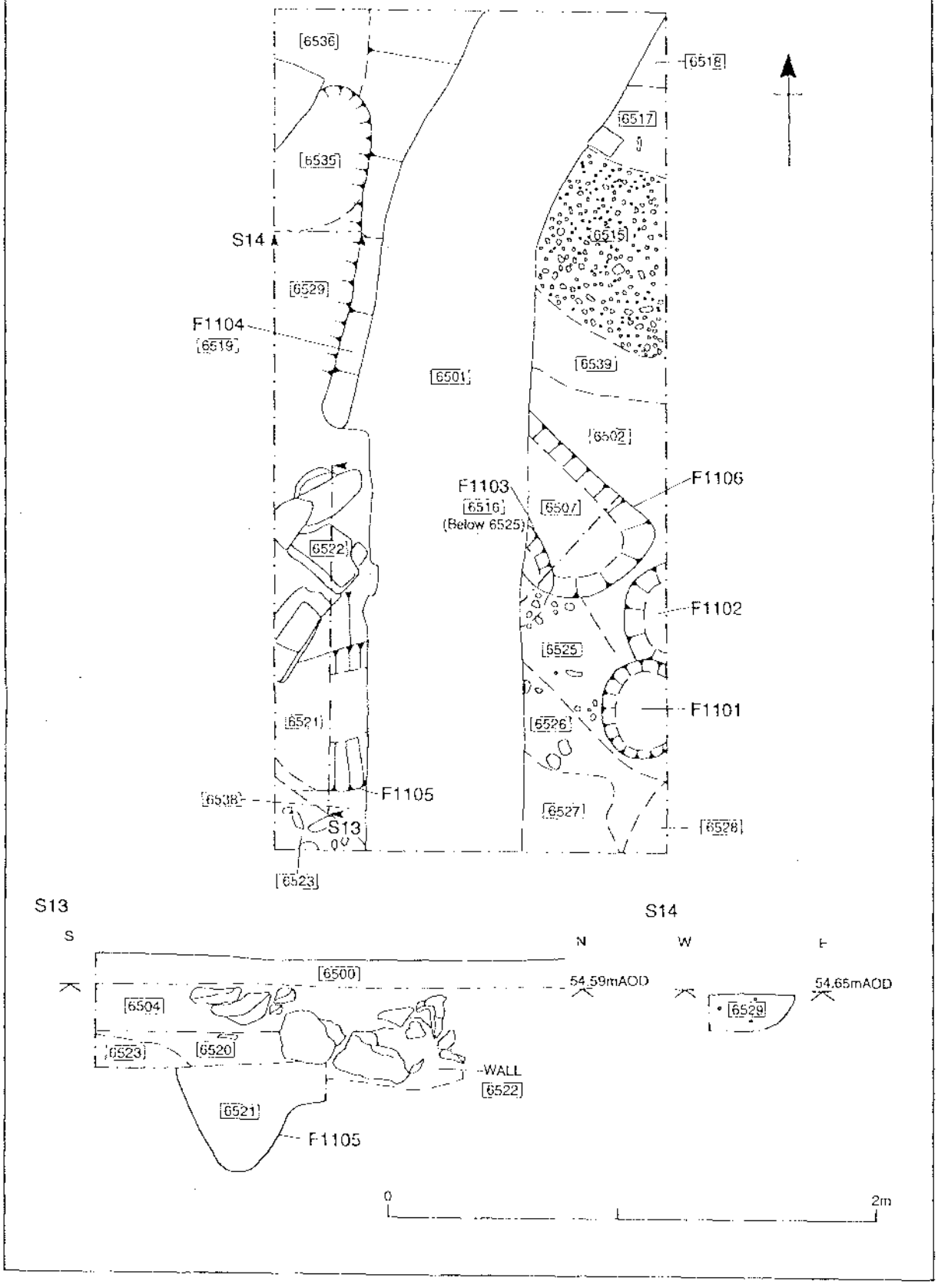

S11
6509
6512
6513
6511
6505
6503
6504
6501
6508
6539
6502
6507
S10
F1103
6507
6510
6504
F1101
S12
S10
NE
SW
54.44mAOD
6507
6504
F1106
6516
F1103
0
2m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S14
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[6529]
F1104
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[6502]
F1103
