DAMERHAM ARCHAEOLOGY PROJECT

EH Project Number 6800

Interim Report on Ploughzone Investigation in August 2013

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1. SUMMARY

1.1 Damerham Archaeology Project (DAP) is focused on the study of a recently discovered complex of prehistoric and Romano-British sites located on the eastern edge of Cranborne Chase, close to the village of Damerham, Hampshire (see Figure 1 for distribution of sites recognised from aerial photographs by 2009).

1.2 Since 2008, the complex has been investigated using a range of non-intrusive survey techniques as well as targeted excavation, a key aim being the investigation of a range of techniques, both in the field and at the analytical stage, allowing the identification of more effective approaches to the recording and characterising of archaeological sites on arable chalklands. A detailed summary of the background and history of the project is contained within the Project Design prepared for the 2013 field season.

1.3 In August 2013, a particular focus of the project was on the investigation of the ploughzone. This comprised intensive surface collection, test-pitting, and excavation of selected sub-surface features. This substantially completed a six-year programme of fieldwork begun in 2008.

1.4 The ploughzone investigation was funded by English Heritage through NHPP Activity 4G2 – Ploughzone Archaeology. This activity requires a "focus on developing a detailed understanding of site characteristics and distributions, and measures for assigning significance".

1.5 During the 2013 field season, a total of 32 hectares were subject to extensive surface collection, and 1 hectare to intensive collection. Collection within that one hectare was supplemented by test-pitting. In addition, targeted excavation involved four trenches located to examine surviving sub-surface deposits associated with five monuments of contrasting character previously identified through remote sensing (see Figure 2 for location of excavation trenches in 2013, and Figure 3 for the fieldwalking grid).

1.6 Briefly stated, the main preliminary conclusions of the ploughzone investigation are that:

- At Damerham, surface collection offered a poor indication of the location and character of the monuments discovered through remote sensing. It should be seen as a complementary survey method rather than one whose results support or replicate those of other non-intrusive methods;
- Consequently, the surface assemblage appears to offer little indication of the likely condition of the archaeological sites at Damerham;
- Intensive surface collection offers the best means of capturing the spatial distribution of artefactual material present on the surface, although the use of a GPS to record the precise location of every item is unnecessary for the purpose of mapping and characterising the surface assemblage;

- Sampling strategies offer an increasingly poor representation of the surface distribution of material as the distance between transects and collection points increases. If sampling rather than intensive collection is used, then careful consideration needs to be given to the aims and objectives of surface collection.

Figure 1: 2009 transcription of cropmarks and earthworks from aerial photographs. Long barrow mounds shown in red; green = negative features (i.e. ditches, pits); blue = recent small-scale extraction. Compare with Figures 2 and 3 for location of 2013 trenches and fieldwalking grids.

1.7 This report is one of a number of planned interim statements detailed under section 11.4 of the 2013 Project Design. There, it was stated that the report would be "specifically focused on analysis of the ploughzone assemblage… This will cover initial analysis of the chronological and spatial extent of the material recovered from the surface; comparisons of surface collection with (a) sub-surface assemblages as recovered both from the ploughzone and archaeological features; and (b) distribution of archaeological

features identified previously through remote-sensing; and initial analysis of relative effectiveness of different collection strategies".

1.8 This interim statement:

- Summarises the methodologies used and results achieved;
- Outlines the remaining work to be carried out on the 2013 ploughzone assemblage;
- Makes recommendations for further targeted surface collection in order to address issues raised during analysis of the 2013 fieldwork and to further refine methodologies;
- Evaluates the relative potential of intensive and extensive collection techniques.

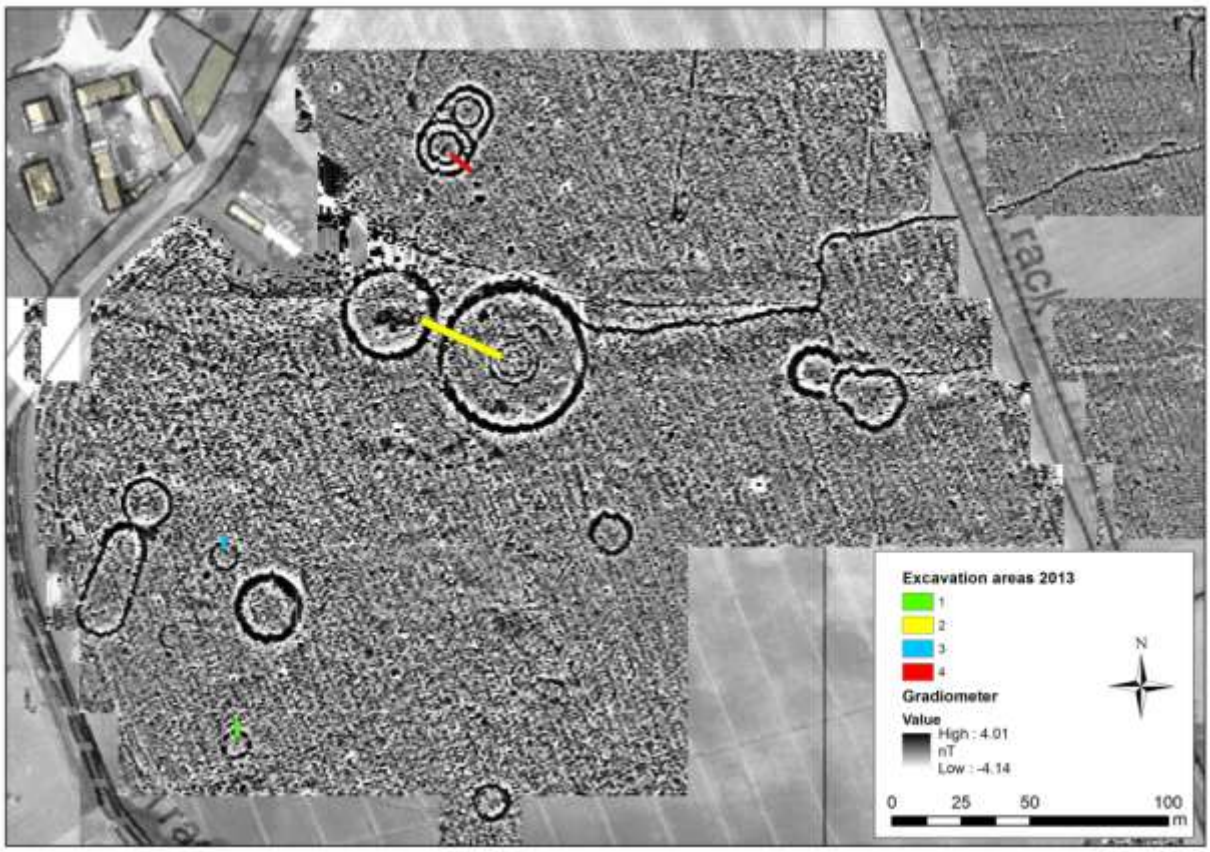


Figure 2: location of excavation trenches, August 2013.

2. PLOUGHZONE AIMS AND OBJECTIVES

2.1 The overall research aims of the Damerham Archaeology Project are listed under section 3.1 of the 2013 Project Design. The overarching aim of the project is the desire to address the problem of how best to research, understand and manage archaeological sites under threat from agricultural activity, notably ploughing.

2.2 The two main foci of the 2013 fieldwork season were:

- Investigation of the ploughzone assemblage through surface collection and test-pitting; and
- Targeted investigation, through excavation, of sub-surface survival of a selection of monuments initially identified through remote sensing.

The excavated artefact assemblage would allow assessment of the relationship between the ploughzone evidence and the surviving in situ archaeological features and material culture within them.

2.3 The ploughzone assemblage, as a key indicator of the chronological and spatial extent of past human activity, is regarded as an essential component in characterising and understanding this landscape. Comparison with the artefact assemblage still present within undisturbed archaeological deposits is essential to understanding the relationship between surface and sub-surface assemblages and, by extension, between surface assemblages and sub-surface survival of archaeological features.

2.4 In line with the overall project aims, the 2013 focus on the ploughzone and subsurface features is seen as key to assessing its value for predicting the condition, significance and potential of sites on cultivated land elsewhere on Cranborne Chase and potentially further afield, especially other chalk regions.

2.5 The specific objectives for the 2013 field season, as far as the ploughzone was concerned, were stated in the 2013 Project Design as follows:

- **3.2.1** To undertake targeted intensive surface collection across arable fields within the project area; and
- **3.2.2** To undertake sampling, through test-pitting, of the ploughsoil and subsoil within the areas targeted for surface collection.

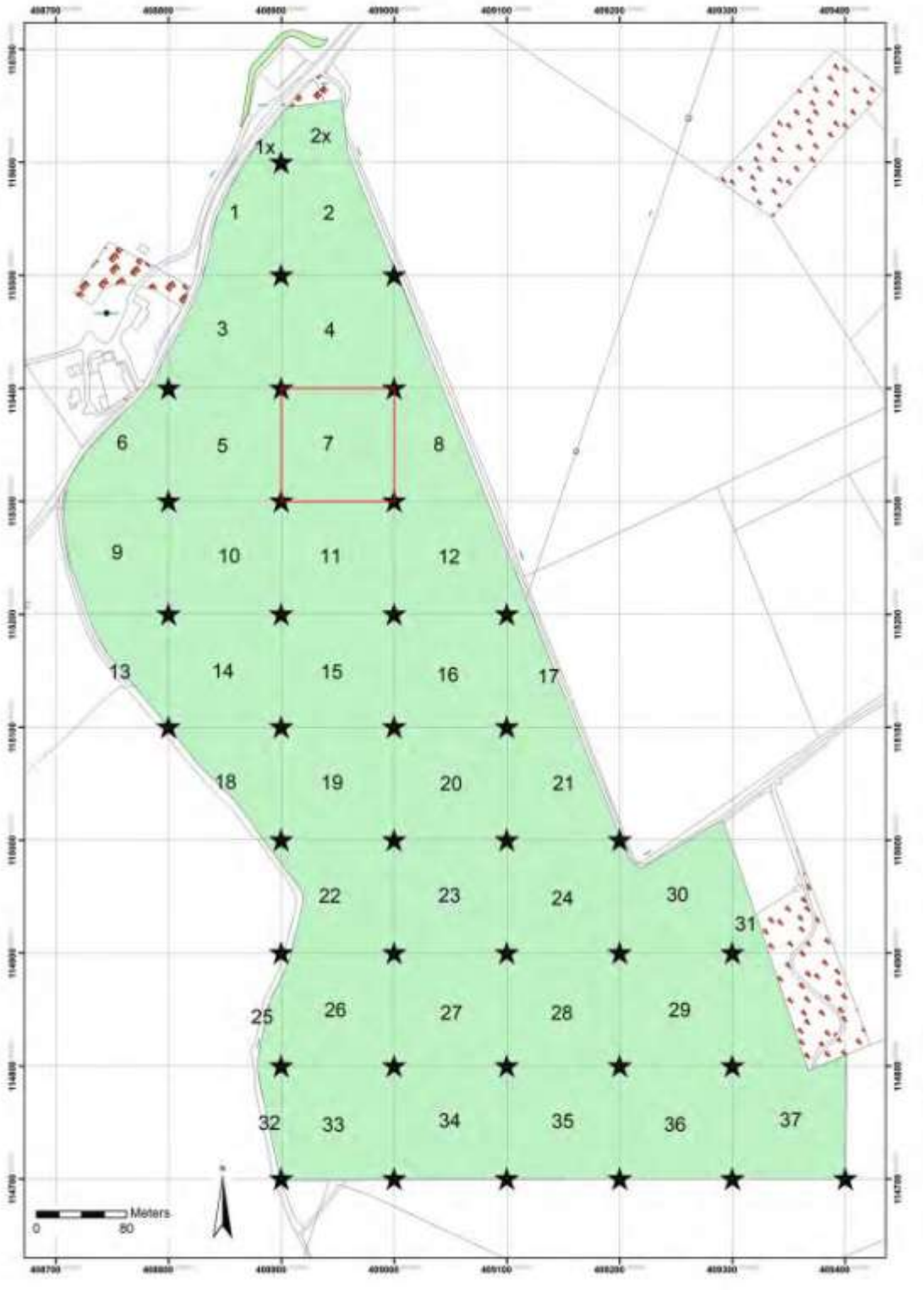


Figure 3: Area of surface collection – extensive (green), intensive (red). Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

3. METHODOLOGY

3.1 As explained in the 2013 Project Design, it had been a key aim of the project since inception to undertake intensive sampling of the surface artefact assemblage. However, a succession of late harvests meant that prior to 2013, only one limited experiment had been undertaken. That experiment had focused mainly on testing the use of hand-held mapping-grade GPS to record the location of individual finds. The feasibility of undertaking intensive surface collection and recording as precisely as possible the location of each artefact was clearly demonstrated. Overall, the experiment allowed an understanding of the practicalities of a surface collection methodology with these aims in mind.

3.2 2013 fieldwork was scheduled for the month of August 2013, on the expectation that the previous crop would be harvested before the end of July, with the next – oil-seed rape – being drilled at the end of August. Surface collection was planned to occur at a suitable interval after harvest, the precise timetable to be determined in the field by Dr Olaf Bayer, subject to the agreement of the landowner and/or farm manager.

3.3 It was decided in advance that the fieldwalking programme would take place within the overall site grid – aligned on the Ordnance Survey national grid – established in 2008 for the first geophysical surveys, and maintained throughout subsequent seasons of survey and excavation.

3.4 In the 2013 Project Design, section 10.4, it was stated that the "emphasis will be on targeted sampling rather than extensive surface collection", although extensive collection was a long-term aim of the project. In fact, considerable extensive surface collection was also undertaken.

3.5 Commencement of surface collection was delayed by late cultivation of the arable fields after harvest. Given repeated experience of delayed harvests in previous years, it was decided to take full advantage of the opportunity in 2013 to undertake extensive systematic surface collection. This would fulfil one of the longstanding aims of the project, complementing the results of the other, extensively-deployed, investigative techniques, as well as providing better contextualisation for the planned intensive collection.

3.6 As set out in the 2013 Project Design, an initial reconnaissance phase involving walk-over survey was undertaken in order to locate, identify and characterise areas of activity. At this stage, no collection was undertaken – all surface finds were left in place. The gap between this reconnaissance phase and the phases of both intensive and extensive surface collection were brief, with no disturbance of the surface occurring between them.

3.7 The area chosen for intensive survey was 1 hectare in extent. Its location was chosen for the following reasons:

1. it overlapped with the eastern extent of the large circular henge-type enclosure being sampled by excavation;

2. although it overlapped with one other monument identified through remote sensing, it was otherwise largely devoid of definite archaeological features;

3. initial walkover survey suggested a variable density of finds visible on the surface, with some marked concentrations of material contrasting with other areas apparently lacking in artefacts.

3.8 The intention, as outlined in the Project Design, was that other areas for fieldwalking would be targeted according to a range of criteria – high or low densities of surface material identified during the walkover survey; the presence or absence of cropmarks and geophysical anomalies; etc. Ultimately it proved possible to additionally undertake extensive collection over much of the arable areas previously investigated through remote sensing and excavation.

3.9 The methodology set out in the 2013 Project Design was enhanced by undertaking intensive collection in one of the 100m x 100m grids in advance of the extensive collection. Extensive collection within this particular grid was modelled subsequently from the data collected.

3.10 Collection for the intensively-walked area was based on a group of between 10 and 12 fieldwalkers walking in a 'fingertip' spaced line within a series of 20m wide corridors, these being marked out on the ground with bamboo canes and ranging poles.

3.11 Prior to fieldwalking, each fieldwalker was provided with training in finds identification, using both excavated finds and, for lithics, items previously collected during fieldwalking by some of our project volunteers elsewhere on Cranborne Chase. Nonetheless, variations in collecting were expected. Rewalking by experienced members of the project team and experienced volunteers permitted identification of 'missed' items, allowed an assessment of the percentage of material overlooked for comparative purposes, and provided opportunities for 'refresher' sessions in finds identification.

3.12 Each fieldwalker was supplied with a quantity of finds bags. Each surface find identified was placed within a single finds bag and then placed back on the surface on the spot it had been picked up from.

3.13 Logging of finds in situ was undertaken by a surveyor with a Leica Smart Rover survey grade GPS (the same instrument had been used to lay out the survey grid to < ± 1cm of the Ordnance Survey national grid. The surveyor was responsible for both numbering and labelling each find and logging its location. All bags were collected after numbering and labelling.

3.14 Extensive surface collection was undertaken over an area of just under 32 hectares across fields previously designated (north to south) as Areas A, B and C, wholly to the north of the 114700 NGR line. The survey grid was marked out with the Leica GPS, with each 100m x 100m grid square further subdivided into a series of smaller collection units using tapes, ranging poles and an optical square, the GPS being used subsequently to check accuracy.

3.15 Within each 100m x 100m grid, collection was based on four north-south traverses spaced 25 metres apart, with collection points at 25 metre intervals along each traverse. All finds from each 25 metre stint were bagged together. Walkers were instructed to collect all surface finds from a 2m wide swathe along their traverse, and to ignore any finds beyond this limit. Additionally, a 20 minute time limit was set for walking each 100m traverse.

3.16 This collection methodology resulted in collection over an approximately 8% sample of the available surface area.

3.17 Overall, conditions for surface collection were good. Both intensive and extensive collection occurred on a cultivated but unploughed surface in dry and, for the most part, sunny conditions, producing a relatively good surface for collection over much of the area walked. The presence of a slightly heavier, more clayey soil towards the northern end of the fieldwalked area offered less favourable conditions.

3.18 A metal detectorist was engaged to walk transects within the hectare subject to intensive collection. Although he was able to cover a satisfactory sample of the 100m x 100m square, further coverage was prevented by interference from the various metal and electric fences bordering the field.

3.1910 1m x 1m test pits were excavated within the area of intensive surface collection. They were located in grid corners, and in areas of apparent concentrations of material, as identified on preliminary plots of the intensive surface collection. Others were located randomly. Any remaining finds were collected from the surface prior to digging, and a series of 10cm-deep spits were excavated until in situ chalk was reached.

