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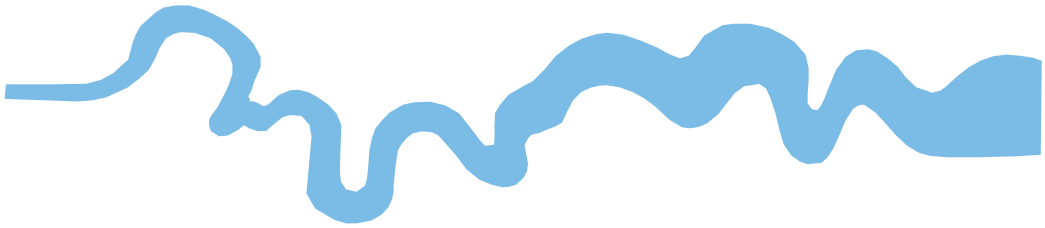

EAST MIDLANDS

A 19th Century Brick Kiln on land between 19 and 73, The Hill, Blunham, Bedfordshire

Archaeological Excavation

by Joshua Hargreaves and Joanna Pine

Site Code: THB18/127

(TL1513 5129)

A 19th century Brick Kiln on land between 19 and 73, The Hill, Blunham, Bedfordshire

An Archaeological Excavation

for

Lodge Park Homes

by Joshua Hargreaves and Jo Pine

TVAS East Midlands

Site Code THB 18/127

May 2023

Summary

Site name: Land between 19 and 73, The Hill, Blunham, Bedfordshire

Grid reference: TL1513 5129

Site activity: Archaeological Excavation

Date and duration of project: 30th September - 23rd October 2022

Project coordinator: Jo Pine

Site supervisor: Jo Pine

Site code: THB 18/127

Area of site: *c.* 600 sq m

Summary of results: The fieldwork examined the site of a circular downdraft brick kiln and associated features including lime mortar mixing pits, drains and both former and contemporary quarry pits. The structure itself was built of brick and is dated to the mid 19th century. It produced bricks that were produced by machine. There is a strong possibility that the kiln was operated by a Frederick Hogg, a local brick and tile manufacturer who died in 1878.

Location and reference of archive: The archive is presently held at TVAS East Midlands, Wellingborough and will be deposited at The Higgins, Art Gallery and Museum in due course, with accession code BEDFM 2021.24.

Report edited/checked by:	Steve Ford✓ 25.05.23 Steve Preston✓ 09.05.23

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A 19th Century brick kiln on land between 19 and 73, The Hill, Blunham, Bedfordshire An Archaeological Excavation

By Joshua Hargreaves and Jo Pine

Report 18/127b

Introduction

This report documents the results of an archaeological excavation carried out on land between 19 and 73, The Hill, Blunham, Bedfordshire (TL 1513 5129) (Fig. 1). The work was commissioned by Mr Colin Williams, for Lodge Park Homes, 20 Kent Road, St Crispin Local Centre, Northampton NN5 4DR.

Planning permission (CB/18/04789/OUT) has been granted by Central Bedfordshire Council for the construction of new housing and associated access and landscaping on the site. The consent is subject to a condition (10) relating to archaeology. Due to the potential disturbance of below ground archaeological features, archaeological fieldwork is required during any ground works taking place on the site. This is in accordance with the Ministry of Housing, Communities and Local Government's *National Planning Policy Framework* (NPPF 2021) and the Council's policies on archaeology. The field investigation took place in accordance with a written scheme of investigation approved by The Archaeology Team for Central Bedfordshire Council and was monitored by them. The archaeological potential of the site was demonstrated by a previous desk-based assessment (Baljkas 2018) and field evaluation (CA 2019). The fieldwork was undertaken by Joshua Hargreaves and Jo Pine between 30th September and 23rd October 2022 and the site code is THB18/127.

The archive is presently held at TVAS East Midlands and will be deposited at The Higgins Art Gallery and Museum in due course, with accession code BEDFM 2021.24.

Location, topography and geology

The excavation site is located in the centre of the village of Blunham some 7km to the east of Bedford (Fig. 1). It comprises an irregular area of c.625 sq m within a larger development site covering approximately 1.37ha (Fig. 2). The proposal site is bounded by undeveloped land to the north, a public track to the east, The Hill to the south and properties fronting The Hill to the west. The excavation area is on a gentle slope between 25.50m and 24.75m above Ordnance Datum. According to the British Geological Survey the underlying geology consists of glacial till (BGS 2001). This was observed as a yellowish brown silty clay during the excavation.

Archaeological background

The archaeological potential of the site has been highlighted from both an initial desktop study (Baljkas 2018) and evaluation (CA 2019). In summary, the site contained no previously known heritage assets but lay on the fringes of the historic (medieval) village. Blunham clearly has late Saxon origins and is first mentioned in Domesday Book (1086) as *Blunham*, or *Bluneham,* which is thought to mean 'homestead or enclosure of a man called Bluwa' (Mills 1998). The village contained two manors. The parish church, dedicated to SS James and Edmund has elements dating from the 12th century. A limited range of evidence is recorded for surrounding areas, all prehistoric with a few Palaeolithic handaxes and a Neolithic polished axe being recorded along with a small number of Iron Age features recorded in evaluation to the south-west.

The environs of the site is historically associated with brick making with place name evidence to this effect. The Ordnance Survey map of 1885 shows that the field to the north of the site was called Brick Field. A 19th century brickworks and brickfield are recorded 200m to the north-west (TL 1482 5144). This was in existence by 1874 but put up for sale in 1880 when it was listed as 'a New Kiln for burning off 23,000 at each burning, a large Drying Shed 60ft by 36.5ft, brick and tiled offices and a thatched building … with a plentiful supply of Brick and Tile' (Cox 1979, 73, ref 26). An area of rough ground to the east of the site is thought to be the site of a number of brick clay extraction pits (S. Utrata pers. comm.) with Lidar images showing the presence of distinctive quarry-like pits in this area (Baljkas 2018, fig. 15). Fieldwork adjacent to 75 The Hill recorded post-medieval quarrying (AS 2017).

Evaluation

The archaeological evaluation of the site comprised the excavation of twelve trenches, each 30m in length and 2m wide (CA 2019) (Fig. 2). Trenches 1, 4 and 7-10 contained no archaeological features. Trenches 6, 11 and 12 contained what appeared to be modern quarry pits, and trench 12 also a modern ditch.

Trench 2

A sub-circular pit was located centrally within Trench 2. The partially exposed pit measured 1.9m wide and 0.11m deep with moderate concave sides and an irregular undulating base. The pit contained a single fill of light brownish grey sandy clay with a large quantity of dumped brick and tile fragments of post-medieval date

Trench 3

Walls and tiled surfaces potentially associated with 19th century industrial activity were identified in this trench. The structure appears to be constructed on, and cut into, levelling layers which contained a large quantity of

burnt materials, including charcoal, slag, brick, pottery, and tile. This was considered the remains of a probable brickworks which was not recorded on historic maps. A quarry pit was planned but not excavated.

Trench 5

A ditch aligned south-west to north-east was recorded. It was c.5m wide and contained pottery of 16th-18th century date and post-medieval ceramic building material (CBM).

Objectives and methodology

The purpose of this project was to identify, excavate and record any deposits of archaeological interest which would have been affected by development works. The area of investigation centred on the industrial remains identified in trench 3 during evaluation trenching.

The general objectives were:

to excavate and record archaeological deposits and features within the excavation area;
to produce relative absolute dating and phasing for deposits and features recorded on site;
to establish the character of these deposits in attempt to define functional areas on the site such as industrial, domestic, etc.; and
to produce information on the economy and local environment and compare and contrast this with the results of other excavations, both locally and in the wider region.

The specific research objectives for this project were:

to determine the date and nature of the post- medieval deposits on the site;
to determine if they relate to the production of bricks and/or tiles;
to identify the organisational layout of the works; and
to determine the range of products produced.

The potential and significance of any such deposits located were to be assessed according to research priorities such as those set out in *Research and Archaeology: a framework for the Eastern Counties- 1 and 2* (Glazebrook, 1997; Brown and Glazebrook 2000, Medlycott 2011) or *Bedfordshire Archaeology - Research and archaeology: resource assessment, research agenda and strategy* (Oake *et al.* 2007) as necessary.

The area of just under 600 sq m was stripped under constant archaeological supervision using a machine with a toothless bucket to the relevant horizon (geological natural) to reveal any archaeological features (Fig. 3). The area was extended to the south-east due to the presence of other features (drains and pits) in this part of the site (Pl. 7).

Results

Kiln 1000 (Figs 4–8)(Pl. 8)

The remains of a circular brick kiln were recorded in the northern part of the excavation area. These remains showed it was a circular downdraught kiln. Parts of this structure had been previously identified in evaluation

trench 3 (CA 2019). Between the evaluation and excavation taking place a geotechnical test pit had been machine dug through part of the kiln removing elements of a sunken chamber. Fortunately this was through elements of the kiln previously recorded in the evaluation. This has allowed a plan of all the surviving remains to be produced (Fig. 4).

The outer circular brick walls and domed/vaulted roof of the brick kiln had been thoroughly robbed after the kiln went out of use, so that no trace of these survived. The foundations of the circular wall had also been partly robbed (robber cut 321) and only the lower elements of the circular foundations survived. The surviving foundations (322, 325 and 326) were shown to surround an internal space with a diameter just a shade under 4m, giving and area of *c*.12.4 sq m (Pls 13, 14 and 17). They were seen to be between 0.60m and 0.80m wide and 0.14m and 0.20m deep with shallow concave sides and slightly rounded or irregular base and were filled with brick and tile fragments together with possible non diagnostic iron working slag, pieces of unburnt coal and brick wasters.

