KENT ARCHAEOLOGICAL PROJECTS

A post-excavation assessment following an archaeological investigation on the route of the new water main at Stockbury, near Maidstone, Kent

NGR 5848121 1613068 to 5815776 1620643
Site code STK-SMS-11
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Commissioned by: south east water

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1) Abstract

Between August and September 2011 Kent Archaeological Projects maintained an archaeological watching brief during ground works associated with the installation of a new 3.9km-long main water pipeline in the parish of Stockbury, approximately 8km northeast of Maidstone, Kent (**Fig. 1**). The watching brief and subsequent archaeological works were commission by South East Water following the production of a desk-based assessment and walkover survey report (Barrett 2011). Readers are referred to this report and Part 3.2 below for a detailed description of the archaeological and historical background of the area.

Following the assessment and walkover survey, the route, which extended westward from the A249 across mostly open farmland, was judged to be of generally low archaeological potential, probably because of the limited amount of development-related excavation that has taken place in this predominantly agricultural area. This resulted in few archaeological remains having been exposed, confirming in this case the archaeological maxim 'absence of evidence is not evidence of absence'.

During the monitoring process, sparsely scattered remains dating to the Mid-to-Late Iron Age, the Roman Period and the Late Medieval and Post Medieval Periods were exposed and investigated along the length of the pipeline route, these including Iron Age rubbish pits and ditches, a much-disturbed cluster of Roman-period urned burials, a Late Iron Age/Early Roman-period trackway and Second World War trenches associated with a nearby pillbox. Several of the pits and ditches exposed and investigated contained no cultural materials and could not be dated.

Many of the archaeological features mentioned above are fairly typical of upland rural East Kent sites and are not considered to be of high archaeological significance. In contrast was the exposure of two groups of Late Iron Age iron smelting furnaces on the mostly Clay-with-Flint surface of the chalk downland that characterises the Stockbury area. One of the works consisted of three smelting furnaces built in shallow, severely truncated pits, with another nearby example consisting of a deeper, better-preserved single pit containing two clay-built iron-smelting furnaces, both with the form of an inverted chimney pot. The second group was much larger, well preserved and multiphase and consisted of four intercutting sunken-floored structures, along with several smaller extensions, the complex as a whole containing at least thirteen furnaces. As in the case of the smaller group, the furnaces were clay-built and shaped like inverted chimney pots.

Groups of large pits, interpreted as iron-ore quarries, were located near the two sets of furnaces, in what was almost certainly a thickly wooded area that provided the required fuel in the form of charcoal. Potsherds associated with the remains dated the larger of the works to between *c.* 50 BC and *c.* AD 25 and the smaller to between *c.* 0 and *c.* AD 50, although the overlap period for the pottery dating and the many similarities between the two sets of furnaces suggested broad contemporeinity. It was therefore concluded that the same group of people produced iron in the area using locally occurring iron ore and fuel for a hundred years or more.

The remains of the iron-smelting works were considered to be of high archaeological significance for three reasons. Firstly, the furnaces and associated materials, such as iron slag, iron ore, bloom fragments and hammerscale, were often exceptionally well preserved *in situ.* This, along with the many nearby quarry pits, meant that the technology of which they were part could be reconstructed in some detail. Secondly, they provided proof for a previously unknown centre of prehistoric iron production within an area that is relatively distant from, but geologically similar to, the Weald of West Kent and East Sussex (well-known for its predominantly Roman-period iron industry). Thirdly, the remains provided evidence for a previously unknown intermediary or evolutionary link between Iron Age slag-pit furnaces and subsequent Roman-period tapping technology in Britain (see Appendix I for a detailed and comprehensive technical discussion of this subject).

Also considered of high archaeological significance was the evidence for the demise of the iron smelting industry sometime around the Roman conquest (AD 43) or a few decades after, along with an increase in Roman-period settlement and occupation activity, probably associated with agriculture. This may suggest that the Iron Age industry was suppressed in favour of, or was eclipsed by the expanding Wealden industry during the Early Roman period. However, the simplest and most likely explanation is that the supply of iron ore in the Stockbury area was depleted after a century or so of intensive exploitation.

Following on-site discussions with representatives from South East Water, the County Heritage Conservation Group, English Heritage and Kent Archaeological Projects it was decided that the Late Iron Age furnaces, which had been partly excavated, sampled and recorded, were of local, regional and national importance and that their unexcavated remains should be preserved *in situ*. It was also agreed that the large amount of sampled industrial waste from the smelting work should be subject to specialist analysis and a detailed technical report.

2) *Introduction*

2.1) Location

The pipeline route ran westward through the parish of Stockbury from the A249 for approximately 3.9km across mostly open farmland, extending from NGR 58465155/ 16153049 to 58159174/16206266 (see Figs. 1 and 2). The monitored topsoil strip focused on the approximately eight-metre wide working area for the route, which passed close to the Scheduled Ancient Monument of Stockbury Castle (a motte and bailey) and to several Listed Buildings (see Parts 3. 2 to 3.7 below and the Historic Environment Record of Kent County Council and the National Monuments Record for the area in Barrett 2011).

Plate 1. The partly excavated remains of the large Late Iron Age iron-smelting works in Area F119 (two-metre scale)

2.2) Methodology and sequence of site investigation

The work overall took place according to the recommended practice and guidelines described in detail in Barrett 2011, 6-9. All structures, deposits and finds were recorded according to accepted professional standards and related accurately to the National Grid. Kent Archaeological Projects, as an archaeological contractor, abides by all statutory provisions and by-laws relating to archaeological fieldwork, in particular the Health and Safety at Work Act 1974, the Institute of Field Archaeologists' Code of Conduct and the Institute of Field Archaeologists' Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology.

The mechanical removal of topsoil was monitored and supervised at all times by an experienced archaeologist. All exposed remains were cleaned using appropriate hand tools and all excavation was undertaken by hand, with all features recorded photographically and drawn in plan and section. All archaeological features and the areas in which they occurred were surveyed using a Leica 1200 series Global Positioning System Survey Device. Subsequently the hand-drawn plans and sections were digitised and the resulting data combined with the survey results in AutoCAD.

The fieldwork took place between 1st August 2011 and 4th November 2011 and initially took the form of archaeological monitoring of the mechanical removal of topsoil within the easement (the approximately ten-metre wide strip in which the pipe was to be installed). The route was divided into ten areas (see Fig. 2) for the purposes of monitoring and recording. Archaeological remains were exposed in nine of the areas and were subsequently delineated and subject to sample excavation, sampling and recording according to accepted archaeological procedures as stated above. The field operatives were: Peter Cichy, Jonny Madden, Slawomir Konieczka, Tim Allen, Martin Grabowski, Bartek Cichy, Jake Warrender and Paul Hart.

Following consultation with Wendy Rogers of the Kent County Council Heritage Conservation Group, Dominique De Moulins, David Dungworth and Sarah Paynter of English Heritage, Samantha Ostridge of South East Water and Tim Allen of Kent Archaeological Projects it was agreed that the large amount of iron work waste (256kg) recovered during the excavation of the smelting works should be subject to specialist analysis. Brice Girbal, whose detailed results are presented in Appendix I, undertook this analysis. Where possible, the excavated features were dated by their ceramic contents, the analysis of which was undertaken by Paul Hart. The detailed results of this work are presented in Appendix V.

3) *Geological, archaeological and historical background*

3.1) Geology and topography

The 1:50,000 scale British Geological Survey map, (Maidstone, Sheet 288) shows the route to lie mainly on Upper Chalk capped by Clay-with-Flints and to cross two narrow Head-filled valleys at an oblique angle.

Part of the Seaford Chalk Formation is exposed on the Stockbury valley slopes and is covered with Head deposits along the A249 roadside. The Seaford Chalk comprises firm white chalk with conspicuous semi-continuous nodular and tabular flint seams. Hard grounds and thin marls are known from the lowest beds and large flint nodules occur commonly.

Lewes Nodular Chalk underlies most of the Upper Chalk in the area. The Lewes Nodular Chalk is composed of hard and very hard nodular chalks and hard grounds with inter-bedded soft to medium hard chalks and marls. The softer chalks become more abundant towards the top.

Nodular chalks are typically lumpy and iron-stained. The first regular seams of nodular flint, some large, commence near the base and continue throughout. The overlying geology over most of the route is Quaternary Clay-with-Flints.

The end of the route descends along another dry valley where Head deposits cover occasionally exposed Seaford chalk. The Landscape Assessment of Kent (Jacobs Babtie, 2004) shows that the search area falls in the Bicknor section of the larger character area of the Mid-Kent Downs, described thus:

'This area consists of the dip slope of the North Downs to the north of the Chalk scarp. It is a large-scale landscape, high, open and generally rolling, with big blocks of woodland and large arable fields. Much of the woodland clings to the steep sides of the valleys cut into the chalk and there is significant variation in vegetation, depending on the soil type'.

3.2) Prehistory

Up to the time of the present archaeological work no archaeological evidence of Palaeolithic, Mesolithic or Neolithic activity is recorded in the surrounding area.

Possible evidence of Bronze Age funerary activity is represented by two round barrows recorded in Stockbury, although it is conceivable that these were reused or even constructed as windmill mounds during the post-medieval period (MKE 20553 and MKE 3160). Other possible evidence of Bronze Age activity includes a group of 30 struck flints recorded during an archaeological evaluation at Monks Orchard, South Street Road, Stockbury, and dated broadly to the Middle Bronze Age or later (SWAT 2006; MKE 42992).

The same archaeological investigation also revealed evidence for an Iron Age iron smelting in the form of iron slag and a ‘bloom pit’ with pottery dating to the Late Iron Age, some ‘tap slag’ and an adjacent posthole. This evidence is of importance in repect of the two iron smelting sites discussed in the present report as it suggests that Late Iron Age iron production took place in an extensive area around Stockbury. It is probable that further excavations in the area would produce further evidence of Late Iron Age iron production.

Other evidence of Iron Age activity has been discovered in Hartlip parish, where Iron Age fire-dogs (MKE 3153) and ferrules (FKE 1011) were discovered. An undated iron rake prong also discovered in Hartlip (MKE 3168) may also have originated during the period. A pattern of dispersed settlement, based upon farmsteads and small agricultural hamlets appears to have emerged by the Late Iron Age period.

A small quantity of otherwise undated prehistoric finds are also listed by the Historic Environment Record (HER), including two fragments of prehistoric antler hoes (MKE 3.3)

3.3) The Romano-British period

Present-day Stockbury is situated close to the first-century AD Roman-period road, although the road probably pre-dates the Roman period. Subsequently called Watling Street, it is likely that the area under consideration formed part of the hinterland of this important route throughout the Late Iron Age and Roman period. Although it lies without the boundaries of the study area, a late Roman-period villa dated to the third and fourth centuries AD was discovered at Hartlip during the eighteenth century and excavated on two occasions during the following century. Excavations revealed a cellar, a bathhouse, hypocaust and an ancillary agricultural building, suggesting that the establishment was located at the centre of a prosperous agricultural estate.

Whilst no finds or features of this date are recorded in the Historic Environment Record, it is likely that the area was integrated into the local villa economy during the late Roman period. Anecdotal evidence of Roman activity in the vicinity includes Roman coins apparently discovered by metal-detectorists and a second-century coin, said to have been found under the doorstep of Beaux Aires Cottage.

3.4) The Anglo-Saxon and Early Medieval Periods.

The HER records shows that an Anglo Saxon pot was discovered in Hartlip (MKE 3169) with an associated but unidentified object (FKE 4050). Dene holes recorded at Yaugher Wood (MKE 3152) and Farthing

Corner, Gillingham (MKE 3165) may date to this period, although it is also possible that they represent later, medieval structures.

Place name evidence indicates that there was a defended site at Stockbury by the end of the Saxon period. Stockbury is recorded by the late elevnth century Domesday survey as Stockinge berge/Stochingeberge. The suffix '–ingas' means 'the people of', whilst the word 'berge/burh' describes a fortified site, suggesting that defensive works had been established at or close to the settlement before the Conqueror's surveyors visited (Lawson and Killingray, 2004: 33; Williams and Martin, 2002: 19).

The manor of Stockbury/Stochingeberge had been established by the end of the Saxon period, and both a church and a mill were in existence by the time of the Domesday survey. Although the church of Saint Mary Magdalene Stockbury is said to date from 1167, it is likely that it had manorial origins during the late Saxon period, as Algifu is stated to have held the manor from King Edward before the Conquest. The Domesday account of Stockbury suggests that the local economy was dominated by arable cultivation, although there was sufficient woodland to support 15 pigs (Williams & Martin, 2002: *ibid*). Following the Conquest William granted the manor to his half brother Odo, Bishop of Bayeux, and Bishop Ansgot of Rochester then held it in his name. Unlike many manorial holdings listed in the Domesday Book, the value of the manor increased from L4 during the reign of Edward the Confessor to L6 in 1086.

3.5) The Later Medieval Period

Following the disgrace of Bishop Odo and the forfeiture of his estates, Stockbury became part of the knight's fee of Roger de St. John, of whom it was held by the family of Auberville, being held by them of Roger de St. John, as one knight's fee. The manor passed by marriage into the hands of the de Criol family during the reign of Edward I, in whose hands it remained until the late fifteenth century. The manor was in the hands of the Tate family at the end of the medieval period (Hasted, 1797).

Stockbury Castle (HER MKE 3157; Scheduled Ancient Monument 418627) is an example of a ring work (medieval fortifications built and occupied from the late Anglo-Saxon period to the later twelfth century). Such structures comprised small, defended areas containing buildings surrounded or partly surrounded by a substantial ditch and a bank surmounted by a timber palisade or, rarely, a stone wall. Occasionally a more lightly defended embanked enclosure, the bailey, adjoined the ring work. Ring works acted as strongholds for military operations and in some cases as defended aristocratic or manorial settlements.

A number of the listed buildings in Stockbury and its vicinity probably originated during the medieval period: Cowstead in Stockbury (173673) appears to be the oldest, with elements dating to the mid-fourteent century, while the Old Forge, Stockbury (173689) and Guildstead Court, Stockbury (173692) date from the beginning of the fifteenth century. Church Farmhouse and Church Farm Cottage, Stockbury (173672) date to the mid-fifteenth century, while Cockhill Little South Street Cottage, Stockbury (173683) dates from 1500 and Queendown Warren, formerly known as Yaugher Manor, Hartlip (176132) dates from 1540.

The deneholes of Yaugher Wood (MKE 3152) and Farthing Corner (MKE 3165) may be medieval in date. Similarly, the possible windmill mounds in Stockbury (MKE 3160 and MKE 20553) may be of medieval construction.

3.6) The Post Medieval Period

The manor of Stockbury passed through the hands of the Tate, Duke and Conny families during the sixteenth and seventeenth centuries, descending to Robert Lock of Rochester in 1700. The manor was subsequently sold to a succession of owners during the eighteenth century, ending up in the hands of Flint Stacey of Maidstone at the end of the century.

At the end of the eighteenth century Edward Hasted noted the poor quality of local soils, the presence of coppiced woodland on the sides of the valley and the survival of enclosed downland near the western boundary of the parish, an area he described as being “poor ruffit land, and a wild and dreary country” (Hasted, 1797).

The poorly preserved tithe map and apportionment of Stockbury, produced respectively in 1838 and 1840, indicate that the proposed pipeline crossed a mixed landscape of arable, pasture and woodland (TNA IR 29/17/346; TNA IR 30/17/346). Other local land uses included a hop ground (Plot 144), while areas of pasture known as Old Park (Plot 11) and Brick Field (Plot 12) suggest former land uses. Parsonage Farm was owned by the Dean and Chapter of Rochester and tenanted by Edward Brittenden, while Church Farm was owned by the prolific local landowner Edward Stacey and tenanted by Bachelor Roper.

The post-medieval archaeological and historic record includes at least 15 extant listed buildings, a well (MKE 3157) within the scheduled area of Stockbury Castle and table tombs in the yard of the church of Saint Mary Magdalene (MKE 43031).

As previously discussed, the deneholes of Yaugher Wood (MKE 3152) and Farthing Corner (MKE 3165) may date to the medieval period or later, and similarly, the possible windmill mounds (MKE 3160) and (MKE 20553) recorded in Stockbury may also be of relatively recent origin.

3.7) Modern Period (1901 to the present)

During the First World War the defences of the Royal Naval Dockyard at Chatham were augmented in order to protect the naval base against attack from land and sea. The Chatham Lines and the Chatham Land Front defended the landward approaches to the base; each containing a variety of earthwork defences and concrete pillboxes (Burridge 1997, 39). Two principal types of pillbox were used in the defensive network; a simple ovoid type designed to hold two Vickers machine guns and simpler square design with a loophole in each of three sides and an entrance in the fourth (Osborne 2008, 53). Two pillboxes of the former design are located adjacent to the route of the proposed pipeline, while a single example of the much rarer square-sided pillbox is located nearby and recorded in the HER (MKE 40061). The latter design appears only to have been used in Kent and only a handful is recorded, amongst which are a group around Newington and the single example at Stockbury (*ibid*).

In 1915 the Directorate of Works surveyed the North Downs for suitable sites from which military aircraft could operate. In February 1916 No. 3 Wing of the Royal Naval Air Service (RNAS) was assigned to the newly established Detling airfield, from which it operated a squadron of Sopwith 11 Strutter fighters (Brooks 1990, 11). Following the departure later that year of the RNAS to active service over the Western Front, the airfield was assigned to the Royal Flying Corps (RFC). At the end of the First World War the airfield was home to 143 Squadron RAF, which flew

Sopwith Camel fighters against German Gotha bombers (*ibid*). After the departure of 143 Squadron in October 1919, Detling was relegated to an Emergency Landing Ground and much of the former airfield reverting to agricultural use.

As the threat of war once again loomed during the late 1930s, Detling was reactivated and the airfield was assigned to 500 (County of Kent) Squadron of the RAF in September 1938. As part of the newly formed Coastal Command, 500 Squadron was equipped with Avro Anson aircraft, which flew reconnaissance and convoy protection missions over the English Channel during the first year of the Second World War. Having escaped the attentions of Luftwaffe bombers during the early weeks of the Battle of Britain, Detling became the target of a devastating raid carried out by German dive-bombers on 13th August 1940 (*ibid*: 16). In the space of three minutes the hangers were demolished, 22 aircraft were destroyed on the ground and 67 service personnel and civilians were killed. Further heavy raids took place on 31st August and 2nd September.

In April 1941 500 Squadron relocated to Norfolk and the airfield subsequently became the short-term home for a number of different formations. In 1943 Detling was transferred to Fighter Command, which renamed the station No. 125 Airfield. Detling became the base for No.15 Fighter Wing, the main function of which was providing fighter escorts for Allied bombers (*ibid*: 19). Detling also provided many of the aircraft that flew ground attack missions in support of the Normandy landings, as well as fighters assigned to intercepting V1 flying bombs.

The German V-weapon campaign also led to the assignment of a single gun (Diver) light anti-aircraft and searchlight emplacement at Stockbury in late June 1944 (adjacent to Parsonage Farm). This was armed with a 40mm gun, which was moved to an extant searchlight emplacement and was manned by the Royal Artillery Training Establishment Regiment of 27 Brigade, and by 332 Searchlight Battery of 33 Searchlight Regiment (NMR TQ 86 SW 64).

As the war in Europe approached its conclusion, Detling was placed under Care and Maintenance on December 1 1944. Following a brief period of use for demonstrations and instruction, the air base finally closed in 1956.

4) Results of the investigation

4.1) Area F111
(Plan, Fig. 2b)

Area F111 comprised the north-east/south-west aligned access track running through arable land between the main compound and the easement (from NGR 58465155/16153049 at 107.8m OD to NGR 58439211/16132078 at 116.54m OD). No archaeological features were observed.

4.2) Area F112
(Plans, Figs 2, 3a, 3b, 3c & 3d; Sections, Figs 13 [28.66])

Here, the pipeline easement ran westward through an arable field lying between the A249 and Church Hill (NGR 58477039/16134626 at 72.4m OD to (NGR 58459878/16127978 at 86m OD).

Plate 2. Area F112 (looking east)

The topsoil strip revealed natural deposits in the form of Clay-with-Flints, which were covered in part by colluvial brown silt-clay sediments of brown silt clay in the lower section of the hill.

A spread of scattered potsherds and small calcined bone fragments (recorded as Context Recording Number 470) was exposed within a patch of Clay-with-Flints in the western part of this area (the presence of the Clay-with-Flints patch is indicated in Plate 1 by the gap in the crop adjacent to the easement). An area of 100m^2 (10m x 10m) was trowel cleaned in, and around the spread containing potsherd and bone fragments in order to establish its extent (**Fig. 3c**). Subsequent, more focused investigation revealed the spread to be the plough-disturbed surface of a 40mm-thick, one-metre long and 0.7m-wide dark grey loam layer (CRN 470) containing sparse calcined bone fragments, charcoal flecks, pottery fragments and frequent nodular and tabular flints. A large number of potsherds with a date-range of *c.* AD 150 – 175/200 (see Appendix V, Context 470, for details) was recovered from this layer, which was removed and sampled in its entirety and found to overlay the bases of four ceramic vessels (Small Finds 2, 3, 4, and 6), one (SF 6) containing a concentration of cremated human bones (CRN 472), along with three small copper items (SFs 5 and 7a & 7b).

Three vessels (SF 3, 4 and 6) were arranged in a north-west/south-east alignment with a samian bowl (SF 2) located to the north-east (**Fig. 3c**). The cremation urn (SF 6) was jar-like in form, in a smoothly finished, reduced sandy fabric. Its rolled rim sherds of rounded profile and plain body sherds identified it as a Monaghan 5C1 type, dating to *c*. AD 120 - *c*. 250. The diameter of the upper part of the preserved urn base of the urn was 80mm, increasing to 150mm at the wall base, with the wall thickness varying from 8mm to 11mm. The cremated remains (CRN 472) consisted of highly fragmented, fully calcined bones (fully sampled and retained for possible subsequent analysis).

Plate 3. The Roman-period burial group (looking north) before excavation (one-metre scale).

Plate 4a. Top left (looking east), the Lezoux samian bowl (SF 2), bottom left, the disturbed contents (CRN 472) of the cremation urn (SF 6), the top of the grog-tempered fine sandy ware (SF3), with copper items (SFs 5 and 7) and the North Kent fine ware (SF4) on the right. (0,2m scale)

One of the accessory vessels (SF 3) was located southeast of the cremation urn and was positioned at the approximate centre of the burial assemblage. Its truncated remains comprised a complete foot-ringed base and plain, fragmented lower body sherds in a fairly hard-fired, oxidised, grog-tempered fine sandy fabric, the whole dating to *c.* AD 175 - *c.* 225. The base was relatively fresh, with the sherds surfaces a little more degraded. The vessel had a form of jar with a 0.8m-wide body diameter and 4mm-thick wall.

Plate 4b. Looking north. The content (CRN 472) of the cremation urn (SF 6) before sampling and the accessory vessel after the removal of the loamy covering layer (CRN 470). (0,5m scale)

Another accessory vessel (SF 4) lying southeast of Vessel SF 3 was a North Kent fine ware vessel, probably with a jug form and dating to *c.* AD 150 – *c.* 200. The sherd's surfaces and breaks were generally fresh, though some appeared slightly more worn. The remains of the vessel consisted of a simple base along with both plain body sherds and body sherds decorated with subtle, acute latticing and tooled burnish. The profile was difficult to reconstruct and no direct parallel was identified. The base was very narrow (approximately 50mm in diameter); and the surviving part of the upper body was 120mm in diameter.

The third accessory vessel (SF 2), lying northeast of vessel SF3, was a small Lezoux Samian bowl dating to *c.* AD 150 – *c.* 200 and was a central Gaulish import. Its fabric was hard-fired, the sherd edges were sharp and fresh. The base was narrow and in ring form, with a diameter 45mm, and the surviving body/rim indicated a diameter of 100mm.

One of the copper alloy item found with the burial remains was a 'U'-shaped (in plan) blade (SF 5) of 10mm width, 24mm length and less than 1mm thickness. It had been held in place in one piece by the surrounding soil and collapsed when excavated. A 16mm-long copper alloy pin (SF 7a) adhered to the south side of one of the accessory vessel (SF 3) and was positioned perpendicularly to the blade at its end section. Next to it was a 10mm-long, cast copper alloy shaft (SF 7b), which was square in section, 3 mm wide and had a spherical head with two hollows on opposite sides. It was probably incomplete and was of unknown function.

The Roman-period burial remains as a whole were situated relatively high up in an exposed position on the southeast slope of Church Hill. Consequently, protracted ploughshare erosion had caused severe truncation to, and fragmentation of the upper parts of the vessels, along with progressive downhill re-deposition of plough-disturbed material, resulting in a substantial loamy accumulation (CRN 479).

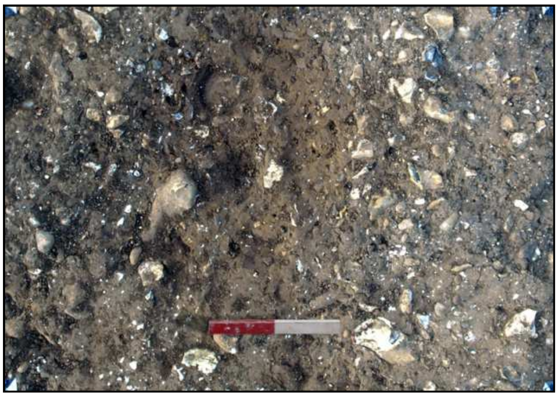


Plate 5. looking north post-excavation following the removal of all burial remains. (0.2m scale)

The upper part of a very large, steep-sided and probably linear feature, possibly a ditch or hollow way, was observed during the monitoring of the pipe-trench cut in the western end of Area F112, near Church Hill. Its exposed and investigated length in the pipe trench was 5.4m long, more than 1.4m in depth (that being maximum depth of the pipe trench), appeared to north-south aligned and was between 8m and 9m wide.

Two fills (CRNs 398 and 399) were exposed within this feature (Fig. 13, Section 28.66). The former (CRN 398) was the lowest and was encountered 1.3ms below the eastern edge of the feature and observed to slope gradually downwards to the west. It was made up of compact, dark brown clay silt with frequent inclusions of fragmented burnt clay and occasional tabular flints. The upper fill (CRN 399) was comprised dark brown clay silt with very occasionally flint cobbles and partly-degraded organic material, showing it to be of relatively recent deposition, probably as deliberate levelling.

No datable material was recovered from either of the fills and too little of it was exposed to characterise it with any confidence. An association with the motte and bailey some 300m to the north is possible, if unlikely, given the recent nature of the upper fill. The feature appears to run alongside Church Hill and to ascend the south-eastern slope of Stockbury hill and may be a recently back-filled medieval or post medieval predecessor of Church Lane itself.

4.3) Area F113

(Plans, Figs. 2, 4, 4a, 4b, 4c, 4d, 4e; Sections, Figs. 14 s.1-4, 15 s.2.5-2.10, 16 s.2.12, 17 s.3.11-4.15, 18 s.10.29, 19 s.11.30, 20 s.11.33, 21 s.31.71-31.73, 22 s.31.74-31.75 & s.32.76)
The Harris matrix for area F113 Fig. 59

The easement in this area began on the west side of Church Hill at NGR 58456567/16128838 (approximately 92m OD) and ascended westward up an increasingly steep hill through a field in pasture for about 190m to NGR 58439953/16128042 (116m OD) before turning north-north-west to run through the flatter land of an arable field for about 400m to NGR 58404347/161447.94 (119m OD). The topsoil strip in the 85m-long part of the easement near the west-north-west end of Area 113 between NGR 58407128/16143043 (119.5m OD) and NGR 58414954/16139364 (121m OD) revealed the remains of two groups of iron-smelting bloomery furnaces (see Appendix 1) and associated pits and postholes.

Plate 6. looking south showing natural brickearth pocket exposed in the pipe trench (one metre scale)

The first group of furnace remains was badly preserved, having been severely truncated by plough action, leaving only the features' bases surviving. The furnaces' structural integrity was therefore sufficiently compromised for little of it to be reliably reconstructed without references to the well-preserved examples described below.

Plate 7 looking south at Furnace 1 before excavation.

Sunken-floored structure B comprised Furnaces 1, 2, 3 (the remains of which were situated in the construction cuts forming the structure) and a group of post-holes ([CRNs 22, 24, 26, 28, 30, 32 and 34].

The first feature [CRN 1] **(Plan Fig. 4e, Section Fig. 14 s.1.1**) interpreted as the remains of an iron-smelting furnace had the form in plan of a 1.15m-long, 0.75m-wide, east-west aligned cut in a flattened figure-of-eight shape, described by the excavator as 'like two bowls merged together'. The pit was steep sided with a flat, stepped base (see below) that was concave at its deepest part at 0.24m below ground level following the removal of topsoil. The differences in the pit depths, which created the stepped appearance of its base, varied from 0.24m to 0.12m, the former depth being where the furnace hearth was located, the latter being the base area west of and immediately in front of the furnace, where the entrance to the furnace had been located. The pit was cut through natural clay that had been scorched *in-situ*, presumably from exposure to the heat from the furnace during the smelting process, to form a medium red compact layer. The lowest part of the scorched natural clay (recorded as CRN 7) at the base of the furnace pit measured 1.12m in length (east-west), 0.68m in width (north-south) and 50mm in thickness.

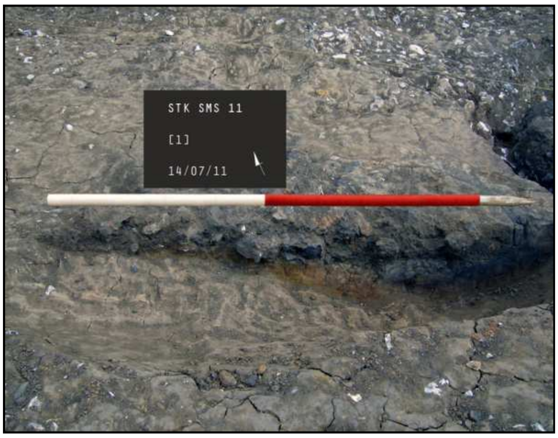


Plate 8, looking north through Furnace 1 (Section 1.1, one-metre scale)

The scorched natural clay base of the pit (CRN 7) appeared to be stratigraphically equivalent to a similar 15mm-thick band of scorched dark red-grey clay (CRN 19) that extended upwards from the scorched basal clay to form the pit side and the outer furnace wall. However, it was not clear whether this was entirely natural clay scorched *in situ* or, at least in part, a deliberately created lining, as it abutted and merged into natural clay in all but the western part of the furnace, where it was free-standing and from where the furnace entrance was accessed (although it should be noted that the degree of preservation was too poor in that area to demonstrate this beyond doubt).

The scorched basal natural clay (CRN 7) was covered, and the furnace wall/pit edge was abutted, by compact, 54mm-thick yellow-red, burnt silty clay containing occasional very small flint fragments, and interpreted as a deliberately constructed furnace floor (CRN 18). This in turn underlay a 70mm-thick, 0.55m-wide deposit of compact, dark grey burnt clay containing frequent charcoal flecks (CRN 5) that also abutted the pit side/furnace wall (CRN 19). A thin accretion of iron slag (not recorded separately) was present on the interface between this deposit and the pit side/furnace wall (CRN 19) in the deepest-cut part of the pit, indicating the position of the furnace hearth and providing reliable evidence for smelting.

Abutting the lower part of the dark grey burnt clay (CRN 5) and overlaying the furnace floor (CRN 18) was a solid layer of shiny blue-grey iron slag containing fragments of clay-silt, burnt clay and charcoal (CRN 6). This was interpreted as the solidified accumulation of the once-molten slag at the base of furnace hearth and identified the furnace as of the 'non-tapping' type, placing it within the Iron Age technological tradition. It was sealed by (CRN 4), a mixed layer of firm, grey-brown silty clay with frequent inclusions of charcoal, iron slag, burnt clay fragments (some with a smooth face on one side) and flints (both burnt and unburnt). This deposit, which extended across both the furnace hearth area and the access area in front of the furnace, was interpreted as the collapsed or deliberately demolished remains of the upper parts of the furnace mixed with material from the smelting process and the surrounding natural clays and silts. It covered an area measuring 1,10m east-west, 0.68m north-south and had a maximum thickness of 0.09m.

The pit [CRN 2] containing the second feature interpreted as the remains of (and from) an iron-smelting furnace **(Plan Fig. 4e, Section Fig. 14 s.1.2**) had gradually sloping sides extending into a slightly concave bottom, measured 0.92m long, 0.63m wide and with a maximum depth of 0.24m.

Plate 9, looking east through Furnace 2 (Fig. 14, Section 1.2, half-metre scale).

The pit appeared as a north-south aligned oval in plan and had been cut down through natural clay, which, following protracted exposure to heat, presumably during the smelting process, had formed a compact, red-scorched surface (CRN 11, maximum thickness 0.11m) within the pit. This surface effectively formed the furnace sides and floor, extending southwards to cover the area within the pit in front of the furnace. The two startigraphically separated contexts (CRN 12 and 10) probably indicated two stages of furnace use. CRN 12 consisted of solidified *in situ* iron slag with very thin laminations of vitrified silty clay. It was 80mm thick and extended for 0.5m in section. CRN 10 was possibly stratigraphically equivalent and consisted of friable burnt clay and nodular 'non-tapping' type slag fragments with inclusions of scorched flint and charcoal flecks. This deposit, which probably represented debris derived from the collapsed furnace wall after it had been broken open to retrieve the bloom, had a maximum depth of 0.1m. Defining the southern edge of the furnace's second stage was a compact, 40mm-wide, 75mm-high, ridge-like deposit of pale orange burnt clay without inclusions (CRN 9), almost certainly representing an *in-situ* part of the furnace's front (south-facing) wall. This underlay and was abutted to the north (in the area of the furnace hearth) by a 70mm-thick layer of compact, dark grey clay-silt containing moderate charcoal and occasional iron slag and scorched daub/burnt clay fragments (CRN 8), suggesting that it represented collapsed material within the furnace, as did previously discussed underlying layer (CRN 10), although in this case the collapsed material extended across the entire pit and formed the uppermost fill within it.

The presence of *in-situ* solidified slag at the base of the furnace area suggested that the furnace was of the 'non-tapping' type, where the molten slag was not conducted away from the furnace but solidified at its base.

A sub-circular pit [CRN 20], which lay immediately north-east of furnace 1 and was just intersected by it, was an earlier feature that had been re-used, either coincidentally or deliberately, as the site of a smelting furnace (see furnace 3 below). The roughly circular pit measured 1.4m north-south, 1.2m east-west and 0.43m deep **(Plan Fig. 4e, Section Fig. 17 s.3.11**), had gradually sloping sides, a concave base and a single fill of grey-brown clay-silt with abundant amount of nodular flints (CRN 21). A small flint blade (SF 1) of indeterminate Neolithic or Early Bronze Age date was retrieved from this feature, which was of unknown function and was partly cut away by the probable construction cut for another furnace or, possibly, a smithing hearth [CRN 3, see below].

Plate 10, looking north, Section 3.11, showing the stratigraphical relation between prehistoric pit (CRN 20) and the Furnace 3 (two-metre scale)

The construction cut [CRN 3] of this feature **(Plan Fig. 4e, Section Fig. 14, s.1.3**) was also in the shape of a figure of eight in plan, had gradually sloping sides and an irregular, undulating base. It measured 1.2m north-east/south-west, 0.62m north-west/south-east and had a maximum depth of 0.22m.

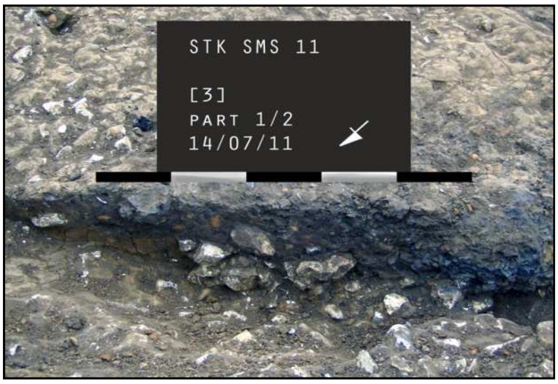


Plate 11, looking southeast through Hearth 3, Section 1.3 (half-metre scale).

It contained a primary fill (CRN 16) of mid red-brown scorched clay with occasional nodular and tabular flint inclusions and was contemporary with a similar layer of red-brown burnt clay (CRN17) with occasional tabular flints and iron slag inclusions. This in turn underlay a deposit of grey-brown scorched clay (CRN 14) that contained occasional nodular flints and small pieces of burnt daub and was sealed by a layer of compact red-tinged grey burnt clay containing occasional charcoal, iron slag and large nodular flints inclusions (CRN15).

Plate 12, looking east through Hearth 3 (Fig. 14, Section 1.4, half-metre scale).

An overlying layer (CRN 13), uppermost within this feature, consisted of grey-brown clay-silt or orange-brown clay-silt, both with frequent, evenly distributed fragments of iron slag, burnt clay and charcoal flecks.

No *in-situ* solidified slag was present in the base of the hearth area, this absence suggesting that this feature differed from furnaces 1 and 2, and identified it as a possible smithing hearth. However, insufficient structural evidence survived to identify it with certainty and it is equally possible that much of the iron slag, charcoal and scorched clay fragments within the feature derived from the demolition of the two adjacent furnaces. Another likely explanation, as discussed below, is that it was simply a badly preserved example of a furnace.

Plate 13, looking north at the sectioned remains of 'non-tapping' Furnaces 1 & 2 and possible 'smithing hearth 3 (one-metre scale).

The three features discussed above [CRNs 1, 2 & 3] were in close proximity, each appearing to have been built to avoid the others, and all bore close similarities in shape and size. On this basis it is probable that they were either contemporary or had been constructed successively over a relatively short period. One [CRN 1] was certainly a non-tapping furnace, another [CRN 2] was almost certainly a non-tapping furnace and the last was too badly preserved to be identifiable with any certainty. The shallow depths of these features compared to the examples in Area F119 discussed below suggest they were either built in shallower pits or that the surrounding land surface has been severely truncated. In either event, only the truncated bases of the features had survived. No datable cultural material was retrieved from the furnaces but, as discussed below, datable pottery from nearby postholes and pits suggested they dated to *c*. 0 – *c*. AD 50.

A circular posthole [CRN 22], **(Plan Fig. 4e, Section Fig.15, s. 2.8)** with a depth of 0.1m, diameter of 0.14m, near vertical sides and a concave base was excavated as part of a group of seven postholes [CRNs 24, 26, 28, 30, 32 and 34], **(Plan Fig. 4e, Sections Fig.15 s.2.5-2.10**).

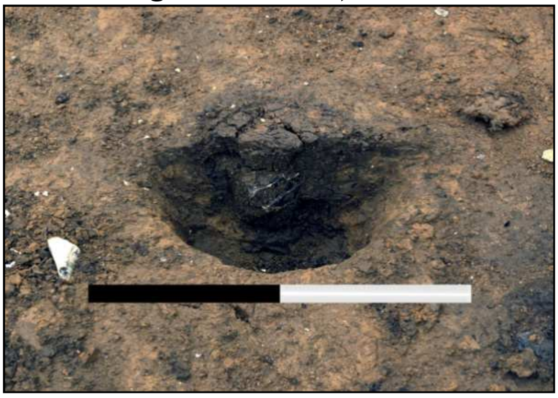


Plate 14, looking northwest through Posthole 22, (Fig. 15, Section 2.8, 0.2m scale)

Six were clustered between 0.55m and 1m west of the three furnaces, one [CRN 34] lying 0.4m to the east. The fill (CRN 23) of Posthole 22 consisted of dark grey clay-silt with occasional inclusions of small flints, charcoal flecks and iron slag fragments.

Plate 15, looking southwest through Posthole 24 (Fig. 15, Section 2.9, 0.2m scale).

The fill (CRN 25) of Posthole 24 (depth 70mm, diameter 0.13m, steep-sided with concave base **(Plan Fig. 4e, Section Fig.15 s.2.9)** was identical.

Plate 16, looking southwest through Posthole 26 (Fig. 15, Section 2.1), (0.2m scale).

Also part of this feature group was a small oval pit, probably a posthole [CRN 26], with steep sides and a concave base and measuring 0.26m in length, 0.20m in width and with a maximum depth of 70mm **(Plan Fig. 4e, Section Fig.15, s.2.1**). Its fill (CRN 27) consisted of dark grey clay-silt containing occasional medium-sized flints, charcoal flecks, iron slag fragments and two potsherds dating to *c.* AD 125 – *c.* 160.

Plate 17, looking southwest, Fig. 15, Section 2.7 through Post-hole 28

Similarly present within this group was another small oval pit [CRN 28], again almost certainly a posthole, with steep sides, concave base and measuring 0.25m in length, 0.21m in width and with a maximum depth of 0.17m. **(Plan Fig. 4e, Section Fig.15 s.2.7**). Its fill (CRN 29) was identical to the previous three examples.

The same applied to near identical small oval pit/posthole [CRN 30], measuring

0.28m in length, 0.27m in width and a maximum depth of 0.1m **(Plan Fig. 4e, Section Fig.15, s.2.6**) and its fill (CRN31) composed of dark grey clay-silt with occasional small flint inclusions.

Plate 18, looking north through Posthole 30 (Fig. 15, Section 2.6, 0.2m scale).

The part of the group was also circular posthole [CRN 32], which had a diameter of 0.21m and a depth of 80mm **(Plan Fig. 4e, Section Fig. 15, s.2.5)** and a fill (CRN 33) of dark grey clay-silt with occasional angular flint inclusions. Also part of the group was a circular posthole [CRN 34] with a diameter of 0.20m and a depth of 0.15m, with a fill (CRN 73) as described in the previous example **(Plan Fig**. **4e**, no section available**)**. The postholes were interpreted as the probable remains of a structure that originally housed or sheltered the three furnaces.

Sunken-floored structure A comprised Furnaces 35, 71 and construction cut 48.

The construction cut [CRN 48]**, (Plan Figs. 4b and 4d, Sections Figs. 18, s.20.29, Fig. 19, s.11.30, Fig. 20, s.11.33**) for another furnace was identified approximately nine metres south of furnace 1, 2 and 3 and the adjacent posthole cluster. The cut had the form of a north-north-west/south-south-east aligned oval pit with a sub-circular extension on its western west side to accommodate an additional furnace **(Plans, Figs. 4b and 4d)**. The western pit edge was steep, forming a sharp angle with the concave pit base, and the eastern edge sloped down more gradually to provide more ease of access to the furnace entrances.

The furnace [CRN 35] was built of clay partly within a pit, which was cut into natural clay as an extension of Construction cut [CRN 48] in order to accommodate the furnace. The extension pit was circular, 0,9m deep, had a top diameter of 0.36m and a diameter near the base of 0.53m **(Plan Fig. 4, Section Fig. 20, s.11.33)**. The upper sides of the pit were vertical, the lower were undercut and joined the concave base at a relatively acute angle to create a bulb-shaped void. The different clay layers used to build the furnace were distinguishable by their different colours, the variation being due to the different degrees of heat exposure

Plate 19 looking north at Section 11.33 through Furnace 35 within construction cut 48 (white section of scale equals to 0.5m).

The furnace base and the furnace wall (CRNs 127 & 40) were probably built as one and consisted of 80mm-thick dark red-scorched clay. The wall was covered on the inside by a 20mm-thick yellow-orange scorched clay (CRN 54) and probably the original inner chamber lining, which was in turn covered by a 42m-thick layer of slightly darker yellow-orange scorched clay (CRN 53) and, covering that, a

60mm-thick light yellow-orange to yellow-grey scorched clay (CRN 39). This, the inner face of the furnace, was lined with a 10mm-thick layer of compact mid yellow-orange scorched clay (CRN 52) probably representing the final ling and suggesting that the furnace was repaired and subject to multiple use.

Overlying the furnace base (CRN 127) was a compact 0.11m-thick layer of very dark grey scorched clay-silt (CRN 126), which also extended out of the basal furnace opening into the access pit within concave depression at the furnace base. Stratigraphically equivalent to this deposit was a 40mm-thick localized patch of dark yellow inclusion-free clay (CRN 50), which may have been a fallen fragment of lining material or trample. Overlying the dark grey scorched clay-silt (CRN 126) was a compact, 80mm-thick layer of black silty clay (CRN 38, Environmental Sample 6) containing abundant charcoal flecks and fragments (this deposit was sampled for C14 dating, flotation and residue analysis). It contained a single large flint-tempered potsherd dating from *c.* 75 BC – *c.* AD 60 and was covered by a 0.13m-thick band of compact, mid-to-light grey-brown clay-silt with moderate charcoal and iron slag inclusion (CRN 51), which was sealed by a more extensive, 0.18m-thick friable accumulation of fairly compact dark grey clay-silt containing frequent fragments of red-orange scorched clay and occasional large blocks of slag (CRN 125). This deposit abutted the inner western furnace wall and extended eastward to fill the concave depression at the furnace base. It underlay a 50mm-thick layer of loose, black charcoal (CRN 124) and a friable, 0.11m-thick black silty deposit containing frequent charcoal and scorched clay inclusions (CRN 123), both of which underlay a substantial deposit (0.75m thick) of dark grey clay-silt with very frequent fragmented charcoal and iron slag inclusions (CRN 49), stratigraphically equivalent and almost certainly the same as two adjacent upper backfills (CRNs 36 & 37), see below), and then, in succession upwards within the furnace 'chimney', a compact 0.42m-thick dark grey clay layer with charcoal, burnt clay, iron slag and nodular flint inclusions (CRN 37) under a top fill of 0.22m-thick dark grey clay with inclusions of charcoal and burnt clay (CRN 36). This deposit produced eleven flint-tempered potsherd of generic Iron Age type (*c.* 600 BC – *c.* AD 60) but thought to date to the end of this period (*c.* 75 BC – *c.* AD 60) because of its association with sherds of that date-range from a stratigraphically equivalent deposit in the same construction pit (see CRN 49 below).

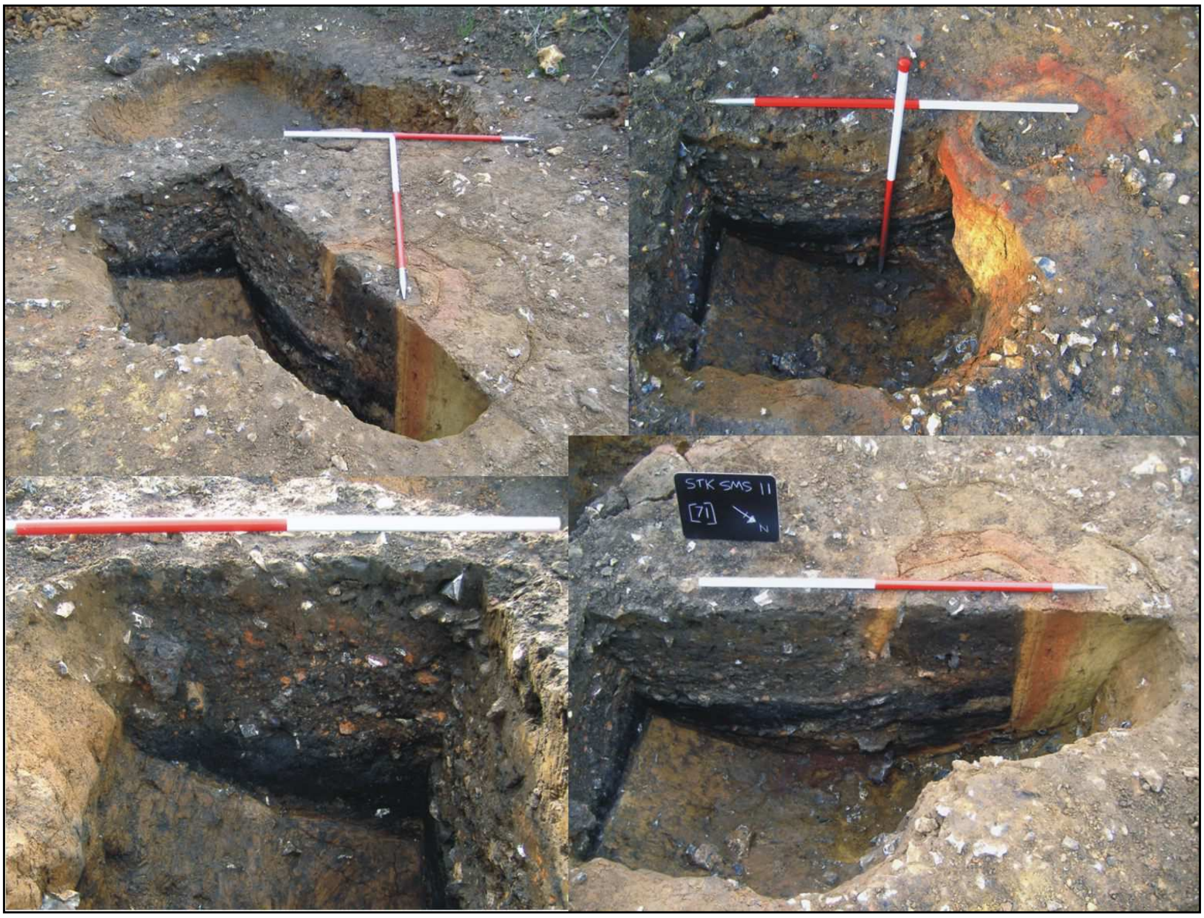
As can be seen in Section **s.11.33** and in plate 21 below, there were two distinct fill types exposed in the section through the furnace and access pit. A concave, bowl-like depression (created to collect the molten slag waste produced in the smelting process) can be seen at the base of the furnace, identifying the furnace as of non-tapping type, where the liquid iron slag was not conducted away from the furnace.

Plate 20, looking west, showing half-sectioned Furnace 35 within construction cut 48 and the remains of the clay-built furnace front wall and entrance. A blackened 'hearth' area occupied a bowl-like depression at the base of the furnace (one-metre vertical scale, one-metre scale)


Plate 21, looking north west at Section 11.33 (Fig. 20) through non-tapping furnace 35 and construction cut 48 (one-metre vertical scale and two-metre horizontal scale).

The thinner layers within the depression (CRNs 50, 51, 123, 124, 125 and 126) were probably associated with the final use of the furnace and the final breaking out of the iron bloom within it, whereas the overlying 0.75m-thick layer of mixed clay-silt, charcoal and iron slag (CRN 49) was almost certainly evidence for the deliberate backfilling and levelling off of the entire structure, as were the two deposits overlying it within the furnace. The backfill lying outside the furnace produced nine potsherds, all grog-and-flint and flint-and-sand tempered Late Iron Age wares with a date-range of *c.* AD 25-50/60, placing the working use of the furnace firmly in the Late Iron Age.

Another furnace [CRN 71] was present in a north-western circular extension of the same pit [CRN 48]**, (Plan Fig. 4b, Section Fig.18, s.10.29-30)**. The extension pit was east-south-east/west-north-west aligned and was sub-oval in plan, with vertical sides in its upper part gradually undercutting in its lower part towards a concave base. It was 0.35m wide at the top, with a gradual increase to 0.51m at the base. The pit had been partly backfilled with light yellow-brown brickearth (CRN 116), shaped to create the tubular structure that would eventually become the furnace.
The inside of the structure had apparently been fired, presumably to consolidate it, as indicated by a red-orange surface layer (CRN 114) of variable thickness (see Plates 22 – 25). Following this a furnace floor (CRN 118), wall (CRN 114) and a final lining (CRN 115), all clay, were built, effectively as one seamless structure, and fired to a light yellow-buff colour (post-excavation analysis of the inner wall/lining revealed two possible phases of lining, suggesting repair to, or re-use of, the furnace – see Plate 26 below).



Top left, Plate 22 looking south at the half-sectioned Furnace 71 (CRNs 114, 115 &118) in the foreground, the excavated area for Furnace 35 in background (one-metre scales). Top right, Plate 23 looking southwest through construction cut 48 with Furnace 71 to the right (one-metre scales). Bottom left, Plate 24 looking southeast at Section 11.30 through general waste and backfill in Construction Cut 48 (one-metre scale). Bottom right, Plate 25 looking southwest at Section 10.29 through waste material around 'tapping' furnace 71 and the construction cut extension (one-metre scale).

The primary fill (CRN 117) overlying the red, scorched clay floor (CRN 118) within the furnace, consisted of firm, dark grey 6mm-thick semi-vitrified clay-silt. Undoubtedly formed by exposure to the high temperatures achieved during the smelting process. This underlay two stratigraphically equivalent deposits (CRNs 121 & 70), respectively a 60mm thick soft, dark brown, fine silt with charcoal and burnt clay inclusions, and a 0.1m-thick friable, dark grey-brown, clay-silt with frequent burnt clay and occasional charcoal inclusions. These were sealed by a composite layer recorded as CRNs 96 and 120, and consisted variously of friable charcoal fragments and powdered charcoal with occasionally large tabular pieces of slag loose (CRN 96), black charcoal fragments and powder (CRN 120), and pale orange scorched clay-silt (CRN 121). The former two deposits were thought to represent surviving samples of the fuel used by the smelters.

The composite layer was sealed in part by a 0.11m-thick compact and localised pale yellow-brown layer of scorched clay-silt with moderate burnt clay and occasional charcoal inclusions (CRN 119), which abutted the north-west furnace wall. It underlay a compact 90mm-thick.varicoloured layer (mid grey to dark red), of clay-silt containing burnt clay fragments (CRN 58). This deposit, which produced ten flint-tempered potsherds with a date-range of *c*. 50 BC – *c*. AD 60, in turn underlay a substantial (0.32m thick) band of friable black clay-silt with abundant charcoal contents (CRN 57). This underlay a more substantial layer (0.43m thick) of grey-black clay-silt with occasionally flint and frequent daub contents, along with large amounts of iron slag and charcoal (CRN 56) is the same as (CRN 49) recorded in previously discussed furnace [CRN 35].

This was the highest deposit to extend out through the furnace opening into the access pit. It was sealed outside the furnace by 0.43m-thick moderately compact dark grey-brown clay-silt (CRN 55) containing large flints, charcoal fragment and small daub fragments and which produced 25 potsherds with a date-range of *c.* 12 BC to *c.* AD 50. It was identical in appearance and thickness to the layer (CRN 97) overlying (CRN 56) inside the furnace, both interpreted as different parts of the same backfill, the presence of which within the furnace indicating that the furnace was open at the top at the time of deposition, probably having been broken open by the smelters to retrieve the iron bloom. A single potsherd present in CRN 97 dated to *c.* 15 BC – *c.* AD 60. The uppermost backfills discussed above, and certainly the (CRN 56), were the same as the uppermost backfill (CRN 49) exposed in relation to the furnace discussed below. The structure of the furnace base and the arrangement of the fills within it (see Plates 25 and 26 and Sections 10.29-10.30) suggest that this Late Iron Age furnace was typologically intermediate between a 'non-tapping' furnace, as in the case of the previous and probably contemporary example (where the molten iron slag was allowed to accumulate in the furnace base, reducing the efficiency) and a 'tapping furnace', where the molten slag was conducted away from the furnace to an adjacent receptacle, usually a small pit or hollow. The 'tip lines' visible in the thin semi-laminated lower fills (CRNs 117, 70, 96, 120, 121 and 58) within the furnace base in this example, see Plate 26 below and Section 10.29) show that any liquid material within the furnace would tend to drain away, despite any accretion, and the access pit floor adjacent to the furnace (see Plate 25 above) seems to have been deliberately sloped downwards away from the furnace base, probably to facilitate the drainage process.

Plate 26. looking southwest at the laminated lower fills at the base of 'tapping' furnace 71.

The extension cut made to accommodate furnace 71 was not separated from the original construction cut [CRN 48] by any fill or fills, indicating that the original pit remained open when the extension was made. It was also noted that the charcoal-dominated layer sequence (CRNs 70, 96, 120, 58 and 57 - see Plates 22, 23 & 25 above) extending out of the second furnace immediately overlay the original pit cut but was not evident in the section relating to the previously investigated furnace (see Section 11.33 and Plate 21 above). In addition, the substantial final backfill(s) (CRNs 97, 55 and 56) within the structure overall were almost certainly the same and contained potsherd with similar date-ranges (*c.* AD 25 – *c.* 60 for CRN 49, *c.* 15 BC – *c.* AD 60 for CRN 55), suggesting that the two furnaces were used simultaneously or nearly so, with no stratigraphic evidence being present that could distinguish them chronologically. The use of the furnaces was dated on the basis of the datable pottery sherds within the final backfills to the latest part of the Late Iron Age period, probably the latter part of the last century BC or the early first-century AD.

A circular, steep-sided pit [CRN 65] **(Plan Figs. 4b and 4d, Section Fig. 17, s. 4.15),** which was of unknown function but had the typical form of a prehistoric storage pit, was exposed some three metres east of construction cut 48. It had a flat base, was one metre in diameter, had a maximum depth of 0.32m and contained two fills, a primary deposit (CRN 67) of 0.18-thick grey-brown clay-silt with occasional inclusions of flint and small charcoal fragments and frequent small fragments of iron slag and burnt clay, and an upper fill (CRN 66) of 0.14m-thick dark grey clay-silt containing occasional fragments of burnt clay and flints, moderate charcoal flecks and frequent pieces of iron slag. The tip line between the deposits suggested that it had been backfilled from its north-east side.

Plate 27 looking north at Section 4.15 through pit CRN 65 (one-metre scale)

The lower fill (CRN 67) produced three potsherds with a date-range of *c.* 75 BC – *c.* AD 50, indicating that it was probably contemporary with the use of the nearby furnaces.

A north-south orientated oval pit [CRN 436] **(Plan Figs. 4b and 4c, Section Fig. 22 s.31.75)** was exposed during the monitoring of pipe trench cut. This feature, possibly a post pit but of unknown function, had steep sides, a concave base and measured 0.42m by 0.31m, with a maximum depth of 0.17m. Its single fill (CRN 444) comprised dark grey-brown clay-silt with occasional iron slag, nodular flint and burnt clay inclusions.

Plate 28 looking northeast at Section 31.75 through post pit 436 (0,2 meter scale).

Three large features [CRN 432], [CRN 434] and [CRN 435] were exposed in section during the excavation of the pipe trench in an area beginning approximately 20m south-south-west of the iron smelting complex described above. One [CRN 432]**, (Plans Figs. 4c and 4b, Section Fig. 21, s. 31.73)**, with steep sides and a concave base, had a maximum depth of 0.9m and a width of 1.28m. Its six fills consisted of, from the bottom up: grey-brown clay-silt containing occasional nodular flints and charcoal fragments (CRN 441); dark grey clay-silt containing frequent charcoal flecks and moderate red-scorched clay fragments (CRN 442); grey-brown clay-silt containing moderate nodular flints (CRN 440); mid grey clay-silt containing occasional charcoal flecks and tabular flints (CRN 439); mid grey clay-silt with frequent nodular flints and occasional charcoal flecks (CRN 438); and dark grey-brown clay-silt with occasional charcoal flecks and very occasional flints and iron slag inclusions (CRN 437). The latter, uppermost, deposit produced ten potsherds with a date-range of *c.* 50 BC – AD 25/150, providing a useful *terminus anti quem*, indicating that the feature as a whole was broadly contemporary with the iron smelting works some 35m to the northeast. It was almost certainly a quarry pit from which the ore-bearing material used in the furnaces was extracted.

Plate 29 looking southwest at Section 31.73 through Pit 432 (one-metre scale)

Another large, similarly steep-sided pit with a flat base [CRN 435**], (Plan Figs. 4c and 4b, Section Fig. 21, s. 31.72)** was exposed approximately five metres south-south-west of the probable quarry features. It contained two fills (CRNs 449 and 450), was 2.1m wide, with a maximum depth of 0.85m. Its basal fill (CRN 450) consisted of dark grey-brown clay-silt with moderate inclusions of nodular flints and occasional charcoal flecks. Some patches of orange-tinged burnt clay were also encountered. Its underlay, dark grey-brown grey-silt with occasional flints, charcoal flecks and scorched clay fragments (CRN 449) that produced nineteen potsherds with a date-range of *c.* 75 BC – *c.* AD 100.

Plate 30. looking southwest at Section 31.72 through Pit 435 (one-metre scale).

As in the case of the previously discussed feature, the uppermost fill here produced datable pottery, in this case nineteen sherds with a date-range of *c.* 75 BC – AD 75/100 AD, again providing a useful *terminus anti quem* dating the feature, which was similarly interpreted as a quarry, with the use of the nearby smelting works.

Part of another large pit [CRN 434**], (Plans Figs. 4c and 4b, Section Fig. 21, s. 31.71)**, again interpreted as a quarry associated with the smelting works, was exposed approximately 10m to the northeast. It was 2.5m wide, had a maximum depth of 0.64m, with sides cutting down at an approximately 45-degree angle towards a concave base. Its four fills consisted of, from bottom up: dark brown clay-silt contains occasional burnt clay patches and moderate amounts of charcoal and nodular flints (CRN 448); grey-brown silty clay with occasional nodular flints (CRN 447); yellow-brown silty clay with occasional tabular flints Context (CRN 446) and dark brown clay-silt clay with moderate flints (CRN 445). No cultural material was retrieved from these fills.

A linear feature [CRN 433]**, (Plan Figs. 4c and 4b, Section Fig. 23 s.31.74)** of 0.78m width, 0.9m maximum depth, vertical sides and a flat base, was exposed some 14m northeast of the previously discussed feature. Its single fill (CRN 443) consisted of dark grey-brown clay-silt with occasional inclusions of burnt clay and flints. Again, no cultural materials were recovered but it's strictly rectangular shape in section identified it as a probable Second World War trench, possibly an outer defensive earthwork associated with the nearby pillbox at NGR 58383638/16146952.

A large linear feature [CRN 451]**, (Plan, Fig 4b, Section Fig. 23 s. 32.76)**, almost certainly a ditch, with a width of 3.12m and depth 0.96m, was exposed in section approximately 50m from the smelting area to the southwest. Its sides cut down at about 45 degrees towards a concave base. A total of eleven fills, accumulated in semi-laminated form, were identified within it.

Plate 31 looking southwest at Section 32.76 through ditch CRN 451 (two metre scale).

The stratigraphic relationships of the fills are given in the Harris Matrix (Fig. 60); their descriptions (from bottom fill upwards) being as follows: bright yellow-brown clay-silt with occasional flints and which produced five potsherds dating to *c.* 50 BC – *c.* AD 60 (CRN 452, primary fill, probable in-washed erosion from the ditch sides); two stratigraphically separate deposits (CRNs 454 and 455), consisting respectively of mid brown clay-silt with moderate nodular flints and which produced twelve potsherds dating to *c.* 50 BC – *c.* AD 60; and mid orange-brown clay-silt clay with moderate nodular flints and which produced three potsherds dating to *c.* AD 25 – *c.* 60, both of these deposits probably resulting from erosion of the ditch sides; dark grey-brown clay-silt with frequent nodular flints (CRN 456); grey-brown silty clay with inclusions of tabular flints and occasionally charcoal flecks and which produced seven potsherds dating to *c.* 50 BC – *c.* AD 60 (CRN 453); grey-brown clay-silt with occasionally nodular and tabular flint inclusions and which produced 53 potsherds dating to *c.* AD 125 – *c.* 150, suggesting the use of the ditch for rubbish disposal (CRN 458); dark grey clay-silt with nodular flint and occasional charcoal inclusions and which produced 103 potsherds dating to *c.* AD 125 – *c.* 175, again suggesting the use of the ditch for rubbish disposal (CRN 459); two stratigraphically separate deposits (CRN 460 and 461), consisting respectively of dark grey clay-silt with occasional burnt flints and which produced four potsherds dating to *c.* AD 125 – *c.* 257, and mid brown clay-silt with moderate nodular flints inclusions and which produced one potsherd with the same date-range; orange-brown clay-silt with occasional nodular flints and which produced nine potsherds dating to *c.* AD 175 – *c.* 250 (CRN 462), and a top fill of mid brown clay-silt with frequent nodular flints and occasional iron slag inclusions (CRN 463).

The quantities of datable potsherds recovered from most of the fills described above allowed a reliable chronology to be proposed for this feature, which was almost certainly open and marked a boundary of some importance, given its size, during the late last-century BC and/or the early first-century AD, during the period when the iron smelting works were in operation. The subsequent in-filling of the ditch, almost certainly as a result of natural in-wash and erosion in regard to the lower fills, took place over the next two hundred years or so, with the dramatically increased numbers of Roman-period potsherds occurring in upper fills pointing to increased occupation/settlement activity in the near vicinity, and the use of the ditch for rubbish disposal (the group of urned burials of the same broad period exposed in Area 112 also points to nearby settlement). The greatly increased amount of pottery dating to the mid Roman Period, the high proportion of domestic wares amongst them and the gradual disappearance of the ditch in which they occurred suggests a significant change in the intensity and type of settlement following the demise of the Late Iron Age iron smelting industry.

4.4) Area F114

(Plan, Fig. 2, 4f, 4g and 4h, Sections Fig. 16 s.2.12-2.13)

The easement in this area extended from shortly before South Street at NGR 58404155/16144512 (118.93m OD) through arable fields to NGR 58337956/16147660 (119.8m OD). The topsoil strip and cutting of the pipe trench exposed a series of features underlying a substantial homogenous colluvial deposit that was excavated in two layers (CRNs 41 and 42), **(Plan Fig. 4h, Section Fig. 16 s.2.12)**.

Plate 32 looking east in Area F114 along the easement and pipe trench

An evaluation trench measuring 1.5m x 2.6m, later extended to the north in two phases **(Plan Fig. 4h; Fig.16, Section s.2.12)** was cut following the exposure during the cutting of the pipe trench of a series of possible archaeological features underlying colluvium.

Plate 33a looking southeast at the excavated evaluation trench

The evaluation trench was intended to establish the overall thickness of the colluvial sediment and characterise the possible archaeological remains beneath it.

The south-east terminus of a feature [CRN 46], **(Plan Fig. 4h, Section s.2.13)** measuring 0.9m in width, 0.6m in depth, with vertical sides and a flat base, but of unknown shape in plan, was exposed on the base of the trench. Its single fill (CRN 47) comprised tabular flints of sizes up to 15cm, the spaces in between being occupied by compact light brown clay-silt. This feature was interpreted as a clay quarry pit, presumably used for the extraction of the orange-brown clay containing abundant tabular flints, the latter being thrown back into the pit following their separation from the clay.

Plate 33b looking northeast at Section 2.13 through Feature 46 (sections of the scale equal 0.5 metre)

The site of a small fireplace (CRN 44), **(Plan Fig. 4h, Sections Fig. 16 s.2.12-2.13)** consisting of grey-black scorched clay was set within the top of the backfill in pit described above.
It was circular in plan, had a 0.3m in diameter and was 50mm thick, contained frequent charcoal fragments, occasionally burnt flints and seven potsherds dating to *c.* 75 BC – *c.* AD 75, suggesting it was contemporary with the Late Iron Age smelting works.

Interpreted as a multi-phase clay quarry, an adjacent 0.15m-deep feature [CRN 45], **(Plan Fig. 4h, Section Fig. 16 Sections s.2.12-2.13)** consisted of irregular, shallow sides and an uneven base. As in the case of the previously discussed quarry pit [CRN 46] it contained a single fill (CRN 43) of tabular flints with sizes up to 15cm, with the intervening spaces filled with compact mid brown clay-silt with iron slag inclusions. This deposit produced eleven potsherds with a date-range of *c.* 50 BC – *c.* AD 150, again suggesting a chronological association with the smelting works.

Plate 34 looking northwest at section 2.12 (one metre scales).

The homogenous 0.4m-thick mid brown silty clay colluvial layer overlying the features described above was excavated in two layers (CRN 41 and CRN 42), Plan 6/5, Section 2/12), which produced, respectively, eight potsherds dating to *c.* 75 BC – *c.* AD 75 and ten sherds with a broad date-range of *c.* 150 BC – *c.* AD 1450 (nine dating to *c.* 150 BC – *c.* AD 260, one, probably intrusive, dating to *c.* 1350 – *c.* 1450). The layer as a whole contained frequent tabular flints, and, apart from the potsherds already mentioned, the upper 0.2m (CRN 42) produced iron slag fragments, a copper alloy object (fitting), an iron rod or nail fragment and a fragments of blue object of unidentified function and material, and the lower 0.2m (CRN 41) produced iron slag fragments.

A 2m-wide and 1.5m deep trench was observed to cut the colluvium in the pipe-trench section in close vicinity to the existing pillbox. The exposed trench section was covered by an iron plate, had vertical sided with a flat base and was interpreted as a Second World War defensive feature, probably of the same type as the similar feature [CRN 433] investigated in Area F113.

Plate 35 looking south at the top part of the Second World War trench exposed in the pipe trench (one-metre scale)

4.5) Area F115

(Plan, Figs. 2 and 5a, 5b, 5c Sections Figs. 24 s.5.14-7.18, 25 s.25.59 and 27 s.7.19)

The route in this area began where the pipeline turned slightly towards the west-south-west to enter pastureland at NGR 58337956/16147660 (119.8m OD), from where it extended for nearly 1000m long to NGR 58248285/16119211 (119.6m OD). Here, the surface geology consisted of mid brown, orange-tinged clay with abundant flint nodule and occasional sandstone inclusions. An irregular sub-oval deposit (CRN 78), **(Plan Fig.5c, Section Fig. 24 s.7.18)** comprising compact dark grey clay with frequent charcoal flecks overlying orange-scorched natural clay was exposed in the central part of Area F115.

Plate 36 looking north at Section 7.18 (CRN 78) (fire site) (tape extended to 0.5m)

It was 0.62m long, 0.56m wide and was 50mm thick. As no cultural materials were present it was interpreted as a fire site of unknown date.

Plate 37 looking west at Area F115, evaluation trench in foreground.

An evaluation trench measuring 0.4m x 0.6m **(Plan Fig. 5, Section Figs. 24 s.5.14 and 27 s.7.19)** was excavated to further investigate a complex and much disturbed cluster of intercutting modern and earlier features exposed in the western part of the area. The evaluation trench revealed two intercutting prehistoric features [CRNs 83 and 81] overlaid by modern pit [CRN 59/79]. A shallow depression on the edge of the woodland in close proximity to the feature complex indicated an area in the easement where the land had been recently levelled and a machine was used to remove the levelling in an area measuring 5.7m by 2m, to the south of the evaluation trench. This revealed a cobbled surface (CRN 63) filling a shallow, flat-based, and approximately north-south aligned linear earthwork [CRN 62], **(Plan Fig. 5a, Section Fig. 24, s.5.14)**, which in turn covered an amorphous, flat-based feature [CRN 83], **(Plan Fig. 5a, Section Fig. s.7.19)**, the latter filled by mid brown silty clay with frequent flint cobbles (CRN 84), the former with mid brown clay-silt also containing very frequent flint cobbles (CRN 63). The section revealed this feature to be some 0.7m wide and 0.22m deep and to widen towards the centre of the investigated area. These features were interpreted as representing two phases of deliberate ground consolidation, effectively trackways, built to make a viable route over a stream or boggy patch of land.

It was observed that the lower fill of this flint-cobbled trackway (CRN 84) was truncated by another, partly exposed feature [CRN 81] with gradually sloping sides and a flat base, the exposed part of which was 0.6m long, 0.4m wide and 0.4m deep. Its fill (CRN 82) consisted of mid brown silty clay containing moderate amounts of tabular flint of up to 40mm in size.

The effects of at least two intrusive phases of machine work using heavy plant in this area meant that the features overlying the flint-cobbled trackways were compacted and distorted, so that it was difficult to distinguish individual features. The following fills were excavated in stratigraphical order but their function could only be provisionally established: a 0.45m-thick mid grey, brown-tinged silty clay sediment (CRN 64) of unascertained extent and containing occasional tabular flint was identified as a simple colluvial accumulation. It was cut by a modern feature [CRN 59, also recorded as 79], **(Plan Fig 5a, Section Fig. 24 s.5.14, Fig. 27 s.7.19)**, which was sub-oval in plan, with vertical sides gradual sloping towards its flat base and was 5m long, 4m wide and 0.43m deep. It contained two fills; a basal fill of mixed white-to-grey chalk and silty clay with occasional flints inclusions (CRN 60) and an upper fill of mid brown silty clay with occasionally charcoal flecks and flints (CRN 61) (also recorded as (CRN 80).

The monitoring of the pipe-trench cut exposed a large pit, probably a flint quarry [CRN 213], **(Plan Fig. 5b Section Fig. 25, s.25.59)** in section. It was 3m wide, more than 1.2m deep and was filled with mid brown silty clay containing frequent small chalk fragments (CRN 214).

Plate 38 looking north at Section 5.14 through modern re-deposited material overlaying a natural hollow with a flint-cobbled trackway (CRN 62/63) at the base. The levelled-up hollow is visible in the background.

4.6) Area F116

(Plans, Figs. 2, 6, 6a, 6b, 6c, 6d, 6e, Sections, Figs 26 s.7.16-7.17, 28 s.8.20-8.22, 29 s.9.23-9.26, 30 s.9.27 & 31 s.12.31-12.32 and s.12.41)

In Area F116 the route extended from West Wood Road at NGR 58248285/16119211 (119.6m OD), running approximately westward through arable land for 187m to NGR 58231397/16127156 (126.4m OD).

Plate 39 looking southeast at the middle part of freshly stripped Area F116 (the top of Ditch 85 is visible in the foreground). Tape extended by one metre

Part of a slightly curving, north-east/south-west aligned ditch was exposed in this area [CNR 85], **(Plan Fig. 6b, Sections Fig. s.8.20-s.8.21)**. It was 0.55m wide and 0.4m deep at its most exposed northeast part was 0.9m wide and 0.6m deep at its most exposed south-western part (a distance of five metres).

Plate 40 looking southeast at the Ditch 85 (one-metre scale)

Its south-eastern side was nearly vertical and its north-western side sloped down at about 45 degrees to a slightly concave base. Its fill (CRN 86) consisted of mid orange-brown silty clay containing abundant flint. This feature, of unknown function and date, was probably prehistoric and may have been part of a round-barrow ditch.

Also exposed were two east-west aligned roughly oval pits [CRNs 110 and 112] in close proximity to each other and to the northern boundary of the easement **(Plan Fig. 6c, Sections Fig. 31 s.12.31 and s.12.32)**. The former was steep-sided, with a concave base and was 1.42m long, 0.53m wide and 0.32m, with a fill (CRN 111) of mottled mid yellow-brown and grey-brown clay-silt with occasional flint inclusions. The latter was similar in profile, was 1.2m long, 0.54m wide and 0.35m deep, with a fill (CRN 113) of the same description as the previous example.

Plate 41 looking east at Section 12.31 through Pits 110 and 112 (one-metre scale).

A ditch [CRN 91], **(Plan Fig. 6c, Section Fig. 28 s.8.22)** was exposed some 3m to the west of the above-described pits. It was 1.2m wide, 0.45m deep and ran on an east-west, alignment before turning at 90 degrees to the north to form a rectangle.
The inner side of the ditch varied from steep to absolutely vertical, the outer from gradual to about 45 degrees and the base was flat, but with shallow step-like

extension on its southeast side, perhaps a remnant of an earlier ditch and therefore suggesting a re-cut. Three fills were identified in the 1.4m-long excavated section: a primary fill (CRN 94) of mid grey-brown mottled silty clay with occasional flint inclusions (this fill almost certainly derived as the result of erosion from the exposed ditch sides); a similar upper side fill (CRN 93) of mid grey-brown mottled silty clay with abundant flint inclusions, and a top fill (CRN 92) of mid brown, orange-tinged clay silt containing veins of grey silt and abundant flint and occasional iron-rich sandstone fragments. The feature as a whole was interpreted as the corner part of rectangular enclosure with a minimum width of three metres. Although undated, it was probably prehistoric.

Plate 42 Looking east at Section 8.22 through Ditch 91 (one-metre scale).

An oval pit [CRN 90], **(Plan Fig. 6c, Section Fig. 31 s.12.41)** measuring 0.84m long (north-south), 0.33m wide and 0.27m deep, with steep sides and a concave base, was exposed four metres northwest of the rectangular ditch direction. Its single fill (CRN 122) consisted of mid yellow-brown silty clay containing occasional tabular flints. Again, no datable materials were present.

A cluster of small features as described below was exposed about 17m northwest of the oval pit. None produced any cultural and/or datable material but all, on balance, were considered to be broadly contemporary and possibly indicative of Neolithic or Bronze Age occupation activity in the area, as were the nearby, similarly undated pits [CRNs 90, 110 & 112], the curving ditch [CRN 85] and the rectangular ditch [CRN 91] discussed above.

A posthole [CRN 109] **(Plan Fig. 6d, Section Fig.29, s.9.26)** had a 0.3m diameter, was 0.15m deep and contained a fill (CRN 108) of mid yellow-brown silty clay with frequent tabular flints inclusions.

Plate 43 Looking west at Section 9.26 through Post-hole 109 (0.2m scale).

One meter to the northwest a linear feature [CRN 104] with a north-east/south-west aligned cut, shallow sides and flat base was partly exposed **(Plan Fig. 6d, Section, Fig. 30 s.9.27)**. It was 0.93m-wide and 0.21m-deep, with a fill (CRN 106) of light yellow brown clay-silt with mid grey and orange mottles. It was interpreted as a shallow pit or gully terminus and adjoined, with no distinguishable change in fill type, by an irregularly shaped pit (CRN 105) measuring 0.72m long, 0.25m-wide, 0.33m in depth and with a fill as described above.

Plate 44 looking south east at Section 9.27 through the features 104 and 105 (scale 1.0m)

A north - west south - east aligned gully/shallow ditch (recoded variously as [CRNs 100 &103], **Plan Fig. 6d, Section Fig. 30 s.9.24-9.25)** was 2.8m long, 0.6m wide and 0.25m deep, with steep sides and a concave base.

Plate 45 looking east at Section 9.24 through the gully terminus [CRN 100] (red part of scale = 0.5m)

The western terminus of the gully **(Section Fig. 30 s.9.24)** was shallower (about 0.12m), with more sloping sides and a concave base, while the northern side of the gully adjoined an oval posthole [CRN 102], **(Section Fig. 30, s.9.25)** of 0.52m length (north-west/south-east), 0.18m width and 0.22m depth, with steep sides and a base tapering to a point.

The fills of posthole and the gully, of which the posthole effectively formed a part, were homogenous and recorded as one (CRN 101), consisting of light brown silty clay with abundant inclusions of tabular flint.

Plate 46 looking west at Section 9.25 through gully 103 and adjacent post-hole 102 (black and white part of scale 0.1m long)

Another north-west/south-east aligned linear feature [CRN 98], **(Plan Fig. 6d, Section Fig. 30 Section 9.23)** exposed next to the gully terminus [CRN 100] was 0.98m long, 0.29m wide and 0.15m deep, with sides sloping variously from moderate to steep and a concave base. Its fill (CRN 99) consisted of light brown silty clay containing frequent of tabular flints.

Plate 47 looking east at Section 9.23 through Gully 98 (red part of scale 0.5m long)

Two parallel, north-east/south-west aligned linear features [CRNs 75 & 77] were exposed running across the easement near the west end of Area F116, the features being separated by a distance of 4.5m. One [CRN 75], **(Section Fig. 26 s.7.16)** was 1.16m wide, 0.28m deep, had moderately sloping sides, a concave base and was filled by yellow-brown clay-silt with frequent inclusions of tabular flints (CRN 74). The parallel linear feature [CRN 77], **(Section Fig. 26, s.7.17)** was 0.86m wide, 0.33m deep, had moderately sloping sides slope and a concave base and also contained yellow-brown clay-silt with frequent tabular flints inclusions. They probably represented the remains of a ditch-enclosed trackway but, as no datable material can be ascribed to them, are of unknown date.

Plate 48 looking north at Section 7/16 through one of the probable roadside ditches (CRN 75) (one metre scale).

Plate 49 looking north at Section 7/17 through the parallel probable roadside ditch (CRN 77) (one metre scale).

4.7) Area F117

Plate 50 looking southeast in Area F117 towards Yelsted Lane (in background behind the gate). The flint cobbled surface running across the easement was located beyond the digger. Trench 2 is visible in the foreground and Trench 1 in front of the pipes

(Plans, Figs. 2, 7, 7a, 7b, 7c, 7d, 7e, 7f, 7g & 7h, Sections, Figs 32 s.9.28, 33 s.13.34, s.13.35, 34 s.13.36, s.14.38 & s.15.42, 35 s.15.43, s.16.44)

Area F117 extended from where the route crossed Yelsted Lane at NGR 58230205/16127565 (126.1m OD) through about 140m fields in pasture to NGR 58218391/16135051 (125,7m OD). Hard-packed colluvium was exposed beneath the topsoil, and three investigatory trenches as described below were excavated to evaluate the archaeological potential of the underlying layers.

Plate 51 looking northwest at Section 9.28 through the fire site (CRN 87) (one-metre scale).

An irregular sub-oval area of compacted scorched clay-silt containing abundant charcoal fragments (CRN 87), **(Plan Fig. 7g, Section Fig. 32 s.9.28)** measuring 0.65m long, 0.55m wide and 80mm in depth was found to be bedded on orange-red scorched natural clay. It was interpreted as the remains of a fire site but the absence of any associated cultural materials meant it could not be dated.

Trench 1
(Plan Fig. 7d, Sections Fig. 33 s.13.34, s.13.35 Fig. 34, s.13.36)
Trench 1 was 'L' shaped, comprising two conjoined rectangles, one measuring 2.6m by 2m, the other 2.6m by 0.7m. The trench exposed part of a flint-cobbled surface measuring two metres by 0.6m (CRN 133) set into brown silty clay. The flinty layer was 0.12m thick and no dating evidence was recovered. It was cut by a 0.3m-wide, 0.35m-deep posthole [CRN 134]**, (Plan Fig. 7d, Section Fig 33 s.13.34**), which lay just northeast of a 0.8m-wide and 0.3m-deep gully or shallow ditch [CRN 136], **(Plan Fig. 7d, Section s.13.34**) and was truncated by a north-west/south-east aligned ditch [CRN 129], **(Plan Fig. 7d, Section Fig. 33 s.13.34 and Fig. 34 s.13.36**). The posthole contained a fill (CRN 135) of 35mm-thick light brown silty clay with occasionally flints and the gully fill (CRN 137) consisted of light brown silty clay with moderate inclusions of tabular flints. The gully or shallow ditch

was north-west/south-east aligned with a steep slope on its north-east side and a more gradual one on the opposite side. It had a concave bottom and was filled as described above.

Plate 52 looking southeast at Section 13.34 in Trench 1 (two-metre scale).

The ditch [CRN 129] cutting the posthole was two metres wide and 0.35m deep, with gradually sloping sides and a flat base. It had two fills (CRNs 130 & 132), the former also being present as a covering top fill in an adjacent ditch [CRN 128] (see below), The primary fill (CRN 132) consisted of mid brown silty clay with abundant flint nodules, and the overlying sediment (CRN 130) consisted of mid brown silty clay with moderate tabular flint and occasional small chalk inclusions. However, the primary fill also contained moderate quantities of mid Roman-period potsherds, 36 of which (with a date-range of *c*. AD 150 – *c*. 200) were recovered.

Plate 53 looking northwest at Section 13.36 in Trench 1 (two-metre scale).

The ditch [CRN 128], **(Plan Fig. 7d, Section Fig. 33 s.13.34, s.13.35 and Fig. 34 s.13.36**) that shared its top fill with adjacent ditch [CRN 129] described above was 1.05m wide, 0.41m deep, south-east/north-west aligned, with moderately sloping sides and a concave base. It ran alongside the northeast edge of the neighbouring ditch [CRN 129] and had a basal fill of mid brown loamy clay with moderate inclusions of fine pebbles, coarse sand and occasional tabular flints (CRN 131), along with a single Late Iron Age potsherd, and upper fill (CRN 130) as previously described.

Trench 2
(Plan Figs. 7a and 7e, Sections Fig. 34 s.15.42, Fig. 35 s.15.43)

Trench 2, which was 2.2m long and 2m wide, exposed two ditches [CRNs 138 & CRN 140], **(Plan Figs. 7a and 7e, Sections Fig. 34 s.15.42, Fig. 35 s.15.43),** both of which cut a colluvial layer of mid brown silty clay with moderate tabular flints inclusions (CRN 498). One ditch [CRN 138] was south-west/north-east aligned, 0.77m wide, 0.31m deep, with steep sides and a flat base. Its fill (CRN 139) consisted of mid yellow-tinged grey silty clay with moderate tabular flints inclusions. This ditch ran alongside the southwest edge of the other ditch [CRN 140], which had the same alignment, was over 1.35m wide, 0.32m deep and also had steep sides and a flat base. Its fill (CRN 141) consisted of grey-brown silty clay containing with moderate amounts of tabular flint and occasional charcoal flecks.

Trench 3
(Plan Fig. 7, 7a, 7f, Section Fig. 35 s.16.44)

This trench, which was 2.5m long and one metre wide, revealed part of a 0.15m-thick cobbled surface (CRN 89) made up of nodular and tabular flints set in compact orange-tinged brown silty clay. It underlay a 0.11m-thick colluvial layer (CRN 88) of mid brown silty clay with inclusions of tabular flint and occasional chalk flecks. Thirty-seven potsherds with a date-range of c. AD 50 – c. 200 were recovered from the base of the colluvium (effectively the surface of the underlying cobbled area), suggesting that that part of a deliberately constructed flint-built trackway or courtyard dating to the early-to-mid Roman-period had been exposed, and that suggest a settlement site of that period lay nearby.

Plate 54 looking northwest at Section 16.44 in Trench 3 (two-metre scale).

Two ditches [CRNs 153 and 154], **(Plan 7e)** conjoined to make a right angle, were identified during the cutting of the pipe trench. The first-cited example was north-east/south-west aligned, 0.72m wide and 0.51m deep, with straight, steep sides, a flat base and filled with mid brown silty clay containing moderate amounts of tabular flint. Fourteen potsherds with a date-range of *c*. AD 125-200 (mid-to-late Roman period) were recovered from this deposit.

Plate 55 looking southwest at the section through Ditch 153 (scale in 0.5m sections).

The second ditch [CRN 154] was north-western/south-east aligned 0.7m wide, 0.46m, again with straight, steep sides and a flat base. Its fill consisted of mid brown silty clay containing moderate amounts of tabular flints.

A large north-south aligned spread of flint cobbles was exposed in section at the end of Area F117. It underlay a thin deposit of topsoil and had been much disturbed by cattle hooves.

Plate 56 looking southwest at the section through the cobbled surface (CRN 151).

The pipe trench exposed a feature [CRN 151] **(Plan Fig. 7b)** of unknown type and function (possibly a ditch) that was north-south aligned, 7.5m wide, 0.25m deep with steep sides and a flat base and contained mid brown silty clay with abundant flint inclusions. It produced two potsherds dating to *c*. 75 BC – *c*. 100 AD.

Alongside its western side was north-south aligned wide and shallow feature [CRN 152] of unknown function or type. It had gradually sloping sides, a flat base and was 8m wide and 0.2m wide located. Its fill consisted of mid brown silty clay with abundant tabular flints contents and aslo produce 15 potsherds with a date-range of *c*. AD 125 – *c*. 200.

A south-west/north-east aligned ditch [CRN 144], **(Plan 7, 7a, 7c Section Fig. 34, s.14.38)** with moderately sloping sides and a convex base was exposed in this area. It was 2.15m wide, 0.65m deep and contained mid brown silty clay with tabular flint inclusions (CRN 145), which also produced 22 potsherds with a date-range of *c*. AD 75- *c*. 175.

Plate 57 looking southwest at Section 14.38 through Ditch 144 (two-metre scale).

Plate 58 looking north at part of the section through a large clay quarry (CRN 156) (two-metre scale)

Two large and possibly linear/ sub-oval features [CRNs 156 and 155], **(Plan Fig. 7, 7a and 7h)** were exposed in section at the western end of Area F117 on both sides of the pipe trench.

The first example cited [CRN 156] was north-east/south-west aligned, 7.12m wide and 1.95m deep, with straight, steep sides and a flat base. Its fill comprised mid brown silty clay with moderate flints inclusions.

The second feature [CRN 155] was 7.3m wide, 3.4ms wide at the base and 1.8m deep. Both were interpreted as quarries, either for clay or flint. No separate Context Recording Numbers were ascribed to the fills, which produced no cultural material but their proximity to the features containing Roman-period potsherds discussed above perhaps suggests an early-to-mid Roman-period date.

Plate 59 looking northwest at a quarry (CRN 155) exposed in section in the western end of Area F117 (two-metre scale)

4.8) Area F118

Plate 60 looking northwest at the west end of Area F117, with Area F118 in the distance behind the fence.

(Plan, Figs. 2 and 8, Sections, Fig. 36 s.11.37, s.14.39, s.14.40 & s.14.45)

Area F118 extended across fields in pasture, extending from NGR 58218391/16135051 (125.7m OD) to NGR 58186135/16147645 (126.8m OD).

Four archaeological features were exposed in this area, all of which cut natural brickearth (recorded as CRN 157) that had charcoal fragments and potsherd embedded in it. Seven of the latter potsherds were recovered, these having a date-range of c. AD 120 – c. 170.

Plate 61 looking southwest at Section 11.37 through the Ditch 143 (one-metre scale)

An approximately north-south aligned ditch [CRN 143], **(Plan Fig. 8, Section Fig. 36 s.11.37)** was investigated at the eastern end of the area. It was 0.94m wide and 0.22m deep, had moderately sloping sides, a concave base and a fill of mid brown clay-silt with moderate amount of tabular flints (CRN 142). No datable materials were retrieved from this feature, which was probably a boundary ditch.

An oval pit [CRN 147], **(Plan Fig. 8, Section Fig. 36 s.14.39)** measuring 0.73m long, 0.64m wide and 0.12m deep was exposed about 100m northwest of the above-described ditch. It had moderately sloping sides, a concave base and a fill (CRN 146) of dark grey-brown silty clay containing moderate amounts of tabular flint. The recovery from this fill of 14 potsherds with a date-range of *c.* 350 BC – *c.* 60 AD dated it to the Late Iron Age.

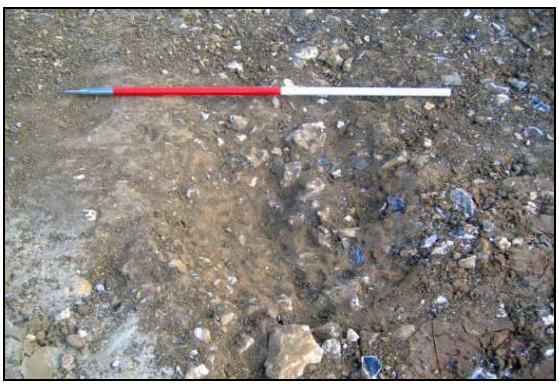


Plate 62 looking southeast at Section 14.36 through Pit 147 (one-metre scale)

An approximately north-south aligned ditch [CRN 149], **(Plan Fig. 8, Section Fig. 36 s.14.40)** was exposed running across the easement about 60m northwest of the above-described pit. It was 0.57m wide and 0.15m deep, with sides sloping down at about 45 degrees to a concave base, and had a fill (CRN 148) of grey-tinged brown clay-silt with moderate inclusions of tabular flint.

Another pit [CRN 159], **(Plan Fig. 8, Section Fig. 36 s.14.45)** was investigated some 35m northwest of the ditch. It was 0.74m in length, 0.56m in width and 90mm in depth, sub-oval in plan, had shallow, gradually sloping sides slope and an uneven base. Its fill (CRN 158) consisted of dark brown clay-silt with frequent inclusions of tabular flint, along with charcoal and scorched daub fragments.

Plate 63 looking north at Section 14.40 through Ditch 149 (one-metre scale)

Plate 64 looking northwest at Section 14.45 through the Pit 159 (0.2m scale)

4.9) Area F119

Plate 65 looking north showing the location and adjacent landscape of the iron-smelting complex

(Plans, Figs. 2, 9, 9a, 9c, 9d, 9e, 9f, 9g, 11 & 12, Sections, Figs. 37 s.17.46, 38 s.17.47, 39 s.19.48, 40 s.19.79, 41 s.20.49, 42 s.20.50, 43 s.21.51, 44 s.22.52, 45 s.22.53, 46 s.22.64, 47 s.23.54, 48 s.23.55, 24.56, 49 s.24.57, 50 s.24.58, 51 s.26.62, 52 s.27.63, 53 s.28.65, 54 s.29.67, 55 s.29.68, 56 s.30.69, 57 s.30.70 & 58 s.60, s.61)

This area extended from a field boundary at NGR 58186135/161476645 (126.8m OD) to a hedge line at NGR 58167730/16155779 (101m), a total length of 201.5m, with a dense concentration of features occurring between NGR 58182500/16148600 (126m OD) and NGR 58181000 (125.4m). These remains indicated the presence of at least five sunken-floored structures, each containing furnaces, the whole pointing to a multiphase Late Iron Age iron-smelting complex containing bloomery furnaces, iron-ore roasting pits and large quantities of waste products from the smelting process. Following initial excavation the remains were judged to be sufficiently important to require consultation with representatives from the Heritage Conservation Group of Kent County Council and English Heritage before further work took place. It was advised that, following the completion of excavation and sampling on those parts of the complex that had already begun, excavation should cease and the remains be preserved *in situ.*

Plate 66 looking south at the freshly stripped area of the iron-smelting complex prior to excavation.

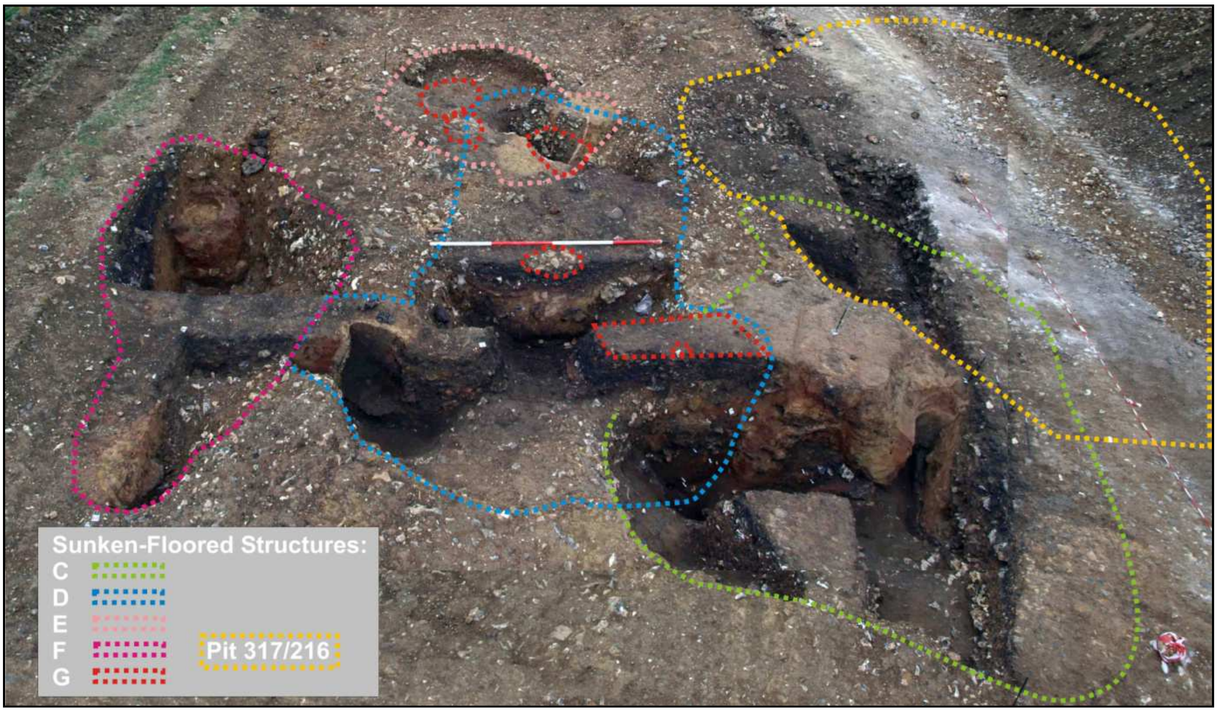


Plate 67 looking northwest at the site following sample excavation with sunken-floored structures C, D, E, F and G indicated by dotted lines (two-metre scale).

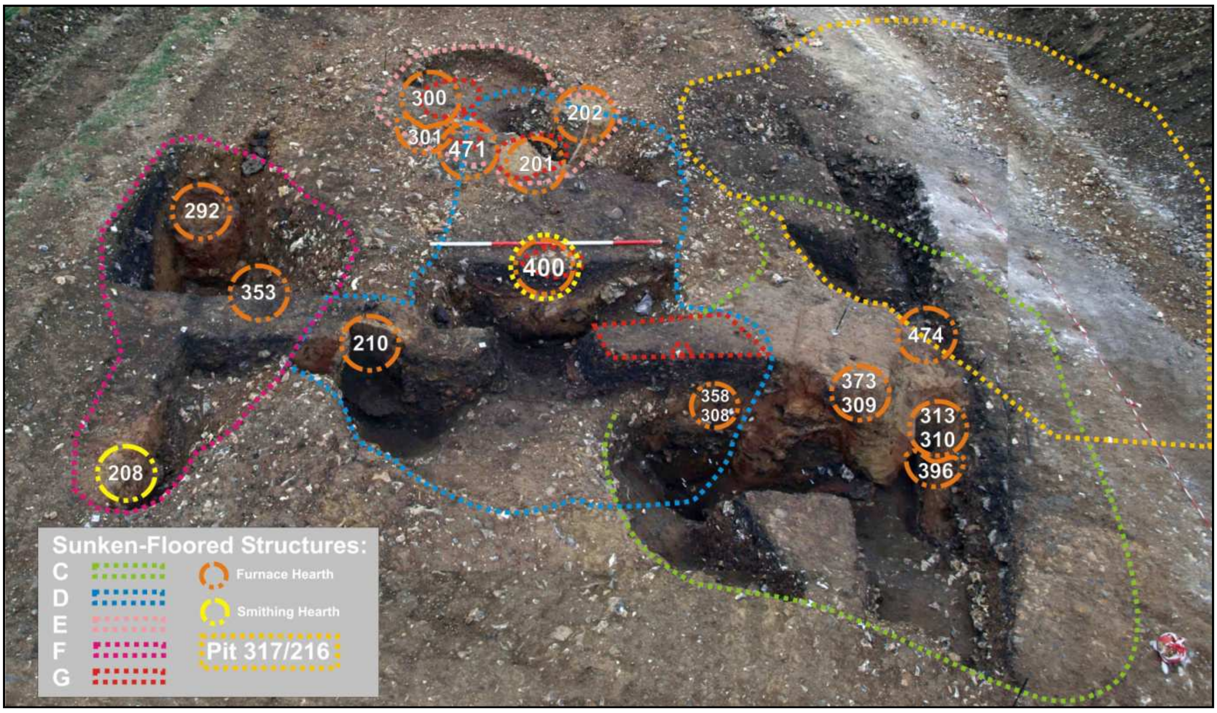


Plate 68 looking northwest at the site showing the sunken-floored structures and the distribution of smelting furnaces and/or hearths within them.

The stratigraphic relationships of the construction cuts, structural remains and associated deposits exposed in this area are shown in the form of a Harris Matrix in **Figure 60.** An illustration (**Figure 61)** showing examples of 'tapping' and 'non-tapping' furnaces is also provided, as is a reconstruction of a Late Iron Age bloomery furnace based on the results of the excavation (**Figure 62)**. The detailed phased plans are shown in Figures **9a, 9c, 9d, 9e, 9f** and **9g**.

Sunken-floored structure C

(Plans Fig 9a, 9b, Fig. 51, Section 26.62, Fig. 50, Section 24.58, Fig. 49, Section 24.57, Fig. 46, Section 22.64, Fig. 43, Section 21.51)

Structure C comprised construction cuts 232, 233, 162, furnaces 396, 310/313, 308/358, 309/373 & 474, extension cuts 306 and 312, access pit 315 and post-hole 307.

Plate 69 looking northwest at the unexcavated top of Furnace 373 (to the left of the top of the two-metre scale).

Fourteen potsherds with a broad date-range of 600 BC to AD 75 were recovered from the exposed surface of the furnace complex before formal excavation began.

The principal construction cuts [CRNs 232/233/162] for this structure formed a north-north-east/south-south-west aligned sub-oval pit with steep sides and a largely flat base. The pit measured 4.03m north-south by 3.02m east-west and had a maximum depth of 1.32m.

The Furnaces

Furnace 396

(Plan Fig. 9a, Sections Figs. 52 s.27.63, Fig. 51 s.26.62*)*

Extension cut 312 formed a north-east/south-west aligned sub-oval cut with moderately steep sides and a flat base, and was effectively a north-eastern deepening of construction cut 232 (see above). It measured 1.84m north-east/south-west by 0.39m north-west/south-east, with a maximum depth of 0.32m. The basal layer within the pit extension/deepening was localized, 60mm-thick, inclusion-free compact red-grey scorched clay (CRN 397), interpreted as the remains of a furnace floor/wall. It had an average thickness of 60mm and underlay a 42mm-thick deposit of compact, metallic-grey iron slag mixed with clay-silt (CRN 392), only exposed in section and interpreted as a remnant of the furnace primary deposit. It was abutted by 0.11m-thick compact red-scorched brick earth (CRN 374), which may be accounted as an outer wall of later built furnace [CRN 313]. The ultimate stratigraphic relation of deposit (CRN 373) cannot be described with absolute certainty, however it is more likely stratigraphically equivalent to a 10mm-thick layer of moderately compact very dark grey silt-clay with frequent charcoal inclusions (CRN 395), in turn underlying a 32mm-thick layer of firm, mid brown-grey silty clay (CRN 394) containing occasional yellow- and red-burnt clay fragments and moderate numbers of charcoal flecks. This was interpreted as a foundation or levelling deposit prior to construction of furnace 313 discussed below.

Plate 70 looking northwest at the base of Furnace 313. A floor was removed in half section, revealing the remains of a previous furnace [396]. The grey inner wall lining of furnace 313 was semi-vitrified, indicating exposure to high temperatures

Taken as a whole, the above-described deposit sequence (CRNs 397, 396, 392, 395 and 394) was interpreted as the consolidated base remnants for a largely demolished furnace (replaced by furnace 310/313 – see below). The charcoal-rich contents of Deposit 395 suggested that it was a surviving trace of charcoal fuel associated with a smelting event within the furnace.


Plate 71 looking northeast at Section 27.63 (Fig. 52), two-metre scale.

Furnace 310, also recorded as 313 (Fig. 52, Section 27.63, Fig. 51, Section 26.62)

Furnace 310/313, which was built on the remains of furnace 396, **(Section Fig. 52 s.27. 63)**, consisted of a outer wall/isolation deposit (CRN 374), abutted to a compacted wall deposit of light brown scorched inclusion-free brickearth (CRN 391), which was also abutted by bright grey, 35mm-thick scorched sandy clay (CRN 314) forming the furnace wall lining and base.

The three deposits discussed above together created a vertical, bulb- shaped void and were recorded as a CRN 310/313. They formed part of the furnace, which was probably originally around a 1.0m high. The surviving remnants measured 0.61m in height and at least 0.35m in diameter at the base. The furnace base was overlain by compact black 30mm-thick silty clay containing abundant charcoal flecks and fragments (CRN 393).


Plate 72 looking northwest at the exposed part of Furnace 313 (white section of scale equals 0.5m)

This primary fill of furnace 313 was interpreted as evidence for the first firing within the furnace. It underlay a 42mm-thick consolidated metallic grey iron-slag accumulation (CRN 390), in turn underlying another consolidated 42mm-thick accumulation of metallic grey iron slag (CRN 387), both deposits interpreted as the waste products from smelting events and probably representing material broken out from the furnace when the bloom was removed.

A 40mm thick charcoal deposit (CRN 389) within the furnace hearth abutted the remaining north-western wall and was interpreted as the remains of fuel used durings another phase of furnace's use after the 'breaking open' suggested by Deposit 387. This latter was sealed by a 31mm-thick deposit of dark grey silty clay containing frequent charcoal flecks and occasional small pieces of scorched clay (CRN 386), interpreted as the residue from a smelting event, as was a similar, adjacent, stratigraphically equivalent layer (CRN 388) consisting of mid red-brown silty clay with occasional charcoal flecks and scorched clay inclusions. A thin (20mm) layer of mid red-scorched clay with a grey upper surface (CRN 385), interpreted with confidence as part of a collapsed inner furnace wall, overlay both of the above-described contexts and appears to be contemporary with a 40mm thick charcoal rich deposit (CRN 381). This deposit may have marked the end of use for furnace 310/313, as it suggested the beginning of the disintegration of the furnace structure. It was covered by a 0.65m-thick deposit (CRN 384) consisting of red-baked brickearth containing lenses of yellow brickearth, grey-scorched clay and occasional fragments of 'tapping' and 'non-tapping' iron slag up to 10cm in size.

This deposit was interpreted, again with confidence, as the remains of the demolished furnace walls, as was an adjacent deposit (probably the same) with similar contents and appearance (CRN 383), which was a 50mm-thick dark grey-brown clay-silt with abundant 'tapping' and 'non-tapping' iron-slag fragments of up to 15cm in size, along with moderate scorched clay and occasional charcoal inclusions.

These deposits (CRNs 384 and 383) were sealed by a 63mm-thick spread of mid brown silty clay (CRN 382) containing moderate charcoal flecks, occasional burnt clay fragments of up to 5cm in size and 'non-tapping' iron slag pieces of up to 6cm. This deposit was very similar (possibly the same) as another layer (CRN 381), which for the most part overlay the natural clay southeast of the furnace and consisted of 61mm-thick dark grey-brown silty clay containing moderate charcoal flecks and occasional 'tapping' iron-slag fragments of up to 5cm in size. Both deposits were interpreted as discarded waste materials from the smelting process undertaken in an adjacent furnace or furnaces.

Plate 73 looking north at Furnace 313 after excavation (white section of scale equals 0.5m)

Plate 74 looking southwest on the partly excavated Feature 232 showing the artificial baulk (overlaid by two metre scale). The baulk contained two rows of furnaces, the separating space between them filled with brickearth.

