

**LAND AT BUTTERFIELD
TECHNOLOGY PARK, GREAT
MARLINGS, LUTON,
BEDFORDSHIRE**

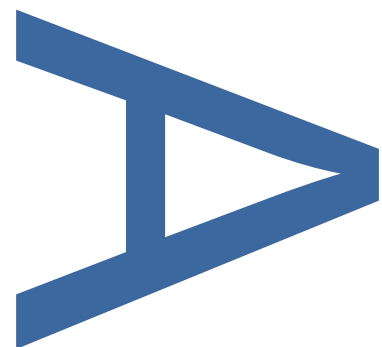
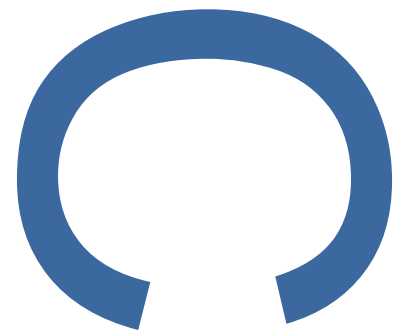
**ARCHAEOLOGICAL STRIP, MAP
AND SAMPLE**

REPORT NO: R13813

**LOCAL PLANNING AUTHORITY: LUTON
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**PLANNING APPLICATION:
17/02069/FUL**

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PRE-CONSTRUCT ARCHAEOLOGY

Land at Butterfield Technology Park, Great Marlings, Luton, Bedfordshire:

Archaeological Strip, Map and Sample Investigation

Local Planning Authority: Luton Borough Council

Central National Grid Reference: TL 1084 2503

Site Code/Accession no: 2018/26

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Report No. R13813

Written and researched by: Christiane Meckseper

Project Manager: Christiane Meckseper

Commissioning Client: Henry Boot Construction Ltd

Contractor: Pre-Construct Archaeology Ltd
Central Office
The Granary
Rectory Farm
Brewery Road
Pampisford
Cambridgeshire
CB22 3EN

Tel: 01223 845522

E-mail: cmeckseper@pre-construct.com

Website: www.pre-construct.com

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ABSTRACT

This report describes the results of an archaeological excavation carried out by Pre-Construct Archaeology on land at Butterfield Technology Park, Great Marlings, Luton between the 15th of October and the 2nd of November 2018. The archaeological work was commissioned by Henry Boot Construction Ltd in response to a planning condition attached to the construction of commercial units with associated parking, landscaping and infrastructure. The aim of the work was to preserve by record any archaeological remains which would be damaged or destroyed by the new development.

Overall, the density of archaeological features and artefacts on the excavated area was low and concentrated in the south-western corner of the site. The majority of the excavated area was devoid of archaeological features, suggesting that the proposed development site is located at the edge or in-between known concentrations of Iron Age to Roman settlements in the vicinity, most notably those at the Butterfield Technology Park to the immediate east, and the Luton Vale Cemetery site c. 250m to the south-west.

The excavations revealed a series of boundary ditches in the south-western area, interspersed with isolated postholes and a small pit, and an isolated un-urned cremation at the eastern edge of the excavated area. A small amount of pottery was retrieved from the ditches which predominantly dated to the late 1st century BC-1st-2nd century AD. One ditch, which was re-cut along its length, contained seven very small sherds of Bronze Age pottery and may be Bronze Age in date. The cremation was radiocarbon dated to the late 2nd to mid- 3rd century AD. A post-medieval quarry pit was located at the north-eastern edge of the excavated area.

The sparse pottery, lack of animal bone and environmental material suggests that the features were located some distance of any settlement activity and represent part of a Roman field system.

1 INTRODUCTION

- 1.1 An archaeological excavation was undertaken by Pre-Construct Archaeology Ltd (PCA) on land at Butterfield Technology Park, Great Marlings, Luton, Bedfordshire, LU2 8DL (centred on Ordnance Survey National Grid Reference (NGR) TL 1084 2503) between the 15th of October and the 2nd of November 2018 (Figure 1).
- 1.2 The site is located 3.8km to the north-east of Luton city centre and 250m to the north-west of the A505.
- 1.3 The archaeological work was commissioned by Henry Boot Construction Ltd in response to a planning condition attached to the construction of new commercial units with associated access, landscaping and services (Planning Reference 17/02069/FUL). The work was undertaken in line with National Planning Policy Framework 2018, Section 16 'Conserving and enhancing the historic environment'.
- 1.4 A trial trench evaluation of the site, carried out by Foundations Archaeology in 2006 identified a small number of possible undated ditches, spread throughout the site area. These were interpreted as representing a prehistoric or Roman field system and could be related to remains of a comparable date excavated to the east and south-west of the proposed development site (FA 2006)
- 1.5 The excavation was carried out in accordance with a Written Scheme of Investigation (WSI) prepared by PCA (Meckseper 2018) in response to a request for archaeological Investigation issued by Hannah Firth, The Central Bedfordshire Council Archaeologist (CBCA), who was acting as the Archaeological Advisor to Luton Borough Council, the Local Planning Authority (LPA).
- 1.6 This was requested as a condition of planning consent (no. 17) due to the high archaeological potential of the wider Butterfield Technology Park area and required that the development should only be implemented in full accordance with an approved scheme of archaeological investigation. This was envisioned to entail a strip, map and sample investigation. This is in line with National

Planning Policy Framework 2012, paragraph 141 and Policy LLP30F of the Luton Local Plan.

- 1.7 The aim of the excavation was to 'preserve by record' any archaeological remains present in those areas of the site which would be affected by groundworks associated with the new development.

1.8 Archaeological Background

- 1.8.1 The archaeological background of the proposed development site is taken from the desk-based assessment, produced for the whole of Butterfield Technology Park, Luton, in August 2017 (Slater 2017, HER search ref: 201718/081). The desk-based assessment established that the Butterfield Technology Park site has moderate potential for prehistoric, Iron Age-Roman, medieval and post-medieval activity and a negligible potential for Anglo-Saxon activity. The following discussion focusses on the Iron Age and Roman remains found in investigations in close proximity of the proposed development site.

- 1.8.2 Numbers in brackets in the following text are heritage asset numbers as listed in the Central Bedfordshire and Luton Historic Environment Record (HER).

Prehistoric to Roman

- 1.8.3 An excavation of a 4-hectare site, part of the Luton Vale Cemetery extension on Butterfield Green Road, c.250m south-west of the proposed development site, identified evidence of Iron Age and early Roman settlement (700BC-AD200) concentrated in the western half of the site (Albion 2005 and 2006, OAE 2019, HER13417). Early to late Iron Age evidence comprised a sequence of round houses which were replaced by Roman boundary ditches. A cremation burial ground was established in the late prehistoric period and continued in use until the early Roman period. Two phases of Roman field system were also present which only produced a small amount of pottery in comparison to the other phases, indicating the field systems were not located close to a settlement.

- 1.8.4 Approximately 500m to the south-west of Butterfield Technology Park is the site of an excavation at Luton Aquatic Centre (HER7243). Features dating to

the Late Iron Age or Early Roman period were uncovered, including a large enclosure with several adjacent smaller enclosures and a trackway. The lack of artefacts and the lack of evidence for internal features suggest that the enclosures did not directly form part of a settlement and were more likely part of a field system. The survival of the trackway may head towards the Iron Age settlement c.250m to the north-east at Luton Vale Cemetery (HER13417).

1.8.5 An excavation immediately to the east of the proposed development site prior to earlier commercial development along Great Marlings, revealed evidence of Bronze Age to early Roman activity (HER15847). The excavation revealed evidence for Early to Middle Iron Age settlement, including a number of rectangular and curvilinear enclosures, one of which contained a roundhouse. Within this area of settlement a number of pits and postholes were also uncovered, although some of the pits were phased to a period after the settlement had gone out of use. The excavations also revealed limited evidence of Early Roman activity, which mainly comprised ditches and pits (Luke and Preece 2017, HER15847).

1.8.6 A dense scatter of Roman pottery, tile and quernstones (HER15528) retrieved through fieldwalking was found to the west of the proposed development site.

Anglo-Saxon to medieval

1.8.7 No Anglo-Saxon heritage assets are recorded near the proposed development site.

1.8.8 Along the western boundary of the proposed development area is Butterfield Green, part of a series of small settlements around village greens which developed during the 12th-13th centuries (HER12399).

1.8.9 Approximately 730m and 370m to the south-west lie the medieval settlements of Stopsley and Swifts Green (HER 17100 and HER 17099). Stopsley village has since expanded in all directions except to the northwest and the Swifts Green village is now largely open ground.

1.8.10 The evaluation at Luton Vale Cemetery revealed evidence for medieval activity (HER 13417). Two medieval ditches were located in the western part

of the site, which are thought to be linked to Hayes Manor, which was situated on the western side of Butterfield Green Road (HER 13417). The 'manor' evolved from property which belonged to the de la Haye family from the late 12th century onwards and was held of the main manor of Luton. It was never a manor in the true sense as it did not hold three weekly courts. Rectilinear earthworks recorded to south of this site are probably related to the manorial site (HER 3341).

Post-Medieval

- 1.8.11 Late 19th and early 20th century Ordnance Survey (OS) maps (Figures 5-8) show the proposed development area as open agricultural fields, lined with trees. The large and irregular shapes of the fields suggest that they were created during enclosure of the parish.

Evaluation of the proposed development site

- 1.8.12 Trial trench evaluation by Foundations Archaeology (FA 2006) revealed a small number of undated ditches. While undated, the ditches could be part of an Iron Age or Roman field system related to the settlements nearby, or medieval or post-medieval field boundaries. A geophysical survey undertaken by Magnitude Surveys on behalf of PCA found some undetermined and ambiguous anomalies which did not suggest any specific archaeological origin (Magnitude Surveys 2017).

2 GEOLOGY AND TOPOGRAPHY

2.1 Geology

2.1.1 The underlying geology of the site is Lewes Nodular Chalk Formation and Seaford Chalk Formation - Chalk (British Geological Survey; Website 1). A Sedimentary Bedrock formed approximately 84 to 94 million years ago in the Cretaceous Period when the local environment was dominated by warm chalk seas.

2.1.2 The superficial deposits are Clay-with-Flints Formation – Clay, Silt, Sand and Gravel (BGS; Website 1). These were formed up to 5 million years ago in the Quaternary and Neogene Periods when the environment was dominated by weathering processes. (British Geological Survey 2018).

2.2 Topography

2.2.1 The site lies on an area of high ground to the north-east of Luton and the Chiltern Hills at approximately 174m above Ordnance Datum (AOD). The River Lea or Lee flows through Luton approximately 1km to the south west of the site

3 METHODOLOGY

3.1 General

3.1.1 The archaeological investigation comprised a strip, map and sample excavation of a 1.12ha area (Figure 2, Plate 1, Plate 2). The excavated area was slightly reduced in size due to existing soil bunds along the southern boundary and a buffer of established trees and vegetation around its perimeter. Two extant, modern drainage ditches across the site had removed any potential archaeological features and were backfilled.

3.1.2 A monitoring visit with the CBCA, Hannah Firth, took place on 29 October 2018 and the site was signed off.

3.2 Excavation Methodology

3.2.1 A 21 ton 360° tracked mechanical excavator was used to strip the excavation area. Topsoil and subsoil were removed in spits down to the level of the undisturbed natural geological deposits where potential archaeological features could be observed and recorded.