Within this circular structure, a sunken chamber was recorded. This had been constructed in a rectangular cut (324/400) cut into a levelling layer (460), a mid grey clay 0.07m deep, and into the natural geology below. The chamber was 0.30m deep. The walls of the chamber (south, west and north: lower walls 324(473-4) and, 400 (476)) made of brick were then built along the edges of this cut. Walls 473 and 474 had been slightly moved from their original positions by the geotechnical test-pit. To the east overlying the construction cut (324) was a small tiled surface (451) which was at a slightly higher level than the tiled floor (472) of the sunken chamber.

The chamber's tiled floor, 472 (Pl. 11) overlay a T- shaped series of ceramic pipes within cuts 327 and 330, which had been laid before the construction of the chamber walls (Pls 9 and 10). These pipes at one time were used as part of a downdraft system which enabled the hot gases generated from fires in the fire chambers of the kiln to circulate within the interior of the kiln and thus fire the bricks. The fire chambers would have been built into/around the kiln walls. The hot gases from burning coal and coke in the fire chambers would rise and hit the domed roof of the kiln then the vacuum caused by an exterior chimney would draw these gases down through the kiln then out of it via the pipes to a chimney. Ceramic pipe 478 in cut 327 and 401 was seen to be laid below wall 474/394 and led beyond the circular walls southwards, likely to a chimney, but no evidence this structure was recorded, it being completely robbed away.

Surrounding this sunken chamber, located at a higher level; were the remains of other areas of tiled floor, 396 and 397. These tiled areas likely represent the only surviving remains of the floor of the kiln where stacks of unfired 'Green' bricks would have been placed to be fired. These tiles were set into a mid grey clay (464), a lev-

elling layer which was 0.10m deep. This sealed a mid greyish red clay (492) only 0.07m deep which overlay the natural geology. Surrounding the kiln was a similar clay layer to layer (462) likely the same levelling layer deposit labelled as (457/470); this was 0.08m deep and was truncated by the circular wall foundation (322, 325, 326), and sealed pit 323.

The sunken chamber was rebuilt during the lifetime of the kiln. A layer of brick, tile and brick wasters (459) was dumped over the original tiled floor and a new tiled floor, 395, was constructed with a slight change of alignment. The outer brick walls of the original chamber appear to have been heightened (392, 393 and 394) and a gap between the west wall (473) and north wall (476) was in-filled by wall 477.

Drains

There are numerous land drain systems to the south and south-east of the kiln (Fig. 3). These systems are inter-cutting showing one replacing another; a much higher density of drains than one would expect in a normal agricultural field. Some of these land drains were likely in use to drain water away from the kiln; drainage was likely poor due to the kiln being built at the base of slope, on a clay geology and over backfilled quarry pits. The drain runs themselves are constructed over backfilled quarry pits and some over layers of brick dust, 387, sealing these pits. Land drain 331 (N–S) which is connected to drain run 333 (W–E) appeared to feed water to a mortar mixing pit 347.

Pit 347 (Figs 3 and 9; Pl. 15)

This was rectangular with near vertical sides, 1.40m by 1.10m and over 0.18m deep. It truncated layer 398. It was filled with a compact yellowish red sand (389) which overlay hardened lime mortar (390). It was truncated by a later land drain (402).

Hard standing

In the far SE corner of the site a metalled surface, 454, was recorded (Pl. 16). This comprised broken brick fragments (red and yellow) in a grey clayey silt matrix. This was seen to be continuing beneath the southern and eastern edge of the excavation and in the excavation area was recorded as a rectangle 2.60m by 3.00m and 0.20m deep. It overlay a dark grey brown sandy clay layer (471) with brick dust and charcoal which was 0.17m deep. This was overlying the natural geology. This surface is likely an area of hard standing on which carts were loaded with ceramic products and mortar to be carted off site.

Quarry Pits (Figs 3, 8 and 9)

Kiln 1000 was built over an earlier back filled quarry pit (323) and there was a large area of inter-cutting quarry pits along the eastern edge of the excavation area (Fig. 3). Many of the ceramic drain runs truncated these. Some

of the eastern quarry pits could have been contemporary with the lifetime of the kiln however many of them are likely earlier. A number of quarry pits (338, 339, 341 and 342) were investigated in box slots through the cluster. Another pit of this cluster was noted in evaluation trench 3 but not excavated. The earlier evaluation also located a number of backfilled quarry pits in other areas of the development area (CA 2019)(Fig. 2). A deep depression just to the east of the site is likely another large quarry hole and possibly contemporary with kiln 1000.

Pit 323 (Pl. 17)

This was seen in a box slot and was seen to be over 0.80m wide and 1.00m in length. It was not bottomed as excavation ceased at 0.60m below the stripped surface. It contained two fills (468 and 469) and four fragments of a small dish or a lid from a rhubarb forcing pot of probable Victorian date were recovered from fill (469).

Pit 338

This was partially excavated in a box slot and was seen to be cut by land drain 332. It was over 0.80m by over 0.70m and deeper than 0.25m. It was filled with a dark grey brown clay (386). and contained yellow-white brick fragments.

Pit 339

This too was seen in a slot and was truncated by land drains. It was over 2.10m by over 1.00m and over 0.40m deep. It was filled with a mid reddish brown sandy silt (361) which was overlain by fill (362), a light grey clay. It was also overlain by a light brown fill (487).

Pits 341 and 342

Two inter-cutting pits were seen in a box slot but the relationship between them was not clear. Pit 341 was over 0.70m deep and contained fill 376 which was a dark reddish brown sandy clay. Pit 342 was seen to be 0.80m deep and its fill (377) was also dark reddish brown sandy clay. Three sherds of a pearlware jug rim and handle of probably early 19th-century date and a clay pipe bowl dated 1810-1840 were recovered from this fill. The pits were sealed by layer 373/374.

Pit 404

This was partially exposed up against the southern edge of the excavation. It was not excavated. It was seen to be *c*. 2m by 1.28m. It was filled with a dark grey brown clay (551).

Finds

Pottery by Sue Anderson

The pottery assemblage comprised 21 sherds of pottery weighing 220g, and was collected from five contexts. Table 1 shows the quantification by fabric; a summary catalogue by context is included as Appendix 2.

Table 1. Pottery quantification by fabric in approximate date order.

Description	Fabric	Date range	No	Wt/g	Eve
Glazed red earthenware	GRE	17th-18th century	2	20	
Tin glazed earthenware	TGE	16th-18th century	2	7	
Creamware	CRW	18th-E.19th century	4	4	
Pearlware	PEW	L.18th-19th century	7	59	0.10
Refined factory-made white earthenware	REFW	19th-20th century	2	3	
Late post-med unglazed earthenware	LPME	19th-20th century	4	127	0.25

Quantification was carried out using sherd count, weight and estimated vessel equivalent (eve). The minimum number of vessels (MNV) within each context was also recorded, but cross-fitting was not attempted unless particularly distinctive vessels were observed in more than one context (details in archive). Post-medieval fabric codes were assigned from the author's fabric series. Methodology follows the joint guidelines of the three main pottery period groups (PCRG, SGRP and MPRG 2016). The results were input onto an Access database, which forms the archive catalogue.

The earliest pottery in the assemblage comprised two sherds of an orange-glazed red earthenware vessel and two fragments of tin-glazed earthenware from which the glaze had been lost (a common occurrence with this type of pottery). Both were recovered from cleaning layer 354 over drains 333 and 349, in association with three small fragments of pale creamware which is likely to be of late 18th or early 19th-century date.

Another tiny fragment of creamware with a green glaze on both surfaces came from cleaning layer 352 over kiln 1, together with a small fragment of a pearlware industrial slipware turned base from a tankard or mug, decorated with a blue slip band which was incised with fine horizontal lines. These suggest a late 18th- or 19th-century date for the context.

Three other fragments of pearlware were recovered from cleaning layer 353, comprising a base fragment from a spongeware ?saucer and a rim and body fragment from a plate with transfer-printed decoration (willow pattern border). Also in this context were two pieces of refined white earthenware, one with vertical grooves suggesting it was part of a small preserve jar, and the other with geometric moulded decoration. The context is likely to be of 19th-century date. Three sherds of a pearlware jug rim and handle were collected from quarry pit 342, fill. The jug had an upright plain rim and the handle was moulded with curls on the inner and outer sides, and was decorated with blue hand-painted motifs. This is probably of early 19th-century date.

Four fragments of a shallow unglazed red earthenware vessel from quarry pit 323, fill 469 had a plain rim and curving body, and measured 170mm in diameter (25% complete). The vessel may be a small dish or a lid from a rhubarb forcing pot of probable Victorian date.

Overall, this assemblage probably dates broadly to the 18th and 19th centuries.

Ceramic Building Materials by Danielle Milbank

A total of 34 fragments of ceramic building material weighing 30.454kg were recovered in the course of the excavation of the brick kiln, hand-collected from 23 contexts, including deposits infilling cut features, and from structural remains. The material largely comprised tile fragments, in addition to several complete (or near-complete) bricks, including brick samples from the kiln structures, and a small number of fragments which could not be identified.

The pieces were examined under x10 magnification and categorised wherever possible based on dimensions, fabric and finish, and the material is summarized in Appendix 3.

Three main fabrics were identified. Fabric 1 comprises a fine medium hard clay with occasional sand inclusions, evenly-fired and with a light to mid orange red colour. Fabric 2 comprises a slightly rough-textured fabric with occasional small voids, slightly friable and weak, unevenly-fired, with a pale or whitish orange pink colour. One fragment (from robber cut 321) has an especially rough texture with voids within the body of the brick. Fabric 3 comprises a fine, dense fabric, evenly-fired medium hard clay in a pale yellow buff colour.

Deposit 353 contained a single piece of tile in fabric 1, with two round peg holes indicating it is roof tile. The fairly neat form and thickness of 14mm suggests it is of broadly post-medieval date. Robber cut 321 (359) contained brick pieces in both fabrics 1 and 2, though only one of the pieces show the bricks' full thickness, and are not closely datable. The piece with full thickness present is 66mm thick, and fairly neatly formed, with no frog, and a stacking mark. It is of likely late 18th to mid 19th century date. Two further pieces of brick have a friable body and one surface which is harder fired and has a grey surface, suggesting post-firing heating. One example is distorted, suggesting overfiring or other defect.