Furnace 309 (also recorded as 373) (Plan Fig. 9a, Section Fig. 51 s.26.62)

Furnace 309/373 was exposed some 0.65m south-west of demolished furnace 310/313 (see **Plan Fig. 9a**). It comprised a 51mm-thick compact basal deposit of dark red silty clay (CRN 231), interpreted as the base or foundation for furnace 309/373. It underlay a compact 62mm-thick mid red-brown scorched clay deposit with infrequent charcoal flecks (CRN 248) and interpreted as a base reinforcement or re-laid floor. Both floor-like deposits were shaped to form a shallow, bowl-like depression in the base of the furnace chamber (see below).

Plate 75 looking north at Section 26.62, Furnace 373/309 (two-metre scale).

The upper floor-like deposit (CRN 248) was cut by Posthole 307 **(Section Fig. 46 s.22.64)**, which was circular in plan (0.21m diameter), had vertical sides, a base tapering to a point and was 0.48m deep. Its fill consisted of a substantial layer (0.21m-thick) of metallic grey crushed iron slag with occasional soil and burnt clay inclusions (CRN 246), which also extended over much of the uppermost base layer (CRN 248) and abutted (and therefore post-dated) an irregular but mostly vertical arrangement of red-scorched burnt brickearth (CRN 363), which, along with three other similarly arranged deposits (CRN 364) mid brown-scorched clay-silt, (CRN 361) bright yellow-pink scorched brickearth and (CRN 360) mid red-scorched brickearth, had clearly been deliberately shaped to form the supporting walls and archway for a furnace.

Plate 76 looking north at the exposed floor in front of Furnace 373 and cut by Posthole 307 (only lower part visible at top).The floor of demolished Furnace 313 is visible to the left (white section of scale equals 0.5m)

Posthole Fill (CRN 246) was sealed by Deposit (CRN 247) (see **Sections Fig. 43 s.21.51 and Fig. 45 s.22.53**). All these deposits were re-used materials, presumably from adjacent redundant furnaces. A fourth deposit in this group (CRN 362) was dissimilar as it consisted of dark grey silty clay containing abundant amounts of large ‘tapping’ and ‘non-tapping’ iron slag fragments, which and been used to make the smooth inner surface of the furnace’s southern wall. The entrance to opening in the furnace was from the north (see below), which was therefore left exposed (see **Section Fig. 51 s.26.62**).

Plate 77 looking north at the arched doorway of Furnace 373). This furnace was unique as iron-slag fragments were used in its construction (red section on scale = 0.5m).

The inner roof/’ceiling’ of the furnace was formed by an arched layer of intensely scorched, bright red-yellow silty clay

Context (CRN 367) with a maximum thickness of 0.12m and which formed, along with Deposit (CRN 362), an inner, dome-like chamber. Deposit (CRN 246), discussed above, may have been a third furnace-flooring layer or may have been residue from the smelting process. It was sealed within the furnace chamber by 72mm-thick mid orange-scorched clay with yellow patches and occasional iron slag and nodular flints inclusions (CRN 247), again possibly a flooring layer or the result of a smelting event.

Plate 78 looking west at Deposit 247 (scorched clay debris in Furnace 373 (white section of scale equals 0.5m).

This underlay a 0.15m-thick layer of compact black silty clay with very frequent flint cobbles and charcoal fragments (CRN 372), almost certainly the result of unused charcoal fuel having been raked out of the shallow bowl at the furnace base. Similarly, a 53mm-thick overlying accumulation of dark grey silty clay with moderate charcoal flecks and occasional burnt clay fragments (CRN 371) was interpreted as residue from the smelting process.

Plate 79 looking west at Deposit 247 (0.2m-scale & red section of vertical scale equals 0.5m)

The deposit sequence overlying deposit (CRN 371) within the furnace chamber consisted of (CRN 370) (0.11m-thick dark red-scorched clay with occasionally yellow-scorched clay fragments and iron slag inclusions of up to 5cm), (CRN 369) (0.24m-thick mid grey-brown silty clay with occasionally charcoal, iron slag and scorched clay inclusions) and (CRN 368) (0.27m-thick red-scorched clay, probably collapsed material from the furnace chamber entrance). Deposits (CRN 370 and 369) probably represented the remains of smelting events within the furnace. The dome-like structure of the furnace measured 1.13m in height, had an internal diameter of 0.37m at the base of the chamber, an overall basal diameter of 0.64m.

Plate 80 looking west at Furnace 373/309 (white section of scale equals 0.5m).

Following the abandonment of furnace 309/373 the northern, open side of the construction pit, by which the furnace opening was accessed (**see Section Fig. 51 s.26.62**), was filled by three deposits, (CRNs 366, 365 and 374). An inverted wedge-shaped (in section) deposit of light yellow brickearth (CRN 366) with a basal width of 0.32m and tapering to a point at a height of 0.76m appeared to have been deliberately inserted as part of a supporting wall for adjacent furnace CRN 310/313. Abutting it immediately to the north was a vertically deposited 0.11m-thick layer of compact red-scorched brickearth (CRN 374), which, like the layer it abutted, formed part of the outer, northwest wall of furnace 310/313. The remaining, fissurelike open part of the access area for furnace 310/313 was filled by compact light yellow brickearth (CRN 365). This may have been a compacted dump deposit but may equally have been an overhanging part of the furnace 309/373 roof structure.

Plate 81 looking southwest showing, to the left, Section 22.64 (Fig. 64) and the upper section of Posthole 307. A burnt clay furnace floor is visible to the right. Above the furnace floor a 'tongue' of iron slag extends from the furnace hearth to the posthole (white scale section = 0.5m).

Furnace 308 (also recorded as 358) (Sections Fig. 51 s.26.62; Fig. 45 s.22.53)

The construction cut extension 306 for the furnace formed a sub-oval pit with moderately sloping sides and a concave base and was effectively an extension of construction cut [CRN 232]. It measured 0.67m north-east/south-west by 0.64m north-west/south-east, had a maximum depth of 0.45m and accommodated furnace 308/358. It either abutted or cut the extreme southern edge of furnace 309/373, and may have superseded it, although concurrent use was also possible.

The basal deposit in extension cut 306 consisted of a slumped deposit of 52mm-thick dark red inclusion-free silty clay (CRN 305), interpreted as a foundation layer for furnace 308/358, which adjoined/abutted furnace 309/373 (**Sections Fig. 51 s.26.62; Fig. 45 s.22.53**). It underlay a similarly slumping, 52mm-thick mid red-orange scorched silty clay (CRN 304), also interpreted as a flooring layer. It was partly covered by a thin (20mm) compact deposit of bright yellow-brown scorched clay, interpreted as the final furnace floor layer (CRN 230). Natural, *in-situ* clay formed the south wall of the furnace and the north wall was formed by a cut though the north wall deposits of furnace 309/373 (see CRNs 364, 363 and 360 above). The inner face of the furnace chamber was recorded as a CRN 308/358. The orange and grey scorched clay (CRN 359) adjoining those deposits was almost certainly the result of exposure to high temperatures.

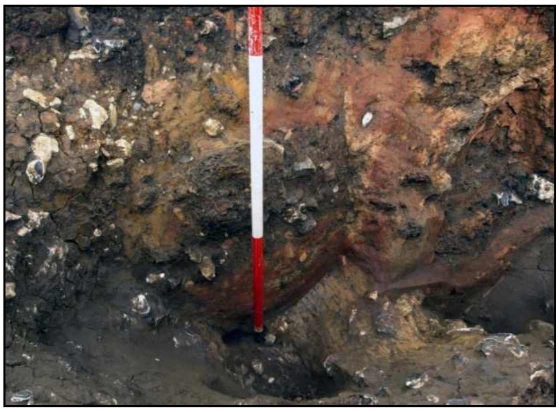


Plate 82 looking northeast at the section through construction cut extension 306 (Section 22.53, Fig. 45), white scale section = 0.5m.

The primary fill (as opposed to underlying structural deposits) within the furnace 308/358 chamber consisted of 0.19m-thick mid orange slightly scorched clay containing yellow lenses of brickearth, occasional iron slag fragments and nodular flints (CRN 247), interpreted as collapsed material from the inner lining of the chamber that accumulated prior to the first smelting event. It underlay a substantial quantity (0.48m thick) of compact dark grey-brown silty clay containing frequent nodular flints, frequent scorched clay lumps, moderate iron-slag fragments, occasional oyster shells and moderate charcoal flecks (CRN 245), this deposit, derived from probable deliberate backfilling of most of the lower part of the furnace chamber. It contained, mostly deeply embedded in it, a massive, semi-cubic mass of iron slag (CRN 357) measuring about 0.35m x 0.32m x 0.39m, possibly residue left after the iron bloom (the desired product) had been broken out or, more probably, a dump deposit. It underlay a diagonal (in section) 0.23m-wide layer of yellow brickearth containing many large fragments of orange-red scorched clay and occasional charcoal flecks (CRN 229), interpreted with confidence as parts of the furnace's wall and roof that had fallen in during the breaking out of the bloom and later. The uppermost fill in the furnace chamber comprised 0.51m-thick mid yellow-grey silty clay with occasional inclusions of charcoal (CRN 227), the fill as a whole probably being dumped loose, the waste material was generated during part of the smelting process nearby.

Plate 83 looking northwest on section through demolished Furnace 308/358, where floor and wall fragments were preserved underlying industrial waste deposits and overlying solidified *in-situ* and once molten iron slag (0.2m scale)

A dump-filled pit or, more likely, a dump-filled depression [CRN 233] appeared to cut or overlay Deposit (CRN 227) in furnace 308/358 and also appeared to cut or overlay the remains of furnace 310/313 (see **Sections Fig. 51 s.26.62 and Fig. 52 s.27.63)**, the two sections intersecting at right angles). However, it is more likely that Cut 312, which was separated from [CRN 233] only by a thin layer (CRN 381), is more plausibly identifiable as part of the overall construction cut [CRN 232] for the sunken-floored structure that, over a presumably long period of use, housed furnaces 396, 310/313, 308/358, 309/373 & 474 and in time become a depression or rubbish pit recorded as CRN 233.

The primary fill (CRN 241/226) in Pit [CRN 233] exposed in **Section Fig 51 s.26.62** (and also in **Section Fig. 49 s.24.57**) consisted of compact 0.25m-thick dark grey-brown silty clay containing moderate inclusions of iron slag fragments, frequent burnt clay fragments, nodular flints and occasional charcoal flecks, along with scorched sand stones and flints (CRN 241). This was almost certainly dumped industrial waste from the smelting process, as were the overlying layers (CRNs 356, 355, 239/219, 225 and 234/269), which consisted of (respectively in bottom-to-top stratigraphic order): 0.17m-thick mid brown silty clay (CRN 356); 0.23m-thick mid grey-brown silty clay with moderate charcoal fleck and 'tapping' iron-slag fragment inclusions, occasional natural clay inclusions, small pieces of daub and very occasional burnt flints (CRN 355); 0.23m-thick firm grey-black silty clay with frequent inclusions of scorched clay, moderate iron slag fragments, occasional nodular flints and moderate charcoal flecks (CRN 239/219); 73mm-thick dark grey silty clay containing occasional flints and frequent charcoal flecks (CRN 225) and, sealing that, 0.18m-thick dark grey-brown clay-silt containing moderate burnt clay fragments, charcoal flecks, occasional iron-slag fragments and very occasional flints (CRN 234/269). A 0.37m deep, 0.12m diameter posthole [CRN 224] cut the latter and contained compact dark grey silty clay with occasional small scorched daub, charcoal flecks, iron-slag and flints inclusions. The posthole fill was sealed by another dump deposit (CRN 222) of 50mm-thick dark grey silty clay containing moderate burnt clay fragments, moderate iron-slag fragments and occasional burnt flints. This layer, which immediately underlay topsoil, produced eight potsherds with a date-range of *c*. 50 BC to *c*. AD 25, suggesting that the underlying furnaces dated to the earlier part of the Late Iron Age.

It should be noted that the deposit sequence CRNs 226/241 to 222 inclusive formed part of the fills of the large, sub-rectangular sunken-floored structure D (see **possible iron - ore roasting area/ smithing hearth** within Structure D below).

The other exposed section through this deposit sequence (**Section Fig. 52 s.27.63**) revealed ten layers (CRNs 380, 242, 379, 240, 378, 377, 238, 376, 375, 237 and 236). Some of these were probably the same as stratigraphically equivalent deposits exposed in **Section 26.62**, but the presence of furnace 310/313 at the sections point of intersection made this impossible to ascertain. The deposits consisted of, again respectively in reverse (bottom to top) stratigraphic order: 0.19m-thick dark brown silty clay containing moderate charcoal flecks, angular flints nodules occasional burnt clay (CRN 380, overlaying CRN 381, see above); 0.25m-thick dark brown silty clay with moderate contents of iron slag, scorched clay fragments and occasional charcoal flecks (CRN 242); 0.17m-thick grey silty clay with abundant amounts of nodular flint, occasional iron-slag fragments and charcoal flecks (CRN 379); 0.15m-thick yellow-brown silty clay with moderate nodular flint contents and occasional iron-slag, scorched clay and charcoal fragments (CRN 240); 0.11m-thick mid grey-brown silty clay containing moderate quantities of nodular flint, frequent 'tapping' and 'non-tapping' iron-slag fragments, some with burnt clay attached, along with moderate inclusions of red-scorched clay in small pieces (CRN 378); 0.16m-thick mid grey-brown silty clay with occasional charcoal flecks, moderate inclusions of burnt clay, occasional iron-slag fragments and occasional and nodular flints (CRN 377); 0.2m-thick mid dark brown silty clay with frequent iron-slag, burnt clay and occasional tabular flint inclusions (CRN 238); 0.12m-thick mid grey-brown silty clay with occasional inclusions of charcoal flecks and 'tapping' iron-slag fragments and moderate amounts of tabular flint (CRN 376); 0.25m-thick dark grey-brown silty clay containing frequent 'tapping' and 'non-tapping' iron-slag fragments, moderate quantities of nodular flint and charcoal flecks and occasional small pieces of scorched clay (CRN 375); 92mm-thick black silty clay with frequent charcoal flecks, occasional iron-slag fragments and nodular flints (CRN 237) and, as the uppermost deposit, a 0.13m-thick dark grey-brown silty clay containing moderate amounts of charcoal and scorched clay fragments, frequent iron-slag fragments and occasional sand stones and nodular flints, some scorched (CRN 236).

The ubiquitous presence of scorched clay, iron slag, charcoal and scorched flints within the above-described deposits sequence suggests that iron production continued in the immediate vicinity on the site and that the sunken-floored chamber in which the furnaces were built was used for the disposal of the waste after they had been abandoned.

Furnace 474
(**Plan Fig. 9a, Sections Fig. 41 s.20.49 Fig. 42 s.20.50 and Fig. 58 s.60**).

Furnace 474 laid approximately one metre north-west of furnace 310/313 and was only partly excavated. Its structure comprised a 0.78m deep construction cut extension/access pit [CRN 315] exposed only in section (**Section Fig. 41 s.20.49**) and cutting natural clay (CRN 500). Another cut [CRN 162], which was identified by the excavator as almost certainly the same, contained two spatially separate basal layers (CRNs 280 and 316) and was considered to be part of construction cut 232.

Plate 84 looking southwest at a 'non-tapping' furnace 474, showing its setting in re-deposited brickearth, presumably to minimise heat loss (0.2m scale).

These layers consisted respectively of 22mm-thick black charcoal flecks and fragments and charred charcoal powder (CRN 280), and 0.12m-thick dark grey-brown silty clay containing occasional burnt clay fragments (CRN 316). The former almost certainly represented industrial waste from a previous smelting event, the latter probably accumulated as construction debris accumulated at the edge of the pit base. The secondary layers in the construction extension pit comprised 31mm-thick is soft, friable, dark red-orange clayey silt (CRN 279), probably construction or demolition debris, and 0.23m-thick compact, dark grey brown brickearth (CRN 278) with moderate flint inclusions. These deposits, all indicative of previous industrial activity on the site, were overlaying an unexcavated deposits (CRNs 166, 288, 289, 284) and (CRN 165) of yellow natural brickearth; (CRN 284) of compact dark red/orange-scorched clay-silt silty clay that effectively formed the hearth base and outer walls for furnace 474 and was contained on its north-western side by re-deposited very compact, 0.54m-thick pale yellow brickearth (CRN 287), the latter seemingly used to minimize heat loss. This was abutted by/or abutted (the stratigraphic relationship was unclear) a compact, 30mm-thick layer of pale orange-yellow scorched silty clay (CRN 166), which was abutted by compact dark red-orange scorched silty clay (CRN 288, unexcavated), these deposits forming part of what was effectively a laminated furnace wall, as was yet another wall lining layer of pale yellow scorched silty clay (CRN 289). The final inner lining layer (CRN 284) within the furnace chamber consisted of 80mm-thick light grey scorched clay.

The primary non-structural deposit (overlying basal deposit CRN 283 within the furnace chamber) comprised a 0.12m-thick spread of tabular iron slag (CRN 282) with a characteristic rippled upper surface, indicating that, although originally liquid, it had solidified *in situ*, indicating that this was a 'non-tapping' furnace. It was sealed by a thick (0.62m) layer of compacted tabular iron-slag and smithing iron-slag fragments (CRN 281), interpreted with confidence as industrial waste thrown into the abandoned, open furnace from adjacent works following the breaking out of the iron bloom.

The outer, surviving parts of the furnace, and, on the eastern margin, the industrial waste (CRN 278) overlying the furnace, was sealed by dumped waste layers, and the fill of a large pit (see Pit 317/216 in 'The Second Non-Structural Phase' below). The contents of the waste layers suggested they represented two further and separated phases of industrial waste disposal. The lower deposit (CRN 164, **Fig. 42, Section 20.50, Fig. 58, Section 50**) consisted of 0.23m-thick dark brown clay-silt containing moderate quantities of scorched clay and flint fragments, the upper (CRN 163, **Fig. 58, Sections 60 and 61**) consisted of 0.38m-thick dark brown clay-silt with frequent flints and moderate iron-slag fragments and produced sixteen potsherds with a date-range of *c.* 200/150 BC – *c.* AD 100. This deposit underlay top/ploughsoil.

Backfills and other deposits associated with furnaces 308/358, 309/373, 310/313, 396 and 474 within sunken-floored structure C

(Plan Fig 9, Sections Fig. 43 s.21.51, Fig. 44 s.22.52, Fig. 45 s.22.53, Fig. 46 s.22.64, Fig. 50 s.24.58, Fig. 51 s.26.62, Fig. 52 s.27.63)

Construction pit [CRN232/162/233] had the form in plan of an irregular oval measuring 4.75m north-east/south-west and 3.33m north-west/south-east. It was steep sided with a maximum depth to its flat base of 0.85m and was almost certainly cut to create the sunken, enclosed area for at least five iron-smelting furnaces (CRNs 308/358, 309/373, 310/313, 396 and 474). It should be noted that the addition or previous existence of adjoining pits [CRNs 215/318 and 317/216], along with a seemingly continuous process of furnace demolition, the re-use of the demolished materials and the limited amount of excavation undertaken meant that the stratigraphic sequence was impossible to ascertain in its entirety.

The remains of furnaces 308, 309, 310 and 396 and the overlying fills have been discussed in detail above (see Sections **Fig. 51 s.24.58 and Fig. 52 s.27.63**). The deepening of the construction cut 232 for furnace 309, which was exposed in Section **s.26.62**, and which was probably the same, or at least indistinguishable from the general construction cut, was also identified in Sections **(s.21.51, s.24.58 and s.27.63)**, and almost certainly represented the much-disturbed floor of the sunken-floored structure in which the furnaces were built. The primary deposit (CRN 231), a compact dark red silty clay interpreted as the basal platform or foundation for Furnace 309/373 was exposed in Sections **s.21.51** and **s.27.63**, as was the overlaying deposit (CRN 248), a mid red-brown scorched silty clay with occasional charcoal flecks and interpreted as furnace base reinforcement or a re-laid floor. However, the primary deposit (CRN 228) exposed in Section **s.24.58**, where the depression [CRN 233] in construction cut 232 was 0.53m deep, consisted of 0.22m-thick mid grey brown silty clay containing frequent flints and moderate burnt clay fragments. It was overlain by a 0.43m-thick accumulation of dark grey-brown silty clay containing frequent nodular flints and scorched burnt clay fragments, moderate iron-slag and charcoal fragments and occasional oyster shells (CRN 245). This deposit was also exposed as the fifth layer in pit [CRN 232/233] in Section **s.21.51**.

The identification of the structural and primary layers, recorded as the same deposit (CRN 246) in Sections **s.26.62** and **s.21.51** is not plausible, as that deposit in the former section comprised a basal deposit of dark metallic blue-grey crushed iron slag lying inside the furnace 309 chamber, whereas in the latter it comprised an external 0.15m-thick dump deposit of grey-brown clayey-silt containing occasional iron-slag fragments and flints. Similarly, deposit 247 is erroneously recorded as different but mutually scorched clay-dominated internal layers within both furnaces 308 and 309 in Section **s.26.62**, as a deposit overlying posthole fill 246 in Section **s.22.64** and as a pit fill in Section **s.21.51** (although these duplication do not in any way negatively affect the overall interpretation of the furnaces' structure and development). Several of the overlying fills exposed in Section **s.21.51** could only be provisionally equated with similar deposits in Section **s.26.62**.

Overlying the deposit recorded as (CRN 246) in Section **s.21.51** was a 0.18m-thick deposit recorded as CRN 247 (as was a dissimilar deposit in Section **s.26.62**), but in this case consisting of mid grey-brown clay-silt with frequent contents of large flint nodules, burnt clay and a small, medium-sized and large iron-slag fragments. This was sealed by a 0.17m-thick band of dark grey-brown silty clay containing frequent nodular flints and scorched burnt clay fragments, moderate iron-slag and charcoal fragments and occasional oyster shells (CRN 245, also present in Sections **s.22.52** and **s.24.58**, although in Section **s.22.52** it is the primary fill of, rather than cut by construction cut 232. This deposit was probably the same as a stratigraphically equal and almost identical, 0.38m-thick layer (CRN 243, also present in Section **s.24.58**) accumulated within a shallow dip in the south-east edge of the construction pit.

Deposits 245 and 243 both underlay a substantial (0.53m-thick) layer of dark brown silty clay with moderate charcoal and nodular flint inclusions, along with moderate amounts of scorched clay, occasional iron-slag fragments and burnt flints (CRN 244). Overlying this deposit was a 0.21m-thick layer of dark brown silty clay with moderate contents of iron slag, scorched clay fragments and occasional charcoal flecks (CRN 242, also identified in Section **s.27.63**, see **Fig. 52** discussion above). The deposit sequence overlying this consisted of nine fills: CRNs 285, 241, 240, 239, 235, 238, 237, 236 and 234. These consisted of, respectively, again in bottom-to-top order: 0.15m-thick mid grey-brown silty clay with moderate scorched clay patches and occasional nodular flints, iron-slag and charcoal flecks (CRN 285); 0.17m-thick dark grey-brown silty clay with moderate iron slag, frequent burnt clay and nodular flints and occasional charcoal flecks, burnt sandstone and burnt flint (CRN 241, identified as such in Sections **s.22.52** and **s.24.58**, stratigraphically equivalent to CRN 285, and also identified in Section s**.26.62** as CRN 226, see **Fig. 51**); 0.38m-thick yellow-brown silty clay with moderate nodular flint contents and occasional iron-slag, scorched clay and charcoal fragments (CRN 240, also identified in Sections **s.22.52, s.24.58** and **s.27.63**, see **Figs. 44**, **50** and **53**); 0.17m-thick grey-black silty clay with frequent burnt clay inclusions, moderate charcoal and iron-slag fragments and occasionally flints (CRN 239, also identified in Sections **s.22.52, s.24.57** and **s.24.58**); 0.17m-thick mid dark brown silty clay with frequent iron-slag, burnt clay and occasional tabular flint inclusions (CRN 238, also identified in Section **s.27.63**, see **Fig. 52**); 0.24m-thick mid brown silty clay with occasional nodular flints and iron slag inclusions (CRN 235, stratigraphically equivalent to CRN 238); 88mm-thick black, very charcoal-rich silty clay containing occasional flints and iron-slag fragments (CRN 237); 0.2m-thick dark grey-brown silty clay with moderate contents of small charcoal, scorched clay and frequent iron-slag fragments, occasional sandstones and flints (burnt and un burnt in both cases (CRN 236); and 0.28m-thick black, very charcoal-rich silty clay containing frequent iron-slag and occasional scorched clay fragments (CRN 234).

The Second Non-Structural Phase

Pit 317/216

(Plan Fig. 9a, 9d, Sections Fig. 41 s.20.50, Fig. 47 s.23.54, Fig. 58 s.60 and s.61)

Plate 85 looking east at excavated Pit 317/216 with sunken-floored structure C and Furnace 474 in background (two metre scale)

Part of a large, roughly oval pit [CRN 317/216] measuring over 5.8m north-south and 3.32m east-west, with a maximum depth of 0.31m was exposed adjoining and intersecting the north-western part of sunken-floored structure C, although the shape in plan of pit cut suggested it had been positioned in order to avoid that structure.

Plate 86 looking northeast at excavated Pit 317/216. (two metre scale)

The pit's main and primary back fill (CRN 163, also recorded as CRN 217) consisted of 0.31m-thick dark brown clay-silt with frequent flints and moderate iron-slag fragments and produced sixteen potsherds with a date-range of *c.* 200/150 BC – *c.* AD 100. A thin (44mm) overlying layer of dark grey-brown silty clay (CRN 218) containing frequent flints was probably naturally formed colluvium and directly underlay topsoil.

The Second Structural Phase

Sunken - floored structure D indicated by Construction cuts 215, 318, 400, 174 and 211 housing furnace 210 and demolished hearth in Pit 400

(Plan Fig. 9a, 9d, 9g, Sections Fig.40 s.19.79, Fig. 48 s.24.56, Fig. 49 s.24.57, Fig. 50 s.24.58, Fig. 51 s.26.62, Fig 53 s.28.65 and Fig. 55 s.29.68)

The construction cut [CRN 215] for this structure effectively formed the western end of the large, approximately east-west aligned sub-rectangular sunken-floored structure housing furnaces 210 and 100 discussed below and also recorded as CRNs 318 and 174 (see below). The sides of the sunken-floored structure were steep, sloping gradually to a mainly flat, 0.37m-deep base and the structure overall (including the parts recorded as CRNs 174 and 318) measured 2.32m north-south and 5.35m east-west, although its south-western corner had been removed by the addition of another furnace construction cut [CRN 181] and its south-eastern corner by furnace construction and access Pit 210 (see below).

Plate 87 looking northwest at partially excavated construction cut 215/318 in s.28.65 (2m scale)

In respect of the following discussion it should be noted that Section **Fig. 49 s.24.57** is an approximately southern continuation of Section **Fig. 51 s.26.62** and was cut at a right angle to Sections **s.24.56** and **s.24.58**.

The primary fill (CRN 226) within the deposit sequence exposed in Section **Fig. 49 s.24.57** was probably a mixture of Deposits 227, 241 and 239, as shown in Section **Fig 49 s.24.57**, Section **Fig. 51 s.26.62** and Section **Fig. 50 s.24.58**. It consisted of 0.15m-thick mid yellow-brown silty clay with moderate burnt clay and occasionally flints. This deposit sequence was associated with waste dumping activity in adjacent sunken-floored structure C and was truncated by principal construction cut 215 for sunken-floored structure D here discussed, the primary fill of which (CRN 221) consisting of a 40mm-thick horizontally deposited layer of compact dark grey silty clay containing moderate charcoal flecks and occasional flints. This was interpreted with confidence as a tread deposit accreted on the Structure D floor. An overlying, similarly horizontally deposited band of 22mm-thick yellow-grey inclusion-free silty clay (CRN 220) was also interpreted as a tread layer, with the low level or absence of cultural and industrial inclusions in both suggesting that these layers were associated with the building of sunken-floored structure D rather than its use. However, a subsequent 40mm-thick horizontal layer (CRN 219) of mid red-grey scorched silty clay containing frequent small pieces of iron slag, occasional charcoal flecks and small iron-ore fragments, indicated that the structure was then in use for iron production. The presence of iron ore fragments, not commonly evident elsewhere on the site, suggested a use as an iron-ore roasting area or a smithing hearth (see Appendix I), probably related to nearby furnace 210. This interpretation was supported by the presence of a 0.73mm-thick, charcoal-rich layer of dark grey silty clay (CRN 225), itself covered by a 0.18m thick accumulation of mid grey-brown clay-silt (CRN 268) containing moderate charcoal fragments and occasional flints, some burnt, this deposit representing either discarded industrial waste or the first phase of the deliberate backfilling of the structure or, most likely, both. Similarly interpreted was an overlying, unevenly deposited, 0.22m-thick layer of dark grey-brown clay-silt (CRN 269, also recorded as CRN 234), which had inclusions of scorched clay fragments, occasional iron-slag fragments and occasional flints. This deposit was cut by a previously described post-hole [CRN 224], (see **Section Fig. 51 s.26.62 and Fourth structural phase**). Three overlying layers (CRNs 222, 270 and, uppermost, 276) consisted of, respectively: 16mm-thick dark grey silty clay containing moderate burnt clay fragments, moderate iron-slag fragments and occasional burnt flints (CRN 222); 0.65m-thick dark grey-brown silty clay containing frequent charcoal fragments, occasional iron-slag fragments and small flints (CRN 270), and 0.22m-thick dark grey clay-silt (CRN 276) containing moderate charcoal and iron-slag fragments, occasional scorched clay fragments and occasional flints. These deposits were interpreted as deliberately discarded waste material thrown into the then redundant sunken-floored structure D.

Furnace construction cut 211
(Plan Fig 9a, 9d, Section Fig. 40 s.19.79)

The uppermost four, largely horizontally deposited layers (CRNs 268, 269, 270 and 276) exposed in the part of the sunken, flat-floored structure D exposed in the proposed iron smithing and ore roasting area extended southward and slumped down into a furnace construction cut [CRN 211]. This cut was effectively an extension of main construction cut 215 and therefore formed the south-eastern part of sunken-floored structure D, of which the furnace was part. construction cut 211 formed an irregular, 1.54m-deep oval pit measuring 1.34m north-south and 1.45m east-west, with three deposits (CRN 261, 260 and 262), consisting respectively of 0.22m-thick yellow-grey clay silt with frequent burnt clay patches underlying

0.15m-thick mid yellow-brown brickearth containing frequent burnt clay patches, both deposits abutted by 0.33m-thick concave layer of dark red-scorched brickearth. The first two deposits (CRNs 261 and 260) were interpreted as packing layers, almost certainly used to support the primary wall deposit (CRN 262), which also extended downwards in a concave shape to form the primary furnace floor. The remainder of the wall was made up of four thin, abutting, horizontally arranged layers (CRNs 263, 264, 265 and 266), comprising, respectively, 41mm-thick light yellow-brown scorched burnt clay-silt, 20mm-thick mid grey scorched silty clay, 33mm-thick bright yellow-brown scorched clay-silt and 15mm-thick mid grey scorched silt-clay, the latter forming the furnace inner wall lining.

Plate 88 looking west at excavated Furnace 210 (white section of large scale equals 0.5m, small scale = 0.2m)

The concave furnace base contained a 0.22m-thick accumulation (CRN 267) of dark grey-brown clay-silt with frequent charcoal fleck inclusions and large fragments of 'non-tapping' iron slag', including one very large fragment, probably once molten iron slag that solidified *in situ* following the final smelting event. An overlying layer of 0.23m-thick mid grey-brown silty clay (CRN 268) contained moderate charcoal fragments and occasional flints, some scorched, and was interpreted as industrial waste dumped into the broken-open and abandoned furnace. It was sealed by similarly interpreted, 0.22m-thick dark greyish brown clayey silt containing moderate burnt clay, charcoal flecks, occasional 'tapping' iron slag and nodular flint stones. It underlay a 0.12m-thick band of dark grey-brown silty clay (CRN 270) with frequent inclusions of charcoal and scorched clay fragments and occasional iron-slag and small angular flints. This deposit, which was also considered to be a dump deposit, was partly overlain by a 0.15m-thick layer (CRN 271) of light yellow-brown scorched clay (interpreted as a collapsed part of the furnace superstructure). An overlying sequence of six similar deposits (CRNs 272, 273, 274, 276, 275 and 277) consisted of, respectively: 0.21m-thick mid grey-brown clay-silt with occasional burnt clay, charcoal fleck and small flint inclusions (CRN 272); 0.19m-thick mid grey-brown clayey silt with inclusions of scorched clay, charcoal flecks, occasional iron-slag pieces and nodular flint stones Context (273); 0.19m-mid grey-brown clayey silt with frequent inclusions of burnt clay, occasional iron-slag fragments and tabular flint stones (CRN 274); 0.22m-thick dark grey clay-silt containing moderate iron-slag fragments and charcoal flecks, occasional flints and burnt clay (CRN 276); 0.1m-thick mid grey-brown silty clay with moderate contents of charcoal flecks, occasional iron-slag fragments and variously-sized flints (CRN 275) and 70mm-thick, dark grey-brown clay-silt containing moderate burnt clay lumps, charcoal flecks and occasional iron-slag fragments and flints (CRN 277), this underlying topsoil. The brickearth packing deposits (CRNs 260 and 261) representing the southern part of furnace 210 was intersected by the construction cut [CRN 209/401/402] for furnaces 292 and 353. As this is post-dated and therefore superseded sunken-floored structure D of which construction cut 211 was a former part. This comprised a later, third structural phase and is discussed below.


Plate 89 looking west at Section 19.79 (Fig. 40) showing construction cut 211 (part of sunken-floored structure D), with access pit 207 and construction cut 209 (for sunken-floored structure F) visible on the extreme top left (horizontal two-metre scale and vertical 0.2m scale)


Plate 90 looking west at Section 19.79 (Fig. 40), with Furnace 210 (to the right) in sunken-floored structure D and access pit 207 with construction cut 209 (part of sunken-floored structure F) to the left (two-metre scale).


Plate 91 looking southeast at Section 29.68 (Fig. 55) through construction cut 318 with extended cut 400 and the remains of a probable tapping furnace indicated by the same context number 400 (two-metre scale)

Construction cut 318

Also excavated and recorded as part of sunken-floored structure D represented by construction cuts 215/174 were remains sample-excavated in a 1.3m-wide slot cut through the structure's east-central part (**Plan Fig. 9a, 9d, Sections Fig. 53 s.28.65 and Fig. 55 s.29.68**). This revealed, at its base, what appeared to be a waste-filled pit [CRN 400].

Plate 92 looking northwest at Section 28.65 (Fig. 53), showing construction cut 318/400, with the solidified 'pool' of iron slag (CRN 332) at its base (0.5m-long red and white scale sections).

A more plausible explanation is that it was a depression in construction cut 215/318, probably formed by the construction of a furnace and the subsequent breaking out from it of the iron bloom. The pit or depression, which was only partly excavated, was sub-oval in plan, 0.62m deep, measured 1.23m north-south and more than 0.65m east-west and had variably sloping, undulating sides and a slightly concave base. Although the two sections formed by the excavated slot were parallel and only 1.3m apart, the large number and complex deposition of the fills within the structure meant that it was for the most part impossible to correlate the two exposed deposit sequences. This was probably because Section **s.28.65** cut through the largely disturbed remains of the furnace and Section **s.29.68** cut through the adjoining industrial waste and demolition layers.

The deposit sequence exposed in the westernmost section **(s.28.65**) comprised a 18mm-thick basal deposit overlying natural clay (CRN 500) and consisting of dark brown silty clay containing moderate charcoal flecks and small fragments of scorched clay (CRN 333), this probably a tread deposit associated with initial activity within the feature. It underlay a solidified but clearly once liquid, 42mm-thick deposit of 'tapping' iron slag (CRN 332) that had accumulated in the base of the pit. This deposit almost certainly identified Pit/Depression [CRN 400] in Cut [CRN 318] as having originally accommodated a possible 'non-tapping' furnace, nearly all of which had subsequently been demolished. The iron-slag accumulation was covered by a 30mm-thick dark grey-brown grey silty clay (CRN 331) containing moderate inclusions of charcoal, iron slag and small flints, and in turn sealed by a substantial (0.27m thick) layer of inclusion-free mid grey-yellow silty clay (CRN 330), almost certainly clay dug out to create a furnace pit and thrown into a conveniently near hole.

Plate 93 looking northwest at Section s.28.65 (close up) solidified 'pool' of iron slag (CRN 332) at its base (0.5m-long red and white scale sections).

It was overlain by two deposits (CRNs 324 and 329), both probably of similar origin as dumped spoil deposit (CRN 330), the former of which consisted of 0.32m-thick dark grey-brown silty clay (CRN 324) containing occasional flints, burnt clay and charcoal flecks, the latter (CRN 329) consisting of 0.33m-thick mid brown silty clay containing occasional charcoal fragments and flints, both perhaps suggesting that preparatory smelting activity (but not yet the production of iron bloom) had commenced nearby. Another probable dump deposit (CRN 328), equated with (CRN 339) in the other section – see below), which overlay deposit (CRN 329) in the northern part of the pit/depression, consisted of mid brown silty clay with frequent large nodular flints, occasional iron-slag fragments of up to 10cm in size and occasional charcoal flecks and natural clay inclusions.

A group of four demolition deposits (CRNs 326, 327, 325 and 323) occupied a 0.24m-deep bowl-like depression within the centre of the above-described deposit sequence, with the large amounts of large iron-slag fragments within Deposits (CRN 325, 326 and 327) suggesting the disposal of industrial waste from nearby smelting furnaces within this feature at this stage.

The four demolition deposits consisted respectively of (in reverse, bottom-to-top stratigraphic order): 0.15m-thick mid red-brown silty clay (CRN 326), 0.11m-thick mid yellow-brown silty clay with occasional charcoal-fleck and nodular flint contents (CRN 327), 0.23m-thick mid grey-brown silty clay with frequent burnt clay and occasional iron slag inclusions (CRN 325) and 82mm-thick mid grey-brown silty clay with occasional contents of scorched clay and charcoal fragments (CRN 323).

The above discussed deposit sequence, interpreted as the result of industrial waste dumping or demolition, underlay what appeared to represent a third phase of deposition represented by four layers (CRNs 322/344, 321, 320/335 and 319). These consisted of, again respectively in reverse, bottom-to-top stratigraphic order: 20mm-thick dark grey-brown silty clay with moderate charcoal flecks (CRN 322), probably the result of silt accumulation within the 0.33m-thick open depression; 0.12m-thick red-brown scorched silty clay with occasional contents of burnt sandstone, charcoal flecks and lenses of burnt clay (CRN 321); 0.24m-thick, dark grey-brown silty clay with moderate contents of charcoal flecks and occasional ‘tapping’ and ‘non-tapping’ iron-slag fragments and small flints, some burnt (CRN 320), and 0.1m-thick red-grey silty clay containing frequent scorched clay and occasional iron-slag fragments (CRN 319).

The deposit sequence exposed in the easternmost section (**Section 29.68**) was markedly dissimilar to the sequence exposed in the opposite section, suggesting that many phases/episodes of waste disposal into the pit took place, possibly over a protracted period, following the abandonment of the furnace attested to by the *in-situ* solidified ‘pool’ of iron slag (CRN 332) at its base.

The pit’s primary fill (**in Section 29.68**) consisted of 30mm-thick dark grey silty clay (CRN 343), containing very large amounts of charcoal in the form of flecks and small fragments, interpreted as discarded or fuel. This deposit may also be equated with primary deposit (CRN 333) (a tread layer) identified in the opposite **Section 28.65** (the two interpretations are not mutually exclusive). The charcoal-rich layer underlay Context (CRN 342) a 0.15m-thick band of dark grey-brown silty clay with moderate burnt flint inclusions (CRN 342), this underlying another charcoal-rich layer (CRN 344), in this case a 20mm-thick dark grey-black silty clay, which, as well contained as much charcoal as (CRN 322) in opposite section and also indicates the beginning of another phase within Cut 318.

Deposits (CRN 343, 342 and 344) were abutted by a large block of iron slag in the northern part of the pit, with a different deposit sequence being evident on the other, northern side of the block. Here, an accumulation of two spatially separated basal deposits (CRNs 341 and 340), consisting respectively of 0.21m-thick dark grey-brown silty clay with moderate contents of fragmented scorched clay and charcoal, and 0.32m-thick mid grey-brown silty clay with occasional charcoal flecks and flint inclusions (CRN 340). Both of the primary deposits were covered by a 0.24m-thick of mid brown silty clay with frequent nodular flint, occasional iron-slag and occasional charcoal fleck inclusions (CRN 339). This deposit was probably the same as (CRN 328) in the opposite section (if so, underlying (CRN 340) equates with (CRN 329). A more extensive and substantial layer (CRN 321), which overlay both deposit sub-sequences, comprised 0.32m-thick red-brown scorched silty clay with occasional contents of burnt sandstone, charcoal flecks and lenses of burnt clay. This deposit was identical in appearance and contents to a 0.12m-thick deposit identified in the opposite section **s.28.65** and was given (perhaps rather speculatively) the same context recording number. A 50mm-thick layer of dark grey silty clay containing much fragmented charcoal (CRN 336) sealed it in this section. This in turn underlay a localised 0.12m-thick spread of mid grey brown silty clay with occasional fragmented burnt clay and iron slag inclusions (CRN 338), which was in turn covered by 0.38m-thick red- grey silty clay, this was sealed by a 0.45mm-thick layer of charcoal-rich grey-black silty clay (CRN 337). The uppermost deposit exposed within this section was a 0.23m-thick band of dark grey-brown grey, silty clay with moderate charcoal, iron-slag and occasional burnt scorched fragments (CRN 334).

As in the case of the opposite section, the overall deposit sequence here lent itself to an interpretation as a sunken-floored structure originally cut to house a furnace, the evidence for which consisted of the fragments of the scorched clay and charcoal fragments present in (CRN 340 and 341), along with the horizontal, semi-laminated deposit sequence lying immediately south of the large iron slag block against which Deposit (CRN 341) rested. The overall deposit arrangement resembled in every detail a disturbed or semi-demolished version of the intact furnaces, with the iron-slag block almost certainly representing the dislodged solidified ‘pool’ of previously molten slag-iron found within the hearth of many ‘tapping’ furnaces. The overlying dump layers, which contain three thin charcoal-rich layers (CRNs 344, 336 and 337), points to multiphase waste disposal probably relating to whole process of cutting the furnace pits, building the furnaces and individual smelting events.

Construction cut 174

Construction cut 174 was exposed in an excavated slot localised in the north-west end of large, sub-rectangular sunken-floored structure D elsewhere represented by CRNs 318 and 215 as previously discussed. Here, the structure’s wall was revealed to slope gradually into a concave base, which was 0.42m deep. Its primary fill (CRN 180) consisted of 11mm-thick, black, charcoal-rich clayey silt, interpreted as waste material discarded into a furnace construction pit in which the furnace had been completely demolished (see below).

Plate 94 looking southeast at the southeast end of Section 17.46 (Fig. 37) showing construction cut 181 of sunken-floored structure E and the southeast wall of Furnace 201 (to the right) abutting the earlier backfills of sunken-floored structure D (two-metre scale with two 0.5m sections).

A similarly interpreted, 0.1m-thick band of dark grey silty clay (CRN 179) containing frequent charcoal flecks and moderate yellow- and orange-scorched clay fragments of up to 4cm in size sealed this layer. This in turn underlay a deposit of 0.23m-thick mid brown silty clay (CRN 177) that had accreted on the north-east pit edge and contained moderate amounts of charcoal and burnt clay fragments, the latter up to 15cm in size. These materials were abutted by a 0.11m-thick mid brown clayey silt (CRN 178) with frequent large scorched clay fragments contents of up to15cm in size, the scorched clay fragments probably derived from a demolished furnace. The overlying, substantial (0.19m-thick) accumulation of mid dark grey silty clay (CRN 176) containing abundant amounts of 'non-tapping' iron-slag fragments of up to 25cm in size, along with occasional burnt clay lumps and nodular flints, these materials certainly derived from a demolished 'non-tapping' furnace. The uppermost deposit in this sequence comprised a 0.24m-thick layer of orange-red scorched clay (CRN 175) with inclusions of orange-red and yellow fragments of scorched burnt clay, nodular flints and charcoal flecks, all these materials interpreted as industrial waste used to backfill an abandoned furnace construction pit, possibly in deliberate preparation for the construction of Furnace 201, which stood in construction cut 181.

Taken as a whole, the stratigraphy sequence associated sunken-floored structure D and the adjoining structures indicated that it superseded sunken-floored structure C, lying immediately to the north, and was superseded by sunken-floored structures E and F, to the west and south respectively (see the discussions of **Furnaces 201, 202, construction cuts 181, 207, 209 and furnaces 208, 353, 292** below).

Plate 95 looking southeast at Section 17.46 (Fig.37) showing third-phase sunken-floored structure E containing Furnace 201(left under scale), Furnace 202 in foreground with the backfill of earlier (second phase) sunken-floored structure D to the extreme left (two-metre scale).

Sunken-floored structure E indicated by construction cut 181, containing furnaces 201 and 202.
(Plan 9a, 9e, 9g, Section Fig. 37 s.17.46, Fig. 38 s.17.47)

This cluster of furnaces, situated in oval sunken-floored structure E formed a discrete group located on the south-western margin of the overall furnace complex. The structure, which measured 5.5m north-west/south-east by 1.82m north-east/south-west end and 2.13m wide (north-south), cut and therefore superseded as a western extension, large sunken-floored structure D (see the construction cut 174 discussion above).

Furnaces 201 and 202

Furnace 201
The primary fill (CRN 182) in construction cut 181 consisted of 0.12m-thick dark red clay, essentially the same type of material used to create furnace floors or basal platforms in the other excavated furnaces (see, for example, CRNs 231 and 305 in **Section Fig. 51 s.26.62**). Here, this material acted as a basal layer for two furnaces (furnaces 201 and 202 as discussed below). Overlying this layer, the base and walls of furnace 201 comprised a sequence of three laminated semi-vertically arranged deposits of various widths (CRNs 205, 183 and 206).

Plate 96 looking southeast at sectioned Furnace 201 (see Section 17.46, Fig. 37). (red/ white sections of scale equal 0.5m)

The outer, north-eastern wall of furnace 201 abutted the previously described deposit sequence in construction cut 174 and consisted of 90mm-wide yellow, inclusion-free brickearth (CRN 205), interpreted as deliberately placed material acting to support the furnace wall and to reduce heat loss from the furnace chamber. It was abutted by 0.12m-thick bright red-scorched inclusion-free clay (CRN 183), interpreted as the first-phase furnace wall and which extended around to form a cylindrical structure with a southwest-facing opening at its base (see **Section Fig. 37 s.17.46**, where the wall was similarly recorded as (CRN 183) outer wall and (CRN 206) inner wall, see below). The surface of the north-eastern part of this wall deposit facing the furnace chamber was scorched to a grey-red semi-vitrified condition, suggesting that it had been exposed to high temperatures and had originally comprised the furnace inner wall, later re-lined. An abutting, 60mm-thick layer of bright grey-pink scorched clay (CRN 206), which also had a smoothed, red-grey semi-vitrified outer surface, was interpreted as the final furnace chamber re-lining.

Furnace 202

Construction cut 181 cut through waste deposits interpreted as the demolished remains of a previous furnace in the southwest part of Section (**Fig. 37 s.17.46**, see construction cut 174 above), but it also cut through natural clay and Clay-With-Flints (CRN 500) in the north-eastern end of **Section Fig. 38 s.17.47**, indicating that the pit had been deliberately extended, presumably to accommodate at least two furnaces (see below).

Plate 97 looking northeast at ‘tapping’ Furnace 202 (see Fig. 38, Section 17.47). Two 0.5m sections on two-metre scale shown.

As in other cases, for example, the above-discussed furnace 201, a sequence of laminated semi-vertically arranged deposits of various widths (CRNs 204, 200 and 203) overlay the basal platform (CRN 182) to form the furnace wall. The outermost deposit (CRN 204) consisted of 0.15m-thick yellow, inclusion-free brickearth, almost certainly deliberately placed to provide support for, and to reduce heat loss from, the completed furnace. It was abutted by 0.12m-thick orange-pink, inclusion-free scorched clay grading towards light grey-white towards the inner surface (CRN 200), where it was exposed to the highest temperatures. No re-lining was evident in this wall, which extended around to form a cylindrical structure with a southwest-facing opening at its base (see **Section Fig. 38 s.17.47**).

Backfills covering and abutting furnaces 201 and 202

Probably contemporary within the furnace wall was a small, localised deposit (CRN 198) overlying the basal platform just outside the furnace opening and consisting of 0.13m-thick mid grey silty clay with frequent bright yellow burnt clay patches, moderate quantities of ‘non-tapping’ iron-slag (average size 3.5cm) and occasional charcoal flecks. This was almost certainly an accretion formed during a smelting event. In Furnace 201 a primary non-structural deposit of 35mm-thick dark grey silty clay (CRN 184) overlying the basal platform (CRN 182) contained frequent charcoal flecks, moderate yellow- and orange-scorched clay fragments and occasional small iron-slag fragments, this deposit probably representing a spread of waste derived from the first or an early smelting event within the furnace. It was overlain by 52mm-thick dark grey silty clay with frequent inclusions of small charcoal flecks and larger amounts of scorched clay (CRN185), this deposit forming a hump-shaped accretion that was probably equivalent to a similar accretion (CRN 198) in furnace 202 (see above).

An extensive and substantial, 32m-thick layer of very charcoal-rich dark grey/black silty clay (CRN 186) covering both accretions (CRNs 185 and 198) contained frequent small yellow-orange fragments of scorched clay lumps and occasional small flints. This charcoal-rich layer extended from the interior of furnace 202, as it did from the interior of furnace 201 and was interpreted as spilled out and/or raked-out waste from the two furnaces, presumably prior to them being re-charged, the waste material then covering the part of the sunken-floored area providing access to their respective openings. A 0.55.m-thick deposit of mid grey silty clay (CRN 199) that covering this layer in the interior of the furnace contained moderate inclusions of small charcoal fragments, orange-scorched clay up to 5cm in size, large nodular flints and occasional 'tapping' and 'non-tapping' iron-slag fragments up to 5cm in size. Taken as a whole, these materials were interpreted as deliberate backfill, probably mixed with waste debris from the last smelting event and rubble from the final breaking out of the iron bloom.

A 0.11m-thick layer of grey-brown silty clay (CRN 188) with frequent charcoal fleck inclusions overlay the extensive charcoal-rich layer within furnace 201 and also contained moderate inclusions of orange and yellow-scorched clay fragments, small flints and occasional inclusions of small pieces of iron-slag. This layer also extended south-westwards into the access area, where it was abutted by a 13m-thick layer of mid grey silty clay (CRN 190) with frequent contents of bright brown scorched clay patches, large fragments of 'non-tapping' iron slag (up to 20cm in size), large nodular flints of measured size and frequent charcoal flecks. This deposit was almost certainly the same as (CRN 188), also recorded as (CRN 187), the differences in appearance and contents probably were local variations. Both were interpreted as a mixture of industrial waste and demolition rubble from the breaking out of iron bloom from the furnace. Coupled with the evident re-lining and re-use of this furnace this suggests that the iron bloom was removed via the basal furnace opening, probably to reduce damage to the furnace wall and minimise the amount of repair required (see **structure A** in Area **F113**, **Section Fig. 20 s.11.33** for another example of probable furnace re-lining and re-use).

The 0.15m-thick, similarly extensive layer of grey-brown clay with occasional inclusions of charcoal fragments and nodular flints (CRN 189) was present within the opening of furnace 201 and extended southeast to the edge of the construction pit but abutted the southwest wall of Furnace 202 and was not present in its interior, the opening of which was blocked by deposit (CRN 186). This suggested that furnace 201 was still open and in use after furnace 202 had been abandoned. Indeed, a thin layer of industrial waste comprising 30mm-thick dark grey silty clay (CRN 193, also recorded as CRN 191) overlying (CRN 189) (and containing frequent charcoal flecks, red-orange scorched clay fragments, occasional small pieces of iron slag and very small flints) extended north-westward out from the interior of furnace 201 into the access area, indicating that the furnace opening was still open although probably not usable when it was deposited, by which time it may be assumed that the furnace pit was being used for waste disposal.

Layers (CRN 187/188/190) were not identified in the deposit sequence abutting furnace 202, where (CRN 189) blocked the furnace opening (see **Section Fig. 38 s.17.47**) and where it was covered in the area next to the furnace by a 0.31m-thick deposit of mid grey silty clay (CRN 197) containing occasional small charcoal and orange-scorched clay fragments among abundant nodular and tabular flints. This deposit, which abutted the furnace 202 south-western wall (CRN 200), was probably waste material thrown into the unusable construction pit [CRN 181]. It underlay another probable waste layer (CRN 194), which was also identified in the deposit sequence associated with furnace 201, where it overlay Deposits (CRN 193/191) and was recorded as (CRN 194) (outside the furnace) and (CRN 192) (inside the furnace), both being 0.24m-thick and described respectively as: dark grey silty clay with moderate inclusions of charcoal flecks, frequent inclusions of orange-scorched clay fragments, moderate inclusions of nodular flints and occasional inclusions of 'non-tapping' iron slag ranging from 4cm to 20cm in size (CRN 194); and dark grey clay-silt containing occasional charcoal flecks, burnt orange-scorched clay fragments, moderate amounts of small tabular flints and occasional large nodular flints (CRN 192). Another probable waste layer (CRN 173), which had sealed Deposit (CRN 192), consisted of 0.1m-thick dark grey silty clay with moderate charcoal-fleck contents, occasional small scorched clay fragments and occasional nodular flints.

A small sub-oval **pit 169** measuring 0.75m north-east/south-west, 0.81m north-west/south-east and 0.15m deep cuts into deposit (CRN 173) and also truncated the north-eastern part of the furnace 201 wall (CRNs 205, 183 and 206). It had moderately sloping sides, a flat base and contained three fills, discussed below.

Two backfills layers (CRNs 196 and 195), probably representing two different phases of waste disposal in the then-disused furnace construction/access pit, comprised the uppermost deposits exposed adjacent to furnace 202. A 72mm-thick mid grey band of silty clay (CRN 196) containing moderate charcoal flecks and orange-scorched clay fragments, along with frequent nodular flints and infrequent iron-slag fragments underlay a 0.1m-thick layer of dark grey silty clay with frequent inclusions of charcoal flecks, moderate inclusions of orange-scorched clay and 'non-tapping' iron-slag fragments and occasional nodular flints inclusions. This layer underlay topsoil.

Three factors derived from the detailed stratigraphic observations made above suggest that the use of furnaces 201 and 202 was broadly contemporary, with the furnaces initially being used simultaneously but furnace 201 remaining in use for longer. Firstly, the furnaces shared the same construction pit cut [CRN 181], secondly, the same substantial charcoal-dominated industrial waste layer (CRN 186) extended out from their respective chambers/internal hearths to cover a common access area, and thirdly, the principal stratigraphically-earlier industrial waste layers sealing the two structural remains were mainly the same (CRNs 186, 189 and 194). Contemporanity of use within such a small sunken area points to intensive, highly organised and well-planned iron production on the site.

Furnace 471

This furnace was not excavated but was revealed during the removal of topsoil as a roughly circular (approximate diameter 0.52m) area of red and orange-red scorched clay lying adjacent to furnace 300 (see below). Its position in adjacent to the furnaces 300 and 301 in construction cut 302 identified it as part of the latest sunken-floored structure G (see *fourth structural phase below*)

Furnaces 300 and 301 in pit 302

The severely truncated remains of another furnace 300, which had almost certainly been re-built (re-build recorded as CRN 301), was set into the uppermost backfill (CRN 194) in construction pit 181. It was stratigraphically equivalent to and probably contemporary with Pit 169 (see above), but severe ground reduction had removed any evidence of a stratigraphic relationship. Only the furnace's bowl-shaped base had survived, being made up of seven structural deposits (CRNs 299, 298, 297, 296, 295, 294 and 293) and internal construction cuts 302, 300 and 301 (see below).

Sunken-floored structure F indicated by construction cuts 207 and 209/ 401/ 402, containing hearth 208 and furnaces 292 and 353
(**Plan Figs. 9a, 9e, 9g, Sections Fig. 39 s.19.48, Fig. 40 s.19.79, Fig. 54 s.29.67, Fig. 56 s.30.69, Fig. 57 s.30.70**).

Construction cut 207 (containing hearth 208)

This truncated hearth (CRN 208) comprised a foundation layer (CRN 249), wall and floor deposits (CRNs 251, 252, 250) and re-lining indicated by deposit (CRN 253).

Construction cut 207 had the form of a north-west/south-east aligned oval in plan, with moderately sloping sides and a concave base. It measured 1.1m north-west/south-east and 0.8m north-east/south-west, was 0.47m deep and contained a 5mm-thick basal deposit of fairly compact, dark red, baked clay without inclusions (CRN 249), interpreted as a consolidated base and pit lining deposited prior to construction of smithing or furnace hearth 208 (see Appendix 1 below for a detailed discussion of the technology of iron bloomery furnaces).
This in turn underlay 70mm-thick deposit of burnt clay (CRN 250 abutting vertically deposited CRN 251), both abutted by a vertical deposit of brick earth (CRN 252), which was abutted by a thin inner wall surface (CRN 253), these deposits as a whole forming the composite base and walls of the hearth. The vertical lining layer (CRN 253) consisted of compact, bright yellow-brown scorched clay and the overlying sealing basal/floor layer (CRN 250) consisted of compact dark grey-brown scorched silty clay containing frequent fragments of slag and charcoal and small stones. Another vertically deposited layer (CRN 252) comprising part of the furnace wall consisted of compact light yellow-brown scorched brick earth.
A 20mm-thick layer of mid grey scorched silty clay (CRN 253), which had been smoothed on its surface (on the inside of the hearth), covered (CRN 252) to create a final, inner wall lining.

The furnace structure overall consisted of semi-vertical walls with sides gradually sloping towards the base to form a bowl-like structure with a surviving height of 0.45m and a basal diameter of 0.53m. It was interpreted as 'non-tapping' bloomery furnace, as the concave base was almost certainly been designed to collect the liquid iron-slag waste within the confines of the furnace, some of which was still present overlying the floor deposit (CRN 250, see **Section 19.48**). However the basal iron slag deposited in this feature seems to not have being solidified *in situ*, suggesting a different interpretation. The overall shallowness of this structure in comparison to the abutting sunken-floored pit containing furnaces 292 and 353 suggests it may have been a smithing hearth rather than a bloomery furnace, and that it was built to be used simultaneously with the furnaces housed by sunken-floored structure F.

Plate 98 looking southwest at the section through Hearth 208 showing the accumulation of iron slag at the base and the backfill of collapsed and demolished material from the upper walls (two-metre scale).

An adjacent and stratigraphically equivalent (to the iron slag layer) consisted of compact dark grey-brown clay-silt (CRN 256) with moderate inclusions of charcoal flecks and flints. This was probably associated with the final use or, less likely, the early abandonment of the feature, soon followed by the deposition of two dump deposits recorded as CRNs 255 and 254. The former, first-phase dump deposit (CRN 255) consisted of compact, bright red and grey-brown scorched silty clay, the latter (CRN 254) of compact red-brown scorched silty clay mixed with smaller pieces of slightly baked clay, both interpreted as collapsed/demolished material from the upper parts of the hearth walls.

Plate 99 looking southwest at the north-western part of Section 19.48 (Hearth 208) (red section of the scale equals 0.5m)

To the north-west, deposit 255 was covered by a 0.21m-thick layer (CRN 258) of dark grey-brown clayey silt with occasional inclusions of scorched clay, iron slag, charcoal and small tabular flints, this being the middle of three industrial dump deposits (the others being CRNs 259 and 257) in Construction cut 209, which housed furnaces 292 and 353. The primary fill (CRN 259) consisted of 0.25m dark grey-brown clayey silt with occasional inclusions of charcoal, small flints and scorched clay, the uppermost fill (CRN 257), which underlay topsoil, consisted of 0.17m-thick dark grey-brown clayey silt containing moderate amounts of iron-slag, occasional pieces of burnt clay, small flints and charcoal flecks.

Plate 100 looking southeast at Section 30.69 (Fig. 56) showing construction cut 209/401/402 (two-metre scale)

Construction cut 209/401/402

Construction cut 209/401/402, which formed most of sunken-floored structure F, housed furnaces 353 and 292 and measured 2.80m north-west/south-east by 2.02m north-east/south-west and had a maximum depth of 0.9m. However, an adjoining shallower sunken-floored pit [CRN 207, see above], which measured 1.32m north-south by 1.33m east-west, was almost certainly the construction pit for a smithing hearth (CRN 208). This pit also formed part of sunken-floored structure F, which therefore housed two furnaces and a hearth.

A 0.4m-wide test trench was cut on a north-south alignment through the central part of sunken - floored structure F, exposing a 0.74m-deep cut with moderately sloping sides breaking into concave base, the two exposed deposit sequences being recorded in **Section Fig. 54 s.29.67** and **Fig. 56 s.30.69** and interpreted as the remains of a partly demolished furnace.

Plate 101 looking northwest at Section 29.67 (Fig. 54) (two metre scale)

Plate 102 looking southwest at the sondage cut through sunken - floored structure F (CRNs 209/401/402) showing the deepening and extension at its base. The base of furnace 353 is visible in the exposed sections (0. 2m scale)

A shallow, bowl-like depression at the base of the structure was interpreted as a deepened extension of the main construction cut to accommodate the furnace base.

Furnace 353

The primary fill (CRN 354) overlying the sunken-floored pit base consisted of 90mm-thick dark grey silty clay, which was interpreted as a tread deposit laid down when the structure was first excavated. However it was only evident in **Section s.29.67.** It was in turn overlain by a 80-100mm-thick band of heavily scorched clay (CRN 423) comprising the furnace's base and wall, thus forming the furnace hearth [CRN 353], which was overlain by a 75mm-thick dark grey-black mottled accumulation of iron slag (CRN 422) that was only evident in **Section s.30.69** (see plate below) and which probably represented the relatively undisturbed 'tapping' iron slag that had settled at the hearth's base during a smelting event.

Plate 103 looking southeast at Section 30.69 (Fig. 56) showing close-up(rectangular in foreground) on accumulation of iron slag (CRN 422) (two metre scale on top)

The overlaying deposit (CRN 421) was stratigraphically equivalent to a 0.12m-thick accumulation of compact grey-red scorched silty clay (CRN 351), only evident in **Section s.29.67**) and almost certainly trodden waste debris from the adjacent furnace. The now disappeared construction cut for the adjacent furnace was indicated by a tip-line between this deposit and the abutting furnace fill (CRN 352), which was a 80mm-thick layer of mid red scorched silty clay recorded in the opposite section as Deposit 420. The underlying layer within the furnace chamber (CRN 421) consisted of a 0.11m-thick band of mid yellow silty clay, interpreted as debris resulting from the demolition of the furnace. It was sealed by a similarly interpreted (CRN 420) discussed above.

The above-described deposits were associated with the construction, use and ultimate demolition of furnace 353, after which part of the sunken-floored structure was backfilled by industrial waste materials, suggesting that iron production continued elsewhere on the site (see furnace 292 below). The industrial waste materials consisted of five layers (CRNs 407/350, 406/349, 348) [only exposed in **Section s.29.67]**, CRN 347/405 and 346/404 and consisted of the following (in bottom-to-top stratigraphic sequence): a 0.13m-thick (average) dark grey silty clay with frequent pieces of iron-slag, nodular flints and occasional to moderate charcoal flecks (CRNs 407/350); 0.21m-thick dark grey silty clay with frequent slag and occasional charcoal flecks (CRN 349/406); 80mm-thick yellow-red scorched silty clay without inclusions (CRN 348); 0.24m-thick dark brown silty clay containing occasional burnt clay lumps, pieces of iron slag and charcoal flecks (CRN 405) and 0.42m-thick dark grey silty clay with frequent iron slag fragments and occasional charcoal flecks (CRN 346/404), the latest deposit underlying topsoil.

Furnace 292

Further excavation in sunken - floored structure F in the area immediately west of **Section s.29.67** exposed another furnace 292, which occupied the western part of the structure and had been broken out on its eastern side, again presumably to remove the iron bloom produced during the final smelting.

Plate 104 looking southwest at Furnace 292 before excavation (0.2m scale) (looking south-west)

As in the other examples, this furnace had been built over a scorched clay platform; in this case a 52mm-thick mid dark red silty clay (CRN 419/413), see **Section Fig. 57 s.30.70**) that formed the base of the furnace and extended seamlessly outward and upward to form the furnace wall (recorded as CRN 430, see below). This primary floor/wall deposit was set into a re-deposited block of yellow grey, inclusion-free brickearth (CRN 431) that acted to support the subsequent furnace wall (and also probably reduced heat loss) or, equally likely, was surrounded by this deposit after it had been built. In either case the effect was the same; a cylindrically shaped void within the brickearth block was lined with a 0.12m-thick inclusion-free, vertically extending deposit of laminated clay-silt (CRN 430), which, following exposure to high temperatures during smelting, was scorched sequentially (from outside to inside): dark red, orange, yellow, white, pink, white and grey, the grey representing the semi-vitrified inner surface. Although recorded as a single deposit, some of the laminations almost certainly represented phases of re-lining, pointing to multiple phases of its usage. The surviving structure, which was interpreted as a 'tapping' bloomery furnace, had a diameter of 0.68m and a height of 0.52m (neither the upper part nor the tapping arch were preserved). As in several other cases, a 0.1m-thick, hump-shaped accretion of scorched clay (recorded as part of CRN 430) lay just outside the void where the tapping arch would have been. This suggested that the tapping arch may have been demolished and then compacted as a tread just outside the furnace during the last removal of iron bloom from the furnace.

Although the furnace 292 structure was left *in situ*, the fills of cut 209/401/402 lying immediately to the east were excavated, revealing structural, industrial and demolition deposits associated with the furnace's construction, use and abandonment (**Section Fig. 57 s.30.70**). The basal deposit (CRN 413/419) was an eastward extension of the furnace base and consisted of 52mm-thick mid-to-dark red silty clay (see above). It underlay a 70mm-thick layer of red-brown scorched clay silt (CRN 412/417) containing frequent charcoal fragments and moderate quantities of large iron-slag fragments, this deposit interpreted as waste material raked out from the furnace, probably mixed with structural rubble from the final breaking out of the iron bloom.

A 0.25m-thick band of mid orange-brown scorched silty clay that contained occasional small flints (CRN 411) sealed this deposit and overlay the truncated top of the furnace. It was interpreted as demolition or industrial waste material thrown into the sunken-floored structure following the abandonment of furnace 292. It underlay a 0.25m-thick layer of mid grey-brown silty clay (CRN 410) with moderate burnt clay and occasional small tabular flint contents. This was interpreted as another industrial dump deposit, as were two overlying deposits, a 0.42m-thick band of mid grey-brown silty clay (CRN 408) containing occasional charcoal flecks and small flints, and a 0.13m-thick localised accumulation of bright grey-brown silty clay (CRN 409) with occasional small flints.

Plate 104b showing its fill of yellow-brown mottled clay with iron slag embedded into (CRN 415).

Plate 104c showing a basal charcoal layer. The lining on its inner wall surface is clearly visible (tape extended to 0,2m)

Plates 104a, 104b, 104c and 104d showing the sequential excavation of Furnace 292, with 104a showing its upper backfill of scorched clay (CRN 414). 0.2m scale

Plate 104d (left) showing the furnace platform (CRN 419) and the black-scorched rear inside wall opposite the broken-out wall, indicating where the original entrance was and from where air was probably blown into the furnace chamber

Plate 105 looking west at the remains of furnace 292/411 showing how it was set into, or surrounded by, re-deposited brickearth and the broken-out part from which the iron bloom was removed after the final smelting (one-metre scale)

Plate 106 looking southeast showing excavated sunken-floored structure F with Furnace 292 and Section 30.70 (Fig. 57) to the right and the remains of Furnace 353 in Section 29.67 (Fig. 54) on the left (two-metre scale)

A long backfill 'tip-line' extended downward for 0.65m from western part of the top of the sunken-floored structure to the lower eastern part of the cut [CRN 402] suggesting that the sunken-floored structure had remained partly backfilled for a while, perhaps while another of the furnaces remained in use. An extensive, 0.33m-thick layer of dark grey-brown clayey silt (CRN 407) containing frequent pebbles, moderate scorched clay and charcoal fragments and occasional pieces of iron slag probably indicated when sunken-floored structure F finally fell out of use. Two overlying layers (CRNs 406, and 404) equated to Fills (CRN 349 and 346) exposed in **Section Fig. 54 s.29.67**, which intersected **Section s.30.70** at a right angle at its eastern margin. These layers also overlay furnace 353, and their contents of burnt flint and frequent iron-slag and charcoal fragments suggested that iron production continued on the site after sunken - floored structure F had been abandoned.

Fourth Structural Phase

Sunken-floored structure G

The latest structure remnants comprising construction cuts 302, 169, 319, furnaces 300, 301, 471, post hole 224 and the top sealing deposit 222 (Plan Fig 9a, 9f, 9g Sections Fig. 37 s.17.46 Fig. 51 s.26.62 Fig. 50 s.24.57 and Fig. 53 s.28.65)

Construction cut 302

The severely truncated remains of another furnace [CRN 300], which had almost certainly been re-built, was set into the uppermost backfill (CRN 194) in Construction pit 181 (SFS E) (see **Section s.17.46**). It was stratigraphically equivalent to and probably contemporary with adjacent construction cuts 169 and 319, but severe ground reduction had removed any evidence of a stratigraphic relationship. Only the furnace's bowl-shaped base had survived, being made up of seven structural deposits (CRNs 299, 298, 297, 296, 295, 294 and 293).

The primary construction cut [CRN 302] formed a rough oval in plan with a north-west/south-east alignment and measured 0.69m in length, 0.56m in width and 0.22m deep, the concave shape indicating that it contained the remains of a 'non-tapping' furnace.

Furnaces 300 and 301

The concave basal layer (CRN 299) within the pit was a 30mm-thick dark red clay containing occasional charcoal flecks and occasional flints, this underlying a 28mm-thick orange-scorched clay (CRN 298), in turn lined by a 0.32mm-thick mid grey-scorched clay (CRN 297) containing occasional charcoal flecks. This deposit probably representing the first-phase furnace floor (CRN 300) as it was covered by probable smelting residue and waste (CRN 296) in the form of 0.22m-thick dark grey-brown clay-silt with moderate inclusions of scorched clay and charcoal flecks, occasional small iron-slag pieces and flints. This in turn underlay a 30mm-thick layer of light grey-scorched clay (CRN 295) with an overlying crust of solidified once-molten slag (as indicated by the ripples on its surface), supporting its interpretation as a 'non-tapping' furnace.

A concave, 40mm-thick band of orange-scorched clay (CRN 294), almost certainly a replacement furnace floor (CRN 301) and representing the second stage of furnace use, overlay this material. The last surviving deposit in this furnace was a 63mm-thick accumulation of dark grey silty clay containing frequent charcoal flecks, moderate iron-slag fragments and moderate light orange and dark red scorched clay (CRN 293), interpreted as the probable residue from the last smelting event within furnace.

The presence of a furnace base set into the uppermost fill of sunken - floored structures D and E indicated three important associated factors; that the Late Iron Age ground surface had been removed by sustained reduction, probably the combined result of protracted natural and ploughshare erosion, that the furnace remains overall had therefore been subjected to severe truncation, with only those parts of the furnaces lying within sunken-floored structures having survived intact, and that iron production had taken place the same place over a relatively long period of time.


Plate 107 looking southeast at truncated and half-sectioned Furnace 300/301 built over the smelting waste and backfills of Furnace 201 in sunken-floored structure E (0.2m scale)


Plate 108 looking east at the partly excavated Late Iron Age furnace complex. The remnants of the latest sunken-floored structure G are located roughly in the centre of the site. Section s.17.46 visible in foreground. (two metre scale)

Construction cut 169

A small sub-oval sunken-floored pit 169 measuring 0.75m north-east/south-west, 0.81m north-west/south-east and 0.15m deep was cut into Deposit 173 (**Section s.17.46**) and also truncated the north-eastern part of the walls of furnace 201 (CRNs 205, 183 and 206), therefore effectively truncating both sunken-floored structures D & E.

This feature was interpreted as the possible construction cut for another furnace or hearth. It had moderately-sloping sides breaking into a flat, then convex base and contained three fills, a lower, 80mm-thick fill of dark grey silty clay with occasional small 'tapping' and 'non-tapping' iron-slag fragments (CRN 171); a 25mm-thick band of pale scorched clay (CRN 172) and an upper, 63mm-thick fill of black silty clay with frequent charcoal inclusions, moderate, very small pieces of orange and yellow scorched clay and occasional small iron slag fragments and angular flints (CRN 170). This feature was accounted as a part of the latest chronologically sunken-floored structure G. However there was no direct evidence of any hearth-like feature accommodated in this sunken-floored construction pit.

Plate 109 looking south east at Section s.17.46 (close up) showing half-sectioned remains of construction cut 169 (white section of scale equals 0.5m)

Construction cut 319

Another sunken-floored pit (recorded only in **Section Fig. 53 s.28.65**) as single fill (CRN 319) without cut number being assigned) measured 0.57m north-west/south-east, 0.43m north-east/south-west and 0.16m in depth. It had moderately sloping south-western sides and nearly vertical north-eastern sides, all breaking into a roughly flat bottom. Its single fill (CRN 319) comprised a 0.16m-thick band of pale scorched clay with moderate inclusions of charcoal flecks and daub. This deposit certainty derived from the demolition of a furnace or similar and represented evidence for continued industrial activity on or near the site, possibly associated with the use of furnaces 300, 301 and 471 in sunken-floored structure G

Plate 110 looking north-west at Section s.28.65 (close up) showing the half-sectioned remains of possible construction cut 319 (white section of scale equals 0.5m)

Post hole 224

A small circular posthole [CRN 224] which truncated the industrial deposits in sunken-floored structure D was exposed in **Sections s.26.62** and **s.24.57** and was almost certainly contemporary with construction cuts 302, 169 and 319 which are truncating sunken-floored structures D and E within the upper industrial back fills. Revealed only in section, the posthole measured 0.37m in depth, 0.16m in diameter, had vertical sides and a bottom tapering to a point. It contained a single fill (CRN 223) of compact dark grey silty clay with occasional small scorched daub fragments, charcoal flecks, iron slag and angular flints. The posthole underlay a definite dump deposit of 50mm-thick dark grey silty clay with moderate burnt clay fragments, iron-slag and occasional burnt flints (CRN 222). This layer, which immediately underlay topsoil, produced eight potsherds with a date-range of *c*. 50 BC to *c*. AD 25.

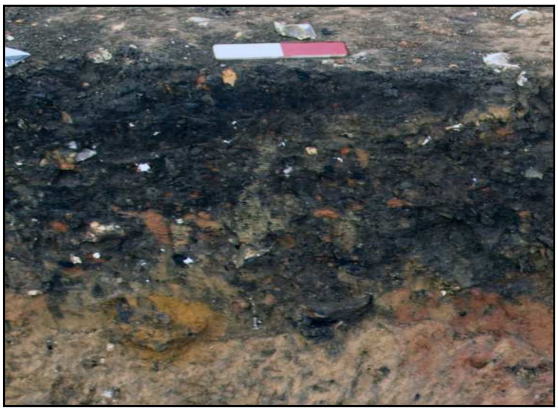


Plate 111. Post-hole 224 in Section 26.62. The clearly visible sealing top layer (CRN 222) indicates another stage of industrial deposition and suggests that iron production continued on site for a very long period (looking north west). (0.2m scale)

The above discussed remnants comprising the latest in site chronology sunken-floored structure G which has been barely survived and not being fully investigated due to a very narrow time span for this site investigation, however the general idea and its presence cannot be dismissed. The structure itself appears to be similar to the previously discussed sunken-floored structure B encountered and investigated on area F113 (see **Plan Fig.4e**). There were also very shallow remnants of a construction cuts (housing furnaces 1, 2 and 3) with only bowl-like bases having survived within the sunken-floored part of the overall structure. Additionally there was a cluster of post-holes in close vicinity to the sunken-floored construction cuts, which clearly suggest a roofed construction made of wattle and daub being erected above the hearths or just next to them providing a shelter for bloomers and black smiths working on this LIA industrial site.

Unphased

Ditch 160

North-east/south-west aligned Ditch 160 (**Fig. 48, Section 23.55**) was 0.72m wide, 0.38m deep, straight and contained a single fill (CRN 161) consisting of mid grey-brown silty clay containing frequent tabular flints. It lay approximately seven metres south-east of the iron smelting complex described above and produced a total of 331 potsherds with a general date-range of c. 15 BC to c. AD 100, although all but eight dated to *c.* 75 BC to *c*. AD 60. The ditch's use, probably for drainage in this ill-drained area, may be assumed to date to the earlier part of this date-range, and probably supplies an approximate date for the use of the adjacent smelting works.

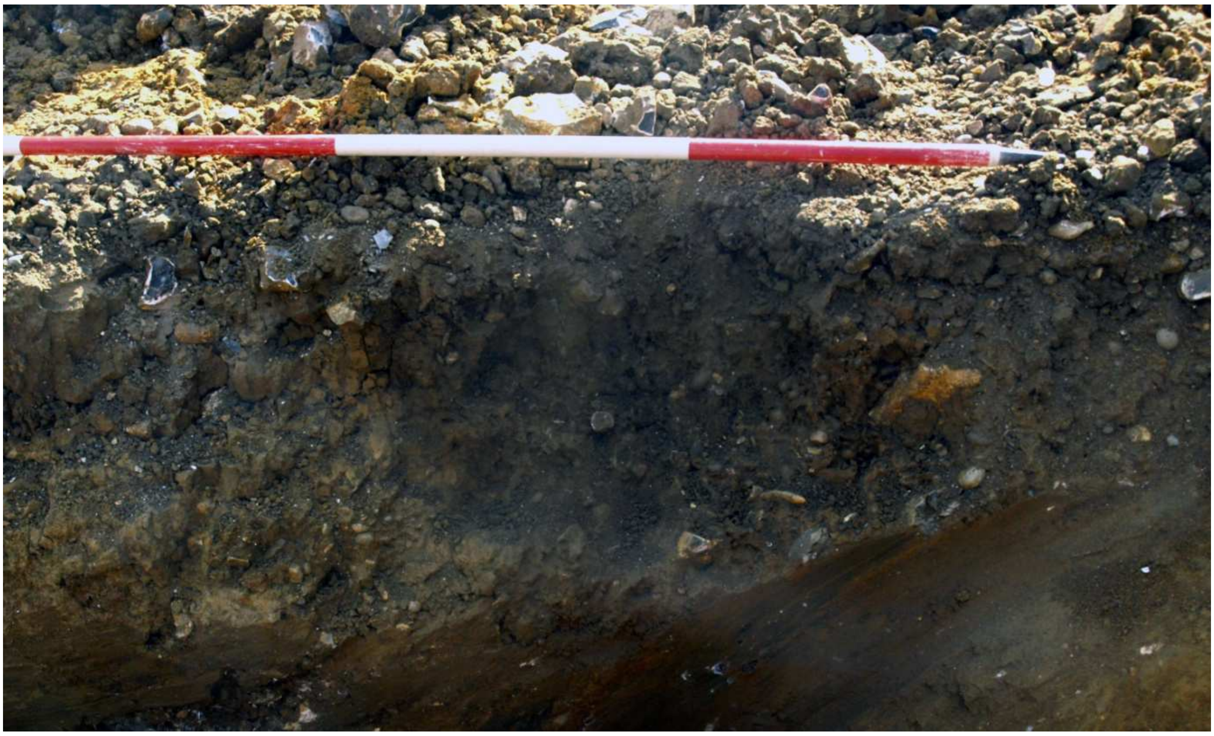


Plate 112 looking south west at the section through probable boundary Ditch 160 (red and white segments of scale = 0.5m)

4.10) Area F120

The route in this area extended approximately north from NGR 58167730/16155779 (101m OD) down a steep slope for some 260m before turning north-west, crossing Cox Street and terminating a short distance before Magpie Lane at NGR 58159174/16206266 (77.5m OD), this point marking the end of the pipeline. No archaeological features were exposed in this area.

5) Environmental potential

Although environmental samples were taken (see Appendix VIII) it is proposed that the environmental potential in the clay-dominated surface of the area is low, with little or no anaerobic of preservation of micro- or macrofossils being evident. It is therefore not proposed to undertake any assessment of the samples, given their low potential.

6) Discussion, interpretation and conclusions

The archaeologically monitored topsoil strip of the approximately eight-metre wide and 3.9km-long working area for the pipe lay allowed a robust, non-predictive investigation to take place of an area previously considered to be of relatively low archaeological potential.
The discovery during this work of two groups of Late Iron Age multi-phase iron smelting works, both containing partly intact and *in situ* furnaces, and one being exceptionally well preserved and containing at least thirteen furnaces, indicates that the Stockbury area was the site, previously unknown, of intensive, extensive and protracted iron production. Supporting for this assertion came from less well-preserved evidence for iron working previously observed nearby at South Street Road (Swale and Thames Archaeological Survey Company 2006). It is probably safe to assume that the remains of other smelting works are present in the area outside the pipe-lay easement. Associated datable pottery evidence suggests that iron production took place in the area for about a hundred years, from *c*. 50 BC to *c*. AD 50.

Specialist analysis of industrial waste samples from the works undertaken by Brice Girbal (see Appendix I) produced results suggesting that the technology employed by the smelters was of an intermediate, transitional type between the use of characteristically Iron Age ‘non-tapping’ furnaces and the tapping furnaces first commonly used during the Roman period, and which continued in use in subsequent periods until the Industrial Revolution.

The evidence for pre-Late Iron Age activity and/or settlement in the area indicated a low level of occupation, with only occasional ditches and pits, for example a curved section of ditch [CRN 85] in Area F116, being identified. In contrast, a wide range of features dating to the Late Iron Age were present, these including boundary and/or drainage ditches, flint-cobbled trackways, cylindrical, flat-bottomed pits (probably for storage) and numerous large pits. The latter were interpreted as quarry pits because of their proximity to the smelting works, which would clearly have required copious supplies of iron ore and which also required large amounts of good-quality clay from which the furnaces were constructed.

Only small amounts of iron ore (2505gms) were identified within the smelting works (see ‘Ore‘ in Appendix I), almost certainly because it was considered too valuable to waste (indeed, some small fragments appear to have been discarded only because their iron content was too low). However, it may be assumed that the smelting works were located in the Stockbury area specifically because it contained viable amounts of easily accessible ore. The present sparse quantities of such material in the area probably result from the deposits being worked out, which event, of course, would mark the end of the industry. Also necessary for the production of the iron bloom, which is the material required for iron smithing, was very large amounts of charcoal, and it may also be assumed that the Stockbury area was well supplied with trees during the Late Iron Age, in an area rendered undesirable for prehistoric agriculturists for clearance and cultivation by the intractable surface geology of Clay-with-Flints.

The establishment of the area as a centre for iron production seems therefore to have been deliberate and systematic, presumably following the discovery of accessible iron ore deposits in the first or middle part of the first century BC. This impression is supported by the type, size and complexity of the earliest smelting works (or at least the one with which the earliest pottery was associated), which dates to that approximate period and was exposed in Area F119. These smelting works were multiphase, the furnaces, usually in pairs, being housed in sunken-floored structures, often with attached ancillary chambers housing additional furnaces or smithing hearths. The sunken-floored structures identified during the excavations probably originated as buildings with substantial superstructures but the truncated state of the furnaces built within them indicated that they have been subject to large-scale natural and ploughshare erosion. For example, only the truncated base of furnace 300/301 survived, and this had been built on top of the totally backfilled remains of sunken-floored structure E. Such a severe degree of ground reduction probably explains why so few post-holes or similar evidence for any associated superstructures were present. It should be noted in this regard that the furnaces are estimated to have originally been about one metre high, with probably the most complete example (Furnace 35 in Area F113) surviving to a height of 0.83m in a particularly deep pit (sunken-floored structure A).

It can be concluded that a large degree of pre-planning preceded the establishment of the industry and that the smelters (and probably other types of iron workers such as smiths) arrived in the area equipped with a detailed knowledge of the technologies required, rather that developing them on site through practice. This was indicated by the fact that the furnaces were often built in pairs and used simultaneously, suggesting that a high degree of efficiency was both prepared for and attained. This in turn suggests that the iron producers were professional specialists who were almost certainly engaged full-time in the industry. Another factor with the same implication was the standard, virtually identical form of every furnace, all of which had the appearance in section of something like a much-enlarged clay pipe bowl in the style of *circa* 1830. This indicates that they were built to a pre-determined and well-established design.

The protracted nature of the industry was indicated by the frequency with which the furnaces, many of which had been rebuilt and re-used after the desired iron bloom had been broken out, were abandoned and replaced. Indeed, in Area F119, four structural phases were identified in which individual sunken-floored structures housing furnaces and/or smithing hearth were abandoned, to be replaced by other, adjacent sunken-floored structures, the abandoned structures then being used to dispose of industrial waste. For example, third-phase sunken-floored structure E containing furnace 201 was built over the backfill of second-phase sunken-floored structure D (see Plate 95 above). Long-term iron production was also indicated by the fact that furnaces were still being built on top of the sunken-floored structures' backfills when they had been filled to a level just below the modern ground surface, as in the case of furnace 300/301 discussed above. This suggests that not only had severe ground reduction taken place on the site, but that a superstructure of some description survived at the time furnace 300/301 was built, assuming, as seems reasonable, that it was not built in the open.

The specialist analysis to which the furnaces and industrial waste were subject led to the conclusion that the furnaces were neither of the 'slag-pit' type nor of the 'tapping' type (see 'Conclusion' in Appendix I). It is therefore proposed that the Late Iron Age date and the geographical location of the sites suggest that the technology employed was 'an intermediary or evolutionary link' between Iron Age slag-pit furnaces and Roman-period tapping furnaces 'perhaps as a consequence of, or catalysed by, contacts with the Continent'. In the light of the evidence described above, which suggests that the Stockbury industry was established by people that already had a high degree of technical expertise, it is entirely possible that the industry was founded by immigrants from the Continent, possibly from Belgic Gaul.

The demise of the industry is probably best explained by the depletion in the area of the required iron ore in about AD 50, after a century or so of intensive iron production. This seems to have been roughly coincident with the burgeoning of the Roman-period Wealden tapping industries of West Kent and East Sussex, which used very similar ore, but where the ore occurs in far greater quantities, this probably explaining the Wealden Industry's longevity. However, on the Stockbury site the evidence of Early and Mid Roman-period pottery within the upper fills of many Late Iron Age features, for example, Ditch 451 in Area F113, suggests that occupation activity of a different type and settlement with a different economic base was established after the demise of the iron industry. Trackways, ditches, some amorphous, unidentifiable features and quarry-like pits all produced Early and Mid Roman-period pottery in significant amounts. Late Iron Age Ditch 451's primary fill of natural in-washed silt was followed by the deposition in its upper fills of large amounts of Roman-period potsherds, indicating increased occupation/settlement activity in the near vicinity, and the use of the ditch for rubbish disposal (the group of urned burials of the same broad period exposed in Area 112 also points to a nearby settlement). The greatly increased amount of pottery dating to the Mid Roman Period, the high proportion of domestic wares amongst them and the gradual disappearance of the Late Iron ditches into which many of them were thrown suggests a significant change in the intensity and type of settlement, which was probably increasingly based on agriculture and animal husbandry following the demise of the Late Iron Age iron smelting industry.

7) Acknowledgements

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Appendix I

Analysis of the Iron Working Waste (by Brice Girbal)

Abstract

During archaeological monitoring near Stockbury by Kent Archaeological Projects, two Late Iron Age smelting sites were discovered (Site Code STK SMS 11). Approximately 256kg of technological debris (slag, clay and ore) and 26 soil samples were sampled from the sites. The morphological and chemical analysis of this material has revealed several points of interest. It is argued that the remains found at Stockbury are evidence for an intermediary or evolutionary link between Iron Age slag-pit furnaces and Roman tapping technology in Britain. The very similar furnace and slag remains found at both sites suggest that the same technology was employed and that similar natural resources were exploited. It is possible that the same group of people were responsible for iron smelting at both sites. Analysis of bloom fragments recovered on the site showed that pure iron of low carbon content was produced. Evidence was also found for smithing and it is likely that the iron blooms produced were refined and turned into billets on site. It is uncertain however, whether this iron was produced for local use by local communities or produced by specialised groups for trade. The chemical composition of the slags was almost identical to the sites in the Kent Tertiary Sands group as discussed in Paynter 2006. As these are very close to Stockbury and share a similar geology it supports Paynter's findings that smelting sites found in the same geological areas share similar chemical compositions due to the exploitation of similar natural resources (ore, clay and fuel).

Introduction

During archaeological monitoring for South East Water (by Kent Archaeological Projects) on a new water main-lay in Kent, between Maidstone and Sittingbourne, two Late Iron Age smelting sites (areas F113 and F119) were discovered near Stockbury (Site Code STK SMS 11). The furnaces were particularly well preserved because they were built in sunken-floored structures (sunken shaft furnaces). Un-Romanised flint-tempered and grog-tempered wares dominated the pottery finds in the fills but some Romanised Belgic wares were also present. This would place the smelting activity sometime in the late Iron Age to the early mid first century AD (c. 50 BC - c. AD 25 for area F119 and c. AD 0 - 50 for area F113). Evidence at F119 (NGR TQ 8181 6149) revealed approximately 18 furnaces occurring in pairs that shared a common pit (like compartments) arranged around two ore roasting pits. Some of the furnaces survived up to a height of approximately one metre. A further five furnace remains were found at F113 (NGR TQ 8411 6141) but the preservation was not as good, with most furnaces having been heavily truncated. Approximately 256kg of technological debris (slag, clay and ore) and 26 soil samples were sampled from the sites and analysed by Brice Girbal for scientific analysis.

Background

In order to recognize the importance of slag remains (the waste product of iron making – in this case the bloomery process) it is essential to understand the principles behind the production of prehistoric iron. Iron ore (a rock rich in iron oxide) is burnt along with charcoal in a furnace; a structure usually made of clay or soil in which the charge (ore and charcoal) is held. The carbon monoxide produced by the burning charcoal reduces the iron oxide in the ore to metallic iron (Schrüfer-Kolb 2004, 7). This is possible at a temperature of about 800°C, which is well below the melting point of iron at 1540°C (Tylecote 1962, 183). However, iron ores not only consist of iron oxides but also contain many unwanted elemental compounds and minerals. It is therefore necessary to remove those from the iron ore during smelting. These 'gangue' (valueless earth in which ore is found) minerals combined with iron oxide have a lower melting temperature than iron (about 1150°C) and can be removed by liquation (Tylecote 1962, 183). To produce iron in solid state it is therefore necessary for temperatures to be above 1150°C but below the melting point of iron enabling the impurities in the ore to melt away in the form of slag (Schrüfer-Kolb 2004, 7).

Unlike the iron, which is often turned into objects (by smithing) and frequently transported, the slag is usually discarded where the iron production took place. Because of this, slag is very important as an indicator of past iron production. Slag also stores a lot of information. The morphology of the slags is a good indicator of the type of technology employed; ie the furnace size, shape, etc (Bayley *et al* 2001; Gordon 1997; Paynter 2007). Having been through the smelting process it also stores information about the ingredients used in the smelt. The charge (charcoal and ore) as well as the furnace wall (which may partially melt) all contribute to the elemental compositions of the slags (Crew 2000; Fulford and Allen 1992, 197; Pleiner 2000, 252-3; Serneels 1993). Different types of raw material (diverging in composition) would therefore leave their unique traces in the slags.

Two main smelting technologies are recognised for iron bloomery smelting. The first is the smelting of iron ore in a slag-pit furnace. This is believed to have been the main technology employed in Iron Age Britain (Paynter 2007). The slag resulting from the smelt is left to accumulate in a purposely-built pit under the furnace structure. It is argued that this pit was usually filled with organic material, which slowly burnt during the smelt leaving space for the slag to accumulate (Mikkelsen 1997; Paynter 2007). The other technology is the smelting of iron in a tapping furnace. This technology is believed not to have been commonly in use in Britain until the Roman period. Here the slag is not left to accumulate in the furnace but is let out or 'tapped' during the smelt through a purposely built hole or arch at the base of the furnace. The slag remains from these two different smelting technologies differ in morphology. The slags from the slag-pit furnaces are dominated by large plano-convex cakes and slag tendrils from where the slag ran through the organic material and solidified at the bottom of the pit. The slags from the tapping furnaces are dominated by what is referred to as tap slag. These are slag flows usually with well-formed surface ripples indicating that they flowed out of the furnace (Paynter 2007).

Another important technology to consider is smithing. This is the manipulation of iron to produce objects and artefacts. The iron is usually heated in a purposely-built hearth in order to soften it, enabling the iron to be kneaded or shaped by hitting it between an anvil and a hammer (Bayley *et al* 2001). Smithing is usually separated into two main phases; primary and secondary smithing. Primary smithing is when the raw iron bloom produced from smelting is consolidated or refined (Bayley *et al* 2001). The main objective here is to remove the largest proportion of slag, which may be adhering to the surface or trapped within the iron. Secondary smithing is when the consolidated/refined iron is manipulated to produce finished artefacts (Bayley *et al* 2001).

The main by products of smithing are hammerscale flats, hammerscale flakes and spheroidal hammerscale (Crew 2006). Smithing flats are formed in primary smithing when the slag surrounding the iron blooms is flattened by the hammer or anvil. This often leaves fragments of slag partially flattened on one side and irregular on the other from where they have detached from the bloom (Crew 1996). Both primary and secondary smithing produces hammerscale flakes and spheroidal hammerscale. Flake hammerscale is formed when the thin layer of oxidised metal on the iron's surface flake off in contact with the hammer (Crew 1996). Spheroidal hammerscale is created when the iron bloom is manipulated close to welding temperature and slag squeezes out of the consolidating iron mass forming small spherical (<5mm) balls of slag (Dungworth and Wilkes 2007). Another common smithing waste is smithing hearth bottoms, formed by the slag created during reactions between the fuel, the hearth wall and oxidised iron accumulating in the hot region (near the blowing hole) of the hearth and coalescing to form a spongy lump. These smithing hearth bottoms are usually circular or oval in plan and plano-convex or concavo-convex in section (Bayley *et al* 2001).

The metal working evidence at Stockbury provides a unique opportunity to examine prehistoric iron manufacture in Kent.

Aims and Objectives

The aim is to provide a comprehensive account of the technological remains recovered at Stockbury to gain a clearer understanding of iron manufacture in Iron Age Kent.

The objectives will include the recognition and analysis of the various types of slags (furnace cakes, tap slag and possible smithing remains) and the ore. This morphological examination will be supplemented by scientific analysis to identify possible ore sources, smelting procedure and the type of finished product (iron/steel). The results will be compared with data from other prehistoric and Roman iron smelting slags (Paynter 2006; Oliver and Applin 1979; Dungworth 2007; Starley 1998).

Methodology

Visual Analysis

The assemblage was washed and then examined visually. Distinctive characteristics such as colour, texture, shape and size were considered. This visual analysis is important to reveal which processes the fragments have resulted from, in turn suggesting possible technological traits (Bayley *et al* 2001; Gordon 1997). The metallurgical debris was then categorised by material type and then sub-divided again and grouped under shared morphological properties. All the material was weighed to the nearest gram. Due to the large quantity of fragments they were not counted individually but assessed by group type.

The soil samples were also visually examined. Characteristics such as soil type, texture, colour and major inclusions were described (Appendix 2). The soils were probed for hammerscale with the use of a magnet. Six soil samples (4, 6, 9, 10, 14 and 17) were then selected for sub-sampling whereby one litre of soil was wet sieved at 5mm, 2mm and 1mm. The material collected during sieving (stone/flint, ore, slag, charcoal and hammerscale) was examined visually and their quantity estimated as an approximate percentage (Appendix 2).

Micro-structural and Chemical Analysis

Samples were then selected from the metallurgical debris for micro-structural and chemical analysis. These were chosen to represent a good proportion of the fragments sampled and the assemblage as a whole. The bigger samples were cut with a linear precision saw (Buehler IsoMet 4000) removing a part of the fragment a few mm thick while the most friable material was broken with a hammer and one edge ground flat with rough wet and dry paper. The samples were then embedded in epoxy resin (Struers epo-thin) and polished to a 1- micron finish. For photographs showing the location of the cut samples please refer to Appendix 3.

The polished samples were carbon coated and examined using a scanning electron microscope (SEM – FEI Inspect F). This allowed the identification of individual micro-structural phases such as wüstite (FeO) and fayalite (Fe_2SiO_4). Images were collected using the back-scattered electron detector – the brightness of each region being related to the average atomic number of that region. The chemical composition of each sample was obtained using the energy dispersive X-ray spectrometer (SDD X-act EDS) attached to the SEM. The data was collected mainly through bulk analyses at magnifications between 100x and 500x depending on the size of the crystalline structures. An average composition was determined by taking the mean of 7 to 12 bulk readings per sample. The more homogenous the sample the fewer readings were required to reach a reliable average. Areas analysed were carefully selected to show a good representation of the crystalline phases, while areas of unusual heterogeneity (corrosion or contamination) or ones making up a minor percentage of the overall sample were avoided. A spot mode allowing an accurate reading of an area less than 10 micron² was used to confirm the crystalline phases present. Three iron prills in each sample (if present) were also spot analysed.

Compositions of slags, ores and clays were calculated assuming that all elements were present as oxides (stoichiometric). Analytical parameters were kept constant at an accelerating voltage of 25kV, spot size of 4.5 (approximately 1.2nA) and processing time of 100 seconds per spectra. The spectra were de-convoluted using the Oxford Instruments INCA software. Compositions were normalised to 100wt% to allow comparisons of samples with varying degrees of porosity. Volumetric proportions of each mineral phase present (wustite, fayalite, hercynite and 'glassy matrix') were measured using the SEM's Oxford Instruments mapping tool, which separates phases by their differing brightness (dependant on the phase's atomic number – backscattered electron). Percentage areas were calculated by selecting three micro-structurally representative regions per sample.

To verify the reliability of the chemical data retrieved by SEM-EDS, the Swedish Iron Slag standard (W:25R) was analysed. Ten areas were examined (Table 1) and the results compared to the reported values (Kresten and Hjarthner-Holdar 2001). This confirms that the data presented is accurate. The soda levels are higher than those reported but analysis of glass reference materials suggests that the values reported here are reliable (Dungworth 2011). The SEM-EDS has a detection limit for most elements of ~0.1wt% and ~0.2wt% for P_2O_5, SO_3 and BaO. The data was rounded to one decimal place while compositions below the detection limit of the measured element were labelled <detection limit (eg <0.1). The elements analysed for the slag samples were Na, Mg, Al, Si, P, S, K, Ca, Ti, V, Cr, Mn, Fe and Ba while Co, Ni, Cu, Zn, As, Zr, Nb, Mo, Sn, Sb, Ce, W, Pt and Pb were also sought for in the iron prills. Any element below the detection limit in all samples is not displayed in the data tables.

Table 1. Ten analyses of the Swedish Iron Slag standard (W:25R) with the average reported value (Kresten and Hjarthner-Holdar 2001).

No.	Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	SO_3	K_2O	CaO	TiO_2	MnO	FeO
DL	0.10	0.10	0.10	0.10	0.20	0.10	0.10	0.10	0.10	0.10	0.10
1	1.44	0.30	8.20	22.93	0.26	0.31	1.17	1.63	0.33	3.40	60.03
2	1.42	0.35	8.26	23.57	0.27	0.23	1.20	1.55	0.24	3.27	59.62
3	1.50	0.32	8.29	23.20	0.23	0.34	1.17	1.66	0.28	3.17	59.82
4	1.38	0.38	8.28	23.18	0.24	0.23	1.16	1.59	0.31	3.43	59.82
5	1.37	0.35	8.34	23.30	0.28	0.22	1.16	1.55	0.30	3.13	59.99
6	1.45	0.31	8.45	23.26	0.27	0.23	1.23	1.56	0.27	3.34	59.62
7	1.41	0.29	8.52	23.44	0.27	0.24	1.15	1.56	0.26	3.20	59.64
8	1.33	0.29	8.32	23.58	0.30	0.23	1.18	1.58	0.25	3.19	59.74
9	1.25	0.32	8.52	23.10	0.27	0.22	1.14	1.49	0.30	3.34	60.04
10	1.43	0.40	8.53	23.33	0.29	0.29	1.19	1.54	0.31	3.14	59.54
Mean	1.40	0.33	8.37	23.29	0.27	0.25	1.18	1.57	0.29	3.26	59.79
St.Dev	0.07	0.04	0.12	0.20	0.02	0.04	0.03	0.05	0.03	0.11	0.18
Reported	**0.61**	**0.38**	**7.14**	**24.73**	**0.26**	**0.10**	**1.02**	**1.42**	**0.32**	**3.01**	**57.10**

Three ferrous standards (MBH11X C1 K, MBH14M B.S. 66K and NIST1¼Cr½Mo IARM 35IN) were tested to check the reliability of the iron compositional data. The recorded compositions were compared to those reported and the elements showing the greatest inaccuracies (Si, Co and Ni) were adjusted/corrected accordingly. The standard data tables are displayed in Appendix 4.

The Material

The assemblage consisted of two types of sample, including a range of metallurgical debris samples and 26 bags of representative soil samples. A brief description of the soil samples is included in Appendix 2 (see below), while the metallurgical debris samples were separated into several categories of material. Three major material types were found – slag, ore and clay. These were then sub-divided by different morphological properties of which nine sub-types of material have been identified. Each type and sub-type was weighed to the nearest gram by context in which they were found. This information is displayed below in Table 2. Pottery, flint and sandstone were also found in the assemblage. These are also displayed in Table 2 but will not be mentioned again in this study.

Table 2. The weights in grams of the differing material type by context.

Context	Area	Tap slag	Furnace Slag			Non dia-gnostic Slag	Smith-ing	Ore	Furnace Lining		Flint	Sand - stone	Pot-tery
			Amor-phous	Cakes	Shaped				Burnt	Vitri-fied			
8	F113	-	-	2254	-	-	-	-	-	-	-	-	-
13	F113	-	-	7170	-	-	-	-	-	-	-	-	-
[35]	F113	4571	4978	-	2053	958	-	192	3603		-	-	-
56	F113	230	1164	-	-	19	-	-	89		-	-	-
70	F113	424	-	-	-	-	-	-	-	488	-	-	-
70base	F113	657	-	-	-	-	-	-	-	-	-	-	-
96	F113	-	-	-	540	-	-	-	-	-	-	-	-
97	F113	-	-	-	-	-	-	-	-	630	-	-	-
101	F116	-	-	-	-	-	-	-	-	-	995	-	-
125	F113	100	-	-	-	-	-	-	-	94	-	-	-
125base	F113	-	710	1102	-	-	-	-	-	-	-	-	-
126	F113	-	-	-	-	-	-	-	-	-	-	-	-
163	F119	2781	-	-	-	28	-	20	-	170	-	-	25
164	F119	324	300	-	-	-	70	282	88	501	-	-	-
167	F119	-	-	-	772	161	96	-	1503		-	-	3482
168	F119	-	-	-	-	-	-	-	281	-	-	-	74
168base	F119	-	189	-	-	-	-	-	-	-	-	-	-
227	F119	-	855	-	-	-	150	-	452	135	-	-	-
[232]	F119	12490	32166	15564	14098	3673	3178	667	-	1495	-	-	-
234	F119	2474	876	1064	-	570	128	81	-	996	-	-	531
236	F119	2695	4416	3192	-	861	-	-	1657		-	130	-
237	F119	-	86	-	-	-	-	-	-	-	-	-	107
239	F119	67	3119	2123	-	55	3960	279	24	183	110	-	-
240	F119	-	-	-	-	-	-	-	-	183	-	-	-
241	F119	715	1943	13123	-	24	-	-	565		150	-	-
242	F119	-	6594	-	-	-	71	-	231	-	150	-	25
244	F119	-	-	-	-	53	-	-	321	-	52	-	5
245	F119	1753	2695	2508	-	628	1078	263	833		-	-	-
247	F119	23	45	-	-	-	91	-	-	-	-	-	-
250	F119	-	-	-	-	-	-	-	-	-	-	-	136
254	F119	-	-	-	-	-	-	-	-	-	-	-	3
257	F119	-	-	-	-	-	-	-	-	-	-	-	151
268	F119	-	4226	23548	-	-	1938	-	-	-	-	-	130
278	F119	-	-	-	-	52	-	-	-	-	-	-	-
281	F119	241	-	-	-	-	80	721	507		-	-	-
290	F119	218	-	-	-	120	-	-	26	-	-	16	-
320	F119	9012	8642	5969	-	3904	780	-	683		-	-	-
458	F113	49	1254	-	-	68	-	-	-	-	-	-	-
Total		38824	74258	77617	17463	11174	11620	2505	15738		1437	3498	1637

All the slags in the assemblage are mainly dark bluish grey with some yellowy brownish red patches. This indicates that they are probably the remains of iron working as opposed to other non-ferrous metals (Wynne and Tylecote 1958, 339).

Tap Slag

Tap slag accounted for approximately 15% of the assemblage (38824g). The majority are quite fragmentary (below 50mm) but range in size from 15x15x10mm to 118x87x54mm. Most are below 30mm in thickness but some examples are up to 60mm thick (especially in contexts 234 and 281). These must have accumulated in a depression when coming out of the furnace.

The tap slags are characteristic due to their well molten and rippled surfaces, an indication that they flowed out of the furnace structure. Their top surfaces are mostly matt dark greyish blue in colour with smooth and well-formed ripples (Figs 1 and 3). These ripples are mainly between 10 and 30mm wide which is suggestive that the slag must have been quite viscous. It is also apparent on some fragments that overlapping tendrils of slag fused together in layers to form larger slabs. Overall the tap slag is quite solid with very little porosity, apart from some sparse tiny (<2mm) spherical holes. On the larger fragments the porosity is more pronounced with larger spherical holes (most around 5 to 10mm), sometimes elongated (up to 40mm in length) and primarily concentrated below the top surface. This is an indication that the slag must have cooled fast, trapping gas as the surfaces hardened. In some cases the upper crust of the slag has broken revealing these voids and giving a crater like appearance to the otherwise smooth upper surfaces.

