# Archaeological fieldwalking, metal-detecting and geophysical surveys plus a trial-trenching evaluation on land to the west of Dawes Lane, West Mersea, Essex, CO5 8GJ

## October-November 2019


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# 1 Summary

*Archaeological fieldwalking, metal-detecting and geophysical surveys plus a trial-trenching evaluation (36 trenches) was carried out on land to the west of Dawes Lane, West Mersea, Essex in advance of the construction of a hundred residential dwellings. The development site is located in an area surrounded by cropmarks and is 450m south of Mersea Barrow. The fieldwalking survey revealed very small scatters of prehistoric, Roman and medieval material, with post-Roman tile/brick and post-medieval and modern pottery dominating the assemblage. Similarly, the metal-detecting survey only produced post-medieval/modern agricultural ironwork and modern waste material. The geophysical survey identified natural linears, historic field boundaries and drainage gullies. Five post-medieval/modern field boundary ditches and six drainage gullies were excavated during the trial-trenching evaluation along with a medieval/post-medieval pit, a possible Roman pit, a possible prehistoric ditch and 15 undated features (seven tree-throws, four pits, two gullies and two ditches).*

# 2 Introduction (Fig 1)

This report presents the results of archaeological investigations comprising fieldwalking, metal-detecting and geophysical surveys, followed by a trial-trench evaluation, on land to the west of Dawes Lane, West Mersea, Essex. The work was carried out between 28th October and 4th November 2019 by Colchester Archaeological Trust (CAT). It was commissioned by Brad Davies of Mersea Homes in advance of the construction of a hundred residential dwellings with vehicular access and parking, a sustainable drainage system, landscaping, areas of public open space for community use and associated groundworks.

As the site lies within an area highlighted by the CHER as having a high potential for archaeological deposits, an archaeological condition was recommended by the Colchester Borough Council Archaeological Advisor (CBCAA). This recommendation was for an archaeological evaluation by trial-trenching and was based on the guidance given in the *National Planning Policy Framework* (MHCLG 2019).

All archaeological work was carried out in accordance with a *Brief for an Archaeological Evaluation*, detailing the required archaeological work, written by Jess Tipper (CBCAA 2019), and a written scheme of investigation (WSI) prepared by CAT in response to the brief and agreed with CBCPS (CAT 2019).

In addition to the brief and WSI, all fieldwork and reporting was done in accordance with English Heritage's *Management of Research Projects in the Historic Environment* (*MoRPHE*) (English Heritage 2006), and with *Standards for field archaeology in the East of England* (EAA **14** and **24**). This report mirrors standards and practices contained in the Institute for Archaeologists' *Standard and guidance for archaeological field evaluation* (CIfA 2014a) and *Standard and guidance for the collection, documentation, conservation and research of archaeological materials* (CIfA 2014b).

# 3 Archaeological background

The following archaeological background is based on information contained within CAT Report 992 and the Colchester Historic Environment Record (CHER) accessed via the Colchester Heritage Explorer (www.colchesterheritage.co.uk):

The site lies within an area that has seen little archaeological investigation. It is located, however, within an area surrounded by fields containing cropmark complexes recorded through aerial photography. The majority of features are interpreted as linears and trackways which likely indicate the presence either of Roman ditches or historic field boundaries. Cropmarks on land to the east and north of Wellhouse Farm, immediately to the north, suggest the presence of a ring-ditch, three rectangular pits (thought to possibly be part of an Anglo-Saxon sunken-floored building) and a number of historic field boundaries (CHER MCC8813). Find spots in this area include that of an Iron Age coin (MCC4894), a Roman coin (MCC8776) and some Roman objects including a brooch, coin and tessera cube (MCC8779). Cropmarks of trackways and

linear features are located at Barrow Hill, to the immediate northeast of the site, although substantial geological deposits at Barrow Hill may mask additional archaeology (MCC4746). To the immediate east of the site, further cropmarks evidence the presence of a possible building of unknown date (MCC8930).

The site is located approximately 450m south of Mersea Barrow (MCC6928, Scheduled Ancient Monument No: SM 32425; NHLE no. 1019019). The barrow was excavated in 1912, when a trench was dug from the eastern side of the barrow into its centre, and a larger central shaft was opened out. A Roman cremation burial was located near the centre of the barrow. It lay within a chamber constructed of Roman roof tiles (*tegulae*) set in mortar. The chamber contained a lead casket inside which was a glass urn containing the cremated human remains. In 1912 the barrow was approximately 33.5m in diameter and 6.9m high. No trace of a ditch around the barrow was detected during this investigation (Warren 1913). The 1912 excavation trench was subsequently roofed over and concreted to form a tunnel to allow visitors access to the burial chamber from the eastern side of the barrow.

The burial was dated in the original site report to the late 1st century (Warren 1913, 138). Hull subsequently suggested that its origins lay in the period from AD 100 to AD 120 (*VCHE* **3**, 160). More recently, it has been suggested that the barrow is mid-2nd century in date (Benfield & Black 2014, 67 & 72).

The cremated human remains were re-examined in 2012-3 by Jacqueline McKinley of Wessex Archaeology (McKinley 2014). The bone came from a male aged between 35 and 45. The individual exhibited evidence of spinal lesions and excessive bony growths, indicating that he suffered from diffuse idiopathic skeletal hyperostosis (DISH), a disease of the joints that today is found mainly in men over 50. Exotic items, including pine resin and frankincense, were also detected (Brettell *et al* 2014). These were probably added to the bone after cremation, suggesting that the internment of this individual was accompanied by an elaborate funerary ritual.

CAT carried out watching briefs at Mersea Barrow in 2014 and 2016 during works to improve visitor access and amenities. No significant archaeological deposits were uncovered, although a small quantity of Roman roof tile fragments was recovered from the modern topsoil on the eastern side of the barrow (CAT Report 992).

There is an unconfirmed report that two Roman rings and fragments of a tessellated pavement were found fairly close to the Mersea Barrow in nearby Bower Hall Lane (Howlett 2012, 66 & 76).

For a full archaeological background see the desk-based assessment of the site by Oxford Archaeology (Pridmore 2019).

## 4 Aim

The aim of the archaeological investigations were to record the extent of any surviving archaeological deposits and to assess the archaeological potential of the site to allow the CBCAA to determine if further investigation is required.

## 5 Fieldwalking survey (Figs 2-6)

### 5.1 Introduction

The fieldwalking survey (FWS) was carried out in accordance with standard Essex fieldwalking methodology which has been used in Essex since the Stansted Project in 1986 (Havis & Brooks 2007) and summarised in 2005 (Medlycott 2005). The methodology is based on a rectangular grid tied into the Ordnance Survey National Grid. The development site is first sub-divided into kilometre squares, each given an identifying letter. Each kilometere square is then sub-divided into hectares, numbered 1-100, starting at the southwest corner. Each hectare is then sub-

divided into 20m square boxes, labelled A-Z (excluding O), also starting in the southwest corner. A 2m wide section is then walked along the western edge of each box (25 in total per hectare) and all of the finds retrieved, providing a 10% sample of the finds from each 20m box. Finds are then counted, weighed, mathematically analysed and plotted onto a map at a suitable scale, typically one sheet per finds type. These plots allow a comparison between groups of finds and an assessment of the 'significance' of a cluster. A 'significant' cluster of material is usually defined as 2 or more adjacent boxes in which the finds are at or above 2 standard deviations (ie, +2sd) above the mean weight.

The Dawes Lane site falls within a single 1km square (centred at TM 213 602), identified as 'A'. The grid system used for this FWS is shown in Fig 2. The total area walked was 10.35ha of arable field, which was still in crop at the time of survey, totalling 227 20m boxes.

## 5.2 Statistical data

*by Mark Baister*

This section with Table 1 below, provides the statistical data to allow comparison with other Essex surveys (Medlycott 2005). All weights are in grammes.

'Significant' finds clusters are defined as a deviation from the norm for the survey area, which is expressed mathematically in the equation below. A 'significant' cluster of material is usually defined as 2 or more adjacent boxes in which the finds are at or above 2 standard deviations (ie, +2sd) above the mean weight. The data from this site is plotted on Figs 3-6.

$$\sigma = \sqrt{\frac{\sum x^2}{n} - \mu^2}$$

**Key for Tables 1-2:**
n = number of 20m boxes walked
Σx = sum of the find-type
Σx² = sum of the individual find-types individually squared
μ = mean of the find-type per 20m box
σ = standard deviation of the find-type
+1σ = mean +1 standard deviation of the find-type (+1 sd)
+2σ = mean +2 standard deviations of the find-type (+2 sd)

| **Flint flakes** | | **Flint cores** | |
|---|---|---|---|
| n | 227 | n | 227 |
| Σx | 1 | Σx | 2 |
| Σx² | 1 | Σx² | 2 |
| Σx² / n | 0.00 | Σx² / n | 0.01 |
| μ | 0.00 | μ | 0.01 |
| μ² | 0.00 | μ² | 0.00 |
| Σx² / n - μ² | 0.00 | Σx² / n - μ² | 0.01 |
| σ | 0.07 | σ | 0.09 |
| +1σ | 0.07 | +1σ | 0.10 |
| +2σ | 0.14 | +2σ | 0.20 |

**Table 1** Statistical data calculations for the prehistoric flints (calculated based on quantities per find type)

| **Burnt flint** | | | |
|---|---|---|---|
| n | 227 | | |
| Σx | 11.5 | | |
| Σx² | 132.25 | | |
| Σx² / n | 0.58 | | |
| μ | 0.05 | | |
| μ² | 0.00 | | |
| Σx² / n - μ² | 0.58 | | |
| σ | 0.76 | | |
| +1σ | 0.81 | | |
| +2σ | 1.57 | | |
| | | | |
| **Roman pottery** | | **Medieval pottery** | |
| n | 227 | n | 227 |
| Σx | 5.90 | Σx | 27.50 |
| Σx² | 34.81 | Σx² | 204.13 |
| Σx² / n | 0.15 | Σx² / n | 0.90 |
| μ | 0.03 | μ | 0.12 |
| μ² | 0.00 | μ² | 0.01 |
| Σx² / n - μ² | 0.15 | Σx² / n - μ² | 0.89 |
| σ | 0.39 | σ | 0.94 |
| +1σ | 0.42 | +1σ | 1.06 |
| +2σ | 0.81 | +2σ | 2.00 |
| | | | |
| **Post-medieval pottery** | | **Roman brick and tile** | |
| n | 227 | n | 227 |
| Σx | 55.70 | Σx | 179.00 |
| Σx² | 463.71 | Σx² | 21121.00 |
| Σx² / n | 2.04 | Σx² / n | 93.04 |
| μ | 0.24 | μ | 0.79 |
| μ² | 0.05 | μ² | 0.62 |
| Σx² / n - μ² | 1.99 | Σx² / n - μ² | 92.42 |
| σ | 1.41 | σ | 9.61 |
| +1σ | 1.65 | +1σ | 10.40 |
| +2σ | 3.06 | +2σ | 20.01 |
| | | | |
| **Medieval / post-medieval tile** | | **Medieval / post-medieval brick** | |
| n | 227 | n | 227 |
| Σx | 2475.2 | Σx | 1447.80 |
| Σx² | 147339.36 | Σx² | 687074.06 |
| Σx² / n | 649.07 | Σx² / n | 3026.76 |
| μ | 10.90 | μ | 6.38 |

| | | | |
|---|---|---|---|
| $\mu^2$ | 118.90 | $\mu^2$ | 40.68 |
| $\Sigma x^2 / n - \mu^2$ | 530.18 | $\Sigma x^2 / n - \mu^2$ | 2986.08 |
| $\sigma$ | 23.03 | $\sigma$ | 54.65 |
| $+1\sigma$ | 33.93 | $+1\sigma$ | 61.02 |
| $+2\sigma$ | 56.96 | $+2\sigma$ | 115.67 |

**Table 2** Statistical data calculations for the burnt flint, pottery and brick/tile (calculated based on weights per find-type)

## 5.3 Results

A small quantity of finds of prehistoric, Roman, medieval and post-medieval date was found scattered across the development site. Results per period and by find-type are listed below and plotted on Figs 3-6.

**Prehistoric (Fig 3):** Prehistoric finds consisted of a flint flake, two probable flint cores and a piece of burnt flint. Only two (the flake and burnt flint) were found in the same hectare (no. 17), although all four were from the southern half of the field. Based on the statistical analysis, see above, Fig 3 shows that there were no significant concentrations of flint. It is also useful to compare finds quantities to the Essex County average (CA) as discussed by Medlycott in 2005. The struck flints at 3 per 10.35ha (or 0.29 per ha) is significantly less than 6 flake average per hectare. Similarly, the single burnt flint, at 11.5g per 10.35ha (1.11g per ha) is only 1% of the CA. These findings would suggest that prehistoric activity here was absent or at a very low level.

**Roman (Fig 4):** Roman finds consisted of pottery and brick/tile. Based on the statistical analysis, see above, Fig 4 shows that there were no significant concentrations of Roman finds. There was only one fragment of Roman pottery (5.9g) at an average weight of 0.03g per 20m box, which is below the CA of 0.627g per 20m box. A total of 179g of Roman brick/tile came from two hectares, but at 0.79g per 20m box this is still only 15% of CA (5.284g).

**Anglo-Saxon**: There were no finds of Anglo-Saxon date.

**Medieval & post-medieval (Figs 5-6):** Medieval and post-medieval finds consisted of pottery, peg-tile and brick. Based on the statistical analysis, see above, Figs 5 and 6 show that there is a 'significant' concentration of post-medieval pottery and tile in grid squares 29 N, P, T and U. It is worth highlighting, however, that none of the post-medieval pottery sherds were of diagnostic forms and could have ranged in date from *c* 1500 to 19th/20th century, so they might actually belong with the modern pottery recovered during fieldwalking. Similarly, some of the fragments of tile and brick may be of 19th/20th century date. Therefore, these 'significant' concentrations may not be as significant as the data suggests.

All of these values are also still well below the CA (see below). There were four fragments of medieval pottery (27.5g) at a mean weight of 0.12g per 20m box and 9 fragments of post-medieval pottery (55.7g) at a mean of 0.24g per 20m box. Both are significantly below the CA of 0.999g per 20m box for medieval pottery and 3.614g per 20m box for post-medieval pottery. Medieval/post-medieval peg-tile from the FWS totalled 2475.2g, or 10.9g per 20m box, with brick totalling 1447.8g, or 6.38g per 20m box. The CA for medieval/post-medieval tile is 50.360g per 20m box.

**Other finds:** Other finds included modern pottery (34 sherds at 360.5g) along with small quantities of oyster shell (9.1g), modern glass (15.7g), slate (19.6g) and animal bone (23.7g).

A catalogue of the fieldwalking finds is presented in Appendix 1, with pottery and flint identifications in Appendix 2. All finds aside from the flint flake, flint core, Roman and medieval pottery sherds will be discarded once this report is approved.

### 5.4 Fieldwalking survey conclusions

The generally low level of prehistoric, Roman and medieval finds would suggest that there was very little or no activity here in those periods. In comparison, there was a slightly larger assemblage of post-medieval pottery and medieval/post-medieval CBM, perhaps concentrated around grid squares 29 N, P, T and U, but these values are still well below the county average for these finds-types. All the results would seem to indicate a background scatter of material spread across an agricultural field.

## 6 Metal-detecting survey (Fig 7)

Each transect of the fieldwalking grid (see above) was also metal-detected. A total of 11.85kg of agricultural ironwork was found during the survey along with 810g of aluminium/tin, brass and the remains of a mobile phone. All of the finds are listed by hectare and grid square in Table 3 below with the findspots plotted on Fig 7. All of the finds are of later post-medieval or modern date, so their distribution has not been analysed further. Most were found in the southern half of the field but this is probably related to topography and the direction of ploughing. All will be discarded once this report has been approved.

| Hectare & grid square | Metal-detecting no. | Description |
|---|---|---|
| 7W | MD22 | Iron nail, 22g |
| 9T | MD23 | Iron angle from bed frame with bolt, 426g |
| 16H | MD6 | Iron bolt, 112g |
| 16I | MD7; MD10 | Iron plough shear fragment, 44g; Iron fragment, 30g |
| 16J | MD8; MD9 | Iron fragment (plough shear point?), 32g; Iron nail, 6g |
| 16P | MD5 | Iron washer, 24g |
| 16N | MD3; MD4 | Iron sheet, triangular shaped, flat, 14g; Iron strip, small, 14g |
| 16T | MD2 | Iron nail fragment, 4g |
| 17D | MD44; MD45 | Iron nail, 18g; Iron bolt head, 104g |
| 17E | MD46; MD47 | Iron nut, 74g; Iron fragment, 22g |
| 17F | MD11 | Iron nut, 20g |
| 17K | MD42 | Iron L-shaped plate with rivets, 120g |
| 17M | MD43 | Iron nail, 6g |
| 17Q | MD41 | Iron triangular-shaped sheet |
| 17T | MD56 | Iron rod, 80g |
| 17V | MD40 | Iron nail, 12g |
| 17W | MD57 | Iron bolt with plastic washer, 350g |
| 17Z | MD64 | Iron triangular plate (plough fragment?), 82g |
| 18A | MD48 | Iron nail, 36g |
| 18B | MD50 | Iron rod fragment, 16g |
| 18F | MD65 | Iron triangular sheet (?plough shear), 104g |
| 18L | MD51; MD52; MD53; MD54 | Iron nail, 10g; Iron nail, 8g; Iron nail fragment, 20g; Iron nail fragment, 10g |
| 18Q | MD19; MD55 | Iron staple, 48g; Iron staple, 44g |
| 18W | MD56 | Iron plate with rounded ends, 226g |
| 18Z | MD12 | Iron plough shear, 2,888g |
| 19C | MD18 | Iron washer fragment, 8g |

| | | |
|---|---|---|
| 19R | MD72 | Aluminium sheet, 8g |
| 19T | MD71 | Iron plate (?fragment of plough shear), 108g |
| 20V | MD21 | Iron rectangular plate with rounded end, 526g |
| 26D | MD1 | ?Squashed tin lid, 310g |
| 26E | MD38; MD39 | Iron nail, 20g; Horse shoe, 474g |
| 26J | MD37 | Iron hook and washer nut, 74g |
| 26P | MD35 | Iron plough shear fragment |
| 26T | MD36 | Mobile phone, 116g |
| 26U | MD32; MD33 | Iron conical object with hole and rivet, 32g & iron fragment, 50g; Iron fragment, 7g |
| 27B | MD58; MD59 | Iron rounded plate with flange, 50g; Iron nail fragment, 1g |
| 27D | MD61 | Iron strip with round ends, 44g |
| 27E | MD62; MD63 | Iron nail, 12g; Iron fragment, 78g |
| 27G | MD60 | Iron horse shoe fragment |
| 27K | MD34 | Brass ?shell case fragment, 174g |
| 27Q | MD31 | Iron nail fragment, 6g |
| 28R | MD68 | Iron rod, 118g |
| 28T | MD69 | Iron plate (?plough shear fragment), 24g |
| 28V | MD67 | Iron flat object with blunt and rounded ends with hole (?part of machinery), 884g |
| 28Y | MD73; MD74; MD75 | Iron nut bolt, 26g; Iron folded plate, 28g; Iron nail fragment, 4g |
| 29M | MD70 | Iron bolt, 102g |
| 37A | MD12; MD13 | Iron curved fragment (?pipe fragment), 68g; Iron curved strip, 10g |
| 37B | MD14; MD15 | Iron strip with curved attachment, 528g; Iron fragment with flat ends and bevelled edges, 460g |
| 37F | MD27; MD28; MD29; MD30 | Iron object with holes, 1,686g; Iron staple or chisel, 642g; Iron plough shear fragment, 244g; Aluminium can fragments, 12g |
| 37H | MD25; MD26 | Aluminium pipe, 146g; Iron flat plate with rounded ends with nuts and bolts attached, 478g |
| 38B | MD16; MD17 | Iron triangular fragment, 28g; Aluminium lump, 44g |

**Table 3** Finds from the metal-detecting survey listed by hectare and grid square

# 7 Geophysical survey

The full report with figures on the geophysical survey can be found at the end of this report. There were no anomalies suggestive of archaeological features aside from two mapped field boundaries and several drainage features. A lattice of linear anomalies was natural fracturing of the shallow sedimentary layer.

See Fig 9 for a plot of the magnetic interpretation over historic maps in relation to the results of the trial-trenching evaluation.

# 8 Trial-trenching evaluation (Figs 8-12)

## 8.1 Results (Figs 8-12)

Thirty-eight trial-trenches were laid out across the development site. Most of the trenches were positioned in the southern half of the field as less development is proposed to take place to the north. All trenches were machine-excavated under the supervision of a CAT archaeologist.

All of the trenches were 30m long, 1.8m wide and excavated through modern topsoil (L1, 0.07-0.35m thick) and subsoil (L2, *c* 0.03-0.28m thick) onto natural (L3, encountered at a depth of 0.23-0.44m below current ground level). Sondages were excavated in trenches T14, T16, T22, T25, T28, T33 and T37 to confirm the identification of L3 as natural.

There were no archaeological remains in trenches T8, T9, T10, T13, T14, T16, T17, T20, T25, T31, T33, T36, T37 or T38.

**Trench 1 (T1):** Natural linear F28 was excavated.

**Trench 2 (T2):** Irregular and undated linear depression F29 was excavated.

**Trench 3 (T3):** Shallow undated gully F31 was on a parallel alignment to the drainage gullies identified by the geophysical survey and is likely to be a post-medieval/modern drainage gully (see Fig 9).

**Trench 4 (T4):** The remains of field boundary ditch F27 lay on a ENE-WSW alignment and was 0.41m wide and 0.06m deep. It was visible on the geophysical survey and is present on early OS mapping (see Fig 9).

**Trench 5 (T5):** Shallow undated gully F25 was on a parallel alignment to the drainage gullies identified by the geophysical survey and is likely to be a post-medieval/modern drainage gully (see Fig 9). Medieval or post-medieval pit/tree-throw F30 was also excavated.

**Trench 6 (T6):** Undated tree-throw F19 and natural feature F32 were excavated.

**Trench 7 (T7):** Shallow undated gullies F20 and F21 were on a similar alignments to the drainage gullies identified by the geophysical survey and are likely to be a post-medieval/ modern drainage gullies (see Fig 9).

**Trench 11 (T11):** Drainage gully F26 was excavated.

**Trench 12 (T12):** The remains of field boundary ditch F22 lay on a ENE-WSW alignment and was 0.8m wide and 0.29m deep. It was visible on the geophysical survey and is present on early OS mapping (see Fig 9). Finds from the backfill are of 19th or 20th century date.

**Trench 15 (T15):** Undated pit F18 was 0.3m wide and 0.12m deep.

**Trench 18 (T18):** Field boundary ditch F23 lay on a NNW-SSE alignment and was 1.6m wide and 0.38m deep. Associated field boundary ditch F24 was aligned ENE-WSW and was 2.1m wide and 0.32m deep. Both are present on early OS mapping (see Fig 9).

**Trench 19 (T19):** Shallow undated gully F16 was on a parallel alignment to the drainage gullies identified by the geophysical survey and is likely to be a post-medieval/modern drainage gully (see Fig 9).

**Trench 21 (T21):** Undated gully F14 was aligned NE-SW and was 0.4m wide by 0.11m deep.

**Trench 22 (T22):** Tree-throw F13 was excavated.

**Trench 23 (T23):** Undated ditch F17 was aligned NE-SW and was 1.5m wide and 0.42m deep.

**Trench 24 (T24):** Undated shallow pit/depression F11 was excavated.

**Trench 26 (T26):** Undated elongated pit F15 was 1.9m wide and 0.2m deep.

**Trench 27 (T27):** Ditch or drainage gully F8 was aligned roughly north to south and was 1.25m wide by 0.14m deep.

**Trench 28 (T28):** Shallow pit F6 contained a single fragment of Roman brick/tile and could date to this period, but given the lack of Roman material from the site as a whole (most of which came from topsoil) this could be a residual find in a later feature.

**Trench 29 (T29):** Undated gully F3 was aligned NNE to SSW and was 0.62m wide by 0.07m deep.

**Trench 30 (T30):** Gully F7 was aligned NNW to SSE and was 0.57m wide by 0.18m deep. It was on a similar alignment to a drainage gully identified on the geophysical survey but contained twelve fragments of prehistoric pottery. Either the alignment is coincidental and this is a prehistoric gully, or the later drainage gully truncated a prehistoric feature. Undated pit F12 was also excavated.

**Trench 32 (T32):** Field boundary ditch F2 was aligned NNW to SSE and was 1.18m wide and 0.23m deep. It is present on early OS mapping (see Fig 9). Tree-throw F1 was also excavated.

