



**LIGHTSOURCE RENEWABLE ENERGY LTD**

**LAND AT LAWRENCE END PARK AND EAST OF BIRCH SPRING,  
DANE STREET, LUTON, BEDFORDSHIRE/HERTFORDSHIRE**

**ARCHAEOLOGICAL WATCHING BRIEF REPORT**

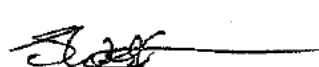


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## LIGHTSOURCE RENEWABLE ENERGY LTD

Land at Lawrence End Park and east of Birch Spring, Dane Street, Luton

### Watching Brief

PREPARED BY:	EDITED BY:	APPROVED BY:
Rob Barnett / Chris Timmins	Jonathan Webster	Jonathan Webster
PP. 		
Assistant Project Officer/ Project Supervisor	Assistant Project Manager	Assistant Project Manger

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TOPOGRAPHIC AND LANDSCAPE SURVEY  
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## CONTENTS

CONTENTS.....	1
<b>SUMMARY</b> .....	<b>3</b>
ACKNOWLEDGEMENTS.....	4
1. INTRODUCTION.....	5
1.1 Project Circumstances and Planning Background.....	5
1.2 Project Documentation .....	5
2. METHODOLOGY .....	7
2.1 Standards and guidance .....	7
2.2 Documentary Research .....	7
2.3 The Watching Brief.....	7
3. BACKGROUND.....	10
3.1 Location and Geological Context .....	10
3.2 Historical and Archaeological Background.....	10
4. WATCHING BRIEF RESULTS .....	11
4.1 Introduction.....	11
4.2 Results .....	12
5. FINDS.....	16
5.1 Introduction.....	16
5.2 Lithics.....	17
5.3 Glass .....	17
5.4 Statement of potential.....	17
6. CONCLUSIONS.....	18
6.1 Interpretation.....	18
6.2 Preservation .....	20
6.3 Development Impact.....	20
7. BIBLIOGRAPHY .....	21
APPENDIX 1: CONTEXT TABLE.....	23
APPENDIX 2: PLATES .....	25
APPENDIX 3: FIGURES .....	29

## **PLATES (APPENDIX 2)**

Plate 1; Access road stripped in the northern field, looking north

Plate 2; Cable trench in the northern field looking north, scale=1.00m

Plate 3; East facing section in feature [302], scale =2.00m

Plate 4; oblique view of east facing section in feature [402], scale =2.00m

Plate 5; oblique view of north facing section in feature [602], scale=2.00m

Plate 6; east facing section in ditch [702] (on right) and ditch [704] (on left), scale = 2.00m

Plate 7; possible crater in woodland to east of southern field view from southeast

## **FIGURES (APPENDIX 3)**

Figure 1: Site Location

Figure 2: Proposed development with the location of the monitored areas

Figure 3: Trench 2 and Trench 4, plan and sections

Figure 4: Trench 4, plan and section

Figure 5: Trench 3 and Trench 6, plan and sections

Figure 6: Trench 7, plan and sections

## SUMMARY

Wardell Armstrong Archaeology (WAA) was commissioned by Lightsource Renewable Energy Ltd to undertake an archaeological watching brief at Land at Lawrence End park and East of Birch Spring, Dane Street, Luton, LU2 9PN (centred on NGR: TL 1401 2004). The watching brief was required as a condition of planning consent granted by North Hertfordshire District Council.

All intrusive groundworks were monitored in the two fields in which the development took place. Excavation of 0.5m wide cable trenches in the north field uncovered two ditches, most likely 18<sup>th</sup>-19<sup>th</sup> Century field boundaries. Three pits, most likely of 20<sup>th</sup> Century date, were partially unearthed by trenches in the south field along with an Upper Palaeolithic (c. 50,000-10,000 BC) flint handaxe.

The cable trenches cutting through the pits and ditches appear to have left most of these features undisturbed. The features were investigated and recorded during the construction of the solar park; no further archaeological interventions are likely to have any impact on the current development.

## ACKNOWLEDGEMENTS

Wardell Armstrong Archaeology (WAA) would like to thank the client Lightsource Renewable Energy Ltd for commissioning the project, and for all their assistance throughout the work. Also, WAA thanks Alison Tinniswood, Historic Environment Records Officer and Andy Instone, County Planning Archaeologist at Hertfordshire County Council for their assistance.

Wardell Armstrong Archaeology also thanks the Site Manager Konstantinos Kalmpogkinis of Biosar and the groundworking staff for their help during this project.

## 1. INTRODUCTION

### 1.1 Project Circumstances and Planning Background

1.1.1 Between October 14<sup>th</sup> and November 27<sup>th</sup> 2015, Wardell Armstrong Archaeology (WAA) undertook an archaeological watching brief at Land at Lawrence End Park and to the east of Birch spring, Dane Street, Luton (Centred on NGR: TL 1401 2004). The site straddles the Hertfordshire/Bedfordshire border. It was commissioned by the client who intends to construct a solar farm for which a planning consent has been granted by North Hertfordshire District Council (planning reference: 15/00845/1) and Central Bedfordshire Council (planning reference CB/15/01484/OAC).

1.1.2 The grant of planning permission by North Hertfordshire District Council stated that 'no development shall take place until the developer has made arrangements for an archaeological Watching Brief to monitor development groundworks and to record any archaeological evidence revealed'.

1.1.3 A watching brief is defined as a programme of 'monitoring and investigation carried out during a non-archaeological activity within a specified area of land or development where construction operations may disturb or destroy archaeological remains' (CIFA 2014a).

1.1.4 This planning condition was in line with advice provided to North Hertfordshire District Council by Alison Tinniswood, Historic Environment Record Officer at Hertfordshire County Council.

1.1.5 The proposed development was considered to contain possible archaeological deposits most likely to date from the Prehistoric/Romano-British or Post Medieval periods. Cropmarks of possible Prehistoric or Romano-British date are recorded 320m west of the site (HER reference 15090), 520m south-east (HER 18462), 840m north (HER 17219), 880m north (HER 12422), 890m north (HER 17218) and 940m north (HER 17234) of the site boundary. Possible remains of post-medieval buildings in the westernmost area are shown on a 1945 aerial photograph.

### 1.2 Project Documentation

1.2.1 The project conforms to advice provided by the archaeological planning advisor Alison Tinniswood, Historic Environment Records Officer, Hertfordshire County Council, (pers comms and email dated: 04<sup>th</sup> August 2015). A WSI (WAA 2015b) was then produced to provide a specific methodology for a programme of archaeological

mitigation implemented via a watching brief. This was approved by the archaeological planning advisor prior to the fieldwork taking place. This is in line with government advice as set out in Section 12 of the National Planning Policy Framework (NPPF 2012).

- 1.2.2 This report outlines the work undertaken on site, the subsequent programme of post-fieldwork analysis, and the results of this watching brief.



## 2. METHODOLOGY

### 2.1 Standards and guidance

2.1.1 The archaeological watching brief was undertaken following the Chartered Institute for Archaeologists *Standard and Guidance for an archaeological watching brief* (2014a), and in accordance with the WAA fieldwork manual (2015c).

2.1.2 The fieldwork programme was followed by an assessment of the data as set out in the *Standard and Guidance for an archaeological watching brief* (ClfA 2014a) and the *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (ClfA 2014b).

### 2.2 Documentary Research

2.2.1 An archaeological desk-based assessment was prepared by WAA (2015a), which set out the archaeological and historical background of the site, and provided an assessment of the significance of all known and potential heritage assets up to 1km from the area of investigation.

### 2.3 The Watching Brief

2.3.1 The watching brief comprised the monitoring of all intrusive works associated with the current development, this comprised the excavation of access roads, compound areas, cable trenches and foundation trenches for the inverter, transformer and substations (Figure 2).

2.3.2 The general aims of these investigations were:

- allow the monitoring archaeologist to signal that an archaeological find has been made before it is destroyed;
- to provide the opportunity for appropriate resource allocation if the archaeological find cannot be dealt with under the watching brief remit;
- to determine the presence or absence of buried archaeological remains within the proposed development site;
- to determine the character, date, extent and distribution of any archaeological deposits and their potential significance;
- determine levels of disturbance to any archaeological deposits from plough damage/agricultural drainage/ past industrial practices/past building activities (or other past land use);

- investigate and record all deposits and features of archaeological interest within the areas to be disturbed by the current development;
- to determine the likely impact on archaeological deposits from the proposed development;
- to disseminate the results of the fieldwork through an appropriate level of reporting.