Their undersides are mainly smooth and undulated, metallic bluish grey in colour (Figs 2 and 4). These undulations are likely to have been created by the slag running over small obstructions like pebbles and stones, retaining their shape when it solidified. Some of the tap slag has fragments of burnt clay adhering to their undersides (Fig 4), which may be parts of the furnace structure. The surrounding floor of the furnaces may indeed have had a significant amount of burnt clay, perhaps fragments from the opening of the tapping arch or from damage sustained to the furnace structure in previous smelts.

Fig 1. Top of tap slag fragments from context (163).

Fig 2. Bottom of tap slag fragments in Fig 1.

Fig 3. Top of tap slag fragments from context (234).

Fig 4. Bottom of tap slag fragments in Fig 3.

There are also some tap slag fragments in contexts (236), [232], (241) and (245) that resemble the start of slag flows (Figs 5 and 6). These are quite thick (up to 80mm) with adhering burnt clay on one side. They usually comprise of well formed overlapping tendrils of greyish blue slag flowing in one direction. The slag appears to flow away from the sides with adhering clay and is undoubtedly the start of a slag flow where tap slag ran out of the furnace. It is unclear whether these were intentional flows or that slag was escaping through cracks in the furnace wall.

Fig 5. Side view of slag flow from context (245).

Fig 6. Opposite side view of slag flow in Fig 5.

Furnace Slag Cakes

Furnace slag cakes were the most abundant slag type by weight (77617g), accounting for approximately 30% of the assemblage. They also comprise the largest surviving slag fragments in the assemblage ranging from 110x62x87mm to 352x303x184mm. The majority of the cakes are broken, around 150-200mm in length (diameter) and 60-120mm in depth. Slag cakes are diagnostic due to their large size and curved edges. In most cases they have convex undersides and at least one surviving curved side. These rounded sides often have clay adhering to them and combined with their convex undersides suggests that they most likely formed on the bottom of the furnace (Figs 7 to 14). The majority of these slag cakes (almost half by weight) are found in context (268) and cut [232]. There are two main types of slag cake; a more solid type with few charcoal impressions and low porosity and another less solid with abundant tendril like slag and more charcoal impressions.

The majority of the slag cakes have rough top surfaces that appear to have been well molten (Figs 7, 9 and 12). They look quite smooth to the eye but are covered in small protrusions of material (sometimes quite sharp) making them rough to the touch. The top surfaces are often slightly concave (Figs 7 and 10) and are mainly dominated by dark brownish red and orangey reddish brown patches. These patches are likely to be a mixture of soil staining and corrosion. It is possible that the bloom may have formed just above these cakes; resting in the concave impression. Some cakes have charcoal impressions on their upper surfaces while on others they are partially broken. Overall, the surviving upper surfaces are quite solid with no or very little porosity. In some cases porosity is apparent with very few spherical, sometimes elongated random holes (10-20mm).

On the broken sides, the greatest proportion of slag cakes reveal many charcoal impressions (Fig 10) varying in size between 10 and 60mm (most between 10 and 30mm). In some cases the charcoal partially survives with small friable remains adhering to their impressions. It is clear that the slag must have formed inside the furnace around the charcoal charge. The fractures also reveal dark bluish grey slag showing medium to high porosity with abundant tiny spherical holes usually <2mm and some more random larger holes (5-10mm). These slag cakes tend to have irregular undersides. The majority have networks of rounded (smooth) slag tendrils surrounded by varying proportions of charcoal impressions (Figs 8, 11 and 14). On the whole these seem to have been in contact with a hard surface as they are partially flattened and the undersides convex (Fig 10 and 13). It is likely that these formed on the bottom of the furnace, flowing through the charcoal and trapping it when the slag solidified. In some instances the undersides are more agitated and rougher with protrusions of material.

Fig 7. Top of slag cake from cut [232].

Fig 8. Bottom of slag cake in Fig 7.

Fig 9. Top of slag cake from context (245).

Fig 10. Side view of slag cake in Fig 9.

Fig 11. Bottom of slag cake in Fig 9.

Fig 12. Top of slag cake from context (268).

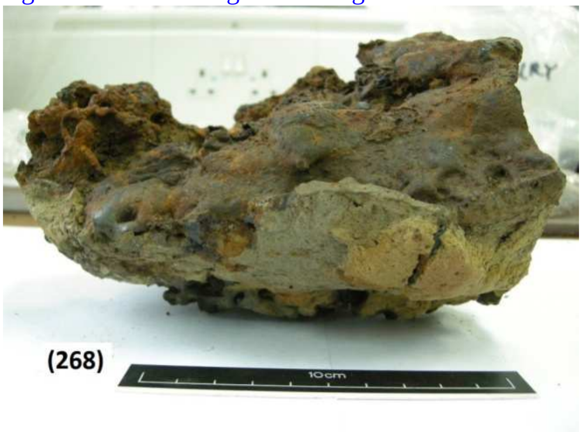

Fig 13. Side view of slag cake in Fig 12.

Fig 14. Bottom of slag cake in Fig 12.

Some of the cakes are more solid with fewer charcoal impressions (sometimes none – Figs 15 to 17). The broken edges of these reveal a dark bluish grey slag with little porosity. They have some small (<5mm) spherical holes and in a few instances there is larger elongated porosity close to the top surfaces. These slag cakes also tend to have more solid undersides. These are mostly convex in shape and quite rough to the touch with tiny protrusions of material. This slag must have been very fluid and pooled on the bottom of the furnace in parts where there was little charcoal.

Fig 15. Top of more solid slag cake fragment from cut [232].

Fig 16. Side view of more solid slag cake fragment in Fig 15.

Fig 17. Bottom of more solid slag cake fragment in Fig 15.

Amorphous Furnace Slag

Amorphous furnace slag is the second most abundant slag type by weight (74258g) accounting for approximately 29% of the assemblage. It is also the most predominant in terms of quantity and varies in size from 15x15x10mm to 180x136x89mm. This slag is amorphous in shape and mainly consists of broken edges with few original surfaces remaining (Figs 18 to 23). They are diagnostic as furnace slag due to the numerous charcoal impressions visible on the broken edges.

The broken surfaces are very rough with sharp protrusions of slag that was shaped around charcoal lumps 10 to 60mm in size (most impressions around 10-30mm). The impressions sometimes have remains of friable charcoal adhering to them (Fig 22) but for the most part it has degraded leaving clear imprints in the slag. The fragments are covered in varying orangey reddish yellowy brown and dark reddish brown patches which is certainly a mixture of corrosion and soil staining (Fig 21). The broken edges expose dark bluish grey slag with medium to high porosity, covered in tiny (<2mm) mainly spherical holes (Figs 18 to 23). There are also a few larger, irregular sometimes angular holes (<10mm).

Due to the large quantity of charcoal inclusions the majority of the fragments are quite light and porous but in some cases part of the natural edges survive revealing more solid and dense slag. Some of these natural edges are well molten, rounded and smooth greyish blue slag which resembles the tendrils observed on the slag cakes (Fig 23). This shows that the slag was once well molten and must have flowed through the charcoal charge, retaining their shape when it cooled. Other edges are rougher with some protrusions of material while some have rough and flattish crust like surfaces resembling the top surfaces of the slag cakes. Indeed it is possible that some of these amorphous lumps are broken remains of slag cakes. Also, in a few instances there is burnt clay adhering to the fragments which suggests that some fragments solidified against the furnace wall.

Fig 18. Amorphous slag fragments from cut [232].

Fig 19. Amorphous slag fragments from context (236).

Fig 20. Amorphous slag fragments from context (320).

Fig 21. Amorphous slag fragments from context (245).

Fig 22. Amorphous slag fragment from cut [232].

Fig 23. Amorphous slag fragment from cut [232].

A small minority of the amorphous slag fragments are made of dense and less porous slag. These are bluish grey in colour and have lost any diagnostic natural edges. They also have fewer charcoal impressions than the rest of the amorphous lumps. The porosity mainly consists of tiny (<2mm) spherical holes. They are most probably broken fragments of the more solid slag cakes or indeed just slag that has collected and solidified in an area of the furnace with little charcoal.

Shaped/Curved Slag

Shaped slag accounted for 7% of the assemblage (17463g). This slag type is diagnostic due to its curved/rounded shape.

The slag is mostly solid but some pieces have holes usually <5mm. They have well molten bluish grey and concave top surfaces (Fig 24 and 25). These range from relatively smooth to mid-rough with protrusions of material. The undersides are mainly convex and often covered in clay that was part of the furnace lining (Fig 26). This slag type had solidified against the furnace wall; lining the inside of the furnace. The slag varies greatly in thickness from 10mm to 70mm depending on where in the furnace it solidified. Some of the slag must have pooled close to the bottom of the furnace as they are quite thick and curved (convex) only on one edge, often with adhering clay (Figs 27 to 29).

Fig 24. Top surface of curved furnace slag from cut [232].

Fig 25. Side view of curved furnace slag in Fig 24.

Fig 26. Bottom surface of curved furnace slag in Fig 24.

Fig 27. Top surface of curved furnace slag from cut [35].

Fig 28. Side view of curved furnace slag in Fig 27.

Fig 29. Bottom surface of curved furnace slag in Fig 27.

Smithing Slag

Smithing waste is usually hard to distinguish from the large quantity of smelting debris and due to their high iron content they often do not survive post depositional processes. However, there are some fragments in the assemblage which differ from the typical smelting waste and could have been produced by smithing. These account for approximately 5% of the assemblage (11620g) and range in size from 33x21x23mm to 157x134x65mm.

They differ from the rest of the assemblage by being almost complete with few broken edges (Figs 30 to 33). Their shape is usually quite rounded and they appear to have been well molten. They have mid-rough surfaces often covered by yellowy orange patches which must be a mixture of corrosion and soil staining. Some are amorphous in shape and rougher with protrusions of slaggy material. They lack the diagnostic large charcoal impressions of the furnace slag but have numerous tiny (<10mm) charcoal impressions and inclusions imbedded in their surfaces (Fig 30). Many also have dark grey, sometimes metallic flaky material adhering to the natural edges. These are almost certainly hammerscale and strengthen the supposition that these slags resulted from smithing. Most are quite light but there are three small fragments in contexts (164), (245) and (320) which are denser and magnetic. These must have a higher proportion of metallic iron and could even be part of the iron blooms; perhaps fragments lost or discarded during the smithing process.

Fig 30. Possible smithing slag fragment from cut [232].

Fig 31. Possible smithing slag fragment from context (245).

Fig 32. Possible smithing slag fragment from context (247).

Fig 33. Possible smithing slag fragment from context (281).

A few fragments appear to be smithing hearth bottoms (in contexts (227), (239), (268) and cut [232]). These are larger than the majority of the other well rounded fragments but smaller than the smelting cakes. They are almost spherical in plan (but some amorphous) and most have slightly concave top surfaces (appearing quite molten) and convex undersides sometimes with larger charcoal impressions (Figs 34 to 36). This is indicative that they must have solidified under the blowing hole of the hearth. They share the same characteristics as the other smithing waste with well rounded mid-rough surfaces, small charcoal inclusions and some adhering hammerscale. A minority of the fragments have larger charcoal impressions up to 70mm but these are few (Fig 36). Some are only fragmentary and have broken edges revealing dark greyish blue slag with the high porosity characteristic of smithing waste (Fig 36). The porosity is abundant and the holes are a mixture of small (<5mm) spherical and irregular holes as well as some larger (mostly <10mm) irregular holes.

Fig 34. Top of possible smithing hearth bottom from cut [232].

Fig 35. Side view of possible smithing hearth bottom in Fig 34.

Fig 36. Bottom of possible smithing hearth bottom in Fig 34.

Non-diagnostic

About 4% (11174g) of the assemblage is non-diagnostic slag. The fragments are all amorphous in shape and quite small (10 to 80mm at their widest point) with the majority under 30mm. Their small size combined with the fact that most are entirely comprised of broken edges (Figs 37 and 38) means that they lack any major diagnostic features and cannot be characterised in any one particular slag grouping discussed above. However, their density and colour indicates that these fragments were more likely the result of ironworking rather than the manipulation and production of other metals.

Fig 37. Non-diagnostic slag fragments from context (234).

Fig 38. Non-diagnostic slag fragments from context (245).

Clay

The assemblage contained 15738g of clay, accounting for approximately 6% of the material collected. The clay is quite fragmentary with the majority of fragments below 60mm in size but with some as large as 117x96x54mm. All the clay is burnt, varying in colour from a bright orangey red to dark grey (Figs 39 and 40). A large proportion of the clay fragments also have one vitrified side. This vitrification has a rounded molten appearance; dark grey in colour and mid-rough with some protrusions of material (Figs 41 and 43). These fragments have a clear transition of colour from the more reduced dark grey clay close to the vitrification (with subsequent lighter shades of grey) to the natural orangey red colour of oxidised clay (Figs 42 and 44). All the clay is very similar with a very fine sandy and friable texture. On the whole it was free of larger inclusions and grog but some fragments had very few tiny charcoal or flint inclusions (<5mm). Whether these were added intentionally or were present in the natural clay is uncertain. Due to the fragmentary nature of the clay fragments, none revealed any diagnostic features. However, the fact that many were vitrified would suggest that they were exposed to very high temperatures and almost certainly were part of the furnace structures, most probably the furnace lining. In support of this is the fact that the clay fragments appear to be the same as the clay residues adhering to the furnace slags. None of the clay comprises of the complete furnace wall width but some of the larger fragments are curved with vitrification on their inner concave sides.

Fig 39. Burnt clay fragments from context (167).

Fig 40. Burnt clay fragments from context (227).

Fig 41. Vitrified clay fragments from context (234).

Fig 42. Reverse view of vitrified clay fragments in Fig 41.

Fig 43. Vitrified clay fragments from context (236).

Fig 44. Reverse view of vitrified clay fragments in Fig 43.

Ore

Ore accounted for approximately 1% of the assemblage (2505g). The majority of the ore appears to have been roasted. Most fragments are small (below 60mm) but some are as large as 150mm (Figs 45 to 48). These are mainly angular in shape with flattish and reasonably smooth surfaces. Most are orangey, yellowish red in colour with some dark red patches. Some of the ore fragments have large quartz inclusions (Figs 46 and 47). None of the fragments are magnetic.

Fig 45. Ore fragments from context (164).

Fig 46. Ore fragments from cut [35].

Fig 47. Ore fragments from context (281).

Fig 48. Ore fragments from context (245).

Soil Samples

The 26 soil samples were visually examined (Appendix 2). This preliminary observation revealed that the majority of them contain some metallurgical debris. Most contain at least some slag, burnt clay, charcoal or ore. The slag is varied but comprises of the major types discussed above. The burnt clay is also the same fine sandy type described above and must have been part of the furnace structure/lining. An interesting aspect is that at least 11 of the soil samples (1, 2, 5, 6, 9, 15, 16, 17, 19, 22 and 25) contain hammerscale flakes and/or spheroid hammerscale. It is also likely that the majority of the other soil samples contain some hammerscale (<1%) which was not identified in the preliminary observation, as hammerscale was found in two 1 litre sub-samples (10 and 14) after sieving which had not been identified before. This strongly suggests that smithing was occurring near the furnaces at both sites (F113 and F119).

Two samples in particular have a greater content of hammerscale (6 and 17). Sample 6 (context 38) has around 10-15% hammerscale in the >1mm sized material while sample 17 (context 269) has approximately 35-40% hammerscale in the >1mm sized material. Sample 17 also has smithing flats (Figs 49 and 50) and a mixture of spheroidial and large flake hammerscale which is suggestive that the iron blooms must have been smithed when they came out of the furnaces and perhaps turned into billets (Crew 1996; Paynter *et al* forthcoming). Smithing flats are evidence of primary smithing while the large quantity of hammerscale flakes may be indicative of secondary smithing. This is interesting as no Iron Age site to date as provided such evidence. The amount of hammerscale in sample 17 suggests that smithing was occurring very close to that area (Bayley *et al* 2001). Context (269) is described as being part of the backfill of the furnace construction pit [211] (furnace 210). This is located close to the centre of the site; therefore it is possible that this area was reserved for smithing.

Fig 49. Smithing flats in soil sample 17 – context (269).

Fig 50. Reverse view of smithing flats in Fig showing the flattened sides.

Scientific Analysis

Twenty five samples were taken for analysis. Five slag cake fragments (STK1 to STK5), five amorphous furnace slag fragments (STK6 to STK10), five tap slag fragments (STK11 to STK15) and three possible smithing slag fragments of which one is a possible hearth bottom (STK16 to STK18). In addition three clay fragments (STK19 to STK21) and four ore fragments (STK22 to STK25) were also sampled. Samples were taken from both sites (F113 and F119) to represent each material type (apart from smithing slag of which there was no evidence for in F113). Table 3 below shows which site and context the samples were taken from as well as the size and weight of the sampled fragments. For the location of cut samples please refer to Appendix 3.

Table 3. Contextual and material information of the selected samples as well as the size (mm) and weight (grams) of the material fragments they were taken from.

Sample	Site/Area	Context	Material Type	Size of Fragment (L x W x D mm)	Weight (g)
STK1	F113	8	Slag Cake	166x147x97	2254
STK2	F119	[232]	Slag Cake	153x128x72	1283
STK3	F119	[232]	Slag Cake (solid)	86x73x57	695
STK4	F119	268	Slag Cake (solid)	152x104x84	1753
STK5	F119	320	Slag Cake (solid)	147x90x58	1465
STK6	F113	[35]	Amorphous Furnace Slag	92x63x50	216
STK7	F113	56	Amorphous Furnace Slag(*)	152x95x73	1155
STK8	F119	[232]	Amorphous Furnace Slag	163x89x65	970
STK9	F119	242	Amorphous Furnace Slag	82x54x58	197
STK10	F119	320	Amorphous Furnace Slag	113x88x84	775
STK11	F113	[35]	Tap Slag	51x36x23	57
STK12	F113	70	Tap Slag	43x32x23	46
STK13	F119	[232]	Tap Slag	102x71x41	411
STK14	F119	236	Tap Slag	66x59x25	135
STK15	F119	320	Tap Slag	84x48x34	192
STK16	F119	164	Smithing (bloom?)	45x33x25	70
STK17	F119	[232]	Smithing (hearth bottom)	110x83x51	798
STK18	F119	320	Smithing (bloom?)	70x48x42	230
STK19	F113	[35]	Clay (part vitrified)	53x40x27	41
STK20	F119	236	Clay (part vitrified)	85x48x29	92
STK21	F119	245	Clay	66x50x29	66
STK22	F113	[35]	Ore	39x31x28	49
STK23	F119	245	Ore	86x74x35	225
STK24	F119	281	Ore	110x80x49	468
STK25	F113	[35]	Ore		

(*) - solid

Slag Microstructure

All the slag in the assemblage have microstructures typical of iron bloomery slags (McDonnell 1986; Morton and Wingrove 1969). The area percentages of the crystalline phases in each sample are given in Table 4.

Table 4. The area percentage of micro-structural phases in each slag sample.

Sample	Fayalite	Wüstite	Glassy Matrix	Hercynite	Leucite
STK1	79	11		10	Present
STK2	68	19	7	6	Present
STK3	60	13	27		
STK4	37	50	13	<1	
STK5	56	30	8	6	Present
STK6	40	49	11		
STK7	50	26	24	<1	Present
STK8	35	45	20		Present
STK9	79	12	7	2	(few)
STK10	29	51	20		(very few)
STK11	59	22	19	<1	
STK12	72	3	19	6	
STK13	79	4	11	6	(very few)
STK14	56	20	24	<1	
STK15	64	13	23	<1	
STK17	24	60	16		

Fayalite (Fe_2SiO_4) in most cases was the most predominant micro-structural phase making between 24% and 79% of the area of the slag. The fayalite was present as a mixture of equiaxed grains ranging from 50 to 700 microns in size and elongated feathery (sometimes skeletal) laths ranging in size from 100 to 4000 microns in length. The shape and size varied greatly depending on the area of the sample in which it was located. It was observed that the fayalite tended to get smaller and more elongated closer to the natural edges (Figs 51 and 52) or solidification fronts. Smaller crystals usually indicate faster cooling so it is not surprising to find these close to edges.

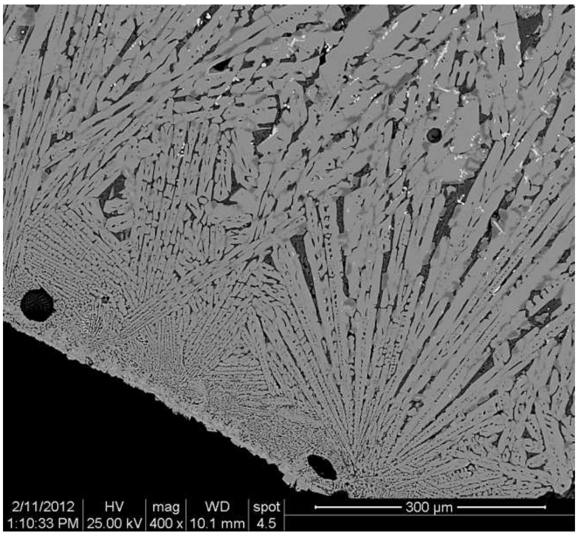

Fig 51. Fayalite getting smaller and more elongated close to edges in STK12.

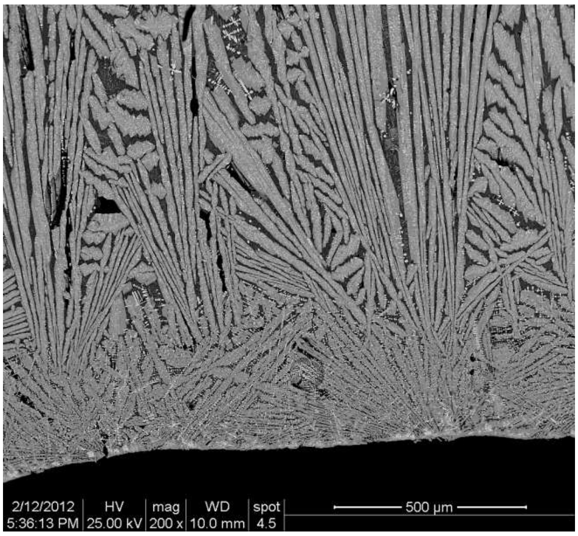

Fig 52. Fayalite getting smaller and more elongated close to edges in STK15.

It is also interesting that the fayalite tends to be larger in the furnace slag than in the tap slag. Indeed the fayalite in the tap slag is mostly fine skeletal and very elongated laths (Fig 53), mainly 100 to 900 microns in length (but some very fine ones as long as 4000 microns in samples STK14 and STK15 – Fig 54), while in the furnace slag these are much thicker and usually quite feathery, mainly 500 to 2000 microns in length (Figs 55 and 56). As the tap slag ran out of the furnace it undoubtedly cooled and solidified faster leaving less time for the fayalite crystals to grow. There also tends to be grainier fayalite in the furnace slag; samples STK1, STK2, STK7 and STK9 are dominated by large equiaxed grains of fayalite (Figs 57 and 58).

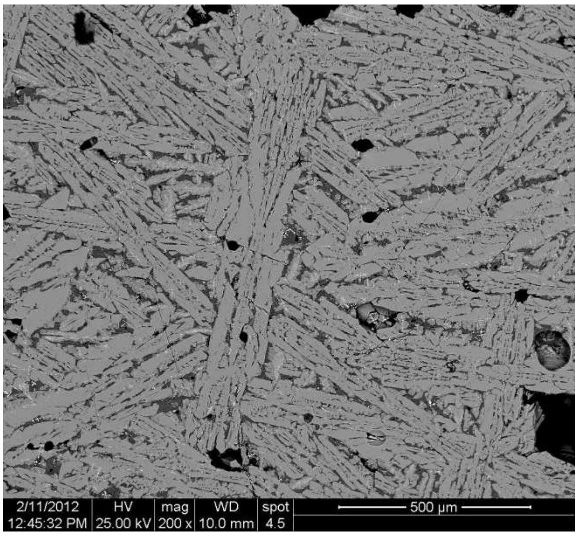

Fig 53. Fayalite laths in tap slag STK12.

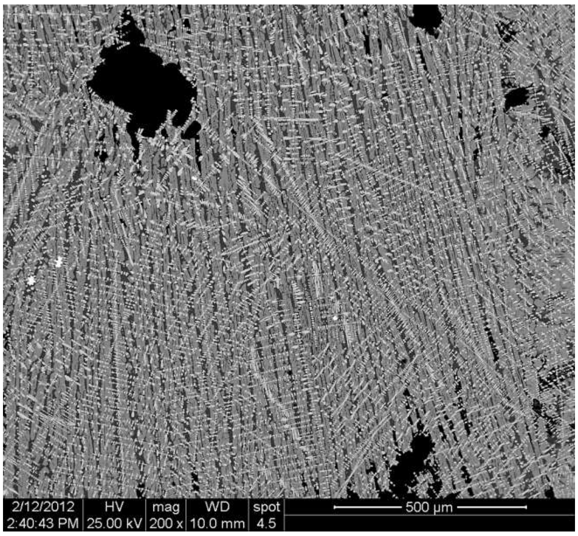

Fig 54. Fine elongated fayalite laths in tap slag STK14.

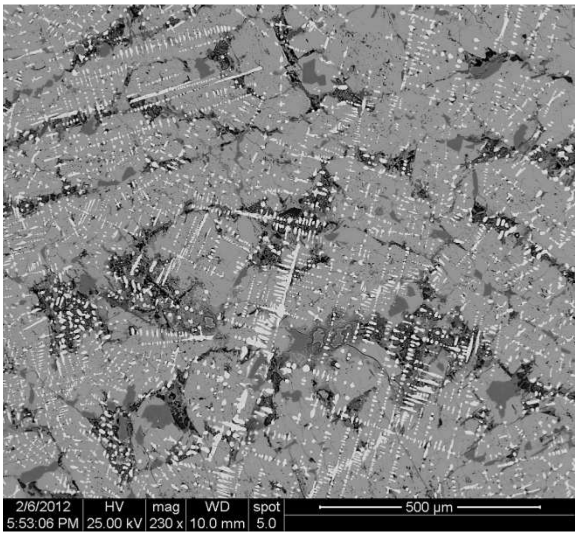

Fig 55. Large feathery fayalite laths in slag cake STK2.

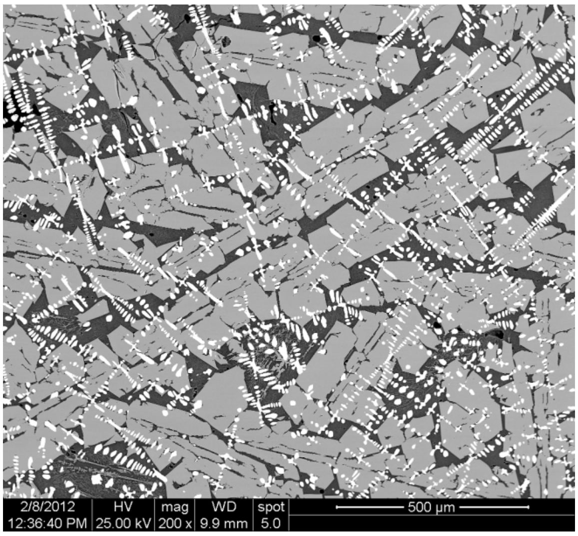

Fig 56. Large fayalite laths in slag cake STK3.

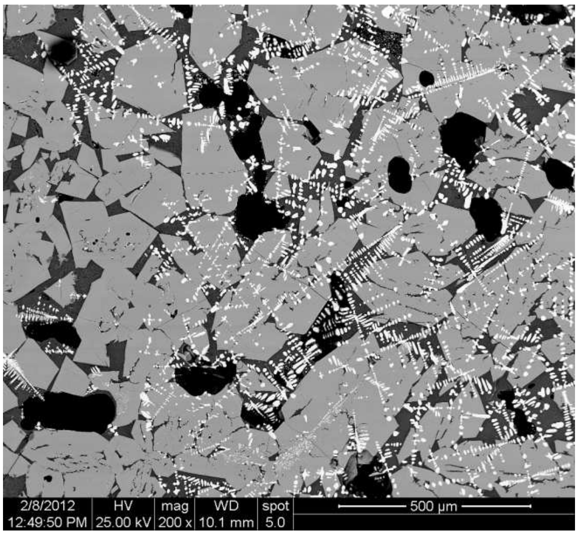

Fig 57. Grainy fayalite in STK3.

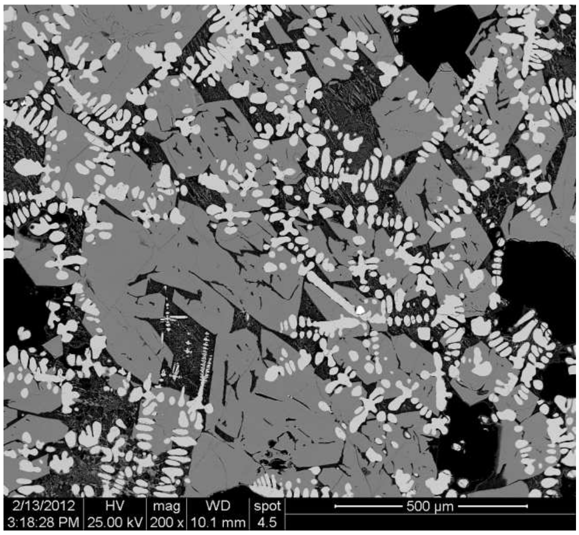

Fig 58. Grainy fayalite in STK7.

In samples STK6 and STK8 the edges of some of the fayalite crystals appear darker (Fig 76). In these areas Ca partially substitutes the Fe giving a chemical composition close to that of kirschteinite ($CaFeSiO_4$).

The second most abundant phase was usually wüstite (FeO) accounting for 3% to 60% of the area of the slag. Wüstite was present in three main forms; well formed dendrites, globular grains and in very fine eutectic (dotty) concentrations. In most samples the wüstite precipitated first above the fayalite phase and mainly took a dendritic or globular form. The dendrites could be very fine and well formed (STK2, STK3, STK5, STK9, STK11, STK14 and STK15 – Figs 59 and 60) ranging in size from 50 to 1800 microns, or thicker and more globular (STK1, STK4, STK6, STK7 and STK10 – Fig 61) ranging in size from 10 to 550 microns. Globular wüstite was present in samples STK2, STK5, STK6, STK7 and STK9 but mainly dominated the microstructures of STK4, STK8, STK10 and STK17 (Fig 62). The globular wustite grains ranged in size from 10 to 300 microns and in some cases started to form elongated networks up to 450 microns in length. Eutectic wüstite was present in samples STK1, STK9, STK12, STK13 and STK15. This dotty sometimes myrmekitic (wormlike) wüstite concentrated on fayalite laths (Figs 63 and 64). Like the fayalite, the wüstite varied greatly in size depending on its location in the samples. The dendrites and globules tended to get smaller and thinner the closer to the natural edges or solidification fronts.

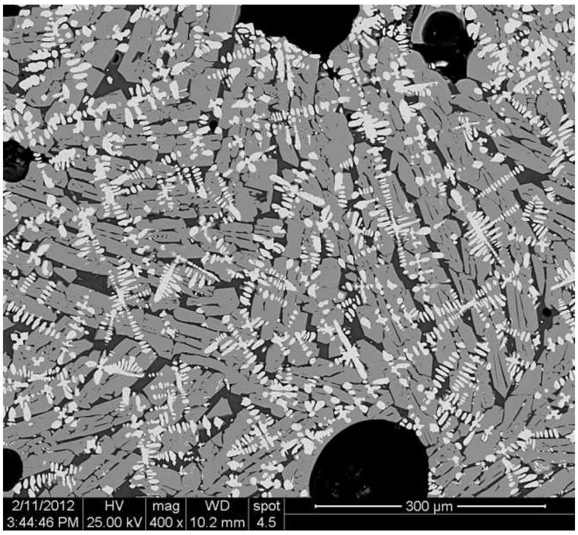

Fig 59. Well-formed wüstite dendrites in STK11.

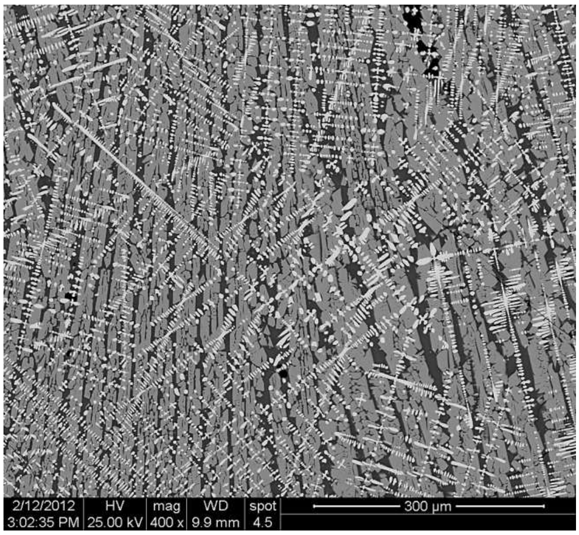

Fig 60. Well-formed wüstite dendrites in STK14.

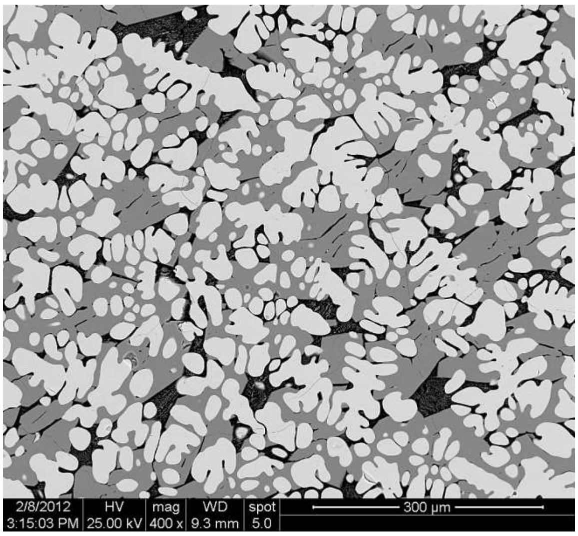

Fig 61. Globular wüstite dendrites in STK4.

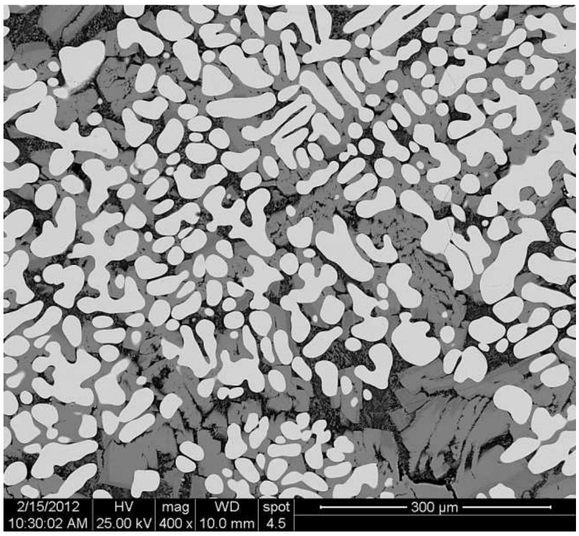

Fig 62. Globular wüstite in STK8.

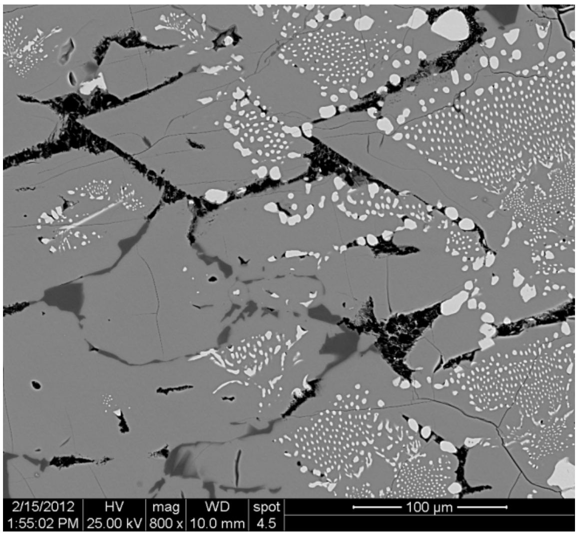

Fig 63. Eutectic wüstite in STK9.

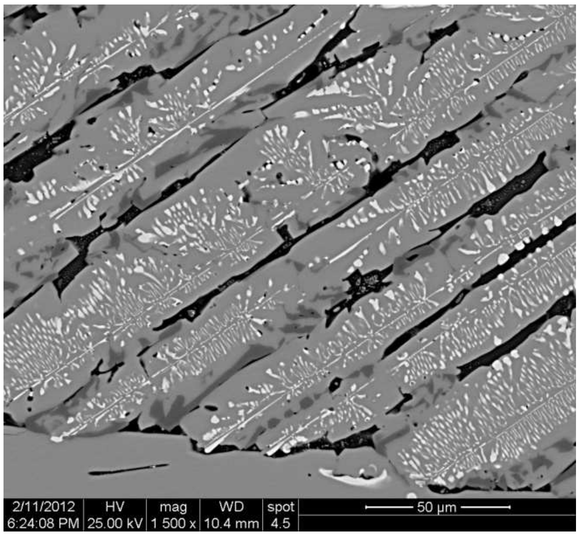

Fig 64.Eutectic wüstite in STK13.

It may be important to stress that the tap slag samples tended to have the least wüstite. This may be because tap slag forms and runs when the furnace is running at an optimum temperature while the furnace slag may still have been subject to reducing/oxidising environments making it likely to be less homogenous and retain higher percentages of iron oxide. Solidification fronts were only present in the tap slag (Figs 65 and 66). These bands of iron oxide represent the partial solidification of a slag surface. As discussed in the morphological analysis of the tap slag it was noticeable that many were formed of layers of overlapping slag runs. The surfaces of these slag runs must have partially solidified before being covered by additional slag, hence forming these solidification fronts. It is possible that in a few of these samples (notably STK13) the iron oxide close to the edges is magnetite (Fe_3O_4).

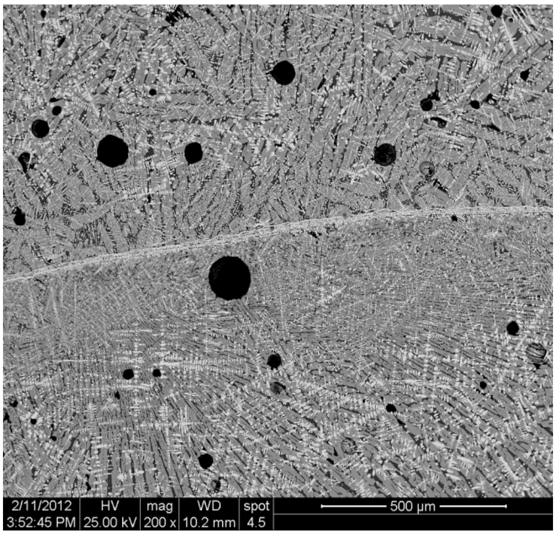

Fig 65. Solidification front in STK11.

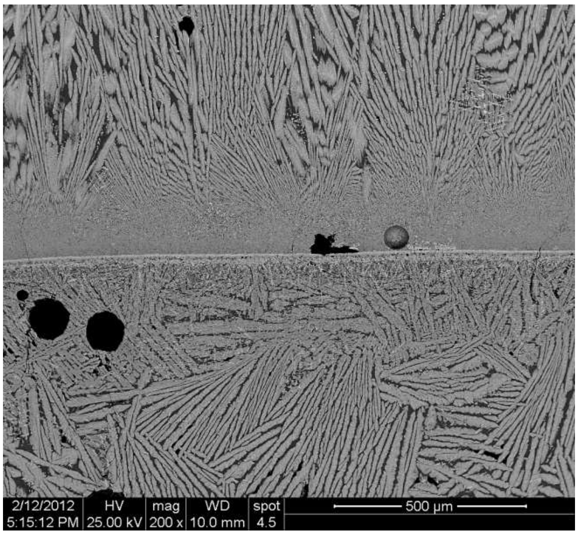

Fig 66. Solidification front in STK15.

Hercynite ($FeAl_2O_4$) was present in most samples (the exceptions being STK3, STK6, STK8 and STK10). In samples STK4, STK7, STK11, STK14 and STK15 it was very sparse with only a few hercynite concentrations but in samples STK1, STK2, STK5, STK9, STK12 and STK13 it accounted for as much as 10% of the area of the slag. The majority of the hercynite was present as angular crystals scattered within the fayalite (Figs 67 and 68). These ranged in size from 10 to 200 microns. Hercynite was also present as small but elongated patchy networks (almost wormlike) concentrating around the glassy matrix and larger free standing wüstite (Figs 69 and 70). The angular hercynite crystals present in the tap slag samples (STK11 to STK15) tended to be smaller (<10 microns – Figs 69 and 70) and there was also a considerable amount of elongated networks around the glassy matrix (up to 40 microns in length).

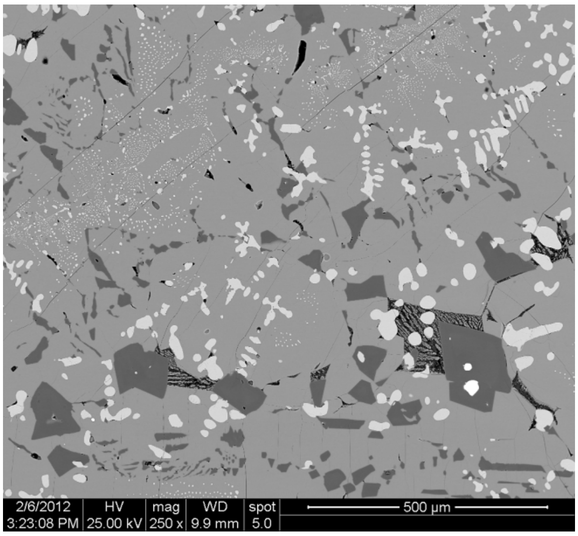

Fig 67. Large angular hercynite (mid grey) in STK1.

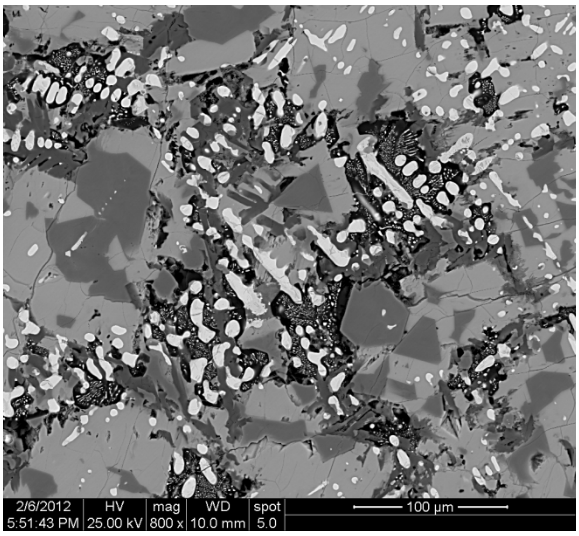

Fig 68. Large angular hercynite (mid grey) in STK2.

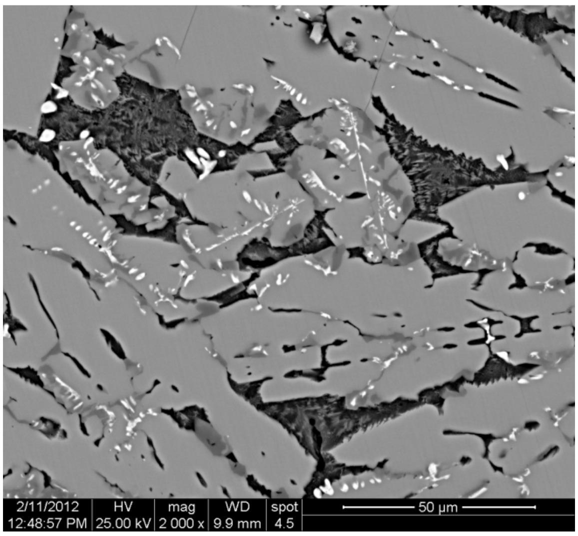

Fig 69. Elongated networks of hercynite (mid grey) forming close to glassy matrix in STK12.

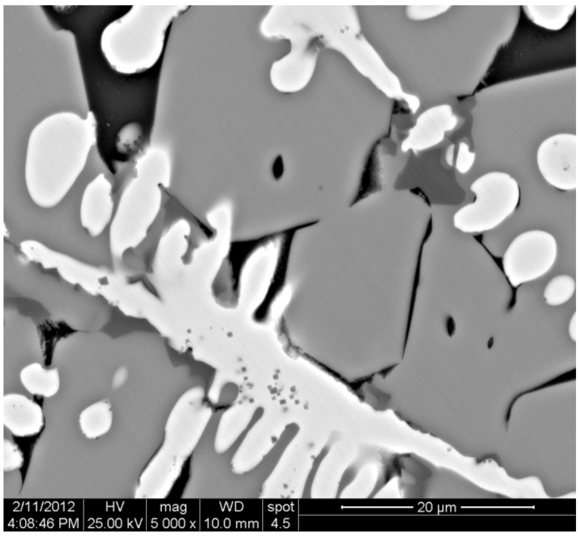

Fig 70. Tiny hercynite crystals (mid-grey) forming around wustite and glassy matrix in STK11.

The remainder of the slag microstructures were listed in Table 4 as glassy matrix (McDonnell 1986); however, careful examination shows extensive de-vitrification in those areas. In most samples (especially STK3, STK4, STK6, STK7, STK8 and STK15) there were tiny secondary fayalite laths within the glassy matrix (Figs 71 and 72). Leucite ($KAlSi_2O_4$) was also present in samples STK1, STK3, STK5, STK7, STK8, STK9, STK10 and STK13. These were mainly globular grains 10 to 100 microns in size (most 10 to 50 microns) with eutectoid wüstite within them (Figs 73 to 76). The leucite concentrated in the glassy matrix and dominated that phase in samples STK1, STK2 and parts of STK5, STK7 and STK8. Sometimes the leucite concentrated close to larger porosity (STK7 and STK10).

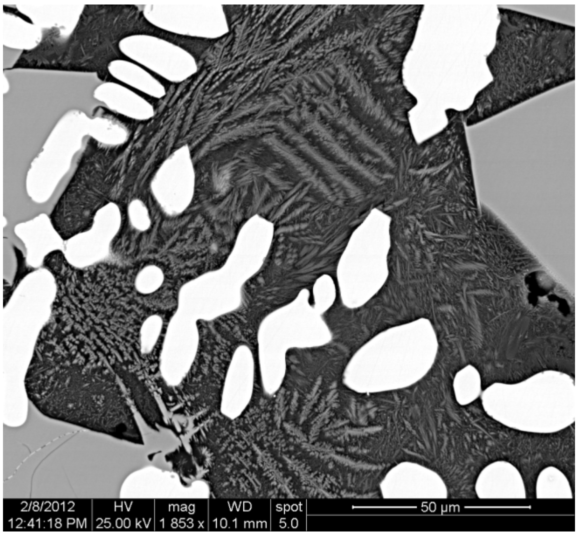

Fig 71. Secondary fayalite within matrix in STK3.

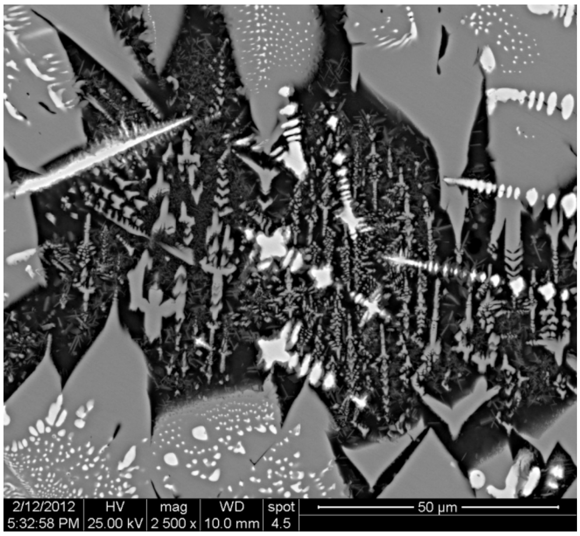

Fig 72. Secondary fayalite within matrix in STK15

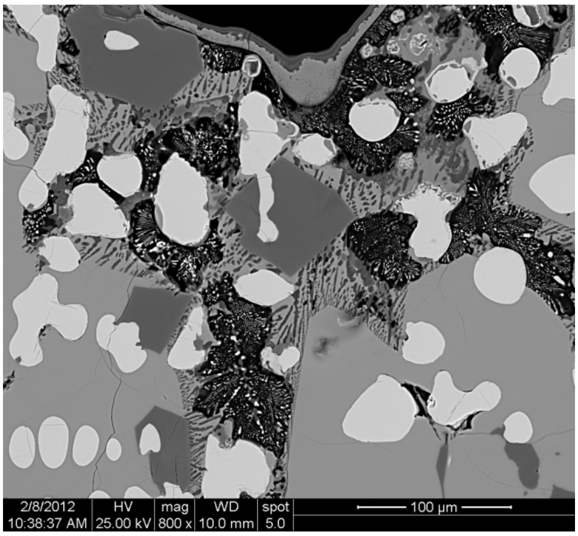

Fig 73. Leucite grains with wüstite eutectic within matrix in STK1.

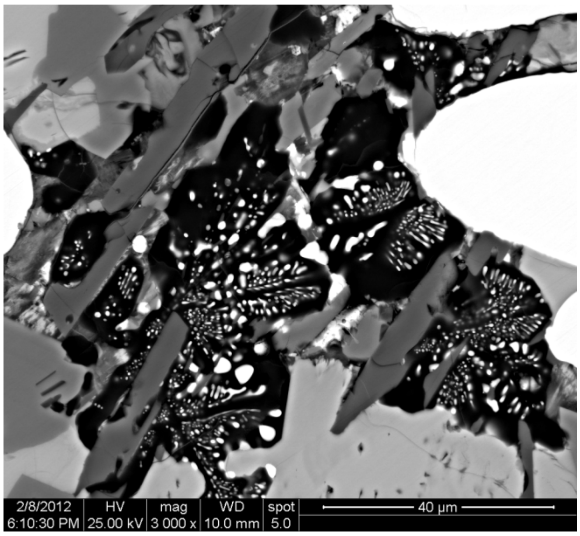

Fig 74. Leucite grains with wüstite eutectic within matrix in STK5.

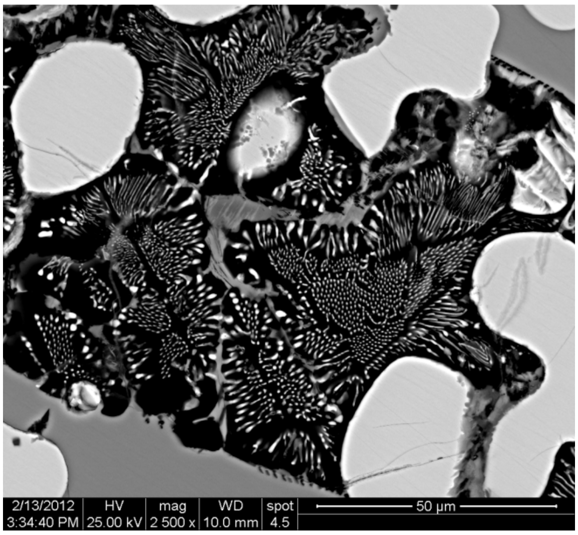

Fig 75. Leucite grains with wüstite eutectic within matrix in STK7.

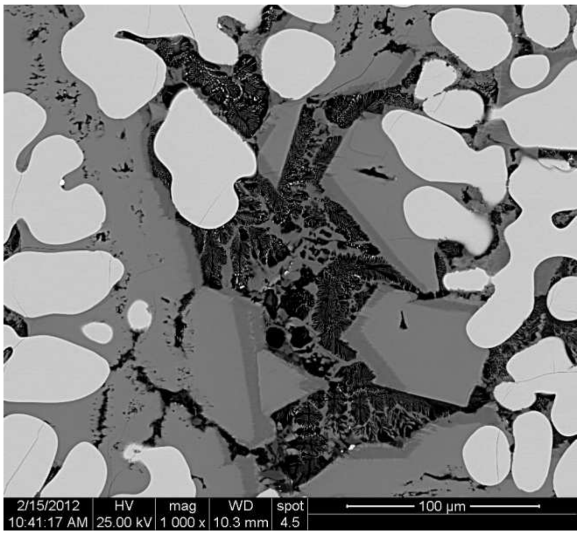

Fig 76. Leucite grains with wüstite eutectic within matrix in STK8.

An unusual phase was the presence of calcium phosphate crystals in samples STK1, STK2, STK5, STK7 and STK9. Also there were some calcium aluminium silicate crystals in samples STK7, STK9 and STK10. The calcium phosphates were usually small elongated (thin) and angular crystals (most between 10 and 70 microns) concentrating in and around the glassy matrix (Figs 77 and 78). These had a chemical composition close to that of apatite (Ca_5PO_4) but in some cases had as much as 10wt% SiO_2. The calcium aluminium silicate crystals were also angular and elongated (3 to 30 microns) and tended to form close to the calcium phosphate crystals or leucite grains (Figs 79 and 80). These were part of the aenigmatite group with a chemical composition close to rhonite ($Ca_2(Fe^{2+}$, Fe^{3+}, $Ti)_6(Si,Al)_6O_{20}$) with the FeO (Fe_2O_3) sometimes partially substituted by TiO_2. Both phases were only present in isolated parts of the samples and made only a tiny proportion of the area of the slag (<0.1%).

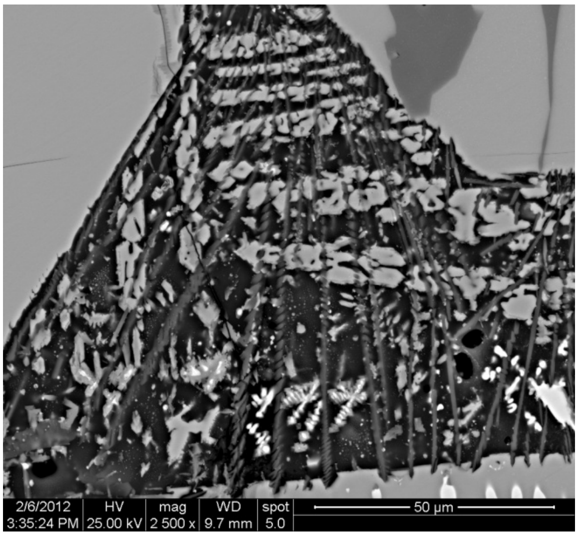

Fig 77. Elongated CaP crystals (dark grey) within matrix in STK1.

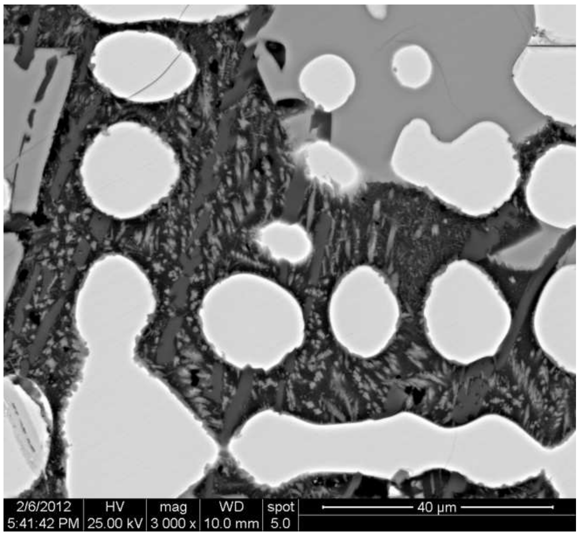

Fig 78. Elongated CaP crystals (dark grey) within matrix in STK2.

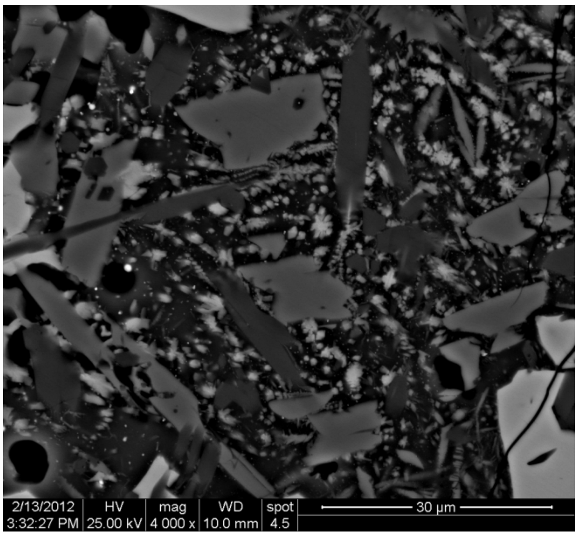

Fig 79. Elongated CaP crystals (dark grey) and angular CaAlSi crystals (mid grey) within matrix in STK7.

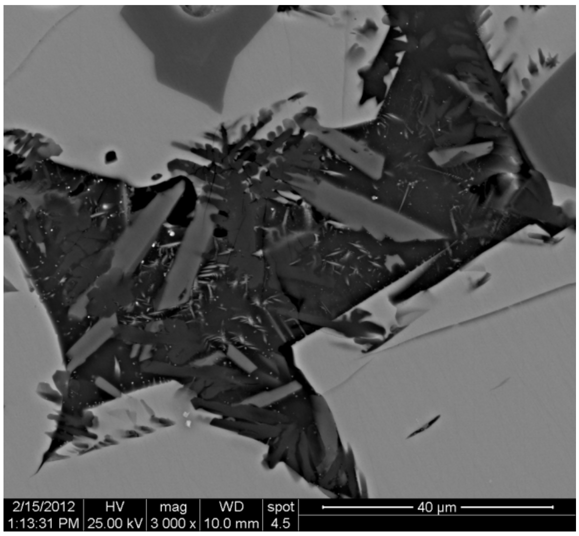

Fig 80. Elongated CaP crystals (dark grey) and angular CaAlSi crystals (mid grey) within matrix in STK9.

On the other hand, most of the tap slag had well vitrified glassy matrixes (Figs 81 and 82) with no or few crystalline formations (STK13 being the exception as there is some phase separation – Fig 83). This must be because the tap slag having run out of the furnace must have cooled faster inhibiting phase separation in the glassy matrix. The presence of hercynite and leucite in the majority of the samples suggests that the ore (other than Fe and Si) was rich in other elements (Al and K) or that the furnace wall made a significant contribution to the slag.

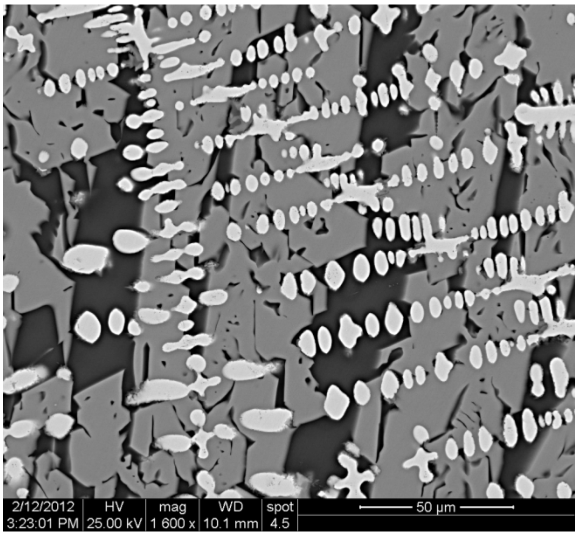

Fig 81. Clear glassy matrix in STK14.

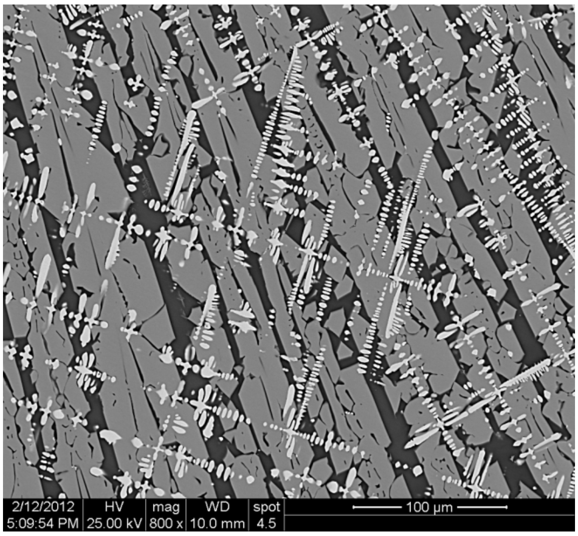

Fig 82. Clear glassy matrix in STK15.

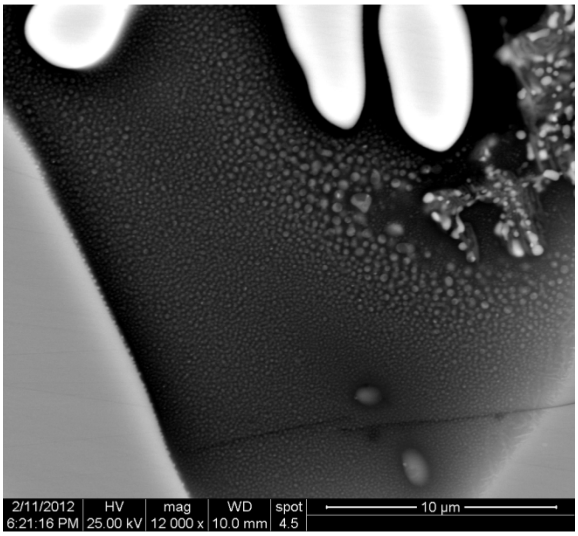

Fig 83. Phase separation in glassy matrix in STK13.

There was no major micro-structural difference between slags from site/area F113 and F119. Indeed the major micro-structural variation seen was between slag types. Overall, the furnace slag tended to be less homogenous and contained a greater variation of micro-structural phases (leucite, calcium phosphates and calcium aluminium silicates) than the tap slag. The crystal size tended to be larger and the proportion of phases varied more in the furnace slag. This is not surprising as the tap slag would have been fully molten when it ran out of the furnace which would have facilitated a more uniform micro-structure to form. Also they would have cooled faster leaving less time for crystalline phases to grow. Another major difference was that the furnace slag was more corroded than the tap slag. This may be due to their overall higher content of iron oxide and iron prills, which are more prone to corrosion. Some of the amorphous furnace slag had severe corrosion on the edges as well as some charcoal inclusions.

Sample STK17 was visually identified as smithing. Its microstructure supports this as it had the highest proportion of iron oxide with its microstructure dominated by large globular wüstite (Fig 84) characteristic of smithing slags (McDonnell 1986, 184). In addition it contained numerous hammerscale flake inclusions on its edges (Fig 85). None of the other slag samples contained any hammerscale which reinforces the supposition that sample STK17 was smithing waste. An exception was sample STK13, which had two hammerscale flake inclusions on its bottom edge. Since STK13 is a tap slag fragment it is likely that they got trapped when the slag ran over them, further proof that smithing was happening in the vicinity of the furnaces.

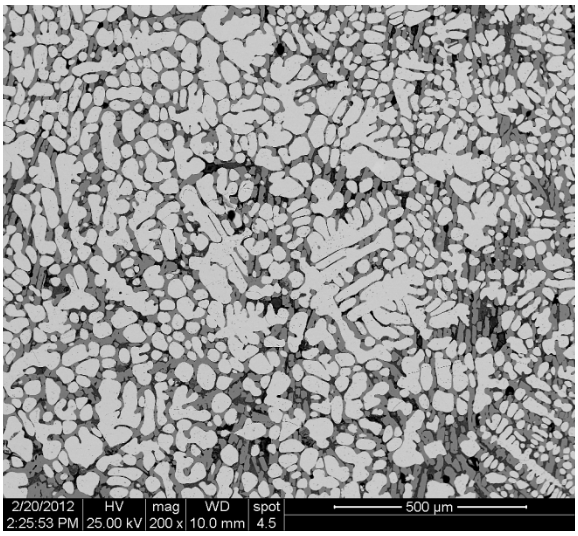

Fig 84. Globular wüstite in smithing slag STK17.

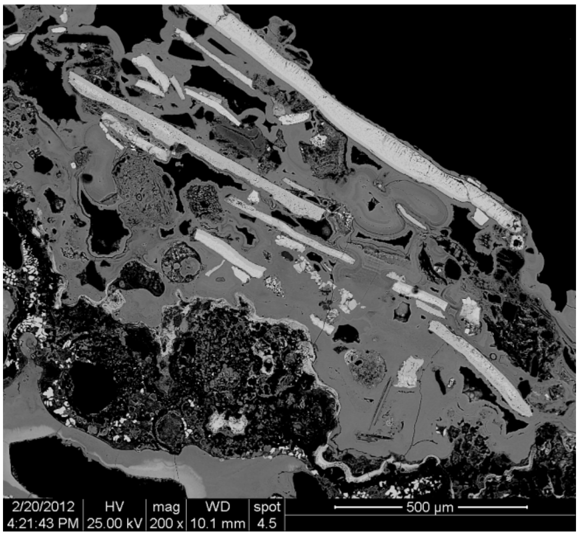

Fig 85. Hammerscale flakes on edge of STK17.

Slag Chemical Composition

The average chemical composition of the slag samples are given in Table 5 below. All the slag compositions are reasonably similar with MgO contents between 0.2 and 0.7wt%, Al_2O_3 between 2.5 and 6.4wt%, SiO_2 between 11.8 and 27.1wt%, P_2O_5 between 0.6 and 1.7wt%, K_2O between 0.2 and 1.4wt%, CaO between 0.6 and 6.6wt%, MnO between 0.1 and 0.9wt% and FeO between 58.9 and 79.5wt%. Although there is some variation in the Al_2O_3, SiO_2, CaO and FeO contents of the slags it is not unusual in iron bloomery smelting assemblages. FeO and SiO_2 contents can vary significantly within one assemblage depending on where the slag formed in the furnace(s) and at what point during the smelt(s). Al_2O_3 and CaO can also vary depending on the level of contribution of the clay (furnace wall) and fuel (charcoal) to the composition of the slags.

Sample STK17 is a possible smithing slag hearth bottom and has a similar chemical composition to the smelting slag samples. This is not surprising as the blooms smithed on site would have contained a lot of smelting slag which would have been the major contribution to the smithing waste. Smithing slags are usually characteristic due to their low contents of MnO (McDonnell 1986, 184) but due to the low quantity of MnO in the smelting slags it is not possible to distinguish the smithing waste compositionally.

Table 5. The average chemical composition of the slag samples. Compositions for samples STK16 and STK17 are from slag inclusions in the iron.

Sample	Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	K_2O	CaO	TiO_2	MnO	FeO
STK1	<0.1	0.4	4.8	23.0	1.0	0.2	0.8	<0.1	0.5	69.1
STK2	0.2	0.5	3.3	22.2	1.6	0.4	2.7	<0.1	0.9	68.1
STK3	0.2	0.4	5.6	27.1	1.0	1.4	4.8	0.1	0.3	58.9
STK4	<0.1	0.2	2.7	14.1	1.0	0.6	1.4	<0.1	0.2	79.5
STK5	<0.1	0.4	4.4	19.6	1.3	0.6	1.5	0.1	0.3	71.6
STK6	0.1	0.3	2.5	17.9	0.7	0.6	3.3	<0.1	0.1	74.4
STK7	0.2	0.6	5.1	21.4	1.7	1.2	3.4	0.1	0.5	65.7
STK8	0.2	0.5	3.3	16.8	1.2	1.2	4.9	<0.1	0.4	71.5
STK9	<0.1	0.6	2.3	25.2	0.6	0.1	0.7	0.1	0.6	69.6
STK10	0.2	0.5	3.8	16.2	1.2	1.0	3.6	0.1	0.5	72.8
STK11	0.1	0.3	5.0	20.8	1.4	0.9	1.8	0.1	0.4	69.1
STK12	0.1	0.3	5.9	25.9	1.3	0.8	2.6	0.2	0.4	62.5
STK13	0.2	0.2	5.2	25.0	0.9	0.8	0.6	0.1	0.4	66.4
STK14	0.2	0.3	6.4	21.5	1.7	1.0	2.8	0.1	0.6	65.3
STK15	0.1	0.4	5.5	24.4	1.1	1.0	3.4	0.2	0.3	63.5
STK16	0.2	0.7	2.8	25.3	1.3	1.7	6.6	0.1	0.3	60.8
STK17	<0.1	0.6	3.7	11.8	1.3	0.6	2.8	<0.1	0.4	78.6
STK18	<0.1	0.2	3.2	22.6	0.8	0.9	3.0	0.1	0.3	68.7

Ore

Four ore samples were analysed and their average chemical compositions are given in Table 6 below. It is evident from the compositions that samples STK22, STK24 and STK25 are not representative of the iron ore smelted at Stockbury. These do not contain enough iron (between 14 and 52.6wt%) to have been viable for smelting and were probably fragments discarded when the ore was sorted. This raises the question of how representative is the ore found at or near smelting sites to the ore being smelted. It is likely that all the best ore fragments would have been smelted while what remains archaeologically may have been intentionally discarded. Nevertheless, sample STK23 is richer in iron and is more likely to have been close to the composition of the ore smelted. Sample STK23 has few impurities and is mainly composed of FeO and SiO_2.

Table 6. Average chemical composition of the ore samples.

Sample	Al_2O_3	SiO_2	P_2O_5	K_2O	CaO	MnO	FeO
STK22	0.4	84.9	0.3	<0.1	0.2	<0.1	14.0
STK23	2.0	27.5	0.5	0.2	0.3	0.1	69.0
STK24	0.2	46.5	0.4	<0.1	0.1	0.1	52.6
STK25	0.2	68.5	0.5	<0.1	0.2	<0.1	30.4

Clay

Three clay samples were analysed and their average chemical compositions are given in Table 7 below. These all reveal typical clay compositions with a SiO_2 majority and high proportion of Al_2O_3. Samples STK19 and STK20 both had vitrified sides which suggests that they had been subject to very high temperatures. All the samples were less than 30mm in width meaning that they did not represent the whole width of the furnace wall but must have been fragments from the furnace lining. An interesting point is that they are all very similar in composition meaning that the furnaces both at F113 and F119 were built with the same clay.

Table 7. Average chemical compositions of the clay samples. The compositions are for the non-vitrified parts of the samples.

Sample	Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	SO_3	K_2O	CaO	TiO_2	FeO
STK19	0.2	0.5	10.4	81.2	0.5	0.1	1.5	0.5	0.7	3.8
STK20	0.3	0.8	11.5	79.6	0.1	<0.1	1.5	0.4	0.8	4.5
STK21	0.3	0.4	9.1	83.8	0.3	<0.1	1.4	0.5	0.6	3.2

Iron

Iron inclusions were found in all slag samples apart from STK13. These were usually spherical or globular and varied in size from 10 to 100 microns (Figs 86 and 87). Some prills were more dendritic in shape and formed part of wüstite globules (Fig 88) while others were shaped like splatters (Fig 89). Three iron prills per sample were analysed and their average chemical compositions are given in Table 8 below.

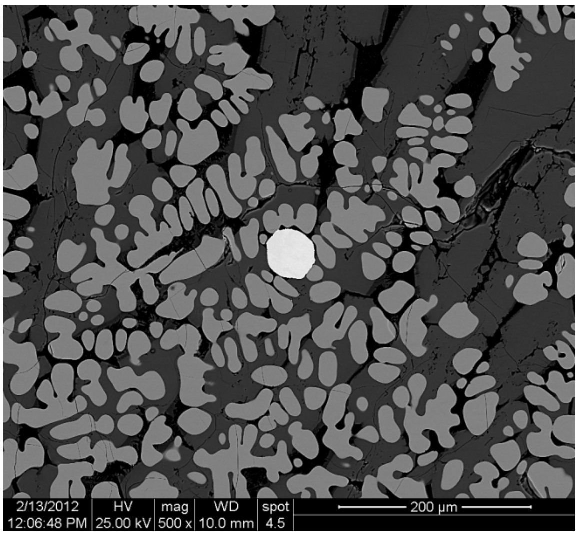

Fig 86. Spherical iron prill in STK6.

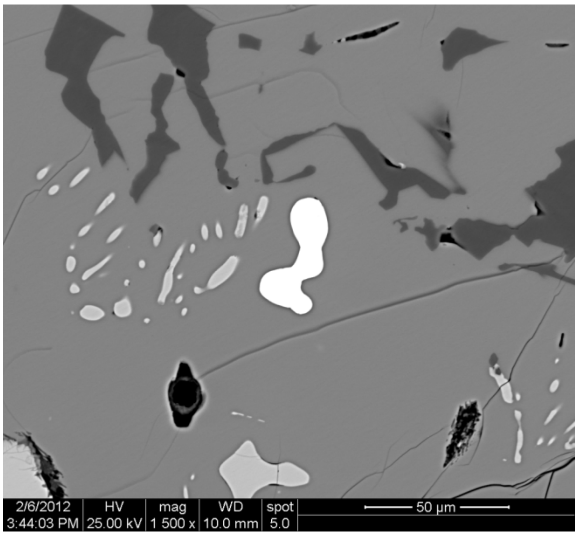

Fig 87. Globular iron prill in STK1

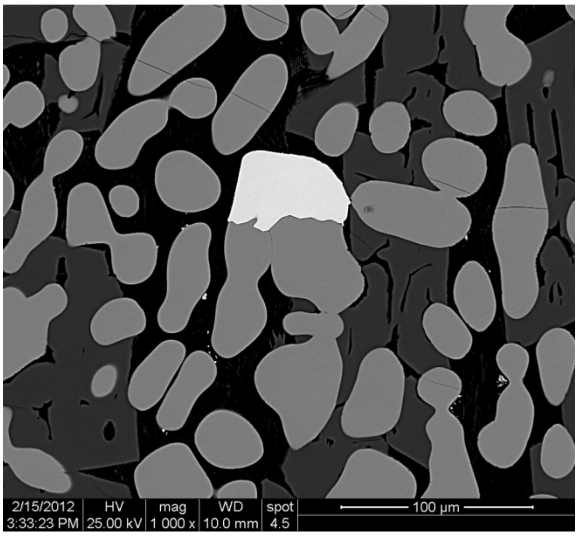

Fig 88. Iron prill part of wüstite globule in STK10.

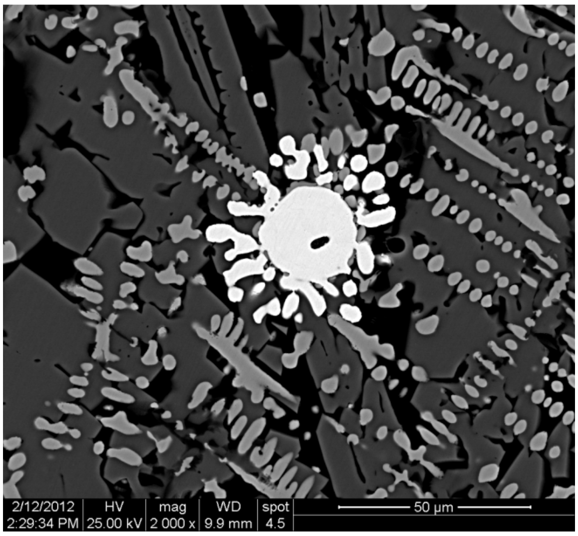

Fig 89. Splat-shaped iron prill in STK14.

Samples STK16 and STK18 were bloom fragments surrounded by a layer of slaggy corrosion. Both have some hammerscale inclusions which suggests that these fragments were lost or discarded during smithing. These two samples were etched with 2.5% nital which enabled their microstructures to be seen under an optical (inverted stage) microscope. The iron in samples STK16 and STK18 is mainly ferritic with the bulk of STK16 made of equiaxed ferrite grains (Fig 90) while the bulk of STK18 is made of erratic ferrite needles with small pearlite boundaries (Figs 91 and 92). The microstructures were micro-hardness tested which confirmed the identification of ferrite (Tylecote 1986, 145). The ferrite grains had a hardness of around 90HV while the ferrite needles were up to 180HV.

Both samples have areas with higher carbon content, for example, on the edges of STK16 the ferrite becomes more needle like (almost widmanstätten) with a more abundant lamellar pearlite matrix (Figs 93 and 94). Sample STK18 has a very small area fully dominated by degenerate sometime lamellar pearlite and in other small areas ferrite needles formed on former austenite grain boundaries (Figs 95 to 97). This would suggest that the iron being produced at Stockbury was iron or low carbon hypoeutectoid steel.

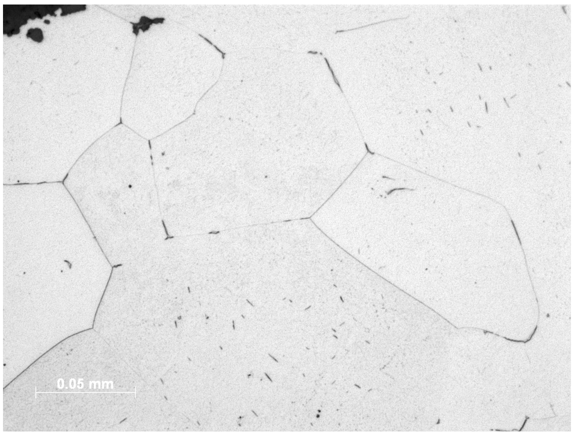

Fig 90. Equiaxed ferrite grains dominating STK16 (500x).

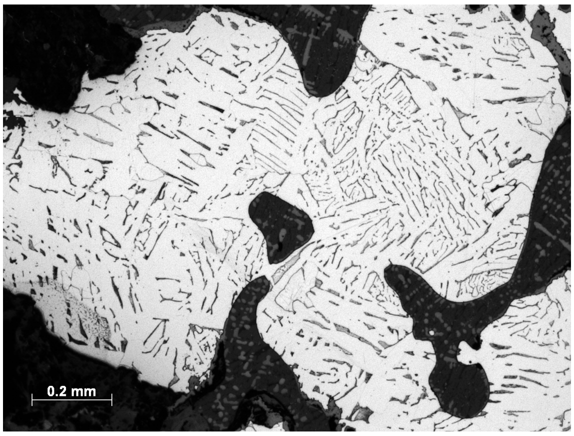

Fig 91. Ferrite needles with pearlite boundaries dominating most of STK18 (100x).

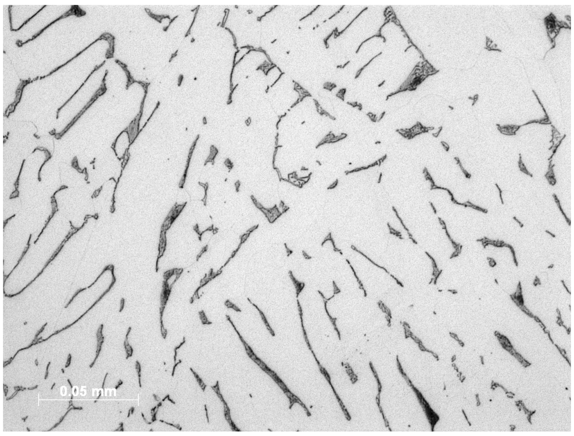

Fig 92. Ferrite needles with pearlite boundaries in STK18 (500x).

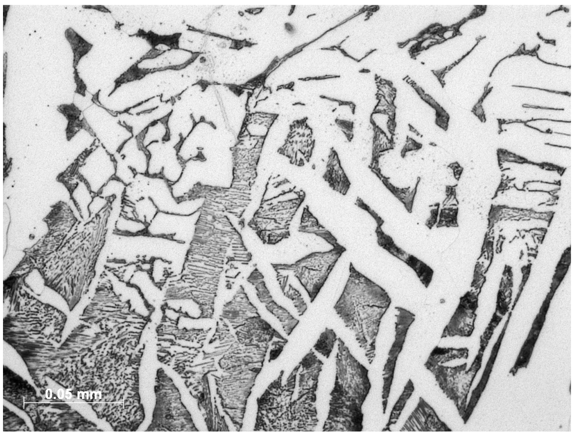

Fig 93. Widmanstätten ferrite needles in a lamellar pearlite matrix on edges of STK16 (500x).

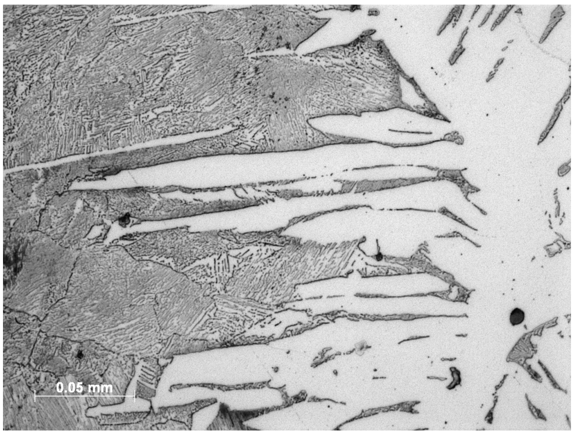

Fig 94. Widmanstätten ferrite needles in a pearlite matrix on edges of STK16 (500x).

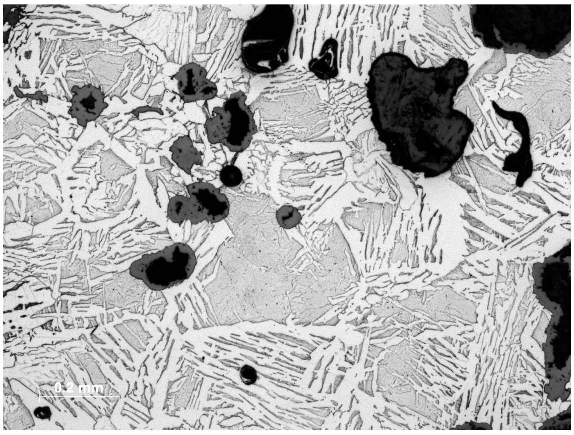

Fig 95. Small area with grain boundary ferrite in a pearlite matrix in STK18 (100x).

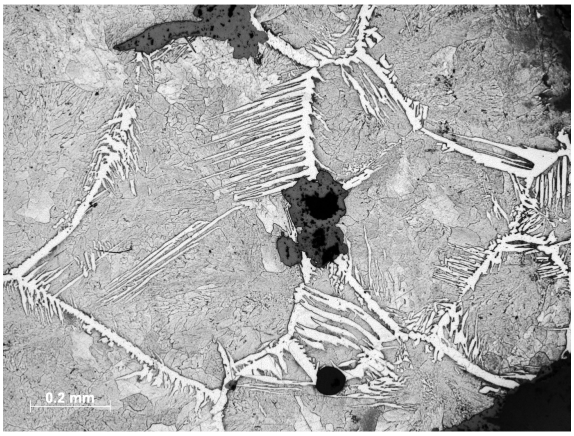

Fig 96. Small area with grain boundary ferrite in a pearlite matrix in STK18 (100x).

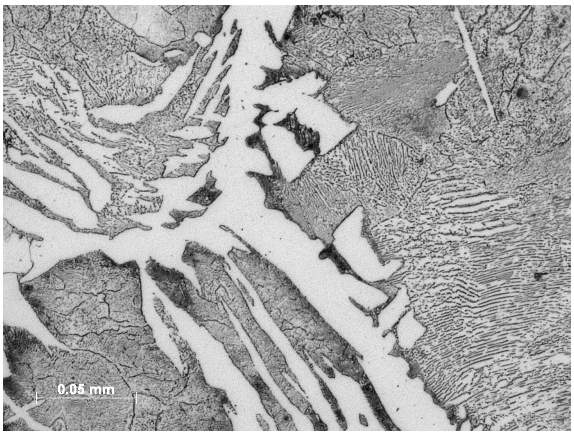

Fig 97. Grain boundary ferrite in a pearlite matrix in STK18 (500x).

The chemical composition of the iron prills in the slag samples and the two iron bloom fragments (Table 8) reveal that the iron was relatively pure with no or very few other elements. Some of the iron prills have some traces of Ni. It is uncertain as to what extent these prills are representative of the iron produced at Stockbury as it is possible that small metallic inclusions (with a larger relative surface area) would be more likely to react with the surrounding slag. However, both bloom samples (STK16 and STK18) were pure iron with no other detectable elements. These are more likely to have been representative of the iron produced at Stockbury.

Table 8. The average chemical composition of iron in each sample. Samples STK16 and STK18 are small bloom fragments.

Sample	Ni
STK1	<0.1
STK2	<0.1
STK3	0.3
STK4	<0.1
STK5	0.3
STK6	<0.1
STK7	<0.1
STK8	<0.1

Sample	Ni
STK9	<0.1
STK10	<0.1
STK11	0.1
STK12	<0.1
STK14	0.1
STK15	<0.1
STK16	<0.1
STK17	0.2

Discussion

Slag Morphology

The exceptional state of preservation (especially at F119) shows that the furnaces were of a shaft kind and at least one metre in height (but most certainly taller). The furnaces were arranged in pairs which shared a common sunken floored compartment. Unfortunately it is uncertain whether or not these furnaces were operated at the same time or not. It is possible that these furnaces could have been operated simultaneously and may even have shared common bellows for their operation. This may have been a way of optimising time and resources. The excavation of these furnace structures did not reveal any blowing holes (tuyeres) or tapping arches. It is likely that the blowing holes were at the front of the structures facing the sunken pits and any evidence destroyed when the blooms were removed. Evidence also points to the re-use of the furnaces. Some of the structures appeared to have layers of clay on the insides, as if the furnaces were re-lined with clay. It is therefore likely that these structures were re-used and repairs made after each smelt. It is also important to mention that the slag morphology from both areas/sites (F113 ad F119) are very similar and must have resulted from the same technology.

The slag morphology share some similarities with other Iron Age and Roman iron smelting assemblages with large convexed slag cakes (furnace bottoms) and diagnostic tap slag. There are however a few differences. The assemblage does not have the diagnostic slag tendrils or prills usually found in slag-pit furnace assemblages (Dungworth 2009, 7; Girbal 2010, 12-3). The majority of the furnace cakes are also rounded on their undersides which indicates that they were in contact with the bottom of the furnaces. Slag-pit furnace bottoms are not usually rounded on their undersides and are dominated by networks of flow slag tendrils with abundant charcoal impressions (Girbal 2010, 8-10) indicating that the slag ran into a slag-pit filled with organic material (Mikkelsen 1997; Paynter 2007). In addition the assemblage consists of about 15% tap slag which is uncommon in slag-pit assemblages. The tap slag is characteristic of tapping furnaces but these assemblages are usually dominated by this slag type.

The Stockbury assemblage is dominated by furnace slag making approximately 66% of all the technological debris. This indicates that the furnaces were probably not continuously tapped. It is likely that they were operated until full capacity was achieved, without letting the slag run out of the furnace. Slag may only have been allowed to run out when the furnaces were opened to retrieve the iron blooms. In support of this are the *in situ* slag runs present at the bottom of some of the furnaces. These appear to have been created by the furnace wall being pulled down with the tap slag pooling out of the furnace when the bloom was retrieved. There is no evidence for controlled tapping nor tapping arches. However, it is also possible that not all the tap slag was recovered and there may have been slag undiscovered in the vicinity. Since the furnaces were built in sunken floored compartments the slag is likely to have been cleared after each smelt to keep the area free of obstruction and leave enough room for the bellows and smelters.

Nevertheless, the evidence points to a mid-way technology whereby the slag was not accumulated in a purposely built pit but neither was it continuously tapped out of the furnace. The sunken shaft furnace remains show no signs of a slag-pit and differ from the more common freestanding shaft furnaces found in the Roman period. This technology may be an evolutionary link between Iron Age slag-pit furnaces and Roman tapping furnaces. The late Iron Age date and the location of the site (Kent which had contacts with the continent around this period) would support this theory.

Another important slag type was the presence of smithing waste (approximately 5%of the assemblage). Slags were found that differed slightly in morphology to the smelting debris and the micro-structural analyses proved that they resulted from smithing with diagnostic large wüstite globules and hammerscale inclusions characteristic of smithing waste (McDonnell 1986). This means that the iron blooms smelted on site were undoubtedly smithed and consolidated in the vicinity of the furnaces. Although area/site F113 did not reveal any smithing waste, the analysis of the soil samples revealed the presence of hammerscale flakes in some of the site's contexts (especially (38)). Indeed, hammerscale flakes were present in almost half of the soil samples collected from both site/areas. Context (269) in particular had as much as 35-40% hammerscale. Although this context (in F119) appears to be backfill of a construction pit associated with furnace structure [210], it indicates that smithing was occurring very close by. This deposit is believed to have derived from rapid deposition of spoil located Northwards of furnace [210] (Peter Cichy personal communication 2012). This indicates that smithing was occurring in the centre of the site.

Large smithing flats and large hammerscale flakes were also present in context (269) which suggests that the blooms were consolidated and perhaps turned into billets (Crew 1996; Paynter *et al* forthcoming). This in itself is interesting as they may have been making 'trade iron' which they could have exchanged for other goods. It is uncertain whether the smelters were professionals, specialising in the production and manipulation of iron and perhaps travelling, offering their services to communities, or whether it was the local population producing iron for their own use.

Compositional Comparisons

The chemical compositions of the slags analysed do not reveal any major differences between slags from site/area F113 and F119 (Figs 98 and 99). This suggests that the smelters at both sites were probably using a comparable technology and employing similar raw materials to smelt iron. Three main constituents are believed to contribute to the chemical composition of slags; the ore, furnace clay and ash from the fuel (Crew 2000; Fulford and Allen 1992, 197; Pleiner 2000, 252-3; Serneels 1993). The chemical analyses of the furnace clay lining (Table 7) prove that they were using the same clay to build their furnaces. The ore analysed in this study is unlikely to have been representative of the ore smelted but fragments found on both sites were similar in composition which suggests that the ore was also the same. Taking into account the small distance (2.3km) between the sites/areas it is not unlikely that they were also using a similar fuel supply. This combined with the fact that both sites/areas had sunken shaft furnace remains with similar slag morphology suggests that the same technology was used. Indeed it may not be inconceivable that the same group of people were responsible for the metallurgical activity seen at both sites/areas. The reason for this is uncertain but it is possible that the smelters were exploiting pockets of local iron ore and moving on when the resource had been depleted.

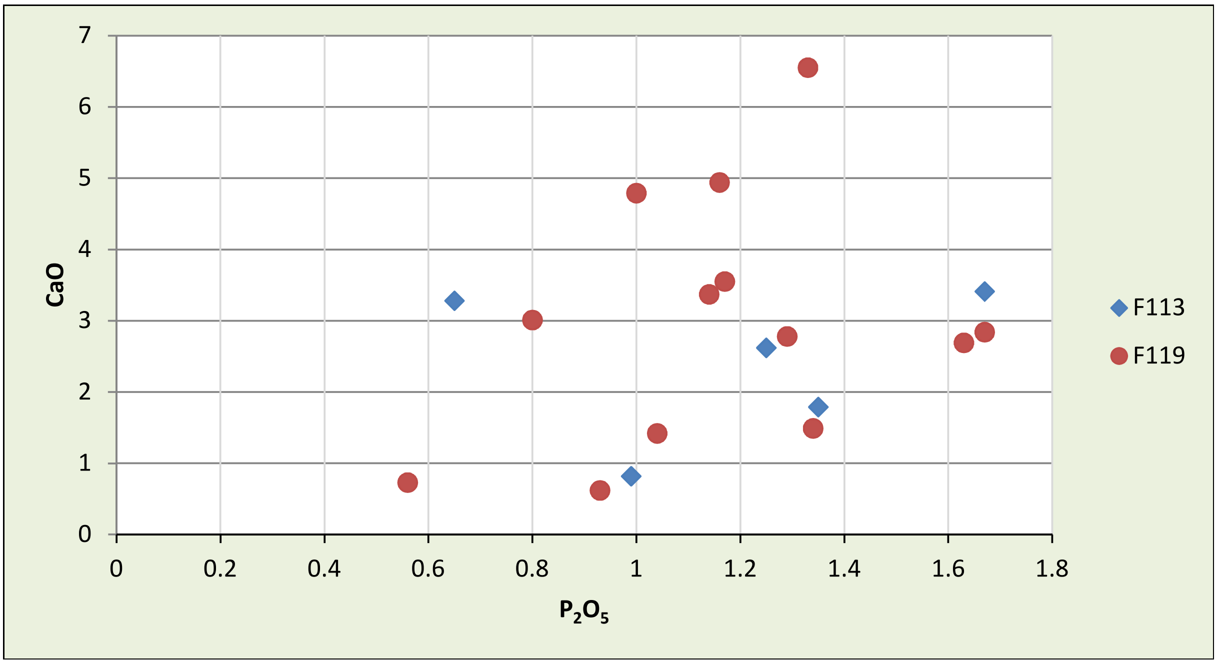

Fig 98. The CaO/P_2O_5 ratio in the slags from sites/areas F113 and F119.

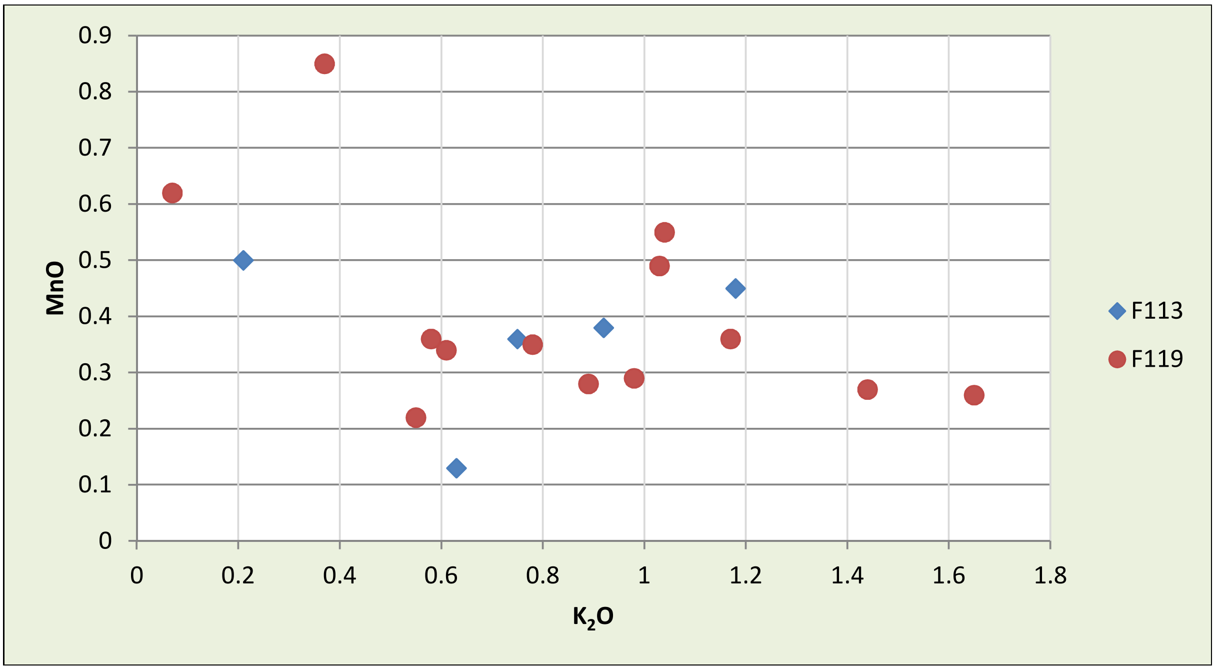

Fig 99. The MnO/K_2O ratio in the slags from sites/areas F113 and F119.

It is also important to compare the chemical composition of the Stockbury slags to slags from other known Iron Age and Roman iron production sites. Of particular interest is the work effectuated by Paynter (2006). Paynter's study examined regional variation in the composition of iron smelting slags linking slag composition to the type of ore smelted. Her study highlighted that smelting occurring in distinct geological areas produced distinct slag compositions. The Stockbury slags are very similar to the Kent Tertiary Sands group (Figs 100, 101 and Table 9) with low levels of MgO (0.4wt%), K_2O (0.8wt%), MnO (0.4wt%) and between 1 and 2wt% P_2O_5 (Paynter 2006, 276-81). The Stockbury slags also have similar levels of SiO_2 and FeO but have on average approximately 1wt% less Al_2O_3 and 1wt% more CaO than the Kent Tertiary Sands group slags (Fig 102 and Table 9). This similarity is not surprising as the iron smelting sites comprising the Kent Tertiary Sands group (Leda Cottages, Hawkinge, Brisley and Westhawk) are close to Stockbury (all in Kent within a 50km radius) and have a similar geology. This supports Paynter's (2006) findings, that smelting sites found in the same geological areas share similar chemical compositions due to the exploitation of similar natural resources (ore, clay and fuel).

Paynter argued that the ore exploited at these sites was concretionary ironstone or iron pan from patches of sand (the Lenham beds) found in the Clay with Flints on the North Downs (2006, 286). Due to the similar chemical composition of the Stockbury slag to the slag from this group of nearby sites, it is possible that the same ore was exploited at Stockbury. More recently however, Young (2010) highlighted the importance of bog ores, similar to iron pan, as a source of iron and raised the possibility that bog ores were smelted in this area. Bog ores and iron pan often have elevated contents of P and Mn, which one would expect to be reflected in the slags although there is much local variability within deposits (Young 2010, 3). Young also notes that, because these elements concentrate in the softer parts of bog ore, "any attempt to wash the ore to reduce the amount of siliciclastic material within it, would also very likely lower the manganese and phosphorus contents markedly" (Young 2010, 3). Some phosphorus was detected in the slag from the smelting sites in this area, comprising the 'Kent Tertiary Sands' group, consistent with smelting iron pan or bog iron ore. Bog ore has been noted in the Weald, for example near rivers, but the iron pan and 'boxstone' of the Lenham beds appears to be the most likely source in the vicinity of Stockbury. Further research into these small iron ore bodies is required to conclusively pin-point the source of iron ores exploited in pre-historic iron smelting.

The lower contents of Al_2O_3 and higher contents of CaO in the Stockbury slags may have resulted from the use of different clay and fuel or their different contribution to the slags. Al_2O_3 is predominant in clay while CaO is mainly found in fuel ashes.

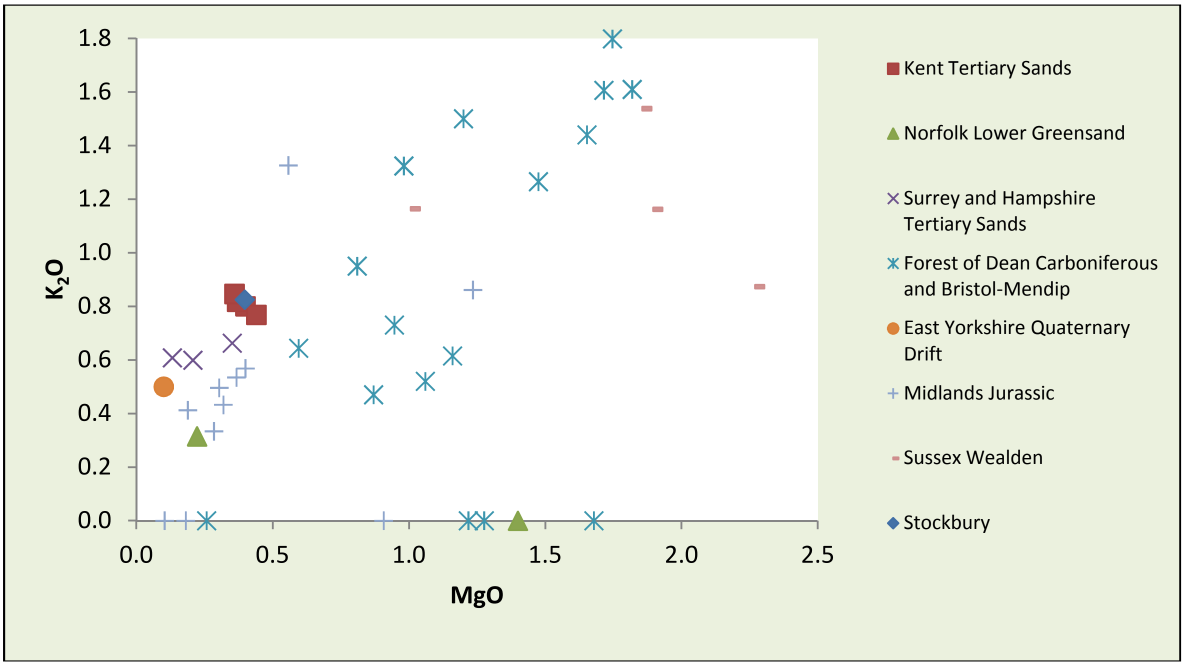

Fig 100. The average K_2O/MgO ratio in iron smelting slags from Stockbury and sites in Paynter's geological groupings. Data obtained from Paynter (2006, 276-7).

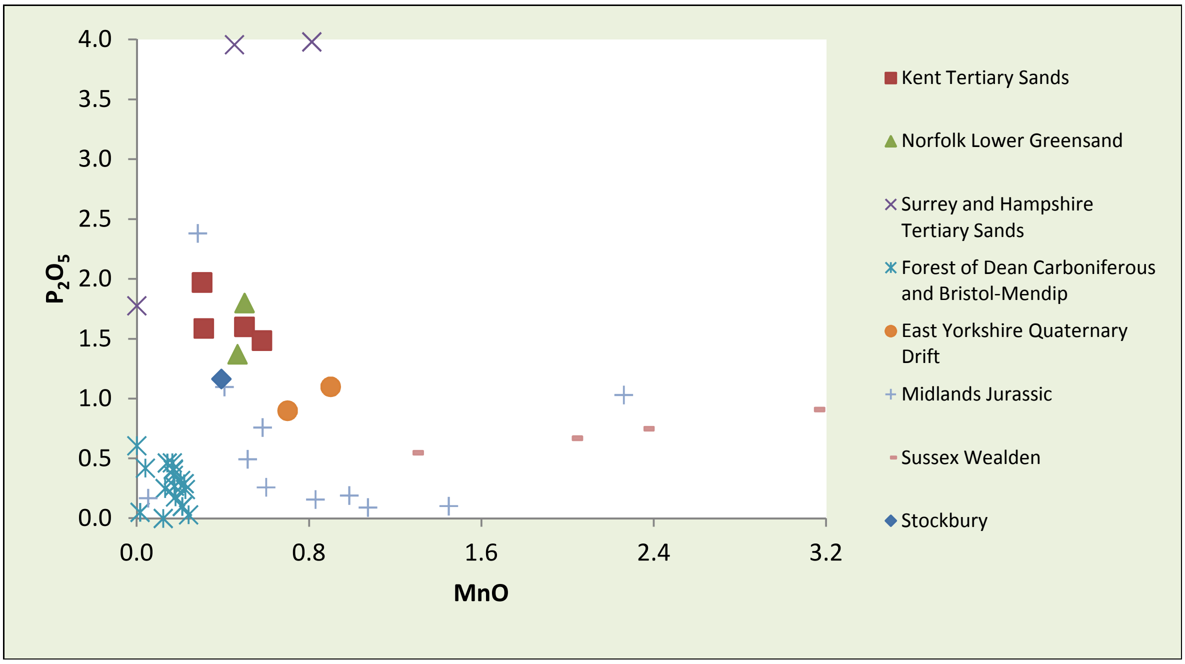

Fig 101. The average P_2O_5/MnO ratio in iron smelting slags from Stockbury and sites in Paynter's geological groupings. Data obtained from Paynter (2006, 276-7).

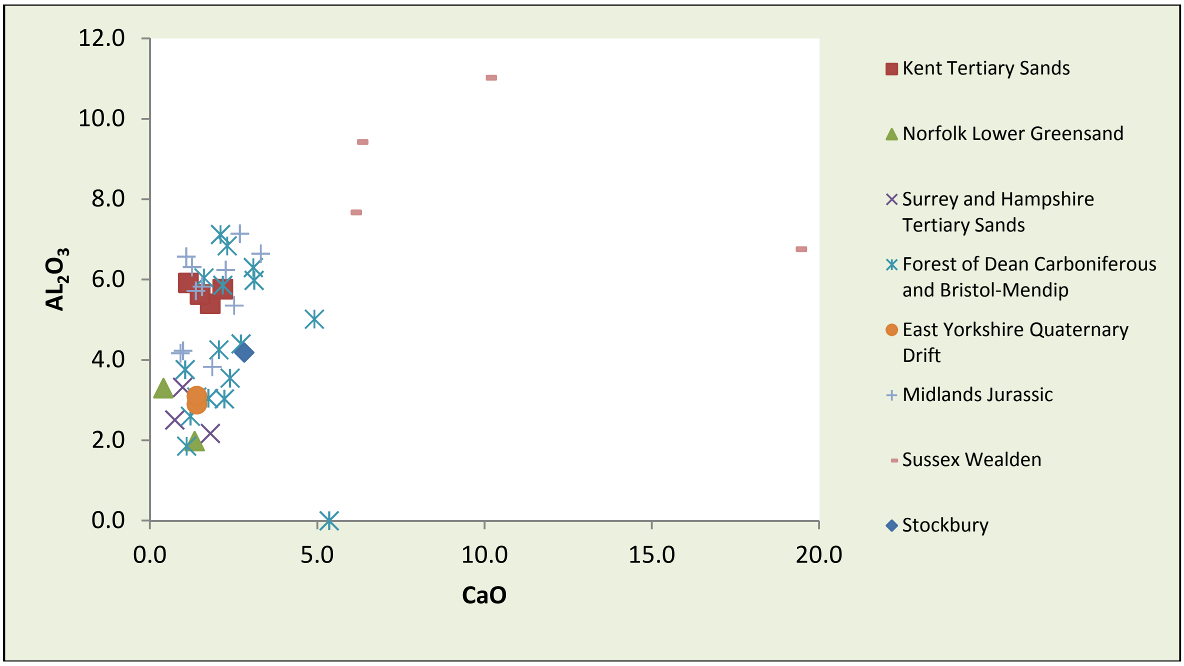

Fig 102. The average Al_2O_3/CaO ratio in iron smelting slags from Stockbury and sites in Paynter's geological groupings. Data obtained from Paynter (2006, 276-7).