A piece of tile (fabric 1, 14mm thick) has no peg holes but is fairly neat, and is likely to represent roof tile of broadly post-medieval date.

Quarry pit 338 (386) contained fragments in fabric 3, and although fragmentary the edges are neat and the pieces represent well-fired, hard brick in a pale yellow white colour. Foundation 322 (452) contained a single piece of roof tile in fabric 1. This comprises a piece of pan tile, with a characteristic curved shape and a thickness of 17mm, and a 19th century date. Foundation 325 (455) contained two pieces of pan tile in fabric 1, with a piece of brick 66mm thick in fabric 2, with a rough texture and one blackened side showing likely heating after firing.

Layers 458 and 459 contained pieces of pantile in the pale, fine fabric 3, which are well-fired and shaped. A tile fragment in fabric 1 appears to have a small nib, though the profile of this is fairly low and it is unclear if the fragment represents a true nib tile. Layer 459 also contained a flat tile 30mm thick, in a rough textured clay with

occasional medium to large groggy inclusions, pale orange buff colour, and a slightly uneven form, which may represent a brick produced for paving, or alternatively a form of 'special'.

Quarry pit 323 (469) included fairly evenly-fired bricks of a thickness of 65mm. This context also included a flat tile 35mm thick, which again may represent a paving brick or form of 'special'.

Samples of thick, square ceramic tiles were recovered from the floor surface of kiln 1 (395, 396 and 472), in addition to a piece from drain 331 which was part of the drain system These are of a fine fabric with no visible inclusions and a typically pale orange buff colour, with some examples having a reduced (darker orange) core showing reducing conditions. They are very hard fired and have a neat finish.

Layer 454 comprises a metalled surface made up of waste ceramic building material, highly fragmented but of the similar material noted on the site as a whole, with fabrics 1, 2 and 3 all represented.

The complete or near complete bricks pieces recovered all represent neatly-formed, unfrogged bricks, produced by mechanised means, and can be categorised as Harley type 5. They reflect the early to mid 19th century production methods of manufacture involving a relatively plastic clay matrix, with few fine inclusions. The pale yellowish colour of the clay when fired is typical for the region and was popular for building in London and the east throughout this period. Of note is the quantity of incomplete and inferior fired bricks, used to construct floor layer 454, occurring as debris in the fill of robber trenches, and used to infill construction cuts.

Summary

Overall, the material appears to date to one main phase, of likely early to mid 19th century date, represented by a fairly narrow range of tile and brick forms, and the majority of these in one principal fabric which is a fairly fine clay with sparse grog inclusions, which fired to a colour ranging from a light orange to a pale buff orange. The other material does not vary to any great extent and appears to show consistency in sourcing and processing clay. The material includes pan tiles which appear to be products of the kiln, and some examples which represent misfired waster material. A number of the fragmentary flat bricks (likely to be pavers) may represent waster material, though this is less clear, and overall the complete examples of durable, neat square tiles demonstrate the high quality used to form the kiln structures. The consistency in the clay fabrics present is broadly suggestive of a fairly short lifespan for the kiln. Although the form of the kiln suggests two phases of construction, the material here cannot be dated closely enough to refine the dating of the structures.

The pantiles have a characteristic s-shaped profile and are more typical of the east of England than any other areas. Dutch tiles of this broad form were imported to Essex in the 16th century, and they were then produced locally (often in pale-firing yellow and buff clays such as these examples) from the 17th century onwards (EH 2013), coming to dominate the north-east coast until the arrival of Welsh slate in the 19th century.

However, the industry continued to flourish into this era, when extensive variations of single lap tile designs were made and often patented.

Coin by Pierre-Damien Manisse

A single bronze half penny issued during the reign of Victoria (1837-1901) was found from cleaning layer 353.

No.1 (353) Half penny 1861 London 2/2 25.7mm 5.48g 12h
O/ VICTORIA D:G: ¦ BRITT:REG:F:D: – Young laureate draped bust left.
R/ HALF ¦ PENNY //[18]61– Britannia helmeted seated right, holding a trident and resting right hand on shield
Ref: Seaby 3956

Clay Pipe by Genni Elliott

A total of 30 fragments of clay pipe were recovered from 11 contexts consisting of six features and five layers. In general the pipe fragments were made of fine clay with no inclusions. Two thirds (20) consisted of stem fragments with two joining together along with a bowl to form a single pipe. A single cut mouth piece was recorded within the stem fragments from context 353 which joined to a second fragment within 353. All the stems had boreholes measuring 4/64" (Appendix 4) though some were more oval than rounded and were noticeably larger than the smallest ones. Typically these smaller boreholes date to later in the period of clay pipe use, likely within the 19th century onwards.

Of the 10 bowl fragments were five bowls consisting of a single bowl from each context, where multiple fragments were recorded within a context these represented recent breaks and joined together to form part of a single bowl. The bowls broadly agree with a later date for the assemblage with those that can be matched to the Oswald typology being at the earliest mid-18th century with several dating to the 19th century including the only one which can be identified to a maker.

Glass by Genni Elliott

Six sherds of glass were retrieved from 3 contexts. All are undiagnostic and date only broadly to the post-medieval period (details in archive).

Vitreous Materials by David Dungworth

The assemblage comprised just over 1.4kg of material. All of the material was examined visually and recorded following standard guidance (HE 2015). The material was divided into several categories based on surface morphology, density, porosity, colour, etc, and weighed. Some of the material is readily identifiable; however,

some of the material can only be tentatively identified without more detailed analysis. The material derives from four contexts and is reported below in context order.

The material from kiln foundation 325 fill 455 comprises two lumps (Pl. 1) with almost identical characteristics (combined weight of 335g). The material is black and appears to be a fayalitic (*ie* containing the mineral fayalite, Fe_2SiO_4) slag, but the measured density (2.1–2.4g/cm^3) is lower than most fayalitic slag (2.6–4.0g/cm^3). Fracture surfaces indicate that there is some porosity but not enough to account for the anomalously low density. The material exhibits some maroon surfaces that indicates the presence of some free iron oxides and that these were oxidised. The material contains numerous small white/yellow inclusions. Some of these appear to be minerals (*eg* quartz) and others appear to be fragments of vitrified ceramic material. The surface morphology is irregular and provides no clues as to where/how the material formed.

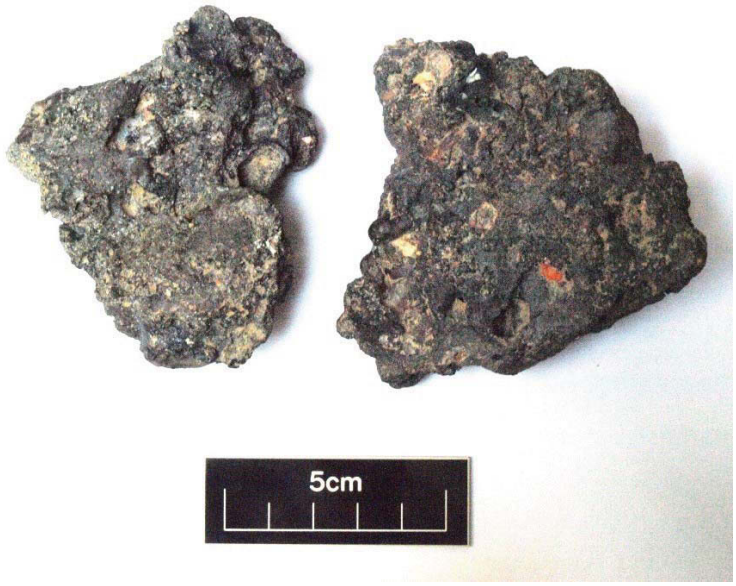

Plate 1: Black vitreous material (possibly non-diagnostic ironworking slag) from context 325/455

Plate 2: Black vitreous material (possibly non-diagnostic ironworking slag) from context [321]/(359)

The material from robber cut 321 (359) comprises small fragments of black vitreous material (86g) (Pl. 2) and a large fragment of metallic iron (258g). The black vitreous material appears to be identical to that from context 325: it has a similarly low density, and similar inclusions (quartz/ceramic?). The metallic iron appears to be a deliberately fashioned but incomplete object; corrosion obscures much of the object.

The material from context foundation 326 (466, sample 4) can be divided into three categories: some black vitreous material (229g, similar to above, Pl. 3), some partially burnt coal (6g, Pl. 4), and some unburnt coal (8g, Pl 5).

Plate 3: Black vitreous material (possibly non-diagnostic ironworking slag) from context 326/466 <4>

Plate 4: Partially burnt coal from context 326/466 <4>

Plate 5: Unburnt coal from context 326/466 <4>

Plate 6: Brick waster from context (459)

The material from levelling layer 459 comprises waste from the (failed?) production of bricks (Pl. 6). The material is fairly light weight (2.1–2.5g/cm^3) and displays some original and some fracture surfaces. The original surfaces tend to be smooth and suggest some slumping/flow of the material when hot. The material (both original and fracture surfaces) is mostly grey in colour but this varies with some areas rather yellowish. The fracture surfaces reveal that the material has two components: fragments of grey ceramic with right angles (these appear to be fragments of bricks) completely embedded in a slumped vitreous material (the latter probably derived from melted bricks).

Summary

The material includes some brick wasters as well as a black vitreous material of uncertain origin. The latter bears some resemblance to non-diagnostic ironworking slags (HE 2015, fig. 18) but with a lower than expected density. The presence of coal and partially burnt coal among this vitreous material suggests that it may have formed in a coal fire. It is assumed that all of the vitreous materials examined were produced in the 19th century. A very wide range of processes could give rise to rather similar looking residues (HE 2018).