3.20 In addition to the test pits, the ploughsoil was also sampled in the four main excavation trenches. Samples of ploughsoil from each trench were set aside for sieving (see Figures 27 – 30 for the location of the samples within each trench, and Appendix 2 for summary details of finds recovered). This has been standard procedure in previous years' excavation trenches, including those in pasture. Further analysis is required of excavated, sieved and surface finds from 2013 and previous years.

3.21 At present, the total number of items from sieved samples and test pits conforms to expectations that the surface assemblage represents a low percentage of the material held within the ploughsoil – circa 5% for 2013 (e.g. for the test pits, 10m² produced 108 items of worked flint; extrapolating from this, 1 hectare might then contain 10,800 items. The intensive surface collection from this hectare yielded 457 worked flints, which would equate to circa 4.2%).

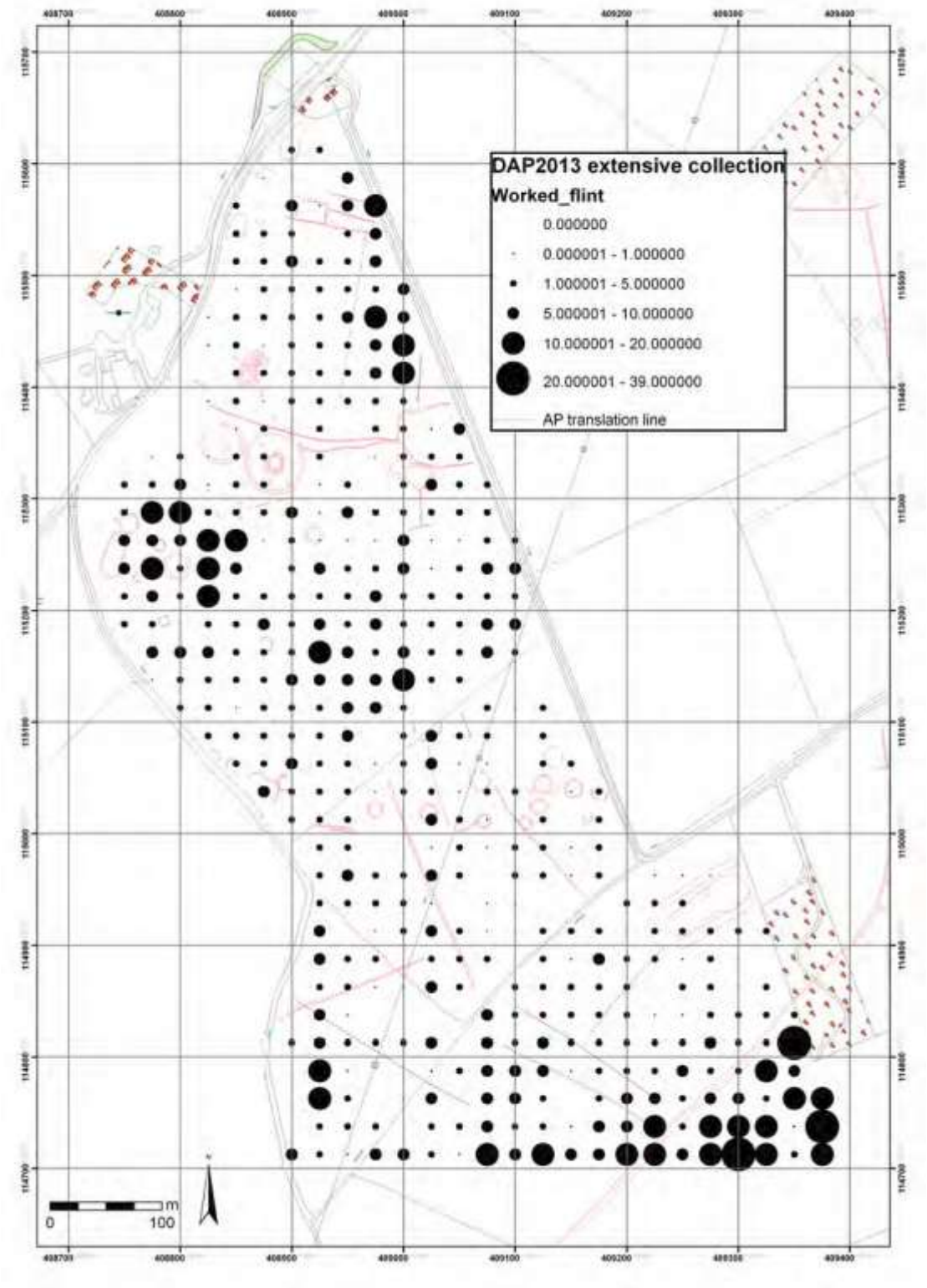


Figure 4: Extensive surface collection – worked flint. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

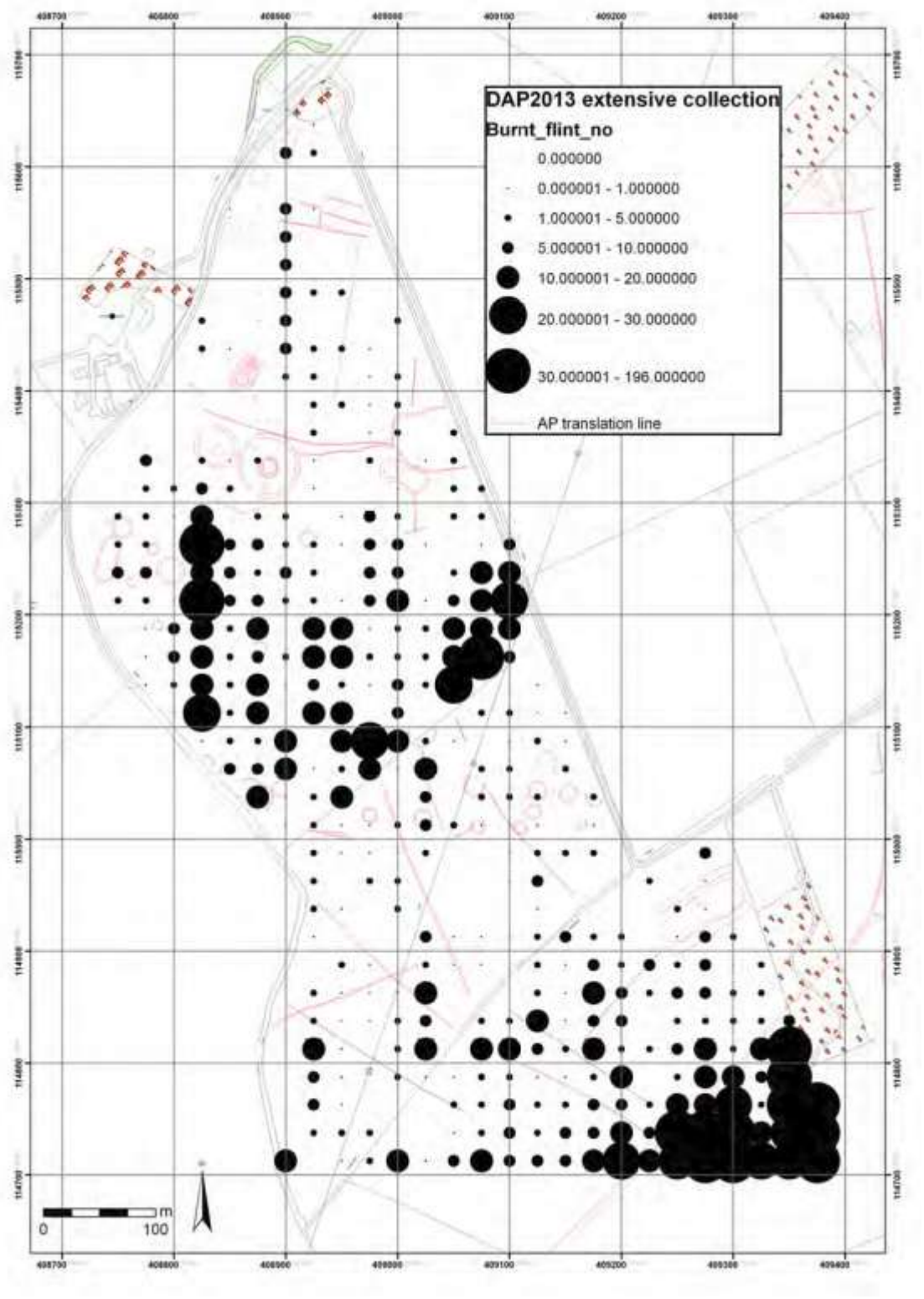


Figure 5: Extensive surface collection – burnt flint. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

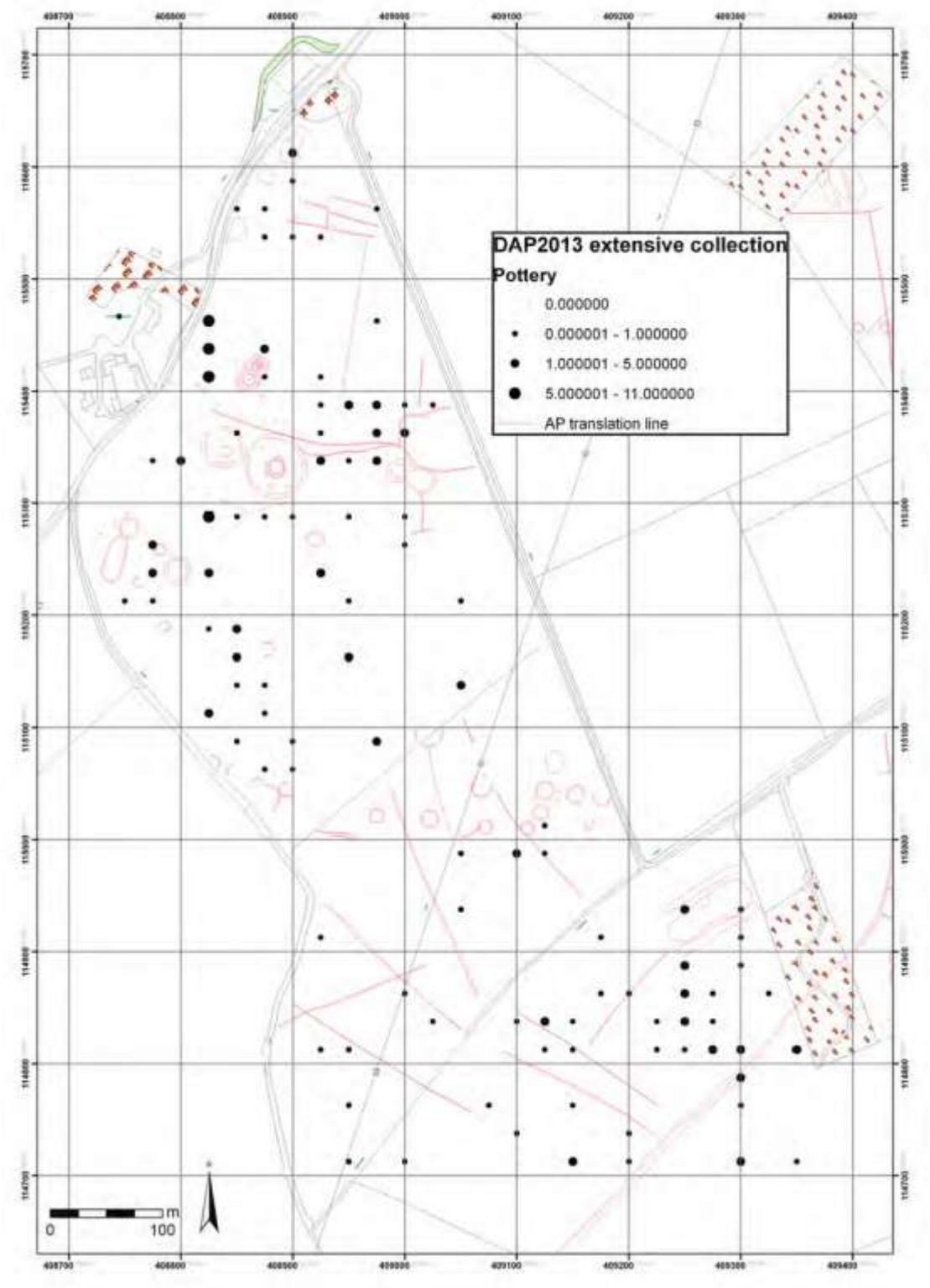


Figure 6: Extensive surface collection – pottery. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

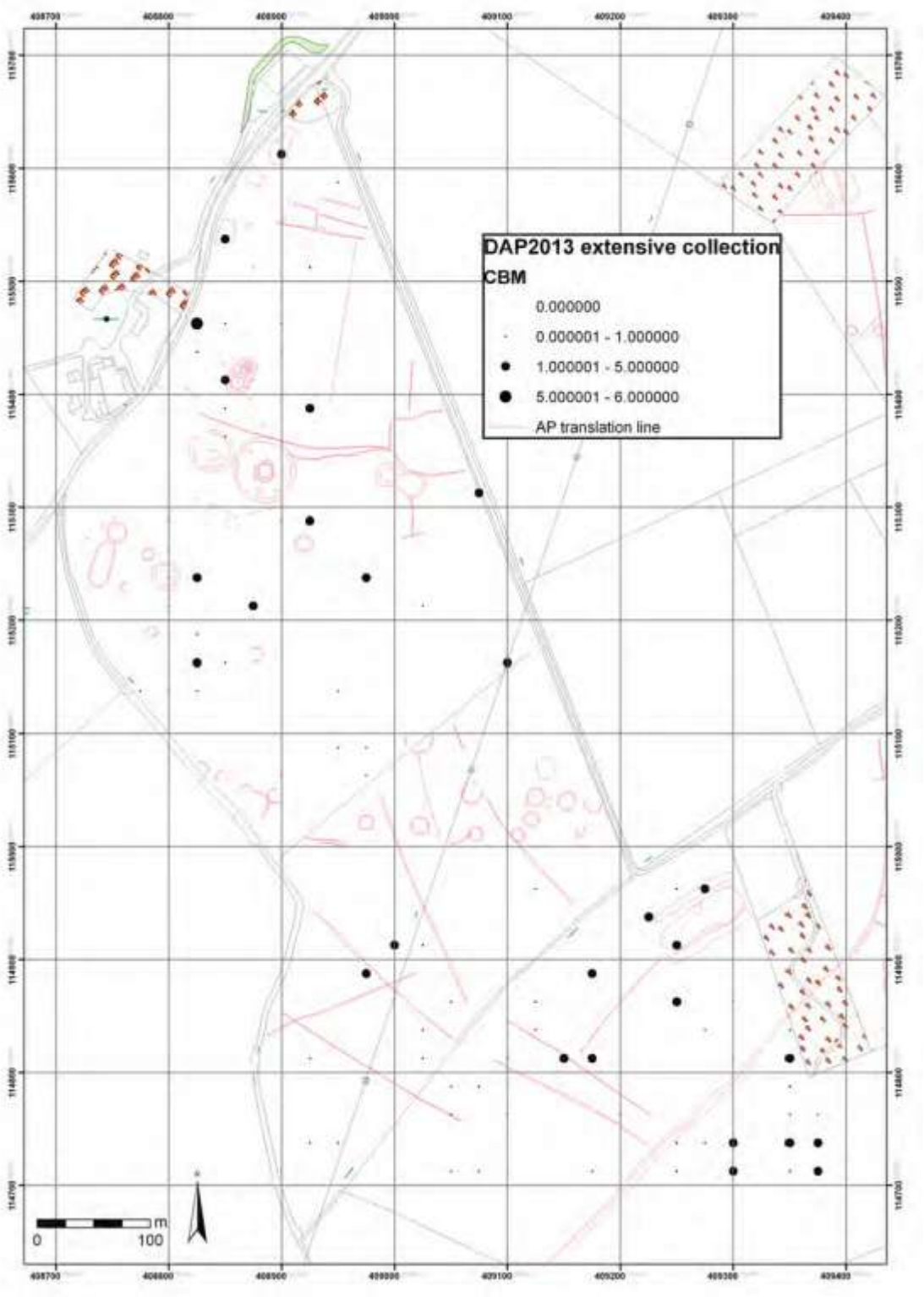


Figure 7: Extensive surface collection – Ceramic Building Material (CBM). Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

4. RESULTS

4.1 Finds Sorting and Data Processing

4.1.1 Surface collection finds from the 2013 season were sorted in early 2014. All sorting was carried out by Alison Roberts (Ashmolean Museum) and Olaf Bayer. At this stage, prior to the assessment phase, no attempt at analysis was made, the material simply being sorted into the following categories: worked flint, burnt flint, pottery, and ceramic building material (CBM). Burnt flint was counted, weighed, and disposed of at this stage. All other categories were retained. Counts of artefacts were recorded for each collection unit and entered into an .xls spreadsheet, and were then imported into ArcGIS 10.1 for interpretation and display.

4.1.2 The creation of spatially referenced datasets for the current report demonstrates the potential of the fieldwalked assemblages for exploring the nature of the relationships with remotely-sensed and excavated data. Full chronological and typological assessment of the fieldwalked material, along with more detailed analysis of the remote-sensing results, will allow more detailed and nuanced investigation of these relationships. However, some preliminary thoughts are offered here.

4.1.3 This report completes the initial sorting and preliminary analysis of the distribution patterns within both intensive and extensive collection areas. Plans and a timetable for detailed assessment, which will in turn lead to more developed analyses of the ploughzone assemblage, are presented within the Updated Project Design.

4.2 Extensive Surface Collection (Figures 4 to 7)

A total of 5245 artefacts were recovered from extensive surface collection (see Table 1). Figures 4 to 7 show the distribution of these finds. In each of these distribution maps, finds for grid 7 – the intensively-walked area – are modelled from the intensive collection data by including only items whose recorded location would have fallen within the spaced transects, and by grouping them according to the 25m collection units.