GROUP	Na_2O	MgO	Al_2O_3	SiO_2	P_2O_5	SO_3	K_2O	CaO	TiO_2	MnO	FeO
Stockbury	0.1	0.4	4.2	21.1	1.2	<0.1	0.8	2.8	0.1	0.4	68.7
Kent Tertiary Sands	0.3	0.4	5.7	21.7	1.7	0.2	0.8	1.7	0.2	0.4	67.0
Norfolk Lower Greensand	0.0	0.8	2.6	22.9	1.6	0.1	0.2	0.9	0.0	0.5	70.3
Surrey and Hampshire Tertiary Sands	0.4	0.2	2.7	20.7	3.2	0.1	0.6	1.2	0.2	0.4	70.5
Forest of Dean Carboniferous and Bristol-Mendip	0.3	1.2	4.3	22.7	0.3	0.1	0.9	2.4	0.2	0.2	67.7
East Yorkshire Quaternary Drift	0.2	0.1	3.0	25.9	1.0	0.2	0.6	1.4	0.1	0.8	66.6
Midlands Jurassic	0.3	0.4	5.6	23.1	0.6	0.0	0.5	1.8	0.3	0.8	66.6
Sussex Wealden	0.2	1.8	8.7	30.2	0.7	0.3	1.2	10.4	0.5	2.2	43.9

Table 9. Average slag compositions for Stockbury and the geological groupings in Paynter's (2006) study. Data obtained from Paynter (2006, 276-7).

Conclusion

The morphological and scientific analysis of the Stockbury slag assemblage has revealed several possible technological traits. The furnaces were of a shaft kind at least one metre in height and they appeared to have been repaired, suggesting that they were re-used. The slag morphology suggests that these were unlikely to have been slag-pit furnaces (Paynter 2007) while the small proportion of tap slag (15% of the assemblage) implies that they were not tapping furnaces either. Taking into account the late Iron Age date and the location of the sites it is possible that the technology was an intermediary or evolutionary link between Iron Age slag-pit furnaces and Roman tapping furnaces; perhaps a consequence of or catalysed by contacts with the continent. It seems likely that the furnaces were operated until full capacity was achieved, without letting the slag run out of the furnace until they were opened to retrieve the iron blooms. The similar slag morphology of both areas/sites F113 and F119 suggests that the same technology was employed.

About 5% of the assemblage was comprised of smithing waste, which is indicative that smithing was occurring on site. This is supported by the large quantity of hammerscale present in certain contexts (38 and 269). It is likely that smithing was occurring near furnace [210] accounted as a part of sunken-floored structure D on area F119. The presence of smithing flats and larger hammerscale flakes in context (269) suggests that the iron blooms were smithed into iron bars or billets (Crew 1996). However, it is uncertain whether local communities produced this iron for local use or whether specialised groups produced it for trade. Estimating the amount of iron produced is also hard as the furnaces seem to have been used more than once, but considering the scale of the operation it is not unlikely that several hundred kilograms of iron was made. The furnaces were not fully excavated and were preserved *in situ*, meaning that the quantity of slag cannot be fully estimated. Micro-structural and chemical analyses of two iron bloom fragments revealed that a relatively pure ferritic iron or low carbon hypoeutectoid steel was the main finished product.

Comparisons of the slags from both Stockbury areas (F113 and F119) revealed that there was no marked difference in chemical composition. This indicates that they were using the same or similar natural resources. Indeed, analysis of the clay furnace lining seems to suggest that they were using the same clay at both sites while their proximity makes it likely that they used similar ores and fuel supply. The similarity of iron smelting technology and use of natural resources means that the same group of people may have been responsible for the metallurgical activity seen at both sites/areas. Comparisons of the slag chemical composition to other contemporary sites discussed in Paynter (2006) revealed that the Stockbury slags share almost identical compositions with slags from the Kent Tertiary Sands group. This supports Paynter's theory that smelting sites found in the same geological areas share similar chemical compositions due to the exploitation of similar natural resources (ore, clay and fuel).

Appendix 2 – Soil Sample Descriptions

The assemblage consists of 26 soil samples. The table below shows which context each sample was taken from and their weight in grams. Each soil sample was visually examined and individually described in the section below.

Soil Sample	Context	Weight (g)	Weight of 1L Sub-Sample (g)
1	4	7733	not sampled
2	8	12530	not sampled
3	5	3576	not sampled
4	12	4638	1166
5	57	11523	not sampled
6	38	5790	973
7	281	14062	not sampled
8	321	8785	not sampled
9	186	7144	1040
10	414	22940	1130
11	415	6935	not sampled
12	416	683	not sampled
13	417	15058	not sampled
14	418	6804	1000
15	272	2343	not sampled
16	271	9041	not sampled
17	269	2752	1072
19	277	2941	not sampled
20	246	12931	not sampled
21	304	7853	not sampled
22	247	12830	not sampled
23	305	1642	not sampled
24	311	1134	not sampled
25	268	4669	not sampled
26	456	985	not sampled

Table 10 showing the weight in grams of the soil samples and the weight of the 1L sub-samples that were taken for wet sieving.

Descriptions

1 (4) – Silty clayey soil, brown (HUE 10YR 4/3) in colour, mainly fine to medium in size. Fine soil has some charcoal, slag and quartz/flint inclusions. There are very few hammerscale flakes. Mainly made up of larger 20-50mm (up to 200mm) agglomerations of slag, soil, burnt clay and charcoal. Some charcoal chunks up to 30mm.

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2 (8) – Silty clayey soil, very dark grayish brown (HUE 10YR 3/2) in colour, mainly very fine to fine in size. Fine soil has some slag (<10mm), burnt clay, some charcoal and few hammerscale flakes. The main bulk of the sample is made up of slag fragments 20-90mm in size (most below 50mm). These are all amorphous furnace slag with lots of charcoal impressions. There are also some natural and burnt clay fragments.

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3 (5) – Very dark gray (HUE 10YR 3/1) sandy soil, mainly very fine to fine in size with quite a few larger clumps 10-20mm (up to 50mm). Soil seems to be mixed with a considerable amount of charcoal fines – could be burnt and may have been subject to high heats. A few burnt clay fragments.

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4 (12) – Clayey silty soil, very dark grayish brown (HUE 10YR 3/2), mainly very fine to fine in size with medium sized agglomerations. Very sparse sandstone, quartz/flint and natural clay inclusions. Some small fragments (<20mm) of ore.

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5 (57) – Silty soil, black (HUE 2.5Y 2.5/1) in colour and very fine in size with some larger lumps up to 40mm. These lumps are primarily made of soil and charcoal with some natural clay and some stones/flint. Very fine soil has a very high content of charcoal fines. Very few hammerscale flakes and spheroid.

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6 (38) – Clayey silty soil, very dark gray (moist HUE 2.5Y 3/1) in colour and very fine in size. Some burnt clay, flint and slag inclusions (<30mm). A few tap slag fragments. Very fine soil has some charcoal (up to 20mm), natural and burnt clay as well as some flint/stone inclusions. Quite a few hammerscale flakes and spheroid.

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7 (281) – Clayey soil, reddish brown (HUE 5YR 4/3) in colour and very fine to fine in size. Some clay, burnt clay, slag and charcoal inclusions in very fine clayey soil. Some larger slag fragments (up to 90mm) and quite a lot of burnt clay fragments (most below 50mm). Some of the burnt clay is also vitrified and some have charcoal inclusions. Some slaggy clay with charcoal which could be a working floor. Some ore fragments up to 50mm.

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8 (321) – Sandy clayey soil, dark reddish brown (HUE 5YR 3/3) in colour and mainly very fine with some fine clumps. Fine soil has some small ore, burnt clay and charcoal inclusions. Some larger friable clayey soil agglomerations up to 8cm (most around 20-40mm) with lots of burnt clay, ore and some charcoal inclusions. Few very small flint/stone and slag inclusions.

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9 (186) – Silty soil (slightly clayey), very dark gray (HUE 7.5YR 3/1) in colour and very fine in size. Very fine soil has a lot of charcoal fines, some burnt clay fragments and some flint/pebbles. There are also some hammerscale flakes. Some larger clumps of soil (20-50mm) comprising of the same charcoal rich soil with some burnt clay, slaggy material and few flint/quartz inclusions.

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10 (414) – Very clayey sandy soil, brown (moist HUE 7.5YR 4/4) in colour, mainly very fine to fine in size but with larger lumps (up to 60mm) of clay. Fine soil is mainly natural clay with very few charcoal and burnt clay fragments. Some small pebbles. Larger lumps are mainly natural clay with small fragments (10-30mm) of burnt clay, some charcoal and some slag. Some burnt clay fragments (same fine sandy material as furnace lining).

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11 (415) – Sandy clayey soil, brown (moist HUE 7.5YR 4/3-4/4) in colour and mainly very fine to fine in size. The fine sandy clayey soil has some charcoal staining/inclusions. There are some large slag fragments (up to 110mm) which seem to be primarily tap slag. Also some large flint and burnt clay (up to 60mm) fragments. The burnt clay is the same sandy clay material as the furnace lining. Quite a few amalgamated lumps of unfired clay (10-20mm) with charcoal inclusions.

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12 (416) – Clayey soil, black (moist HUE 2.5Y 2.5/1) in colour and very fine to fine in size. Clayey soil has a very high proportion of small charcoal fines up to 20mm (most <5mm). Few fragments of quartz/flint. Some random natural silty clay lumps (around 20mm).

---

13 (417) – Very clayey silty soil, very dark gray (moist HUE 2.5Y 3/1) in colour and mainly fine in size but forming some larger clumps (most <30mm). Fine clayey soil has a high proportion of charcoal (fragments up to 20mm) and some fine fragments of burnt clay. Also some tiny (<3mm) fragments of ore. Some large fragments (up to 100mm) of slag and burnt/vitrified clay. The clay is the same fine sandy material used as the furnace lining.

---

14 (418) – Clayey sandy soil, very dark gray (HUE 5YR 3/1-3/2) in colour and mainly very fine to fine in size. The fine clayey sandy soil has some burnt clay fragments and some charcoal inclusions. Also some stones/flint and a slaggy type material. Some larger amalgamations of the same fine clayey sandy soil (up to 130mm but most around 30-60mm) with fragments of burnt clay, charcoal and a slaggy material. This slaggy dark gray material is solid, dry and seems to be like an ashy brittle slag. Its provenance is uncertain but may have been part of a working floor.

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15 (272) – Clayey sandy soil, dark brown (HUE 7.5YR 3/2) in colour and very fine to fine in size. Fine soil has charcoal (up to 15mm), ore and burnt clay fragments. Few hammerscale flakes. Some larger clumps of natural clay (up to 60mm) with charcoal inclusions and some small burnt clay fragments. Few ore fragments up to 50mm.

---

16 (271) – Sandy clay, light brown (moist HUE 2.5Y 5/4) in colour and fine in size. Fine clay has some charcoal inclusions and there are some hammerscale flakes. Mainly larger clumps of clay but around 20-60mm in size (up to 90mm). Clay is unfired and looks natural with fibrous organic material and charcoal inclusions.

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17 (269) – Sandy slightly clayey soil, very dark gray (moist HUE 10YR 3/1) in colour and very fine in size. Very fine soil has quite a bit of charcoal and some fragments of burnt clay. Also lots of hammerscale flakes and spheroid. Some larger slag and burnt clay fragments mostly <30mm. Some of the slag appears to be of the smithing type.

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18 – n/a

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19 (277) – Slightly clayey soil, dark yellowish brown (HUE 10YR 4/4) in colour and very fine to fine in size. Fine soil has some burnt clay and some stones/flint. Very few hammerscale flakes and spheroid. Some larger fragments of mainly clay up to 70mm (most around 20-30mm). Some larger rounded pebbles and quartz and some slag fragments up to 90mm (most around 20-30mm).

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20 (246) – Silty clay, reddish brown (wet HUE 5YR 4/3) in colour. The clay has a few burnt clay fragment inclusions. Mainly dominated by tap slag up to 120mm in size (most around 20-60mm). There are also a considerable amount of smaller tendril like slag fragments. Some of the larger slag fragments have burnt clay adhering to their surfaces. Some ore fragments up to 80mm.

21 (304) – Sandy clay, yellowish red (moist HUE 5YR 4/6) in colour and mainly fine to medium in size. Some larger clay clumps up to 100mm with few small (<10mm) charcoal inclusions. A few small fragments of burnt clay.

22 (247) **–** Silty clay, yellowish red (moist HUE 5YR 5/6) in colour and fine to medium in size. Some small charcoal inclusions. Very few hammerscale flakes. The majority of sample consists of large fragments of furnace slag (cakes and amorphous) up to 150mm and clumps of clay 20-100mm in size. These clay clumps are unfired and have some charcoal inclusions.

23 (305) – Silty clay, reddish brown (wet HUE 2.5YR 4/4) in colour. Mainly large clumps of clay 20-60mm in size with very few small flint/quartz and charcoal inclusions.

24 (311) – Sandy clay, yellowish brown (HUE 10YR 5/6) in colour. Mostly in small clumps 10-50mm in size. The clay is unfired with some small flint inclusions and very sparse charcoal stains.

25 (268) – Silty soil, dark greyish brown (HUE 10YR 4/2) in colour and very fine to fine in size. Fine soil has some small charcoal and burnt clay fragment inclusions. Some hammerscale flakes present. There are large burnt clay inclusions (10-50mm) and a few large charcoal fragments up to 30mm. Also some agglomerations of soil with charcoal, clay and stone inclusions.

26 (456) **–** Clayey soil, dark grayish brown (HUE 10YR 4/2) in colour. Mainly clumps of soil with flint, quartz, bone and pottery inclusions. The clumps are up to 120mm in size and are an amalgamation of large (up to 70mm) quartz/flint nodules, bone and pottery fragments (up to 60mm) as well as some small charcoal inclusions (<10mm).

1L Sub-Sample Descriptions

Six soil samples were sub-sampled whereby 1 litre of soil was wet sieved at 5mm, 2mm and 1mm. These are described below and the content of each material type was approximated in percentages.

4 – >5mm (475g) – Almost entirely composed of burnt sandy fragments (95%). These are dark gray with some charcoal inclusions. It is not clear what these fragments are but could be a burnt layer or an ash layer. About 5% is slag (mainly tap slag) with well rounded features approximately 10-40mm in size. A few small stones and quartz/flint fragments (<1%).

>2mm (75g) – Majority dominated by the same burnt sandy fragments (98%). Very few slag fragments (<1%), natural quartz/flint (1%). Also very few burnt clay fragments (<1%).

>1mm (67g) – Majority dominated by burnt sandy fragments (98%). Very sparse burnt clay (<1%) and some natural flint /quartz (<1%). Very few tiny charcoal fragments (<0.01%).

6 – >5mm (226g) – Majority is burnt/vitrified clay (30-40%). Also a considerable amount of tap slag <20mm (20%). Some charcoal up to 20mm in size (20%). There is also some smithing type slag (<5%) and some hammerscale up to 10mm in size (<1%). Some natural flint/quartz (10-15%).

>2mm (52g) – Majority is charcoal (40%) and burnt clay (40%) with some stones and flint (5-10%). A few slag fragments (5%) and quite a bit of hammerscale (5-10%).

>1mm (50g) – Majority is charcoal and burnt clay (75%), some quartz/flint (5%) as well as some ore and slag (5-10%). Quite a lot of hammerscale flakes and spheroid (10-15%).

9 – >5mm (274g) – Majority is a mixture of tap and furnace slag up to 50mm in size (30-40%). There are some quartz/flint and pebbles (20-30%) and some amorphous/non-diagnostic (maybe some smithing) slag (15%). Some burnt clay (10%) and some charcoal fragments (5%).

>2mm (76g) – Majority is burnt clay with charcoal fragments and quartz/flint (50-60%). Some slag (<20%) and some possible slaggy smithing waste (<20%). Some hammerscale flakes and spheroid (<5%).

>1mm (90g) – Mainly burnt clay, slag, charcoal and some quartz/flint (90%). Some hammerscale flakes and spheroid (5-10%).

10 – >5mm (258g) – Mainly slag with flow features, most probably tap slag around 10-50mm in size (85%). Some burnt/vitrified clay (15%) and a few small fragments of quartz/flint (<1%).

>2mm (5g) – Majority is flint/quartz (40%) and burnt clay (30-40%). Some small fragments of slag (10-20%). Few charcoal fragments (<1%) and ore fragments (<5%). Very few hammerscale flakes (<0.1%).

>1mm (1g) – Majority quartz/flint and burnt clay (85%).Some slag (10-15%) and ore fragments (<2%). Very few hammerscale flakes (<1%).

14 – >5mm (402g) – Mainly amalgamated gray clay (working floor?) up to 40mm in size (60-70%). Some burnt clay (10%) and some quartz/flint (10%). Some amorphous furnace (possibly some smithing) slag with lot of charcoal impressions (15-20%). Very few charcoal fragments (<1%) and very few ore fragments (<1%).

>2mm (131g) – Mainly burnt clay and some of the same amalgamated gray clay (60%). Some flint (10%) and some furnace slag (20-30%). Very few charcoal (<2%) and ore fragments (<2%).

>1mm (62g) – Mainly burnt clay, amalgamated gray clay, quartz/flint and furnace slag as above and approximately

same ratios (98%). A few hammerscale flakes (<2%).

17 – >5mm (285g) – Majority is tendril like furnace slag (50%) and burnt clay (25%). Some possible smithing type slag mainly <10mm in size and quite light (15%). Some hammerscale flakes and smithing flats (5%). Very few quartz/flint (<2%) and charcoal (<1%).

>2mm (75g) – Some burnt clay, charcoal, very few ore and slag fragments (60-65%). Some flint/quartz (5%) and lots of hammerscale flakes and spheroid (30-35%).
>1mm (58g) – Mainly burnt clay, charcoal, flint/quartz and slag (60-65%). Lots of hammerscale flakes and spheroid (35-40%).

Appendix 3 – Sample Locations


Top view showing location of sample STK1.


Bottom view.


Side view.


Top view showing location of sample STK2.


Bottom view.


Side view.


Top view showing location of sample STK3.


Bottom view.


Side view.


Top view showing location of sample STK4.


Bottom view.


Side view.


Top view showing location of sample STK5.


Bottom view.


Side view.

Location of STK6.

Reverse view.

Location of STK7.

Reverse view.

Location of STK8.

Reverse view.

Location of STK9.

Reverse view.

Location of STK10.

Reverse view.

Top view showing location of sample STK11.

Bottom view.

Top view showing location of sample STK12.

Bottom view.

Top view showing location of sample STK13.

Bottom view.

Top view showing location of sample STK14.

Bottom view.

Top view showing location of sample STK15.

Bottom view.

Location of STK16.

Reverse view.

Location of STK17.

Reverse view.

Location of STK18.

Reverse view.

Location of STK19.

Reverse view.

Location of STK20.

Reverse view.

Location of STK21.

Reverse view.

Location of STK22.

Reverse view.

Location of STK23.

Reverse view.

Location of STK24.

Reverse view.

Appendix 4 – Metal Standards Data

NIST1¼Cr½Mo IARM 35IN

Spectrum	SiO_2	Cr_2O_3	MnO	FeO	CoO	NiO	Cu_2O	MoO_2
1	1.02	1.38	0.62	95.67	0.50	0.15	0.12	0.34
2	0.96	1.40	0.57	95.40	0.46	0.16	0.18	0.67
3	0.92	1.37	0.60	95.61	0.49	0.18	0.16	0.47
4	1.00	1.38	0.51	95.50	0.53	0.21	0.13	0.55
5	0.88	1.40	0.59	95.64	0.44	0.19	0.12	0.53
6	0.92	1.37	0.60	95.48	0.42	0.13	0.18	0.70
7	0.91	1.34	0.58	95.70	0.44	0.17	0.09	0.58
8	0.95	1.37	0.56	95.62	0.43	0.17	0.14	0.55
9	0.91	1.37	0.62	95.67	0.54	0.16	0.12	0.41
10	0.95	1.37	0.60	95.38	0.61	0.18	0.19	0.51
Mean	**0.94**	**1.38**	**0.59**	**95.57**	**0.49**	**0.17**	**0.14**	**0.53**
Reported	**0.59**	**1.13**	**0.54**		**0.013**	**0.122**	**0.17**	**0.47**

MBH14M B.S. 66K

Spectrum	Al_2O_3	SiO_2	P_2O_5	SO_3	MnO	FeO	CoO	NiO
1	0.00	0.17	0.12	0.95	1.01	97.17	0.42	0.07
2	0.08	0.11	0.09	0.78	1.12	97.21	0.44	0.07
3	0.04	0.08	0.11	0.72	0.98	97.33	0.53	0.11
4	0.01	0.13	0.15	0.73	1.10	97.26	0.46	0.07
5	0.03	0.16	0.07	0.66	0.90	97.51	0.49	0.08
6	0.04	0.10	0.14	0.72	1.20	97.24	0.42	0.04
7	0.04	0.18	0.20	1.12	1.22	96.61	0.49	0.04
8	0.04	0.09	0.17	0.86	1.22	97.07	0.39	0.06
9	0.07	0.15	0.09	0.84	1.22	96.98	0.48	0.07
10	0.02	0.15	0.12	1.00	1.15	96.96	0.48	0.02
Mean	**0.04**	**0.13**	**0.13**	**0.84**	**1.11**	**97.13**	**0.46**	**0.06**
Reported	**0.002**	**0.004**	**0.062**	**0.322**	**0.86**		**0.005**	**0.012**

MBH11X C1 K

Spectrum	SiO_2	P_2O_5	V_2O_5	Cr_2O_3	MnO	FeO	CoO	NiO	Cu_2O
1	1.67	0.16	0.18	0.36	1.36	91.48	0.49	0.62	0.17
2	1.69	0.23	0.22	0.32	1.38	91.38	0.47	0.64	0.17
3	1.73	0.20	0.19	0.34	1.37	91.28	0.50	0.67	0.21
4	1.58	0.23	0.26	0.33	1.40	91.45	0.50	0.56	0.18
5	1.64	0.13	0.21	0.33	1.32	91.57	0.46	0.61	0.23
6	1.69	0.18	0.19	0.36	1.33	91.55	0.44	0.59	0.17
7	1.63	0.18	0.21	0.35	1.37	91.34	0.58	0.63	0.20
8	1.73	0.23	0.21	0.34	1.32	91.38	0.46	0.62	0.19
9	1.52	0.20	0.24	0.35	1.31	91.53	0.56	0.60	0.20
10	1.66	0.09	0.23	0.37	1.37	91.57	0.45	0.59	0.17
Mean	**1.65**	**0.18**	**0.22**	**0.35**	**1.35**	**91.45**	**0.49**	**0.62**	**0.19**
Reported	**1.14**	**0.108**	**0.13**	**0.28**	**1.22**		**0.05**	**0.59**	**0.23**

Appendix V

Analysis of the pottery (by Paul C. Hart)

Contents

1. Abstract

The pottery assemblage dated broadly from the Mid to Late Iron Age, Early Roman and Mid Roman periods. A couple of sherds of Late Medieval or Post Medieval pottery were also recovered. Many of the prehistoric ceramics were Late Iron Age date and were characterised by the use of grog, flint and mixed tempered fabrics of 'Belgic' style, form or influence. Shell-tempered and Medway glauconitic sandy fabrics were also used. Some less diagnostic pottery necessitated the adoption of a wider date bracket, but no solely pre Late Iron Age pottery was identified. All wereprobably locally made.

The Later Iron Age (c. 50 BC to c. AD 50) was the focus of prehistoric activity on the site, with the construction and use of two groups of well-preservd furnace pits related to the production of iron being of clear archaeological importance. The associated pottery evidence points to a date of c. 50 BC to AD 0/25 for the pit complex in Area F119 and c. 0/25 to AD 50 for pit 48 in Area F113 East. Ditch 160, sited near to the pit complex, was probably open from about 15 BC but also contained a few pre- and post-Roman Conquest potsherds.

Much of the Roman-period pottery appeared to derive from naturally in-filling large pits and ditches, as well as from buried surfaces and colluvium. Some of these pits and ditches could have been open in the Late Iron Age. Pottery of specifically pre- and post- Roman Conquest date was present in a few contexts and suggests some degree of continuity in activity from the Late Iron Age to the Early Roman period, though no features on site were definitely constructed at that time.

One cremation pit was discovered: Context 470 was badly damaged through Late Post Medieval ploughing but the remains of five vessels deposited around AD 150 to 175 survived, including one imported Central Gaulish Lezoux samian Form 31 bowl. Worn sherds of Central and East Gaulish samian were alsorecovered from other features. Two sherds of Early Roman-period Gallo-Belgic white ware from North Gaul were the only other definite imports present. Most of the Roman-period pottery was likely of relatively local manufacture, with North Kent sandy ware fabrics being dominant and purely grog-tempered fabrics rarely used. Shell-tempered fabrics, always a minority ware, continued in use into the Early Roman period.

2. Introduction

The pottery assemblage from this site (STK SMS 11) comprised 1320 sherds weighing 5584g. The sherds were washed, dried and examined in good light using hand lenses of 5x and 10x magnification. Weights were calculated to the nearest gram. All dates given are *circa*.

The quantification and dating list details the assemblage's primary fabric and form characteristics. Each entry notes the potential presence of a single vessel of that fabric type. An estimate for the date of the context has been included alongside the context number heading (both in Bold). The fabric title typically describes the additional temper and or major inclusions that characterise the type. Where appropriate this description has been substituted with a product name of widely recognised type and source, such as 'North Kent fine' (a silty fabric formerly known as 'Upchurch' ware) or 'Central Gaulish Lezoux samian'. The Roman sandy wares, the majority if not all of which were of local manufacture and could be prefixed 'North Kent', have been titled solely according to their fabric.

The character of the pottery assemblage has been described on a ceramic period basis in the Summary (5) and the contexts that relate to these periods have been identified. The implications that the dating of the contexts has for the associated features has been dealt with in the Discussion (6), organised by feature and in date order (earliest to latest).

3. Period codes employed

Code	*Period*
LP	Late Prehistoric
IA	Iron Age
MLIA	Mid Iron Age to Late Iron Age (MIA>LIA)
LIA	Late Iron Age
ER	Early Roman
MR	Mid Roman
LM	Late Medieval
PM	Post Medieval
LPM	Late Post Medieval

4. Quantification and dating

Context *Quantity*	*Fabric (Form type)*	*Weight (g)*	*Date*	***Context date?*** *Emphasis*
Area F119		-	-	
1	Flint	1	IA	600 BC - AD 50/75
1	Grog, sand + sparse flint	23	LIA	75 BC - AD 75
2	*Total*	*24*		
Area F119 (Bag 2)		-	-	
4	Flint	16	IA	600 BC - AD 50/75
3	Sparse flint + grog	36	MLIA/LIA	75 BC - AD 75
4	Grog + flint	31	LIA	75 BC - AD 75
1	Grog	14	LIA	75 BC - AD 75
12	*Total*	*97*		
(27)			***ER>MR***	***AD 125-150/175***
2	N Kent fine	2	ER>MR	AD 125-150/175
2	*Total*			
[35]			***LIA***	***75 BC - AD 50/60***
4	Flint	27	IA	600 BC - AD 50/75
6	Grog tempered glauconitic sandy	45	IA/LIA	800/75 BC - AD 60
1	Flint + grog	29	IA/LIA	600/75 BC - AD 75
11	*Total*	*101*		
(38)			***LIA***	***75 BC - AD 50/75***
1	Flint	44	LIA	75 BC - AD 50/75
1	*Total*	*44*		
(41)			***?LIA***	***?75 BC - AD 50/75***
2	Flint tempered sandy	6	MLIA>LIA	200/150 BC - AD 50
6	Shell tempered sparse fine sandy	14	LIA	75 BC - 75 AD
8	*Total*	*20*		
(42)			***MLIA>LM***	***150 BC - AD 1450***

5	Flint + shell + organic tempered sandy	3	MLIA>LIA	200/150 BC - AD 50
1	Grog	9	LIA>ER	15 BC/75- AD 150
1	Fine sandy	2	ER>MR	AD 125-175
1	EG La Madeleine/Argonne? samian	12	ER>MR	AD 140-200/260
1	Grog	5	MR	AD 175-225
1	Canterbury Tyler Hill sandy	3	LM	AD 1350/1375-1450
10	*Total*	*34*		
(43)			***?LIA/ER***	***?75 BC- AD 150***
1	Flint	5	LP	1550 BC - AD 50/75
3	Flint tempered fine sandy	8	IA	600 BC - AD 50/75
1	Flint tempered fine sandy	24	IA	600 BC - AD 50/75
1	Sandy	1	MLIA>LIA	200/150 BC - AD 50
1	Sandy	2	MLIA>ER	200/150 BC - AD 100
3	Shell	2	LIA>ER	75 BC/75- AD 150
1	?Shell tempered silty	3	IA/LIA	AD 25-75
11	*Total*	*45*		
(44)			**LIA**	**75 BC - AD 75**
3	Flint	5	IA	600 BC - AD 50/75
2	Flint + shell + organic tempered sandy	5	MLIA>LIA	200/150 BC - AD 50
1	Shell	2	LIA	75 BC - AD 75
1	Shell	2	LIA	75 BC - AD 75
7	*Total*	*14*		
(49)			***LIA***	***AD 25-50/60***
2	Grog tempered fine sandy	18	LIA	75 BC - AD 75
1	Grog + flint tempered fine sandy	9	LIA	75/50 BC - AD 75
1	Grog + flint	9	LIA	10 BC - AD 50
1	Grog + sparse flint (*C4 jar?*)	7	LIA	10 BC/01- AD 50
2	Sparse flint + grog glauconitic sandy	13	LIA	75 BC/25- AD 60
1	Grog tempered fine sandy	9	LIA	AD 25-75
1	Grog with sparse fine flint + chalk	4	LIA>ER?	AD 50-75/100

9	*Total*	*69*		
(55)			***LIA***	***15 BC/25- AD 50/60***
7	Flint	24	IA/LIA	75 BC - AD 75
2	Grog + flint	10	LIA	75 BC - AD 75
4	Grog	8	LIA	75 BC - AD 75
3	Grog tempered glauconitic sandy	36	LIA	75 BC/25- AD 60
7	Grog + sparse flint (*G5-1 butt beaker?*)	114	LIA	15BC/01- AD 50
2	Grog + sparse flint	78	LIA	10 BC - AD 75
(58)			***IA***	***50 BC - AD 50/75***
10	Flint	107	IA	600 BC - AD 50/75
10	*Total*	*107*		
(67)			***LIA***	***75 BC - AD 50***
2	Flint	23	LP/IA	600/75 BC - AD 50/75
1	Grog + sparse flint (*cf. B2-1/B2-2* jar)	14	LIA	75 BC - AD 50
3	*Total*	*37*		
(89)			**ER>*MR***	***AD 50/75-200***
1	Sandy	1	ER	AD 50-125/150
2	Sandy	7	ER	AD 50-125/150
1	Sandy	1	ER	AD 50-125/150
1	Sandy	2	ER	AD 50-125/150
1	Sandy	3	ER	AD 50-125/150
1	Sandy	2	ER	AD 50-150
3	Fine sandy	2	ER	AD 50-150
1	N Kent fine	11	ER	AD 75-125/150
1	Shell tempered sandy (*3L6/L2/3D2 jar*)	9	ER	AD 70-130/150
1	Sandy	1	ER	AD 75-150
1	Grog tempered fine sandy	1	ER	AD 75-150
6	Thameside sandy (*5C2 pie dish*)	16	ER>MR	AD 120/150-175/210
3	Thameside sandy (*5C1 pie dish?*)	11	ER>MR	AD 120/150-175/230
3	Fine sandy	9	ER>MR	AD 125-175
1	Fine sandy	1	ER>MR	AD 125-175
1	Grog tempered fine sandy	5	ER>MR	AD 125-175
1	Fine sandy	4	MR	AD 150-200/270

7	N Kent fine	25	MR	AD 150/175-250
1	N Kent fine	4	MR	AD 150/175-250
37	*Total*	*115*		
(97)			-	-
1	Grog (*residual?*)	4	LIA	15 BC – AD 50/75
(131)		-	-	
1	Grog (*residual*)	2	LIA	75 BC - AD 75
(132)			***MR***	***AD 150-200***
1	Flint	2	IA/LIA	75 BC - AD 50/75
2	Shell	9	LIA	75 BC - AD 75
1	Grog	4	LIA	75 BC - AD 75
1	Grog	5	LIA>ER	15 BC/75-AD150
2	Sandy	4	ER	AD 50-125
1	Sandy	2	ER	AD 50-125
1	N Kent fine	1	ER	AD 50/75-150
1	Fine sandy	2	ER>MR	AD 125-175
6	Sandy	22	ER>MR	AD 125-175
14	Sandy (*3H1 jar*)	37	ER>MR	AD 130/150-175/200
1	EG La Madeleine/Argonne? samian	1	ER>MR	AD 140-260
3	Grog (*mortarium*)	44	MR	AD 150-250
2	EG Trier samian (*F.31 bowl*)	18	MR	AD 150/175-260
36	*Total*	*151*		
(145)			***ER>MR***	***AD 75-175***
1	Shell tempered sandy	2	LIA>ER	75 BC - AD 75/150
2	Shell (*cf. 3E7.2 jar*)	4	ER	AD 75-150
1	Shell	2	ER	AD 75-150
1	Very fine sandy	5	ER	AD 75-150
2	Very fine sandy	1	ER>MR	AD 75-150/175
1	Sandy	5	ER>MR	AD 75-150/175
6	N Kent fine (*beaker*)	5	ER>MR	AD 75-150/230
5	Grog tempered very fine sandy	18	ER>MR	AD 75/125-175
2	N Kent fine	2	ER>MR	AD 75/100-175
1	N Kent fine	1	ER>MR	AD 125-250
22	*Total*	*45*		

(146)			***MLIA>LIA***	***350 BC - AD 50/75***
13	Flint tempered fine sandy	63	MLIA>LIA	350 BC - AD 50/75
1	Fine sandy	3	ER>MR	75/125- AD 175
14	*Total*	*66*		
(151)			***ER***	***75 BC/50- AD 100/150***
1	Grog	4	LIA	75 BC - AD 75
1	N Kent fine	2	ER	50/75- AD 150
2	*Total*	*6*		
(152)			**ER>*MR***	***AD 125-200***
2	Fine sandy	1	ER>MR	AD 75-175
4	Sandy	6	ER>MR	AD 125-175
1	Sandy	1	ER>MR	AD 125-175/275
2	N Kent fine	2	ER>MR	AD 125-175/250
3	N Kent fine	1	ER>MR	AD 125-250
2	N Kent fine	4	MR	AD 150-200/250
14	*Total*	*15*		
(157)			***ER>MR***	***AD 120-170***
1	Sandy	3	ER	AD 50-150
6	Sandy (*mortarium*)	59	ER>MR	AD 75/120-170
7	*Total*	*62*		
(161)			***LIA>ER***	***15 BC - AD 100***
1	Shell	4	LIA>ER	75 BC - AD 150
92	Flint + sparse grog	162	LIA	75 BC - AD 50/75
1	Flint + sparse grog	4	LIA	75 BC - AD 50/75
18	Flint tempered sandy	62	LIA	75 BC - AD 50/75
11	Fine sandy + sparse flint	18	LIA	75 BC/25- AD 50/75
1	Fine sandy + sparse flint	1	LIA	75 BC/25- AD 50/75
33	Grog (*B1-1 jar?*)	145	LIA	50 BC - AD 75
158	Flint (*cf. C1 jar*)	795	LIA	25 BC - AD 50/75
13	Grog (*red surfaced flagon*)	33	LIA	15 BC - AD 50/75

2	N Kent fine	2	ER	AD 50-100
1	Fine sandy	6	ER	AD 50-100
331	*Total*	*1232*		
(163)		-	-	
3	Flint tempered glauconitic sandy	14	MLIA>LIA	200/150 BC - AD 60
1	Grog tempered sandy	5	LIA	75 BC - AD 75
1	Grog + flint	11	LIA	75 BC - AD 75
4	Grog + flint tempered sandy	22	LIA	75 BC - AD 75
7	Flint (*cf. C1-2 jar*)	138	LIA	50 BC - AD 01/50
16	*Total*	*193*		
(222)			***LIA***	***50 BC - AD 25***
4	Grog + flint	35	MLIA>LIA	125-25 BC
1	Flint tempered sandy	7	MLIA>LIA	125 BC - AD 25
1	Grog + flint	2	LIA	75 BC - AD 75
2	Grog tempered sandy	161	LIA	50 BC - AD 25
8	*Total*	*205*		
(437)			***LIA>ER***	***50 BC/AD 25-150***
1	Flint	12	MLIA>LIA	75 BC - AD 50/75
2	Grog + sparse flint (*B1 jar*)	52	LIA	50 BC - AD 75
1	Flint tempered sandy	5	LIA>ER	AD 25-75
1	N Kent fine	1	ER	AD 50-100/125
1	N Kent fine	1	ER	AD 50-100/125
1	Sparse flint tempered sandy	3	ER	AD 50/75-125
1	Grog	12	ER	AD 75-125/150
2	Gallo-Belgic fine sandy white ware	4	ER	AD 75-150
10	*Total*	*90*		
(449)			**LIA>*ER***	***75 BC/ AD 50-75/100***
5	Flint tempered fine sandy	7	MLIA>LIA	150 BC - AD 50/75
4	Flint + sparse grog + organics	13	MLIA>LIA	150/75 BC - AD 50/75
4	Flint	30	LIA	AD 25-75
1	Sandy	2	LIA>ER	AD 25-75
2	Grog	2	ER	AD 50-75/100
3	Very fine sandy (*flagon handle*)	16	ER	AD 75-100/125
19	*Total*	*70*		

(452)			***LIA***	***50 BC - AD 50/75***
2	Flint tempered	22	IA/LIA	75 BC - AD 50/75
1	Flint + grog	6	LIA	75 BC - AD 50/75
2	Flint tempered sandy *(cf. C4 type jar?)*	38	LIA	50 BC - AD 50/75
5	*Total*	*66*		
(453)			**LIA**	***50 BC - AD 75***
6	Grog	13	LIA	75 BC - AD 75
1	Grog *(B1-1 jar?)*	21	LIA	50 BC - AD 75
7	*Total*	*34*		
(454)			***LIA***	***75 BC - AD 50/75***
12	Flint *(cf. C3 type jar)*	161	LIA	75 BC - AD 50/75
(455)			***LIA>ER***	***25/50- AD 70***
1	Flint	1	IA/LIA	75 BC - AD 50/75
1	Grog	2	LIA	75 BC - AD 75
1	Grog (*cf. G1-6/7B1.2 platter*)	14	LIA>ER	25/50- AD 70
3	*Total*	*17*		
(458)			***ER***	***120-150 AD***
1	Flint	11	IA/LIA	75 BC - AD 50/75
1	Flint	6	IA/LIA	75 BC - AD 50/75
5	Flint	9	IA/LIA	75 BC - AD 50/75
1	Flint	9	LIA	75 BC - AD 50/75
5	Flint + grog	10	LIA	75 BC - AD 50/75
10	Grog + flint	36	LIA	75 BC - AD 75
1	Grog + sparse flint	9	LIA	75 BC - AD 75
2	Sandy (*3G1 jar?*)	26	ER	AD 50-110/125
2	Sandy	9	ER	AD 50-125
1	Sandy	5	ER	AD 50-125
2	Fine sandy-silty	6	ER	AD 50-150
1	Sandy	1	ER	AD 75-125/150
1	N Kent fine	1	ER>MR	AD 50/75-175
1	CG Lezoux samian (*F18/31 bowl*)	38	ER	AD 120-150
1	N Kent fine	2	ER>MR	AD 125-175

6	Sandy	32	ER>MR	AD 125-175
3	Sandy	9	ER>MR	AD 125-175
3	Sandy	23	ER>MR	AD 125-175
2	Fine sandy	2	ER>MR	AD 125-175
4	Grog tempered fine sandy	21	ER>MR	AD 125-175/275
53	*Total*	*265*		
(459)			***ER>MR***	***AD 125/150-175***
15	Flint	36	IA/LIA	75 BC - AD 50/75
1	Flint	10	IA/LIA	75 BC - AD 50/75
1	Flint	6	IA/LIA	75 BC - AD 50/75
1	Flint	2	IA/LIA	75 BC - AD 50/75
1	Flint	5	IA/LIA	75 BC - AD 50/75
1	Flint + sparse grog tempered sandy	13	LIA	75 BC - AD 50/75
1	Flint	11	LIA	75 BC - AD 50/75
8	Flint (*cf. C type jar?*)	48	LIA	75 BC - AD 50/75
1	Grog tempered sandy	72	LIA	75 BC - AD 75
1	Grog tempered sandy	13	LIA	75 BC - AD 75
1	Grog tempered fine sandy	5	LIA	75 BC - AD 75
1	Grog	2	LIA	75 BC - AD 75
1	Grog	5	LIA	75 BC - AD 75
4	Grog	47	LIA	75 BC - AD 75
1	Shell + grog tempered sandy	52	LIA>ER	75 BC - AD 150
1	Grog (*L9 lid?*)	37	ER	AD 0/50-70
1	Sandy (7D *platter*)	152	ER	AD 50-70/120
1	GB? fine sandy w. ware (*butt beaker?*)	2	ER	AD 50-70/150
1	Sandy	4	ER	AD 50-150
3	Sandy	6	ER	AD 50-125/150
1	Sandy	6	ER	AD 50-125/150
1	Sandy	1	ER	AD 50-125/150
1	Sandy (3H1 jar?)	21	ER	AD 50/100-125/150
2	Sandy	5	ER	AD 50-125/150
4	Sandy	14	ER	AD 50-125/150

2	Sandy	14	ER	AD 50-125/150
10	Sandy	221	ER	AD 50-125/150
1	Sandy (*3F jar?)*	5	ER>MR	AD 50-150/170
1	N Kent fine	2	ER	AD 75-125/150
1	N Kent fine	2	ER	AD 75-125/150
1	N Kent fine	2	ER	AD 75-125/150
1	N Kent fine	3	ER	AD 75-125/150
1	Sandy	10	ER	AD 75-125/150
1	Grog	22	ER	AD 75-150
3	Sandy	26	ER>MR	AD 125-150/175
1	Sandy	15	ER>MR	AD 125-150/175
5	Sandy	13	ER>MR	AD 125-175
1	Sandy	1	ER>MR	AD 125-175
2	Sandy	12	ER>MR	AD 125-175
4	Sandy	9	ER>MR	AD 125-175
2	Grog tempered silty	4	ER>MR	AD 125-175
1	Grog tempered fine sandy	5	ER>MR	AD 125-175
1	Grog tempered fine sandy	3	ER>MR	AD 125-175
1	Sandy	2	ER>MR	AD 125-175/200
1	Grog tempered fine sandy	1	ER>MR	AD 125-175/275
1	Grog tempered fine sandy	7	ER>MR	AD 125/150-200/275
1	Sandy	11	MR	AD 150-175/200
2	Sandy	7	MR	AD 150-175/200
1	Sandy	2	MR	AD 150-200
1	EG La Mad/Arg? samian (*mortarium*)	8	MR	AD?170-260
1	Sandy redware	5	PM>LPM	AD 1650-1800
103	*Total*	*987*		
(459)			***ER>MR***	***AD 125/150-175***
(460)			**ER>*MR***	***AD 125-175/275***
4	Sandy	7	ER>MR	AD 125-175/275
(461)			**ER>*MR***	***AD 125-175/275***
1	Fine sandy	10	ER>MR	AD 125-175/275

(462)			***MR***	***AD 175-250***
1	Flint tempered sandy	13	MLIA>LIA	AD 200 BC - 50/75
3	Grog (*cf. G1-6/7B1.2 platter*)	26	LIA>ER	AD 25/50-70
4	V fine sandy/silty	7	MR	AD 150-250
1	Sandy	5	MR	AD 175-275
9	*Total*	*51*		
(470) Pot from "cremation" area			***MR***	***AD 150-175/200***
1	Grog tempered sandy	2	ER	AD 75-150
11	N Kent fine (*SF 4*)	6	ER>MR	AD 110/120-150/190
80	Sandy (*3J3 jar?*)	96	MR	AD 150-220/240
2	Grog tempered fine sandy (*SF 3*)	3	MR	AD 175-225
94	*Total*	*107*		
(470) SF 2			***MR***	***AD 150-175/200***
1	N Kent fine (*SF 4*)	1	ER>MR	AD 110/120-150/190
40	CG Lezoux samian (*F31 bowl*)	137	MR	AD 150-200
1	Grog tempered fine sandy (*SF 3*)	1	MR	AD 175-225
1	Porcelain	1	LPM	AD 1745+
43	*Total*	*140*		
(470) SF 3			***MR***	***AD 150-175/200***
8	Grog tempered fine sandy	87	MR	AD 175-225
(470) Fill of SF 3			***MR***	***AD 150-175/200***
6	N Kent fine (*SF 4*)	2	ER>MR	AD 110/120-150/190
3	Sandy (*3J3 jar?*)	21	MR	AD 150-220/240
9	*Total*	*23*		
(470) SF 4			***MR***	***AD 150-175/200***
62	N Kent fine (*3J1 jar?*)	79	ER>MR	AD 110/120-150/190
2	Sandy (*3J3?/5C1 vessel*)	1	ER>MR	AD 120-250
64	*Total*	*80*		
(470) SF 6			***MR***	***AD 150-175/200***

4	Sandy	5	ER>MR	AD 50-175
183	Sandy (*3J3?/5C1 vessel*)	247	ER>MR	AD 120-250
1	N Kent fine (*SF 4*)	1	ER>MR	AD 110/120-150/190
82	Sandy (*5C1 pie dish*)	158	ER>MR	AD 120/150-230/250
6	Sandy (*3J3 jar?*)	18	MR	AD 150-220/240
276	*Total*	*429*		

Total

1320 sherds *5584 grams*

Abbreviations

SF – Small Find number

5. Summary

The majority of the fabrics from this assemblage were of local manufacture. All of the prehistoric pottery was likely to have been produced locally and flint-tempered fabrics appeared to have continued in use alongside the typically grog-tempered fabrics of Late Iron Age 'Belgic' style, up to the Roman conquest and perhaps a little after. A few sherds demonstrated the use of Medway area glauconitic sandy fabrics and shell-tempered fabrics (all now leached), during the Late Iron Age, with the latter continuing in use into the Early Roman period.

Of the Roman-period pottery, a few sherds of Central and Eastern Gaulish samian ware were undoubted imports, as were two sherds of North Gaulish Gallo-Belgic white ware. One other sherd of Early Roman-period white ware could have been of late Gallo-Belgic or perhaps preferably indigenous manufacture. Sandy ware fabrics of probable North Kent derivation dominated the Roman-period assemblage. Silty North Kent fine ware fabrics were also present. Some Roman-period shell-tempered and grog-tempered sherds were present, but it was notable that purely grog-tempered fabrics appeared to have been little used during the Early and Mid Roman periods on this site. The North Kent sandy ware industries operating from various coastal sites nearby clearly dominated the local market.

Mid to Late Iron Age: 350 BC to AD 50/75

Contexts potentially of this date: (146).
Contexts containing residual pottery of this date: (42), (43).

Context 146 contained thirteen relatively thin-walled gently curving flint-tempered sherds; some worn, others fresher. These were broadly of Mid to Late Iron Age date and could relate to the other specifically Late Iron Age pottery identified from this site. The fabric featured fine sand that may not have been selected deliberately. A very worn sherd of fine sandy ware, relatively hard fired and possibly of Roman-period date, could have been introduced through ploughing.

Context 42 contained small, worn sherd fragments in a black sandy fabric that featured occasional traces of small shell, burnt-out organics and some small burnt flint temper. Other natural fine grit inclusions were also present. These could be from wares of Mid to Late Iron Age to Late Iron Age date (200/150 BC to AD 50). Slightly larger sherds in the same fabric were recovered from Context 44 and, if related to the other sherds from that context, could date from the Late Iron Age to the early Roman period (75 BC to AD 75).

Context 43 contained one small, fragmentary, sandy ware sherd of probable Mid to Late Iron Age date (200/150 BC to AD 50). A worn, soft fine sandy ware sherd could be of similar date and possibly date up to 100 AD. Also present was a very worn base sherd in a reduced, relatively sparse finely flint tempered fine sandy fabric, broadly Iron Age in date. Other sherds in a similar fabric but with a brown exterior surface and less worn may be of similar date. A coarsely flint tempered sherd could date anywhere from the Middle Bronze Age to the Iron Age, though it is more likely to be associated with the Iron Age pottery, given their presence.

Late Iron Age to Early Roman: 75/50 BC to AD 50/75

Contexts potentially of this date: Area F119, [35], (38), (44), (58), (67), (452), (453), (454).
Contexts containing residual pottery of this date: (41), (131), (132), (145)? (437)? (449), (458), (459).

Pottery of this date was collected from Area F119. The context was dominated by 'Belgic' style grog-tempered fabrics; fresh flint-tempered sherds, which featured strong orange-tinged exterior surfaces, were also reasonably of that date. Three sparse flint- and grog-tempered sherds with patchy oxidised firing colours featured lightly rusticated surfaces in the form of low relief irregular trails of clay and occasional larger pellets. The use of grog in the fabric suggests a Late Iron Age date, though grog-tempered fabrics are also known to occur in Early to Mid Iron Age assemblages in Kent, a time when the use of intentional rustication was a commonly employed technique. However, it appears to be unusual for mixed temper Late Iron Age fabrics to feature rustication.

Rustication was a continentally inspired tradition whereby additional clay was applied to the exterior of a vessel to create an irregular, lumpy surface finish. Rustication as produced in the Early to Mid Iron Age is not a common feature of Late Iron Age assemblages, though occasional examples have been noted as being 'rusticated'. An early first century BC bead rim vessel featuring rustication was recorded from the Isle of Thanet and another rusticated bead rim jar has been reported from West Malling, suggesting that the technique 'continued to be used into the early part of the first century BC in Kent' (Jones 2009, p.6). Nigel Macpherson-Grant has suggested that the bolder, deliberate finishes characterise the Early to Mid Iron Age tradition and others can be finishing traits which could occur at any time. ‘Wet slurried finishes’, which could describe the rustication seen on the sherds from this context, have been recorded on regional Mid to Late Iron Age vessels.

Context [35] contained sherds from three vessels in different fabrics. Purely flint tempered sherds with oxidised surfaces appeared relatively fresh and were broadly of Iron Age date. A reduced base sherd of mixed fine flint and grog temper appeared slightly more worn and was also broadly Iron Age. Slightly worn, reduced, plain body sherds in a Medway glauconitic sandy fabric also featured sparse, fine grog temper. Glauconitic sandy fabrics first appeared in the Earliest Iron Age and were initially rare outside of their production area, but became more common from 200/150 BC. Grog tempering was the dominant feature of Late Iron Age pottery but also appeared throughout the Iron Age as a minority fabric type. The group is broadly Iron Age and the grog tempering could suggest a Late Iron Age date from 75 BC to 50/60 AD.

Context (38) contained a single body sherd, lightly worn in places, in a flint-tempered fabric with oxidised surfaces featuring comb decoration. The combing could suggest a Late Iron Age date, though such decoration has also been seen on vessels of Early to Mid Iron Age date. A Late Iron Age date seems likely however. Similar, undecorated sherds were recovered from context [35] within the same feature.

Context (44) contained small, plain body sherds in a shell tempered fabric, a flint tempered fabric and a mixed temper sandy ware fabric which featured sparse inclusions of fine shell, flint, burnt out organics and natural grit. Most were similarly worn, though one of the shell tempered sherds, of Late Iron Age date, was comparatively fresh looking.

Context (58) contained sherds from the base and lower body of a single vessel in a flint tempered fabric. The exterior had been smoothed and showed dull oxidised patches on a generally reduced surface, but lacked specific diagnostic traits. The sherds were only lightly worn at most and were likely to be contemporary with their context. Other contexts from the same feature produced Late Iron Age pottery.

Context (67) produced one slightly worn, handmade sherd in a mixed grog and sparse flint tempered fabric, which featured the remains of three neatly executed corrugations above a plain section. It could have derived from a jar of Thompson B2-1 ‘everted rim’ or B2-2 ‘not everted rim’ type. Thompson notes that the handmade examples of the former are typologically early, while the latter is typologically an early form (Thompson 1982, 116-121, 122-125). A broad date of 75 BC to 50 AD is likely and a BC date may be possible, though handmade examples have been found associated with Gallo-Belgic pottery. Two other slightly worn body sherds in a coarsely flint tempered fabric were also present. Both vessels were potentially broadly contemporary with their context.

Context (452) contained sherds from three vessels, all relatively fresh, though a sherd in a mixed flint and grog tempered fabric appeared a little more worn. One sherd in a flint tempered sandy fabric comprised a ‘Belgic’ style externally thickened in-turned rim from a vessel akin to a Thompson C4 type bead rim jar. Thompson suggests that this is an East Kent form of the first century AD and often post-conquest, though at Highstead it also appeared in first century BC contexts, suggesting ‘an earlier emergence’ (Thompson 2007, p. 189-214).

Context (453) notably contained only grog tempered sherds; unusual in this assemblage. One everted rim sherd, slightly worn, may have derived from an everted-rim necked jar of Thompson B1-1 type. This standard plain form dates from the later first century BC until after the Roman conquest (Thompson 2007, p.189-214, p.192). A similar rim was recovered from context (161). Six other plain body sherds in this context derived from a different vessel.

Context (454) contained fresh sherds in a flint-tempered fabric from a single globular vessel featuring a plain in-turned rim and distinct shoulder, similar to a Thompson C3 type. Horizontal and diagonal shallow finger-wiping marks were present below the shoulder. Thompson notes that the 'Belgic' grogged form of C3 derives from the Iron Age (Thompson 2007, 189-214) and Couldrey suggests a recognised start date in the first century BC (Couldrey 2007, 179).

Several contexts contained residual sherds of Late Iron Age date. Context (41) contained six fairly worn sherds in a soft, reduced, micaceous, sparse fine sandy fabric which featured frequent small shell voids; possibly Late Iron Age. Two equally worn sherds in a reduced, flint tempered sandy fabric were broadly of Mid to Late Iron Age to Late Iron Age date, from 200, perhaps 150 BC to 50 AD.

Context (131) contained a single, small, much worn grog tempered sherd which could have been residual. Context (132) contained a worn flint tempered sherd and reduced grog tempered sherds, along with quite worn reduced shell tempered sherds potentially of pre 75 AD date. Context (145) contained one very worn looking reduced, shell tempered sandy ware sherd which was either Late Iron Age or Early Roman but probably residual in a second century AD ditch context. Other shell tempered sherds were also present (see Early Roman to Mid Roman further below).

Context (437) produced a variety of Late Iron Age and Early Roman pottery, most of which showed some signs of wear. Two conjoining rim sherds in a reduced grog and sparsely flint tempered fabric, relatively fresh, were from a plain everted rim necked jar of Thompson B1-1 type, dated 50 BC to 75 AD (Thompson 1982, p.86-95). An everted rim sherd in a black, flint tempered fabric could be of similar date.

Context (449) contained worn, plain body sherds in flint tempered fabrics which dated from 150 and 75 BC to 50/75 AD. Notable were four sherds in a flint and sparse grog and organic tempered fabric, one of which featured the well-preserved impression from a small, narrow leaf. Four slightly worn flint tempered sherds were from a vessel with a short, right-angled everted rim and interior bevel and also featured a shallow 'cordon' effect defined by two horizontal grooves. This vessel had copied butt beaker forms and dated from 25 to 75 AD (Macpherson-Grant *pers comm.*).

Context (458) contained flint tempered sherds which were all relatively thin-walled. One featured a broad tooled comb-like decoration. One group of five sherds had well smoothed surfaces and one of those featured a single grooved line. Ten grog and flint tempered sherds included one simple everted rim sherd. The material was not significantly worn; some of the flint tempered sherds appeared relatively fresh and all were potentially contemporary

Context (459) contained grog tempered 'Belgic' style pottery and flint tempered pottery potentially influenced by 'Belgic' forms, as well as less diagnostic material; all were likely to be broadly contemporary. Most of these sherds, notably the flint tempered and larger grog tempered sherds, were relatively fresh with only a couple of the smaller grog tempered sherds exhibiting more significant degrees of wear. Fifteen relatively thin-walled flint tempered sherds with pale orangey surfaces included one externally thickened upright rim sherd which could have derived from a globular jar. This form was produced in grog tempered fabrics but may pre-date them (Couldrey 2007, p. 176-178). One upright bead rim in a flint tempered fabric was noted. Also in a flint tempered fabric were four externally thickened in-turned, flat topped rim sherds from a closed form vessel akin to a Thompson C type jar (Thompson 1982). One body sherd in an oxidised flint and sparse grog tempered sandy fabric featured a single grooved line.

Late Iron Age: 50 BC to 25 AD
Contexts potentially of this date: (222).
Contexts containing residual pottery of this date: (163).

Context (222) contained two large, decorated body sherds from a large diameter, thick-walled vessel in a reduced grog tempered fabric; one of the sherds featured iron staining. These sherds were relatively fresh and featured a narrow, smoothed cavetto zone which lay directly above a single row of close-spaced finger-tip impressions, immediately below which lay angled comb decoration. The well-developed 'Belgic' form suggests a date from 50 BC and it has been dated up to 25 AD (Macpherson-Grant *pers comm*.). One other small, reduced mixed grog and flint tempered sherd was also present.

The remaining sherds from two different vessels in mixed grog and flint tempered and flint tempered sandy ware fabrics, had been fired to dark orangey and mid orangey colours respectively, possibly the result of an accidental re-firing. These sherds appeared a little more worn than the comb decorated sherds and may have been residual, though an episode of re-firing could have contributed to their worn state and all may have been broadly contemporary. The grog and flint tempered sherds were thick-walled and included one simple upright, flat-topped rim dated 125 to 25 BC. The one flint tempered sandy fabric sherd comprised a thick walled everted rim dated 125 BC to 25 AD (Macpherson Grant *pers comm*.).

Context (163) was a fill of feature [317], which was thought to be a modern cut that lay immediately adjacent to and perhaps truncated furnace pit [162]. It contained flint, grog and mixed grog and flint tempered sherds which were all likely to be relatively contemporary. As observed in other contexts, the predominantly grog tempered sherds appeared to be slightly more worn than the flint tempered sherds; potentially the result of a softer fabric. One grogged tempered sandy ware sherd featured a comb decorated surface that was significantly worn, suggesting that this sherd need not have been directly associated with the other, fresher-looking material. If all had been re-deposited from a single context, then the worn sherd would suggest a date from at least 50 BC for the others, if not a little later.

Three of the flint tempered sherds had utilised a Medway glauconitic sandy fabric. Seven fresh looking sherds in a reduced, flint tempered fabric were from the rim and upper body of a globular jar. The rim was short upright, slightly everted with faceting and an internal bevel; the exterior surface of the vessel below the smoothed neck remained untreated. Similar forms were found at Highstead, where Couldrey noted that they were akin to Thompson C1-2 bead rim rounded jar types (Thompson 1982) and continued to the end of the first century BC (Couldrey 2007, p. 176-189; p179). Thompson notes that the grog tempered forms of this type appeared in probable late first century BC contexts and continued to the end of the first century AD (Thompson 1982, p.217-218). A date of 50 BC to 01/50 AD could be suggested for these and the potentially associated sherds and thus the context from which they may have been disturbed, which presumably had been a fill or fills within furnace pit [162].

Late Iron Age: 15 BC/25 to 50 AD
Contexts of this date: (49), (55).
Contexts containing residual pottery of this date: (97).

Context (49) contained sherds in a variety of fabrics, including a glauconitic sandy ware, all of which contained an element of grog. Seven different vessels were present, most represented by single sherds which appeared slightly worn; all were broadly of Late Iron Age date. One black, grogged sherd with a little sparse flint temper featured a small part of a simple, slightly everted rim below which was a single horizontal band of diagonal impressed finger nail decoration. This 'pseudo rouletting' was inspired by the decoration on butt beakers and the sherd would date from 10 BC to 50 AD (Macpherson-Grant *pers comm*.). The vessel could be akin to a Thompson C4 type round shouldered jar, an East Kent first century AD form (Thompson 1982, p.238-243). This sherd and one other flint and grog tempered sherd were more crudely made than the others but were relatively fresh. Other sherds featured smoothed, plain surfaces; a couple appeared slightly harder fired and could date from 25 to 75 AD. One thin-walled sherd could date from 50 to 75 AD (Macpherson-Grant *pers comm*.). All could perhaps have been contemporary from 25 to 50/60 AD.

Context (55) contained sherds from one reduced, flint tempered vessel alongside others of grog and mixed grog and flint tempering. The former was lightly worn but not more so than the others and all could have been broadly contemporary. Seven sherds in a grog and sparse flint tempered fabric were from a vessel with an angular everted rim and three shallow grooved horizontal lines which created a lightly rippled zone at the shoulder. The consistent nature of the grooving suggested that this had been done on a wheel (Macpherson-Grant *pers comm*.). This vessel could be akin to a Thompson B2-1 type (Thompson 1982, p.116-121), though most of the illustrated examples featured less angular rims and were rippled immediately below the rim with no gap between. The exterior and interior surfaces were generally oxidised to a rich, strongly dark reddish-orange colour and could be an intentional, though not completely successful attempt to create a red-surfaced vessel. The B2-1 types noted in Thompson's corpus were not red-surfaced.

Alternatively these sherds could be from a plain barrel-shaped butt beaker of G5-1 type (Thompson 1982, p.506-509), 'essentially a form of the first half of the first century AD'. Some examples of these are known to have been red-surfaced. The grooved lines could be creating the impression of a cordon, which is a more typical characteristic of the type, though this also has parallels. The angular everted rim is comparable, though it lacks the interior bevel which is present on most, but not all examples. The sherd breaks were slightly worn but the surfaces did not appear significantly abraded. Two other thick-walled plain body sherds, in a similar fabric, were similarly oxidised but appeared more worn. These featured a subtle acute lattice tooled-burnish decoration which might have been copying butt beaker forms (Macpherson-Grant *pers comm*.). Three sherds in a Medway glauconitic sandy fabric featured worn-looking shallow comb decoration; they were fairly hard fired and could perhaps date from 25 to 60 AD. One everted, slightly bead-rimmed sherd in a grog and flint tempered fabric was also present.

Context (97) contained a single, worn, relatively thin-walled grog tempered sherd probably from a red surfaced flagon of 15 BC to 50/75 AD date.

Late Iron Age to Early Roman: 15 BC to 100 AD

Contexts potentially of this date: (161).

Context (161) was broadly of this date, with the remains of at least eleven vessels likely to be present. Many of the flint tempered sherds potentially derived from a single vessel comparable to a Thompson C1 type bead rim jar (Thompson 1982). The vessel featured a bold, upright bead rim with a slightly flattened top and angled combed decoration a short distance below a shoulder carination. One sherd featured a linear decoration of two adjacent grooves separated by a small ridge, likely made from same, notched tool. Two sherds featured holes which had been drilled through the exterior surface within this zone of combing post-firing; the drill creating a hole which tapered from 8mm to 3mm in diameter. Many of the body sherds in the same coarsely flint tempered fabric were plain and did not feature the combing, thus the decorative scheme may have been of limited extent. The rim and upper body exterior were fired a dark black, while other sherds in the same fabric and potentially from the same vessel, also featured dark brown and dull reddish colours.

The form of this vessel derived from a Late Iron Age 'Belgic' style tradition; it's well-formed and developed nature suggests that it dated from 25 BC to 50/75 AD (Macpherson-Grant *pers comm*.). Sherds from other vessels in traditional grog tempered 'Belgic' style fabrics were also present. One featured a gently curving everted rim which could have derived from a Thompson B1-1 type plain everted rim necked jar, which dates from the later first century BC until after the Roman conquest (Thompson 2007; p.189-214, p.192). A similar rim was recovered from context (453). Plain body sherds from a red surfaced flagon dated 15 BC to 50/75 AD were present. All of the purely flint tempered and grog tempered sherds appeared relatively fresh or only lightly worn and could be contemporary. The two identified forms also agree with this. Disregarding sherd count, grog tempered vessels do not dominate the assemblage from context (161), as might be expected in an assemblage of advanced Late Iron Age date.

There were a few sherds of potential 25 to 50/75 AD date in the form of fine sandy fabrics which featured sparse flint temper. These were all small and fairly worn. There were also a couple of sherds from two other vessels which could date from around the mid to late first century AD. Two of these were in an early North Kent fine grey ware fabric, very thin-walled and quite worn. The other was a relatively fresh short everted rim sherd in a fine sandy fabric, dated 50 to 100 AD (Macpherson-Grant *pers comm*.). A date of 25 to 50 AD would allow most if not all of the pottery from this context to be broadly contemporary and a date around 50 AD for all could be postulated, but as this context derived from a ditch feature there need be no contemporary association between the sherd groups and the variations in wear suggest they had different histories.

Early Roman: 50 to 70 AD

Contexts potentially of this date: ?(449), (455).

Contexts containing residual pottery of this date: (459), (462).

Context (449) contained a small, slightly worn sandy ware sherd of 25 to 75 AD date. Two small, similarly worn sherds in an oxidised grog tempered fabric, one a very short everted rim fragment, were dated from 50 to 75/100 AD (Macpherson-Grant *pers comm*.). Three oxidised sherds in a very fine sandy fabric were from a flagon handle of early form, dated 75 to 100/125 AD (Macpherson-Grant *pers comm*.). Evidence of a white slip coating was preserved within a single central groove on the exterior surface, but elsewhere had worn away. These, along with some flint tempered sherds from a vessel which copied a butt beaker form (noted further above), could potentially have been contemporary around 50 to 75 AD, but need not have been associated. They could all have been residual in a naturally infilling deposit.

Context (455) contained a fairly fresh grog tempered sherd from a shallow platter (12mm deep) with a simple upright rim, a carination half way up the body and a slight internal ridge. The form is comparable to a Thompson G1-6 type (Thompson 1982, p. 458-461; Thompson 2007, p.189-214), but more specifically similar to a Monaghan 7B1-2 type (Monaghan 1987, p.158-159), though the centre of the base was absent. A grog tempered sherd from the same type of platter, potentially the very same platter (the sherds do not conjoin), was found in context (462).

The G1-6 type is a copy of Gallo-Belgic forms Cam 7 and 8 and Thompson states that the grogged type is mostly post-conquest (Thompson 1982, p.459; Thompson 2007, p.193). Green notes that G1-6 platters, 'a post conquest form is quite common in Canterbury in grogged ware' (Green 2007, p.221). Monaghan dates the 7B1.2 type (in sandy fabrics and rare) from 43 to 70 AD. The CAM 7 and 8 forms in Terra Rubra and Terra Nigra fabrics were imported to South East Britain from around 20 BC to 70 AD (Tyers 1996) and thus could have been available pre-conquest for imitation in local wares. The grogged platter was well made, relatively hard fired and has been dated 25/50 to 70 AD. Two small, fresh plain body sherds in a reduced flint tempered fabric and a grog tempered fabric, appearing only slightly worn, were also recovered from this context.

Context (459) produced part of the rim from a lid of shallow profile in a grog tempered fabric, slightly worn around the breaks. A similar example amongst Thompson's L6 type, which is found both pre and post conquest, was dated 5 to 40/45 AD (no. 9 [1335]; Thompson 1982, p.548-549). It may however be more generally comparable to the very shallow out turned conical lids of Thompson L9 type, which 'appear to be post conquest' (Thompson 1982, p.554-555); the one dated example listed being pre Flavian (ie. 14 to 68 AD). It has been dated from 5/50 to 70 AD for now. Thompson notes that lids 'are not especially common' (Thompson 1982, p.535). Also present was a rouletted sherd in a fine sandy white ware fabric which featured some fine grog, either a later Gallo Belgic or perhaps an indigenous product, broadly dated from 50 to 150 AD. It could be from a butt beaker and date no later than 70 AD.

Of similar date was a sandy ware sherd from a smooth walled platter (approximately 24cm in diameter) with an internal ridge, of Monaghan 7D type. The outer surface was smoothed and black but quite worn. The profile was comparable to a 7D2.1 type, though lacking the external groove below the rim. This type is dated from 43 to 70 AD and is rare (Monaghan 1987, p.160). Plain platter type 7D1.1, but with a less upright rim, is dated 43 to 90/120 AD (the form being pre 120 AD). The platter was somewhat similar, but not the same type as the platter(s) in grogged fabrics from contexts (455) and (462) noted above and below; the sandy platter having a more rounded profile lacking a carination and with a broader span in the lower body wall, but with similar simple upright rim and slight internal ridge.

Context (462) contained a residual grog tempered sherd from a well-made, hard fired platter of the same form as that noted from context (455). It was slightly worn, particularly around the outer surface of the rim. Also present was a fresh, plain body sherd in a flint tempered sandy fabric, probably of Late Iron Age date given the general circumstances. The flint and the grog tempered sherds might but need not have been associated.

Early Roman: 75 BC/50 to 100/150 AD
Contexts potentially of this date: (151).

The date of context (151) is slightly ambiguous. It contained two small, plain sherds, both very worn on one side. One was a reduced grog tempered sherd, possibly Late Iron Age and dated from 75 BC to 75, perhaps 100 AD at most. The other was an oxidised North Kent fine ware sherd which dated from 50/75 to 150 AD. Both could potentially have been contemporary around 75 AD, though they need not have been associated within the context. The unifacial wear could have derived through exposure in context, or suggest the sherds were residual.

Early Roman: 50 to 125/150 AD
Contexts potentially of this date: ?(43), (437)?
Contexts containing residual pottery of this date: (42), (89), (132), (458), (459).

Context (43) contained sherds of varying dates, the freshest of which was a small sherd of shell tempered ware with an oxidised exterior surface which would broadly date from 75 BC and could date from 75 to 150 AD. A very worn, residual, soft, silty sherd with a dull oxidised exterior surface could date from 25 to 75 AD, though an earlier date is possible. A similarly worn base sherd in a reduced, relatively sparse finely flint tempered fine sandy fabric was broadly Iron Age in date and has been noted further above.

Context (437) produced a worn bead rim in a reduced sandy fabric with sparse flint temper, dated from 25 to 75 AD (Macpherson-Grant *pers comm*.). A slightly worn, very thin-walled plain body sherd in an oxidised sandy and sparse flint tempered fabric, was dated from 50/75 to 125 AD. Small, worn sherds of thin-walled oxidised and reduced North Kent fine ware, dated 50 to 100/125 AD, were present. A worn body sherd of hard, oxidised, wheel-thrown grog tempered pottery was dated 75 to 125/150 AD (Macpherson-Grant *pers comm*).

Two small, fractured, wheel-thrown plain body sherds in an imported Gallo-Belgic white ware fabric were also present. The fabric was comparatively fine but featured a very fine sand content and could be from North Gaul (National Roman Fabric Reference NOG WH 3 fabric?), dated 75 to 150 AD. All the sherds from this context, including the relatively fresh-looking grog tempered rim sherds noted further above, could have been contemporary around 75 AD, but need not have been associated.

Context (42) contained one worn, thick-walled grog tempered sherd with an oxidised exterior surface which could date from 15 BC to 150 AD but may be Early Roman.

Virtually all of the sherds from context (89) were worn to some degree, though those which dated prior to 150 AD were likely to be residual. All of the soft sandy ware sherds which dated up to 125/150 AD were small and worn. One was a thin-walled, externally thickened everted rim sherd in a dark, grey-black fabric; the remainder were all plain body sherds. Most vessels were represented by a single sherd. One quite worn rouletted North Kent fine ware base sherd in a soft, greeny buff-grey fabric, was dated 75 to 125/150 AD and may have derived from a beaker.

A rim sherd in a sandy, black fabric, which featured voids from probable leached shell inclusions was notable. It comprised a relatively square-sectioned upright rim with a narrow tooled groove towards the outer edge on the top of the rim (possibly a lid seat groove) and two narrow linear tooled grooves on the exterior vertical face of the rim. It was akin to a Monaghan 3L2.3 type lid seated jar dated 50/70 to 140 AD, though the illustrated types lacked the exterior rim grooves. Alternatively it could be a 3L6.1 square sectioned grooved rim type dated 70 to 130 AD, though the sherd had different grooves and lacked the interior bevel of the illustrated example. Both of these types occurred in shell tempered fabrics but were rare (Monaghan 1987, p.108-111).

Only a short area of the neck was visible, with no decoration present. The groove on the rim top was shallow and may not be a lid seat. Other potentially similar Monaghan forms were the 3E7.2 bead rimmed jar with square bead type (probably rare and perhaps usually in sandy fabrics; p.86-87), or the Thameside shell tempered storage jar 3D type (p.79-84), though there were no direct parallels (3D2.2 was closest, dated 60 to 150 AD, but rare). Monaghan notes that the shell tempered 3D storage jars are abundant and 'highly individual' (Monaghan 1987, p.79). A rim of generally similar profile, but in a less sandy fabric, with thicker body-walls and without any rim grooves, was recovered from context (145).

Context (132) contained three small, worn and likely residual sandy ware sherds of 50 to 125 AD date. Also present were an oxidised, grog tempered sherd of potential Early Roman date and a sherd of oxidised North Kent fine ware dated 75 to 150 AD.

Context (458) contained sherds of this date, which could be residual. Three sherds, including one everted rim, in a soft, dark, sandy fabric appeared fresh but their firing was distinctly different to harder fired sherds dated AD 125 to 175, which were also present. The former could potentially be contemporary with the context, though the presence of some slightly worn sherds suggests that a residual element might be present. Notable among these were two sherds in a creamy coloured fine sandy fabric, perhaps from a flagon, dated from 50 to 150 AD. Small, worn sherds of a dull oxidised sandy ware and a pale oxidised North Kent fine ware were also present.

Context (459) contained dark, reduced sherds in soft, sandy fabrics dated up to 125 or 150 AD. Several rims in such fabrics were present. One was a small, fairly thin-walled, thickened everted rim. Another small rim in a soft, grey sandy fabric was from a hooked bead rim jar of Monaghan 3F type, 40 to 150/170 AD (Monaghan 1987, p.88-91). A small sherd with a bead-like rim defined by an external groove and a small, upright, flat-topped rim, both in soft, dark sandy fabrics, were also present.

An everted rim in a black sandy fabric with an internal bevel, cavetto neck and a scored-looking single linear shoulder groove (as seen in the black sandy body sherds noted below), could be from an everted rim jar of Monaghan 3H1 type (Monaghan 1987, p.94-100). This type is dated from 100 to 250/300 AD, but most of them have thicker, more pronounced rims. Monaghan notes that ‘in general, 3H1 does not seem very numerous before 130/150’. The rim was more similar to a 3H6.1 type, but this is rare and dates from 170 to 250 AD, which seems generally too late for the soft fabric, though not for the context.

There were two sets of black, thin-walled sandy ware sherds which featured a linear grooved decoration, potentially produced by different tools and perhaps from different vessels. These could be from the vessel with the simple bead rim defined by a groove, or that with the upright flat topped rim, all being in same type of fabric. Ten sherds in a soft, black, sandy fabric with pale brown exterior surface patches included four body sherds, which also featured a linear grooved decoration. This had been created with a tool that produced two sharp fine linear grooved edges, which bordered an inner zone of irregular, shallow grooved marks.

Early Roman to Mid Roman: 50/75 to 175/200 AD

Contexts potentially of this date: (89), (145).

Most of the sherds from context (89) looked worn to some degree and many were relatively small. All of the general sandy ware sherds appeared worn. Two ‘pie dish’ vessels in worn sandy fabrics were represented. Three black sherds with partially oxidised surfaces included one rolled rim of rounded profile from a Monaghan 5C1 type ‘pie dish’; the type dates from 120/150 to 230/250 AD (Monaghan 1987, p.140-147). Six black sherds included one rolled rim of triangular profile from a Monaghan 5C2 type ‘pie dish’; this type is dated from 120/150 to 210 AD (Monaghan 1987, p.140-147). The fabrics of both were not hard fired and were perhaps less likely to significantly post-date 175 AD.

A small number of sherds in hard-fired fabrics were present and these would typically date from 175 AD, but could of course have occurred earlier as accidental rather than intentional hard firings. The later dated pottery featured sherds from two relatively hard fired North Kent fine ware vessels dated 150/175 to 250 AD. One base sherd was comparatively fresh; seven plain body sherds from a different vessel featured relatively sharp old breaks but somewhat worn and abraded exterior and interior surfaces, which could perhaps have resulted in part from soil conditions. One hard fired fine sandy ware, slightly worn, dated from 150 to 200/270 AD. Slightly less hard fired fine sandy and grog tempered fine sandy ware sherds dated 125 to 175 AD also showed signs of wear.

Context (145) contained a variety of fresher and more worn looking sherds of small size, some of which shared similar dates. Of the relatively fresh looking pottery, an everted rim in a soft sandy fabric with dull orange oxidised surfaces dated 75 to 150/175 AD. Two small, oxidised North Kent fine ware sherds, not very hard fired, dated 75/100 to 175 AD. One small, harder fired North Kent fine grey ware sherd was dated from 125 to 250 AD.

Of the worn pottery, one very worn reduced shell tempered sandy ware was either Late Iron Age or Early Roman but was probably residual (already noted further above). Three other shell tempered sherds in very fine sandy fabrics (but with the sand element negligible), were also present and may have derived from North Kent shelly ware storage jars dating up to around 150 AD. Two were fragments of a black coloured, squared-off bead rim akin to a Monaghan 3E7.2 type (Monaghan 1987 p.84-87). There were no rim parallels amongst the Monaghan 3D Shell Tempered storage jar types, though Monaghan notes that ‘each vessel is however highly individual, tending towards the unique’ (Monaghan 1987, p.79-84). A similar rim was recovered from context (89).

Five fairly hard fired but roughly made grog tempered very fine sandy sherds, including an upright, simple bead rim sherd, were dated 75/125 to 175 AD. Six small, reasonably well fired North Kent fine grey ware sherds, including two very short everted rim fragments broken at the neck, may have derived a beaker. Similar Monaghan beaker rim types are generally dated from 75 to 150 AD, though some large globular vessel types can be from 190 to 210/230 AD (Monaghan 1987, p.55-75).

Early Roman: 120 to 150 AD
Contexts potentially of this date: (27), (458).

Context (27) contained two small, slightly worn, fairly hard fired sherds of North Kent fine grey ware.

Context (458) contained a base sherd of potential Central Gaulish Lezoux samian. Little more than the foot-ring was present, but it could have derived from the plate/bowl transitional Form 18/31 of 120 to 150 AD date (Webster 1996, p.13-16, p.32-35). The slip showed patchy wear, while on the base of the foot-ring the slip had completely worn away.

The sandy ware sherds from this context that were dated from 125 to 175 AD shared similar qualities in sounding relatively crisp and hard fired but were actually fairly soft fabrics. The broad date based on firing characteristics which was applied to these otherwise undiagnostic plain sherds agreed well with the dating of the samian; they could perhaps have been dated up to 150/175 AD. Sherds in an identical fabric to that of the four hard fired, grog tempered fine sandy ware sherds were noted in context (459) and these could have derived from the same vessel. The form of one of the sherds suggested the presence of a handle.

Two relatively hard fired sounding sandy rim sherds were notable and were perhaps from a bead rimmed faceted jar of Monaghan 3G1 type, dated 40/50 to 100/110 AD (Monaghan 1987, p.91-94). They were most comparable to the rare 3G1.7 type, of 50/60 to 90/110 AD, though with a more upright and well-defined bead rim. The type was comparable to/derived from the ‘Belgic’ style Thompson C4 type (noted elsewhere). Monaghan notes that one of the West Kent 3G vessels in his corpus was from a late first to early second century AD deposit. The rim sherds from context (458) appeared relatively fresh and potentially contemporary with the context. It could be the case that these hard fired sherds were slightly residual but their unusually hard-fired nature had kept them looking fresh. Alternatively they could be contemporary with the context at around 125 AD and be a slightly later lived example of the 3G1 type, suggesting a date for the context at the earlier end of the date bracket.

Early Roman to Mid Roman: 125 to 175 AD
Contexts potentially of this date: (157), (460), (461).
Contexts containing intrusive pottery of this date: (42), (146).

Context (157) contained relatively fresh sherds from a thick-walled mortarium in a sandy, buff coloured fabric, possibly a Kentish product. Two rim sherds featured a slightly raised interior lip and the scar of an exterior flange, which had broken along the junction with the main body. Few formal attributes were present, but a vessel of potentially similar form and fabric from Highstead was dated from 120 to 170 AD (Fig.141, no. 591; Hartley 2007, p.247-248). Also present was a slightly worn sherd in a soft sandy fabric, possibly residual.

Context (460) contained three fairly hard-fired sandy ware sherds. Context (461) had just one, slightly worn sherd of this date.

Context (42) featured a small, worn, oxidised sherd of fine sandy ware with a partial white slip painted decoration. Context (146) contained a small, very worn, relatively hard fired sherd of fine sandy ware likely to be Roman period and potentially intrusive.

Early Roman to Mid Roman: 125 to 200 AD

Contexts potentially of this date: (152).

All of the sherds from context (152) were small and plain. Sherds in sandy fabrics which dated from 75 and 125 to 175 AD appeared relatively more worn, though not excessively so, but were probably residual to some degree. Two sherds in a North Kent fine ware fabric with buff coloured surfaces, dated 150 to 200/250 AD, appeared fresh. Two other North Kent fine grey ware sherds dated 125 to 175/250 AD, were also relatively fresh. While a focus around 150 to 175 AD for this context may be possible, the nature of the feature could suggest that it would potentially have been open over a longer period and able to accrue material more gradually.

Early Roman to Mid Roman: 125/150 to 175 AD

Contexts potentially of this date: (459).

Much of the later pottery from context (459) which dated from 150 AD appeared relatively fresh or only slightly worn, but quantity wise it was very much in the minority. Late Iron Age and Early Roman pottery also recovered from this context has been discussed further above. Many of the plain body sherds were dated on firing characteristics. Hard sounding sandy wares which were not actually very hard fired were dated from 125 to 150/175 AD. Harder fired sherds which were not the very hard fired products typically expected post 175 AD, were dated from 150 to 175/200 AD. These latter sherds looked fresh and were perhaps a little fresher than the slightly earlier dated sandy wares. This agreed well but could be a consequence of their firing.

One sherd from a samian mortarium, the latest dated Roman sherd from this context, was very worn with much of its slip missing. The fabric may have suffered from acidic ground conditions, or it could be late and intrusive. It was a plain body sherd with no traits to aid identification, though could be a Form 45, possibly East Gaulish and from La Madeleine or Argonne (Webster 1996, p.55-56). If so it would date from 170 to 260 AD. It is thought that samian imports decreased in the third century AD and in general there was little samian around after 200 AD. No evidence of significant third century AD activity has been recognised in the assemblage. A date around 150 AD for the context could be satisfactory for much of the assemblage, with those sherds being relatively fresh or only lightly worn. The worn samian sherd is a problem though and the presence of a small sherd of Post Medieval to Late Post Medieval pottery, presumably intrusive, is notable.

Mid Roman: 150 to 175/200 AD: Cremation burial (470)
Contexts: (470), (470) SF 2, (470) SF 3, (470) Fill of SF 3, (470) SF 4, (470) SF 6.

Context (470) derived from a cremation burial and contained the partial remains of several vessels likely to have been disturbed by ploughing. The date proposed for the context as a whole reflects the overlap of the suggested dates for the individual vessels and the not particularly hard fired nature of all but one of the local wares.

One small, worn scrap of grog tempered sandy ware recovered from the general context (470) was potentially residual. Seventy nine sherds in a soft, reduced sandy fabric, which included seven gently curving, flaring everted rim fragments, with the remainder plain body sherds, may have derived from a wide mouthed everted rim jar of Monaghan 3J type (Monaghan 1987, p.103-108). These jars, frequently decorated, imitated BB1 vessels and could date from 110/120 to 250 AD, though the soft fabric would normally suggest a date prior to 150/175 AD. The edges and surfaces appeared slightly worn. The form was difficult to discern, the rim having broken at the neck junction, which Monaghan notes is a feature of the 3J jars. The curving nature of the rim could suggest that this was a 3J3 type, which dates from 150 to 220/240 AD and which Monaghan notes is 'the most common variant of 3J in the second century' (Monaghan 1987, p.105). Alternatively it could be a 3J9.4 type, but this features an open lattice decoration and dates from 170/190 to 210/230 AD, a time when harder fired vessels were becoming the norm. Dating as the 3J3 type is preferred for now.

Small Find 2 comprised base, plain body and rim sherds probably from a Central Gaulish Lezoux samian Form 31 bowl dated 150 to 200 AD (Webster 1996, p.13-16, p.34-34). The profile was only partially preserved and difficult to establish with absolute certainty. The slip was worn through in places, notably around the rim and base of the foot-ring; the fabric was hard fired and the sherd edges sharp and fresh.

Small Find 3 was a complete foot-ringed base and plain lower body sherds in a fairly hard fired, oxidised, grog tempered fine sandy fabric dated 175 to 225 AD. The base was relatively fresh, while the sherd surfaces appeared a little more degraded.

Small Find 4 comprised sherds from a North Kent fine ware vessel. The sherd surfaces and breaks were generally fresh, though some occasionally appeared a little more worn. No rims were recovered as part of Small Find 4, but everted rim sherds from this vessel were found elsewhere in context (470), reflecting the disturbed nature of the context. Simple base, plain body and other body sherds which featured a subtle, acute lattice, tooled burnish decoration were present. The profile was difficult to reconstruct and no direct parallel was identified. The base was narrow, approximately 5cm in diameter; the rim was very partially represented and too fragmentary to assess a diameter. It may be akin to a Monaghan 3J4 type jar (small, slim jars with narrow base and widely everted rims), dated from 130/140 to 180/220 AD (Monaghan 1987, p.105-106; though the illustrated examples were all sandy wares and lacked the lattice decoration). It may be more like a 3J1 jar (with short, straight everted rim), of 110/120 to 150/190 AD (p.103-104; again the illustrated vessels were all in sandy fabrics, but did feature lattice decoration, with 3J1.4 being the best parallel overall).

Small Find 6 comprised sherds from a plain 'pie dish' in a smoothly finished, reduced sandy fabric. Rolled rim sherds of rounded profile and undecorated body sherds identified the vessel as a Monaghan 5C1 type, dating 120/150 to 230/250 AD (Monaghan 1987, p.140-141). The fact that the vessel was not particularly hard fired could suggest an earlier rather than a later date. Six gently curving everted rim sherds, in generally the same fabric and firing colours as the 'pie dish' were from the 3J3 type jar noted further above. Undiagnostic sherds which could have derived from either vessel were also present, along with four plain body sherds in a similar looking, fairly soft fabric but with a rougher surface appearance that potentially derived from a different vessel.

Mid Roman: 150 to 200 AD
Contexts potentially of this date: (132).
Contexts containing residual pottery of this date: (42).

Context (132) contained fresh looking contemporary and more worn-looking, residual sherds. The freshest pottery comprised fourteen small, dark sherds in a sandy fabric from an everted (cavetto) rimmed jar of Monaghan 3H1 type (Monaghan 1987, p.94-95). Monaghan suggests this type broadly dates from 100 to 250/300+ AD, though is thought to be more commonly occurring after 130/150 AD; most of the variants date 170/190 to 210/230 AD. The fabric was fairly hard and would typically date up to around 175 AD, though could be slightly later.

Three sherds from an oxidised, grog tempered mortarium in a hard fired fabric dated 150 to 250 AD were relatively fresh, being only slightly worn in places. Part of a right-angled, thinning everted rim and spout were present but no form parallels have been established. A fair representation of the trituration gritting survived and was composed primarily of white flint grits, but also featured some coloured pebble flint grits and occasional possible ironstone grits.

Other sherds showed slight but not significant wear and could perhaps be relatively contemporary with the formation of context. Two conjoining sherds of East Gaulish samian, possibly from Trier, were from the rim and upper body of what was likely to have been a Form 31 bowl (Webster 1996, p.13-16, p.34-35). Webster suggests the form appeared in the mid second century AD, but that 'vessels from East Gaulish centres will have been imported into Britain from the late second to mid third century'. The sherds had lost nearly all of their slip but were otherwise not significantly abraded. Six fairly hard fired sandy ware sherds, dated 125 to 175 AD, were slightly worn around the edges. Similarly dated was a thin-walled, widely flaring everted rim in a fine sandy fabric.

More worn looking was another samian sherd in a softer looking orangey fabric, possibly an East Gaulish product from La Madeleine or the Argonne, dating from 140 to 260 AD. It retained a little more slip than the other samian sherds from this context, but appeared more significantly worn. It featured a small bead rim similar to that on the Form 31 sherds noted above, but the sherd was small and no specific parallel could be established.

Context (42) also produced a very worn, hard fired rim sherd of potential La Madeleine/Argonne samian. The rim was simple and could be from a Form 33 conical cup, which was the most popular cup form during the mid and late second century AD, with East Gaulish examples being made into the third century AD (Webster 1996, p. 45).

Mid Roman: 175 to 250 AD
Contexts potentially of this date: (462).
Contexts containing residual pottery of this date: (42).

Context (462) contained four oxidised, thin-walled body sherds in a very fine sandy/silty fabric, slightly worn around the edges, possibly but not certainly a North Kent fine ware. One thin-walled sandy ware sherd, fairly fresh and relatively hard fired with dull oxidised surfaces, could date from 175 AD.

Context (42) contained a worn, hard fired, finely grog tempered sherd dated 175 to 225 AD, which could be termed a 'Native Coarse Ware' product.

Late Medieval: 1350/1375 to 1450 AD

Contexts containing residual pottery of this date: (42).

Context (42) produced a small, worn sherd of Canterbury Tyler Hill sandy ware which featured slight traces of exterior glazing. It was fairly hard fired, with a crisp firing sandwich and a little grog within the fabric.

Post Medieval to Late Post Medieval: 1650+ AD

Contexts containing intrusive pottery of this date: (459), (470) SF 2.

A small, thick-walled, glazed sandy red ware sherd broadly dated 1650 to 1800 AD, was recovered from the Early Roman to Mid Roman context (459). A small fragment of glazed porcelain dated 1745+ AD was recovered from the Mid Roman cremation context (470) Small Find 2. The latter had probably been introduced through ploughing.

6. Discussion

The dating implications for the contexts and their associated features have been discussed below. The estimated dates for each context have been based on the overlap in the dates of the freshest-looking sherds which were likely to have been contemporary with their context. In some cases, typically concerning the Roman ceramics, this has led to a focus around a very short date bracket or even a single date, but these dates must always be considered *circa* and not absolute. The dating of contexts which derived from ditches has given consideration to the fact that these fills likely accrued gradually over time and thus the dates have been broadened according to the sherd evidence. All naturally silting contexts will gather material over time should there be activity in the vicinity which can contribute it.

The rate of natural silting which occurred in features left open to the elements on this site is unknown. Colin Baker looked at the rate of natural sedimentation within a large, Mid to Late Iron Age pit on the Isle of Thanet and suggested that silting driven by mass movement processes of landslip, soil creep and hillwash, accumulated colluvium at a mean rate of 0.2cm per year over a 2000 year period (Baker 2010, p.72). That feature was situated on an expanse of gently sloping land within an area of chalk geology and while not directly comparable with the circumstances at Stockbury, may offer some indication of a rate of natural secondary silting.

One might expect that a feature such as a ditch, freshly dug through more friable soils and natural, would accumulate its initial primary silting more rapidly, with soil formation aided by the establishment of early vegetation cover. Given that the features at Stockbury were cut through clay and that the soil overburden may have had a significant clay content, the rates of initial primary and later silting could be slower. The degree to which such ditch features were subsequently cleared of vegetation and maintained or re-dug would also be a factor and this could make them appear to have been constructed later than they actually were.

Pit [147]; 350 BC to 50/75 AD

Pottery from context (146), a secondary fill of pit [147], dated to this broad period. These comprised sherds from a single flint tempered vessel and a very worn, potentially intrusive sherd of Early Roman to Mid Roman date. Most of the flint tempered pottery from this site has been associated with grog tempered pottery of Late Iron Age date (75/50 BC to 75 AD) or has exhibited formal traits of that date. No pottery of solely pre Late Iron Age date has been noted in the site assemblage, though pit [147] could of course be an earlier, unrelated feature.

Colluvium (41)

Worn, residual plain body sherds from two different vessels were recovered from this context; they might but need not have been associated. A flint tempered sandy ware dated from 200/150 BC to 50 AD and a shell tempered fabric dated from 75 BC to 75 AD.

Fireplace remains, context (44); 75 BC to 75 AD

The few sherds recovered from this context were all small, mostly worn and potentially residual to some degree. One shell tempered sherd of Late Iron Age date, 75 BC to 75 AD, appeared relatively fresh and could suggest a date for this feature. Another shell tempered sherd, which appeared more worn, was of the same date and the other similarly worn sherds might, but need not, have been associated.

Late Iron Age and Roman layers within feature [451]
Contexts (452), (453) and (454) solely contained pottery of the Late Iron Age and dated from 50 BC to 50/75 AD. These contexts were a primary and subsequently secondary fills of feature [451]. Other fills from this feature contained pottery which suggested they formed at a later date. Context (455) was potentially Early Roman at around 43 to 70 AD. Context (458) was Early Roman at 120 to 150 AD. Context (459) was Early Roman to Mid Roman from 125/150 to 175 AD. Contexts (460) and (461) contained a little Early Roman to Mid Roman pottery, from 125 to 175/275 AD and context (462) appeared Mid Roman from 150 to 200/275 AD. The pottery could suggest that this feature was first open during the Late Iron Age and gradually in-filled over the next two or more centuries, each context incorporating pottery generated by activity in the immediate vicinity as it gradually formed. Some re-deposition of earlier material is also suggested. A small sherd of Post Medieval to Late Post Medieval pottery from context (459) is anomalous and noteworthy.

The pottery from the Late Iron Age contexts (452), (453) and (454) were all relatively fresh. The fact that little grog tempered material was recovered from context (452), but only grog tempered pottery was found in context (453), could reflect a progression from an early to a later, more established Late Iron Age period. The use of grog tempered fabrics typically comes to dominate the composition of Late Iron Age assemblages and though flint tempered fabrics were still used, they increasingly become a minority fabric type.

Context (455) contained a fresh sherd from a grog tempered platter which probably dated from 50 to 70 AD. A worn sherd from the same type of platter, perhaps the same vessel, was recovered from context (462). Two small, fresh, flint tempered sherds and a grog tempered sherd which appeared only slightly worn were potentially contemporary.

Contexts (453) and (455) both formed in similar positions on the opposing upper sides of feature [451] and could have formed at the same time, thus suggesting that the grog tempered pottery from context (453) could date towards the very latter end of its range. A rim of similar form to that recovered from context (453) was found in context (161) of ditch [160].

Contexts (458) and (459) contained a comparatively large number of sherds of varying fabrics, with many vessels represented by a single or only a couple of sherds. Context (458) was dated from 120 to 150 AD but it contained a significant amount of earlier pottery from the Late Iron Age (75 BC to 75 AD) and Early Roman (50 to 125 AD) periods. The Late Iron Age pottery was not significantly worn and some of the flint tempered fabrics appeared relatively fresh. The Early Roman pottery contained a mix of slightly worn and fresher looking material. A similar composition of pottery was recovered from context (459). This context was dated 125/150 to 175 AD but also contained a comparatively large number of sherds from 75 BC to 75 AD (the majority fresh-looking) and 50 to 125/150 AD (some showing signs of wear). A small sherd of Post Medieval/Late Post Medieval pottery was also recovered from this context.

Whether contexts (458) and (459) were intentionally backfilled deposits containing material freshly disturbed from earlier features nearby, or represented a gradual accruement of material in a naturally silting deposit, is not certain. The fact that the Iron Age pottery appeared in both contexts suggests that some element of disturbance was occurring. The fresh nature of much of the Late Iron Age pottery also suggests that it had not been exposed for long or moved very far from where it had originally been deposited.

While the pottery which was likely to have been contemporary with its context suggests that the feature was open and accruing material from at most 75 BC to 200 AD, there is an apparent gap from 70 to 120 AD where no context appears to have contemporary pottery of that date. Residual pottery of that date was present in contexts (458) and (459) however, suggesting a broad continuum of activity in the vicinity.

Furnace in sunken-floored pit Areas F113 East, F113 West and F119

No pottery was recovered from the furnace pits in Area F113 West. Post hole [26] from the same area contained two, small sherds of Early Roman date.

A comparatively small number of sherds were recovered from the complex of furnace pits in Area F119. Those recovered as context 'Area F.119' were surface finds gathered from the area which encompassed the furnace pits and ditch [160]. The sherds were solely of Late Iron Age date from 75 BC to 75 AD, with no Roman or other ceramics present.

Context (163) of feature [317], which lay adjacent to and possibly truncated furnace pit [162], contained fresh, potentially contemporary pottery which dated from 50 BC to 01/50 AD. The loose nature of fill (163) suggested to the excavator that it may have been modern and that feature [317] could represent a modern disturbance to furnace pit [162]. If so, the pottery from context (163) could have derived from a fill within furnace pit [162].

Pottery from context (222), a fill of iron roasting pit [215]/[318] situated within the furnace pit complex in Area F119, was broadly of the same potential date as that from context (163). Large, fresh sherds of grog tempered 'Belgic' style pottery were present alongside flint tempered sherds that appeared slightly worn and had perhaps been accidentally re-fired. The fresh 'Belgic' style sherds would date from 50 BC to 25 AD, with the flint tempered sherds either residual pre-'Belgic' from 125 BC or, if relatively contemporary (the worn sherds owing their 'residual' appearance to being re-fired), around 50 to 25 BC/25 AD. It seems likely that the furnace complex in Area F119 dates to the Late Iron Age, perhaps 50 BC to 01/25 AD.

The pottery recovered from furnace pit [48] in Area F113 East, though often appearing slightly worn, would suggest a broad date from 50 BC to 50 AD for this feature. No Roman products were present. Sherds from red surfaced vessels and others inspired by butt beaker forms, dated from 15/10 BC to 50 AD, were present in the upper fills, as were some relatively hard fired sherds of potential 25 to 60 or 75 AD date. Assuming that the use-life of these furnaces was relatively short and if they had been backfilled shortly after abandonment incorporating now slightly worn pottery formerly contemporary with their use, a date of 01/25 to 50 AD is possible.

Adjacent to furnace structure [71] within pit [48], lower fill (58), which sat upon a tabular deposit of slag produced during the final firing of the furnace, contained relatively contemporary-looking flint tempered sherds from a single vessel diagnostic only of a broad Iron Age date. Upper fill (55) of pit [48] contained large, oxidised sherds of grog and sparse flint tempered fabrics, along with comb decorated sherds in a hard fired Medway glauconitic sandy fabric and sherds from a single, purely flint tempered vessel. Most showed some degree of wear, but all could have been broadly contemporary from 15 BC to 60 AD. Some of the oxidised sherds may have been from a red-surfaced butt beaker of 01 to 50 AD and a date from 25 to 50 AD for the context is possible. This context potentially formed at the same time as context (97), an upper fill within furnace structure [71], which contained a single, worn sherd of 'Belgic' style red surfaced flagon of 15 BC to 50/75 AD date. This sherd was found on the surface and though residual, could perhaps have been contemporary with the use-life of the pit before being incorporated within the backfill.

Less diagnostic, relatively fresh and lightly worn pottery of broadly Iron Age date was recovered from context [35] within the same feature. The presence of fine grog temper in two of those fabrics (one a Medway glauconitic sandy ware), could suggest a date from 75 BC to 50/60 AD. A lightly worn, comb decorated sherd in a flint tempered fabric was recovered from context (38) at the base of furnace structure [35] within pit [48]. Relatively fresh sherds in a similar fabric, potentially from the same vessel, were recovered from context [35]. Grog and mixed grog and flint tempered sherds (including a Medway glauconitic sandy ware), were recovered from context (49) within pit [48]. All could broadly date from 50 BC to 60 AD; some were slightly worn. Freshest were two handmade, grog tempered sherds of 10 BC to 50 AD date, one showing 'pseudo rouletted' impressed finger nail decoration inspired by butt beakers. A couple of harder fired sherds might date from 25 to 60 and 75 AD and one thin-walled sherd might date from 50 to 75/100 AD; all were slightly worn. The group could be contemporary from around 25 to 50 AD.

Pit [65] adjacent furnace pit [48]; 75 BC to 50 AD

Context (67), a fill from pit [65], contained a 'Belgic' style corrugated sherd in a grog and sparse flint tempered fabric dated 75 BC to 50 AD. This and a couple of flint tempered sherds were slightly worn around the breaks, though the surfaces were fairly fresh and the sherds were likely to have been relatively contemporary with the feature. It could be associated with furnace pit [48] nearby; slag was found in this context.

Ditch [160]; 15 BC to 100 AD

Context (161), a fill of ditch [160], potentially dates from 15 BC to 100 AD. It contained a substantial amount of fresh looking or only lightly worn pottery which, if broadly contemporary, could date from 15 BC to 50/75 AD. A couple of un-Romanised sherds of potential first century AD date, 25 to 50/75 AD, were present, though these were small and fairly worn. A relatively fresh rim sherd dated 50 to 100 AD was present along with two worn sherds of similar date.

As a ditch fill, this context might be expected to have gradually accrued finds that weathered into it from an adjacent surfaces over time. Many sherds from a flint tempered, bead rim jar were present which perhaps, along with the fresh looking or only lightly worn flint tempered and grog tempered Late Iron Age sherds, could have been discarded directly into the ditch from activity close by. The relative positions that all of the sherds were recovered from within the fill are of course unknown. The ditch might have been constructed from around 25 or perhaps 15 BC at the earliest and remained open into the Early Roman period. Pottery evidence from that later period is sparse, but some degree of occupation in the vicinity is indicated. The pottery could all have been in circulation together around 50 AD, but given the composition of the assemblage, the condition of the sherds and the nature of the context, several independent though perhaps relatively continuous phases of activity over a longer period are more likely. It may be that activity in the Early Roman period was farther removed from this feature than it was in during the Late Iron Age.

Pit [432]; 50 BC/25 to 150 AD?

Context (437), a fill of pit [432], contained a limited number of sherds dated variously from the Late Iron Age to the Early Roman periods; most were worn to some degree. Eight vessels were represented, six of which each by a single sherd. The freshest were two conjoining sherds of Late Iron Age 'Belgic' grog tempered pottery dated 50 BC to 75 AD. Notable was the presence of two, small sherds of imported North Gaulish Gallo-Belgic white ware dated 75 to 150 AD. All the pottery from this context could have been contemporary around 75 AD, but need not have been associated. The sherds could represent a feature naturally in-filling and accumulating residual pottery gradually over time, perhaps from 25 to 150 AD at most.

Early Roman: 43 to 70 AD

Specific evidence of activity in the post conquest Early Roman period, 50 to 70 AD, is limited. Pottery from context (455), a fill of earlier feature [451] discussed further above, was potentially contemporary with its context, while residual material of this date was recovered from contexts (459) and (462) within the same feature. Context (449), a fill within large feature [435], contained a little, worn pottery dated 50 to 75 AD, along with other slightly worn sherds which could but need not have been contemporary (see further below). No features on this site can be certainly said to have been constructed at this time.

Linear (151); 75 BC/50 to 100/150 AD

Context (151) comprised the fill and cut of a wide, shallow linear feature. Only two small, sherds were recovered and both showed significant unifacial wear which could have occurred through exposure in a slowly silting context, or suggest the sherds were residual. One grog tempered sherd could be Late Iron Age, from 75 BC to 75 AD. One oxidised North Kent fine ware sherd could date from 50/75 to 150 AD.

The ditch was probably open from at least around 50 to 100 AD and the sherds could be contemporary around 75 AD, but this need not be the case. The fill was 0.25m deep, which could perhaps have taken some 100 years or more to accrue naturally, based on the rate established by Baker (Baker 2010; see further above). The location from which the sherds were recovered within the context is understandably unknown.

Feature [435]; 75 BC/50 to 75/100 AD?

Context (449) of large feature [435] contained worn sherds in reduced flint tempered fabrics that broadly dated from 150 BC to 50/75 AD, but could have been relatively contemporary and Late Iron Age in date. Other, slightly worn flint tempered sherds were from a vessel which imitated a butt beaker form and dated from 25 to 75 AD. A small, slightly worn sherd in a sandy fabric was similarly dated. A small rim fragment in an Early Roman grog tempered fabric was dated from 50 to 75/100 AD. Three fragments of an early flagon handle, formerly white slipped, was dated 75 to 100/125 AD. The date of this context is uncertain given the mixed and worn nature of the pottery. It could potentially date from 50 to 75/100 AD, perhaps more likely so if it comprised an intentionally backfilled deposit. Alternatively this context could represent a deposit gradually accruing material from at least 75 BC to 100 AD.

Land surface context (89); 75 to 200 AD

Context (89) was a very stony layer thought to represent a former land surface, perhaps an intentionally cobbled track or hollow way. A comparatively large amount of pottery was recovered from this deposit, none of which appeared particularly fresh and many vessels were represented by single sherds. Two comparatively substantial phases of material from 50 to

125/150 AD and 125 to 175 AD were present, along with a couple of sherds which dated from 150/175 to 250 AD and could represent a final, third phase of limited activity before the surface was abandoned and sealed by overlying colluvium-like deposit (88). The pottery could suggest that this surface was exposed and accruing material from a maximum of 50 AD to around 200 AD or slightly later. The absence of grog tempered fabrics of Late Iron Age 'Belgic' style could suggest a start date post 75 AD.

Ditch [144]; 75 to 175 AD

Context (145) was a secondary fill of ditch [144] and it contained a variety of fresher and more worn pottery which could have accrued gradually from 75 to 175 AD. No pottery was recovered from the primary fill. The earliest, freshest sherds from context (145) dated variously from 75, 100 and 125 AD.

Post hole [26]; 125 to 150/175 AD

Context (27) solely contained two small sherds dated 125 to 150/175 AD. These were slightly worn and could be residual.

Linear feature (152); 125 to 200 AD

Context (152) comprised the fill and cut of a wide, shallow linear feature. All of the pottery recovered comprised small, plain body sherds, of which the North Kent fine ware fabrics which dated from 125 AD and 150 AD were the freshest. Sandy ware sherds which potentially dated from 75 AD and 125 AD were also present but appeared more worn. Such a feature, if left open, might be expected to gradually accrue material as it naturally silted but unlike some other linear features on this site, this one had not gathered a comparatively large amount of pottery of varying dates, which could be due to its size and or location relative to any activity. Most of the fabrics dated from at least 125 AD and the context need not be earlier than this. All of the pottery could have been relatively contemporary around 150 to 175 AD and this may offer a focus if the use-life of this feature was short. If it functioned as a boundary ditch then a longer use-life might be possible, from 125 to 200 AD.

Natural layer (157); 120 to 170 AD

Pottery recovered from context (157), a layer of natural clay, comprised relatively fresh sherds from a mortarium of Early Roman to Mid Roman date, perhaps 120 to 170 AD, along with a slightly worn and potentially residual sherd of 50 to 150 AD.