2.3.3 Deposits considered not to be significant were removed by a mechanical excavator fitted with a toothless ditching bucket to maximise the chance for identification of archaeological remains, all intrusive groundworks were monitored under the close supervision by a suitably trained archaeologist. Where potential archaeological remains were present they were cleaned by hand with all possible features being inspected and selected deposits were excavated by hand to retrieve artefactual material and environmental samples. Once completed all features were recorded according to the WAA standard procedure as set out in the Excavation Manual (WAA 2015c).

2.3.4 All finds encountered were retained on site and returned to the Carlisle office where they were identified, quantified and dated to period. A *terminus post quem* was then produced for each stratified context under the supervision of the WAA Finds Officer, and the dates were used to help determine the broad date phases for the site. On completion of this project, the finds were cleaned and packaged according to standard guidelines (Ibid). Please note, the following categories of material will be discarded after a period of six months following the submission of this report, unless there is a specific request to retain them (and subject to the collection policy of the relevant depository):

- unstratified material;
- modern pottery;
- material that has been assessed as having no obvious grounds for retention.

2.3.5 A full professional archive has been compiled in accordance with the project specification, and the Archaeological Archives Forum recommendations (Brown 2011). The archive will be deposited with Cecil Higgins Art Gallery & Museum (Bedford, Luton) in Central Bedfordshire in 2017, when it reopens. Until then the archive will be retained at Wardell Armstrong Archaeology's facility at Carlisle. Copies of the report will be sent to Hertfordshire and Bedfordshire HERs, available upon

request. The project archive can be accessed under the unique project identifier **WAA-15, CP11444, LEP-A**.

- 2.3.6 Wardell Armstrong Archaeology supports the Online Access to the Index of Archaeological Investigations (OASIS) project. This project aims to provide an on-line index and access to the extensive and expanding body of grey literature, created as a result of developer-funded archaeological work. As a result, details of the results of this project will be made available by WAA as a part of this national project. The OASIS reference for the project is: **wardella2-232180**.

### 3. BACKGROUND

#### 3.1 Location and Geological Context

3.1.1 The site is centred at NGR: TL 1401 2004 (Figure 1). The site's environs comprise arable fields and woodlands to the immediate east of Chiltern Green Road and south of Dane Street. The south field of the site straddles the Bedfordshire/Hertfordshire border. Luton Airport is situated 450m to the northwest. The area of investigation lies at a height of c 150m aOD (above Ordnance Datum) which was broadly flat across its extent.

3.1.2 The site is approximately 13 hectares in size and split into two north/south aligned rectangular fields staggered next to each other and connected by an east/west aligned haul road. A second haul road is orientated north/south from the eastern field and connects the site to Dane Street (Figure 2).

3.1.3 The underlying solid geology is mapped as a combination of Lewes Nodular Chalk formation and Seaford Chalk formation that were laid down approximately 84 to 94 million years ago in the Cretaceous Period. This is overlain by a combination of clay, silt, sand and gravel deposited up to 5 million years ago in the Quaternary and Neogene Periods and formed through general weathering processes (BGS 2015). The natural substrate observed during the current phase of works comprised silty clay with flint inclusions which is consistent with the mapped geologies above.

#### 3.2 Historical and Archaeological Background

3.2.1 A desk-based assessment was produced to summarise the known historical and archaeological background of the site and the surrounding landscape to a distance of 1km (WAA 2015a). It is not intended to repeat that information here and what follows is a brief overview, for further details please refer to the original document.

3.2.2 This report identified that there were no designated heritage assets within the site boundary.

3.2.3 No heritage assets designated as scheduled ancient monuments are recorded within the immediate vicinity of the site

3.2.4 One known non-designated heritage asset is recorded within the immediate vicinity of the site; the Bedfordshire HER records a cropmark complex which extends into the site boundary on the west (HER 15090). The desk-based assessment concluded that there was a reasonable likelihood that archaeological remains of Prehistoric, Romano-

British or Post-medieval date may be present within the proposed development site. These remains were predicted to be of low to medium archaeological interest and a slight to moderate adverse impact upon those remains was the most likely predicted outcome of the solar park's construction.

3.2.5 No intrusive archaeological investigations have been undertaken in the area of investigation and as discussed above the only known potential archaeological evidence known is in the form of aerial photographs and were interpreted as remains of past quarrying activity. Outside the immediate study area further aerial photograph analysis has highlighted more cropmarks around 140m north of the development site which were described only as a linear feature.

3.2.6 **Prehistoric:** Cropmarks, interpreted as possible prehistoric enclosures, have been noted in the area surrounding the development area but neither the Bedfordshire or Hertfordshire HER record any dated evidence within the 1km search area.

3.2.7 **Post Medieval:** Lawrence End (reference 1102755), located 750m south-east of the site, was a large estate which was first recorded in 1565 (Pollington 1977). By 1841, when the estate was purchased by Richard Oakley, the estate totalled 1000 acres and included within it Chiltern Hall Farm, to the south of the site, Dane Street Farm, to the north of the site and Tinkers Hall to the west of the site. It is therefore surmised that the land within the site boundary fell entirely within the estate.

3.2.8 The earliest cartographic evidence studied as part of this assessment was the 1802 Kings Walden Enclosure Map. This showed the part of the site within Hertfordshire as being owned by the Reverend John Hawkings. Two fields (currently one field) in the north of the site were recorded as 'The Fourteen Acres' and 'The Nine Acres'. The legible field in the south of the site was recorded as 'Wood Close'.

3.2.9 During the 1930s much of the countryside to the north of the site was bought up by The Luton Corporation and a WWII military airstrip was established (reference 9271). The airstrip was subject to German bombing in 1940 (Lea 1993).

## 4. WATCHING BRIEF RESULTS

### 4.1 Introduction

4.1.1 The watching brief was undertaken between the 14<sup>th</sup> October and 27<sup>th</sup> November 2015. The archaeological watching brief monitored all intrusive groundworks

associated with the construction of the solar farm. Context numbers are provided, where relevant, in brackets, relating also to a summary table provided in Appendix 1.

4.1.2 The development groundworks required the excavation of access roads, cable trenches, construction compounds and bases for transformers, inverters and substations (Figure 2).

## 4.2 Results

### 4.2.1 Northern Field

An access road from Dane Street, just east of Dane Street Farm was excavated southwards into the northern field and alongside Birch Spring woodland on its east side to the junction of Birch Spring and Withstocks Wood. (Figure 2) The road was c.3m wide and stripped of a grey silty clay plough soil (100) to a depth of between 0.20m and 0.30m. The base of the plough soil was not reached in the northern field.

4.2.2 An area for the construction compound measuring c.25m x 12m was stripped into the plough soil (**100**) to a depth of 0.20m.

4.2.3 A foundation trench for a substation/transformer measuring 12m x 6m in the northwest corner was excavated to a maximum depth of 1.20m. Below 0.30m depth of plough soil (**100**) was a deposit of yellow silty clay (**101**) with random flint inclusions to 1.00m depth; this overlay a yellow clay (**102**) with red/orange streaks and mottles to the base of the excavation at 1.20m.

4.2.4 Cable trenches 0.70m - 0.90 m wide by 1.00 - 1.20m depth were excavated around the field and adjacent to the piled panel hangers. The deposit sequence consisted of a maximum of 0.30m depth of plough soil (**100**) overlying the yellow/orange silty clay substrate deposits (**101**)/(**102**) with varying amounts of flint inclusions.

4.2.5 At the lower end of the natural slope in the north eastern corner of the field, a 0.30m to 0.50m thick deposit of buff silty clay (**103**) with frequent flint inclusions was observed below the plough soil (**100**) overlying the yellow clay substrate (**101**) in the excavated cable trench.

4.2.6 Cable trenches to a width of 0.25m excavated by a mechanical trencher to a depth of up to 0.50m were not monitored due to their narrow width. All areas observed in the northern field showed a very similar sequence of soil deposits

4.2.7 Cable trenches excavated in the southern field were numbered in the order in which they were monitored (Figure 2). One of these trenches, Trench 7, continued from the

southern field into the northern field, following a course parallel to the western boundary of the northern field. The cable trench was 0.50m wide and 1.20m deep. At NGR TL 13508 20431, on the western edge of the northern field, the cable trench exposed two linear features (Plate 6 and Figure 6). The first, [702] appeared to follow a southwest-northeast course, was around 0.50m wide and 0.34m deep and was filled with a light brown gravelly clay (703). This feature and its fill were cut by another linear feature [704] which appeared to follow the same course. [704] was around 0.80m wide and 0.64m deep. and contained two fills; the primary fill (705) was a light brown gravelly clay and filled the bottom 0.34m. The secondary fill (706) was a dark red-brown silty clay filling the upper 0.28m. No dateable finds were recovered from either of the fills. Environmental samples were taken from both.

