Late Romano-British Pottery Production in Context: the Crambeck Ware Industry and its Landscape Setting

Volume 2 of 2

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Appendix 1 Report on Geophysical Survey Completed at the Site of Roman Pottery Kilns and Associated Features at Crambeck, North Yorkshire.

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Introduction

With the permission of landowners and English Heritage, geophysical survey work was undertaken as part of PhD research at the site of Roman pottery kilns at Crambeck, North Yorkshire in February, March, and April/May 2013. Crambeck lies to the south west of Malton next to the A64, the likely course of a Roman York-Malton road (see Fig. 1). The area of survey included three fields to the south-west of Crambeck village as well as the garden of Crambeck House (Appendix 1, fig. 2). The results set within the wider area can be seen in appendix 2, figs. 3 and 4.

The survey undertaken included both magnetometry and resistivity. This was done in order gain as much information about the site as possible. The survey was conducted with the help of archaeology undergraduate and masters students from the University of York with ranging geophysical experience.

Fig. 1. Location of Crambeck village in the wider area.

Aims

The aim of this survey was to begin to establish the extent of the Roman pottery production site as well as to confirm if features surveyed in the 1980s were still visible (Bartlett & Hinchliffe 1989, 91-95). The magnetometer was employed, as it would best show up any kilns that may have survived. The resistivity machine was likewise employed, as it would best show up any of the more solid features such as walls and compact floors as well as any ditches.

The results of the survey conducted in the 1980s show that the largest field (currently owned by Mr and Mrs Pollard, Crambeck House) contains distinct evidence of the pottery kilns in terms of both the kilns themselves and a network of ditches. The specific aim in this field

was to confirm if these features were still visible and to determine the extent of the potteries. The 1980s survey did not establish how far down the hill in this field the complex ran. It was also hoped that some previously unknown kilns could be identified.

The aim in the two small fields closer to the village (currently owned by the residents of Crambeck village) was to see if any evidence of the pottery industry could be picked up and what form that may take. It was unlikely that any kilns would be in these fields but it was possible that this could be the site of the potters' living area if it was separate from the kilns themselves. The aim in surveying the garden of Crambeck House was to expand on the note in the 1912 Ordnance Survey Map *'Remains and Roman Coins found A.D. 1858'*. It is highly likely that these remains have been cut away by the existing road. However, further similar features may exist further back from the road in what is now the garden of Crambeck House.

Methods

As previously stated both magnetometry and resistivity were used at the site. This section will consider the methods used in each of the fields and garden, including grid layout, equipment and results processing.

Village Fields

A base line was established, using ranging poles, along the straight hedgerow that comprised the south-west boundary of these two fields, running south-east from the A64. This was done using a dumpy level and measuring in the fixed points. A second baseline was established halfway along the first, running the length of the fields. A series of 20x20m grids were then measured off these baselines using tape measures and triangulation. Yellow discs were pinned into the ground in lieu of poles so as to reduce the risk of harm to the horses in the field. The area covered by both machines consisted of 21 full grids plus two half grids (8,800sq. m.).

The magnetometry was conducted at 1m traverses with 0.25m samples. The resistivity was conducted also at 1m traverses but with 1m samples in order to ensure as much of the area was covered as possible. The direction of the first traverse for both methods was north-east. Various obstacles existed in these fields, themselves separated by a wooden fence, such as a metal gate, stables, feeding troughs and a manure pile, some of which show up on the magnetometry results. The ground was relatively even with a gentle slope towards the village.

Garden, Crambeck House

A baseline was established along a fence running on a north-west/south-east alignment, separating two areas of the garden. Due to the irregular shape of the garden two 10x10m grids were set up, the second leading from the east corner of the first (200sq. m.). Unfortunately it was not possible to conduct a magnetometry survey in this space as it is surrounded by metal fences and is very close to the house, thus there was too much interference with the machine. The resistivity survey was conducted at 0.5m traverses with 0.5m samples with the direction of the first traverse to the south-east. The ground was sloping roughly south-east and was fairly uneven with large lumps of grass and grassed over molehills.

Large Field

A baseline was established using a dumpy level along the fence that comprises the south-west boundary of the field and a second was established halfway along the first running the length of the field. A measurement of the fixed points were taken for future reference. As with the village fields, a series of 20x20m grids were triangulated off these baselines. The corners of the girds were marked with bamboo sticks and the baselines with ranging poles. The direction of the traverses for both magnetometry and resistivity was north-east.

The magnetometry was again conducted with 1m traverses and 0.25m samples. This covered an area consisting of 66 grids (26,400sq. m.). The resistivity covered a smaller area due to time and labour constraints and consisted of 18 grids (7,200sq. m.). This was done at 1m traverses with 1m samples in order to cover as much of the area as possible. This was necessary as no resistivity work had previously been done on the site. The results of the 1mx1m resistivity work were too unclear to show much although hints of features could be seen. As a result of this a key area was established and covered by 0.5mx0.5m resistivity sampling. The ground of the field is largely even but was peppered with molehills and one metal feeding trough that shows up on the magnetometry results. The entire field is on the side of a hill sloping down towards the village.

Results Processing

This was done on a Toughbook provided by the University. For both survey methods the grid data was compiled into a master grid on the Geoplot program and then processed using a variety of methods. For the magnetometry data this included zero mean traverse to clear up any striping in the grids, the grids were clipped to three standard deviations around the mean, reducing the geological response and enhancing the archaeological response. The

same processing methods are used for the resistivity along with edge-matching and de-spiking.

4. Results and Interpretation

Large Field

Magnetometry (Appendix 3, fig. 5)

The results from this method of survey confirmed that the ditch system and kilns discovered by the 1980s survey are still very visible. This confirms that the protection afforded the site by English Heritage has preserved the archaeological site. The pottery site is largely contained within the top half of the field close to the south-west boundary fence. As in the 1980s, the kilns are certainly part of the Crambeck pottery industry and the ditches are most likely to be associated with it, whether they are earlier ditches that have been re-used or ones created contemporary to the kilns. The results confirm the presence of the six kilns identified in the 1980s and suggest the presence of one, possibly two, more within the same ditched enclosure. A number of ditches extend into the remainder of the field. Plough marks can also be seen, although these are unlikely to be Roman and do not relate to the pottery site. Roughly 120m from the south-west boundary is the hint of a circular feature. However, this only just appears in the corner of one of the grids and further survey work would be necessary to establish whether this is an historical feature, although this may be hindered by the presence of the A64 road.

Resistivity (Appendix 3, fig. 6)

The results here clearly show two kilns, most likely the same as two of the larger ones on the magnetometry results (in the 1980s these were labelled Kilns 3 and 4; Bartlett and Hinchliffe 1989, fig. 2, 92). Running roughly east-west there is a large white feature, most likely a ditch. This runs the length of the resistivity survey area. However it does not appear to be the same as the large boundary ditch at the northern end of the pottery enclosure as it runs at a different angle. More investigation would be necessary to establish the relationship between these two ditches. A feature – roughly square in shape – can be seen in black close to this ditch and to the west of Kiln 4. This cannot be clearly seen in the magnetometry results. Another rectangular feature can just be seen to the west of this unidentified square and it was necessary to carry out further resistivity work at a higher resolution over this area (results discussed below). There are several possible ditches between these features and the south-west field boundary and the further resistivity work did not shed any further light on these. Additional to this in the two grids furthest down the field there appears to be a potential

rubble heap or rubbish dump. To the south-west of this appears to be two more potential kilns. It is likely that these are Kilns 5 and 6 as identified by Bartlett and Hinchliffe (1989, fig. 2, 92).

As previously mentioned it was necessary to carry out further resistivity work at a higher resolution of 0.5m traverses and 0.5m samples to attempt to shed further light on some suspect features (Appendix 3, fig. 7). This work showed up some black/grey mostly roughly circular features that appear in a very linear formation. These are shaped like the top half of a square and appear to be at least partially surrounded by a ditch. A second feature in the rough shape of a bicycle wheel with spokes showed up to the north of the linear feature. It is not possible to state what these features are for certain without further investigation, most likely in the form of excavation or at least test pits. This would give a clearer indication of what these features are and their relationship to the other features in the field and the pottery industry.

After the analysis of these results it was decided that an extension of the 0.5mx0.5m resistivity sampling might shed more light on what the two features are (Appendix 3, fig. 8). A further 10 grids were surveyed at this higher resolution. They showed an area of what can only be described as splodging or spots that appear to respect a blank square area. These lead off from the square feature identified in the first wave of higher resolution resistivity down the hill for at least 60m. It is unclear what these may be other than that they are hard and/or dry. It is possible that they may be pits of some sort. Further investigation in the form of test pitting and ground penetrating radar may shed more light on these unusual features. This second wave of higher resolution work also showed up a hint of two overlapping roundhouses. Again further investigation (test pitting, GPR) would confirm whether they are indeed roundhouses.

Village Fields and Crambeck House Garden

Magnetometry (Appendix 3, fig. 8)

This provides a clear view of several ditches. The main one appears to be on a north-south alignment through both fields with at least one large bend in it. Modern features can be seen including two pipelines and interference from obstacles in the field as stated earlier. It is possible that these ditches are earlier than the pottery industry and weren't reused like those further up the hill or they may be later than the Roman period. There is also the hint of plough marks although it is unlikely these are Roman and related to the pottery site.

Resistivity (Appendix 3, fig. 9)

A large black feature shows up in the village fields in the grids closest to the A64. It is unclear as to what this feature might be and it does not appear to relate to anything on the magnetometry results. Further investigation in the future may shed more light on the nature of this feature. A number of ditches are hinted at across the survey area but it is unclear how and if they could relate to the ones identified around the pottery kilns.

The results from the garden of Crambeck house were inconclusive (appendix 3, fig. 10). It is suspected that there is simply too much interference from building rubble known have been dumped there at the time of building and from the house itself.

5. Summary and Recommendations for Future Work

It is clear then that the remains of the pottery industry at Crambeck are still visible. It is unlikely that they extend further down the hill towards the village of Crambeck but it is possible related sites may exist on the other side of the A64 or in the fields on the north side of the village.

The site would benefit from some excavation, most likely on a small scale and probably in the form of test pitting. This would aim to clarify what the linear ditch and bicycle wheel features are and their relationship with the rest of the site, particularly the Crambeck pottery industry. It is strongly suggested that English Heritage continues to provide protection for this site, as it is clear that much archaeology continues to exist below the surface.

6. Bibliography

Bartlett, A. and Hinchliffe, J. 1989 'A survey of the Roman pottery production site at Jamie's Craggs, Crambeck', pp91-95. In Wilson, P.R. (ed.) *Crambeck Roman Pottery Industry*, (Roman Antiquities Section, Yorkshire Archaeological Society, Leeds)

Appendix 1: Area of Survey

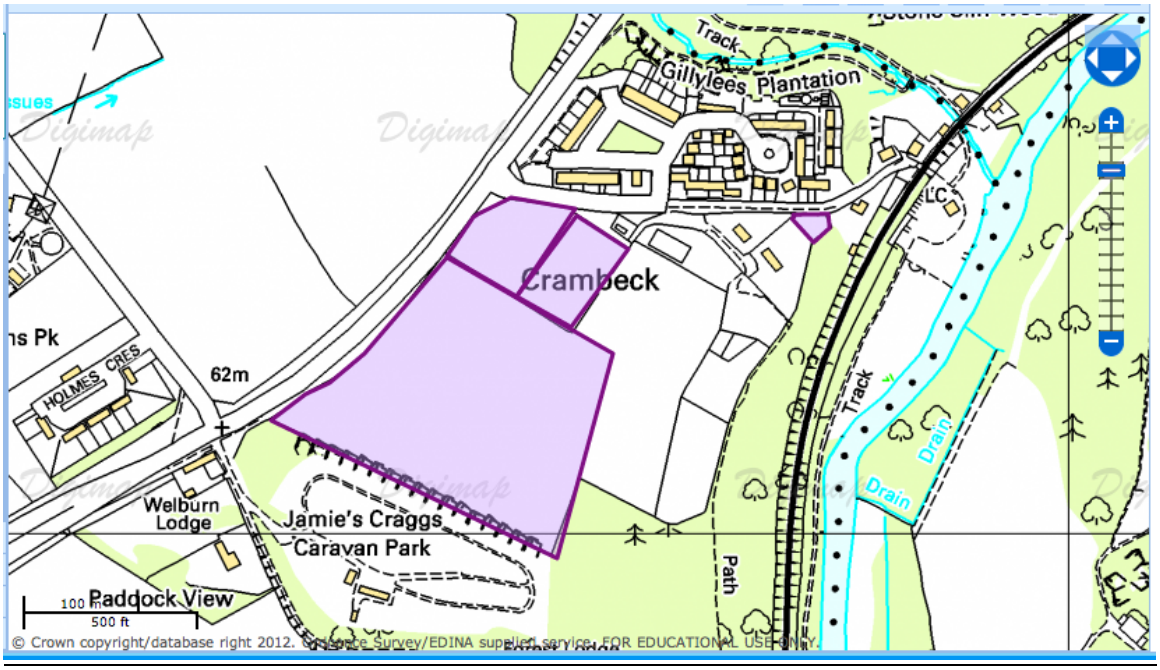


Fig. 2. Area of survey (highlighted in purple).

Image courtesy of edina.co.uk.

Appendix 2: Results in relation to the wider area

Fig. 3. Magnetometry

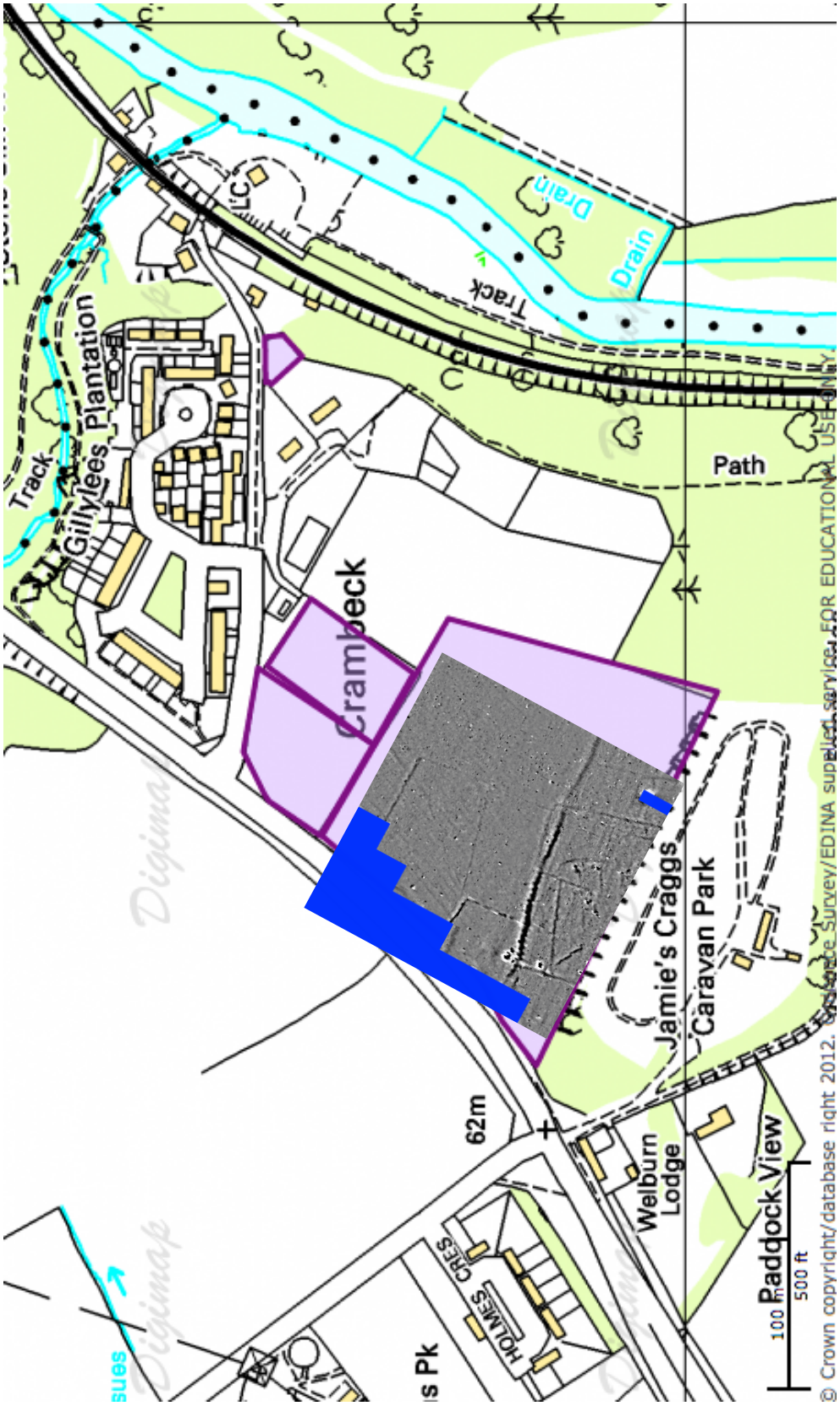
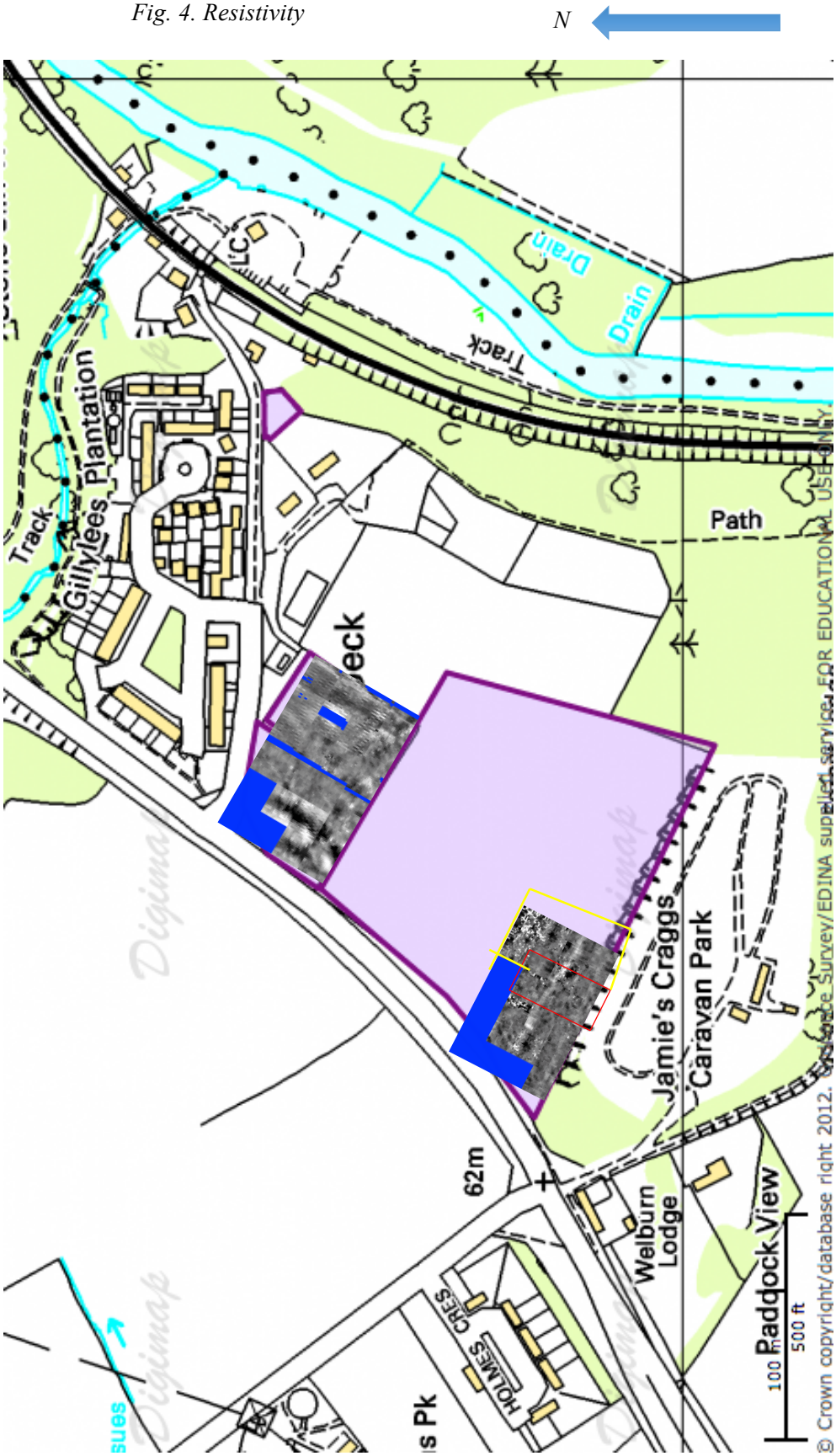


Fig. 4. Resistivity



Area covered by higher resolution resistivity outlined in red. Extension of higher resolution resistivity outlined in yellow.

Appendix 3: Results

Large Field

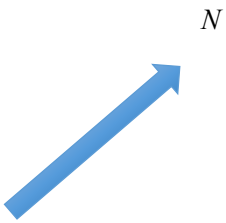


Fig. 5. Magnetometry Results

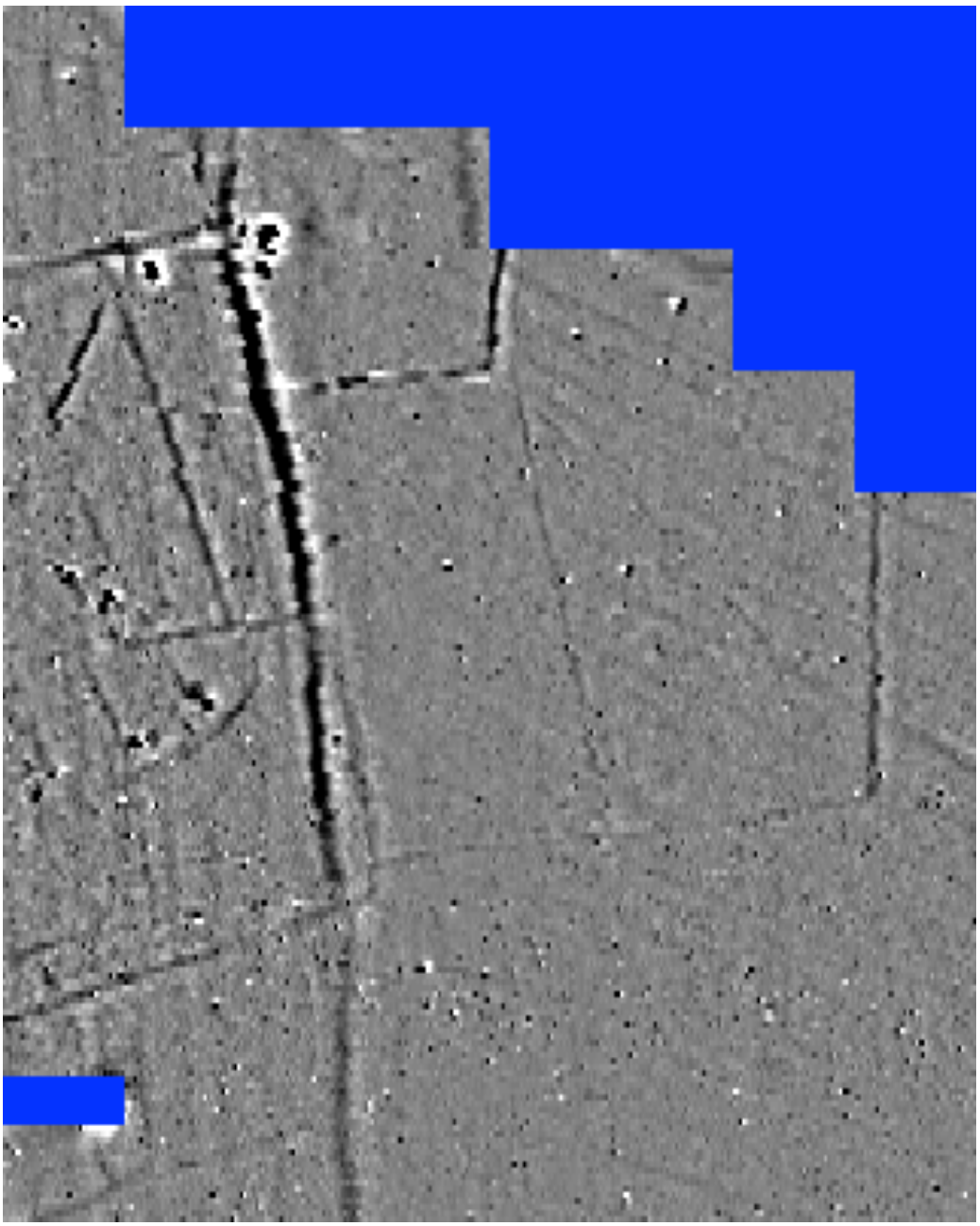


Fig. 6. Resistivity Results. Area covered by further resistivity work at a higher resolution is outlined in red.

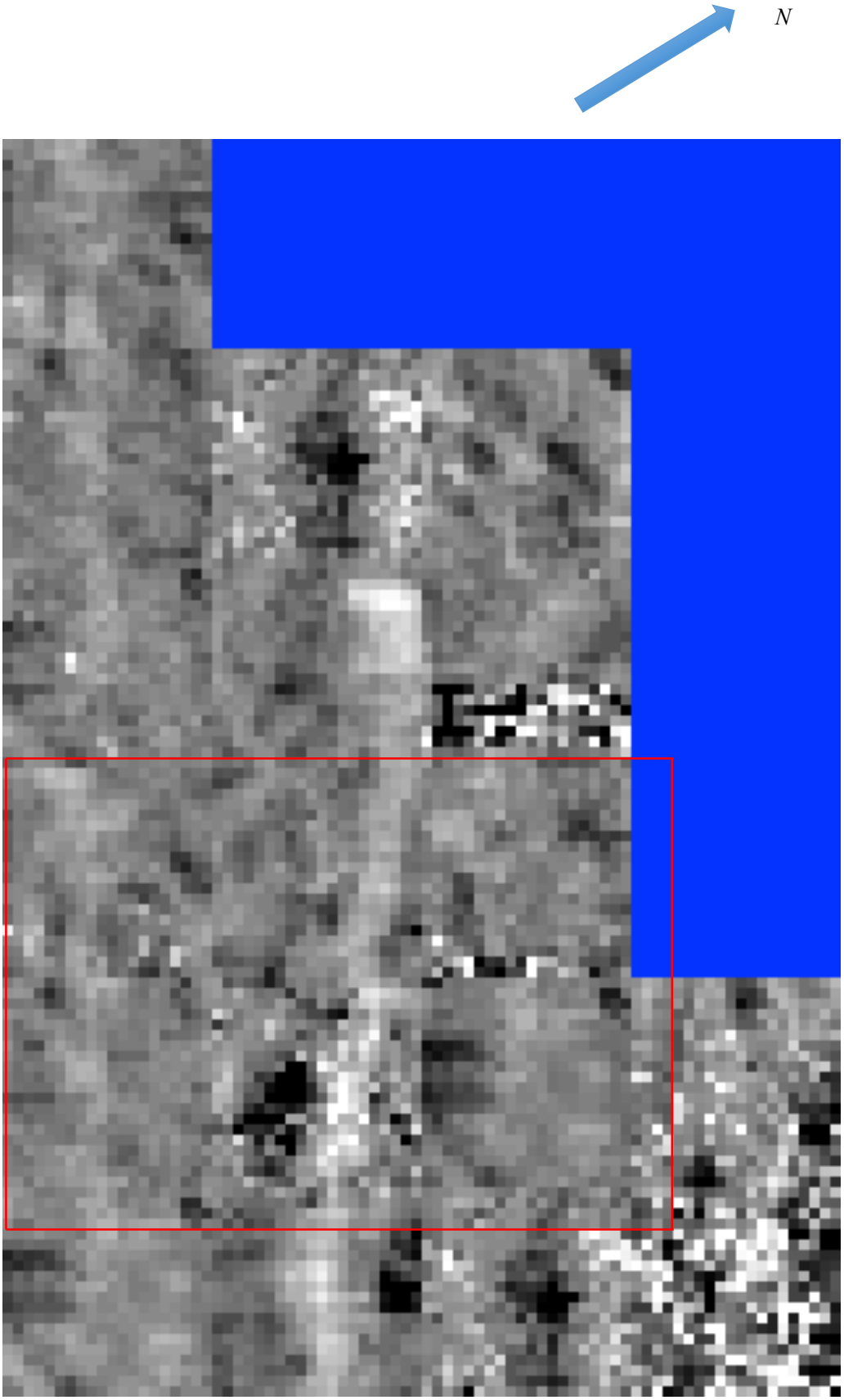
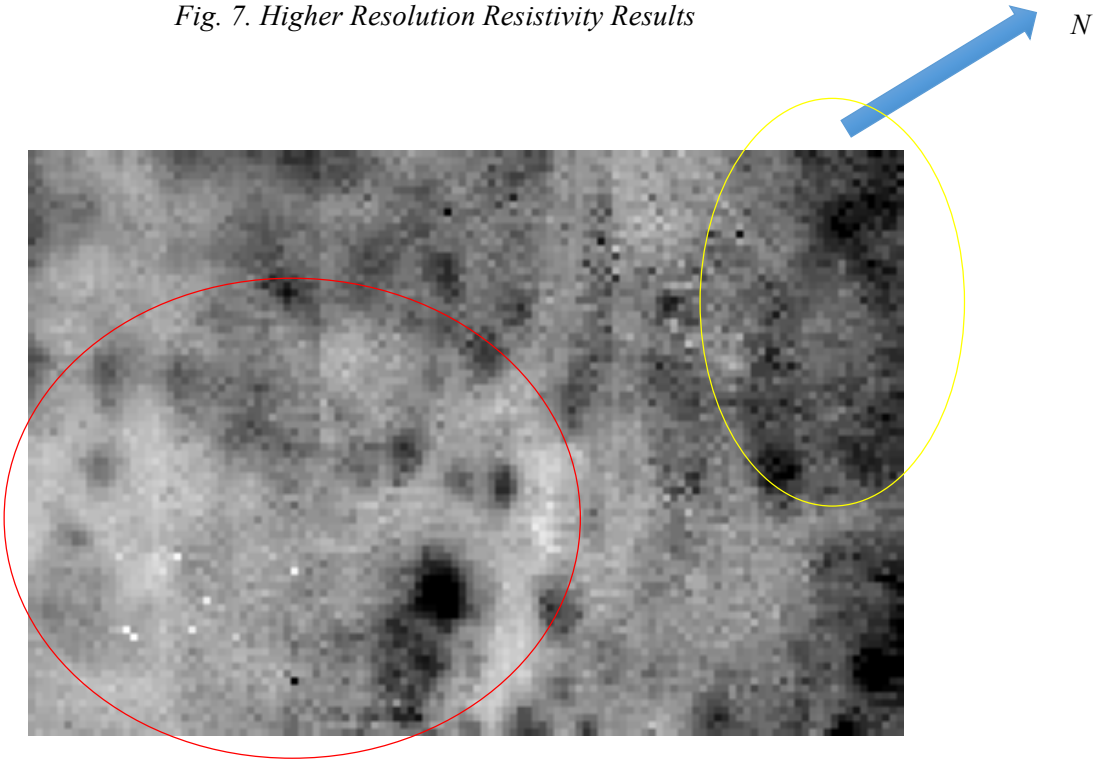
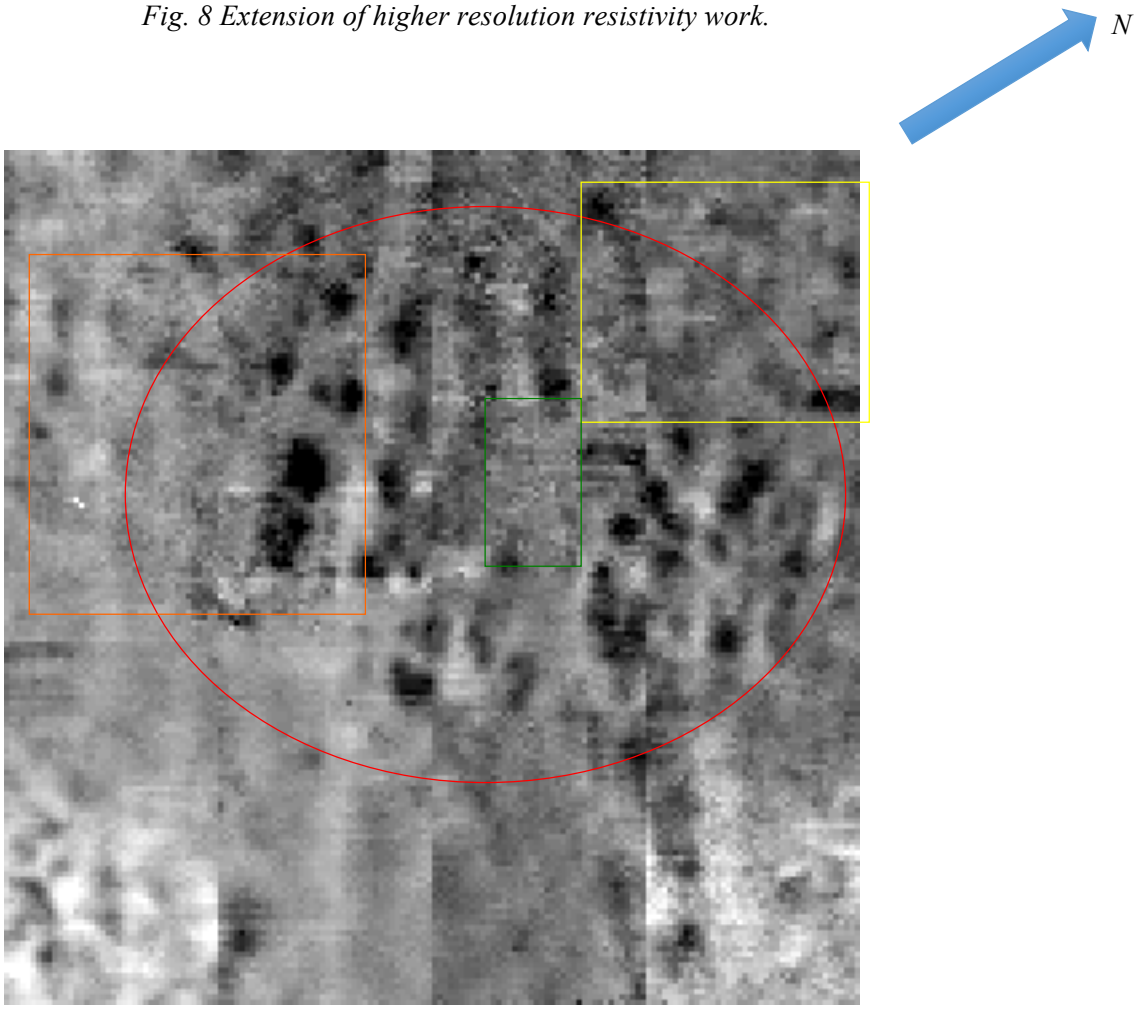


Fig. 7. Higher Resolution Resistivity Results



Linear hard/dry features and bicycle wheel feature outlined in red and yellow respectively.