Cremation deposit (470); 150 to 175 AD

Context (470) comprised a cremation deposit badly affected by subsequent ploughing. All the vessels were incomplete and only partially represented. Comparing the dates of the different vessels suggests a date of around 150 to 175 AD for the deposition of the assemblage. The vessels present comprised a jar in a North Kent fine ware fabric, a jar and 'pie dish' in a North Kent sandy ware fabric, another vessel in a local grog tempered fine sandy fabric and an imported Dragendorff Form 31 bowl in a Central Gaulish Lezoux samian fabric. A few sherds in different fabrics from two other Roman vessels were also present, but these may have been introduced to the deposit by ploughing. A small sherd of Late Post Medieval porcelain suggested a date after which some of this disturbance could have occurred.

Ditch [129]; 150 to 200 AD

Primary fill (132) of ditch [129] contained pottery from the Late Iron Age, Early Roman and Mid Roman periods. The Late Iron Age sherds were worn and likely residual in a feature of Roman date. The Early Roman sherds of 50 to 125 AD were also worn. The freshest pottery, from two different vessels, overlapped in date from 150 to 175/200 AD. Other sherds, slightly worn, were dated from 125 to 175 AD. Two hard fired sherds from a Form 31 bowl of potential East Gaulish Trier samian, dated from 175 to 260 AD, had lost virtually all of their slip coating but were otherwise fairly sharp. One relatively soft and worn looking sherd of East Gaulish samian was dated from 140 to 260 AD.

As shown in section, the context layer was generally only some 0.10m thick. The rate of formation of a naturally silting deposit elsewhere has been estimated at 0.2cm per year over the long term (Baker 2010; as discussed further above) and this agrees well with the 50 year date bracket suggested by the pottery evidence here. The freshest sherds could be contemporary around 150 to 175 AD and the Form 31 bowl suggests a date post 175 AD for at least the final stage of formation. A decline in the numbers of samian vessels imported during the third century AD could suggest that vessels from rural sites are less likely to be of advanced third century AD date.

Ditch [128]; uncertain date (Late Iron Age or Roman)

Primary fill (131) of ditch [128] contained one small, worn sherd of Late Iron Age pottery. The fill was only 0.05m deep and probably represented the initial stages of infilling in a freshly dug ditch, with the worn sherd likely to have been residual. Ditch [128] lay adjacent to ditch [129], which has been dated from 125 to 200 AD and from which a greater amount of pottery was recovered from a deeper primary fill (see above). If both features had been open at the same time, it might be thought that a similar pottery assemblage could have appeared in both. Ditch [128] could perhaps pre-date ditch [129], but this is speculation only.

Colluvium (42)

This context produced single, worn sherds which potentially dated from the Late Iron Age to the Late Medieval periods. A few small, fragmentary sherds which could have been flint tempered might date from the Mid to Late Iron Age to Late Iron Age, though the dating of these remains uncertain.

Layer (43)

This re-deposited context contained a variety of generally small, worn sherds; most either Iron Age or Mid to Late Iron Age. The freshest was a shell tempered sherd which could be Late Iron Age to Early Roman in date; the oxidised exterior surface suggests a date from 75 to 150 AD. Such a date may be considered more likely given the comparatively worn state of the other sherds and while this could offer a *terminus post quem* for the context, conclusions drawn from such a minimal amount of often ambiguous material must remain speculative.

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Appendix VI

List of non-ceramic and flint finds

By Paul C Hart

Context	*Finds*	*Quantity*	*Weight (g)*
(4)	Slag	7	325
(27)	Slag	4	98
(41)	Slag	1	4
(4)	Slag	7	325
(27)	Slag	4	98
(41)	Slag	1	4
(42)	Copper alloy object (fitting)	1	2
	Iron object (rod/nail fragment?)	1	2
	Slag	1	4
	? (Blue coloured object fragments)	2	1
(43)	Slag	1	4
(44)	Burnt flint potboiler	1	9
[48]	Iron bloom	8	136
(58)	Slag	1	8
	Burnt clay	1	1
	Charcoal	3	1
(67)	Burnt clay	2	18
(145)	CBM – Tile	1	11
(437)	Slag	4	42
(449)	Bone	1	10

Appendix VII

Context Table

Context Index

Context No.	Context Type	Area Section Photo/ Plate	Description	Interpretation/ Function/date
00	Deposit	All	Medium, dark brown, clayey silt with moderate organic. Average thickness 0,22m	Top soil for representation in matrixes
1	Cut	F113. Plan 1/1 section 1/1	W-E aligned cut. Oval/eight shape in plan, two bowls merged together. One was twice deep, they both have steep sides and flat bottom. Length: 1,25m Width: 0,37m. Depth: 0,1m and 0,24m.	Cut of furnace remains. Period – iron age
2	Cut	F113. Plan 1/1 Section 1/2	N-S aligned cut, oval shape in plan with moderate S side, steep others, gradual BOS base and concave bottom. Length: 0,9m width: 0,54m depth: 0,23m	Cut of furnace remains. Period – iron age
3	Cut	F113. Plan 1/1 Section 1/3-4	NE-SW aligned, oval shape in plan with steep sides, gradual BOS base and flat bottom. Length: 1,2m Width: 0,6m depth: 0,24m.	Cut of furnace remains. Period – iron age
4	Fill	F113. Plan 1/1 section 1/1	Firm, mid brownish grey, silty clay with charcoal flakes, slag, burnt clay and burnt flints. Length: 1,1m width: 0,4m thickness 0,1m	Fill of [1]. Back fill
5	Fill	F113. Plan 1/1 section 1/1	Very compacted, dark grey, burnt clay with no inclusions. Length: 0,6m Width: 0,5m thickness: 0,08m	Fill of [1]. Back fill. Furnace floor.
6	Fill	F113. Plan	Very compacted, mid	Fill of [1]. Back fill.

		1/1 section 1/1	yellowish grey, burnt clay with no inclusions. Width: 0,13m thickness 0,05m	Furnace floor.
7	Fill	F113. Plan 1/1 section 1/1	Firm, mid red, burnt clay in situ with no inclusions. Length: 0,6m width: 0,7m thickness: 0,5m	Fill of [1]. Back fill. Function: furnace floor.
8	Fill	F113. Plan 1/1 section 1/2	Firm, mid brownish grey, silty clay with charcoal flakes, slag, orange burnt clay. Length: 0,4m width: 0,4m thickness 0,15m	Fill of [2]. Back fill.
9	Fill	F113. Plan 1/1 section 1/2	Very compacted, yellowish grey, burnt clay in situ with no inclusions. Length: 0,03m width: 0,2 thickness: 0,12m	Fill of [2]. Back fill
10	Fill	F113. Plan 1/1 section 1/2	Firm, mid grey brown, silty clay with flints, charcoal and slag inclusions. Length: 0,38m width: 0,45m thickness 0,1m	Fill of [2]. Back fill
11	Fill	F113. Plan 1/1 section 1/2	Very compacted, red clay burnt in situ. Length: 0,8m width:0,55m thickness: 0,1m	Fill of [2]. Back fill
12	Fill	F113. Plan 1/1 section 1/2	Firm, dark grey, burnt clay. Length:0,5m width:0,5m thickness: 0,08m	Fill of [2]. Back fill. Furnace base.
13	Fill	F113. Plan 1/1 section 1/3-4	Firm, mid brownish grey, silty clay with occasionally flints, frequently slag and charcoal flakes. Occasionally orange burnt clay. Lenght:0,8m width:0,54m thickness: 0,2m	Fill of [3]. Back fill
14	Fill	F113. Plan 1/1 section 1/3-4	Firm, mid brownish grey, silty clay with occasional flints and small pieces of burnt clay. Length:0,58m	Fill of [3]. Back fill

			width:0,3m thickness: 0,1m	
15	Fill	F113. Plan 1/1 section 1/3-4	Compacted, dark grey, burnt clay in situ with occasionally flints up to 5cm. Length:0,54m width: 0,5m thickness: 0,1m	Fill of [3]. Back fill.
16	Fill	F113. Plan 1/1 section 1/4	Firm, mid red brown, burnt clay with occasionally flints size up to 5cm. Length: width: 0,4m thickness: 0,05m	Fill of [3]. Back fill. Furnace base
17	Fill	F113. Plan 1/1 section 1/4	Firm, mid grey brown, silty clay with flints, slag, burnt clay inclusions. Length:0,5m width:0,2m thickness: 0,33m	Fill of [3]. Back fill.
18	Fill	F113. Plan 1/1 section 1/1	Firm, mid yellowish grey, burnt silty clay with flint inclusions. Length:0,2m width:0,17m thickness: 0,05m	Fill of [1]. Back fill.
19	Fill	F113. Plan 1/1 section 1/1	Compact, dark grey, burnt clay in situ. Width: 0,07m thickness 0,05m, depth:0,17m	Fill of [1]. Furnace wall remains.
20	Cut	F113. Plan 3/2 section 3/11	W-E aligned cut, Sub-oval shape in plan with moderate concave sides, gradual BOS base, and concave base. Length:1,4m width: 1,2m depth: 0,43m	Cut of pit. Prehistoric period. Feature is truncated by furnace construction pit [3]
21	Fill	F113. Plan 3/2 section 3/11	Firm, mid grey brown, clay with abundant amount of flints cobbles. Length: 1,4m width: 1,2m depth: 0,43m.	Fill of [20]. Back fill.
22	Cut	F113. Plan 3/2 section 2/8	Circular shape in plan with steep sides and concave base. Diameter 0,14m Depth: 0,1m	Cut of post hole.
23	Fill	F113. Plan 3/2 section 2/8	Firm, mid grey, silty clay with occasional flint, charcoal flakes and iron slag. Length:0,14m	Fill of [22]

			width: 0,14m depth: 0,1m	
24	Cut	F113. Plan 3/2 section 2/9	Circular shape in plan with steep sides, gradual BOS base and concave bottom. Diameter: 0,13m depth: 0,07m	Cut of post hole.
25	Fill	F113. Plan 3/2 section 2/9	Firm, mid grey, silty clay with occasionally flints and charcoal. Width: 0,13m depth: 0,07m	Fill of post hole [24]
26	Cut	F113. Plan 3/2 section 2/10	Oval shape in plan with steep sides and concave bottom. Length:0,26m width: 0,2m depth: 0,11m	Cut of post hole.
27	Fill	F113. Plan 3/2 section 2/10	Firm, mid grey, silty clay with occasionally charcoal flakes and flints. Length:0,26m width:0,2m depth:0,11m	Fill of [26]
28	Cut	F113. Plan 3/2 section 2/7	Oval shape in plan with steep sides and concave base. Length:0,25m width: 0,21m depth:0,17m	Cut of post hole
29	Fill	F113. Plan 3/2 section 2/8	Firm, mid brownish grey, silty clay with occasionally flints and charcoal. Length:0,25m width:0,21m depth: 0,17m	Fill of [28]
30	Cut	F113. Plan 3/2 section 2/6	Circular shape in plan with shallow sides and concave bottom. Diameter 0,28m, depth: 0,1m	Cut of post hole.
31	Fill	F113. Plan 3/2 section 2/6	Firm, mid brown grey with occasionally flints, slag and charcoal. Width: 0,28m depth 0,1m	Fill of [30]
32	Cut	F113. Plan 3/2 section 2/5	Circular shape in plan with shallow sides and concave bottom. Diameter 0,2m depth:0,08m	Cut of post hole.
33	Fill	F113. Plan 3/2 section	Firm, mid brown grey silty clay with	Fill of [32]

		2/5	occasionally slag, flints and charcoal. Width:0,2m depth:0,2m	
34	Cut	F113. Plan 3/2 section	Circular shape in plan with steep sides and concave base. Diameter: 0,2m depth: 0,15m	Cut of post hole.
35	Cut/Structure	F113. Plan 10/14 section 4/13	Circular shape in plan with vertical sides and undercut. Bottom slightly concave. Diameter on top: 0,25m diameter at base: 0,5m, depth: 1,05m	Cut of furnace hearth.
36	Fill	F113. section 4/13 Plan 10/14	Firm, dark grey, silty clay with moderate charcoal flakes, occasionally burnt clay. Width: 0,25m depth:0,22m	Fill of [35]. Back fill
37	Fill	F113. section 4/13 Plan 10/14	Medium compaction, dark grey, silty clay with moderate charcoal flakes, burnt clay, slag and occasional flint cobbles. Length:0,3m width:0,3m depth:0,42m	Fill of [35]. Deliberated back fill.
38	Fill	F113. section 4/13 Plan 10/14	Medium compaction, black, silty clay with abundant amount of charcoal, chunks size up to 2cm. Width:0,4m thickness:0,08m	Fill of [35] and [48] Back fill. Charcoal dump.
39	Fill	F113. section 4/13 Plan 10/14	Firm, color varies from yellowish orange to light yellowish grey, burnt clay. Width: 0,06m Depth:1,3m	Fill of [48] and furnace [35]. Furnace wall
40	Deposit	F113. section 4/13 Plan 10/14	Firm, mid red, burn clay in situ with occasionally flints. Width: 0,1m Depth:0,8m	Natural. Burnt clay in situ
41	Deposit	F114. section 2/12 Plan 6/5	Firm, mid brown, silty clay with moderate flint cobbles size up to 10cm, occasionally iron slag. Thickness:0,2m	Colluvium
42	Deposit	F114. section 2/12 Plan 6/5	Firm, mid brown, silty clay with frequent flint cobbles size up to 11cm,	Colluvium

			occasionally iron slag. Thickness:0,2m	
43	Layer	F114. section 2/12 Plan 6/5	Firm, mid brown, silty clay with abundant amount of flint cobbles of size up to 15cm. Thickness:0,15m	Re-deposit
44	Deposit	F114. section 2/12 Plan 6/5	Mid compaction, dark grey – black, silty clay with frequent charcoal flakes. Occasionally burnt flints. Length:0,3m width:0,3m depth:0,05m	Fireplace remains
45	Cut	F114. section 2/12 Plan 6/5	Not revealed shape in plan, sides irregular and shallow and uneven bottom.	Cut of pit series.
46	Cut	F114. section 2/12 Plan 6/5	Not revealed shape in plan with vertical sides and flat bottom. Width:0,9m length:1,2+m depth:0,6m	Cut of pit.
47	Fill	F114. section 2/12 Plan 6/5	Firm, light brown, clayey silt with abundant amount of flints of size up to 15cm. Width:0,9m length:1,2m depth:0,6m	Fill of [46] Back fill
48	Cut	F113. section 4/13 11/30 11/33 Plan 11/15	NW-SE aligned cut. Sub-oval shape in plan with steep/vertical sides and flat base sloping down towards W. Length:3m width:1,9m depth:0,95m	Cut of pit. Furnace construction
49	Fill	F113. section 4/13 Plan 11/15	Medium compaction, dark grey, silty clay with frequent charcoal, slag and occasional flints. width:1,6m depth:0,75m	Back fill of [48]
50	Fill	F113. section 4/13 Plan 11/15	Medium compaction, dark yellow, clay with no inclusions. Width:0,2m thickness:0,04m	Fill of [48]. Back fill. Re-deposited natural. Trample layer
51	Fill	F113. section 4/13 Plan 11/15	Medium compaction, mid brownish grey, silty clay with moderate charcoal flakes and slag. Deliberated back-fill.	Fill of [48]

			Width:0,29m depth:0,13m	
52	Deposit	F113. section 4/13 Plan 11/15	Firm, mid yellowish orange, burnt clay. Width:0,01m Depth:0,35m.	Part of inner wall – lining of [35]
53	Deposit	F113. section 4/13 Plan 11/15	Firm, light grey, burnt clay. Width:0,04m Depth:0,35m	Part of furnace [35] wall
54	Deposit	F113. section 4/13 Plan 11/15	Firm, yellowish orange, burnt clay. Width:0,02m depth:0,35m	Part of furnace [35] wall
55	Fill	F113. section 10/29 11/30 Plan 11/15	Medium compaction, dark grey brown, silty clay with moderate large flints, moderate fragments of daub. Moderate charcoal flakes. Length:0,80m Width:0,5m depth:0,27m	Fill of [71]
56	Fill	F113. section 10/29 11/30 Plan 11/15	Firm, dark grey – black, silty clay with occasionally flints and frequent daub, slag and charcoal. Length:1,30m+ width:0,64m+ depth:0,33m	Fill of [71]
57	Fill	F113. section 10/29 11/30 Plan 11/15	Friable, deep black, silt with abundant amount of charcoal. Length:1,30m+ width:0,64m+ thickness:0,1m	Fill of [71]
58	Fill	F113. section 10/29 11/30 Plan 11/15	Fairly compact, dark grey, silt with moderate charcoal fragments, slag, frequent burnt clay, occasionally flints. Width:0,95m Length:1,00m	Fill of [71]. Back fill
59	Cut	F115. section 5/14 Plan 5/4	Sub-oval shape in plan with vertical sides, gradual BOS base and flat bottom. Length:5m Width:4m Depth:0,43m	Cut of pit. Modern period
60	Fill	F115. section 5/14 Plan 5/4	Soft compaction, mid brown, silty clay with occasionally charcoal flakes and flints. Width:1,26m depth:0,25m	Fill of [59]. Secondary fill.

61	Fill	F115. section 5/14 Plan 5/4	Medium compaction, color varies from white to grey, chalk with silty clay. Occasionally flints. Width:1,1m depth:0,45m	Fill of [59].
62	Cut	F115. section 5/14 Plan 5/4	NW-SE aligned linear cut with moderate sides, gradual BOS base and flat bottom. Width:0,7m length:1,9m depth:0,22m	Cut of gully.
63	Fill	F115. section 5/14 Plan 5/4	Loose compaction, mid brown, silt with frequent flint cobbles. Width:0,7m length:1,9m depth:0,22m	Fill of [62]. Back fill
64	Layer	F115. section 5/14 Plan 5/4	Medium compaction, mid brownish grey, silty clay with occasionally flints. Lenght:2,0m+ width:1,90m depth:0,45m	Colluvium
65	Cut	F113. section 4/15 Plan 4/3	Circular shape in plan with steep sides and gradual BOS base. Bottom mainly flat. Diameter:1,0m depth:0,32m	Cut of pit.
66	Fill	F113. section 4/15 Plan 4/3	Medium compaction, dark grey, silty clay with occasional burnt clay and flints, moderate charcoal flakes and frequent slag. Length:1,0m width:0,46m width:0,3m	Fill of [65]. Back fill.
67	Fill	F113. section 4/15 Plan 4/3	Firm, mid brown grey, silty clay with occasionally flints and charcoal, frequent small pieces of slag and burnt clay of size up to 3cm. Length:1,0m width:0,58m thickness:0,32m	Fill of [65]. Back fill.
68	Deposit	F113. section 4/13 Plan 11/15	Compact, color varies mid grey to red, silty clay with burnt clay lumps. Length: n/a width:0,14m depth:0,09m	Leveling deposit of [48]

69	Fill	F113. section Plan 11/15	Very compacted, orange, sub-ceramic-soil with occasionally slag. Length:0,50m width:0,40m thickness:0,09m	Fill of [71]
70	Fill	F113. section 11/30 10/29 Plan 11/15	Friable, dark grey brown, clayey silt with occasionally daub, frequent slag, occasionally charcoal flakes. Length:1,00m+ width:0,5m+ thickness:0,1m	Fill of [71]. Back fill.
71	Cut/Structure	F113. section 10/29 11/30 Plan 11/15	W-E aligned cut. Oval shape in plan with vertical sides and concave base sloping down towards outside of hearth. Length:0.64m width:0,32m top and 0,51m at bottom depth:0,88m	Positive cut of furnace tube, hearth
72	VOID			
73	Fill	F113. Plan 3/2	Firm, grey, silty clay with occasionally charcoal flakes. Length:0,2m width:0,2m depth:0,15m	Fill of [34]
74	Fill	F116. Plan 7/6 section 17/16	Medium, yellowish brown, clayey silt with frequent flints. Width:1,16m depth:0,28m	Fill of [75]
75	Cut	F116. Plan 7/6 section 7/16	NNE-SSW aligned linear cut with moderate sides, gradual BOS base and concave bottom. Width:1,16m depth:0,28m	Cut of ditch.
76	Fill	F116. Plan 7/7 section 7/17	Medium compaction, mid yellowish brown, clayey silt with frequent flints. Width:0,86m depth:0,33m	Fill of [77]
77	Cut	F116. Plan7/7 section 7/17	NNE-SSW aligned linear cut with moderate sides, gradual BOS base and concave bottom. Width:0,86m	Cut of ditch.

			depth:0,33m	
78	Deposit	F115. Plan 7/8 section 7/18	Irregular-sub-oval shape in plan. Dark grey clay with frequent charcoal flakes. Deposit sits on orange burnt clay. Length:0,6m width:0,6m depth:0,05m	Fireplace remains
79	Cut	F115. Section 7/19 plan 7/9	Sub-oval shape in plan with vertical sides, gradual BOS base and flat bottom. Length:5m Width:4m Depth:0,43m	Cut of pit. Modern period
80	Fill	F115. Section 7/19 plan 7/9	Layer of softly compacted dark brown silty clay and layer of chalk deposit the same as (60) and (61)	Fill of [79]
81	Cut	F115. Section 7/19 plan 7/9	Not revealed shape in plan with moderate sides and flat bottom. Length:0,6m width:0,4m depth:0,4m	Cut of feature.
82	Fill	F115. Section 7/19 plan 7/9	Medium compaction, mid brown, silty clay with moderate flints of size 0,04m. Length:0,6m+ width:0,4m depth:0,4m	Fill of [81] secondary fill
83	Cut	F115. Section 7/19 plan 7/9	Unrevealed shape in plan with flat base. Depth:0,5m	Cut of feature.
84	Fill	F115. Section 7/19 plan 7/9	Firm, mid brown, silty clay with abundant amount of flints. Depth:0,5m	Fill of [83]. Back fill
85	Cut	F116. Section 8/20-21 plan 8/10	Curvilinear shape in plan. Sharp BOS top, side varies from steep to vertical. Bottom concave. Length:1,4m width:0,95m depth:0,6m	Cut of ditch. Prehistoric period
86	Fill	F116. Section 8/20-21 plan 8/10	Firm, mid orangish brown, silty clay with abundant amount of flint cobbles. Length:1,4m+ width:0,95m depth:0,6m	Fill of [85]
87	Deposit	F117. Section 9/28 plan 9/13	Irregular-sub-oval shape in plan. Very compacted, black, clayey silt with	Fireplace remains. Roman period.

			abundant amount of charcoal flakes. Lebght:0,65m width:0,55m depth:0,08m	
88	Deposit	F117 Drawings 16/44 + GPS	Very compact, mid brown, silty clay with moderate flints cobbles and occasional small chalk flakes of size up to 2cm. max depth:0,3m	Colluvium. Overlays possible prehistoric deposit (89)
89	Deposit/Fill	F117 Drawings 16/44 + GPS	Firm, orangish brown, silty clay with abundant nodular and tabular flints. Max depth: 0,51m	Buried ancient landscape. Cobbled surface? Trackways?
90	Cut	F116. Plan 12/23 section 12/41	Oval in plan with steep sides, gradual BOS base and concave bottom. Length:0,8m width:0,3m depth:0,27m	Cut of pit. Prehistoric period.
91	Cut	F116. Plan 8/11 section 8/22	Curvilinear shape in plan, sides varies from shallow to vertical. Length:1,4m width:1,2m depth:0,45m	Cut of prehistoric ditch.
92	Fill	F116. Plan 8/11 section 8/22	Firm compaction, mid orangish brown with moderate grey vain, silty clay with abundant amount of flints, occasionally iron rich sandstones. Length:1,2m width:0,9m depth:0,35m	Fill of [91]
93	Fill	F116. Plan 8/11 section 8/22	Firm, mid brownish grey, silty clay with frequent flints. Length:1,2m width:1,1m depth:0,3m	Fill of [91]
94	Fill	F116. Plan 8/11 section 8/22	Medium compaction, mid brown with grey patches, silty clay. Moderate flints of size up to 10cm. Occasionally manganese. Length:1,2m width:0,8m depth:0,25m	Fill of [91] Primary fill. Prehistoric period.
95	Fill	F113 plan 11/15 section 10/29	Friable, dark black, charcoal fragments and charcoal powder with occasionally large	Fill of [71] Back fill

			tabular pieces of slag. Width:0,4m Thickness:0,03m	
96	Fill	F113 plan 11/15 section 10/29	Firm, pale orange, sub-ceramic soil. Width:0,33m thickness:0,06m	Fill of [71] Back fill
97	Fill	F113 plan 11/15 section 10/29	Loose and friable, Dark grey brown, clayey silt with moderate flints, burnt clay patches. Width:0,43m depth:0,29m	Fill of [71]
98	Cut	F116. Plan 9/12 section 9/23	NW-SE aligned linear cut with moderate-steep sides, gradual BOS base, bottom concave. Length:1,00m Width:0,3m Depth:0,15m	Cut of gully. Prehistoric period.
99	Fill	F116. Plan 9/12 section 9/23	Firm, Light brown, silty clay with frequent flints up to 10cm. Length:0,9m width:0,3m depth:0,13m	Fill of [98]
100	Cut	F116. Plan 9/12 section 9/23	NW-SE aligned Linear cut with shallow sides and concave bottom. Length:2,8m width:0,6m depth:0,1m	Cut of gully, terminus.
101	Fill	F116. Plan 9/12 section 9/24-25	Firm, light brown silty clay with frequent broken angular flints, size 1-10cm. Occasionally manganese flakes. Length:1,7m width:0,6m depth:0,25m	Fill of [100] [102] [103]
102	Cut	F116. Plan 9/12 section 9/25	NW-SE aligned cut. Oval shape in plan with steep sides and bottom tapered to a point. Length:0,5m width:0,2m depth:0,2m	Cut of post hole.
103	Cut	F116. Plan 9/12 section 9/25	NW-SE aligned linear cut with sharp BOS top, steep sides and concave bottom. Length:2,8m width:0,3m depth:0,25m	Cut of gully.
104	Cut	F116. Plan 9/12 section	NE-SW aligned cut with shallow sides and	Cut of pit or gully terminus.

		9/27	bottom mainly flat. Length:0,6m+ width:0,9m depth:0,2m	
105	Cut	F116. Plan 9/12 section 9/27	Irregular shape in plan, sides varies from moderate to undercut, concave bottom. Length:0,7m width:0,25m depth:0,3m	Cut of pit. Prehistoric period.
106	Fill	F116. Plan 9/12 section 9/27	Firm, light yellowish brown with moderate mid grey and orange patches, silty clay. Moderate flints. Length:1,2m width:0,3m depth:0,3m	Fill of [104] [103]
107				
108	Fill	F116. Plan 9/12 section 9/26	Firm, mid yellowish brown, silty clay with frequent flints. Length:0,3m width:0,3m depth:0,15m	Fill of [109]
109	Cut	F116. Plan 9/12 section 9/26	Circular shape in plan with vertical sides and concave bottom. Diameter:0,3m depth:0,15m	Cut of post hole
110	Cut	F116. Plan 12/16 section 12/31-32	Oval shape in plan with moderate sides and concave bottom. Length:1,4m width:0,5m depth:0,32m	Cut of pit.
111	Fill	F116. Plan 12/16 section 12/31-32	Firm, mid yellowish grey to mid yellowish brown, silty clay with occasionally flints. Length:1,4m width:0,5m depth:0,32m	Fill of [110]
112	Cut	F116. Plan 12/16 section 12/31-32	Oval shape in plan with moderate sides and flat bottom. Length:1,0m width:0,5m depth:0,35m	Cut of pit.
113	Fill	F116. Plan 12/16 section 12/31-32	Firm, mid yellowish grey to mid yellowish brown, silty clay with occasionally flints. Length:1,0m width:0,5m depth:0,35m	Fill of [112]
114	Deposit	F113. Section	Firm, but friable, color varies from mid reddish	Fill of [71]. Outer part of furnace wall.

		10/29 plan 11/15	orange to dark reddish orange, burnt clayey silt. Width:0,12m Depth:0,2m	
115	Deposit	F113. Section 11/30 plan 11/15	Compact, but friable, mid yellow, orange, burnt clayey silt.	Fill of [71]. Part of inside furnace wall.
116	Deposit	F113. Section 10/29 plan 11/15	Compact, but friable light yellow, burnt clayey silt. Width:0,17m Depth:0,75m	Fill of [71]. Part of furnace wall.
117	Fill	F113. Section 10/29 plan 11/15	Firm, very dark grey, vitrified silt soil. Width:0,29m depth:0,06m	Fill of [71]. Primary fill.
118	Fill	F113. Section 10/29 plan 11/15	Compact, dark red, clay. Width:0,65 depth:0,07m	Fill of [71]. Furnace floor
119	Fill	F113. Section 10/29 plan 11/15	Medium compaction, pale yellow brown, silt with moderate burnt clay and occasional charcoal flakes. Width:0,28m depth:0,1m	Fill of [71]
120	Fill	F113. Section 10/29 plan 11/15	Loose, black, charcoal fragments and powder. Width:0,49m depth:0,11m	Fill of [71]
121	Fill	F113. Section 10/29 plan 11/15	Soft, dark brown, fine silt with moderate charcoal flakes and occasionally sub-ceramic soil. Width:0,22m depth:0,06m	Fill of [71]
122	Fill	F116. Plan 12/23 section 12/41	Firm, mid yellowish brown, silty clay with occasionally flints. Length:0,8m width:0,3m depth:0,27m	Fill of [90]
123	Fill	F113. Plan 11/15 section 11/33	Friable, Black, silt with frequent charcoal flakes and moderate sub-ceramic inclusions. Width:0,22m depth:0,1m	Fill of [48]
124	Fill	F113. Plan 11/15 section 11/33	Loose, black, charcoal. Width:0,97m depth:0,05m	Fill of [48]

125	Fill	F113. Plan 11/15 section 11/33	Medium compaction, dark grey brown, silty clay with frequent fragments of sub-ceramic material, occasionally large blocks of slag. Width:1,29m depth:0,18m	Fill of [48]
126	Deposit	F113. Plan 11/15 section 11/33	Compact, mid grey, burnt clayey silt. Width:0,32m thickness:0,1m	Primary fill at furnace [35] bottom.
127	Fill	F113. Plan 11/15 section 11/33	Compact, dark red, burnt clay width:0,78m depth:0,08m	Fill of [48]. Furnace floor.
128	Cut	F117. Plan 13/17 section 13/34-36	SE-NW aligned linear cut with gradual BOS top and moderate sides, concave bottom. Length:1,8m width:1,0m depth:0,4m	Cut of Ditch. Roman period.
129	Cut	F117 plan13/17 section 13/34, 36	NW-SE aligned linear cut with shallow sides and flat bottom. Width:2m lengh:1,8m+ depth:0,35m	Cut of ditch. Roman period
130	Fill	F117 plan13/17 section 13/34, 36	Very compact, mid brown, silty clay with moderate flints cobbles and occasional small chalk flakes of size up to 2cm. Length:1,8m width:3,0m depth:0,3m	Fill of [128] [129] Tertiary fill.
131	Fill	F117 plan13/17 section 13/34, 36	Compact, mid brown, silty sandy clay with moderate fine pebbles, coarse sand and occasionally flints. Length:1,8m+ width:0,4m depth:0,05m	Fill of [128]. Primary fill
132	Fill	F117 plan13/17 section 13/34, 36	Firm, mid brown, silty clay with abundant amount of flint nodules. Length:1,8m+ width:1,1m depth:0,3m	Fill of [129]. Primary fill.
133	Layer	F117 plan13/17 section 13/34, 36	Compact, mid brown, silty clay with abundant amount of flint cobbles. Length:2m+	Layer of cobbles. Roman period.

			width:0,6m+ thicknes:0,1m	
134	Cut	F117 plan13/17 section 13/34	Eight shape in plan with steep sides and concave base. Width:0,3m depth:0,35m	Cut of merged postholes.
135	Fill	F117 plan13/17 section 13/34	Compact, light brown, silty clay with occasionally flints. Width:0,3m depth:0,35m	Fill of [134]
136	Cut	F117 plan13/17 section 13/34	NW-SE aligned linear cut with moderate sides and concave bottom. Length:0,8m width:0,7m depth:0,3m	Cut of gully.
137	Fill	F117 plan13/17 section 13/34	Compact, light brown, silty clay with moderate flints. Length:0,8m width:0,7m depth:0,3m	Fill of gully [136]
138	Cut	F117 section 15/41-42	SW-NE aligned linear cut with steep sides and flat base. Length:2,0m+ width:0,77m depth:0,3m	Cut of ditch.
139	Fill	F117 section 15/41-42	Firm, mid yellowish grey, silty clay with moderate flints and occasionally charcoal flakes. Length:2,0m+ width:0,77m depth:0,3m	Fill of [138] secondary fill.
140	Cut	F117 section 15/41-42	SW-NE aligned linear cut with steep sides. Length:2,0m+ width:1,35m+ depth:0,32m	Cut of wide shallow linear feature. Roman period
141	Fill	F117 section 15/41-42	Firm, mid grey brown, silty clay with occasionally charcoal and moderate flints. Length:2,0m+ width:1,35m+ depth:0,32m	Fill of [140]. Secondary fill.
142	Fill	F118 section 11/37 Plan 11/18 14/19	Compact, Mid brown, clayey silt with moderate flints. Width:0,94m depth:0,22m	Fill of [143]. Secondary fill.
143	Cut	F118 section 11/37 Plan 11/18 14/19	NNE-SSW aligned linear cut with moderate sides and concave bottom. Width:0,94m depth:0,22m	Cut of ditch.

144	Cut	F117. Plan 14/20 section 14/38	SW-NE aligned linear cut with moderate, convex sides and convex bottom. Width:2,0m length:1,6m depth:0,65m	Cut of ditch. Roman period.
145	Fill	F117. Plan 14/20 section 14/38	Very compacted, mid brown, silty clay with moderate flints. Width:2,0m+ length:1,6m+ depth:0,6m	Fill of [144]. Roman period. Secondary fill.
146	Fill	F118. Section 14/39 Plan 14/21	Compacted, dark grey brown, silty clay with moderate flints. Length:0,73m+ width:0,64m depth:0,12m	Fill of [147]. Secondary fill.
147	Cut	F118. Section 14/39 plan 14/21	Oval shape in plan with moderate sides and concave bottom. Length:0,73m width:0,64m depth:0,12m	Cut of pit. Iron age period.
148	Fill	F118. Section 14/40 Plan 14/22	Compacted, mid grey brown, clayey silt with moderate flints and frequent black mineral flakes. Width:0,57m depth:0,15m	Fill of [149]. Secondary fill. Iron age period.
149	Cut	F118. Section 14/40 Plan 14/22	Linear cut with moderate sides and concave bottom. Width:0,57m depth:0,15m	Cut of gully
150	Cut/fill	F117. Plan GIS	Rectangular shape in plan with vertical sides and flat base. Feature filled by medium compaction silty clay. Length:0,3m width:0,3m depth:0,6m	Cut of gate foundation. Modern period
151	Cut/fill	F117. Plan GIS	N-S aligned linear cut with steep sides and flat bottom. Feature filled with compacted mid brown, silty clay. Moderate flints. Width:0,73m depth:0,25m	Cut of wide, shallow feature.
152	Cut/fill	F117. Plan GIS	N-S aligned linear cut with shallow sides and	Cut of wide, shallow linear feature.

			flat bottom. Feature filled with brown silty clay with abundant amount of flints. Width:7,0m depth:0,2m	
153	Cut/fill	F117. Plan GIS	NE-SW aligned linear cut with straight, steep sides and flat bottom. Feature filled with compact, mid brown, silty clay with moderate flints. Width:0,7m depth:0,5m	Cut of ditch. Roman period.
154	Cut/fill	F117. Plan GIS	NW-SE aligned linear cut with straight, steep sides and flat bottom. Feature filled with compact, mid brown, silty clay with moderate flints. Width:0,7m depth:0,46m	Cut of ditch. Roman period.
155	Cut/fill	F117. Plan GIS	Not revealed shape in plan with steep sides and flat bottom. Feature filled with loose flint cobbles and topped with mid brown silty clay. Width: 7m at the bottom:3,0m depth:1,8m	Cut of pit. Clay quarry.
156	Cut/fill	F117. Plan GIS	Not revealed shape in plan with steep sides and flat bottom. Feature filled with loose flint cobbles and topped with mid brown silty clay. Width: 7m at the bottom:3,0m depth:1,9m	Cut of pit. Clay quarry.
157	Layer	F118. Plan 14/19	Firm, mid yellowish brown, clay with frequent flints. Contains Anthropogenic inclusions and finds.	Natural deposit.
158	Fill	F118. plan 14/24 section 14/45	Compacted, dark grey brown, clayey silt with frequent flints, moderate charcoal flakes and daub. Length:0,74m width:0,56m depth:0,09m	Fill of [159]. Back fill
159	Cut	F118. plan	Sub-oval shape in plan	Cut of pit.

		14/24 section 14/45	with shallow sides and uneven base. Length:0,74m width:0,56m depth:0,09m	
160	Cut	F119. Plan GIS section 23/55	NE-SW aligned linear cut with steep sides and concave bottom. Length:10,0m+ width:0,7m depth:0,38m	Cut of ditch. Iron age period.
161	Fill	F119. Plan GIS section 23/55	Firm compaction, mid brownish grey, silty clay with frequent flints. Length:1,0m+ width:0,7m depth:0,38m	Fill of [160]
162	Cut	F119. Plan 20/28 section xx/60	Not revealed shape in plan with moderate sides and flat base. Depth:0,78m	Cut of furnace construction pit. Iron age period.
163	Fill	F119. Plan 20/28 section xx/60-61 20/49-50	Soft, dark brown, clayey silt with frequent flints and moderate slag. Length:3,0m+ width:2,7m+ depth:0,56m	Fill of [317]. Back fill. Modern
164	Fill	Section 20/49-50 xx/60 plan 20/28	Compact, dark brown, clayey silt with moderate burn clay inclusions, moderate flints. Depth:0,21m	Fill of [162]
165	Deposit	Section 20/49-50 xx/60 plan 20/28	Compacted, dark reddish orange, burnt clayey silt. Width:0,3m	Outer part of furnace wall.
166	Deposit	F119. Section 20/49-50 xx/60 plan 20/28	Compact, pale orangish yellow, burnt clayey silt. Width:0,03m depth:0,77m	Outer part of furnace wall
167	Fill	F119. Section 20/49-50 xx/60 plan 20/28	Compact, dark brown, clayey silt with moderate flints and burnt clay patches. Depth:0,36m width:0,36m	Fill of furnace in pit [162]
168	Fill	F119. Section 20/49-50 xx/60 plan 20/28	Loose, dark brown, clayey silt with frequent charcoal and moderate burnt clay. Width:0,44m depth:0,41m	Fill of furnace in pit [162]

169	Cut	F119, plan 18/27, 18/26, section 17/46	Sub oval shape in plan with moderate sides and flat base. Dimensions: L: 0.75, Width: 0.80, Depth: 0,15	Cut of pit, function – unknown, possibly iron age date
170	Fill	F119, plan 18/27, 18/26, section 17/46	Firm, Black, Silty clay with freq charcoal inclusions, moderate tiny pieces of burnt clay (orange, yellow) size less than 0,005m and occasionally small iron slag fragments and angular flints size up to 0,04m. Thickness 0,08m	Back-fill of feature [169]
171	Fill	F119, plan 18/27, 18/26, section 17/46	Firm, Dark grey, Silty clay with occasionally tapping and non tapping iron slag size up to 0,04m, moderate burnt clay lenses size up to 0,5cm, occasionally bigger lenses size 0,5cm – 5cm, occasionally angular flints size up to 5cm. Thickness 0,08m	Primary fill of [169]
172	Fill	F119, plan 18/27, 18/26, section 17/46	Firm, mid grey, clayey silt with moderate bright clay lenses. Occasionally small lenses of burnt clay size up to 2cm, occasionally small flint up to 2cm. Width: 0,18m, Thickness 0,03m	Back-Fill of [169]
173	Fill	F119, plan 18/27, 18/26, section 17/46	Firm, Dark grey, silty clay with moderate charcoal flakes, occasionally burnt clay pieces size up to 0,5cm. Occasionally flints size up to 7cm. Width: 0,27m, Thickness 0,1m	Top fill of [201]. Fill truncated by pit [169]
174	Cut	Section 17/46-47, plan 18/26, 17/47	Sub-oval shape in plan with gradual BOS top and steep sides, base mainly concave. Length: 4m, width: 2m, Depth: 0,55m. Possibly the same as [318]	Cut of pit, East terminus of pit [318], function ore roasting pit. Iron age period. Feature truncated at SW side by furnace construction pit [181] Possible also than feature is construction

				pit for furnace [401]
175	Fill	F119, section 17/46, plan 18/26, 17/47	Firm, Dark red brown, silty clay with occasionally tapping and non tapping iron slag pieces size up to 5cm. Frequently tiny pieces of burnt clay, mainly orange red and occasionally yellow – size up to 0,5cm, occasionally bigger chunks of burnt clay size up to 5cm. Occasionally flint size up to 5cm, moderate charcoal flakes. Width: 0,85m, Depth: 0,24m	Top back-fill of [174]
176	Fill	F119, section 17/46, plan 18/26, 17/47	Medium, dark grey, silty clay with abundant amount of non tapping iron slag pieces size up to 25cm and small pieces of crushed iron slag fragments size up to 10cm, occasionally orange burnt clay size up to 5cm, moderate flints size up to 15cm. Width: 0,50m Depth: 0,2m	Back-fill of pit [174]
177	Fill	F119, section 17/46, plan 18/26, 17/47	Firm, mid brown, silty clay with moderate charcoal flakes and orange, yellow burnt clay lumps size up to 5cm. Occasionally flints size up to 15cm. Width: 0,60m, depth: 0,50m, average thickness 15cm	Back-Fill of pit [174]
178	Fill	F119, section 17/46, plan 18/26, 17/47	Firm, mid brown, silty clay with frequent burnt clay size up to 15cm. Width: 0,3m, thickness 0,1m	Back-fill of pit [174]
179	Fill	F119, section 17/46, plan 18/26, 17/47	Medium compaction, Dark grey, silty clay with frequent charcoal flakes, moderate yellow and orange burnt clay lumps size up to 4cm	Back-Fill of pit [174]

180	Fill	F119, section 17/46, plan 18/26, 17/47	Medium, Black, clayey silt with frequent charcoal flakes. Width: 0,80m, thickness: 0,01m	Back-fill, charcoal dump of [401]
181	Cut	F119, section 17/46, 17/47, plan 18/26, 17/47, xx/32	Sub-rectangular with bended corners shape in plan, steep sides, gradual BOS base, bottom flat at NS side slightly slopes down NE. In the deepest place alongside NE two furnaces were constructed. Length: 2,48m, Width: 2,30m, Depth: 0,7m	Cut of pit. Function – furnace construction pit. Date – iron age. Feature is truncating other pit [174]. Furnaces [201] and [202] were built in this pit. After feature's back-fill another furnaces were built above this cut. Features nos [302] and [471]
182	Fill	F119, section 17/46, 17/47, plan 18/26, 17/47, xx/32	Firm, dark red, clay. Width: 0,8m, Thickness: 5cm. The same type of clay was used in almost every furnace in this area	Back-fill, furnace foundation foot of [201] and [202]
183	Deposit	F119, section 17/46, plan 18/26	Firm, bright red, Burnt clay in situ with no inclusions. Width: 0,09m, max depth: 0,6m. Total diameter 0,58m, inner diameter 0,4m. Probably burnt silty clay (205). This deposit is surrounded outside by brick earth (205) but only at NE side. Inside is surrounded by (206) which may be the same material but affected by higher temperature	Built up deposit, furnace wall forms into tube
184	Fill	F119, section 17/46, plan 18/26	Medium compaction, dark grey, silty clay with frequently charcoal flakes and moderate lumps of yellow and orange burnt clay, lumps size up to 5cm, very occasionally pieces of iron slag up to 2cm. Width: 1,01m, thickness 0,03m	Primary back –fill of furnace [201]. Layer deposited inside furnace [201] extending outside of the furnace to the center of furnace construction pit [181]
185	Fill	F119, section 17/46, plan	Medium compaction, Dark grey, silty clay with frequently charcoal	Fill of [181]

		18/26	inclusions flakes size up to 1cm, frequently burnt clay lumps yellow and orange size up to 3cm. Occasionally dark red (daub) clay, lumps size up to 2cm, moderate pebbles. Width: 0,3m, thickness 5cm	
186	Fill	F119, section 17/46, 17/47 plan 18/26	Medium, Dark grey, silty clay with frequently yellow and orange burnt clay lumps size up to 0,5 cm. Occasionally small flint size up to 3cm. Width: 1,30m, thickness 10cm	Fill of [181] and furnace [201] and [202]
187	Fill	F119, section 17/46 plan 18/26	Firm, mid grey, silty clay with frequent bright orange and yellow burnt clay, lumps size up to 5cm. Width: 10cm, thickness: 4cm	Fill of furnace [201]
188	Fill	F119, section 17/46 plan 18/26	Firm, mid brown grey, silty clay with frequently charcoal flakes up to 0,5cm. moderate orange and light yellow burnt clay lumps size up 4cm. moderate flint pebbles, occasionally iron slag size up to 3cm. Width: 0,85m, thickness 6cm	Fill of furnace [201] and pit [181]
189	Fill	F119, section 17/46 plan 18/26	Very compacted, mid brown, clay with occasionally charcoal flakes, frequently flints size up to 10cm. Width: 0,80m, thickness 15cm	Fill of [181] and furnace [201]. This fill derives from re-deposited natural. Back fill
190	Fill	F119, section 17/46 plan 18/26	Firm, mid grey, silty clay with frequently light brown patches of burn clay of size up to 0,5cm, occasionally lumps of non tapping iron slag, lumps size up to 20cm, moderate flints size up to 18cm, frequently charcoal flakes. Width: 1,20m, thickness: 15cm	Back Fill of [181]

191	Fill	F119, section 17/46 plan 18/26	Firm, dark grey, silty clay with abundant charcoal flakes and moderate burnt clay size up to 1cm, occasionally. Width: 0,25m, thickness: 4cm	Back Fill of furnace [201]
192	Fill	F119, section 17/46 plan 18/26	Medium compaction, mid grey, silty clay with occasionally charcoal flakes, occasionally burnt clay lumps size up to 0,5cm. moderate small flints up to 5cm and occasionally flint of size up to 15cm. Width: 0,4m, thickness 0,2m	Back Fill of furnace [201].
193	Fill	F119, section 17/46 plan 18/26	Firm, dark grey, silty clay with frequently charcoal flakes, frequently red and orange burn clay lump size up to 3 cm, occasionally slag lump size up to 2cm. occasionally flint pebbles. Width: 0,4m, thickness 3cm	Fill of [181] the same as (191)
194	Fill	F119, section 17/46-47 plan 18/26	Firm, dark grey, silty clay with moderate charcoal flakes, frequently orange burnt clay lumps size up to 0,5cm, moderate non tapping iron slag lumps size up to 4cm, occasionally large fragments of slug of size up to 18cm, moderate flint cobbles up to 20cm. Width: 1,7m, thickness 12cm	Top fill of [181]
195	Fill	F119, section 17/47 plan 18/26	Firm, dark grey, silty clay with frequent charcoal flakes of size up to 1cm, moderate orange burnt clay average size 2cm, moderate non tapping slag lumps size 2-6cm,	Fill of [181]

			occasionally flints up to 7cm. Width: 0,6m thickness, depth 10cm	
196	Fill	F119, section 17/46 plan 18/26	Very compacted, mid grey, silty clay with moderate charcoal flakes, moderate orange burnt clay lump size up to 2cm, frequent flints of size up to 7cm, occasionally iron slag. Width: 0,87m, thickness 0,07m	Fill of pit [181]
197	Fill	F119, section 17/46 plan 18/26	Medium compaction, mid grey, silty clay with occasionally charcoal flakes, occasionally orange burnt clay lumps size up to 3cm, abundant amount of flints of average size 5cm. Width: 0,33m, depth: 0,25m	Back Fill of pit [181]
198	Fill	F119, section 17/46 plan 18/26	Firm, mid grey, silty clay with frequent light yellow burnt clay lumps size 5cm, occasionally charcoal flakes, moderate non tapping iron slag, lumps size 2-5cm. Width: 0,4m, thickness: 0,1m	Back fill of pit [181]
199	Fill	F119, section 17/47 plan 18/26	Firm, mid grey, silty clay with moderate charcoal flakes, moderate orange burnt clay, lumps size up to 5cm, moderate flints, size up to 10cm, occasionally tapping and non tapping iron slag of size up to 5cm. Width: 0,32m, depth: 0,55m	Back fill of furnace [202]
200	Deposit	F119, section 17/47 plan 18/26	Firm, orange-pink-white towards hearth, burnt clay in situ Furnace wall thickness: 10cm white inner wall thickness: 2cm. Total wall thickness: 12cm. Front	Built up deposit of furnace [202] This deposit is overlaying reddish clay (182) On NE side deposit is surrounded by brick earth (204)

			furnace wall consist of iron slag stuck to the wall. Wall height: 0,62m. Wall is forming into tube of total diameter 0,55m, inner diameter 0,31m	
201	Structure	F119, section 17/46 plan 18/26	Bloomery tapping furnace constructed in furnace construction pit at it NE side. Other contemporary furnace [202] was constructed next to this one. Building process commence on dark red clay (182) with building up furnace tube. Probably wall was made of clay isolated outside by brick earth (205). Furnace wall color consist of orange - white grey - pink – white, color gradually changes from outside to the inside. Furnace was used at least several times as it wearing signs of repairs to be made during exploitation. Preserved furnace height: 0,65m, hearth diameter: 0,26m, furnace outer diameter: 0,58m. Walls are vertical with gradual BOS base. The tapping arch was not preserved instead of that hole was present in furnace front (size circa 37cm)	Furnace cut. Iron age period. No accumulation of slag was present inside.
202	Structure	F119, section 17/46 plan 18/26	Bloomery tapping furnace constructed in furnace construction pit at it NE side. Other contemporary furnace [201] was constructed next to this one. Building process	Furnace cut. Iron age period. Some accumulation of slag was present at front wall.

			commence on dark red clay (182) with building up furnace tube in a shape of a vase. Probably wall was made of clay isolated outside by brick earth (204) apart of front wall. Furnace wall color consist of orange -pink – white, color gradually changes from outside to the inside. Furnace was used at least several times as it wearing signs of repairs to be made during exploitation. Preserved furnace height: 0,61m, top hearth diameter: 0,31m, mid hearth diameter: 0,28m, bottom hearth diameter: 0,18m, furnace outer diameter: 0,57m. Walls are vertical with gradual BOS base and concave bottom. The tapping arch was not preserved instead of that hole was present in furnace front (size circa 16cm)	
203	Fill	F119, section 17/47 plan 18/26	Firm, dark grey, silty clay with occasionally charcoal flakes. Width: 0,15m, thickness 0,03m.	Back Fill of [202]
204	Fill	F119, section 17/47 plan 18/26	Firm, yellow, silty clay with no inclusions. Brick earth used as isolation of furnace [202]. Width: 0,12m, depth: 0,5m.	Fill of [181]
205	Fill	F119, section 17/47 plan 18/26	Firm, yellow, silty clay with no inclusions. Brick earth used as isolation of furnace [201]. Width: 0,12, depth: 0,5m.	Fill of [181]
206	Fill	F119, section 17/47 plan 18/26	Firm, white-grey-pink-white, burnt clay. Inner wall of furnace [201]. Thickness: 0,06m, height: 0,62m. Outside	Fill of [181]

			surrounded by (183) possibly the same material by less affected due to lower temperature.	
207	Cut	F119. Section 19/48 plan xx/31	Oval shape in plan with moderate sides and concave bottom. Length:1,1m width:0,8m depth:0,45m	Cut of furnace construction pit.
208	Structure	F119. Section 19/48 plan xx/31	Circular shape in plan with vertical sides and concave bottom. diameter:0,5m depth:0,45m	Non tapping furnace remains
209	Cut	F119, Section 9/48, plan xx/31	Oval shape In plan with moderate sides and concave base. Length: 2,80m, width: 2,20m, depth: 0,4m	Cut of pit. The same as [401] and [402]. Feature is truncating furnace [208] [210]
210	Structure	F119, section 9/48, plan xx/31	Bloomery tapping furnace constructed in furnace construction pit [211] at it S side. Building process commenced on dark red clay with building up furnace tube formed into bulb – lower part diameter is 14cm greater the on the top. Probably wall was made of clay isolated outside by brick earth (260) and (261). Furnace wall color consist of red – yellow – light grey-grey-pink-white-grey, color gradually changes from outside to the inside. Furnace was used at least several times as it wearing signs of repairs to be made during exploitation. Preserved furnace height: 0,7m, hearth beam: 0,26m X 0,3m, furnace outer diameter: 0,4m X 0,6m. Walls are vertical with	Furnace cut. Iron age period. Accumulation of slag was present inside on the walls and bottom.

			gradual BOS base. The tapping arch was not preserved as well as front wall.	
211	Cut	F119, section 9/48 plan xx/31	Sub-oval shape in plan with S side steep, uneven. N side moderate concave. Bottom mainly flat. Furnace [210] was build up along S side. Length: 1,20m, width: 1,4m, depth 0,7m. Feature is truncating roasting area pit [318] and it is truncated by pit [209]	Cut of furnace construction pit. Iron Age period
212	Deposit	F119. Section 19/48 plan xx/31	Firm, dark red, clay with occasionally flints. Width:0,95m thickness:0,04m	Fill of [211] Furnace foundation foot
213	Cut	F115. Section 25/59 plan xx/xx	Unrevealed shape in plan with steep sides and unrevealed bottom. Width:2,9m+ depth:1,2m+	Cut of pit. Quarry
214	Fill	F115. Section 25/29 plan xx/xx	Medium compaction, mid brown, silty clay with frequent chalk flakes. Width:2,9m depth:1,2m+	Fill of [213]. Back fill
215	Cut	F119. Section 24/56-57 26/62 plan xx/31	W-E aligned Oval cut with steep sides, gradual BOS base and flat bottom. The same as [318]. Width:2,0m depth:0,37m	Cut of pit. Iron roasting.
216	Cut	F119. Section 23/54 plan 20/28 17/25	Oval shape in plan with shallow sides, gradual BOS base and bottom mainly flat. Width:7,0m length:3,0m+ depth:0,55m	Cut of pit. Same as 317
217	Fill	F119. Section 23/54 plan 20/28 17/25	Medium compaction, white, chalk with occasionally flint nodules. Width:3,0m depth:0,1m	Fill of [216]. Back fill
218	Fill	F119. Section 23/54 plan	Soft, dark brownish grey, silty clay with frequent flints.	Fill of [216]. Back fill

		20/28 17/25	Width:7,0m depth:0,55m	
219	Fill	F119. Section 24/56-57 plan xx/31	Firm, mid grey red, silty clay with frequent small pieces of roasted iron, occasionally charcoal flakes, occasional small pieces of iron ore. Width:1,4m thickness:4cm	Fill of [215]. Primary fill
220	Fill	F119. Section 24/57 plan xx/31	Firm, Yellowish grey, clay with no inclusions. Burnt clay in situ. Width:0,55m thickness:2cm	Fill of [215]
221	Fill	Section 24/56-57 plan xx/31	Firm, dark grey, silty clay with moderate charcoal flakes with occasionally flints.	Fill of [215]. Primary fill.
222	Fill	F115. Section 24/27 plan xx/31	Firm, dark grey, silty clay with moderate burnt clay, moderate iron slag, occasionally burnt flints. Width: 0,9m thickness:5cm	Fill of [215]. Back fill
223	Fill	F119. Section 24/27 plan xx/31	Firm, dark grey, silty clay with occasionally small pieces of daub, charcoal flakes, iron slag and flints. Width:0,15m depth:0,37m	Fill of post hole [224]
224	Cut	F119, section 26/62 24/52 plan xx/31	Circular shape in plan with vertical sides and bottom tapered to a point. Diameter 13cm, depth: 37cm. Feature is truncating pit [215]	Cut of post hole
225	Fill	F119. Plan xx/31 section 24/57	Firm, dark grey, silty clay with occasionally flints, frequent charcoal flakes. Width:0,95m thickness:0,05m	Fill of [215]
226	Fill	F119. Plan xx/31 section 24/57 26/62	Firm, mid yellowish brown, silty clay with moderate burnt clay and occasionally flints. Width:0,25m depth:0,15m	Fill of [232]
227	Fill	F119.Plan xx/31 section	Firm, mid yellowish grey, silty clay with occasionally charcoal	Fill of [358]

		24/57-58 22/53 26/62	flakes. Width:0,4m length:0,5m depth:0,5m	
228	Fill	F119. Section 24/58 plan xx/31	Firm, mid grey brown, silty clay with frequent flints, moderate burnt clay. Width:1,0m thickness:12cm	Fill of [232]
229	Fill	F119, section 26/62 24/52 plan xx/31	Firm, yellow, brick earth with abundant amount of mid orange burnt clay lumps. Occasionally charcoal flakes. Very occasionally flints up to 6cm. Width: 0,72m, thickness: 10cm. Fill derives from demolished wall (308)	Back fill of [358]
230	Deposit	F119. Section 26/62 22/53 plan 20/28 28/29	Compacted, light yellowish brown, burnt clay in situ. Width:0,4m length:0,42m+ thickness:2cm	Furnace [308] top part of the floor.
231	Deposit	Section 26/62 22/64 21/51 plan 20/28 28/29	Firm, dark red, clay. Width:1,15m thickness:5cm	Furnace foundation foot
232	Cut	Plan 17/25 20/28 28/29 section 21/51 22/64 26/62	Sub-oval shape in plan with steep sides and flat uneven sloping base. Length:4,0m width:3,0m depth:1,30m	Cut of furnace construction pit.
233	Cut	Plan 17/25 20/28 section 24/57-58 27/63 21/51 26/62 22/52-53	Oval shape in plan with steep sides and flat base. Length:2,7m width:1,75m depth:0,85m	Cut of pit.
234	Fill	F119. Plan 17/25 20/28 section 21/51 24/57-58 22/52 26/62	Firm, black, silty clay with frequent charcoal, slag, occasionally burnt clay. Length:2,0m width:1,5m depth:0,25m	Fill of [215] [233]
235	Fill	F119. Plan 15/25 20/28 section 21/51 22/52	Firm, mid brown, clay with occasionally flints, iron slag. Length:0,5m wifth:0,3m depth:0,2m	Fill of [233]
236	Fill	F119. Plan 20/28	Medium compaction, dark brownish grey, silty	Fill of [233]. Back fill.

		section 21/51 27/63	clay with moderate charcoal flakes, burn clay, frequent slag, occasionally sand stones and flint stones. Very occasionally burnt sand stone and flint stones. Length:1,2m width:1,15m thickness:0,1m	
237	Fill	F119. Plan 20/28 section 21/51 24/58 27/63	Firm, black silty clay with frequent charcoal flakes, occasionally slag, occasionally flints. Length:2,0m width:1,1m thickness:0,09m	Fill of [233]
238	Fill	F119 plan 17/25 20/28 section 21/51 27/63	Medium compaction, mid dark brown, silty clay with frequent iron slag, frequent burnt clay patches, occasionally flints. Length:2,0m thickness:0,2m	Fill of [233]
239	Fill	F119 plan xx/31 section 26/62 21/51 22/52	Firm, black-dark-grey, silty clay with frequent burnt clay patches, moderate slag, occasionally flints, moderate charcoal flakes. Length:1,2m width:1,3m thickness:0,1m	Fill of [233]. Back fill.
240	Fill	F119. Plan 17/25 20/28 section 24/58 21/51 22/52 27/63	Firm, mid yellowish brown clay with moderate flint cobbles and occasionally iron slag. Occasionally patches of burnt clay, charcoal flakes and burnt flints were also encountered. Length:2,0m width:1,75m thickness:0,15m	Fill of [233]. Back fill
241	Fill	F119. Section 22/52 21/51 26/62 24/57-58 plan xx/31 17/25	Medium compaction, color varies from dark grey to brown, silty clay with clay patches, moderate slag, frequent burnt clay, frequent	Fill of [233]. Back fill

		20/28	cobbles and occasionally charcoal flakes. Burnt sand stones and burnt flint stones were also encountered. Length:1,2m width:0,5m thickness:0,1m	
242	Fill	F119. Plan 17/25 20/28 section 27/63 21/51	Firm, dark brown, silty clay with moderate slag, moderate burnt clay patches, occasional charcoal flakes. Length:2,0m width:1,0m thickness:0,1m	Fill [233]. Back fill.
243	Fill	F119. Plan 17/25 20/28 xx/31 section 24/58 21/51	Firm, mid grey brown, silty clay with moderate charcoal flakes, frequent flints cobbles, moderate slag, occasionally burnt clay and occasionally burnt sand stones. Length:2,0m width:0,95m thickness:0,25m	Fill of [233]. Back fill
244	Fill	F119. Plan 17/25 20/28 section 21/51 22/52	Medium compaction, dark brown, silty clay with moderate charcoal flakes, moderate flints cobbles, moderate burnt clay, occasionally slag, occasionally burnt flints. Length:1,8m width:1,2m thickness:0,3m	Fill of [233]. Back fill
245	Fill	F119. Plan 17/25 20/28 28/29 section 22/52-53 26/62	Medium, dark brown grey, silty clay with frequent flints cobbles, frequent burnt clay, moderate slag, occasionally oyster shells, occasional slag, moderate charcoal. Length:1,9m width:1,0m thickness:0,2m	Fill of [232]. Back fill
246	Fill	F119. Plan 28/29 17/25 20/28 section 26/62 21/51 22/64	Loose compaction, dark metallic bluish grey, crushed slag, occasionally burnt clay, occasionally soil inclusions. Length:0,35m+	Fill of [373] [307]

			width:0,55m	
247	Fill	F119. Plan 17/25 20/28 28/29 section 26/62 21/51 22/53 22/64	Firm, mid orange with yellow patches, clay mixed with burnt clay, occasionally slag and flints. Length:0,8m width:0,62m thickness:0,2m	Back fill of [358]
248	Deposit	F119. Plan 28/29 17/25 20/28 section 26/62 21/51 22/64	Compact, mid brownish red, burnt clay with very occasionally charcoal flakes. Length:1,1m width:0,4m+ thickness:0,06m	Fill of [232]. Furnace floor
249	Fill	F119. Section 19/48 plan xx/31	Medium, dark red, clay with no inclusions. Depth:0,47m	Fill of [207]. Furnace foundation and part of the wall.
250	Fill	F119. Plan xx/31 section 19/48	Firm, dark brownish grey, clayey silt with frequent slag, charcoal and small stones. Width:0,82m depth:0,3m	Fill of pit [207]
251	Deposit	F119. Plan xx/31 section 19/48	Compact, light yellowish brown, burnt silty clay. Width:0,6m depth:0,28m	Part of furnace wall
252	Deposit	F119. Plan xx/31 section 19/48	Compact, light yellowish brown, burnt brick earth. Width:0,6m depth:0,18m	Part of furnace wall
253	Deposit	F119. Plan xx/31 section 19/48	Compact, mid grey, burnt silty clay. Width:0,6m depth:0,26m	Furnace lining.
254	Fill	F119. Plan xx/31 section 19/48	Compact, mid brownish red, burnt silty clay mixed with clay. Width:0,4m depth:0,28m	Fill of [207]. Back fill
255	Fill	F119. Plan xx/31 section 19/48	Compact, light red and grey brown, burnt silty clay. Width:0,8m depth:0,24m	Fill of [207] back fill
256	Fill	F119. Plan xx/31 section 19/48	Firm, dark grey brown, clayey silt with moderate charcoal flakes and flints. Width:0,32m depth:0,16m	Fill of [207]
257	Fill	F119. Plan xx/31	Dark brownish grey, clayey silt with moderate	Fill of [207]. Back fill. The same as 404

		section 19/48	slag, occasionally burnt clay, small flints, and charcoal flakes. Length:0,8m width:0,2m depth:0,17m	
258	Fill	F119. Plan xx/31 section 19/48	Firm, dark brown grey, clayey silt, occasionally burnt clay, slag, charcoal flakes and flints.	Fill of [209]. Back fill.
259	Fill	F119. Plan xx/31 section 19/48	Firm, dark brownish grey, clayey silt with occasionally charcoal, small flints and daub. Width:0,45m depth:0,25m	Fill of [209]. Back fill
260	Fill	F119. Plan xx/31 section 19/48	Compact, mid yellowish brown, clayey silt with frequent burnt clay patches. Length:0,2m width:0,2m depth:0,15m	Fill of [219]. Back fill
261	Fill	F119, plan xx/31 section 19/48	Compact, yellowish grey, clayey silt with frequent burnt clay patches. Length:0,2m width:0,2m depth:0,2m	Fill of [219]. Back fill
262	Deposit	F119. Plan xx/31 section 19/48	Firm, dark red, burnt brick earth. Width:0,15m depth:0,33m	Fill of [211]. Part of furnace [210] wall
263	Deposit	F119. Plan xx/31 section 19/48	Compact, light yellowish brown, burnt silty clay. Depth:0,55m thickness:0,04m	Part of furnace wall
264	Deposit	F119. Plan xx/31 section 19/48	Compact, mid grey, burnt silty clay. Depth:0,29m thickness:0,02m	Part of furnace wall
265	Deposit	F119. Plan xx/31 section 19/48	Compact, light yellowish brown, burnt clay. Depth:0,55m thickness:0,03m	Part of furnace wall
266	Deposit	F119. Plan xx/31 section 19/48	Compact, mid grey, burnt silty clay	Part of furnace wall
267	Fill	F119. Plan xx/31 section 19/48	Firm, dark brownish grey, clayey silt with frequent charcoal flakes and large lumps of tap slag. Length:0,5m	Fill of [211] and [210]

			width:0,4m depth:0,22m	
268	Fill	F119. Plan xx/31 section 24/56-57 19/48	Firm, mid brownish grey, silty clay with moderate charcoal fragments, occasional flints and burnt flints.	Fill of [215]. Back fill
269	Fill	F119. Plan xx/31 section 24/56-57 19/48	Firm, dark brownish grey, clayey silt with moderate burnt clay and charcoal flakes, occasionally slag and flints. Length:2,0m width:1,0m thickness:0,2m	Back fill of [211] [215]
270	Fill	F119. Plan xx/31 section 24/56-57 19/48	Firm, dark brownish grey, silty clay with frequent charcoal fragments, burnt clay, occasionally slag and small flints. Length:1,5m+ width:1,0m depth:0,32m	Fill of [211] [215]
271	Fill	F119. Plan xx/31 section 19/48	Compact, light yellowish brown, burnt silty clay. Length:0,46m width:0,4m depth:0,14m	Fill of [211]
272	Fill	F119. Plan xx/31 section 19/48	Firm, mid grey brown, clayey silt with occasionally burnt clay, charcoal flakes and small flint. Length:0,2m width:0,2m depth:0,2m	Fill of [211] [215]. Back fill
273	Fill	F119. Plan xx/31 section 19/48	Firm, mid brownish grey, clayey silt with moderate burnt clay and charcoal flakes. Occasionally slag and flints. Length:0,22m width:0,2m depth:0,19m	Fill of [211] [215]
274	Fill	F119. Plan xx/31 section 19/48	Firm, mid brownish grey, clayey silt with frequent burnt clay, occasional slag and flints. Length:0,26m width:0,25m depth:0,19m	Fill of [211] [215]
275	Fill	F119. Plan xx/31 section 19/48	Medium, mid brownish grey, silty clay with moderate charcoal flakes, occasionally slag	Fill of [211]

			and flints. Length:0,2m width:0,15m depth:0,1m	
276	Fill	F119. Plan xx/31 section 19/48 24/56-57	Firm, dark grey, clayey silt with moderate slag and charcoal flakes, occasionally flints and burnt clay. Length:0,67m width:0,6m depth:0,22m	Fill of [211] [215]
277	Fill	F119. Plan xx/31 section 19/48	Firm, dark brownish grey, clayey silt with moderate burnt clay and charcoal flakes, occasionally slag and flints. Length:0,22m width:0,1m depth:0,07m	Fill of [211]
278	Fill	F119. Plan 17/25 20/28 section 20/49-50	Compact, dark grey brown, sub-ceramic soil.	Fill of [162]
279	Fill	F119. Plan 17/25 20/28 section 20/49-50	Light, friable, dark reddish orange, clayey silt. width:0,11m depth:0,03m	Fill of [162]
280	Fill	F119. Plan 17/25 20/28 section 20/49-50	Compact, black, charcoal fragments and powder with silt soil. Width:0,1m depth:0,02m	Fill of [162]
281	Fill	F119. Plan 17/25 20/28 section 20/49-50	Compact, dark grey brown, clayey silt with moderate burnt clay, slag and burnt sand stones. Width:0,53m depth:0,3m	Fill of [162]
282	Deposit	F119. Plan 17/25 20/28 section 20/49-50	Spread of tabular slag in situ. Length:0,69m width:0,49m	Fill of [162]
283	Deposit	F119. Plan 17/25 20/28 section 20/49-50	Firm, light grey, sub-ceramic soil.	Furnace floor in pit [162] UNEXCAVATED
284	Deposit	F119. Plan 17/25 20/28 section 20/49-50	Compact, light grey, burnt clayey silt. Thickness:0,08m	Furnace lining.
285	Fill	F119. Section 24/58 21/51 plan 28/29 17/25 20/28	Firm, mid brown grey, silty clay with moderate burnt clay patches, occasionally flints, slag, charcoal flakes.	Fill [233]. Back fill

			Length:2,0m width:1,3m depth:0,25m	
286	Deposit	F119. Plan 17/25 20/28 section 20/49-50	Compact , pale yellow, burnt silty clay. Width:0,025m depth:0,71m	Furnace lining
287	Deposit	F119. Plan 17/25 20/28 section 20/49-50	Compact, pale yellow, brick earth. Width:0,15m depth:0,54m	Furnace wall isolation UNEXCAVATED
288	Deposit	F119. Plan 17/25 20/28 section 20/49-50	Compact, dark reddish orange, burnt silty clay.	Furnace remains. UNEXCAVATED
289	Deposit	F119. Plan 17/25 17/28 section 20/49-50	Compact, pale yellow, burnt silty clay. Width:0,16m+	Furnace remains. UNEXCAVATED
290	Void			See (163)
291	Void			See [317]
292	Structure	F119 plan 31/33-39 section 30/70	Bloomery non tapping furnace constructed in furnace construction pit [402] at it W side. Building process commenced on dark red clay with building up furnace tube Probably wall was made of the same clay isolated outside by brick earth. Furnace wall color consist of dark red – orange – yellow – white – pink light grey, color gradually changes from outside to the inside. Furnace was used at least several times as it wearing signs of repairs to be made during it exploitation. Preserved furnace height: 0,5m of total height: 0,9m, hearth beam: 0,4m, furnace outer diameter: 0,68m. Walls are vertical with gradual BOS base and concave bottom. ‘Doorway steep’ is	Furnace cut. Iron age period. Accumulation of slag was present inside on the walls and bottom.

			located 10cm above furnace bottom. Front wall was demolished as well as top part of furnace. The sod was present on back side.	
293	Fill	F119, section 17/46 plan xx/32 18/26	Firm, dark grey, silty clay with frequent charcoal flakes, moderate slag, moderate light orange and dark red burnt clay. Width: 29cm, depth: 6cm	Fill of [301]
294	Deposit	F119, section 17/46 plan xx/32 18/26	Firm, orange, burnt clay in situ. Width: 35cm, thickness: 4cm	Fill of [300] 2nd stage of furnace floor
295	Fill	F119, section 17/46 plan xx/32 18/26	Firm, light grey, burnt clay. Accumulation of flowing slag on the top of this layer. Width: 0,3m thickness 0,03m	Fill of [300] furnace floor
296	Fill	F119, section 17/46 plan xx/32 18/26	Firm, dark grey, silty clay with frequent charcoal flakes, moderate tapping and non tapping slag size up to 2cm, moderate orange and light yellow burnt clay lumps size up to 0,5cm. Width: 33cm, thickness 4cm	Fill of [300]
297	Fill	F119, section 17/46 plan xx/32 18/26	Firm, mid grey, burnt clay in situ with occasionally charcoal flakes. Width: 0,32m thickness 3cm	Fill of [302] first stage of furnace floor
298	Fill	F119, section 17/46 plan xx/32 18/26	Firm, orange, burnt clay. Width: 5cm Depth: 12cm	Fill of [302] part of furnace wall
299	Fill	F119, section 17/46 plan xx/32 18/26	Firm, dark red clay with occasionally charcoal flakes, occasionally flints. Width: 0,5m thickness 3cm	Fill of [302] furnace foundation foot
300	Cut	F119, section 17/46 plan xx/32 18/26	Oval shape in plan with shallow sides and concave bottom. Width: 0,38m depth: 17cm	Cut of Furnace hearth. 1st stage

301	Cut	F119, section 17/46 plan xx/32 18/26	Oval shape in plan with shallow sides and concave bottom. Width: 0,3m depth: 6cm	Cut of hearth. 2nd stage of furnace hearth.
302	Cut	F119, section 17/46 plan xx/32 18/26	Oval shape in plan. Non tapping bloomer furnace. Constructed at the ground level with base slightly sunken into concave pit. Diameter: 56cm depth: 22cm. Furnace wall was not preserved. In preserved floor deposit at least two levels (stages) of furnace floor were encountered.	Cut of furnace
303	Fill	F119, section 17/46 plan xx/32 18/26	Firm, Dark grey, silty clay with frequent charcoal flakes, frequent flint cobbles of size up to 13cm, moderate flowing slag, lumps size up to 14cm, moderate big chunks of orange burnt clay some of them contains slag. Width: 0,58m thickness 6 cm	Fill of [181]
304	Fill	F119. Plan 28/29 section 26/62 22/53	Firm, mid reddish orange, burnt clay in situ. Length:0,53m width:0,42m depth:0,05m	Fill of [308]. Furnace floor. Fill of [306]
305	Fill	F119 section 26/62 22/53 plan 28/29	Firm, dark red, clay with no inclusions. Width: 0,6m Length: 0,5m thickness: 5cm	Fill of [306] Furnace foundation foot
306	Cut	F119 section 26/62 22/53 plan 28/29	Sub oval shape in plan with moderate sides and concave base. Length: 0,7m width: 0,6m depth: 0,45m. This pit was dug on bottom of another pit [232] in it SW part.	Furnace construction pit.
307	Cut	F119 section 22/64 plan 28/29	Circular shape in plan with vertical sides with bottom tapered to a point. Length: 0,2m width: 0,15m Depth: 0,37m. Feature was filled in with crushed	Cut of post hole located at the front of furnace doorway. Feature was dug on the level of furnace floor (248)

			iron slag from furnace [308]	
308	Structure	F119. Plan xx/31 28/29 17/25 20/28 section 26/62 22/53 22/52		Non tapping demolished furnace.
309	Structure	F119. Plan xx/31 28/29 17/25 20/28 section 26/62 22/64 22/52 21/51		Complete tapping iron furnace. UNEXCAVATED
310	Structure	F119. Plan xx/31 28/29 17/25 20/28 section 26/62 27/63		Tapping furnace.
311	Deposit	F119 section none plan 28/29	Medium compaction, mid golden yellow, sandy clay with moderate flint nodules. This deposit was used as lining in furnace [310]	Natural deposit
312	Cut	F119 section 27/63, 26/62 plan 28/29	Oval Irregular shape in plan with moderate sides and flat base. Length: 1,8m Width: 0,4m depth: 0,3m. Feature's base is located 1m below present ground surface in the bottom of pit [323] in it NE part.	Furnace construction pit
313	Cut	F119 section 27/63 26/62 plan 20/28 17/25 28/29	Circular shape in plan with vertical sides and gradual BOS base. Bottom flat sloping down outside of the furnace. diameter 0,4m depth: 0,7m	Cut of furnace 310 hearth - final stage
314	Deposit	F119 section 27/63 26/62 plan 20/28 17/25 28/29	Firm, light grey, burnt sandy clay. Thickness: 3,5cm depth: 0,73m	Furnace lining
315	Cut	F119. Plan 20/28 section 20/49 xx/61	Not revealed shape in plan with steep sides and concave bottom. Width:0,4m+ depth:0,16m	Furnace construction pit

316	Fill	F119. Plan 20/28 section xx/60 20/49	Compact, dark grey brown, silty clay with occasionally burnt clay. Width:0,4m	Fill of [162]
317	Cut	F119. Plan 20/28 section xx/60-61 20/49	Oval shape in plan with moderate sides and flat bottom. Depth:0,58m extends beyond LOE.	Cut of pit. The same as [216]
318	Cut	F119 section 28/65 29/68 plan xx/31	The same as [215] Oval shape in plan with moderate sides and flat bottom.	Cut of pit. Function – iron roasting
319	Fill	F119. Plan xx/31 section 28/65	Firm, reddish grey, silty clay with frequent burnt clay and occasionally slag. Width:0,42m depth:0,2m	Fill of [318]
320	Fill	F119. Plan xx/31 section 28/65	Firm, dark brownish grey, silty clay with moderate charcoal flakes, moderate slag pieces, occasionally small flints and burnt flints.	Fill of [318]. Back fill.
321	Fill	F119 plan xx/31 section 28/65	Firm, reddish brown, silty clay with occasionally burnt sand stone, occasionally charcoal flakes and lenses of burnt clay. Width:1,45m thickness:0,05m	Fill of [318]. Primary fill
322	Fill	F119 plan xx/31 section 28/65	Firm, dark grey brown, silty clay. Width:0,72m thickness:0,02m	Fill of [318]
323	Fill	F119. Plan xx/31 section 28/65	Firm, mid brownish grey, silty clay with occasionally burnt clay and charcoal. Width:0,28m thickness:0,09m	Fill of [400]. Back fill.
324	Fill	F119. Plan xx/31 section 28/65	Firm, dark grey brown, silty clay with occasionally flints, burnt clay and charcoal flakes. Width:0,38m depth:0,3m	Fill of [400]
325	Fill	F119. Plan xx/31	Firm, mid grey brown, silty clay with frequent	Fill of [400]

		section 28/65	burnt clay inclusions and occasionally slag. Width:0,44m depth:0,2m	
326	Fill	F119. Plan xx/31 section 28/65	Firm, mid brown red, silty clay with occasionally big chunks of iron slag. Width:0,55m thickness:0,05m	Fill of [400]. Deliberate backfill.
327	Fill	F119. Plan xx/31 section 28/65	Medium, mid brownish yellow, silty clay with occasionally charcoal flakes and flints. Width:0,27m thickness:0,05m	Fill of [400]
328	Fill	F119 section 28/65 plan xx/31	Firm, mid brown, silty clay with frequent flint cobbles, occasionally iron slag of size up to 10cm, occasionally charcoal flakes, occasional natural clay inclusions. Width: 0,7m thickness: 0,1m depth: 0,4m	Fill of [400]. Back fill
329	Fill	F119. Plan xx/31 section 28/65	Firm, mid brown, clay with occasionally charcoal fragments and flints. Width:0,78m thickness:0,2m	Fill of [400]. Back fill
330	Fill	F119. Plan xx/31 section 28/65	Firm, mid grey yellow, silty clay. Width:0,85m depth:0,27m	Fill of [400]. Back fill
331	Fill	F119. Plan xx/31 section 28/65	Firm, dark brown grey, silty clay with occasionally charcoal flakes, slag and flints. Width:0,6m thickness:0,02m	Fill of [318].
332	Deposit	F119 section 28/65 plan xx/31	Tapping iron slag accumulated at the bottom of furnace. Thickness 4cm width: 0,36m	Tapping iron slag
333	Fill	F119 section 28/65 plan xx/31	Firm, dark brown, silty clay with moderate charcoal flakes. Width: 0,75m thickness: 2cm	Back Fill of [400]
334	Fill	F199. Plan	Firm, dark brown grey,	Fill of [318]

		xx/31 section 29/68	silty clay with moderate charcoal flakes, slag and occasionally burnt clay. Width:1,22m depth:0,33m	
335	Fill	F119 section 28/68 plan xx/31	Firm, dark brown grey, silty clay with moderate charcoal, moderate flints, occasionally burnt clay, moderate tapping iron slag size up to 20cm, occasionally non tapping iron slag. Width: 1,5m depth: 0,3m thickness: 15cm	Back fill of [218]
336	Fill	F119. Plan xx/31 section 29/68	Firm, dark grey, silty clay with frequent charcoal. Width:0,7m thickness:0,02m	Fill of [318]
337	Fill	F119. Plan xx/31 section 29/68	Firm, black, silty clay with frequent charcoal. Width:1,13m thickness:0,02m	Fill of [318]
338	Fill	F119. Plan xx/31 section 29/68	Firm, mid grey brown, silty clay with occasionally burnt clay and slag. Width:0,37m thickness:0,05m	Fill of [318]
339	Fill	F119. Plan xx/31 section 29/68	Firm, dark brownish grey, silty clay with occasionally charcoal flakes and moderate flints. Width:0,48m depth:0,21m	Fill of [318]
340	Fill	F119. Plan xx/31 section 29/68	Firm, mid grey brown, silty clay with occasionally charcoal flakes and flints. Width:0,35m depth:0,2m	Fill of [318]
341	Fill	F119. Plan xx/31 section 29/68	Firm, dark brownish grey, silty clay with moderate burnt clay and charcoal flakes. Width:0,2m depth:0,15m	Fill of [318]
342	Fill	F119. Plan xx/31 section 29/68	Firm, dark grey brown, silty clay with moderate burnt flints. Width:0,98m thickness:0,02m-0,05m	Fill of [318]
343	Fill	F119. Plan	Firm, dark grey, silty	Fill of [318]

		xx/31 section 29/68	clay with frequent charcoal. Width:0,64m thickness:0,03m	
344	Fill	F119. Plan xx/31 section 29/68	Firm, dark grey, silty clay with frequent charcoal flakes, occasionally lenses of burnt clay. Width:0,85m thickness:0,02m	Fill of [318]
345	-			
346	Fill	F119. Plan xx/31 section 29/67	Firm, dark grey, silty clay with frequent slag, occasionally charcoal flakes.	Fill of [401]
347	Fill	F119. Plan xx/31 section 29/67	Firm, dark brown, silty clay with occasionally burnt clay, slag and charcoal flakes. Width:0,55m thickness:0,13m	Fill of [401]
348	Fill	F119. Plan xx/31 section 29/67	Firm, yellowish red, burnt clay width:0,25m thickness:0,05m	Fill of [401]
349	Fill	F119. Plan xx/31 section 29/67	Firm, dark grey, silty clay with frequent slag and occasionally charcoal. Width:1,27m thickness:0,05m	Fill of [401]
350	Fill	F119. Plan xx/31 section 29/67	Firm, dark grey, silty clay with frequent slag, flints and occasionally charcoal flakes. Width:1,25m thickness:0,13m	Fill of [401]
351	Fill	F119. Plan xx/31 section 29/67	Firm, reddish grey, silty clay. Width:0,55m thickness:0,08m	Fill of [401]
352	Fill	F119. Plan xx/31 section 29/67	Firm, mid red, silty clay. Width:0,58m thickness:0,05m	Fill of [401]
353	Fill	F119. Plan xx/31 section 29/67	Firm, mid yellow, silty clay. width:0,45m thickness:0,07m	Fill of [401]
354	Fill	F119. Plan xx/31 section	Firm, dark grey, silty clay. width:0,45m thickness:0,01m	Fill of [401]

		29/67		
355	Fill	F119 section 26/62 plan 28/29	Firm, mid brown grey, silty clay with moderate charcoal flakes, moderate tapping iron slag size up to 7cm, occasionally natural clay inclusions, occasionally small pieces of daub, very occasionally burnt flints. Width: 0,45m depth: 0,2m	Fill of [233]. back fill
356	Fill	F119 section 26/62 plan 28/29	Firm, mid brown, clay. Re-deposited natural clay. Width: 15cm depth: 17cm	Fill of [233]
357	Deposit	F119 section 26/62 plan 28/29	Deposit of slag	Re-deposit of flowing slag accumulated at the bottom of furnace [308]
358	Cut	F119 section 26/62 plan 28/29	Oval shape in plan NE side straight and vertical. Other side has not been preserved. Sharp BOS base slightly concave bottom. Width: 0,55m height: 0,55m. Originally was 1,05m	Cut of furnace [308] hearth. (remains)
359	Fill	F119 section 26/62 plan 28/29	Firm, Light orange gradually changes into grey, burnt clay in situ, no inclusions. Depth: 0,46m width: 4cm	Fill of [306] furnace [308] lining
360	Deposit	F119 section 26/62 plan 28/29	Firm, mid red, burnt brick earth. Deposit gradually going into (361) which is located near at the ‘front’	Furnace [309] wall deposit. UNEXCAVATED
361	Deposit	F119 section 26/62 plan 28/29	Firm, Light pinkish yellow, burnt brick earth. Deposit is gradually going into (360) The same as above but less affected by temperature	Furnace [309] wall deposit. UNEXCAVATED
362	Deposit	F119 section 26/62 plan 28/29	Big chunks of slag were used to build up furnace arched doorway and probably to build up the wall also.	Non flowing iron slag deposit. UNEXCAVATED
363	Deposit	F119 section 26/62 plan	Firm, mid red, burnt brick earth. Deposit	Furnace [309] wall deposit.

		28/29	gradually going into (361) which is located near at the 'front'	UNEXCAVATED
364	Deposit	F119 section 26/62 plan 28/29	Firm, mid brown, silty clay. Re-deposited natural clay	Furnace [309] wall deposit. UNEXCAVATED
365	Deposit	F119 section 26/62 plan 28/29	Medium, yellow, brick earth Width: 0,3m depth: 0,75m	Furnace [309]{310] outside walls isolation deposit. UNEXCAVATED
366	Deposit	F119 section 26/62 plan 28/29	Medium, light yellow, brick earth Width: 0,3m depth: 0,75m	Furnace [309][310] outside walls isolation deposit. UNEXCAVATED
367	Deposit	F119 section 26/62 plan 28/29	Firm, light reddish yellow, burnt clay.	Furnace [309] wall deposit. UNEXCAVATED
368	Deposit	F119 section 26/62 plan 28/29	Firm, mid red, burnt clay. Eroded furnace doorway deposit.	Furnace [309] wall deposit. UNEXCAVATED
369	Fill	F119 section 26/62 plan 28/29	Firm, mid brownish grey, silty clay with occasionally charcoal, moderate burn clay, occasionally burnt clay lumps up to 5cm, occasionally slag up to 5cm	Fill of furnace [308] hearth [373]. UNEXCAVATED
370	Fill	F119 section 26/62 plan 28/29	Firm, dark red, burnt clay with occasionally slag up to 5cm, occasionally yellow burnt clay inclusions. This may be the late stage of floor.	Fill of furnace [308] hearth [373]. UNEXCAVATED
371	Fill	F119 section 26/62 plan 28/29	Firm, dark grey, silty clay with moderate charcoal, occasionally burnt clay size up to 5cm	Fill of furnace [308] hearth [373]. UNEXCAVATED
372	Fill	F119 section 26/62 plan 28/29	Medium, black, silty clay with frequent flint cobbles and abundant amount of charcoal	Fill of furnace [308] hearth [373]. UNEXCAVATED
373	Cut	F119 section 26/62 plan 28/29	Oval in plan, tube forming into bulb. Top diameter: 0,22m Bottom width: 0,6m. height: 1,10m	Cut of furnace [309] hearth. UNEXCAVATED
374	Deposit	F119 section 26/63 plan	Medium, mid red, burnt brick earth. Thickness:	Part of furnace [310] wall

		20/28	11cm height: 0,65m	
375	Fill	F119 Section 27/63 plan 20/28	Dark grey brown, frequent tapping and non tapping slag, lumps size up to 15cm, moderate flint cobbles, moderate charcoal flakes, moderate small slag pieces, occasionally lumps of clay, size 2-10cm, moderate burnt clay size 11cm. Width: 1,4 depth: 0,2m	Fill of [233] Back fill
376	Fill	F119 Section 27/63 plan 20/28	Firm, mid grey brown, silty clay with occasional charcoal flakes, occasionally tap slag up to 2cm, moderate flints up 5cm. Width: thickness: 5cm	Fill of [233] Back fill
377	Fill	F119 Section 27/63 plan 20/28	Firm, mid brown grey, silty clay with occasionally charcoal flakes, moderate burnt clay inclusions size up to 5cm, occasionally slag, occasionally flint cobbles. Width:0,55m Thickness: 0,1m	Fill of [233] Back fill
378	Fill	F119 Section 27/63 plan 20/28	Firm, mid brown grey, silty clay with moderate flint cobbles up to 20cm, frequent tapping and non tapping slag cobbles some with burnt clay attached to. Moderate burnt red clay small pieces up to 2cm. Width: 0,7m thickness: 0,1m	Fill of [233] Back fill
379	Fill	F119 Section 27/63 plan 20/28	Firm, cobbles deposit with silty clay. Occasionally slag, occasionally charcoal flakes. Width: 0,7m Thickness: 15cm	Cobbles deposit Fill of [233]
380	Fill	F119 Section 27/63 plan 20/28	Firm, dark brown, silty clay with moderate charcoal flakes moderate flints up to 20cm, occasionally burnt clay	Back fill of [233]

			size up to 5cm. Width: 0,75m thickness: 0,1m	
381	Fill	F119 Section 27/63 plan 20/28	Firm, dark brownish grey, silty clay with moderate charcoal flakes, occasionally tapping slag up to 5cm. width: 0,7m thickness: 6cm	Fill of [312]
382	Fill	F119 Section 27/63 plan 20/28	Firm, mid brown, silty clay with moderate charcoal flakes, occasionally burnt clay size up to 5cm, occasionally non tapping slag up to 6cm. Width: 0,85m thickness: 0,06m	Fill of [313]
383	Fill	F119 Section 27/63 plan 20/28	Firm, dark brownish grey, silty clay with abundant amount of tapping and non tapping slag size up to 15cm, moderate burnt clay, occasionally charcoal flakes. Width:35cm thickness: 5cm	Fill of [312]
384	Fill	F119 Section 27/63 plan 20/28	Firm, mid red, baked brick earth with lenses of yellow brick earth and grey burnt clay. Occasionally tapping and non tapping slag up to 10cm. Width: 0,75m depth: 0,65m. Fill derives from demolished furnace walls.	Fill of [313] Back fill
385	Fill	F119 Section 27/63 plan 20/28	Firm, mid red with grey top, burnt clay. Width: 0,5m thickness: 2cm. Fill derives from collapsed furnace wall.	Fill of [313] Back fill
386	Fill	F119 Section 27/63 plan 20/28	Firm, dark grey, silty clay with frequent charcoal flakes, occasionally small pieces of burnt clay size up to 1cm. Width:0,35m thickness: 3cm	Fill of [313] Back fill
387	Fill	F119 Section	Firm, dark gray brown, silty clay with	Fill of [313] Back fill

		27/63 plan 20/28	occasionally charcoal, frequently burnt clay size up to 10cm, moderate slag size up to 7cm. Width: 0,37m thickness: 5 cm	
388	Fill	F119 Section 27/63 plan 20/28	Firm, mid reddish brown, silty clay with occasionally charcoal flakes, moderate orange and burnt clay inclusions. Width: 0,2m thickness: 0,1m	Fill of [313] Back fill
389	Fill	F119 Section 27/63 plan 20/28	Firm, mid reddish grey, silty clay with moderate charcoal flakes. Width: 17cm thickness: 4cm	Fill of [313] Back fill
390	Fill	F119 Section 27/63 plan 20/28	Tapping slag accumulated at furnace [310] base. Width: 36cm, thickness: 4cm	Fill of [313] Back fill
391	Fill	F119 Section 27/63 plan 20/28	Firm, light brown, burnt brick earth.	Fill of [312] Wall UNEXCAVATED
392	Fill	F119 Section 27/63 plan 20/28	Tapped slag accumulated at the bottom	Fill of [312] deposit of slag UNEXCAVATED
393	Fill	F119 Section 27/63 plan 20/28	Moderate, black, silty clay with frequent charcoal. Width: 22cm thickness: 3cm	Fill of [313]
394	Fill	F119 Section 27/63 plan 20/28	Firm, mid brown grey, silty clay with occasionally yellow and red burnt clay size up to 0,5cm, moderate charcoal flakes. Width: 0,35m thickness: 3cm	Fill of [312]
395	Fill	F119 Section 27/63 plan 20/28	Mid compaction, Black, silty clay with frequent charcoal inclusions. Length: 17cm thickness: 1cm	Fill of [312]
396	Cut	F119 Section 27/63 plan 20/28	Floor level 5cm below level of cut's [313] base.	Cut of Furnace [310] hearth stage one UNEXCAVATED
397	-			

398	-			
399	-			
400	Cut	F119 section 28/65 plan xx/31	Not revealed shape in plan, possibly oval with steep sides and flat base. Feature is truncated and overlayed by pit [318]. Width: 1,6m depth: 0,8m	Cut of furnace construction pit
401	See [402]			The same as [402]
402	Cut	F119 plan xx/31 31/33 section 30/69-70	Oval shape in plan with steep sides and uneven bottom. Length: 2,80m Width: 2,02m Depth: 0,9m Furnace [292] was constructed in this pit along W side.	Cut of furnace construction pit. The same as [401]
403	-			
404	Fill	F119. Plan xx/31 section 30/69-70	Firm, dark brown grey, clayey silt with moderate charcoal fragments, burnt clay, burnt stones and occasionally slag. Length:1,5m width:1,1m thickness:0,2m	Fill of [402]. Back fill.
405	Fill	F119 plan xx/31 31/33 section 30/69	Firm, mid yellow brown, silty clay with occasionally charcoal flakes, moderate slag, occasionally burnt clay size up to 2cm. Width: 60cm thickness: 5cm	Fill of [402]
406	Fill	F119. Plan xx/31 section 39/69-70	Medium compaction, dark brown, clayey silt with moderate burnt clay, occasionally charcoal flakes, slag and flints.	Fill of [402]
407	Fill	F119. Plan xx/31 section 30/69-70	Firm, dark brownish grey, clayey silt with frequent pebbles and moderate burnt clay, occasionally slag and moderate charcoal flakes. Length:2,0m width:1,8m depth:0,3m	Fill of [402]
408	Fill	F119. Plan xx/31 section 30/69-70	Firm, mid grey brown, silty clay with occasionally charcoal flakes and small flints. Width:1,0m length:1,0m	Fill of [402]

			depth:0,42m	
409	Fill	F119. Plan xx/31 section 30/69-70	Firm, light grey brown, silty clay with occasionally small flints. Length:0,42m width:0,3m depth:0,13m	Fill of [402]
410	Fill	F119. Plan xx/31 section 30/69-70	Firm, mid grey brown, silty clay with moderate burnt clay patches and occasionally small flints. Length:0,7m width:0,5m depth:0,25m	Fill of [402]
411	Fill	F119. Plan xx/31 section 30/69-70	Firm, mid orange brown, silty clay with occasionally small flints.	Fill of [402]
412	Fill	F119 Section 30/70 plan xx/31 31/33	The same as (417)	Fill of [402]
413	Fill	F119. Plan xx/31 section 30/70	Medium, dark red, clay. width:1,0m thickness:0,05m	Fill of [402]. Furnace foundation foot.
414	Fill	F119. Plan xx/31 31/34	Firm, dark red, silty clay with frequent burnt clay lumps, occasionally charcoal flakes and small flints. Diameter:0,4m depth:0,18m	Fill of furnace flue in pit [402]
415	Fill	F119. Plan xx/31 31/33 31/35	Firm, mid brown, clayey silt with moderate flint cobbles, charcoal and slag. Diameter:0,4m depth:0,05m	Fill of furnace flue in pit [402]
416	Fill	F119. Plan xx/31 31/33 31/36	Medium, black, charcoal and ashes. Diameter:0,4m depth:0,02m	Fill of furnace flue in pit [402]
417	Fill	F119. Plan xx/31 31/33 31/37	Firm, mid reddish brown, clayey silt with frequent charcoal, moderate big chunks of slag. Diameter:0,4 depth:0,06m	Fill of furnace flue in pit [402]
418	Fill	F119. Plan xx/31 31/33 31/38	Compact, mid grey, clayey silt with frequent slag. Diameter:0,4m depth:0,04m	Fill of furnace flue in pit [402]
419	Fill	F119	The same as (419)	Fill of [402]

		Section 30/70 plan xx/31 31/33 31/39		
420	Fill	F119 Section 30/69 plan xx/31 31/33	Mid red, firm, burnt brick earth with light grey lenses of burnt clay, occasionally flints and slag. Width: 0,5m Thickness 0,1m . Fill derives from furnace demolition which was located near by.	Fill of [402] Back fill
421	Fill	F119 Section 30/69 plan xx/31 31/33	Firm, light brown, brick earth with light grey and red burnt clay patches. Width: 0,9m thickness: 0,7m Fill derives from furnace demolition	Fill of [402] Back fill
422	Fill	F119 Section 30/69 plan xx/31 31/33	Firm, dark grey, accumulation of slag. Width: 0,4m thickness: 0,03m Fill derives from furnace demolition	Fill of [402] Back fill
423	Fill	F119 Section 30/69 plan xx/31 31/33	Firm, dark red, clay burned on the top. Probably furnace floor remains. Width: 0,7m thickness: 5cm	Fill of [402] Back fill
424	-			
425	-			
426	-			
427	-			
428	-			
429	-			
430	-			
431	-			
432	Cut	F113T. plan GPS section 31/73	Not revealed shape in plan with steep sides and concave bottom. Width:1,28m depth:0,9m	Cut of pit
433	Cut	F119 section 31/74 plan xx/xx		Cut of WWII trench
434	Cut	F113T. plan GPS section 31/71	Not revealed shape in plan with moderate sides and concave bottom. Width:2,5m depth:0,64m	Cut of pit
435	Cut	F113T. plan GPS section	Not revealed shape in plan with steep-vertical	Cut of feature.

		31/72	sides and flat bottom. Width:2,1m depth:0,85m	
436	Cut	F113T. plan GPS section 31/75	Oval shape in plan with steep sides and concave bottom. Length:0,4m width:0,3m depth:0,17m	Cut of pit.
437	Fill	F113T. plan GPS section 31/73	Firm, dark brown grey, silty clay with occasionally charcoal flakes, very occasionally flints and slag. Length:1,3m width:0,9m thickness:0,47m	Fill of [432].
438	Fill	F113T. Plan GPS section 31/73	Firm, mid grey, silty clay with frequent flints and occasionally charcoal flakes. Width:0,97m thickness:0,12m	Fill of [432]
439	Fill	F113T. plan GPS section 31/73	Firm, mid grey, silty clay with occasionally charcoal flakes and flints. Width:0,87m thickness:0,37m	Fill of [432]
440	Fill	F113T. plan GPS section 31/73	Firm, mid brownish grey, silty clay with moderate flints. Width:0,35m depth:0,6m	Fill of [432]
441	Fill	F113T. plan GPS section 31/73	Firm, dark grey, silty clay with frequent charcoal flakes, moderate burnt red clay. width:1,0m thickness:0,03m	Fill of [432].
442	Fill	F113T. plan GPS section 31/73	Firm, mid brownish grey, silty clay with occasionally flints and charcoal. Width:0,1m depth:0,45m	Fill of [432]
443	Fill	F113T. plan GPS section 31/74	Firm, dark brownish grey, silty clay with occasionally, slag, burnt clay and flints. Width:0,78m length:0,9m depth:0,5m	Fill of [433]
444	Fill	F113T. plan GPS section 31/75	Firm, dark brownish grey, silty clay with occasionally slag, flints and burnt clay. length:0,4m width:0,3m	Fill of [436]

			depth:0,17m	
445	Fill	F113T. plan GPS section 31/71	Firm, dark brown, silty clay with moderate flints. Length:1,22m width:0,9m thickness:0,26m	Fill of [434]
446	Fill	F113T. plan GPS section 31/71	Firm, yellowish brown, silty clay with occasionally flints. Length:1,5m width:0,9m thickness:0,52m	Fill of [434]
447	Fill	F113T. plan GPS section 31/71	Firm, mid grey brown, silty clay with occasionally flints. Length:1,03m thickness:0,53m	Fill of [434]
448	Fill	F113T. plan GPS section 31/71	Firm, dark brown, silty clay with moderate charcoal flakes, occasionally burnt clay and moderate flints. Width:2,12m depth:0,65m	Fill of pit [434]
449	Fill	F113T. plan GPS section 31/72	Firm, dark brownish grey, silty clay with occasionally flints, charcoal flakes and burnt clay. width:2,14m depth:0,48m	Fill of [435]
450	Fill	F113T. plan GPS section 31/72	Firm, dark brown grey, silty clay with moderate flints, occasionally charcoal flakes and burnt clay. width:2,13m depth:0,56m	Fill of [435]
451	Cut	F113T. plan GPS section 32/76	Not revealed shape in plan with moderate sides and concave base. Width:3,0m depth:0,96m	Cut of feature.
452	Fill	F113T. plan GPS section 32/76	Firm, Light yellowish brown, clayey silt with occasionally flints. Width:0,7m depth:0,5m	Primary fill of [451]
453	Fill	F113T. plan GPS section 32/76	Firm, grayish brown, silty clay with moderate flints and occasionally charcoal flakes. Width:0,71m depth:0,29m	Fill of [451] secondary fill.
454	Fill	F119T. plan	Firm, mid brown, clayey	Fill of pit [451]

		GPS section 32/76	silt with moderate flints. Width:0,65m thickness:0,15m	
455	Fill	F113T. plan GPS section 32/76	Firm, mid orange brown, silty clay with moderate flints. Width:0,86m thickness:0,05m – 0,1m	Fill of [451]
456	Fill	F113T. plan GPS section 32/76	Firm, dark grey brown, clayey silt with frequent flints cobbles. Width:0,8m depth:0,27m	Back fill of [451]
457	-			
458	Fill	F113T. plan GPS section 32/76	Firm, mid grey brown, clayey silt with occasionally flints. Width:1,48m thickness:0,1m-0,2m	Fill of [451]. Back fill.
459	Fill	F113T. plan GPS section 32/76	Medium, dark grey, clayey silt with moderate flints and occasionally charcoal flakes. Width:1,36m thickness:0,1m	Fill of [451]. Back fill
460	Fill	F113T. plan GPS section 32/76	Medium, dark grey, clayey silt with occasionally burnt flints and burnt clay. width:0,8m thickness:0,1m	Fill of [451]
461	Fill	F113T. plan GPS section 72/63	Firm, mid brown, silty clay with moderate flints. Width:0,5m thickness:0,07m	Fill of [451]
462	Fill	F113T. plan GPS section 32/76	Firm, mid orange brown, clayey silt with occasionally flints. Width:1,6m thickness:0,12m	Fill of [451]
463	Fill	F113T. plan GPS section 32/76	Firm, mid brown, silty clay with frequent flints, occasionally slag. Width:1,58m depth:0,18m	Fill of [451]
464	-			
465	-			
466	-			
467	-			
468	-			
469	Deposit	F115.		Colluvium
470	Deposit	F112. Plan	Moderately compacted,	Cremation remains.