Conclusion

The remains of a downdraft brick kiln have been recorded in the excavation area. It had been heavily robbed so that only the partial remains of the foundations of circular kiln wall survived together with some interior tiled flooring. Also surviving was a sunken chamber which had been re-built on at least one occasion. Beneath the earliest tiled floor of this chamber were the remains of pipe work which would have drawn hot air/gases from the kiln to a chimney; but no evidence of this structure survived. Also recorded were a series of land drains likely associated with the kiln in a sequence of replacement. One of these systems appeared to divert water to a small mortar mixing pit. This mortar pit might suggest that some of the brick and tile being produced by the kiln were being used locally; as if taken some distance the mortar would dry out and harden. A large area of quarry pits were also recorded in the excavation area; some being earlier than the construction of the kiln but some likely contemporary; other quarry pits were located within the larger development area and directly to the east. An area of metalling was also recorded made of waste brick and tile likely a loading area.

This kiln excavated is probably not the same kiln mentioned in documentary references, this being *c*. 200m to the NW according to the HER. One kiln might have replaced another but equally they could have been in use at roughly the same time. Although there were the larger commercial brickyards more than often there were smaller operations; owned by farmers or landowners and worked by agricultural labourers, seasonally as brick making was a seasonal occupation (Cox 1979).

A Bill head dating to 1869 has been located (Pl. 18) which may give insight to the kiln and owner of this brickworks. The bill is titled ‘Blunham Kiln and Bought of Frederick Hogg’; and is for the sale of a quantity of tile. Fredrick Hogg it is suggested is the owner of this particular brickworks at this date. However given the presence of the other brickfield and kiln to the NW this is not a given. It may be he was the owner of both brickworks. Further documentary evidence indicates he was heavily involved in brick and tile production. He had been running a kiln at Girtford Bridge, Sandy, between March 1819 and at least October 1820 and he was in charge of the larger works at Cox Hill from 1830, when the kilns are first recorded (Cox 1979). Fredrick Hogg

was a successful businessman who lived at Girtford House, Girtford. This was a small hamlet just outside the town of Sandy which after 1910 was incorporated into the expanding Sandy. Hogg was a man of means owning numerous properties and land and likely made his money as a wine and spirit merchant. Later by1867 Merville's Directory of Sandy lists him as a brick and tile maker and manager. Later in his brick making career he was using brick and tile making machines and had placed an advertisement in the Bedfordshire Mercury in 1867 to sell some of these machines (Cox 1979). The bricks of Kiln 1000 were the product of machines. Frederick Hogg died in 1878 and all his property went to his illegitimate son Fredrick Safford.

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APPENDIX 1: Feature details

Cut	*Deposit*	*Group*	*Type*	*Date*	*Dating Evidence*
321	359, 450		Robber cut	Victorian or later	Stratigraphy
322	452	1000	Foundation	Victorian	CBM and Stratigraphy
323	468-9		Quarry Pit	Victorian or earlier	Pottery and Stratigraphy
324	472-5,	1000	construction cut for Kiln	Victorian	Brick sample
325	455-6	1000	Foundation	Victorian	CBM and Stratigraphy
326	465-6, 467, 490-1	1000	Foundation	Victorian	CBM and Stratigraphy
327	478, 479	1000	Pipe run	Victorian	CBM and Stratigraphy
330	493-5	1000	Pipe run	Victorian	CBM and Stratigraphy
331	355-6		Land Drain	Victorian	Clay Pipe and Stratigraphy
332	357-8, 366, 368, 384-5		Land Drain	Victorian	Clay Pipe and Stratigraphy
333	461-2, 481-3		Land Drain	Victorian	Clay Pipe and Stratigraphy
334	484-5		Land Drain	Victorian	Stratigraphy
335	363-5		Land Drain	Victorian	Clay Pipe and Stratigraphy
336	369-70		Land Drain	Victorian	Stratigraphy
337	371-2		Land Drain	Victorian	Stratigraphy
338	386, 486		Quarry Pit	Victorian or earlier	Brick and Stratigraphy
339	361-2, 487		Quarry Pit	Victorian or earlier	Stratigraphy
340	488-9		ceramic pipe	Victorian or later	Association
341	376		Quarry Pit	Victorian or earlier	Stratigraphy
342	377		Quarry Pit	Victorian or earlier	Pottery, clay pipe and stratigraphy
343	378		Land Drain	Victorianor later	Type and Stratigraphy
344	379		Land Drain	Victorian	Association and Stratigraphy
345	380		Land Drain	Victorian or later	Type and Stratigraphy
347	389, 390		Mortar mixing Pit	Victorian	Association and Stratigraphy
348	391		Posthole	Modern	Stratigraphy
349	498		Land Drain	Victorian	Association and Stratigraphy
400	476, 496	1000	Wall	Victorian	Association
401	497	1000	Pipe run	Victorian	Association and Stratigraphy
402	499		Land Drain	Victorian or later	Stratigraphy
403	550		Land Drain	Victorian or later	Stratigraphy
404	551		Pit	Victorian or earlier	Association
	350		Topsoil		
	351		Subsoil		
	352	1000	Cleaning layer kiln 1000	Edwardian or later	Stratigraphy
	353		Cleaning layer southern area	Edwardian or later	Stratigraphy
	354		cleaning layer over 333 and 349	Edwardian or later	Stratigraphy
	360		Layer	Victorian	Stratigraphy
	373		Layer	Victorian	Stratigraphy
	374		layer	Victorian	Stratigraphy glass and clay pipe
	375		Layer	Victorian	Stratigraphy
	381		Layer	Victorian	Stratigraphy
	382		Layer	Victorian or earlier	Stratigraphy
	383		Layer	Victorian or earlier	Stratigraphy
	387		Layer	Victorian or earlier	Stratigraphy
	388		Layer/or fill	Victorian or earlier	Stratigraphy
	392	1000	Wall	Victorian or earlier	Stratigraphy
	393	1000	Wall	Victorian	Association and Stratigraphy
	394	1000	Wall	Victorian	Association and Stratigraphy
	395	1000	Tiled Surface	Victorian	Association and Stratigraphy
	396	1000	Tiled Surface	Victorian	Association and Stratigraphy
	397	1000	Tiled Surface	Victorian	Association and Stratigraphy
	398		Layer	Victorian	Stratigraphy
	399		Layer	Victorian or earlier	Stratigraphy
	451	1000	Tiled surface	Victorian or earlier	Stratigraphy
	453		Layer	Edwardian or later	Stratigraphy
	454		Metalled surface	Victorian	Association and Stratigraphy
	457		Layer	Victorian	Association

Cut	*Deposit*	*Group*	*Type*	*Date*	*Dating Evidence*
	458		Layer	Victorian or earlier	Stratigraphy
	459		Levelling Layer	Victorian	Stratigraphy
	460		Layer	Victorian	Stratigraphy
	463		Levelling Layer	Victorian	Association and Stratigraphy
	464		Levelling Layer	Victorian	Association and Stratigraphy
	470		Layer	Victorian	Association
	471		Levelling Layer	Victorian	Association and Stratigraphy
	477	1000	Wall	Victorian	Stratigraphy
	480		Layer	Victorian	Stratigraphy
	492		Layer	Victorian	Stratigraphy

APPENDIX 2: *Pottery summary*

Cut	*Deposit*	*Fabric*	*Type*	*No*	*Wt (g)*	*MNV*	*Form*	*Rim*	*Spot date*
	352	CRW	D	1	1	1			18th century
	352	PEW	B	1	3	1			Late 18-19th century
	353	PEW	B	1	2	1	saucer?		Late 18-19th century
	353	PEW	RD	2	12	1	plate	everted	Late 18-19th century
	353	REFW	D	1	1	1			19-Early 20th century
	353	REFW	D	1	2	1			19-20th century?
	354	CRW	U	3	3	3			Late18-19th century
	354	GRE	D	2	20	1			17-19th century
	354	TGE	U	2	7	1			16-18th century
342	377	PEW	RH	3	42	1	jug	upright plain	19th century?
323	469	LPME	RU	4	127	1	lid?	plain	19th century?

APPENDIX 3: Catalogue of ceramic building material

Cut	*Deposit*	*Feature*	*Type*	*No*	*Wt (g)*	*Comments*
	353	Cleaning layer, southern area	Brick	1	88	
331	355	Ceramic drains	Slate	1	25	
331	356	Construction cut for drain 355	Tile	1	-	
321	359	Robber cut	Brick	19	1975	
339	361	Quarry Pit	Tile	1	7	
337	372	Ceramic pipe	Brick sample	1	3351	
338	386	Quarry Pit	Brick	6	246	
	395	Floor surface Kiln 1000	Floor tile	1	-	
	396	Floor surface Kiln 1000	Floor tile	2	-	
	397	Floor surface Kiln 1000	Floor tile	2	-	Sample retained #4
	451	Floor surface Kiln 1000	Floor tile	1	1530	Sample retained #1
322	452	Foundation	Tile	1	360	
	454	Metalled surface	Brick and Tile	4	4616	Sample retained #5
325	455	Foundation	Brick and Tile	5	1174	
	458	Layer	Brick and Tile	3	524	
	459	Levelling Layer	Brick and Tile	2	3010	
333	461	Bricks	Brick sample	2	-	Sample retained #2
333	462	Bricks	Brick sample	1	2991	
323	469	Quarry Pit	Brick and Tile	6	2168	
	472	Floor surface Kiln 1000	Floor Tile	1	-	Sample retained #6
324	475	Wall Kiln 1000	Brick sample	1	3011	
400	476	Wall Kiln 1000	Brick sample	1	3003	
330	494	Construction cut for pipes 493	Brick sample	1	2375	
		Total		64	30454	

APPENDIX 4: Catalogue of clay tobacco pipes

Context 353
5x bowl fragments join to form a single undecorated bowl with a spur.
Oswald type 3.G: 12 1730-1780, though bowl is incomplete.

Context 356
1 bowl with spur, joins with the two stem fragments recorded above. Bowl has ribbed moulded decoration with leaves along the seam.
Oswald type 3.G: 15 1840-1880 though bowl is incomplete.