4.2.8 At TL 13496 20529, again on the western edge of the northern field, Trench 7 exposed two more linear features (Figure 6). The first [707] appears to follow a southwest-northeast course and was around 1.10m wide and 0.29m deep. This was filled with a light brown gravelly clay (708), [707] and (708) were cut by another linear feature [709] which appeared to run along the same course as [707]. [709] was around 1.40m wide and 0.42m deep and contained two fills, the primary fill (710) was a light brown gravelly clay indistinguishable in colour and composition from fill (708); this clay filled the bottom 0.25m. The secondary fill (711) was a dark red-brown silty clay and filled the upper 0.17m. No dateable finds were recovered from any of the fills.

#### 4.2.9 Southern Field

Trench 1 consisted of the removal of ploughed topsoil (104), subsoil (105) and geological substrate (106) to allow foundations for communications and transformer buildings to be laid. No features of archaeological significance were encountered in this trench.

4.2.10 Trench 2 ran along a northeast-southwest course parallel to, and to the south of, the known oil pipe running through the southern field. This cable trench was 0.50m wide and 0.70m deep. At TL 13414 20233 removal of the clay substrate (201) exposed a flint handaxe; no cut archaeological features were visible at this location.

4.2.11 At TL 13365 20174 Trench 2 exposed a cut feature [202] which was 7.64m wide (Figure 3). The full depth of feature [202] was not reached in the 0.70m deep cable trench. The feature had been filled with a dark orange-brown silt clay with frequent chalk lumps and fleck inclusions (203). No dateable finds were recovered from this fill. A

sample was taken from it for environmental analysis. Part of Trench 4 ran parallel to Trench 2, feature **[406]** (described below) was alongside **[202]**.

- 4.2.12 Trench 3 was 0.50m wide, 0.70m deep and 6.00m in length running north to south. At TL 13392 20103 this trench exposed the northern edge of a cut feature **[302]** (Plate 3 and Figure 5). The exposed part of the cut was 2.75m north-south. The full depth of the feature was not reached in the 0.70m deep cable trench. The feature was filled by a dark orange-brown silty clay with frequent chalk lump and fleck inclusions **(303)**. A fragment of brown glass was recovered from this fill. Part of Trench 6 ran east-west, at a right angle to the south end of Trench 3. Feature **[602]** (described below) was adjacent to **[302]**.
- 4.2.13 Trench 4 was 0.50m wide, 1.00m deep and followed a course around the perimeter of the solar panel rows in the south field to the north of the Total oil pipe running northeast-southwest. At TL 13445 20323 the trench exposed a cut feature **[402]** 11.05m wide (Plate 4 and Figure 4). The full depth of the feature was not reached and had been filled in two phases. The exposed extent of fill **(403)** was 0.23m north-south and 0.1m deep; this fill lay against the south edge of **[402]**. The exposed extent of fill **(405)** was 0.6m north-south and 0.1m deep; this lay against the north edge of **[402]**. Fills **(403)** and **(405)** were light orange-brown clay with frequent chalk flecks; these were overlain by fill **(404)** which was a dark orange-brown silty clay with frequent chalk lump and fleck inclusions. No dateable finds were recovered from any of the fills. A sample was taken from fill **(404)** for environmental analysis.
- 4.2.14 At TL 13370 20171 Trench 4 exposed a cut feature **[406]**. The feature was 6.00m wide, the full depth was not exposed in the 1.00m deep cable trench. This feature was filled by a dark orange-brown silty clay with frequent chalk lump and fleck inclusions **(407)**. No dateable finds were recovered from this fill. Feature **[406]** lies in close proximity to feature **[202]** exposed in Trench 2 (Figure 3).
- 4.2.15 Trench 5 was 0.50m wide and 1.40m deep for most of its length. The cable trench ran along the eastern side of the southern field, on an east-west course through the strip of woodland separating the southern and northern fields, and then on a south-north course parallel to, and 2.00m to the west of (outside), the western boundary fence of the northern field. No archaeological features or finds were exposed. At TL 13455 20307 the cable trench was dug to a depth of around 3.00m to install electrical cable ducts beneath the oil pipe. At the maximum depth of the trench the natural geology



**(501)** was the same brown-orange clay-with-flints that lay immediately beneath the ploughed topsoil **(500)**.

- 4.2.16 Trench 6 was 0.50m wide, 1.20m deep and followed a course around the perimeter of the solar panel rows to the south of the oil pipe in the southern field. At TL 13396 20099 the cable trench exposed a cut feature **[602]** (Plate 5 and Figure 5). The feature was 9.90m wide; its full depth was not reached in the 1.20m deep trench. **[602]** was filled by a dark orange-brown silty clay with frequent chalk lump and fleck inclusions **(603)**. No dateable finds were recovered from the fill. A sample was taken from it for environmental analysis. This feature lies adjacent to feature **[302]** in Trench 3.
- 4.2.17 Trench 7 was 0.50m wide, 1.20m deep and followed a course near the south and east edges of the southern field before passing through a strip of woodland and into the northern field. No archaeological features or finds were exposed by this trench in the southern field.
- 4.2.18 The archaeological remains observed in the northern field are most likely to be 18<sup>th</sup>/19<sup>th</sup> century field boundary ditches. The remains in the southern field appear to be three pits or craters, 20<sup>th</sup> century in date. The handaxe found in Trench 2 is dated to the Upper Palaeolithic era. In total there were nine features noted consisting of 22 contexts as summarised in Appendix 1.

## 5. FINDS

### 5.1 Introduction

5.1.1 A total of two artefacts, weighing 96g, were recovered from two deposits during an archaeological watching brief on land at Lawrence End Park, Luton, Central Bedfordshire.

5.1.2 All finds were dealt with according to the recommendations made by Watkinson & Neal (1998) and to the Chartered Institute for Archaeologists (CIfA) Standard & Guidance for the collection, documentation, conservation and research of archaeological materials (2014b). All artefacts have been boxed according to material type and conforming to the deposition guidelines recommended by Brown (2011), EAC (2014) and Cecil Higgins Art Gallery. This museum is currently closed so WAA will retain the archive for the present.

5.1.3 The material archive has been assessed for its local, regional and national potential and for its potential to contribute to the relevant research frameworks.

5.1.4 The finds assessment was compiled by Megan Stoakley with contributions from David Jackson.

5.1.5 Quantification of finds by context is visible in Table 1.

Cxt	Material	Qty	Wgt (g)	Date	Comments
201	Flint	1	90	Preh	Upper Palaeolithic tool
303	Glass	1	6	PM-Mod	Brown bottle glass
<b>TOTAL</b>		<b>2</b>	<b>96</b>		

Table 1: Quantification of Bulk Finds by Context

## 5.2 Lithics

- 5.2.1 A single flint tool, weighing 90g, was recovered from deposit (201). The artefact is in good condition.
- 5.2.2 The tool is of Upper Palaeolithic date and may comprise some form of crude bifacial knife (*Pers. Comm.* Jackson 2015).
- 5.2.3 Further analysis is certainly warranted on this artefact. It warrants illustration.

## 5.3 Glass

- 5.3.1 A single fragment of post-medieval to modern bottle glass, weighing 6g, was recovered from deposit (303). The artefact is in poor to moderate condition.
- 5.3.2 No further analysis is necessary on this assemblage.

## 5.4 Statement of potential

- 5.4.1 The Upper Palaeolithic flint tool is of high archaeological significance and warrants further research and illustration.
- 5.4.2 The bottle shard is of low archaeological significance and was consequently not retained with the archive.

## 6. CONCLUSIONS

### 6.1 Interpretation

- 6.1.1 The archaeological watching brief monitored all excavations associated with the construction the solar farm at Lawrence End Park. The remains were concentrated in on the western edge of the northern field and throughout the southern field. The remains consisted of pits or craters in the southern field and field boundary ditches in the northern field.
- 6.1.2 The linear features uncovered in Trench 7 on the western edge of the northern field are most likely field boundary ditches. The four ditches found appear to be the remains of two field boundaries following the same or a similar alignment around 100m apart. The original field boundary ditches **[702]** and **[707]** were filled, or allowed to naturally silt up with a gravelly clay. Both of these original ditches were then recut or replaced along almost the same alignment by slightly wider ditches. Both field boundaries, each consisting of an original and a replacement or recut ditch, appear to have undergone the same or very similar sequences of cutting, silting up, re-cutting and further silting up in two phases. This may suggest that the field boundaries were contemporary and were recut and allowed to silt up, or were intentionally backfilled in the same periods. However, an 1802 map showing the northern field shows only one field boundary running east-west through what is now a single field. Both ditches may have been contemporary and predated the mapped field boundary or one of the exposed ditches is the remains of the mapped boundary, the other ditch being overlooked or already backfilled before the arrival of cartographers however, a lack of dateable finds in any of the ditches prevents a confident interpretation regarding the precise relationship between them. The generally east-west orientation (as much as could be viewed in a 0.5m wide cable trench) of the ditches according with the mapped east-west field boundary would strongly suggest that the features exposed are the remains of field boundary ditches, at least one of which dates to the 18<sup>th</sup>/19<sup>th</sup> centuries.
- 6.1.3 The features exposed in five locations in the southern field are most likely the remains of three pits or craters. Trench 6 exposed the east-west extent **[602]** of one pit/crater and Trench 3 exposed its northern edge **[302]**. The limited extent of the feature exposed by the 0.5m wide cable trenches appears to show that the feature is roughly circular in plan with a diameter of around 10m. The uppermost 0.7m of the fill within