Worked flint (weight/g)	**Burnt flint (weight/g)**	**Pottery**	**CBM**	**Other**	**total**
1990 (20336)	2875 (49215)	184	128	68	5245

Table 1. Extensive surface collection

Worked Flint

4.2.1 1990 pieces of worked flint, with a combined weight of 20336g, were collected during the extensive survey. As is shown in Figure 4, worked flint occurred on low concentrations across the entire survey area. Raised densities of worked flint were encountered in the southwest (grid square 33), central (square 15), northwest (squares 9 and 10), north (squares 2 and 4), and southeast (squares 30, 36 and 37) areas of the survey area.

4.2.2 The bulk of the assemblage, on the basis of the initial rapid assessment, is relatively undiagnostic, the majority deriving from a flake-based lithic industry, with only very occasional traces of blade-based reduction sequences. This is consistent with a broad mid-late Neolithic/early Bronze Age date, and is broadly in line with the overall date range of the monuments within the arable area, with the exception of Dampney Barrow, the Early Neolithic long barrow in Area C.

4.2.3 Only two unambiguously diagnostic lithic artefacts were identified: a mid-to-late Neolithic transverse arrowhead (Figure 8) from square 22, and an Early Bronze Age barbed and tanged arrowhead (Figure 9) from square 9.

4.2.4 Few of the concentrations of worked flint match the known locations of prehistoric monuments as recorded through geophysical survey and aerial photography. However, in the northwest, a cluster of ring ditches presumed to represent the plough-levelled remains of round barrows is associated with a higher density of lithic artefacts. Further work on both surface and excavated assemblages will be necessary to determine (if possible) the chronological relationship between monuments and lithics here, although the two ring ditches excavated in 2013 produced very little artefactual material from undisturbed contexts. It may be that the ring ditches in this area broadly post-date the activities that resulted in the surface scatters.

4.2.5 The area of the enclosures sampled by excavation in 2013 – trenches 1 and 2 – displays a markedly low density of worked flint from the surface, as does the spread of ring ditches further south (Area B).

4.2.6 The surface collection towards the western edge of Area B included a small but marked middle Neolithic component, strongly suggesting here at least a clear temporal distinction between activities indicated by the lithics and the construction of the monuments.

4.2.7 The other notable clusters of worked flint do not coincide with the locations of known Neolithic and Bronze Age monuments, as revealed by remote sensing. The higher density of finds in the southeast corner of the fieldwalked area actually lies on a south-facing slope, facing away from the known monuments (including Dampney Barrow, which sits just below the top of the slope on its north-facing side). The known cropmarks in the area of squares 30, 36 and 37 are linears associated with a probable Iron Age/Roman enclosure just east of the survey area.

4.2.8 While it seems likely that some of the area of higher density finds indicate areas of settlement or other activities away from the main funerary or ceremonial monuments, the dense concentration at the southern end of the survey area is located mainly to one side of a northwest-southeast linear associated with the Iron Age/Roman enclosure (and the same is true of the similarly dense concentration of burnt flint in this area – see Figure 5). In other words, the distribution of worked flint appears to have some relationship with an archaeological feature presumed (at present) to be much later in date.

4.2.9 Overall, the distribution of worked flint differs from the distribution of prehistoric monuments as indicated by remote sensing. The ploughzone assemblage is a complementary dataset which needs further analysis on its own terms. It is not reinforcing or duplicating the results of remote sensing and – at Damerham at least – could not function as a proxy for aerial or geophysical survey. The surface distribution of worked flint does not offer a useful indication of the location of archaeological monuments.

4.2.10 Our preliminary results support the idea that surface collection has considerable potential for identifying areas and activities not readily identifiable through remote sensing. Surface collection may be the only means of identifying aspects of domestic/daily life occurring close to but not at the monuments.

4.2.11 The preliminary assessment does not allow for clear identification of chronological variation among the surface and excavated assemblages. The fact that the primary and secondary contexts within the excavated ditches were still predominantly in situ means that the surface assemblage cannot reflect their contents, and in any case the quantities of surface material from above the monuments was low.

Burnt Flint

4.2.12 2875 pieces of burnt flint, with a combined weight of 49, 215g, were collected during the extensive survey. Figure 5 shows that as with the worked flint component of the extensive assemblage, the burnt flint is widely distributed across the entire area of collection. Again, as with the worked flint, several distinct concentrations of burnt flint are discernible in Figure 5, notably in the southeast corner (squares 30, 36 and 37) and across the central area (the southern end of Area A – squares 10, 12, 14, 16, 18 and 19). It is perhaps worth remarking that the southern limit of this central spread of higher densities of burnt flint is marked by a late 20th century field boundary.

4.2.13 As with the worked flint, there appears to be little direct correlation between the locations of known archaeological features and the occurrence of concentrations of burnt flint. The main exception occurs in the central area of the survey where several known monuments, all levelled round barrows of probable Late Neolithic to Middle Bronze Age date, are overlain by a more

extensive spread of burnt flint. However, the area of the large enclosures is again marked by a relatively low density of surface finds.

4.2.14 The highest concentration of burnt flint, as with the worked flint, comes from the south-east limit of the collection area. As with the worked flint, this higher density of objects occurs on one side of a presumed Iron Age or Roman linear ditch. This higher density is partly exaggerated by over-enthusiastic collection by volunteer participants in an area of marked abundance, leading to some collection beyond the width of the two-metre transects that they were walking. This was observed, noted and corrected in the field. However, this concentration clearly represents a genuine anomaly, as with the worked flint.

4.2.15 The ratio of worked flint to burnt flint from excavated contexts is at least 10:1, in terms of both numbers and weight. The ratio from the surface assemblages is generally between 1:1 and 1:3. In other words, burnt flint is present in far greater quantities on the surface than within undisturbed archaeological features. However, as already noted, the spatial distributions of worked and burnt flint are broadly comparable. While the markedly different ratios might be taken to indicate that the burnt flint is generally later in date than the monuments, the similar distributions suggest the possibility of a broad contemporaneity, or at least overlap, with the worked flint assemblage. It may be, therefore, that a proportion of the burnt flint, like the worked flint, represents activities occurring away from the monuments.

4.2.16 As with the worked flint, the surface distribution of burnt flint offers a poor indication of the location of archaeological monuments identifiable through remote sensing.

Pottery and CBM (Figures 6 & 7)

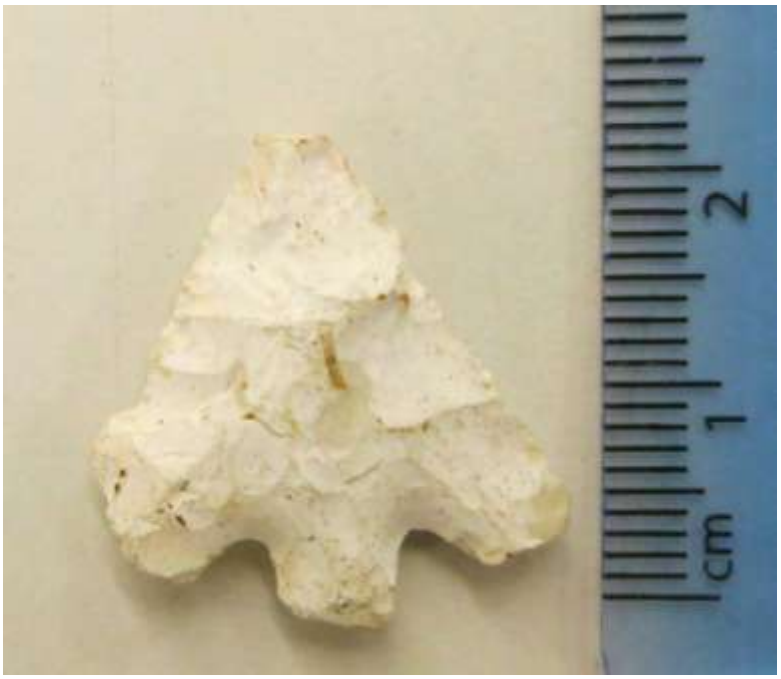
4.2.17 184 pieces of pottery and 128 pieces of CBM were collected during the extensive survey (see Figures 6 and 7). In advance of assessment, little can be said of the typological and chronological range of this material beyond the fact that the bulk is suspected to be medieval or later. Both classes of material are present in very low concentrations across the survey area with little indication of major concentrations. The retrieval of medieval and post-medieval artefacts from a chalk quarry dug into the side of Dampney Barrow in 2011-12 presents an opportunity for future work to explore relationships between these excavated and fieldwalked assemblages, which seem to relate to poorly documented or undocumented activities in the landscape in more recent centuries.

Other artefacts

4.2.18 A total of 68 other artefacts (glass, slate, metal, oyster shell, etc) were recovered during extensive surface collection. As with the pottery and the CBM, these can be usefully compared with a similar range of items found in excavated medieval and post-medieval contexts.

Above: Figure 8 – Neolithic transverse arrowhead.

Below: Figure 9 – Early Bronze Age barbed and tanged arrowhead



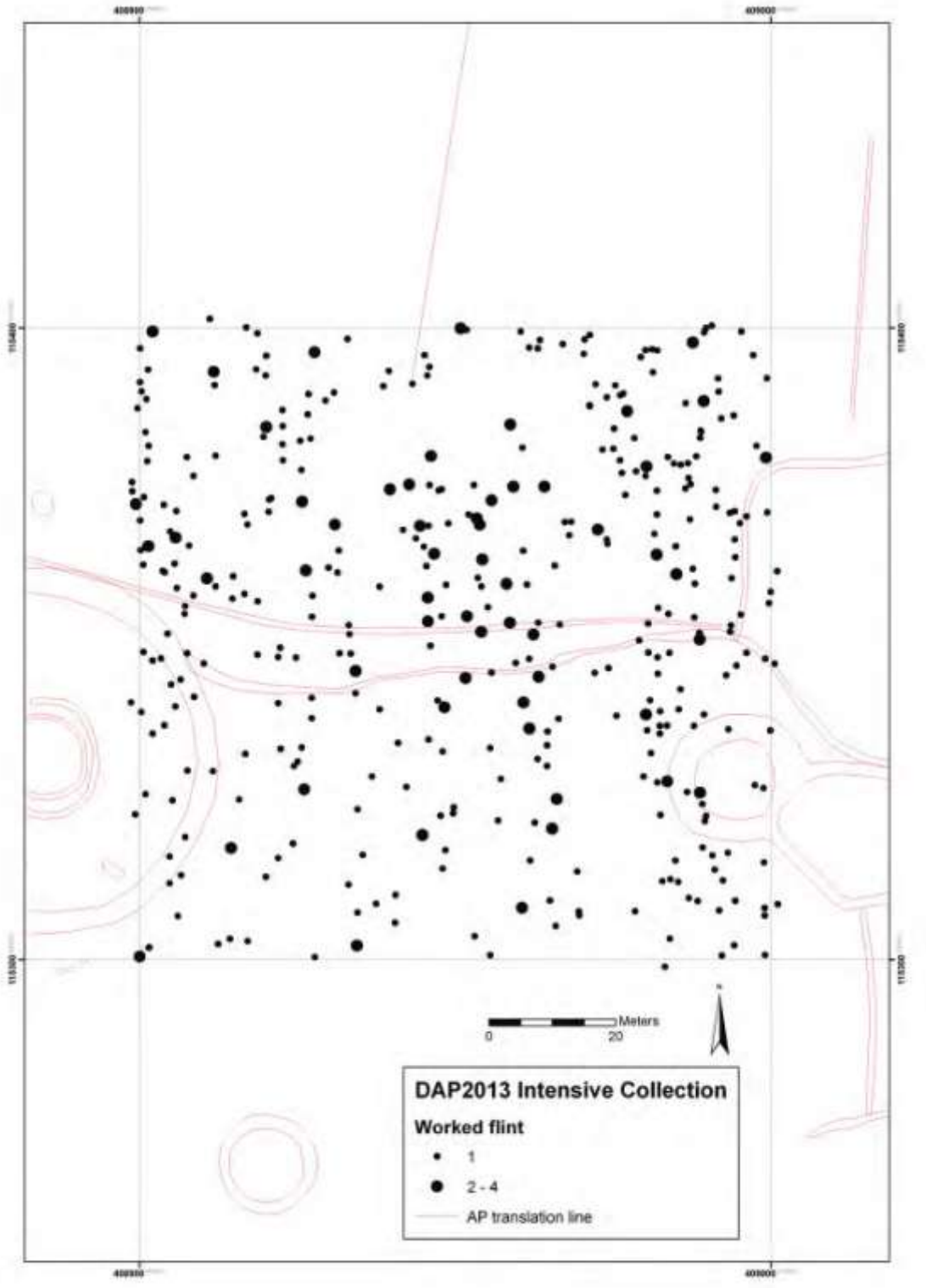


Figure 10: Worked flint from intensive surface collection. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

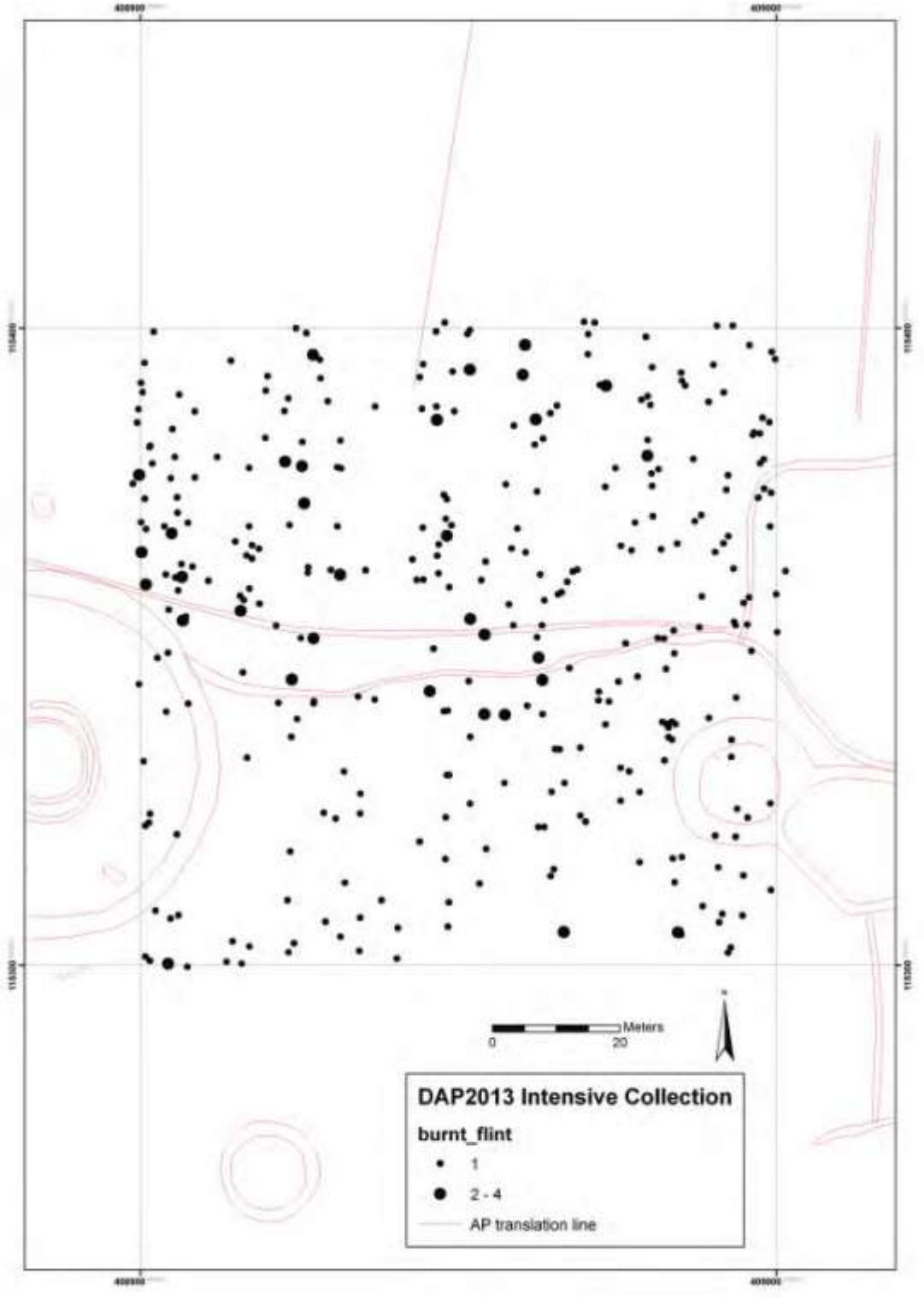


Figure 11: Burnt flint from intensive surface collection. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