Context 363 [335]
1 undiagnostic bowl fragment, undecorated.

Context 374
2x bowl fragments join, with initials on the spur 'JM'. There were no good matches to the initials in Bedfordshire database of clay pipe makers. Surrounding counties of Northamptonshire, Buckinghamshire and Hertfordshire also produced no matches. Cambridgeshire (Huntingdonshire) produced the most likely candidate of James Mumby recorded as making pipes in 1828 in the St Ives area, Flood (1976, 39–46) specifically recorded his initials as 'JM' on the spur. Slightly later there is a Joseph Mumby (1847) making clay pipes also in St Ives.
Moulded ribbed decoration with oak type leaves along the seam.
Oswald type: too little present to be diagnostic.

Context 377 [342]
1 bowl with spur and moulded decoration of spiky leaves along the seam.
Oswald type 4.G: 24 1810-1840.

(Summary of Stem Fragments by borehole size)

Cut	*Deposit*	*4/64"*
333	481	3
332	357	1
-	352	1
-	354	1
321	359	2
-	453	2
335	363	1
-	353	6 (M)
331	356	2
-	374	1

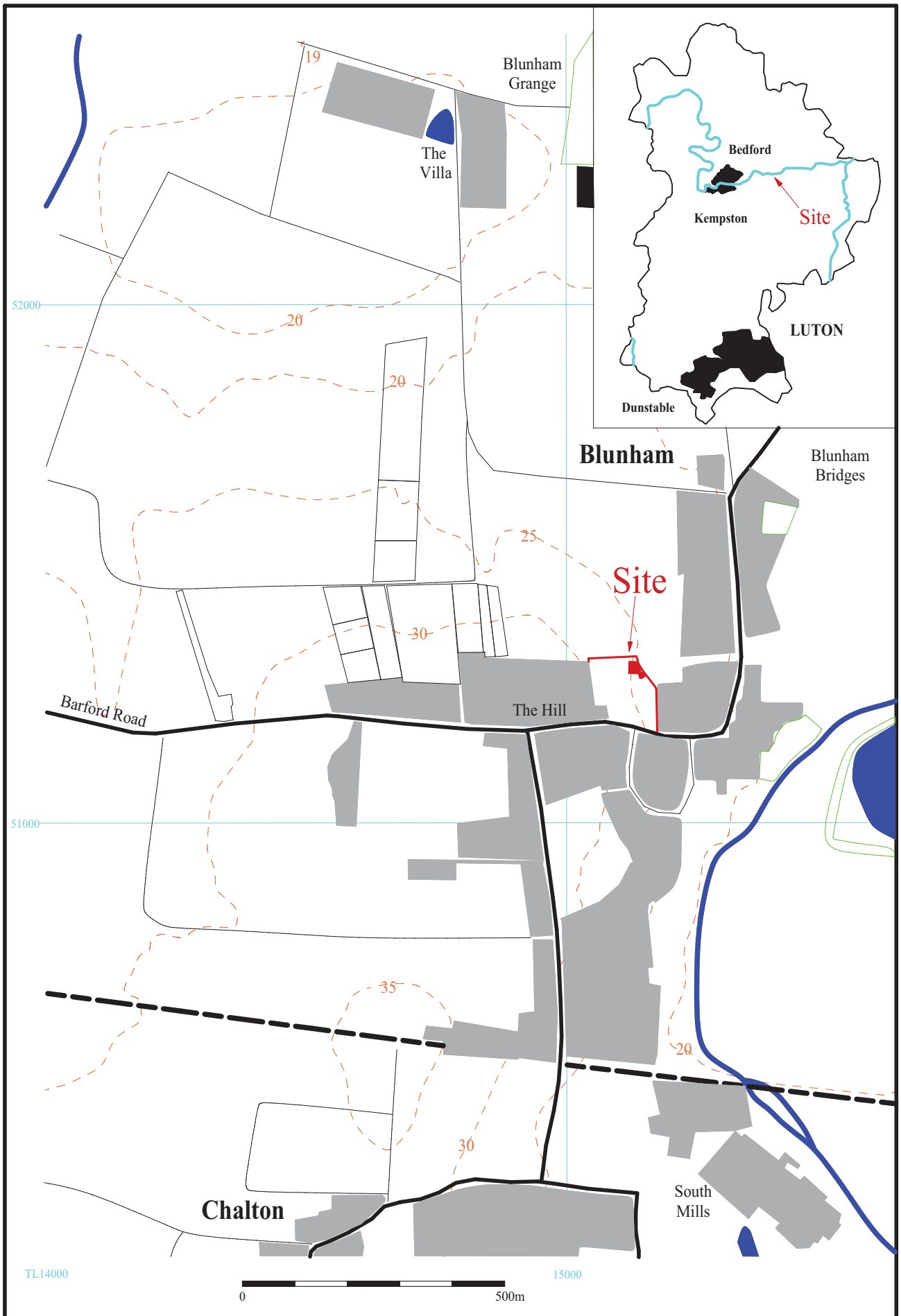

Figure 1. Site within Bedfordshire and Blunham

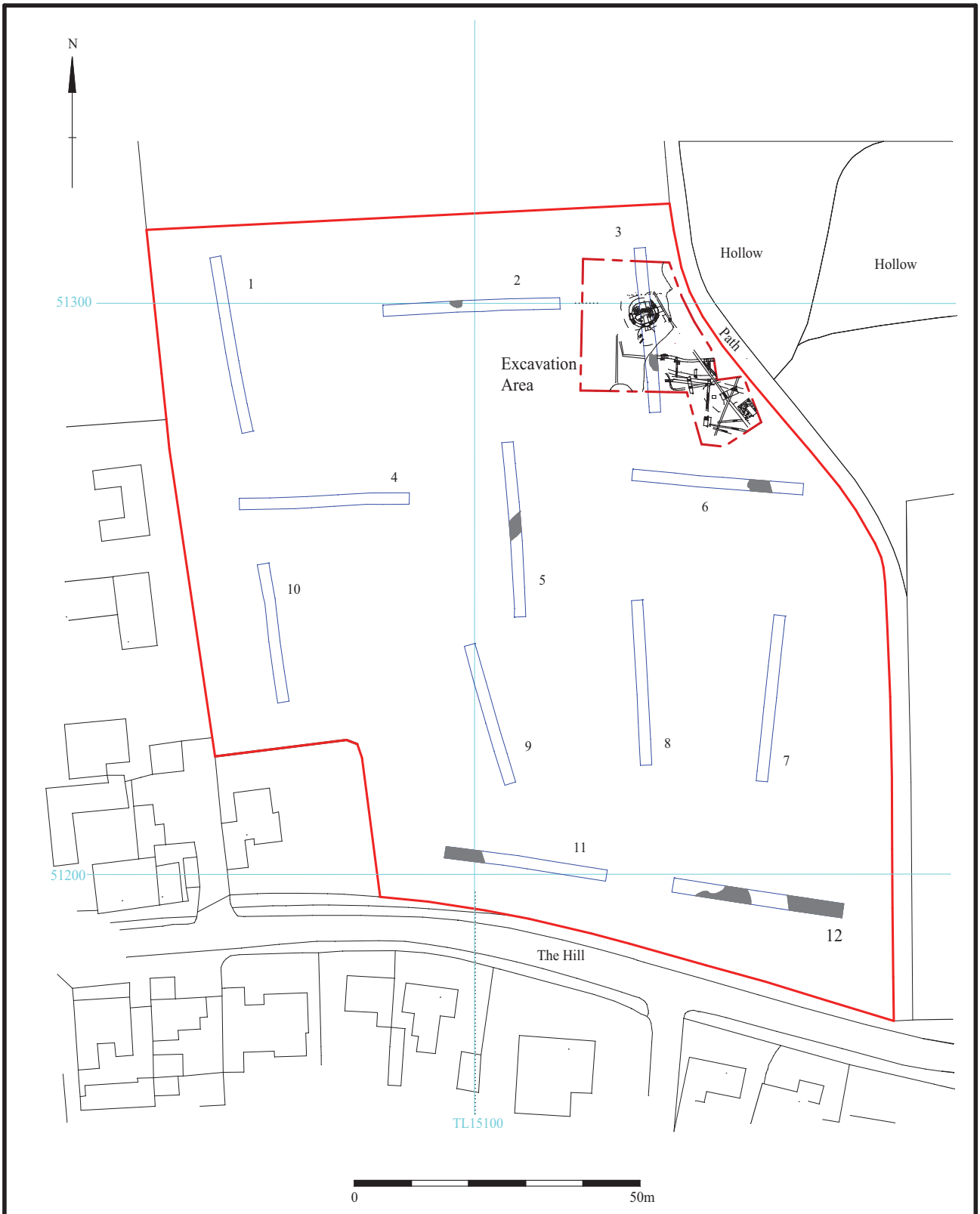

Figure 2. Plan showing Excavation Area and Previous Evaluation (Cotswolds Archaeology 2019).