**Trench 34 (T34):** Tree-throws F5 and F9 were excavated. Nineteen pieces of baked clay at 318g came from F9.

**Trench 35 (T35):** Tree-throws F4 and F10 were excavated.

**Photograph 1** Trench T2, looking west


**Photograph 2** Field boundary ditch F2, looking north.


**Photograph 3** Possible Roman pit F6, looking west

**Photograph 4** Trench T34, looking east

## 8.2 Pottery and ceramic building material from the trial-trenching evaluation

*by Dr Matthew Loughton*

### Methodology

Prehistoric pottery was recorded via the added temper, such as flint (HMF) or sand (HMS) while Roman pottery was classified according to the fabric groups outlined in *CAR* **10** (1999) and vessels classified via the Colchester (*Camulodunum*), henceforth Cam, type series (Hawkes & Hull 1947; Hull 1958; *CAR* **10** 1999, 468-487). The post-Roman pottery was recorded according to the fabric groups from *CAR* **7** (2000) and Cunningham (1985). All the pottery was recorded by sherd count, the number of rims, handles and bases, and weight for each fabric group. The number of vessels was determined by rim EVE (estimated vessel equivalent). Ceramic building material (henceforth CBM) was recorded by sherd count and weight.

The trial-trenching evaluation uncovered 63 sherds of pottery and CBM with a weight of just over 2.7kg (Table 4). There were rim sherds from 0.11 vessels (rim EVE) (Table 4). CBM accounts for most of this material by sherd count and by weight (Table 4).

| Ceramic material | no. | weight/g | MSW/g | Rim EVE |
|---|---|---|---|---|
| Pottery | 16 | 42 | 3 | 0.11 |
| CBM | 47 | 2,677 | 57 | - |
| **All** | **63** | **2,719** | **43** | **0.11** |

**Table 4** Details on the main types of ceramics and pottery

Pottery and ceramics finds were recovered from 13 features and one layer, although the majority of the finds came from F7 and F9 (Table 5).

| Context | Context type | no. | weight/g | MSW/g |
|---|---|---|---|---|
| F2 | Ditch | 4 | 83 | 21 |
| F6 | Pit | 1 | 51 | 51 |
| F7 | Gully | 12 | 18 | 2 |
| F8 | Ditch or drainage gully | 1 | 1 | 1 |
| F9 | Tree-throw | 19 | 318 | 17 |
| F11 | Pit/depression | 3 | 58 | 19 |
| F12 | Pit | 6 | 78 | 13 |
| F15 | Pit | 1 | 9 | 9 |
| F22 | Ditch | 5 | 18 | 4 |
| F23 | Ditch | 1 | 95 | 95 |
| F25 | Gully | 2 | 45 | 23 |
| F27 | Ditch | 1 | 728 | 728 |
| F30 | Pit | 2 | 79 | 40 |
| L1 | Top soil | 5 | 1138 | 228 |
| | **Total** | **63** | **2719** | **43** |

**Table 5** Quantities of pottery and CBM from specific features and contexts

**Pottery**
The small assemblage of pottery includes prehistoric, Roman and post-medieval material which was recovered from four features (Table 6).

| Feature | Feature type | no. | weight/g | MSW/g |
|---|---|---|---|---|
| F2 | Ditch | 1 | 13 | 13 |
| F7 | Gully | 12 | 18 | 2 |
| F22 | Ditch | 2 | 2 | 1 |
| F25 | Gully | 1 | 9 | 9 |
| | **Total** | **16** | **42** | **3** |

**Table 6** Quantities of pottery from specific features and contexts

Twelve small sherds of prehistoric handmade pottery tempered with sand (HMS) or flint (HMF) with a weight of 19g was recovered from gully F7.

There were two sherds of Roman pottery with a weight of 10g. Gully F25 contained a rim (EVE 0.04) from a Cam 307 globular bowl/jar in fabric CH (oxidised Hadham ware) which dates from the late 2nd to the early 3rd or 4th century AD (*CAR* **10** 1999, 482). A small possible sherd of coarse oxidised ware (fabric DJ) came from ditch F22.

Finally, two Staffordshire-type white earthenware (fabric 48D) plates or dishes (EVE 0.07), with blue transfer-printed willow pattern designs, dating to the 19th-20th century, were recovered from ditches F2 and F22.

**Ceramic building material (CBM)**
There were 47 sherds of CBM with a weight of nearly 2.7kg and this consists of a variety of Roman, medieval and post-medieval material (Table 7). Most of this assemblage consists of baked clay, peg-tile and Roman tile.

| CBM code | CBM type | no. | Weight/g | MSW/g |
|---|---|---|---|---|
| ***Roman*** | | | | |
| RT | Roman t*egula* | 4 | 1,025 | 256 |
| RFT | Roman flue tile | 1 | 113 | 113 |
| RBT | Roman brick or tile (general) | 1 | 51 | 51 |
| ***Post-Roman*** | | | | |
| PT | Peg-tile | 9 | 277 | 31 |
| BR | Brick | 2 | 747 | 374 |
| ***Undated*** | | | | |
| | Baked clay | 30 | 464 | 15 |
| | **Total** | **47** | **2,677** | **57** |

**Table 7** Ceramic building material by period and type

CBM was recovered from twelve features and one layer, although most of this material came from pit F9 and the other features only contained small assemblages (Table 8).

| Context | Context type | no. | Weight/g | MSW/g |
|---|---|---|---|---|
| F2 | Ditch | 3 | 70 | 23 |
| F6 | Pit | 1 | 51 | 51 |
| F8 | Ditch or drainage gully | 1 | 1 | 1 |
| F9 | Tree-throw | 19 | 318 | 17 |
| F11 | Pit/depression | 3 | 58 | 19 |
| F12 | Pit | 6 | 78 | 13 |
| F15 | Pit | 1 | 9 | 9 |
| F22 | Ditch | 3 | 16 | 5 |
| F23 | Ditch | 1 | 95 | 95 |
| F25 | Gully | 1 | 36 | 36 |
| F27 | Ditch | 1 | 728 | 728 |
| F30 | Pit | 2 | 79 | 40 |
| L01 | Topsoil | 5 | 1138 | 228 |
| | **Total** | **47** | **2677** | **57** |

**Table 8** Quantities of CBM by features and layers

**Roman CBM**
Except for one fragment of RBT (Roman brick or tile general) with a weight of 51g from pit F6, all the Roman CBM came from topsoil L1 and consisted of four sherds of *tegulae* with a weight of 1,025g and one thinner sherd, with a thickness of 16mm, possibly of Roman flue tile.

**Post-Roman CBM**
This consists of nine sherds of peg-tile with a weight of 277g which came from ditches F2, F22 and F23, gully F25, and from pit F30. Finally, there were two pieces of brick: one large unfrogged brick with dimensions of ? mm x 94 mm x 58 mm from ditch F27, and one small brick fragment (19g) from pit F30.

**Baked-clay**
Baked-clay was recovered from F8, F9 which contained a large part of this material (19 pieces at 318g), F11, F12 and F15.

**Conclusion**
Table 9 summarizes the dating evidence for the features which produced dateable pottery and/or ceramic finds. Gully F7 is prehistoric while the shallow pit could be Roman although this is based on the presence of only one sherd of Roman CBM. Most of the dateable features date to the medieval/post-medieval periods and the 19th-20th century. Five features (F8, F9, F11, F12, F15) which only produced baked-clay cannot be dated.

| Context | Prehistoric pottery | Roman pottery | Post-Roman pottery | CBM | Overall date approx. |
|---|---|---|---|---|---|
| F2 | - | - | F48D | PT | 19th-20th century |
| F6 | - | - | - | RBT | ?Roman |
| F7 | HMS HMF | - | - | - | Prehistoric |
| F22 | - | DJ | F48D | PT | 19th-20th century |
| F23 | - | - | - | PT | Medieval/post- medieval |
| F25 | - | CH Cam 307 (late 2nd-early 3rd/4th century) | - | PT | Medieval/post- medieval |
| F27 | - | - | - | BR | Post- medieval |
| F30 | - | - | - | PT BR | Medieval/post- medieval |

**Table 9** Approximate dates for the features

## 8.3 Non-ceramic finds from the trial-trenching evaluation
*by Laura Pooley*

During the evaluation every trench was metal-detected and the spoil heaps checked for finds. Two fragments of iron strip and two copper-alloy shotgun cartridge caps were found in post-medieval ditch F23 and modern ditch F24 respectively (see Table 10). Two iron nails also came from post-medieval pit F30.

| Context | Finds no. | Description |
|---|---|---|
| F23 | 14 | **Iron:** Two fragments of iron strip, flat with rectangular cross-section, 1) 70mm long, 33mm wide, 4mm thick, 2) 27mm long, 33mm wide, 4mm thick, total 36g, post-medieval. |
| F24 | 15 | **Copper-alloy:** Two shotgun cartridge caps, 19th-20th century. |
| F30 | 18 | **Iron nails:** 1) Complete, square-sectioned shank, flat round head (*c* 16mm diameter), 66.1mm long, 12g. 2) Complete, square-sectioned shank, small flat oval head (*c* 8.9 x 7.7mm), 30.3mm long, 2g. |

**Table 10** Metal finds from contexts

A small quantity of metalwork was recovered from topsoil and spoil from ten of the trenches. All of the finds have been catalogued under finds number 21, and are listed by trench in Table 11 below. Most, if not all, are likely to date from the 19th to the 20th century.

| Trench | Description |
|---|---|
| T1 | 1) Two fragments of scrap lead, 15.4g.<br>2) Lump of iron, 8.1g. |
| T2 | Fragment of scrap lead, 3.9g. |
| T4 | 1) Fragment of scrap lead, 10.7g.<br>2) Bronze ring, probably a machinery fitting, 29.8mm diameter, 2.2g. |

| | |
|---|---|
| T24 | 1) Copper-alloy machinery tag, incomplete, 5.8g, ...]CK INSPIRATOR / ...]K INSPIRATOR CO / ...].21 1870 APR. 24. 1878 / ...] 31. 1880 *(the Hancock Inspirator Company was based in the USA)*<br>2) Small screw, 1.2g. |
| T31 | 1) Small copper-alloy screw, 3.9g.<br>2) Fragment of copper-alloy, 1.1g. |
| T32 | 1) Iron nail shank, 4.3g.<br>2) Two small copper-alloy fittings, likely to be machinery parts, 1.8g. |
| T33 | Copper-alloy screw cap, 1.5g. |
| T36 | 1) Fragment of iron sheet, 32.5g.<br>2) Bronze ring, probably a machinery fitting, 19.4mm diameter, 1.1g.<br>3) Copper-alloy tag from the end of a zipper, 2.1g. |
| T37 | 1) Fragments of two iron fittings, likely to be machinery parts, 21.7g.<br>2) Small copper-alloy funnel-shaped object, possible machinery part, 10.2g.<br>3) Fragment of lead, 6.2g.<br>4) Small lead shot, 1.9g.<br>5) Button, four central fixing holes, GOODALL & GRAHAM CONDUIT STREET, 1.5g |
| T38 | Piece of rolled lead sheet, 56.8g. |

**Table 11** Metal-detected finds from trenches

Other finds include two pieces of burnt flint from tree-throw F5, oyster shell from post-medieval/ modern ditch F22 and post-medieval pit F30, and a fragment of slag from post-medieval ditch F25.

| Context | Finds no. | Description |
|---|---|---|
| F5 | 2 | **Burnt flint:** two pieces of burnt flint, cracked, crazed and burnt grey, white and pink, 21g. |
| F22 | 12 | **Oyster shell:** One fragment, 6g. |
| F25 | 17 | **Metalworking debris:** one fragment of slag, 10.5g. |
| F30 | 18 | **Oyster shell:** Five fragments, 20.4g. |

**Table 12** Other non-ceramic finds listed by context

All of the non-ceramic finds listed in this section will be discarded once this report has been approved.

### 8.4 Worked flints from the trial-trenching evaluation

*by Adam Wightman*

Eight potential work flints were collected during the fieldwork. The three flints from F5 (T34) were discarded as they were not humanly worked. A small flake with three broken edges and a crazed ventral face was recovered from F22 and another small flake was recovered from F8. Three worked flints were recovered from the ploughsoil (L1). A possible core was recovered from the ploughsoil in T34 and a small flake and a probable tool of convenience were recovered from T13. The tool of convenience is a small, broken piece which appears to have a neat line of scraper retouch along one edge.

This small assemblage of worked flints suggests limited activity in the area in the later prehistoric period (probably Late Neolithic – Bronze Age).

| Context | finds no. | artefact type | cortex % | soft/hard hammer | modification |
|---|---|---|---|---|---|
| L1 | 11 | flake | 45 | hard | |
| | | tool of convenience | 90 | | semi-abrupt |
| | 8 | ?core | 60 | | |

| | | | | | |
|---|---|---|---|---|---|
| F5 | 2 | 3 flint pieces with natural breaks | | | |
| F8 | 5 | flake | 65 | hard | |
| F22 | 12 | flake | 0 | | shallow |

**Table 13** Worked flints by context

### 8.5 Animal bone from the trial-trenching evaluation

*by Alec Wade*

The evaluation produced 55 pieces of animal and bird bone (total weight 232g) from three post-medieval/modern features and one of uncertain date (that might also be post-medieval/modern). The material was in poor surface condition and quite fragmented with occasional signs of dog gnawing, usually a good indicator of residuality within the finds from a context.

Cow (F31) and sheep or goat (F25) were identified in the assemblage (no distinction being possible between the two species due to a lack of diagnostic features) and fragments of bird bone from F2 may be of chicken. No cut or chop marks were noted on any of the material.

| Context | Type | Finds no. | No. pieces | Weight (g) | Comments |
|---|---|---|---|---|---|
| F2 | Post-medieval field boundary ditch | 1 | 2 | 4 | Femur and tibia fragments from a large (domestic fowl) sized bird. |
| F8 | Either an undated ditch or post-medieval/ modern drainage gully | 5 | 3 | 10 | Possible femur fragments from a medium to large sized mammal. Surface condition of the bone is extremely poor. |
| F25 | Post-medieval/ modern drainage gully | 17 | 1 | 6 | Fragment of a sheep or goat humerus that may have been slightly dog gnawed. |
| F31 | Post-medieval/ modern drainage gully | 19 | 49 | 212 | Fragments of a mature cow tibia and a metapodial in poor condition with signs of slight dog gnawing. |

**Table 14** Animal bone by context

## 9 Environmental assessment

*by Lisa Gray MSc MA ACIfA Archaeobotanist*

### Introduction

Two samples were presented for assessment. Five were taken but only these two produced flot and residue. Sample <2> is from an undated pit F18 (10L) and sample <5> is from irregular and undated linear depression F29 (40 L).

The aims of this assessment are to determine the significance and potential of the plant macro-remains in the samples, consider their use in providing information about diet, craft, medicine, crop-husbandry, feature function and environment.

#### Sampling and processing methods

Samples were taken and processed by Colchester Archaeological Trust. All samples were processed using a Siraf-type flotation device. Flot was collected in a 300 micron mesh sieve then dried.

Once with the author the flots were scanned under a low powered stereo-microscope with a magnification range of 10 to 40x. The whole flots were examined. The abundance, diversity and state of preservation of eco- and artefacts in each sample were recorded.

Identifications were made using uncharred reference material (author's own and the Northern European Seed Reference Collection at the Institute of Archaeology, University College London) and reference manuals (such as Beijerinck 1947; Cappers *et al.* 2006; Charles 1984; Jacomet

2006). Nomenclature for plants is taken from Stace (Stace 2010). Latin names are given once and the common names used thereafter.

At this stage, to allow comparison between samples, numbers have also been estimated but where only a very low number of items are present they have been counted. Identifiable charred wood >4mm in diameter has been separate from charred wood flecks. Fragments this size are easier to break to reveal the cross-sections and diagnostic features necessary for identification and are less likely to be blown or unintentionally moved around the site (Asouti 2006, 31; Smart & Hoffman 1988, 178-179). Charred wood flecks <4mm diameter have been quantified but not recommended for further analysis unless twigs or roundwood fragments larger then 2mmØ were present.

**Results**

Both flots were very small, 10ml for sample <2> and 5ml for sample <5> and not very productive. Both were dominated by uncharred root/rhizome fragments and low numbers of charcoal flecks too small to identify. Sample <2> contained a low number of charcoal fragments of identifiable size along with low numbers of uncharred segetal plant wild radish (*Raphanus raphanistrum* L.) seeds (fruits with no seeds).

**Recommendations**

No further work is recommended on these samples.

# 10 Conclusion

Archaeological investigations on land west of Dawes Lane, West Mersea revealed limited evidence of prehistoric, Roman and medieval activity on the development site. There was one possible prehistoric ditch, one possible Roman pit, and very small quantities of scattered prehistoric flint, Roman pottery, Roman CBM and medieval pottery in no significant concentrations. Post-medieval and modern finds dominated the fieldwalking and metal-detecting surveys, most of which were probably the result of agricultural activity. The geophysical survey identified only natural linears, historic field boundaries and drainage gullies. Six drainage gullies (or possible drainage gullies) and five field boundary ditches excavated during the evaluation were of post-medieval/modern date, and all of the field boundaries are visible on early OS maps of the area. Other excavated features comprised a medieval/post-medieval pit and 15 undated features (seven tree-throws, four pits, two gullies and two ditches).

# 11 Acknowledgements

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## 13 Abbreviations and glossary

| | |
|---|---|
| Anglo-Saxon | period from *c* 500 – 1066 |
| CAT | Colchester Archaeological Trust |
| CBCAA | Colchester Borough Council Archaeological Advisor |
| CBCPS | Colchester Borough Council Planning Services |
| CHER | Colchester Historic Environment Record |
| CIfA | Chartered Institute for Archaeologists |
| context | specific location of finds on an archaeological site |
| EHER | Essex Historic Environment Record |

| | |
|---|---|
| feature (F) | an identifiable thing like a pit, a wall, a drain: can contain 'contexts' |
| layer (L) | distinct or distinguishable deposit (layer) of material |
| medieval | period from AD 1066 to *c* 1500 |
| modern | period from *c* AD 1800 to the present |
| natural | geological deposit undisturbed by human activity |
| NGR | National Grid Reference |
| OASIS | **O**nline **A**cces**S** to the **I**ndex of Archaeological Investigation**S**, http://oasis.ac.uk/pages/wiki/Main |
| post-medieval | period from *c* AD 1500 to *c* 1800 |
| prehistoric | pre-Roman |
| Roman | the period from AD 43 to *c* AD 410 |
| section | (abbreviation sx or Sx) vertical slice through feature/s or layer/s |
| wsi | written scheme of investigation |

## 14 Contents of archive

**Finds:** Part of a box (most finds discarded, see above)

**Paper record**

One A4 document wallet containing:
The report (CAT Report 1499)
CBC evaluation brief, CAT written scheme of investigation
Original site record (feature and layer sheets, finds record, sections)
Site digital photos and log

**Digital record**

The report (CAT Report 1499)
CBC evaluation brief, CAT written scheme of investigation
Site digital photographs, thumbnails and log
Graphic files
Survey data

## 15 Archive deposition

The paper and digital archive is currently held by the Colchester Archaeological Trust at Roman Circus House, Roman Circus Walk, Colchester, Essex CO2 7GZ, but will be permanently deposited with Colchester Museum under ref. nos. ECC4387, ECC4388 and ECC4389.

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## Appendix 1 Fieldwalking finds

All weights in grammes; Med/pmed = medieval/post-medieval

| Km & Grid Square | Roman Pottery | | Medieval Pottery | | Post-medieval pottery | | Roman brick & tile | Med/pmed tile | Med/pmed brick | Burnt flint | Flakes | Cores | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | Wt. | No. | Wt. | No. | Wt. | Wt. | Wt. | Wt. | Wt. | No. | No. | |
| 8P | | | | | | | | 36.7 | | | | | |
| 8R | | | | | | | | 8.5 | | | | | |
| 8V | | | | | | | | 14.1 | | | | | |
| 8X | | | | | | | | 52.5 | | | | | |
| 9A | | | | | | | | | 54.6 | | | | |
| 9F | | | | | | | | | 11.7 | | | | |
| 9R | | | | | | | | | 5.3 | | | | |
| 9S | | | | | | | | | 8.8 | | | | |
| 9T | | | | | | | | 29.6 | | | | | |
| 9V | | | | | | | | 12.4 | | | | | |
| 9W | | | | | | | | 34.2 | | | | | |
| 9X | | | | | | | | | 5.6 | | | | |
| 16D | | | | | | | | 15.9 | 3.3 | | | | |
| 16E | | | | | | | | 16.5 | | | | | |
| 16G | | | | | | | | 29.7 | | | | | |
| 16I | | | | | | | | | 47.9 | | | | |
| 16J | | | | | | | | | | | | | Modern glass: 6.3g |
| 16M | | | | | | | | 32.7 | | | | 1 | Modern pottery: 1 at 1.5g |
| 16N | | | | | 1 | 8.0 | | | 1.3 | | | | |
| 16Y | | | | | | | | | 56.5 | | | | |
| 17A | | | | | | | | 33.5 | | | | | |
| 17C | | | | | | | | 19.8 | | | | | |
| 17D | | | | | | | | 4.9 | | | | | |
| 17G | | | | | | | | | | | | | Stone (natural): 19.5g |
| 17J | 1 | 5.9 | | | | | | | | | | | |
| 17K | | | | | | | | | | | | | Modern pottery: 1 at 25.8g |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **17N** | | | | | | | | | 5.3 | | | | |
| **17P** | | | | | | | | | | 11.5 | | | Modern pottery: 1 at 55.3g |
| **17Q** | | | | | | | | | 14.1 | | | | |
| **17R** | | | | | | | | 16.9 | | | | | |
| **17V** | | | | | | | | 9.2 | | | | | |
| **17X** | | | | | | | | | | | 1 | | |
| **17Y** | | | | | | | | | | | | | Modern pottery: 1 at 15.2g |
| **18A** | | | | | | | | 9.9 | | | | | |
| **18B** | | | | | | | | 9.9 | | | | | |
| **18C** | | | | | | | | 26.5 | 6.0 | | | | |
| **18D** | | | | | | | | 11.3 | | | | | |
| **18E** | | | | | | | | 43.9 | 77.7 | | | | |
| **18F** | | | | | | | | 14.7 | | | | | Oyster shell: 3.5g |
| **18M** | | | | | | | | 31.3 | 7.0 | | | | |
| **18N** | | | | | | | | | 102.6 | | | | |
| **18P** | | | | | | | | | 22.9 | | | | Modern pottery: 1 at 0.2g |
| **18Q** | | | | | | | | | 11.6 | | | | |
| **18S** | | | | | | | | 35.0 | | | | | |
| **18T** | | | | | | | | 17.4 | | | | | |
| **18V** | | | | | | | | | | | | | Modern pottery: 3 at 37.8g |
| **18W** | | | | | | | | | | | | | Modern pottery: 1 at 7.1g |
| **18Y** | | | | | | | | 24.2 | | | | | Modern pottery: 1 at 10g |
| **19C** | | | | | | | | 36.0 | | | | | |
| **19D** | | | | | | | | 36.2 | | | | | |
| **19H** | | | | | | | | 38.1 | | | | | |
| **19I** | | | | | | | | 25.5 | | | | | |
| **19K** | | | | | | | | 12.9 | | | | | |
| **19M** | | | | | | | | 7.4 | | | | | |
| **19N** | | | | | | | | 30.9 | | | | | |
| **19P** | | | | | | | | 33.6 | | | | | |
| **19S** | | | | | | | | | 31.7 | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **19T** | | | | | | | | | 3.3 | | | | |
| **19U** | | | | | | | | 16.3 | | | | | |
| **19W** | | | | | | | | 24.6 | | | | | |
| **19Z** | | | | | | | 140 | | | | | | Modern pottery: 1 at 2.9g |
| **20Q** | | | | | | | | 41.4 | | | | | Modern pottery: 1 at 21.6g |
| **20V** | | | | | | | | 23.1 | | | | | |
| **26D** | | | | | | | | | 46.1 | | | | |
| **26E** | | | | | | | | | | | | | Modern pottery: 1 at 6.6g |
| **26I** | | | | | | | | | | | | | Modern pottery: 1 at 4.7g |
| **26J** | | | | | | | | | | | | | Modern pottery: 1 at 9.3g |
| **26P** | | | | | | | | | | | | | Modern pottery: 1 at 1.8g |
| **26U** | | | | | 1 | 3.6 | | | | | | | Modern pottery: 1 at 26.0g |
| **27D** | | | | | | | 39 | 18.4 | | | | | |
| **27E** | | | | | | | | 15.2 | | | | | |
| **27F** | | | | | | | | 35.4 | | | | 1 | Modern pottery: 3 at 5.7g |
| **27G** | | | | | | | | | | | | | Modern pottery: 1 at 8.3g |
| **27L** | | | | | | | | | | | | | Slate: 11.6g |
| **27M** | | | | | | | | 49.0 | | | | | |
| **27Q** | | | | | | | | | | | | | Modern pottery: 2 at 21.2g |
| **27R** | | | | | 1 | 2.6 | | | 11.1 | | | | |
| **27S** | | | | | | | | | | | | | Modern pottery: 1 at 2.9g |
| **27T** | | | | | | | | | | | | | Modern pottery: 2 at 6.8g |
| **27U** | | | | | | | | 28.3 | | | | | |
| **27Y** | | | | | | | | | | | | | Modern pottery: 1 at 4.5g |
| **27Z** | | | | | | | | 16.9 | | | | | |
| **28C** | | | | | | | | 19.1 | | | | | |
| **28D** | | | | | 1 | 11.4 | | 45.7 | | | | | |
| **28E** | | | | | | | | 95.8 | | | | | |
| **28K** | | | | | | | | | | | | | Modern pottery: 1 at 27.9g |
| **28L** | | | | | | | | | | | | | Modern pottery: 2 at 30.8g |
| **28N** | | | | | | | | 37.9 | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **28P** | | | | | | | | 5.5 | | | | | |
| **28R** | | | | | | | | | | | | | Modern pottery: 1 at 16g |
| **28S** | | | | | | | | 11.6 | | | | | |
| **28U** | | | 1 | 4.2 | | | | 5.4 | | | | | |
| **29A** | | | | | | | | 32.9 | | | | | Modern pottery: 1 at 14.2g |
| **29B** | | | | | | | | 10.2 | | | | | |
| **29C** | | | | | 1 | 5.1 | | | | | | | |
| **29D** | | | | | | | | 56.6 | | | | | Modern glass: 3.3g |
| **29E** | | | | | | | | 63.7 | | | | | |
| **29G** | | | | | | | | 67.7 | | | | | |
| **29I** | | | | | | | | 32.6 | | | | | Modern pottery: 1 at 9.8g |
| **29K** | | | | | | | | 63.3 | | | | | |
| **29L** | | | | | | | | 29.4 | | | | | |
| **29N** | | | 1 | 8.0 | | | | 155.2 | | | | | |
| **29P** | | | | | 1 | 10 | | 37.1 | | | | | |
| **29Q** | | | 1 | 6.0 | | | | 120.2 | | | | | Oyster shell: 2.19g |
| **29R** | | | | | | | | 45.4 | | | | | Slate: 8.0g |
| **29S** | | | | | | | | 40.1 | | | | | Modern pottery: 1 at 5g |
| **29T** | | | | | 1 | 9.9 | | 58.0 | | | | | Modern glass: 6.1g; Oyster shell: 3.5g |
| **29U** | | | | | 2 | 5.1 | | 173.5 | | | | | Modern pottery: 1 at 11g |
| **29V** | | | | | | | | 31.4 | | | | | |
| **29W** | | | 1 | 9.3 | | | | 31.0 | | | | | |
| **30A** | | | | | | | | 4.1 | 33.0 | | | | Modern pottery: 1 at 2.2g; Stone: 76.4g |
| **30B** | | | | | | | | | 27.4 | | | | |
| **30F** | | | | | | | | | 53.8 | | | | Animal bone (modern): 13.6g |
| **30G** | | | | | | | | 10.2 | | | | | Animal bone (modern): 10.1g |
| **30H** | | | | | | | | 40.6 | | | | | |
| **30Q** | | | | | | | | 20.2 | | | | | |
| **37B** | | | | | | | | 27.3 | | | | | |
| **37D** | | | | | | | | 23.1 | | | | | |
| | | | | | | | | | | | | | |