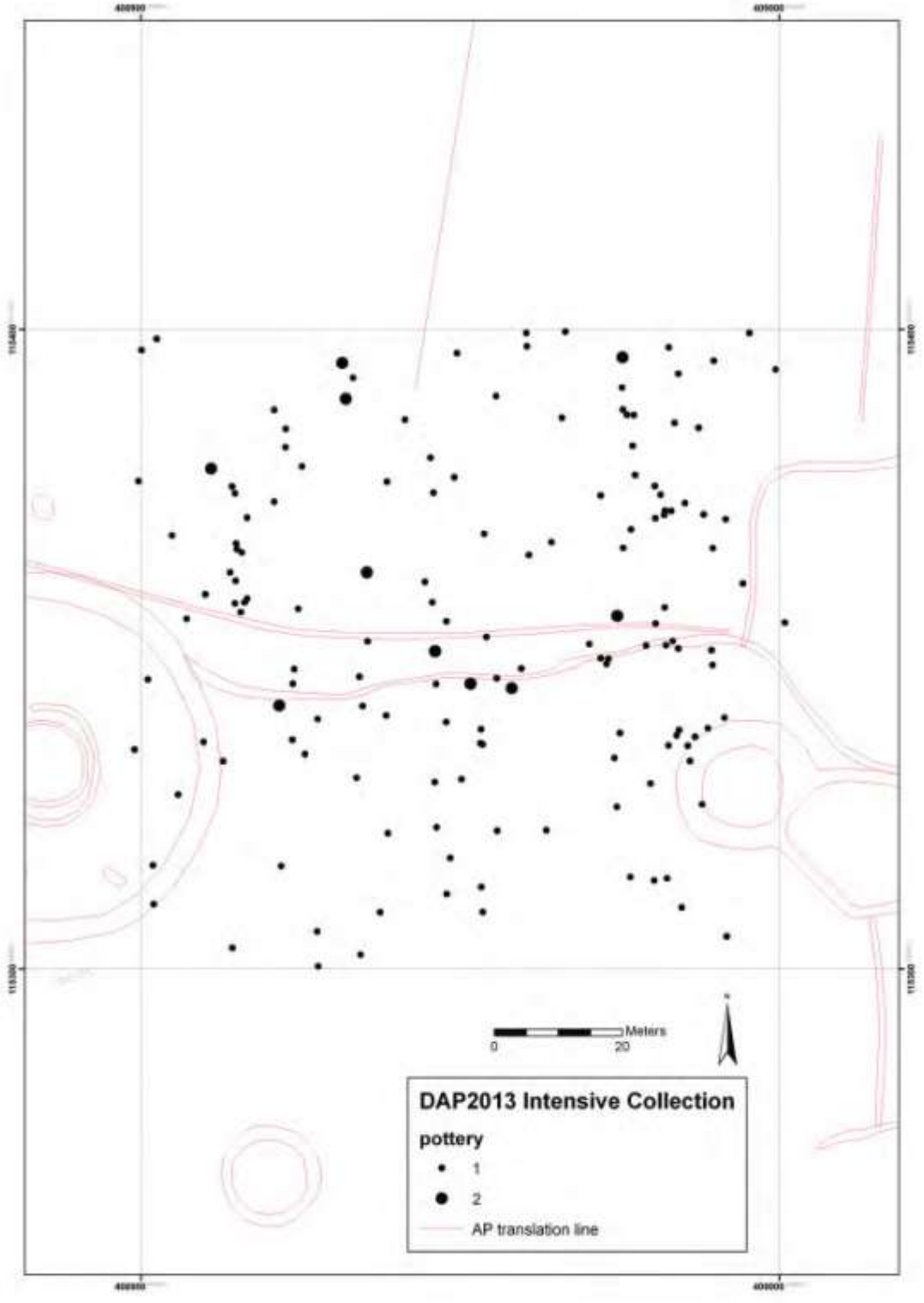


Figure 12: Pottery from intensive surface collection. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

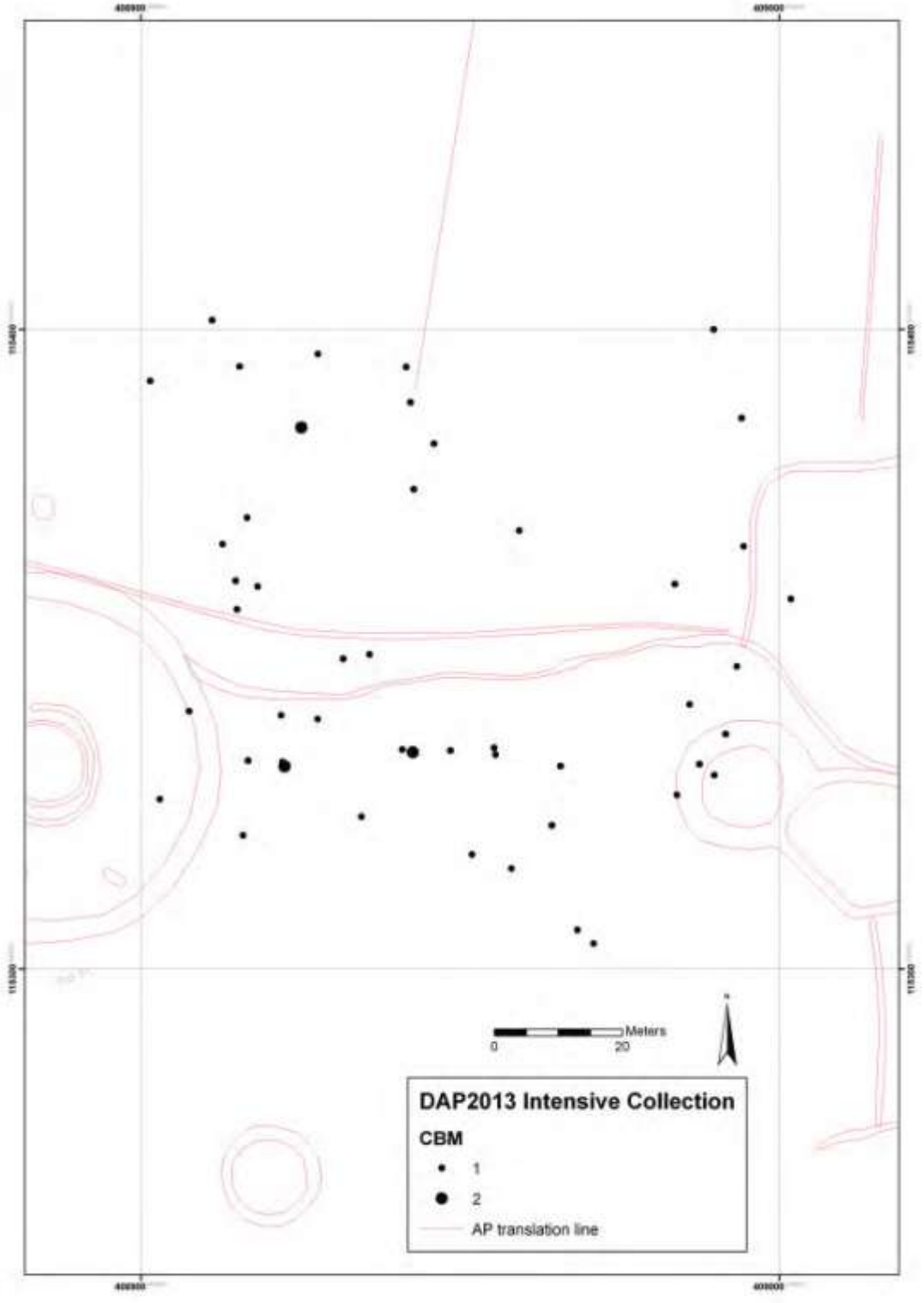


Figure 13: CBM from intensive surface collection. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

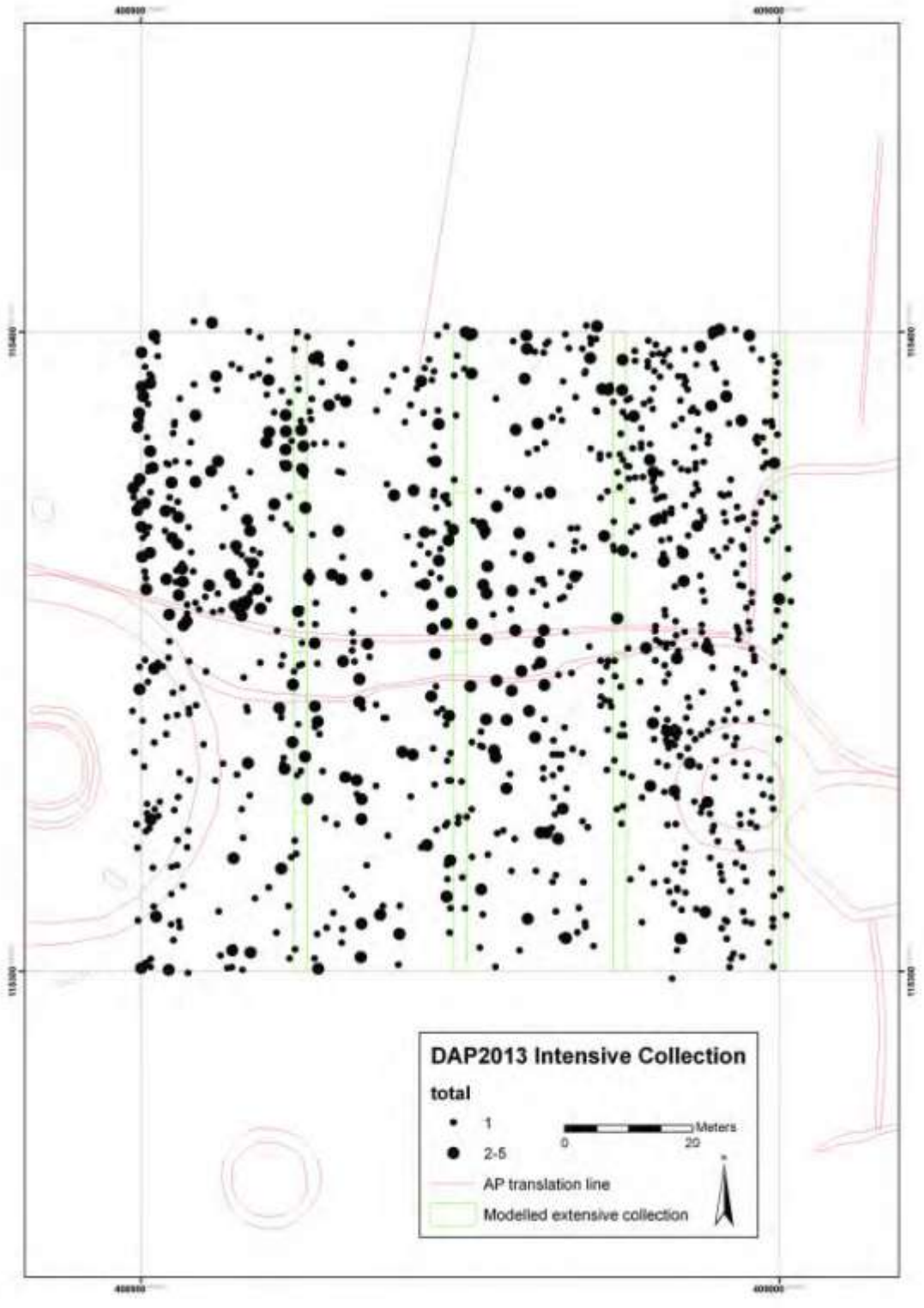


Figure 14: All finds from intensive surface collection with modelled extensive collection units superimposed in green. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

4.3 Intensive Collection (Figures 10 – 14)

4.3.1 A total of 1072 artefacts were recovered from the intensive surface collection (see Table 2). Figures 10 to 13 show the distributions of these finds. As with the extensively-collected material, analysis within the project GIS alongside the results of all other investigative methods indicates that the material, once its full chronological and typological range has been detailed, will clearly contribute greatly to several of the project's key aims and objectives. This report represents preliminary assessment based on the spatial extent of the surface assemblage.

Worked flint	Burnt flint	Pottery	CBM	Other	total
457	376	161	51	27	1072

Table 2. Intensive surface collection

4.3.2 All classes of material are reflected in the area of intensive collection in broadly similar proportions to those seen in the wider extensive collection. Both worked and burnt flint are widely distributed within the intensive collection area, as are pottery and CBM, albeit at much lower densities.

4.3.3 Visual inspection of the datasets suggests little apparent relationship between the distribution of surface finds and the position of underlying archaeological features known from remote sensing. The western edge of the square overlaps with the eastern arc of the large henge-type enclosure sampled in 2013 by excavation, while towards the southeast corner is a more unusual cropmark presumed to represent a funerary monument of later Neolithic or Early Bronze Age date. The centre of the square is crossed by cropmark and geophysical anomalies representing at least two phases of ditched field boundary, one still extant as recently as the 1980s. The date of origin of these boundaries is unknown, but certainly pre-dates the earliest extant detailed mapping of the area.

4.3.4 Other than a slightly higher concentration of worked flint in the north central area of the collection square, and a similar concentration of burnt flint in the northwest, little spatial patterning is currently evident within the intensively collected assemblage at this stage.

4.3.5 As with the extensive collection, the bulk of the lithic assemblage, on the basis of the initial rapid assessment, is relatively undiagnostic, the majority deriving from a flake-based lithic industry, with only very occasional traces of blade-based reduction sequences.

4.3.6 Figure 14 shows the full distribution of all surface finds from intensive collection relative to a series of green blocks that model the size and location of the extensive survey collection units had we undertaken extensive survey in this square – i.e. each pair of green lines represents a 2 metre wide transect across the intensively walked hectare square. 82 (or 7.6%) of the intensive collection finds fall within these collection units, which between them cover 8% of the surface of the grid square.

4.3.7 The purpose of using the GPS for recording find location was to allow analysis of different strategies for both sampling the assemblage and for displaying the results. On the basis of the preliminary assessment undertaken to date, it seems that the use of a GPS is unnecessary if the aim is to characterise the nature and extent of the surface assemblage. Intensive collection within 10m x 10m grid squares (see Figures 15 – 17) seems to offer a close approximation to the overall distribution of surface material. Increasing the size of the grids (e.g. to 20m x 20m or more) has the effect of reducing the degree of observable variation in the distribution of material (Figures 18 – 20).

4.3.8 To date, initial assessment of different sampling strategies has focused on presenting the data as though the 'intensive' hectare had been walked at (a) 25 metre transects with collection points every 25 metres, and (b) 50 metre transects with collection points every 50 metres, for both worked flint and burnt flint. Further analysis is necessary on the worked flint assemblage in order to determine how representative the results of such collection strategies would be in terms of the functional/typological range of the objects and also their chronological spread

4.3.9 In terms of representing the spatial extent and distributional variation of the surface assemblage, the difference between total collection and sampling is quite marked (compare Figures 15 to 17 with Figures 21 to 24). With spaced transects, the impression given is of a low density of finds with considerable gaps in the distribution, in contrast to the total collection (Figure 15). The previously noted cluster of worked flint to the north of the centre of the square, for example, disappears completely. The more widely-spaced the transects and collection points, the lower the apparent density of material and the more gaps appear in the distribution. This preliminary analysis suggests strongly that more closely-spaced transects and collection points will give a more representative picture of the actual distribution of material on the surface.

4.4 Test Pits

4.4.1 Figure 25 shows the distribution of the 10 1m x 1m test pits excavated through the ploughsoil within the area of intensive surface collection. Numbers of finds for each test pit are shown in tables 1-10 in Appendix 1. The test pits all ranged between 0.25m and 0.35m deep. Beyond modern plough lines, no chalk cut features were identified in any of the test pits.

4.4.2 The composition of the artefact assemblage was broadly comparable with that recovered from the surface, the latter obviously a sub-set of the former. Further analysis will follow assessment of the excavated material, including the sieved ploughsoil samples from the excavation trenches.

4.5 Metal Detecting

4.5.1 A single 10m wide corridor was walked diagonally across the centre of the intensive collection area by an experienced local metal detectorist. Further

transects were prevented by interference to the detector signal caused by the proximity of electric and other wire fencing. The chosen transect(s) (Figure 26) deliberately avoided the locations of known prehistoric and later monuments, as revealed by remote sensing.

4.5.2 A total of 51 targets were identified, the detectorist marking each prospective find location on the surface with bamboo canes (colour coded to indicate ferrous or non-ferrous metal). A sub-sample of 10 targets was hand excavated. All proved to be readily identifiable as modern objects, such as fragments of broken plough, and shotgun cartridges. All were reburied in their original locations.

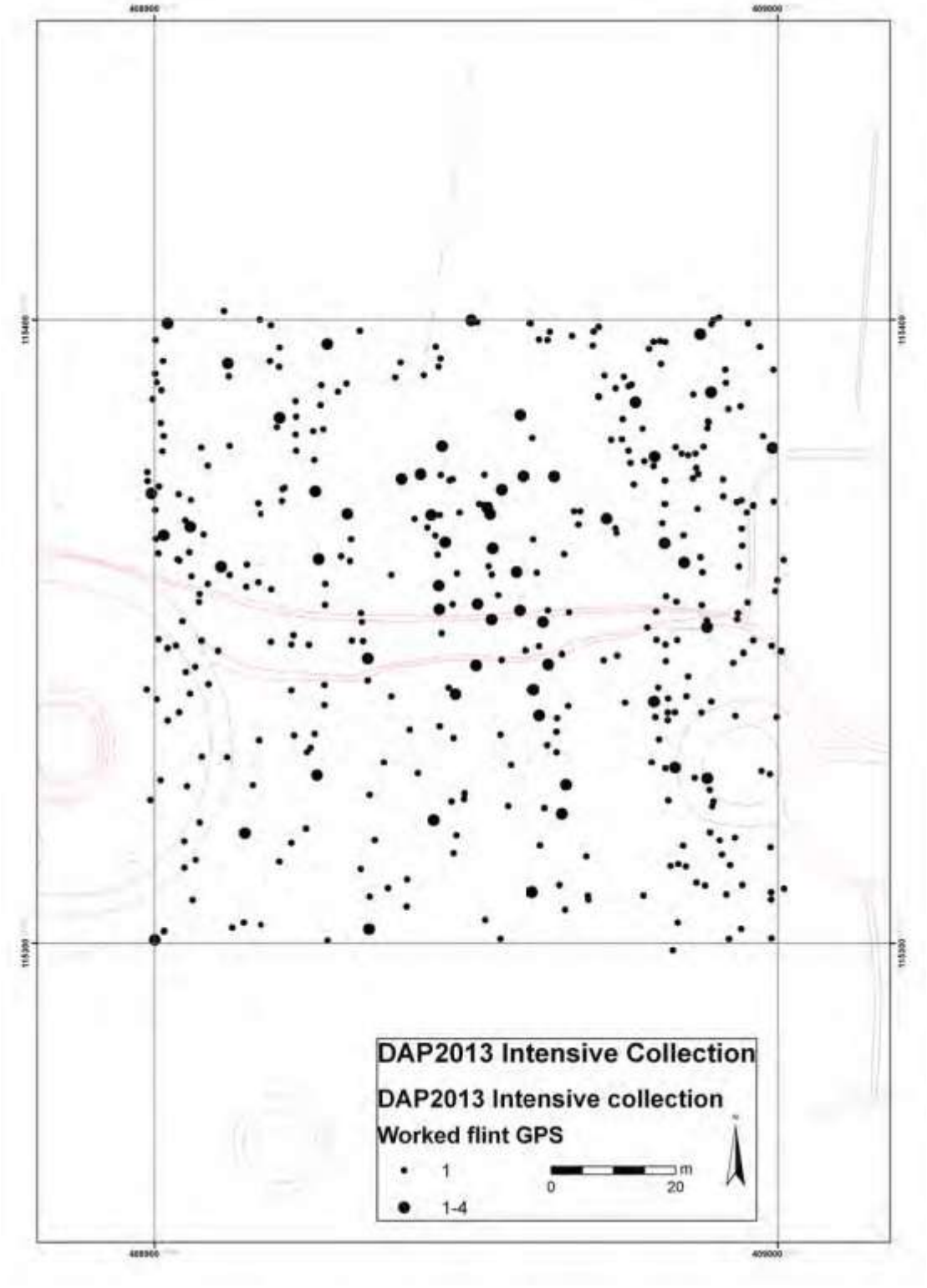


Figure 15: Worked flint from intensive surface collection – GPS locations of individual finds. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