Fig. 8 Extension of higher resolution resistivity work.



Original square feature outlined in an orange rectangle.

Splodging/spots outlined in red circle.

Blank area respected by splodging/spots outlined in a green rectangle.

Possible roundhouses outlined in yellow square.

Village Fields

Fig. 9. Magnetometry Results

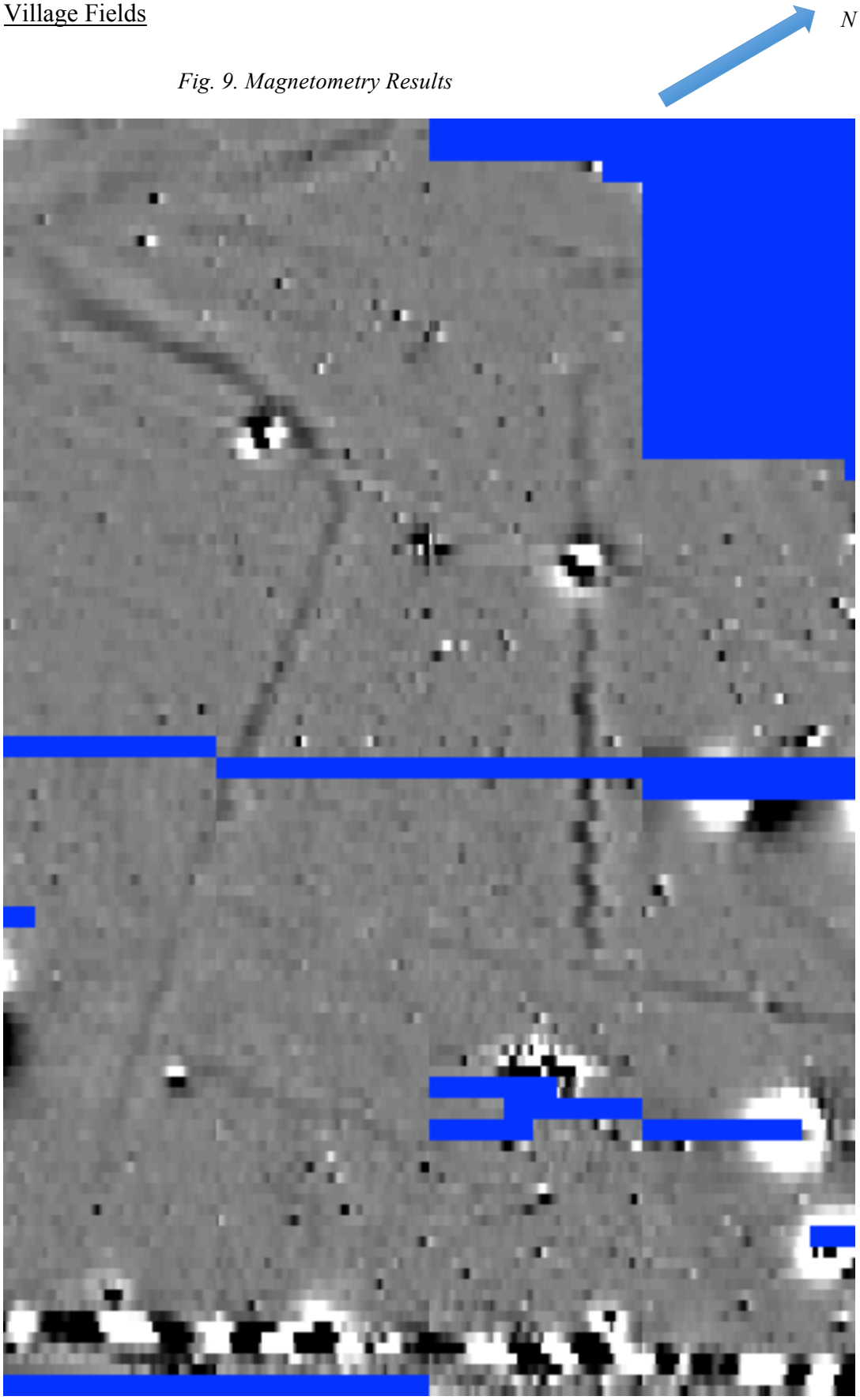
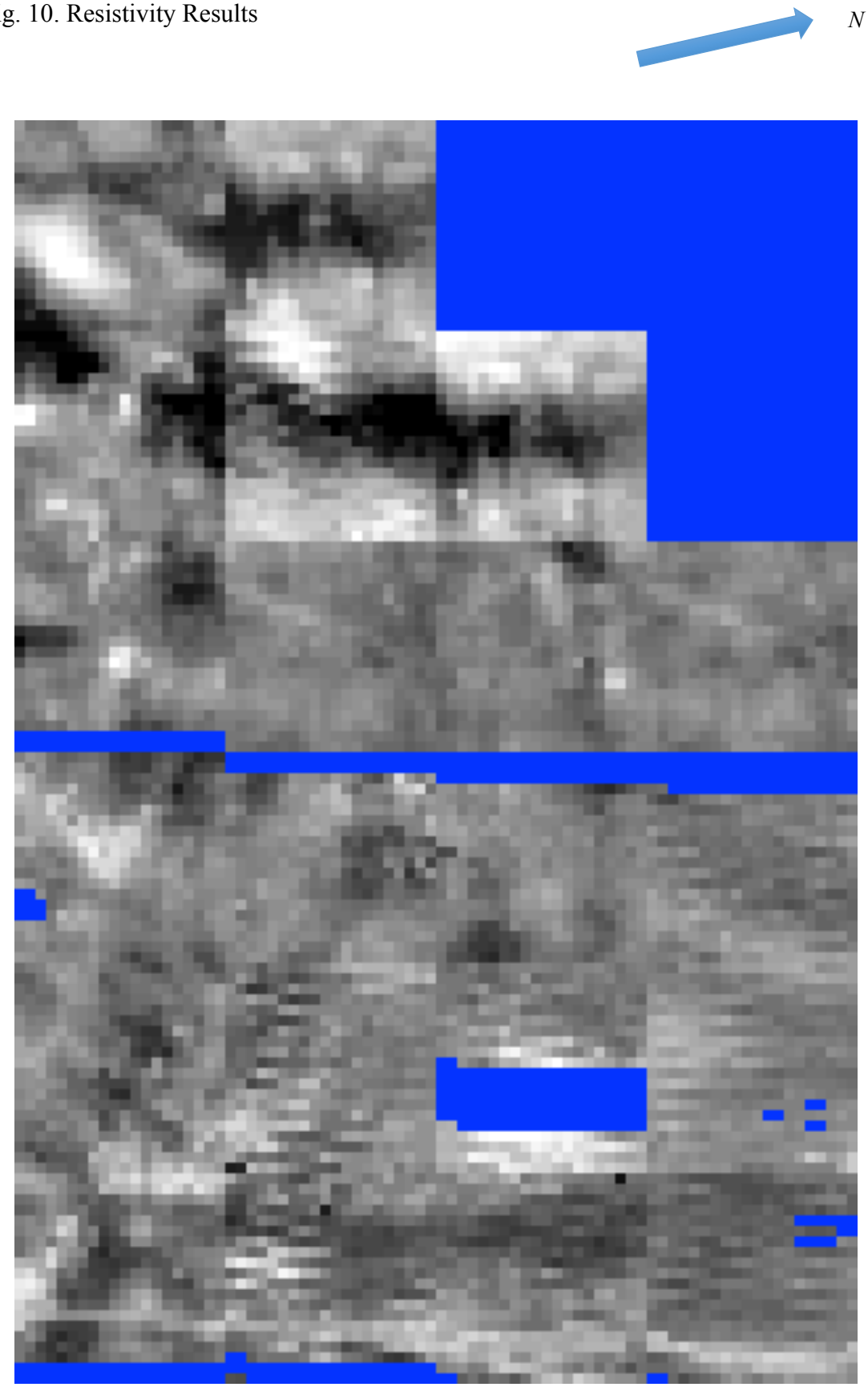
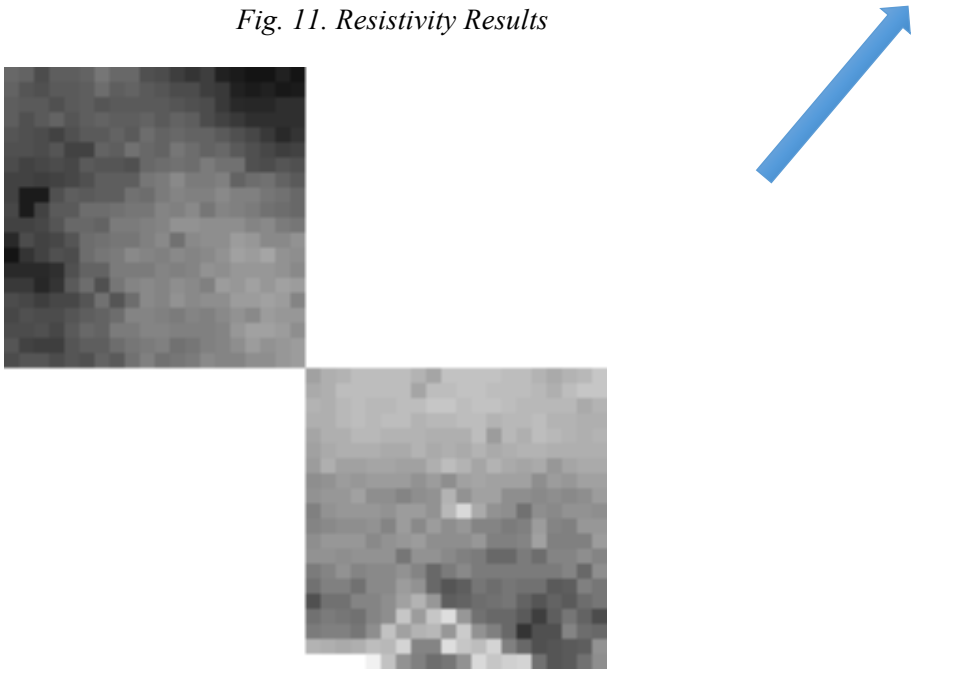


Fig. 10. Resistivity Results



Garden, Crambeck House

Fig. 11. Resistivity Results



Appendix 2 Report on Geophysical Survey Conducted in the Field to the north of Crambeck Village Belonging to the Huttons Ambo Estate, 1st – 5th September 2014

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1. Introduction and Site Location

The site is located to the north of Crambeck village, east of the A64 and is prat of the Huttons Ambo Estate. Kind permission was granted for the survey by the Estate and by the farmer of the land, Richard Wainwright. The location of the field is highlighted below (Fig. 1).

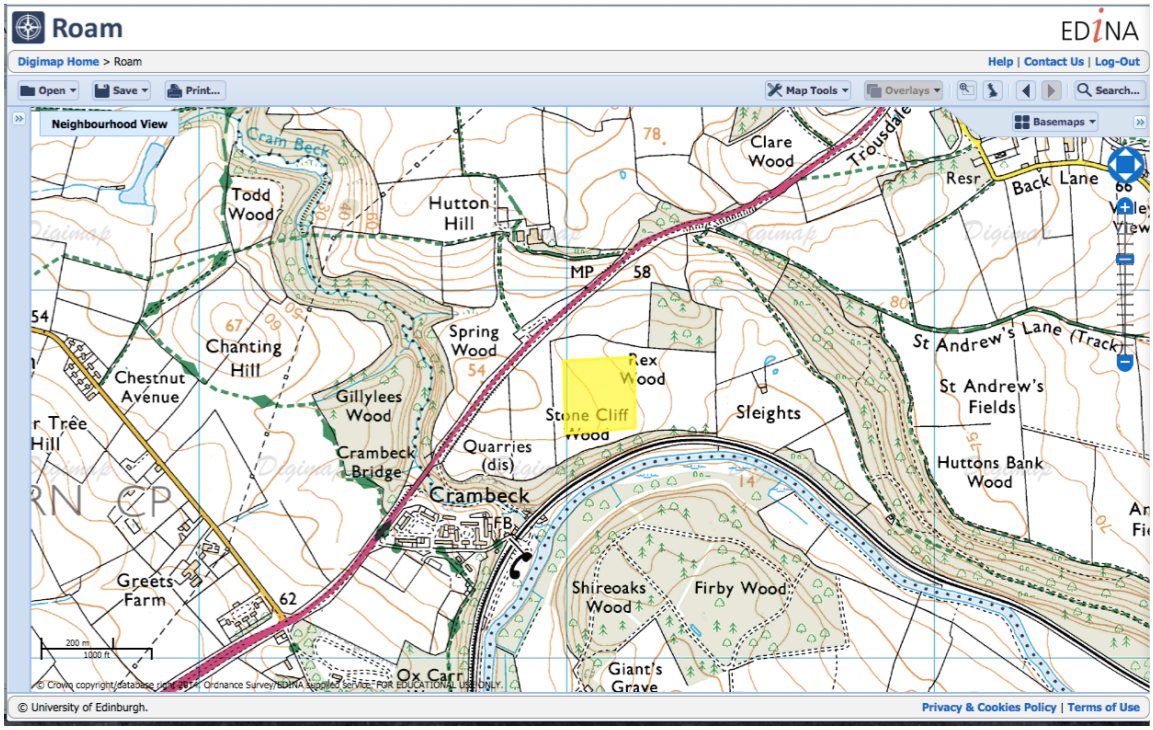

Figure 1 Approximate location of the survey highlighted in yellow.

This field was first identified as a possible site through aerial photography conducted by the author in 2013. Some cropmarks of possible ditches were highlighted. The site was investigated as part of the author's PhD research on the Crambeck pottery production industry. What is considered to be the 'main' production site for this industry is at Jamie's Craggs to the SW of Crambeck village, east of the A64. The relationship between the Rex Wood site and the Jamie's Craggs site required investigation.

2. Aims of Survey

This survey was intended to be an initial investigation in to the likely existence of some unidentified features visible as cropmarks, located through aerial photography. The aim was the cover a wide area of the field in which these cropmarks had been seen to establish if these represented archaeological features. Good results had been achieved in the Jamie's Craggs field by the author and it was therefore decided that this would not only be the quickest and easiest way to conduct a large survey but would be the most likely to provide good results.

3. Methodology

A series of 20m grids were established in the field oriented N-S covering a 200sq m area. This was extended with a 100m strip consisting of five 20m grids running W from the NE corner during the excavation. The total area surveyed was 4.16ha (41,600sq m). The total number of grids surveyed was 104.

A Bartington Gradiometer 601 Dual Sensor Magnetic Gradiometer ws used for the survey at a resolution of 1m x 0.125m. Geoplot 3.0 on a Toughbook was used to download and process the data. The processing tools used included low pass filter, zero mean grid, zero mean traverse, and interpolate. This data was then imported into GIS in order to superimpose it over the OS map. Importing it into GIS also allowed the interpreted images to be created.

4. Results and Interpretation

The survey revealed a number of features. Most of these were ditches largely running on an E-W alignment. The two largest of these look to have been old field boundaries or possibly field drains. Those towards the east seem to be related to a series of likely building platforms that are visible in the NE corner of the survey. There is one large ditch running on a rough NE-SW alignment interconnected by four small N-S aligned ditches. Three likely building platforms could be confidently identified although it is possible that there are more in the surrounding area not identified by the survey. These were approximately 20m sq.

To the W of these, still N of the NE-SW aligned ditch, are tow E-W ditch like features banding a smaller dark feature which is likely to be a pit of some sort. These three features appear to be related in some way and cover a 40m long by 20m wider area. The “pit” is approximately 6m long by 1m wide. Discussion of this feature is impossible without further investigation. Beyond this no other archaeological features were visible in the survey.

Material recovered off the surface of the field during the investigation included early Roman pottery and worked flint (a scraper/awl). There were also a few pieces of late Iron Age / early Romano-British pottery. This gives a tentative date to the possible settlement of late Iron Age to early Roman. The analysis of these few artefacts recovered in ongoing. Washing and specific identifications need to take place to allow any more to be said. Once analysed these artefacts will be returned to the farmer or directly to the Huttons Ambo Estate after consultation with both.

The magnetometry results can be seen below in Figure 2 and the interpreted image in Figure 3.

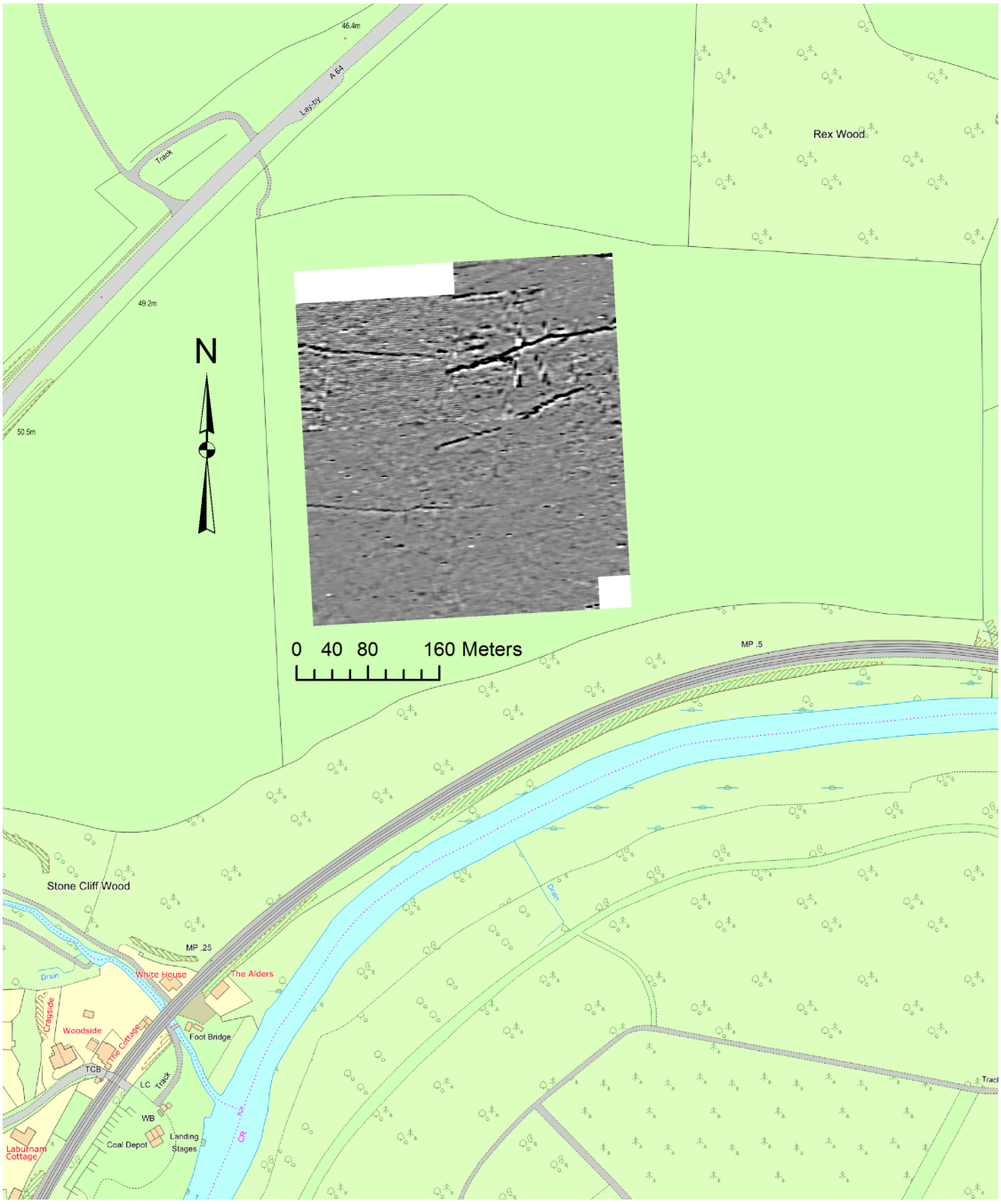

Figure 2 Magnetometry results.

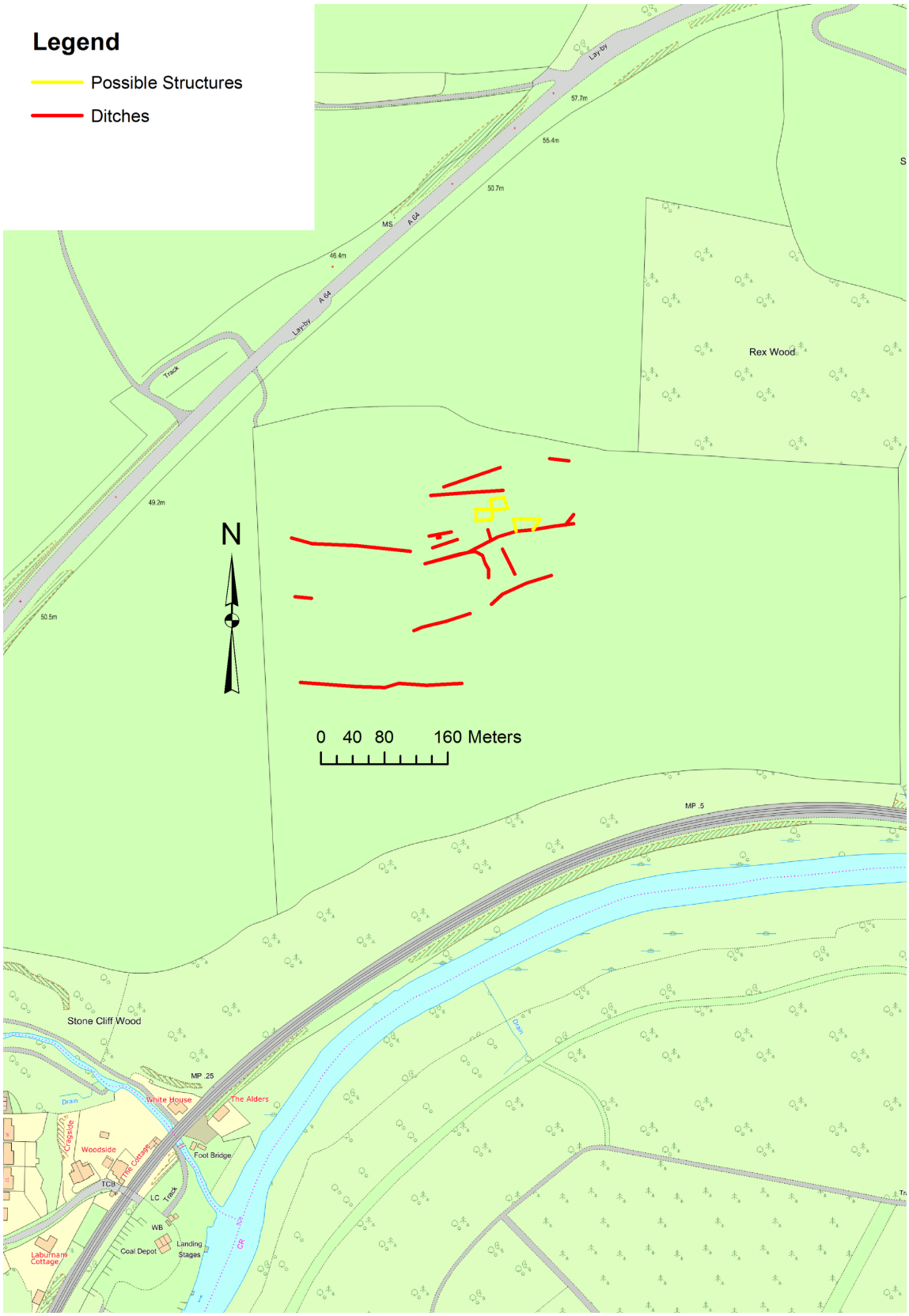

Figure 3 Interpreted magnetometry results.

5. Conclusion

In conclusion, this has been positively identified as an archaeological site with the high possibility of remains surviving below the surface. This is likely to be a small late Iron Age to early Roman site, possible a small settlement or farm. It is clear that it was not related to the period of pottery production at the nearby Jamie's Craggs site at Crambeck, which dates to the 3rd and 4th centuries AD. If further work were to be done, it should begin with a more detailed geophysical survey with resistivity meters. Some test pitting may than prove relevant. However, this is not conceivable within the constraints of this PhD, nor is it directly relevant. Furthermore, the site does not appear to be under any immediate threat, although ploughing does occur in the field. Given the small amount of archaeological material visible on the surface and the apparently good survival of the archaeological features, it can be suggested that the site is relatively well preserved. Ploughing cannot be causing too much damage as plough lines were not visible on the geophysics results. The site and any information it may still contain is not under threat from development or any such similar activity therefore further investigation is not recommended in the immediate future. Whether more investigation is conducted at some point in the future is another matter and would have to be discussed in detail with the farmer and the Huttons Ambo Estate. As stated, further work is not needed for the aims of the PhD and nor is it needed in a rescue capacity as the site is not under any immediate threat.

Appendix 3 Geophysical and Metal Detecting Survey Carried out at Greets Farm, October – November 2014. Undertaken as part of PhD research into Crambeck Romano-British pottery production

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Figure 1 Wider landscape features.

Figure 2 Areas of survey.

Figure 3 Interpreted geophysical results.

1. Introduction

The site is located close to the brow of Whitwell Hill between the A4 and Welburn village. It is south-west of Malton. Close by on the opposite site of the A64 is the sire of the Romano-British Crambeck ware potteries. The survey was conducted by the author as part of her PhD research into the Crambeck potteries and its surrounding landscape. Volunteers from the University of York were used as well as a reputable metal detectorist, Mr Wood. The survey was conducted with the permission of the landowner, Mr Lyons. He approached the author in October 2014 due to the high number of Crambeck pottery sherds he had found whilst working on the fields over the years. The fields are currently under grass and during the spring/summer periods are a small caravan park/camping ground. My Lyons stated that the fields had once been ploughed and under crop but had not been in a number of years. This report will present the findings of the geophysics and metal detecting surveys and suggest any further investigations that may be needed.

2. Site Location and Survey Area

As mentioned above the site is locate close to the Crambeck pottery site, on the opposite side of the A64 between York and Malton. The field in question are almost at the brow of Whitwell Hill. The north-west boundary of the fields is marked by a fence, a short distance from which the ground drops off into a narrow valley. This was caused in the past by a spring running from a point south-west of the site, along its north-west boundary and into the Cramb Beck stream a short distance to the north of the site. Figure 1 below indicated the fields in which the survey was conducted the location and path of the spring and the location of the pottery site.

The survey area covered two fields to the south-west of Greets Farm house, the north-east field contained some caravans at the time of survey along the south-east boundary. As a result, the survey area was contracted to avoid impact with the caravans. Similarly, in the south west field there were some horse-jumping areas set up which restricted the area of survey to the south-western end of the field. The areas of survey are indicated below in Figure 2.

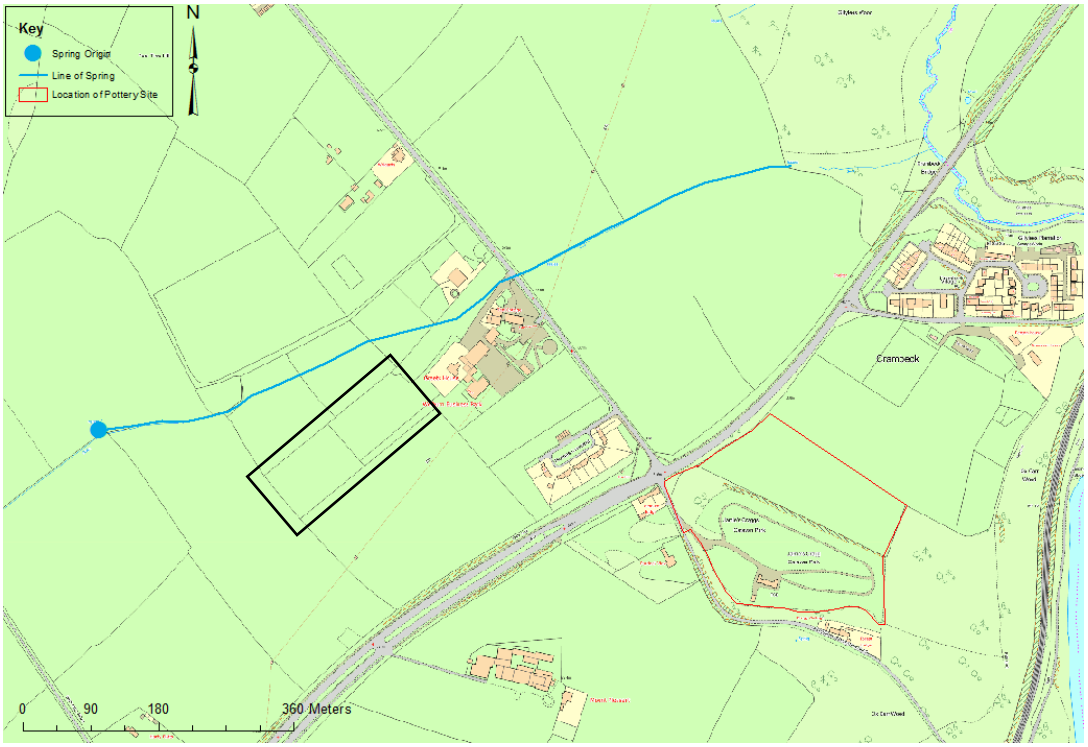


Figure 1 Wider landscape features. Surveyed fields outlined in black.

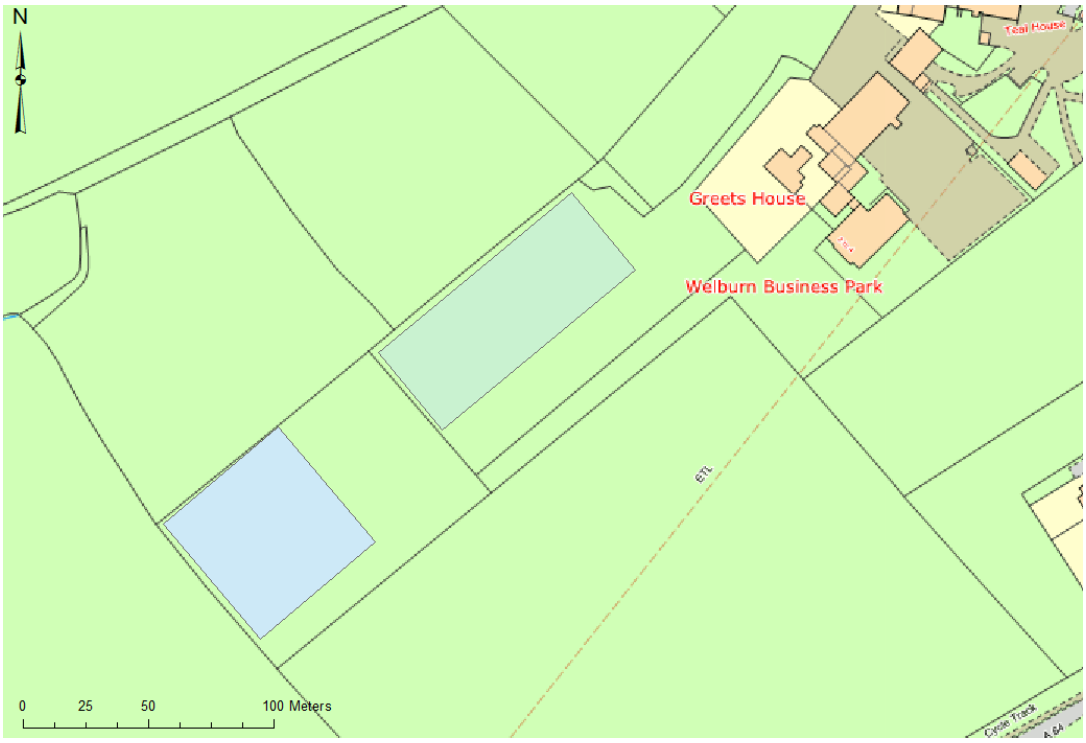


Figure 2 Areas of survey.