| Statistical analysis | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Σx** | | 5.90 | | 27.50 | | 55.7 | 179 | 2475.2 | 1447.8 | 11.5 | 1 | 2 | |
| **Σx²** | | 34.81 | | 204.13 | | 463.71 | 21121 | 147339.36 | 687074.06 | 132.25 | 1 | 2 | |
| **Σx² / n (227)** | | 0.15 | | 0.90 | | 2.04 | 93.04 | 649.07 | 3026.76 | 0.58 | 0.00 | 0.01 | |
| **μ** | | 0.03 | | 0.12 | | 0.24 | 0.79 | 10.90 | 6.38 | 0.05 | 0.00 | 0.01 | |
| **μ²** | | 0.00 | | 0.01 | | 0.05 | 0.62 | 118.90 | 40.68 | 0.00 | 0.00 | 0.00 | |
| **Σx² / n - μ²** | | 0.15 | | 0.89 | | 1.99 | 92.42 | 530.18 | 2986.08 | 0.58 | 0.00 | 0.01 | |
| **σ** | | 0.39 | | 0.94 | | 1.41 | 9.61 | 23.03 | 54.65 | 0.76 | 0.07 | 0.09 | |
| **+1σ** | | 0.42 | | 1.06 | | 1.65 | 10.40 | 33.93 | 61.02 | 0.81 | 0.07 | 0.10 | |
| **+2σ** | | 0.81 | | 2.00 | | 3.06 | 20.01 | 59.96 | 115.67 | 1.57 | 0.14 | 0.20 | |

**Key**
n = number of 20m boxes walked
Σx = sum of the find-type
Σx² = sum of the individual find-types individually squared
μ = mean of the find-type per 20m box
σ = standard deviation of the find-type
+1σ = mean +1 standard deviation of the find-type (+1 sd)
+2σ = mean +2 standard deviations of the find-type (+2 sd)

## Appendix 2 Identification of the fieldwalking pottery and flint

**Pottery** *by Dr Matthew Loughton*

| Km & grid square | Fabric | Fabric name | No. | Weight g | Date |
|---|---|---|---|---|---|
| 16M | F48D | Staffordshire-type white earthenwares | 1 | 1.5 | 19th-20th century |
| 16N | F40 | Post-medieval red earthenwares | 1 | 8.0 | *c* 1500-19th/20th century |
| 17J | GX | Other coarse, principally locally-produced grey wares | 1 | 5.9 | Roman |
| 17K | F48D | Staffordshire-type white earthenwares | 1 | 25.8 | 19th-20th century |
| 17P | F45M | Modern English stoneware | 1 | 55.3 | 19th-20th century |
| 17Y | F48D | Staffordshire-type white earthenwares | 1 | 15.2 | 19th-20th century |
| 18P | F48D | Staffordshire-type white earthenwares | 1 | 0.2 | 19th-20th century |
| 18V | F45M | Modern English stoneware | 1 | 33.0 | 19th-20th century |
| 18V | F48D | Staffordshire-type white earthenwares | 2 | 4.8 | 19th-20th century |
| 18W | F45M | Modern English stoneware | 1 | 7.1 | 19th-20th century |
| 18Y | F21A | Colchester-type ware | 1 | 10 | Medieval, *c* 1200-1550 |
| 19Z | F45M | Modern English stoneware | 1 | 2.9 | 19th-20th century |
| 26E | F48D | Staffordshire-type white earthenwares | 1 | 6.6 | 19th-20th century |
| 26I | F48D | Staffordshire-type white earthenwares | 1 | 4.7 | 19th-20th century |
| 26J | F48D | Staffordshire-type white earthenwares | 1 | 9.3 | 19th-20th century |
| 26P | F48D | Staffordshire-type white earthenwares | 1 | 1.8 | 19th-20th century |
| 26U | F48D | Staffordshire-type white earthenwares | 1 | 26.0 | 19th-20th century |
| 26U | F40 | Post-medieval red earthenwares | 1 | 3.6 | *c* 1500-19th/20th century |
| 27F | F45M | Modern English stoneware | 1 | 3.0 | 19th-20th century |
| 27F | F48D | Staffordshire-type white earthenwares | 2 | 2.7 | 19th-20th century |
| 27G | F48D | Staffordshire-type white earthenwares | 1 | 8.3 | 19th-20th century |
| 27Q | F45M | Modern English stoneware | 1 | 14.0 | 19th-20th century |
| 27Q | F48D | Staffordshire-type white earthenwares | 1 | 7.2 | 19th-20th century |
| 27R | F40 | Post-medieval red earthenwares | 1 | 2.6 | *c* 1500-19th/20th century |
| 27S | F48D | Staffordshire-type white earthenwares | 1 | 2.9 | 19th-20th century |
| 27T | F48D | Staffordshire-type white earthenwares | 2 | 6.8 | 19th-20th century |
| 27Y | F48D | Staffordshire-type white earthenwares | 1 | 4.5 | 19th-20th century |
| 28D | F40 | Post-medieval red earthenwares | 1 | 11.4 | *c* 1500-19th/20th century |
| 28K | F45M | Modern English stoneware | 1 | 27.9 | 19th-20th century |
| 28L | F45M | Modern English stoneware | 2 | 30.8 | 19th-20th century |
| 28R | F48D | Staffordshire-type white earthenwares | 1 | 16.0 | 19th-20th century |
| 28U | F21A | Colchester-type ware | 1 | 4.2 | Medieval, *c* 1200-1550 |
| 29A | F48D | Staffordshire-type white earthenwares | 1 | 14.2 | 19th-20th century |
| 29C | F40 | Post-medieval red earthenwares | 1 | 5.1 | *c* 1500-19th/20th century |
| 29I | F48D | Staffordshire-type white earthenwares | 1 | 9.8 | 19th-20th century |
| 29N | F21A | Colchester-type ware | 1 | 8.0 | Medieval, *c* 1200-1550 |
| 29P | F40 | Post-medieval red earthenwares | 1 | 10 | *c* 1500-19th/20th century |
| 29Q | F21A | Colchester-type ware | 1 | 6.0 | Medieval, *c* 1200-1550 |
| 29S | F48D | Staffordshire-type white earthenwares | 1 | 5.0 | 19th-20th century |
| 29T | F40 | Post-medieval red earthenwares | 1 | 9.9 | *c* 1500-19th/20th century |

| | | | | | |
|---|---|---|---|---|---|
| 29U | F40 | Post-medieval red earthenwares | 2 | 5.1 | *c* 1500-19th/20th century |
| 29U | F48D | Staffordshire-type white earthenwares | 1 | 11.0 | 19th-20th century |
| 29W | F21A | Colchester-type ware | 1 | 9.3 | Medieval, *c* 1200-1550 |
| 30A | F48D | Staffordshire-type white earthenwares | 1 | 2.2 | 19th-20th century |

**Flint** *by Adam Wightman*

| **Km & grid square** | **Description** | **Date** |
|---|---|---|
| 16M | Probable flake core | Later prehistoric (Mesolithic to Bronze Age) |
| 17X | Small secondary flake, four previous removals, evidence of usewear/edge damage | |
| 27F | Probable flake core | |

## Appendix 3 Context list for the trial-trenching evaluation

| Context number | Trench number | Finds number | Context type | Description | Date |
|---|---|---|---|---|---|
| L1 | All | 8, 11 | Topsoil | Soft, moist dark grey/brown sandy-silt | Modern |
| L2 | All | - | Subsoil | Firm, moist medium grey/brown sandy-silty-clay with occasional small stones | Undatable |
| L3 | All | - | Natural | Hard, moist medium orange/brown clay | Post-glacial |
| | | | | | |
| F1 | T32 | - | Tree-throw | Firm, moist medium grey/brown sandy-silt | Undated |
| F2 | T32 | 1 | Field boundary ditch | Hard, dry medium grey/brown sandy-silty-clay with 2% CBM fragments, 5% pottery fragments and CBM flecks | Post-medieval / modern |
| F3 | T29 | - | Gully | Soft, moist light yellow/grey/brown silty-clay with daub flecks and 1% stones | Undated |
| F4 | T35 | - | Tree-throw | Firm, moist light/medium grey/brown clay | Undated |
| F5 | T34 | 2 | Tree-throw | Firm/hard, moist light/medium orange/grey/brown silty-clay | Undated |
| F6 | T28 | 3 | Pit | Firm, moist medium grey/brown sandy-silty-clay | ?Roman |
| F7 | T30 | 4 | Gully | Soft, hard dry/moist medium grey/brown silty-clay and 5% pot fragments | ?Prehistoric |
| F8 | T27 | 5 | Ditch or drainage gully | Firm, dry/moist medium grey/brown silty-clay with charcoal flecks and 3% stones | Uncertain |
| F9 | T34 | 6 | Tree-throw | Firm, moist light/medium grey/brown silty-clay with daub flecks | Undated |
| F10 | T35 | - | Tree-throw | Firm, moist light yellow/grey clayey-silt | Undated |
| F11 | T24 | 7 | Pit/ depression | Firm, moist medium grey/brown silty-clay with daub flecks | Undated |
| F12 | T30 | 9 | Pit | Firm, moist medium grey/brown sandy-silt | Undated |
| F13 | T22 | - | Tree-throw | Firm, moist medium orange/grey/brown clayey-silt | Undated |
| F14 | T21 | - | Gully | Firm, moist medium grey/brown sandy-silty-clay | Undated |
| F15 | T26 | 10 | Pit | Firm, moist light grey/brown silty-clay with charcoal and daub flecks and 3% stones | Undated |
| F16 | T19 | - | Drainage gully | Soft, light orange/grey clayey-silt | Post-medieval |
| F17 | T23 | - | Ditch | Firm/hard, moist medium grey/brown silty-clay | Undated |
| F18 | T15 | - | Pit | Firm, moist medium grey/brown sandy-silt with charcoal flecks | Undated |
| F19 | T6 | - | Tree-throw | Light/medium, grey/brown clayey-silt | Undated |
| F20 | T7 | - | Gully (?drainage gully) | Friable, moist medium orange/grey/brown clayey-silt | ?Post-medieval |
| F21 | T7 | - | Gully (?drainage gully) | Firm, moist light yellow/orange/brown clayey-silt | ?Post-medieval |
| F22 | T12 | 12 | Field boundary Ditch | Firm/hard, dry/moist medium green/brown silty-clay with charcoal flecks | Post-medieval / modern |
| F23 | T18 | 13, 14 | Field Boundary Ditch | Hard, dry light grey/brown sandy-silty-clay with charcoal and CBM flecks and 5% stones | Post-medieval |
| F24 | T18 | 15 | Field Boundary Ditch | Firm/hard, dry medium grey/brown sandy silty-clayey-loam | Post-medieval / modern |

| | | | | | |
|---|---|---|---|---|---|
| F25 | T5 | 17 | ?Drainage gully | Firm moist medium grey/brown clayey-silt | Post-medieval / modern |
| F26 | T11 | - | Drainage gully | Soft, moist light yellow/grey/brown silty-clay with charcoal and daub flecks and 2% stones | Post-medieval / modern |
| F27 | T4 | 16 | Field Boundary Ditch | Firm, moist medium green/brown silty-clay | Post-medieval |
| F28 | T1 | - | Natural linear | Firm, moist light grey/brown silty-clay and 1% stones | Post-glacial |
| F29 | T2 | - | Irregular linear depression | Firm, moist light grey/brown sandy-silty-clay | Undated |
| F30 | T5 | 18 | Pit | Firm, moist medium/dark grey/brown clayey-silt | Medieval / post-medieval |
| F31 | T3 | 19 | ?Drainage gully | Firm, moist medium/dark grey/brown silty-clay | Post-medieval / modern |
| F32 | T6 | - | ?Natural feature | Firm moist light grey/brown sandy silty clay | Post-glacial |

## Appendix 4 Pottery from the trial-trenching evaluation

| Context | Feature type | Find no. | Find Type | Nr | Wg | MSW | Discard | Rim | Handle | Base | Decoration | STAMP | GRAF Pre-F | GRAF Post-F | Wmd Int | Wmd Ex | Soot Int | Soot Ex | Burn Int | Burn Ext | Residue | Abraded | Wear (modif) | Repair hole | Fabric Grp | Fabric type | Typology | Vessel function | EVE | Diam. | Comments | Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F02 | Ditch | 1 | Pottery | 1 | 13 | 13 | | 1 | 0 | 0 | WILLP | | | | | | | | | | | | | | F48D | Fineware | | 5 Dish/plate | 5 | 220 | | 19th-20th century |
| F07 | Gully | 4 | Pottery | 10 | 14 | 1 | | | | | | | | | | | | | | | | | | | HMS | Coarseware | | | | | Brown surface, black core | Prehistoric |
| F07 | Gully | 4 | Pottery | 2 | 4 | 2 | | | | | | | | | | | | | | | | | | | HMF | Coarseware | | | | | Orange | Prehistoric |
| F22 | Ditch | 12 | Pottery | 1 | 1 | 1 | | 1 | 0 | 0 | WILLP | | | | | | | | | | | | | | F48D | Fineware | | 5.3 Plate | 2 | ? | | 19th-20th century |
| F22 | Ditch | 12 | Pottery | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | DJ | Coarseware | | | | | ? | Roman |
| F25 | Ditch | 17 | Pottery | 1 | 9 | 9 | | 1 | 0 | 0 | | | | | | | | | | | | | | | CH | Fineware | Cam 307 | 4 Bowl-jar | 4 | 160 | Fresh, nr Hadham oxidised | Late 2nd to early 3rd/4th century |

## Appendix 5 Ceramic building material from the trial-trenching evaluation

| Context | Feature type | Find no. | Find Type | Nr | Wg | MSW | Discard | Typology | Sub-type | Flange corner | Flange fr Left | Flange fr Right | Flange Back left | Flange back Right | NR Flange | LCA | LCA Length | UCA | UCA length | FL Height | FL width | FL thickness | STAMP | Signature | Tally Mark | GRAF Post-F | Animal print | Shoe print | Scored | Combed | Roller stamp | Circ. Vent | Rect. Vent | Blocked vent | Mortar | Burn Int | Burn Ext | Abraded | Wear (modif) | Comments | Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F02 | Ditch | 1 | CBM | 3 | 70 | 23 | | PT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Medieval-Post Medieval |
| F06 | Pit | 3 | CBM | 1 | 51 | 51 | | RBT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Roman |
| F08 | Ditch/gully | 5 | CBM | 1 | 1 | 1 | | Baked clay | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? |
| F09 | Tree throw | 6 | CBM | 19 | 318 | 17 | | Baked clay | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? |
| F11 | Pit | 7 | CBM | 3 | 58 | 19 | | Baked clay | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? |
| F12 | Pit | 9 | CBM | 6 | 78 | 13 | | Baked clay | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? |
| F15 | Pit | 10 | CBM | 1 | 9 | 9 | | Baked clay | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | ? |
| F22 | Ditch | 12 | CBM | 3 | 16 | 5 | | PT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Medieval-Post Medieval |
| F23 | Ditch | 13 | CBM | 1 | 95 | 95 | | PT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Medieval-Post Medieval |
| F25 | Gully | 17 | CBM | 1 | 36 | 36 | | PT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Medieval-Post Medieval |
| F27 | Ditch | 16 | CBM | 1 | 728 | 728 | | BR | Un-frogged BR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? x 94 x 58mm, brown to purple, curved top | Post-Medieval |
| F30 | Pit | 18 | CBM | 1 | 60 | 60 | | PT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Medieval-Post Medieval |
| F30 | Pit | 18 | CBM | 1 | 19 | 19 | | BR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Medieval-Post Medieval |
| L01 | Top soil | 20 | CBM | 1 | 506 | 506 | | RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 32 mm thick | Roman |
| L01 | Top soil | 20 | CBM | 2 | 183 | 92 | | RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Roman |
| L01 | Top soil | 20 | CBM | 1 | 336 | 336 | | RT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 32 mm thick | Roman |
| L01 | Top soil | 20 | CBM | 1 | 113 | 113 | | RFT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ? thinner 16 mm, FT rather than teg? | Roman |

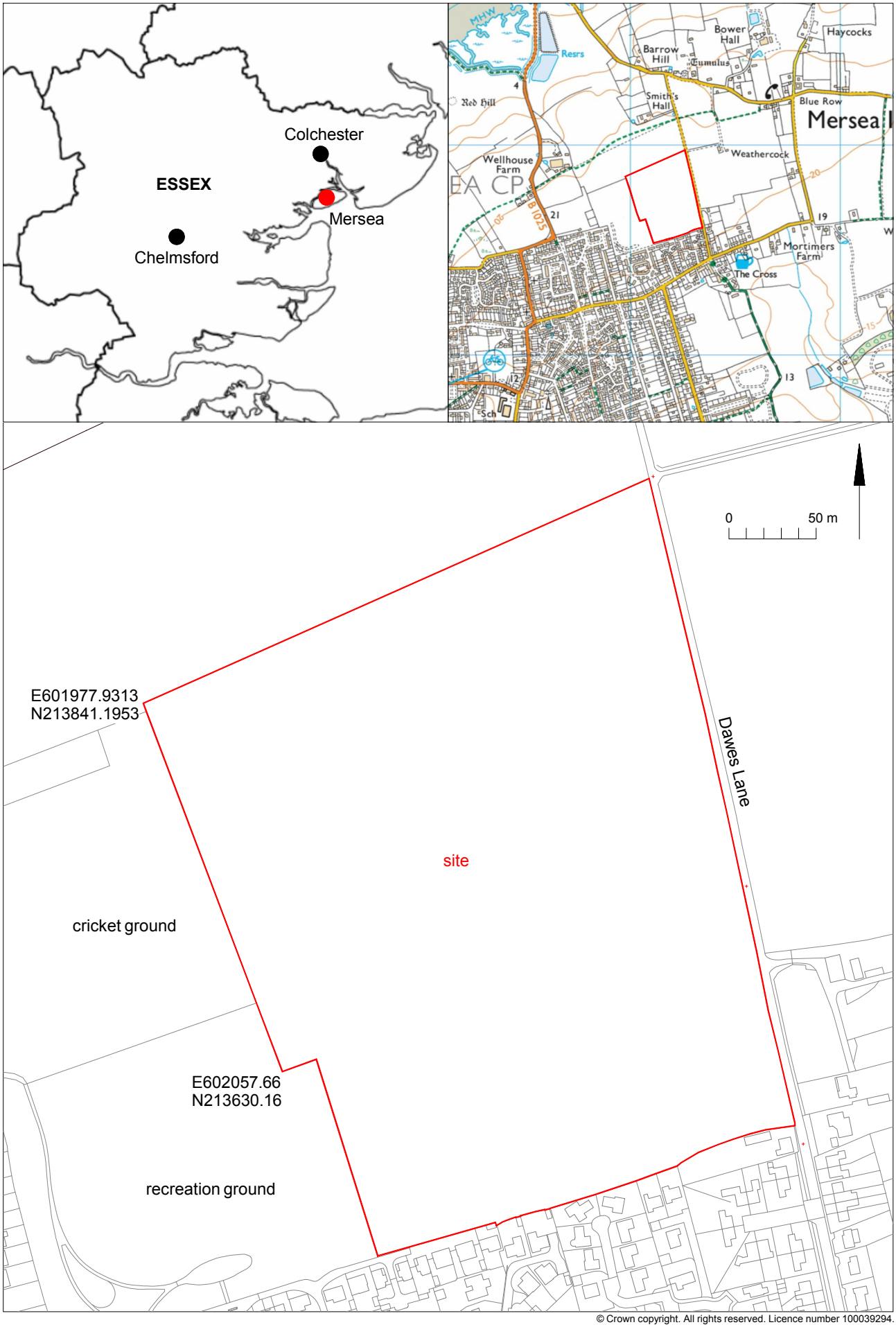


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Fig 1 Site location

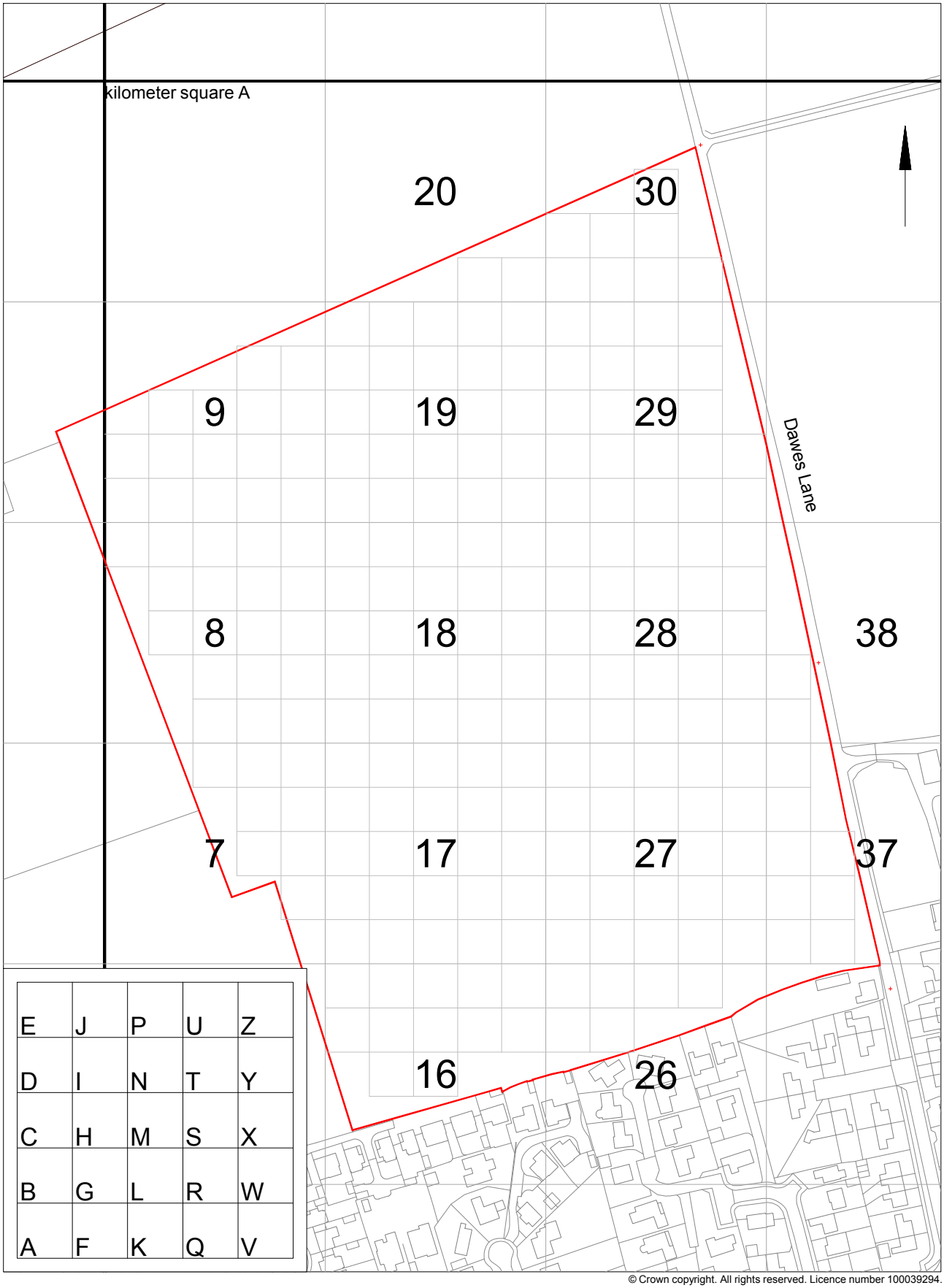


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Fig 2 Field-walking and metal-detecting survey grid.
The kilometre square is divided into numbered hectare squares which are further sub-divided into 20m square boxes, labelled A-Z (excluding O).