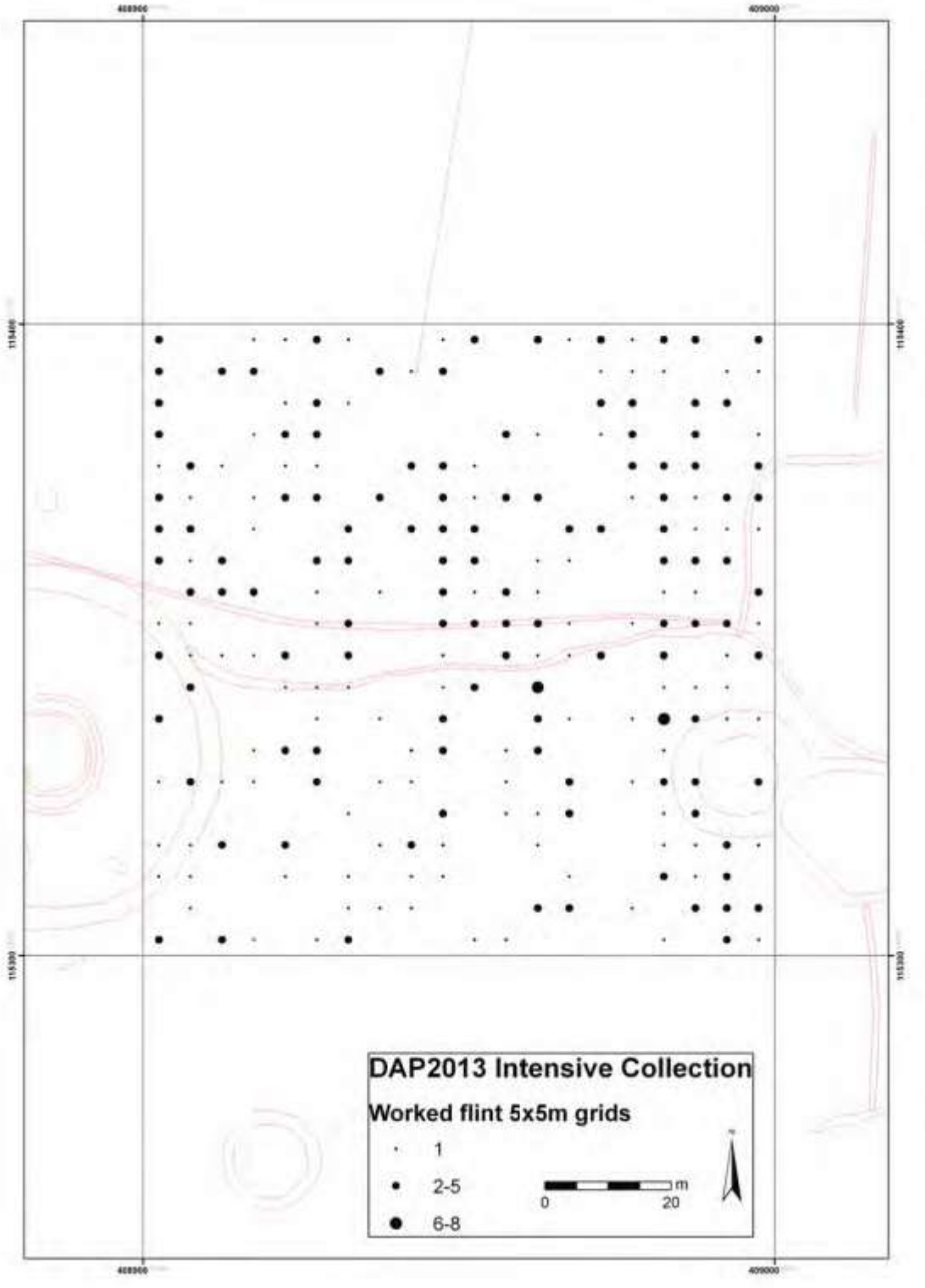


Figure 16: Worked flint from intensive surface collection. All finds grouped within 5m x 5m collection units. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

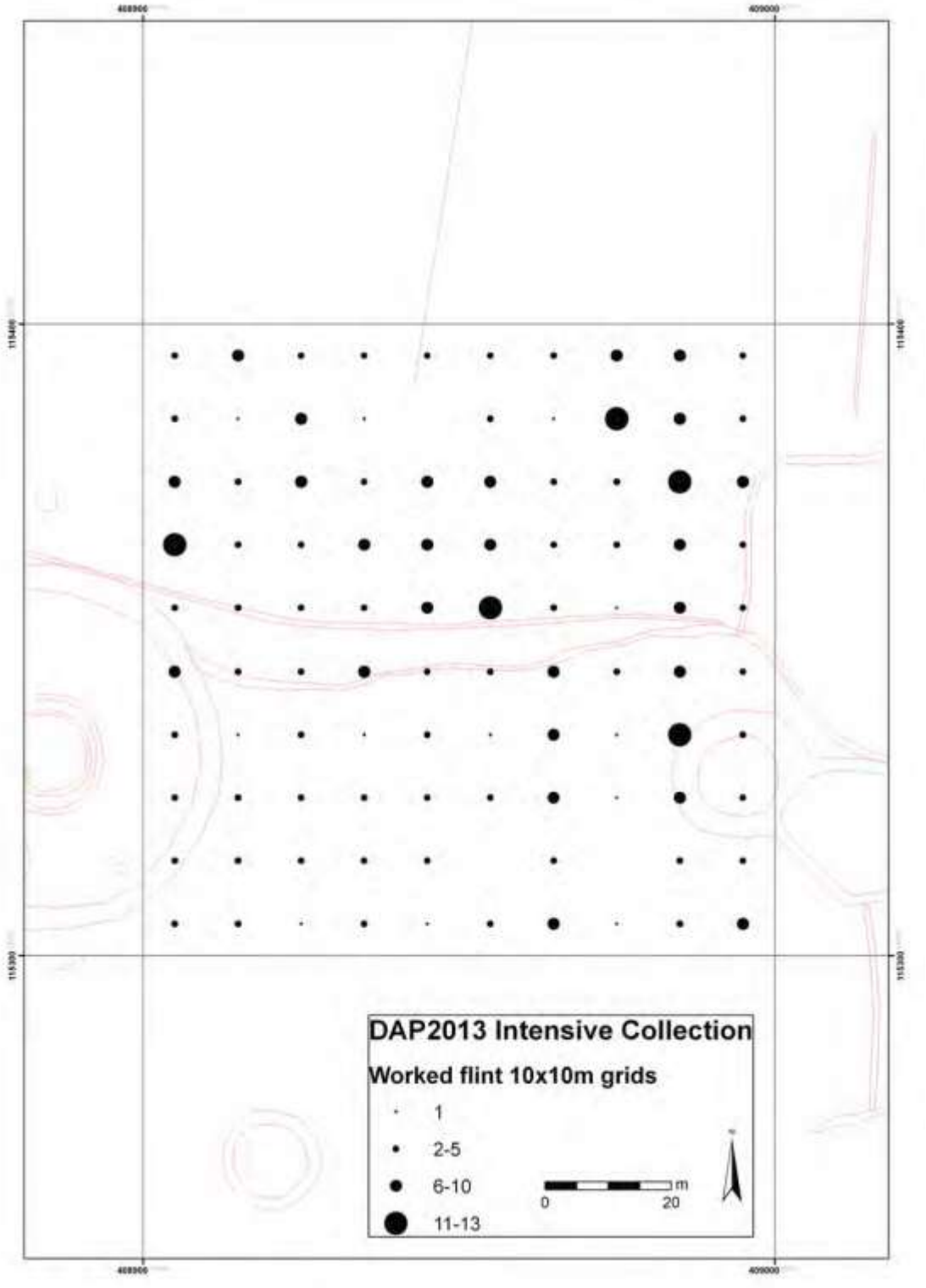


Figure 17: Worked flint from intensive surface collection. All finds grouped within 10m x 10m collection units. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

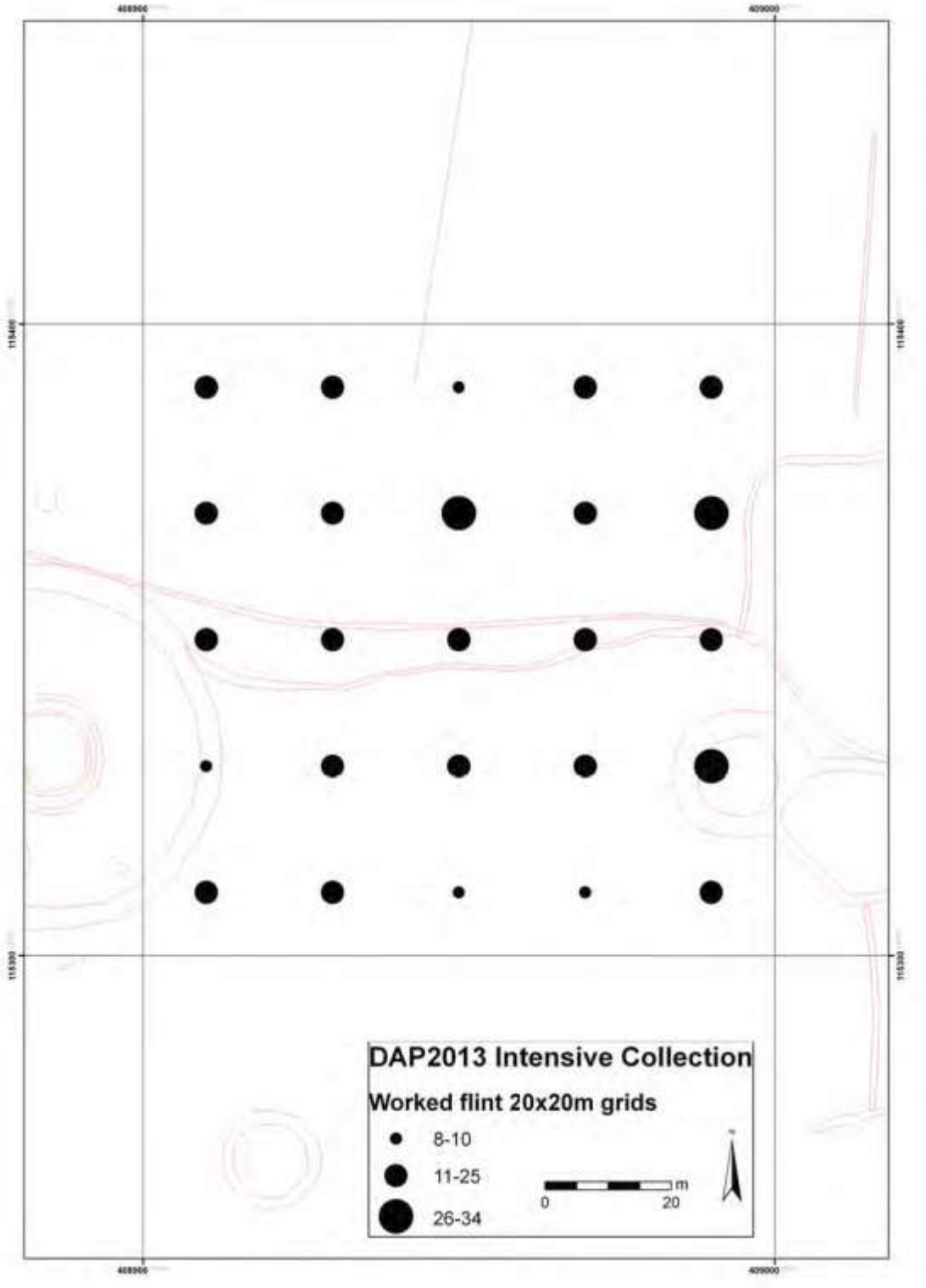


Figure 18: Worked flint from intensive surface collection. All finds grouped within 20m x 20m collection units. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

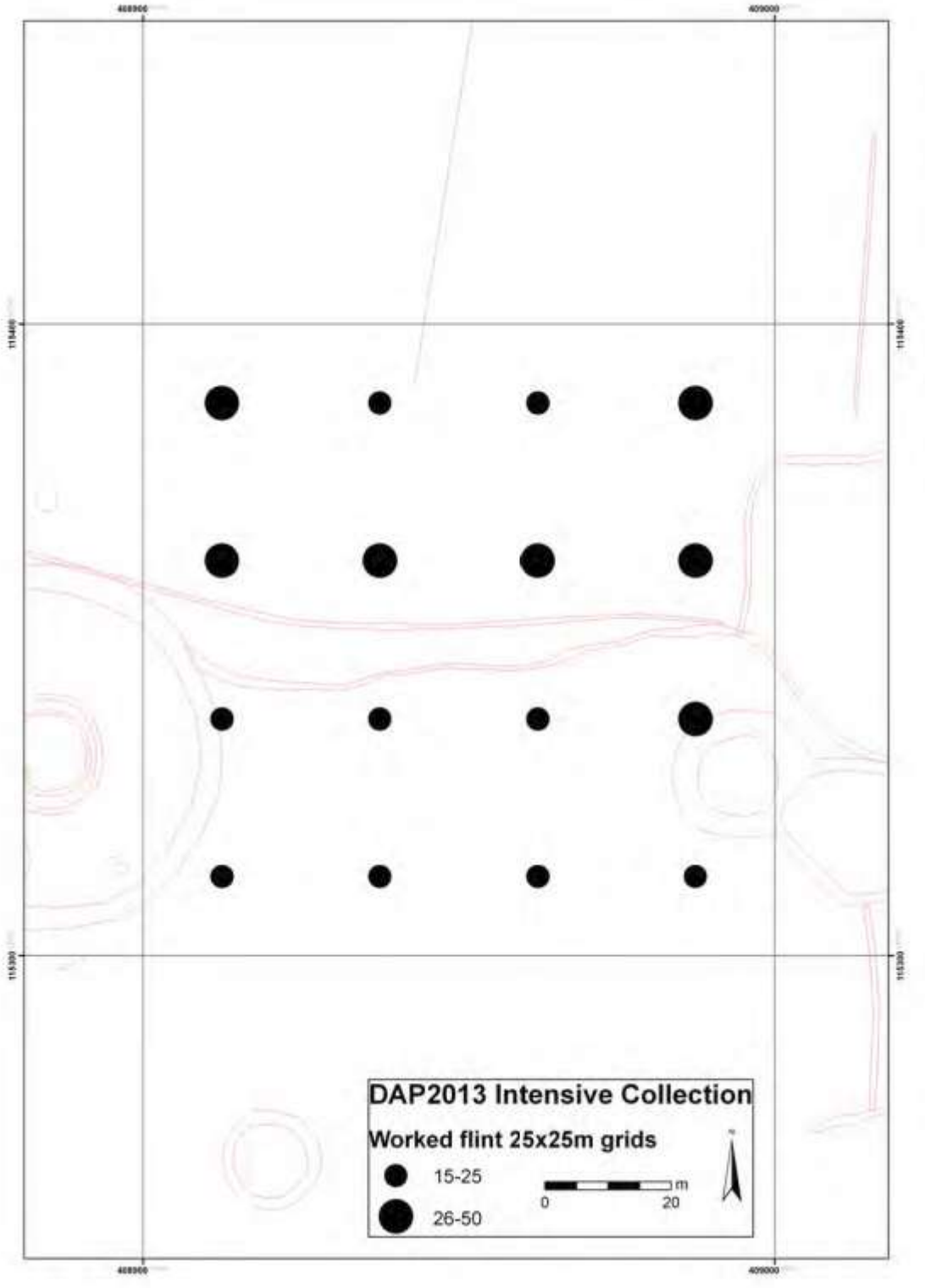


Figure 19: Worked flint from intensive surface collection. All finds grouped within 25m x 25m collection units. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