the pit/crater showed no variation in colour or composition. A brown glass fragment, probably a bottle neck, was found some 0.4m below the upper horizon of the fill, this find was believed to be of probable 20<sup>th</sup> century date, strongly suggesting that the void, or at least its upper extent, was filled during that period. Another pit or crater was exposed in Trenches 2 and 4, the courses of which ran parallel to each other along some of their courses; cuts **[202]** and **[406]** are most likely the same feature, possibly roughly circular in plan. As mentioned above, the limited extent of the feature exposed in 0.5m wide cable trenches prevents a confident assertion regarding its overall shape. Although no dateable finds were recovered from the respective fills, their colour, composition, weathering and compactness appeared identical to each other and to **(303)**, which yielded the 20<sup>th</sup> Century glass. As such it is suggested that the pits/craters were contemporary.

- 6.1.4 Pit **[402]** in Trench 4 is also probably contemporary with the other two pit/craters although the upper extent of this feature does have evidence of two fill phases. Fills appear to have accumulated against the southern and northern edges of the pit respectively. Although these fills have chalk inclusions, they are a much lighter shade of orange-brown than the later fill of this pit and that of the other two pits in this field. Why this feature should have a different fill sequence from the others in this field is unclear. However, fill **(404)** appears identical to the fills of the other features and a similar date for all of the pits/craters is most likely.
- 6.1.5 Although none of the features in this field were excavated to their base, the presence of chalk in the fills would appear to indicate that they were excavated or blasted to depths of more than 3m. This supposition does rely on the assumption that the clay-with-flints that overlies the chalk stratum in this region is consistent in the depth observed in Trench 5 when undercutting an oil pipe. Although this cannot be proven from the excavations conducted here, no chalk was encountered in any of the other cable or foundation trenches throughout this site.
- 6.1.6 The features in the southern field have been described here as pits or craters. The suggestion that these features were extraction pits of some kind is cited in the desk based assessment prepared for this site (WAA 2015a). The other possibility is that the voids were caused by WWII German bombs missing the military airstrip site now

occupied by Luton Airport. A possible crater still remains in the woodland adjacent to the southern field (Plate 7).

- 6.1.7 The worked flint handaxe recovered from the natural clay geology in Trench 2 attests to the presence of people in this vicinity during the Upper Palaeolithic era (c. 50,000-10,000 BC). The presence of this artefact in the natural clay geology may be explained by the last user of the tool pressing it into the clay to provide a fixed cutting point to work with. The point is missing from the handaxe which might explain why it was left *in situ*. The tool may have been inserted into the clay for some other reason; whatever that may be, it is not unusual for such tools to be found in an upright position in the ground (Calvin 1993, 245).

## 6.2 Preservation

- 6.2.1 The survival of the archaeological features beneath the ploughed topsoil was good. Whilst ploughing has mixed the subsoil and overlying humic layers, and most likely removed the uppermost extent of the fills of the pits/craters and ditches, the depth of the ploughing consistently appears to have been no more than 0.3m below ground surface throughout the site. Below the ploughsoil's lower horizon, edges between the firm clay substrate and clayey fills of cut features remain clearly distinguishable and where undisturbed by trenching are likely to remain so.

## 6.3 Development Impact

- 6.3.1 The development will have a limited impact on the observed archaeological remains. The fairly narrow cable trenches are likely to have left most of the ditches and sizeable proportions of the pits/craters undisturbed. The watching brief has ensured that those remains that were disturbed by this development have been preserved by record.

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Cumwhinton



## APPENDIX 1: CONTEXT TABLE

<b>Context Number</b>	<b>Context Type</b>	<b>Area</b>	<b>Description</b>
100	Deposit	Throughout site	Dark greyish-brown silty clay plough soil
101	Deposit	Throughout site	Yellow/orange silty clay substrate with random flint inclusions
102	Deposit	Seen in base of transformer/substation trench in north field below (102)	Yellow silty clay substrate with orange and red streaks and mottles, scarce stone inclusions
103	Deposit	Seen in lowest area at bottom of slope, north eastern area of northern field, below (100), above (101)	Buff silty clay subsoil with frequent flint inclusions, of colluvial origin
104	Deposit	Trench 1	Light brown clayey loam plough soil
105	Deposit	Trench 1	Brown gritty clay subsoil
106	Deposit	Trench 1	Brown-orange clay natural geology
200	Deposit	Trench 2	Brown clayey loam ploughed soil
201	Deposit	Trench 2	Brown-orange clay-with-flints natural geology
202	Cut	Trench 2	7.64m wide pit or crater
203	Deposit	Trench 2	Dark orange-brown silty clay with flint and chalk inclusions. Fill of [202]
300	Deposit	Trench 3	Brown clayey loam ploughed soil
301	Deposit	Trench 3	Brown-orange clay-with-flints natural geology
302	Cut	Trench 3	Partially exposed 2.75m wide pit or crater
303	Deposit	Trench 3	Dark orange-brown silty clay with flint and chalk inclusions. Fill of [302]
400	Deposit	Trench 4	Brown clayey loam ploughed soil
401	Deposit	Trench 4	Brown-orange clay-with-flints natural geology
402	Cut	Trench 4	11m wide pit or crater
403	Deposit	Trench 4	Light orange-brown clay with chalk fleck inclusions. Joint first fill of [402]
404	Deposit	Trench 4	Dark orange-brown silty clay with flint and chalk inclusions. Second fill of [402]
405	Deposit	Trench 4	Light orange-brown clay with chalk fleck inclusions. Joint first fill of [402]
406	Cut	Trench 4	6m wide pit or crater
407	Deposit	Trench 4	Dark orange-brown silty clay with flint and chalk inclusions. Fill of [406]
500	Deposit	Trench 5	Brown clayey loam ploughed soil
501	Deposit	Trench 5	Brown-orange clay-with-flints natural geology
600	Deposit	Trench 6	Brown clayey loam ploughed soil
601	Deposit	Trench 6	Brown-orange clay-with-flints natural geology
602	Cut	Trench 6	9.9m wide pit or crater
603	Deposit	Trench 6	Dark orange-brown silty clay with flint and chalk inclusions. Fill of [602]
700	Deposit	Trench 7	Brown clayey loam ploughed soil
701	Deposit	Trench 7	Brown-orange clay-with-flints natural geology

702	Cut	Trench 7	0.5m wide field boundary ditch cut
703	Deposit	Trench 7	Light brown-grey gravelly clay fill of [702]
704	Cut	Trench 7	0.8m wide field boundary ditch cut
705	Deposit	Trench 7	Light brown-grey gravelly clay, first fill of [704]
706	Deposit	Trench 7	Dark red-brown silty clay, second fill of [704]
707	Cut	Trench 7	1.1m wide field boundary ditch cut
708	Deposit	Trench 7	Light brown-grey gravelly clay fill of [707]
709	Cut	Trench 7	1.4m wide field boundary ditch cut
710	Deposit	Trench 7	Light brown-grey gravelly clay, first fill of [709]
711	Deposit	Trench 7	Dark red-brown silty clay, second fill of [709]