		GPS	silty clay with occasionally cremated bones and pottery sherds	Roman period
471	Structure	F119	Unexcavated	Furnace. UNEXCAVATED
472	Deposit	F112	Moderately compacted, clayey silt with frequent cremated human bones	Spread of cremated human remains
473	Cut/Fill	F114		Modern feature
474	Cut	F119		Furnace hearth
498	All			Colluvium
499	Structure		[35] [71] [48]	sunken-floored structure A
500	Deposit	All	Natural deposit for representation in matrixes	Natural
501	Group	F119	Stratigraphical group of features and deposits.	
502	Group	F119	Stratigraphical group of features and deposits.	
503	Group	F119	Stratigraphical group of features and deposits.	
504	Group	F119	Stratigraphical group of features and deposits.	
505	Group	F119	Stratigraphical group of features and deposits.	
506	Group	F119	Stratigraphical group of features and deposits.	
507	Group	F119	Stratigraphical group of features and deposits.	
508	Group	F119	Stratigraphical group of features and deposits.	
509	Group	F119	Stratigraphical group of features and deposits.	
510	Group	F119	Stratigraphical group of features and deposits.	
511	Group	F119	Stratigraphical group of features and deposits.	
512	Group	F119	Stratigraphical group of features and deposits.	
513	Group	F119	Stratigraphical group of features and deposits.	
514	Group	F119	Stratigraphical group of features and deposits.	
515	Group	F119	Stratigraphical group of features and deposits.	
516	Group	F119	Stratigraphical group of features and deposits.	
517	Structure	F113	[1], [2], [3], [22], [24],	sunken-floored structure

			[26], [28], [30], [32], [34]	B
518	Structure	F119	[232], [162], [306], [307], [312], [315], [474], [396], [310/313], [309/373], [308/358]	sunken-floored structure C
519	Structure	F119	[215/318/174], [400], [211], [210]	sunken-floored structure D
520	Structure	F119	[181], [201], [202]	sunken-floored structure E
521	Structure	F119	[209/401/402], [207], [208], [292], [353]	sunken-floored structure F
521	Structure	F119	[300], [301], [302], [169], (319), [224], (222)	sunken-floored structure G

Appendix VIII

Environmental samples

Sample No	Context No	Quantity	Description
<1>	(4)	20Ltr	Fill of [1] Silty clay with charcoal and slag
<2>	(8)	20Ltr	Fill of [2] Silty clay with charcoal
<3>	(5)	10Ltr	Fill of [1] Dark grey burnt clay
<4>	(12)	10Ltr	Fill of [2] Silty clay with charcoal
<5>	(57)	5Ltr	Fill of [71] Dark soil with ashes
<6>	(38)	5Ltr	Fill of [48] Dark soil with charcoal
<7>	(281)	5Ltr	Fill of [162] Dark grey brown clayey silt
<8>	(221)	2Ltr	Fill of [215] Dark soil with ashes
<9>	(186)	3Ltr	Fill of [181] Silty clay with charcoal
<10>	(414)	5Ltr	Fill of [403] Dark red silty clay
<11>	(415)	5Ltr	Fill of [403] clayey silt with charcoal
<12>	(416)	2Ltr	Fill of [403] charcoal and ashes
<13>	(417)	5Ltr	Fill of [403] clayey silt with charcoal
<14>	(418)	5Ltr	Fill of [403] clayey silt with slag
<15>	(272)	5Ltr	Fill of [210] clayey silt with burnt clay
<16>	(271)	5Ltr	Fill of [210] Burnt silty clay
<17>	(269)	5Ltr	Fill of [215] Burnt clay with charcoal
<18>	(268)	5Ltr	Fill of [215] Silty clay with charcoal
<19>	(277)	5Ltr	Fill of [210] Burnt clay with charcoal
<20>	(246)	5Ltr	Fill of [373] [307] dark metallic grey
<21>	(304)	5Ltr	Fill of [308] Reddish burnt clay in situ
<22>	(247)	5Ltr	Fill of [358] Silty clay with burnt clay
<23>	(305)	5Ltr	Fill of [306] dark red clay
<24>	(311)	5Ltr	Lining of [310] Yellow sandy clay
<25>	(268)	5Ltr	Fill of [215] Silty clay with charcoal
<26>	(456)	5Ltr	Fill of [451] Dark grey clayey silt
<26>	(456)	5Ltr	Fill of [451] Dark grey clayey silt

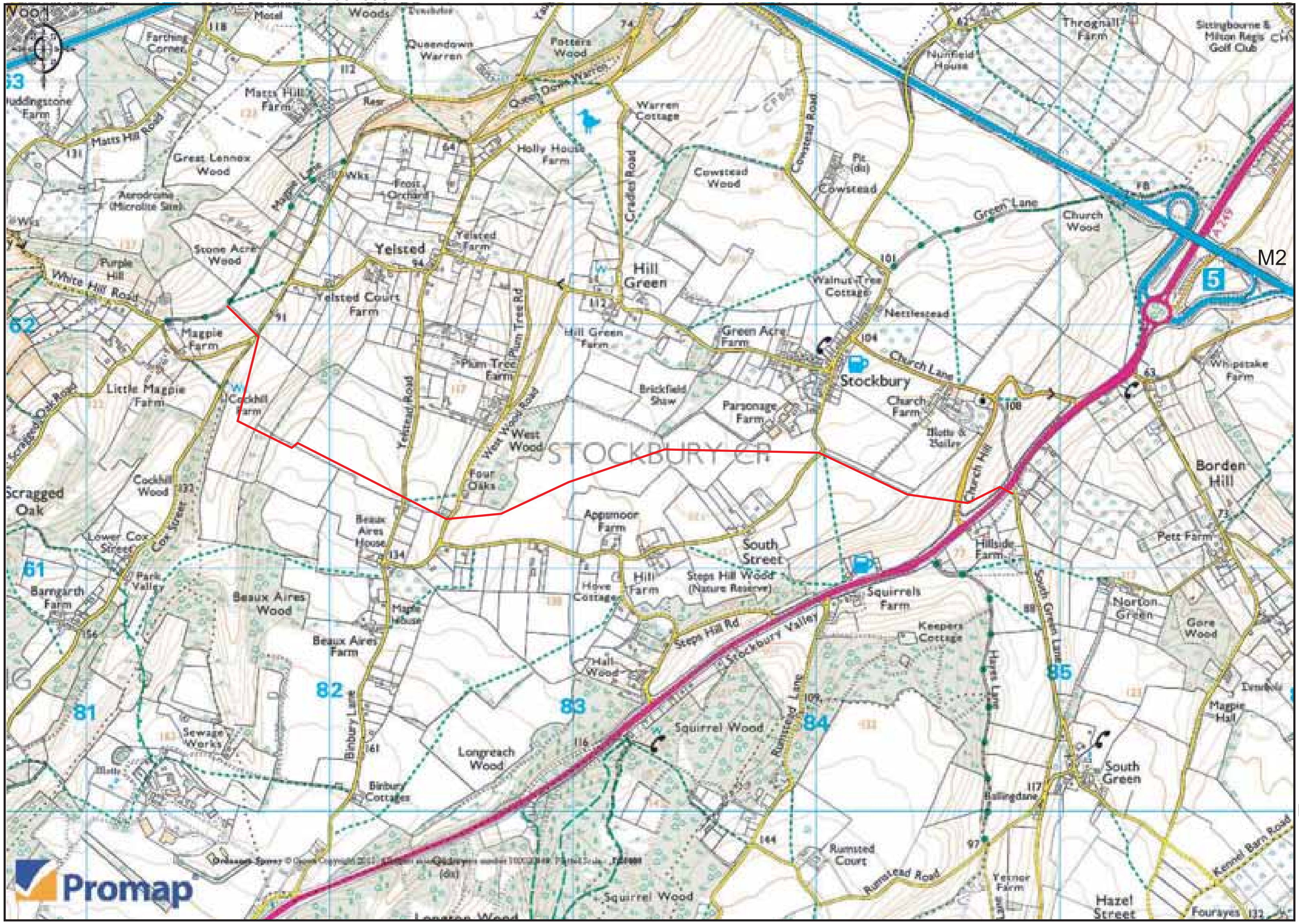


Figure 1 Scheme Location, 1:25,000
Pipeline route (—)

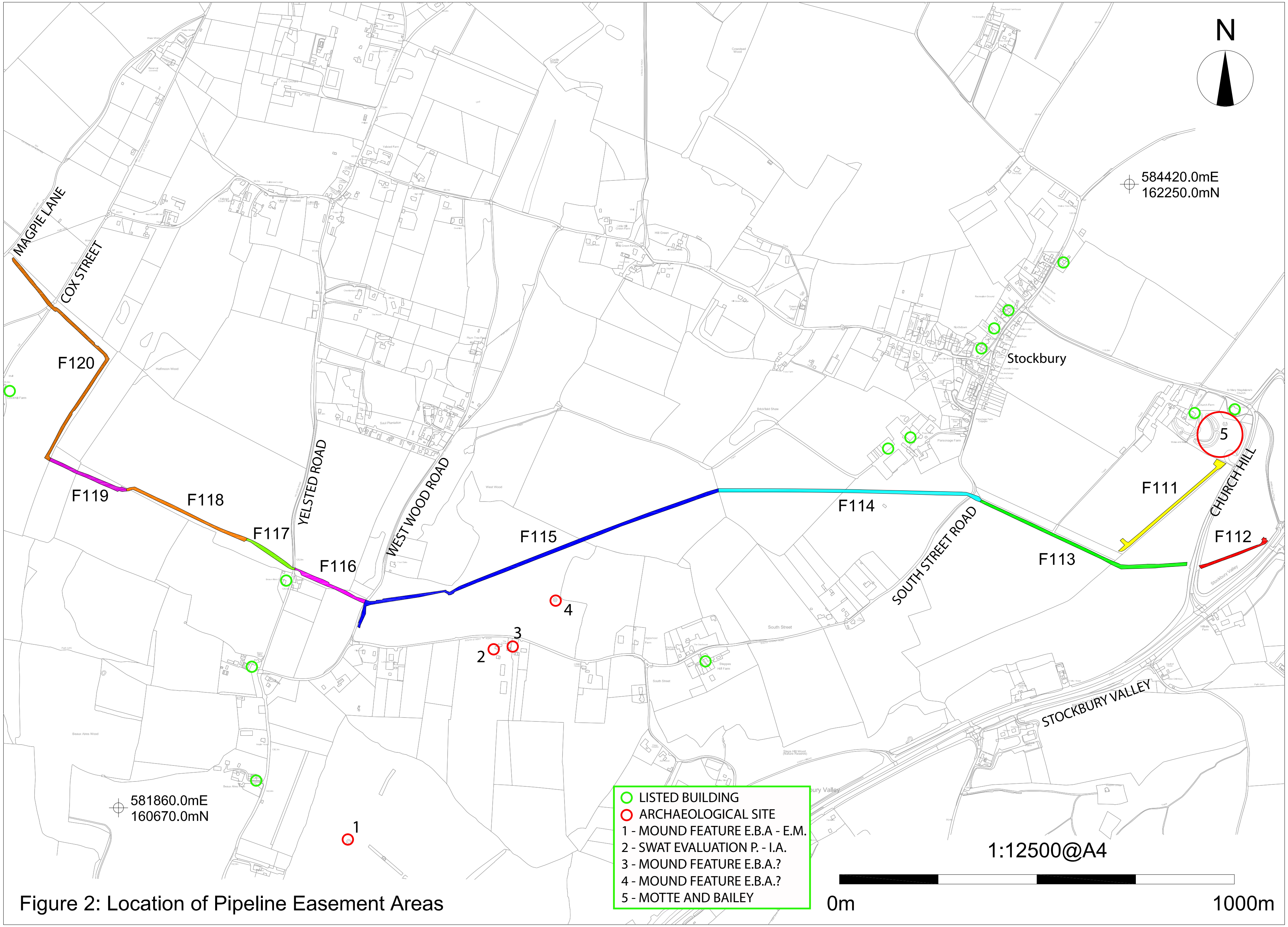


Figure 2: Location of Pipeline Easement Areas

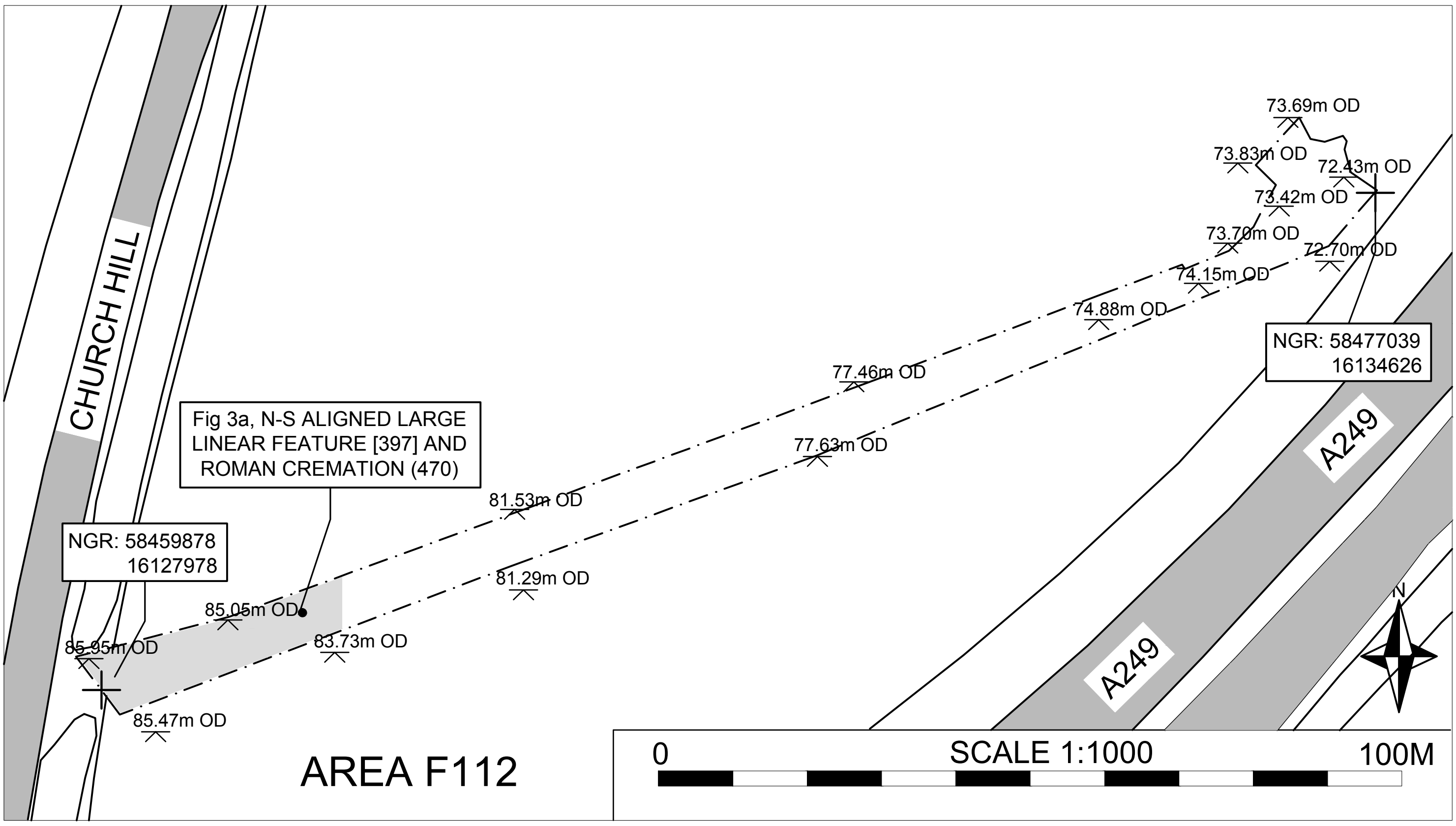


Figure 3: Easement plan; Area F112

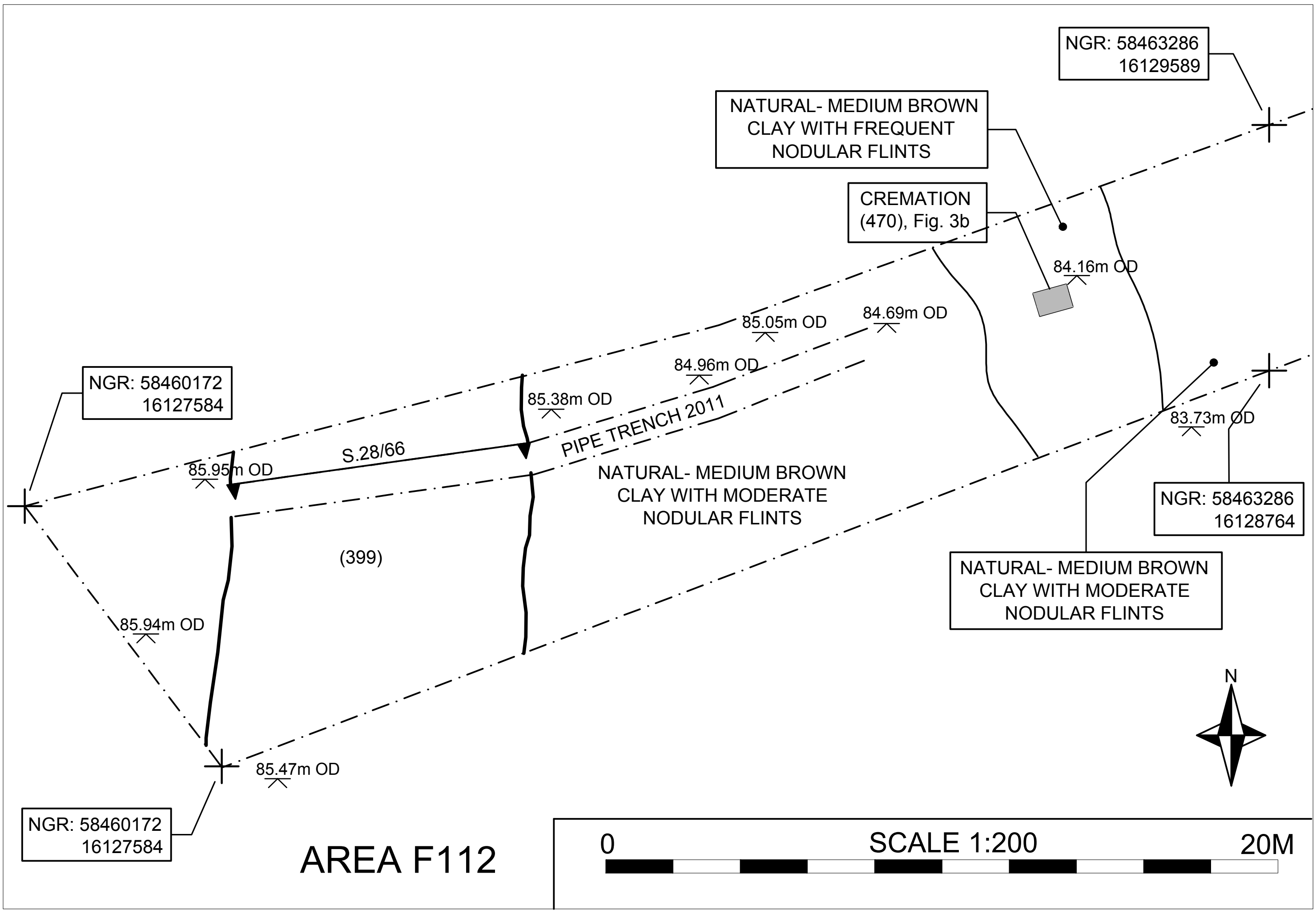


Figure 3a: Site plan; Area F112

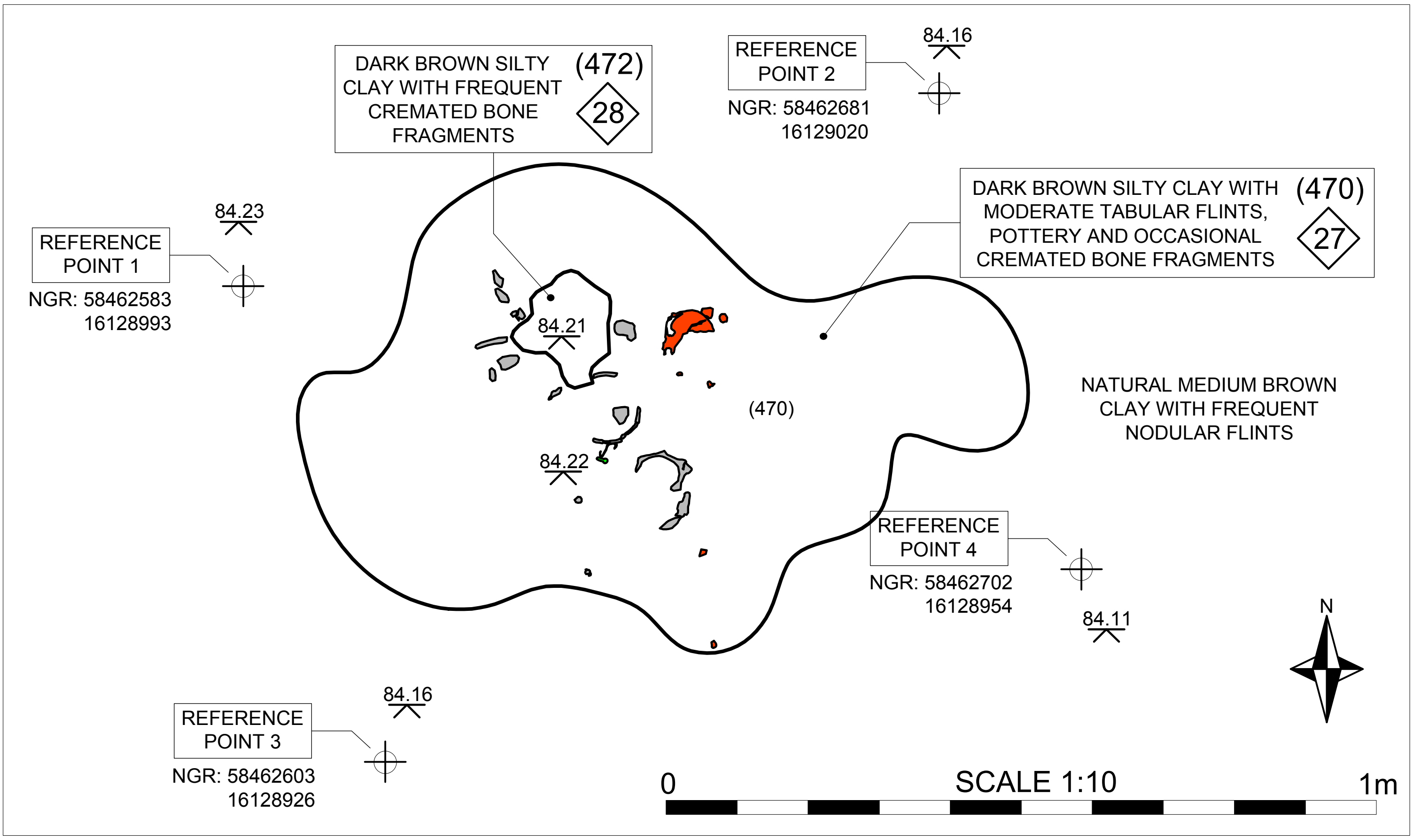


Figure 3b: Area F112; Pre excavation plan of Roman Cremation

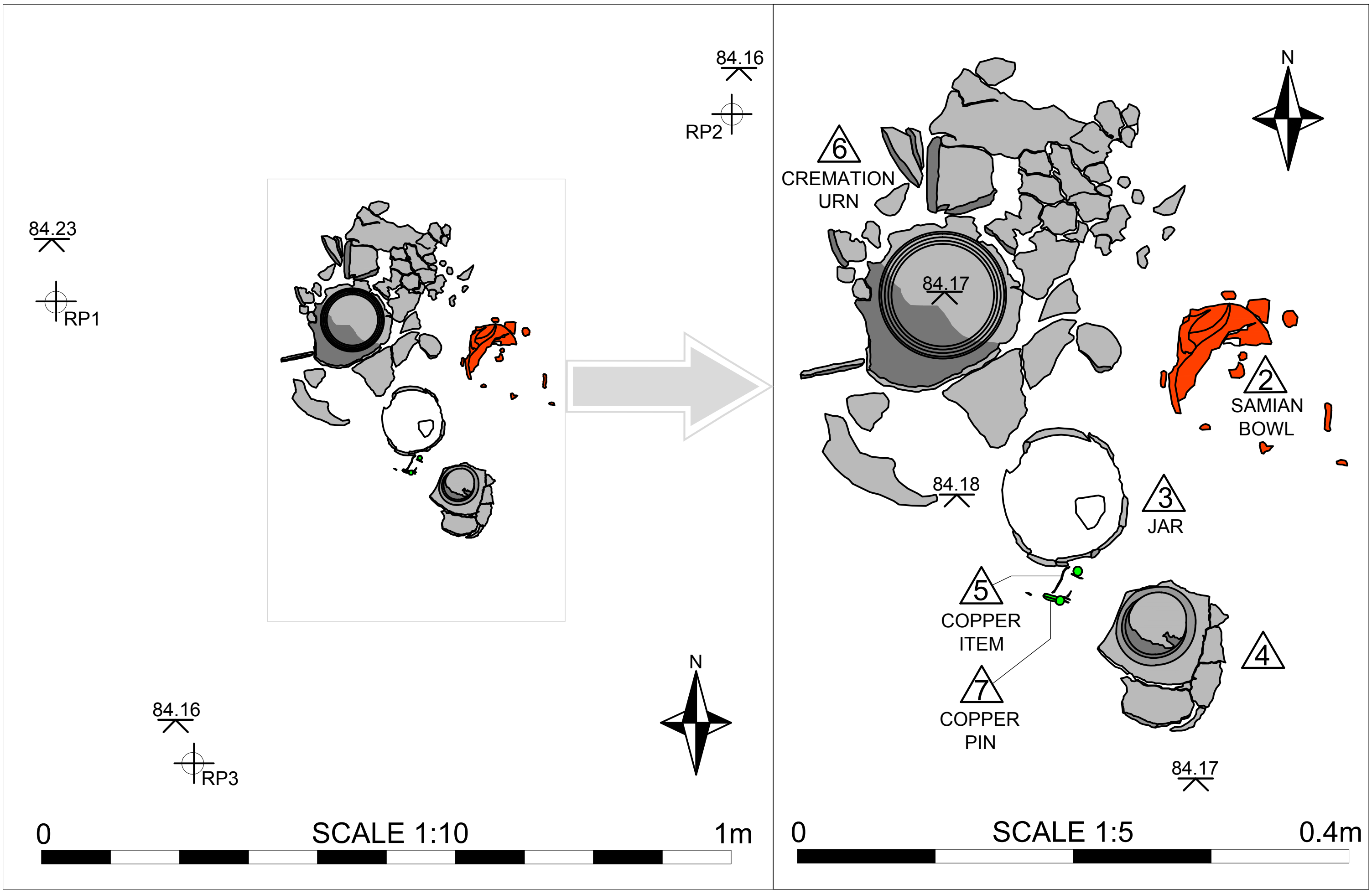


Figure 3c: Area F112; Post excavation plan of Roman Cremation

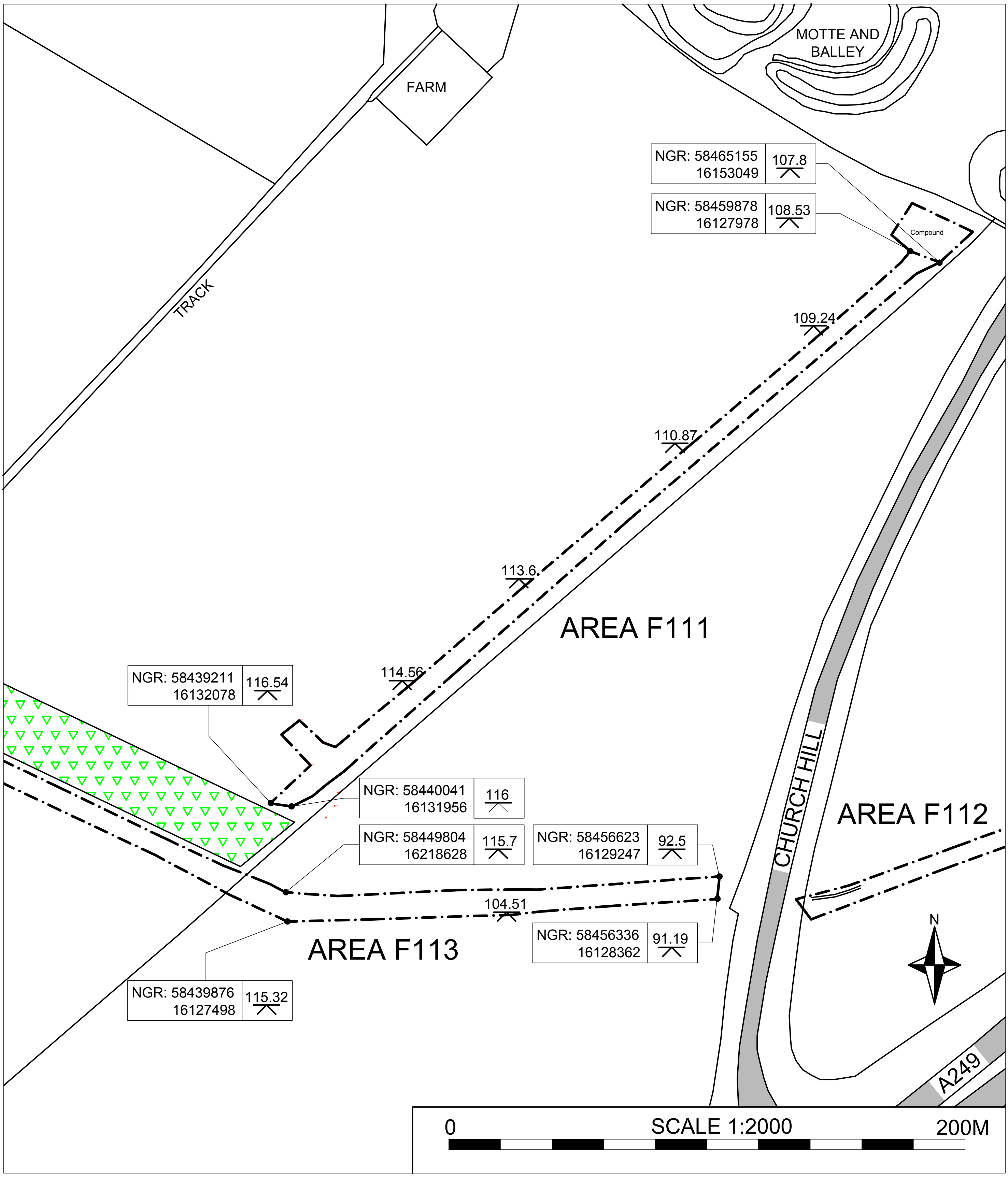


Figure 4: Easement plan; Area F111 and East part of Area F113

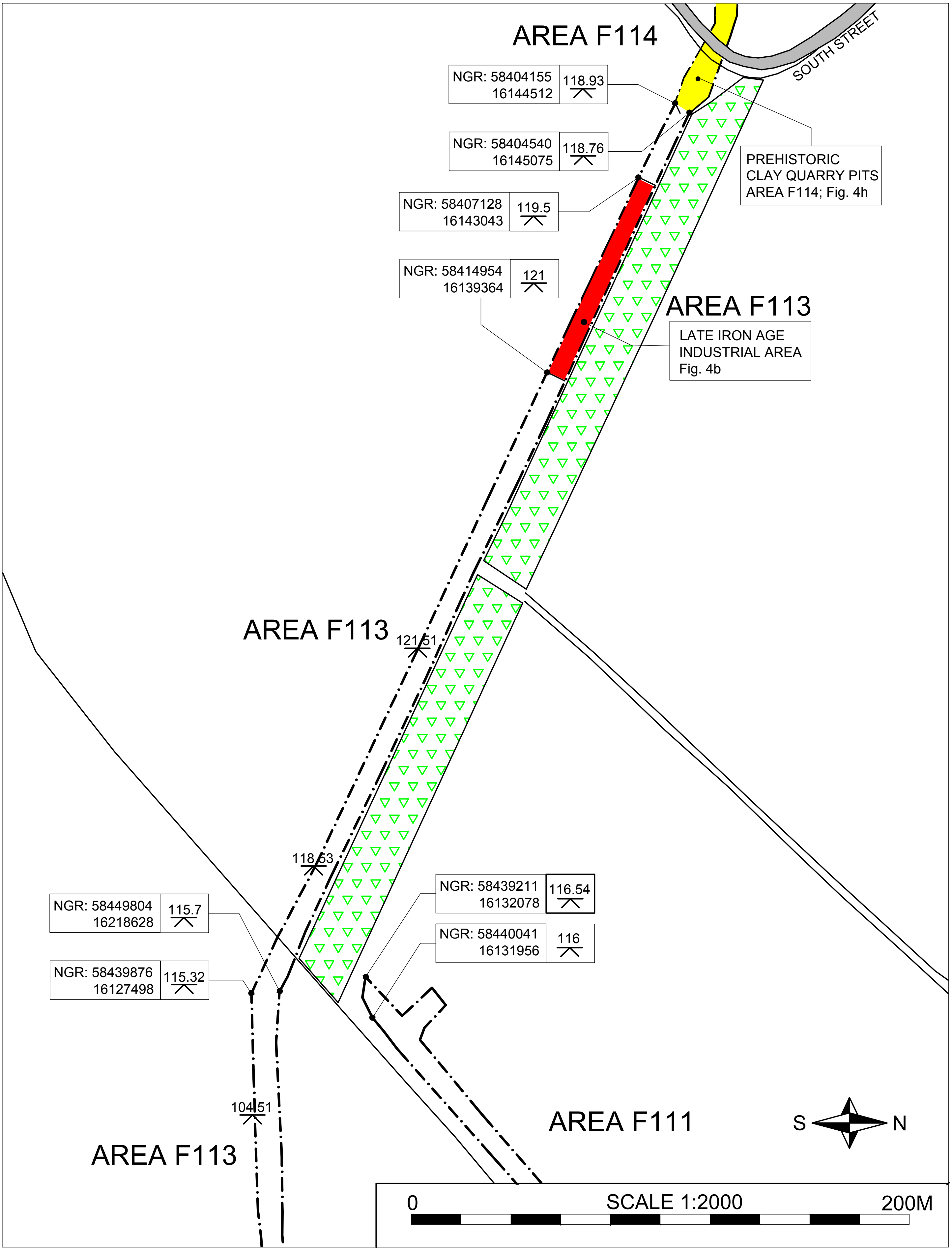


Figure 4a: Easement plan; Area F113

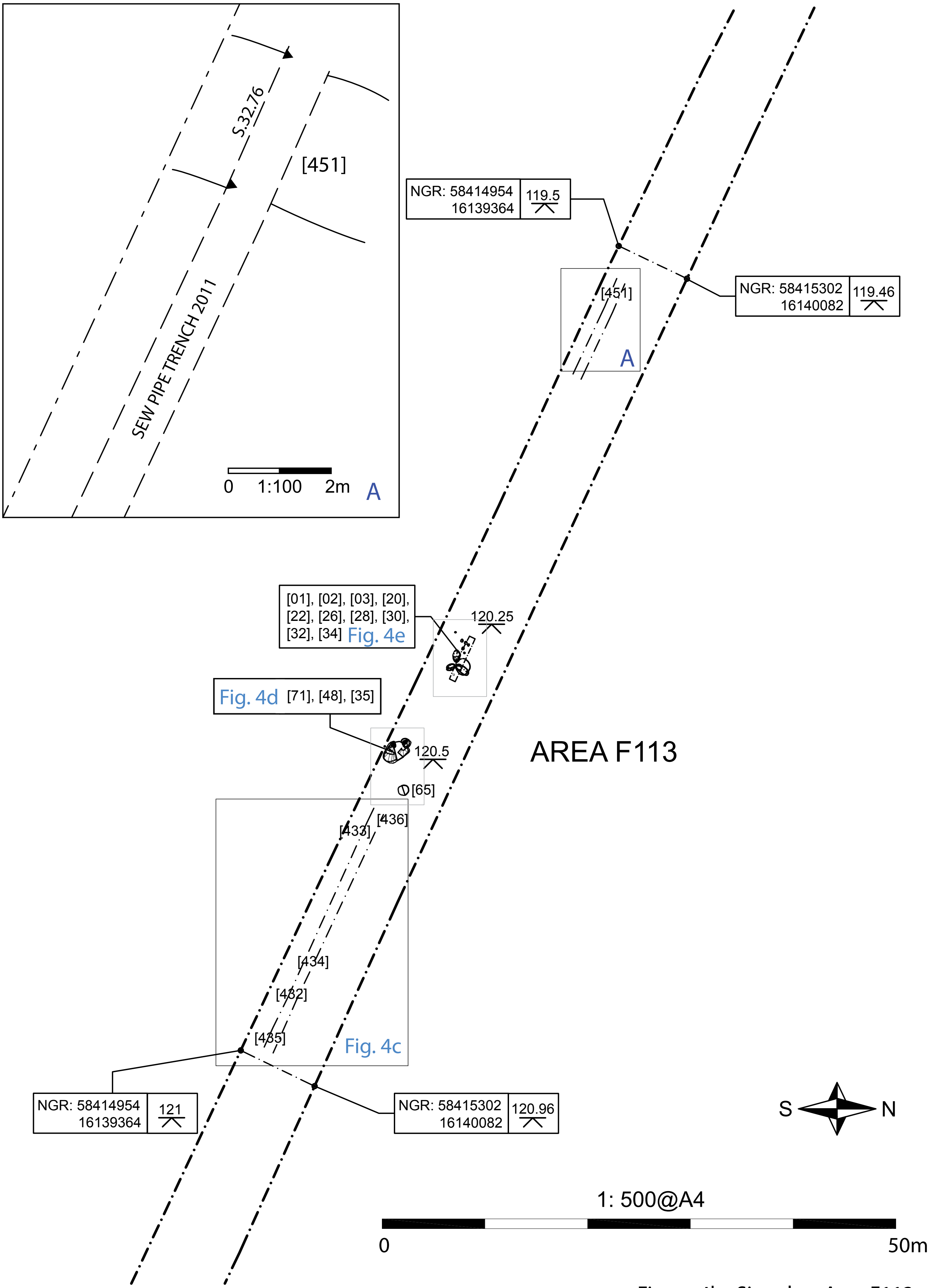


Figure 4b: Site plan; Area F113

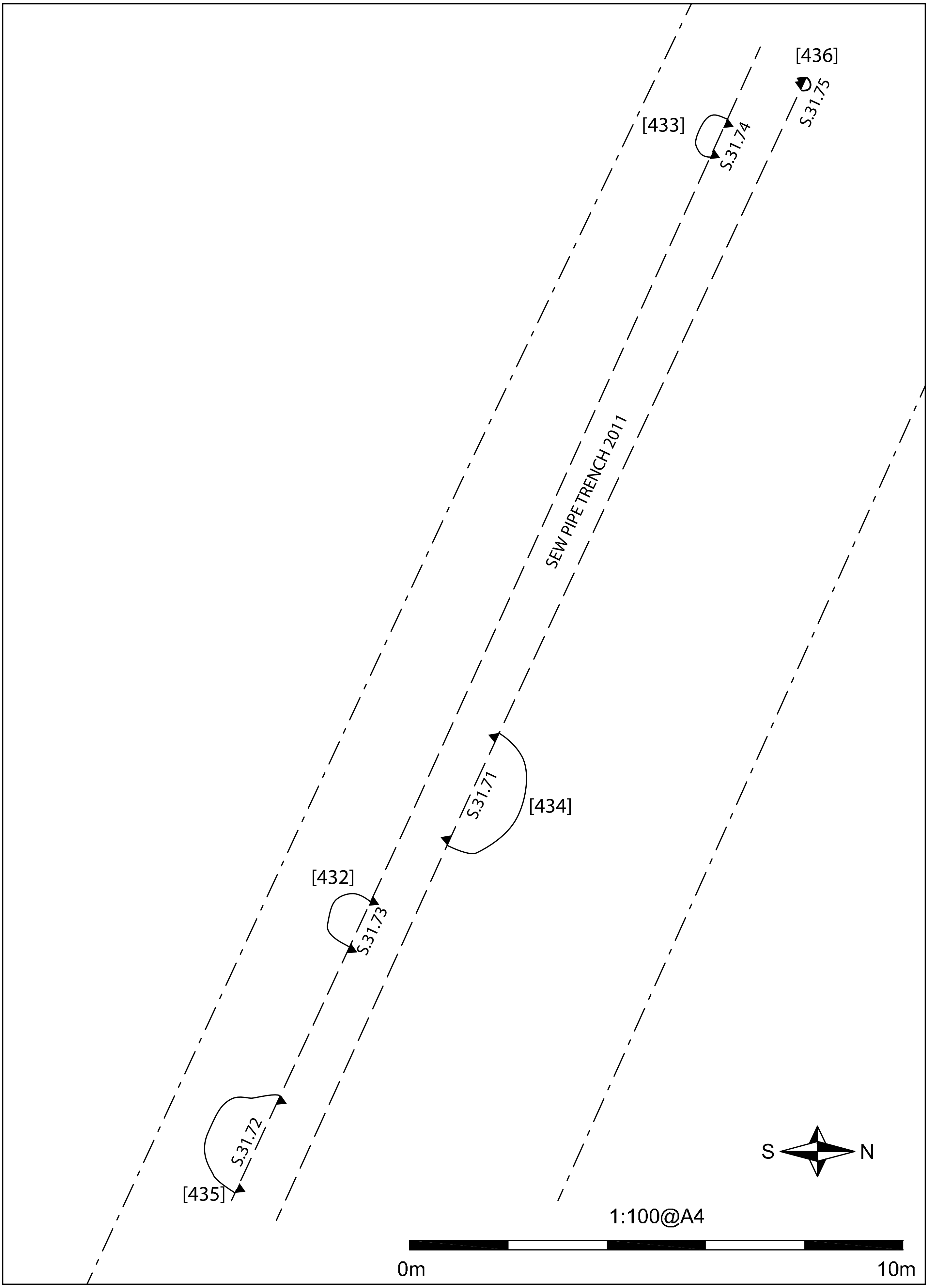


Figure 4c: Site plan; Area F113

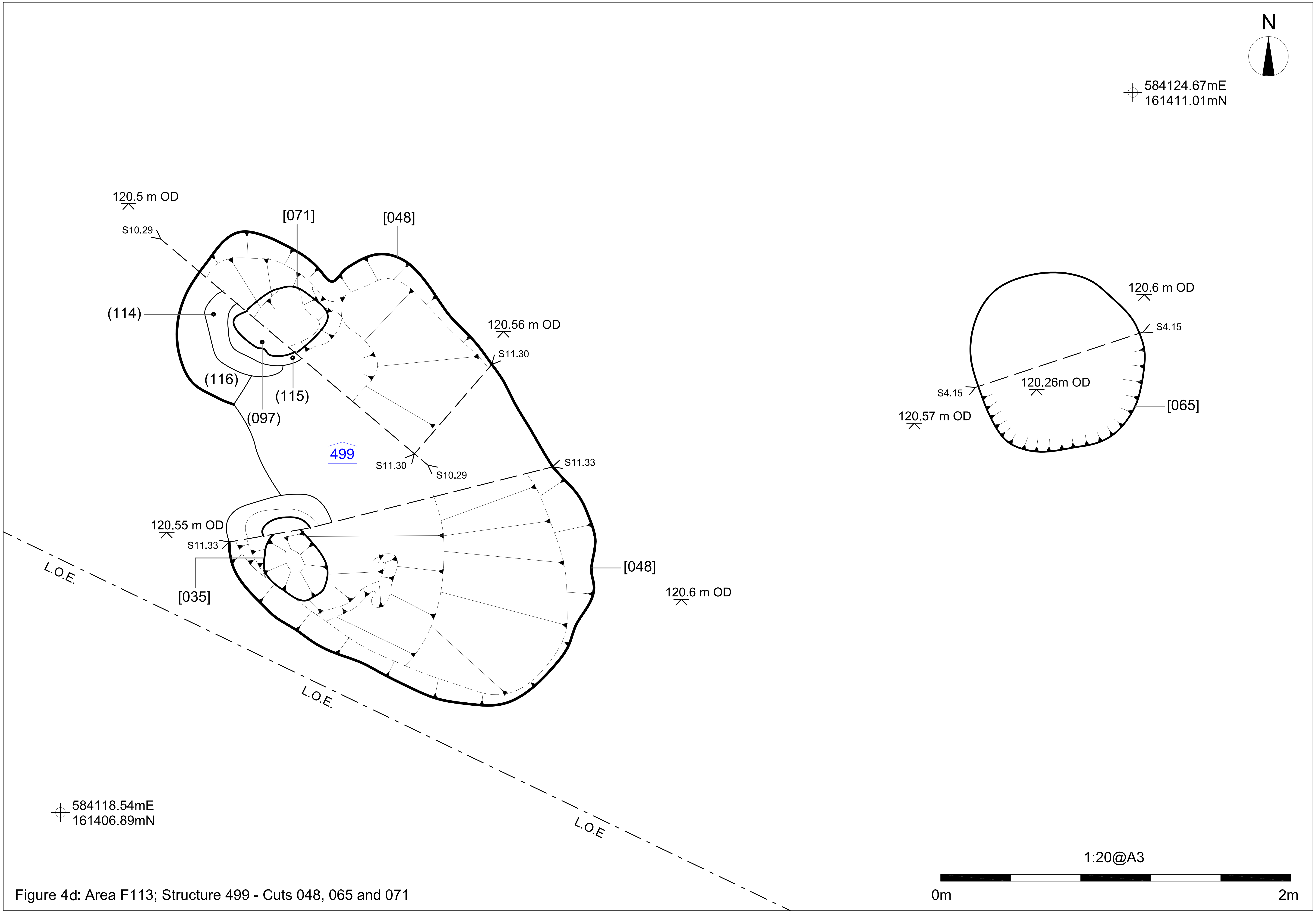


Figure 4d: Area F113; Structure 499 - Cuts 048, 065 and 071

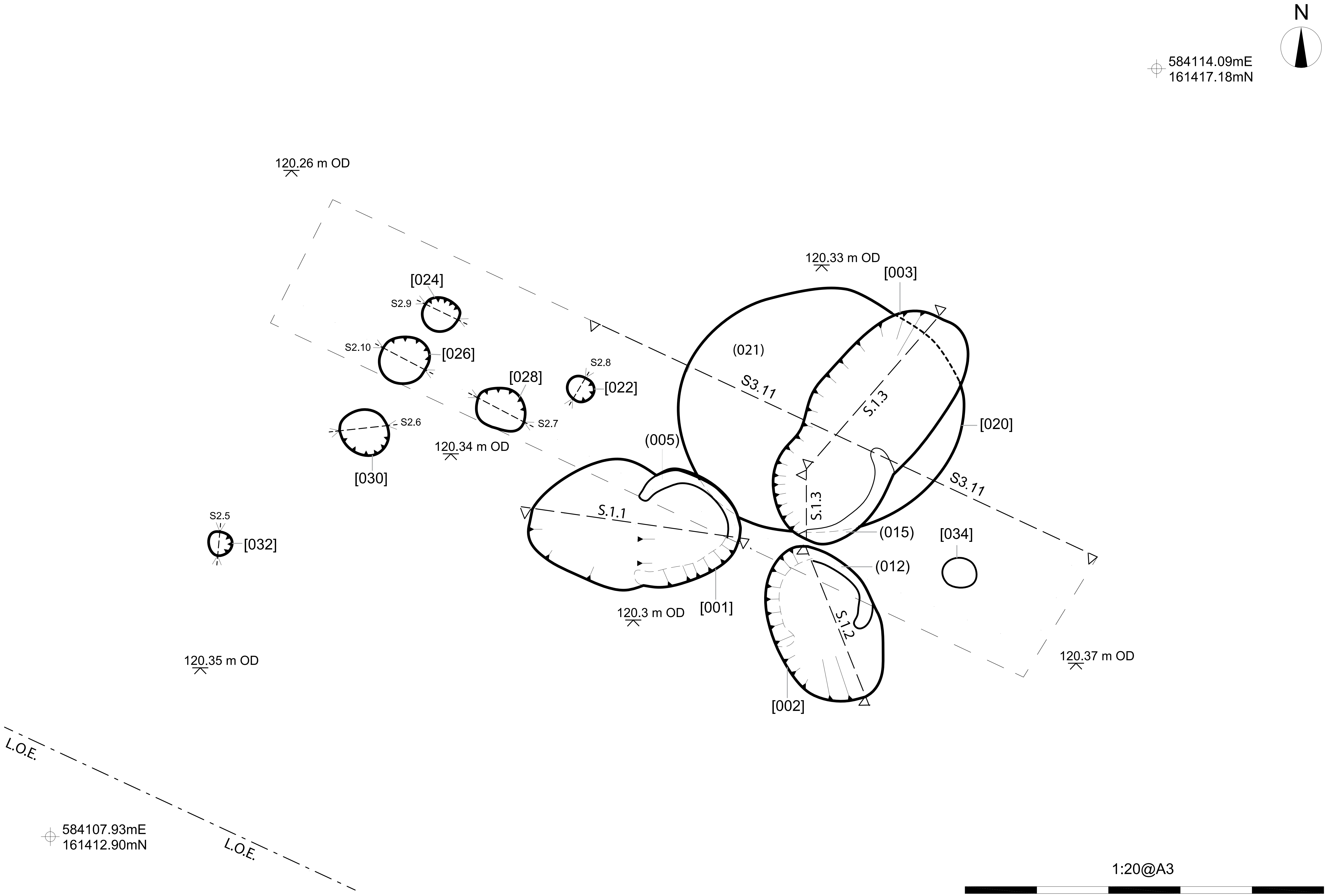


Figure 4e: Area F113; Cuts 001, 002, 003, 020, 022, 024, 026, 028, 030, 032 and 034