3. Aims and Methodology

The aims of the geophysical survey were to investigate the high numbers of pottery sherds found by Mr Lyons and to establish whether any related features could be identified. It has long been suggested that the Crambeck pottery industry was not just contained within the field at Jamie's Craggs but that there were many more kilns throughout the landscape. Indeed some of the 'outliers' have been identified at Crambe and on Hutton Hill (Wilson 1989, 99-107; and unpublished grey literature report Norther Archaeological Associates 2005 respectively). Therefore, the presence of a high number of Crambeck sherds on the Greets Farm land could indicate the presence of another kiln or kilns.

All the geophysics were carried out over a series of 20m x 20m grids established in the fields. In the first instance magnetometry was used on both fields. This has been known to produce good results in the area and is best placed for indicating kilns as the firing process leaves a highly magnetic trace. This was conducted using a Bartington Grad 601 Dual Sensor Gradiometer at a resolution of 0.5m traverses and 0.125m samples. Both fields were surveyed using this machine. The resistivity as carried out only in Field 1, using a Geoscan RM15 Twin Probe Array machine with o.5m prove spacing. This wsa done at a resolution of 1m traverses and 0.5m samples. After conducting this survey in Field 1, the results were unclear enough for it not to be repeated in Field 2. Also the magnetometry in Field 2 did not indicate anything that might be a building or structure that would warrant investigation with the resistivity machine.

The area surveyed in Field 1 was 0.4ha and Field 2 was 0.36ha, the total area surveyed being 0.76ha.

The aims of the metal detecting survey were to establish if any signs of occupation could be identified and to get a rough idea of the objects in the field. This was done using a Minelab CTX 3030 metal detector. Furthermore, the GPS system was enable, allowing Mr Wood to track where he had walked. Only a few grids in Field 1 were detected. All finds were plotted using the inbuilt GPS system on the detector. Mr Wood only investigation objects in the topsoil and did not dig below that. The catalogue of objects was submitted to the Portable Antiquities Scheme at the Yorkshire Museum.

4. Interpretation of the Geophysics Results

Only the interpreted results have been included in the text for ease of explanation (Figure 3). The data for the magnetometry results can be seen in Appendix 1 and the resistivity in Appendix 2.

As mentioned above, the resistivity results were not clear and did not appear to reveal any archaeological features. The north-eastern end of the survey area in field 1 was particularly unclear and the author was informed by Mr Lyons that soil had been dumped in that area to level off the field. This is obscuring any archaeological features that may be there.

The magnetometry results from both fields revealed some archaeological features. There were a number of highly magnetic circular responses in Field 1 that are remarkably similar to those in the Jamie's Craggs field that have been proven to be kilns. However, they may also be pits of one kind or another. There is a fair amount of Crambeck pottery recovered from the field, both by Mr Lyons and Mr Wood during his metal detecting survey. This could indicate that these features are indeed kilns, although this is by no means certain and more work would be required to answer this question. Close to the series of possible kilns was an irregularly shaped magnetic response. This was similar to the possible kiln responses although it was weaker. It is unclear what this feature may be although both a kiln and a pit are possibilities.

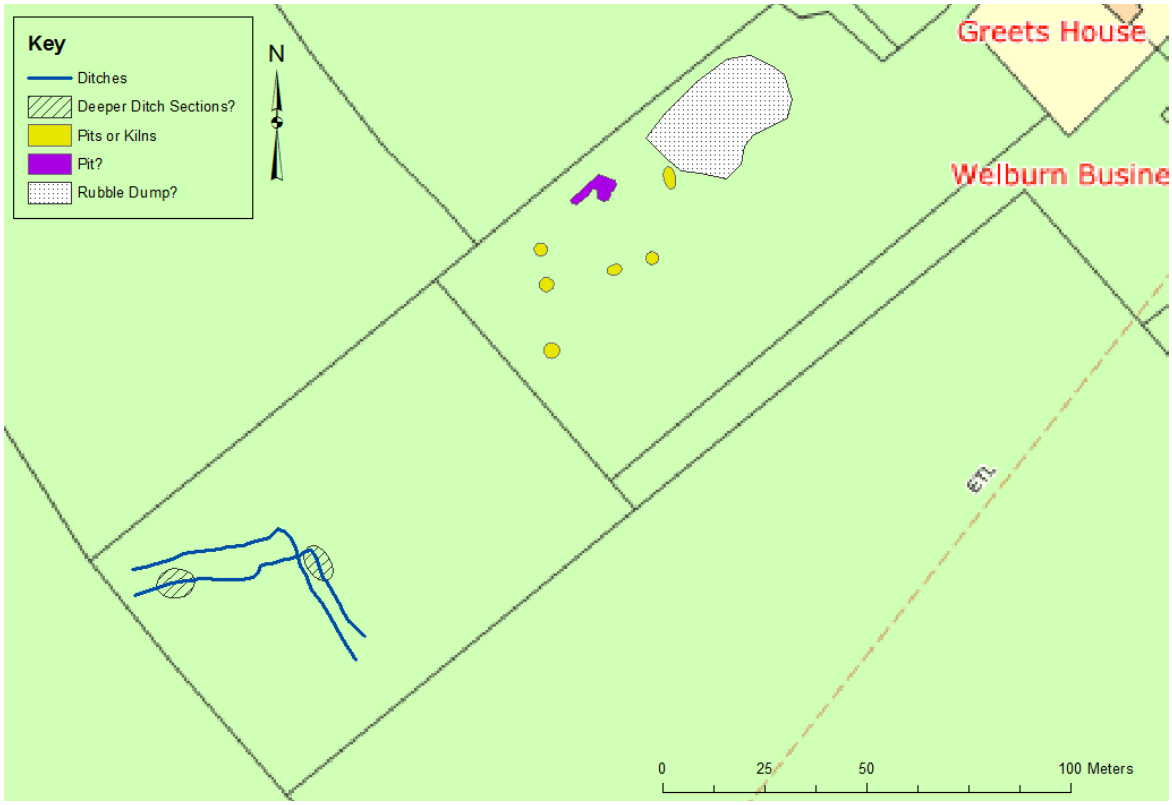


Figure 3 Interpreted magnetometry results.

The magnetometry survey revealed two clear ditches in Field 2. These are of similar shape but intercut one another and it is most likely that this is two phases of the same boundary line. Both ditches had short sections that were strongly magnetic. Again, this mirrors responses seen in the Jamie's Craggs field close by. In that field a large highly magnetic

linear response was revealed to be part of a boundary ditch and bank system for an Iron Age promontory fort. The ditch itself was approx. 3m wide and 1.38m deep. It is possible that the highly magnetic sections of the two ditches in Field 2 are of a similar proportion. It may be that the remainder of the ditched were never of such large proportions r have been almost erased through agricultural processes. Unfortunately, it is impossible to comment on the date of these features although it is likely that they are not earlier than the Roman period as they have right angled corners – a feature rarely seen in boundaries before then. However, they are just as likely to be medieval or post-medieval. There are no field boundaries matching their orientation on old maps for the area so it is like that they are of Roman – medieval date. Further work would be necessary to answer this question. No other features were identified in this field.

5. Results of the Metal Detecting Survey

A number of metal signals were encountered in the south-west end of Field 1. Most of these were objects thought to be either modern farm equipment or part of the Halifax bomber known to have crashed nearby. In the process of investigating signals a number of ceramic and pottery sherds were also recovered. The majority of these are Roman in date with a fair number of Crambeck ware sherds present. There were also some Holme-on-Spalding Moor ware present, although inly in very small numbers. Their presence in the field adds to the potential identification of some of the responses on the geophysics as Roman pottery kilns.

All finds were cleaned, recorded and returned to the owner and a list with find spot location reported to the local portable Antiquities Officer,

Rebecca Griffiths, York Museums Trust, The Yorkshire Museum, Museum Gardens, York, Yorkshire, UO1 7FR.

A copy was also given with this report to Mr Lyons and the North Yorkshire County Council Historic Environment Record office.

6. Discussion of Results

it is possible that Field 1 contains the remains of Roman pottery kilns, which most likely produced Crambeck ware and would therefore date to the third/fourth centuries AD. However, it is by no means certain, as the responses thought to be kilns may also be pits. The spread of Crambeck ware collected by the owner from the field could be explained by the site's location – almost directly opposite a known production site.

However, the highly magnetic anomalies, taken together with the presence of a fair number of Crambeck sherds does seem to indicate the presence of kilns in the field.

Field 2 shows two possible phases of boundary ditches that do not seem to enclose the possible pottery production area in Field 1. Sections of these ditches appear to have been quite substantial at one time or another, their date is impossible to gauge.

7. Recommendations for Further Investigations

as discussed above there are a number of features that may or may not be Crambeck ware kilns. The only way to know for certain would be to excavate one or two of them, possibly through test pits. Similar responses have been ground-truthed at Jamie's Craggs and have been riven to be kilns.t ere would be no immediate need to excavate the kiln itself if indeed that is what the responses are.

A similar small-scale excavation could also provide a most likely date for the construction and fills of the ditches in Field 2.

There is no immediate threat to the small amount of archaeology in these fields. Both are under private ownership of Mr Lyons and are under pasture (one is seasonally used as a caravan/camping site, the other for horse exercising). The fields are out of the line of sight of the nearby A64 road. As there is no immediate threat, any excavation of the features would be from a purely research perspective at this time.

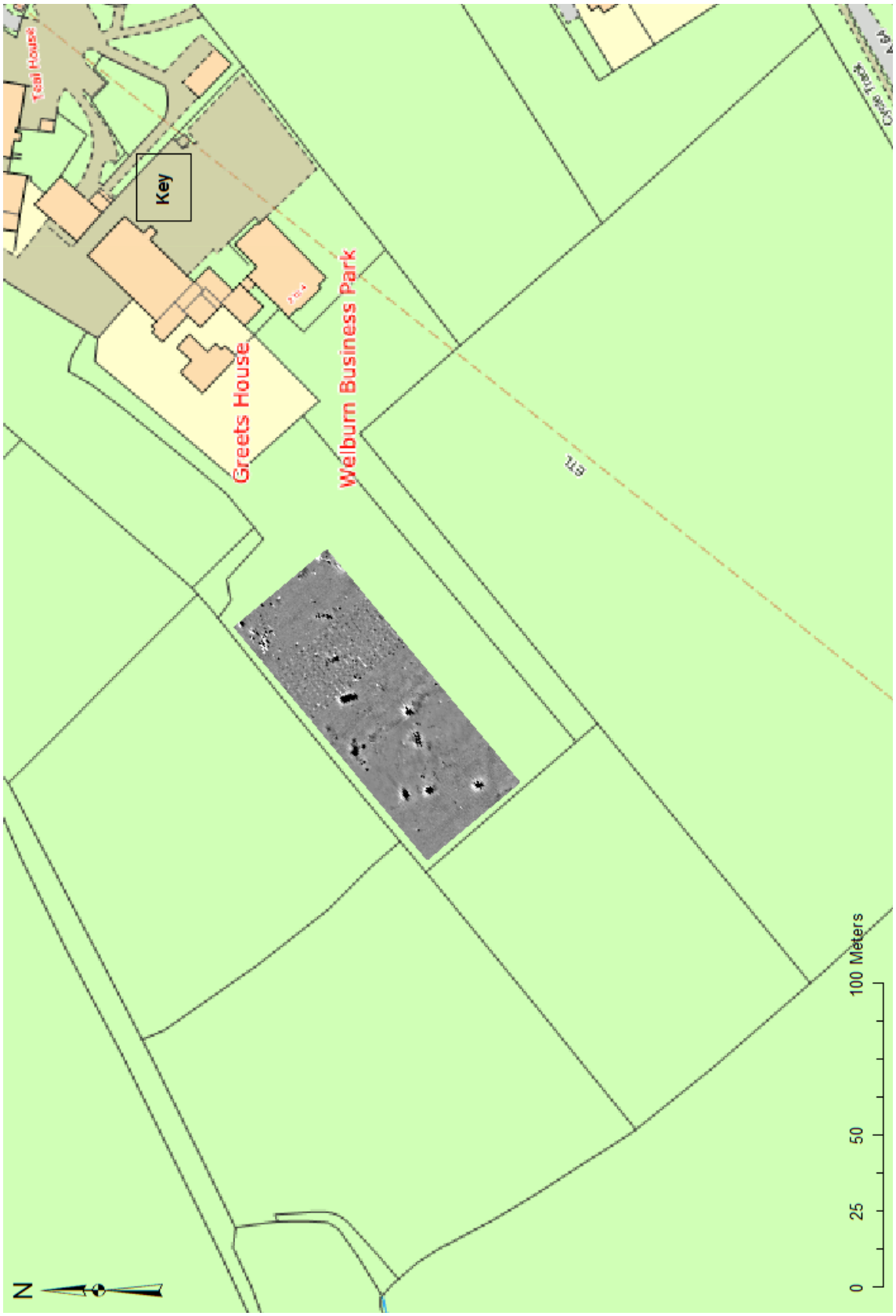
Bibliography

Abramson et al 2005 *Iron Age Settlement and Roman Pottery Kilns near Crambeck, North Yorkshire,* unpublished grey literature report, Northern Archaeological Associates

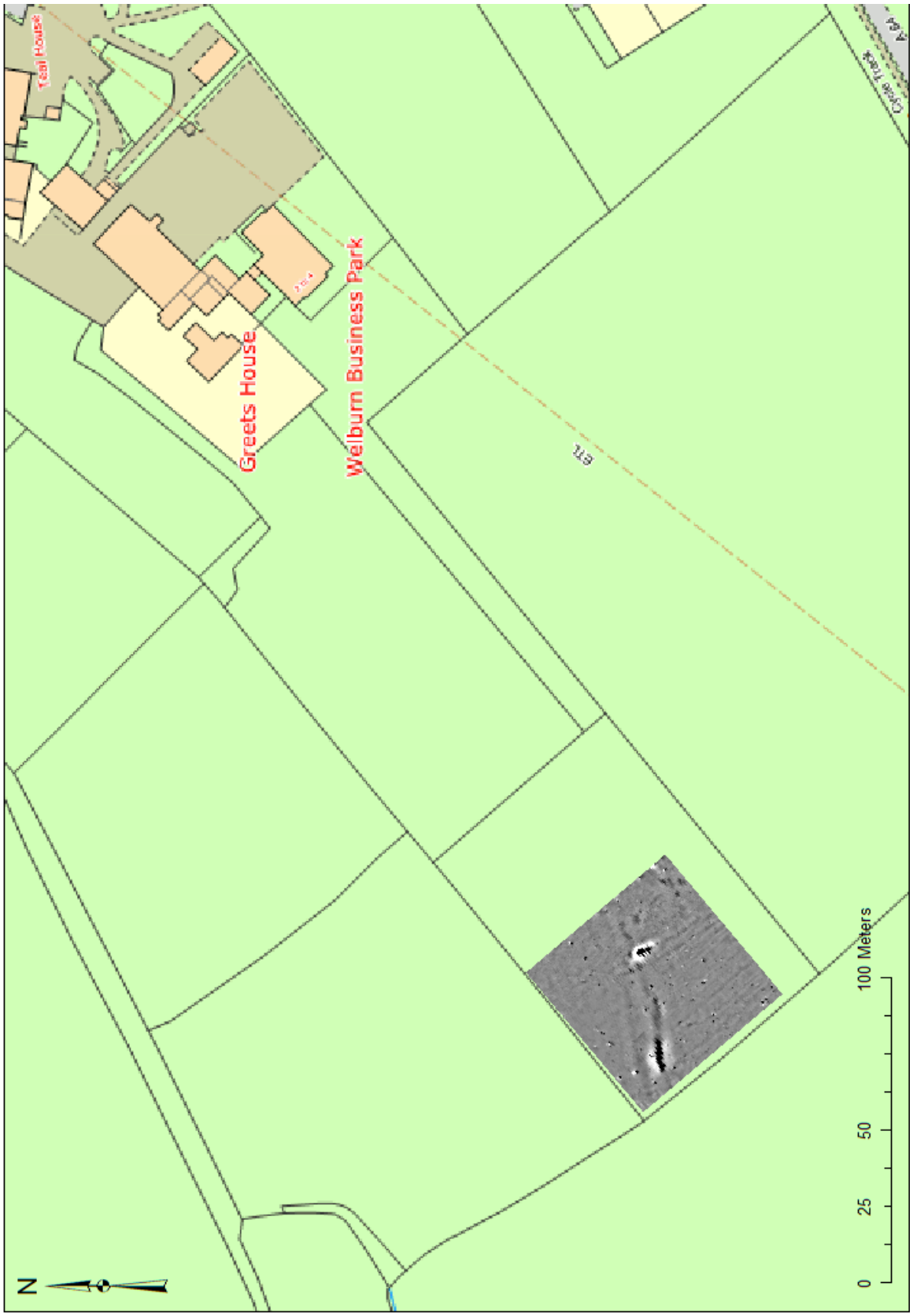
Wilson, p. (ed.) 1989 *Crambeck Roman Pottery Industry*, (Roman Antiquities Section, Yorkshire Archaeological Society, Leeds)

Appendix 1 Magnetometry Data

Field 1



Field 2



Appendix 2 Resistivity Data

Field 1

Appendix 4 Report on a Magnetometry Survey Conducted on the Site of a Possible Henge Monument, Crambeck, North Yorkshire

Rachel Wood

PhD Researcher

Department. of Archaeology

University of York

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Figure 3 view of the cropmarks looking east. The Jamie's Craggs field and the caravan park can be seen in the background.

Figure 4 The magnetometry results. Part of the circular feature is visible close to the western corner.

Figure 5 The circular feature is more visible in this image although the interference from the pipe has distorted the results.

Introduction

This site has previously been identified as that of a possible henge monument with a set of circular earthworks visible on aerial photographs. Identification of the nature of this feature forms the basis of reasoning behind the magnetometry survey. Unfortunately, machine malfunction resulted in poor quality data making it difficult to discern any archaeological remains. Despite this it was possible to confirm the presence of a large circular feature as indicated by the cropmarks. The field is on the west side of the A64 opposite the entrance to Crambeck village and very close to the known site of a late Romano-British pottery production industry. This survey was undertaken as part of PhD research into that industry by the author.

Aims

As previously stated this survey aimed to investigation the nature of a set of circular cropmarks identified via satellite imagery (Figure 1). The cropmarks are also visible in aerial photos taken by P. Addyman in 1984 (Figures 2 and 3). It had been suggested in conversation with Professor Dominic Powlesland that these may be the remains of a henge monument as they appeared to indicated a ditch inside a bank – this being a characteristic feature of such monuments.

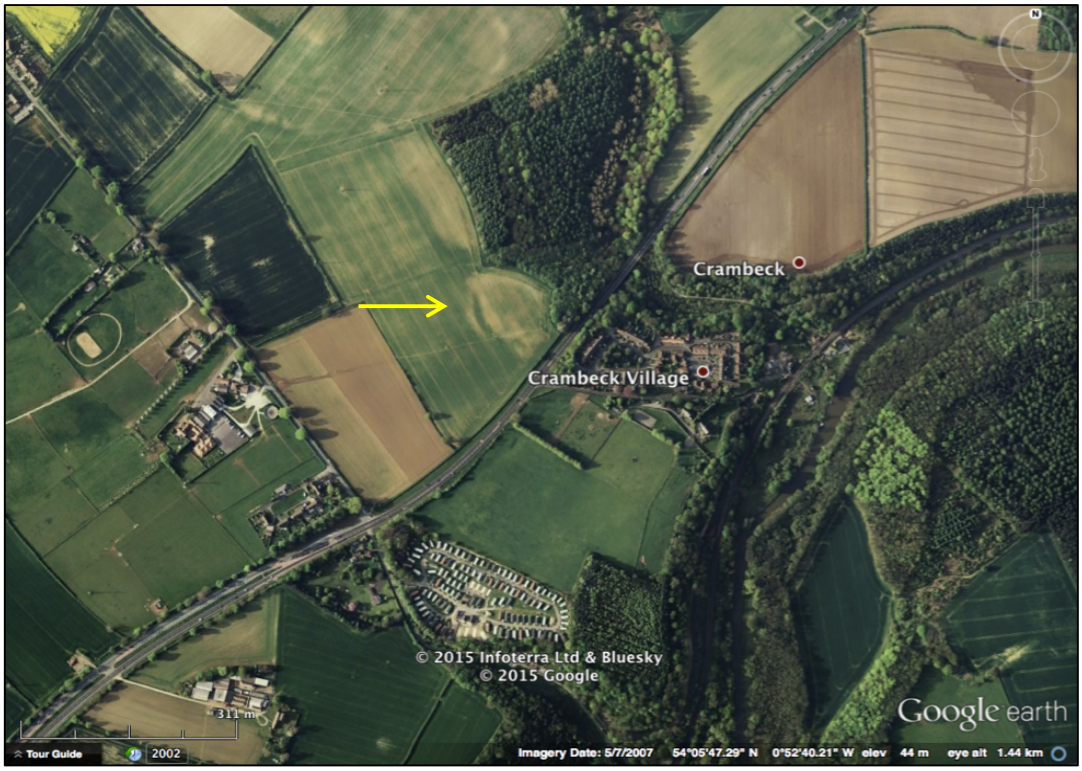

Figure 1 Google Earth image (2007) showing the cropmarks identified as a henge.

Figure 2 View of the cropmarks looking north east. Part of Crambeck village can be seen in the top right corner. Image credit: Peter Addyman 1984.

Figure 3 View of the cropmarks looking east. The Jamie's Craggs field and the caravan park can be seen in the background. Image credit: Peter Addyman 1984.

Methods

The survey was carried out over a series of 20m x 20m grids established in the field targeting the area containing the cropmarks. Magnetometry was chosen primarily for the speed of data collection and secondly a lack of volunteers made the application of other geophysical methods unachievable. The was conducted using a Bartington Grad 601 Dual Sensor Gradiometer at a resolution of 0.5m traverses and 0.125m samples. The area surveyed was approximately 3ha.

Results

As previously mentioned, machine malfunction resulted in poor quality data. However, it has been possible to confirm the presence of a large circular feature in the location indicated by the cropmarks. There was also some interference from a buried pipe and overhead power lines. Unfortunately, further analysis of this data is not achievable. Figures 4 and 5 below show the data in various forms of processing.

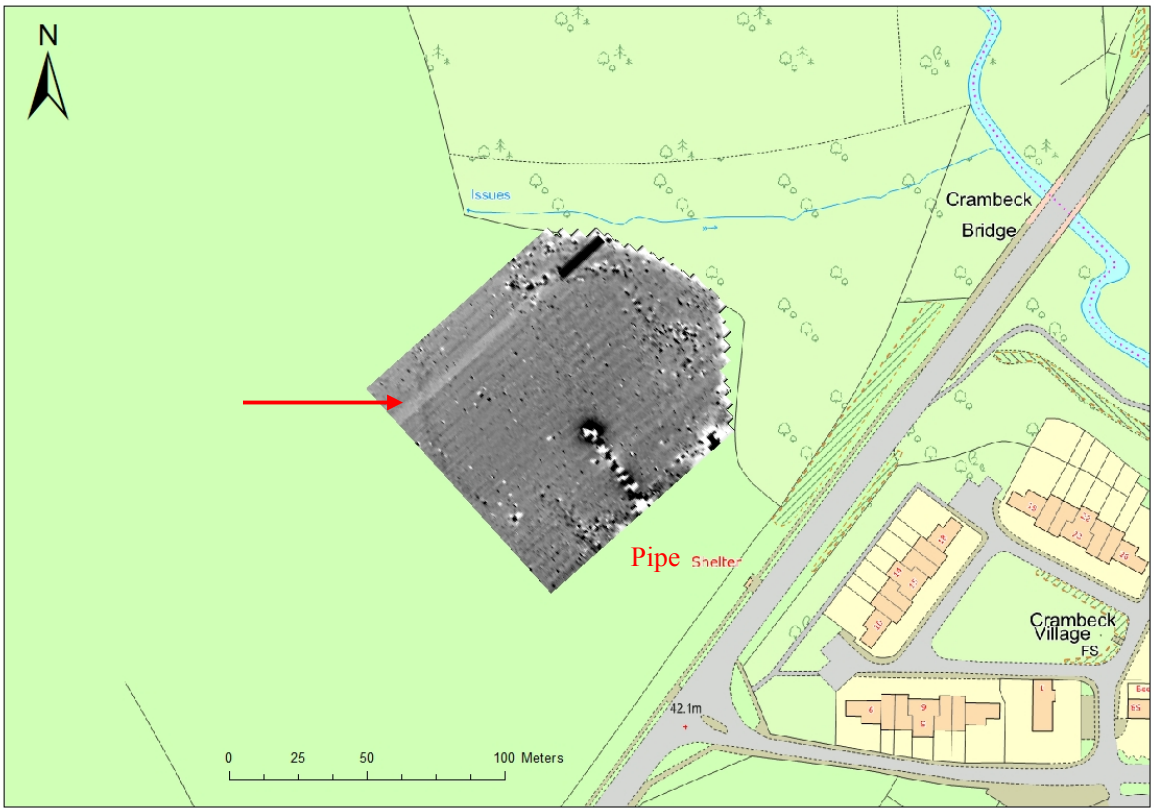

Figure 4 The magnetometry results. Part of the circular feature is visible close to the western corner.

Figure 5 The circular feature is more visible in this image although the interference from the pipe has distorted the results.

Recommendations

It is strongly recommended that this survey be repeated and other geophysical methods employed, such as resistivity. This would produce better quality data and shed further light on the nature of this feature. Any future surveys would benefit from a slightly larger survey area, extending the current grids to the south-west, north-west and south-east although the total area need not be extensive.

Appendix 5 Project Design for a Research Excavation at Crambeck Romano-British Pottery Production Site, Crambeck, North Yorkshire. The Crambeck Archaeology Project

Rachel Wood

PhD Candidate

Archaeology Department

University of York

Project Name	The Crambeck Archaeology Project
Author	Rachel Wood (University of York)
Version	V1
Date	Monday 13th January 2014
Status	Submission for approval and permission to conduct the excavation.
Circulation	Dr Keith Emerick (EH), Gail Falkingham (NYCC HER), Steve Roskams (University of York), Dr. Pete Wilson (EH), Dr Mark Whyman (YAT), Mr and Mrs Pollard (Landowners).
Required Action	Comment and approval
File Name	Crambeck Project Research Design

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1. Background

1.1 Site Description and Location

Crambeck lies to the south-west of Malton, to the east of the A64, which itself follows the likely course of a Roman road linking York (Eboracum) and Malton (Delgovicia). The location of the Crambeck pottery production site is highlighted in Figure 1. The site is on a north-east facing hillside and is currently pasture under the terms of its scheduling.

Fig. 1. Map highlighting (in purple) the location of the Crambeck pottery production site.

Evans suggests that the Crambeck kilns had access to two clay sources, one *"…around 1km to the north of where the Oxford Clay outcrops at Hutton Bank…"* and the other a source of boulder clay at the village of Crambe (1989, 43). It appears that the Crambeck industry was well placed in terms of trade and distribution opportunities. The River Derwent would have been navigable during the Roman period and this would have allowed access to York, North Lincolnshire, and the North Sea (along the River Humber), amongst other places (Evans 1989, 43). As well as being able to distribute their products geographically, the potters at Crambeck had placed themselves on the border of the market areas of the three largest towns in the area, York, Malton and Shiptonthorpe (Evans 1989, 43). In general, pottery in the Roman period was distributed mainly within the local market area – Crambeck may be linked to these three markets. Added to this advantage was the fact that the Crambeck industry may have straddled the boundary between the tribes of the Parisi and the Brigantes (Evans 1989, 43), thus making Crambeck wares accessible to two tribal groupings. This location no doubt contributed, in part, to its success. The distribution of Crambeck ware also extended up to Hadrian's Wall, however, something potentially aided by the existence of military mechanisms (Evans 1989, 43).

1.2 Previous Work

Philip Corder first identified the site in 1926-7 (1989a, 3-24). However, pottery had been collected from here in the late 1800s. Corder excavated four kilns in the area that has since been quarried away and is now occupied by Jamie's Craggs Caravan Park. Two cist burials were also found there, one at least seemingly post-dating the use of the kilns. In 1936 Corder excavated two more kilns not far from the original four (1989b, 25-35). These were subsequently destroyed by the construction of a road near to Mount Pleasant Farm. Throughout the 1960s and 1970s several ditch sections were recognised and recorded in the Jamie's Craggs quarry face (Ramm 1989, Hayes 1989, Dent 1989, 37-40). The function of these ditches and the relationship between them remains unclear, although it is certain that they relate to those identified by a magnetometry survey in the 1980s (see below; Bartlett and Hinchliffe 1989, 91-95).

In the same two decades related discoveries were made at the nearby village of Crambe. In 1960-5, near to Cliff House Farm, Crambe, Wenham discovered a 'T-shaped drying oven or kiln', a hut or small building, a cinery urn, and a stone cist (1989, 99-103). It was thought that these represented either the living area of the Crambeck potters or an outlier to the main production site at Jamie's Craggs. In 1974 King and Moore identified two kilns and a rubbish pit not far from Wenham's discoveries and the same conclusions were drawn (1989, 105-107).

In 1981 Bartlett and Hinchliffe conducted magnetometry and fieldwalking surveys at what remained of the Jamie's Craggs site (1989, 91-95). This covered the area that is now scheduled as an ancient monument. The magnetometry survey identified a complex network of ditches as well as several hotspots that were thought to be more kilns (Bartlett and Hinchliffe 1989, 92-94). The fieldwalking established a concentration of pottery sherds, the vast majority of which were Crambeck ware, within the network of ditches focussed on the top of the hill, closest to the edge of the quarry (Bartlett and Hinchliffe 1989, 94-95). The sherds were not generally found close to any of the suspected kilns, leading to the suggestion that they had been widely dispersed by ploughing (Bartlett and Hinchliffe 1989, 95). Bartlett and Hinchliffe drew three conclusions from the surveys: the Crambeck production site was enclosed within a network of ditches at the crest of the hill at Jamie's Craggs which has been partially destroyed by quarrying; a number of kilns survive in this area as buried features; and agricultural activity at the time of the survey was damaging the remaining archaeological features (1989, 95).

In 1998 excavations were carried out by Northern Archaeological Associates ahead of the installation of a water main from Harton to Hildenley, not far from Crambeck at Mount Pleasant Farm and Hutton Hill (Abramson et al 2005). Iron Age roundhouses were discovered at Mount Pleasant Farm, their occupation ending with the arrival of the Romans in the area. Activity only restarted with the emergence of the Crambeck ware industry (Abramson et al 2005, 1). Iron Age boundary ditches were identified at Hutton Hill, which predated two Crambeck ware kilns (Abramson et al 2005, 1). Just over 4,000 pottery sherds were recovered from these kilns along with some kiln furniture, thus providing new evidence for specialisation of greyware production and the first clear evidence of tile production at Crambeck (Abramson et al 2005, 1).

Swan made attempts in the 1980s to understand the construction of the kilns, although the evidence is far from clear (1980, 24, 39, 60; 1984, 109-111). Further research has attempted to fit the Crambeck industry into the wider picture of the north of Britain towards the end of the Roman Empire (Evans 1985; 1988; 1989; 1990; 2000; Whyman 2001). This generally involves debates about the wide distribution of the ware (across the north of England) and whether this can be attributed to a military contract.

Earlier this year, a second geophysical survey was undertaken by the author, the details of which will be discussed below (1.5 see also Appendix 1).

1.3 Designation and Management History

The pottery industry at Crambeck was first designated a scheduled monument in December 1946 and the scheduling was last amended in December 1997 (the scheduled area can be seen in Fig. 2). The land was ploughed up until the 1980s, when a geophysical survey revealed the extent of the surviving archaeology (Bartlett and Hinchliffe, 1989, 91-95). Since then, the scheduled area has been under pasture.

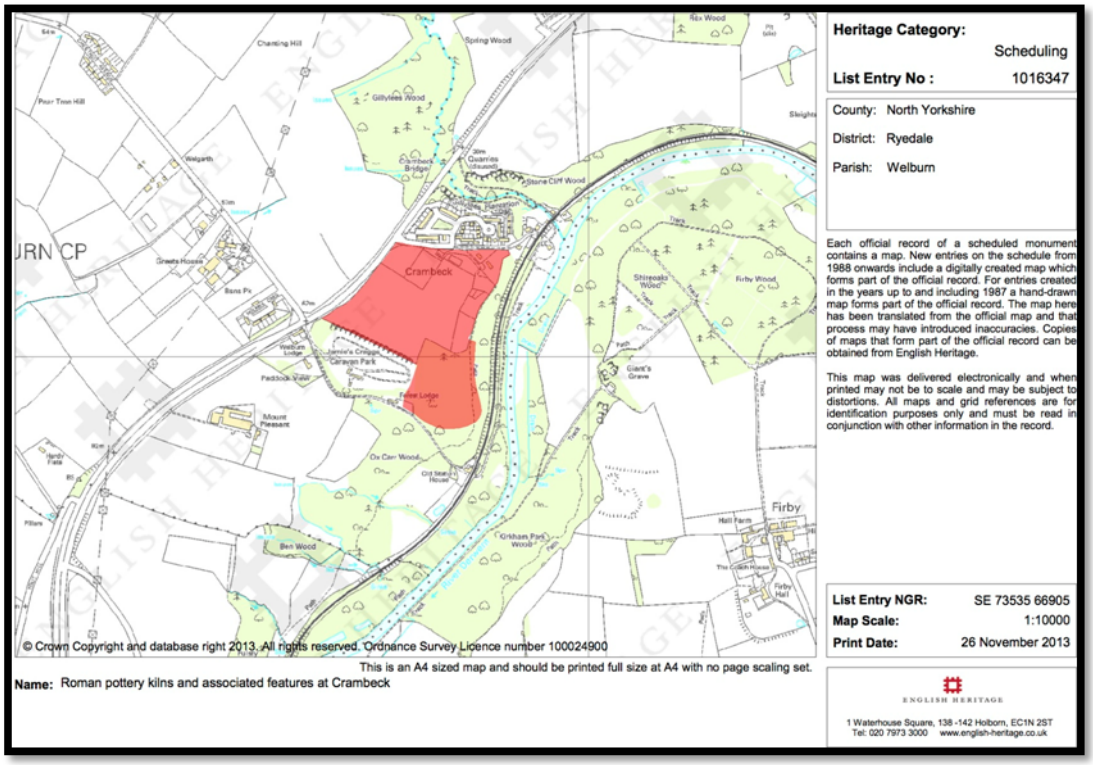

Fig. 2. Map showing scheduled area at Crambeck.