## APPENDIX 2: PLATES

*Plate 1; Access road stripped in the northern field, looking north*



*Plate 2; Cable trench in the northern field looking north, scale=1.00m*



*Plate 3; East facing section in feature [302], scale =2.00m*



*Plate 4; oblique view of east facing section in feature [402], scale =2.00m*



*Plate 5; oblique view of north facing section in feature [602], scale=2.00m*



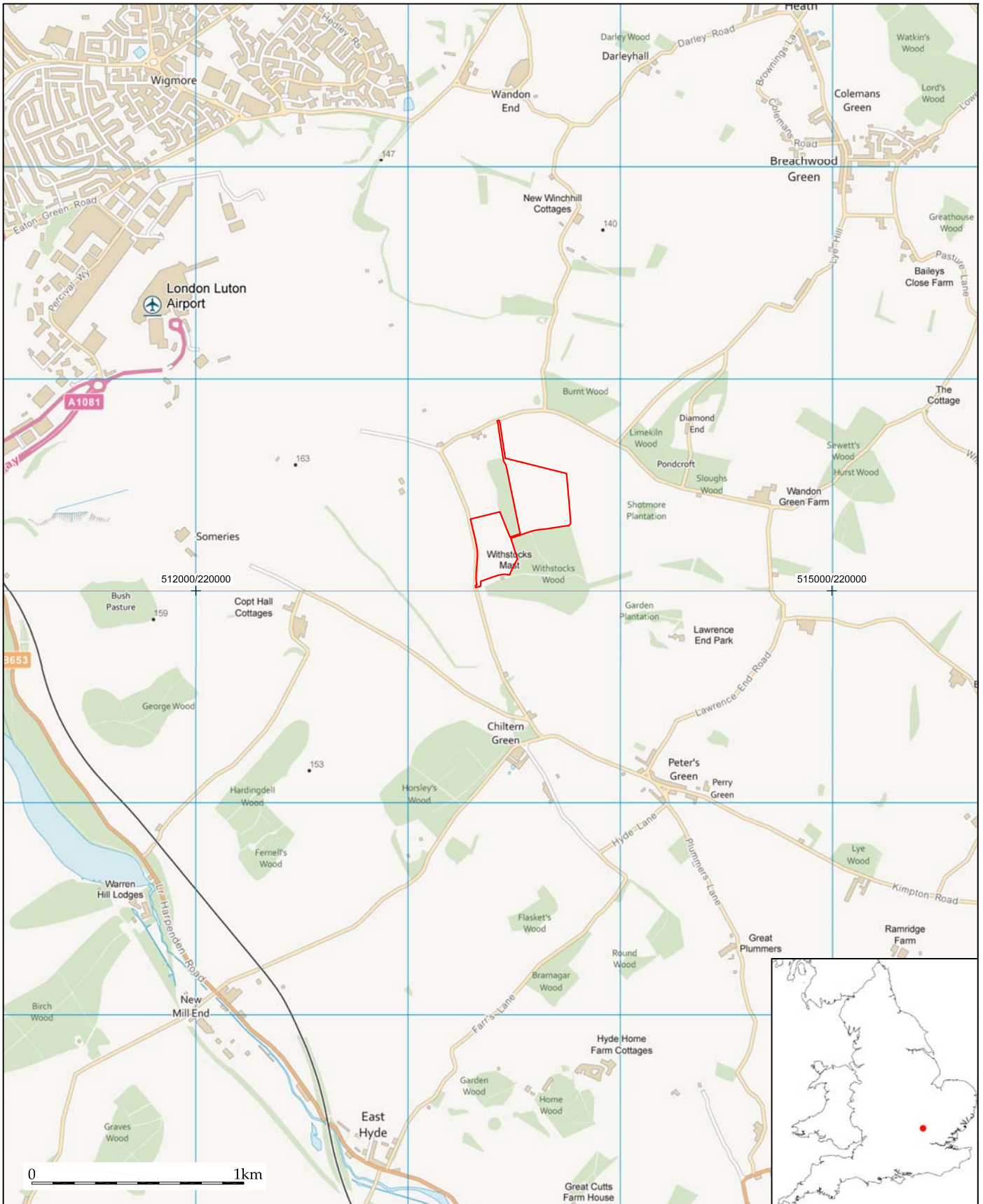
*Plate 6; east facing section in ditch [702] (on right) and ditch [704] (on left), scale = 2.00m*



*Plate 7; possible crater in woodland to east of southern field view from southeast*



## APPENDIX 3: FIGURES






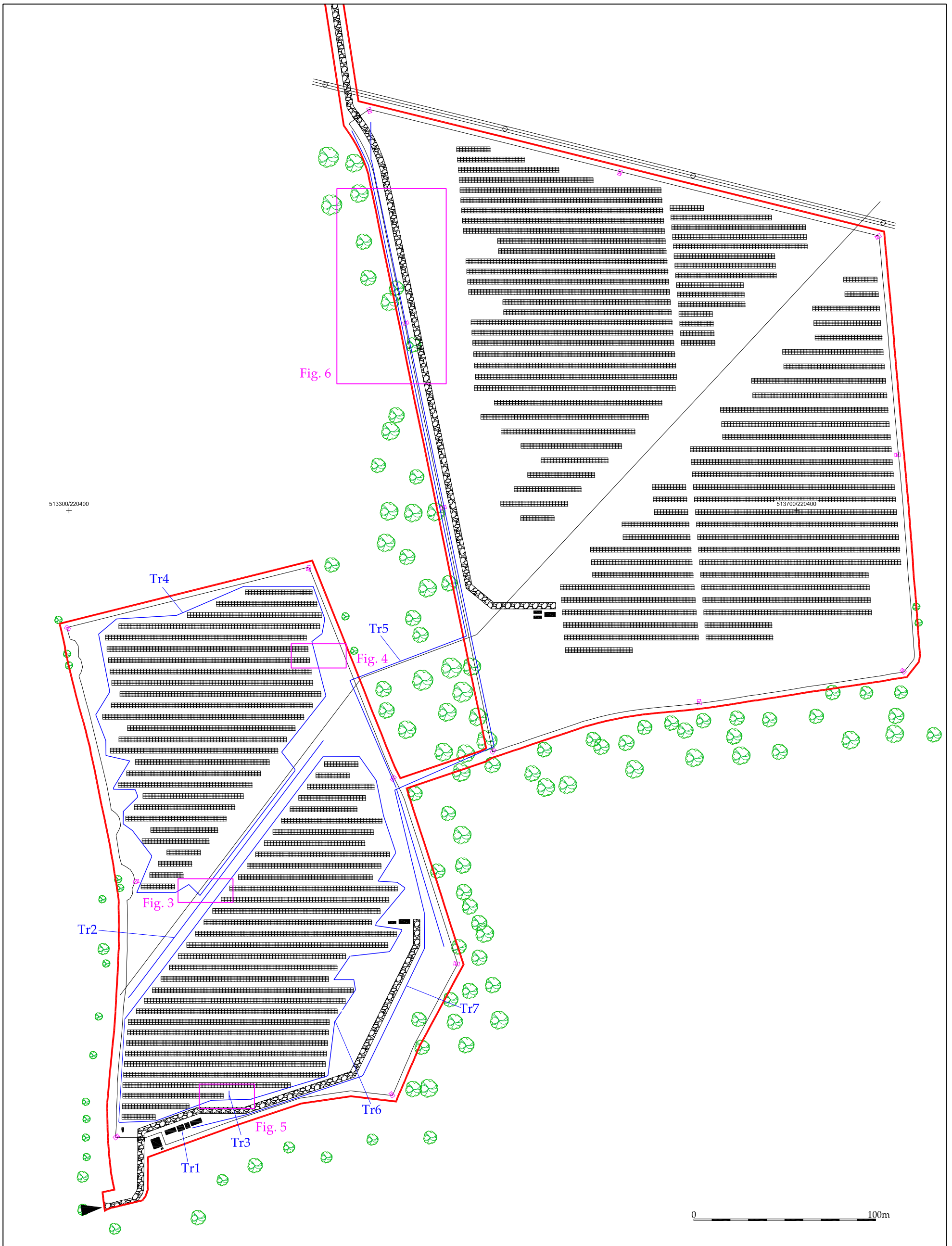
 <p>Wardell Armstrong Archaeology 2015</p>	<p>PROJECT: Land at Lawrence End Park and east of Birch Spring, Dane Street, Luton</p> <p>SCALE: 1:25,000 at A4</p> <p>REPORT No: CP11444</p> <p>CLIENT: Lightsource Renewable Energy Ltd</p> <p>DRAWN BY: AB</p> <p>DATE: December 2015</p> <p>FIGURE: 1</p>	<p>KEY:</p>  <p>Site boundary</p>	 <p>Reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown copyright. All rights reserved. Licence number 100019512</p>
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Figure 1: Site location.







 <p>Wardell Armstrong Archaeology 2015</p>	<p>PROJECT: Land at Lawrence End Park and east of Birch Spring, Dane Street, Luton</p> <p>SCALE: 1:2,000 at A3</p> <p>REPORT No: CP11444</p> <p>CLIENT: Lightsource Renewable Energy Ltd</p> <p>DRAWN BY: AB</p> <p>DATE: December 2015</p> <p>FIGURE: 2</p>	<p>KEY:</p> <ul style="list-style-type: none"> <li><span style="border-bottom: 2px solid red; width: 20px; display: inline-block;"></span> Site boundary</li> <li><span style="border-bottom: 2px solid blue; width: 20px; display: inline-block;"></span> Trenches monitored during Watching Brief</li> </ul>	 <p>Reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown copyright. All rights reserved. Licence number 100019512.</p>
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Figure 2: Proposed development with the location of the monitored areas.