0 100 m

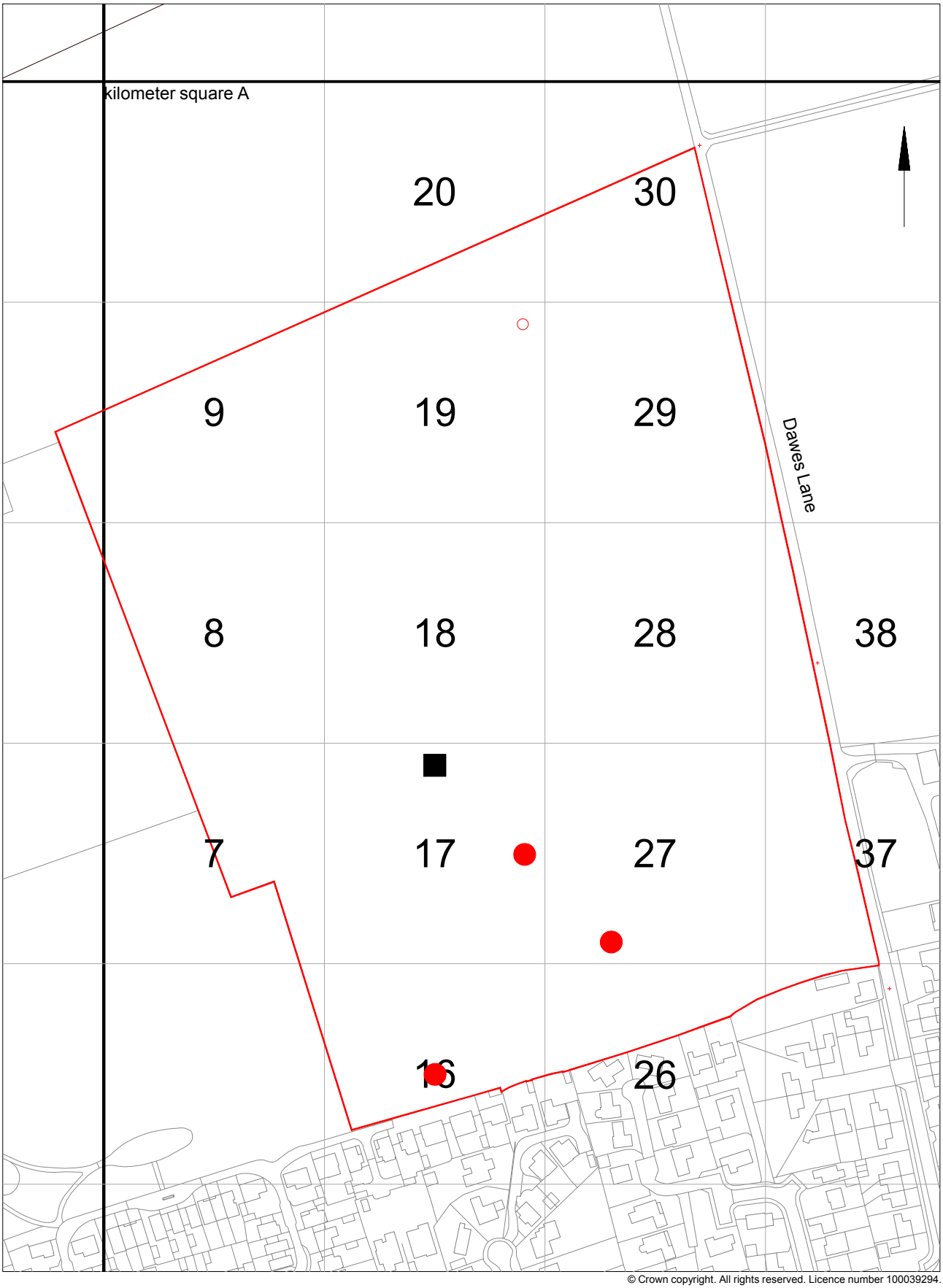


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Fig 3 Results of fieldwalking survey: worked and burnt flint.

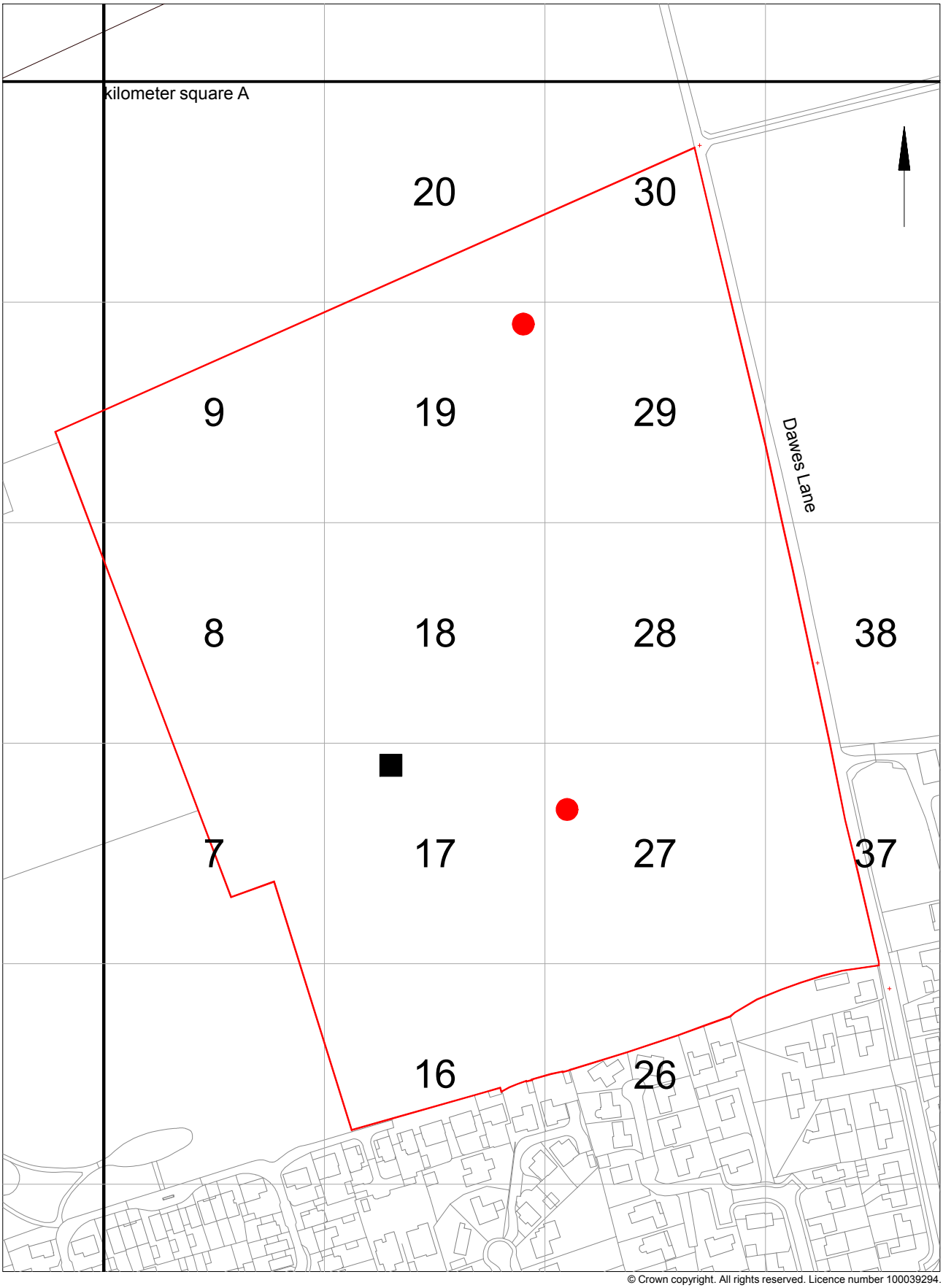


Fig 4 Results of fieldwalking survey: Roman finds.

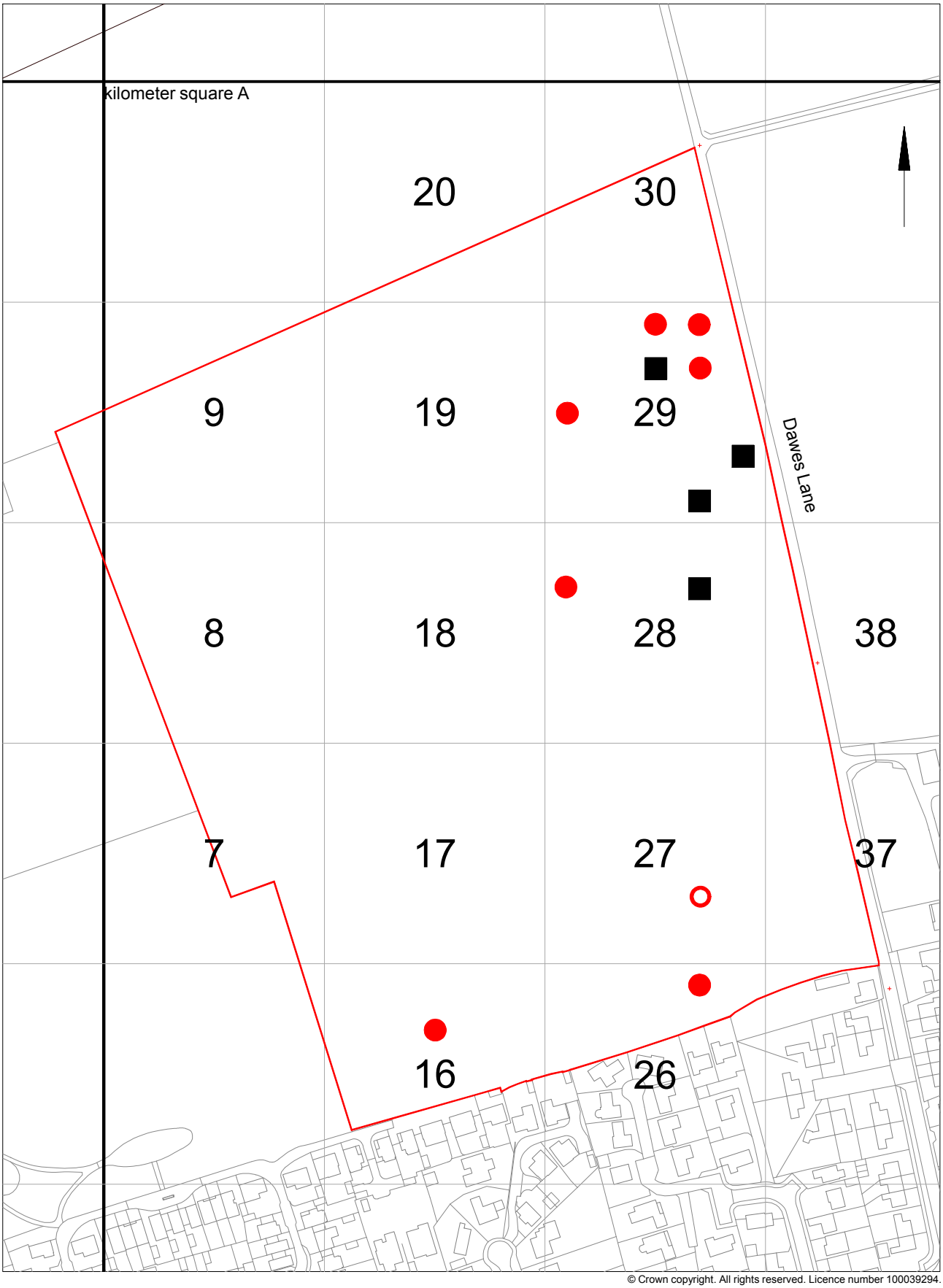


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Fig 5 Results of fieldwalking survey: medieval and post-medieval pottery.

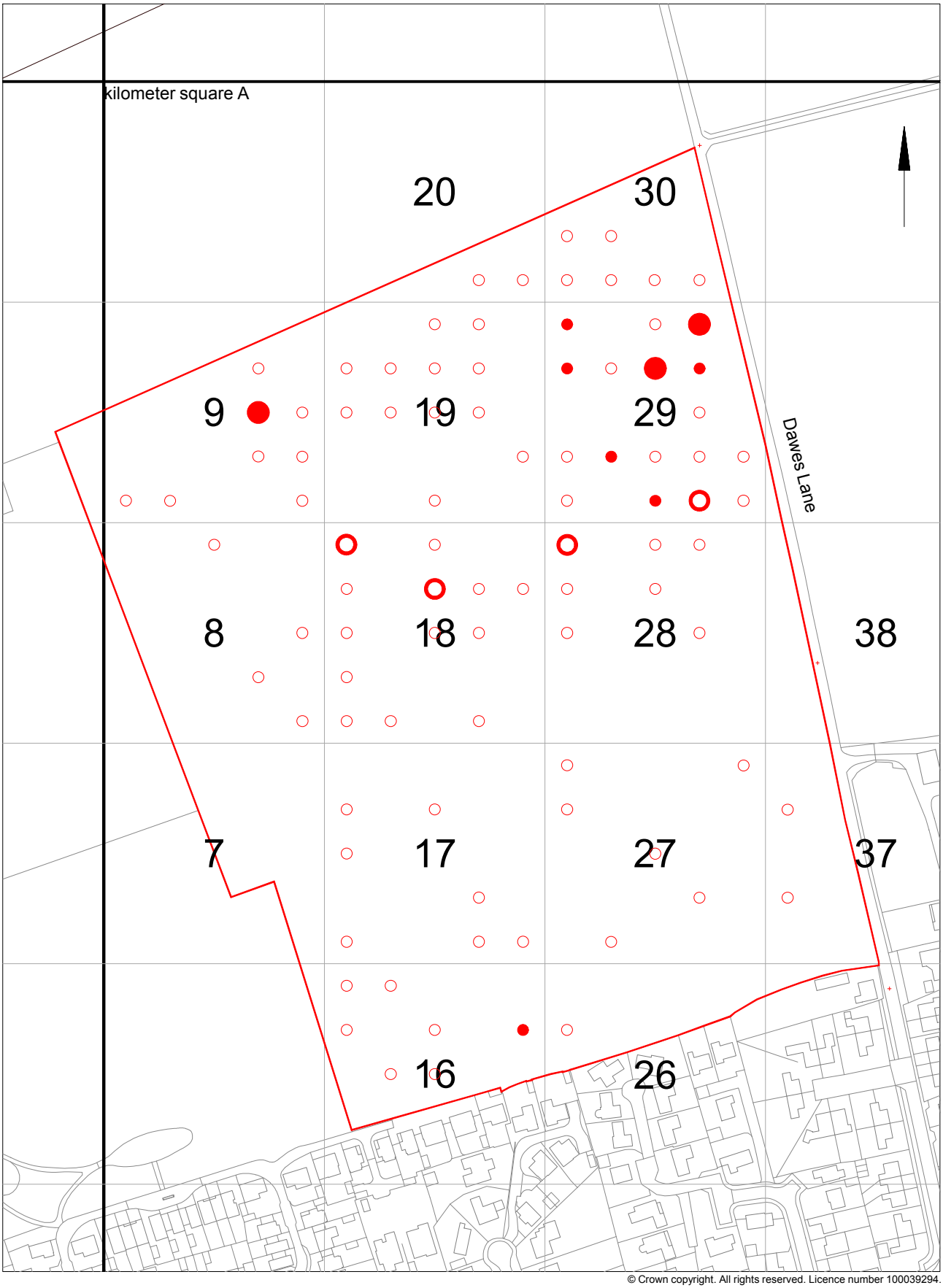


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Fig 6 Results of fieldwalking survey: medieval/post-medieval CBM.

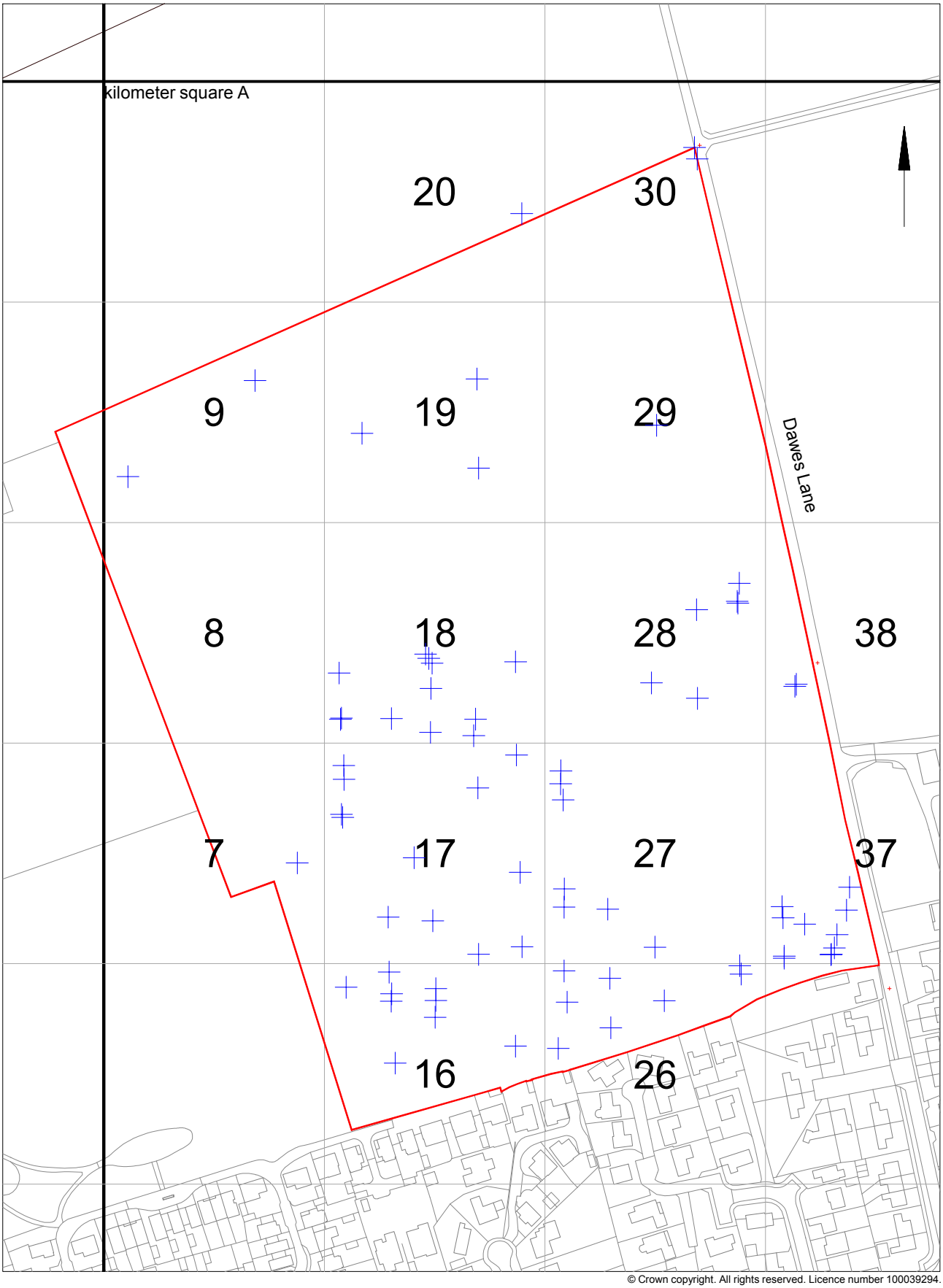


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Fig 7 Results of metal-detecting survey.

metal-detected find

0 100 m

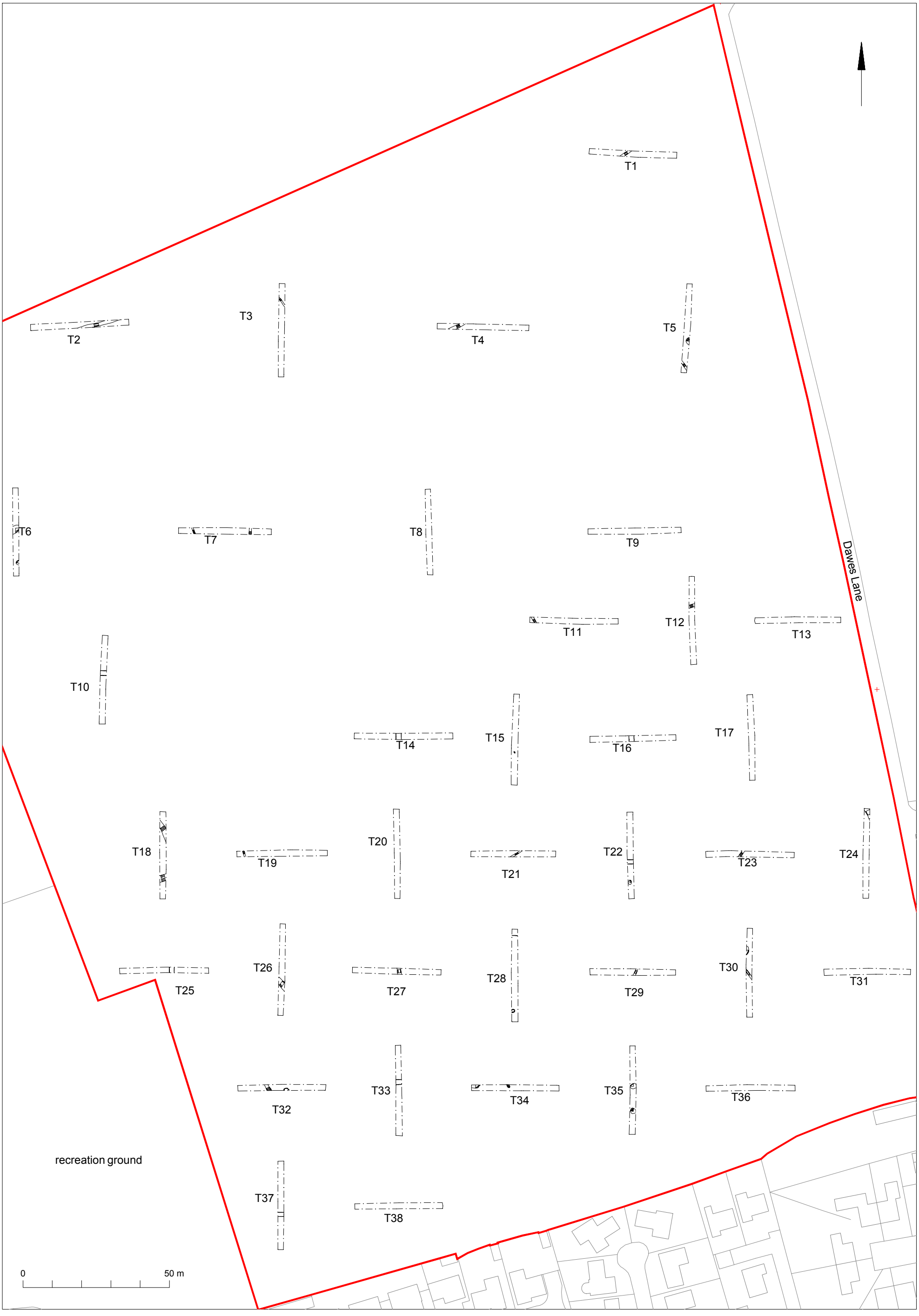


Fig 8 Trial-trenching evaluation results.

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Fig 9 Trial-trenching evaluation results overlaid onto the geophysical survey and historic mapping (see Appendix 6 at the end of this report for full details and a key of the geophysical survey).