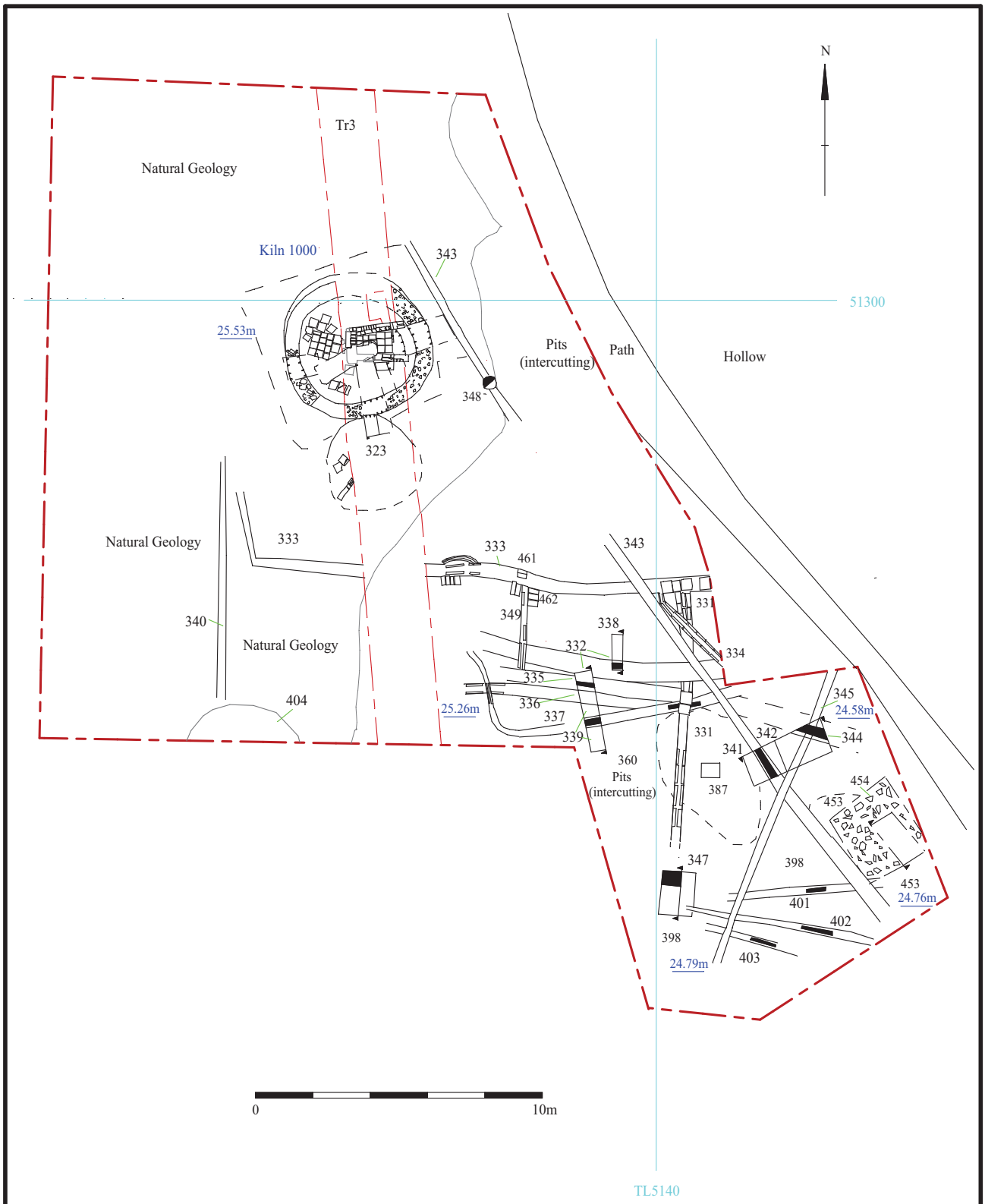

Figure 3. Plan showing Excavation Area

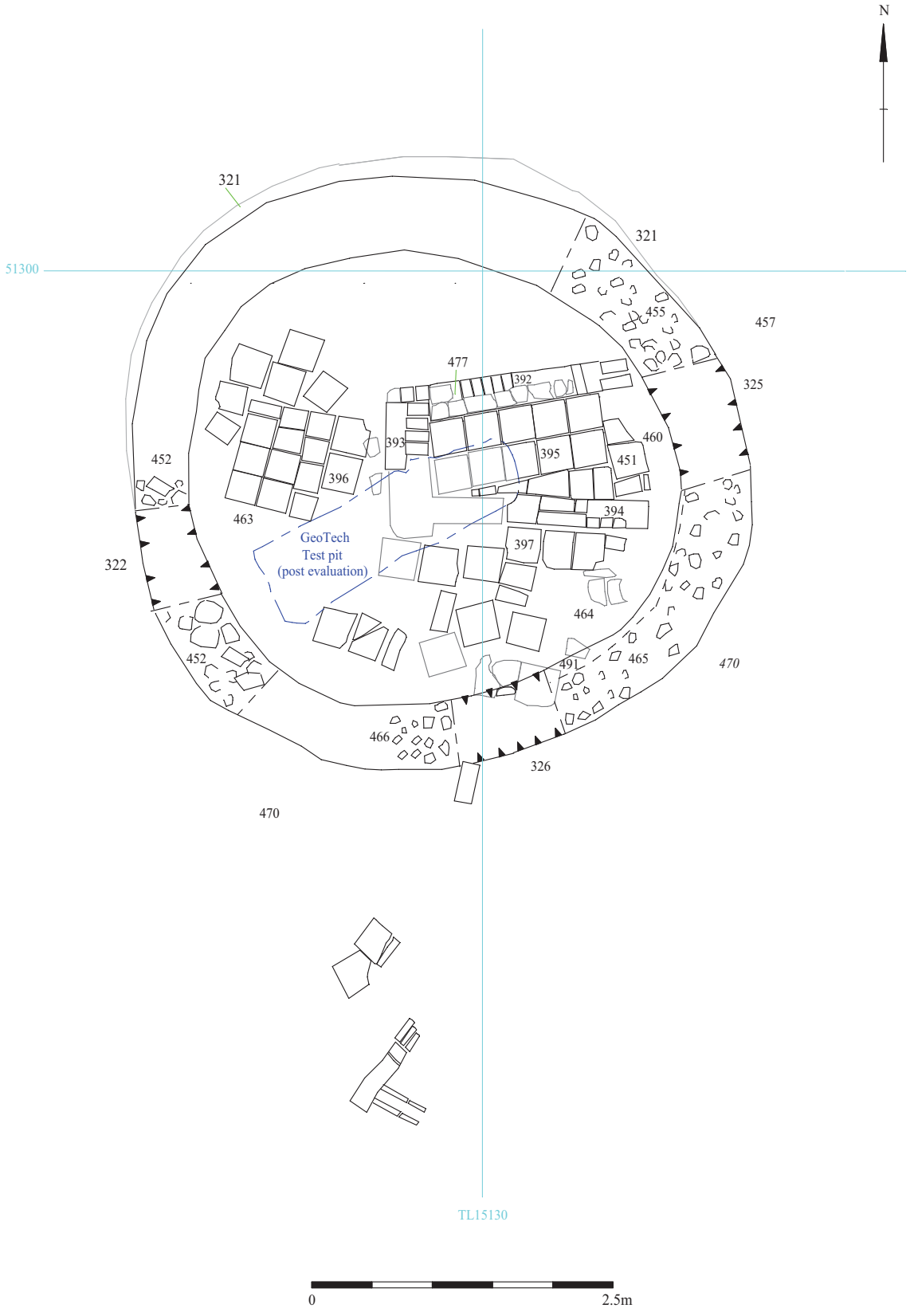

Figure 4. Detail of Kiln 1000 (upper levels)

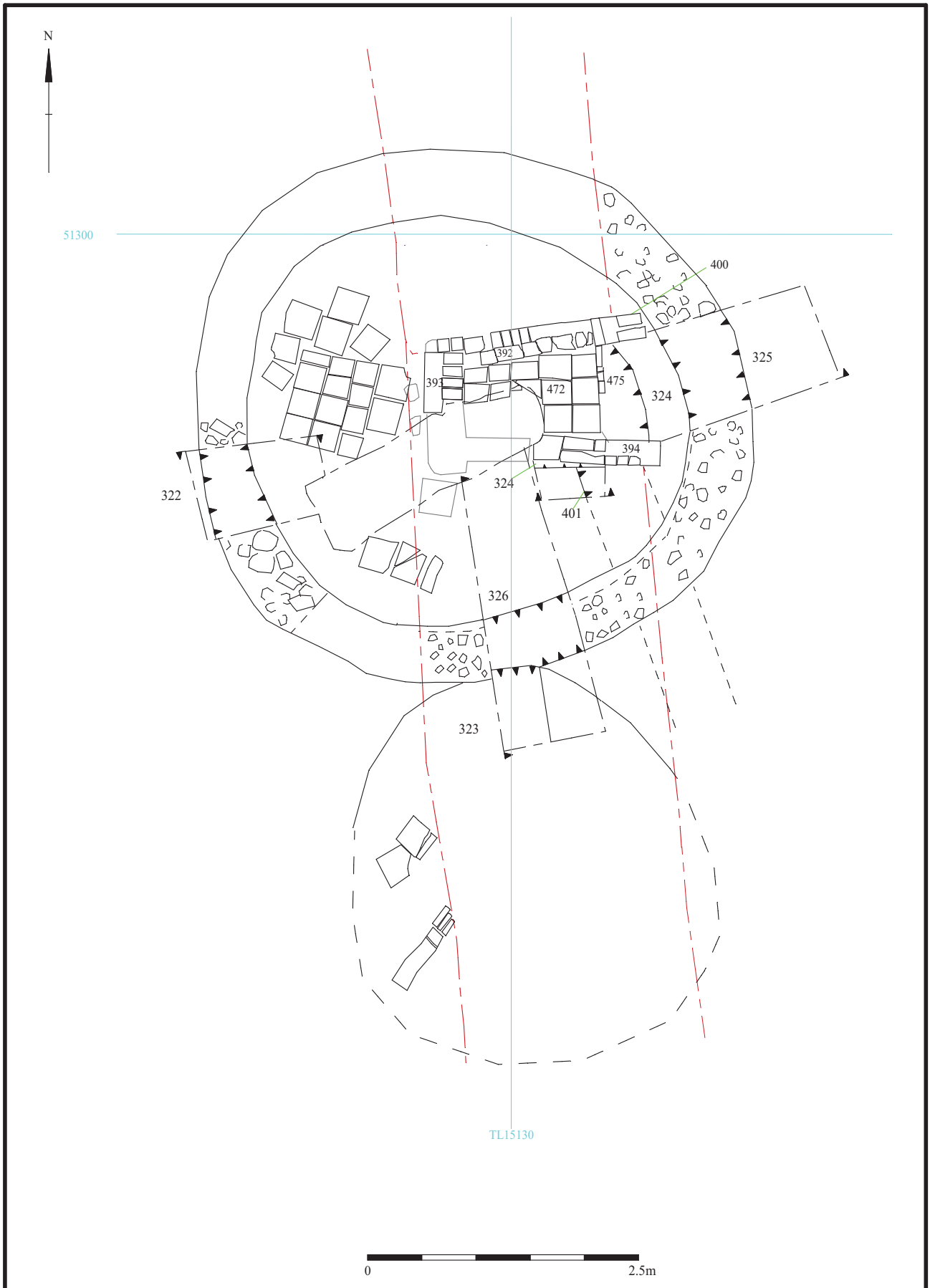

Figure 5. Detail of Lower Foor of Sunken Chamber in Kiln 1000, and showing Pit 323.