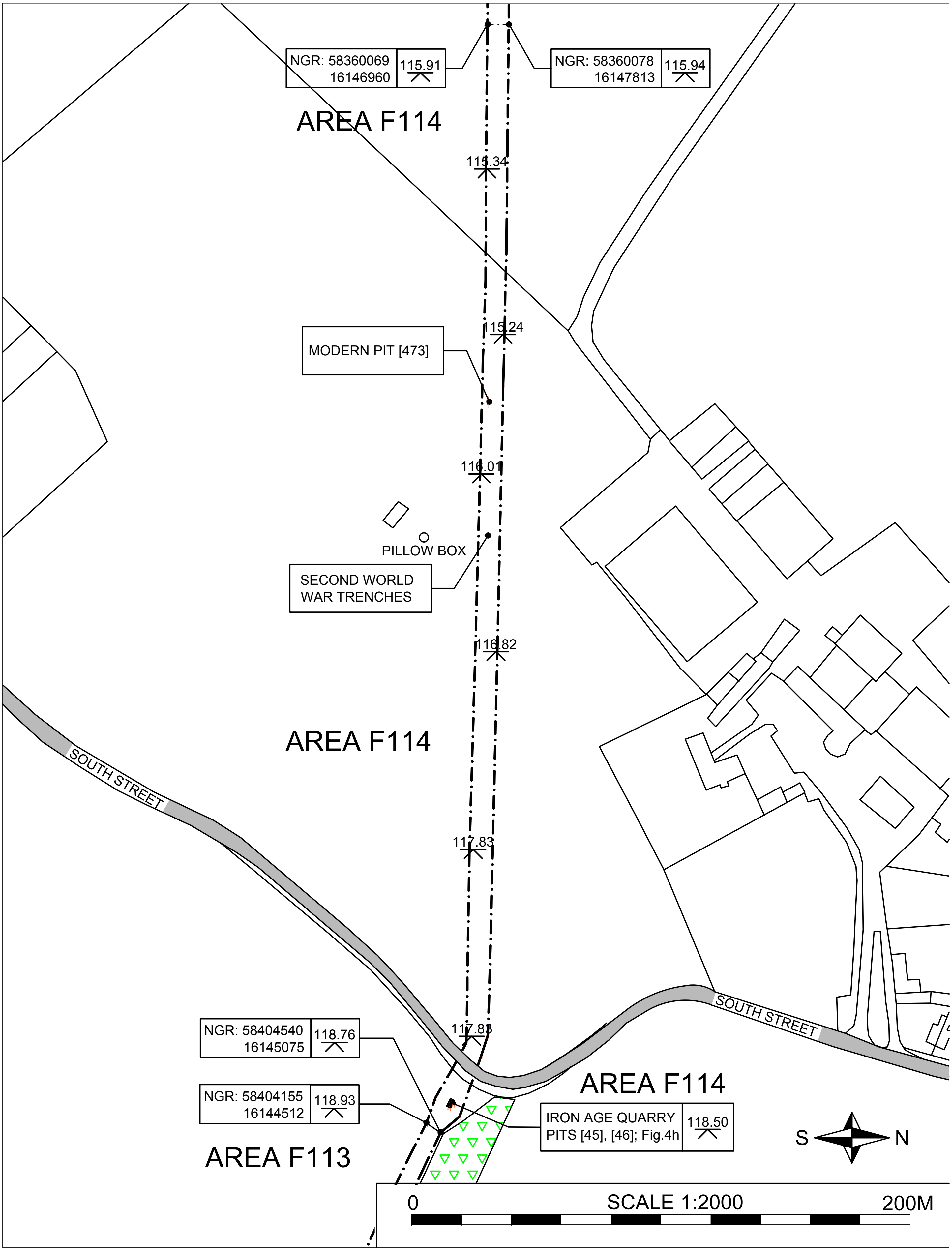


Figure 4f: Easement plan, eastern part of Area F114

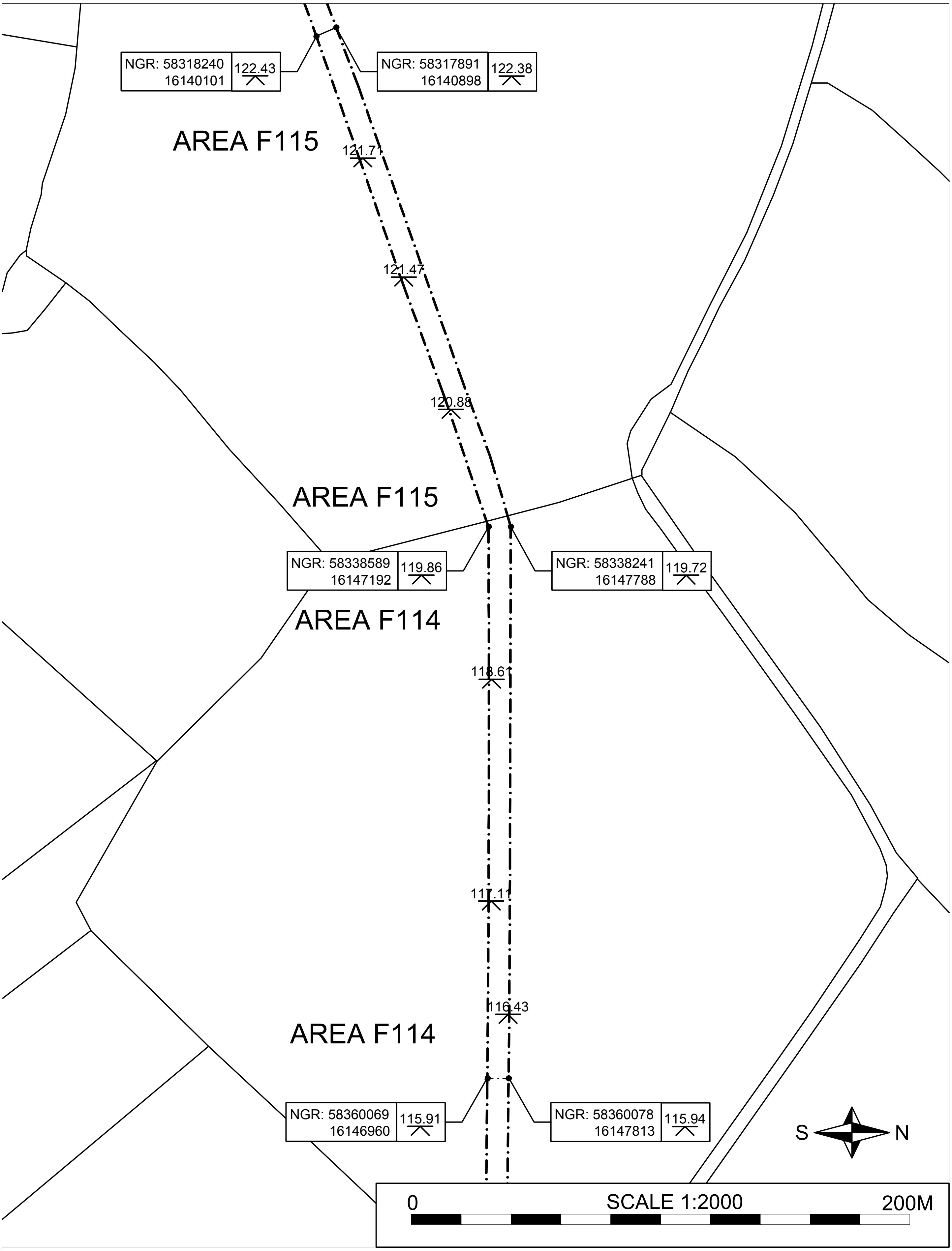


Figure 4g: Easement plan, western part of Area F114

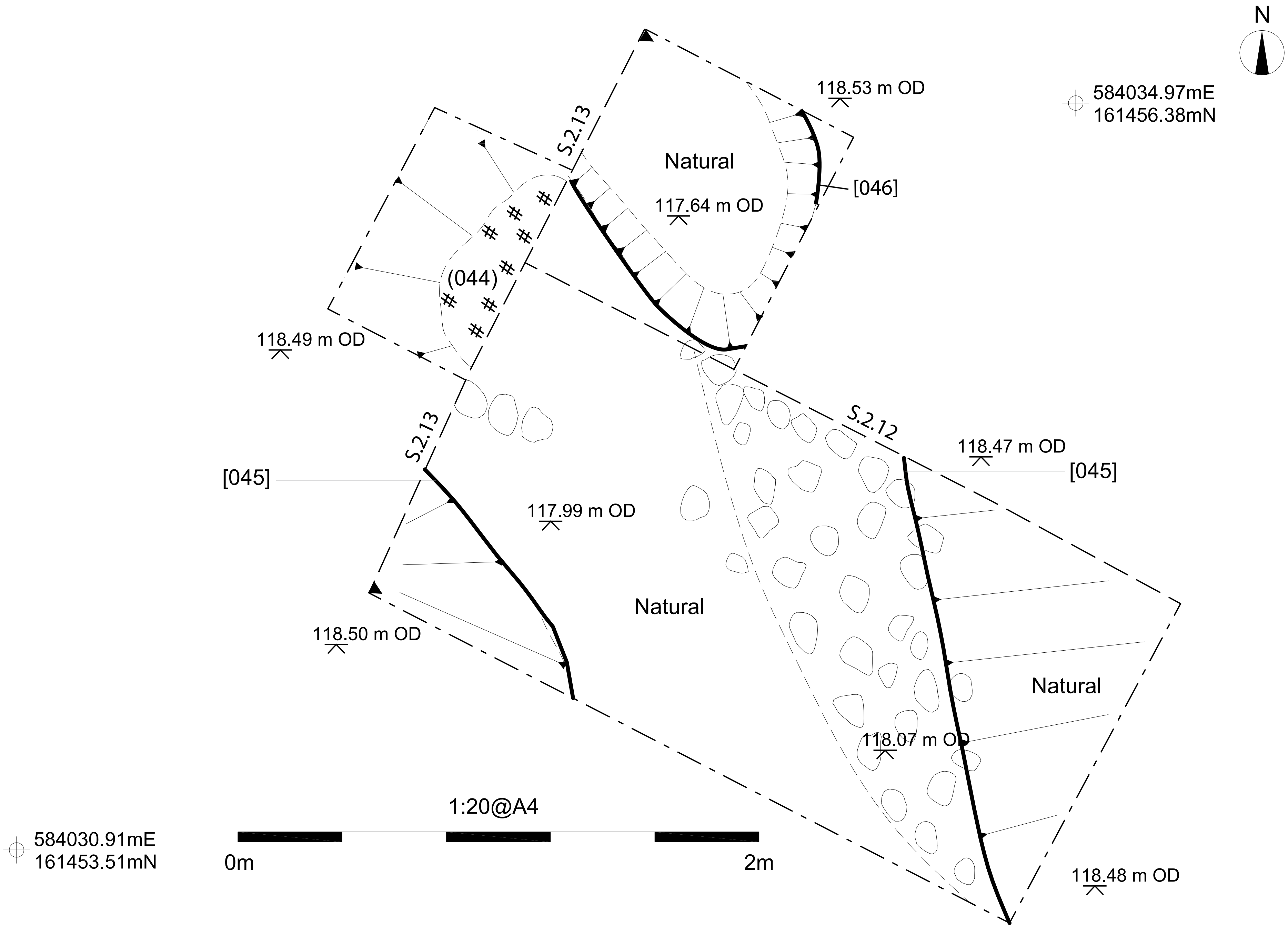


Figure 4h: Area F114; Cut 045 and 046

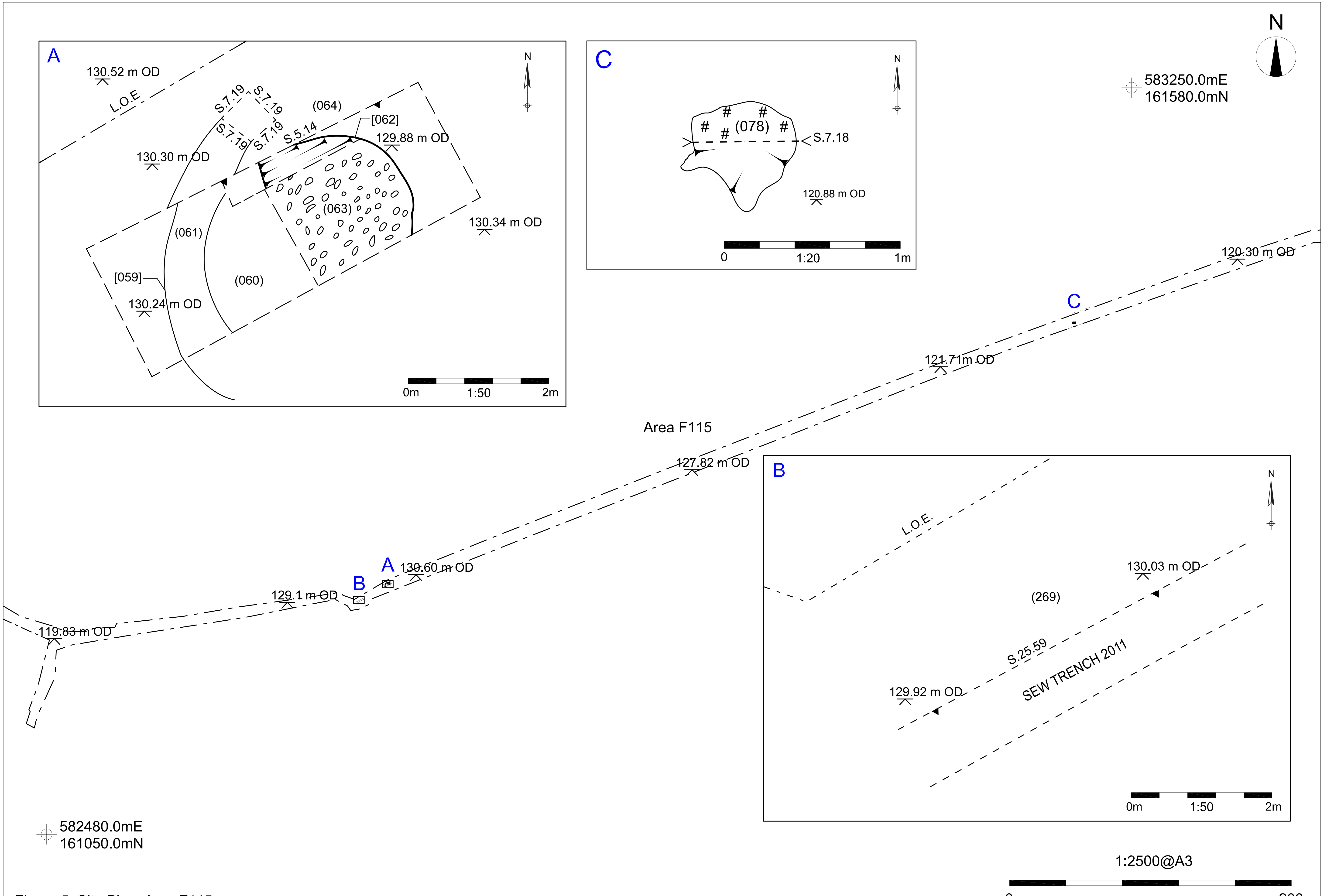


Figure 5: Site Plan; Area F115

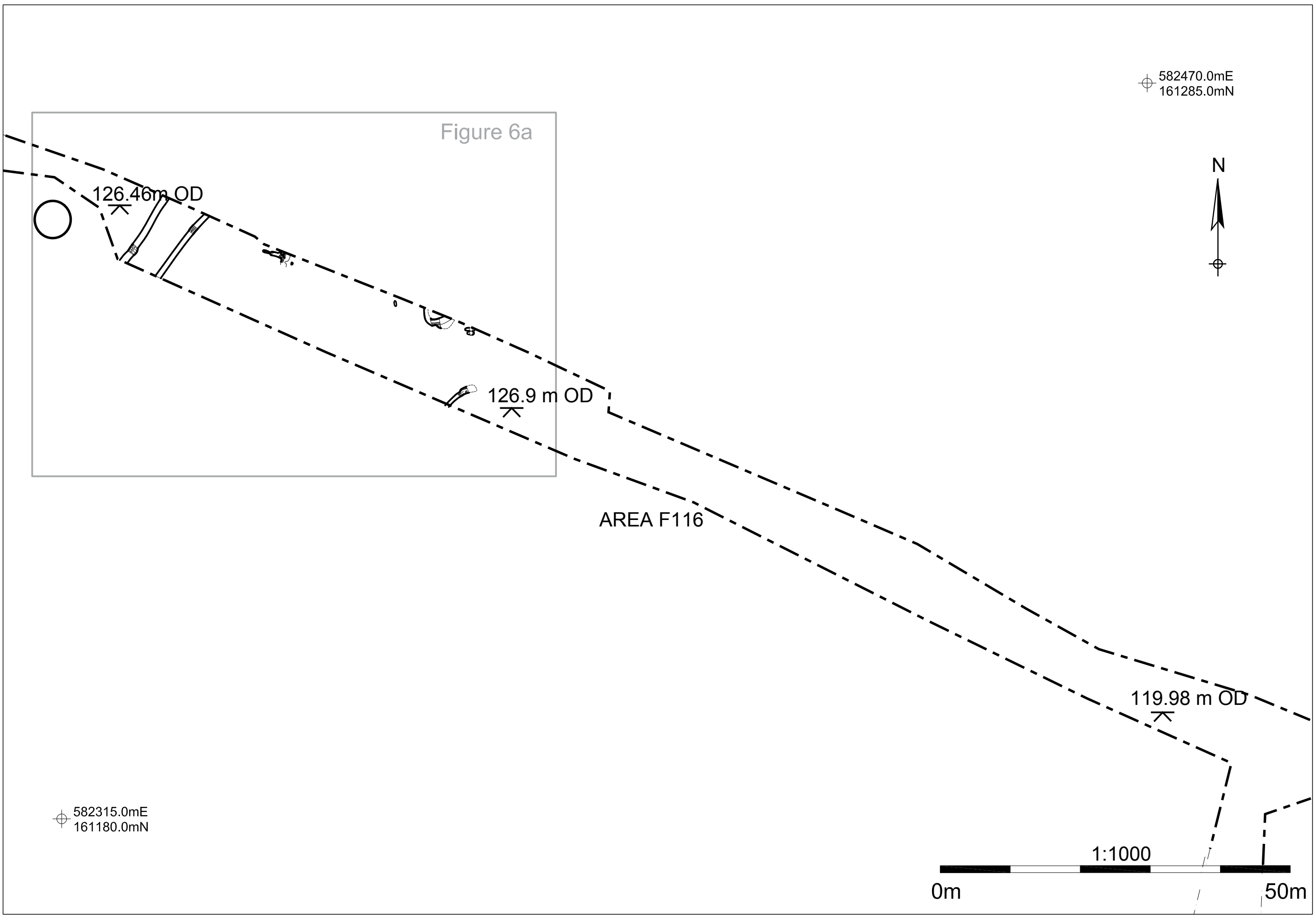


Figure 6: Easement Plan; Area F116

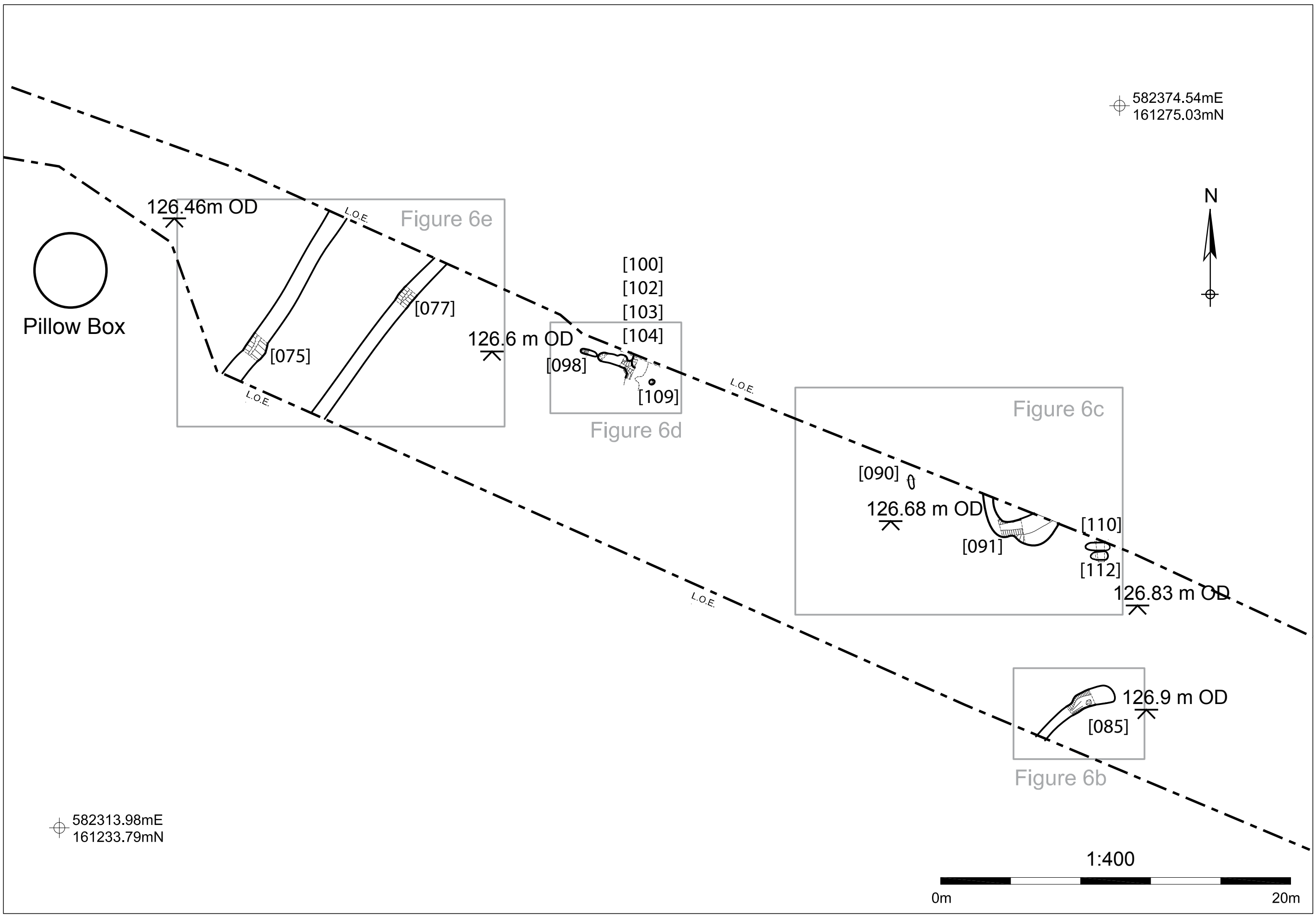


Figure 6a: Site Plan; Area F116

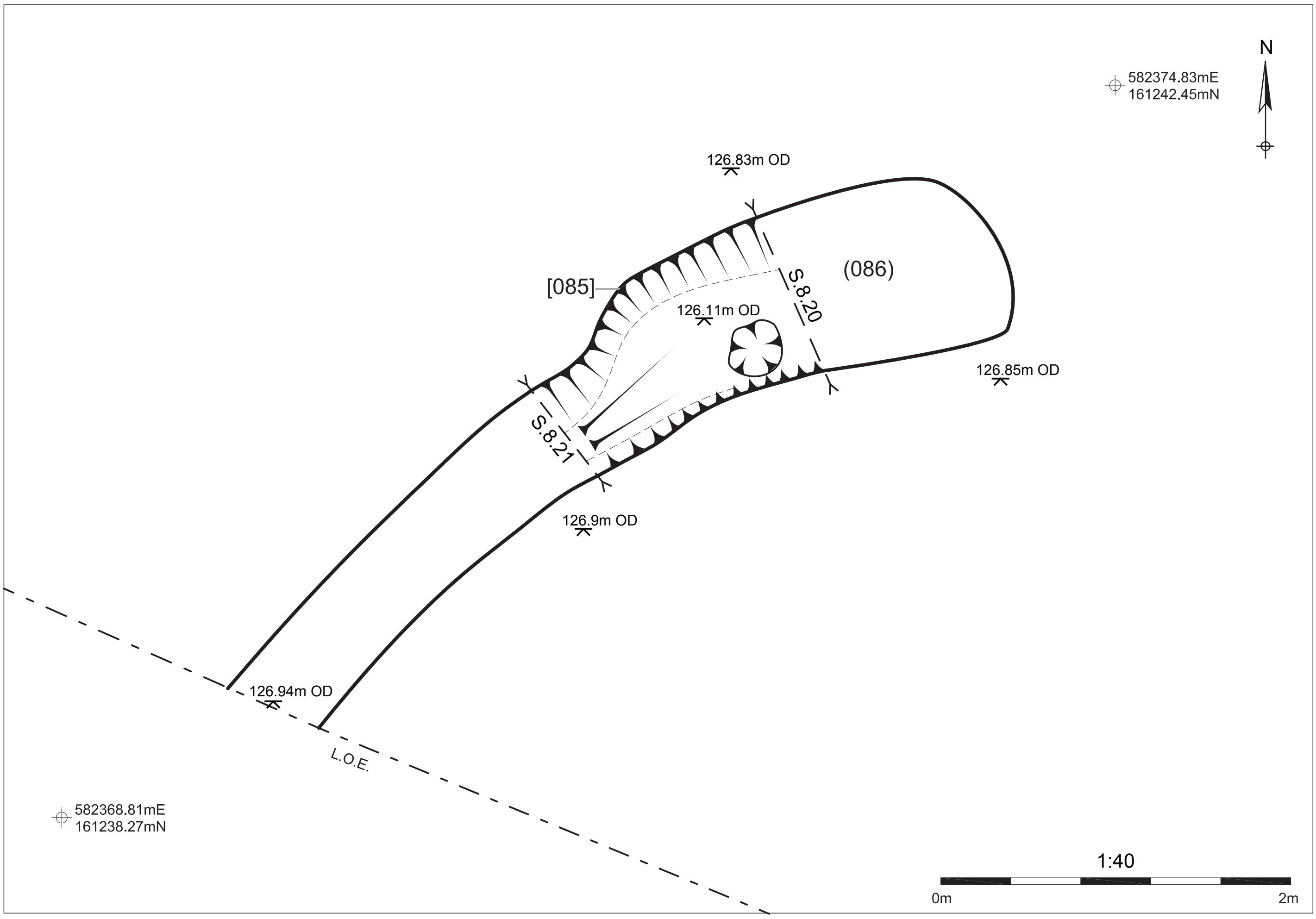


Figure 6b: Area F116; Cut 085

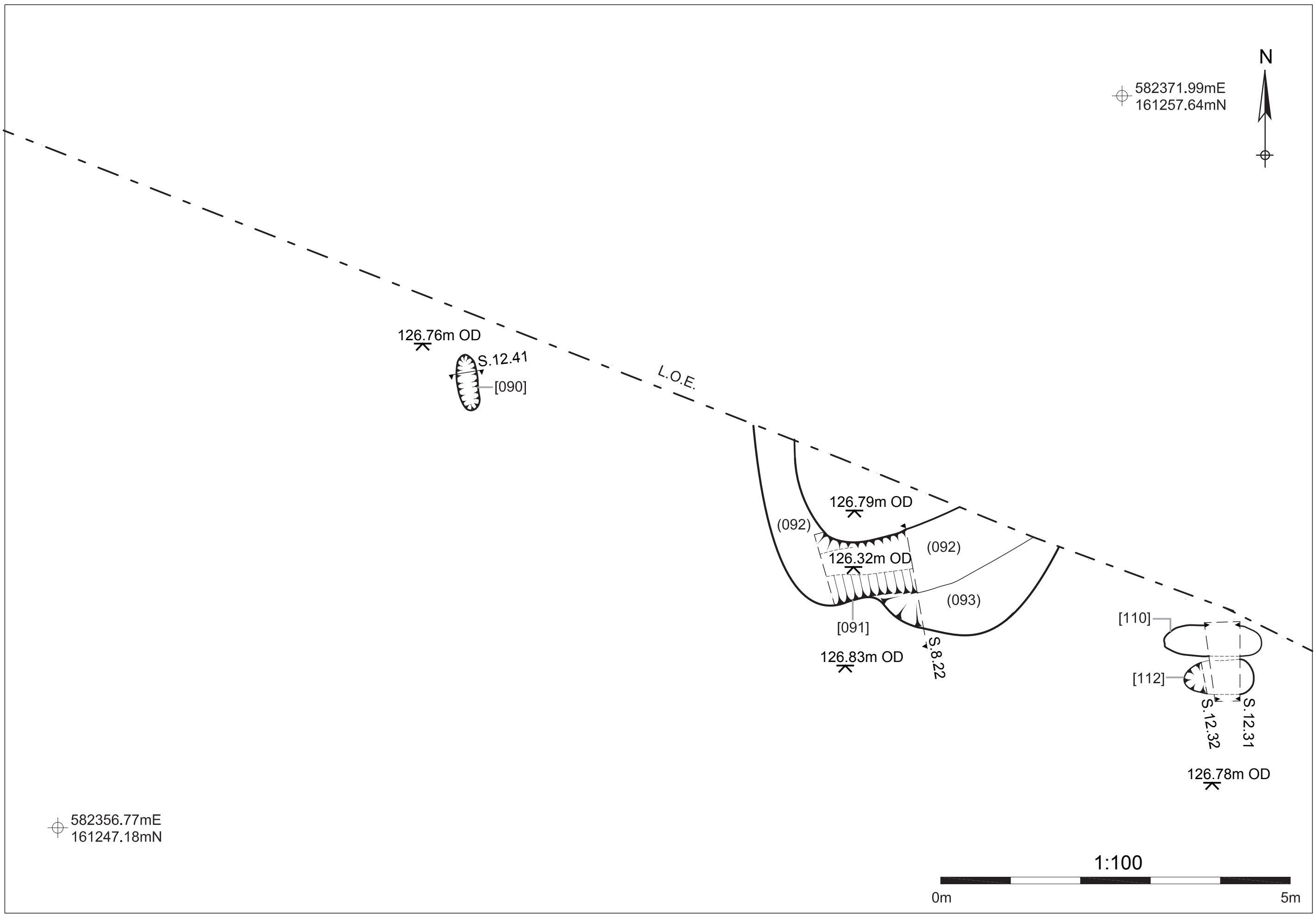


Figure 6c: Area F116; Cuts 090, 091, 110 and 112

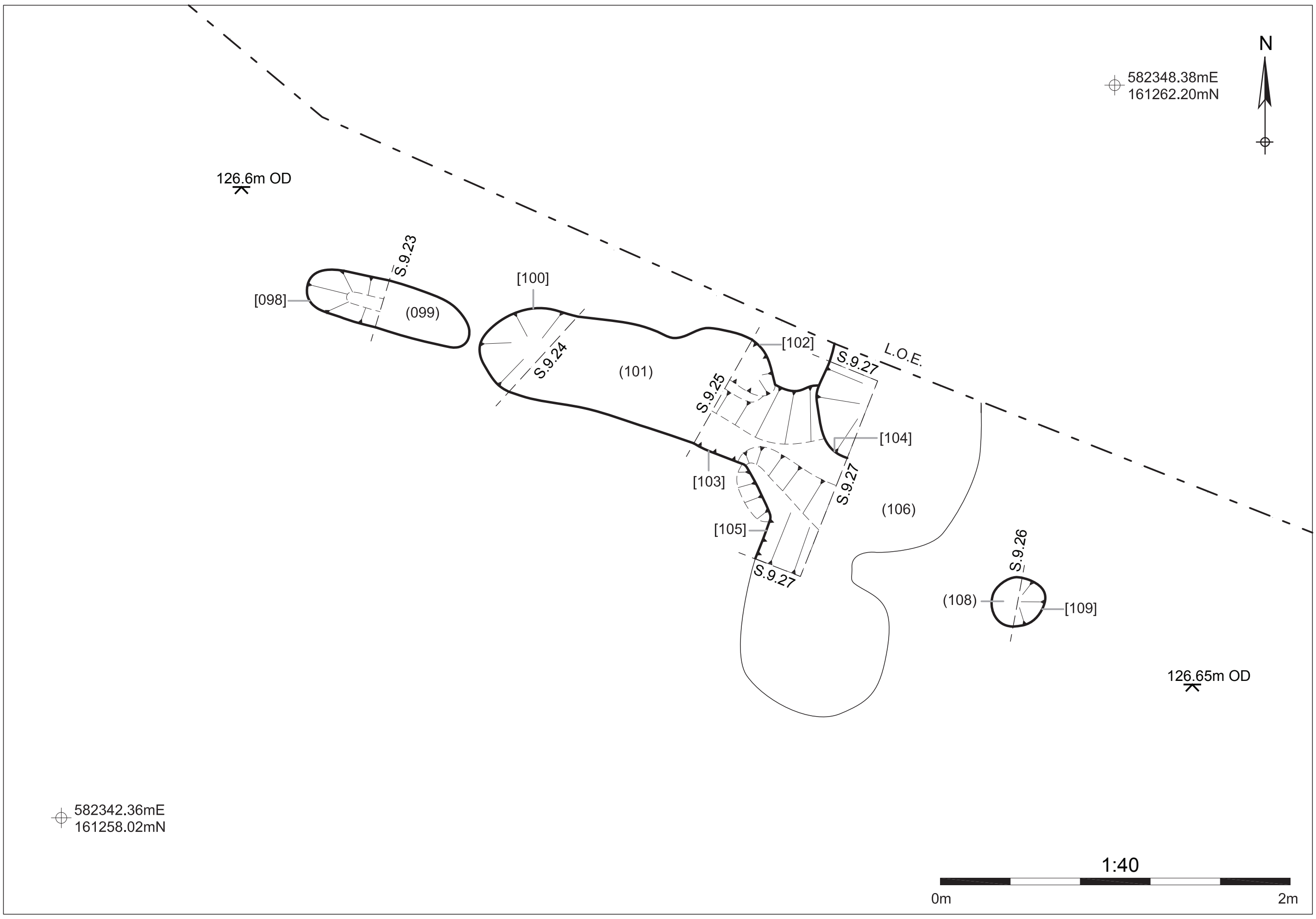


Figure 6d: Area F116; Cuts 098, 100, 102, 103, 104, 105 and 109

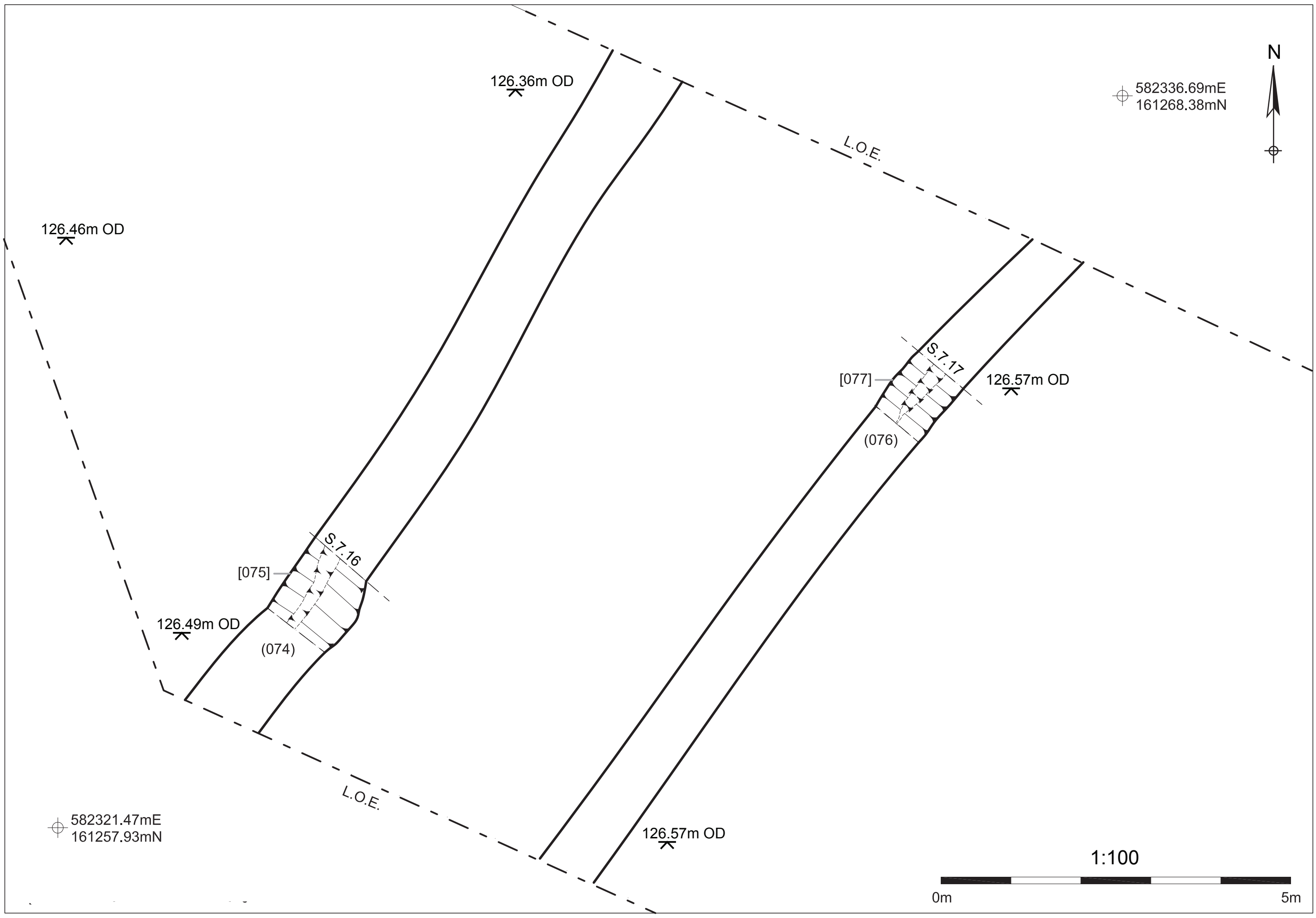


Figure 6e: Area F116; Cuts 075 and 077

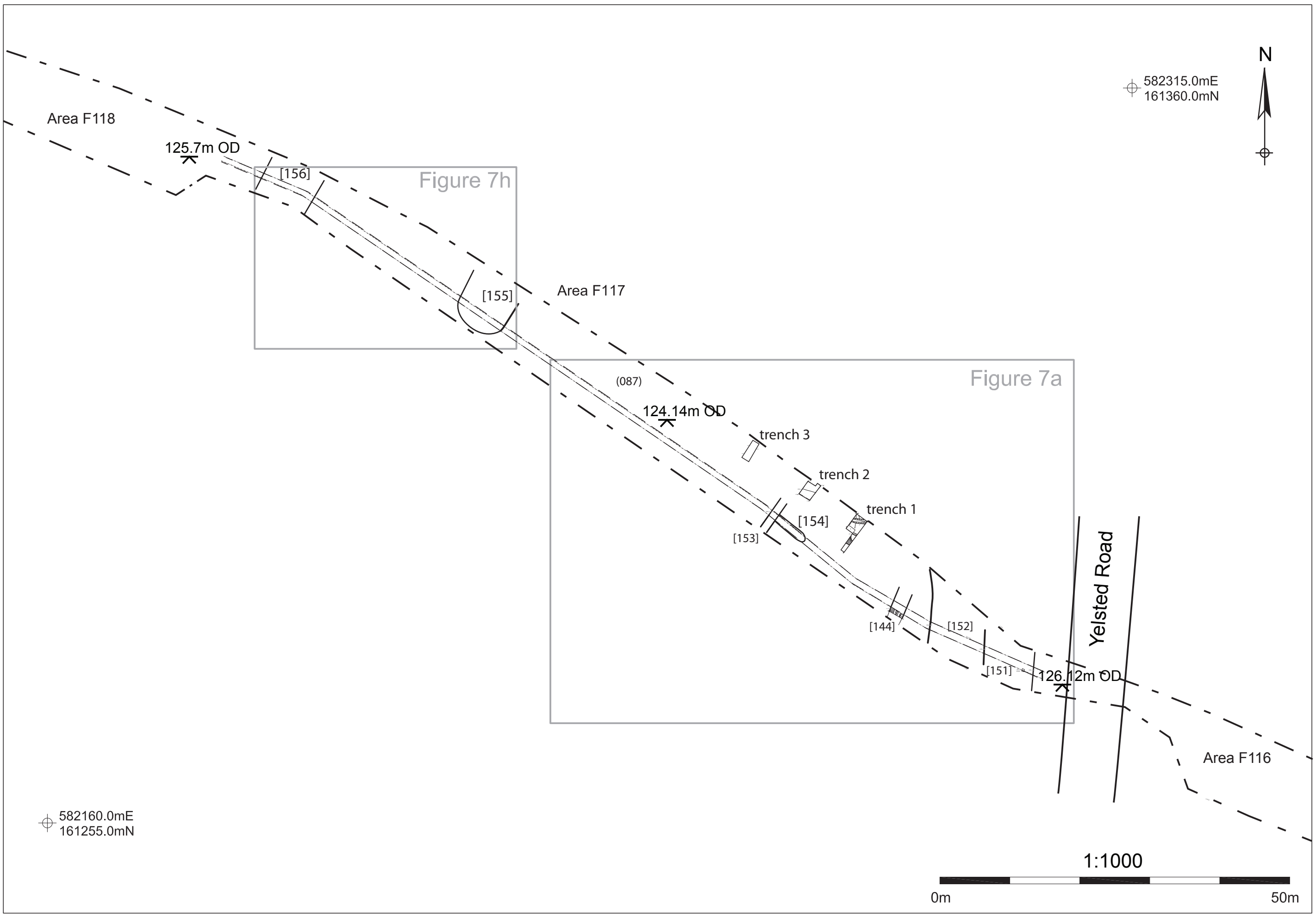


Figure 7: Site Plan; Area F117

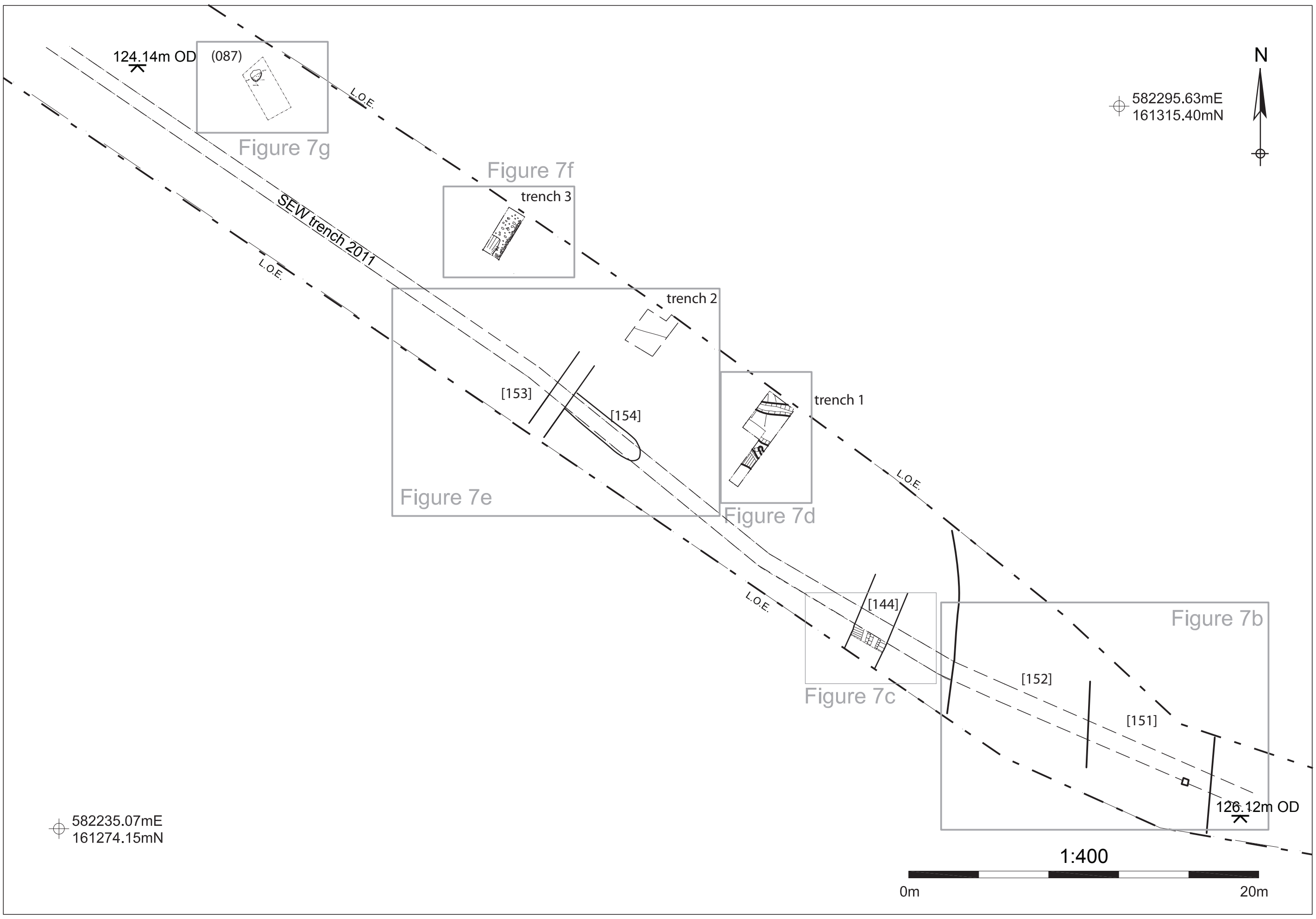


Figure 7a: Site Plan; Area F117

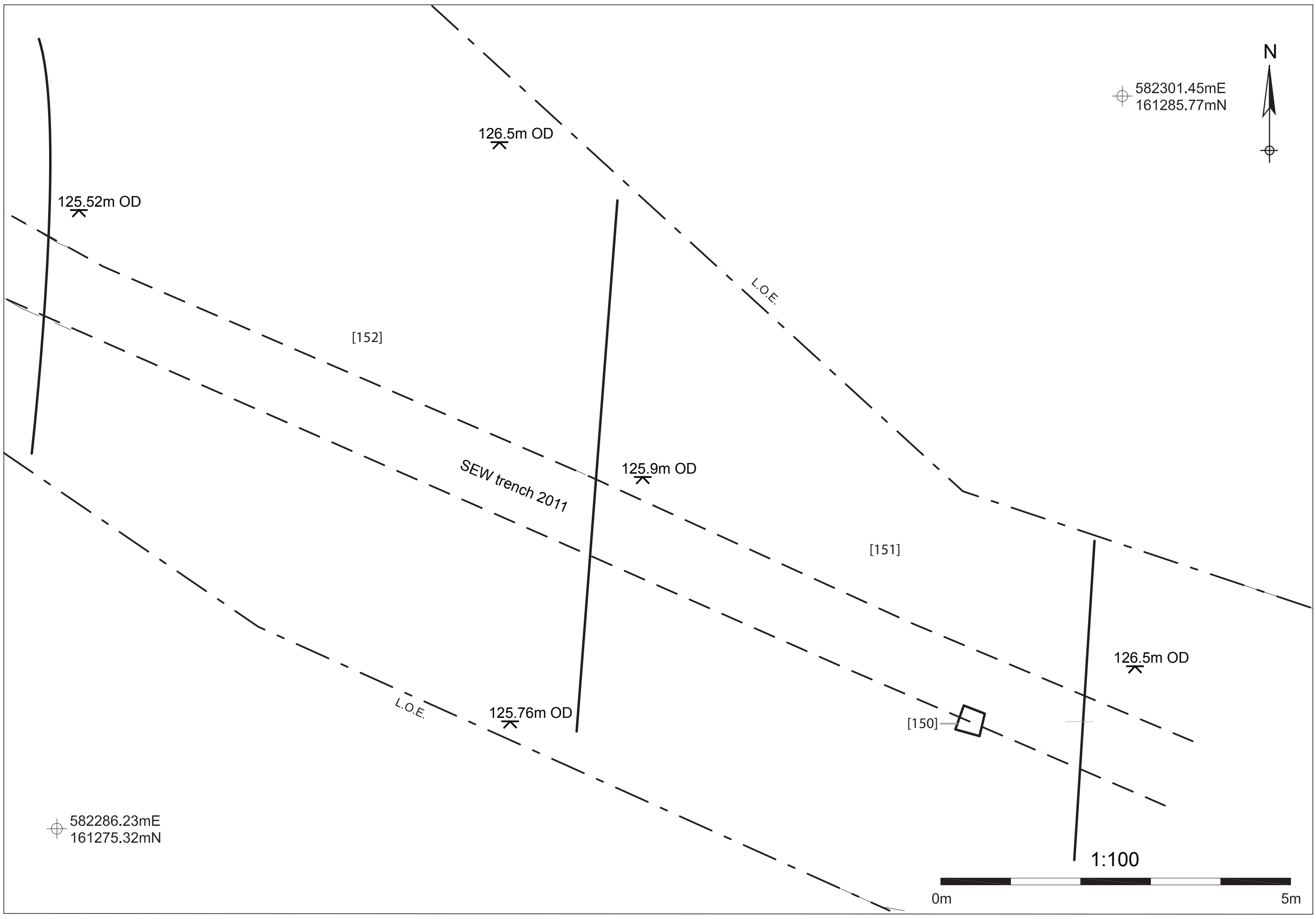


Figure 7b: Area F117; Cuts 150 and 151

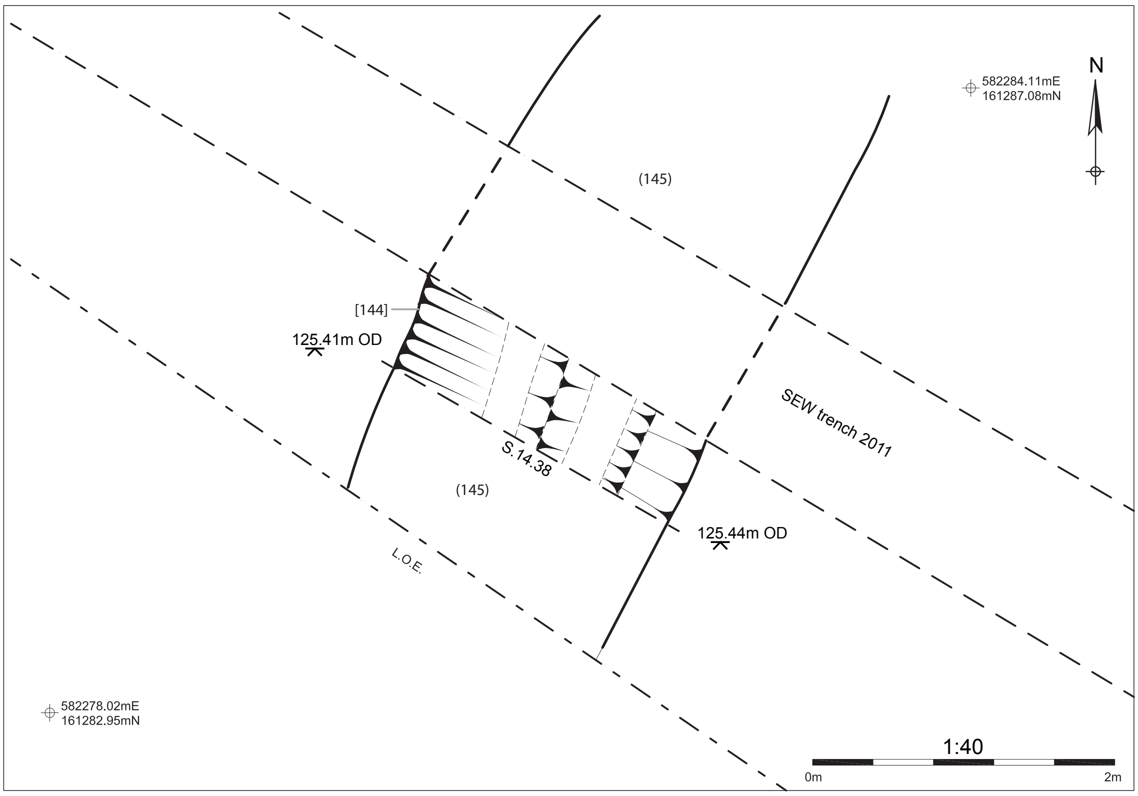


Figure 7c: Area F117; Cut 144

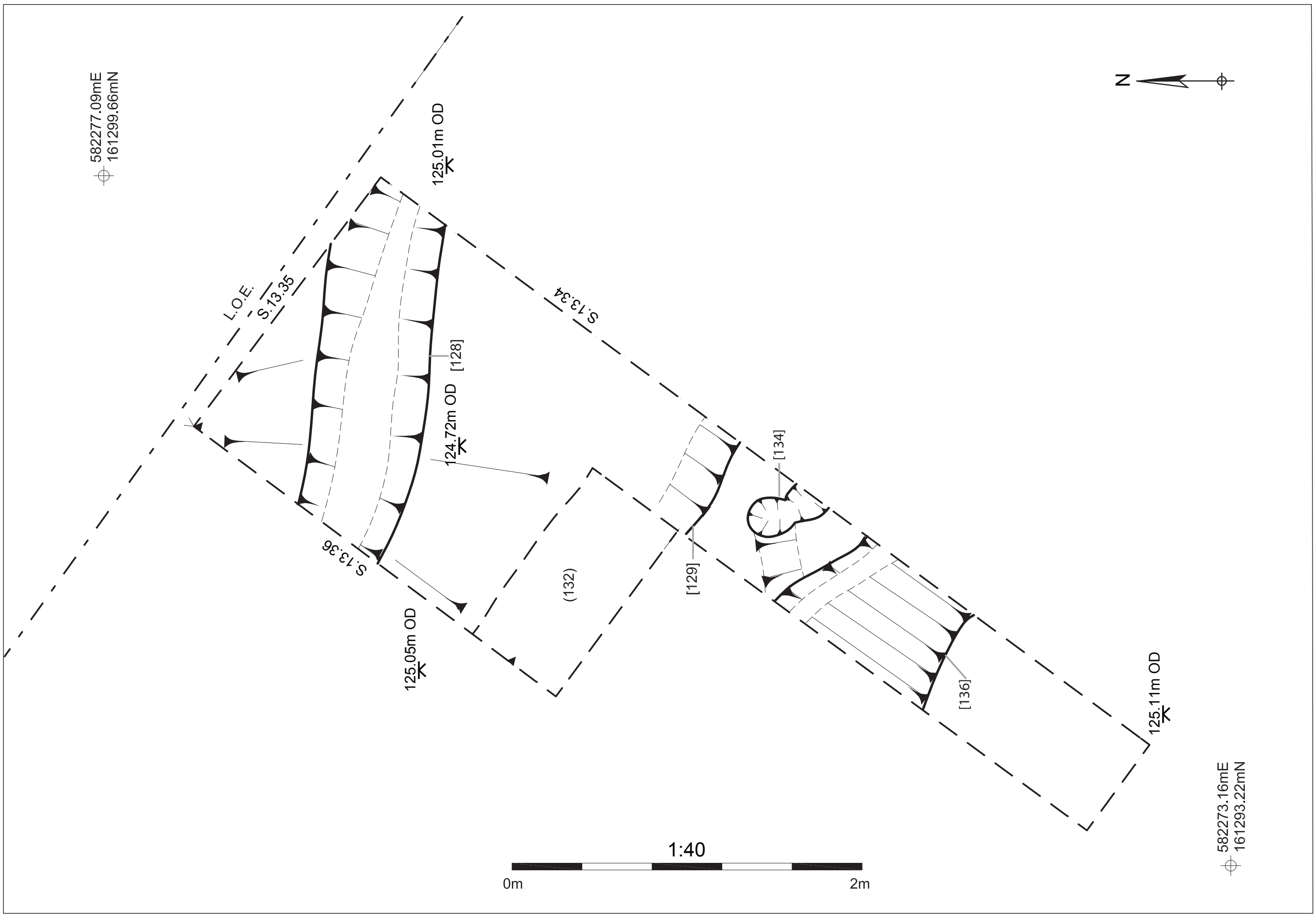


Figure 7d: Area F117; Cuts 128 and 129

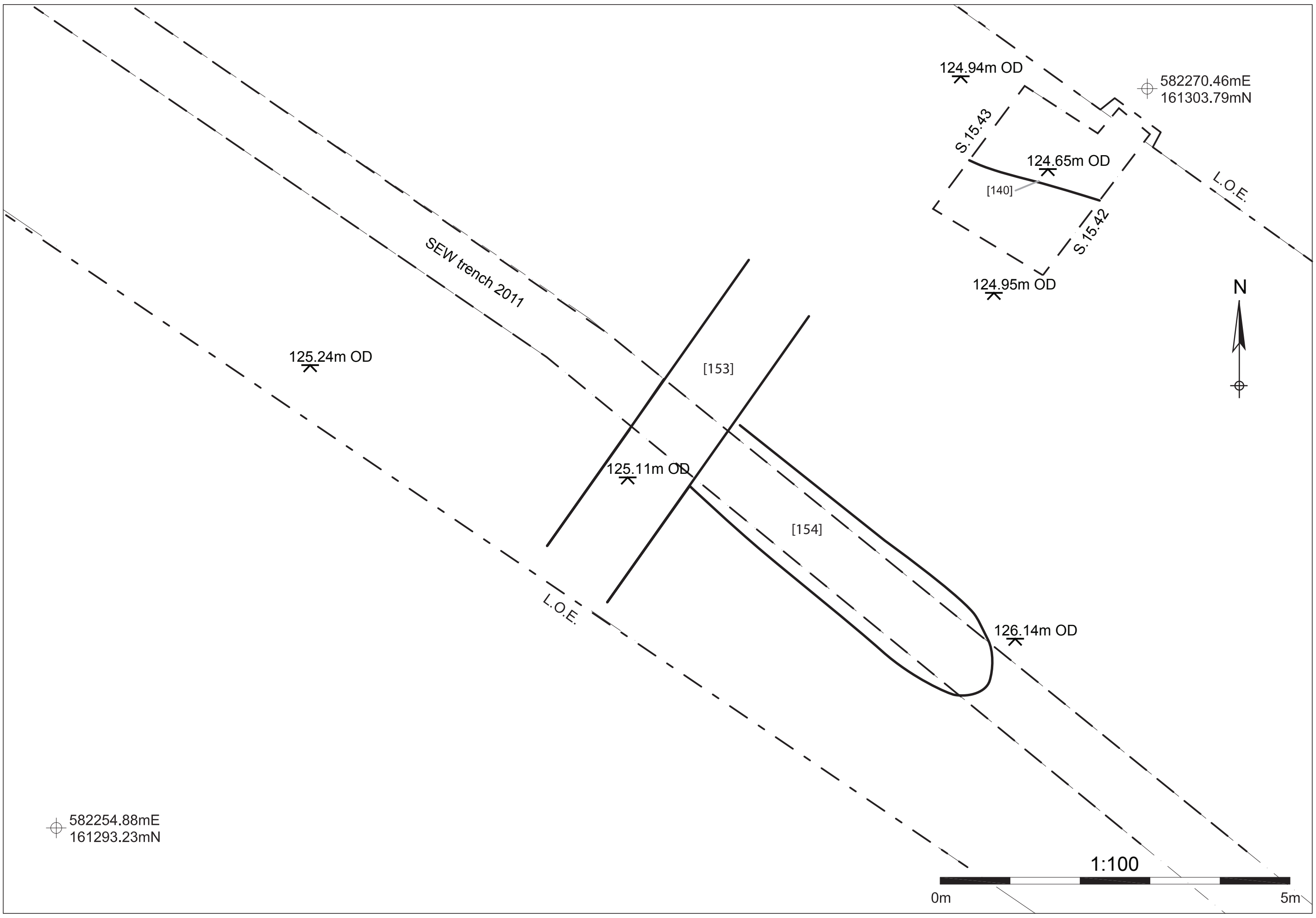


Figure 7e: Area F117; Cuts 140 and 154

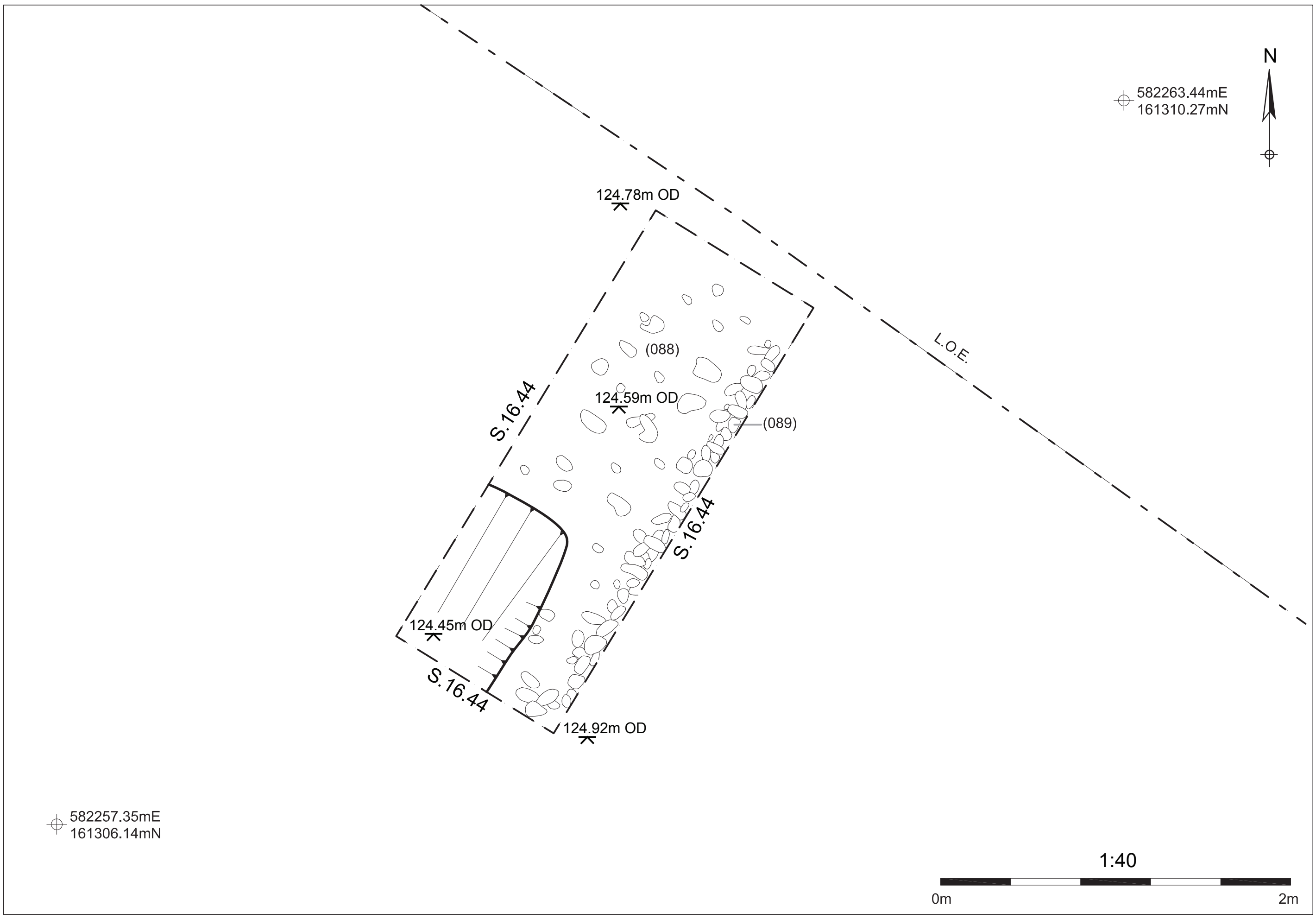


Figure 7f: Area F117, trench 3

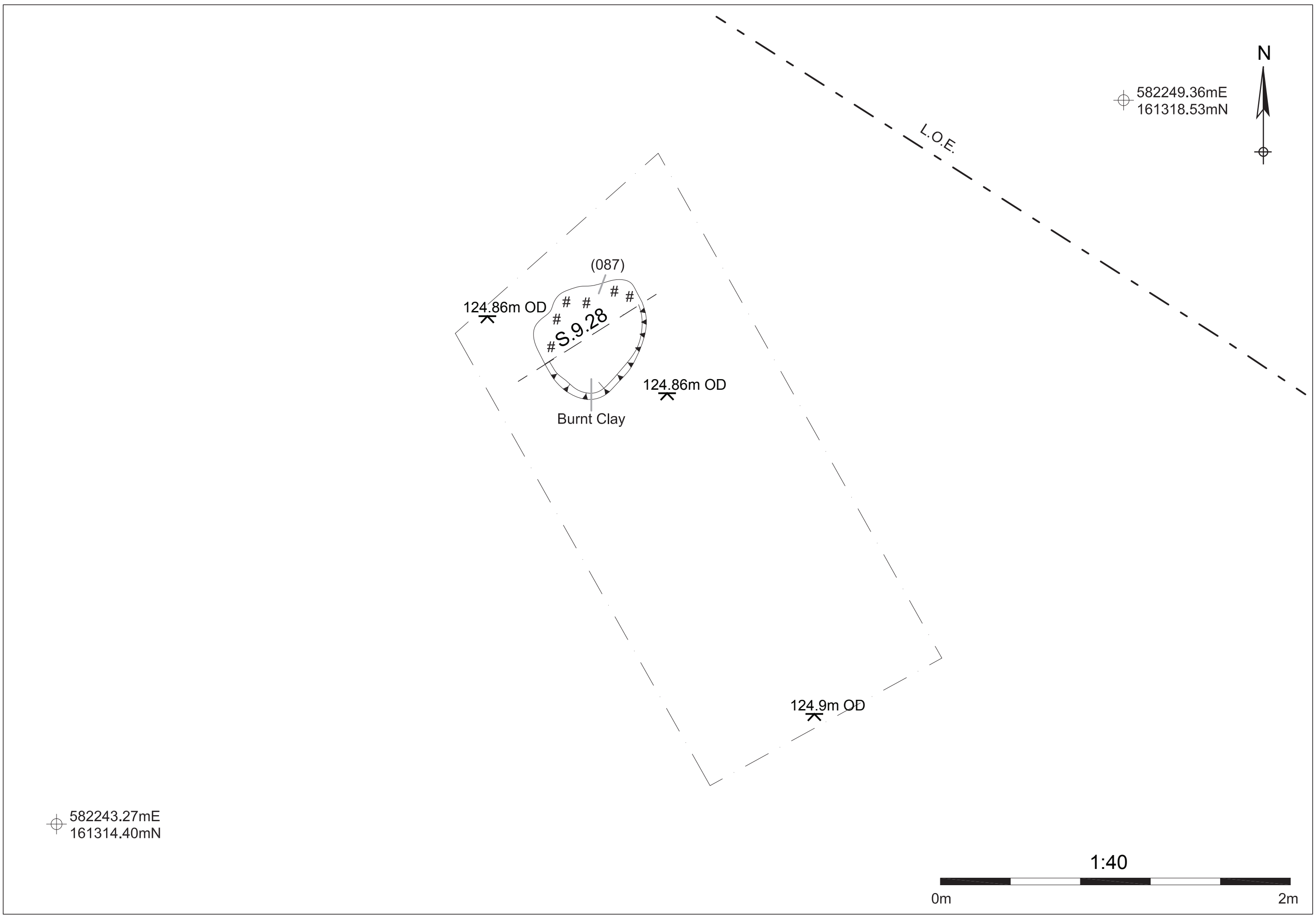


Figure 7g: Area F117; Deposit 087

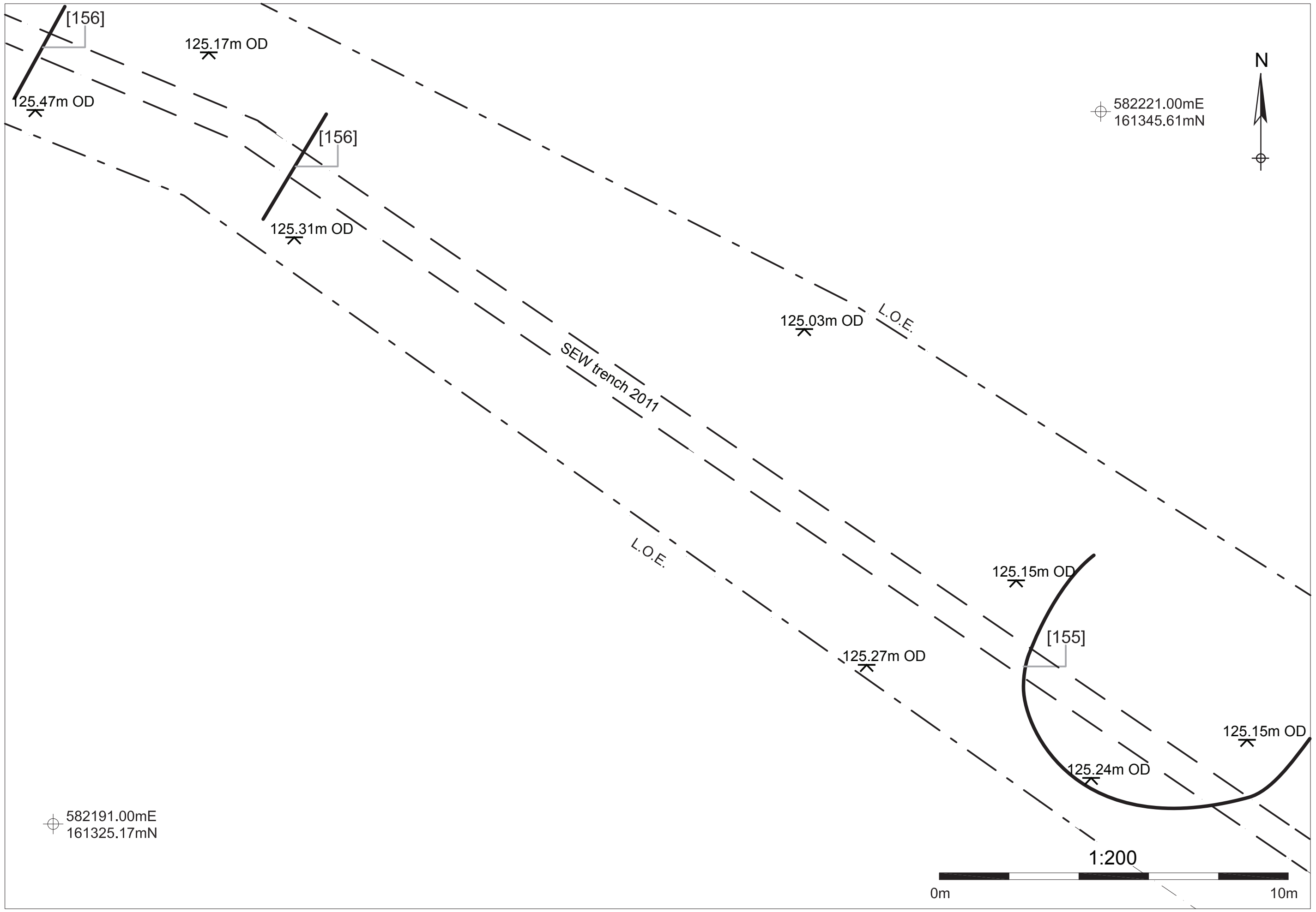


Figure 7h: Area F117; Cuts 155 and 156

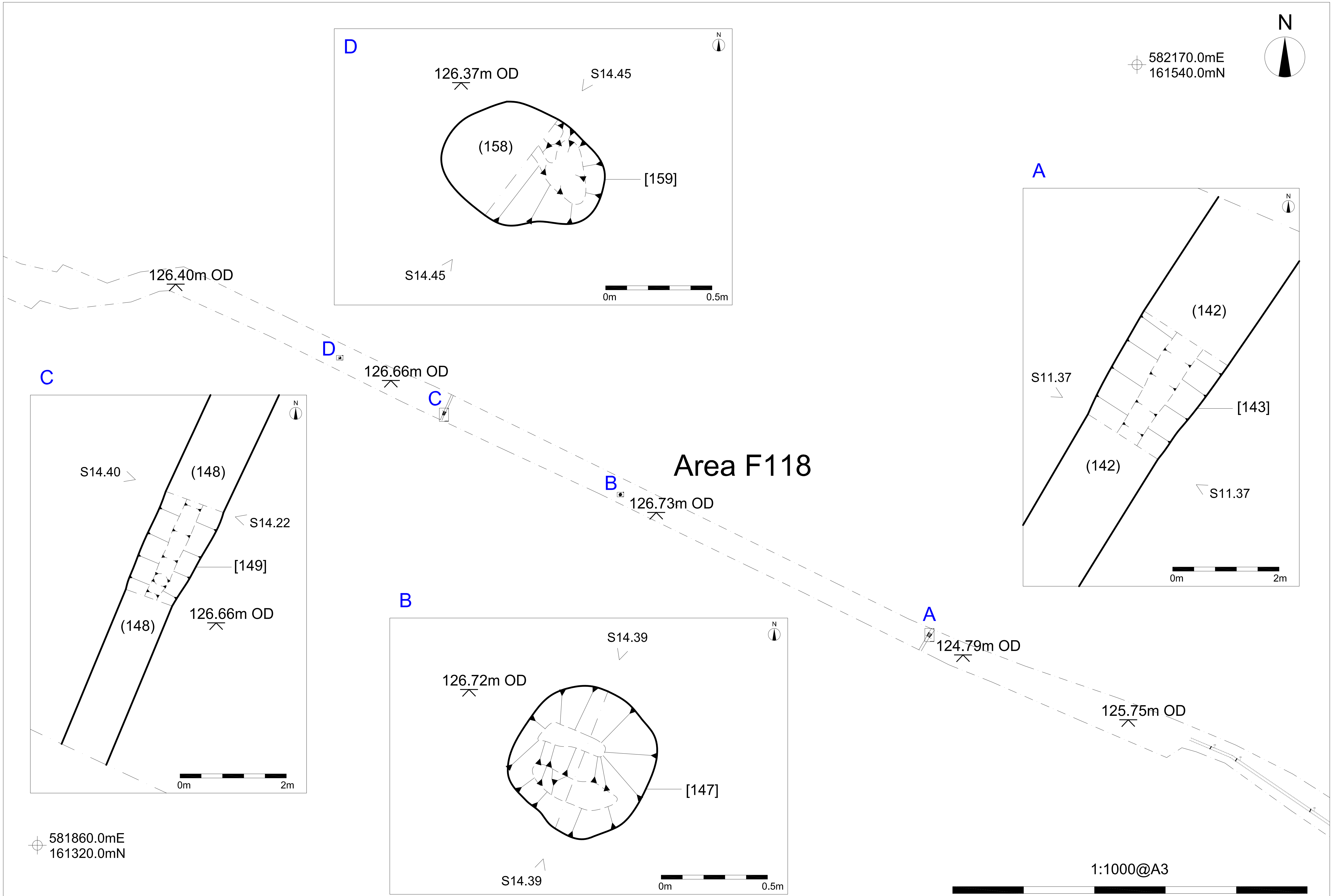


Figure 8: Site Plan; Area F118

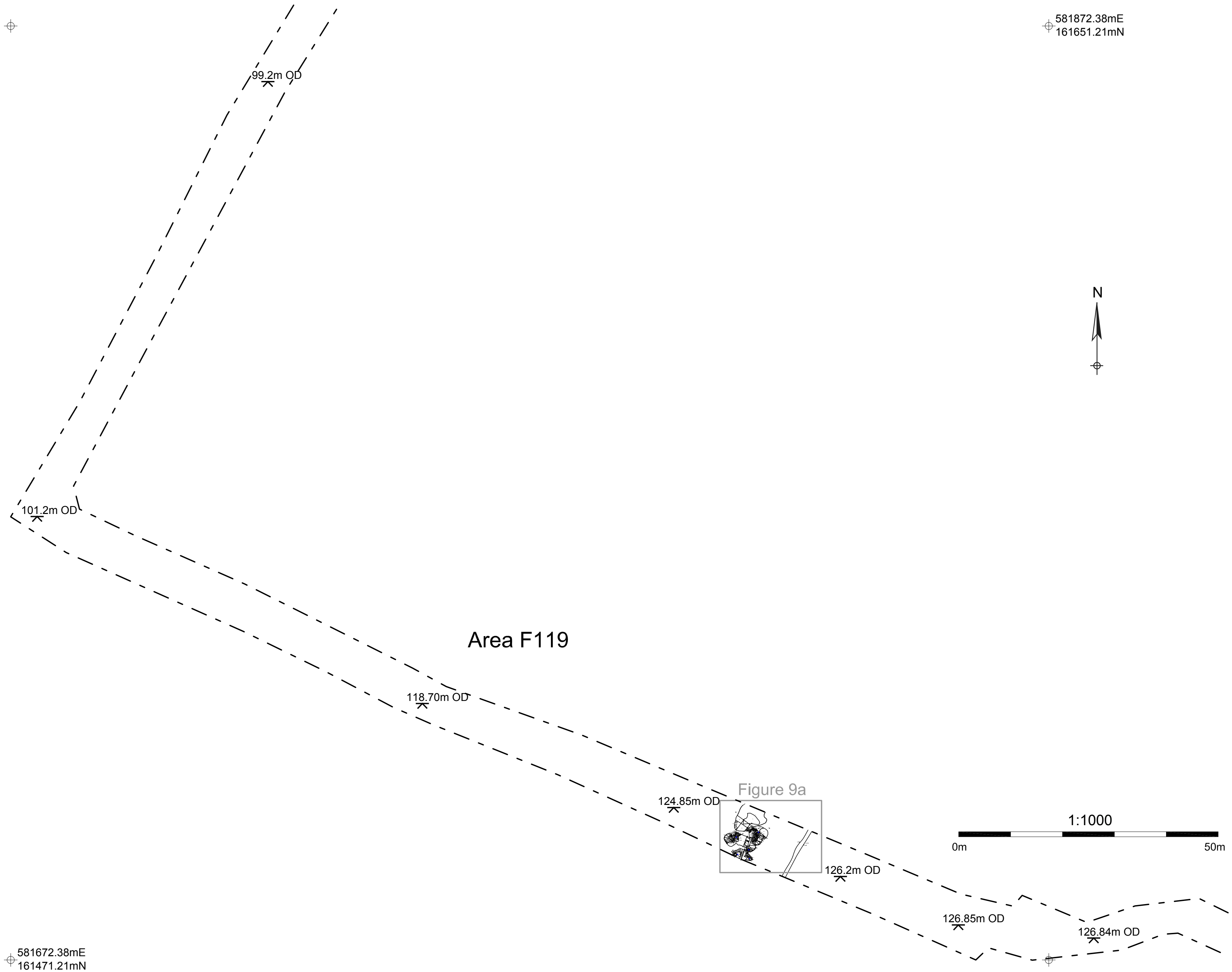


Figure 9: Site Plan; Area F119

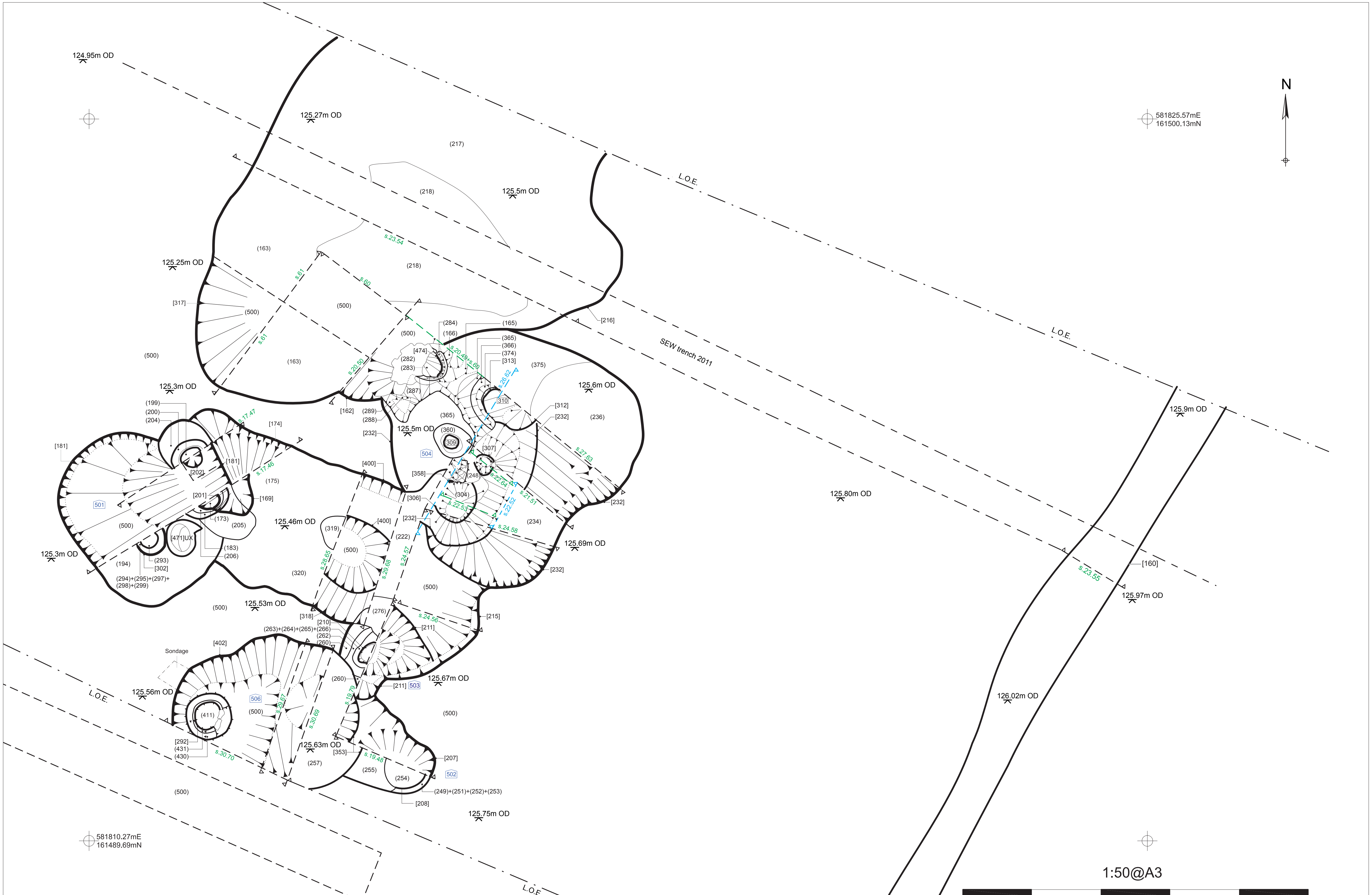


Figure 9a: Area F119; Furnace Complex (Overview)

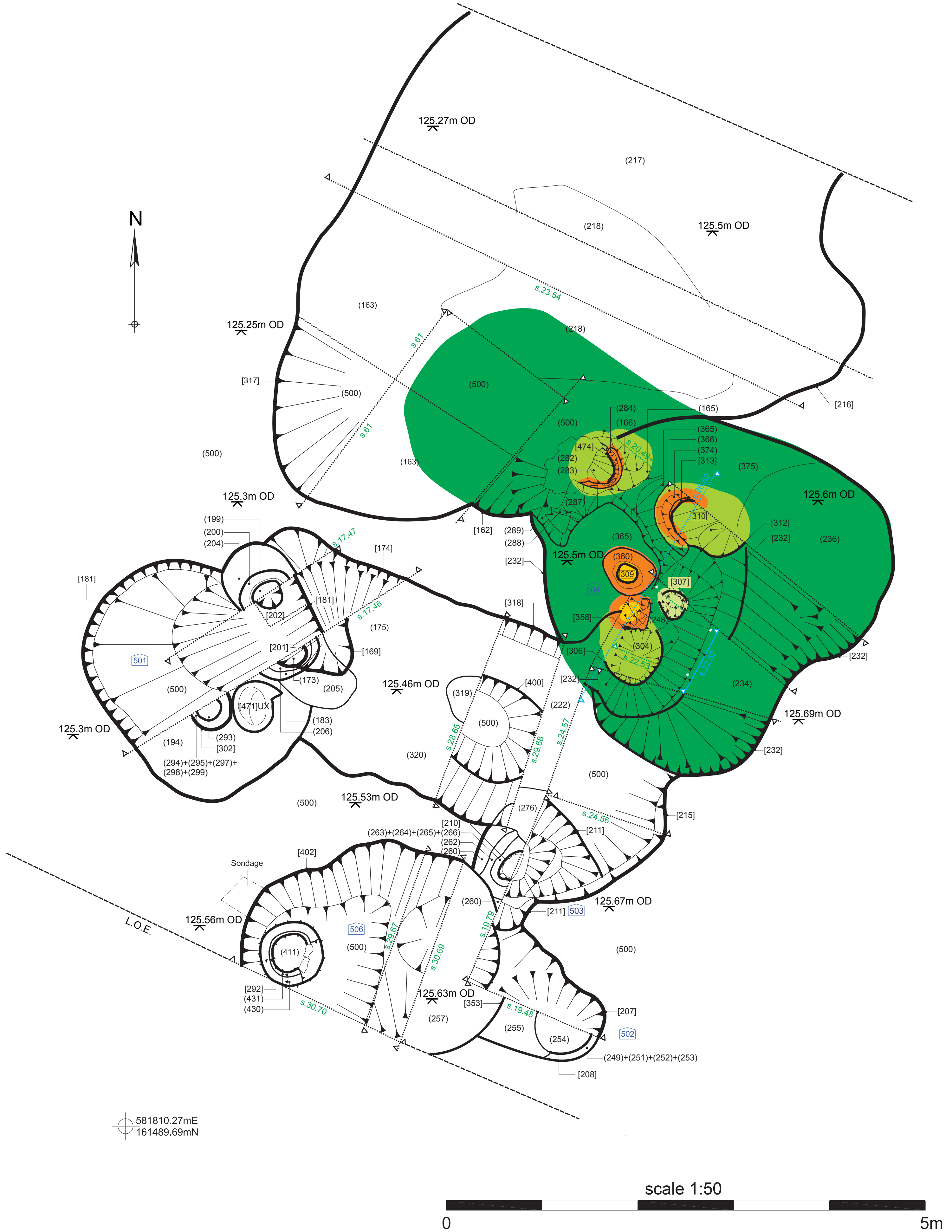


Figure 9c: Area F119; Sunken-Floored Structure C

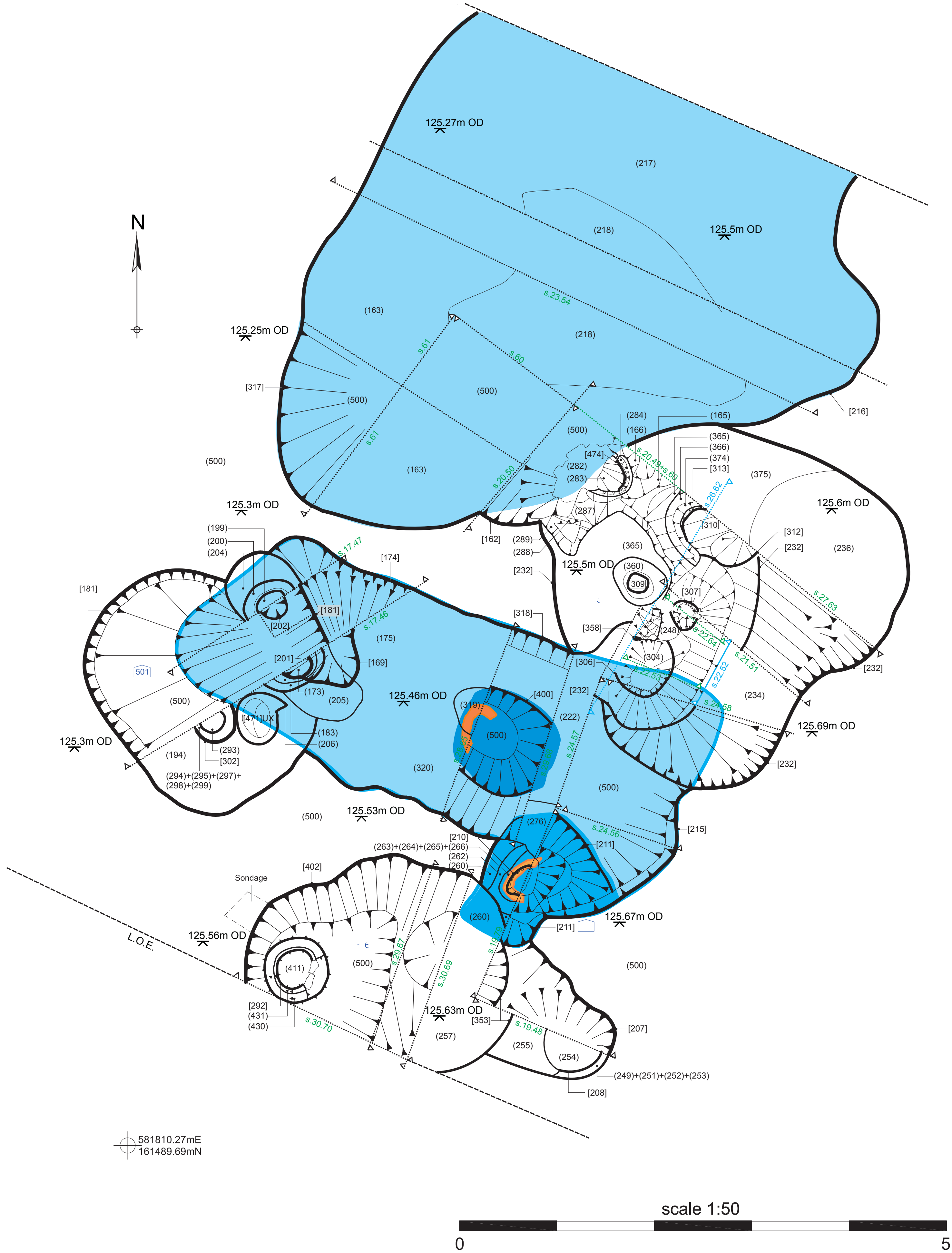


Figure 9d: Area F119; Sunken-Floored Structure D and Pit 317/216

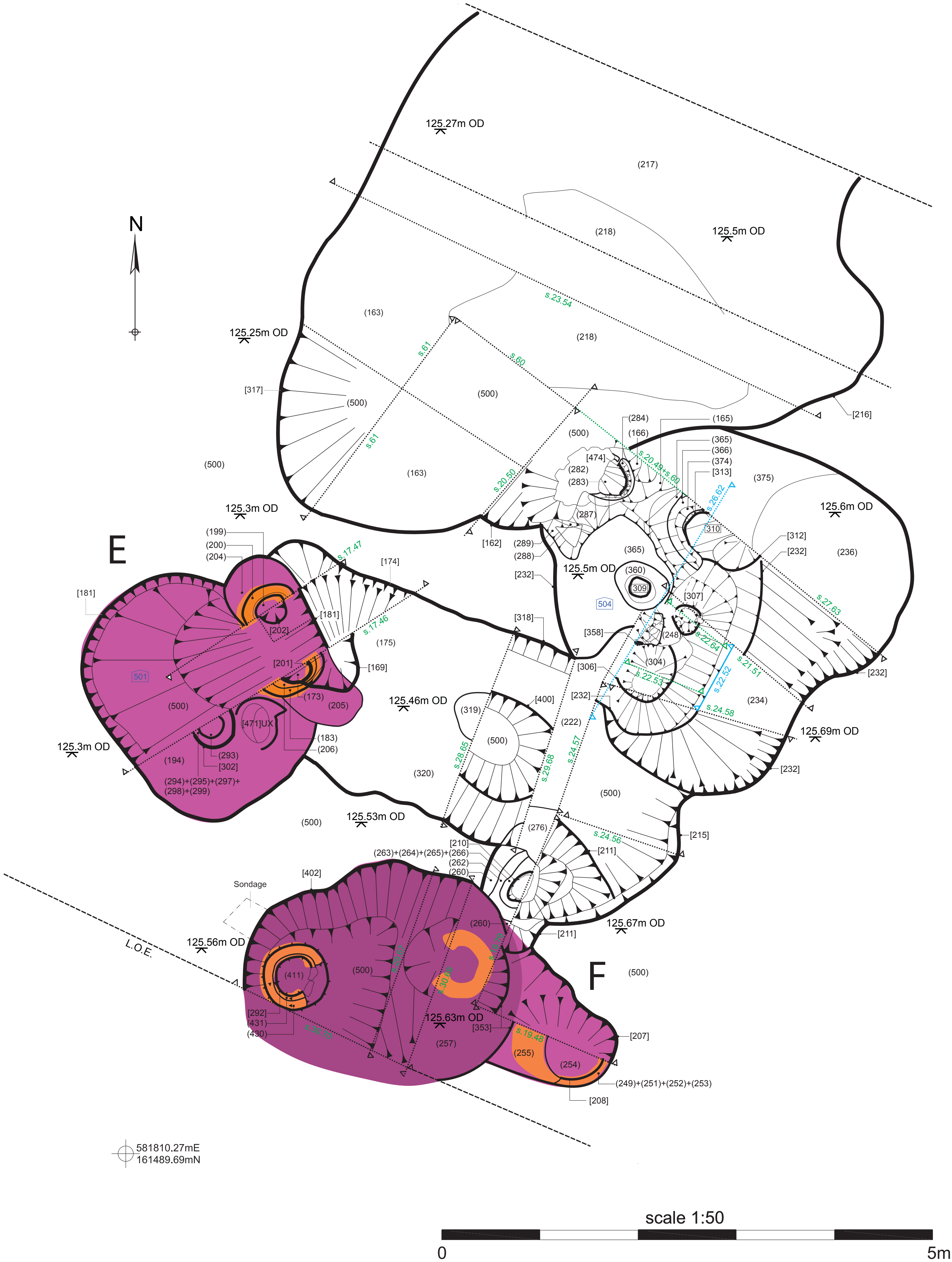


Figure 9e: Area F119; Sunken-Floored Structures E and F

Figure 9f: Area F119; Sunken-Floored Structure G

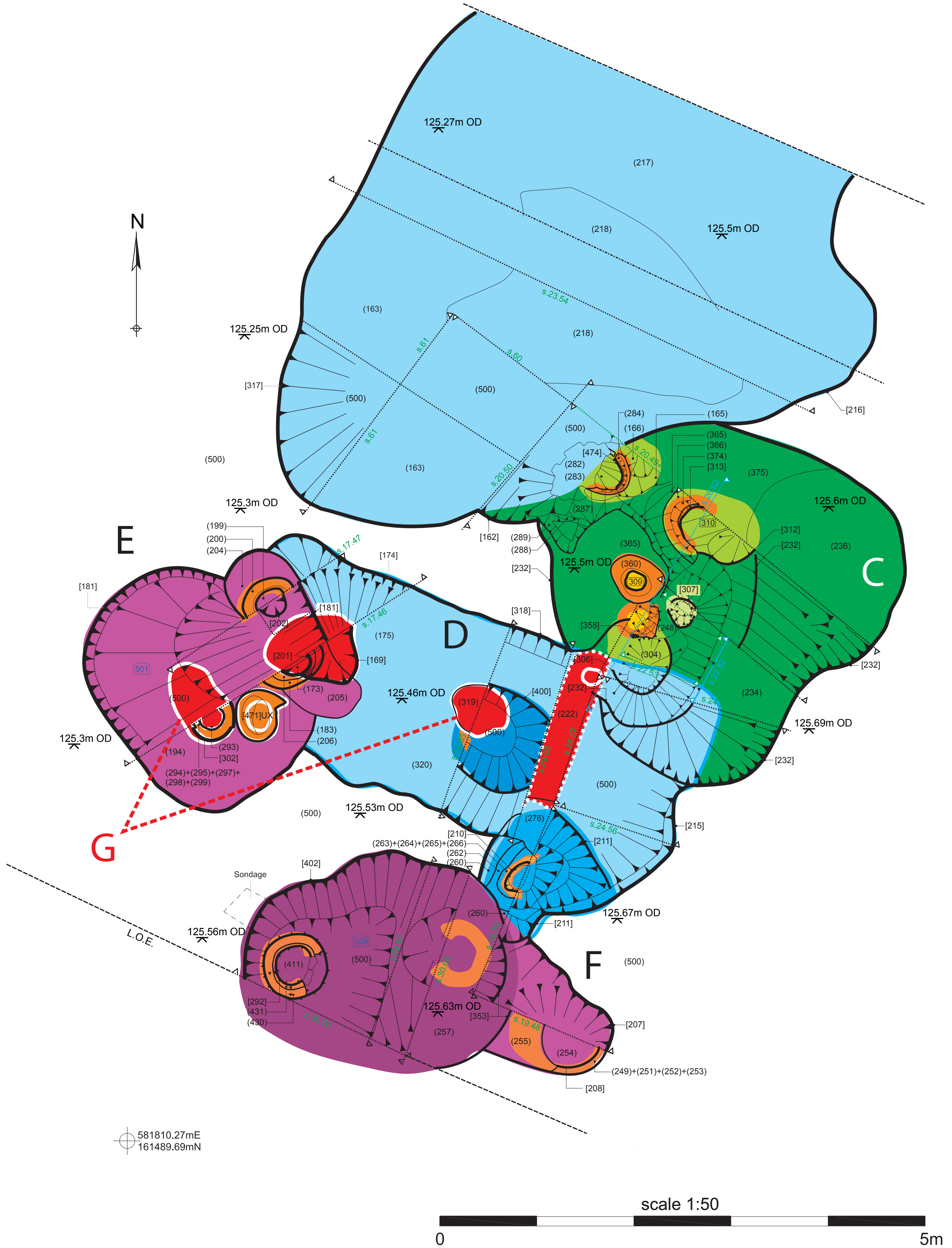


Figure 9g: Area F119; Sunken-Floored Structures C, D, E, F and G

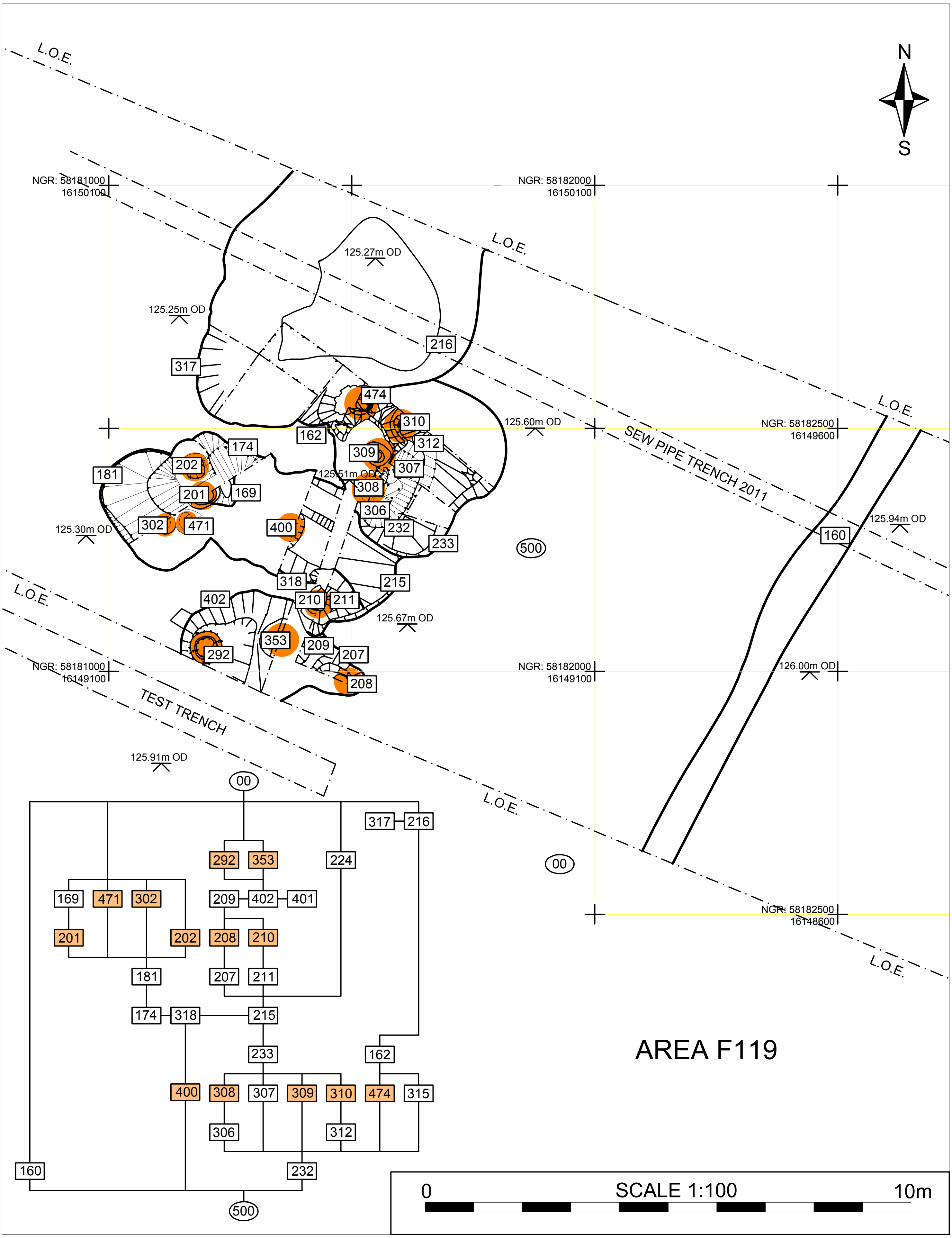


Figure 11: Area F119; Schematic plan of furnace complex showing simplified harris matrix

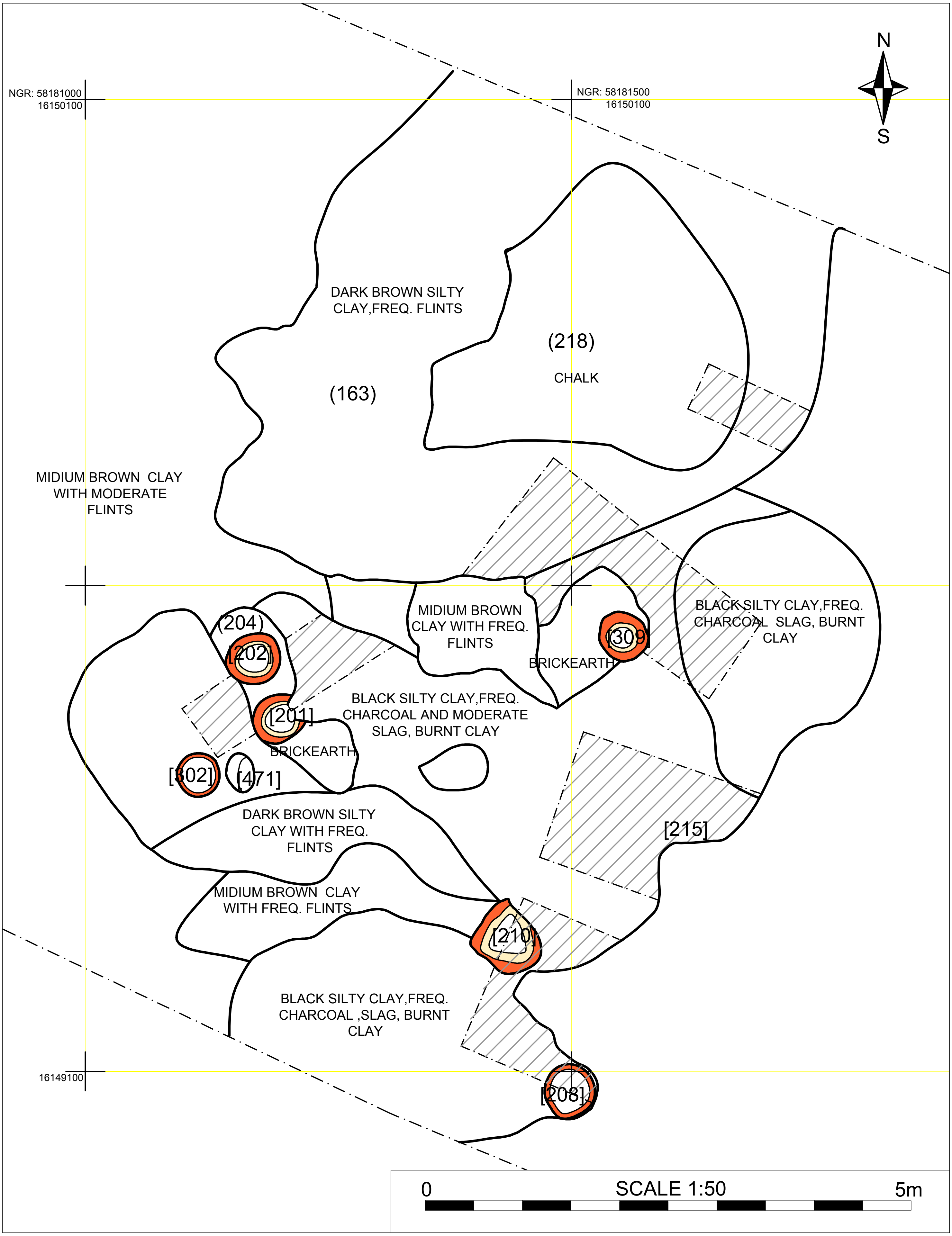


Figure 12: Area F119; Pre-Excavation plan showing first intervention slots

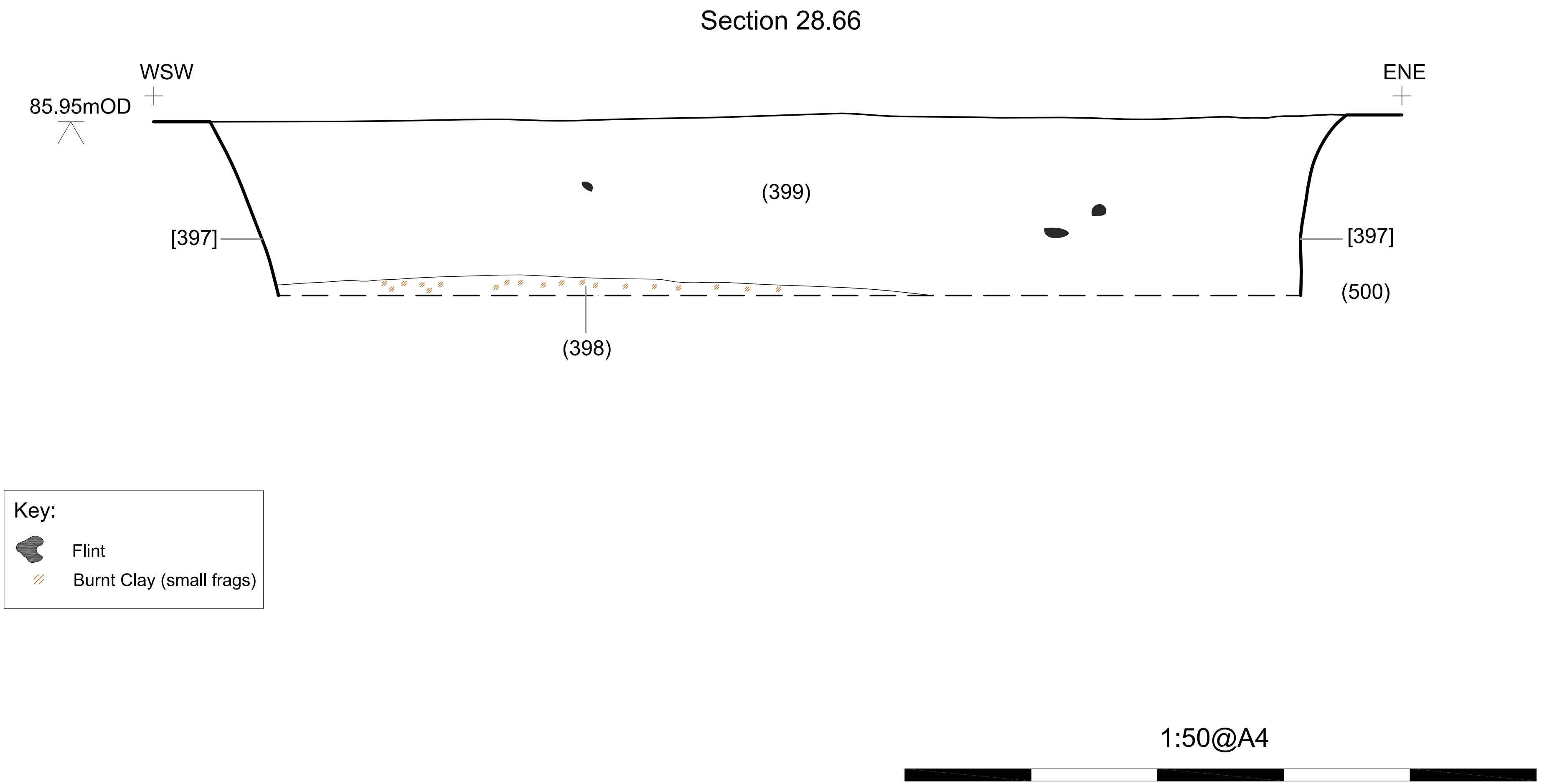


Figure 13: Area F112; Section 28.66

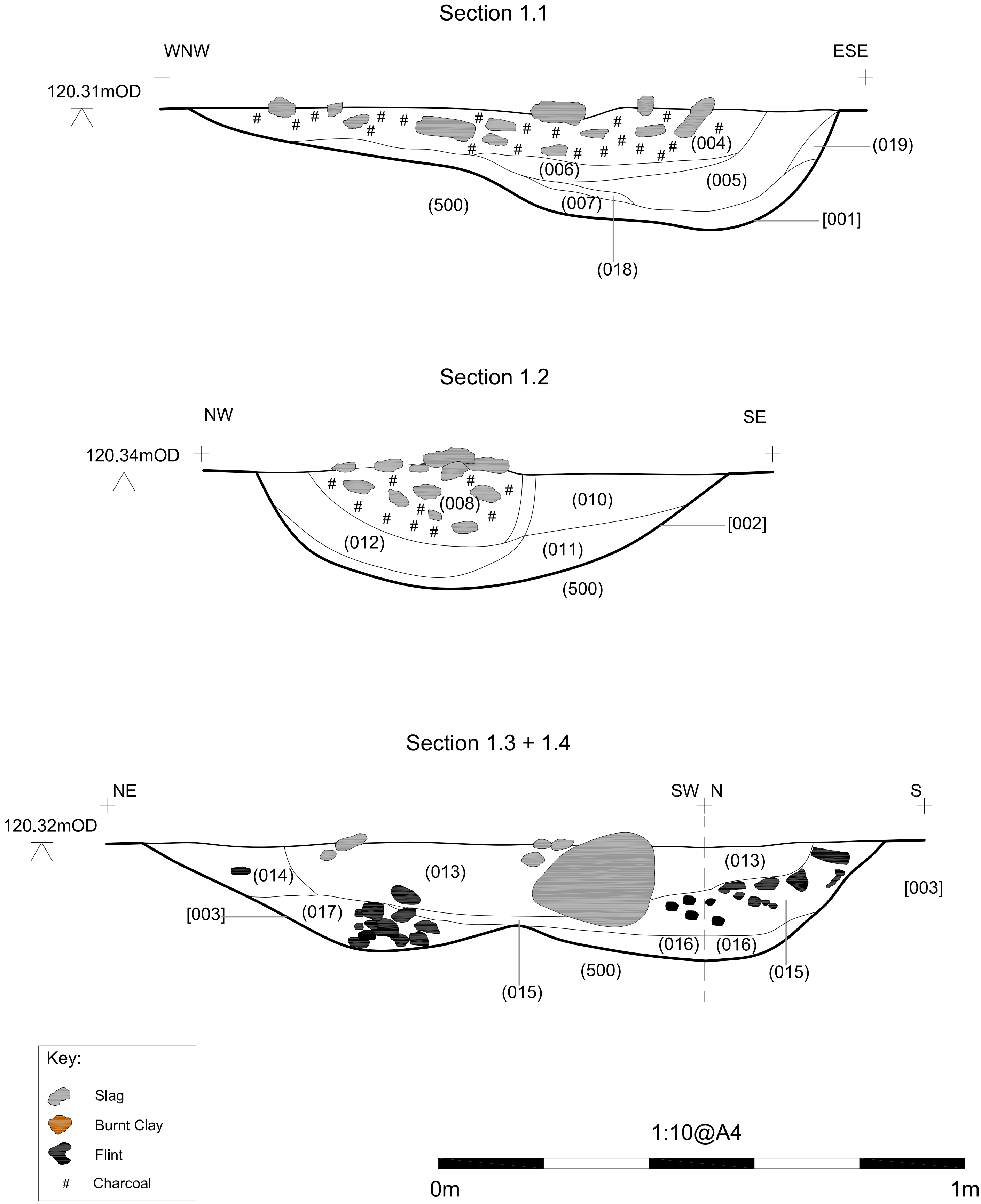


Figure 14: Area F113; Sections 1.1 - 1.4

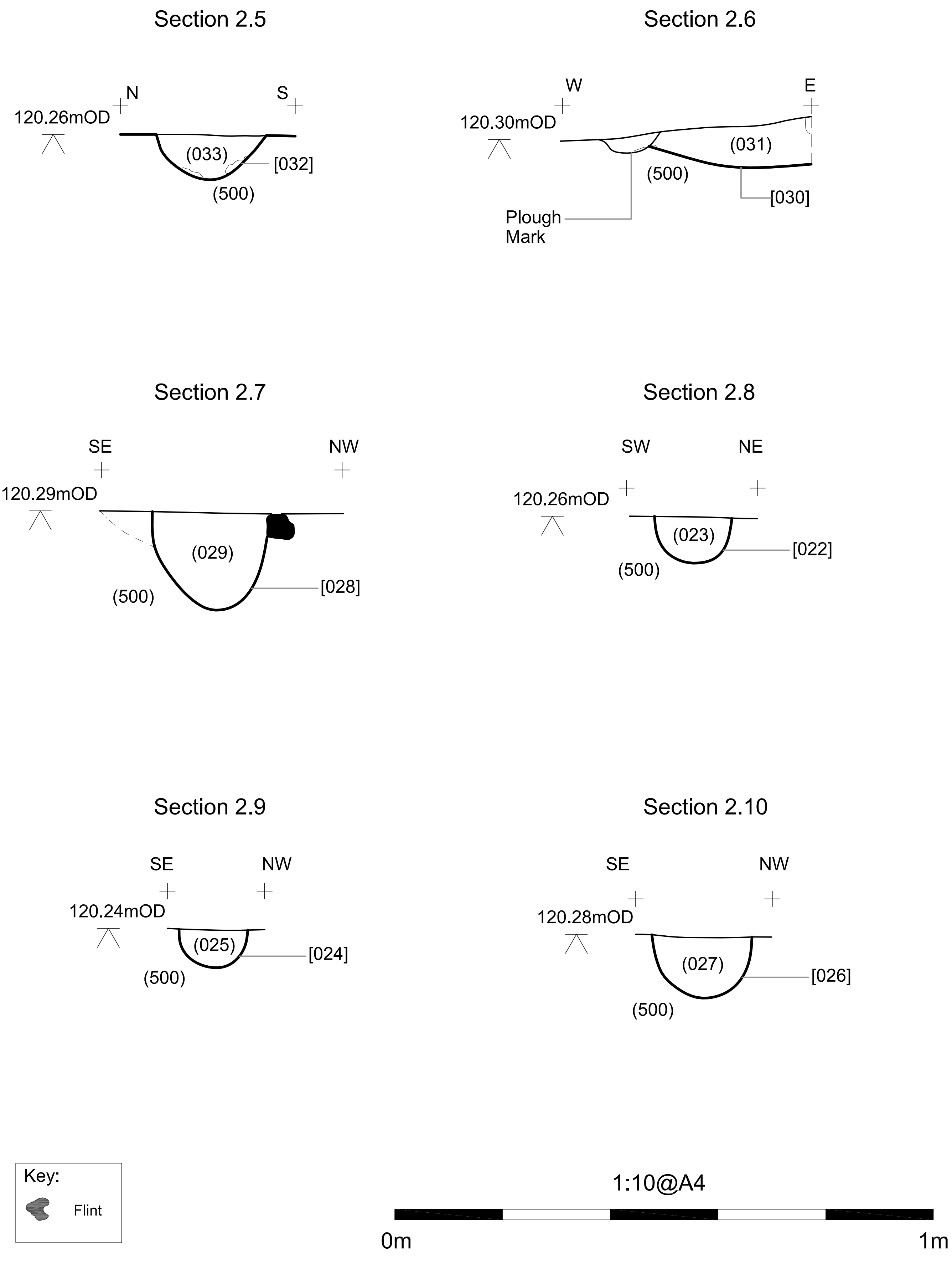


Figure 15: Area F113; Sections 2.6 - 2.10

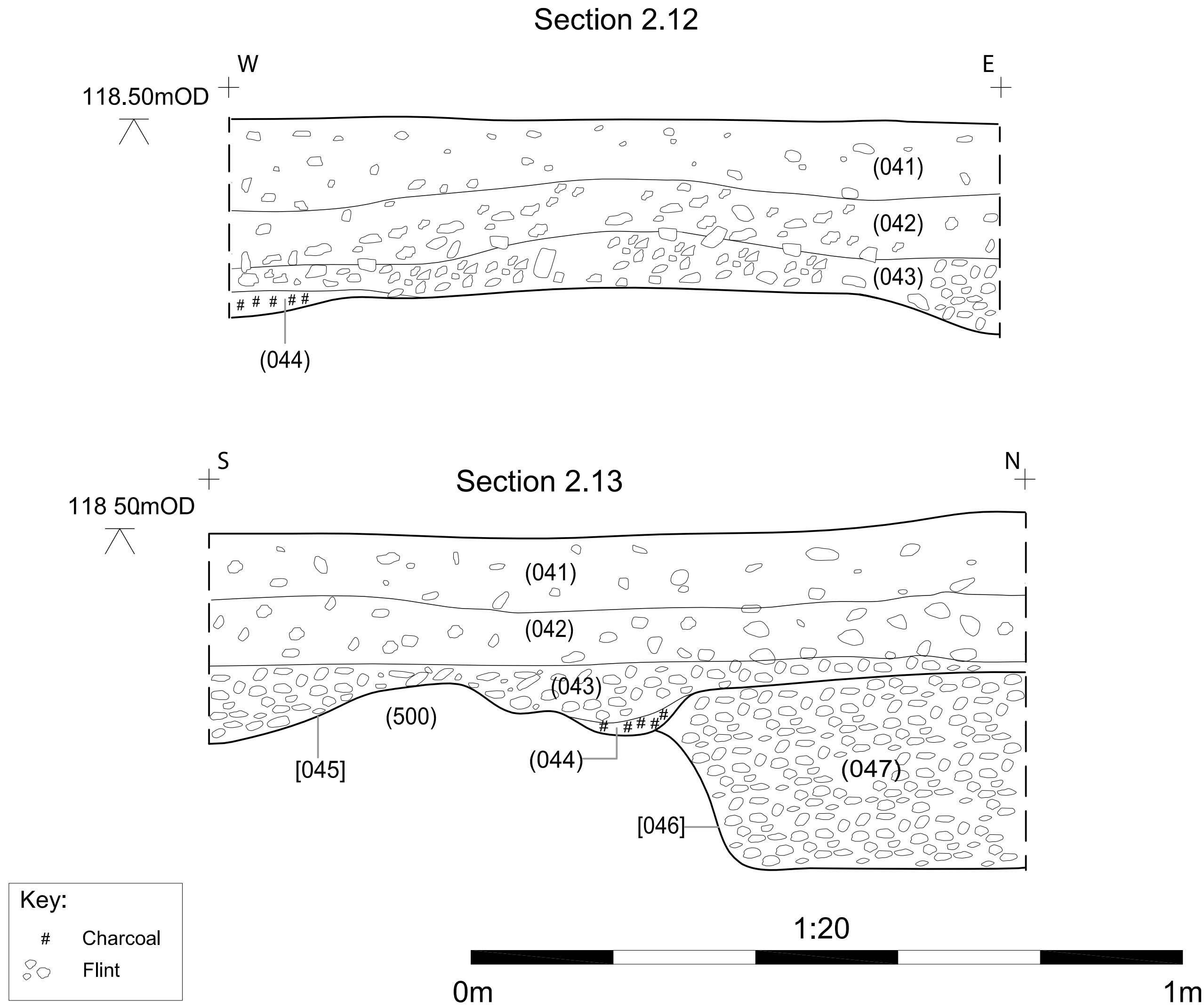


Figure 16: Area F114; Section 2.12 and Section 2.13

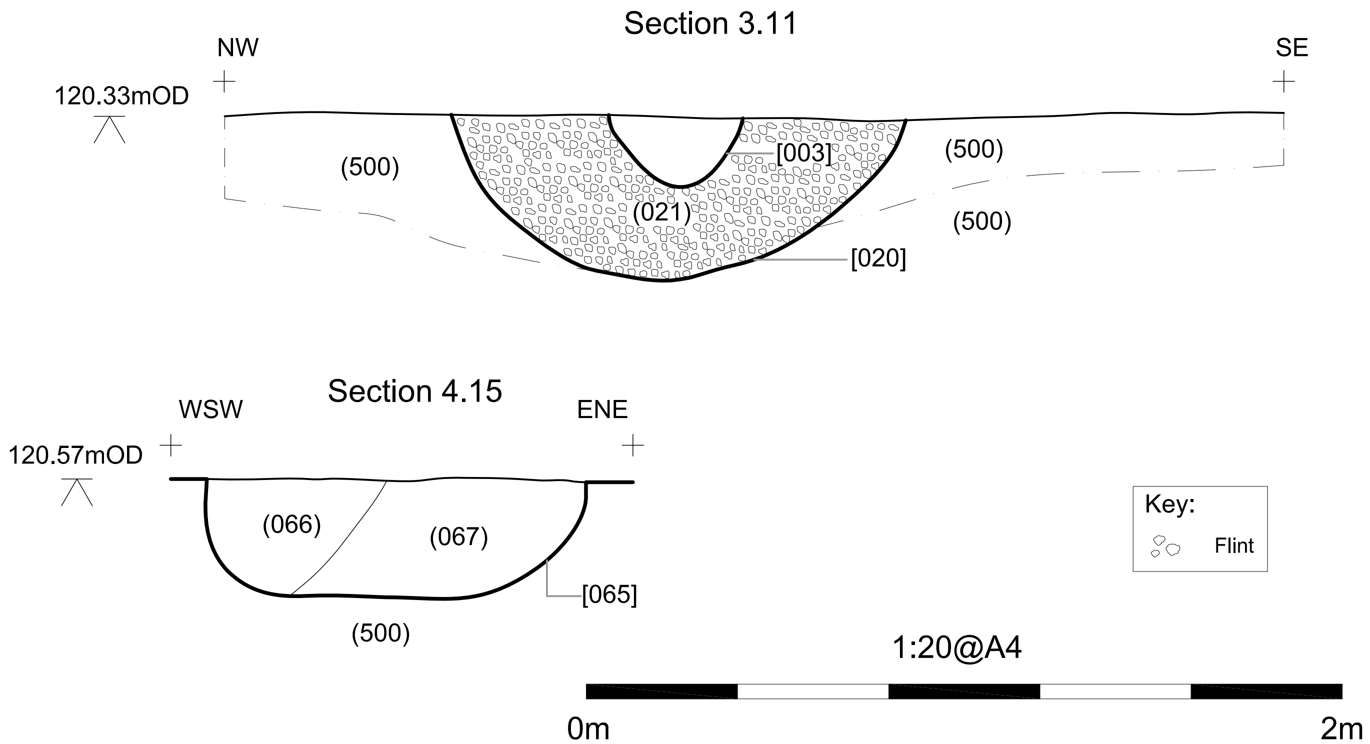


Figure 17: Area F113; Section 3.11 and 4.15

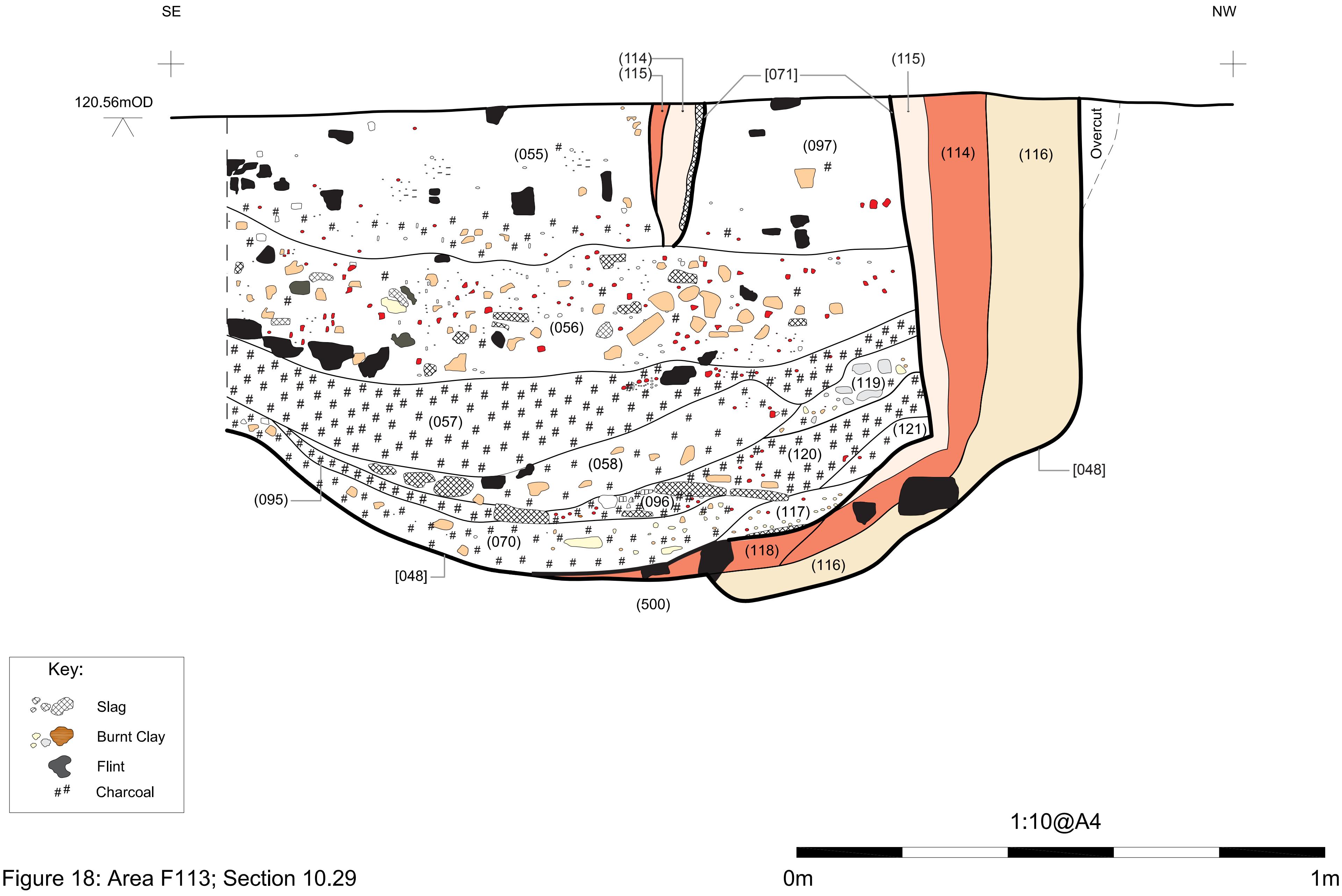
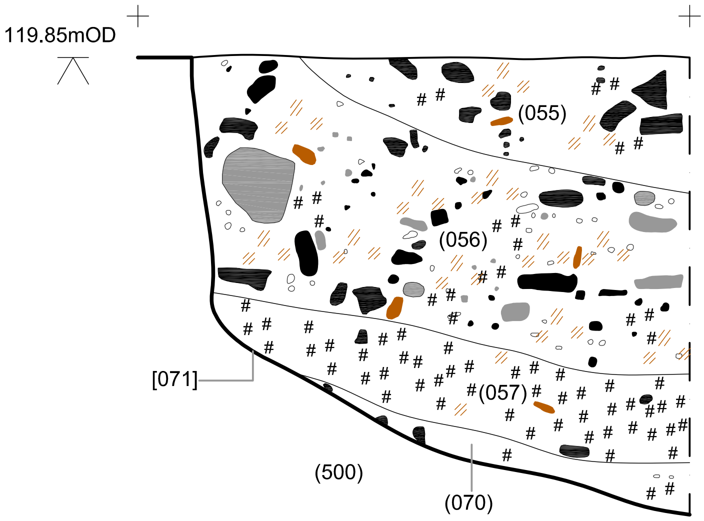


Figure 18: Area F113; Section 10.29

Section 11.30



Key:

- Slag
- Burnt Clay
- Flint
- Burnt Clay (small frags)
- # Charcoal

1:10@A4

0m 1m

Figure 19: Area F113; Section 11.30

Section 11.33

Figure 20: Area F113; Section 11.33

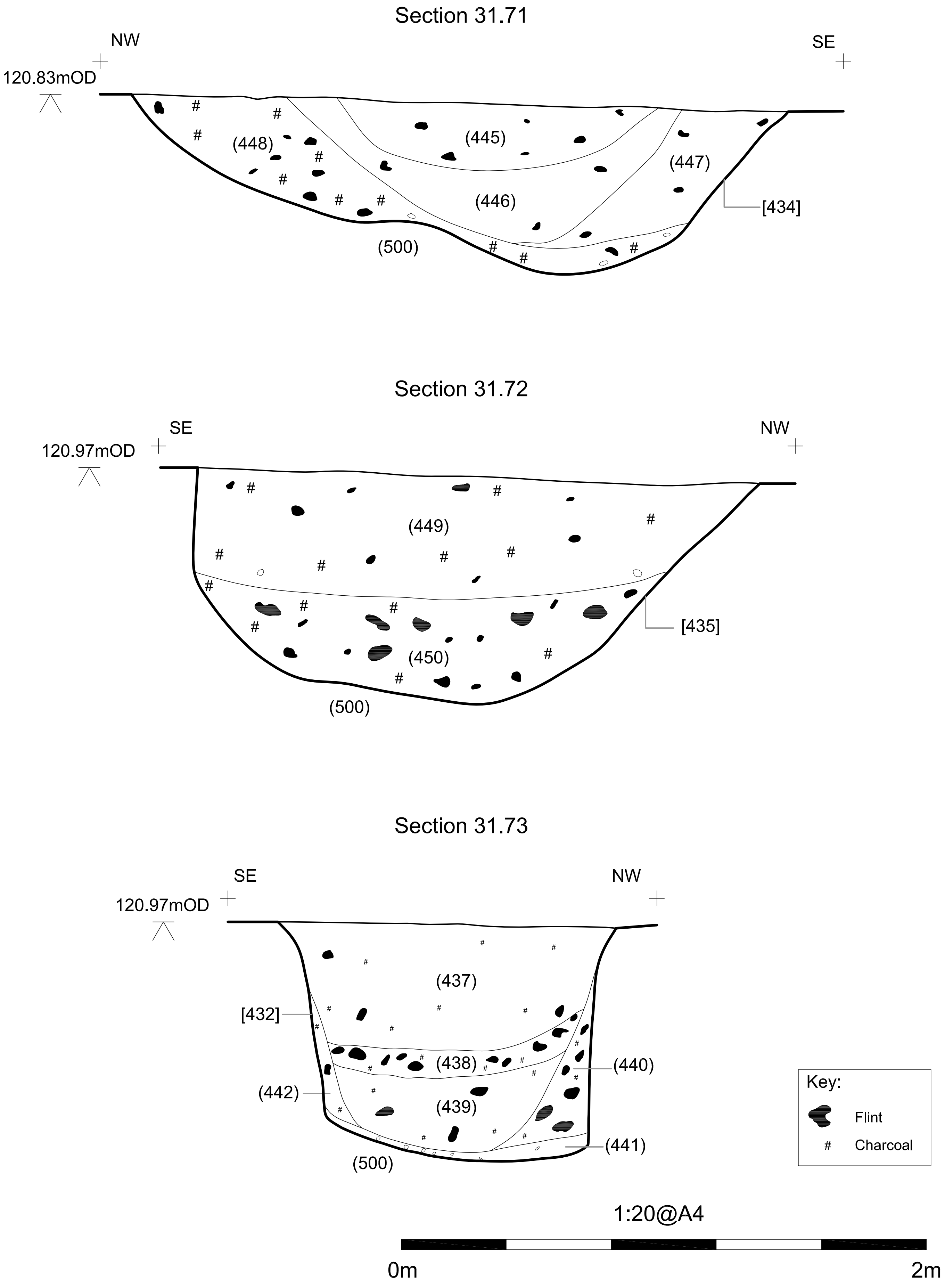


Figure 21: Area F113; Sections 31.71 - 31.73

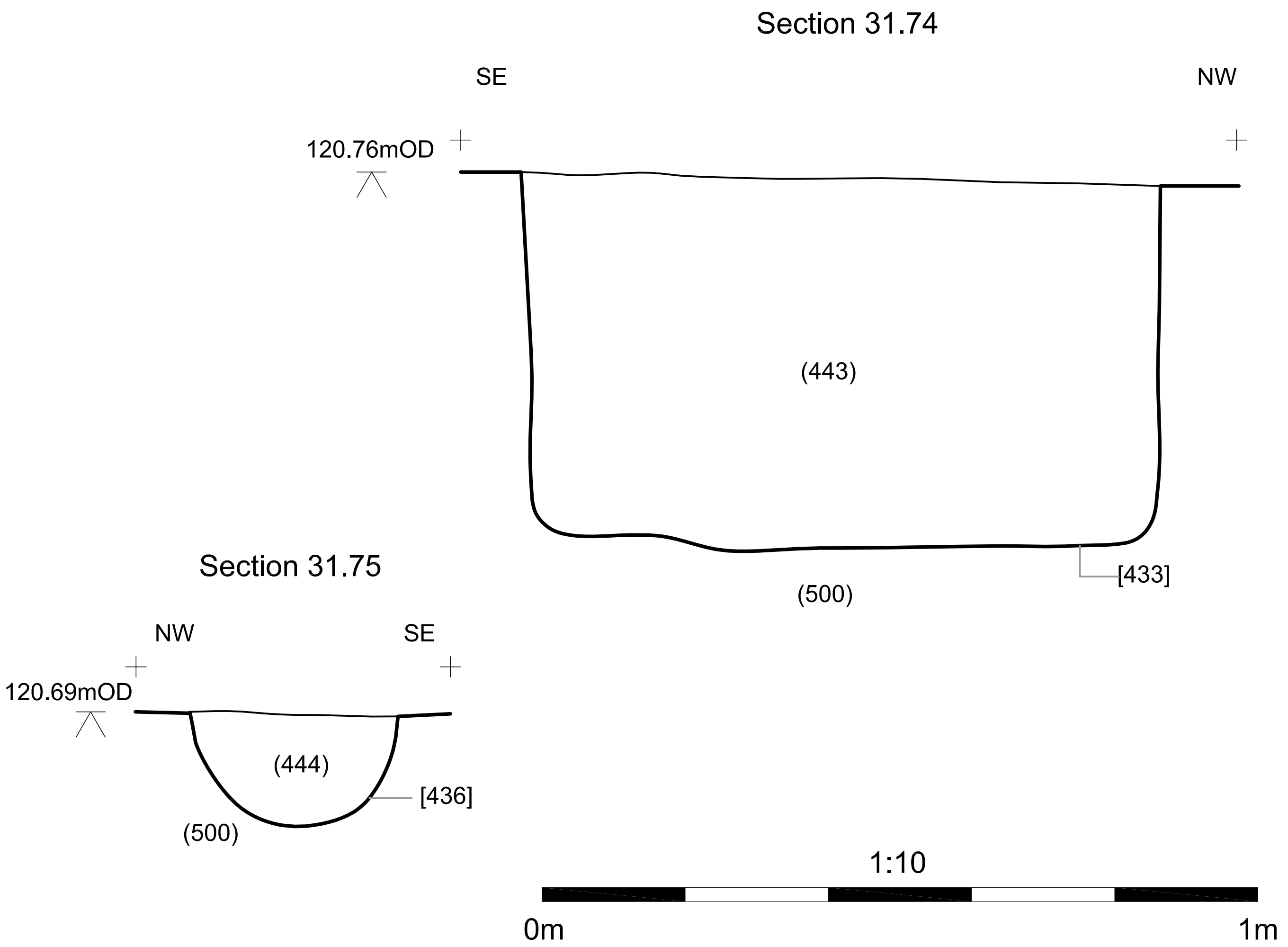


Figure 22: Area F113; Section 31.74 and 31.75

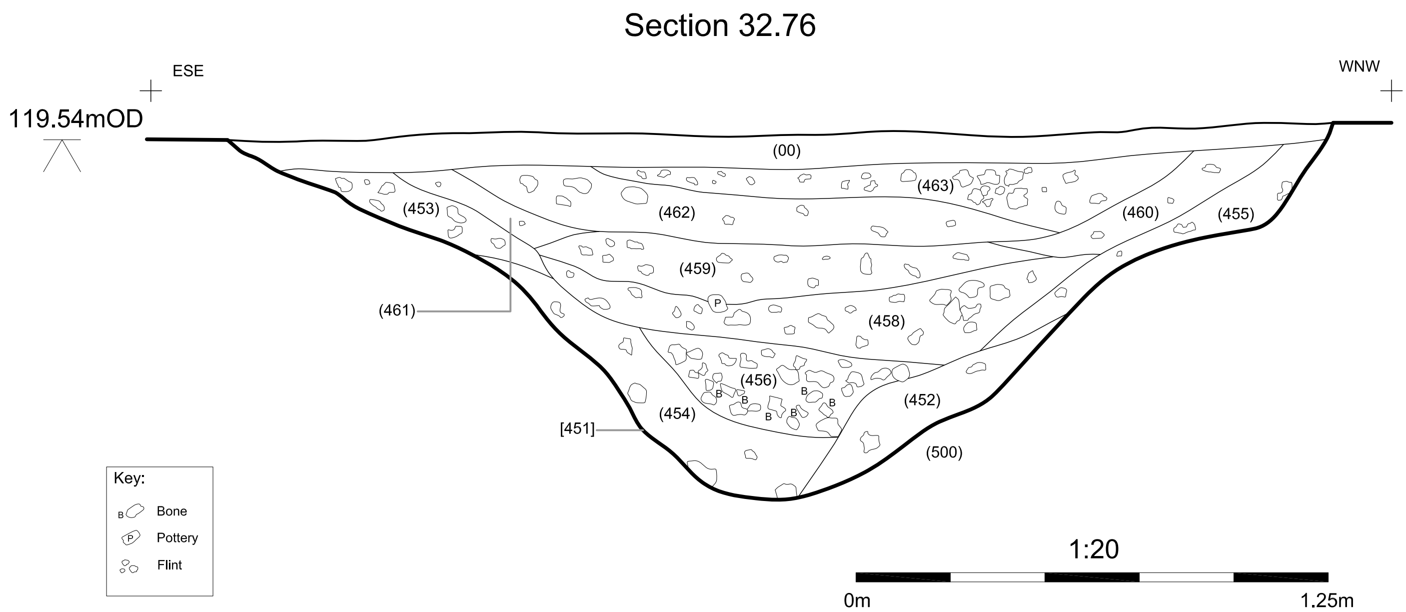


Figure 23: Area F113; Section 32.76

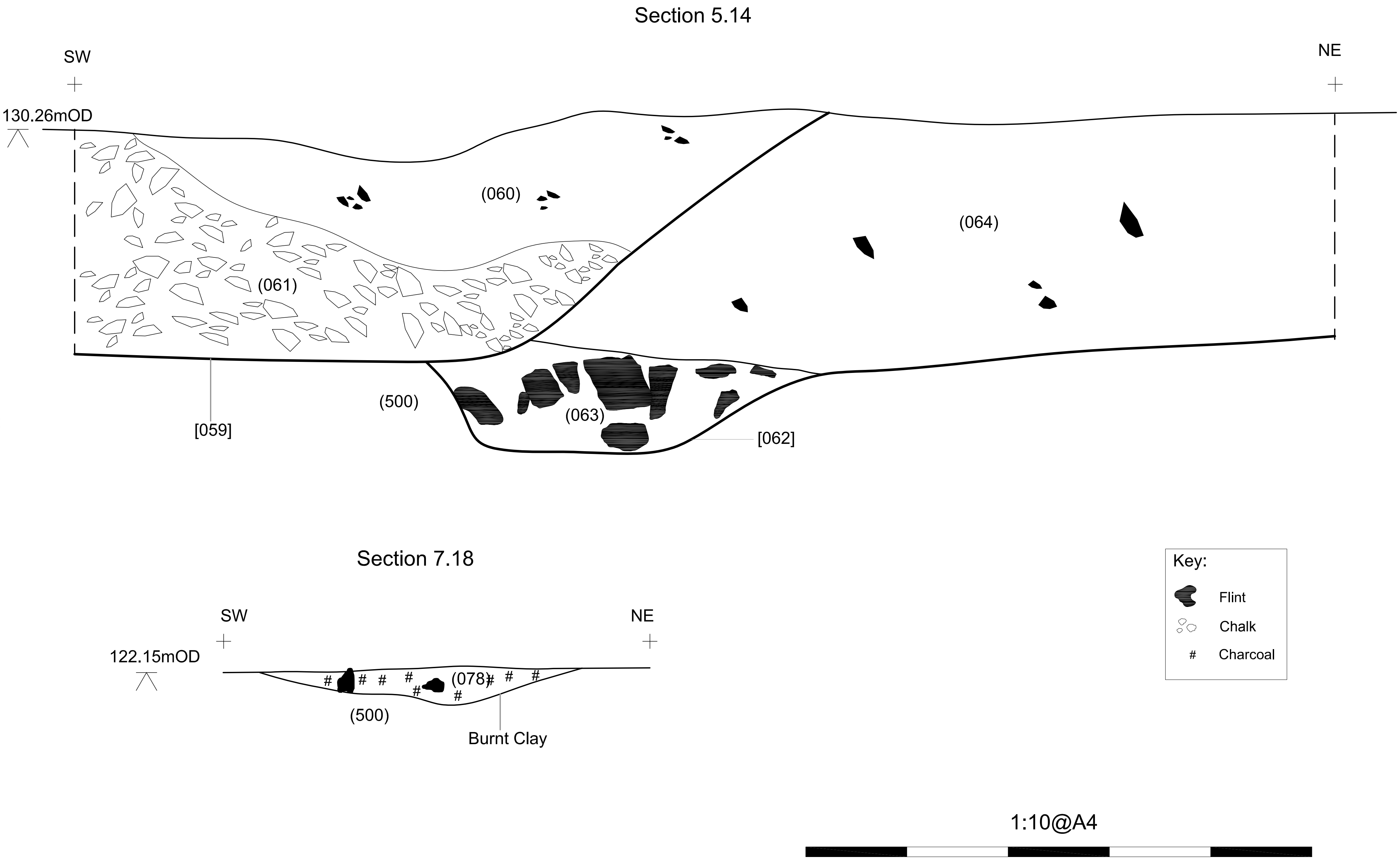
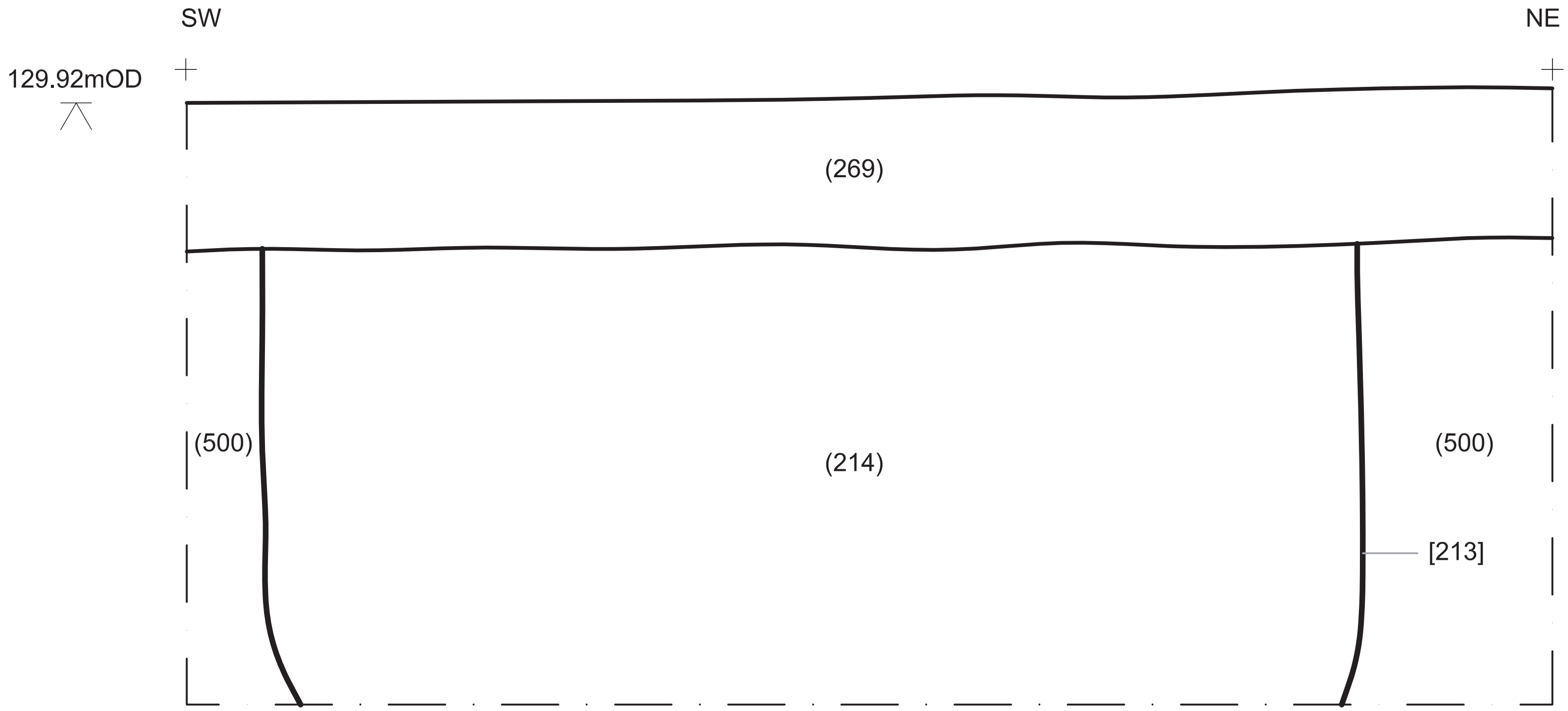


Figure 24: Area F115; Sections 5.14 and 7.18

Section 25.59



1:20@A4

0m 2m

Figure 25: Area F115; Section 25.59

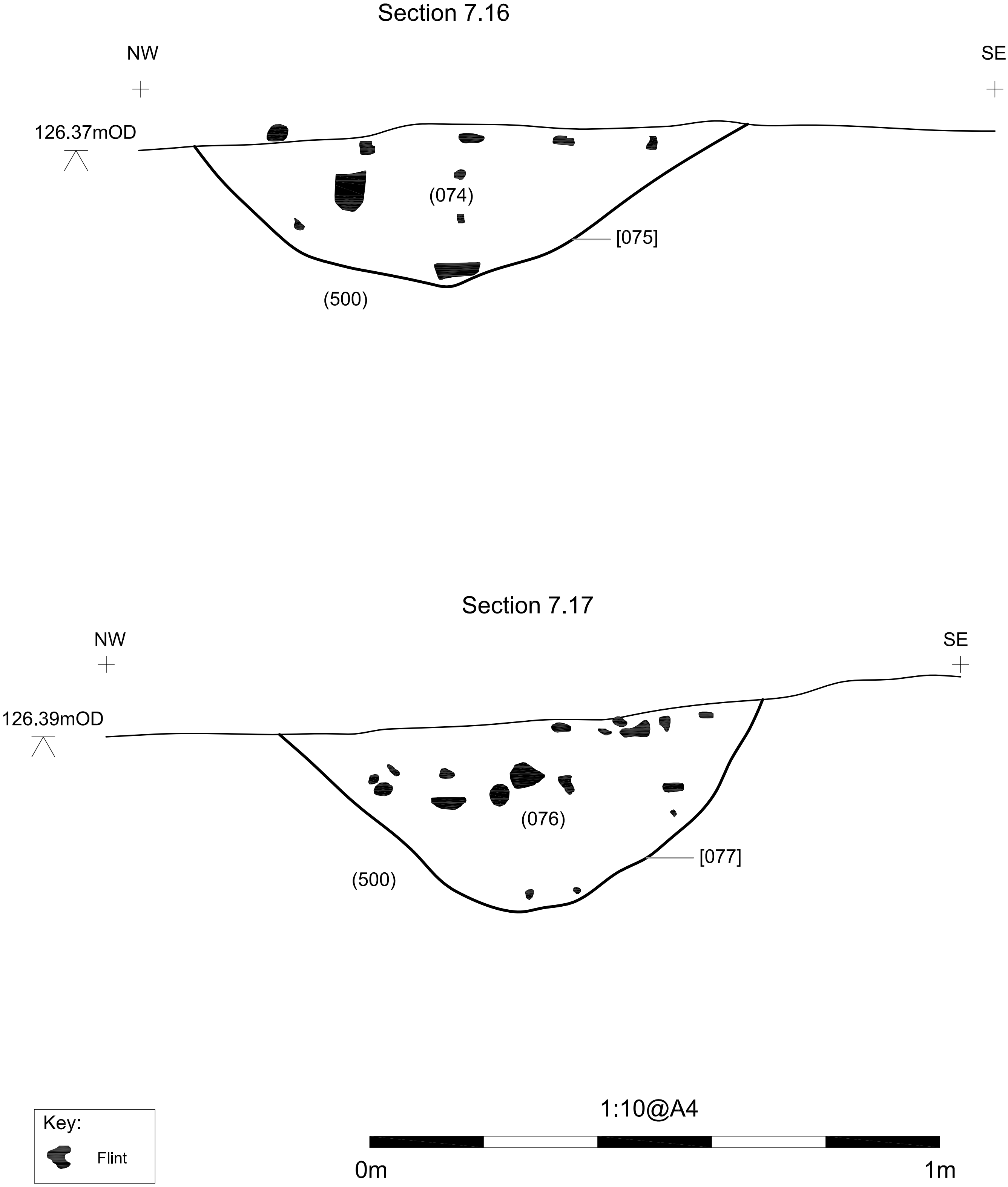
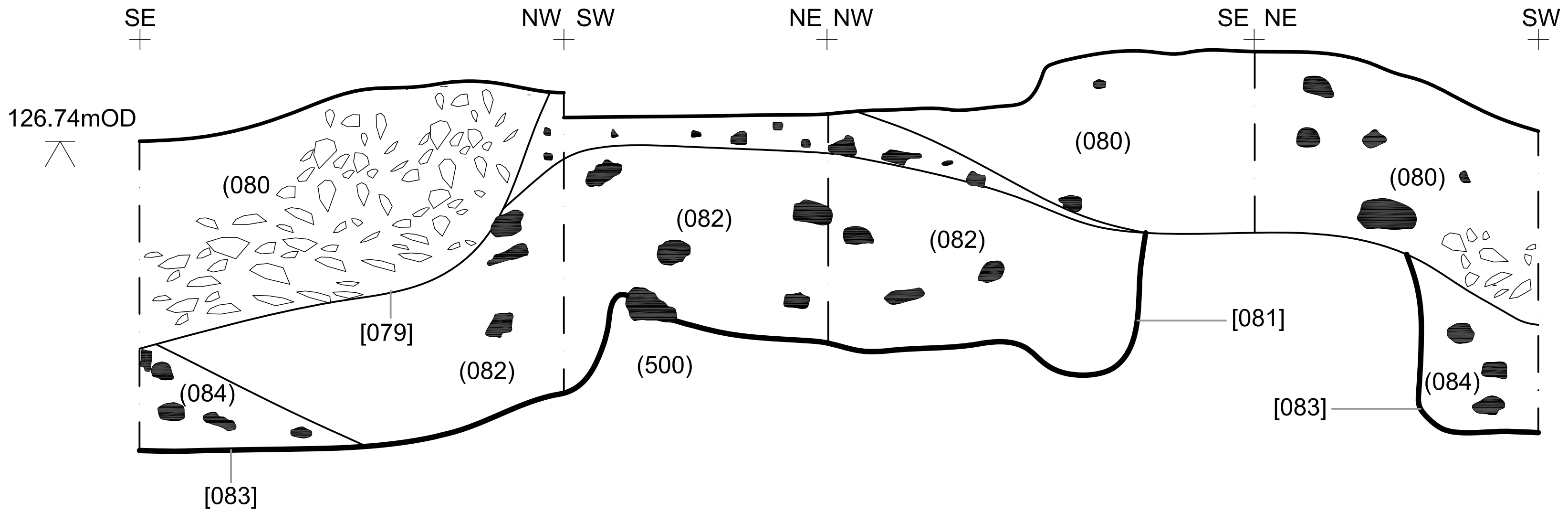


Figure 26: Area F116; Section 7.16 and 7.17

Section 7.19



Key:
Flint
Chalk

1:10@A4
0m
1m

Figure 27: Area F115; Section 7.19

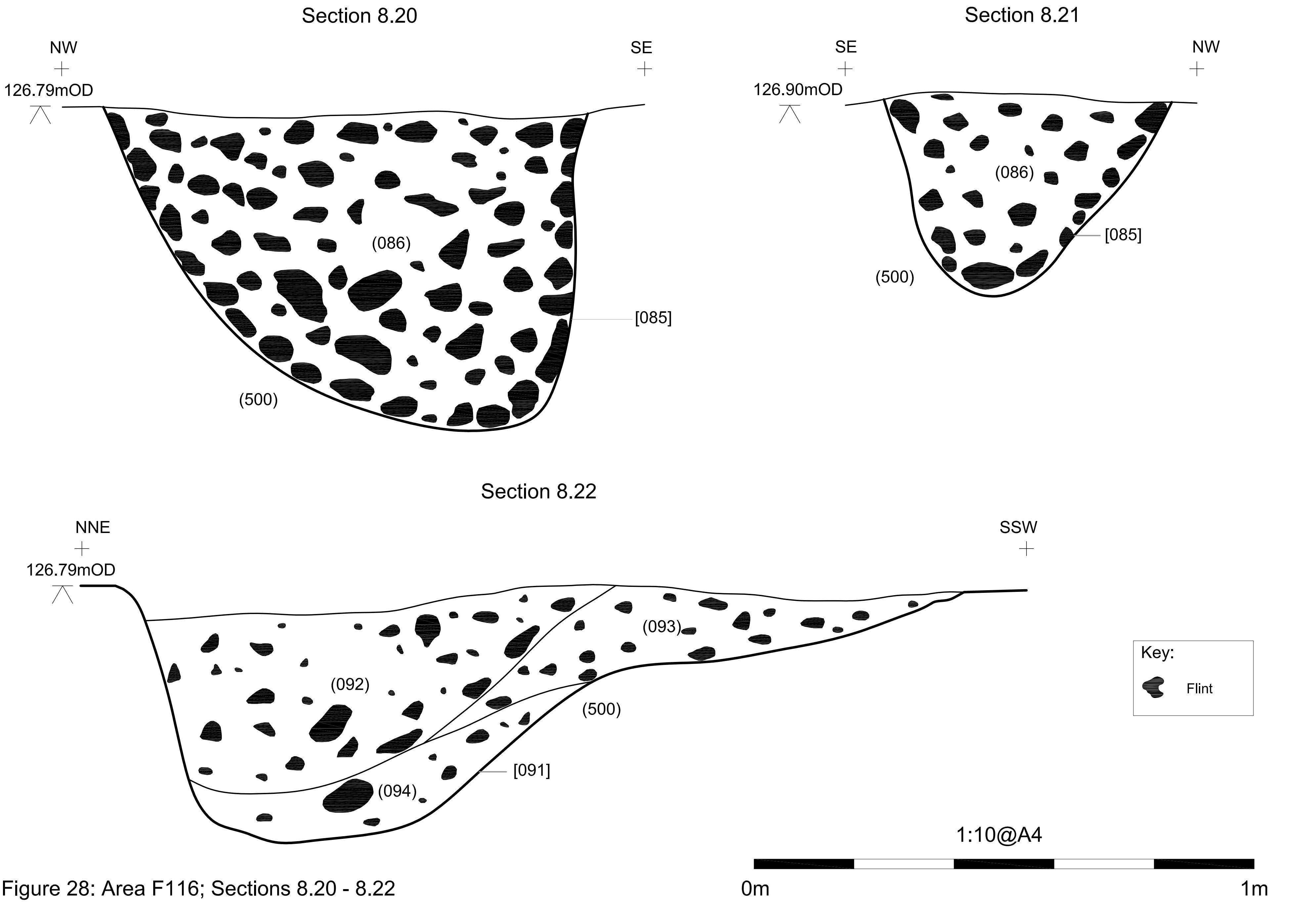


Figure 28: Area F116; Sections 8.20 - 8.22

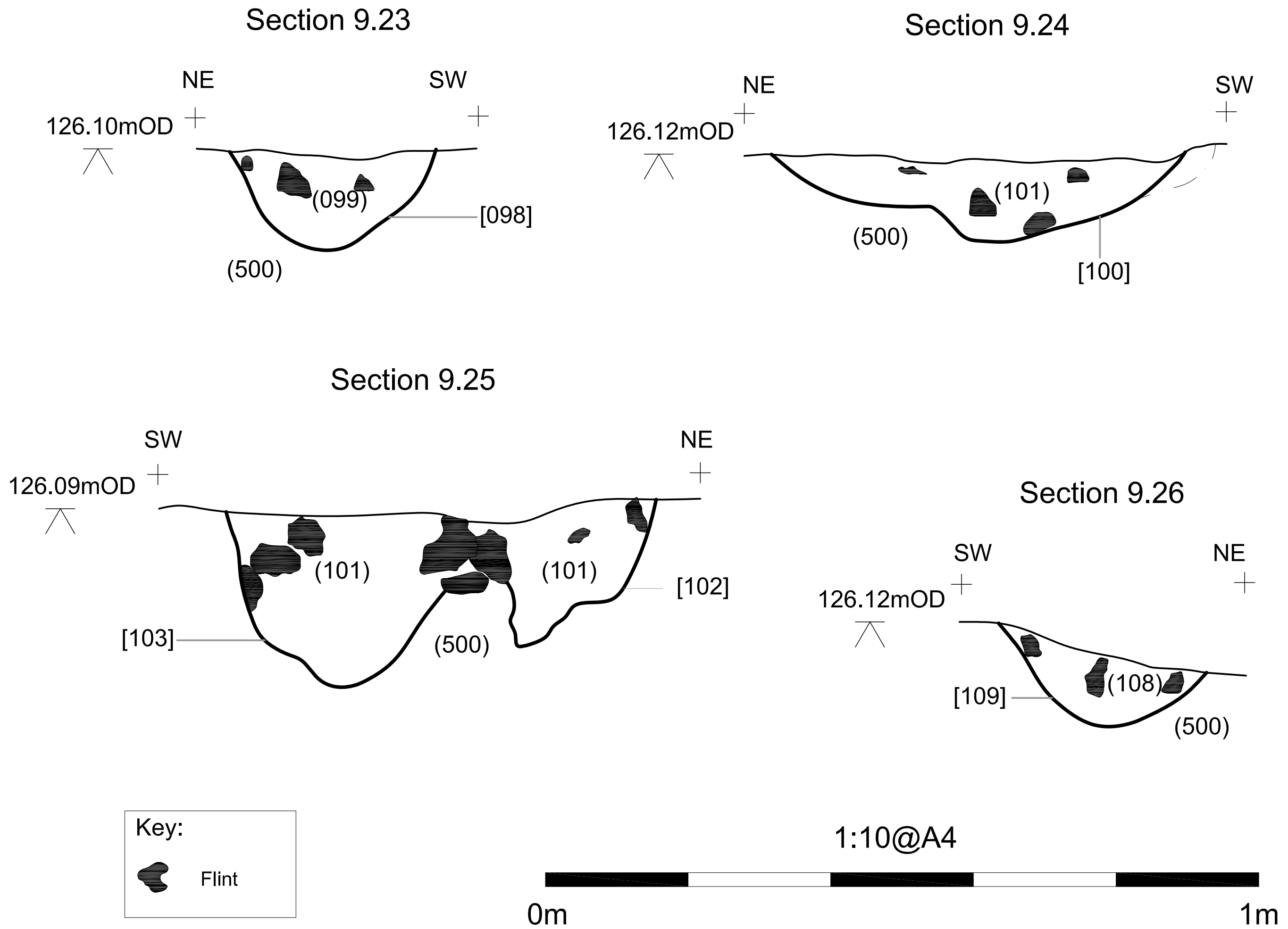


Figure 29: Area F116; Sections 9.23 - 9.26

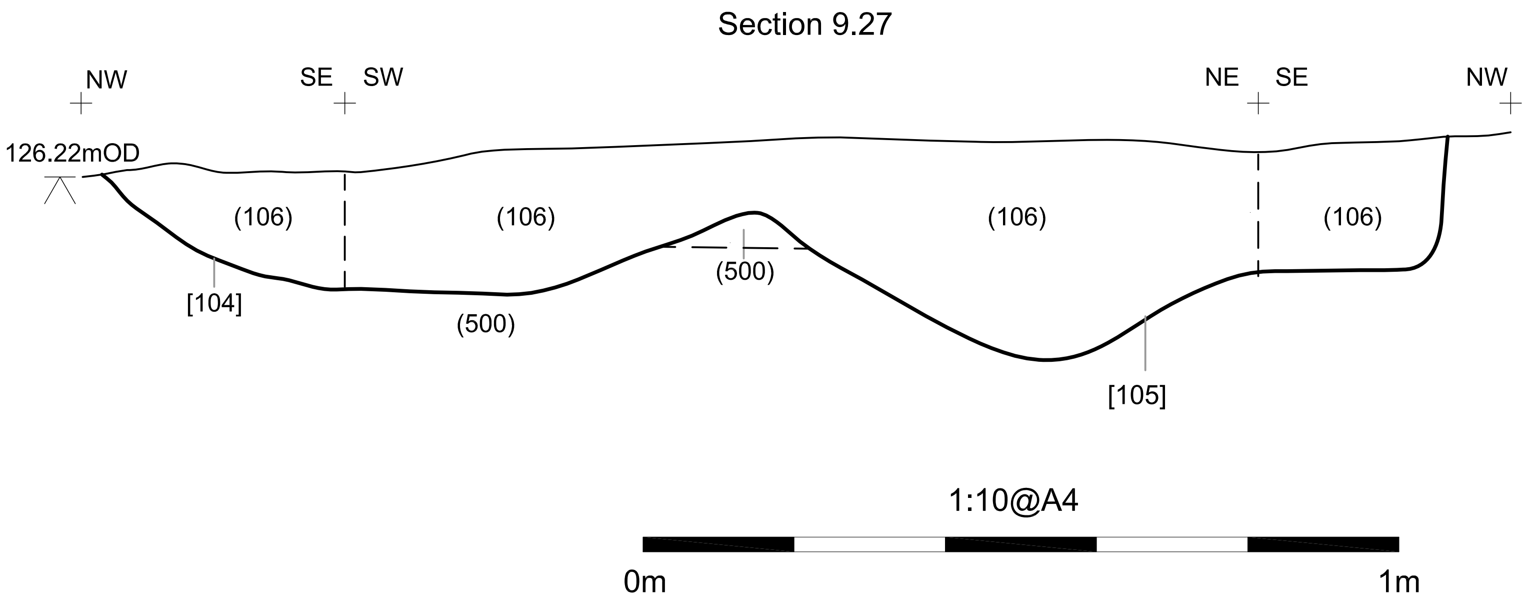


Figure 30: Area F116; Section 9.27

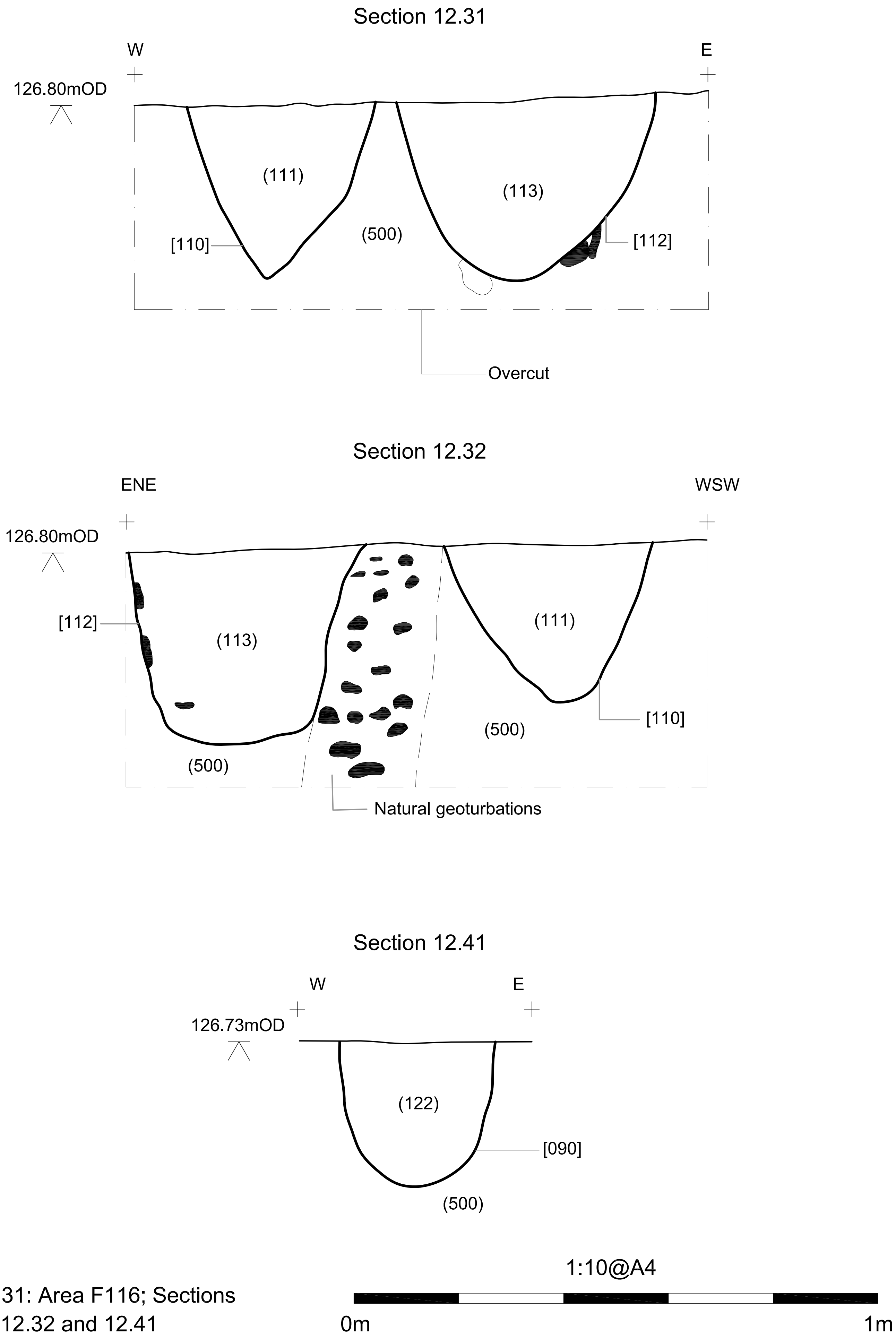
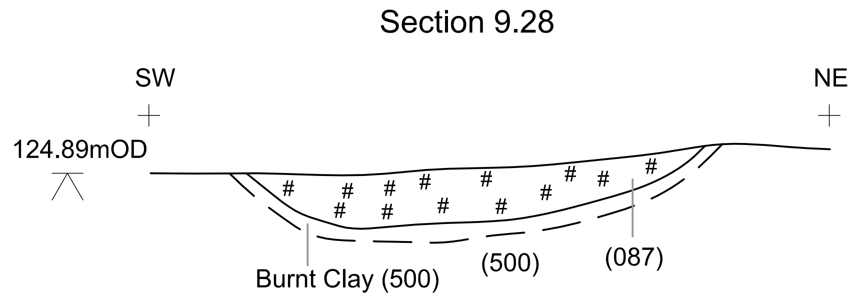