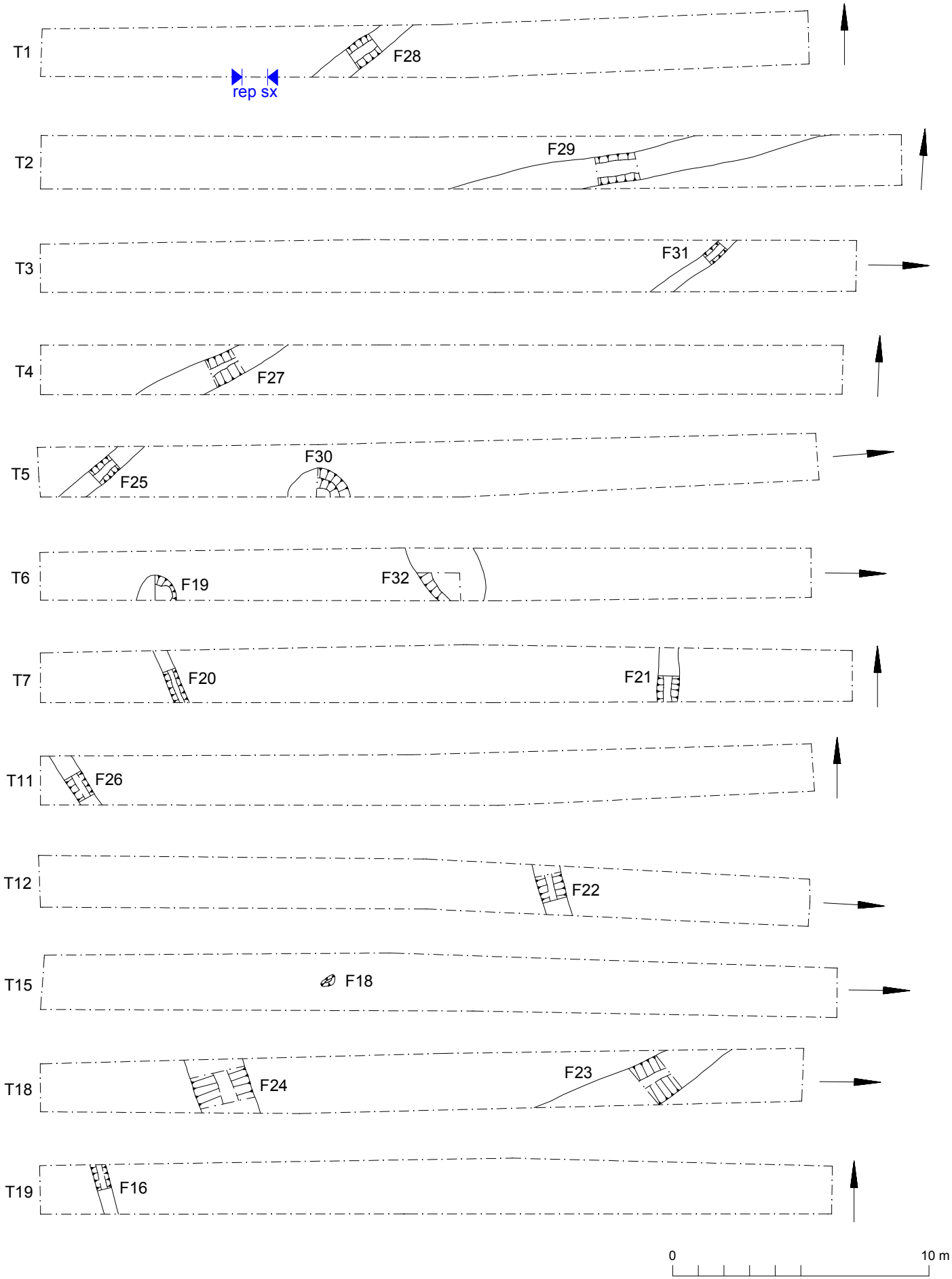


Fig 10 Detailed trench plans: T1, T2, T3, T4, T5, T6, T7, T11, T12, T15, T18 and T19

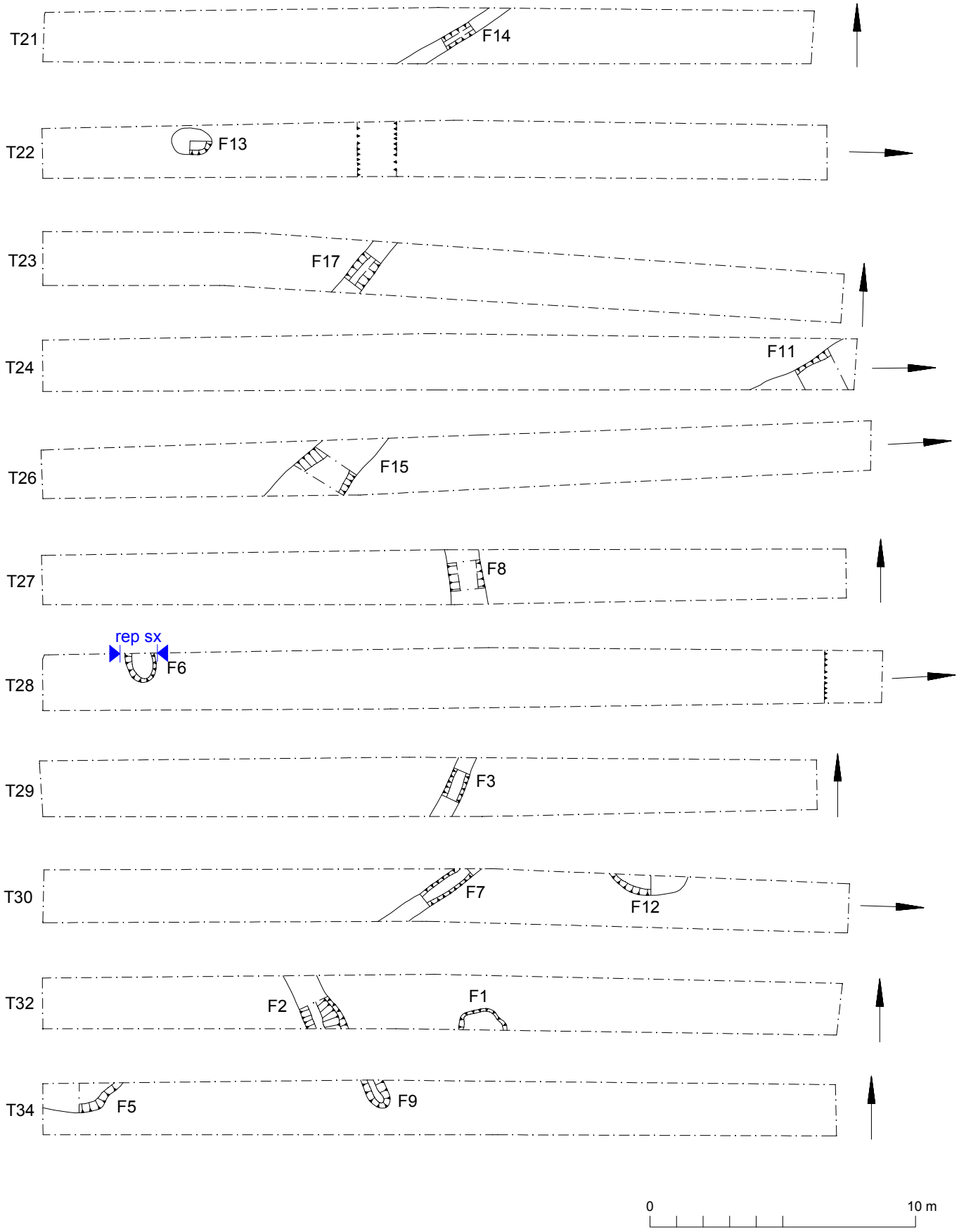


Fig 11 Detailed trench plans: T21, T22, T23, T24, T26, T27, T28, T29, T30, T32 and T34

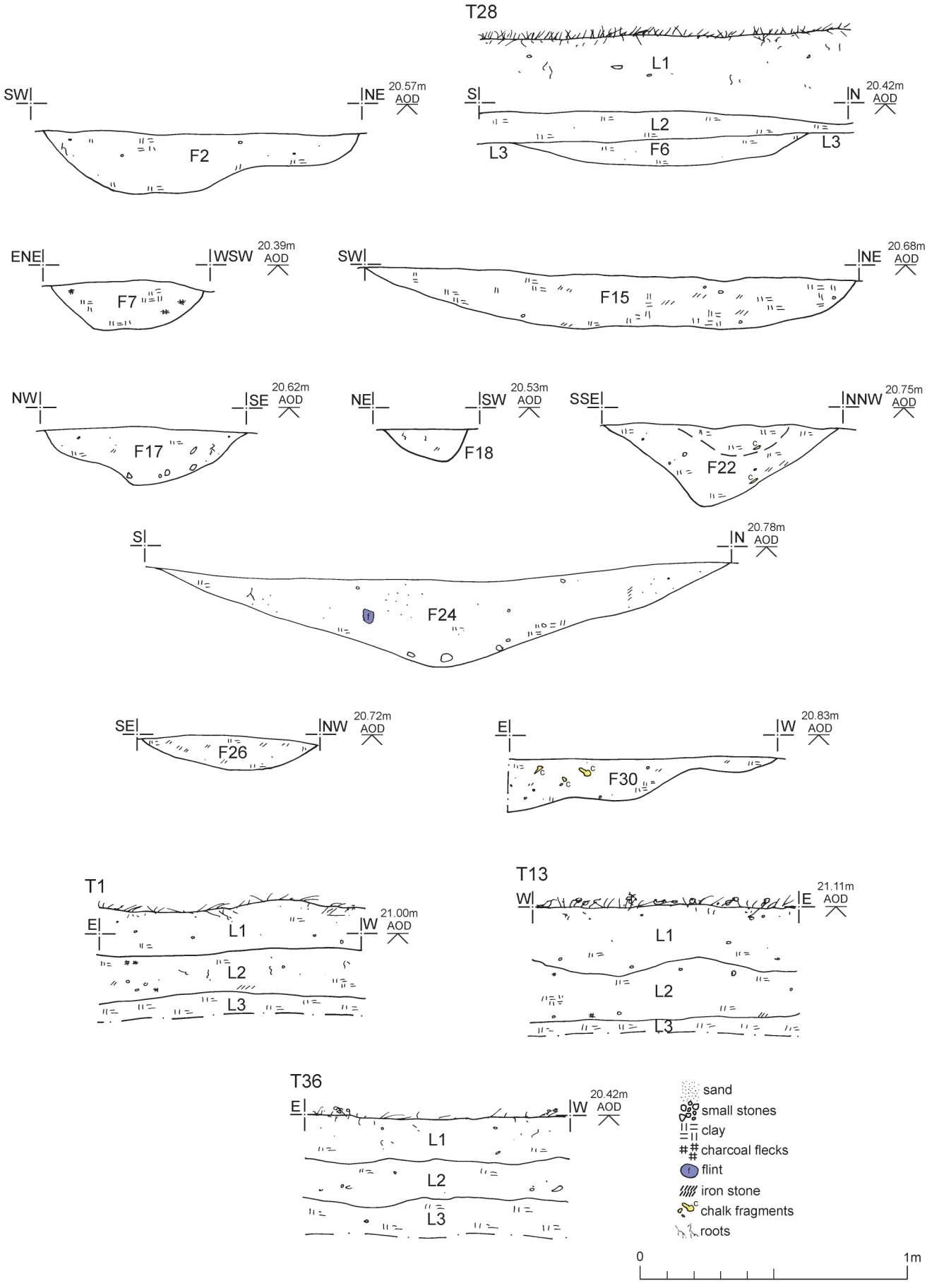


Fig 12 Feature and representative sections.

# Essex Historic Environment Record/
# *Essex Archaeology and History*

## Summary sheet

| | |
|---|---|
| ***Address:*** **Land to the west of Dawes Lane, West Mersea, Essex, CO5 8GJ** | |
| ***Parish:*** Colchester | ***District:*** Mersea |
| ***NGR:*** TM 021 137 (centre) | ***Site code:***<br>CAT project refs.: 19/10a (fieldwalking & metal-detecting) and 19/10b (geophysics & evaluation)<br>CHER refs.: ECC 4387 (Geophysics), ECC4388 (fieldwalking & metal detecting) and ECC4389 (evaluation)<br>OASIS refs.: colchest3-369801 (fieldwalking & metal detecting), colchest3-369807 (evaluation) & magnitud1-371656 (geophysics) |
| ***Type of work:***<br>Fieldwalking, metal-detecting and geophysical surveys, and evaluation | ***Site director/group:***<br>Colchester Archaeological Trust |
| ***Date of work:***<br>28th October to 4th November 2019 | ***Size of area investigated:***<br>10.32ha |
| ***Location of curating museum:***<br>Colchester museum | **Funding source:**<br>Developer |
| ***Further seasons anticipated?***<br>Not known | ***Related CHER/SMR number:***<br>CHER MCC4746, MCC4894, MCC6928, MCC8776, MCC8779, MCC8813, MCC8930 |
| ***Final report:*** CAT Report 1499 | |
| ***Periods represented:*** Prehistoric, Roman, medieval, post-medieval & modern | |
| **Summary of fieldwork results:**<br>Archaeological fieldwalking, metal-detecting and geophysical surveys plus a trial-trenching evaluation (36 trenches) was carried out on land to the west of Dawes Lane, West Mersea, Essex in advance of the construction of a hundred residential dwellings. The development site is located in an area surrounded by cropmarks and is 450m south of Mersea Barrow. The fieldwalking survey revealed very small scatters of prehistoric, Roman and medieval material, with post-Roman tile/brick and post-medieval and modern pottery dominating the assemblage. Similarly, the metal-detecting survey only produced post-medieval/modern agricultural ironwork and modern waste material. The geophysical survey identified natural linears, historic field boundaries and drainage gullies. Five post-medieval/modern field boundary ditches and six drainage gullies were excavated during the trial-trenching evaluation along with a medieval/post-medieval pit, a possible Roman pit, a possible prehistoric ditch and 15 undated features (seven tree-throws, four pits, two gullies and two ditches). | |
| ***Previous summaries/reports:*** Pridmore, R. 2019. *Land off Dawes Lane, West Mersea: Archaeological Desk-Based Assessment.* Oxford Archaeology. | |
| ***CBC monitor:*** Jess Tipper | |
| ***Keywords:*** - | ***Significance:*** * |
| ***Author of summary:***<br>Laura Pooley | ***Date of summary:***<br>December 2019 |

# Written Scheme of Investigation (WSI) for an archaeological evaluation on land to the west of Dawes Lane, West Mersea, Essex, CO5 8GJ.

**NGR:** TM 021 137 (centre)
**District:** Colchester

**Planning reference:** 192211 (pre-planning)

**Commissioned by:** Brad Davies (Mersea Homes Ltd)
**On behalf of:** Mersea Homes Ltd

**Curating museum:** Colchester

**CHER project code:** tbc

**CAT project codes:** 2019/10a (fieldwalking and metal-detecting)
2019/10b (geophysics and evaluation)

**Oasis project IDs**: fieldwalking and metal-detecting: colchest3-369801
geophysics: to be completed by Magnitude Surveys
evaluation: colchest3-369807

**Site manager:** Chris Lister

**CBC monitor:** Jess Tipper

**This WSI written**: 14/10/2019 (revised)

COLCHESTER ARCHAEOLOGICAL TRUST,
Roman Circus House,
Roman Circus Walk,
Colchester,
Essex, CO2 7GZ

*tel:* 01206 501785
*email:* eh@catuk.org

## Site location and description

The proposed development site is located on the eastern edge of West Mersea, almost at the centre of the island, approximately 11.8km south-southeast of the main historic centre of Colchester on land to the west of Dawes Lane, West Mersea, Essex, CO5 8GJ (Fig 1). The site is centred on National Grid Reference (NGR) TM 021 137. The field is currently agricultural land used for growing crops.

## Proposed work

The development comprises the construction of 100 residential dwellings with vehicular access and parking, a sustainable drainage system, landscaping, areas of public open space and for community use and any other associated groundworks.

## Archaeological background

The following archaeological background is based on CAT Report 992 and the Colchester Historic Environment Record (CHER, MCC numbers) accessed via the Colchester Heritage Explorer (www.colchesterheritage.co.uk)):

The site is lies within an area that has seen little archaeological investigation, however, it is located within an area surrounded by fields with cropmarks recorded through aerial photography. The majority of features interpreted are linear features and trackways which likely represent either Roman ditches or historic agricultural boundaries. Land to the east and north of Wellhouse Farm, immediately to the north include a ring-ditch, three rectangular pits, thought to possibly be part of an Anglo-Saxon sunken-floored building (SFB) and a number of historic field boundaries (MCC8813). Find spots noticed in this area include an Iron Age coin (MCC4894), Roman coin (MCC8776) and some Roman objects including a brooch, coin and tessera cube (MCC8779). To the immediate northeast of the site on cropmarks at Barrow Hill trackways and linear features are noted, however, a large amount of geological deposits which may be masking evidence of archaeology (MCC4746). To the immediate east of the site cropmarks show evidence of a possible undated building (MCC8930).

The site is located approximately 450m south of Mersea Barrow (MCC6928, Scheduled Ancient Monument No: SM 32425; NHLE no. 1019019). The barrow was excavated in 1912 (Warren 1913). The excavation consisted of a trench dug from the eastern side of the barrow into its centre, where a larger central shaft was opened out. A Roman cremation burial was located near the centre of the barrow. It lay within a chamber constructed of Roman roof tiles (tegulae) set in mortar. The chamber contained a lead casket inside which was a glass urn containing the cremated human remains. In 1912 the barrow survived approximately 33.5 m in diameter and 6.9 m high. No trace was discovered in 1912 of a ditch around the barrow. The 1912 excavation trench was subsequently roofed over and concreted to form a tunnel to allow visitors access to the burial chamber from the eastern side of the barrow.

The burial was dated in the original site report to the late 1st century (Warren 1913, 138). The date of the burial and barrow was subsequently reassessed by Hull to AD 100-120 (VCHE 3, 160). More recently, it has been suggested that a mid-2nd century date is more likely for the construction of the barrow (Benfield and Black 2014, 67 & 72).

The cremated human remains were re-examined in 2012-3 by Jacqueline McKinley of Wessex Archaeology (McKinley 2014). The bone came from a male aged between 35 and 45. There is evidence of spinal lesions and excessive bony growths, indicating that he suffered from diffuse idiopathic skeletal hyperostosis (DISH). This is a disease of the joints that today is found mainly in men over 50. The presence was also detected of exotic items, including pine resin and frankincense (Brettell et al 2014). These were probably added to the bone after cremation, and suggest an elaborate funerary ritual.

CAT carried out watching briefs at Mersea Barrow in 2014 and 2016 during works to improve visitor access and amenities. No significant archaeological deposits were uncovered,

although a small quantity of Roman roof tile fragments was recovered from the modern topsoil on the eastern side of the barrow (CAT Report 992).

There is an unconfirmed report that two Roman rings and fragments of a tessellated pavement were found fairly close to the Mersea Barrow in nearby Bower Hall Lane (unpublished letter to D.T-D Clarke dated 28.8.1980 from Mrs J W M Read; Howlett 2012, 66 & 76).

For a full archaeological background see the desk-based assessment of the site by Oxford Archaeology (August 2019)

## Proposed work

The development proposes the construction of *100 residential dwellings (including 30% affordable housing); Sustainable drainage system (SuDs); Circa 5.2ha of land for community uses, landscaping, public open space; vehicular access from Dawes Lane. T*he project is currently in pre-application stage (no. 192211).

As the site lies within an area highlighted by the CHER as having a high potential for archaeological deposits, an archaeological condition was recommended by the Colchester Borough Council Archaeological Advisor (CBCAA). The recommended archaeological condition is based on the guidance given in the *National Planning Policy Framework* (MHCLG 2019.

## Requirement for work (Fig 1)

The required archaeological work was for an archaeological evaluation. Details are given in a Project Brief written by CBCAA (CBC 2019).

Specifically, the archaeological work will comprise of three parts:

1) Fieldwalking and metal-detecting survey
2) Geophysical survey
3) Evaluation by trial-trenching

Specifically the evaluation will involve 38 linear trenches, each measuring 30m long by 1.8m wide located in an axial grid across the development site. In the area designated as open space, ten trenches will be evaluated giving a 1% sample of the site, a further 28 trenches will be evaluated in the residential area covering a 3% sample of the site. In total 1,140m of trenching will be evaluated. See Fig 1 for a provisional trench location plan. Trench locations may be reviewed and relocated pending results of the non-intrusive surveys. Trenches may need to be widened in localised areas to facilitate excavation of deep archaeological features (if encountered).

The evaluation is required to enable the archaeological resource, both in quality and extent, to be accurately quantified. To:

- Identify the date, approximate form and purpose of any archaeological deposit, together with its likely extent, localised depth and quality of preservation.
- Evaluate the likely impact of past land uses, and the possible presence of masking colluvial/alluvial deposits.
- Establish the potential for the survival of environmental evidence
- Provide sufficient information to construct an archaeological conservation strategy, dealing with preservation, the recording of archaeological deposits, working practices, timetables and orders of cost.

Further archaeological evaluation could be required if unusual deposits or other archaeological finds of significance are recovered, this decision will be made by the CBCAA and will be the subject of an additional brief and WSI.

## General methodology

All work carried out by CAT will be in accordance with:

- professional standards of the Chartered Institute for Archaeologists, including its *Code of Conduct* (CIfA 2014a, b)
- Standards and Frameworks published by East Anglian Archaeology (Gurney 2003, Medlycott 2011)
- relevant Health & Safety guidelines and requirements (CAT 2018)
- the Project Brief issued by the CBCAA (CBC 2019).

Professional CAT field archaeologists will undertake all specified archaeological work, for which they will be suitably experienced and qualified.

Notification of the supervisor/project manager's name and the start date for the project will be provided to CBCAA one week before start of work.

Unless it is the responsibility of other site contractors, CAT will study mains service locations and avoid damage to these.

At the start of work (immediately before fieldwork commences) an OASIS online record http://ads.ahds.ac.uk/project/oasis/ will be initiated and key fields completed on Details, Location and Creators forms. At the end of the project all parts of the OASIS online form will be completed for submission to CHER. This will include an uploaded .PDF version of the entire report.

A unique HER event number will be obtained from the CBCAA prior to the commencement of fieldwork. The curating museum will be notified of the details of the project and the event code, which will be used to identify the project archive when depositing at the end of the project.

## Staffing

The number of field staff for this project is estimated as follows:
1) Fieldwalking and metal-detecting survey: one Project Manager and five archaeologists for five days for each survey and a Project Officer and archaeologist for one day to lay out the grid.
2) Geophysics: by Magnitude Survey.
3) Evaluation: One Project Manager/Officer and five archaeologists for ten days

In charge of day-to-day site work: Laura Pooley (fieldwalking) and Adam Wightman/Mark Baister (metal-detecting survey and evaluation).

## Fieldwalking and metal-detecting methodology

A systematic fieldwalking and metal-detecting survey will be carried out following standard Essex fieldwalking methodology as used by Havis and Brook during excavations at Stansted airport (2004).

The landscape survey is based on the National Grid. The national grid kilometre square the site is located in will be divided into numbered hectare squares which have then been further sub-divided into 20m square boxes, labelled A-Z (excluding O) (see Fig 2). Archaeologists will walk and retrieve finds from a 1m wide strip one each side of their transect. Finds from each 20m transect will be placed in a bag labelling which site, kilometre, hectare and lettered 20m square they are in. A 10% sample of the survey area is thus walked.

A fieldwalking/metal-detecting record sheet will be completed for each hectare walked. This should include observational information about the condition of the ground surface, crop (if any), weather and topography of the field.

The metal-detecting survey will be overseen by CAT senior site staff Adam Wightman, Mark Baister and Ben Holloway who have all been trained in the use of metal-detectors and used them for more than five years. CAT also works in partnership with Geoff Lunn as a metal-detecting advisor. Geoff has over four years experience detecting and has worked with CAT to recover finds from recent excavations including the Mercury Theatre site in Colchester, and who has also worked with the Colchester Archaeological Group, Suffolk Archaeology, Access Cambridge Archaeology, The Citizan Project (MOLA) and others. The fieldwalking project will be overseen by Laura Pooley who has extensive experience including a large-scale fieldwalking project at Colchester Garrison.

## Geophysics methodology

This part has been contracted out to Magnitude Survey, see Appendix 1 for their written scheme of investigation.

One test grid square will be re-surveyed at the start/finish, and the results reproduced in the report in order to check for calibration and consistency.

## Evaluation methodology

Where appropriate, modern overburden and any topsoil stripping/levelling will be performed using a mechanical excavator equipped with a toothless ditching bucket under the supervision and to the satisfaction of a professional archaeologist. If no archaeologically significant deposits are exposed, machine excavation will continue until natural subsoil is reached.

Where necessary, areas will be cleaned by hand to ensure the visibility of archaeological deposits.

If archaeological features or deposits are uncovered time will be allowed for these to be excavated, planned and recorded.

All features or deposits will be excavated by hand. This includes a 50% sample of discrete features (pits, etc), 10% of linear features (ditches, etc) in 1m wide sections, and 100% of complex structures/features. Complex archaeological structures such as walls, kilns, ovens or burials will be carefully cleaned, planned and fully recorded, but where possible left *in situ*. Only if it can be demonstrated that the complex structure/feature is likely to be destroyed by groundworks will it be removed, or on the rare occasion where full excavation (or exhumation in the case of burials) is necessary to achieve the objectives of the evaluation.

Burials, if encountered, will be left *in situ* at this evaluation stage with an on site human bone specialist available to record as much information as possible.

Fast hand-excavation techniques involving (for instance) picks, forks and mattocks will not be used on complex stratigraphy.