3.2.2 Exposed surfaces were cleaned by trowel and hoe as appropriate and all further excavation was undertaken manually using hand tools.

3.3 Recording and Finds Recovery

3.3.1 The limits of excavations, heights above Ordnance Datum (m OD) and the locations of archaeological features and interventions were recorded using a Leica 1200 GPS rover unit with RTK differential correction, giving three-dimensional accuracy of 20mm or better.

3.3.2 Deposits or the removal of deposits judged by the excavating archaeologist to constitute individual events were each assigned a unique record number (often referred to within British archaeology as 'context numbers') and recorded on individual pre-printed forms (Taylor and Brown 2009). Archaeological processes recognised by the deposition of material are signified in this report by round brackets (thus), while events constituting the removal of deposits are referred to here as 'cuts' and signified by square brackets [thus]. Where more than one slot was excavated through an

individual feature, each intervention was assigned additional numbers for the cutting event and for the deposits it contained (these deposits within cut features being referred to here as 'fills').

3.3.3 During the post-excavation assessment, multiple sections excavated across a single feature will be grouped together by unique 'group numbers' e.g. Ditch 1. Additionally, features of contemporary date and representing the same type of activity or land-use will be assigned to interpretative groups e.g. 'Refuse Pits', 'Quarry Pits'). The record numbers assigned to cuts, deposits and groups are entirely arbitrary and in no way reflect the chronological order in which events took place. Artefacts recovered during excavation were assigned to the record number of the deposit from which they were retrieved.

3.3.4 All features and deposits excavated during the excavation are listed in Appendix 2.

3.3.5 Metal-detecting was carried out during the topsoil and subsoil stripping and throughout the excavation process. Archaeological features and spoil heaps were scanned by metal-detector periodically. Only objects of modern date were found and were not retained for accession.

3.3.6 High-resolution digital photographs were taken of all relevant features and deposits and were used to keep a record of the excavation process.

3.4 Sampling Strategy

3.4.1 Discrete features were half-sectioned, photographed and recorded by a cross-section scaled drawing at an appropriate scale (either 1:10 or 1:20). Where large or significant finds assemblages were present, features were subsequently 100% excavated for finds recovery.

3.4.2 Linear features were investigated by means of regularly-spaced slots amounting to 25% of their lengths. Where stratigraphic relationships between features could not be discerned in plan, relationship slots were also excavated, and these were recorded as part of the GPS survey and noted on the relevant context sheets.

3.5 Environmental Sampling

3.5.1 A total of 10 bulk samples (generally 20-40 litres in volume), and 3 samples from the cremation, including a C14 sample, were taken to extract and identify micro- and macro-botanical remains and to provide further dateable material. The aim of this sampling was to investigate the past environment and economy of the site, and in the case of settlement features, the diet of the inhabitants and the agricultural basis of the settlement. An additional aim of the sampling was to recover small objects that are not readily recovered by hand-collection, such as metalworking debris and bones of fish and small animals. These samples were taken from sealed deposits.

4 RESULTS

- 4.1 The excavation revealed five ditches on a NNW-SSE alignment, located in the south-western part of the site (Figure 2). Ditches 7 and 8 had previously been recorded as a single feature [1603] in Trench 16 of the evaluation (FA 2006).
- 4.2 Ditches 1-4 were generally up to 0.50m wide and 0.13-0.26m deep (Figure 4 Sections 15, 17 and 18, Plate 3). Ditch 2 represents a re-definition of Ditch 1 and it is possible that the ditches are part of a field system that was in use over a long period of time, leading to a re-definition of those boundaries (Figure 4 Sections 7 and 8). Segments of ditches 1-4 contained single fragments of pottery dating from the late 1st century BC to 2nd century AD.
- 4.3 Ditches 5 and 6 to the north-east lie on a NW-SE alignment and are both generally wider and deeper than Ditches 1-4. Ditch 5 represents a re-cut of Ditch 6. Ditch 6 has a distinctive profile with a wide top and narrow base. Ditches 5 and 6 measure on average 0.8-1.40m in width and 0.45m in depth (Figure 4 Sections 21 and 22, Plate 4). The combined width of the re-cut boundary is up to 2.80m. The morphology of the ditches suggests that this represents a larger boundary ditch that was re-defined over time. Segment [172] of Ditch 6 contained an assemblage of 7 extremely abraded sherds Bronze Age pottery.
- 4.4 No animal bone was present within any of the features. The ditches also contained small amounts of residual flint flakes and intrusive post-medieval brick fragments. The narrow and shallow survival of some of the ditches suggests that the site was considerably horizontally truncated.
- 4.5 In the same area as the ditches were several isolated postholes (features 114, 116, 118, 120 and 150). The postholes were dispersed across the site and formed no structures; their function is unclear.
- 4.6 A small, isolated cremation [134] was located at the eastern edge of excavation (Plate 5). The cremation was un-urned and a radiocarbon date of one of the bone fragments produced a date of 1806 ± 26BP or cal AD 258 (95.4% probability) or cal AD 196-244 (68.2% probability). Seven small

fragments of pottery dating to the early 1st century to the early 3rd century AD (AD50-230) were also retrieved, which may make the earlier radiocarbon date more likely. The limit of excavation was extended eastwards around the cremation to check for further burials, but none were found.

- 4.7 A large, circular pit [185], 8.0m in diameter and 1.10m in depth with concave sides and a flat base, was located at the north-eastern edge of excavation (Figure 4 Section 25, Plate 6). The eastern edge of excavation was extended to reveal the full extent of the feature. This most likely represents a quarry pit. Fragments of ceramic building material (CBM) and clay tobacco pipe from the pit fills suggest a post-medieval date for the feature.
- 4.8 Ditch [104] on an E-W alignment in the south-western corner of the excavation contained fragments of CBM and plastic and was modern in date.
- 4.9 No other archaeological features were revealed within the excavated area. Several linear and irregular features were tested but turned out to be rooting or variations of the natural geology. This was also the case for features [1903] and [2103] previously identified in the evaluation trenches (FA 2006).
- 4.10 The excavation revealed the footprints of the backfilled evaluation trenches (FA 2006). These were in slightly different locations than indicated in the evaluation report, which is most likely due to a surveying error in 2006. The features excavated in the trenches matched with features revealed in the excavation (Figure 2).

5 THE FINDS

5.1 Flint

Ella Egberts

Introduction

- 5.1.1 Archaeological investigations at the above mentioned site resulted in the recovery of a small quantity of struck flint and unworked burnt stone. The assemblage has been comprehensively catalogued by context and this includes further descriptive details of the material (Table 1). This report summarises the data in the catalogue; it quantifies and describes the material and presents a preliminary assessment and outline of its significance.

	Decortication flake	Flake	Flake fragment	Debitage <15mm	Core fragment	Core shaping	Burnt stone (no.)	Burnt stone (wt: g)
Total	2	2	2	45	1	1	47	71.2

Table 1: Quantification of struck and burnt flint

- 5.1.2 A total of 8 struck flints, 45 pieces of micro-debitage (flakes and flake fragments less than 15mm in maximum dimension), and 47 pieces (71.2g) of unworked burnt flint were recovered from the site (Table 1).
- 5.1.3 The majority of struck flints were found singly in a number of ditches and in a cremation. Fills (147) and (149) (a ditch and a posthole) are the only two contexts which included two struck flakes as well as a number of pieces of micro-debitage. The posthole fill (149) also included a small fragment of possibly worked, burnt flint. All other unworked burnt flint fragments were recovered from context (133), which has been interpreted as a cremation. In this case the burnt flint therefore most likely presents naturally occurring flint clasts accidentally burnt during the cremation process.

Struck flint

Raw material

- 5.1.4 Most of the struck flints from this site were made on fine-grained, translucent

light brown flint with occasional flakes struck from light grey and grey flint. Where present, cortex is a weathered nodular surface or formed by ancient recorticated fracture scars. The raw material may have been obtained from the Pleistocene tills (Lowestoft Formation), clay-with-flints or glaciofluvial deposits. As the bedrock geology around the site is chalk (Holywell Nodular Chalk Formation and New Pit Chalk Formation, the Chalk Rock Member and Lewes Nodular Chalk formation) (BGS 2019), even reworked sediments such as river terrace deposits and tills may include good quality flint but the small sample of struck flint from Butterfield Technology Park does not appear to show a preference for the use of such raw materials.

Condition

- 5.1.5 The worked flint is in fresh to slightly chipped condition. The worked flint in the ditches is in fresher condition which indicates that it may not have moved far after discard. The material in the posthole and cremation is in a more chipped condition and likely to have moved to some extent after discard.

Description

- 5.1.6 A total of eight struck flints were recovered from the site. The assemblage includes (decortication) flakes, flake fragments, a core fragment, and a core-shaping flake. The presence of small numbers of micro-debitage in most samples shows that flint working occurred in the vicinity of these features. None of the flakes shows any diagnostic characteristics; they are mainly small and relatively thin, occasionally with slightly obtuse striking platforms. The core fragment is worked in an unsystematic way and shows only a few flake scars which were struck from a naturally fractured, straight platform. The core shaping flake evidences some core preparation and reshaping practices, this together with the presence of some parallel flake scars on the core shaping flake may tentatively point to earlier prehistoric flint working practices.

5.1.7 Discussion

- 5.1.8 The worked flints from Butterfield Technology Park indicate prehistoric activity at the site. The small assemblage, the fact that most struck flints are found in isolation (suggesting that these pieces ended up in these contexts by chance),

and the small amount of debitage of a derived nature together indicate that at the sample locations no significant flintworking would have taken place.

5.2 Prehistoric Pottery

Sarah Percival

5.2.1 A total of 23 sherds weighing 133g were collected from nine contexts (Table 2 and

Context	Feature	Feature type	Fabric	Form	Spot date	Quantity	Weight (g)	Rim count
101	101	Subsoil	F07	Bead rim jar	LC2-C3AD	1	28	1
			RO5A		C1AD+	2	2	
108	110	Ditch	F17		LC1BC-C1AD	1	1	
129	130	Ditch	F29		C1AD+	1	3	
133	134	Cremation	SAM	Dr33A	AD50-230	7	24	
137	138	Ditch	F09		LC1BC-C1AD	1	2	
141	142	Ditch	F29	Reeded rim bowl	C2AD	1	18	
155	156	Ditch	R08		C1AD	1	26	
170	172	Ditch	G1		EBA	7	11	
176	178	Ditch	F28		C2AD	1	18	
Total						23	133	1

5.2.2 Table 3). The assemblage includes a small quantity of much abraded possible Bronze Age pottery from a single feature (ditch [172]) plus a small assemblage of Late Iron Age to early Roman date. The pottery is poorly preserved with a mean sherd weight of 6g, with most sherds being small and abraded

Feature	Feature type	Context	Spot date	Quantity	Weight (g)	MSW
101	Subsoil	101	C1AD+	2	2	
			LC2-C3AD	1	28	
110	Ditch	108	LC1BC-C1AD	1	1	
130	Ditch	129	C1AD+	1	3	
134	Cremation	133	AD50-230	7	24	
138	Ditch	137	LC1BC-C1AD	1	2	
142	Ditch	141	C2AD	1	18	

156	Ditch	155	C1AD	1	26	
172	Ditch	170	EBA	7	11	
178	Ditch	176	C2AD	1	18	
Total				23	133	6g

Table 2: Quantity and weight of pottery by feature

Methodology

5.2.3 The assemblage was analysed in accordance with the guidelines for analysis and publication recommended by the Prehistoric Ceramic Research Group (PCRG 2010). The total assemblage was studied and a full catalogue prepared. The sherds were examined using a binocular microscope (x10 magnification) and were divided into fabric groups defined on the basis of inclusion types. Vessel form was recorded and the sherds were counted and weighed to the nearest whole gram. Decoration, condition, food residues and sooting were also noted. The catalogue was recorded using Microsoft Excel 2010.