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(Below 6525)
[6507]
F1106
[6522]
F1102
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F1101
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F1105
S13
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S13
S
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54.59mAOD
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WALL
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F1105
S14
W
E
54.65mAOD
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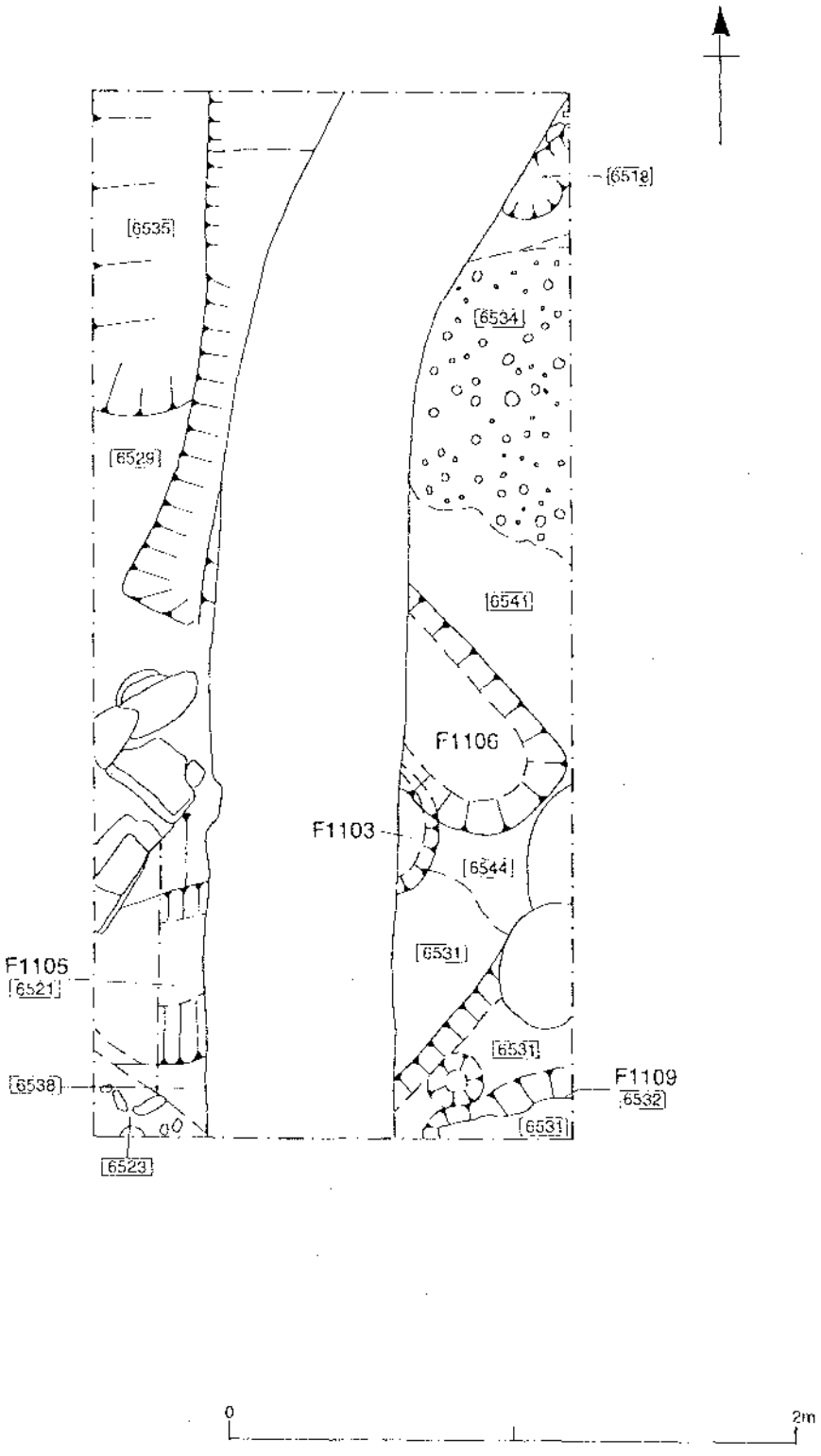
2m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F1106
F1103
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F1109
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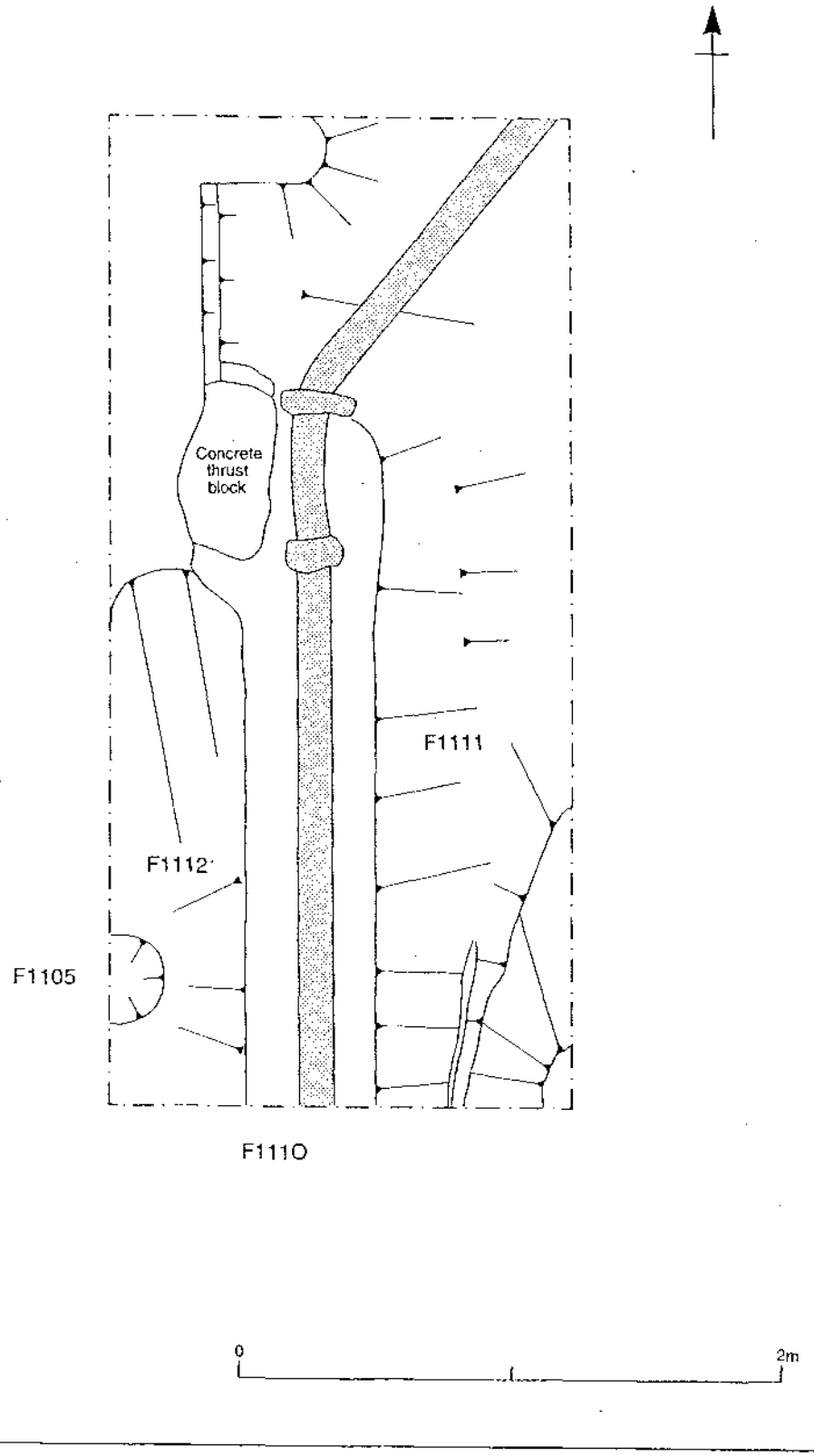
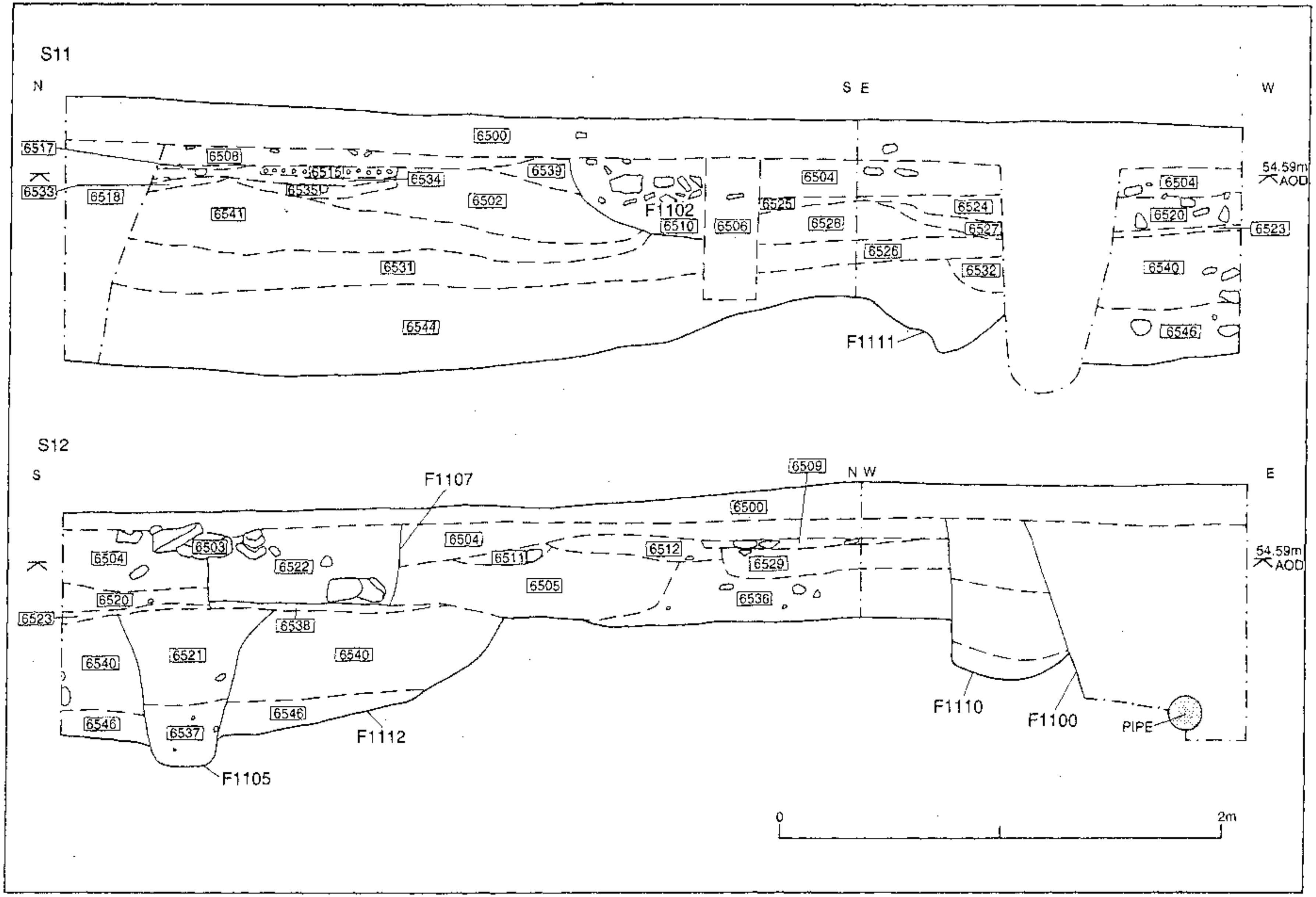
0
2m


Concrete thrust block
F1111
F1112
F1105
F1110
0
2m



S11
N
S E
W
6500
6517
6508
6515
6534
6539
6504
6533
6518
6535
6502
6541
F1102
6510
6506
6525
6526
6524
6527
6526
6532
6531
6544
F1111
54.59m AOD
6504
6520
6523
6540
6546
S12
S
F1107
6509
N W
E
6500
6504
6503
6504
6522
6511
6512
6529
6505
54.59m AOD
6520
6536
6523
6538
6521
6540
6540
6546
6546
6537
F1112
F1105
F1110
F1100
PIPE
0
2m

S15