1.4 Project Background

Topographical work and geophysical survey were conducted at Crambe by the University led by Dr. Helen Goodchild in 2011-2012. This was followed by a Desk Based Assessment of the area along the A64 covering the Roman and Medieval periods as an MA dissertation by Rachel Wood (2012), which led to the current PhD work by the same author on the Crambeck pottery industry. The first step in the latter research was to conduct a geophysical survey of the site at Crambeck. Dr Keith Emerick at English Heritage granted permission and a Section 42 licence on 30th January 2013. The survey included the main field previously investigated by Bartlett and Hinchliffe (1989, 91-95), as well as the two fields immediately to the North-East owned by Crambeck village and the garden at Crambeck House The garden was investigated due to the OS 1912 reference of "Remains and Roman coins found A.D. 1858" which placed the find on the boundary of the current garden. The objectives of the geophysical survey were to begin to establish the extent of the pottery production site; confirm if the features identified by the 1980s survey were still visible; and the possible identification of previously unknown kilns. The geophysical survey identified the potential for excavation to inform the understanding and management of the site. These results allowed a certain level of comprehension but need to be ground-truthed if the site is to be properly appreciated and managed effectively.

The Crambeck excavation proposed here is thus a targeted sampling exercise that forms a collaborative effort in consultation with English Heritage. It builds on questions raised during the course of PhD research to contribute to the understanding of a key Roman pottery industry, and to protecting and improving the designation of a Scheduled Ancient Monument. It is also part of a much wider project involving English Heritage, students from the University of York Archaeology Department, and the local community. This plans to contribute to several nationally important issues in Roman archaeology, such as how 'Roman' was rural society in the north of England, and what effect the end of the Empire had on trade, industry and the rural landscape in the north. The project will also inform the protection strategy for a key regional site. The specific objectives of the excavation will be considered in more detail next.

1.5 Aims of the Excavation

Earlier this year a geophysical survey of the site, both magnetometry and resistivity, was carried out over several weeks with the permission of English Heritage and the landowners (for report see Appendix 1). The magnetometry results (Fig. 3) confirmed the existence of the ditch system previously identified in 1981 by Bartlett and Hinchliffe.

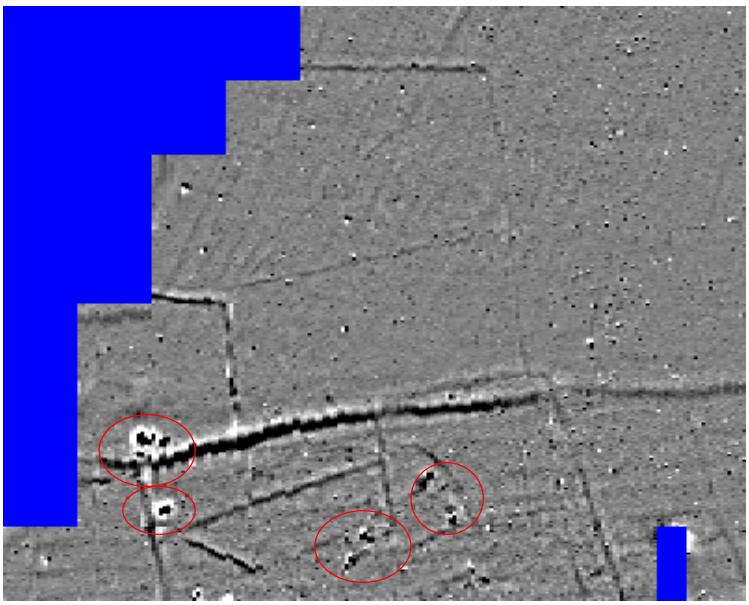

Fig. 3. Magnetometry survey results. Six areas of high magnetism highlighted in red.

The results also show 6 areas of high magnetic response (highlighted in red in Fig. 3), which, in the past, have been thought to represent kilns. This indeed may be the case but this theory has never been tested. This would be one aim of the excavation: to ground-truth the geophysics results, with a view to developing indicators that may help identify new and related Crambeck production sites within the surrounding landscape in the future.

The geophysics was not planned as a one-off process. The results from one level of resolution led to more detailed work, in one zone in particular. The initial resistivity results show at least two unidentified features (Fig. 4). Once the resistivity survey was re-done at a higher resolution there appeared to be two possible overlapping roundhouses suggesting two phases of occupation (Fig. 5). There are also several dark circular features that appear in a partial rectilinear formation. These seem to respect a blank area. It is not clear what these might be. Excavation would provide a better idea as to whether these features are real and (if they are) what they might be.

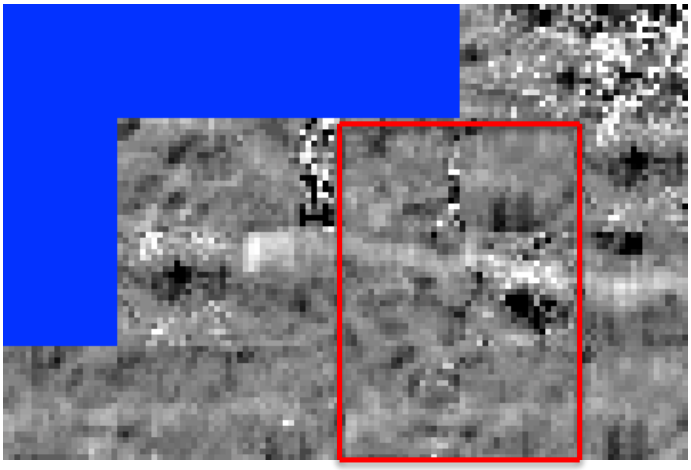

Fig. 4. Initial resistivity results. First area of higher resolution outlined in red. This area was then extended to the south-east and north-east.

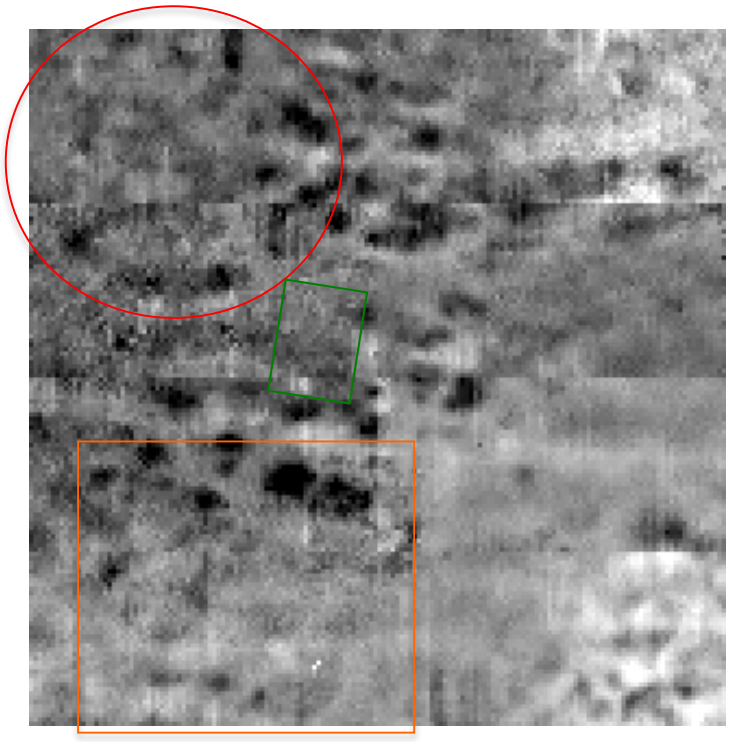

Fig. 5. Higher resolution resistivity results. The possible roundhouses are circled in red. The blank area is highlighted in green. The circular features forming a rectilinear shape are highlighted in orange.

The main aims of the excavation would be to firstly confirm the features suggested by the geophysics, and secondly to attempt to identify unclear features. The relationships between the features would be examined as well as their state of preservation. This would inform any assessment of whether or not the scheduling of the site is still valid. Increasing the ability to identify new related Crambeck production sites would not only add to knowledge of the production of the ware, it would also help to identify possibly better preserved sites that may be in need of scheduling or protection. (Details on the size of the trenches, their location, and their relationship with the features identified through geophysics are in Section 4.)

2. Business Case

2.1 Research Aims

The research questions are outlined in more detail in 3.1. Previous work on the Crambeck industry has, overall, focussed on the distribution of the ware (Evans 1985, 1988, 1989, 1990, 2000; Swan 1980, 1984; Whyman 2001). This focus on distribution is affected by the 'earlier' issue of how the material is produced and how does it relate to other processes of production in the landscape? These questions are in line with the broad aims of the Regional Research Framework for Yorkshire (Roskams and Whyman 2001). The research aims of the excavation will focus on exploring the processes of production at the Crambeck industry and how these relate to the wider landscape. The approach taken here of attempting to further understand the production site before attempting to understand the distribution and use of the ware will fit in with the concept of developing attitudes towards the study of pottery in general, and more broadly, Roman Britain.

2.2 Conservation Aims

In line with the National Heritage Protection Plan (NHPP), we aim for minimal destruction (2011-2015). Hence we will remove the topsoil and any features underneath will be examined and planned but not excavated in most cases unless absolutely necessary. If viable, the fills of some of the ditches will be removed in order to determine their depth and possible function, the processes by which they were dug, used and back-filled, and their inter-relationships (specific tactics will be decided once topsoil has been removed and the size of individual features has been established

This excavation fits in with the NHPP's theme of research that delivers conservation outcomes. The fieldwork has the potential to show whether or not the current scheduling is still relevant and whether a larger or smaller area would be more appropriate. This will inform English Heritage's management of the monument (NHPP 6A3, 2011-2015). It will also contribute to the conservation of the Crambeck production industry by ground-truthing the geophysics results. This should facilitate the identification of other Crambeck production sites within the landscape that may be better preserved and possibly under threat from agricultural or other activity. Some of these sites (yet to be identified) may be appropriate for scheduling. Furthermore the project has the potential to contribute to the understanding of the effects of past ploughing on the site and the current condition of deposits in line with NHPP Activities 2D1 and 4G2, generating comparative data for those seeking to deal with similar problems on other sites.

The project will also be providing training for a number of students from the University of York, alongside others who already have sufficient previous experience to supervise others. Steve Roskams, Senior Lecturer in Archaeology at University of York, will have an overview of the strategy and tactics on site. It will introduce future archaeologists to the issues involved in dealing with a scheduled site and the management of the wider archaeological landscape. The local community will also benefit through the possibility of a tour of the site (dependent on landowner permission), which will provide a greater understanding of what the project aims, and of the archaeology that is on their doorstep. Finally, the excavation can better inform the landowner on the protection and use of the scheduled site (NHPP Measure 8).

3. Aims and Objectives

3.1 Research Questions

The excavation provides a rare opportunity to further the understanding of the Romano-British Crambeck pottery production site. There are four main questions that this excavation aims to answer.

How do the features showing on the geophysics results relate to those surviving below ground?

What are the anomalous features identified by the higher resolution resistivity survey and how do they relate to the pottery production site?

What is the relationship between, and character of, the ditches shown on the geophysics results, and how do they relate to the pottery production site?

What is the state of preservation of these archaeological features?

3.2 Publication and Presentation

The final publication will be deposited with the ADS and the North Yorkshire County Council Historic Environment Record. A copy will also be sent to English Heritage as well as the landowners. With the consent of the landowners, it may also be possible to give a short talk about the project and its results to the residents of Crambeck village.

4. Methodology

All features and any stratification will be recorded to professional standards. Detailed plans will be made and context information recorded. Particular emphasis will be placed on the quality of this information, especially the plans, as this is key to the main aim of the excavation of attempting to gain a clear understanding of the site. Top plans and single context plans will be done at a scale of 1:20, section drawings at 1:10.

There will be no discard strategy as such. Everything will be sieved and collected due to the apparent wide dispersal of material throughout the soil, evidenced by what is evident in molehills across the site. Finds washing will be done on site as much as possible. Sensitive artefacts, if any, will be protected on site and then sent to the relevant specialist: artefacts in need of such treatment are not expected but, if such items are discovered, they will be stored in Stewart boxes in line with the practices set out in *First Aid for Finds* (Neal and Watkinson, 1998).

There will be four trenches each covering a 25sqm area (fig. 6). Trenches 1 and 4 will cover the intersections of several ditches with the aim of understanding how these relate to each other and if they played a role in the pottery industry. Trench 2 will be opened above what is thought to be a kiln to establish whether or not this is the case and look at the extent of preservation. Its relationship with a nearby ditch will also be considered. Finally, Trench 3 will cover some of the anomalies identified by the higher resolution resistivity survey with the aim of understanding their function and their relationship to the pottery production (Fig. 7).

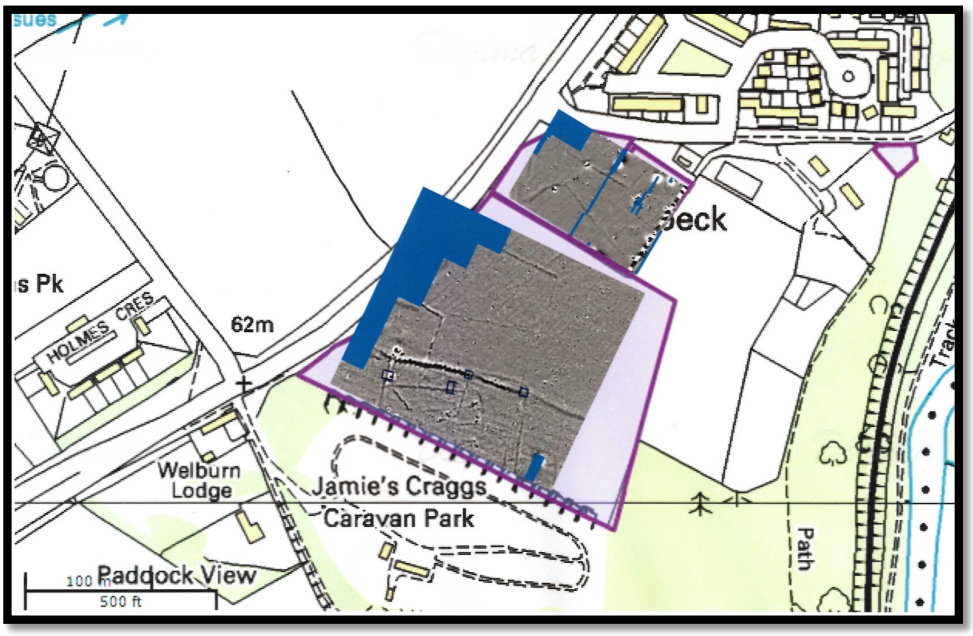

Fig. 6. Approximate location of trenches in relation to the magnetometry results.

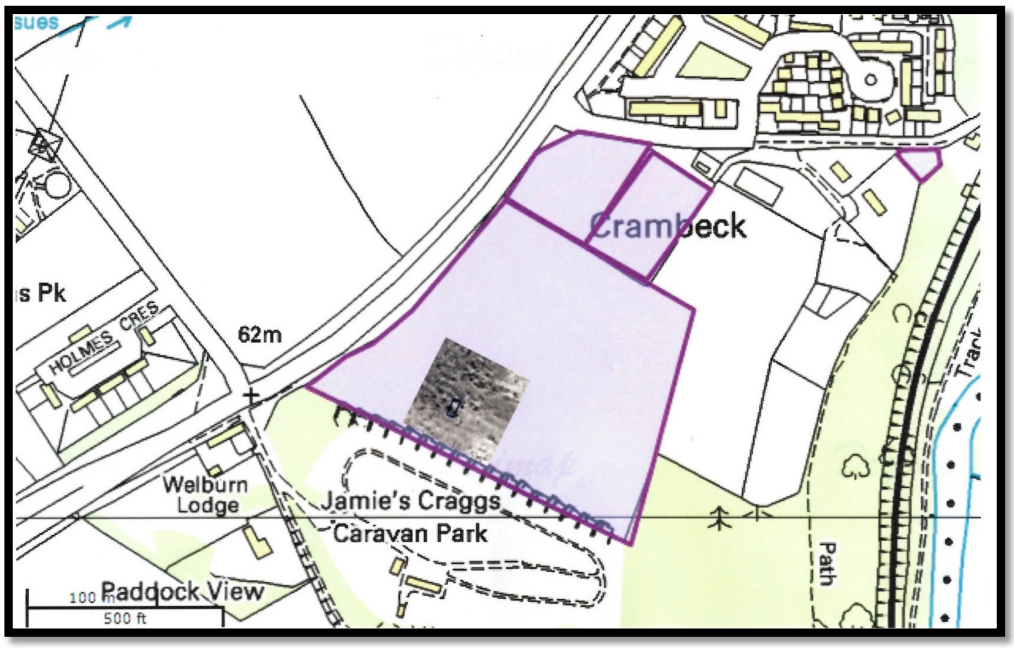

Fig. 7. Approximation location of Trench 3 in relation to the higher resolution resistivity results.

5. Resources, Timetable and Costs

5.1 Excavation

The resources for the excavation and post-excavation work will be provided by the Archaeology Department at the University of York. Portaloos and a site office will be installed at the site for the duration of the excavation. Transport will be provided by Rachel Wood and one other car.

All participants will be given a health and safety briefing before the start of the excavation. A risk assessment for the excavation will be conducted in accordance with University of York guidelines [1]. Steps will also be taken to protect the trenches overnight.

5.2 Archive

The initial outcome of the excavation will be the site archive. This will remain in paper form unless a suitable digital format can be found, a scan being made of this paper record for security purposes. This will be stored, along with the artefact archive, at the Yorkshire Museum Trust. A copy of the final excavation report (see below) will be submitted to the ADS.

5.3 Analysis and Publication

If specialist input is needed during the post-excavation and analysis stages, this will be the subject of a further bid for resources. However, it is not anticipated that any specialists will be needed other than on Crambeck ware, which the excavation organiser is able to provide. Stratigraphic and spatial analysis of the record will be undertaken, and then integrated with the assemblage evidence. Environmental sampling will be carried out only if a feature is fully excavated (e.g. the ditch fills). A final publication of the work will then be written and deposited with the ADS, HER, English Heritage and the landowners. A note on the excavation will be placed in the CBA forum and a short report on the excavation will be submitted to the YAS website.

The results of the excavation will also feature in the final thesis of the PhD, of which this project is a part. Post-PhD it is hoped to publish a short report on the excavation and the related fieldwork in the Yorkshire Archaeological Journal, providing the results merit it. It

[1] http://www.york.ac.uk/archaeology/intranet/health-safety/risk-assessment/

is also hoped to disseminate the results of the work to the residents of Crambeck village in the form of a presentation and talk (see above).

5.4 Staff and Specialists

Staff for the project will be taken from the student body of the Archaeology Department at the University of York. It is hoped to engage 16 students, at least 4 of whom will have sufficient experience to supervise others. Steve Roskams will also be on site. The project will offer some training and the opportunity to build on existing experience. Depending on landowner permission, it may also be possible to run tours of the site for the residents of Crambeck. Other specialists will be employed as necessary.

5.5 Timetable

It is hoped that the excavation of the four trenches described above (4) will take no more than two weeks, 24th March – 4th April 2014. The timetable for completion can be seen below.

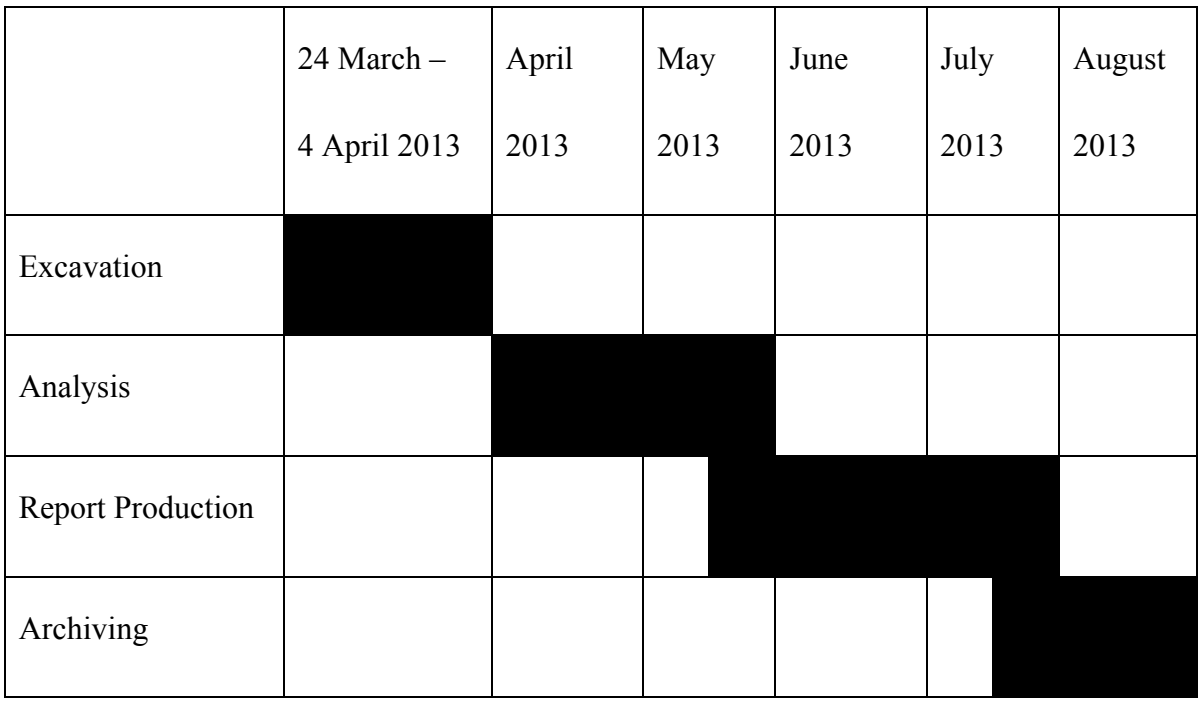

Fig. 8 Timetable of project.

5.6 Costs

Funding has been applied for from the following: University of York Departmental Research Fund (£565.20), and the Association for Roman Archaeology (£1000). It is understood that it is unlikely that all the funding will be granted so many options have been explored. The costs of the project are outlined below.

Porta-loos	£151.20
Site office (porta-cabin)	£144
Post-excavation	£0
Equipment	£0
Archive	£TBA
Finds Bags / Sharpies	£0
Transport	£270

Fig. 9. Costs of excavation

6. Archive Deposition

The excavation artefact and document archive will be deposited with the Yorkshire Museum Trust. Copies of the excavation report will be sent to all relevant HER bodies, English Heritage, Archaeology Data Service, and the landowners.

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Appendix 6 The Crambeck Archaeology Project

Excavations 24th March – 4th April 2014

Interim Report

Rachel Wood

PhD Candidate

Archaeology Department

University of York

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1. INTRODUCTION

This interim report is intended to inform on the discoveries made at Crambeck during excavations carried out between 24th March and 4th April 2014. These investigations were carried out as part of the author's PhD research. The site's location (section 2) will be followed by an outline of the previous work regarding the Romano-British pottery production at Crambeck (section 3) and a discussion of the wider landscape features (sections 4, 5) that have come to light as part of these investigations. This will be followed by a preliminary discussion of the outcome of the Spring 2014 excavation (section 6). It must be noted here that at the time of writing this report only half of the post-excavation work had been completed. Therefore, this report by no means includes the final conclusions and interpretation of the site. This will be followed by a discussion of the discovery made in Trench 5 (section 7). The report will end with a summary (section 8).

2. SITE LOCATION

Crambeck village lies to the south-west of Malton, to the east of the A64. The area of interest encompasses primarily the field to the south-west of the village, between it and the Jamie's Craggs caravan park. This contains the Romano-British pottery production site as well as part of a likely Iron Age fort (see section 4). The largest remaining earthworks of the Iron Age fort are contained within Ox Carr Wood to the south-east of the Jamie's Craggs field. In addition, a possible henge feature has been identified in the field directly opposite Jamie's Craggs on the west side of the A64. All locations are indicated on the map below (Fig. 1).

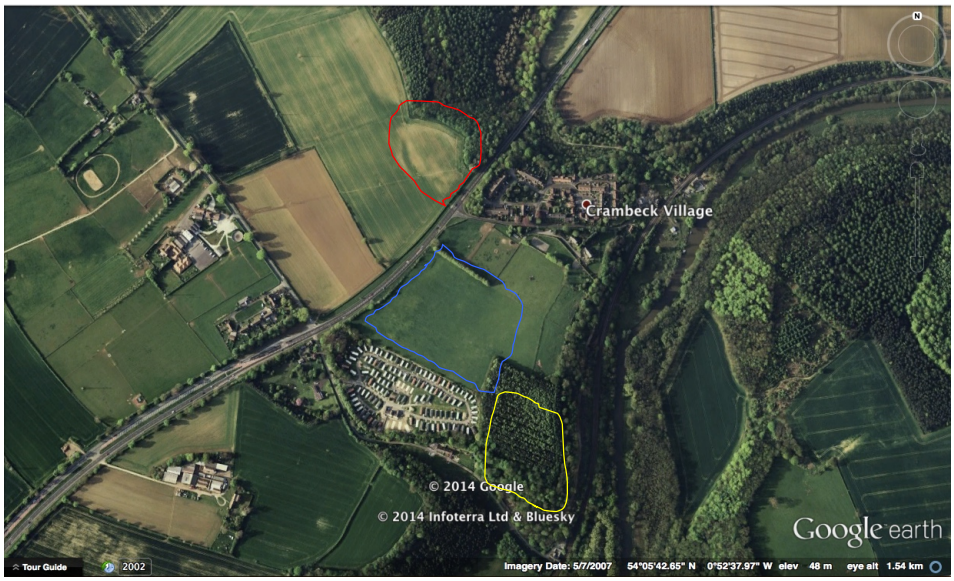

Fig. 1. Location of the pottery production site and cart burial (blue area), Ox Carr Wood (yellow area), and the possible henge feature (red area)

3. ROMANO-BIRITSH POTTERY PRODUCTION

In the 1920s Philip Corder identified the Jamie's Craggs field as the site of the Romano-British production of Crambeck ware pottery. Corder identified six kilns over the course of two excavations in the 1920s and 1930s (Corder 1989a 3-24, & 1989b, 25-35). Four of these kilns were in the area that has since been quarried away and is now the Jamie's Craggs caravan park. Two cists were also uncovered at the Jamie's Craggs site, one of which cut into a kiln. Some robbed out foundation trenches for a building were uncovered at this site, as were the remains of a possible hearth. The other two kilns were half a mile away to the south-west at Mount Pleasant Farm.

In the 1960s and 1970s some ditch sections were recorded in the Jamie's Craggs quarry face (Dent 1989, 39-40; Hayes 1989, 37-38; Ramm 1989a & b, 37, 39). These were assumed to relate to the pottery production and the possible plan was later identified in the 1980s by Bartlett and Hinchliffe (1989, 91-95). The magnetometry and fieldwalking surveys conducted by Bartlett and Hinchliffe identified a ditch system at the brow of the Jamie's Craggs hill, with some of the ditches running into the quarry. The fieldwalking identified a concentration of Crambeck ware pottery within this ditch system. Bartlett and Hinchliffe concluded that the ditches on a rough north-east – South-West alignment subdivided the potters' working area. The magnetometry also identified six responses that were assumed to be kilns (Fig. 2) (one of which has subsequently been proven to be an Iron Age cart burial – see section 7). The most distinctive feature of the magnetometry survey was a large ditch roughly aligned west-east. This was suggested to be the northern boundary of the potters' working area. Subsequent work has identified this as the northern boundary of an Iron Age promontory fort (see section 4) – this is not to say that it did not also form a boundary for the pottery production area.

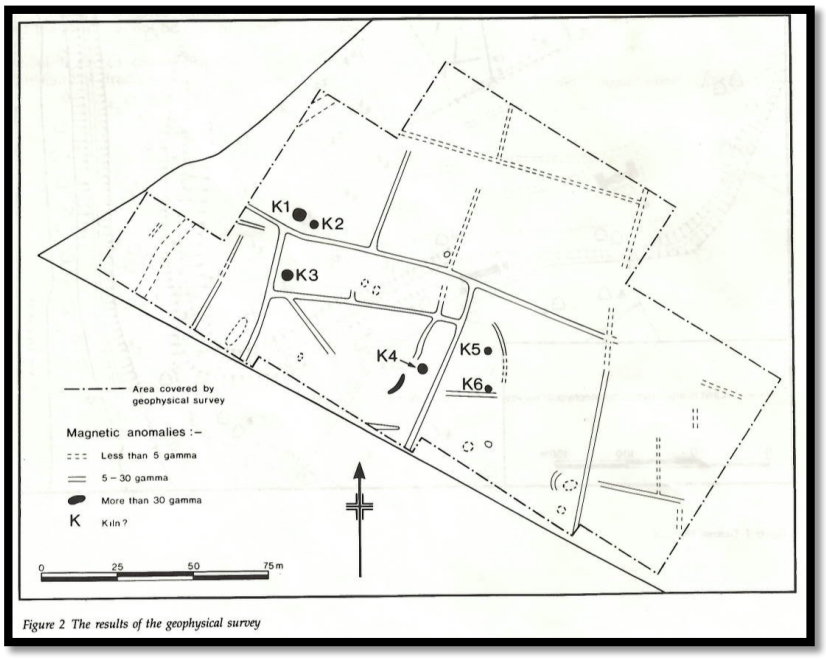

Fig. 2. The results of Bartlett and Hinchliffe's magnetometry survey (1989, 92).

In spring 2013, the author conducted a magnetometry and resistivity survey of Jamie's Craggs field as part of PhD research with the permission of English Heritage and the landowners. The results of the magnetometry survey (Fig. 3) were almost identical to those of Bartlett and Hinchliffe.

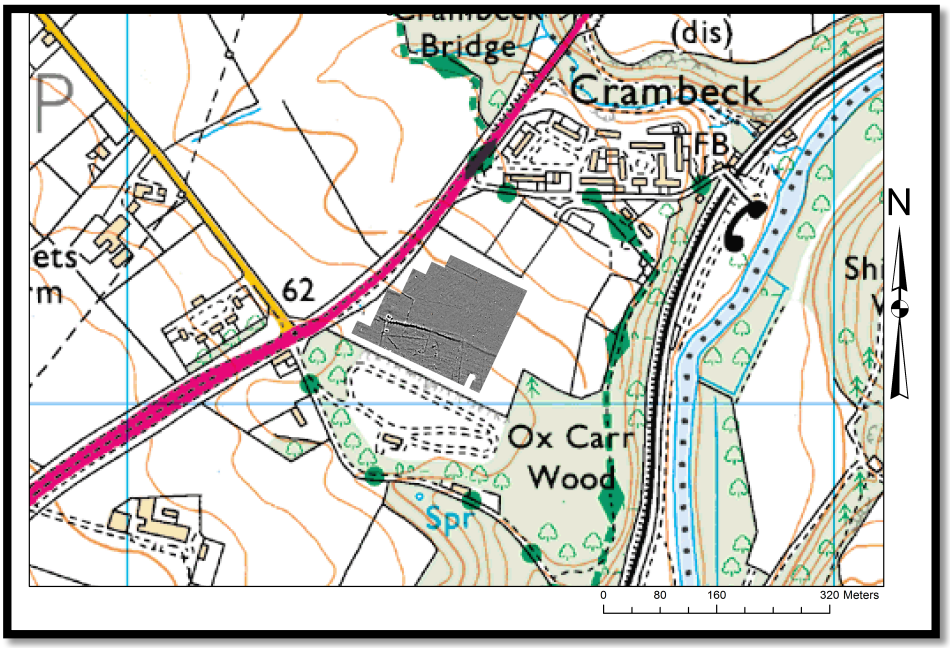

Fig. 3. Spring 2013 magnetometry results.

The same ditches were identified, as were the responses that were thought to be kilns. The large west-east ditch appeared to be heading towards the corner of Ox Carr Wood to the east of the field. At this point there was no reason to consider that the highly magnetic responses were anything other than kilns. The resistivity results were much less clear, although an area of interest containing a large anomalous feature was identified by a higher resolution resistivity survey.

4. IRON AGE PROMONTORY FORT

There are some large earthworks in Ox Carr Wood, roughly running along its eastern and southern edges, parallel with where the land falls off into the Derwent gorge and the Castle Howard Station Road respectively. The had previously been identified as various things including a Roman fort, a Roman holloway down to the Derwent River, and terracing caused by limestone quarrying.