Assemblage description

5.2.4 The small assemblage includes seven extremely abraded sherds in friable grog-tempered fabric from fill (170) of ditch [172]. The sherds may be of Early Bronze Age date comparable to early prehistoric pottery found previously at the site (Timby 2006) but are otherwise not closely datable.

5.2.5 The remainder of the assemblage spans the mid/late 1st century BC to early 3rd centuries AD. A complete profile of a small plain Central Gaulish samian Dragendorff 33 cup dated to AD 50-230 was found accompanying cremation [134] (<http://potsherd.net/atlas/types/sigillata/gallery>). The remainder of the assemblage comprises un-sourced coarsewares in a range of shell-tempered, sandy and grog-tempered fabrics, including rims from a shell-tempered bead rim jar from subsoil (101) and a reeded rim bowl in micaceous sandy reduced ware from ditch [142]. Handmade sandy reduced ware found in the fill of ditch [110] and grog-tempered ware from ditch [137] may be Late Iron Age (late 1st century BC to mid-1st century AD).

Context	Feature	Feature type	Fabric	Form	Spot date	Quantity	Weight (g)	Rim count
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101	101	Subsoil	F07	Bead rim jar	LC2-C3AD	1	28	1
			RO5A		C1AD+	2	2	
108	110	Ditch	F17		LC1BC-C1AD	1	1	
129	130	Ditch	F29		C1AD+	1	3	
133	134	Cremation	SAM	Dr33A	AD50-230	7	24	
137	138	Ditch	F09		LC1BC-C1AD	1	2	
141	142	Ditch	F29	Reeded rim bowl	C2AD	1	18	
155	156	Ditch	R08		C1AD	1	26	
170	172	Ditch	G1		EBA	7	11	
176	178	Ditch	F28		C2AD	1	18	
Total						23	133	1

Table 3: Pottery by Context

Discussion

5.2.6 The earlier prehistoric assemblage compares well with previous pottery found during evaluation excavations at Butterfield Green (Timby 2006) and suggests a possible Bronze Age presence. The remainder of the pottery dates to the late 1st century BC to early 3rd century AD, and is broadly comparable with the Late Iron Age to Roman pottery found during excavations at Butterfield Green in 2005 to 2006 (Wells 2017). The assemblage is however too small to allow for further analysis.

5.3 Ceramic Building Material By Amparo Valcarel

Introduction

5.3.1 A total of 46 fragments of Roman fired clay and post-medieval ceramic building materials weighing 982 g was retrieved from 9 contexts (Table 4). The material was predominantly post-medieval brick and roof tile with small amounts of fired clay.

5.3.2 This assemblage was assessed in order to:

- Identify the fabric and form from which a list of spot dates could be provided for the features and structures;
- Catalogue the assemblage. The database for this site is CBM 2018/29.cbm.acddb.;
- Make recommendations for further study.

Methodology

- 5.3.3 The application of a 1kg masons hammer and sharp chisel to each example ensured that a small fresh fabric surface was exposed. The fabric was examined at x20 magnification using a long arm stereomicroscope or hand lens (Gowland x10).
- 5.3.4 As there was no Luton ceramic building material fabric reference collection housed at PCA each new fabric from this site was prefixed by LUT followed by 1, 2, 3 etc. thus; LUT1. Consultation of the relevant 1:50000 geological map (<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>) ensured an understanding of the geology of this part of England and some idea of its economic potential. A review of the ceramic building material was undertaken not only for a fabric review but also to provide a list of spot dates.

Geological Background

- 5.3.5 Luton lies in a part of the British Isles that is geologically characterised by Quaternary sediments. The underlying drift geology in the area of the development consists in Lewes Nodular Chalk Formation and Seaford Chalk Formation – Chalk.

Ceramic Building Material

LUT1: Sandy fabric, very course with abundant quartz <0.2mm, and occasional red iron oxide (7 examples, 175 g), brick and peg tile

LUT2: Fine sandy fabric; few quartz grains <0.2mm; occasional silty pellets (5 examples, 95 g), peg tile

LUT3: Very course with glassy and red clay pellets inclusions (2 example, 634 g), brick

- 5.3.6 The post-medieval material recovered from the site consist of bricks and

roofing tiles made of different local fabrics, but especially from sandy fabric LUT1. All the material collected came from different fills, mainly from fill (182) of Pit [185].

5.3.7 Three brick samples from fills (129) and (182) from Ditch [130] and Pit [185] were collected. The bricks are made of different fabrics: LUT1, a course sandy fabric with occasional quartz and LUT3, a very course matrix with glassy and red clay pellets inclusions. The brick made of LUT3 03 from fill (129) is poorly made and fired, indicating a 18th or 19th centuries date. The other sample brick is made of a local sandy clay matrix (LUT1), and with no dimension preserved.

5.3.8 Roof tiles were recovered from different fills, made of two different fabrics LUT1 and LUT 2. All the examples are abraded suggesting that it had been dumped. One curved pan tile introduced in Britain in the mid-17th century was collected from layer [101].

Undiagnostic form and fabrics (25 examples, 38 g)

5.3.9 A small cluster of undiagnostic examples of ceramic building material were recovered from numerous contexts. The fragments are small and undiagnostic, most of them less than 3 cm across, and so are completely undatable.

Burnt Clay (6 examples, 1 g)

5.3.10 A small assemblage of burnt and fired clay was recovered from fill (133) of Cremation [134]. The fragments are very small and are non-diagnostic pieces, and merely they are associated with the process of burning.

Context	Cut	Fabric	Form	Size	Date range of material		Latest dated material		Spot date
101	101	2279	Post-medieval pan tile	1	1630	1850	1630	1850	1630-1850
105	105	LUT2; UNK	Post-medieval peg tile and unknown fabric	2	1450	1900	1450	1900	1600-1900
108	110	LUT2; UNK	Post-medieval peg	2	1450	1900	1450	1900	1600-

Context	Cut	Fabric	Form	Size	Date range of material		Latest dated material		Spot date
			tile and unknown fabric						1900
125	126	LUT1	Post-medieval peg tiles	2	1450	1900	1450	1900	1600-1900
129	130	LUT3	Post-medieval brick	1	1700	1900	1700	1900	1700-1900
133	134	3102	Small and abraded fired clay	6	1500B C	1700	1500B C	1700	50-400
143	144	UNK	Unknown fabric and form	4					Undatable
145	146	UNK	Unknown fabric and form	14					Undatable
182	185	LUT1; LUT2:LUT3; UNK	Post-medieval peg tiles and bricks; Unknown fabric and form	14	1450	1900	1700	1900	1700-1900

Table 4: Ceramic Building Material from all contexts

5.4 Metalwork

Ruth Beveridge

Introduction

- 5.4.1 The evaluation work carried out by Foundations Archaeology in 2006 produced no metalwork artefacts. The assemblage recovered from the excavation is made up of three hundred and thirty-six objects of metalwork and waste debris; of this total only one object is not an iron nail (Appendix 2). Two hundred and thirty-eight nails, or fragments of, were collected from un-urned cremation [134]. The remaining iron nail and iron object were from the fills of field boundary ditches [142] and [144] respectively.
- 5.4.2 The finds have been recorded below and a full listing is provided in the catalogue. They have been examined with the aid of low level magnification and with the assistance of radiographs. The radiographs will be included with the archive.

Condition

- 5.4.3 The overall condition of the metalwork was poor; many of the nails are corroded with hollow shanks. Accurate quantification of the nails recovered from cremation [134] was hindered by their fragmentary nature.

Roman

Iron

- 5.4.4 Two hundred and thirty-eight nails, plus fragments of waste, possibly pyre debris, weighing a total of 332g, were recovered from cut [134], an un-urned cremation.
- 5.4.5 Although the cremation was truncated, the remains of metalwork was found mixed with the calcide bone and a single piece of Samian ware; a piece from the base of a Dragendorff cup of AD50-230 date (Section 5.2).
- 5.4.6 Nails accounted for approximately 70% of the total weight, with the remaining 30% being fragments of fuel ash slag and mineralised wood/charcoal that can be interpreted as pyre debris. Examination of the radiograph revealed that amongst the nails were three complete small tacks with flat, circular heads (measuring 13.9mm in length); a further fifty-five nails have similarly small, circular heads, however some of these appear domed and could be the remains of hobnails, Manning Type 10, rather than small, flat headed tacks. Fewer than 5% of the nails were of Manning Type 1b.
- 5.4.7 The small, flat headed tacks may have been used for securing furnishings on a wooden bier, Weekes, 2008,148; thus offering some insight into the pyre-side rituals. Mould, 2004, 271 also suggests, such nails could have been used for securing bone inlay in situ on the surface of wooden objects or utilised decoratively in their own right, to adorn wooden mortuary items such as boxes and caskets. The small tacks recovered from cut [134] exhibit little post-depositional corrosion; Cool, 2004, 438, observes that this is an indication that the nails were burnt in the cremation process.
- 5.4.8 In his discussion of funerary rites, Smith, 2018b, 267 notes that the placing of shoes within the grave, worn or otherwise, was a common Romano-British

practise and likely related to the deceased's journey into the afterlife. The nails identified as hobnails from [134] are evidence for this provision of footwear; in this instance they represent the remnants of cremated shoes collected as part of the pyre debris.

The nails of Manning Type 1b from [134] are medium-sized nails and likely to have been used in the construction of the bier, pyre or additional wooden boxes perhaps included as grave goods. It was notable that the remains of mineralised wood were observed only on the nails of medium size.

Undated

Iron

5.4.9 In addition to the material recovered from the cremation; two artefacts were recovered from the fills of field boundary ditches; neither are intrinsically datable themselves; though the nail from ditch [141] could be of Roman date by association with the pottery collected from the ditch fill.

5.4.10 Nail: incomplete with flat, sub-oval head and truncated shank, square in cross-section. Corroded Manning Type 1b. Fill (141) of ditch [141].

5.4.11 Plate: Heavily encrusted and corroded object, triangular in plan. It is the corner section of a plate object with raised border. Narrowest end is rectangular in cross-section. Fill (143) of ditch [144].

Discussion

5.4.12 The small finds assemblage reflects a low level of Roman activity on the site, likely peripheral to the main settlement area.