A sondage will be excavated in each trench to test the stratigraphy of the site. This will occur in every trench unless it can be demonstrated that a feature excavated within a particular trench has clearly penetrated into natural.

A representative section will be drawn of each trench, to include ground level, the depth of machining within the trench and the depth of any sondages.

A metal detector will be used to examine trenches, contexts and spoil heaps, and the finds recovered.

Individual records of excavated contexts, layers, features or deposits will be entered on proforma record sheets. Registers will be compiled of finds, small finds and soil samples.

## Site surveying

The evaluation trench and any features will be surveyed by Total Station, unless the particulars of the features indicate that manual planning techniques should be employed. Normal scale for archaeological site plans and sections is 1:20 and 1:10 respectively, unless circumstances indicate that other scales would be more appropriate.

The site grid will be tied into the National Grid. Corners of excavation areas will be located by NGR coordinates.

## Environmental sampling policy

The number and range of samples collected will be adequate to determine the potential of the site, with particular focus on palaeoenvironmental remains including both biological remains (e.g. plants, small vertebrates) and small sized artefacts (e.g. smithing debris), and to provide information for sampling strategies on any future excavation. Samples will be collected for potential micromorphical and other pedological sedimentological analysis. Environmental bulk samples will be 40 litres in size (assuming context is large enough).

Sampling strategies will address questions of:

- the range of preservation types (charred, mineral-replaced, waterlogged), and their quality
- concentrations of macro-remains
- and differences in remains from undated and dated features
- variation between different feature types and areas of site

CAT has an arrangement with Val Fryer / Lisa Gray whereby any potentially rich environmental layers or features will be appropriately sampled as a matter of course. Trained CAT staff will process the samples and the flots will be sent to Val Fryer or Lisa Gray for analysis and reporting.

Should any complex, or otherwise outstanding deposits be encountered, VF or LG will be asked onto site to advise. Waterlogged 'organic' features will always be sampled. In all cases, the advice of VF/LG and/or the Historic England Regional Advisor in Archaeological Science (East of England) on sampling strategies for complex or waterlogged deposits will be followed, including the taking of monolith samples.

## Human remains

CBCAA will be notified immediately if any human remains are encountered during the evaluation.

Burials, if encountered, will be left *in situ* at this evaluation stage. Following HE guidance (HE 2018) if the human remains are not to be lifted, the project osteologist will be available to record the human remains *in situ* (i.e. a site visit).

If circumstances indicated it were prudent or necessary to remove remains from the site, the following criteria would be applied; if it is clear from their position, context, depth, or other factors that the remains are ancient, then normal procedure is to apply to the Department of Justice for a licence to remove them. Conditions laid down by the DoJ license will be followed. If it seems that the remains are not ancient, then the coroner, the client, and the CBCAA will be informed, and any advice and/or instruction from the coroner will be followed.

Human remains removed from site for analysis may be sent for radiocarbon dating (see finds section).

## Photographic record

Will include both general and feature-specific photographs, the latter with scale and north arrow. A photo register giving context number, details, and direction of shot will be prepared on site, and included in site archive. Digital site photographs will be taken and archived as per Historic England guidelines (HE 2015a).

## Finds

All significant finds will be retained.

All finds, where appropriate, will be washed and marked with site code and context number. CAT may use local volunteers to assist the CAT Finds Officer with this task.

Most of our finds reports are written internally by CAT Staff under the supervision and direction of Philip Crummy (Director) and Howard Brooks (Deputy Director). This includes specialist subjects such as:

ceramic finds (pottery and ceramic building material): Matthew Loughton
animal bones: Alec Wade (or Adam Wightman, small groups only)
small finds, metalwork, coins, etc: Laura Pooley
non-ceramic bulk finds: Laura Pooley
flints: Adam Wightman
environmental processing: Robin Mathieson/Bronagh Quinn
project osteologist (human remains): Meghan Seehra

or to outside specialists:

animal and human bone: Julie Curl (*Sylvanus*)
environmental assessment and analysis: Val Fryer / Lisa Gray
radiocarbon dating: SUERC Radiocarbon Dating Laboratory, Glasgow
conservation/x-ray: Laura Ratcliffe (LR Conservation) / Norfolk Museums Service, Conservation and Design Services

Other specialists whose opinion can be sought on large or complex groups include:

flint: Hazel Martingell
prehistoric pottery: Stephen Benfield / Nigel Brown / Paul Sealey
Roman pottery: Stephen Benfield / Paul Sealey / Jo Mills / Val Rigby / Gwladys Monteil
Roman brick/tile: Ernest Black / Ian Betts (MOLA)
Roman glass: Hilary Cool
small finds: Nina Crummy
other: EH Regional Adviser in Archaeological Science (East of England).

All finds of potential treasure will be removed to a safe place, and the coroner informed immediately, in accordance with the rules of the Treasure Act 1996. The definition of treasure is given in pages 3-5 of the Code of Practice of the above act. This refers primarily to gold or silver objects.

Requirements for conservation and storage of finds will be agreed with the appropriate museum prior to the start of work, and confirmed to CBCAA.

A contingency will be made in the budget for scientific assessment/analysis. This can include soil micromorphological assessment and/or absolute dating (such as archaeomagnetic and radiocarbon) if suitable deposits are identified. The Historic England Regional Science Advisor will be consulted for advice.

## Post-excavation assessment

An updated post-excavation assessment will be submitted within 2 months or at an alternatively agreed time with the ECCHEA.

Where archaeological results do not warrant a post-excavation assessment then agreement will be sought from the ECCHEA to proceed straight to grey literature / publication.

## Results

Notification will be given to CBCAA when the fieldwork has been completed

An appropriate archive will be prepared to minimum acceptable standards outlined in *Management of Research Projects in the Historic Environment* (HE 2015b).

The report will be submitted within 6 months of the end of fieldwork, with a copy supplied to CBCAA as a PDF.

The report will contain:

- Location plan of groundworks. At least two corners of which will be given 10 figure grid references.
- Section/s drawings showing depth of deposits from present ground level with Ordnance Datum,
  vertical and horizontal scale.
- Archaeological methodology and detailed results including a suitable conclusion and discussion and results referring to Regional Research Frameworks (Medlycott 2011).
- All specialist reports or assessments
- A concise non-technical summary of the project results.

An EHER summary sheet will also be completed within four weeks and supplied to CBCAA.

Results will be published, to at least a summary level (i.e. round-up in *Essex Archaeology & History*) in the year following the archaeological field work. An allowance will be made in the project costs for the report to be published in an adequately peer reviewed journal or monograph series

## Archive deposition

It is a policy of Colchester Borough Council that the integrity of the site archive be maintained (i.e. all finds and records should be properly curated by a single organisation), with the archive available for public consultation. To achieve this desired aim it is assumed that the full archive will be deposited in Colchester Museums *unless otherwise agreed in advance*. (A full *copy* of the archive shall in any case be deposited).

**By accepting this WSI, the client agrees to deposit the archive, including all artefacts, at Colchester & Ipswich Museum.**

The requirements for archive storage will be agreed with the curating museum. If the finds are to remain with the landowner, a full copy of the archive will be housed with the curating museum.

The archive will be deposited with Colchester & Ipswich Museum or an alternate repository (approved by COLEM and CBCAA) within 3 months of the completion of the final publication report, with a summary of the contents of the archive supplied to CBCAA. Digital archives will be curated with the Archaeology Data Service, or similar accredited digital archive repository, that safeguard the long-term curation of digital records. Prior to deposition CAT's data management plan (based on the official guidelines from the Digital Curation Centre [DCC 2013]) will ensure the integrity of the digital archive.

The CBCAA will be notified of the archiving timetable throughout the project and once deposition has occurred.

A digital / vector drawing of the site be given to the CBCAA for integration into the HER.

## Monitoring

CBCAA will be responsible for monitoring progress and standards throughout the project, and will be kept regularly informed during fieldwork, post-excavation and publication stages.

Notification of the start of work will be given to CBCAA one week in advance of its commencement.

Any variations in this WSI will be agreed with CBCAA prior to them being carried out.

CBCAA will be notified when the fieldwork is complete.

The involvement of CBCAA shall be acknowledged in any report or publication generated by this project.

## References

Note: CAT reports, except for DBAs, are available online in PDF format at http://cat.essex.ac.uk


| | | |
|---|---|---|
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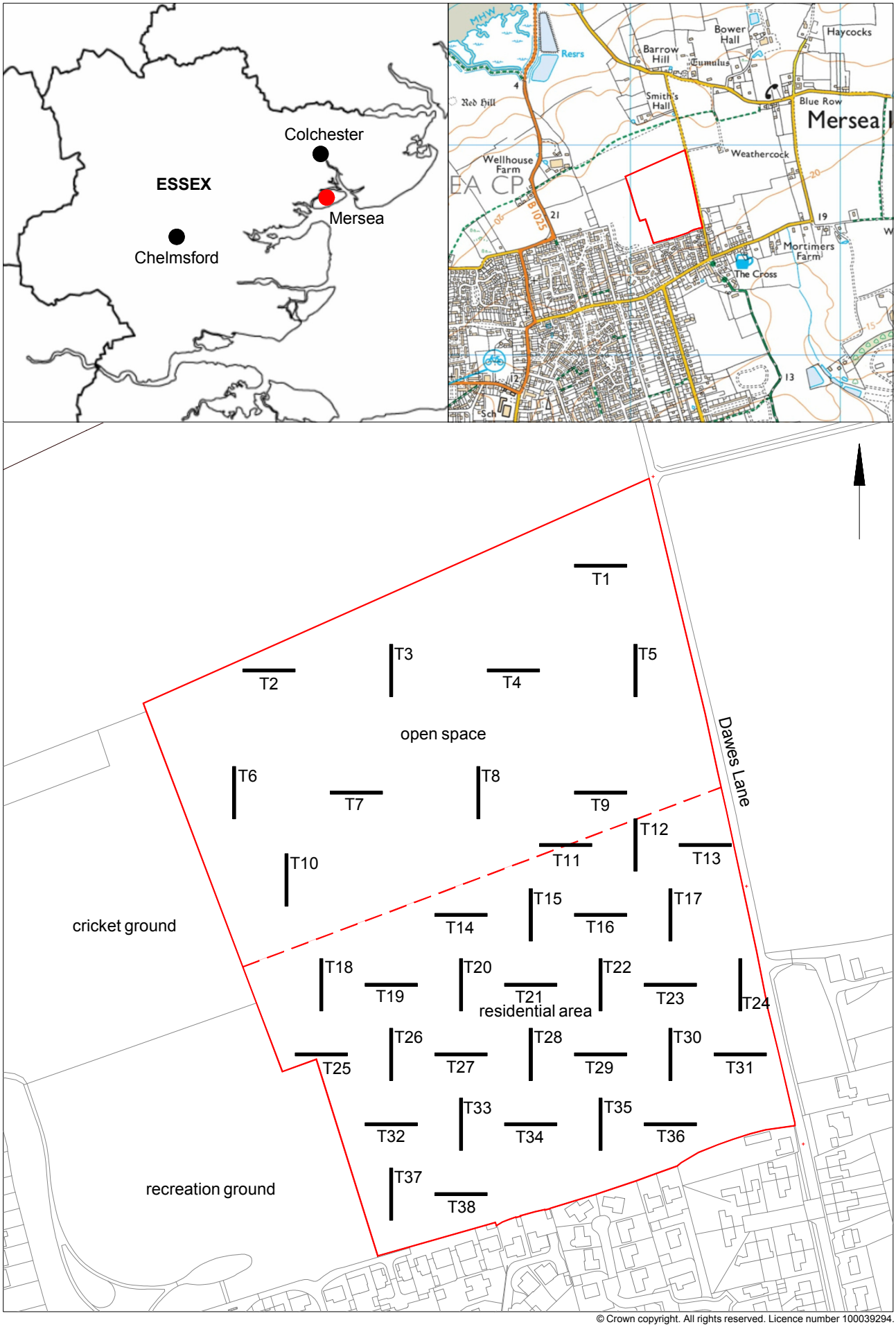


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Fig 1 Site location and provisional trench location.

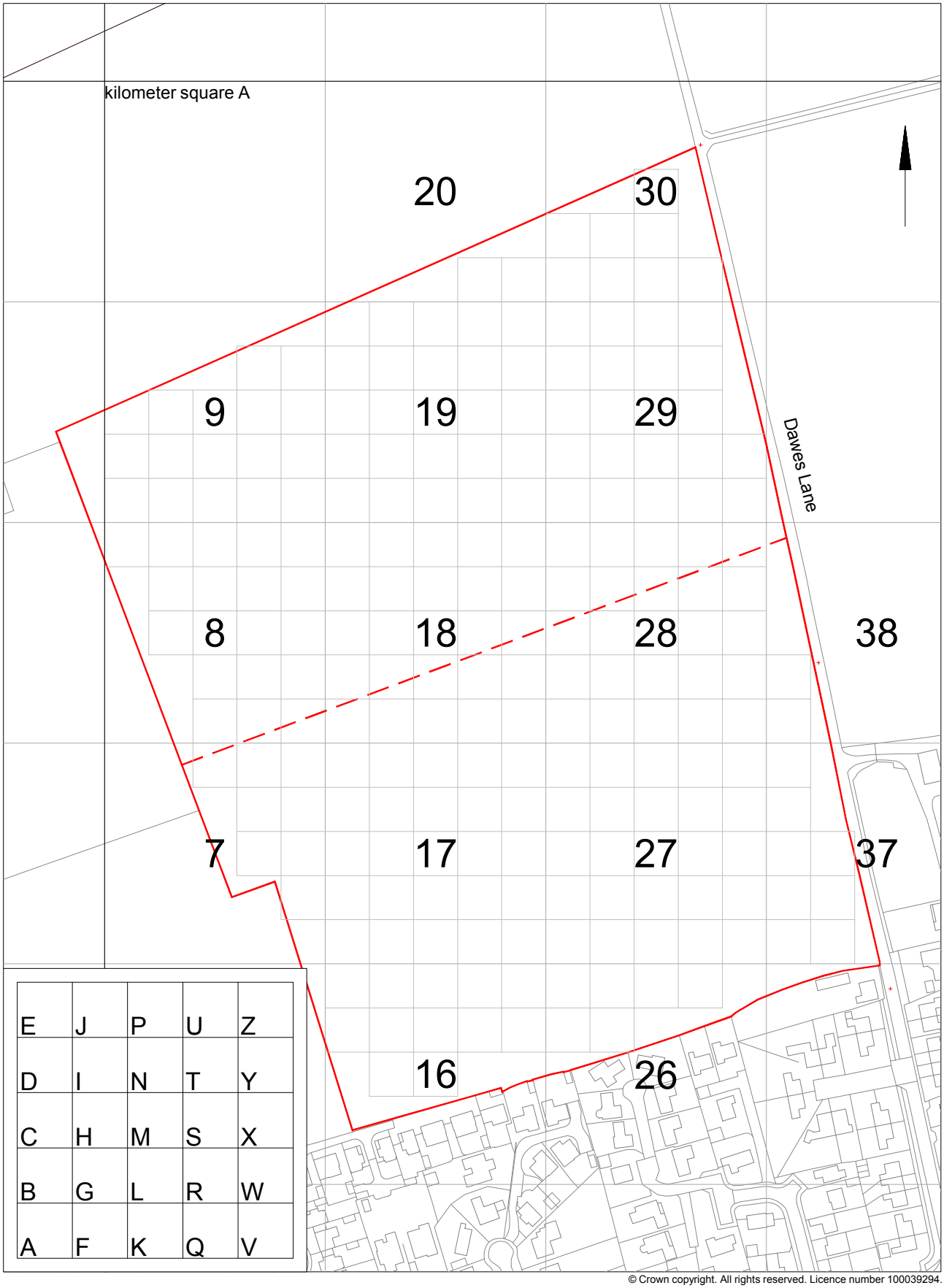


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Fig 2 Field-walking and metal-detecting survey finds recovery methodology:
The kilometre square (TM 0213) is divided into numbered hectare squares which are further sub-divided into 20m square boxes, labelled A-Z (excluding O).

0 100 m

# Written Scheme of Investigation

# For a Geophysical Survey

# of

# Land West of Dawes Lane, West Mersea

# Colchester, Essex

**For**

**Colchester Archaeological Trust**

**Magnitude Surveys Ref: MSTM565**

**HER Event Number: If applicable**

**OASIS Number: If applicable**

**October 2019**

**Unit 17, Commerce Court**

**Challenge Way**

**Bradford**

**BD4 8NW**

**01274 926020**

**info@magnitudesurveys.co.uk**

| Version | Purpose/Revision | Author | Figures | Approved By | Date Issued |
|---|---|---|---|---|---|
| 1.0 | WSI | Lauren Beck BA | Lauren Beck BA | Julia Cantarano Ingénieur PCIfA | 03 October 2019 |

| Print Name: | Signature: | Role: | Date: |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

# Contents

# 1. Introduction

1.1. This document details a Written Scheme of Investigation for a geophysical survey by Magnitude Surveys Ltd (MS) for Colchester Archaeological Trust. The survey comprises a c. 10.2ha area of arable land west of Dawes Lane, West Mersea, Colchester, Essex (TM 022 139).

1.2. The geophysical survey will comprise hand-pulled/quad-towed, cart-mounted or hand-carried GNSS-positioned fluxgate gradiometer survey. Magnetic survey is the standard primary geophysical method for archaeological applications in the UK for its ability to detect a range of different features. The technique is particularly suited for detecting fired or magnetically enhanced features, such as ditches, pits, kilns, sunken earth houses, and industrial activity (David *et al*., 2008).

1.3. The survey will be conducted in line with the current best practice guidelines produced by Historic England (David et al., 2008), the Chartered Institute for Archaeologists (2014) and the European Archaeological Council (Schmidt et al., 2015).

# 2. Objective

2.1. The objective of this geophysical survey is to assess the subsurface archaeological potential of the survey area.

# 3. Quality Assurance

3.1. Project management, survey work, data processing and report production have been carried out by qualified and professional geophysicists to standards exceeding the current best practice (CIfA, 2014; David *et al*., 2008, Schmidt *et al*., 2015). All MS managers, field and office staff have relevant degree qualifications to archaeology or geophysics and/or field experience.

3.2. Magnitude Surveys is a Registered Organisation of the Chartered Institute for Archaeologists (CIfA), the chartered UK body for archaeologists, and a corporate member of ISAP (International Society of Archaeological Prospection).

3.3. Director Dr. Chrys Harris is a Member of CIfA, has a PhD in archaeological geophysics from the University of Bradford and is the Vice-Chair of ISAP. Director Finnegan Pope-Carter is a Fellow of the London Geological Society, the chartered UK body for geophysicists and geologists, as well as a member of GeoSIG, the CIfA Geophysics Special Interest Group. Reporting Analyst Dr. Kayt Armstrong has a PhD in archaeological geophysics from Bournemouth University, is the Vice Conference Secretary and Editor of ISAP News for ISAP, and is the UK Management Committee representative for the COST Action SAGA.

3.4. MS has developed a bespoke geophysical system whereby data is live-streamed from the field back to the office while fieldwork is ongoing. This allows for data to be regularly monitored not only in the field, but by managers in a controlled office environment. Coverage gaps or small errors within the data can be quickly identified and rectified, improving quality control of field survey. The live data streaming allows MS to provide processed data to the client at regular intervals, allowing all parties to be informed of the field survey's progress. Should it become apparent that the survey is being compromised by local conditions, such as the spreading of

green waste, this will be reported back to the client and a mitigation strategy can be devised if necessary.

# 4. Risk Assessment

4.1. MS' standard magnetic fieldwork risk assessment and site-specific risk assessment have been appended to the end of this document. Before geophysical survey will commence, a brief walkover will be undertaken to identify any additional hazards of an unusual or site-specific nature. If any additional hazards are identified, the site-specific risk assessment will be updated to include these hazards and all surveyors will be informed of the risk. If appropriate mitigation factors cannot be put in place, then the field or part thereof will not be surveyed.

4.2. Field staff will attend a site induction if required. Necessary PPE will be supplied and worn. Wet and cold/hot weather protection is also supplied.

4.3. All surveyors have been issued company mobile phones. Survey teams are expected to make regular contact with the office to keep all parties updated with survey progress. Any change in conditions that may affect the health and safety of the survey team must be reported immediately.

4.4. The survey van contains suitable welfare facilities. Antiseptic hand gel is provided, as is bottled drinking water. A first aid kit is stored in the cab of the van, with a second kit near personnel within the survey area.

4.5. The nearest NHS urgent care centre is at Colchester General Hospital, Turner Road, Colchester, Essex, CO4 5JL. Should toilets be unavailable on site the nearest public accessible toilet is located at Tesco Superstore, Greenstead Rd, Colchester CO1 2TE.

# 5. Methodology

## 5.1. Data Collection

5.1.1. Geophysical survey will comprise the magnetic method as described in the following table.

5.1.2. Table of survey strategies:

| Method | Instrument | Traverse Interval | Sample Interval |
|---|---|---|---|
| Magnetic | Bartington Instruments Grad-13 Digital Three-Axis Gradiometer | 1 m | 200 Hz reprojected to 0.125 m |

5.1.3. Magnitude Surveys employs a modular cart system, which can easily be configured to be towed by quad, pulled by hand, or carried depending on what is most suitable for the site configuration and conditions. Consisting of a cart frame, and backpack system survey can be undertaken should conditions preclude survey with the wheels. The hand carried system retains all of the advantages of a cart system because it is still GNSS positioned and the sensors are maintained at a consistent height.

5.1.4. Magnetic data will be collected using MS' bespoke, hand-pulled/quad-towed cart system or hand-carried GNSS-positioned system. MS' cart or hand-carried system will

be comprised of Bartington Instruments Grad 13 Digital Three-Axis Gradiometers. Positional referencing will be through a multi-channel, multi-constellation GNSS Smart Antenna RTK GPS outputting in NMEA mode to ensure high positional accuracy of collected measurements. The RTK GPS is accurate to 0.008m + 1ppm in the horizontal and 0.015m + 1ppm in the vertical.

5.1.5. Magnetic and GPS data will be stored on an SD card within MS' bespoke datalogger. The datalogger is continuously synced, via an in-field Wi-Fi unit, to servers within MS' offices. This allows data collection, processing and visualisation to be monitored in real-time as fieldwork is ongoing (see 3.6).

5.1.6. A navigation system will be integrated with the RTK GPS will be used to guide the surveyor. Data will be collected by traversing the survey area along the longest possible lines, ensuring efficient collection and processing.

## 5.2.Data Processing

5.2.1. Magnetic data will be processed in bespoke in-house software produced by MS. Processing steps conform to Historic England's standards for "raw or minimally processed data" (see sect 4.2 in David et al., 2008: 11). Data plots contained within the report conform to Historic England's standards for minimally processed data.

Sensor Calibration – The sensors will be calibrated using a bespoke in-house algorithm, which conforms to Olsen et al. (2003).

Zero Median Traverse – The median of each sensor traverse will be calculated within a specified range and subtracted from the collected data. This removes striping effects caused by small variations in sensor electronics.

Projection to a Regular Grid – Data collected using RTK GPS positioning requires a uniform grid projection to visualise data. Data will be rotated to best fit an orthogonal grid projection and are resampled onto the grid using an inverse distance-weighting algorithm.

Interpolation to Square Pixels – Data will be interpolated using a bicubic algorithm to increase the pixel density between sensor traverses. This produces images with square pixels for ease of visualisation.

## 5.3.Data Visualisation and Interpretation

5.3.1. The report will present the gradient of the sensors' total field data as greyscale images, as well as the total field data from the upper and/or lower sensors. The gradient of the sensors minimises external interferences and reduces the blown-out responses from ferrous and other high contrast material. However, the contrast of weak or ephemeral anomalies can be reduced through the process of calculating the gradient. Consequently, some features can be clearer in the respective gradient or total field datasets. Multiple greyscale images at different plotting ranges will be used for data interpretation.

5.3.2. Geophysical results will be interpreted using greyscale images and XY traces in a layered environment, overlaid against OS Open Data, satellite imagery, historic maps, LiDAR

data, and soil and geology maps. Google Earth (2019) will be consulted as well, to compare the results with recent land usages.

5.3.3. Geodetic position of results - All vector and raster data will be projected into OSGB36 (ESPG27700) and provided upon request in ESRI Shapefile (.SHP) and Geotiff (.TIF) respectively. Figures will be provided with raster and vector data projected against OS Master Mapping.