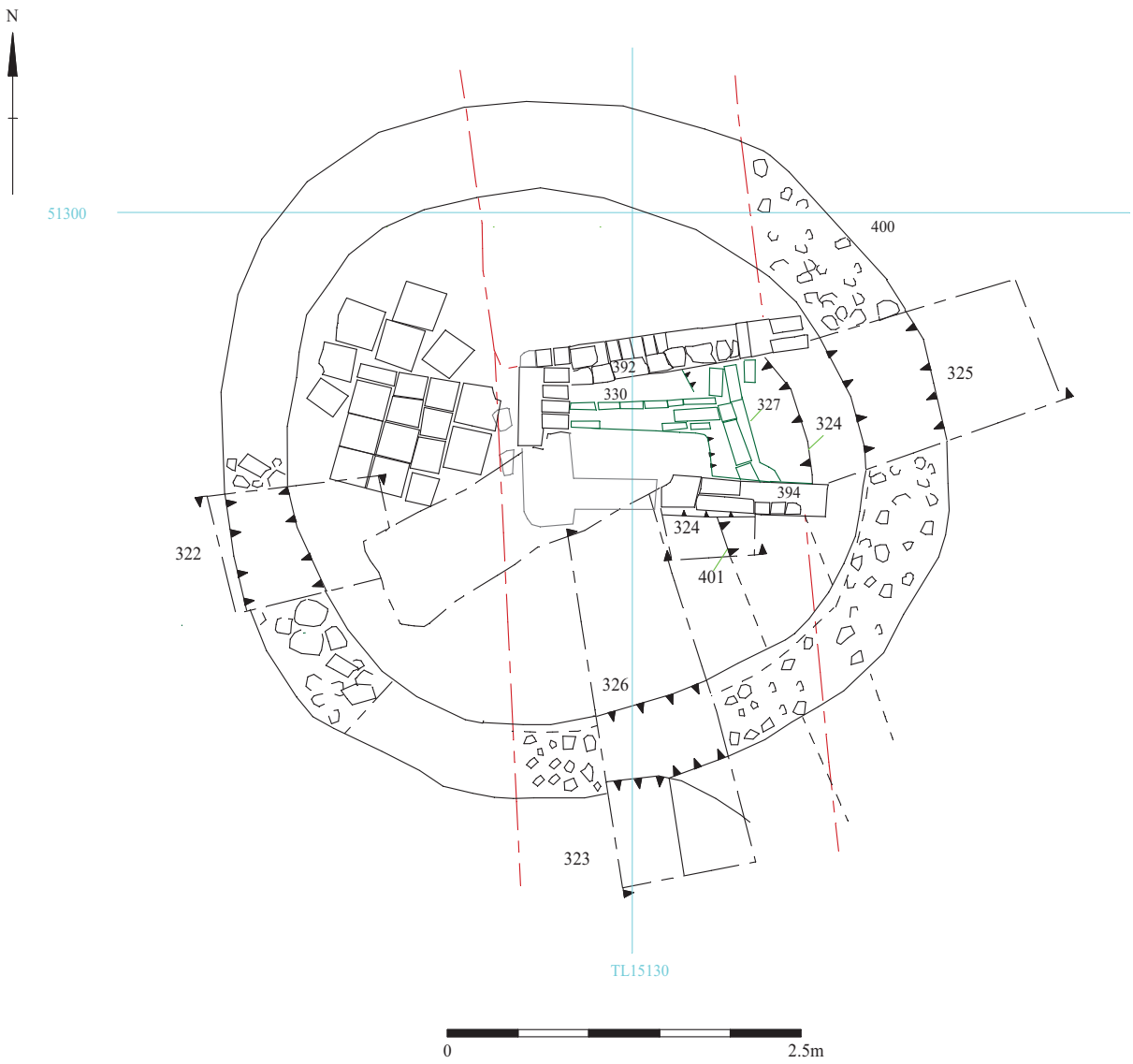

Figure 6. Detail of lower Pipework of Kiln 1000

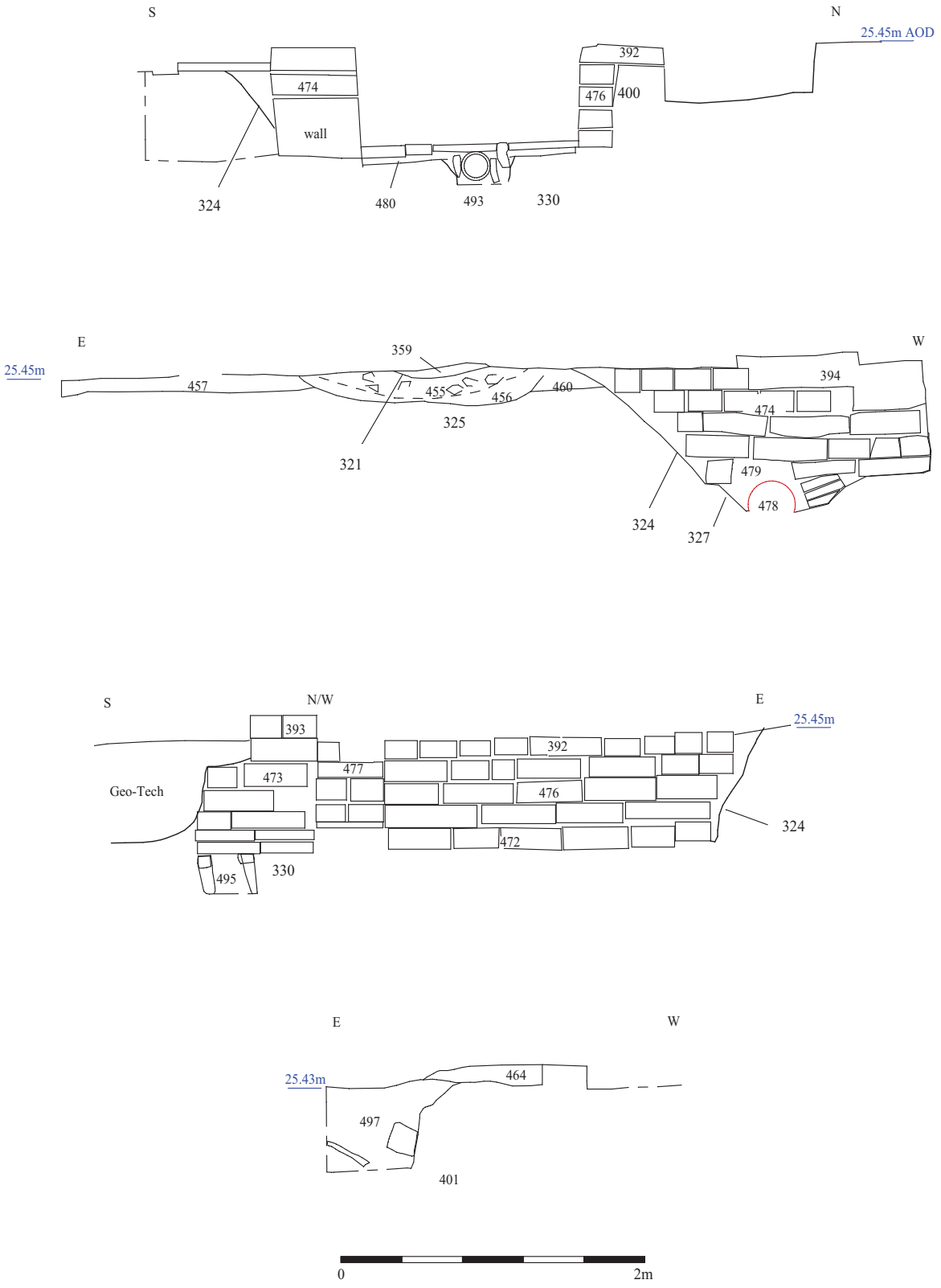

Figure 7. Sections.