5.4.13 The assemblage is composed almost entirely of the nails and associated debris retrieved from a single, un-urned cremation [134]. Crummy, 2014, 198, notes in her assessment of material from the Puckeridge cemetery, that it is usual to find this high proportion of ironwork in Romano-British cremations, as nails were utilised in the construction of pyres, coffins, biers, wooden boxes and other furniture that may have been deposited with the deceased. If the finds from [134] are the contents of an un-urned cremation, they may originally have been deposited within an organic container made from cloth, leather or

basketry, Mckinley, 2004, 284.

- 5.4.14 The nails retrieved from cremation [134] vary in size and shape but small nails or tacks predominate. The condition of the nails and the waste material retrieved with them suggest the collection of pyre debris and the possibility that this material represents re-deposited pyre debris within cut [134], rather than a cremation burial, should be considered, particularly given that only a small quantity of cremated bone was collected (Section 5.5).
- 5.4.15 McKinley (2004, 304) demonstrates the widespread nature of this phenomenon, showing that the recovery of re-deposited pyre debris in discrete cuts from Romano-British graves fills is relatively common. Amongst the examples given, she notes that 78% of unurned cremations from Baldock Area 15 and 50% of unurned cremations from St Stephen's in St Albans, contained re-deposited pyre debris.

5.5 Human Bone

James Young Lanthorne

Introduction

- 5.5.1 The deliberate deposition of cremated human bone was encountered during the archaeological investigation at Butterfield Technology Park, Luton, Bedfordshire. A single, isolated cremation within cut [134] was encountered near the eastern edge of the excavation. The following report provides a summary of cremation (133).

Methodology

The remains were excavated in accordance with the ClfA guidelines (McKinley and Roberts, 1993) that require cremations to be excavated in spits. The deposits from each spit were wet sieved through a 0.5mm sieve, and the residues passed through a stack of 10mm, 5mm and 2mm mesh sieves. All the bone <2mm was extracted for analysis. The ≥2mm residue was scanned (and has been retained) and identifiable bone and any artefacts extracted. All the weights were recorded and represented as a percentage of the total weight; these results do not include the ≥ 2mm residues, although the residues were scanned for identifiable elements.

Results

5.5.2 Cremated human bone was found within fill (133) in cut [134].

Weight of bone

5.5.3 The weights of each fraction are shown in Table 5 below as well as the fraction of the total weight of the skeletal material in cremation (133):

Context no.	Cut no.	Sample no.	Spit	>10mm fraction (g)	≥5mm fraction (g)	≥2mm fraction (g)	Total weight without ≥2mm fraction (g)
133	134	1001	1	5	9	220	14
133	134	1002	2	0.5	0.5	194	1
Total				5.5	9.5	414	15

Table 5: Weight per spit of cremation (133)

5.5.4 The assessment of cremated human bone followed the guidelines established by Jacqueline McKinley in the Guidelines to the Standards for Recording Human Remains (Brickley and McKinley 2004). Any identifiable bone fragments (skull, axial, upper limb, lower limb and unidentified long bone) were recorded along with the level of fragmentation and oxidisation illustrated by variations in colour from the normal buff/white colour of a fully oxidised cremation, any sexually dimorphic traits and ageing data, such as epiphyseal fusion and dental development, and any pathological lesions.

5.5.5 Studies carried out on the cremated remains produced by modern crematoria, with the <2mm fraction removed, indicated that an adult individual would weigh between 1001.5 – 2422.5g, with an average weight being 1625.9g (McKinley 1993). While the weight of the cremated material does depend on the sex and age of the individual there is an area of overlap (McKinley, 1993). Archaeological cremations tend to have lower total weights than modern cremations principally due to modern cremated remains being collected in a much more controlled environment. Despite this the results from the studies of modern cremations can give an idea of the proportion of remains that were finally buried from archaeological cremations.

5.5.6 The low weight exhibited by cremation (133) indicated that it could potentially

represent the remains of a juvenile individual, a deliberately deposited token amount of burnt human bone, or that the cremations had been damaged by later activity on the site, such as ploughing.

Condition of the bone

- 5.5.7 Studies on modern cremations have also provided data on the fragment size that can be expected from an adult cremation. Similar to the weight of cremations the fragment size from archaeological cremations is usually less than those found with modern studies, often due to damage resulting from later truncation. The majority of fragments from modern cremations are over 10mm (McKinley, 1994),
- 5.5.8 Very little bone that was over 5mm in size was present within cremation (133) supporting the premise that the cremation was truncated by later activity of the site rather than being that of a juvenile or a token amount from an adult.
- 5.5.9 No identifiable elements were recognisable among the cremated bone.
- 5.5.10 The majority of the cremated bone was greyish white in colour with occasional-moderate grey brown and occasional white fragments. This would indicate that the bone was incompletely oxidised for the most part. These results would be suggestive of a pyre temperature that did not fall below 300°C for the majority of time it was burning but may occasionally have peaked at 600°C.

Demography and Pathology

- 5.5.11 Assessment of the cremated bone did not suggest that there was more than one individual. No discrete aging or sexing indicators were present on any of the fragments of cremated bone. There were no pathological lesions.

Recommendations for future work

- 5.5.12 No further work is recommended on cremation (133). As the cremation showed evidence of possible horizontal truncation and was likely to have been contaminated by other deposits, no further analysis on the charcoal retrieved from environmental samples (1001) and (1002) is recommended (Langthorne pers comm. 29/10/2019).

5.6 Radiocarbon dating

5.6.1 A sample of cremated bone from fill (133) of cremation [134] was sent for Radiocarbon dating to the Scottish Universities Environmental Research Centre (SUERC), sample number SUERC-87834. This produced a radiocarbon date of $1806 \pm 26\text{BP}$ or cal AD 258 (95.4% probability) or cal AD 196-244 (68.2% probability), which is the late 2nd to mid-3rd century Roman period. The latter date matches the pottery from the cremation, which was dated to AD50-230, so may actually be of a higher probability.

5.7 Environmental Remains

Kath Hunter Dowse

5.7.1 Ten samples were assessed for their potential for plant remains and other environmental evidence including charcoal. The samples were processed using a flotation technique recovering the flot to 300 μm and the residue to 1mm. The residues were sorted in-house by PCA with charcoal and other plant remains extracted from the greater than 2 mm fraction. The flots and material extracted from the residues were rapidly assessed by the author using an MTL stereo microscope. The results from this assessment are recorded in Table 1.

5.7.2 Standard basic charcoal analysis was undertaken as part of the assessment. It attempted to identify the presence of ring porous or diffuse vessel patterns. Where possible the author attempted to identify whether the charcoal represents roundwood, heartwood, twig or root. However, the act of trying to identify the above characteristics in abraded charcoal is by necessity destructive, so this was not carried out on all of the fragments from this evaluation. The frequency of all charred remains has been recorded using the following criteria:

* 1-5 items

** 6-10 items

*** 11-50 items

***50-100+ items

- 5.7.3 The frequency for charcoal recorded in Appendix 1 (Table 6) in brackets e.g. (***) represents the proportion that appears to be larger than 2mm in all dimensions and may be identifiable to species.
- 5.7.4 Where identification of other plant macrofossils has taken place, the nomenclature for cereals follows Zohary et al. 2012 and other plants Stace 2010. The term “seed” may include achene, fruit, nutlet etc.
- 5.7.5 The criteria used to select samples for further analysis of archaeobotanical remains is based on a scheme developed by Wendy Carruthers. This allows various factors to be taken into account when assessing samples. The priority categories used in this assessment are as follows:

A= high potential on archaeobotanical grounds (i.e. rare or interesting plant taxa or exceptional preservation) or due to the scarcity of information from this type of deposit (e.g. Neolithic contexts).

B= good potential due to reasonable preservation and/or frequent identifiable charred plant remains, i.e. the assemblage can provide a useful amount of information.

C= some charred material but present in low concentrations or very poorly preserved. The samples will only be worth including if part of a group, or if the context is especially important or particular information is required.

D= no charred material or so few to have been fully identified and recorded. Any information recovered from C and D samples can be included in the final report if necessary (Carruthers pers. comm).

Results

- 5.7.6 All of the samples assessed contain charcoal but only four contained fragments larger than 2mm in all dimensions. The two samples taken from the cremation [134] have abundant charcoal fragments. Both ring porous and diffuse characteristics were noted. Both Sample 1007 from posthole [150] and sample 1008 from ditch [161] contained less than 5 fragments each of

potentially identifiable charcoal. The two cremation samples also contained a fragment of a pin like iron object, slag and pottery. These were microscopic fragments and were therefore not sent to specialists for further identification.

5.7.7 A single large legume seed possibly a broad bean (*Vicia faba*) was present in sample 1008. Sample 1010 contained a single indeterminate cereal grain.

5.7.8 Some of the samples (1001,1002,1003,1004 and1008) contained a small number of amorphous charred fragments, which may be of plant origin. However, further identification has not been possible

5.7.9 All of the samples contained abundant modern roots and seeds. Some also contained modern insects, moss and leaf fragments.

Recommendations

5.7.10 Due to the paucity of identifiable environmental remains from all of the other samples no further work is recommended on them.

6 DISCUSSION

- 6.1 The investigations revealed a series of ditches in the south-western corner of the site which predominantly dated to the late Iron Age to early Roman period (late 1st century BC to 1st-2nd century AD) (Figures 2 and 3). One ditch slot yielded an assemblage of abraded Bronze Age pottery.
- 6.2 The range of forms and fabrics compares well with previous pottery found at Butterfield Green (Timby 2006) and suggests a possible Bronze Age presence with more defined occupation taking place from the late 1st century BC to early 3rd century AD, though the assemblage is too small for more precise definition (Percival, above).
- 6.3 No animal bone was found on site and the environmental remains were sparse. This, and the low quantity of pottery within the features, suggests that the ditches were most likely part of a late prehistoric to early Roman field system, located some distance away from settlement. All ditches showed evidence for re-cutting and it is possible that the field system was in use from the late 1st century BC to the 2nd century AD. Ditches 7 and 8 may be Bronze Age in date.
- 6.4 A single, isolated cremation was revealed near the eastern edge of site. The excavations were extended to reveal potential further burials, but none were found. The correlation of pottery and a radiocarbon date from the cremation suggest a late 2nd - mid 3rd century date for the burial.
- 6.5 The low weight of human bone within the cremation indicated that it could potentially represent the remains of a juvenile individual, a deliberately deposited token amount of burnt human bone, or that the cremations had been damaged by later activity on the site, such as ploughing.
- 6.6 The nails retrieved from cremation [134] vary in size and shape but small nails or tacks predominate. These could originate from pyres, coffins, biers, wooden boxes and other furniture that may have been deposited with the deceased. The condition of the nails and the waste material retrieved with them suggest the collection of pyre debris and the possibility that this material represents re-

deposited pyre debris within cut [134], rather than a truncated cremation burial (Beveridge above and Mckinley, 2004, 284). However, as very little human bone over 5mm in size was present, Langthorne (above) favours the premise that the cremation was truncated by later activity.

- 6.7 A single large pit at the north-eastern edge of site represents a post-medieval quarry pit.