# 6. Reporting

6.1. A detailed report of the survey will be produced after data collection is completed. The Planning Archaeologist will be provided with a draft report for approval, and the approved report will be submitted to the HER. The final report will include as standard:

- Abstract
- Introduction – Details site location and client details.
- Quality Assurance – Details the expertise of Magnitude Surveys and Magnitude Surveys employees undertaking the work.
- Objectives—Details survey objectives.
- Geographic Background – Details the soils and geology of the survey area, as well as providing a general summary of site conditions at time of survey.
- Archaeological Background – Details a brief summary of the archaeological and historical background of the site and its immediate environs. While this will not be an exhaustive assessment of the known sites, it will draw on elements relevant to the results obtained during survey.
- Methodology—Details survey strategy employed, instruments used, data collection strategy, data processing and visualisation methods.
- Survey Considerations – Details specific points of note for each survey area, including topography, upstanding obstructions or neighbouring objects.
- Results—Details the results and interpretation of the geophysical survey, both in a general context and discusses specific anomalies of archaeological interest. Geophysical reports will be discussed in consideration with satellite imagery, historic mapping and LiDAR data—if freely available—as supporting interpretative evidence.
- Conclusions
- Archiving
- Copyright
- References
- Figures—The site location and individual survey areas will be presented. Georeferenced greyscale images of the minimally processed data, XY traces and corresponding interpretations will be displayed at appropriate scales. Interpretations will also be displayed over satellite imagery, historic mapping and LiDAR—as applicable—to provide

further context to the interpretations. All figures will include a detailed scale bar, north arrow and key.

# 7. Archiving

7.1. MS maintains an in-house digital archive, which is based on Schmidt and Ernenwein (2013). This archive stores the collected measurements, minimally processed data, georeferenced and un-georeferenced images, XY traces and a copy of the final report. A copy of this archive will be included in a disk with the final printed report.

7.2. MS contributes reports to the ADS Grey Literature Library upon permission from the client, subject to the any dictated time embargoes.

7.3. An OASIS form will be filled in on completion of the survey, providing permission from the client.

# 8. Copyright

8.1. Copyright and the intellectual property pertaining to all reports, figures, and datasets produced by Magnitude Services Ltd. is retained by MS. The client is given full licence to use such material for their own purposes. Permission must be sought by any third party wishing to use or reproduce any IP owned by MS.

# 9. References

Chartered Institute for Archaeologists, 2014. Standards and guidance for archaeological geophysical survey. CIfA.

David, A., Linford, N., Linford, P. and Martin, L., 2008. Geophysical survey in archaeological field evaluation: research and professional services guidelines (2nd edition). Historic England.

Google Earth, 2019. Google Earth Pro V 7.1.7.2606.

Olsen, N., Toffner-Clausen, L., Sabaka, T.J., Brauer, P., Merayo, J.M.G., Jorgensen, J.L., Leger, J.M., Nielsen, O.V., Primdahl, F., and Risbo, T., 2003. Calibration of the Orsted vector magnetometer. *Earth Planets Space* 55: 11-18.

Schmidt, A. and Ernenwein, E., 2013. Guide to Good Practice: Geophysical Data in Archaeology. 2nd ed., Oxbow Books, Oxford.

Schmidt, A., Linford, P., Linford, N., David, A., Gaffney, C., Sarris, A. and Fassbinder, J., 2015. Guidelines for the use of geophysics in archaeology: questions to ask and points to consider. EAC Guidelines 2.


MSTM565 - Dawes Lane, Mersea Island
Figure 1 - Site Location
1:25,000 @ A4
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Contains Ordnance Survey data © Crown Copyright and database right 2019

Site Boundary

N

0 0.5 1 km

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602000
603000
214000
214000
Barrow Hill
East Mersea Road
Haycocks Lane
Smith's Hall
Weathercock
Wellhouse Farm
Dawes Lane
Chapmans Lane
Royston
Paeony Chase
B1025
Tennis Court
Tennis Court
Playing Field
Allotments
Garden Farm
Garden Farm
Play Space
Glebe View
Colchester Road
Constable Close
Trinity Close
Union Church
Chatsworth Road
Langwood
Windsor Road
Windsor Road
Oakwood Avenue
Norfolk Avenue
Suffolk Avenue
Brierley Avenue
East Road
Empress Avenue
Fairhaven Avenue
Seaview Avenue
Cross Lane
Waldegraves Lane
Upland Road

MSTM565 - Dawes Lane, Mersea Island
Figure 2 - Location of Survey Area
1:5,000 @ A3
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Survey Extent

N

0 100 200 300 m

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# STANDARD MAGNETIC FIELDWORK RISK ASSESSMENT

| Likelihood of Accident/Incident Occurring | Severity of Consequences |
|---|---|
| 1. Highly improbable<br>2. Probable – annually<br>3. Infrequent – 2-3 times/year<br>4. Occasional – monthly<br>5. Frequent – weekly | 1. Minor injury minor damage to plant/equipment/buildings<br>2. Injury (no time lost) damage repair costs are low<br>3. Injury (time lost) high damage repair costs<br>4. Major reportable injury very high damage repair costs<br>5. Fatality major damage and major costs |

| Details of tasks to be carried out | Potential Hazard | A Likelihood | B Severity Rating | Overall Risk Rating A x B | Control Measures | Action | Revised Risk Rating |
|---|---|---|---|---|---|---|---|
| Driving company vehicle | Losing control of vehicle, sudden breaking or swerving.<br><br>Hitting another road user, pedestrian or stationary object. | 2<br><br>2 | 5<br><br>5 | 10<br>Moderate<br><br>10<br>Moderate | Do not drive vehicle if feeling unwell or tired.<br><br>Take regular breaks on long journeys.<br><br>Take turns driving when working in groups.<br><br>Try to avoid driving in adverse weather | If weather is severe pull over.<br><br>Stay in a hotel if work has been delayed or weather conditions are extreme. | 1x5=5<br>Low<br><br>1x5=5<br>Low |
| Parking company vehicle | Parking in an unsafe location, such as a blind corner or hidden dip or on the side of a major highway.<br><br>Pausing while farm gates are opened in order to exit highway. | 3<br><br>4 | 5<br><br>4 | 15<br>High<br><br>16<br>High | Where possible park off-road in car parks, farm yards, fields or lay-bys.<br><br>If it is not possible to access a survey area in a safe manner, stop and make new arrangements, such as obtaining keys or codes to locked gates.<br><br>Use vehicle lights, such as dipped headlights, and hazards.<br><br>Avoid packing or unpacking the vehicles in the dark.<br><br>When performing reversing procedures while entering or exiting fields, position a colleague in a safe place where they can be seen and heard in order to direct and | Wear high visibility clothing when working around vehicles.<br><br>Use the floodlight when necessary and safe to do so.<br><br>Return early during winter months to prevent working in dusk conditions<br><br>Only stop on highway if safe to do so. Use hazard lights. | 1x5=5<br>Low<br><br>1x4=4<br>Low |

# STANDARD MAGNETIC FIELDWORK RISK ASSESSMENT

| Likelihood of Accident/Incident Occurring | Severity of Consequences |
|---|---|
| 1. Highly improbable<br>2. Probable – annually<br>3. Infrequent – 2-3 times/year<br>4. Occasional – monthly<br>5. Frequent – weekly | 1. Minor injury minor damage to plant/equipment/buildings<br>2. Injury (no time lost) damage repair costs are low<br>3. Injury (time lost) high damage repair costs<br>4. Major reportable injury very high damage repair costs<br>5. Fatality major damage and major costs |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | communicate information on the road traffic. | | |
| Loading and unloading the cart | Muscle strain, dropping equipment, slips trips and falls. | 4 | 2 | 8<br>Moderate | Work in a pair, never lift the cart in or out on your own. Move the cart to the edge of the van and then lower to the ground. Never step out the van while lowering to the floor. Follow manual handling training. | Clear both the interior and surrounding van area before attempting to lift the cart in or out the van. | 2x1=2<br>Low |
| Entering and commencing work in a new survey area | Coming into contact with unknown hazards in a new survey area. | 4 | 2 | 8<br>Moderate | Where possible, arrange for livestock to be removed from survey areas before work is begun.<br><br>Liaise with farmer with regard to livestock.<br><br>Complete a walkover survey and dynamic risk assessment of the survey area to identify any hidden or unusual hazards, remove or reduce the hazard as best as possible and inform all other staff members of both the hazard and the measures that are being implemented to minimise the risk. | Provide a project questionnaire a to be completed by the client before commencement of fieldwork to reduce or eliminate hazards before commencing fieldwork. | 2x1=2<br>Low |
| Balancing the magnetic sensors | To complete the sensors' calibration requires the cart to be lifted and turned upside down. | 4 | 3 | 12<br>Moderate | When the cart must be lifted, ensure it is set up by two people. Before the cart is lifted, a set of steps and commands should be agreed, who will perform each step and when.<br><br>If either party feels uncomfortable with the procedure, they should immediately let their partner now and safely put the cart down together. | | 3x2=6<br>Low |

# STANDARD MAGNETIC FIELDWORK RISK ASSESSMENT

| Likelihood of Accident/Incident Occurring | Severity of Consequences |
|---|---|
| 1. Highly improbable<br>2. Probable – annually<br>3. Infrequent – 2-3 times/year<br>4. Occasional – monthly<br>5. Frequent – weekly | 1. Minor injury minor damage to plant/equipment/buildings<br>2. Injury (no time lost) damage repair costs are low<br>3. Injury (time lost) high damage repair costs<br>4. Major reportable injury very high damage repair costs<br>5. Fatality major damage and major costs |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | The cart should not be lifted in high winds or when the ground is slippery underfoot. | | |
| Surveying with the cart | Slips, trips and falls while walking with instrument.<br><br>Strains to muscles while pulling cart. | 4 | 3 | 12<br>Moderate | Care taken when working in field.<br><br>Work not to be undertaken where there are poor field conditions, such as heavy plough or thick vegetation - where a clear view of the underfoot condition is not possible. | Safety survey boots to be worn while walking.<br><br>Warm up/ down in cold conditions. | 3x2=6<br>Low |
| Working in all weather conditions. | Hypothermia and heat stroke. | 3 | 3 | 9<br>Moderate | Stop survey and take shelter in heavy rain and strong wind to avoid accidents and illness.<br><br>Take regular breaks in hot weather. | Appropriate PPE to be worn, full waterproofs and safety boots are provided.<br><br>Make use of the provided, water, sun tan lotion and aftersun. Wear a hat. | 3x1=3<br>Low |

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# SITE SPECIFIC RISK ASSESSMENT

Project Name: Project No:

Client: Assessor:

Date of Survey: Signature:

**Description:**

| Hazard | Who could be harmed? | Mitigation strategies? | Any further action required? | Who should take action? When? | Has the hazard been resolved? |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
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# COSHH FORM

| **Task**<br>**Refuelling of Quad Bike** | |
|---|---|
| **Location of activity: On Site** | **Assessment Reference: MAGCOSHH - 3** |
| **Who is at Risk:** | Staff undertaking task, nearby contractors and/ or public. |
| **Material** | **Hazard** |
| Petrol | Risk of combustion. The vapours and liquid are hazardous to health. Skin contact with liquid fuel can lead to soreness and itching rashes or blistering (dermatitis). |

**Control Measures**

Store only the minimum amount of fuel required in the appropriate container, never over fill the container. Make sure the container is on firm level ground when filling. Regularly inspect the container to make sure it is in full working order and free from damage. Should you have any concern regarding the container report it immediately and do not use it.

Only refuel the quad bike where it is safe to do so, in a well-ventilated area, away from any source of heat, spark, flame or other source of ignition. Only undertake refueling when the area is free from other contractors and / or visitors, members of the public. Refuel the quad bike well away from watercourses or drainage systems to reduce risk of harm to wildlife. Use the appropriate funnel and spouts when refuelling to reduce the chance of spillage. Make sure the vehicle is switched off during the refuelling. Immediately secure both the container and the fuel tank on completion of refuelling. Make sure both the spill kit, fire extinguisher and fire blanket are to hand during the procedure.

Clean up any spillage immediately, using the spill kit.

**Flammables and explosives**

*Is there a substance used or formed that might give rise to a fire?* Yes

Petroleum is extremely flammable. Store away from heat, sparks, open flame and combustible materials. Store only in the appropriate container.

Foam, dry powder and carbon dioxide extinguishers can be used.

**Personal Protective Equipment [***gloves, safety glasses*]

Wear safety glasses and single use gloves at all times while refuelling. Keep skin covered. Dispose of single use gloves after use.

**Monitoring**

Not required.

| |
|---|
| **Health surveillance required**<br><br>Check skin for dryness and soreness every six months. Report any problems to Finnegan Pope-Carter. |
| **Storage**<br><br>Keep away from heat, sparks, open flame and combustible materials. Store only in the provided container. Store used spill kit granules and absorbents in the waste bags provided in the spill kit |
| **Waste disposal** [general waste, recyclable]<br><br>Arrange for hazardous waste collection through Bradford City Council |
| **First Aid**<br><br>In the event of petrol coming into contact with skin or eyes rinse immediately with plenty of water or eyewash. Change clothes immediately. Attend the nearest A&E. |

| |
|---|
| **Assessment Summary**<br><br>The risk posed from refuelling the quad bike is medium. Using the appropriate control measures and PPE this risk is reduced to medium low. |

Assessor: Ed Burton

Signed: Edward Burton

Date: 07/3/19

Review date: 31/3/20

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# COSHH FORM

| Task<br>**Use of Lithium Polymer Batteries** | |
|---|---|
| **Location of activity: On Site** | **Assessment Reference: MAGCOSHH - 4** |
| **Who is at Risk:** | Staff undertaking task survey. |
| **Material** | **Hazard** |
| Lithium Polymer Batteries | Electrolyte may irritate skin or eyes. Fire Hazard if battery is damaged, incorrectly charged or exposed to excessive heat. |

**Control Measures and storage procedures**

Batteries are designed to be recharged, use only charging equipment provided.

Use Lipo fire proof bags provided when charging. Do not leave unattended when charging.

Place charging equipment and batteries on a level, non-flammable surface.

Inspect cables in advance of use and charging, do not use or charge batteries **if a fault is found, quarantine the item and report to management.**

Never disassemble a battery, do not puncture or crush.

Do not store above 60® C

Protect terminals when storing

**Flammables and explosives**

*Is there a substance used or formed that might give rise to a fire?* Yes

Damaged cells may leak flammable vapours.

Foam, dry powder and carbon dioxide extinguishers can be used.

**Personal Protective Equipment [***gloves, safety glasses*]
No PPE is required for the handling and use of batteries which have not been damaged.
The handling of damaged batteries should be avoided, if it is necessary to move a damaged battery chemical resistant gloves should be used, and safety glasses worn. No skin should be exposed.

**Monitoring**

Not required.

**Health surveillance required**

| |
|---|
| None. |
| **Storage**<br><br>Keep away from heat, sparks, open flame and combustible materials. Store only in the provided containers, within lipo fire proof bags. |
| **Waste disposal** [general waste, recyclable]<br><br>Arrange for hazardous waste collection through Bradford City Council |
| **First Aid**<br><br>If cell becomes ruptured or damaged and material from within the cell comes in to contact with skin, flush immediately with water. If contact with eyes occurs, then flush with copious amounts of water for 15 minutes. Seek medical advice. |

| |
|---|
| **Assessment Summary**<br><br>The risk posed from the use of Lithium Polymer baterries is medium. Using the appropriate control measures and PPE this risk is reduced from medium to low. |

Assessor: Ed Burton

Signed: Edward Burton

Date: 7/3/19

Review date: 31/3/20

magnitude surveys

# OASIS DATA COLLECTION FORM: England



## OASIS ID: colchest3-369801

### Project details

| | |
|---|---|
| Project name | Fieldwalking and metal-detecting survey on land to the west of Dawes Lane, West Mersea, Essex, CO5 8GJ |
| Short description of the project | Archaeological fieldwalking, metal-detecting and geophysical surveys plus a trial-trenching evaluation (36 trenches) was carried out on land to the west of Dawes Lane, West Mersea, Essex in advance of the construction of a hundred residential dwellings. The development site is located in an area surrounded by cropmarks and is 450m south of Mersea Barrow. The fieldwalking survey revealed very small scatters of prehistoric, Roman and medieval material, with post-Roman tile/brick and post-medieval and modern pottery dominating the assemblage. Similarly, the metal-detecting survey only produced post-medieval/modern agricultural ironwork and modern waste material. The geophysical survey identified natural linears, historic field boundaries and drainage gullies. Five post-medieval/modern field boundary ditches and six drainage gullies were excavated during the trial-trenching evaluation along with a medieval/post-medieval pit, a possible Roman pit, a possible prehistoric ditch and 15 undated features (seven tree-throws, four pits, two gullies and two ditches). |
| Project dates | Start: 28-10-2019 End: 04-11-2019 |
| Previous/future work | No / Yes |
| Any associated project reference codes | 192211 - Planning Application No. |
| Any associated project reference codes | 2019/10a - Contracting Unit No. |
| Any associated project reference codes | ECC4388 - HER event no. |
| Type of project | Field evaluation |
| Site status | None |
| Current Land use | Cultivated Land 4 - Character Undetermined |
| Monument type | N/A None |
| Significant Finds | FLINT Late Prehistoric |
| Significant Finds | POTTERY Roman |
| Significant Finds | CERAMIC BUILDING MATERIAL Roman |
| Significant Finds | POTTERY Medieval |
| Significant Finds | CERAMIC BUILDING MATERIAL Medieval |
| Significant Finds | POTTERY Post Medieval |
| Significant Finds | CERAMIC BUILDING MATERIAL Post Medieval |
| Significant Finds | AGRICULTURAL IRONWORK Post Medieval |
| Significant Finds | POTTERY Modern |
| Significant Finds | CERAMIC BUILDING MATERIAL Modern |
| Significant Finds | AGRICULTURAL IRONWORK Modern |
| Significant Finds | GLASS Modern |
| Methods & techniques | ""Fieldwalking"","Metal Detectors"" |
| Development type | Rural residential |
| Prompt | National Planning Policy Framework - NPPF |
| Position in the planning process | Pre-application |

### Project location

| | |
|---|---|
| Country | England |
| Site location | ESSEX COLCHESTER WEST MERSEA land to the west of Dawes Lane |
| Postcode | CO5 8GJ |
| Study area | 10.2 Hectares |
| Site coordinates | TM 021 137 51.7848608426 0.930459015367 51 47 05 N 000 55 49 E Point |

### Project creators

| | |
|---|---|
| Name of Organisation | Colchester Archaeological Trust |
| Project brief originator | CBC Archaeological Officer |
| Project design originator | Emma Holloway |

| | |
|---|---|
| Project director/manager | Chris Lister |
| Project supervisor | Ben Holloway |
| Type of sponsor/funding body | Developer |
| Name of sponsor/funding body | Mersea Homes Ltd |

## Project archives

| | |
|---|---|
| Physical Archive recipient | Colchester Museum |
| Physical Archive ID | ECC4388 |
| Physical Contents | "Worked stone/lithics","Ceramics" |
| Physical Archive notes | Prehistoric flint, Roman and medieval pottery retained, all other finds discarded |
| Digital Archive recipient | Colchester Museum |
| Digital Archive ID | ECC4388 |
| Digital Contents | "other" |
| Digital Media available | "Spreadsheets","Survey","Text" |
| Paper Archive recipient | Colchester Museum |
| Paper Archive ID | ECC4388 |
| Paper Contents | "other" |
| Paper Media available | "Miscellaneous Material","Report" |

## Project bibliography 1

| | |
|---|---|
| Publication type | Grey literature (unpublished document/manuscript) |
| Title | Archaeological fieldwalking, metal-detecting and geophysical surveys plus a trial-trenching evaluation on land to the west of Dawes Lane, West Mersea, Essex, CO5 8GJ: October-November 2019 |
| Author(s)/Editor(s) | Pooley, L. |
| Other bibliographic details | CAT Report 1499 |
| Date | 2019 |
| Issuer or publisher | Colchester Archaeological Trust |
| Place of issue or publication | Colchester |
| Description | A4 ring-bound loose leaf |
| URL | http://cat.essex.ac.uk/all-reports.html |

| | |
|---|---|
| Entered by | Laura Pooley (lp@catuk.org) |
| Entered on | 10 December 2019 |

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# OASIS DATA COLLECTION FORM: England



## OASIS ID: colchest3-369807

### Project details

| | |
|---|---|
| Project name | Archaeological evaluation on land to the west of Dawes Lane, West Mersea, Essex, CO5 8GJ |
| Short description of the project | Archaeological fieldwalking, metal-detecting and geophysical surveys plus a trial-trenching evaluation (36 trenches) was carried out on land to the west of Dawes Lane, West Mersea, Essex in advance of the construction of a hundred residential dwellings. The development site is located in an area surrounded by cropmarks and is 450m south of Mersea Barrow. The fieldwalking survey revealed very small scatters of prehistoric, Roman and medieval material, with post-Roman tile/brick and post-medieval and modern pottery dominating the assemblage. Similarly, the metal-detecting survey only produced post-medieval/modern agricultural ironwork and modern waste material. The geophysical survey identified natural linears, historic field boundaries and drainage gullies. Five post-medieval/modern field boundary ditches and six drainage gullies were excavated during the trial-trenching evaluation along with a medieval/post-medieval pit, a possible Roman pit, a possible prehistoric ditch and 15 undated features (seven tree-throws, four pits, two gullies and two ditches). |
| Project dates | Start: 28-10-2019 End: 04-11-2019 |
| Previous/future work | Yes / Not known |
| Any associated project reference codes | 2019/10b - Contracting Unit No. |
| Any associated project reference codes | 192211 - Planning Application No. |
| Any associated project reference codes | ECC4389 - HER event no. |
| Type of project | Field evaluation |
| Site status | None |
| Current Land use | Cultivated Land 4 - Character Undetermined |
| Monument type | GULLY Late Prehistoric |
| Monument type | PIT Roman |
| Monument type | FIELD BOUNDARY DITCHES Post Medieval |
| Monument type | FIELD BOUNDARY DITCHES Modern |
| Monument type | DRAINAGE GULLIES Post Medieval |
| Monument type | DRAINAGE GULLIES Modern |
| Monument type | PITS Uncertain |
| Monument type | DITCHES Uncertain |
| Monument type | GULLIES Uncertain |
| Monument type | TREE-THROWS Uncertain |
| Significant Finds | POTTERY Late Prehistoric |
| Significant Finds | POTTERY Roman |
| Significant Finds | CERAMIC BUILDING MATERIAL Roman |
| Significant Finds | CERAMIC BUILDING MATERIAL Medieval |
| Significant Finds | CERAMIC BUILDING MATERIAL Post Medieval |
| Significant Finds | CERAMIC BUILDING MATERIAL Modern |
| Significant Finds | POTTERY Modern |
| Significant Finds | AGRICULTURAL IRONWORK Post Medieval |
| Significant Finds | MISCELLANEOUS METALWORK Post Medieval |
| Significant Finds | AGRICULTURAL IRONWORK Modern |
| Significant Finds | MISCELLANEOUS METALWORK Modern |
| Methods & techniques | ""Sample Trenches"" |
| Development type | Rural residential |
| Prompt | National Planning Policy Framework - NPPF |
| Position in the planning process | Pre-application |

### Project location

| | |
|---|---|
| Country | England |
| Site location | ESSEX COLCHESTER WEST MERSEA Land to the west of Dawes Lane, West Mersea, Essex |
| Postcode | CO5 8GJ |
| Study area | 10.2 Hectares |

| | |
|---|---|
| Site coordinates | TM 021 137 51.7848608426 0.930459015367 51 47 05 N 000 55 49 E Point |
| Height OD / Depth | Min: 20.05m Max: 20.76m |

## Project creators

| | |
|---|---|
| Name of Organisation | Colchester Archaeological Trust |
| Project brief originator | CBC Archaeological Officer |
| Project design originator | Emma Holloway |
| Project director/manager | Chris Lister |
| Project supervisor | Ben Holloway |
| Type of sponsor/funding body | Developer |
| Name of sponsor/funding body | Mersea Homes Ltd |

## Project archives

| | |
|---|---|
| Physical Archive recipient | Colchester Museum |
| Physical Archive ID | ECC4389 |
| Physical Contents | "Animal Bones","Ceramics","Worked stone/lithics" |
| Digital Archive recipient | Colchester Museum |
| Digital Archive ID | ECC4389 |
| Digital Contents | "other" |
| Digital Media available | "Images raster / digital photography","Spreadsheets","Survey","Text" |
| Paper Archive recipient | Colchester Museum |
| Paper Archive ID | ECC4839 |
| Paper Contents | "other" |
| Paper Media available | "Miscellaneous Material","Photograph","Plan","Report","Section" |

## Project bibliography 1

| | |
|---|---|
| Publication type | Grey literature (unpublished document/manuscript) |
| Title | Archaeological fieldwalking, metal-detecting and geophysical surveys plus a trial-trenching evaluation on land to the west of Dawes Lane, West Mersea, Essex, CO5 8GJ: October-November 2019 |
| Author(s)/Editor(s) | Pooley, L. |
| Other bibliographic details | CAT Report 1499 |
| Date | 2019 |
| Issuer or publisher | Colchester Archaeological Trust |
| Place of issue or publication | Colchester |
| Description | A4 ring-bound loose leaf |
| URL | http://cat.essex.ac.uk/all-reports.html |

| | |
|---|---|
| Entered by | Laura Pooley (lp@catuk.org) |
| Entered on | 10 December 2019 |

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# Geophysical Survey Report

# of

# Land West of Dawes Lane, West Mersea

**For**

**Colchester Archaeological Trust**

**On Behalf Of**

**Mersea Homes**

**Magnitude Surveys Ref: MSTM565**

**HER Event Number: ECC4387**

**OASIS ID: magnitud1-371656**

**October 2019**

**Unit 17, Commerce Court**

**Challenge Way**

**Bradford**

**BD4 8NW**

**01274 926020**

**info@magnitudesurveys.co.uk**

**Report By:**

Robert Legg BSc (Hons) MSc, Frederick Salmon BSc FGS

**Report Approved By:**

Dr. Chrys Harris MCIfA

**Issue Date:**

30 October 2019

# Abstract

Magnitude Surveys was commissioned to assess the subsurface archaeological potential of a c. 10.2ha area of land west of Dawes Lane, West Mersea, Colchester, Essex. A fluxgate gradiometer survey was successfully completed across the site. No anomalies indicative of archaeological activity have been identified. Geophysical results primarily reflect natural variations visible in the form of an irregular lattice pattern of anomalies; this pattern has been associated with the fracturing of the upper bedrock layer. Anomalies related to the agricultural use of the site have been detected and interpreted as historic field boundaries and drains. The impact of modern activity on the results is limited to the effects caused by Dawes Lane on the eastern boundary, residential properties along southern boundary and discrete ferrous anomalies for near surface metallic objects.