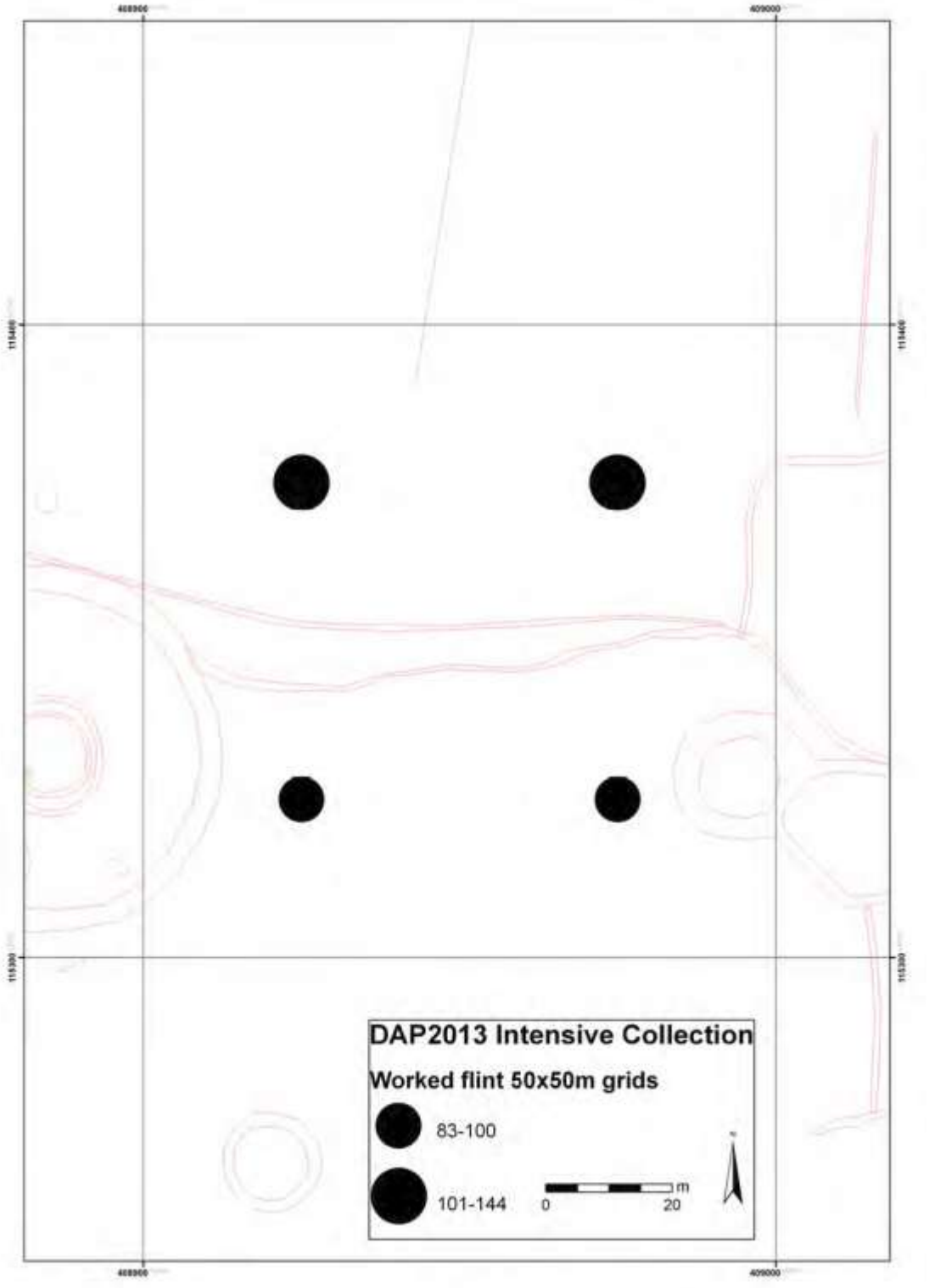


Figure 20: Worked flint from intensive surface collection. All finds grouped within 50m x 50m collection units. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

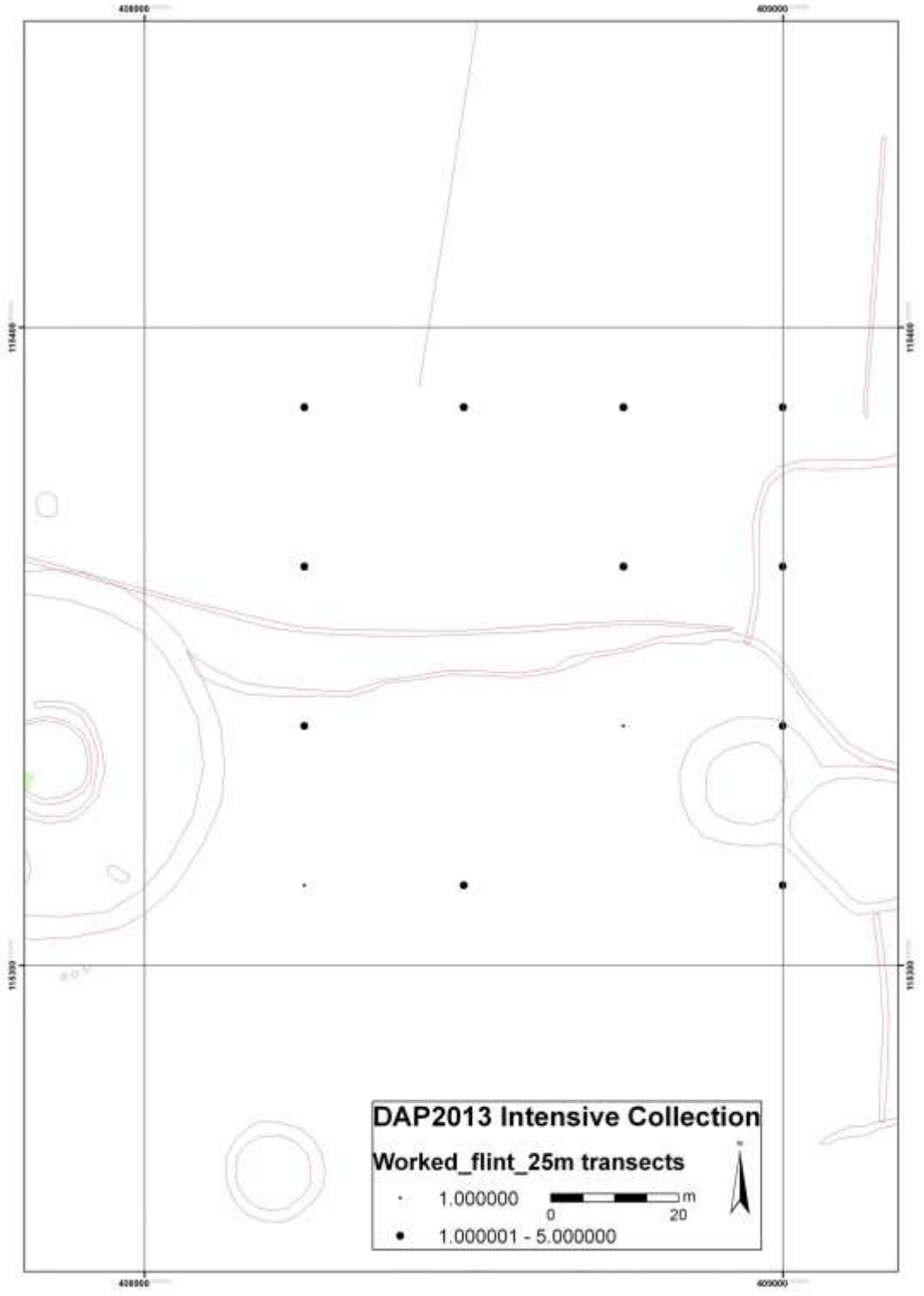


Figure 21: Worked flint from intensive surface collection. Data modelled according to a sampling strategy of 2m wide transects centres at 25m intervals and 25m collection points. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

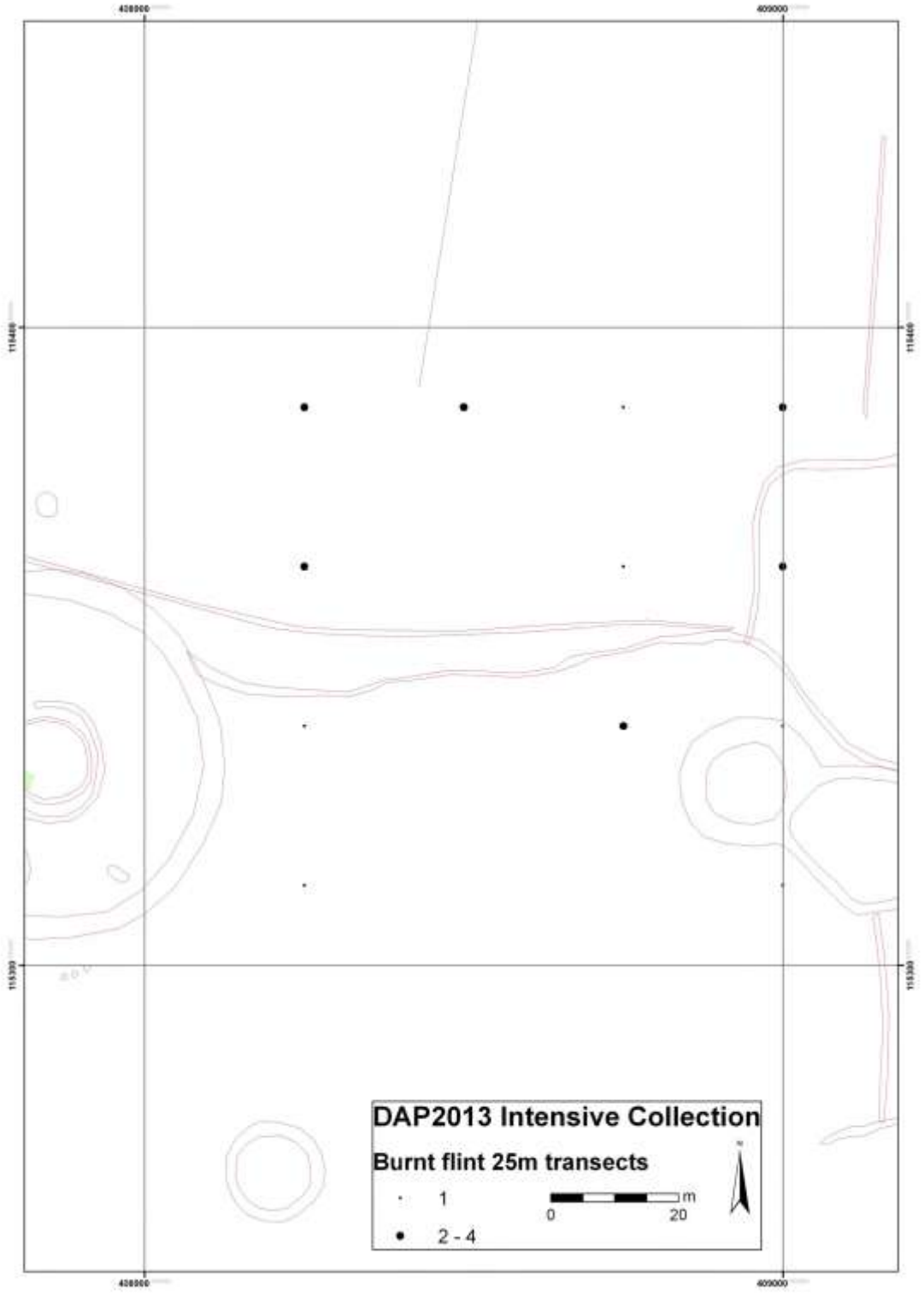


Figure 22: Burnt flint from intensive surface collection. Data modelled according to a sampling strategy of 2m wide transects centres at 25m intervals and 25m collection points. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

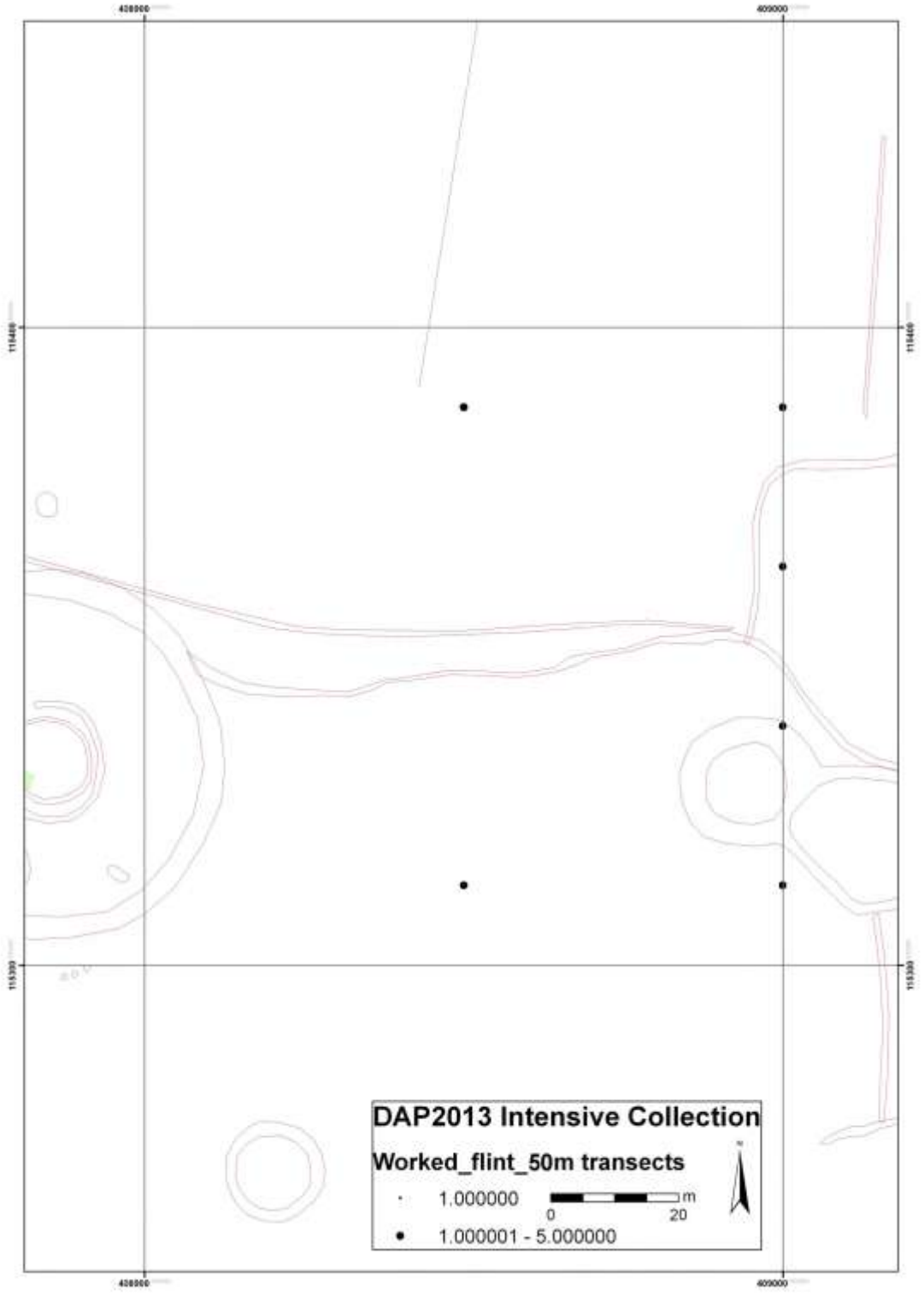


Figure 23: Worked flint from intensive surface collection. Data modelled according to a sampling strategy of 2m wide transects centres at 50m intervals and 50m collection points. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

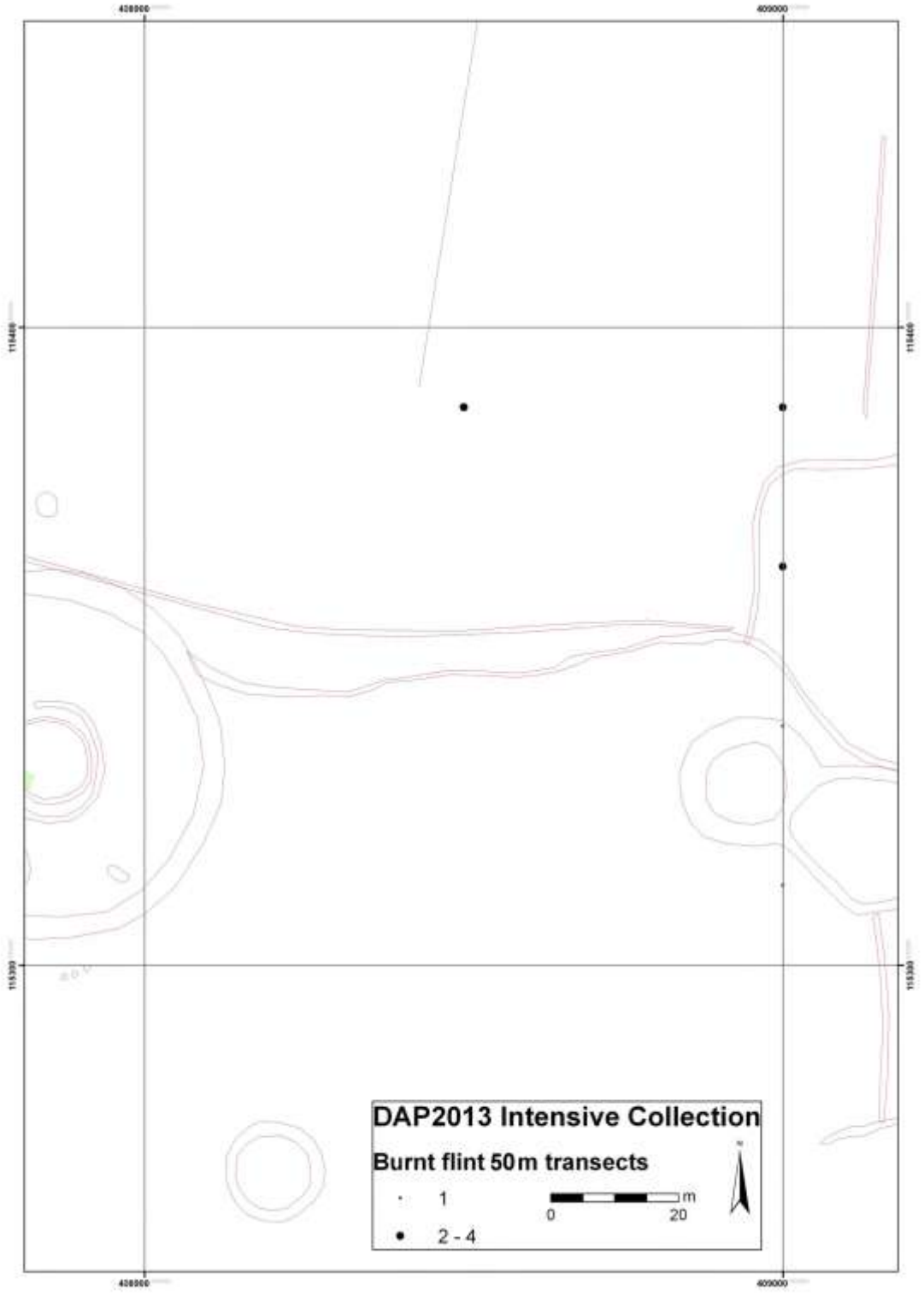


Figure 24: Burnt flint from intensive surface collection. Data modelled according to a sampling strategy of 2m wide transects centres at 25m intervals and 25m collection points. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