7 INTERPRETATION

- 7.1 The investigation area at Butterfield Technology Park lies in a landscape of dispersed Iron Age to Roman settlement remains. Overall, the density of archaeological features and artefacts on the excavated area was low and concentrated in the south-western corner of the site. The majority of the excavated area was devoid of archaeological features, suggesting that the proposed development site is located at the edge of or in-between known concentrations of prehistoric to Roman settlements in the vicinity.
- 7.2 The development site lies between two known, concentrated settlement foci of the Iron Age to early Roman periods at Butterfield Technology Park adjacent to the development site in the east (Luke and Preece 2018) and the Luton Vale Cemetery site c.250m to the south-west (OAE 2019). In contrast to the development site, both sites had evidence for early, middle and late Iron Age roundhouses, which were superseded by ditches and isolated pits of the early and later Roman periods. A late Iron Age to early Roman cremation cemetery was part of the Luton Vale Cemetery site.
- 7.3 Similar to the development site, Bronze Age pottery, and a loomweight fragment, were found in later features at the Butterfield Technology Park site (Luke and Preece 2017). While Ditch 6 containing Bronze Age pottery on the development site, and its re-cut, was on a slightly different alignment to the later ditches and may be Bronze Age in date, it occurs in isolation. It is more likely that the Bronze Age artefacts present in features on both sites are residual and attest to settlement activity nearby.
- 7.4 The distribution of late Iron Age/early Roman features on the Butterfield Technology Park site suggested the presence of settlement to the west of the excavated area (Luke and Preece 2018, 88). However, the area immediately to its west has to be discounted as no settlement evidence was revealed on the development site.
- 7.5 The ditches on the development site most likely represent a continuation of the late Iron Age/early Roman field system excavated both at the Luton Vale Cemetery and Butterfield Technology Park sites. In all investigations there

was a low density of artefacts of this period, suggesting the features were part of agricultural enclosures or field systems. However, the general presence of those features and artefacts, as well as the isolated cremation, dating to the late 2nd to mid- 3rd century, does suggest settlement nearby. The remains on the development site are of local significance only.

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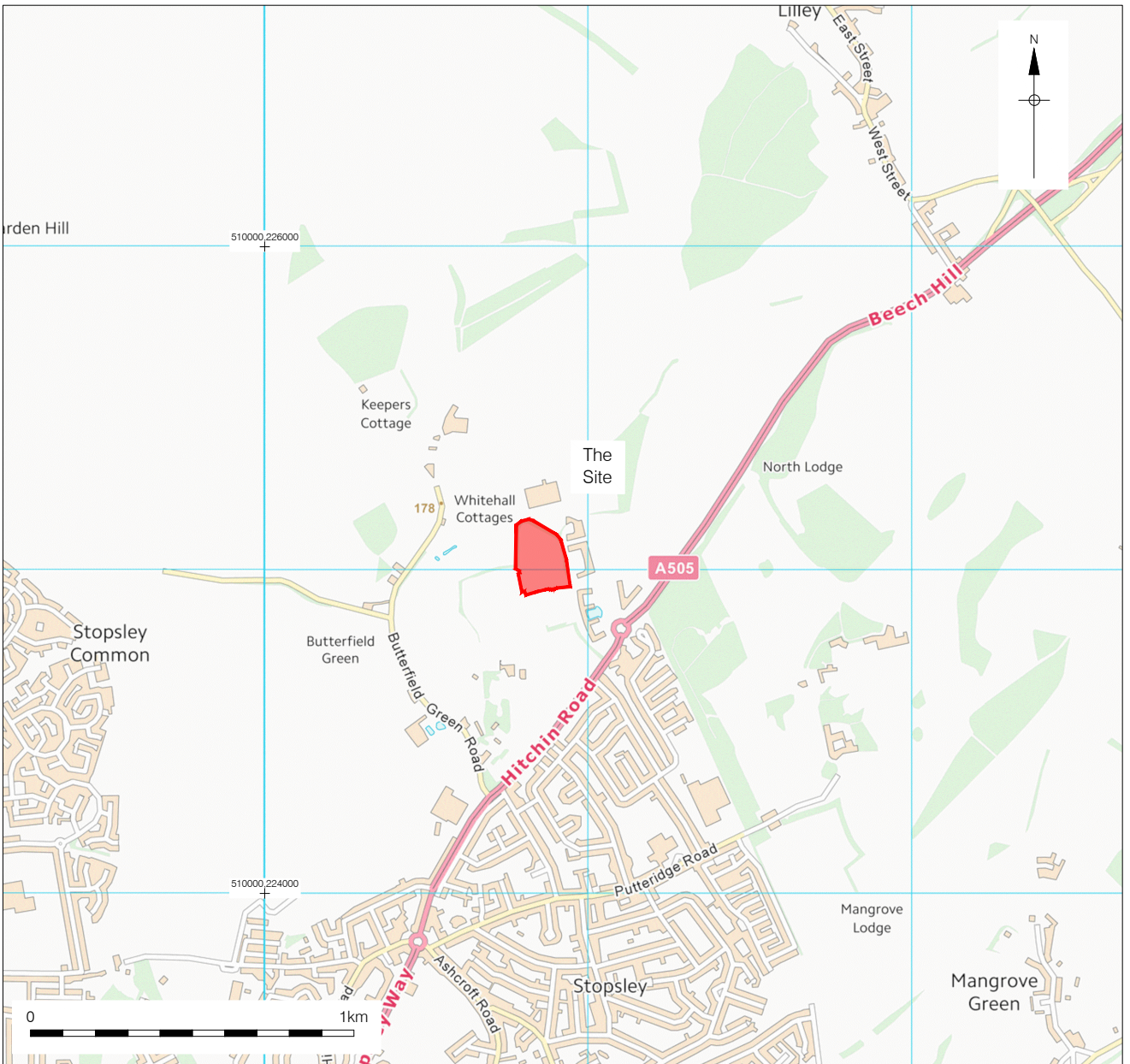
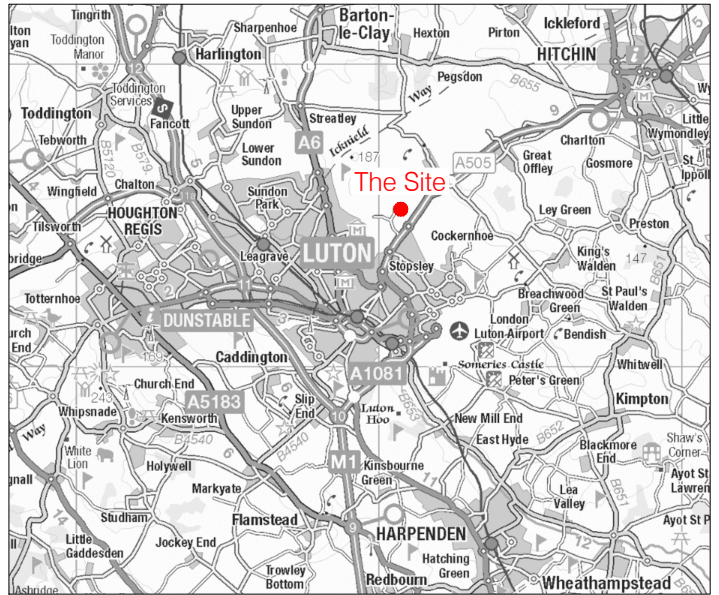
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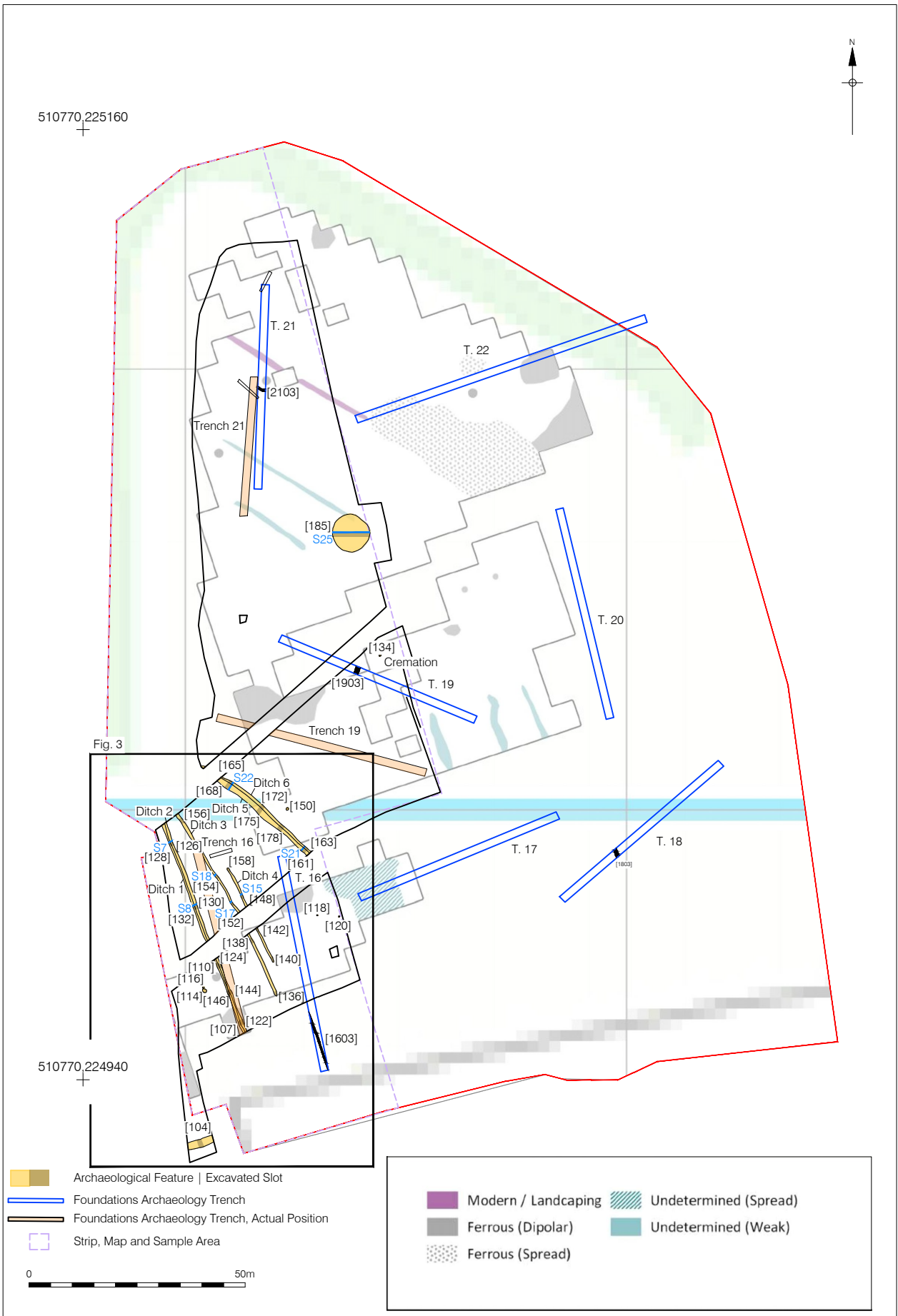
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10 FIGURES