As part of the Spring 2014 excavation (see section 6), an earthwork survey was carried out by Al Oswald (University of York) in Ox Carr Wood. The results of this survey identified the remaining earthworks to be part of an Iron Age promontory fort. The area enclosed by the fort is indicated in Fig. 4 below. The large east-west aligned ditch identified by the 1980s and 2013 magnetometry surveys appears to be the northern boundary for this fort. A slight bank and ditch earthwork running along the northern boundary of the wood connects this ditch to the north-east corner of the more prominent earthworks. The large ditch was dated to the Iron Age during the Spring 2014 excavation (the only finds contained within its fills were Iron Age pottery and some animal bone).

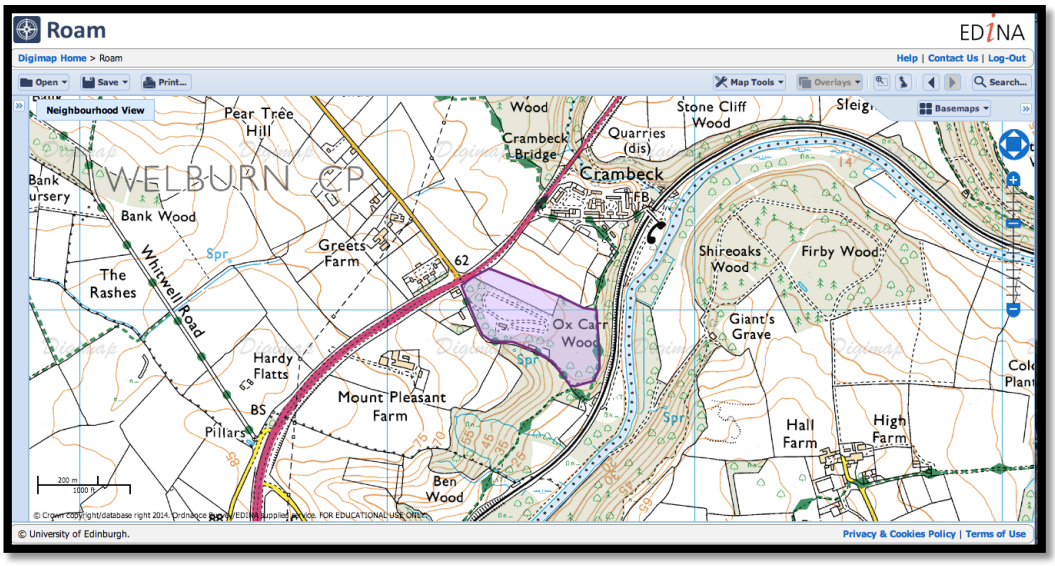

Fig. 4. Area enclosed by the Iron Age promontory fort. The existing earthworks are at their largest in the south-east corner of Ox Carr Wood.

It now appears that the Crambeck Romano-British pottery production site was contained within the earthworks of an Iron Age fort. These earthworks would still have been visible to a considerable height at the peak of the pottery production in the late fourth century and it appears that the potters then subdivided the enclosure to suit their needs. During the excavation the ditch was identified as being flanked by two banks on its northern and southern sides, again tallying with the earthworks in the wood. The ditch itself was 3.5m wide and 1.38m deep and had been cut into the bedrock geology. All but one of the responses identified as possible kilns was enclosed within the confines of this fort. Many questions still need to be answered about this previously unknown period of occupation: were its inhabitants the ancestors of the Crambeck potters?, had the fort been abandoned when the potters took over? – to name but two. What is clear is that that fort would have been an imposing landscape feature and its earthworks would have remained so long after its primary use ended.

5. POSSIBLE HENGE

Dominic Powlesland (The Landscape Research Centre) recently identified the cropmarks of a possible henge on Google Earth (Fig. 5). This is in the field directly opposite the Jamie's Craggs field on the western side of the A64. The same feature is visible in some aerial photographs taken by Peter Addyman (then at YAT) in 1984 (Figs. 6 and 7).

Fig. 5. Google Earth image of the possible henge (2007). The ?henge in highlighted in yellow.

Fig. 6. View of the ?henge looking east. The Jamie's Craggs field and the caravan park can be seen in the background. (Image Credit: Peter Addyman)

Fig. 7. View of ?henge looking north-east. Part of Crambeck village can be seen in the top right corner. (Image Credit: Peter Addyman)

This feature warrants further investigation, initially in the form of a geophysical survey. Another possibility is that it is a multi-vallate enclosure. Whichever identification is correct, the henge / multi-vallate enclosure is a previously unidentified feature that adds to the complexity of the emerging multi-period nature of the landscape around Crambeck village.

It may be the case that the archaeological and monumental complexity has some relationship to the geographical location as a 'gateway' to and from the Vale of Pickering. It is likely that the ?henge earthworks were visible when the fort was constructed in the Iron Age and possibly even at the peak of Crambeck production in fourth century.

6. SPRING 2014 EXCAVATION

Following on from the geophysical survey in spring 2013, an excavation of the Jamie's Craggs site was conducted over two weeks as part of the author's PhD research in March-April 2014. The general aim was to test the geophysics results. The research questions for the excavation were as follows: (1) how do the features showing on the geophysics results relate to those surviving below ground? (2) what are the anomalous features identified by the higher resolution resistivity survey and how do they relate to the pottery production site? (3) what is the relationship between, and character of, the ditches shown on the geophysics results, and how do they relate to the pottery production site? (4) what is the state of preservation of these archaeological features?

Initially four trenches were planned covering no more than a total of 100sq m. Due to some trench location issues, there were six trenches which in total came to just under 100sq m. Two of these trenches (1 and 4) were placed over the large ditch and related banks.

Trench 1 focussed on the ditch itself and revealed its stone cut nature and provided Iron Age dating material from the fills. There was also what was thought at the time of excavation to be a late Iron Age / Early Roman cremation. This consisted of a dark black deposit situated at the junction between the latest fill of the ditch and the bank on its northern side. This contained ?animal bones as well as fragments of possible human bone. Two individual pots were contained within the deposit – initially one was thought to be of Iron Age material, the other of a more Roman fabric and design (although not Crambeck ware). The pots were broken and distributed throughout the deposit. The deposit was half sectioned and the excavated portion was 100% sampled. The more complete parts of the pots were left in situ. Post-excavation analysis has since revealed that one of the pots is a very abraded Crambeck reduced ware vessel, possibly Corder's type 11 (1989a, 31), or pot #91 in Plate IV (1989b, 18). It is either a small jar or beaker. The second pot is of a very porous black fabric that in places shows signs of possible burning. It is likely that this is a poorly made local ware. The environmental processing of the cremation deposit revealed 72 worked jet and coloured glass beads. The glass beads are in a range of colours including blue, green, red, white, and colourless with gold-tinted iridescence. The dark blue colouring of some of the beads is thought to date to the late Roman period. Jenny Price has confirmed this initial date. Further

environmental analysis of the cremation deposit has yet to be done and the osteoarchaeological analysis is currently underway. This is being conducted with permission from the Ministry of Justice. Initial analysis (under the guidance of Malin Holst, York Osteoarchaeology Ltd) suggests that the recovered bones are that of a child. Given that children are often found with adults in cremation burials, it is likely that there is another individual in the deposit. This is far from confirmed and it is hoped that more information will come to light during the analysis of the cremation deposit. It would certainly be beneficial to retrieve the rest of the deposit in order to provide a full report. In sum, a provisional date of the late Roman period can be given to this cremation deposit, although this is far from certain and further analysis is needed.

Trench 4 focussed on the banks to the north and south of the west-east aligned ditch. It established that they were constructed of material produced during the original digging of the ditch. Very little dating material was recovered from the banks if any, although it is clear that their construction is contemporary with that of the ditch. The ditch, its northern bank and the cremation deposit can be seen below in Fig. 8.

Fig. 8. Post-excavation view of the stone cut Iron Age ditch, its northern bank, and the cremation. (Image Credit: The Crambeck Archaeology Project).

Trench 3 was placed over the anomalous features identified by the higher resolution resistivity survey. This identified these responses as geology. Trench 1 was placed 20m west of where it was initially planned. This identified a ditch on a SE–NW orientation, the

function of which cannot be clearly stated although it is clear that it was not part of the fort defences nor of the internal sub-divisions. This trench also identified a possible flue and stokehole of a ?kiln / furnace of some sort (Fig. 9). It was odd that this feature showed no evidence of burning. At present, environmental analysis has revealed little although detailed lab analysis has yet to take place. Much more cannot be said about this feature without further excavation as is was obstructed by the side of the trench.

Fig. 9. Pre-excavation view of the possible flue in Trench 2. (Image Credit: The Crambeck Archaeology Project)

As a result of identifying the response in Trench 5 as not a kiln (see section 7), another trench (TR6), 2m x 2m was placed over a smaller similar response also thought to be a kiln. It was very quickly clear that in this case the response was indeed a Crambeck ware kiln. Trench 6 revealed part of the furnace and its external packing material. What remained of the top of the kiln was very close to the surface being not far below the topsoil ($_c$20cm). The kiln was in surprisingly good condition with only the very top of the furnace dome having collapsed

into its interior. It seemed to have been untouched by any ploughing (ancient or modern). The flue was not located and was thought to exit under the northern edge of the trench. The second furnace (Crambeck kilns are known to come in pairs) was thought to be close by but was not uncovered. This was a fantastic discovery and bodes well for the survival of other likely kilns in the vicinity as well as the survival of the internal structure of one or more of the kilns. The kiln can be seen in Fig. 10.

Fig. 10. Pre-excavation view of the Crambeck ware kiln looking south-west. (Image Credit: The Crambeck Archaeology Project)

7. TRENCH 5 – IRON AGE CART BURIAL

Trench 5 was placed over one of the magnetometry responses previously identified as a kiln. These responses ranged from $_{c.}$12m to $_{c}$1.5m across. Trench 5 was placed over a medium sized response, $_{c.}$3m across. A 3m x 3m trench was positioned over this response. It quite quickly became apparent that the response was not a kiln as previously thought. The top of an iron bar emerged a few centimeters under the subsoil, although no measurement was taken at this stage (unfortunately the iron broke before a measurement could be established). As excavation progressed it became clear that this was potentially the upper part of a circular or curved object. It was first assumed to be modern given its relatively high location in the matrix and its good state of preservation. It quickly became clear that the iron piece was much larger than originally thought. Mark Whyman (YAT), who visited the site, was first

to suggest that it might be an iron tyre in an Iron Age cart burial. The trench was re-examined after this suggestion and the context sheets re-evaluated and clarification added to them with this possibility in mind. During excavation it was established that the northern side of the tyre was split by an old break. The southern part was quite thin in one area and subsequently split during excavation thus allowing a section $_c$60cm long to be removed. Roughly 10cm directly underneath the top arch of the tyre were excavated a lynch pin as well as parts of one, possibly two, nave hoops. It is likely that the grave extends to the east as the traces of a possible cut on the western side of the tyre was identified. The plan view of the trench with the remains of the iron tyre (post-break) can be seen in Fig. 11.

Fig. 11. Part-excavation view of Trench 5. The remains of the iron tyre (post-break) can be seen on the left of the image with the natural limestone on the right. The grave cut was a faint distinction just to the north of the limestone. This suggests that the grave could be cut into the natural bedrock geology. (Image Credit: The Crambeck Archaeology Project)

The response on the spring 2013 magnetometry results excavated in Trench 5 is indicated in Fig. 12. The kiln (TR6) is to the east. There is also a larger (possible multi-feature response) to the north of Trench 5. It is possible that this is another cart burial or even multiple cart burials. There is also a hint of another to the south of Trench 6.

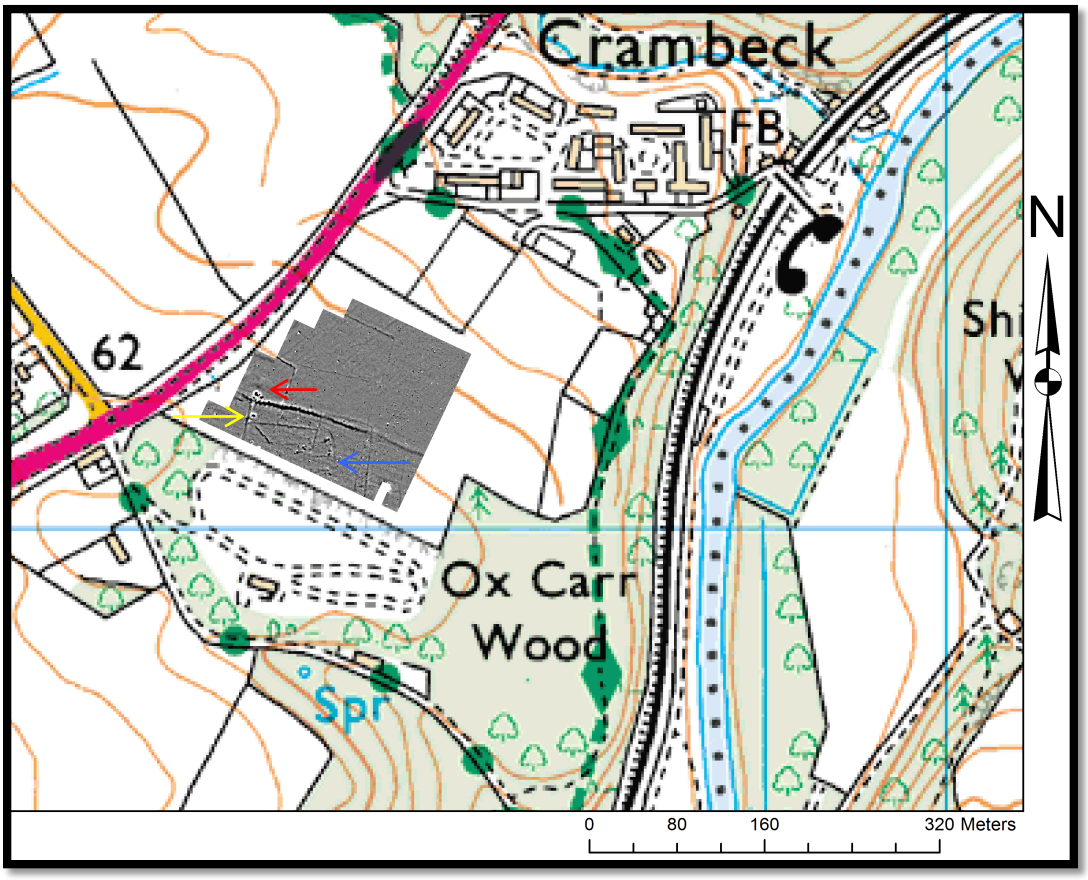

Fig. 12. The response in Trench 5, cart burial (yellow); the response in Trench 6, Crambeck ware kiln (blue); and the larger possibly multi-feature unexcavated response (red)

The iron objects recovered from Trench 5 have since been sent for conservation by Magarethe Felter at YAT – conservation is on-going. Analysis of the other material recovered from the top- and sub-soils has yet to be done. A research committee has been established consisting of Dr. Pete Wilson (English Heritage), Keith Emerick (English Heritage), Steve Roskams (University of York), Dr. Mel Giles, Dr. Sonia O'Connor, Dr. Cath Neal, Dr. Ian Stead, Dr. Dominic Powlesland, and Dr. Mark Whyman (YAT). The committee has met and a plan of action discussed and agreed for implementation as soon as possible.

The first phase plan is to conduct a focussed high resolution geophysics survey over the area of Trench 5 as well as two very similar responses to the north and south (one of which is considerably larger). Ground truthing will be conducted at the same time under the supervision of Steve Roskams and / or Mark Whyman with more geophysics taking place as each layer of soil is stripped. This is intended to provide information in order to write a detailed project design for the second phase which will consist of the excavation and

recovery of the cart burial in Trench 5 and any more subsequently identified on the site. This is fairly urgent, not only is the portion uncovered suffering from corrosion (although TR5 was backfilled on the advice of Margrethe Felter), the site is also very exposed lying next to the A64 and may fall prey to night-hawking or other illegal activity which could damaged the well preserved kilns on site not to mention any other surviving features yet to be identified. Currently there are some issues gaining permission from the landowners for the first phase of geophysics and ground-truthing. They have agreed to speak to Rachel Wood (Project Director) at the end of July 2014 in order to establish what the involved parties need to do to allow the project to move forward with investigation and recovery of this find. The committee is being kept up to date with developments as they take place. Plans for the full-scale excavation and recovery will be made in more detail once the first phase of higher resolution survey has been carried out.

PLEASE NOTE: due to the highly sensitive nature of the find in Trench 5 the discovery is currently being kept between the committee and Gail Falkingham at North Yorkshire County Council. The landowners have been informed and the need for discretion at least for now has been impressed upon them. All those who attended the Spring 2014 excavation have signed a disclaimer agreeing not to discuss the excavation.

8. SUMMARY

Recent investigations have revealed the landscape around Crambeck village to be complex and multi-period. It was clearly an active Iron Age landscape with a large fort and burials present. There is also evidence for earlier activity in the area in the form of a possible henge. It was already clear that there was Roman activity in the area with the presence of Crambeck ware kilns in the Jamie's Craggs field.

Further investigation is needed in the first instance to conduct a more detailed geophysical survey of the identified cart burial along with the two possible similar burials to the north and south. This will also involve a small programme of ground-truthing the results. Geophysics will be conducted as each layer of soil is stripped. These investigations will stop immediately when archaeological features become apparent – either on the geophysics results or in the soil. The aim of this is to provide detailed information in order to write a project design for the full-scale excavation of the cart burial or burials.

Due to the continuing corrosion, a much more detailed full excavation of the cart burial then needs to take place. This will require careful planning and integration of on-site and off-site conservation processes. The site is a security risk given its location next to the A64. It is

highly visible from the road and swift action regarding the cart burial(s) is needed to reduce the chance of illegal action at the site.

The possible henge will also require a geophysical survey in order to establish its plan layout and function with more certainty. The completion of this work will then allow links to be made from the earliest phase of landscape use through to the Iron Age fort and the cart burials, and through to the Roman pottery production. Without these paths of further investigation much more cannot be said about the landscape around Crambeck village than has been done here.

Retrieval of the remainder of the cremation deposit from Trench 1 is highly desirable. It is most likely that this could produce more beads as well the remainder of the pots. An analysis of the complete deposit could shed light on the use of the landscape towards the end of the Roman occupation of Britain at the time when the Crambeck ware industry was in decline. It would also be interesting to establish if this is an isolated cremation or whether there are more, possibly along the length of the defensive Iron Age ditch.

Further work also needs to be conducted on the identified kiln. The second furnace, flues and stokehole need to be identified. A complete and detailed plan of a Crambeck kiln would be very beneficial. Furthermore, given the good level of preservation, it is highly likely that the internal structure of the kiln(s) remains in situ. Therefore, excavation of one or more of these kilns could shed light on their internal structure, a feature of the Crambeck kilns that remains little understood. Such investigations would be well placed to significantly further the understanding of the Crambeck ware production industry, particularly regarding the kiln mechanisms.

As stated above (section 7), discretion is paramount until a full investigation (the proposed geophysics and ground-truthing followed by a full excavation) of the cart burial(s) can take place. This report must not therefore be distributed to anyone outside of those named in the committee and the landowners:

Steve Roskams (University of York)

Dr. Pete Wilson (English Heritage)

Dr. Keith Emerick (English Heritage)

Dr. Ian Stead

Dr. Sonia O'Connor (University of Bradford)

Dr. Melanie Giles (University of Manchester)

Dr. Mark Whyman (York Archaeological Trust)

Dr. Dominic Powlesland (The Landscape Research Project)

Dr. Cath Neal (University of York)

Gail Falkingham (Historic Environment Record, North Yorkshire County Council)

The landowners – Mr and Mrs Pollard, Crambeck House, Crambeck, North Yorkshire, YO60 7EL.

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Appendix 7 Crambeck Archaeology Project

2014 Spring Season

Pottery Analysis

Rachel Wood

Project Director

Archaeology Department

University of York

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1. Introduction

The 2014 spring season of the Crambeck Archaeology Project produced a reasonable assemblage of pottery, all hand recovered. A total of 1613 sherds were recovered, weighing 12.50kg. The majority of the sherds were Roman in date (1419; 87.97%), with the rest being of medieval to modern date. Many of the sherds showed signs of weathering and abrasion, although this did not impede identification. The average sherd weight was 7.75g. However, there was much abrasion of sherds in general and damage to some rims leaving them unsuitable for EVE measurements. It must be noted here that the pottery recovered from Trench 5 and from the cremation burial are not included in this analysis. They are discussed in the relevant reports. Due to the special nature of the contents of Trench 5 it was thought pertinent to write a separate report dedicated to the trench. The only pottery recovered from it was in the topsoil and subsoil and is thus not have any particular importance.

2. Aims

The aims of the pottery analysis were to identify the different pottery fabrics, to use the pottery to contribute to dating contexts wherever possible, to characterise the occupation at the site, and to contribute to interpreting its relationship with other sites in the wider landscape.

3. Methodology

This analysis followed the standard procedure for pottery investigation based on Orton, Tyers and Vince (1993) *Pottery in Archaeology*, and the second edition of the same book by Orton and Hughes (2013), as well as *The National Roman Fabric Reference Collection: A Handbook* (1998). The *Potsherd* website was also used for reference and distribution maps (http://potsherd.net/atlas/potsherd). The Estimated Vessel Equivalents (EVEs) were calculated wherever possible using both rim and base percentages. There were combined to suggest the minimum number of vessels present (Orton, Tyers & Vince 1993, 172). Pottery of non-Roman date or Roman pottery from established production centres was used to date contexts as it is challenging to date the numerous local wares. As a result 63% of the identifiable contexts from which pottery was recovered could be dated in this way.

It is useful to note here that unless otherwise stated the percentages given in the sections below are of the total assemblage, including the medieval – nineteenth century sherds.

4. Fabric

Identifying the colour and density of the clay matrix, as well as classifying the material, frequency and size of any inclusions within in the clay recorded fabrics. Surface treatments, where present, were also noted in terms of cover and colour. Wherever possible fabrics were identified using *The National Roman Fabric Reference Collection* (NRFRC). Full descriptions of these fabrics can be found in the NRFRC and will therefore not be repeated here.

The fabrics identified covered four broad date ranges, Roman, Medieval, Post-Medieval, and Modern. The Roman fabrics are separated into eight broad categories: coarse reduced wares, coarse oxidised wares, grog tempered wares, imported fine wares, British wares, samian, Crambeck Parchment Ware, and Crambeck Reduced Ware. The total sherd count (TSC) and weight for each of the categories are below (Table 1).

Ware Group	TSC	%	Weight (g)	%
Roman: Coarse Reduced Wares	227	14.07%	1778.9	14.23%
Roman: Coarse Oxidised Wares	33	2.05%	162.5	1.30%
Roman: Grog Tempered Wares	7	0.43%	61.6	0.5%
Roman: Imported Fine Wares	2	0.12%	6.0	0.05%
Roman: British Wares	115	7.13%	863.6	6.91%
Roman: Samian	1	0.06%	5.3	0.04%
Roman: Crambeck Parchment Ware	106	6.57%	1331.5	10.65%
Roman: Crambeck Reduced Ware	928	57.53%	7331.0	58.65%
Medieval	33	2.05%	316.9	2.53%
Post-Medieval	53	3.29%	386.5	3.09%
Modern	108	6.7%	256.6	2.05%

Table 1: The total sherd count and weight for each sherd group.

4.1 Roman: Coarse Reduced Wares

A large proportion of the assemblage consists of unsourced coarse reduced wares of Roman date. There are a total of 227 (14.07%) weighing 1778.9g (14.23%), with an EVE of 1.1. Other than identifying these as Roman, no further information could be gleaned from them. One topic for further investigation would be a more detailed study of these coarse reduced wares to see if they can be further identified. There was one named coarse reduced ware, Huntcliffe Calcite Gritted Ware. There were 5 (0.31%) sherds of this weighing 26.1g (0.21%). This is believed to have an East Yorkshire source and dates to the fourth century. Given this, it is not surprising to find it on the contemporary site at Crambeck.

The majority of these sherds were recovered from the topsoil, subsoil and ploughsoil contexts across the site. However, sherds were also present in all three fills of the large E-W defensive ditch, which date as follows, tertiary (1007) – Roman, secondary (1014) and primary (1016) – late Iron Age to early Roman. Sherds were also present in the kiln collapse (1222) that dates from the late Roman to post-Roman periods. Both fills of a SW-NE aligned ditch also contained sherds of this sort although these are believed to be residual as the feature itself is thought to date to the post-medieval period. HUN CG ware was present in the tertiary and secondary fills of the E-W ditch and the subsoil above this feature.

4.2 Roman: Coarse Oxidised Wares

These make up 33 sherds (2.05%) in the assemblage, weighing 162.5g (1.3%) and with an EVE of 0.52. Similar to the coarse reduced wares, other than identifying them as Roman, no further information could be gleaned from them and they would benefit from a more detailed study in the future.

The majority of these sherds also came from topsoil and subsoil contexts across the site. Although, some were recovered from the kiln collapse (1222) that dates from the late Roman to post-Roman periods. This could suggest a late Roman date for these oxidised wares but this is purely conjecture at this point.

4.3 Roman: Grog Tempered Wares

These make up 0.43% of the total assemblage (7 sherds) and weigh 61.6g (0.5%). There were two wares of this type present, Pink Grog Tempered ware (PNK GT) and an unknown type. PNK GT was the more numerous and was found in the primary fill (1106) of the SW-NW ditch [1105] (post-medieval) as well as the secondary fill (1308) of the E-W ditch [1009] (late Iron Age – early Roman). Those sherds in (1106) are presumed to be residual as the feature is thought to be of post-medieval date. The unknown ware was only found in a single subsoil context.

4.4 Roman: Imported Fine Wares

There are two imported fine wares within the assemblage, Central Gaulish Black Slipped ware (CNG BS) and Argonne Colour Coated (ARG CC) ware. Both consist of a single sherd and weigh 2.8g and 3.2g respectively. Together they consist of 0.12% of the total sherds and 0.05% of the total weight of the assemblage. These sherds are interesting because of their date. ARG CC dates from $_{c}$210 – $_{c}$ 300AD and CNG BS from $_{c}$101 – $_{c}$300AD. These both begin production at least a century before the Crambeck site. But given that it is possible

that production of Crambeck ware begin in the late third century, these sherds may have arrived at the site as their own production centres were in decline, therefore towards the end of their respective date ranges.

A second option is that these two sherds are residual from earlier activity within the surrounding landscape. However, it is generally believed that activity in the area stopped with the arrival of the Romans and only started again with the beginnings of Crambeck production. Further survey work conducted recently by the author of this report suggests that there was an earlier Roman settlement on the opposite hill, north of the known Crambeck production site. Nothing is known about this possible early Roman site for certain but no doubt further investigation into the surrounding landscape may find an explanation for the presence of these early wares at what is predominately a fourth century production site.

Both wares were found in subsoil contexts and are likely to have been dragged there as the result of agricultural activity.

4.5 Roman: British Fine Wares

A total of 6 British fine wares were identified: Eboracum White Slipped ware (EBO WS), Holme-on-Spalding Moore Reduced ware (HSM RE), Lower Nene Valley Colour Coated ware (LNV CC), Oxford White-Slipped ware (OXF WS), South West Black Burnished Ware 1 (SOW BB1), and Wilderspool Oxidised ware (WIL OX).

EBO WS is interesting as it is dated firmly to the second century and thus predates the production of Crambeck ware. A total of 5 sherds of this were identified, weighing 33.7g), and with an EVE of 0.05 (base). As with the imported fine wares it is likely that this is a residual sherd from earlier activity in the surrounding landscape. It is not in itself indicative of early activity at the Jamie's Craggs site.

HSM RE and WIL OX both have a broad Roman date of $_{c}$43–$_{c}$410AD. HSM RE had a total of 102 sherds (721g) and WIL OX a total of 4 sherds (54.9g). HSM RE also had an EVE of 1.HSM RE is known to have an East Yorkshire source and to have been widely distributed across the Yorkshire region throughout the Roman period meaning its presence at the Jamie's Craggs production site is not unsurprising. WIL OX is known to have a source in the Warrington area. Being to the west of Manchester it is not entirely implausible that some of this ware should make its way to our site.

There was a single sherd of LNV CC ware present, weighing 15.8g and with an EVE of 0.05. This is known to have sources in the Nene Valley area and was one of the leading production

centres in Britain in the second to fourth centuries. Its later stages of production are contemporary with Crambeck ware. Together with its wide distribution across the country, albeit sparse to the north, makes it another unsurprising presence at the Jamie's Craggs site.

There was also a single sherd of OXF WS present, weighing 6.4g. This ware dates from the second to fourth centuries and again is known to have been popular and have a wide distribution. Its latter stages of production are contemporary with that of Crambeck ware.

Perhaps the most surprising of the British fine wares identified was SOW BB1. This is thought to have been produced somewhere near Devon and is distributed almost exclusively to Devon and Cornwall although there are exception found on the south coast of Wales and at the Antonine and Hadrianic Walls. This was dates from $_{c}$101–$_{c}$300AD and therefore precedes Crambeck ware, although it may overlap the beginning of production. A total of 2 sherds of SOW BB1 were identified, weighing 31.8g. These sherds would benefit from the attentions of a pottery expert who has vast experience dealing with this ware and could be much more certain in their identification of SOW BB1. If these two sherds are indeed SOW BB1 then their presence at the Jamie's Craggs Crambeck production site is very unusual. Perhaps more of this has been discovered in the Yorkshire area since the *Potsherd* distribution map for the ware was created. Further investigation into this would be vastly beneficial.

In general then, the identified British wares are unsurprising additions to this assemblage and, where they do not have a broad Roman date, are from the period immediately prior to or are contemporary with the production of Crambeck ware.

4.6 Roman: Samian

There was 1 sherd (0.06%) of Heiligenberg Samian ware (HGB SA) present in the assemblage, weighing 5.3g (0.04g%). This was a fairly plain piece with only a single indented horizontal line of decoration on its exterior. The sherd appeared to be from a slant-sided bowl (Form Code 2). HGB SA dates to the second century AD, and, as discussed for some of the other early wares, it is likely that this sherd is residual from earlier activity in the surrounding landscape. In itself, it does not indicate an earlier phase of activity at the Jamie's Craggs site.

4.7 Roman: Crambeck Parchment Ware

There were a total of 106 sherds (6.57%) of Crambeck Parchment ware (CRA PA), weighing 1131.5g (9.05%) with an EVE of 2.15.

CRA PA was discovered in 14 separate contexts, 11 of which were topsoil, subsoil or ploughsoil of modern date. Sherds were also recovered from a thin layer (1204) of grey-brown soil that overlay natural bedrock. It was unclear what the nature of this feature was. Sherds were also recovered from a section of the northern defensive bank (1306). This is dated to the Iron Age and the sherds are likely to be intrusive. Perhaps unsurprisingly, sherds were also recovered from the kiln collapse layer (1222), although in significantly less quantity than Crambeck Reduced ware, suggesting that this particular kiln was not used for the production of CRA PA.

4.8 Roman: Crambeck Reduced Ware

Crambeck Reduced ware (CRA RE) was by far the largest past of the assemblage. It consisted of 928 sherds (57.53%), weighing 7731g (58.65%) with an EVE of 9.54. the large number of sherds of this ware is unsurprising given the nature of the site.

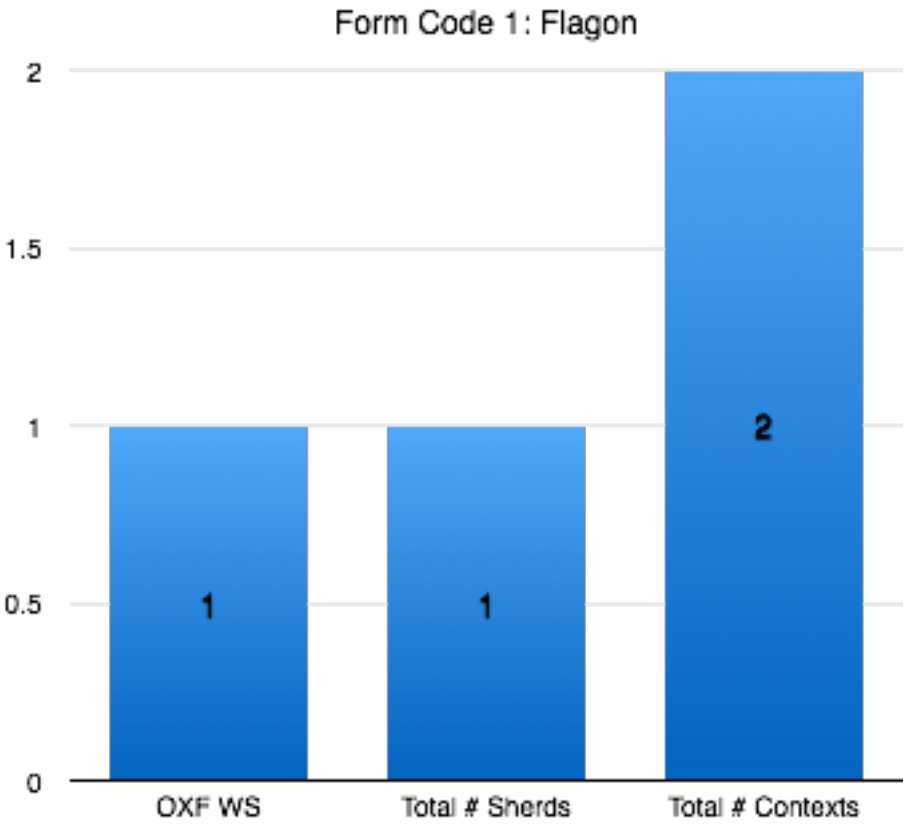
CRA RE was found in a total of 20 contexts, 13 of which were topsoil, subsoil or ploughsoil contexts across the site. CRA RE was also recovered from the tertiary fill of the E-W ditch [1009] in two separate trenches (contexts (1007) and (1307)). This fill is thought to be of Roman date, a fact the presence of CRA RE supports. The ware was also recovered from the grey feature (1204) and from the fill (1208) of a possible N-S aligned ditch [1207], both are of uncertain function and date. CRA RE was found in sections of both the north (1306) and south (1305) defensive banks. Given that construction of this feature is of Iron Age date it is likely that the sherds are intrusive, possibly as a result of agriculture or bioturbation.