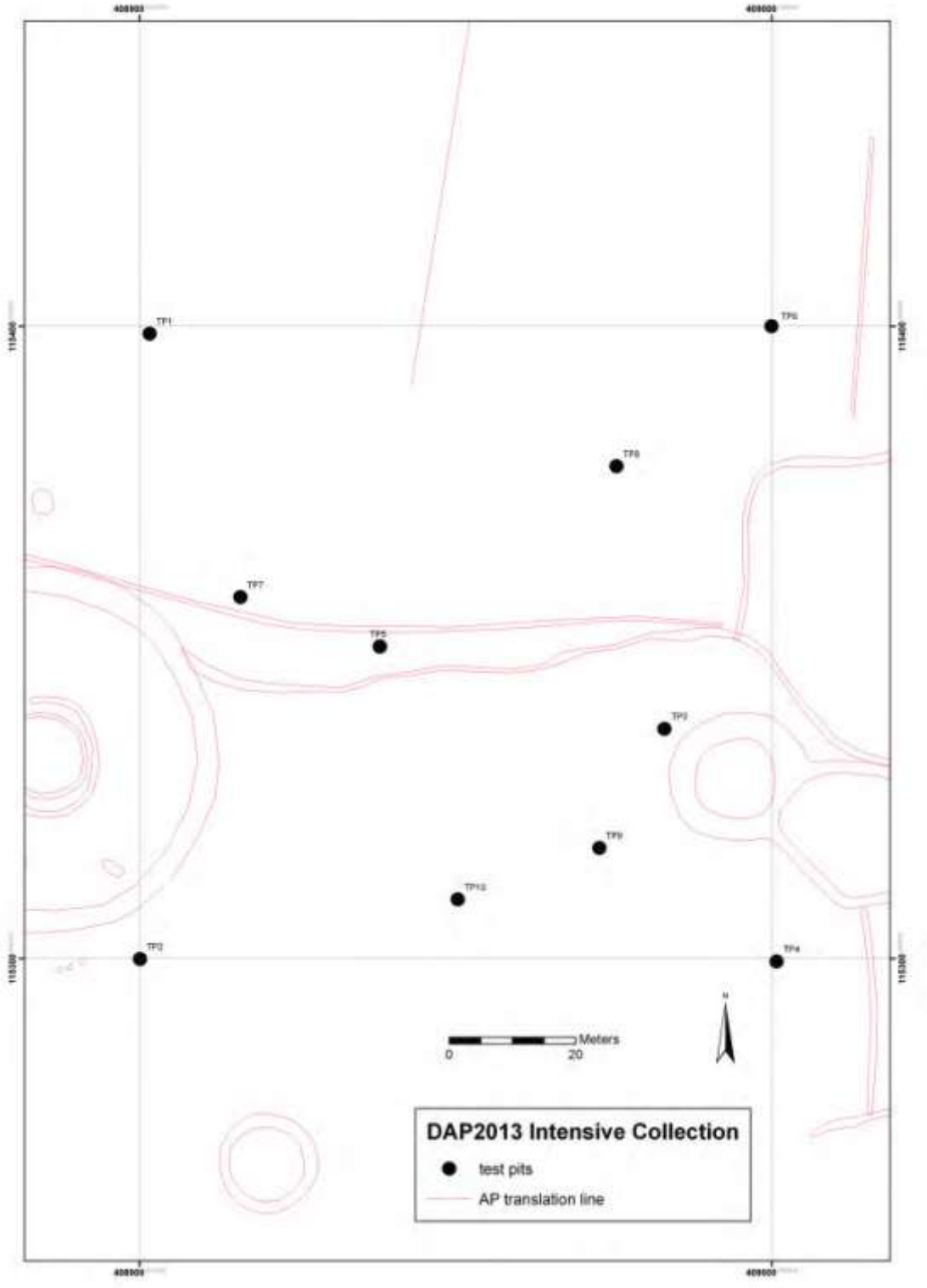


Figure 25: Location of test pits within intensive collection area. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

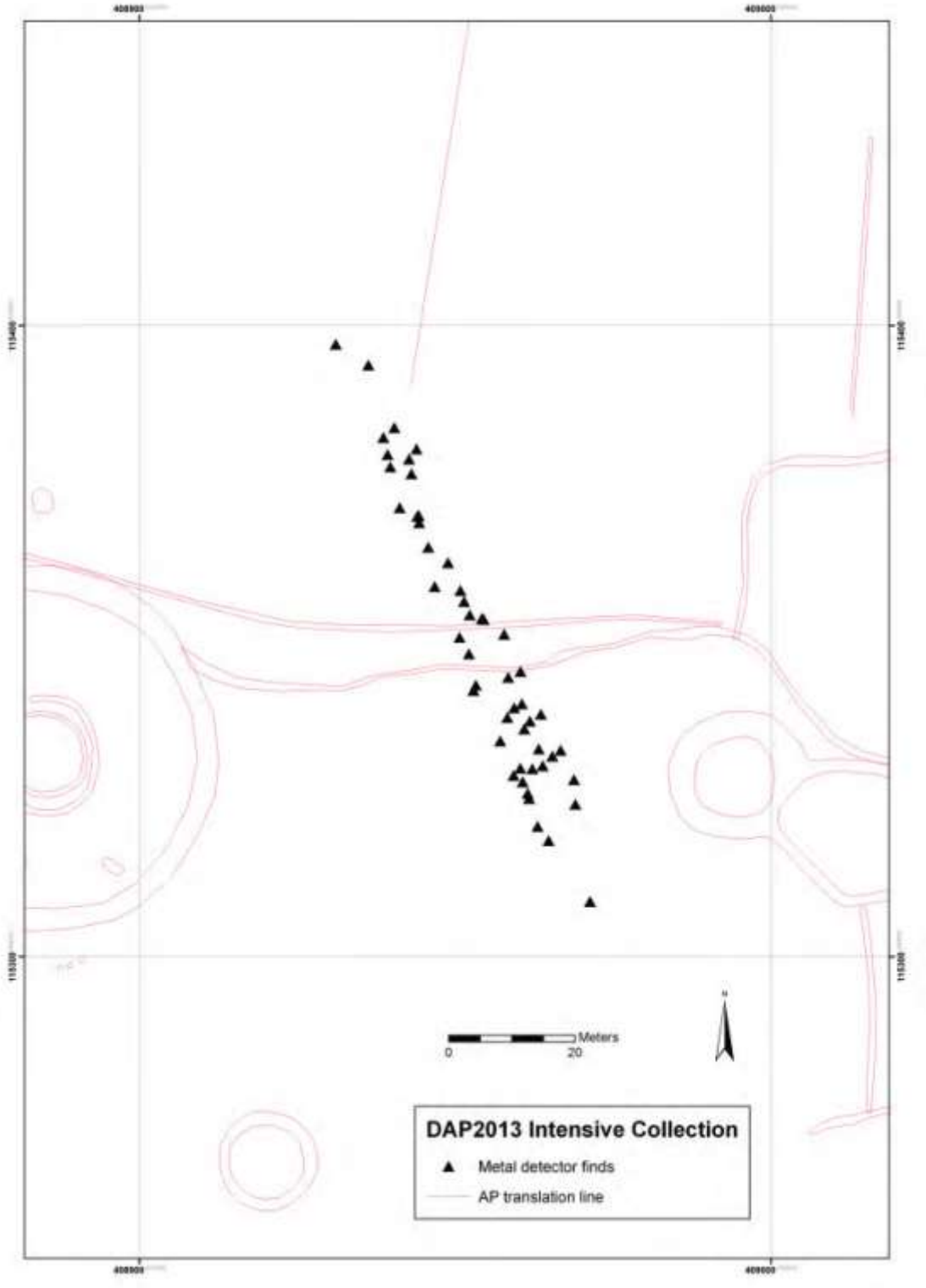


Figure 26: Location of metal detector finds in intensive collection area. Base mapping is © Crown copyright/database right 2013. An Ordnance Survey/Edina supplied service.

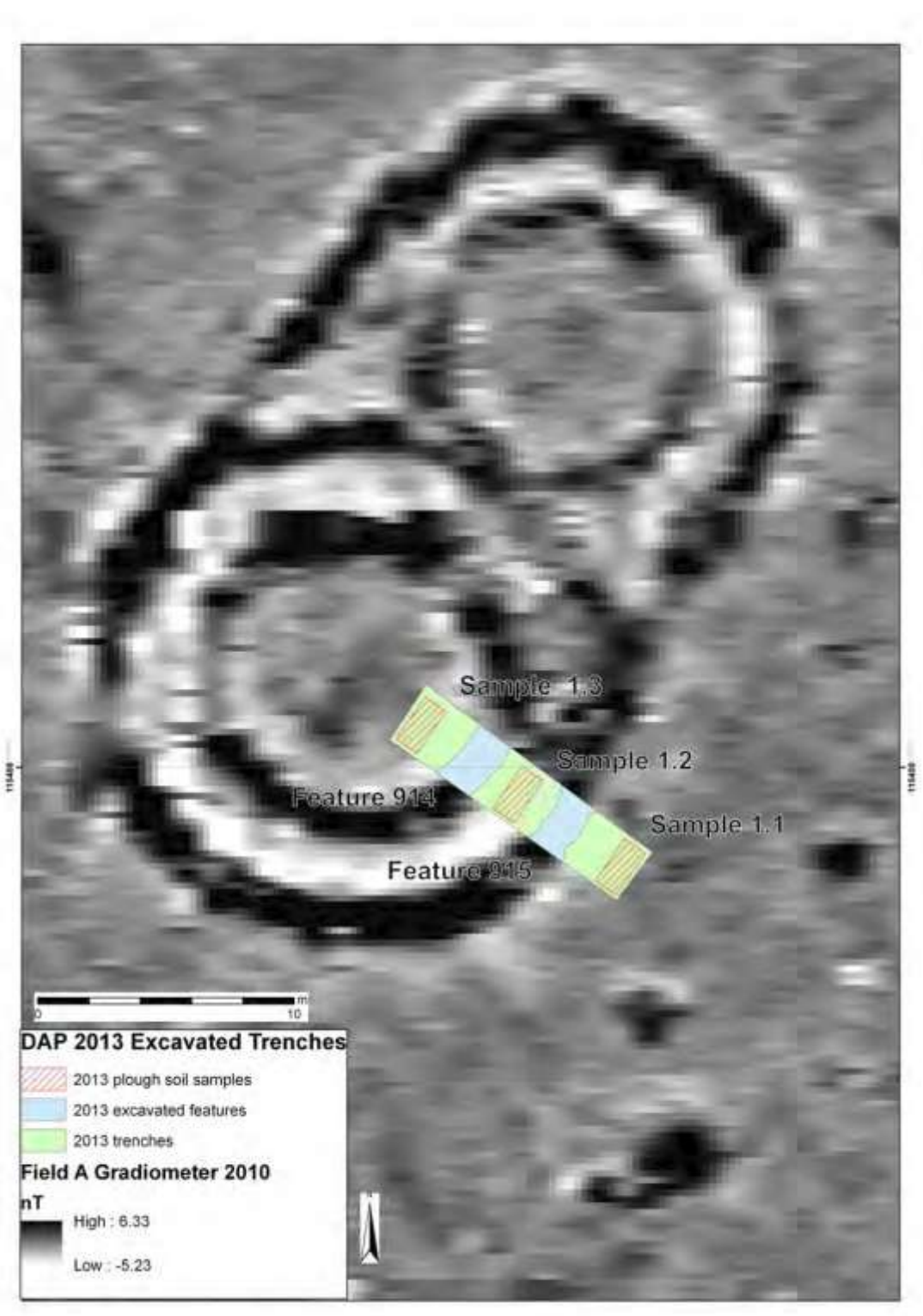


Figure 27: Location of sieved ploughsoil samples, Trench 1.

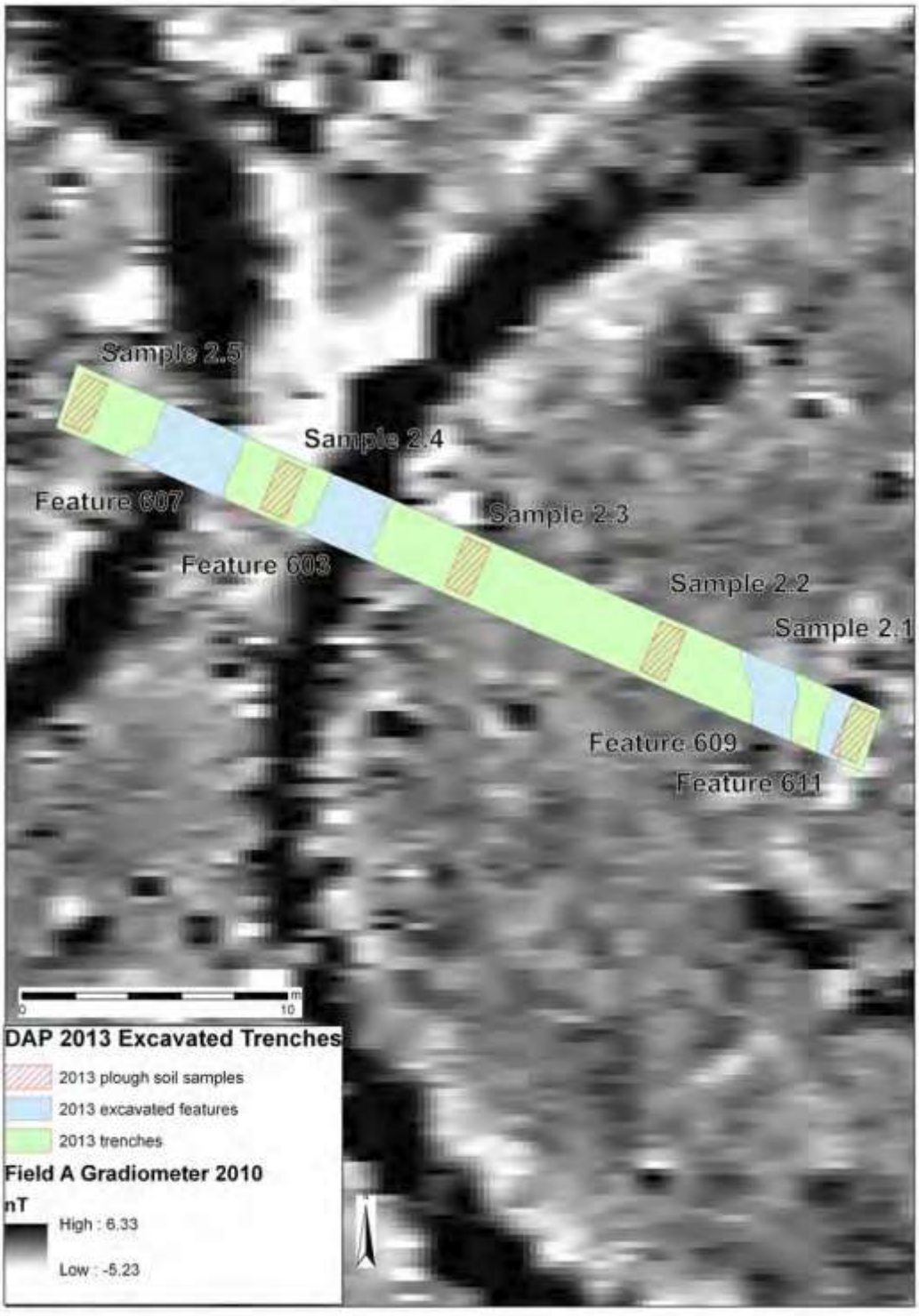


Figure 28: Location of sieved ploughsoil samples, Trench 2.

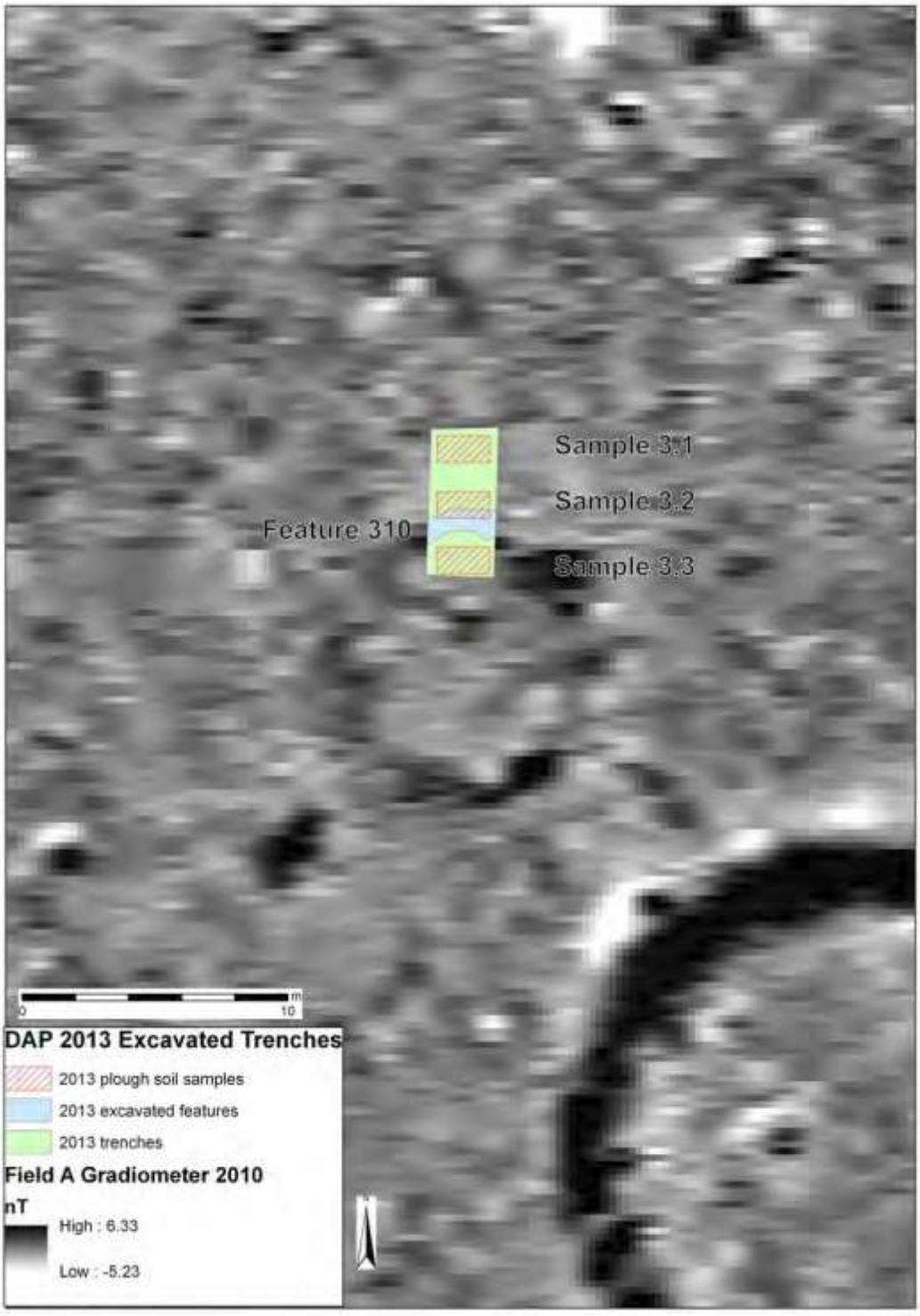


Figure 29: Location of sieved ploughsoil samples, Trench 3.