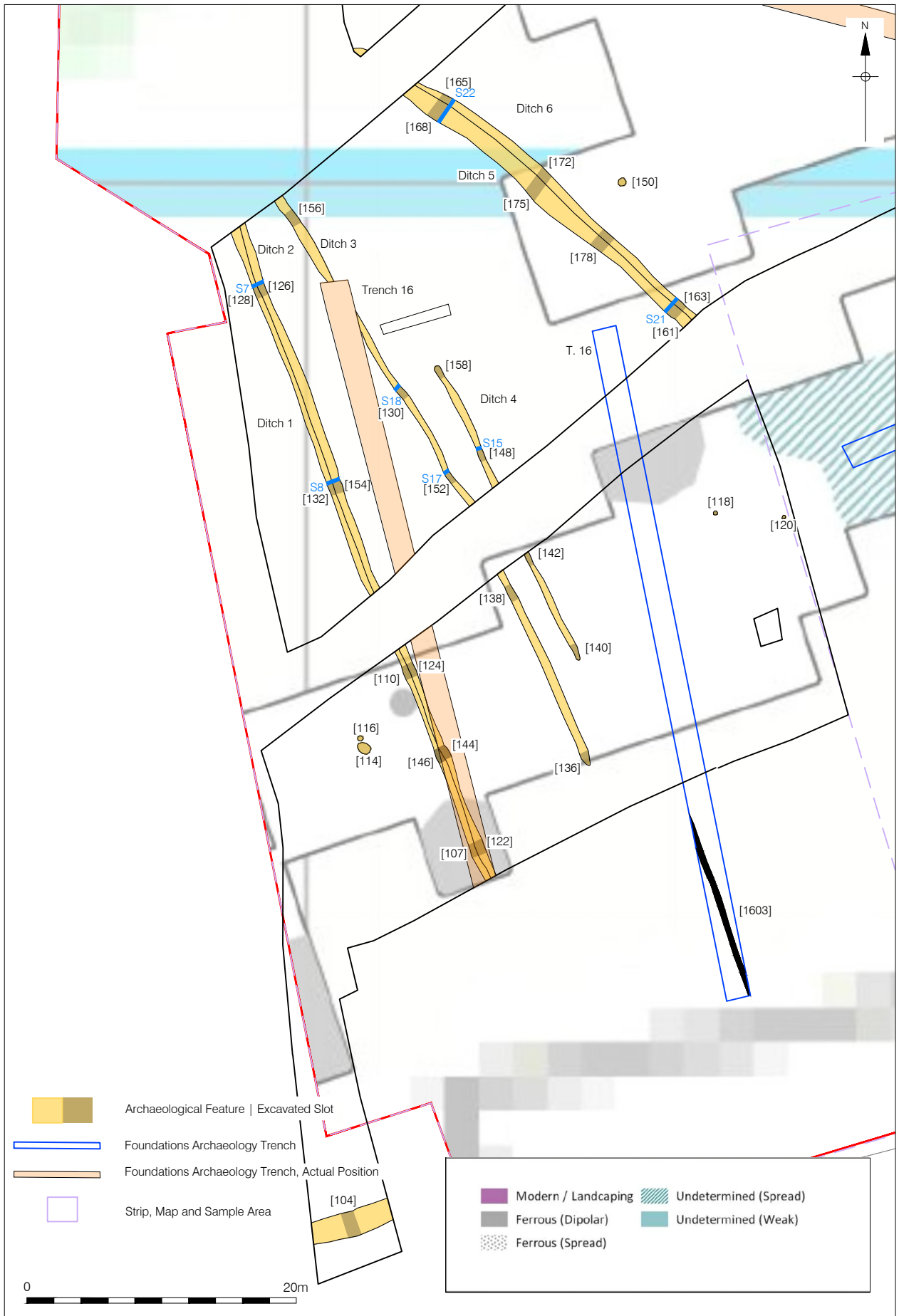
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Figure 1
 Site Location
 1:2,000,000; 250,000 & 20,000 at A4



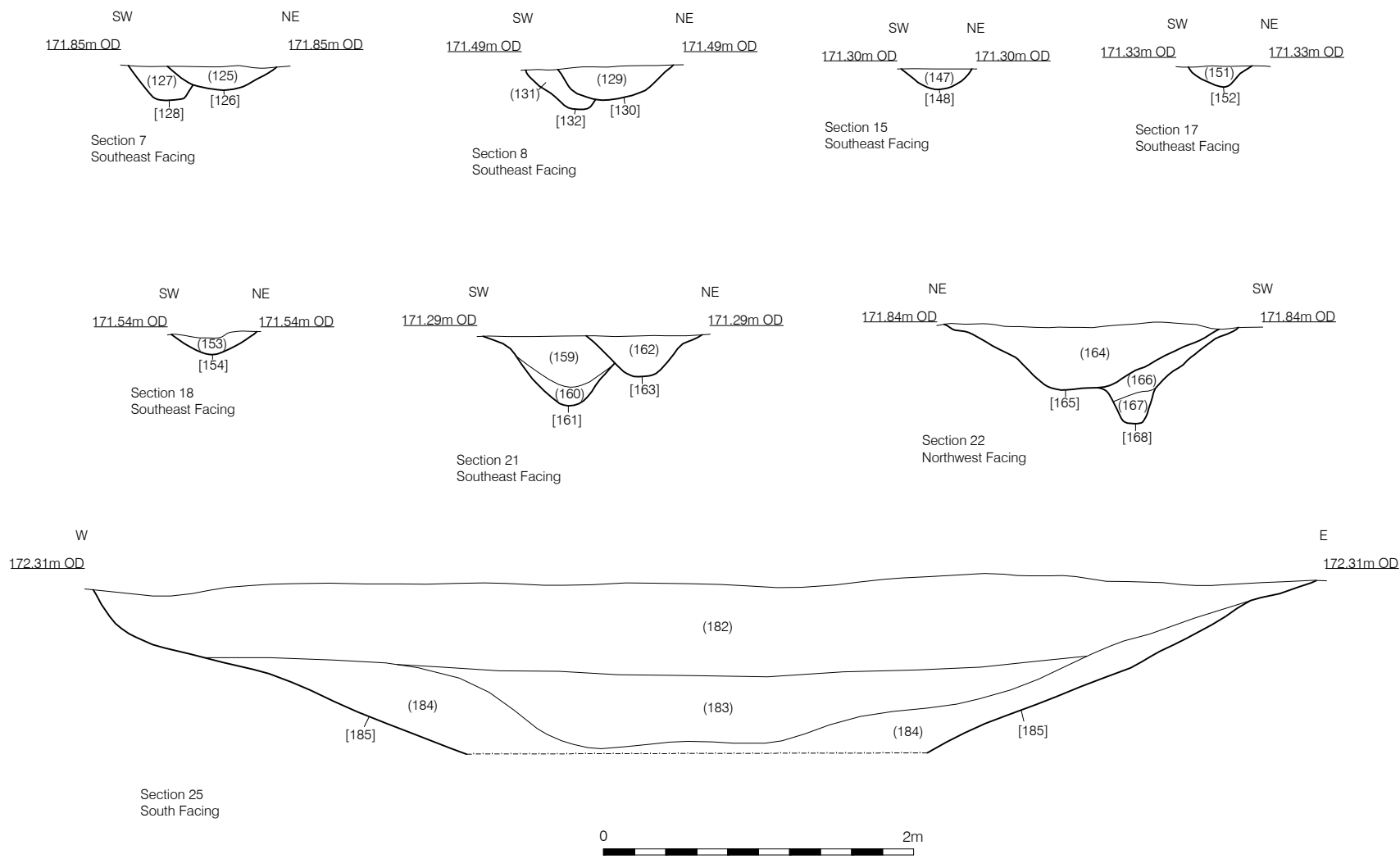
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Figure 2
 All Features Plan
 1:1,250 at A4



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Figure 3
 Close up of features in south-western corner
 1:400 at A4



11 APPENDIX 1: PLATES



Plate 1: The excavation site, looking south-west



Plate 2: The excavation site, looking north



Plate 3: Ditch 4, segment [148], looking south



Plate 4: Ditches 5 and 6, looking south-west



Plate 5: Cremation [134] pre-excitation



Plate 6: Quarry Pit [185], looking north-east

12 APPENDIX 2: METALWORK AND SMALL FINDS CATALOGUE

SF	Fill	Cut	Sample No.	Material	Object	Description	Date	Width (mm)	Length (mm)	Depth (mm)	Diam (mm)	Weight (g)	Extent
1	133	134		Iron	Nails	Sixty fragments of nails- overall they have flat, circular heads and tapering shanks, square or rectangular in cross-section. Most are truncated, corroded and encrusted in dirt. Some of the shanks are hollow. Selection measured.		14.1 - 9.9	45.8 - 13.9	8.4 - 3.4		Total: 182	Incomplete
1	133	134		Iron	Nail	Near complete elongate object with flat, sub-circular head and tapering shank, square in cross-section. Shank bent towards tip. Exhibits less corrosion.		5.5	17.1	2		<1	Incomplete
	133	134	1001 (spit 1 crem)	Iron	Nail	Elongate object with flat, sub-circular head and tapering shank, square in cross-section. Tapers to a point. Good condition with no corrosion. Burnt?		7.6	15.7	2		<1	Complete
	133	134	1001 (spit 1 crem)	Iron	Nails/ tacks	Two nails or tacks that appear as an elongate object with tapering shank, square in cross-section; tapers to a point. Revealed as two tacks in the x-ray with flat, circular heads. Good condition; possibly burnt.		5.8	15.8	2.1		<1	Incomplete
	133	134	1001 (spit 1)	Iron	Nails	Forty-five fragments of nail shanks; they are square in cross-section and many		3.3	12.4	2.9		Total: 8	Incomplete

SF	Fill	Cut	Sample No.	Material	Object	Description	Date	Width (mm)	Length (mm)	Depth (mm)	Diam (mm)	Weight (g)	Extent
			crem top part)			taper to a point. They are corroded; some appear hollow. Typical example measured.							
	133	134	1001 (spit 1 crem top part)	Iron	Nails	Seventeen fragments of tapering nail shanks; they are square/rectangular in cross-section. They are corroded; some appear hollow. Typical example measured.		5.6	19.2	4		Total: 11	Incomplete
	133	134	1001 (spit 1 crem top part)	Iron	Waste	One hundred and forty-six fragments of magnetic iron waste/nails/fuel residues. Corrosion masks detail. Some of the surfaces vesicular. Some evidence of organics - wood. Could be pyre debris? Selection measured.		16.3 - 6.9	17.2 - 10	9.8 - 3.5		Total: 64	Incomplete
	133	134	1001 (spit 1 crem top part)	Iron	Nails	Twenty-eight fragments of nails with flat, sub-circular heads and tapering shanks, square in cross-section. Corroded. Selection measured.		15 - 7.9	13.3 - 9.4	5.8 - 2.5		Total: 21	Incomplete
	133	134	1001 (spit 1 crem top part)	Iron	Nails	Three elongate objects with flat, sub-rectangular heads and truncated shanks, square in section. One hollow.		12.8 12.8 10	19.7 26 21.6	4.7 8.5 6.4		3 6 2	Incomplete
	133	134	1002	Iron	Nails	Thirty-one fragments of nails with flat-sub-		16.5 -	44.9 -	8.2 -		35	Incomplete