4.9 Medieval – Modern

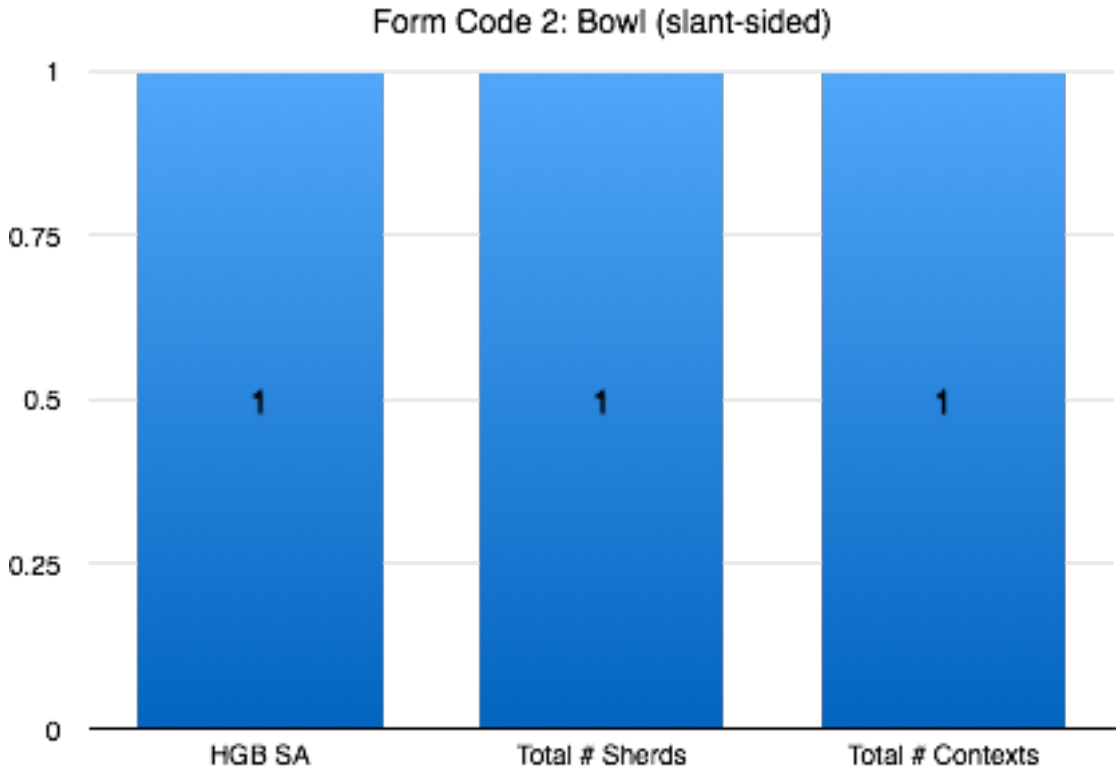
A total of 161 sherds (12.04%) of medieval to modern date, weighing 960g (7.67%). EVEs were not taken for these wares, as they would not aide answering the research objectives. All of the sherds were recovered from topsoil, subsoil and ploughsoil layers of modern date across the site.

5. Form

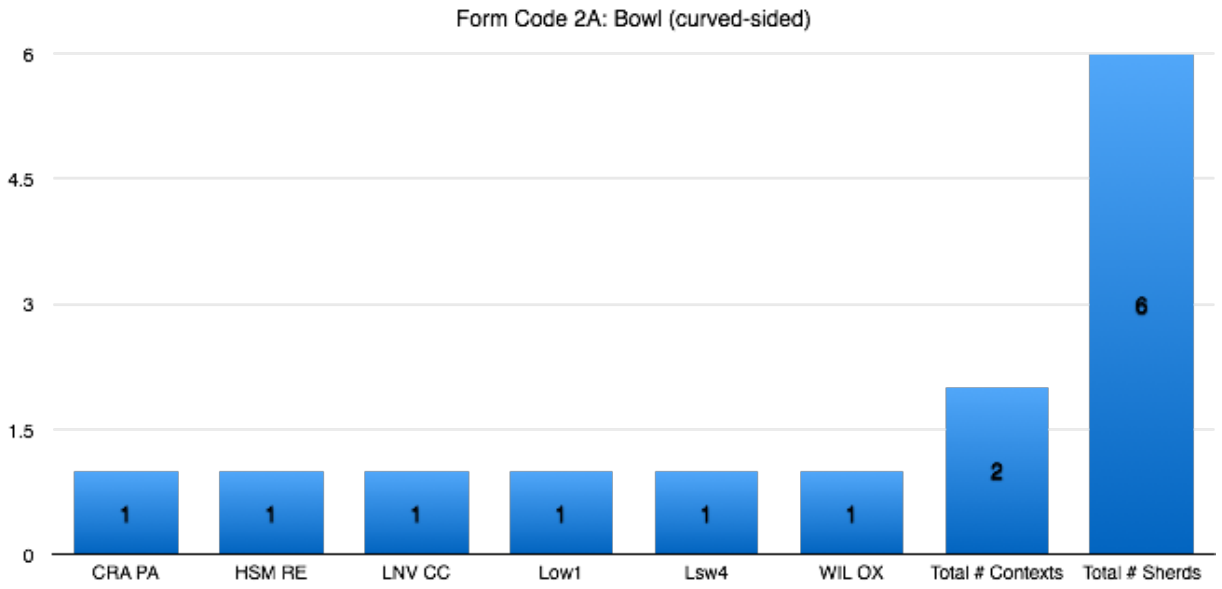
There were a total of 9 forms identified across the site from a variety of wares and contexts. The graphs below show the sherd count for each ware present for that form as well as the total number of sherds and total number of contexts in which that form was present.



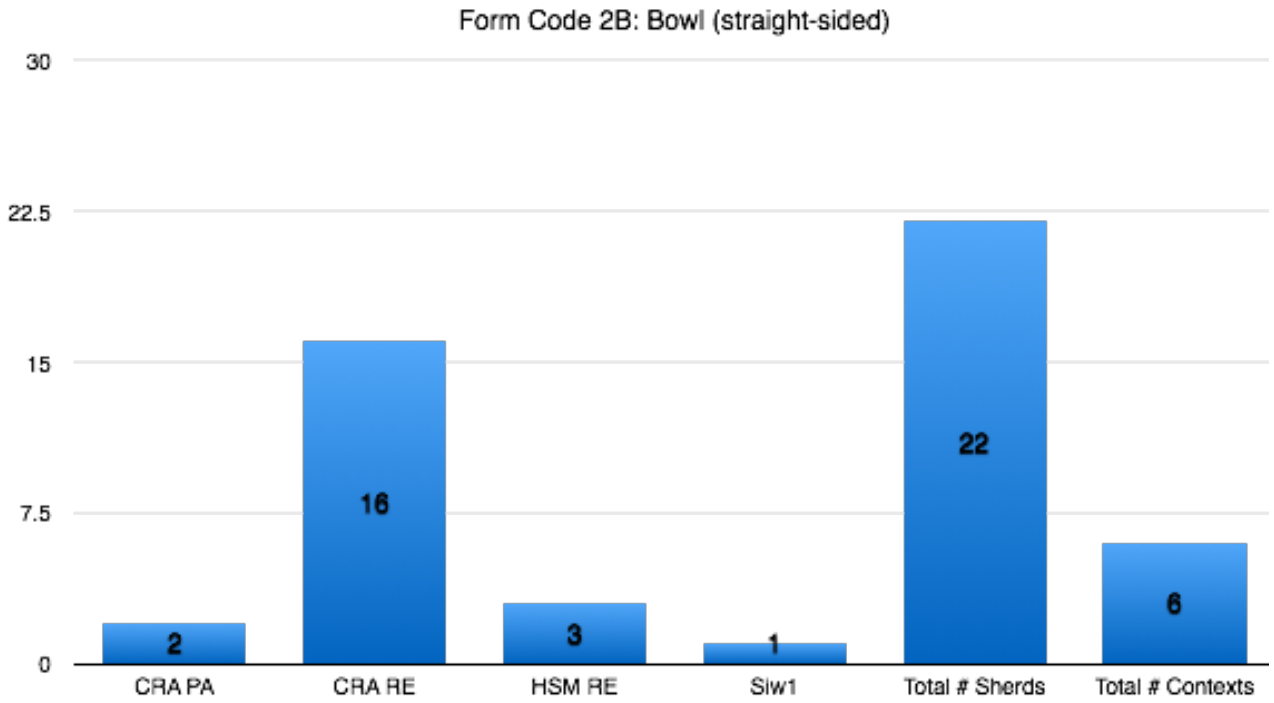
Graph 1: Form Code 1 Flagon



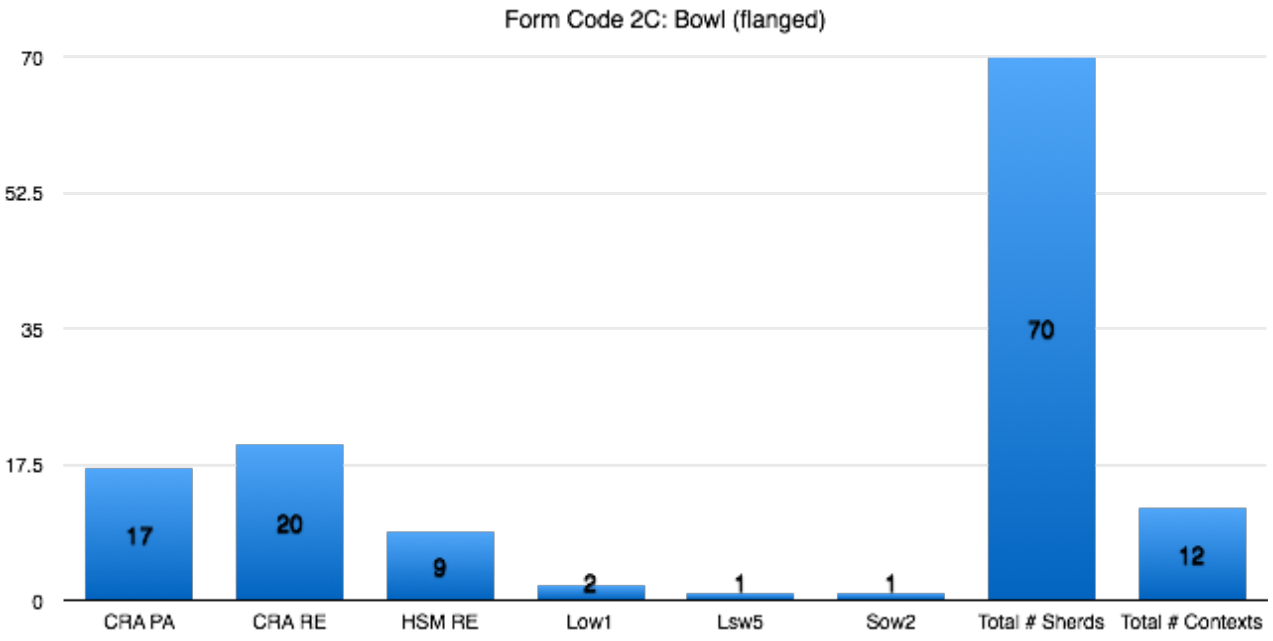
Graph 2: Form Code 2 Bowl (slant-sided)



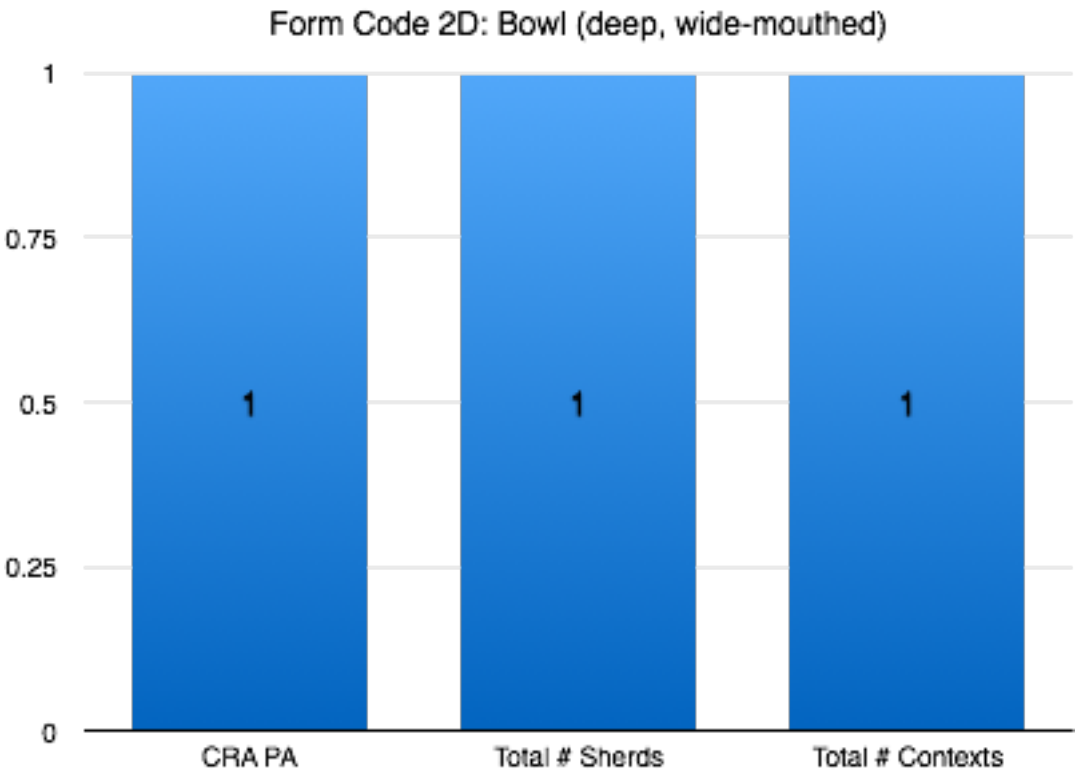
Graph 3: Form Code 2A Bowl (curved-sided)



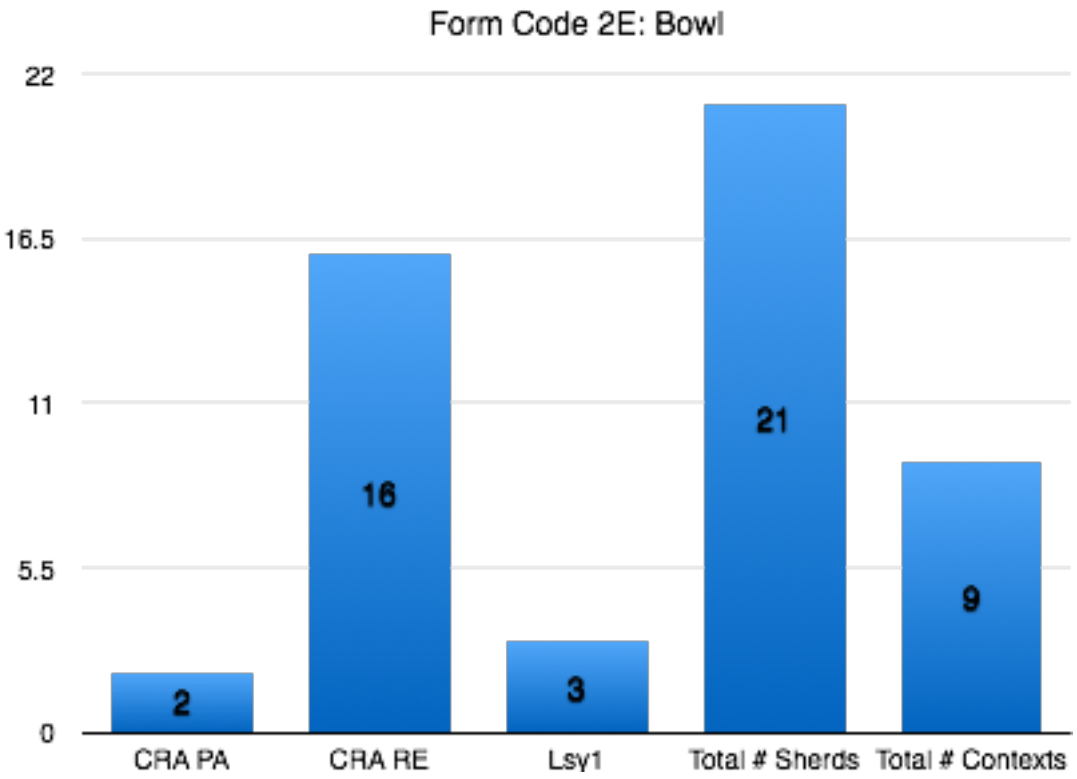
Graph 4: Form Code 2B Bowl (straight-sided)



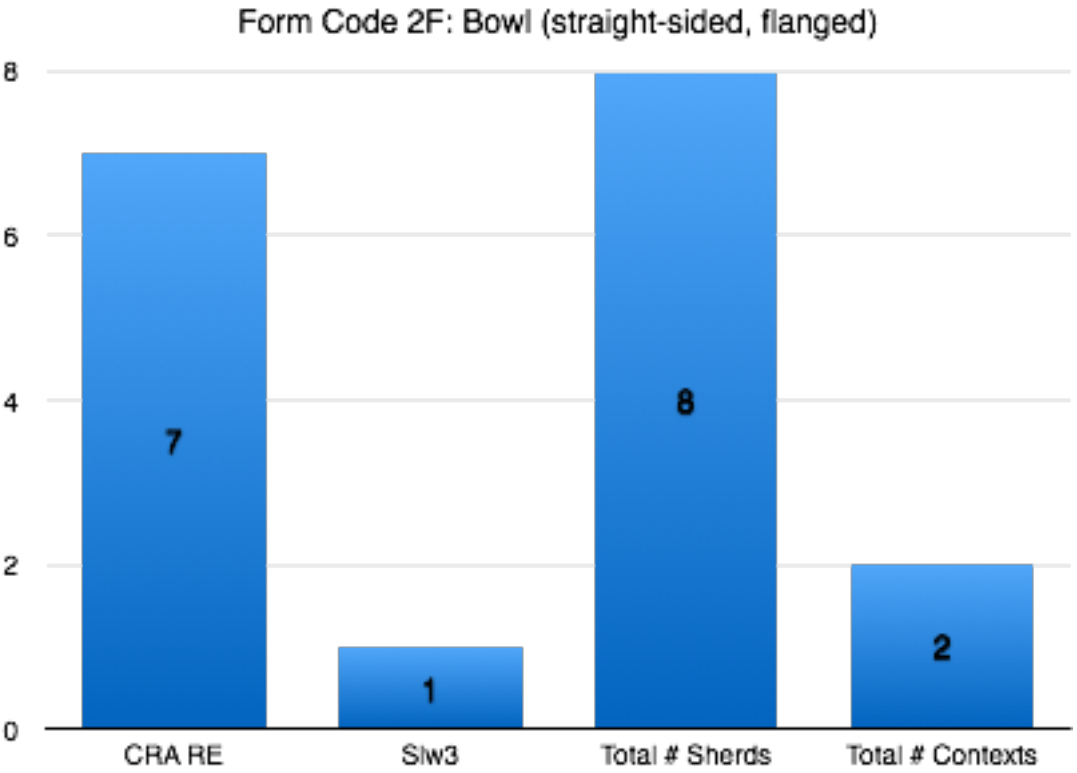
Graph 5: Form Code 2C Bowl (flanged)



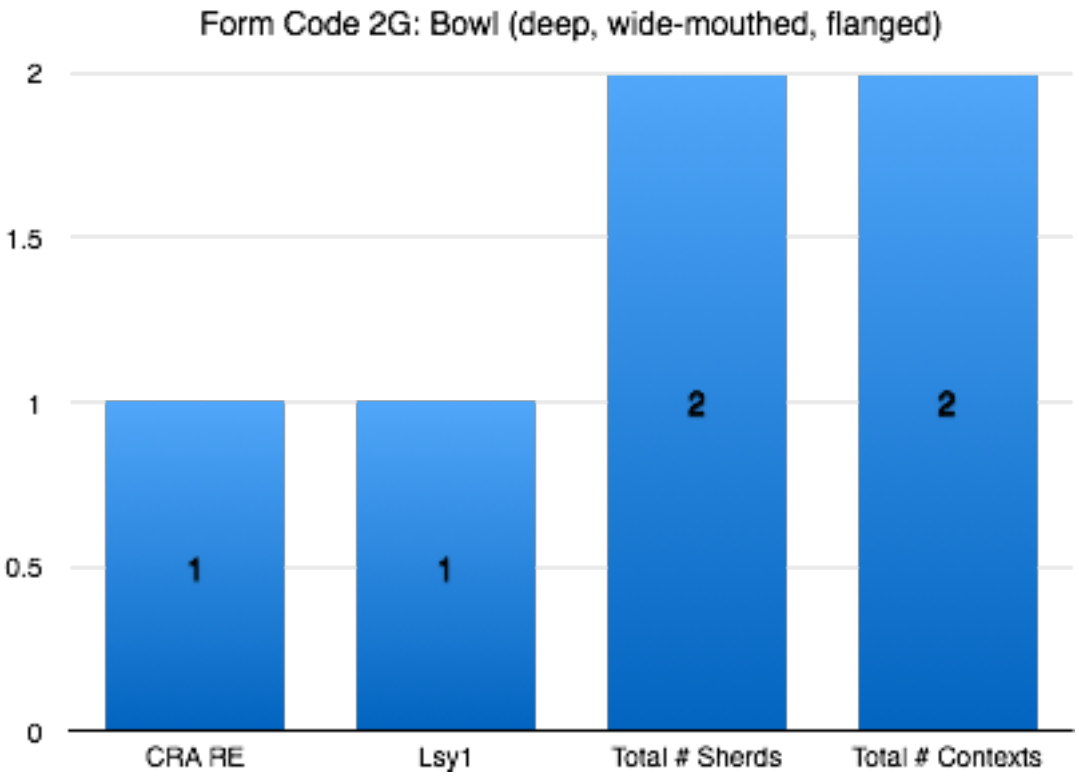
Graph 6: Form Code 2D Bowl (deep, wide-mouthed)



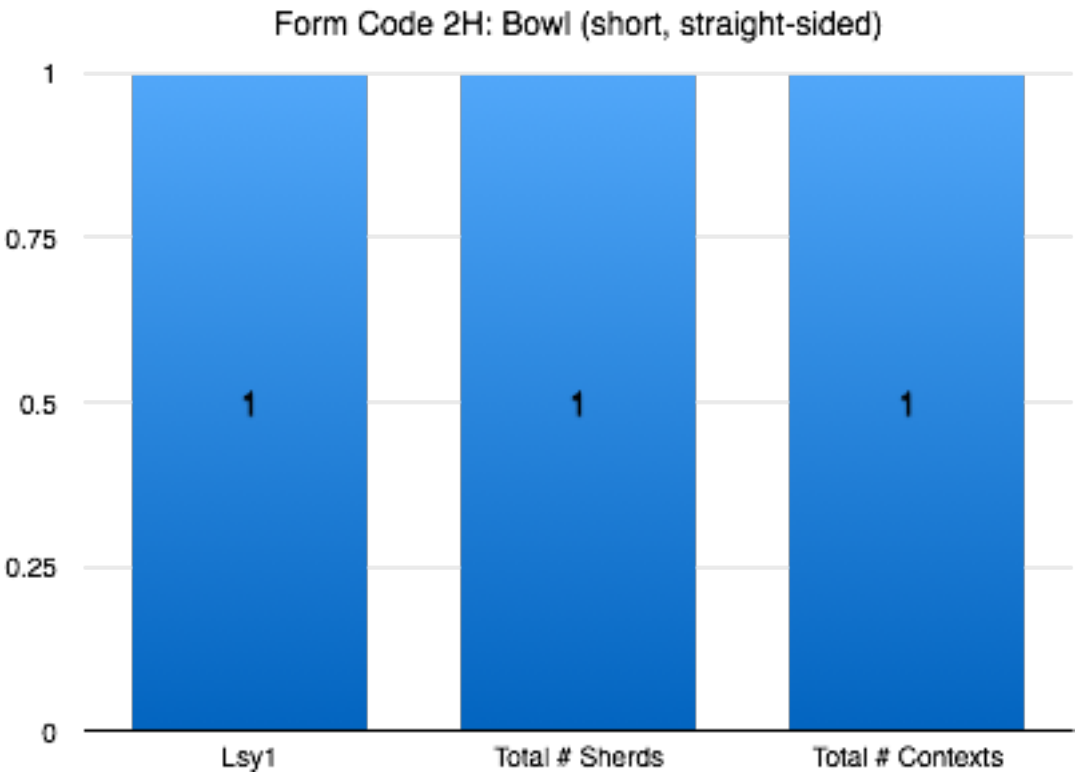
Graph 7: Form Code 2E Bowl



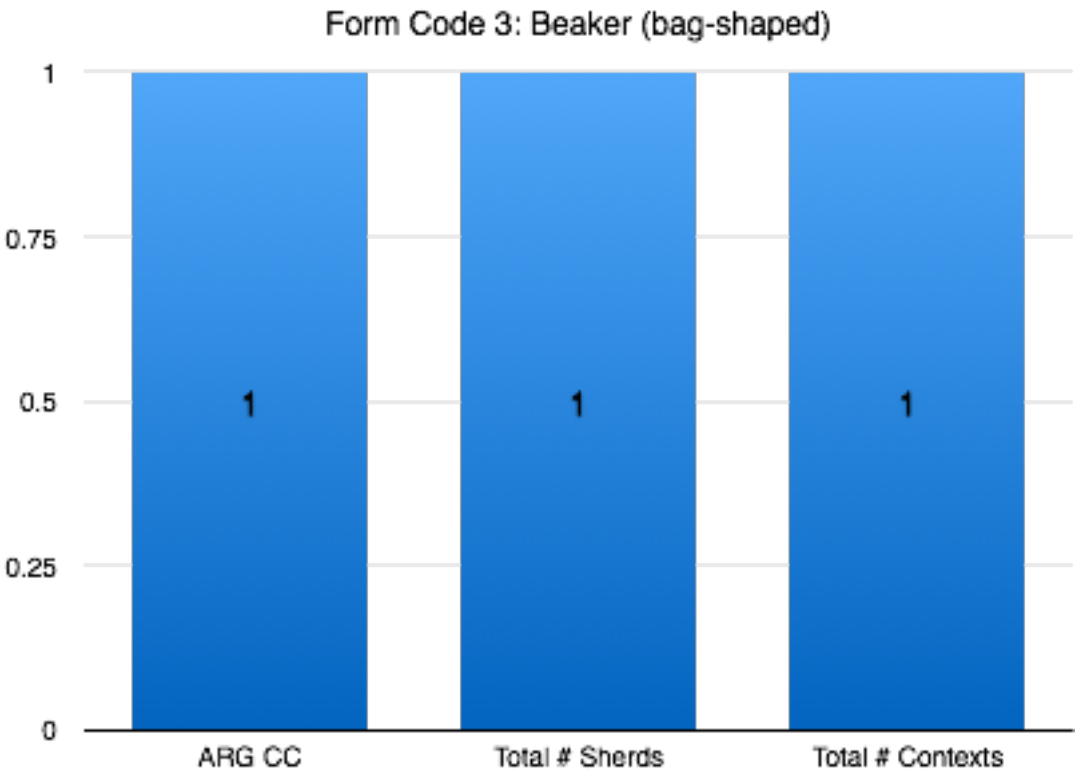
Graph 8: Form Code 2F Bowl (straight-sided, flanged)



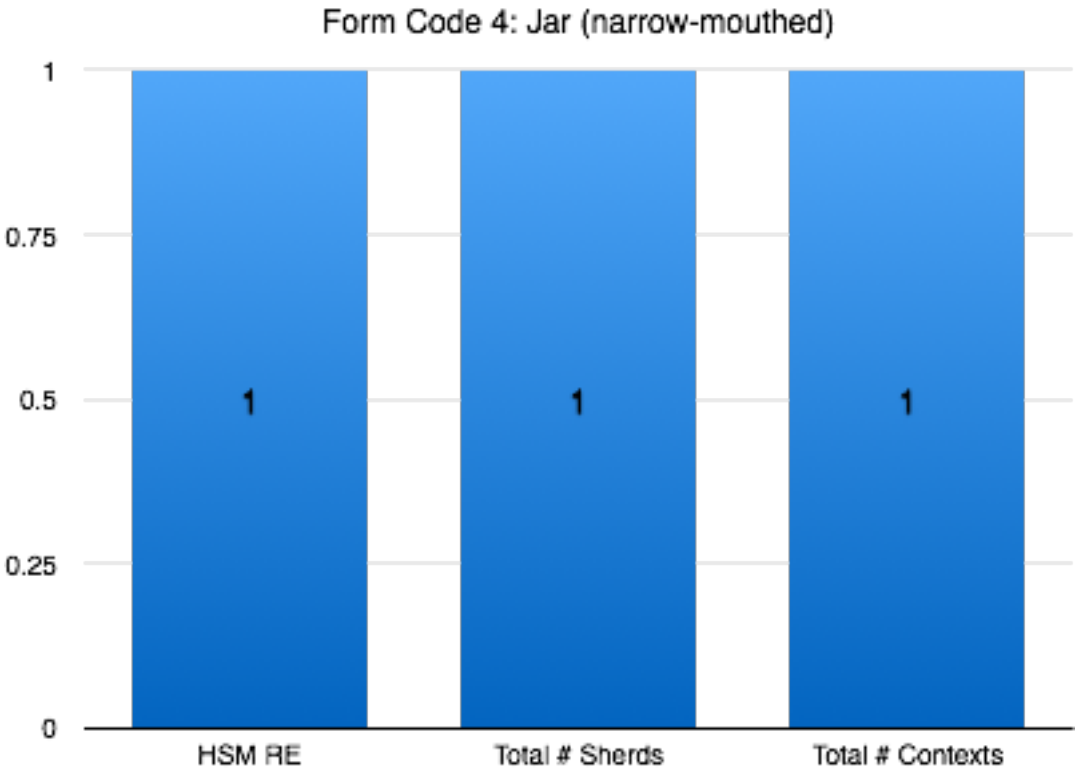
Graph 9: Form Code 2G Bowl (deep, wide-mouthed, flanged)



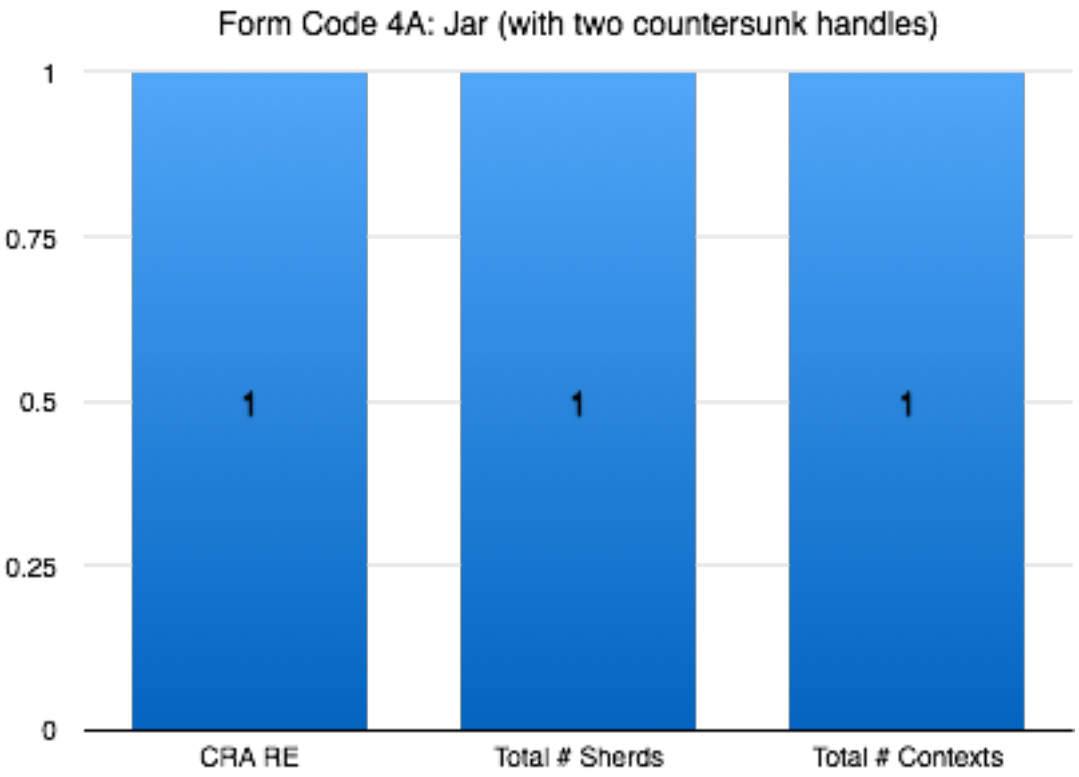
Graph 10: Form Code 2H Bowl (short, straight-sided)