# Contents

# List of Figures

# 1. Introduction

1.1. Magnitude Surveys Ltd (MS) was commissioned by Colchester Archaeological Trust on behalf of Mersea Homes to undertake a geophysical survey on a c.10.2ha area of land west of Dawes Lane, West Mersea, Colchester, Essex (TM 0223 1375).

1.2. The geophysical survey comprised hand-pulled cart-mounted GNSS-positioned fluxgate gradiometer survey.

1.3. The survey was conducted in line with the current best practice guidelines produced by Historic England (David et al., 2008), the Chartered Institute for Archaeologists (CIfA, 2014) and the European Archaeological Council (Schmidt et al., 2015).

1.4. It was conducted in line with a WSI produced by MS (Magnitude Surveys 2019).

1.5. The survey commenced on 15th October 2019 and took one day to complete.

# 2. Quality Assurance

2.1. Magnitude Surveys is a Registered Organisation of the Chartered Institute for Archaeologists (CIfA), the chartered UK body for archaeologists, and a corporate member of ISAP (International Society of Archaeological Prospection).

2.2. Director Dr. Chrys Harris is a Member of CIfA, has a PhD in archaeological geophysics from the University of Bradford and is the Vice-Chair of ISAP. Director Finnegan Pope-Carter is a Fellow of the London Geological Society, the chartered UK body for geophysicists and geologists, as well as a member of GeoSIG, the CIfA Geophysics Special Interest Group. Reporting Analyst Dr. Kayt Armstrong has a PhD in archaeological geophysics from Bournemouth University, is the Vice Conference Secretary and Editor of ISAP News for ISAP, and is the UK Management Committee representative for the COST Action SAGA.

2.3. All MS managers have relevant degree qualifications to archaeology or geophysics. All MS field and office staff have relevant archaeology or geophysics degrees and/or field experience.

2.4. Data collection was repeated over the same traverses to demonstrate the consistency and reliability of the geophysical survey. These are presented below:

2.5. Traverses 4, 5 and 6:

2.6. Traverses 4, 5 and 7:

# 3. Objectives

3.1. The objective of this geophysical survey is to assess the subsurface archaeological potential of the survey area.

# 4. Geographic Background

4.1. The site is located on the northeast edge of West Mersea, Mersea Island, Essex (Figure 1). Survey was undertaken across the southern section of an arable field. The field continues farther to the north beyond the survey extent, and the site is bound by Dawes Lane to the east, residential properties of Barrow Mews and Stable Close to the south and recreation fields to the west (Figure 2).

4.2. Survey considerations:

| Survey Area | Ground Conditions | Further Notes |
|---|---|---|
| 1 | A flat, arable field under a young oilseed rape crop. Ground conditions were damp at the time of survey. | Bound to the east by Dawes Lane, wooden fencing and a hedgerow to the south and west. A housing estate lies immediately past the south field boundary and the field continues north beyond the survey area. |

4.3. The survey area is located within the Eastern Hampshire Basin. This particular depression within the basin is bounded to the south by a build up of 'Storm Beach Deposits' creating a natural barrier to any tidal influence and deposition. Along the other coast lines of Mersea, superficial material comprises 'Tidal Flat deposits' corresponding with the bodies of water surrounding the land mass. Behind this barrier, little superficial geology is recorded; any such sediment within the area corresponds to localised (undated) landslide events, in which natural barriers of nearby riverine or coastal environments have failed allowing coarse grained river terrace deposits to flow into the basin and settle on the flat terrain, most noticeable along the southern coast line (British Geological Survey, 2019).

4.4. Within the survey area, no superficial geology is identified, suggesting a shallow bedrock layer or upper consolidated sedimentary layer is visible within the geophysical survey. Comprised mainly of Pliocene Clays silts and sands, of the Upper Thames Formation, the site was part of a shallow sea environment. As a result of the sites proximity to the glacial limit Isostatic readjustment lowered the sea level relative to the land. As the land raised from the sea as the glacier melted, water in this basin slowly dissipated, depositing sedimentary material, forming a friable sedimentary layer(s) – prone to fracturing and weathering (in the near surface), (British Geological Survey, 2019).

4.5. Soils within the site are acid loamy with 'Slightly impeded drainage' (Soilscapes, 2019). This percolation of moisture through the upper soil layers may cause the drying out or the freeze-thaw (seasonal weather) of the upper bedrock layer.

# 5. Archaeological Background

5.1. The following is a summary of an assessment of the site produced by Oxford Archaeology (Pridmore 2019) and provided by Colchester Archaeological Trust.

5.2. Within the survey area, no heritage assets have been recorded, though cropmarks and possible ridge and furrow in the north of the site are identifiable in aerial images of the site. Further cropmarks are identifiable surrounding the site, however, most of these, as with the cropmarks on site, are interpreted as of a probable natural origin.

5.3. Prehistoric activity in the wider environs has been recorded with Bronze Age pottery from test pits c.700m and 800m southwest of site (MSS5732 and MCC10238), later Iron Age gold stater just northwest of site and 730m east of site (MCC4894 and MCC8769), worked flints 70m south of site (ECC4176), and a ring ditch cropmark 930m east of site (MCC8721).

5.4. Roman activity has been recorded in the wider environs through finds from test pits including pottery c.700-800m southwest (MCC5732, MCC10238, MCC10237), c.800-900m south (MCC8822 and MCC10241) and c.600m west of site (MCC10236), a lava stone 70m south of site (ECC4176), and quern stones or coin findspots c.600 and 750m north (MCC8261 and MCC8784), c.850m southwest (MCC8784), c.750m west (MCC4863) and c.950m east-northeast of site (MCC8854).

5.5. Early Medieval activity is restricted to one metal detecting findspot of coins and a copper alloy disc c.700m west of site (MCC8768). Late Medieval activity in the wider landscape is recorded with pottery finds from test pits c.800m west (MCC10214 and MCC5732) and c.700m-850m of site (MCC10237, MCC10236 ad MCC10236), and field boundaries identified in aerial photographs believed to be Medieval in origin c.600m east of site (MCC5595). Post medieval pottery has been identified c.700-850m southwest (MCC10214, MCC10241 MCC10237) and c.700m west of site (MCC10236).

# 6. Methodology

## 6.1. Data Collection

6.1.1. Geophysical prospection comprised the magnetic method as described in the following table.

6.1.2. Table of survey strategies:

| Method | Instrument | Traverse Interval | Sample Interval |
|---|---|---|---|
| Magnetic | Bartington Instruments Grad-13 Digital Three-Axis Gradiometer | 1m | 200Hz reprojected to 0.125m |

6.1.3. The magnetic data were collected using MS' bespoke hand-pulled cart system GNSS-positioned system.

6.1.3.1. MS' cart system was comprised of Bartington Instruments Grad 13 Digital Three-Axis Gradiometers. Positional referencing was through a multi-channel, multi-constellation GNSS Smart Antenna RTK GPS outputting in NMEA mode to

ensure high positional accuracy of collected measurements. The RTK GPS is accurate to 0.008m + 1ppm in the horizontal and 0.015m + 1ppm in the vertical.

6.1.3.2. Magnetic and GPS data were stored on an SD card within MS' bespoke datalogger. The datalogger was continuously synced, via an in-field Wi-Fi unit, to servers within MS' offices. This allowed for data collection, processing and visualisation to be monitored in real-time as fieldwork was ongoing.

6.1.3.3. A navigation system was integrated with the RTK GPS, which was used to guide the surveyor. Data were collected by traversing the survey area along the longest possible lines, ensuring efficient collection and processing.

## 6.2. Data Processing

6.2.1. Magnetic data were processed in bespoke in-house software produced by MS. Processing steps conform to Historic England's standards for "raw or minimally processed data" (see sect 4.2 in David et al., 2008: 11).

Sensor Calibration – The sensors were calibrated using a bespoke in-house algorithm, which conforms to Olsen et al. (2003).

Zero Median Traverse – The median of each sensor traverse is calculated within a specified range and subtracted from the collected data. This removes striping effects caused by small variations in sensor electronics.

Projection to a Regular Grid – Data collected using RTK GPS positioning requires a uniform grid projection to visualise data. Data are rotated to best fit an orthogonal grid projection and are resampled onto the grid using an inverse distance-weighting algorithm.

Interpolation to Square Pixels – Data are interpolated using a bicubic algorithm to increase the pixel density between sensor traverses. This produces images with square pixels for ease of visualisation.

## 6.3. Data Visualisation and Interpretation

6.3.1. This report presents the gradient of the sensors' total field data as greyscale images, as well as the total field data from the lower sensors. The gradient of the sensors minimises external interferences and reduces the blown-out responses from ferrous and other high contrast material. However, the contrast of weak or ephemeral anomalies can be reduced through the process of calculating the gradient. Consequently, some features can be clearer in the respective gradient or total field datasets. Multiple greyscale images at different plotting ranges have been used for data interpretation. Greyscale images should be viewed alongside the XY trace plot (Figure 8). XY trace plots visualise the magnitude and form of the geophysical response, aiding in anomaly interpretation.

6.3.2. Geophysical results have been interpreted using greyscale images and XY traces in a layered environment, overlaid against open street maps, satellite imagery, historic maps, LiDAR data, and soil and geology maps. Google Earth (2019) was consulted as well, to compare the results with recent land usages.

6.3.3. Geodetic position of results - All vector and raster data have been projected into OSGB36 (ESPG27700) and can be provided upon request in ESRI Shapefile (.SHP) and Geotiff (.TIF) respectively. Figures are provided with raster and vector data projected against OS Open Data as well as against mapping provided by the client.

# 7. Results

## 7.1.Qualification

7.1.1. Geophysical results are not a map of the ground and are instead a direct measurement of subsurface properties. Detecting and mapping features requires that said features have properties that can be measured by the chosen technique(s) and that these properties have sufficient contrast with the background to be identifiable. The interpretation of any identified anomalies is inherently subjective. While the scrutiny of the results is undertaken by qualified, experienced individuals and rigorously checked for quality and consistency, it is often not possible to classify all anomaly sources. Where possible an anomaly source will be identified along with the certainty of the interpretation. The only way to improve the interpretation of results is through a process of comparing excavated results with the geophysical reports. MS actively seek feedback on their reports as well as reports of further work in order to constantly improve our knowledge and service.

## 7.2.Discussion

7.2.1. The geophysical results are presented in consideration with satellite imagery (Figure 6) and historic maps (Figure 7).

7.2.2. The fluxgate gradiometer survey has responded well to the environment of the survey area. Modern interference is limited to Dawes Lane on the eastern boundary, residential properties along southern boundary and discrete ferrous anomalies for near surface metallic objects. The survey area is characterised by a quiet magnetic background. No anomalies indicative of archaeological activity have been identified in the survey area; anomalies of natural origin dominate instead the results. Natural variations have been detected across the survey area with linear anomalies forming an irregular lattice pattern (Figure 5). The anomalies follow several cropmarks previously identified from aerial photographs (see Section 5.2) (Figure 6) and most likely reflect fracturing of the underlying Pliocene Clays silts and sands, and subsequent infilling by overlying deposits (see Section 4.4).

7.2.3. Several linear anomalies indicative of drainage features have been noted running north-south across the survey area (Figure 6). Evidence of historic agricultural land usage consists in fragmentary, discrete anomalies positioned along field boundaries identified on historic OS maps (Figure 7).

## 7.3.Interpretation

### 7.3.1. General Statements

7.3.1.1. Geophysical anomalies will be discussed broadly as classification types across the survey area. Only anomalies that are distinctive or unusual will be discussed individually.

7.3.1.2. **Magnetic Disturbance** – The strong anomalies produced by extant metallic structures along the edges of the field have been classified as 'Magnetic Disturbance'. These magnetic 'haloes' will obscure the response of any weaker underlying features, should they be present, often over a greater footprint than the structure they are being caused by.

7.3.1.3. **Ferrous (Spike)** – Discrete ferrous-like, dipolar anomalies are likely to be the result of isolated modern metallic debris on or near the ground surface.

7.3.1.4. **Ferrous/Debris (Spread)** – A ferrous/debris spread refers to a concentrated deposition of discrete, dipolar ferrous anomalies and other highly magnetic material.

7.3.1.5. **Undetermined** – Anomalies are classified as Undetermined when the anomaly origin is ambiguous through the geophysical results and there is no supporting or correlative evidence to warrant a more certain classification. These anomalies are likely to be the result of geological, pedological or agricultural processes, although an archaeological origin cannot be entirely ruled out. Undetermined anomalies are generally not ferrous in nature.

### 7.3.2. Magnetic Results - Specific Anomalies

7.3.2.1. **Natural (**Weak**)** – Across the entirety of the survey area, a complex of intersecting linear anomalies has been identified (Figure 5), forming an irregular lattice pattern representation of geological fracturing. The fractures exhibit a positive, but weak magnetic signal most explicit in the total field data (Figure 3). The fracture anomalies correspond with cropmarks already recorded in the wider landscape (Figure 6) and appear to be characteristic of the geology of Mersey Island. Specifically, they can be associated with the fracturing of the island's shallow bedrock and its infilling with sedimentary layers deposited subsequent to the raising of the island from the sea (see Section 4.4).

7.3.2.2. **Agricultural (Strong/ Weak/Spread)** – A series of discrete anomalies have been detected forming two parallel linear lines. They exhibit a strong positive signal and are east to west oriented. Each alignment of discrete anomalies measures c.300m in length. These anomalies correspond with former field boundaries noted on 2nd edition OS maps (Figure 7).

7.3.2.3. **Drainage Feature/ Possible Drainage Feature** – Across the majority of the survey area, a series of roughly parallel linear anomalies have been identified (Figure 5). These linear anomalies exhibit a very weak dipolar magnetic signal most visible in the magnetic gradient data and in the XY trace plot (Figures 4, 8). This weak dipolar linear anomaly is typical of drainage features. Some

anomalies with ephemeral magnetic signals have been classified as "Possible Drainage Feature" as these follow a similar alignment to those clearly defined typical drainage anomalies. The change of the magnetic signal is due to the slight shift of alignment, the ephemeral anomalies follow the exact alignment the data was collected. The magnetic signature of anomalies on the exact alignment of data collection is minimised.

# 8. Conclusions

8.1. A fluxgate gradiometer survey has successfully been undertaken across the site. No anomalies suggestive of archaeological features were identified. The impact of modern activity on the site is limited with the south and east perimeters of the survey area been affected by adjacent roadways and buildings.

8.2. The geophysical results have detected the fracturing of the shallow sedimentary layer as a lattice of linear anomalies which cross the site. This effect is caused by the site's location within the particular geological landscape on Mersea Island comprised of a shallow sea environment, with little superficial geology recorded. This allows the shallow bedrock geology layer to be visible within the results. The changing of water levels on the island due to glacial limit Isostatic readjustment deposited sedimentary material, forming friable sedimentary layer(s) – prone to fracturing and weathering (in the near surface).

8.3. Historic agricultural use has been detected in the form of two series of discrete anomalies corresponding with two mapped field boundaries. Several drainage features have been found as well.

# 9. Archiving

9.1. MS maintains an in-house digital archive, which is based on Schmidt and Ernenwein (2013). This stores the collected measurements, minimally processed data, georeferenced and un-georeferenced images, XY traces and a copy of the final report.

9.2. MS contributes reports to the ADS Grey Literature Library upon permission from the client, subject to the any dictated time embargoes.

# 10. Copyright

10.1. Copyright and the intellectual property pertaining to all reports, figures, and datasets produced by Magnitude Services Ltd. is retained by MS. The client is given full licence to use such material for their own purposes. Permission must be sought by any third party wishing to use or reproduce any IP owned by MS.

# 11. References

British Geological Survey, 2019. Geology of Britain. Mersea Island, Essex. [http://mapapps.bgs.ac.uk/geologyofbritain/home.html/]. [Accessed 18/10/2019].

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Schmidt, A., Linford, P., Linford, N., David, A., Gaffney, C., Sarris, A. and Fassbinder, J., 2015. Guidelines for the use of geophysics in archaeology: questions to ask and points to consider. EAC Guidelines 2. European Archaeological Council: Belgium.

Soilscapes, 2019. Mersea Island. Cranfield University, National Soil Resources Institute [http://landis.org.uk]. [Accessed 18/10/2019].

# 12. Project Metadata

| | |
|---|---|
| MS Job Code | MSTM565 |
| Project Name | Land West of Dawes Lane, West Mersea |
| Client | Colchester Archaeological Trust |
| Grid Reference | TM 0223 1375 |
| Survey Techniques | Magnetometry |
| Survey Size (ha) | 10.2 |
| Survey Dates | 2019-10-15 |
| Project Manager | Dr. Chrys Harris MCIfA |
| Project Officer | Julia Cantarano *Ingenieur* PCIfA, reporting checked by Leanne Swinbank BA ACIfA |
| HER Event No | ECC4387 |
| OASIS No | magnitud1-371656 |
| S42 Licence No | N/A |
| Report Version | 0.2 |

# 13. Document History

| Version | Comments | Author | Checked By | Date |
|---|---|---|---|---|
| 0.0 | Initial draft for Project Officer to Review | RL, MC | LS | 2019-10-21 |
| 0.1 | Minor corrections from Project Officer, issued to Project Manager to review | FS | CH | 2019-10-22 |
| 0.2 | Minor corrections from Project Manager, issued to client for review | IC | JC | 2019-10-24 |
| 1.0 | Corrections from client | JC | FPC | 2019-10-30 |


MSTM565 - Land West of Dawes Lane, West Mersea
Figure 1 - Site Location
1:25,000 @ A4
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Contains Ordnance Survey data © Crown Copyright and database right 2019

Site Boundary

N

0 0.5 1 km

magnitude surveys


MSTM565 - Land West of Dawes Lane, West Mersea
Figure 2 - Location of Survey Area
1:5,000 @ A3
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Contains Ordnance Survey data © Crown Copyright and database right 2019

Survey Extent

N

0 100 200 300 m

magnitude surveys

213500
213600
213700
213800
213900
602100
602200
602300
602400
602000
602100
602200
Area 1

MSTM565 - Land West of Dawes Lane, West Mersea
Figure 3 - Magnetic Total Field (Lower Sensor)
1:1,500 @ A3
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Background mapping provided by client

48,997 nT 49,005

N

0 40 80 120 m

magnitude surveys

213500
213600
213700
213800
213900
602100
602200
602300
602400
602000
602100
602200
Area 1

MSTM565 - Land West of Dawes Lane, West Mersea
Figure 4 - Magnetic Gradient
1:1,500 @ A3
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Background mapping provided by client

-1 nT 2

N

0 40 80 120 m

magnitude surveys

213500
213600
213700
213800
213900
602100
602200
602300
602400
602000
602100
602200
Area 1

MSTM565 - Land West of Dawes Lane, West Mersea
Figure 5 - Magnetic Interpretation
1:1,500 @ A3
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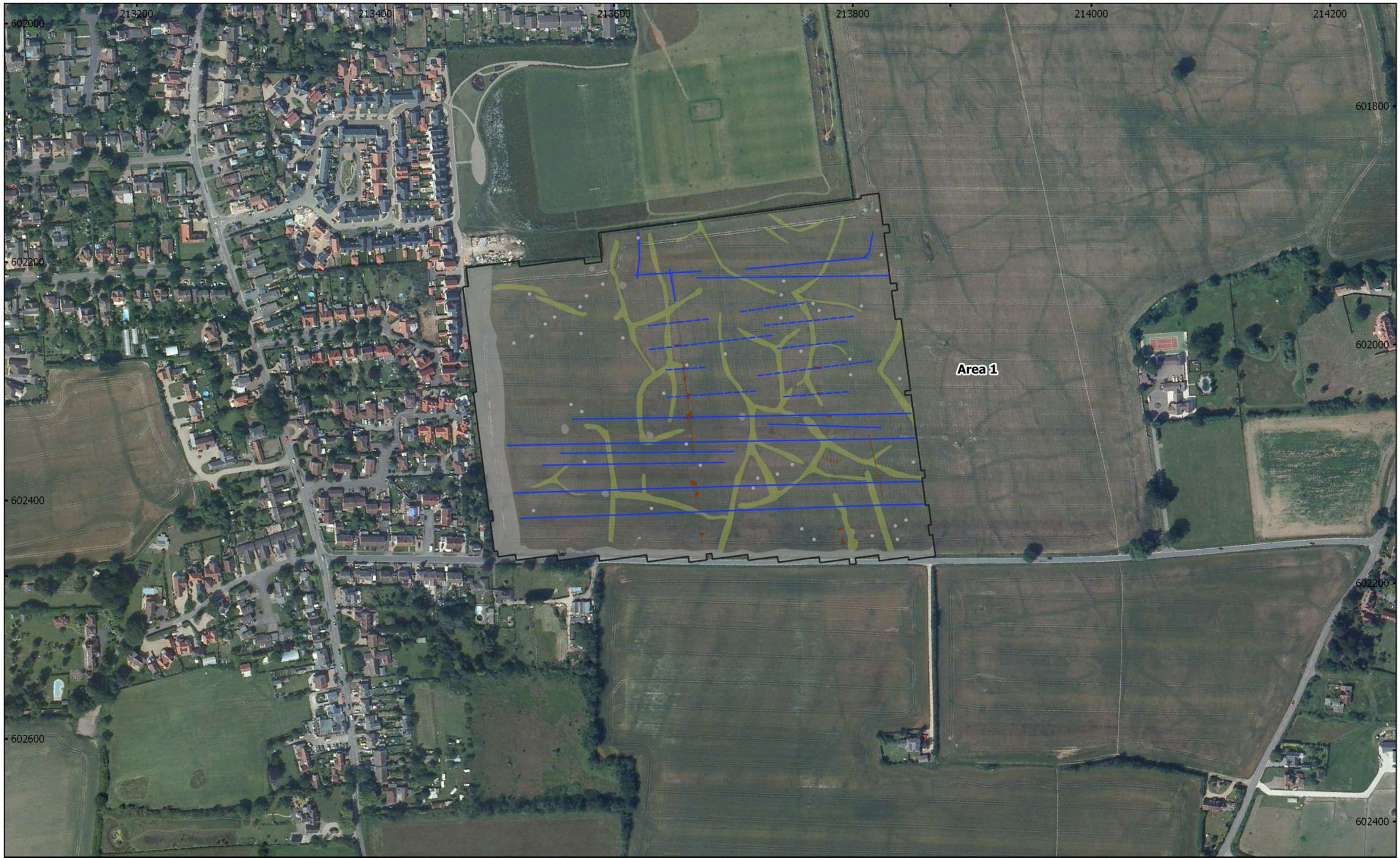
Background mapping provided by client

Agricultural (Spread)
Agricultural (Strong)
Agricultural (Weak)
Magnetic Disturbance
Natural (Weak)
Agricultural (Trend)
Possible Drainage Feature
Drainage Feature
Ferrous (Spike)

N

0 40 80 120 m

magnitude surveys




MSTM565 - Land West of Dawes Lane, West Mersea
Figure 6 - Magnetic Interpretation Over Satellite Imagery
1:3,000 @ A3
Copyright Magnitude Surveys Ltd 2019
Contains satellite imagery © 2019 Bing Satellite

- Agricultural (Spread)
- Agricultural (Strong)
- Agricultural (Weak)
- Magnetic Disturbance
- Natural (Weak)
- Agricultural (Trend)
- Possible Drainage Feature
- Drainage Feature
- Ferrous (Spike)

N

0 80 160 240 m

magnitude surveys


MSTM565 - Land West of Dawes Lane, West Mersea
Figure 7 - Magnetic Interpretation Over Historic Maps
1:3,000 @ A3
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Contains historic maps: Ordnance Survey, 6" 2nd edition c. 1882-1913 © National Library of Scotland

- Agricultural (Spread)
- Agricultural (Strong)
- Agricultural (Weak)
- Magnetic Disturbance
- Natural (Weak)
- Agricultural (Trend)
- Possible Drainage Feature
- Drainage Feature
- Ferrous (Spike)

N

0 80 160 240 m

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213500
213600
213700
213800
213900
602100
602200
602300
602400
602000
602100
602200
Area 1

MSTM565 - Land West of Dawes Lane, West Mersea
Figure 8 - XY Trace Plot
30nT/cm at 1:1,500 @ A3
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Background mapping provided by client

N

0 40 80 120 m

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