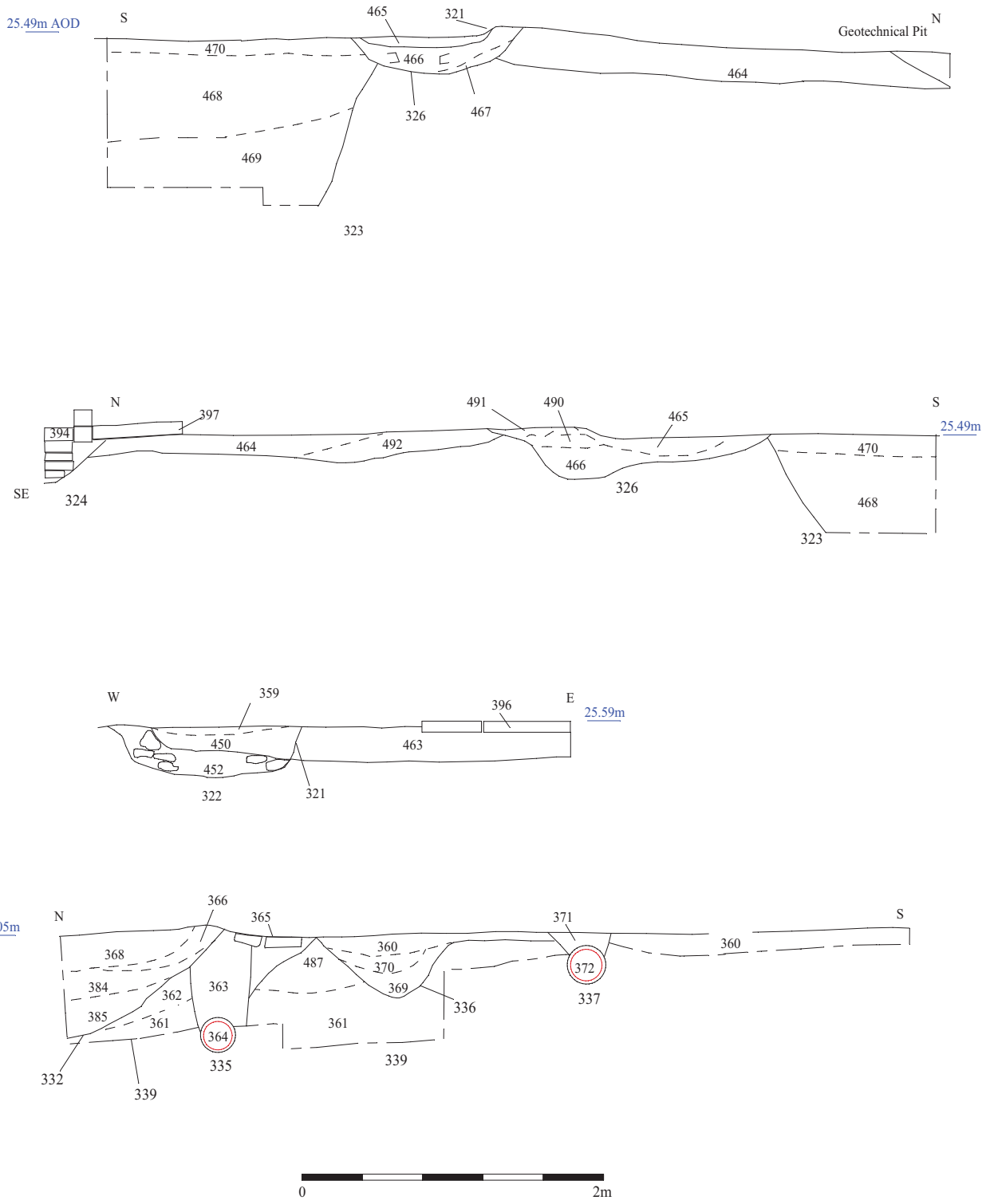

Figure 8. Sections.

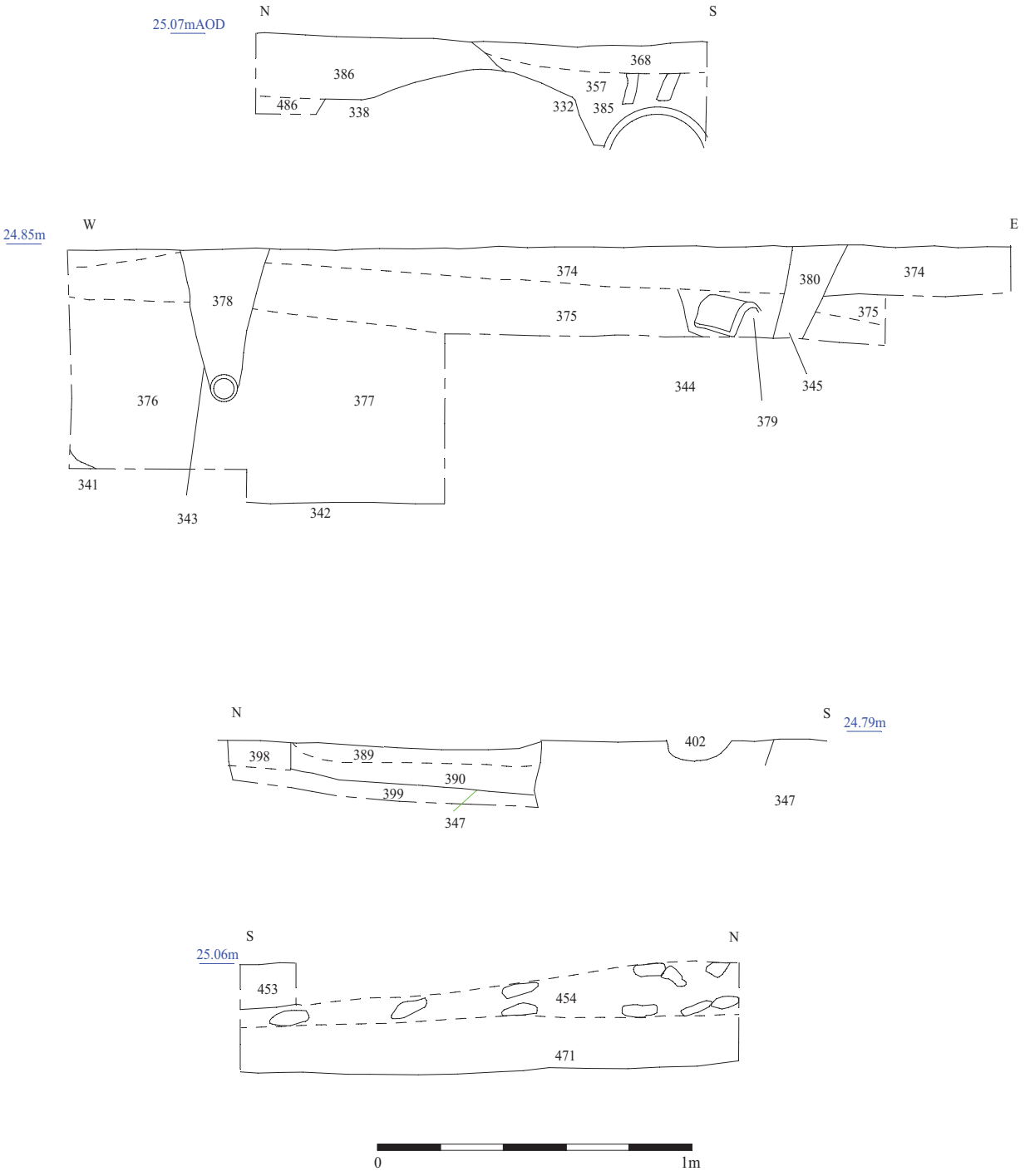

Figure 9. Sections.

Plate 7. Drone view of the site.

Plate 8. Drone view of brick kiln 1000.

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Land between 19 and 73, The Hill,
Blunham,Bedfordshire, 2022
Archaeological Excavation
Plates 7 - 8.

TVAS
EAST MIDLANDS

Plate 9. Hot air system in base of kiln 1000, looking west, Scales: 0.5m, 0.3m and 0.1m.

Plate 10. Showing downdraught pipes, looking south, Scales: 0.5m and 0.3m.

Plate 11. Lower floor level within kiln 1000, looking west, Scales: 0.5m, 0.3m and 2 x 0.1m.

Plate 12. Detail of firing chamber, looking west, Scales: 0.5m and 0.3m.

Plate 13 Foundation 322, looking south-east.
Scales: 0.5m, 0.3m, 0.1m

Plate 14. Foundation cuts 324 and 325, looking south,
Scales: 2m, 0.3m and 0.1m.

Plate 15. Mortat mixing pit 347, looking north,
Scale: 2m.

Plate 16. Metalled sruface 454 looking south,
Scale: 2m.

Plate 17. Pit 323 and kiln foundation 326, looking west,
Scales: 2m, 0.5m and 0.1m.

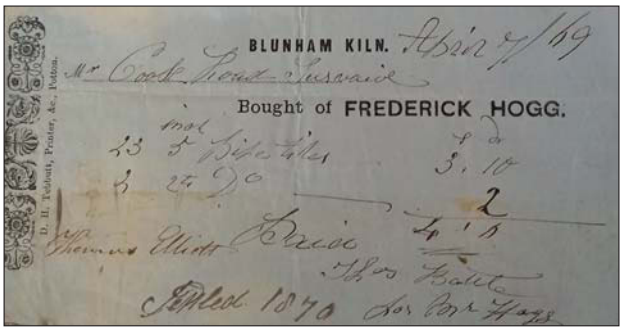

Plate 18. Detail of Blunham kiln bill of sale, 1870.

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Land between 19 and 73, The Hill,
Blunham,Bedfordshire, 2022
Archaeological Excavation
Plates 13 - 18.

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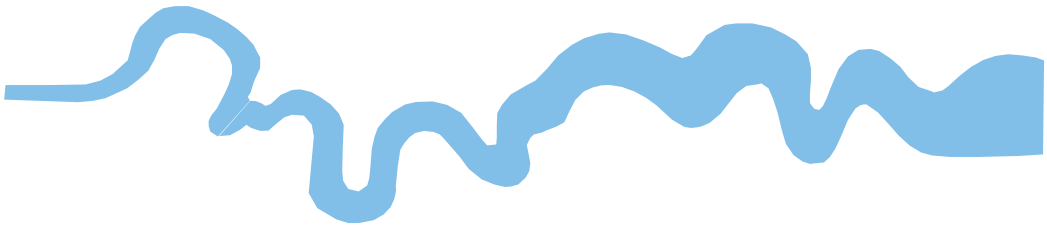
TIME CHART

	Calendar Years
Modern	AD 1901
Victorian	AD 1837
Post Medieval	AD 1500
Medieval	AD 1066
Saxon	AD 410
Roman	AD 43
	AD 0 BC
Iron Age	750 BC
Bronze Age: Late	1300 BC
Bronze Age: Middle	1700 BC
Bronze Age: Early	2100 BC
Neolithic: Late	3300 BC
Neolithic: Early	4300 BC
Mesolithic: Late	6000 BC
Mesolithic: Early	10000 BC
Palaeolithic: Upper	30000 BC
Palaeolithic: Middle	70000 BC
Palaeolithic: Lower	2,000,000 BC



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