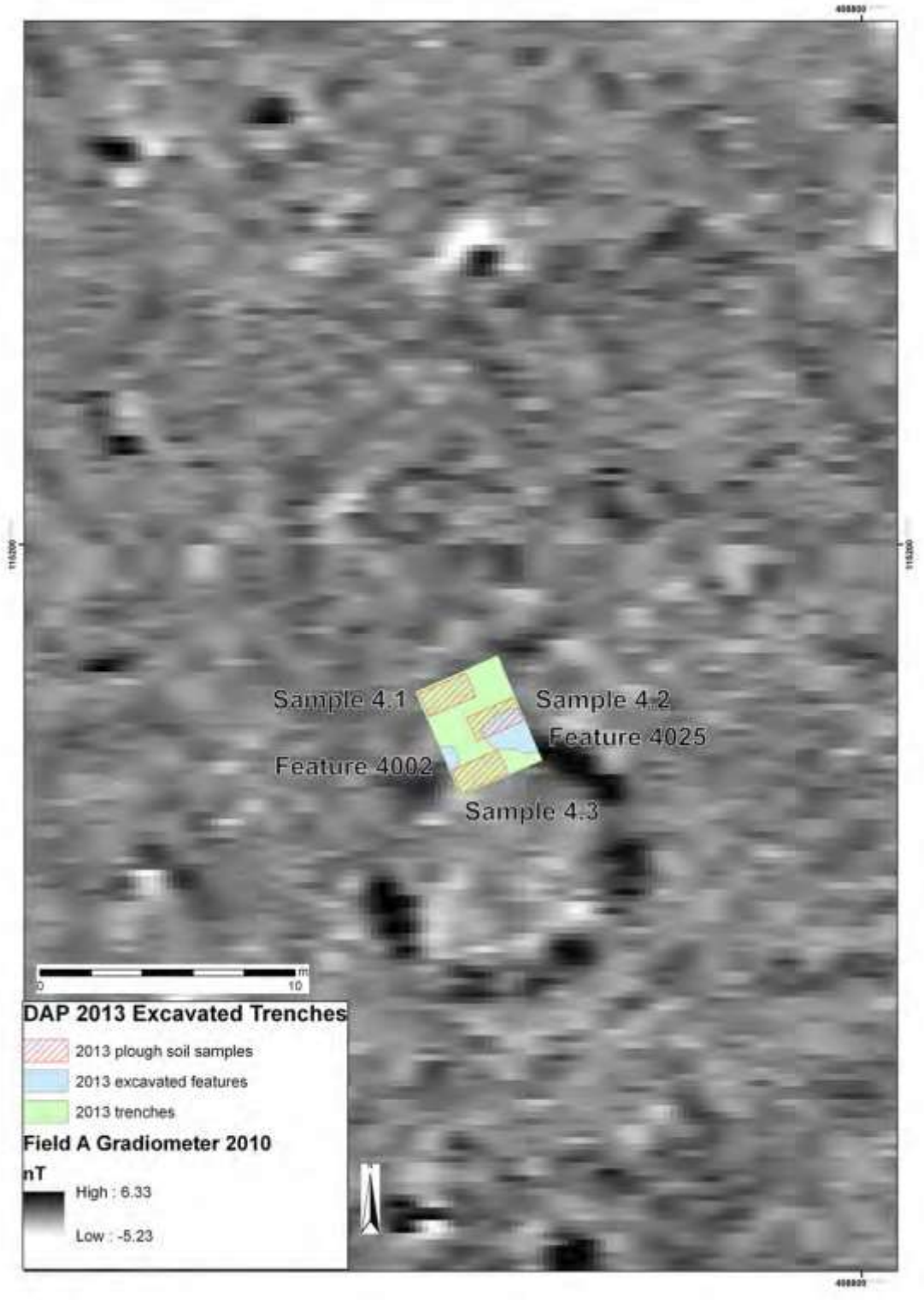


Figure 30: Location of sieved ploughsoil samples, Trench 4.

5. SUMMARY OF PRELIMINARY RESULTS

5.1 There is a marked contrast between the distribution of artefacts recovered from the surface, and the distribution of archaeological monuments as identified through remote sensing. The main clusters of worked and burnt flint tend not to coincide with the locations of prehistoric ceremonial and funerary monuments.

5.2 The surface assemblage is presumed to represent activities different from those occurring within or at the monuments. These activities were presumably either associated with more ephemeral structures such as shallow pits or stake holes, which have either been eroded by the plough or do produce a readily identifiable signal via remote sensing; or they were never accompanied by structural features.

5.3 The temporality of these activities reflected in the surface assemblage is unclear, but may emerge from further analysis. At present, the chronological relationship between the surface assemblage and the construction and use of the monuments is uncertain, beyond a very broad and general contemporaneity. However, there are indications of clusters within the surface collection that may pre-date the monuments within Areas A and B at least.

5.4 Overall, within our project area, the results of surface artefact collection offer a poor indication of the locations of archaeological monuments. Furthermore, if the principal sites and the main clusters of surface finds do not coincide, then – subject to further analysis of both excavated and surface assemblages – the results of fieldwalking seem unlikely to offer any useful indication of the condition of those monuments.

5.5 Surface collection, whether intensive or extensive, offers a dataset complementary to that recovered from the excavation trenches and from the remote sensing.

5.6 Surface collection, whether intensive or extensive, as a survey method is complementary to, rather than a proxy for, remote sensing techniques.

5.7 Modelling different collection strategies for intensive surface collection suggests that intensive collection within 10m squares offers a good approximation of the surface distribution of artefacts.

5.8 Modelling the effectiveness of different sampling strategies on the data recovered through intensive collection strongly suggests that the more widely-spaced the individual fieldwalkers and collection points, the less representative the results are in terms of the actual spatial distribution of material.

5.9 The relationship between the results of different sampling strategies and the surface assemblage as recovered by intensive collection needs to be considered alongside the spatial relationship between the surface material and the archaeological monuments as discovered through remote sensing. If fieldwalking offers a poor indication of where the monuments are, and instead reflects other activities – potentially functionally and/or chronologically as well as spatially distinct from the monuments – then sampling strategies need to

reflect this likelihood. The preliminary results presented here suggest that the less intensive the sampling strategy, the less meaningful the results are likely to be in terms of identifying the locations of prehistoric activity in the landscape.

6. FURTHER WORK ON THE 2013 SURFACE ASSEMBLAGES

Plans for the assessment phase are presented in the Updated Project Design. As far as the fieldwalking assemblage is concerned, the key objectives for this phase are:

- Full and detailed assessment of all lithic finds from both intensive and extensive collection areas, including chronology, typology, reduction sequence, dorsal scar type, etc, to allow more detailed and nuanced analyses of spatial distributions in relation to both excavated assemblages and remote sensing data.
- Full assessment, including chronological and typological identification, of all pottery finds.
- Full assessment, including chronological and typological identification, of all CBM and other finds (glass, slate, metal etc).
- Full integration, after assessment, of the surface and excavated assemblages.
- Further GIS-based spatial analysis of all finds, reflecting the more detailed assessment of individual items.
- Preparation of a detailed report based on this subsequent phase of assessment and GIS-based analysis, incorporating more fully the results of the re-analyses of remote-sensing data.

7. RECOMMENDATIONS FOR FUTURE FIELDWORK ARISING FROM 2013

7.1 The single hectare of intensive surface collection took a minimum of 10 fieldwalkers, and a maximum of 12, a little over one full day (8 hours) to complete. Future intensive collection will need to be timed for when the maximum number of experience volunteers are available.

7.2 The GPS recording of each find location was markedly time-consuming due to a very week mobile phone signal across much of the site, something that also affected on-site communication between the fieldwalking team and the four excavation trenches. The weak GPS signal also impacted considerably on the 3D recording of finds from the excavation trenches. The delay in logging fieldwalking finds was a key contributory factor in the decision to focus more on extensive collection, for which the GPS was less essential, for the remainder of the time in the field. Future intensive fieldwalking will be speeded up by using the GPS merely to establish survey control, and logging individual find locations with a Total Station.

7.3 Consideration needs to be given to the necessity for further intensive collection to this degree of precision. The 2013 fieldwork, for example, suggests that intensive collection with 10m x 10m grids provides a good approximation of the actual distribution of material on the surface. Unless it is intended to undertake further modelling of intensively-collected data, then further use of a GPS to record all find locations maybe unnecessary.

7.4 The intensive and extensive surface collections took place within, and aligned upon, the overall site survey grid as established in 2008 for the extensive geophysical surveys. However, the direction of cultivation across all the arable fields was at a markedly different angle to this grid. The highly visible lines of cultivation proved a considerable distraction to fieldwalkers, especially during the extensive collection when individual walkers were more widely spaced apart. In future fieldwalking, consideration will be given to aligning the fieldwalking transects with the direction of cultivation in order to make fieldwalking more straightforward for the volunteers, and to ensure constant spacing and density of collection.

7.5 The majority of the lithic artefacts are heavily patinated. This does raise the possibility that the white colour of patinated lithic objects, as seen against the background of a dry, chalk-rich soil matrix, has resulted in their under-representation in the collected surface artefact population. This is clearly something to be taken into account when revising the methodology for planned future intensive and extensive collection.

8. SUMMARY OF KEY ACHIEVEMENTS AND POTENTIAL OF THE FIELDWALKING PROGRAMME

8.1 The extensive collection programme offers a useful broad-brush tool for understanding what was going on where and when in the Damerham landscape that we didn't have prior to 2013. Preliminary analyses of the spatial data have demonstrated some clear relationships and contrasts with the data derived from remote sensing which will be the subject of further study following full chronological and typological assessment of the surface and excavated assemblages.

8.2 Experience in the field has allowed refinements of methodologies for both intensive and extensive collection in order to provide a sound basis for spatial and statistical analyses.

8.3 The unexpected bonus of considerable extensive surface collection has provided an invaluable dataset for analysing along with the extensive geophysical survey undertaken in 2008-11 and the aerial survey transcription, and will play a key role in reanalysis of both datasets.

8.4 The spatially extensive surface collection has encompassed the areas of all excavation trenches opened in the arable fields in 2011-13, allowing an invaluable opportunity to compare ploughzone and in situ material.

8.5 The preliminary spatial analyses presented here demonstrate the potential for more detailed work, following the assessment phase, utilising chronological and typological attributes of individual finds.

8.6 The preliminary analyses presented here demonstrate the potential of the existing datasets, and those arising from planned further fieldwork later in 2014, to fully address key research questions set in the original Project Design, including:

- The relationship between the ploughzone assemblage and material still in situ in undisturbed archaeological deposits.
- Does the ploughzone assemblage provide evidence for activity other than that associated with the known monuments? Does it indicate, for example, areas of settlement contemporary with the funerary and ceremonial monuments?
- Does the ploughzone assemblage offer evidence for phases of activity not represented by the known archaeological monuments?
- Can intensive surface collection, using the methodology developed by DAP, demonstrate optimum sampling levels to ensure representative collection of surface material, in terms of the nature and chronology of the activities represented as well as their spatial distribution?

Appendix 1 – Artefacts recovered from Test Pits

Test pit/spit	Worked flint	Burnt	Pottery	CBM
TP1 surface	1	0	0	0
TP1 spit 1	2	2	0	0
TP1 spit 2	2	1	0	0
TP1 spit 3	1	2	6	0

Table 1

Test pit/spit	Worked flint	Burnt	Pottery	CBM
TP2 surface	0	0	0	0
TP2 spit 1	3	4	3	0
TP2 spit 2	4	4	8	4
TP2 spit 3	2	1	1	0
TP2 spit 4	1	4	0	0

Table 2

Test pit/spit	Worked flint	Burnt	Pottery	CBM
TP3 surface	1	0	0	0
TP3 spit 1	1	4	3	0
TP3 spit 2	6	5	4	4
TP3 spit 3	5	1	0	1
TP3 spit 4	1	4	0	0

Table 3

Test pit/spit	Worked flint	Burnt	Pottery	CBM
TP4 surface	1	0	1	0
TP4 spit 1	4	1	0	0
TP4 spit 2	0	6	0	0
TP4 spit 3	1	5	0	0

Table 4

Test pit/spit	Worked flint	Burnt	Pottery	CBM
TP5 surface	2	0	0	0
TP5 spit 1	1	12	11	0
TP5 spit 2	4	13	5	0
TP5 spit 3	4	4	1	0
TP5 spit 4	2	0	0	0

Table 5

Test pit/spit	Worked flint	Burnt	Pottery	CBM
TP6 surface	3	0	1	2
TP6 spit 1	9	1	0	0
TP6 spit 2	11	1	0	0
TP6 spit 3	1	0	0	0

Table 6

Test pit/spit	Worked flint	Burnt	Pottery	CBM
TP7 surface	0	0	1	0
TP7 spit 1	1	6	4	0
TP7 spit 2	2	1	1	0
TP7 spit 3	0	1	0	0

Table 7

Test pit/spit	Worked flint	Burnt	Pottery	CBM
TP8 surface	9	2	0	0
TP8 spit 1	1	10	2	0
TP8 spit 2	1	8	3	0
TP8 spit 3	2	1	1	0

TP8 spit 4	2	0	0	0

Table 8

Test pit/spit	Worked flint	Burnt	Pottery	CBM
TP9 surface	3	0	0	0
TP9 spit 1	7	6	1	0
TP9 spit 2	4	1	1	0
TP9 spit 3	2	0	0	0

Table 9

Test pit/spit	Worked flint	Burnt	Pottery	CBM
TP10 surface	3	0	0	0
TP10 spit 1	2	2	1	0
TP10 spit 2	6	2	0	2
TP10 spit 3	0	3	0	0

Table 10

Appendix 2 – Artefacts recovered from sieved samples in excavation trenches

Trench	Collection unit	Worked flint (weight g)	Burnt flint (weight g)	Pottery (weight g)	CBM (weight g)	Slag (weight g)	Comments
1	1.1	23 (177)	0	7 (43)	0	0	
1	1.2	11 (55)	25 (86)	18 (63)	1 (14)	0	Bone fragment
1	1.3	17 (57)	0	4 (43)	0	0	
2	2.1	5 (4)	1 (18)	3 (12)	0	0	
2	2.2	12 (78)	1 (31)	11 (40)	0	0	
2	2.3	6 (52)	1 (16)	4 (18)	0	0	1x Cu alloy fragment
2	2.4	13 (91)	5 (61)	7 (29)	0	0	
2	2.5	9 (72)	1 (9)	5 (54)	0	1 (11)	
3	3.1	19 (55)	14 (256)	9 (30)	1 (38)	0	
3	3.2	27 (147)	13 (37)	20 (69)	0	1 (4)	1x flint scraper
3	3.3	2 (2)	2 (10)	0	0	0	
4	4.1	17 (122)	16 (128)	15 (51)	0	3 (23)	
4	4.2	8 (63)	7 (67)	9 (24)	1 (20)	0	
4	4.3	2 (16)	14 (162)	16 (49)	0	0	

Appendix 3 – summary of artefacts recovered from excavated contexts

Trench	Context description	Context	Worked flint (weight g)	Burnt flint (weight g)	Pottery (weight g)	CBM (weight g)	Quartzite (weight g)
Trench 1	Fill of ditch 914	901	6 (15)	1 (15)	0	0	0
Trench 1	Fill of ditch 915	902	4 (94)	0	0	0	0
Trench 1	Fill of ditch 914	903	1 (81)	0	0	0	0
Trench 1	Fill of ditch 915	910	2 (26)	0	0	0	0

Trench	Context description	Context	Worked flint (weight g)	Burnt flint (weight g)	Pottery (weight g)	CBM (weight g)	Quartzite (weight g)
Trench 2	Plough soil	601	7 (77)	0	1 (33)	0	0
Trench 2	Fill of ditch 603	604	34 (542)	9 (590)	0	0	1 (326)
Trench 2	Fill of ditch 607	606	0	1 (1)	0	0	0
Trench 2	Fill of ditch 609	608	12 (134)	2 (165)	0	0	0
Trench 2	Fill of ditch 611	610	3 (23)	0	0	0	0
Trench 2	Fill of ditch 607	615	2 (23)	0	0	0	0
Trench 2	Fill of ditch 603	622	28 (761)	1 (19)	0	1 (1)	0
Trench 2	Fill of ditch 609	640	1 (1)	0	0	0	0
Trench 2	Fill of ditch 603	647	2 (16)	0	0	0	0
Trench 2	Fill of ditch 603	651	1 (3)	0	0	0	0
Trench 2	Fill of ditch 607	653	28 (408)	0	1 (1)	0	0
Trench 2	Fill of ditch 603	659	2 (49)	0	0	0	0
Trench 2	Fill of ditch 607	660	15 (288)	0	0	0	0
Trench 2	Fill of ditch 603	662	1 (4)	0	0	0	0
Trench 2	Fill of ditch 603	663	1 (8)	0	0	0	0

Trench	Context description	Context	Worked flint (weight g)	Burnt flint (weight g)	Pottery (weight g)	CBM (weight g)	Quartzite (weight g)
Trench 3	Fill of ditch 303	302	1 (5)	0	0	0	0