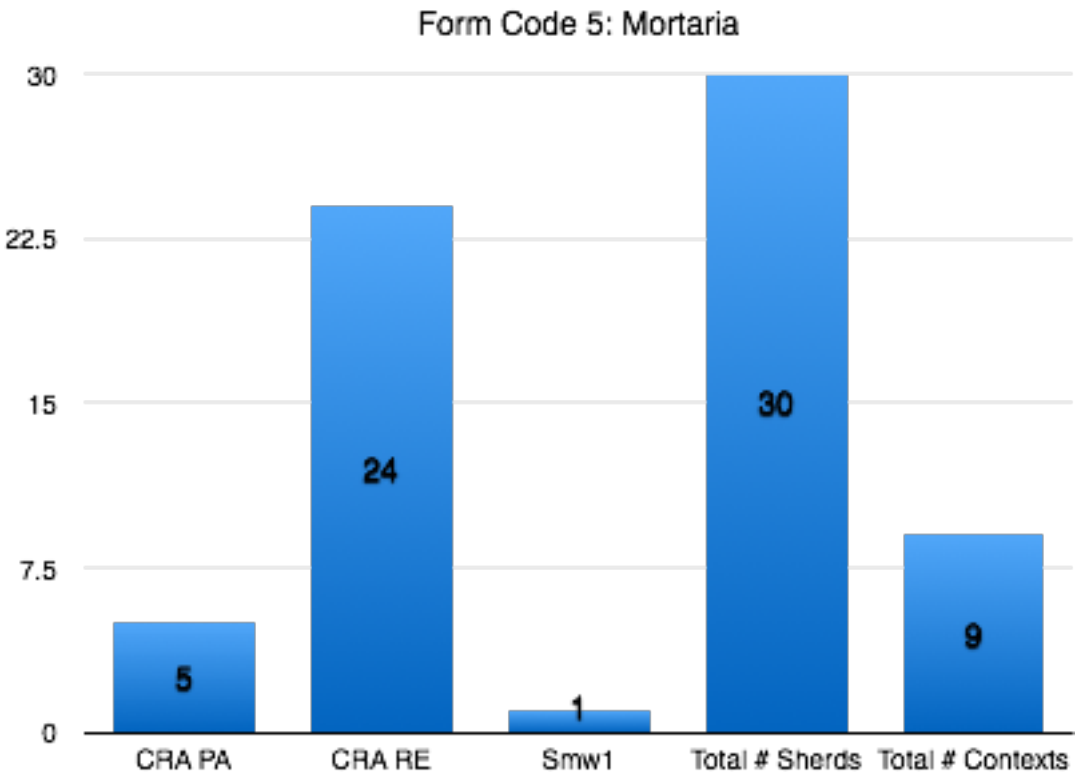
Graph 11: Form Code 3 Beaker (bag-shaped)



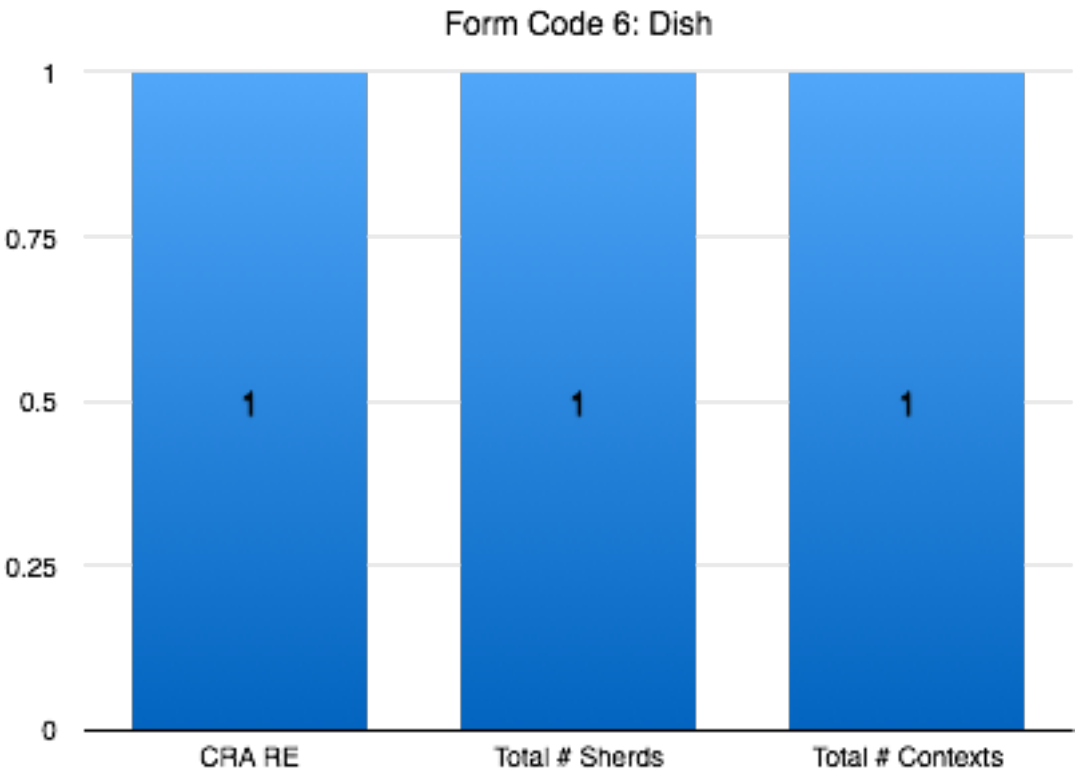
Graph 12: Form Code 4 Jar (narrow-mouthed)



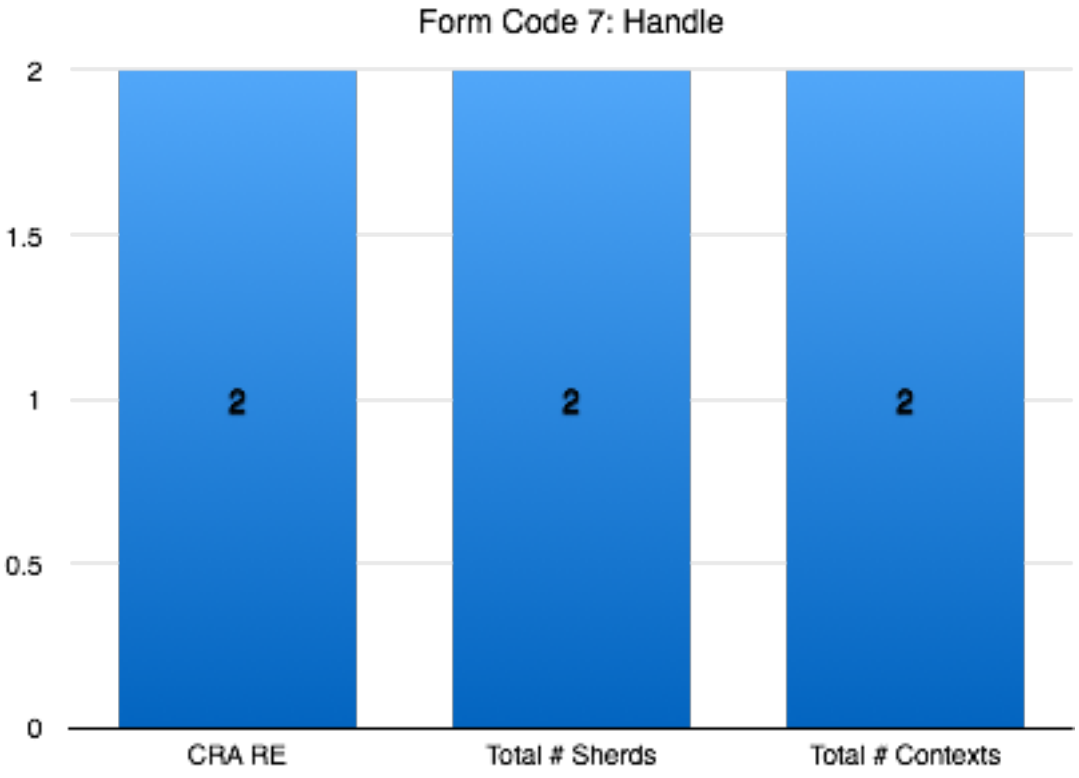
Graph 13: Form Code 4A Jar (with two countersunk handles)



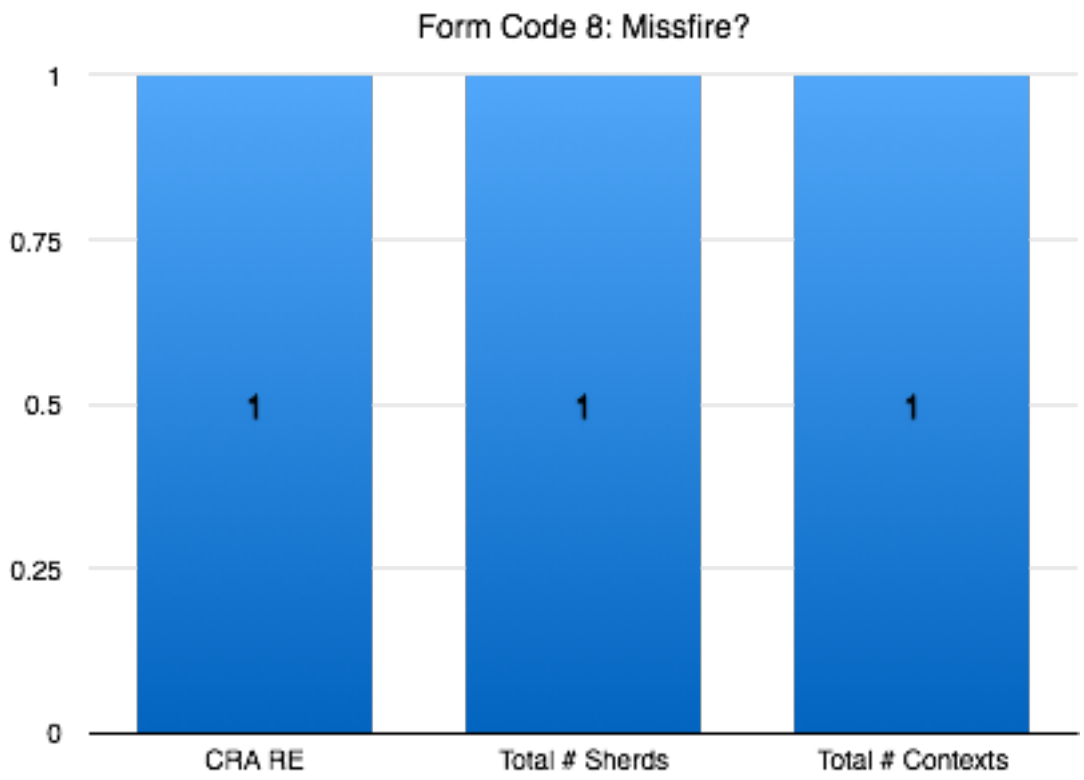
Graph 14: Form Code 5 Mortaria



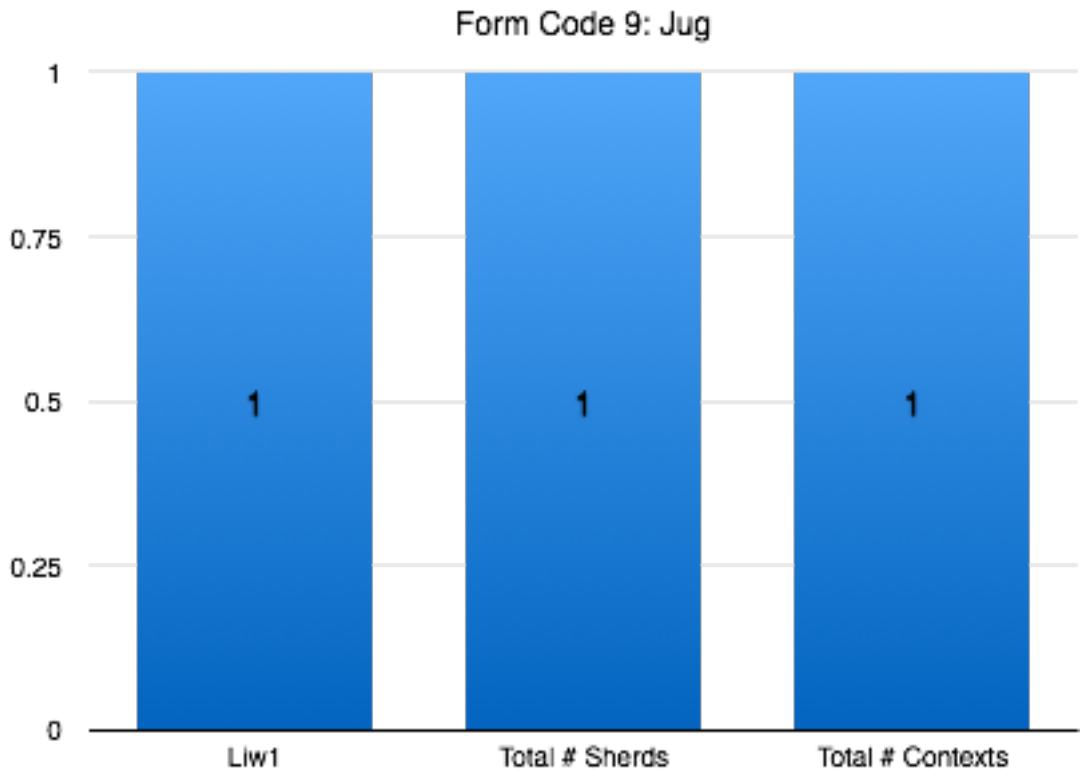
Graph 15: Form Code 6 Dish



Graph 16: Form Code 7 Handle



Graph 17: Form Code 8 Missfire?



Graph 18: Form Code 9 Jug

The forms themselves are those that would be expected on a Crambeck production site. If they are not common forms of Crambeck ware then they are all functional types that would most likely have been used to help the potters in their craft. Of the 171 sherds displaying form, 117 of these were Crambeck ware (CRA PA 28, CRA RE 89). Of the Crambeck ware identified, 83 of them were of a bowl form (FC 2-2H). Of all the Crambeck forms present, CRA RE was the most prevalent with a total of 89 sherds of identifiable form. None of the Crambeck forms present represented a new addition to the typology of the ware. One interesting point to note regards that of mortaria. It is said that this form of Crambeck ware is almost entirely exclusive to the parchment ware. However, of the sherds identified in this assemblage 24 of them were CRA RE mortaria with just 5 of CRA PA. Many of the CRA RE mortaria were rims with a section of body attached. There were also some conjoining body pieces.

Of the total number of sherds with recognisable form, 131 were identified as bowls of varying types. Of these 63.36% (83sherds) were of Crambeck ware, 60 of them CRA RE (45.8% of identified bowl sherds). It is possible to extrapolate from this that the site produced a large quantity of bowls in the Crambeck Reduced ware. A total of 37 Crambeck ware sherds identified as bowls were recovered from the topsoil (1220), subsoil (1221), and collapse (1222) layers in and around the kiln. Other forms in Crambeck fabrics recovered from these layers include mortaria (CRA PA 1 sherd, CRA RE 4 sherds) and a possible misfired sherd of CRA RE from the collapse layer (1222).

6. Decoration

Decoration was present on 79 sherds of 13 different wares. The majority of this decoration consists of indented lines in linear patters and all of it was on the exterior of the vessels. Of the unknown wares on which decoration was present, 7 of them displayed a single indented horizontal line, all of which came from topsoil/subsoil contexts across the site. Two other unknown wares displayed more interesting forms of decoration. A fragment of Lsw2 of unidentified form had the possible imprint of some sort of natural fibre (e.g. rope) on part of it's exterior. The exterior of a fragment of a similar ware, Lsw4, was divided by a wavy line, one half being dark grey burnish and the other beige fabric. It is unclear whether this is deliberate decoration or signs of misfiring.

Decoration, in the form of a single indented horizontal line was also present on HGB SA (1 sherd), HSM RE (3 sherds), and LNV CC (1 sherd). All of these sherds also had recognisable forms, beings bowls of varying types and a single example of a jar (HSM RE). Again all of these sherds were recovered from subsoil contexts across the site.

A total of 10 sherds of CRA PA displayed decoration – 9 bowls of varying sort, and 1 mortarium. The decoration in these instances consisted of either a single/double horizontal indented line on top of the flange or a single indented horizontal line below the rim. All of the sherds once again, were recovered from topsoil/subsoil/ploughsoil contexts of modern date across the site. Unfortunately no examples of this ware were recovered displaying the characteristic red slipped style of decoration.

A total of 55 sherds of CRA RE displayed decoration – 17 bowls of varying sort, 3 mortaria, 1 handle, and 33 of unidentifiable form. Once again nearly all of the sherds were recovered from topsoil/subsoil contexts across the site, with a few exceptions. A sherd of a type 2C bowl with a double horizontal indented line on top of the flange and as well as a number of sherds of unidentifiable form were recovered from the collapse layer (1222) above the kiln. It is unclear if the decoration on some of the latter was deliberate or was the result of misfiring.

The decoration present on the sherds of CRA RE is all either possible misfire, or linear patters consisting of one, two or three indented lines. There are some other forms of linear decoration present in this ware as depicted below.

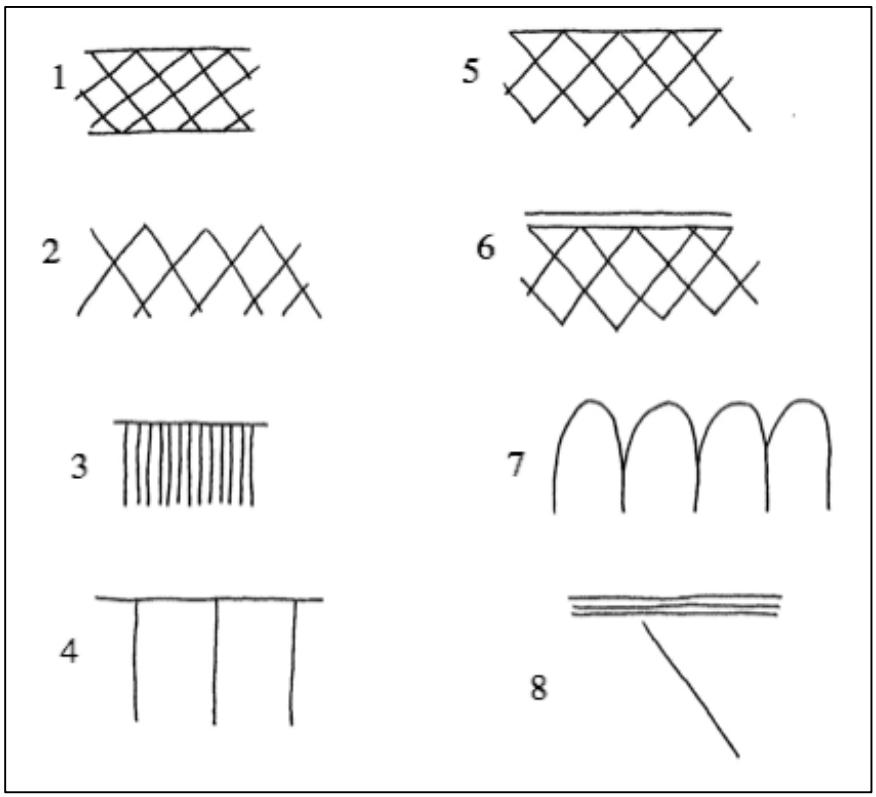


Fig. 1: Assorted designs identified on sherds of CRA RE.

Key
1: Slipped cross hatched design between two single horizontal lines.
2: Cross hatch design both wide and narrow and either in a dark grey slip or indented.
3: Several closely spaced vertical lines descending from a single horizontal line. All indented.
4: Single horizontal line with widely space vertical lines descending. All indented.
5: Indented cross hatch design under a single horizontal line.
6: Indented cross hatch design under a double horizontal line.
7: A curvilinear design in a mid grey slip.
8: Triple horizontal lines with a single diagonal line underneath. All in a dark grey slip.

One interesting point to note here is that 36 of the sherds of CRA RE displaying decoration came from the kiln contexts, topsoil (1220), subsoil (1221), and collapse layer (1222). A total of 7 were bowls of varying forms and 29 of indeterminate form.

7. Notable Aspects

There are two aspects of this assemblage that deserve special mention. First is the presence of a ware labelled Lsy1, the second is the distribution of the pottery recovered in relation to the Iron Age defensive ditch and bank system.

7.1 Lsy1

This ware is a coarse reduced fabric with regular limestone and quartz inclusions. It is handmade and none of the sherds present show any signs of decoration, slip, or burnish. Many of the sherds are very porous with regular holes in the surface and within the fabric that can range from 0.02mm to 0.10mm across. These appear to have been cause by blown limestone inclusions. It is a lightweight fabric and can have a soapy feel to the surfaces. There are a total of 62 sherds (3.84% of total assemblage) weighing 587.1g (4.7%). The

tables below show the sherds by context as well as by form and EVE.

Context #	Total # Sherds	Total Weight (g)	Context Description	Date of Context
(1001)	1	2.2	Topsoil	Modern
(1002)	7	67.4	Subsoil	Modern
(1003)	1	5.1	Natural	
(1007)	13	119.3	Tertiary fill of E-W defensive ditch [1009]	Roman
(1014)	2	40.8	Secondary fill of E-W defensive ditch [1009]	L IA – E Roman
(1016)	2	8.9	Primary fill of E-W defensive ditch [1009]	L IA – E Roman
(1104)	1	57.0	Secondary fill of SW-NE ditch [1005]	Post-Medieval
(1106)	9	28.8	Primary fill of SW-NE ditch [1005]	Post-Medieval
(1202)	5	34.1	Subsoil	Modern
(1220)	1	18.2	Topsoil	Modern
(1221)	5	92.5	Subsoil	Modern
(1222)	9	82.5	Kiln collapse	Roman – Post-Roman
(1302)	4	22.7	Subsoil	Modern
(1303)	1	4.5	Subsoil	Modern
(1308)	1	3.1	Secondary fill of E-W defensive ditch [1009], same as (1014)	L IA – E Roman

Table 2: The sherds of Lsy1 by context, with the date and description of each feature.

Form Code	Form Description	Context #	Total # Sherds
2E	Bowl	(1221)	2
2E	Bowl	(1222)	1
2G	Bowl (deep, wide-mouthed, flanged)	(1104)	1
2H	Bowl (short, straight-sided)	(1007)	1

Table 3: The forms present of Lsy1, their contexts and their descriptions.

Context #	Rim %	Base %	EVE
(1002)	5	0	0.05
(1007)	2.5	5	0.07
(1007)	3.5	0	0.03
(1104)	9.5	0	0.09
(1202)	7.5	0	0.07
TOTAL	**0.25**	**0.05**	**0.31**

Table 4: The EVEs present for Lsy1.

Of the Roman fabrics present, Lsy1 is the fourth most numerous in terms of sherds, behind CRA RE (928), CRA PA (HSM RE) and HSM RE (102). It is also completely different from any of the other wares found on site. They are all either known wares or unknown wares made one a wheel and to a high standard. Lsy1 is not only handmade but it is also of much poorer quality than anything else found on site. It is distributed over most of the site although there is less of it in the western half. It is most numerous in the fills of the Iron Age defensive ditch, particularly in the eastern most section excavated, as well as the topsoil and subsoil layers above the fills. The eastern most section excavated of the tertiary fill (1007) of the E-W ditch [1009] contained the highest concentration of sherds (13) weighing 119.3g. Looking solely at its presence in these ditch fills it could be suggested that it is a late Iron Age or early Roman ware. However, 15 sherds were recovered from the kiln collapse layer and the topsoil/subsoil layers above it. This context is most certainly of late Roman – post-Roman date and thus contradicts the previous statement.

Lsy1 was also present in the cremation burial inserted into (1007). This burial contained two vessels, one of Crambeck Reduced ware, the other of Lsy1. Unfortunately, this was only partially excavated and the complete vessels were not recovered. Much more cannot be said about the presence of this ware in the burial without the retrieval of the remainder of the context. As the report on the cremation burial states, it is clear this feature if of third-fourth century date.

The Lsy1 fabric is very similar to Huntcliffe Calcite Gritted Ware (HUN CG). However, given its very porous nature a definite identification of this ware as HUN CG could not be

confirmed. It is possible that Lsy1 is in fact HUN CG but some process has taken place over time that has resulted in the degrading of the inclusions thus creating the porous effect. It is referred to separately throughout the course of this report as the identification could not be confirmed. Further investigation would be beneficial here to either confirm or deny the HUN CG identification.

7.2 Distribution of Sherds in Relation to the Iron Age Defences

The distribution of the sherds recovered is not even across the site. There is a concentration in the centre of the site, particularly in the area surrounding the kiln and closer to the old quarry edge. The maps below demonstrate the distribution of all roman sherds, as well as CRA RE, CRA PA and Lsy1 individually, in relation to the known features on the site. It is possible to suggest that the Roman pottery production activity was concentrated towards the top, centre of the hill at Jamie's Craggs.

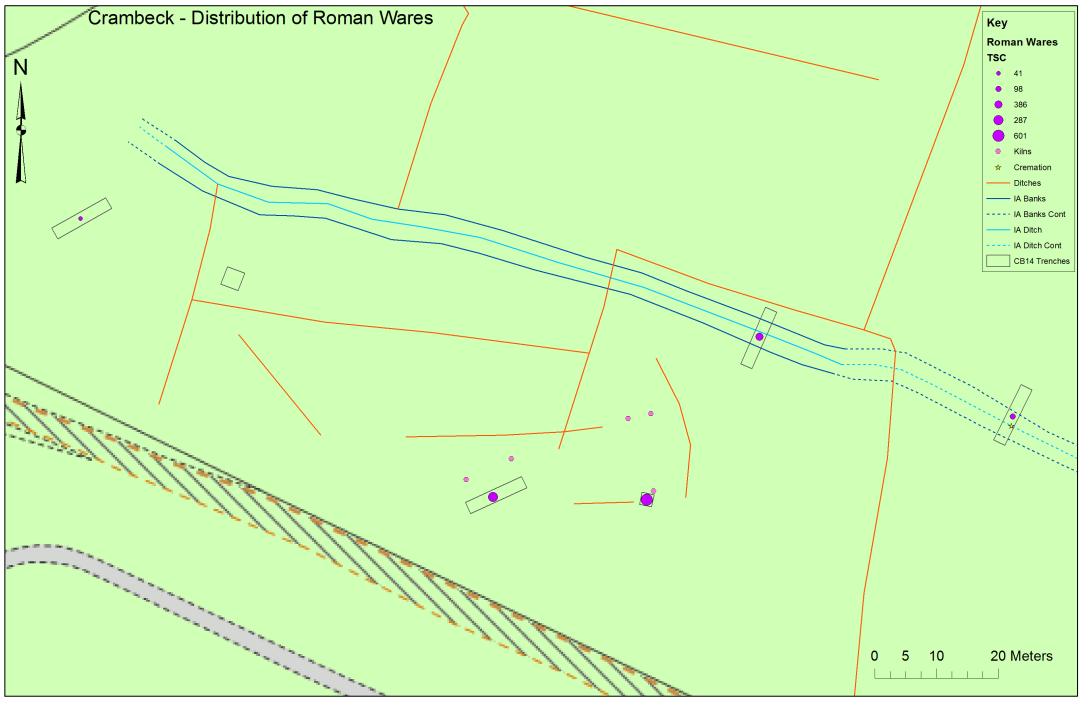


Fig 2: The distribution of all Roman wares by sherd count in relation to the known features on the site.

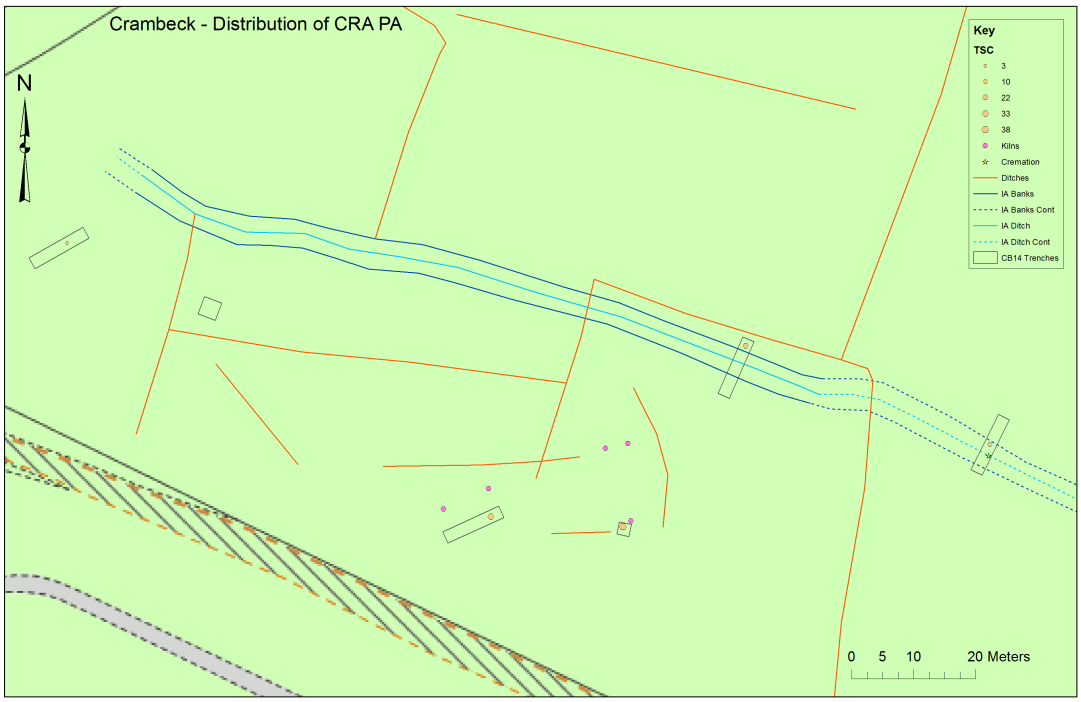


Fig. 3: The distribution of Crambeck Parchment ware by sherd count in relation to the known features on the site.

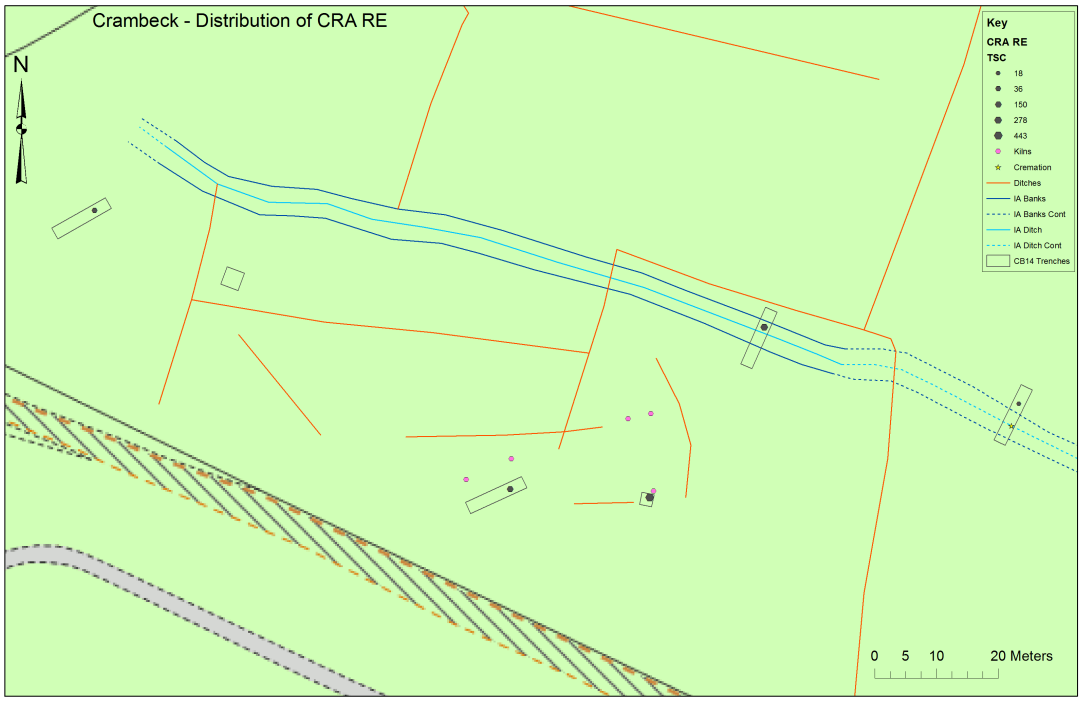


Fig. 4: The distribution of Crambeck Reduced ware by sherd count in relation to the known features on the site.