PROJECT:  
Land at Lawrence End Park and  
east of Birch Spring, Dane Street,  
Luton

CLIENT:  
Lightsource Renewable Energy  
Ltd

SCALE: Plans 1:100/Sections 1:50 at A3

DRAWN BY: HP

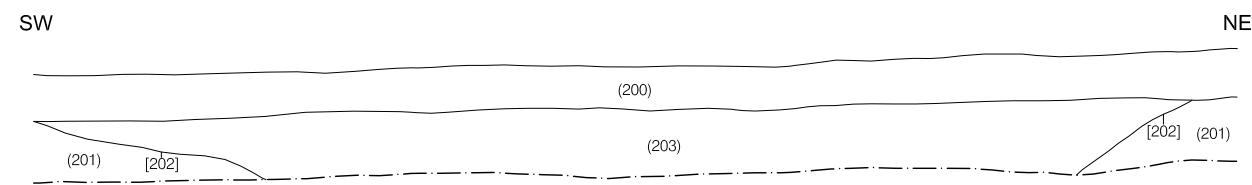
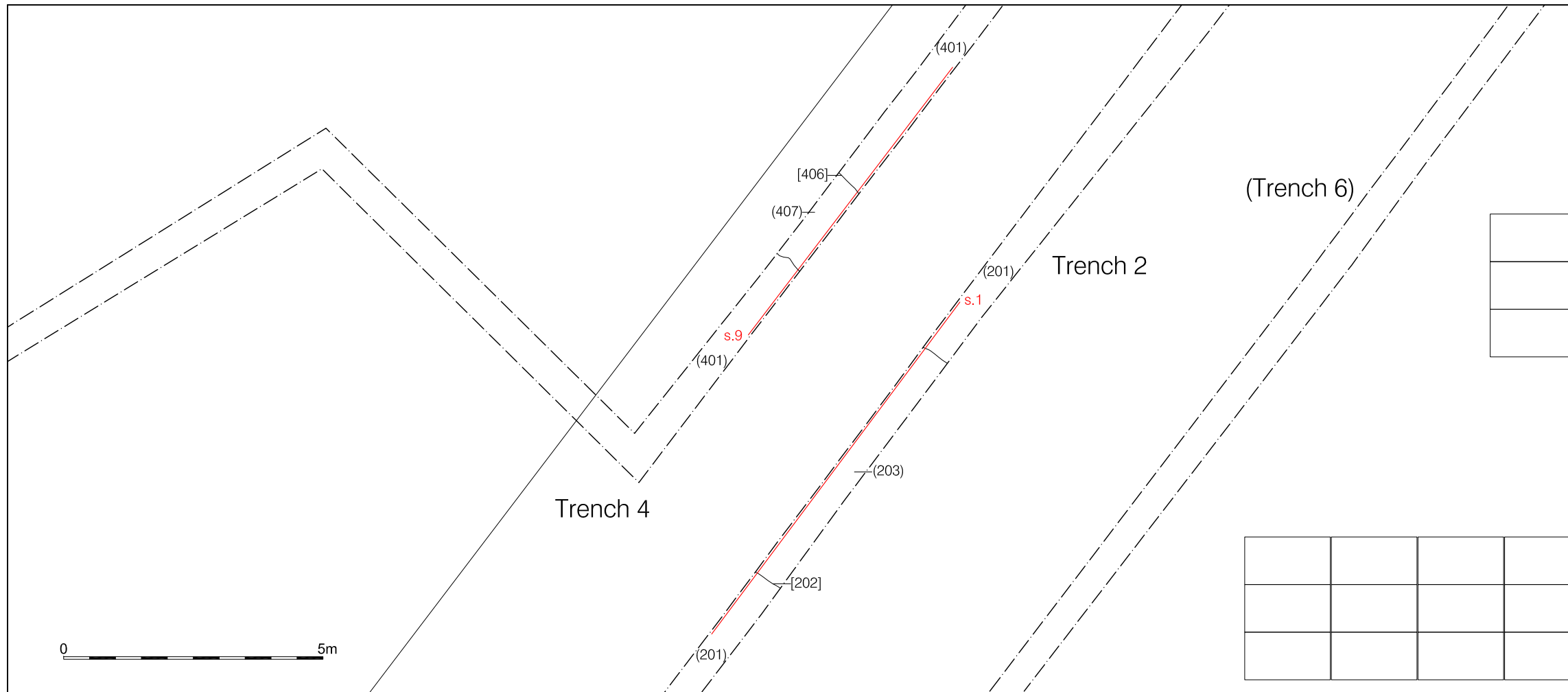
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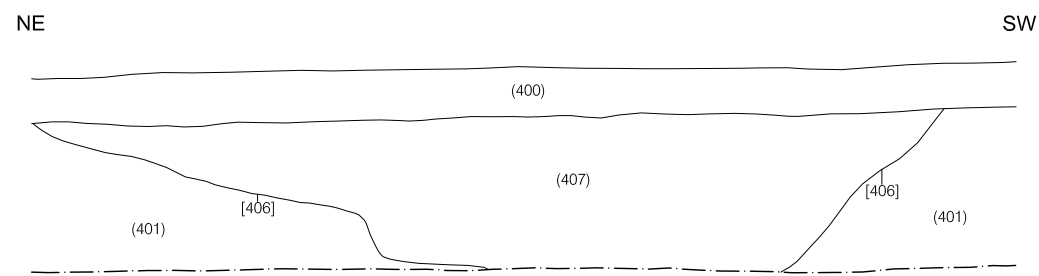
- (101) Context number
- Section location
- Limit of excavation

REPORT No:  
CP11444

FIGURE:  
3



Section 1. East facing section across feature [202].



Section 9. East facing section across feature [406].



Figure 3: Trench 2 and Trench 4; plan and sections.

PROJECT:  
Land at Lawrence End Park and  
east of Birch Spring, Dane Street,  
Luton

CLIENT:  
Lightsource Renewable Energy  
Ltd

SCALE: Plans 1:100/Sections 1:50 at A3

DRAWN BY: HP

DATE: December 2015

KEY:

- (101) Context number
- Section location
- Limit of excavation



REPORT No:  
CP11444

FIGURE:  
4

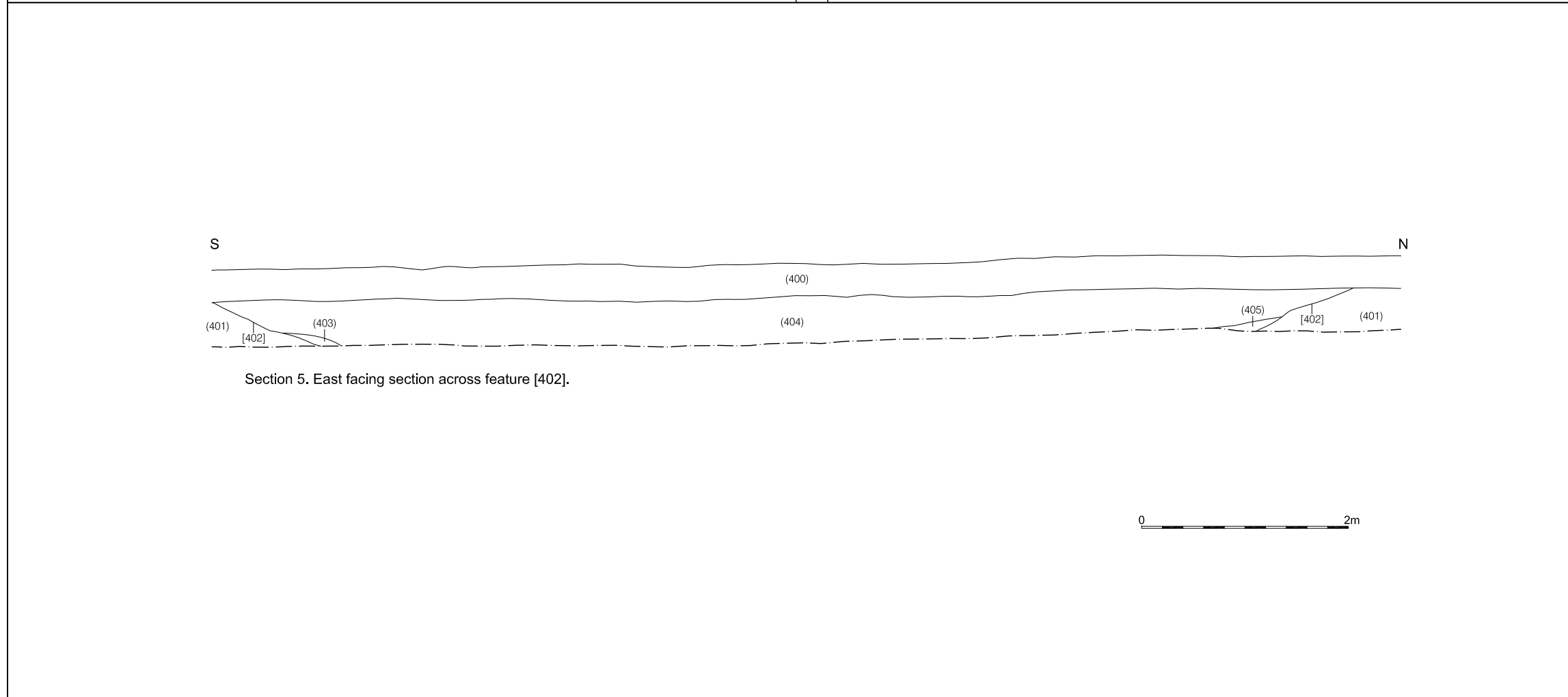
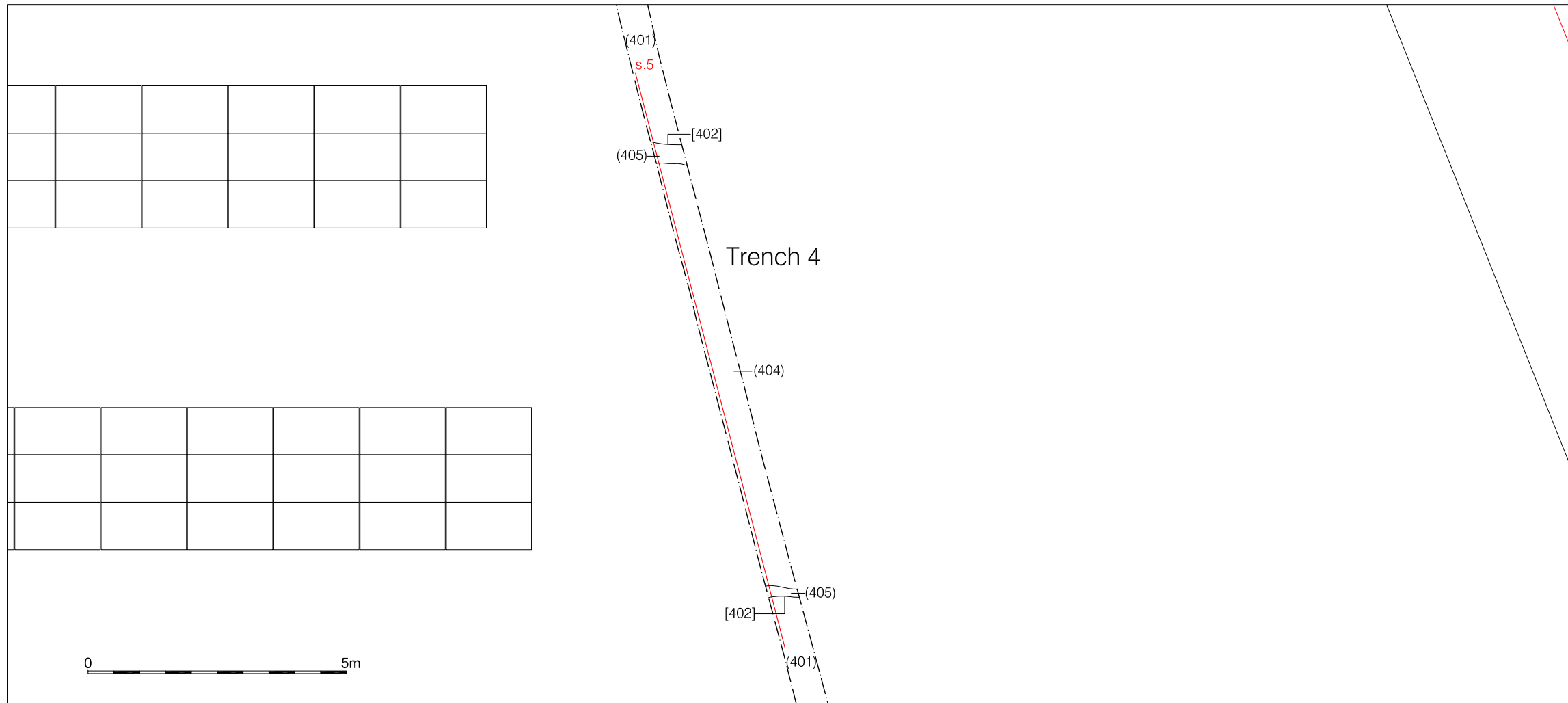


Figure 4: Trench 4; plan and section.

PROJECT:  
Land at Lawrence End Park and  
east of Birch Spring, Dane Street,  
Luton

CLIENT:  
Lightsource Renewable Energy  
Ltd

SCALE: Plans 1:100/Sections 1:50 at A3

DRAWN BY: HP

DATE: December 2015

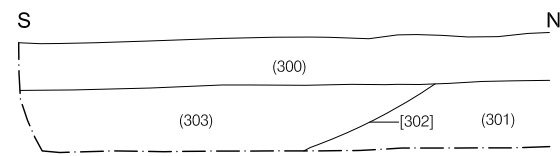
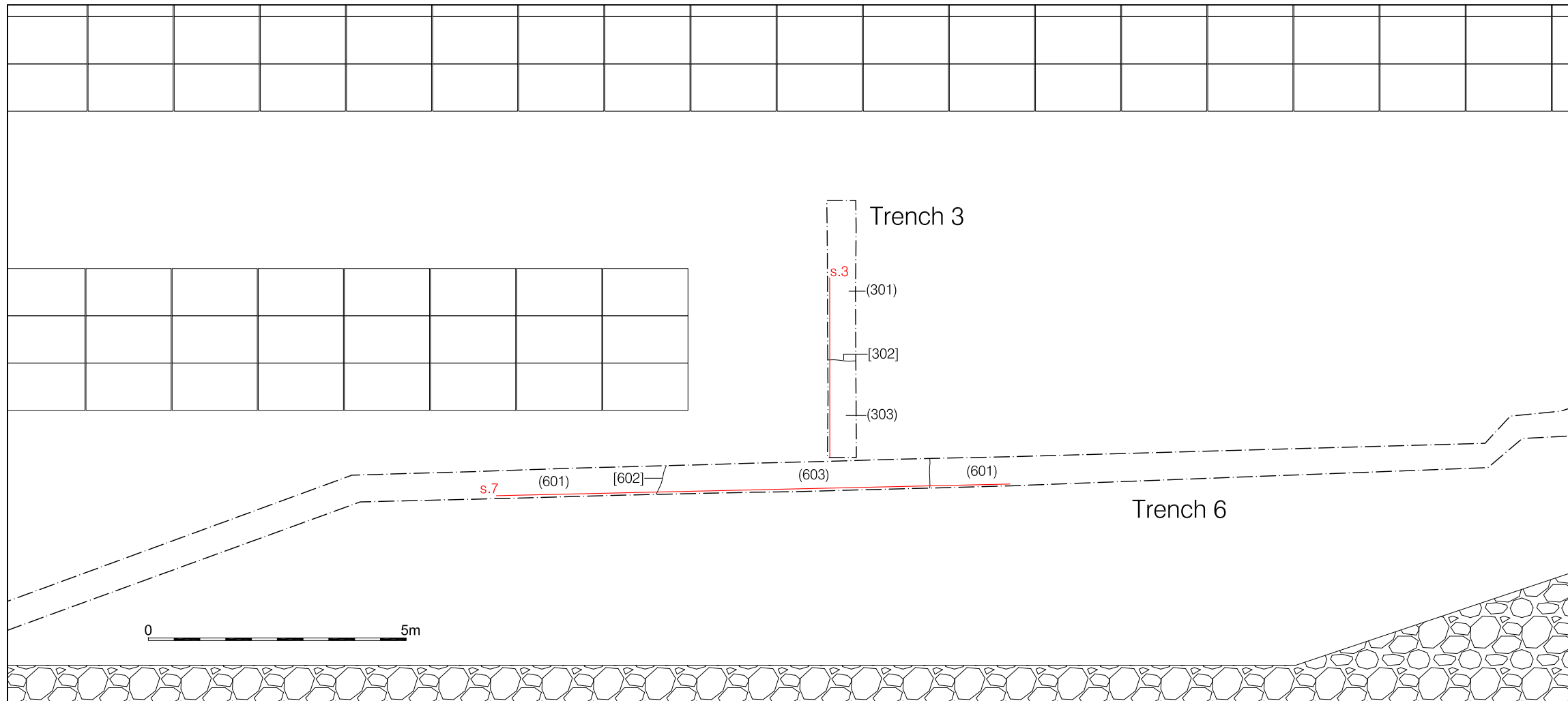
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- Limit of excavation

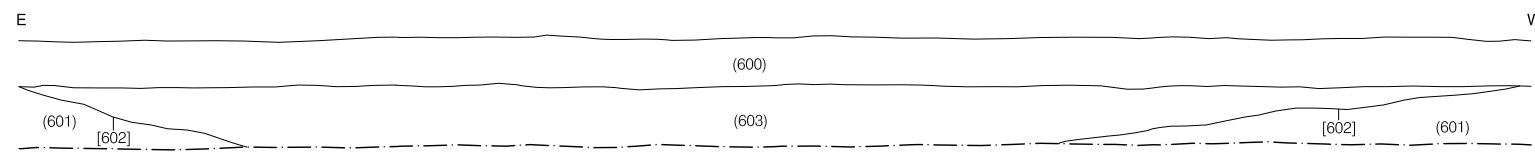


REPORT No:  
CP11444

FIGURE:  
5



Section 3. East facing section across feature [302].