SF	Fill	Cut	Sample No.	Material	Object	Description	Date	Width (mm)	Length (mm)	Depth (mm)	Diam (mm)	Weight (g)	Extent
			(spit 2 crem)			circular - oval heads and truncated, tapering shanks, square in cross section. Masked by corrosion. Some of the shanks are hollow. Selection measured. Also fragment of sandstone - ?natural		9.2	17	2.5			
	141	142		Iron	Nail	Object with flat, sub-oval head and truncated shank, square in cross-section. Corroded		20.8	22.2	9.6		7	Incomplete
	143	144		Iron	Object	Heavily encrusted and corroded object, triangular in plan. Narrowest end is rectangular in cross-section.		104.6	131.5	30.2		556	Incomplete

13 APPENDIX 3: PLANT REMAINS

Table 6: Plant Remains

sample no.	context	feature	Charred								Charcoal	Comments	Potential	Charcoal Potential
			Grain	cereal	chaff	legume	seed	fruit/nut	ACL					
1001	133	cremation 134 spit1								*	(****)****	Charcoal includes ring porous and diffuse.Amorphous charred fragments. Iron object,slag, burnt and unburnt bone fragments. Abundant modern roots and seeds	D	Good
1002	133	cremation 134 spit2								*	(****)****	Charcoal includes ring porous and diffuse.Amorphous charred fragments. Iron object,pottery, . Abundant modern roots and seeds	D	Good
1003	137	ditch138									*	Abundant modern roots , seeds and insects	D	poor
1004	143	ditch144								*	*	Amorphous charred fragments.Abundant modern roots , seeds and fungal sclerotia	D	poor
1005	145	ditch146									*	Abundant modern roots , seeds and fungal sclerotia	D	poor
1006	147	ditch148									*	very soily flot with abundant modern roots	D	poor
1007	149	post hole 150									(*)*	Charcoal includes ring porous. Abundant modern roots	D	poor

1008	159	ditch161			*			*	(*)**	Possible broad bean (cf.Vicia faba), Indet seed and amorphous charred fragments	D	poor
1009	164	ditch 165							*	very soily flot with abundant modern roots and dicotyledonous leaf fragments.	D	poor
1010	166	ditch 168		*					*	Cereal grain nfi,Abundant modern roots and moss	D	poor

14 APPENDIX 4: CONTEXT INDEX

Context No	Cut	Type	Category	Length (m)	Width (m)	Depth (m)	Description	Interpretation
100		Layer	Topsoil	0	0	0.25	Mid greyish-brown Clayey silt, Friable	Topsoil
101		Layer	Subsoil	0	0	0.35	Light brownish grey, Silty clay, Firm	Subsoil
102		Layer	Natural				Light-mid orange, Gravel/Clay/Sand, Very Compact	Natural
103	104	Fill	Ditch	1	1.6	0.3	Light brownish grey, Silty clay, Compact	
104	104	Cut	Ditch	1	1.6	0.03	Linear, Clear sided, Moderate slope, Concave	Field Boundary
105	107	Fill	Ditch	1	0.96	0.21	Light greyish brown, Silty clay, Firm	
106	107	Fill	Ditch	1	0.43	0.13	Mid brownish orange, Gravely clay, Firm	
107	107	Cut	Ditch	1	1.1	0.32	Linear, Clear sided, Moderate slope, Concave base	Field Boundary
108	110	Fill	Ditch	1	0.83	0.11	Light greyish brown, Silty clay, Firm	
109	110	Fill	Ditch	1	0.69	0.21	Mid brownish orange, Gravely clay, Firm	
110	110	Cut	Ditch	1	0.92	0.28	Linear, Clear sided, Moderate slope, Concave base	Field Boundary
111	114	Fill	Posthole	0.49	1.05	0.2	Mid greyish brown, Silty clay, Friable	
113	114	Fill	Posthole	0.3	0.24	0.18	Mid orangy brown, Silty clay, Firm	
114	114	Cut	Posthole	0.49	1.05	0.2	Circular, Clear sided, Sheer slope, Flat base	
115	116	Fill	Posthole	0.31	0.25	0.31	Mid orangy brown, Silty clay, Firm	
116	116	Cut	Posthole	0.31	0.25	0.31	Circular, Clear sided, Sheer slope, Flat base	
117	118	Fill	Posthole	0.32	0.32	0.05	Dark greyish brown, Clayey silt, Friable	
118	118	Cut	Posthole	0.32	0.32	0.05	Sub-Circular, Clear sided, Gentle slope, Irregular base	
119	120	Fill	Posthole	0.31	0.29	0.16	Light Greyish brown, clayey silt, Friable	
120	120	Cut	Posthole	0.31	0.29	0.16	Circular, Clear sided, Gentle slope, Concave base	

Context No	Cut	Type	Category	Length (m)	Width (m)	Depth (m)	Description	Interpretation
121	122	Fill	Ditch	1	0.66	0.21	Light yellowish grey, Clayey silt, Firm	
122	122	Cut	Ditch	1	0.66	0.21	Linear, Gentle sided, Gentle slope, Concave base	Field Boundary
123	124	Fill	Ditch	1	0.54	0.24	Light yellowish grey, Clayey silt, Firm	
124	124	Cut	Ditch	1	0.54	0.24	Linear, Gentle sided, Gentle slope, Concave base	Field Boundary
125	126	Fill	Ditch	1	0.7	0.15	Mid Brownish grey, Silty clay, Compact	
126	126	Cut	Ditch	1	0.7	0.15	Linear, Shallow sided, Gentle slope, Concave base	Field Boundary
127	128	Fill	Ditch	1	0.32	0.22	Mid orangy grey, Silty Clay, Compact	
128	128	Cut	Ditch	1	0.32	0.22	Linear, Sharp sided, Steep slope, Concave base	Field Boundary
129	130	Fill	Ditch	1	0.73	0.22	Mid brownish grey, Silty clay, Compact	
130	130	Cut	Ditch	1	0.73	0.22	Linear, Clear sided, Gradual slope, Concave base	Field Boundary
131	132	Fill	Ditch	1	0.43	0.26	Mid orangy grey, Silty clay, Compact	
132	132	Cut	Ditch	1	0.43	0.26	Linear, Clear sided, Moderate slope, Concave base	Field Boundary
133	134	Fill	Cremation	0.49	0.49	0.19	Mid greyish brown with black patches, Silty Clay, Firm	
134	134	Cut	Cremation	0.49	0.49	0.19	Oval, Un-Urned,	Cremation
135	136	Fill	Ditch	1	0.57	0.13	Mid greyish brown, Clayey silt, Firm	
136	136	Cut	Ditch	1	0.57	0.13	Linear, Clear sided, Shallow slope, Concave base	Field Boundary
137	138	Fill	Ditch	1	0.55	0.12	Mid greyish brown, Clayey silt, Friable	
138	138	Cut	Ditch	1	0.55	0.12	Linear, Clear sided, Shallow slope, Concave base	Field Boundary
139	140	Fill	Ditch	1	0.42	0.14	Mid brownish grey, Silty clay, Firm	
140	140	Cut	Ditch	1	0.42	0.14	Linear, Gentle sided, Gentle slope, Concave base	Field Boundary
141	142	Fill	Ditch	1	0.39	0.18	Mid brownish grey, Silty clay, Firm	

Context No	Cut	Type	Category	Length (m)	Width (m)	Depth (m)	Description	Interpretation
142	142	Cut	Ditch	1	0.39	0.18	Linear, Steep sided, Sheer slope, Concave base	Field Boundary
143	144	Fill	Ditch	1	0.81	0.12	Mid brownish grey, Silty clay, Compact	
144	144	Cut	Ditch	1	0.81	0.12	Linear, Sharp sided, Gradual slope, Concave base	Field Boundary
145	146	Fill	Ditch	1	0.38	0.21	Mid orangy grey, Silty clay, Compact	
146	146	Cut	Ditch	1	0.38	0.21	Linear, Sharp sided, Moderate slope, Concave base	Field Boundary
147	148	Fill	Ditch	1	0.45	0.12	Mid brownish grey, Silty clay, Firm	
148	148	Cut	Ditch	1	0.45	0.12	Linear, Clear sided, Gentle slope, Concave base	Field Boundary
149	150	Fill	Posthole	0.53	0.47	0.17	Mid brownish grey, Sandy clay, Compact	
150	150	Cut	Posthole	0.53	0.47	0.17	Circular, Sharp sided, Gradual slope, Concave base	
151	152	Fill	Ditch	1	0.41	0.13	Mid greyish brown, Clayey silt, Firm	
152	152	Cut	Ditch	1	0.41	0.13	Linear, Clear sided, Gentle slope, Concave base	Field Boundary
153	154	Fill	Ditch	1	0.55	0.15	Mid greyish brown, Clayey silt, Friable	
154	154	Cut	Ditch	1	0.55	0.15	Linear, Clear sides, Gentle slope, Concave base	Field Boundary
155	156	Fill	Ditch	1	0.62	0.15	Mid greyish brown, Clayey silt, Friable	
156	156	Cut	Ditch	1	0.62	0.15	Linear, Sharp sided, Gentle slope, Concave base	Field Boundary
157	158	Fill	Ditch	1	0.38	0.07	Mid brownish grey, Silty clay, Firm	
158	158	Cut	Ditch	1	0.38	0.07	Linear, Gentle sides, Gradual slope, Concave base	Field Boundary
159	161	Fill	Ditch	1	1.1	0.33	Mid brownish grey, Silty clay, Very Compact	
160	161	Fill	Ditch	1	0.6	0.12	Mid greyish orange, Silty clay, Compact	
161	161	Cut	Ditch	1	1.1	0.45	Linear, Straight sided, Moderate slope, V-Shaped base	Field Boundary
162	163	Fill	Ditch	1	0.7	0.25	Mid brownish yellow, Silty clay, Compact	

Context No	Cut	Type	Category	Length (m)	Width (m)	Depth (m)	Description	Interpretation
163	163	Cut	Ditch	1	0.7	0.25	Linear, Straight sided, Moderate slope, Concave base	Field Boundary
164	165	Fill	Ditch	1.76	1	0.38	Mid greyish brown, Silty clay, Compact	
165	165	Cut	Ditch	1.76	1	0.38	Linear, Steep sided, Gradual slope, Concave base	Field Boundary
166	168	Fill	Ditch	1	0.86	0.18	Mid yellowish brown, Silty clay, Compact	
167	168	Fill	Ditch	1	0.86	0.21	Mid orangish brown, Silty clay, Compact	
168	168	Cut	Ditch	1	0.86	0.58	Linear, steep sided, gradual slope, Concave base	Field Boundary
169	172	Fill	Ditch	1	0.81	0.05	Mid breyish brown, Clayey silt, Friable	
170	172	Fill	Ditch	1	1.4	0.35	Mid yellowish brown, Clayey Silt, Compact	
171	172	Fill	Ditch	1	0.66	0.11	Mid yellowish, grey, Silty Clay, Compact	
172	172	Cut	Ditch	1	1.4	0.44	Linear, Steep sides, Gradual slope, Concave base	Field Boundary
173	175	Fill	Ditch	1	1.27	0.2	Light bronish yellow, Silty Clay, Compact	
174	175	Fill	Ditch	1	0.74	0.28	Mid Orangy brown, Silty Clay, Very Compact	
175	175	Cut	Ditch	1	1.2	0.67	Linear, Tapered sides, Moderate slope, Concave base	Field Boundary
176	178	Fill	Ditch	1	2.04	0.32	Mid Yellowish Brown, Clayey Silt, Firm	
177	178	Fill	Ditch	1	0.92	0.08	Mid Yellowish Grey, Clayey Silt, Compact	
178	178	Cut	Ditch	1	2.04	0.41	Linear, Gentle sides, Gradual slope, Concave base	Field Boundary
179	181	Fill	Ditch	1	0.49	0.09	Mid Orange Brown, Silty Clay, Compact	
180	181	Fill	Ditch	1	0.35	0.2	Very Compact, Mid Brownish Orange, Silty Clay	
181	181	Cut	Ditch	1	0.5	0.35	Linear, Sharp, Moderate steepness, Concave base	Field Boundary
182	185	Fill	Pit	8	8	0.6	Compact, Mid Brownish Grey, Clayey Silt	
183	185	Fill	Pit	4.4	4.4	0.4	Compact, Light Browninsh Grey, Clayey Silt	