Figure 31: Area F116; Sections 12.31, 12.32 and 12.41



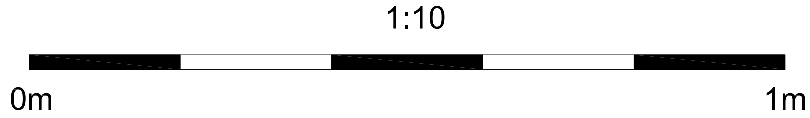
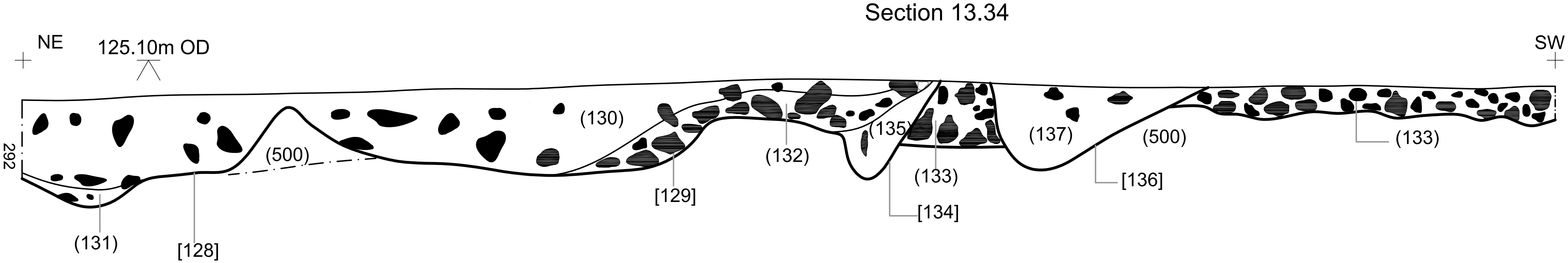
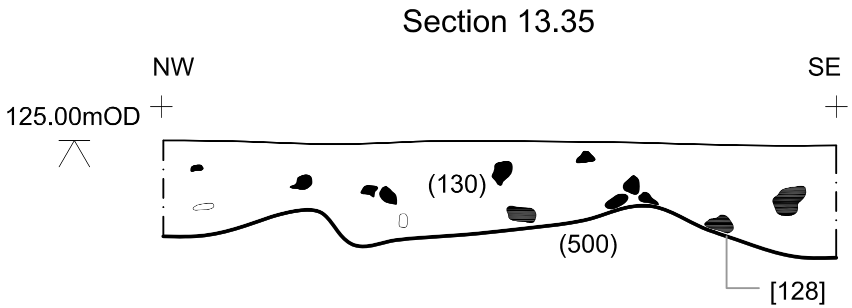
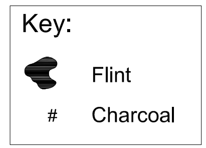


Figure 32: Area F117; Section 9.28







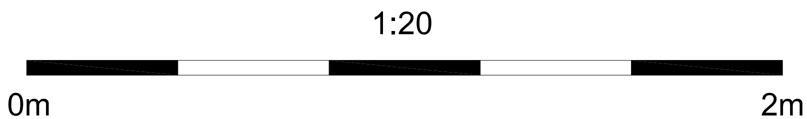


Figure 33: Area F117; Section 13.34 and 13.35

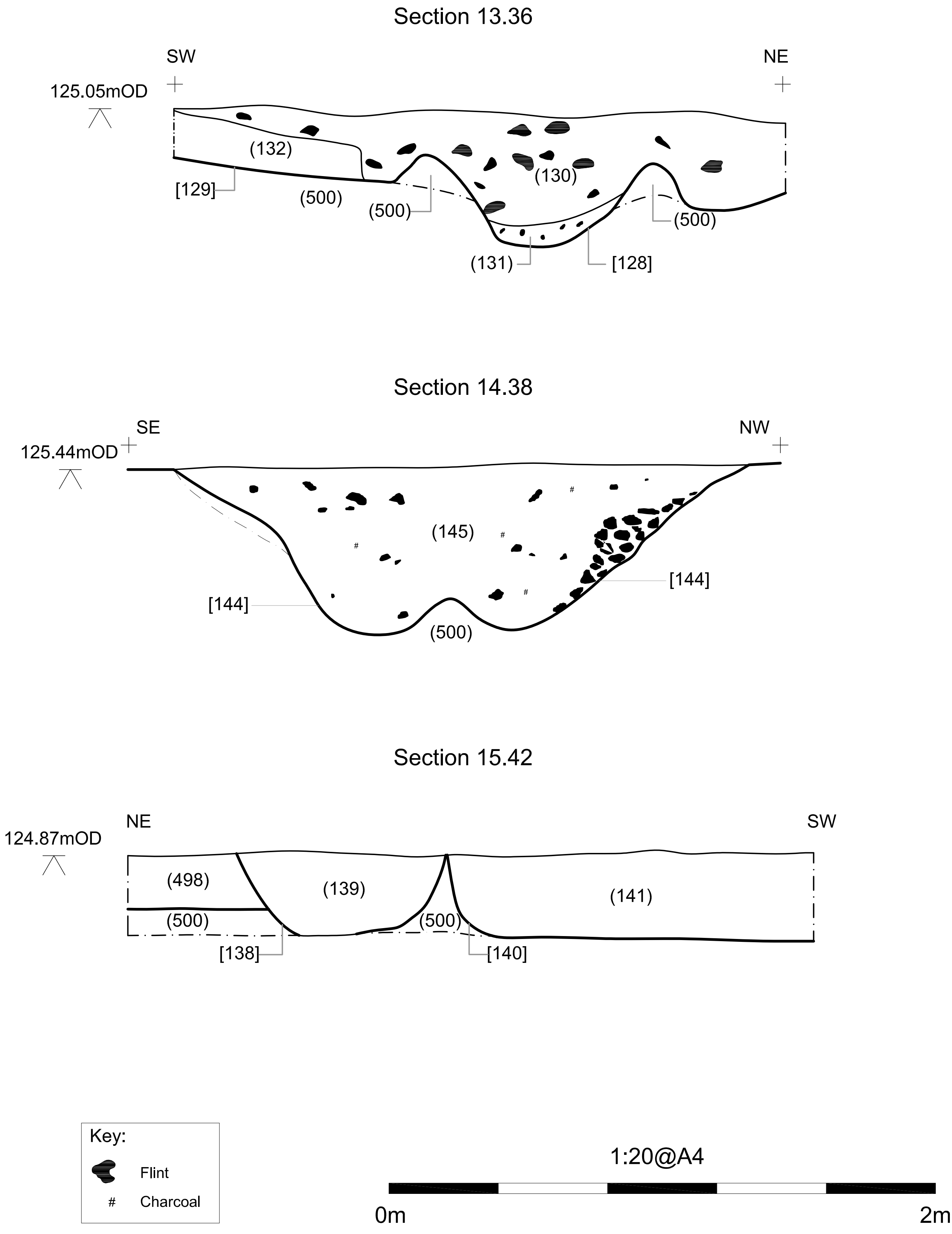


Figure 34: Area F117; Sections 15.36, 15.38 and 15.42

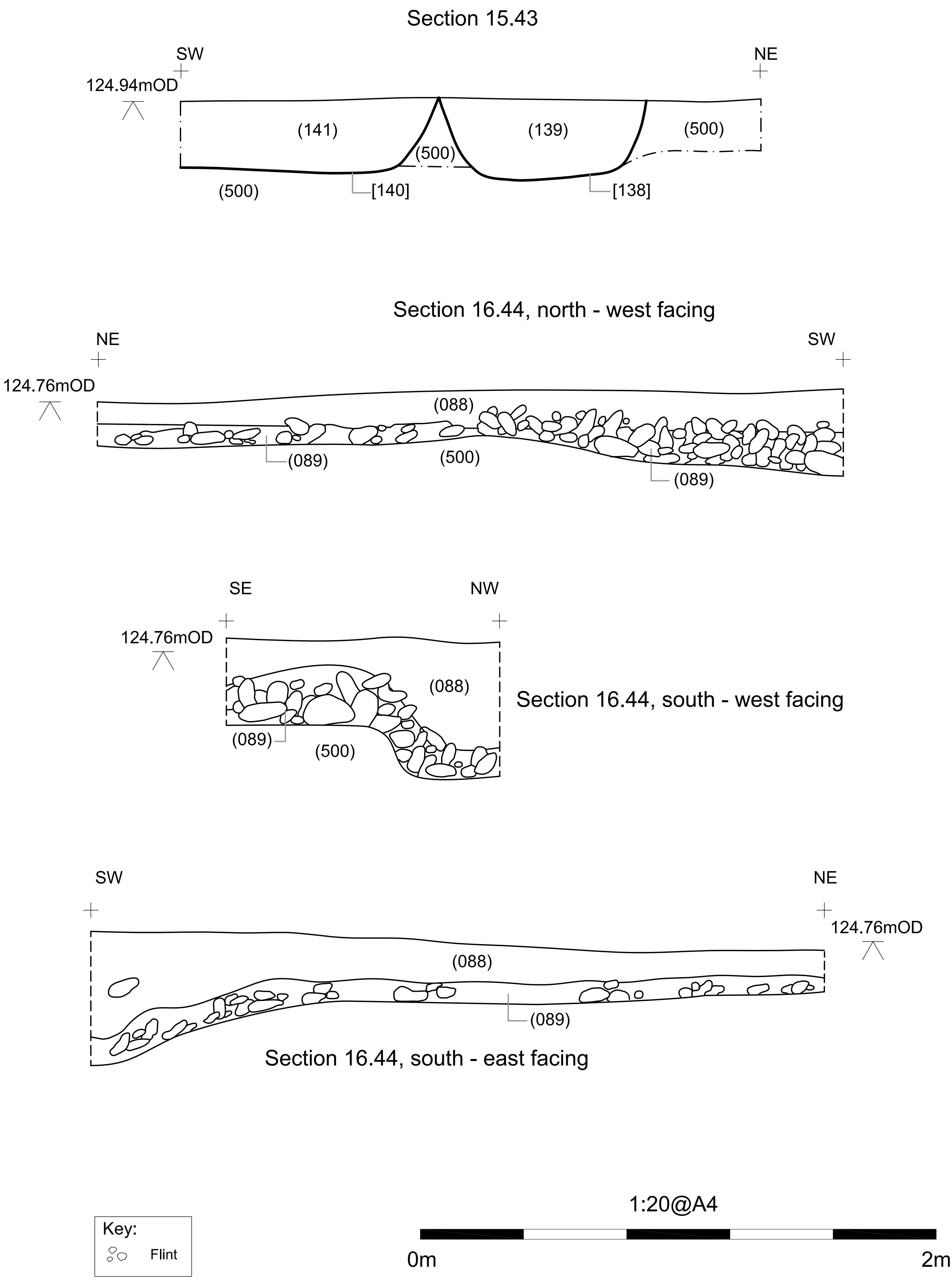


Figure 35: Area F117; Section 15.43 and 16.44

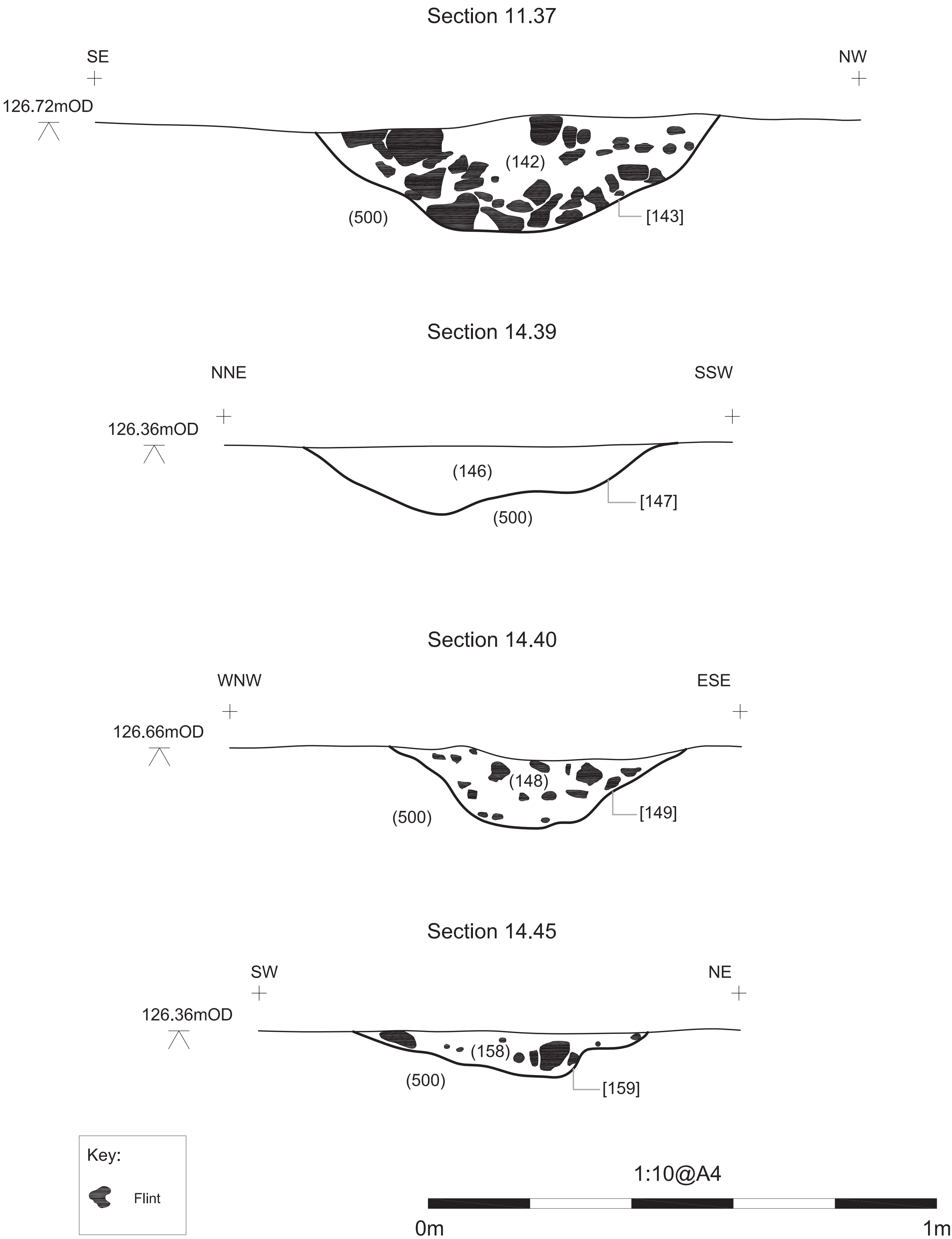
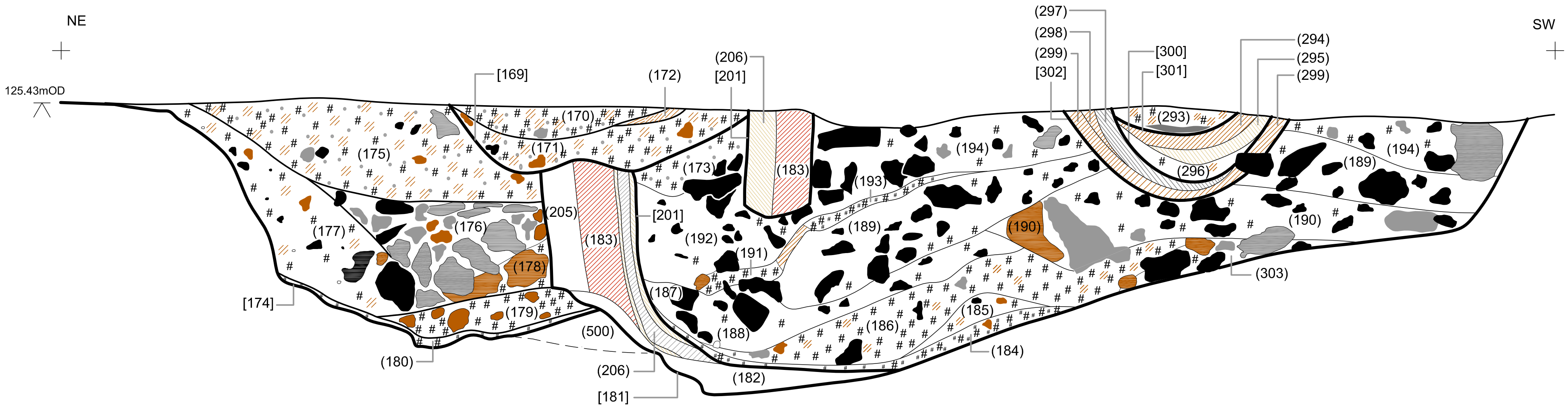
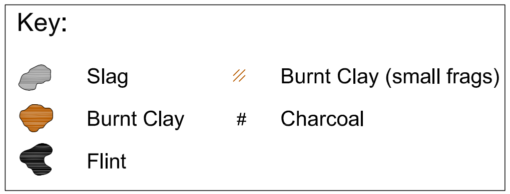


Figure 36: Area F118; Sections 11.37, 14.39, 14.40 and 14.45

Section 17.46





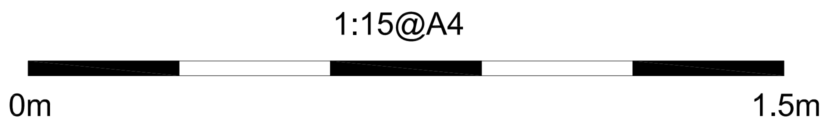


Figure 37: Area F119; Section 17.46

Section 17.47

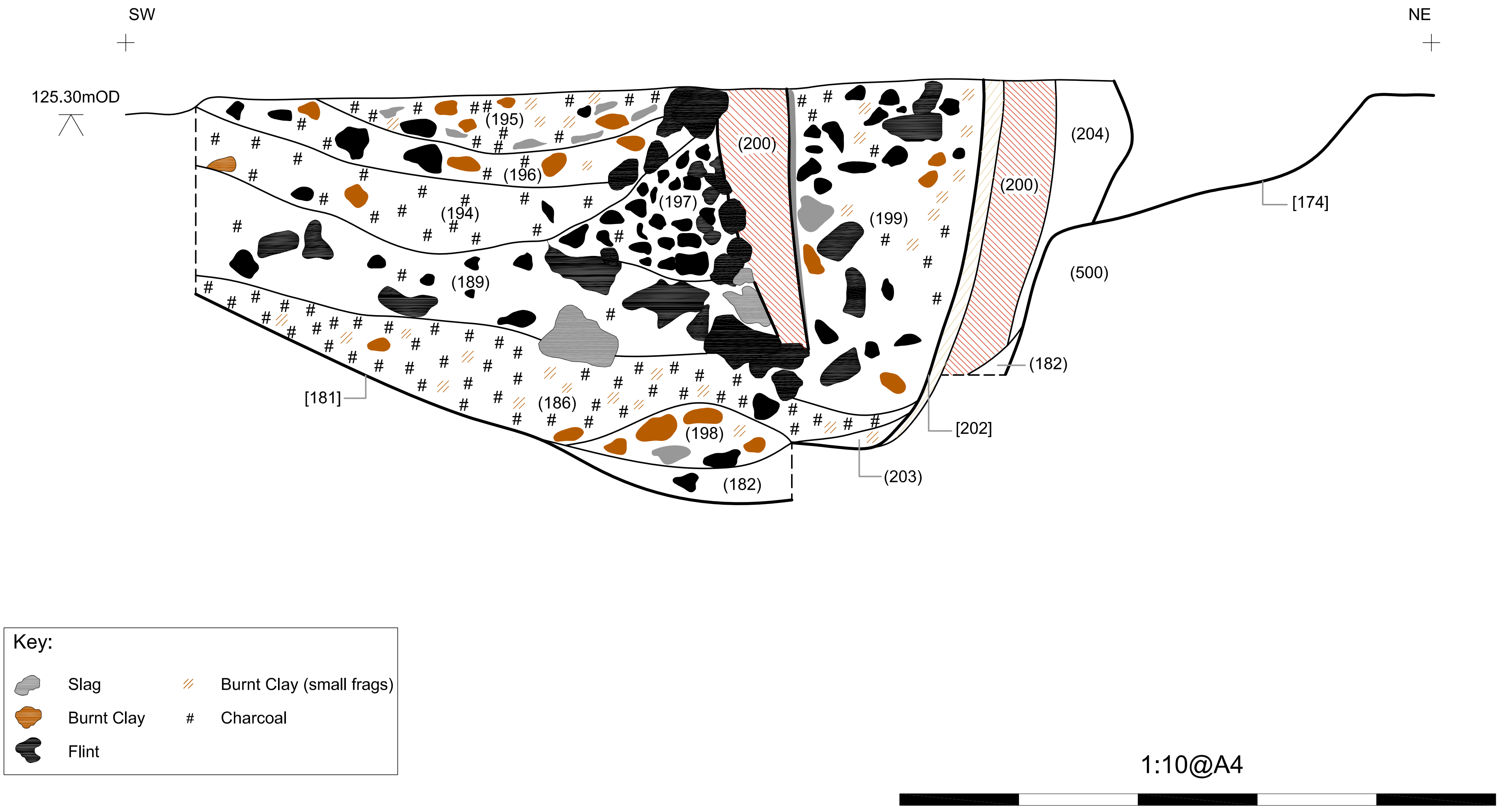


Figure 38: Area F119; Section 17.47

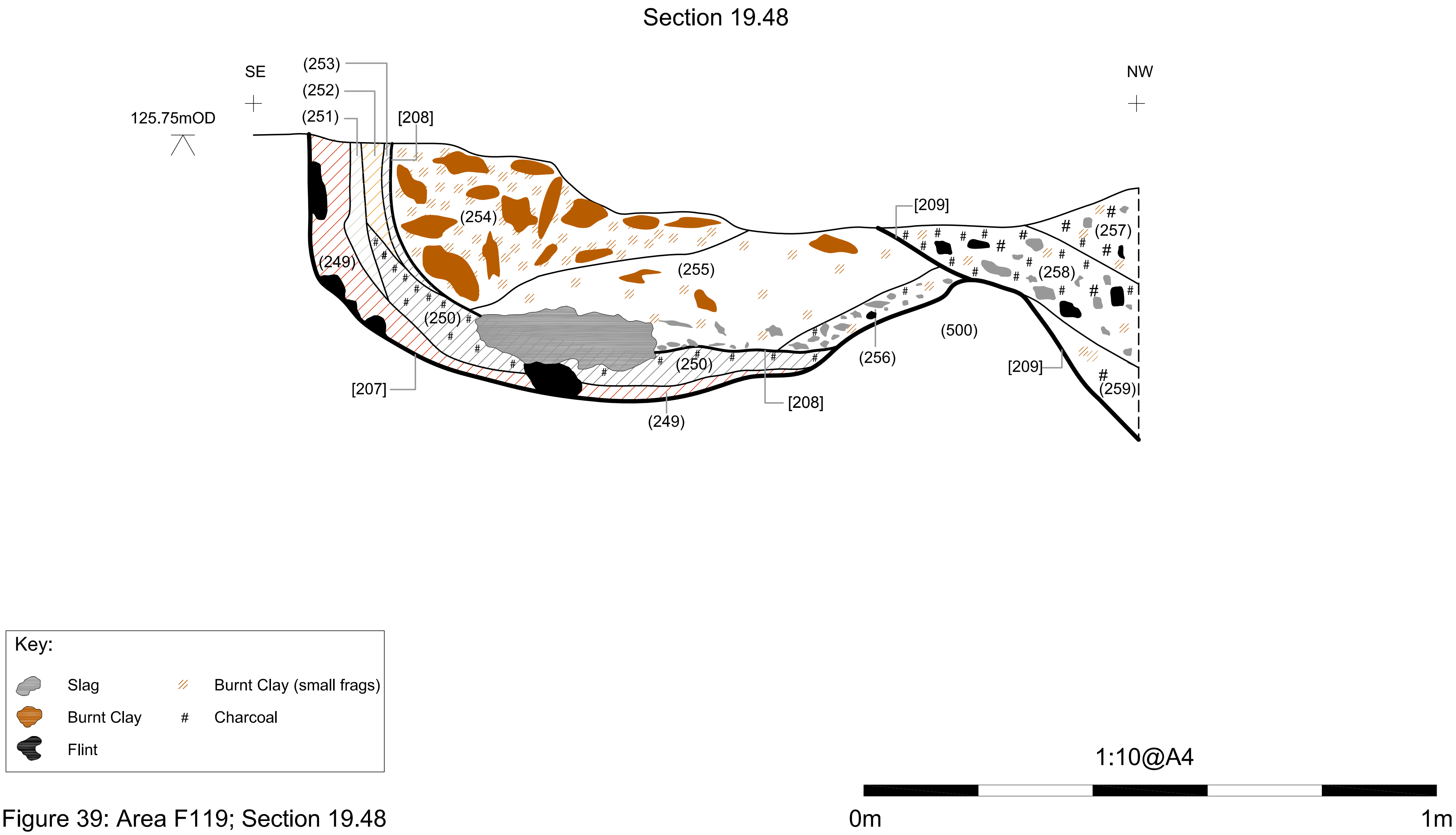
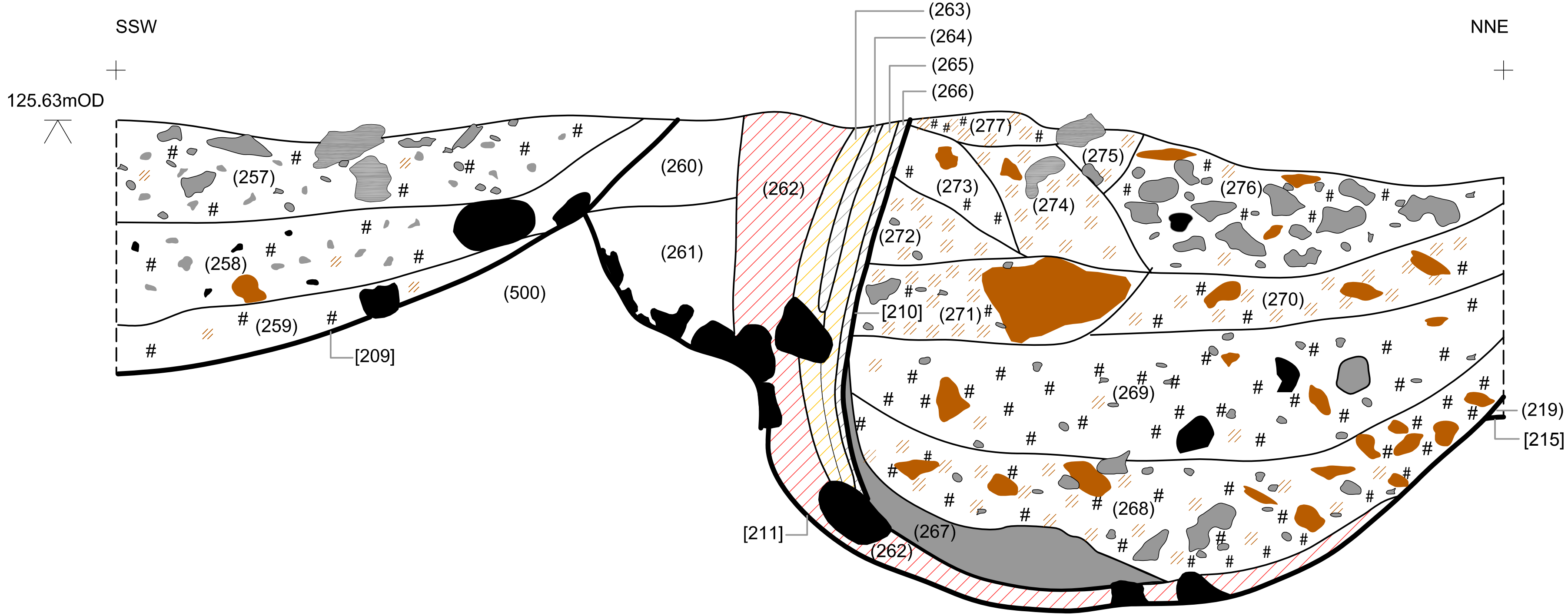


Figure 39: Area F119; Section 19.48

Section 19.79



Key:

Slag	Burnt Clay (small frags)
Burnt Clay	# Charcoal
Flint	

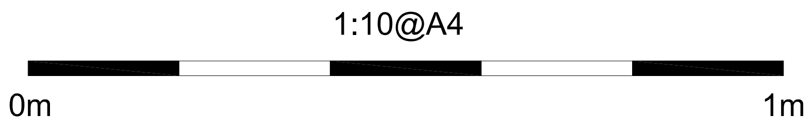


Figure 40: Area F119; Section 19.79

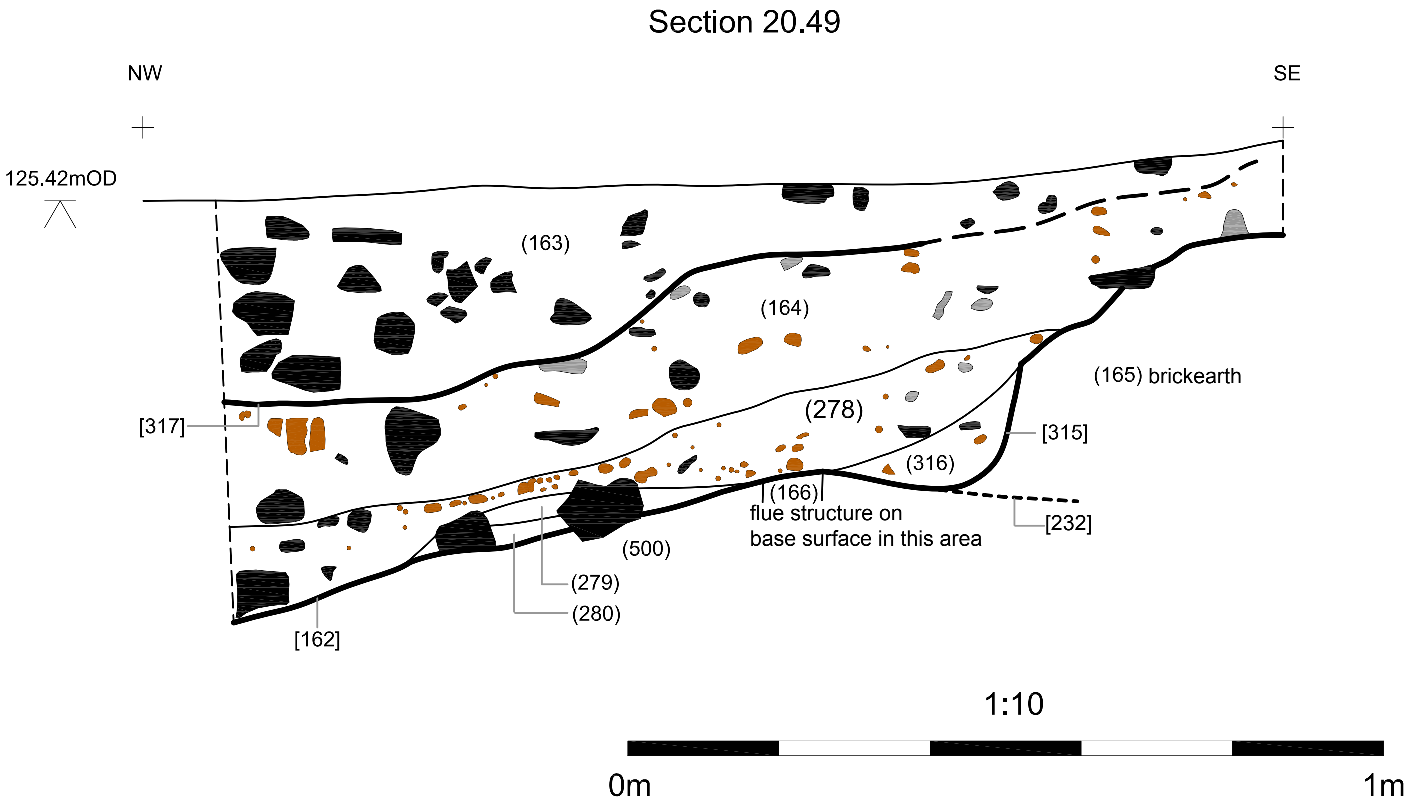


Figure 41: Area F119; Section 20.49

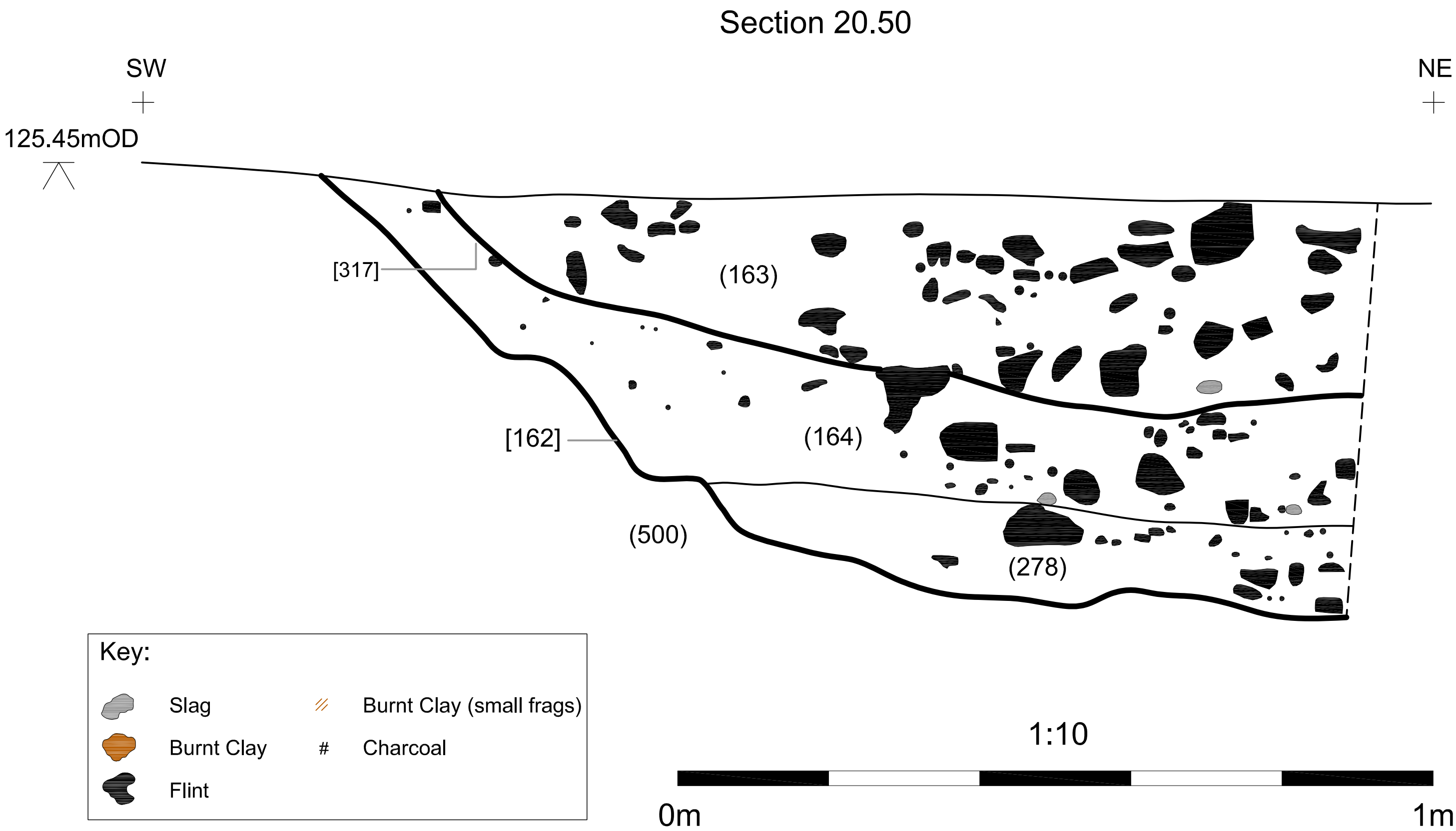


Figure 42: Area F119; Section 20.50

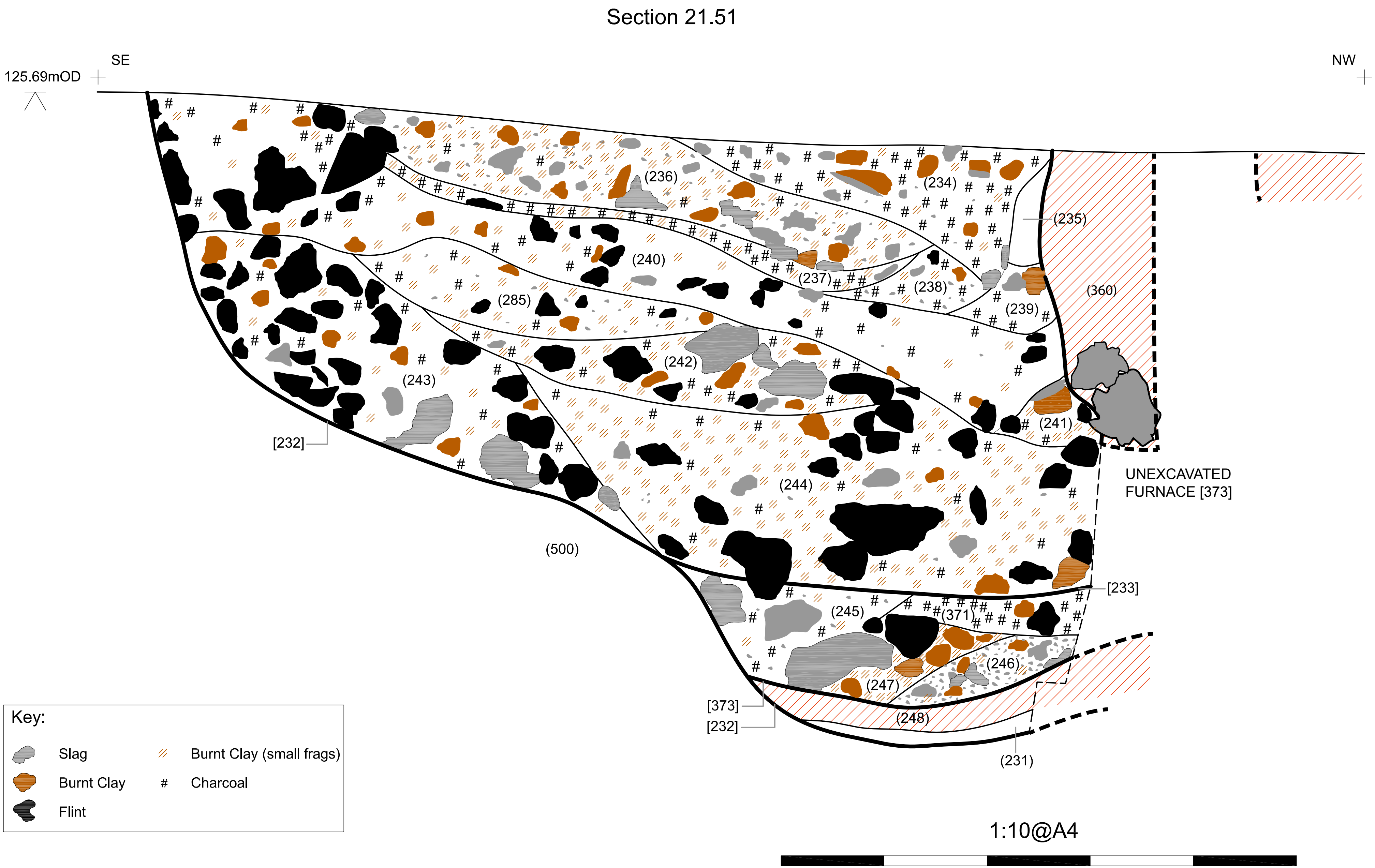


Figure 43: Area F119; Section 21.51

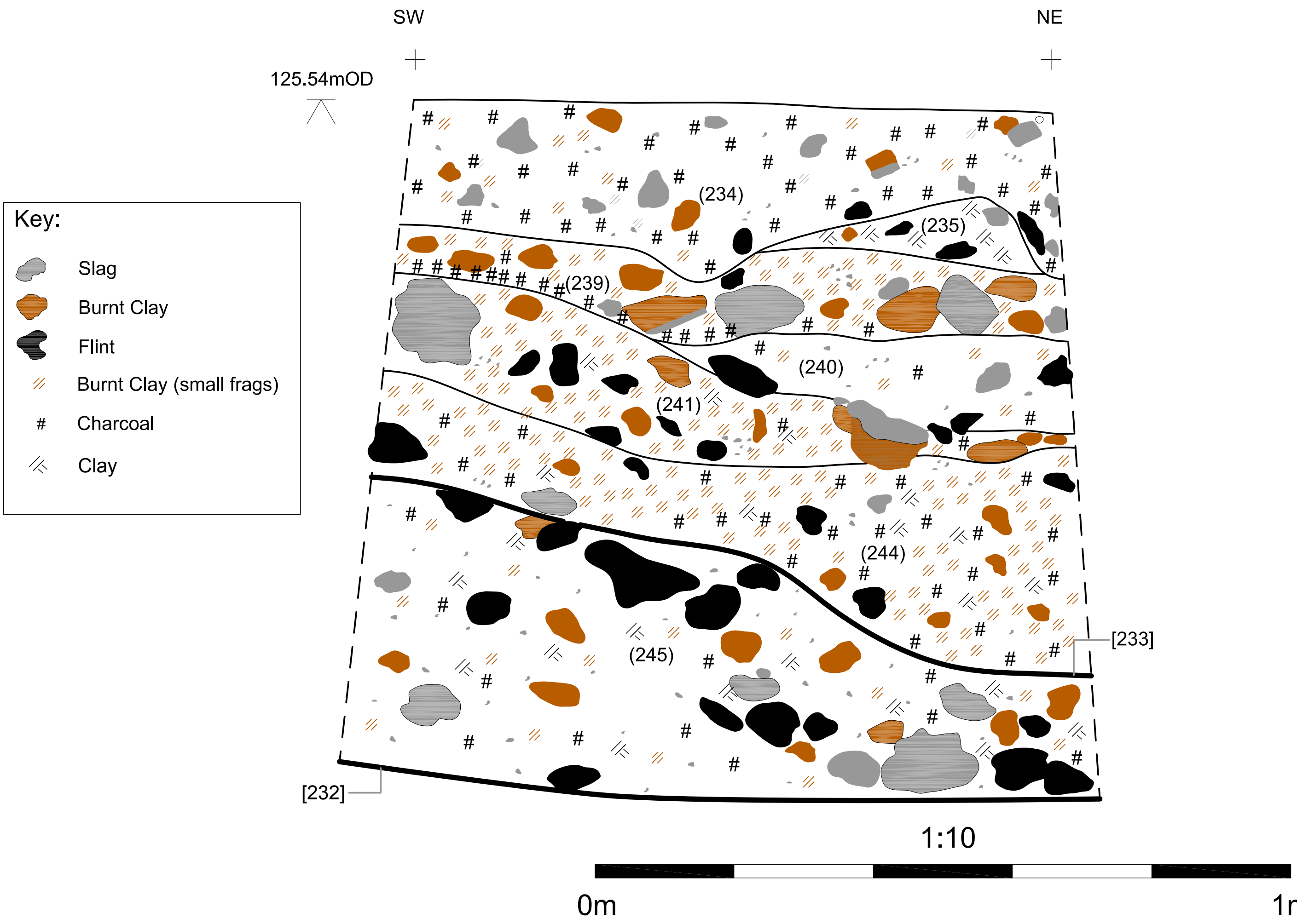


Figure 44: Area F119; Section 22.52

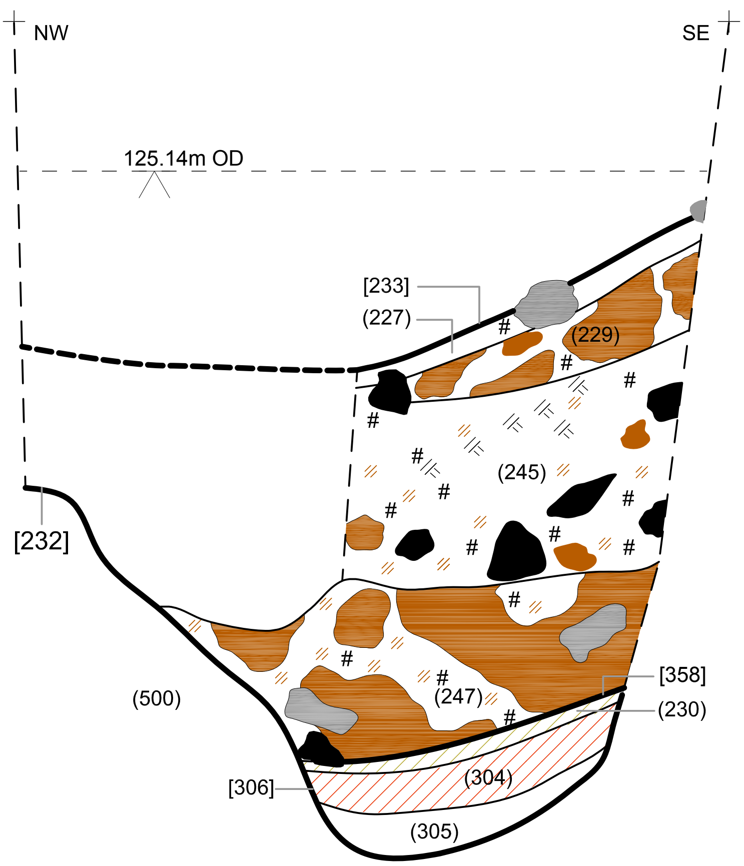


Figure 45: Area F119; Section 22.53, scale 1:10

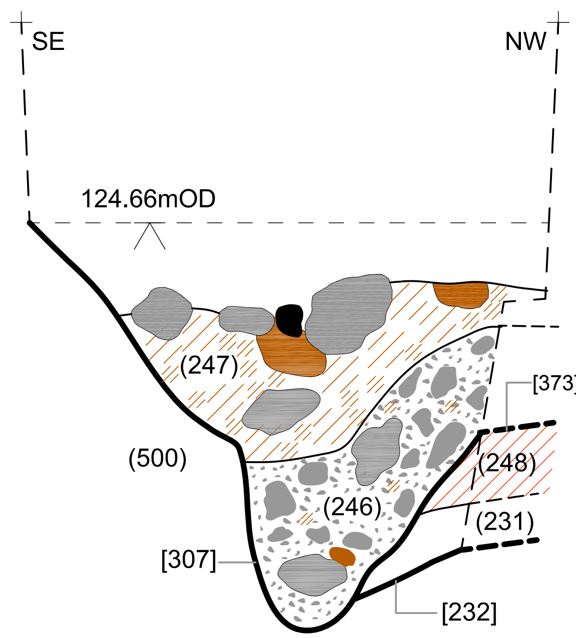


Figure 46: Area F119; Section 22.64, scale 1:10

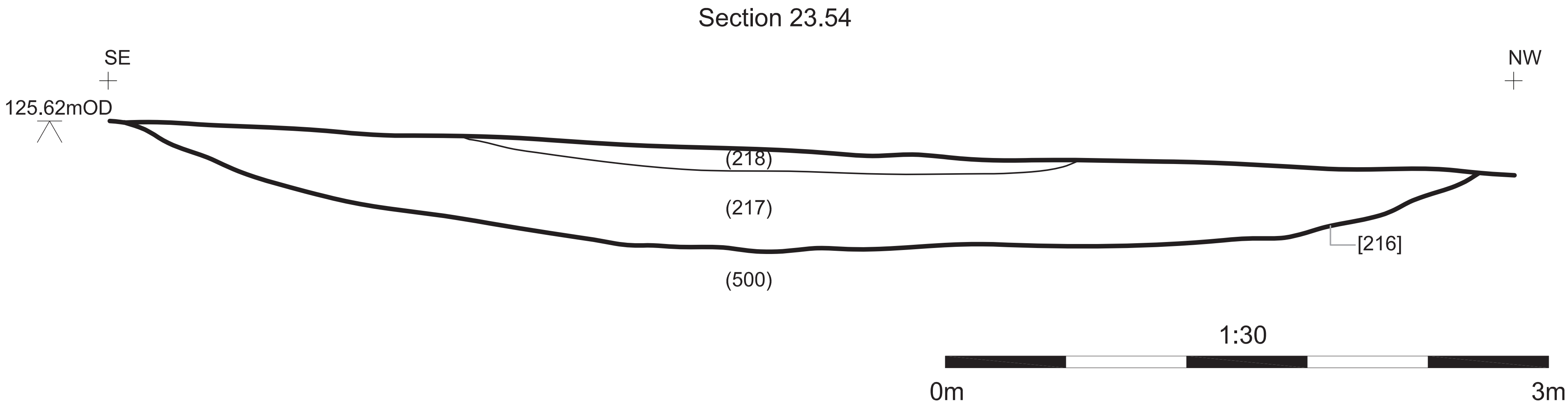


Figure 47: Area F119; Section 23.54

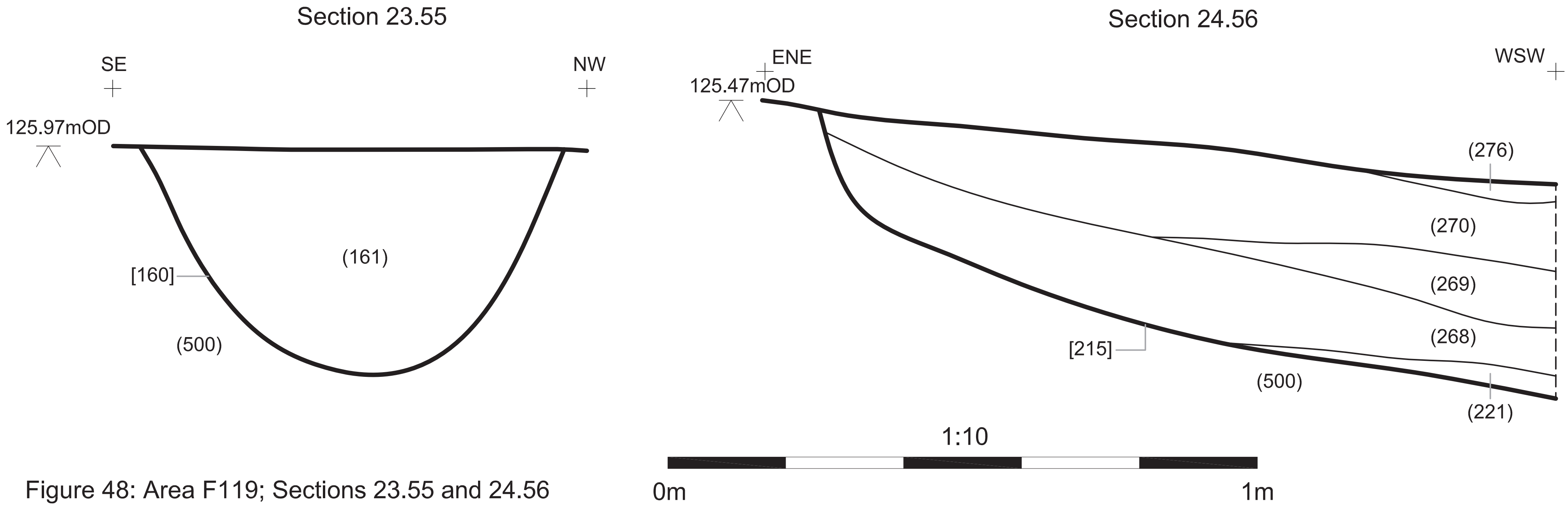


Figure 48: Area F119; Sections 23.55 and 24.56

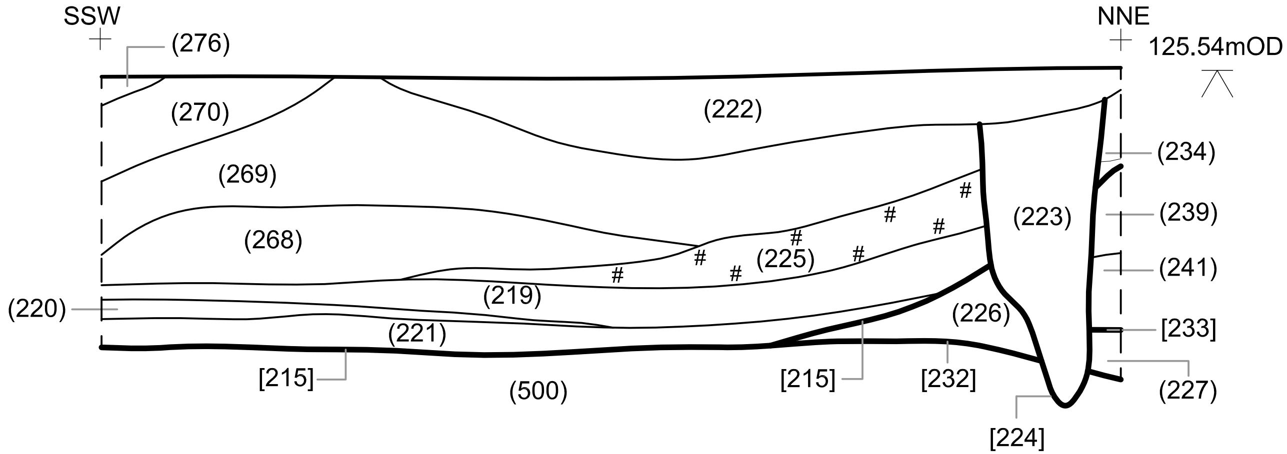


Figure 49: Area F119; Section 24.57, scale 1:10

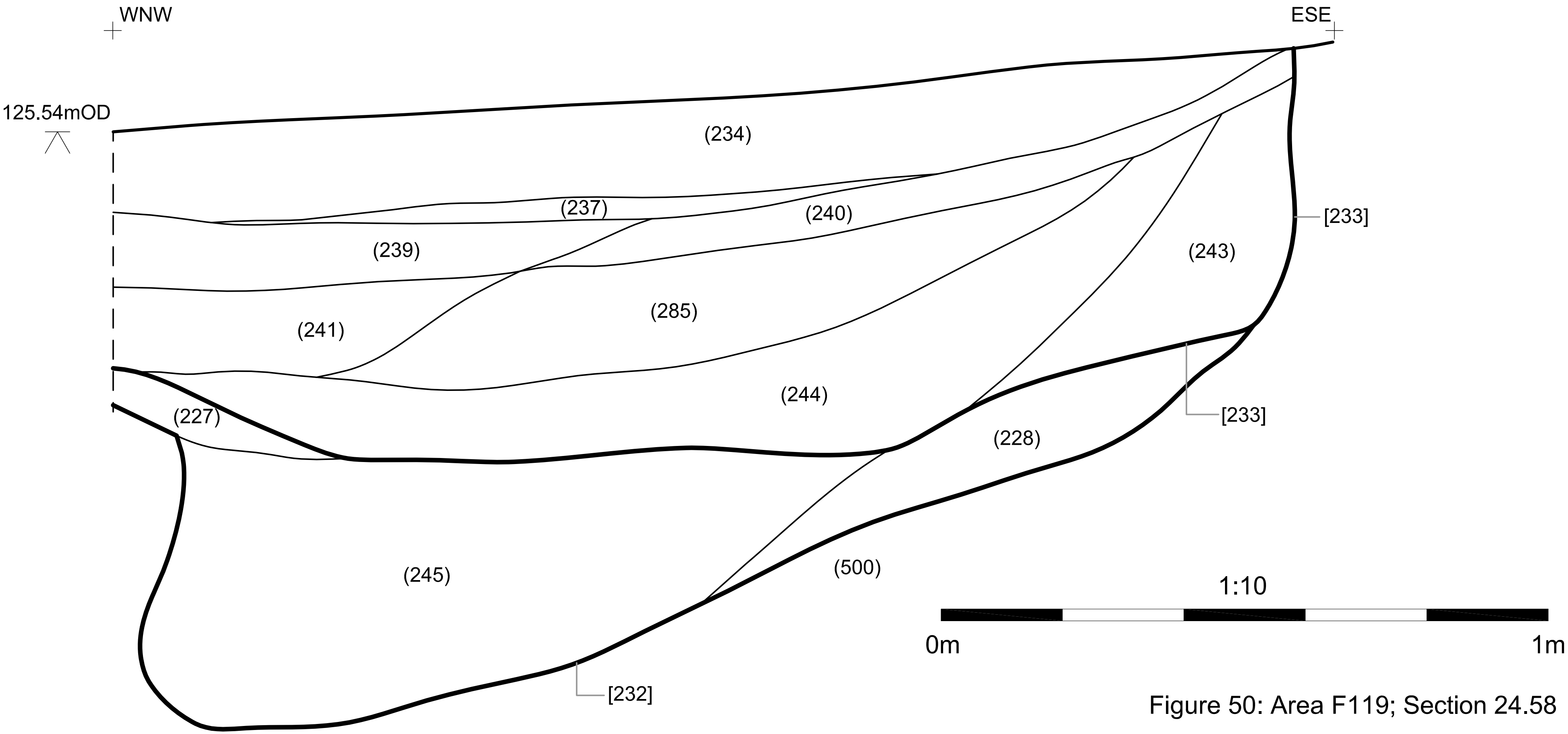
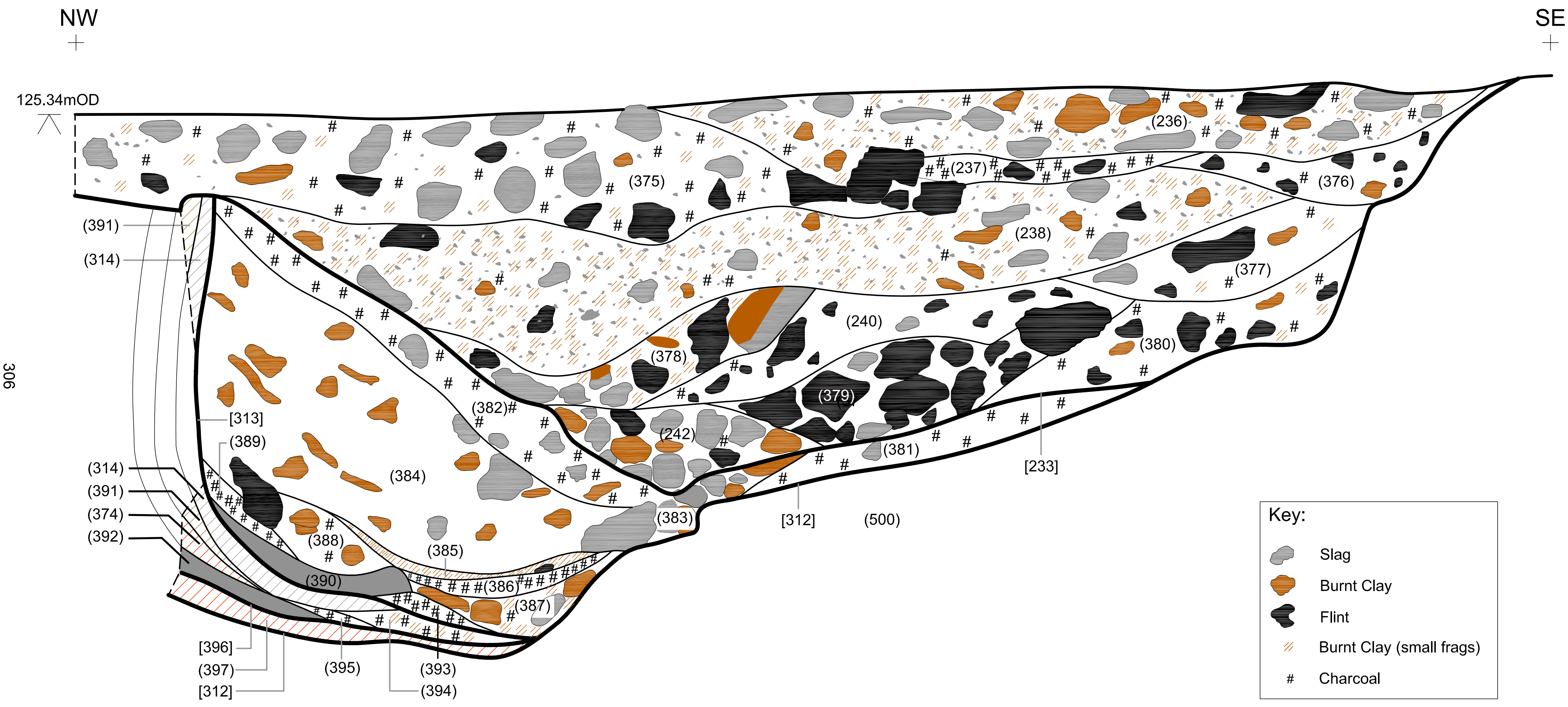


Figure 50: Area F119; Section 24.58

Figure 51: Area F119; Section 26.62

Section 27.63

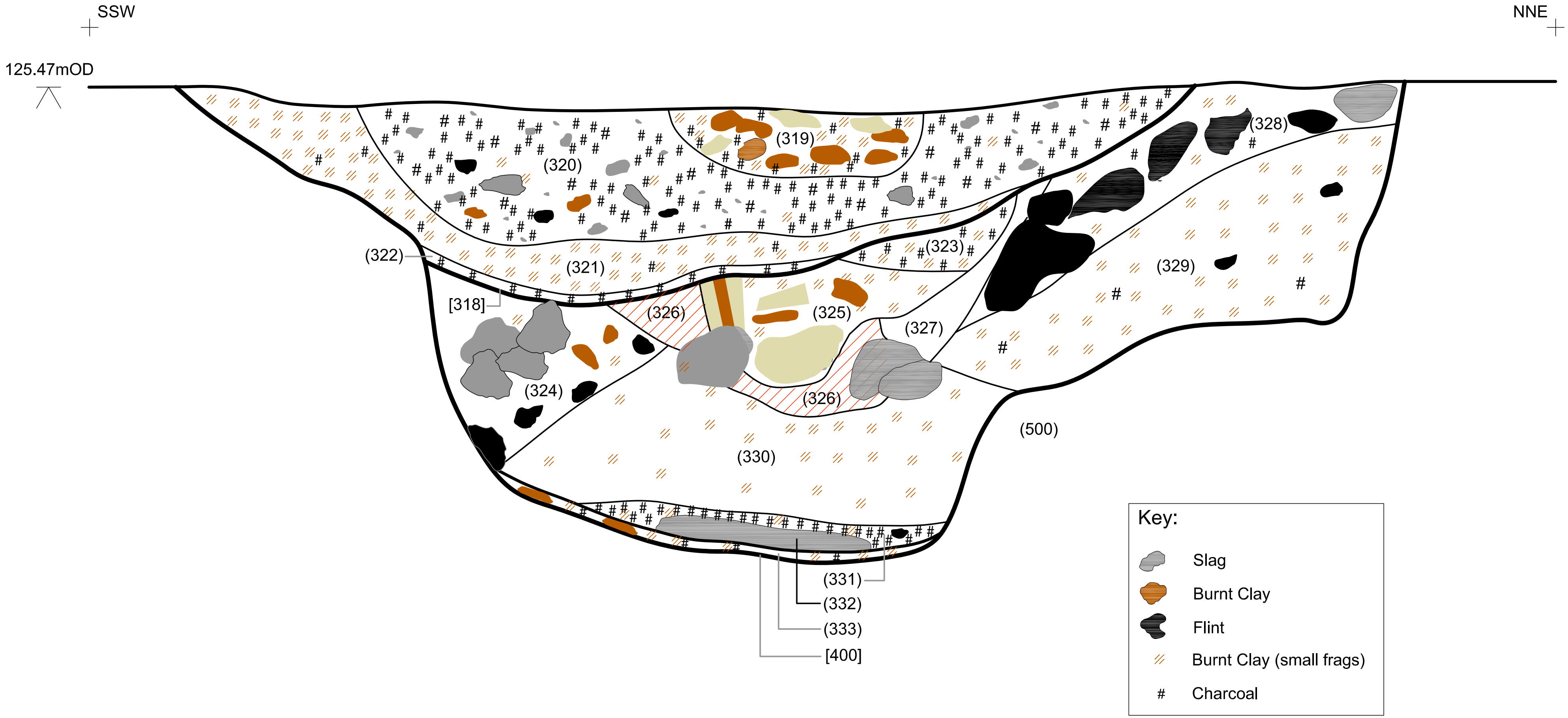


SCALE 1:10 @ A4

0m 1.25m

Figure 52: Area F119; Section 27.63

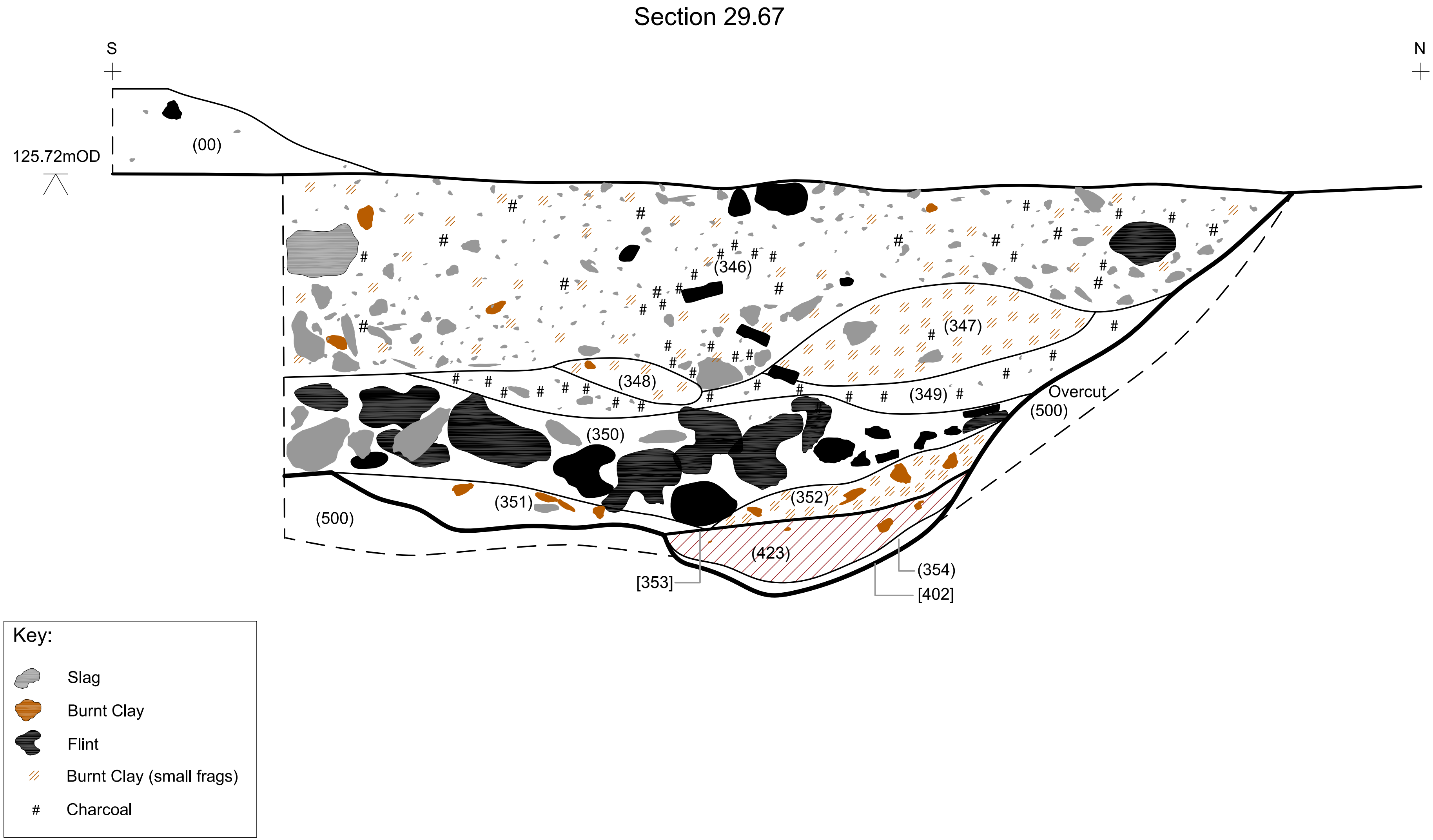
Section 28.65



1:10@A4

0m 1m

Figure 53: Area F119; Section 28.65



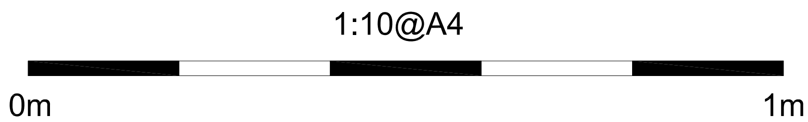


Figure 54: Area F119; Section 29.67

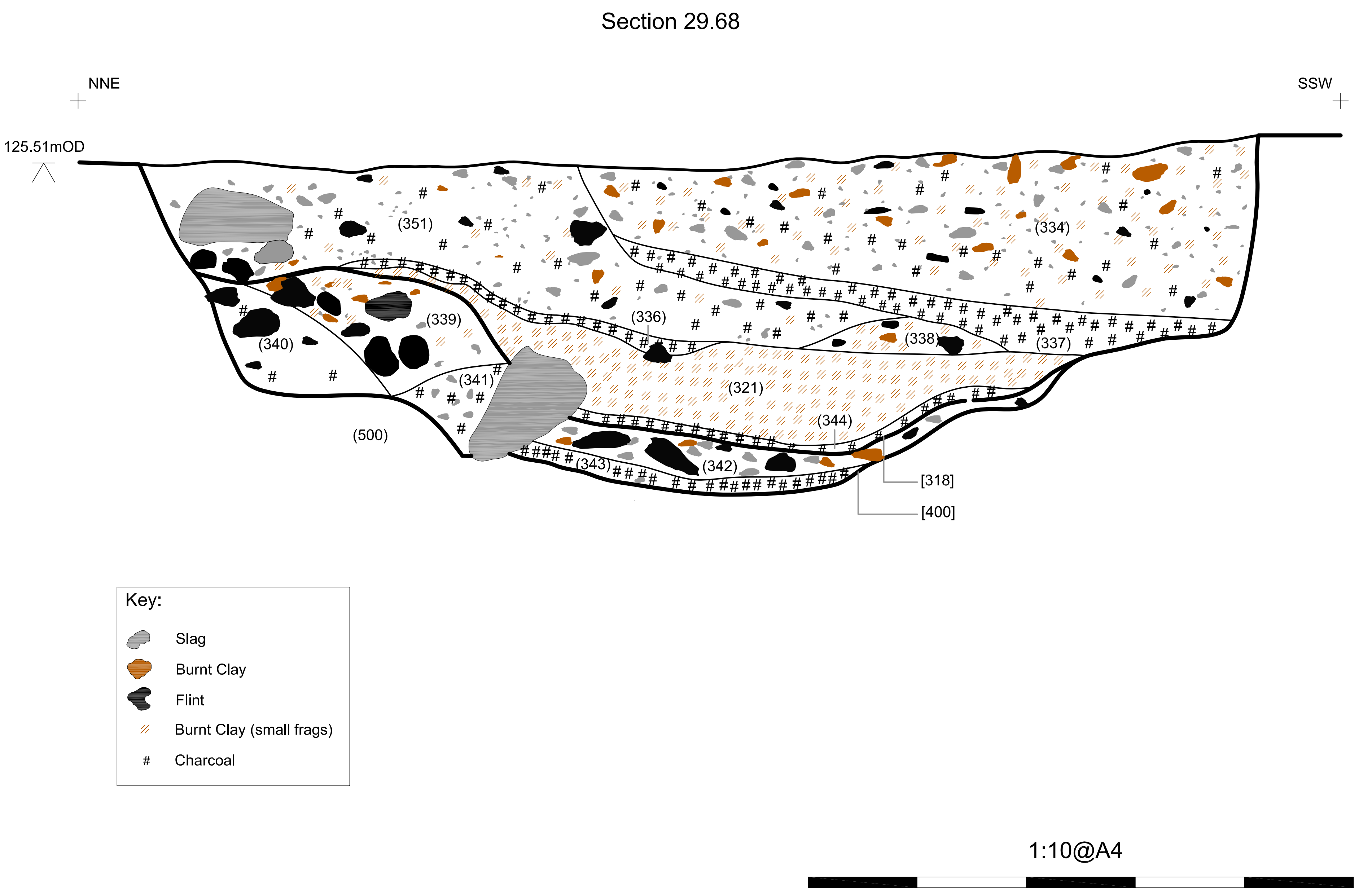


Figure 55: Area F119; Section 29.68

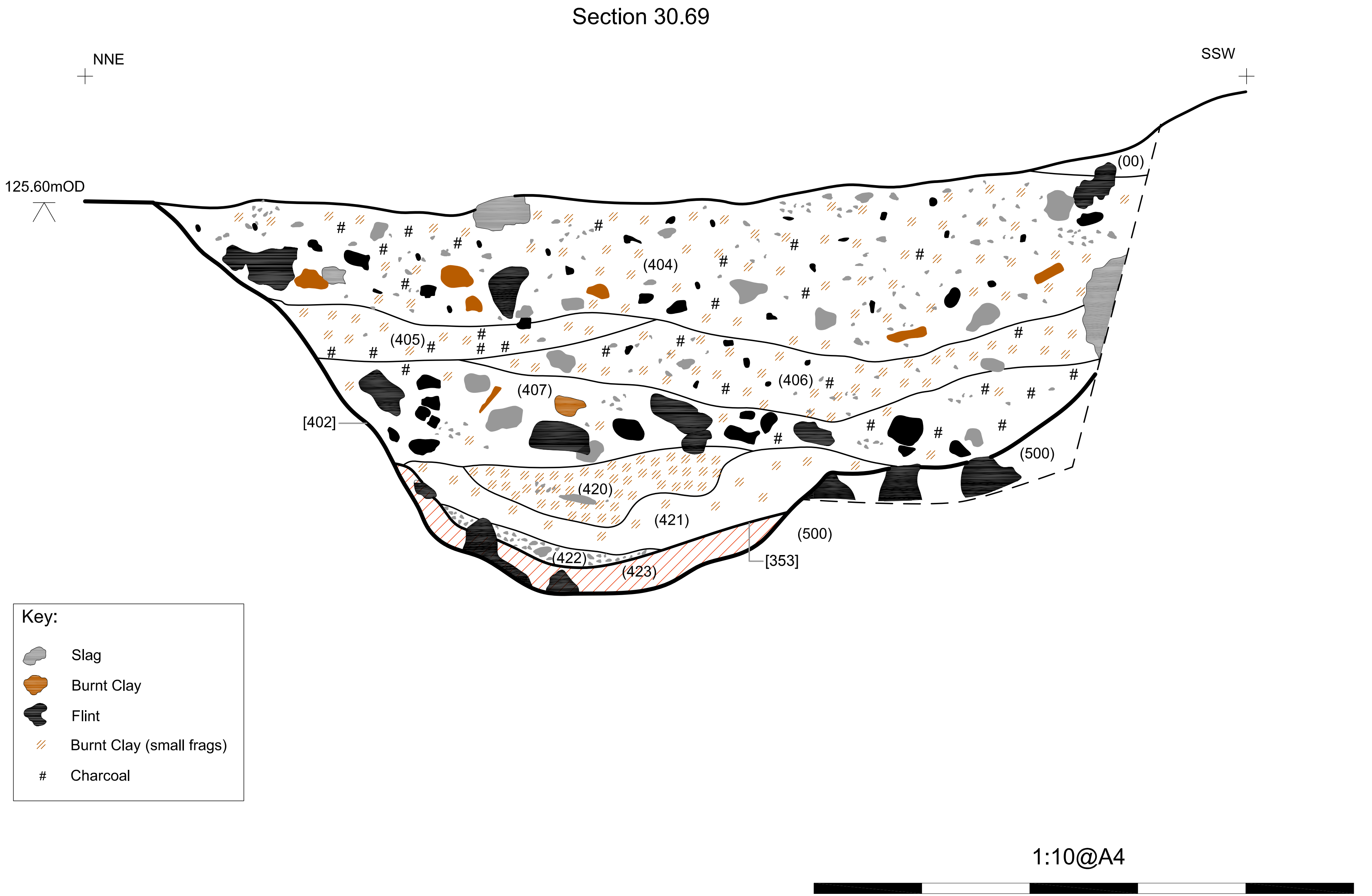


Figure 56: Area F119; Section 30.69

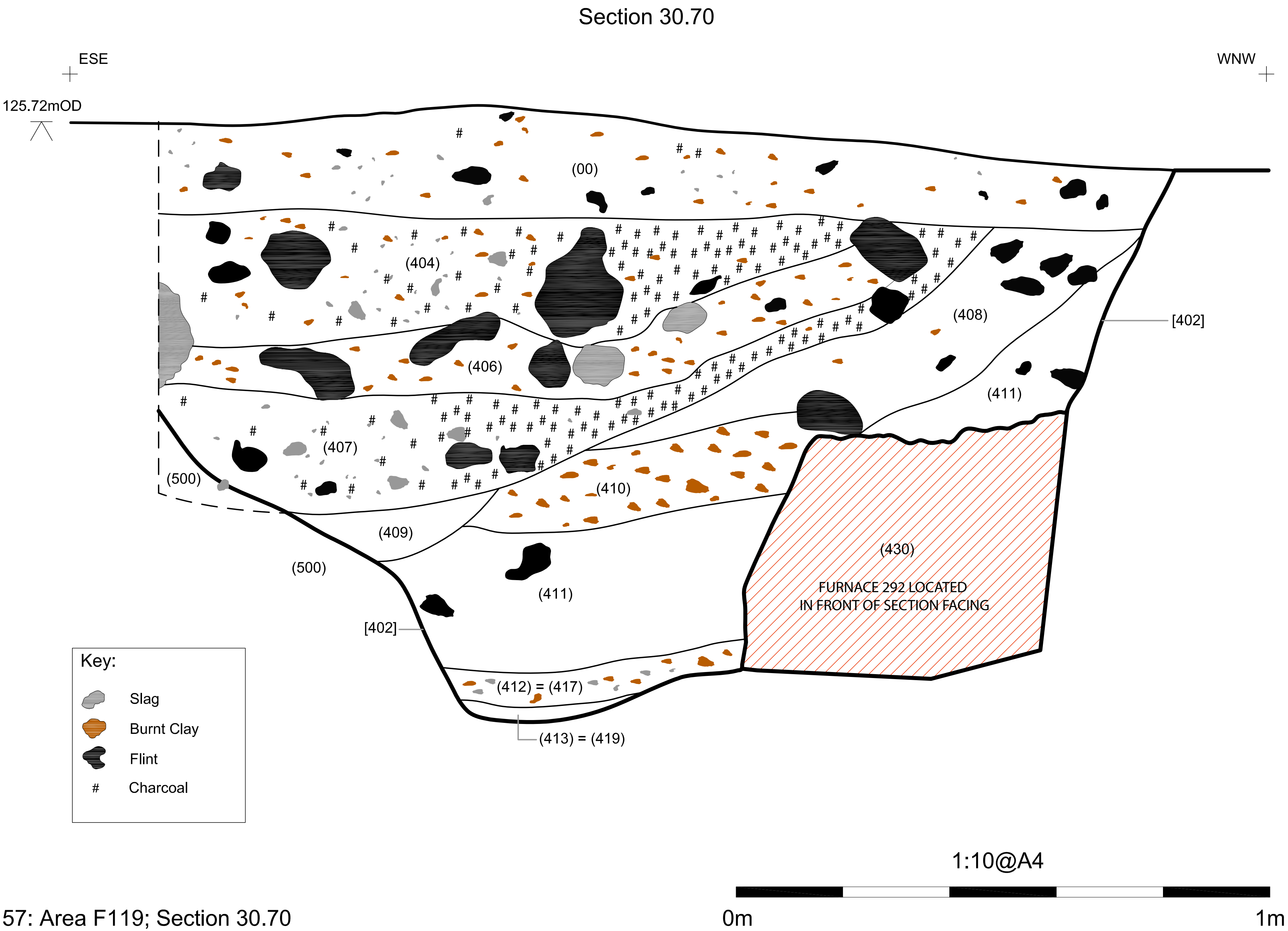


Figure 57: Area F119; Section 30.70

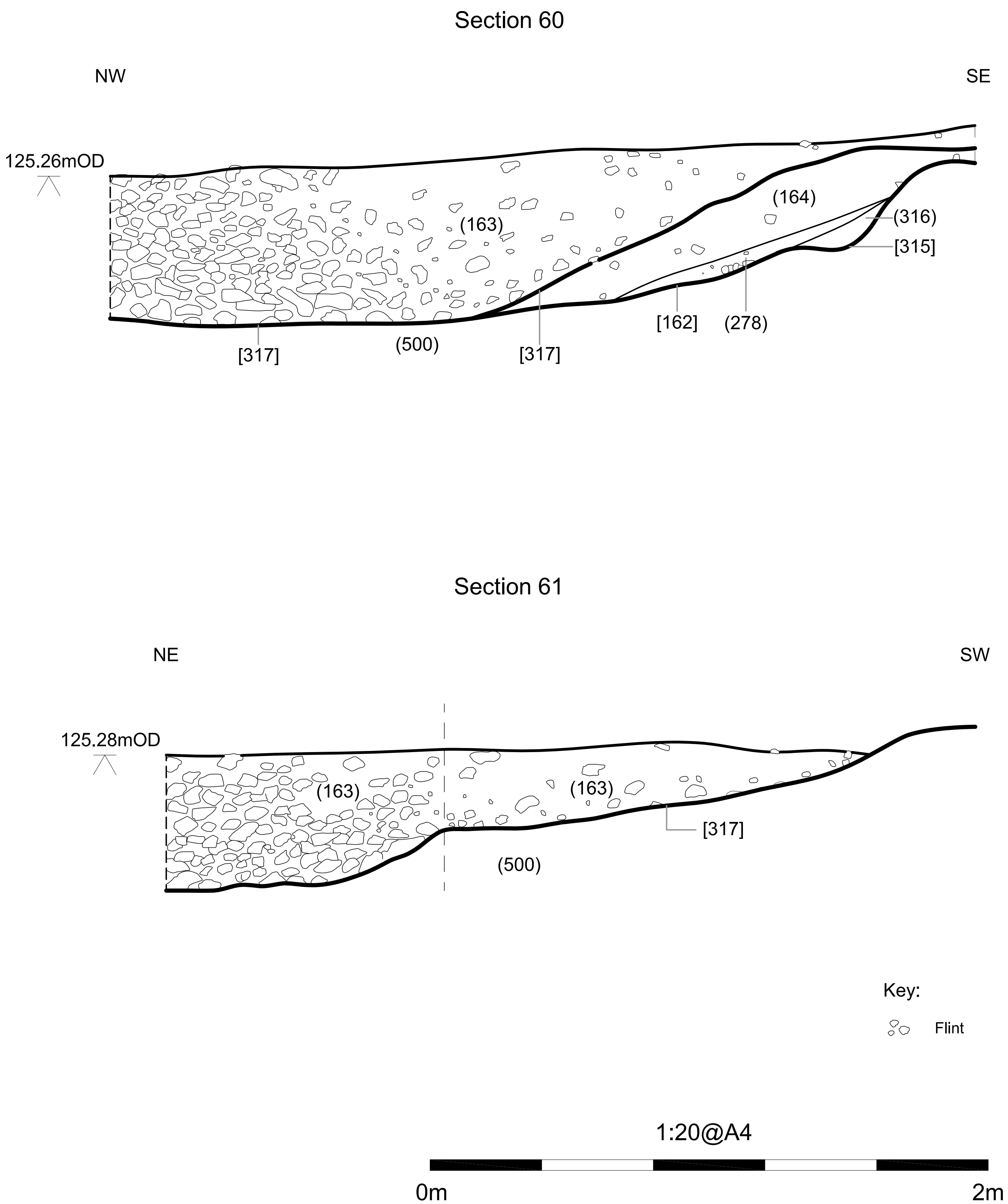


Figure 58: Area F119; Sections 60 and 61

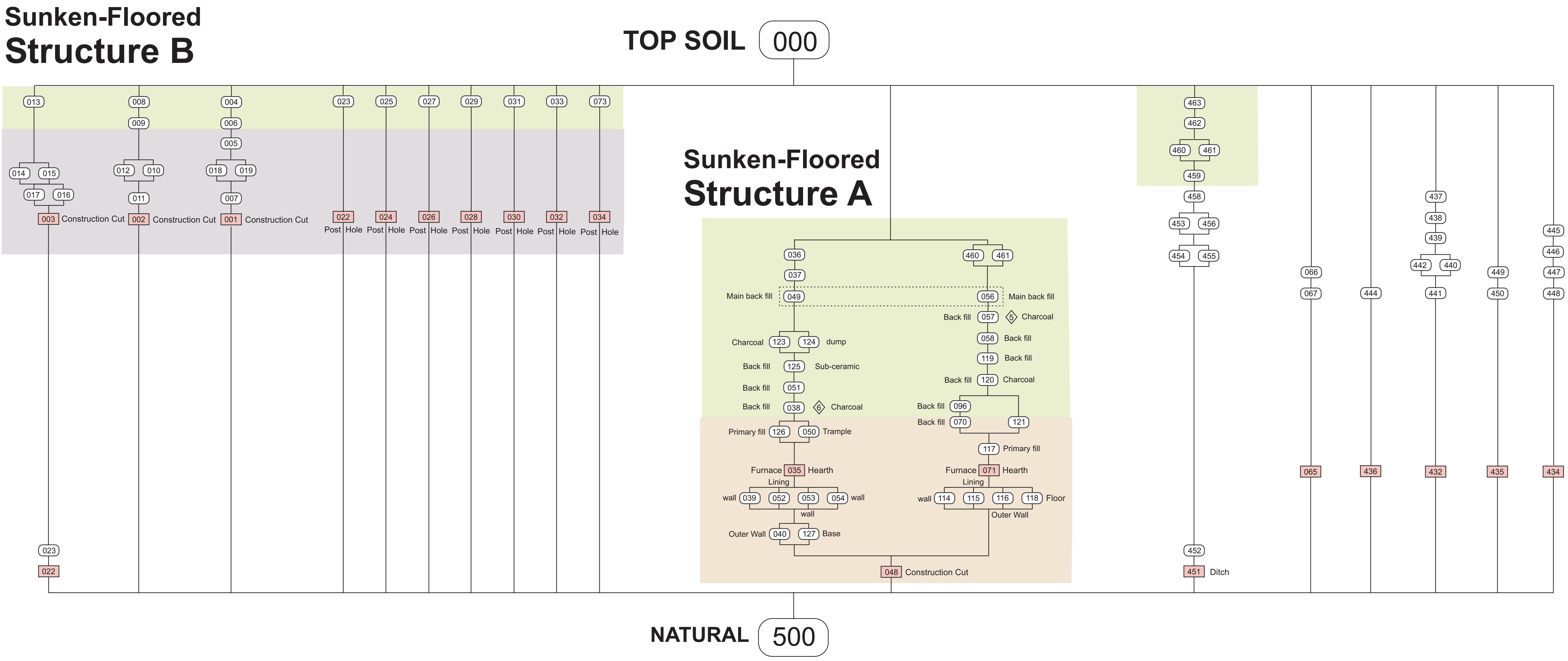


Figure 59: Harris Matrix for Area F113

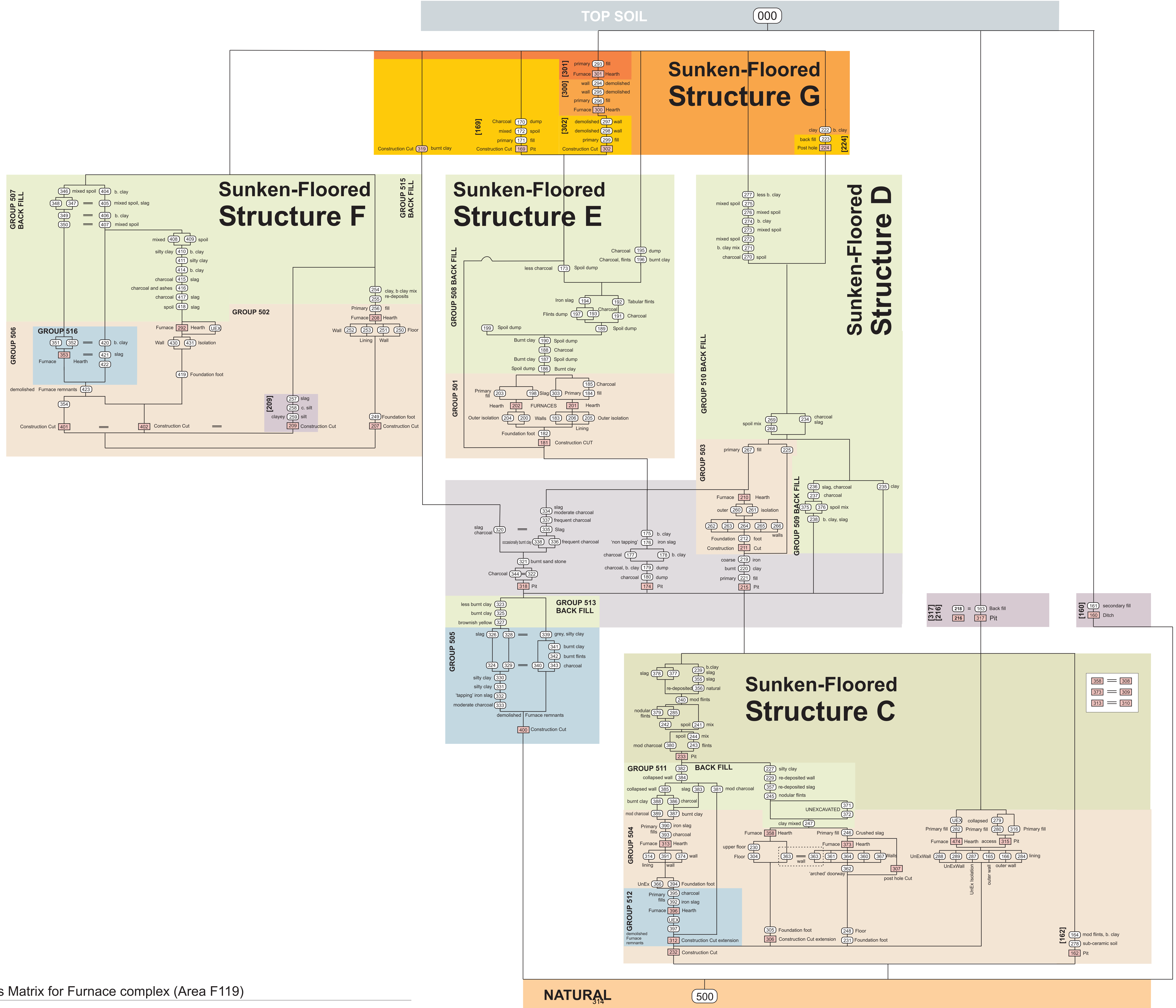


Figure 60: Harris Matrix for Furnace complex (Area F119)

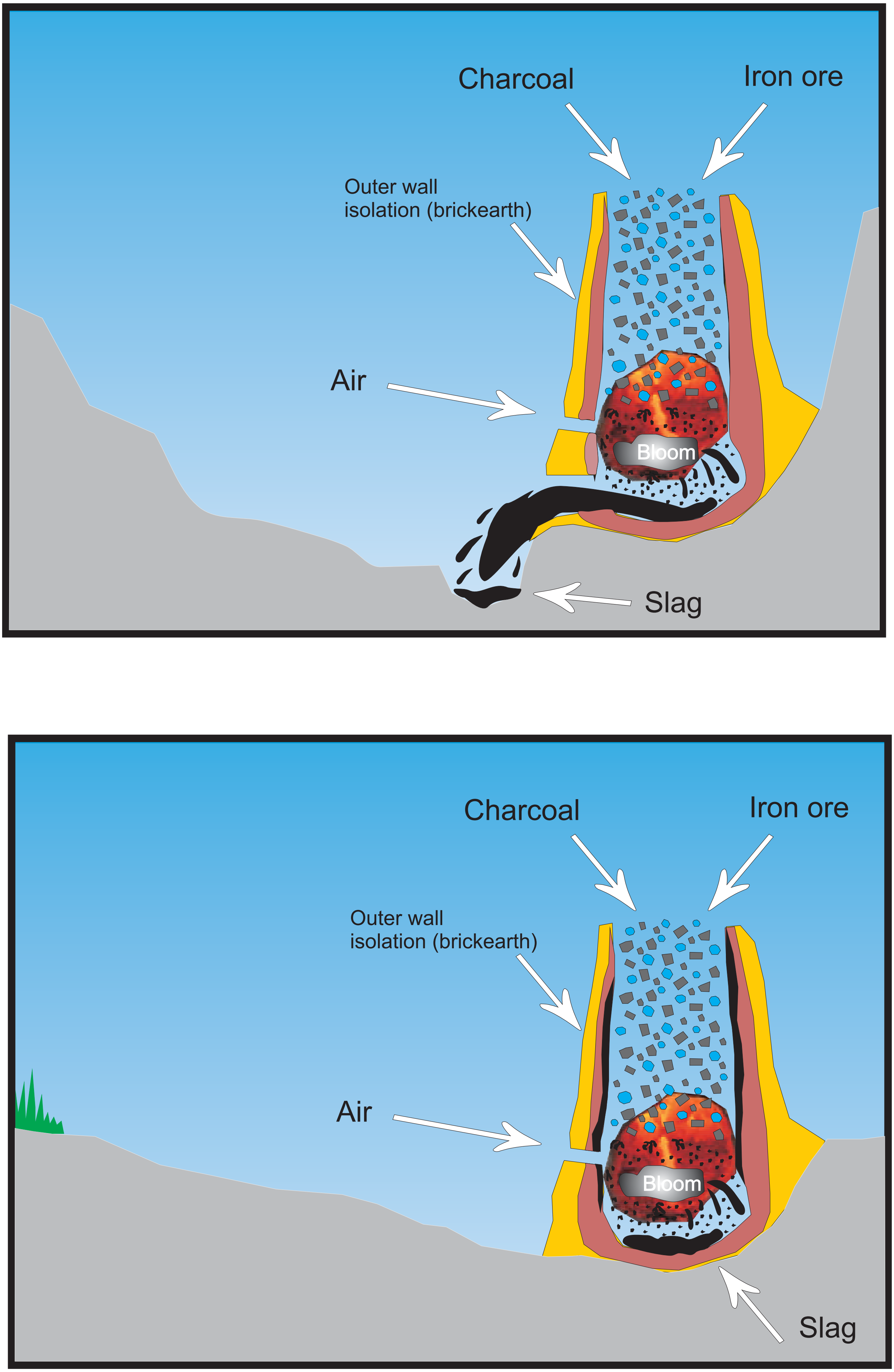
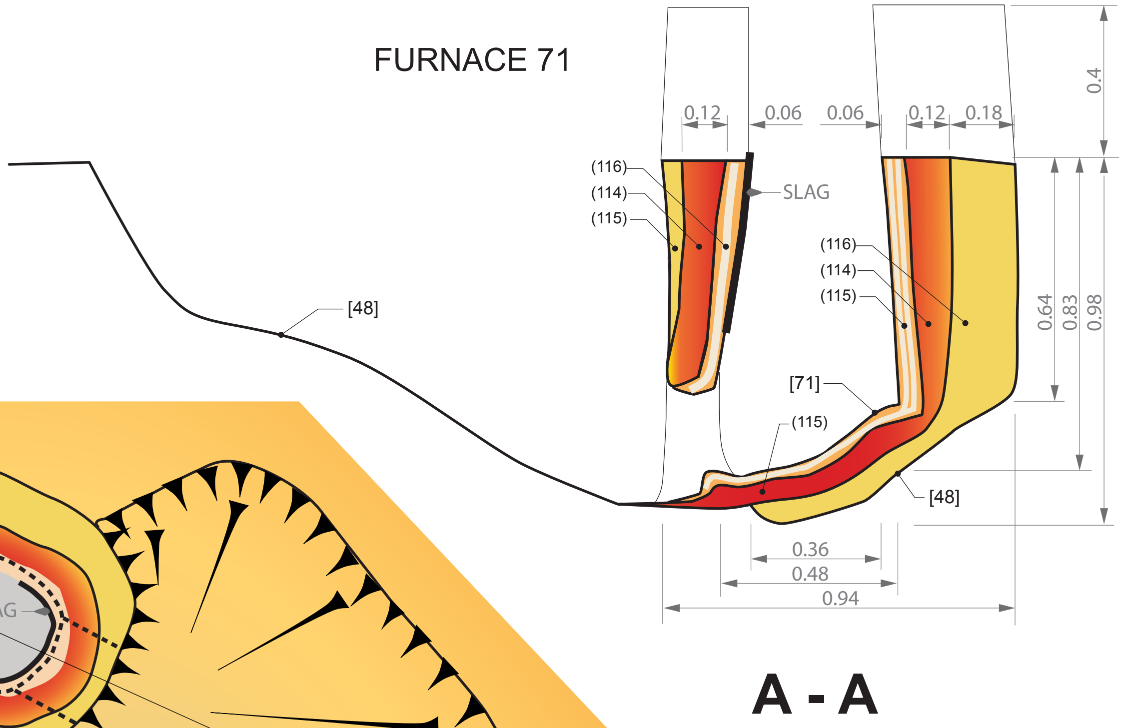
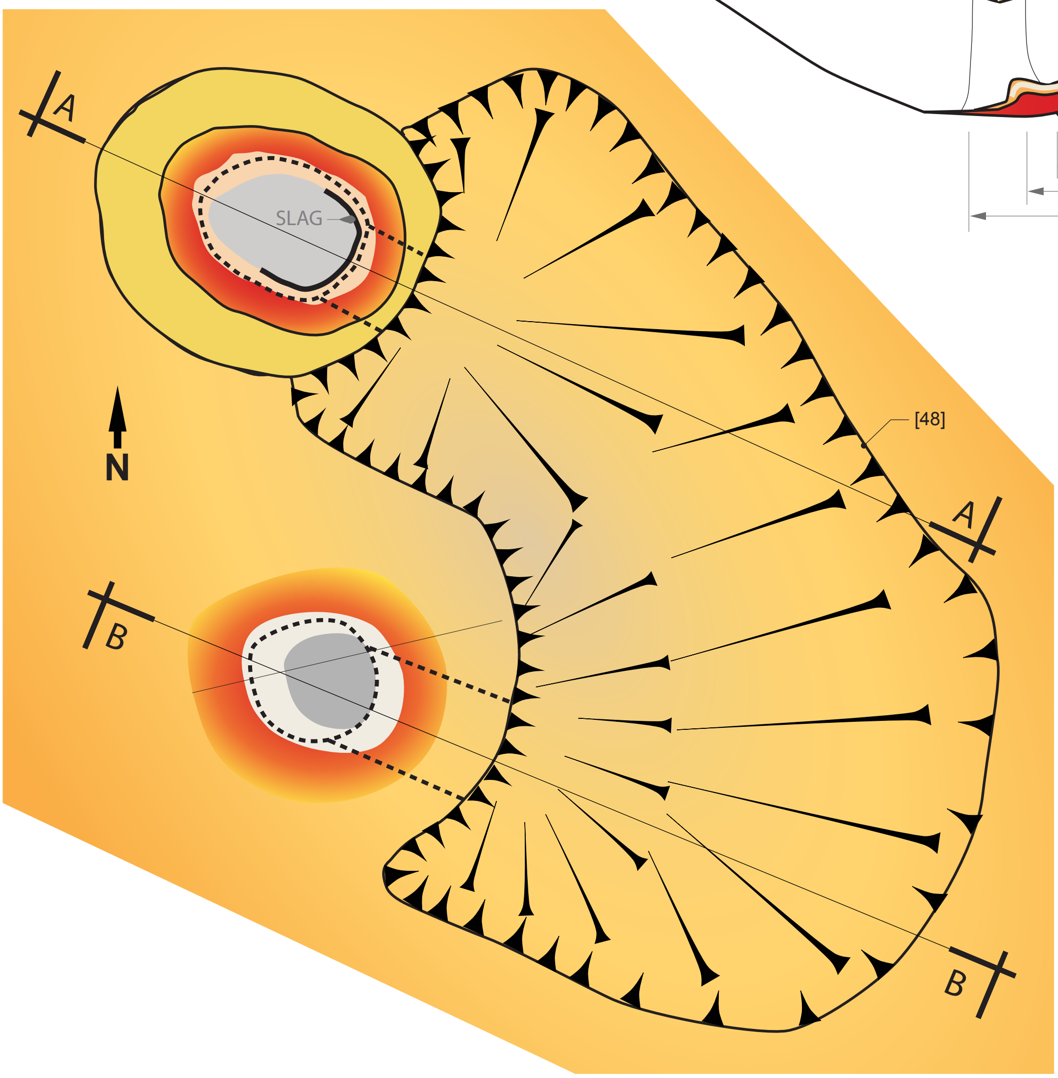


Figure 61: ‘tapping’ and ‘non tapping’ furnace





SCALE 1:20, AREA F113
BOTH FURNACES WERE IN USE SEVERAL TIMES.
IT`S NICELY VISIBLE ON BACK LINING (115) OF THE FURNACE 71 WHERE ARE VISIBLE THE SAME COLOUR GRADIENT 3 TIMES (ORANGE - WHITE -ORANGE -WHITE - ORANGE).
BOTH FURNACES WERE HIGHER - AT THE TOP OF FURNACES, SLAG ADHERED TO THE FRONT WALL WAS BROKEN. IN FURNACE 71 THIS SLAG AT BROKEN EDGE HAD ABOUT 1 CM THICK. IN FURNACE 35 THE BROKEN EDGE WAS ABOUT 0.5 CM THICK.
FURNACE 35 WAS BORED IN “NATURAL”. SO LAYER 40 IS “NATURAL” AND PART OF LINING, BUT LINING WAS REPAIRED AND CONTAIN RE DEPOSITED CLAY.

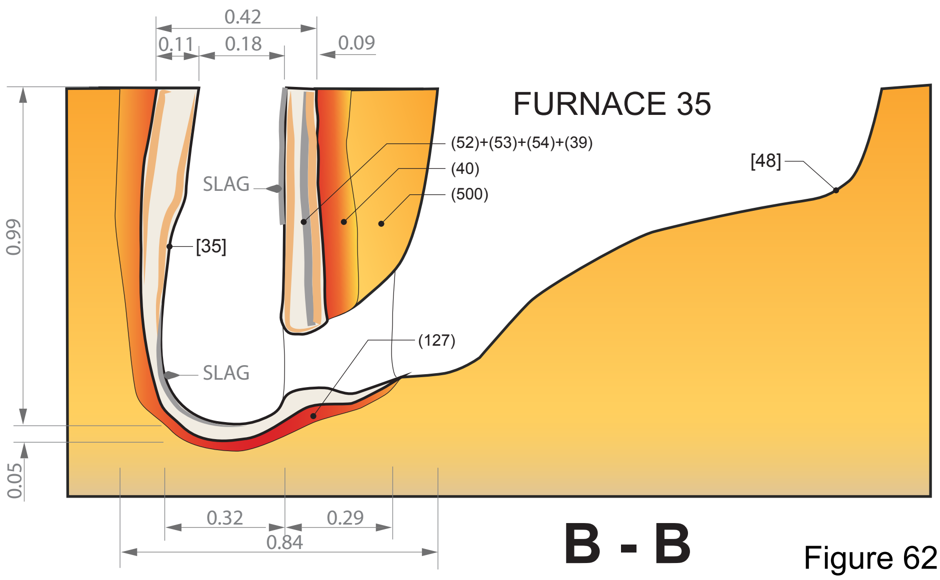


Figure 62: Area F113; Sunken floored structure A - reconstruction.