Section 7. North facing section across feature [602].



Figure 5: Trench 3 and Trench 6; plan and sections.

PROJECT:  
Land at Lawrence End Park and  
east of Birch Spring, Dane Street,  
Luton




CLIENT:  
Lightsource Renewable Energy  
Ltd

SCALE: Plans 1:400/Sections 1:50 at A3

DRAWN BY: HP

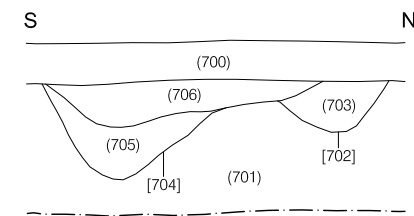
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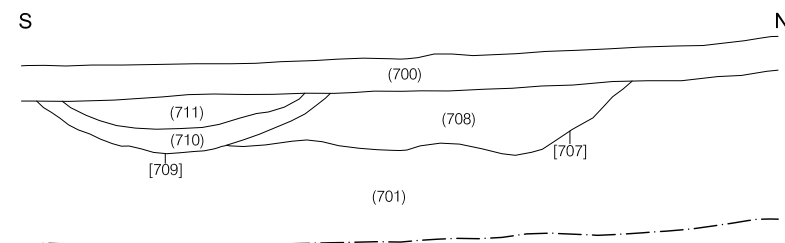
	Context number
	Section location
	Limit of excavation

REPORT No:  
CP11444

FIGURE:  
6



Section 11. East facing section across features  
[702] and [704].



Section 12. East facing section across [707] and [709].

0 2m

0 20m

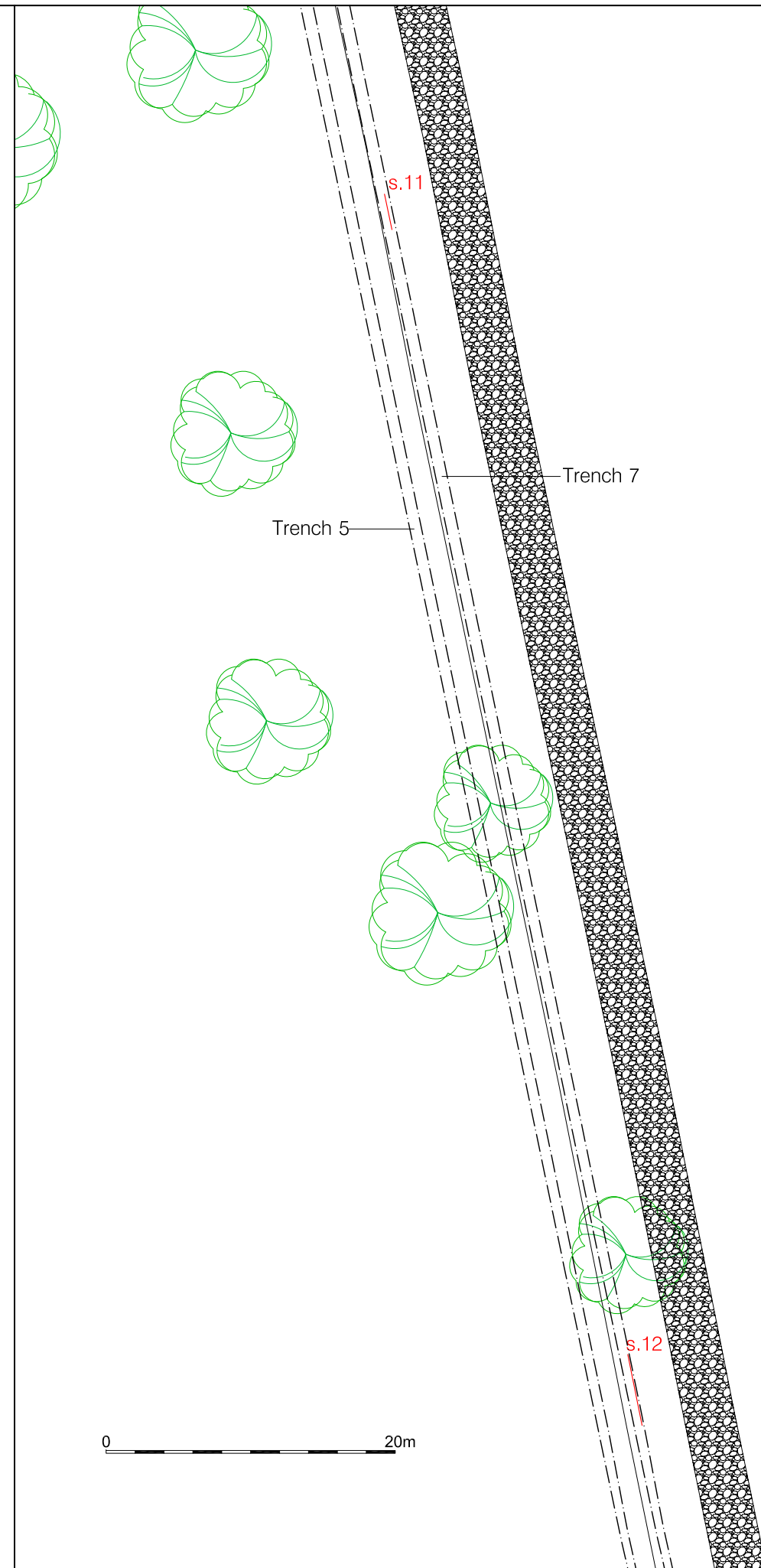


Figure 6: Trench 7, plan and sections.

STOKE-ON-TRENT  
Sir Henry Doulton House  
Forge Lane  
Etruria  
Stoke-on-Trent  
ST1 5BD  
Tel: +44 (0)845 111 7777

CARDIFF  
22 Windsor Place  
Cardiff  
CF10 3BY  
Tel: +44 (0)29 2072 9191

EDINBURGH  
Suite 2/3, Great Michael House  
14 Links Place  
Edinburgh  
EH6 7EZ  
Tel: +44 (0)131 555 3311

GREATER MANCHESTER  
2 The Avenue  
Leigh  
Greater Manchester  
WN7 1ES  
Tel: +44 (0)1942 260101

LONDON  
Third Floor  
46 Chancery Lane  
London  
WC2A 1JE  
Tel: +44 (0)20 7242 3243

NEWCASTLE UPON TYNE  
City Quadrant  
11 Waterloo Square  
Newcastle upon Tyne  
NE1 4DP  
Tel: +44 (0)191 232 0943

PENRYN  
Tremough Innovation Centre  
Tremough Campus  
Penryn  
Cornwall  
TR10 9TA  
Tel: +44 (0)1872 560738

SHEFFIELD  
Unit 5  
Newton Business Centre  
Newton Chambers Road  
Thornccliffe Park  
Chapelton  
Sheffield  
S35 2PH  
Tel: +44 (0)114 245 6244

TRURO  
Wheal Jane  
Baldhu  
Truro  
Cornwall  
TR3 6EH  
Tel: +44 (0)1872 560738

WEST BROMWICH  
Thynne Court  
Thynne Street  
West Bromwich  
West Midlands  
B70 6PH  
Tel: +44 (0)121 580 0909

International offices:

ALMATY  
29/6 Satpaev Avenue  
Rakhat Palace Hotel  
Office Tower, 7th Floor  
Almaty  
050040  
Kazakhstan  
Tel : +7-727-3341310

MOSCOW  
Suite 2, Block 10,  
Letnikovskaya St.  
Moscow, Russia  
115114  
Tel: +7(495) 980 07 67

Wardell Armstrong Archaeology:

CUMBRIA  
Cocklakes Yard  
Carlisle  
Cumbria  
CA4 0BQ  
Tel: +44 (0)1228 564820