Context No	Cut	Type	Category	Length (m)	Width (m)	Depth (m)	Description	Interpretation
184	185	Fill	Pit	6.8	6.8	0.61	Firm, Mid Orangey Brown, Silty Clay	
185	185	Cut	Pit	8	8	1.1	Oval, Straight sided, Moderate steepness, Concave base	Quarry Pit

15 APPENDIX 5: OASIS FORM

OASIS ID: preconst1-365015

Project details

Project name Butterfield Technology Park, Great Marlings, Luton, Bedfordshire

Short description of the project An archaeological excavation was carried out by Pre-Construct Archaeology on land at Butterfield Technology Park, Great Marlings, Luton between the 15th of October and the 2nd of November 2018. The archaeological work was commissioned by Henry Boot Construction Ltd in response to a planning condition attached to the construction of commercial units with associated parking, landscaping and infrastructure. The excavations revealed a series of boundary ditches in the south-western area, interspersed with isolated postholes and a small pit, and an isolated un-urned cremation at the eastern edge of the excavated area. A small amount of pottery was retrieved from the ditches which dated to the 1st - 3rd century AD, including a small assemblage of Bronze Age pottery. The cremation was radiocarbon dated to the late 2nd to mid- 3rd century AD. A post-medieval quarry pit was located at the north-eastern edge of the excavated area. The sparse pottery, lack of animal bone and environmental material suggests that the features were located some distance of any settlement activity and represent part of a Roman field system. Overall, the density of archaeological features and artefacts on the excavated area was low and concentrated in the south-western corner of the site. The majority of the excavated area was devoid of archaeological features, suggesting that the proposed development site is located at the edge or in-between known concentrations of prehistoric to Roman settlements in the vicinity. The remains are most likely related to those found during excavations at the Butterfield Innovation Centre c.300m the south-west where evidence of an Iron Age settlement and two phases of Roman field system were present. It is likely that the ditches on the development site represent a continuation of that field system.

Project dates Start: 15-10-2018 End: 02-11-2018

Previous/future work Yes / No

Any associated project 2018/26 - Museum accession ID
reference codes

Any associated project 2018/26 - Sitecode
reference codes

Type of project Recording project

Monument type DITCH Roman

Monument type CREMATION Roman

Monument type POSTHOLE Uncertain

Monument type QUARRY PIT Post Medieval

Significant Finds POTTERY Roman

Significant Finds CBM Roman

Significant Finds CBM Post Medieval

Significant Finds NAIL Roman

Project location

Country England

Site location BEDFORDSHIRE LUTON LUTON Butterfield Technology Park, Great Marlings, Luton

Site coordinates TL 1084 2503 51.912314616257 -0.388386624927 51 54 44 N 000 23 18 W Point

Project creators

Name of Organisation Pre-Construct Archaeology Limited

Project design
originator PCA Central

Project
director/manager Christiane Meckseper

Project supervisor Lawrence Morgan-Shelbourne

Type of
sponsor/funding body Henry Boot Construction Ltd

Project archives

Physical Archive
recipient Luton Culture

Physical Contents "Ceramics","Environmental","Human Bones","Metal","Worked stone/lithics"

Digital Archive
recipient Luton Culture

Digital Contents "Environmental","Human Bones","Metal","Survey","Worked stone/lithics","Ceramics"

Digital Media available "Database","Images raster / digital photography","Spreadsheets","Survey","Text"

Paper Archive
recipient Luton Culture

Paper Media available "Context sheet","Drawing"

Project bibliography 1

Grey literature (unpublished document/manuscript)

Publication type

Title Land at Butterfield Technology Park, Great Marlings, Luton, Bedfordshire: Archaeological Strip, Map and Sample

Author(s)/Editor(s) Meckseper, C

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Entered by Christiane Meckseper (cmeckseper@pre-construct.com)

Entered on 27 August 2019

16 APPENDIX 6: SUERC RADIOCARBON CERTIFICATE

RADIOCARBON DATING CERTIFICATE

13 August 2019

Laboratory Code SUERC-87834 (GU52409)

Submitter Sian O'Neill
Pre-Construct Archaeology
The Granary
Rectory Farm
Pampisford
CB22 3EN

Site Reference 2018/26

Context Reference 133

Material Cremated Bone

$\delta^{13}\text{C}$ relative to VPDB -20.5 ‰

Radiocarbon Age BP 1806 \pm 26

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Laboratory and should be quoted as such in any reports within the scientific literature. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon* 58(1) pp.9-23.

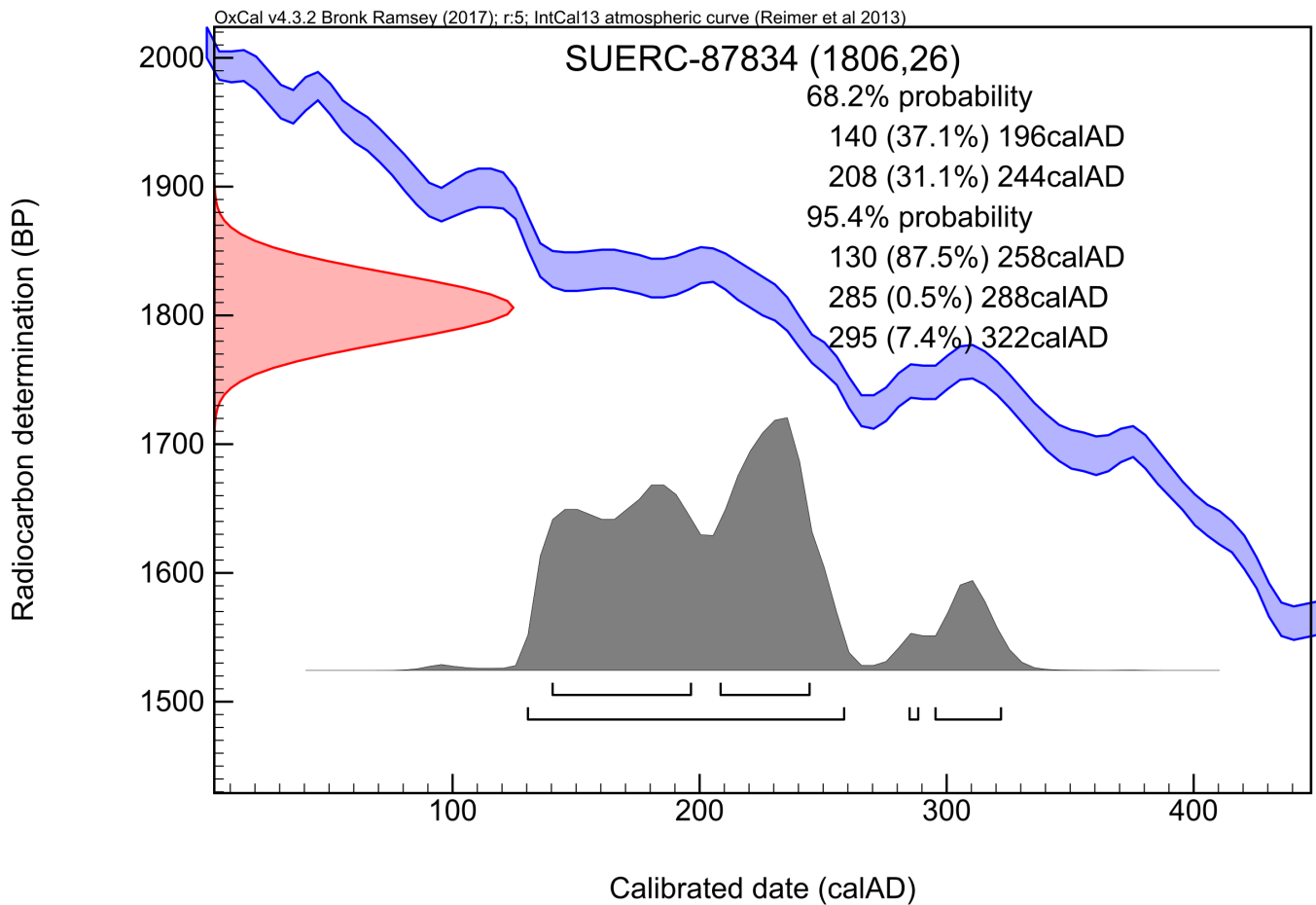
For any queries relating to this certificate, the laboratory can be contacted at suerc-c14lab@glasgow.ac.uk.

Conventional age and calibration age ranges calculated by :



Checked and signed off by :





The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

* Bronk Ramsey (2009) *Radiocarbon* 51(1) pp.337-60

† Reimer et al. (2013) *Radiocarbon* 55(4) pp.1869-87

PCA

PCA CAMBRIDGE

THE GRANARY, RECTORY FARM
BREWERY ROAD, PAMPISFORD
CAMBRIDGESHIRE CB22 3EN
t: 01223 845 522

e: cambridge@pre-construct.com

PCA DURHAM

THE ROPE WORKS, BROADWOOD VIEW
CHESTER-LE-STREET
DURHAM DH3 3AF
t: 0191 377 1111

e: durham@pre-construct.com

PCA LONDON

UNIT 54, BROCKLEY CROSS BUSINESS CENTRE
96 ENDWELL ROAD, BROCKLEY
LONDON SE4 2PD
t: 020 7732 3925

e: london@pre-construct.com

PCA NEWARK

OFFICE 8, ROEWOOD COURTYARD
WINKBURN, NEWARK
NOTTINGHAMSHIRE NG22 8PG
t: 01636 370 410

e: newark@pre-construct.com

PCA NORWICH

QUARRY WORKS, DEREHAM ROAD
HONINGHAM
NORWICH NR9 5AP
T: 01603 863 108

e: norwich@pre-construct.com

PCA WARWICK

UNIT 9, THE MILL, MILL LANE
LITTLE SHREWLEY, WARWICK
WARWICKSHIRE CV35 7HN
t: 01926 485 490

e: warwick@pre-construct.com

PCA WINCHESTER

5 RED DEER COURT, ELM ROAD
WINCHESTER
HAMPSHIRE SO22 5LX
t: 01962 849 549

e: winchester@pre-construct.com