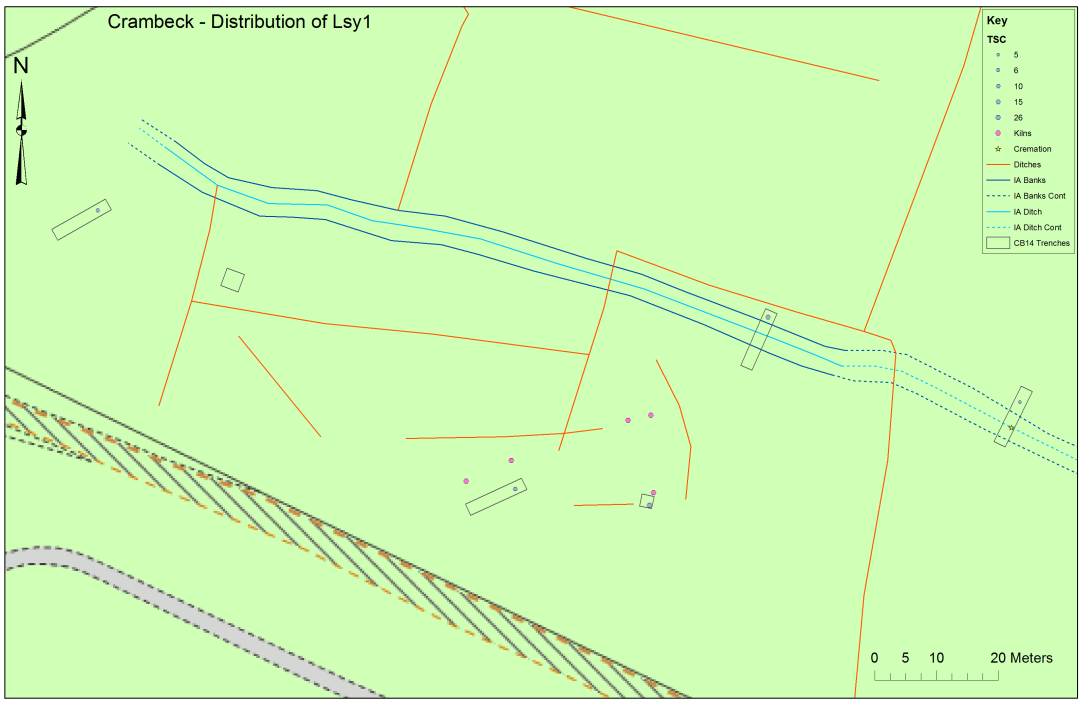


Fig. 5: The distribution of Lsy1 by sherd count in relation to the known features on the site.

8. The Kiln Assemblage

A trench was placed over a response on the geophysics that was thought to be a kiln. This indeed was the case. Only the topsoil and subsoil were excavated with the other features being assigned context numbers but being left in-situ. Some sherds were recovered from the kiln collapse (1222) in the process of cleaning this feature. A total of 610 sherds were recovered, 37.82% of the total assemblage; weighing 4254g, 34.03% of the total assemblage. A total of 34 separate wares were identified as well as sherds of medieval, post-medieval and modern date. Of these wares 2 were Crambeck wares, 4 were known wares, 7 were unknown oxidised wares, 19 were unknown reduced wares, 1 was Lsy1, and 1 was an unknown grog tempered ware. The table below shows the total sherd count and weight for the known wares and Lsy1 recovered from the three contexts, including both Crambeck wares.

Ware	(1220) Topsoil		(1221) Subsoil		(1222) Kiln collapse		Total by Ware	
	TSC	Weight (g)	TSC	Weight (g)	TSC	Weight (g)	TSC	W(g)
CRA PA	3	10.6	26	261.3	9	149.7	38	421.6
CRA RE	32	244.1	251	1166.1	160	1490.3	443	2900.5
ARG CC	0	0	1	3.2	0	0	1	3.2
EBO WS	0	0	0	0	1	6.8	1	6.8
HGB SA	0	0	1	5.3	0	0	1	5.3
HSM RE	2	8.6	37	272.5	0	0	39	281.1
Lsy1	1	18.2	5	92.5	9	82.5	15	193.2
WIL OX	0	0	3	49.8	1	5.1	4	54.9
							TSC	**TW(g)**
Total by Context	38	281.5	324	1850.7	180	1734.4	**542**	**3866.6**

Table 5: The TSC and weight for each known ware, including CRA PA, CRA RE and Lsy1, recovered from the kiln contexts. The TSC and total weight of these sherds recovered from the trench are in bold.

The vast majority of sherds recovered from these contexts were Crambeck Reduced ware, a total of 443 sherds weighing 2900.5g. It would be plausible to suggest therefore that this kiln focused on producing this ware rather than the other Crambeck types. It is interesting to note that five out of the nine named wares recovered from the site are found in these contexts. This includes the only sherd of Samian to be recovered. Although, that said the Samian sherd came from the subsoil context so it could be pure coincidence that it was found in the layer directly above the kiln. The same can be said for the single sherd of Argonne Colour Coated ware. Those sherds recovered from the topsoil and susbsoil will have been removed from their original context by processes such as agricultural activity. However, those sherds recovered through the cleaning of the top of the collapse layer were still in their original context. Given that this collapse layer was simply cleaned rather than excavated, it stands to reason that there will be many more sherds within the kiln contexts themselves compared to the topsoil and subsoil. Given that several hundred were recovered from the topsoil and subsoil, that equates to the possibility of several more hundred in the kiln itself. Alternatively, the kiln may be empty, although this is extremely unlikely.

A number of forms were identifiable in the assemblage recovered from the vicinity of the kiln. The table below identifies the total number of sherds for each form present across the three contexts.

Form + Codes	TSC
Bowl (2, 2A-2H)	48
Mortaria (5)	5
Beaker (3)	1
Jar (4/4A)	2
Missfire? (8)	1
Jug (9)	1
Handle (7)	1

Table 6: The total sherd count for each of the forms present in the kiln assemblage.

The bowls are by far the most numerous form in the assemblage – this fits with the excavation assemblage as a whole. Of the bowls identified, 37 were of Crambeck ware, 30 of them CRA RE. This suggests that not only did the kiln, at least at the time of abandonment, focus on producing Crambeck Reduced ware, it seems to have specialised in producing bowls in this ware.

The total EVE for the kiln assemblage is 5.03, 34.10% of the total EVE for the excavation assemblage. Perhaps unsurprisingly, the ware with the largest EVE within the kiln assemblage is CRA RE (3.25); followed by HSM RE (0.72) and CRA PA (0.7). This again supports the suggestion that the kiln focused on the production of Crambeck Reduced ware.

The kiln is clearly contemporary with the production of Crambeck Ware pottery and as stated, appears to have focused on the production of the Reduced ware in particular. However, there are a handfull of sherds recovered, primarily from the subsoil, but also present in the topsoil and collapse layers, that are of earlier date. The table below shows the wares, the TSC for each, and the established date range for the ware.

Ware	Date Range	TSC
ARG CC	201-300AD	1
EBO WS	101-200AD	1
HGB SA	101-250AD	1
HSM RE	43-410AD	39
WIL OX	43-410AD	4

Table 7: The early wares present in the kiln assemblage.

The earliest wares, EBO WS and HGB SA could well be residual. It is of interest to note that the sherd of EBO WS was recovered from the kiln collapse layer suggesting its deposition was contemporary with the kiln. The sherd of ARG CC ware may be contemporary with the early stages of Crambeck production, which is thought to have begun

in the late third century. However, even if that is the case then by the time the kiln went out of use the sherd (or vessel it belonged to) could have been around 100years old and therefore an heirloom piece. This is impossible to confirm or deny unless the remainder of the vessel is found in a secure and datable context. The HSM RE and WIL OX sherds are most likely to be contemporary with the production activity at the site but given their unspecified date ranges it is impossible to say whether they vessels they belonged to were in use at the beginning, middle, or end of Crambeck production at the site. That said, their presence is not as surprising as the other early wares, especially in the case of HSM RE, which is widely accepted as contemporary with Crambeck wares.

9. Datable Contexts

A total of 12 contexts could be dated on the basis of the pottery contained within them. The table below lists those contexts, giving a description of each, and the TSC of each ware recovered.

Context #	Description	Wares Recovered	TSC	TSC by Context	Date of Context	Comments
1007	Tertiary fill of E-W ditch [1009]	CRA RE	5	**23**	**Late Roman**	This probably formed during the second half of the Roman period, possibly aided, in places, by dumps of broken Crambeck pottery.
		HSM RE	1			
		HUN CG	3			
		Lbw3	1			
		Lsy1	13			
1014	Secondary fill of E-W ditch [1009]	Lsy1	2	**2**	**Late Iron Age / Early Roman**	It is not known precisely when this layer formed but it is likely it took place sometime between when the promontory fort fell out of use and beginning of pottery production.
1016	Primary fill of E-W ditch [1009]	HUN CG	1	**3**	**Late Iron Age / Early Roman**	It is not known precisely when this layer formed but it is likely it took place sometime between when the promontory fort fell out of use and beginning of pottery production.
		Lsy1	2			
1104	Secondary fill of SW-NE ditch [1105]	Lsy1	1	**2**	**Post-medieval**	The Roman sherds appear to be residual, most likely disturbed by ploughing
		Sy1	1			
1106	Primary fill of SW-NE ditch [1105]	PNK GT	1	**10**	**Post-medieval**	The Roman sherds appear to be residual, most likely disturbed by ploughing

		Lsy1	9			
1204	Unidentified grey feature	CRA PA	1	**6**	**Unknown, likely to be Roman**	The nature of this feature is unknown and its date cannot be securely stated. However, based on the pottery it could be Roman.
		CRA RE	5			
1208	Fill of a possible N-S ditch [1207]	CRA RE	4	**4**	**Unknown, could be Roman**	The nature of this feature is unknown and its date cannot be securely stated. However, based on the pottery it could be Roman.
1222	Kiln Collapse	CRA PA	9	**184**	**Late Roman**	The collapse of the top of this kiln will have occurred after the kiln itself when out of use. This is likely to have been in the later Roman period or in the early fifth century
		CRA RE	160			
		EBO WS	1			
		WIL OX	1			
		Xw1 (oxidised)	1			
		Liw1	1			
		Lsy1	9			
		Slw3	1			
		Sw4	1			
1305	South bank (same as 1010)	CRA RE	1	**1**	**Iron Age**	Construction of this bank was during the Iron Age and it is possible that it was repaired sometime during the Roman period. However it is more likely that the few Roman sherds are simply intrusive.
1306	North bank (same as 1006)	CRA PA	1	**5**	**Iron Age**	Construction of this bank was during the Iron Age and it is possible that it was repaired sometime during the Roman period. However it is more likely that the few Roman sherds are simply intrusive.
		CRA RE	4			
1307	Tertiary fill of E-W ditch [1009] (same as 1007)	CRA RE	2	**2**	**Late Roman**	This probably formed during the second half of the Roman period, possibly aided, in places, by dumps of broken Crambeck pottery.
1308	Secondary fill of E-W ditch [1009] (same as 1014)	PNK GT	1	**3**	**Late Iron Age / Early Roman**	It is not known precisely when this layer formed but it is likely it took place sometime between when the promontory fort fell out of use and beginning of pottery production.
		Lsy1	1			
		Lw2	1			

Table 8: The dateable contexts, a description, and the total sherd count of the wares recovered from each.

The majority of datable contexts are contemporary with the Roman pottery activity at the site. The inclusion of Roman sherds in contexts that aren't can be confidently explained as intrusive, this is most likely to have been caused by interventions such as agricultural processes.

10. Discussion

This section will examine certain aspects of the assemblage and discuss its relevance to and impact on the interpretation of features present at the site.

The chronology of the assemblage is fairly consistent. The majority of sherds have either a broad Roman date ($_c$43 – $_c$410AD) or are confined to the third or fourth centuries. All these wares are contemporary with Crambeck ware and its production and have a known distribution in the Yorkshire region. There are some exceptions to this general dating of the assemblage. LNV CC and OXF WS both date to $_c$100 – $_c$400AD; SOW BB1 and CNG BS to $_c$101 – $_c$300AD; HGB SA has the earliest date range of $_c$100 – $_c$200AD; and ARG CC to $_c$210 – $_c$300AD. With the exception of HGB SA, all of these wares are either contemporary to Crambeck ware, although with an earlier production start date, or their production is confined to the period immediately prior to the production of Crambeck ware. These sherds then, are either from vessels produced towards the end of their production period or are residual from an earlier phase of activity (be that at this site or from elsewhere and passed on). The presence of the decidedly second century HGB SA is usual. Although there was only 1 small sherd of this ware, it is likely that this is residual from an earlier phase of activity in the surrounding landscape. It was recovered from a subsoil context (1221) and therefore may not be from features relating to the production of Crambeck ware. Unfortunately it is impossible to know. The first excavation of the site in the 1920s did reveal some sherds of Samian ware (Corder 1989, 2-24), and there may be an earlier phase of Roman activity yet to be identified at this site.

The presence of SOW BB1 sherds is very unusual, given its production and distribution is confined almost solely to the Devon / Cornwall areas. In terms of chronology, this ware may overlap with the beginning of production of Crambeck ware. If these sherds are indeed of SOW BB1 (and they would benefit from the attentions of a specialist with vast experience of this material) then it is possible that they were brought to site by an individual travelling from one of the known distribution areas, e.g. the Devon / Cornwall area or from the Antonine and/or Hadrianic Walls, given that Crambeck is so far out of the known distribution area for the area. The presence of these two sherds does not suggest that SOW

BB1 was ever distributed to the area in the usual manner. It is more likely that the vessels/s were purchased within one of the distribution areas and brought to the Crambeck site.

The presence of Lsy1 has been discussed in detail above. However, it is perhaps prudent to highlight again how out of character this ware is when compared to the rest of the assemblage. It is possible that this is representative of a post-Crambeck production phase at the site, or of the decline period of the ware. The poor quality fabric and handmade nature of this ware suggests that it was produced in the later fourth century or in the fifth century. It was revered from a context containing glass and worked jet beads dating from the 3rd – 4th centuries and therefore is unlikely to be any earlier than this. These sherds would certainly benefit from further analysis to answer some of these crucial questions. This would also confirm or deny the potential identification of this ware as HUN CG.

Given that a large number of sherds were deposited in the area to the south of the kiln both in and around a section of the Iron Age defensive ditch, this area may have been used as a bump for broken and misfired pottery. The same can be said for the area immediately to the west of the kiln. A large number of Crambeck sherds were recovered from the top and subsoils. Given the lack of features in this area it is possible that agricultural processes have disturbed a dump.

11. Future Research

The assemblage would benefit from further analysis of the unidentified wares. This could shed light on whether they were made locally or are imported from elsewhere in Britain or the Roman Empire. The Lsy1 sherds in particular would benefit from closer study. This could shed light on the ware and whether it is contemporary with the production of Crambeck ware and if they are in fact Huntcliffe Calcite Gritted ware. Furthermore, a second opinion on some of the early known wares, such as EBO WS, HGB SA and ARG CC would be beneficial. This would be especially useful in confirming or contradicting the presence of SOW BB1 in the assemblage- given that the site location is so far away from the known distribution of this ware. Lastly, excavation of the kiln and any contents remaining in the furnace could confirm the suggestions made here that, certainly towards the end of its lifespan, the kiln focused on the production of Crambeck Reduced ware bowls

12. Summary

The contents of this assemblage is unsurprising given nature of the site. There are clearly some aspects that warrant further investigations as discussed above. The assemblage is representative of part of a Crambeck production site but also contains hints of earlier Roman

occupation of the site or in the surrounding landscape. Comparison of this assemblage to that recovered by Corder would be a worthwhile exercise, if the majority of Corder's material can be found. Further tot his, our understanding of the Crambeck site as a whole would benefit from the combining of the results from this most recent excavation with that of Corder in the 1920s therefore combining two halves of the same site.

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Appendix 8 Crambeck Archaeology Project

2014 Spring Season

Flint Report

Don Henson

University of York

FLINT REPORT: CRAMBECK 2014

51 flint pieces were presented for analysis. Of these, 29 are human artefacts and are analysed below.

Table 1: Summary of artefacts by trench and context

Trench	**Context**	**Artefacts**	**Natural**
1	1001	3	1
	1002	4	3
	1007	9	2
	1016	0	3
2	1102	0	1
3	1201	1	2
	1202	4	4
4	1301	2	1
	1302	2	1
	1307	1	1
5	1122	2	0
6	1220	0	1
	1221	0	2
Unstratified	n/a	1	0
TOTAL		**29**	**22**

Summary

The collection has the appearance of a random background scatter of largely unrelated flints. There are no chronologically diagnostic items, a range of raw materials was being knapped and knapping technology is varied.

Activity shows a preference for the manufacture and use of blades. Such activity could potentially date from any time during the Late Palaeolithic into the Neolithic. This cannot be narrowed down further without further artefactual evidence or diagnostic artefacts.

Information about each artefact is presented in the accompanying data set *Crambeck flint data 14.xls*.

Materials

Two kinds of flint were being used. Chalk flint, derived from the Lincolnshire or Yorkshire Wolds, is an opaque white-grey flint, often with coarse variations in texture (often referred to as 'inclusions'). This is a poor quality material, used where access to good quality flint is not possible or where it is locally available and is used expediently. Till flint is grey-dark grey translucent, sometimes with textural variation and sometimes very homogeneous. It is derived from the glacial tills in the east of northern England as a background scatter of eroded till deposits, in local rivers or along the east coast of Lincolnshire and Yorkshire. It is the flint of choice for much of prehistory in northern England.

The artefacts are broadly evenly split between the two types of flint. Few contexts are dominated by only one type, although the low numbers from each context make it hard to base any conclusions on this. Of the contexts with more than two artefacts, 1007 is mostly chalk flint while 1202 is mostly till flint. These may be of different dates or episodes of activity at different periods.

Knapping

There are three cores, all in chalk flint. None is the result of particularly skilled knapping. one is an exhausted core remnant, the others are simple one-platform cores that seem to represent opportunistic removal of flakes rather than deliberate production of a range of flakes or flakes for particular tools.

There is a preference for the manufacture of blades in till flint (five out of nine blades in till flint, three out of nine in chalk flint with one unidentifiable). Chalk flint use was mostly for flakes (9 flakes and three blades). The contrast should not however be pressed to far given the low number of artefacts.

Retouch and use damage

Only three artefacts have retouch.

Chalk flint flake (item 11), context 1007: a thick flake which may have had the proximal end retouched away

Till flint blade (item 18), context 1202: a possible end scraper on a badly formed blade

Till flint flake (item 24), context 1302: an irregular flake with scraping wear and an old snap off one side

Use damage is often hard to tell apart from later accidental damage, either during prehistory or more recent times. Nine artefacts show what may be ancient damage.

Damage along one edge of a flake

Till flint flake (item 1), context 1001

Chalk flint flake (item 2), context 1001

Till flint blade (item 8), context 1007

Till flint blade (item 19), context 1202

Chalk blade (item 29), unstratified

Damage along both edges

Chalk flint blade (item 5), context 1002: one edge blunted, other edge shallow

Damage at the distal end

Chalk flake (item 27), context 1122

The retouched items 11, 24 also show signs of damage.

In summary, five out of the nine blades show either retouch or damage. Only four out of the 17 flakes have retouch or damage.

Don Henson

27th October 2014

ID	Trench	Context	Material	Artefact	Type	L1	W1	T1	L2	PC	SC	Condition	Retouch	Damage	Burnt	Notes
1	1	1001	Till	Flake	Secondary	47	40	7	50	yes	no	whole	no	yes	no	one edge
2	1	1001	Chalk	Flake	Tertiary	28	24	8	30	no	no	whole	no	yes	no	one edge
3	1	1001	Till	Flake	Tertiary	15	16	6	21	no	no	whole	no	no	no	
4	1	1002	Till	Flake	Secondary	35	50	6	53	yes	no	whole	no	no	no	
5	1	1002	Chalk	Blade	Tertiary	27	15	7	27	no	no	proximal	no	yes	no	damage - one edge blunted, other edge shallow; small length of distal tip missing
6	1	1002	Till	Blade	Tertiary	27	20	3	27	no	yes	medial	no	no	no	thin, double ridged blade
7	1	1002	Chalk	Core	Irregular	26	22	16	29	no	no	whole	no	no	no	exhausted fragment of a core
8	1	1007	Till	Blade	Tertiary	32	16	5	32	no	no	whole	no	yes	no	one edge
9	1	1007	Chalk	Flake	Tertiary	17	27	10	33	no	no	proximal	no	no	no	
10	1	1007	Chalk	Blade	Tertiary	26	14	2	26	no	no	whole	no	no	no	one edge partially snapped
11	1	1007	Chalk	Flake	Secondary	25	28	11	28	yes	yes	whole	yes	yes	no	thick flake with proximal end retouched away?
12	1	1007	Chalk	Flake	Tertiary	19	19	11	23	no	no	whole	no	no	no	hinge fracture flake
13	1	1007	Chalk	Flake	Secondary	12	17	9	18	yes	no	whole	no	no	no	
14	1	1007	Chalk	Flake	Tertiary	19	12	6	22	no	no	medial	no	no	no	left side broken off
15	1	1007	Chalk	Flake	Tertiary	11	8	2	11	no	no	whole	no	no	no	
16	1	1007	Chalk	Flake	Tertiary	9	7	1	9	no	no	whole	no	no	no	
17	3	1201	Chalk	Core	One platform	44	61	23	61	no	no	whole	no	no	no	tabular block with one flake removed
18	3	1202	Till	Blade	Tertiary	32	17	9	35	no	no	whole	yes	no	no	possible end scraper on a badly formed blade
19	3	1202	Till	Blade	Tertiary	19	12	3	19	no	no	medial	no	yes	no	use damage along one edge
20	3	1202	Till	Flake	Secondary	19	18	10	20	yes	no	medial	no	no	yes	
21	3	1202	Burnt	Blade	Tertiary	20	15	5	20	no	no	proximal	no	no	yes	heavily whitened with edges burnt off
22	4	1301	Chalk	Core	One platform	28	47	30	47	yes	no	whole	no	no	no	irregular, opportunistic core
23	4	1301	Till	Blade	Tertiary	20	12	5	20	no	no	whole	no	no	no	
24	4	1302	Till	Flake	Tertiary	24	30	9	30	no	no	whole	yes	yes	no	irregular flake with scraping wear and old snap off one side
25	4	1302	Till	Flake	Tertiary	27	14	2	27	no	no	whole	no	no	no	
26	4	1307	Till	Flake	Tertiary	26	22	8	28	no	no	proximal	no	no	no	
27	5	1122	Chalk	Flake	Tertiary	35	32	3	38	no	no	distal	no	yes	no	small part of proximal end missing, damage at distal end
28	5	1122	Till	Flake	Tertiary	19	17	1	20	no	no	medial	no	no	no	both sides may be snapped off
29	unstr.	unstr.	Chalk	Blade	Tertiary	38	14	4	38	no	no	distal	no	yes	no	damage along one edge, may be original

Raw Material	Number	Definition
Chalk flint	15	Flint derived from the chalk deposits of the Lincolnshire or Yorkshire Wolds
Till flint	13	Flint derived from glacial tills and eroding into local rivers, along the east coast or within the landscape
Unknown	1	

Artefact	Number	Definition
Core	3	A nodule showing signs of having flakes detached from it
Flake	17	A piece detached from a core or from tools being made or reworked
Blade	9	A flake of regular manufacture with roughly parallel sides either side of a single or double longitudinal ridge

Type	Number	Definition
Primary	0	Flakes whose whole dorsal surface is primary cortex, represents the first stage of knapping from a nodule
Secondary	5	Flakes with partial dorsal primary cortex, indicates the presence of nodules or cores in the early stages of knapping
Tertiary	21	Flakes with no primary cortex

Retouched	3	Deliberate retouching of flake edges to produce particular shapes or edges
Damaged	9	Damage to edges of flakes during use or shortly afterwards (not including modern damage)

Condition	Number	Definition
Whole	18	Both ends and sides surviving
Proximal	4	A portion of a flake that still has the bulbar scar and point of knapping, or lacks the working end of the tool
Medial	5	A broken flake or tools lacking the 'top' and 'bottom' or both of its two sides
Distal	2	A portion of a flake that is missing its bulbar scar and point of knapping, or is the working end only of a tool

Flakes/Blades	Number	
Till flint flakes	0	
Till flint blades	0	
Chalk flint flakes	0	
Chalk flint blades	0	

Appendix 9 Crambeck Archaeology Project

2014 Spring Season Faunal Analysis

Erin Keenan (MA Hons)

and

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Figures

Figure 1 Fragment from Trench 1 displaying cut mark as indicated by the arrow.

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Overview

Faunal remains were found in Trenches 1, 2, 3, 4, and 6, with the greatest number of elements coming from Trench 1. Environmental processing and residual analysis resulted in the recovery of additional osteological material, all of which was highly fragmented and too small to identify to element or species. Preservation of the material was generally very poor, which likely relates to the site being located on limestone natural. As a result the bones are highly demineralised due to the leaching of mineral apatite as water passed through the soil and the limestone. This process left pieces of bone that show high levels of cortical bone degradation, are highly susceptible to fracture, and are chalky in nature. Unfortunately such poor preservation precluded many of these pieces from being confidently identified to element or species.

Bones that showed better preservation were largely from topsoil or plough soil contexts indicating they are likely modern in origin. This is supported by the presence of the skeletal remains of a sheep adjacent to Trench 1 which still had tufts of wool surrounding it.

A small amount of faunal material was recovered from within archaeological contexts in Trenches 2 and 3. These contexts, however, defied provisional interpretation beyond 'post-Roman' or 'post-medieval' by excavators, forcing the bones within them to also lack interpretation until or unless new evidence comes to light.

Faunal remains from Trench 1, and one element recovered from Trench 4, are therefore the only remains that were recovered from provisionally dated contexts, which are ascribed a provisional date range of mid-Iron Age to early Roman. Species identified within this date range are cattle (*Bos taurus*) and sheep (*Ovis aries*). Other elements have been tentatively identified as horse (*Equus caballus*) and caprine (sheep or goat (*Capra hircus*)). Many of the remaining fragments originate from medium to large mammals, while the remainder are too fragmented to speculate upon, even in the broadest sense.

What follows is an analysis of elements found within each trench using the University of York's faunal reference collection. All context information is obtained from trench reports.

Trench 1

Trench 1 (Table 1) contained the highest number of faunal remains, as well as the highest number of archaeological remains. All such remains were recovered from the fills of a large ditch measuring 3.5m across in an East-West orientation. It cut through the natural geology to a total depth of 1.3m. The southern slope of the ditch was at >45º angle, while the northern

slope was steeper at >90 º. Three phases of fill were identified within the ditch during excavation, all of which contained faunal material.

The first phase within the ditch, provisionally dated to the mid to late Iron Age, consisted of a light grey brown sandy-silt with limestone rubble which was hypothesised to have been collapse from adjacent banks. Identifiable faunal material from this deposit was mostly cattle. An adult proximal half of a left cattle radius and a left cattle ulna were identified. The ulna and radius do not appear to articulate, and the smaller size of the ulna suggests it may be juvenile. The epiphysis, however, was not present, precluding confirmation based on fusion or non-fusion. A fragment of cattle metacarpal was also identified.

More tentative identifications were made for a heavily degraded vertebral body of a large mammal—possibly also cattle—and what may be a mandibular fragment of a caprine. The remaining faunal remains are highly fragmented and preservation was so poor that no further identifications could be made.

Figure 1 Fragment from Trench 1 displaying cut mark as indicated by the red arrow.

One of these unidentifiable fragments—possibly from a rib—displays a cut mark (Figure 1). Microscopic inspection suggests that this mark is not a result of excavation. Given the high degree of cortical wear and weathering, the cut mark is remarkably prominent. This suggests the original cut into the bone was quite deep, indicating a very sharp metal cutting instrument.

No elements recovered from the secondary fill of the ditch, comprised of medium grey-brown sandy silt, could be confidently identified.

The latest phase had a dark grey brown sandy-silt fill with some limestone cobble inclusions. This deposit was provisionally dated to the late Iron Age / early Roman period based upon pottery sherds recovered. Eleven fragments of animal bone were recovered from this fill, two of which were confidently identified as originating from sheep. Both of these elements were mandibular teeth. The first, a third molar, showed little to no wear with a general lack of root formation, indicating the individual from which it originated was a juvenile with unerupted third molars. The second tooth, a second molar, also showed little wear and lack of root formation. It is possible these teeth originated from the same individual, though this cannot be confirmed.

Two other elements were tentatively identified, but it should be stressed that the poor preservation and erosion of the cortical surfaces of osteological fragments obscured skeletal markers that would allow a definitive identification. As such these two elements only represent possible identifications. The first of these appears to be a fragment of left horse tibia, and the second a fragment of right humerus from horse or cattle.

Inserted within this fill and the north bank of the ditch was a human cremation, which was analysed separately and is discussed in Appendix 11. The remaining faunal fragments from this context were not identifiable. Other finds from this fill were restricted to pieces of pre-Roman pottery and the deposit has been provisionally dated to the mid- to late Iron Age.

Root damage was visible on several of the faunal remains recovered from the first and final fills of the ditch. Given that the depth at which they were found is well beyond the reach of roots, this damage suggests that the material was discarded on the coeval topsoil and allowed to rest with little to no disturbance. The ditch itself was permitted to grow over for a period of time, leading to the root damage seen on the bones. The lack of root damage identified on fragments recovered from the secondary fill may indicate a period during which it was preferable to keep the ditch clean of overgrowth, rapid burial of the bones such that they were beyond the reach of the roots, or other disturbance which prevented root interaction with the bones.

Trench 2

Three elements were recovered from Trench 2 (Table 2): the distal portion of a right tibia from a rabbit (Leporidae), a cattle mandibular molar, and a caprine mandibular molar. The rabbit femur was recovered from the plough soil and is likely modern. Both molars have been shattered through post-excavation processes, and are poorly preserved in general, resulting in an inability to determine molar wear.

Both molars were recovered from the fill of a substantial ditch which measured 0.93m in depth and 1.2m in width. The ditch cuts through the uppermost layer of archaeology—which was provisionally interpreted as a post-medieval plough soil, or other agricultural levelling—and into natural. The cattle molar was recovered in the secondary fill of this ditch, which was a brown silty-sand with some clay and occasional gravel and cobble inclusions. The caprine molar was recovered from the primary fill of the ditch, which consisted of a brown silt-sand speckled with charcoal lumps. Datable evidence for these fills is scant, though the presence of post-medieval tile in the primary fill allows a broad post-medieval date to be applied to both fills.

Trench 3

The majority of finds from Trench 3 (Table 3) were recovered from the topsoil and subsoil, indicating they are likely modern in date. Identifiable topsoil elements include a vertebral epiphyseal plate from a large mammal, the dentine core of a premolar from a large mammal (possibly cattle but may also be horse), the third mandibular molar (m3) from a caprine, and a cattle deciduous fourth premolar (dp4). The caprine m3 was very heavily worn, exhibiting Grant (1982) wear stage g. The cattle dp4 was broken and dental attrition could not be assessed.

Identifiable plough soil elements include a cattle first maxillary molar (M1), a fragmented cattle tooth, and a highly fragmented petromastoid from a large mammal. The fragmented cattle tooth was too broken to permit much analysis. The petromastoid exhibited high mineralisation through calcite formation, which manifested as a greenish iridescent sheen. Such formation is in line with the limestone rich environment in which the assemblage was found.

Finally, a caprine maxillary molar was identified from a moderately compacted dark orange-brown deposit within a ditch that could not be interpreted, but that is speculated to relate to ploughing activity. If this is the case, the material, like the rest of the faunal assemblage from this trench, is likely modern.

Remaining material from these three contexts was too fragmentary to be identified to either species or element.

Trench 4

Only six osteological elements were recovered from Trench 4 (Table 4), four of which were too fragmented to be identifiable. Of the two remaining pieces, one was identified as the left femur from a juvenile rabbit. This was recovered from the plough soil and is likely modern. The other piece of osteological material is a fragment from a bone comb, which requires analysis by an individual specialising in combs made from osteological material. The comb fragment was found unstratified, and so, unfortunately, cannot be contextualised within the trench.

One of the unidentifiable fragments was recovered from a bank which has been provisionally dated to the 3rd or 4th century, though scant evidence results in a broader date range of late Iron Age or late Roman period.

Trench 6

All osteological finds recovered from Trench 6 (Table 6) were found in the plough soil, and are likely modern in date. Only one fragment could be confidently identified as a cattle mandibular third molar (m3) which exhibits Grant wear stage e/f.

Synthesis and Conclusion

The frequency of teeth hints at the poor preservational environment in which the faunal remains were recovered. Tooth enamel and dentine generally preserve better than bone, and the poor preservation of the bone which was recovered may be a result of rapid degradation of osteological material in a limestone rich environment. Alternatively, the infrequent faunal finds may be reflective of infrequent faunal depositions. The few remains recovered may simply be bits of debris which accumulated in the area over time, much as faunal material is accumulating in the field in the modern day.

The remains recovered from Trench 1, which represents the greatest source of faunal material on site, may relate to deposition of butchering debris. The hint of helical fractures, though much degraded, and the cut mark that persists on one fragment lends credence to this. The small number of fragments found, however, suggests that this assemblage does not represent a dump for butchery refuse, though the poor preservational environment must be acknowledged as possibly having played a role in the limited number of finds. The root

damage on bones from the first and final fills from the ditch of Trench 1 hints at activity (or inactivity) within the ditch while those fills were actively accumulating.

Few final conclusions can be drawn from such a poorly preserved assemblage. Further excavation or research may allow for a stronger understanding of the accumulation processes of this osteological material and its relation to the site at large.

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Appendix: Faunal Data

Trench 1

Context #	Context ID	Context dated to	Bone No.	Species	Element	Quantity	Side (L)	Side (R)	Age (F/J)	Age (S)	Age (A)	Complete (25)	Complete (50)	Complete (75)	Complete (100)	Taphonomy	Pathology	Comments
(1007)	final fill of [1009]	late Iron Age / early Roman	1	Ovis a	tooth (m3)	1	1		1						1	weathering; root damage;		tooth probably erupting or in crypt; heavy wear on enamel obscures potential pathologies etc.
(1007)	final fill of [1009]	late Iron Age / early Roman	3	Ovis a	tooth (m2)	2	1		1						1	weathering; root damage; post ex damage		tooth probably erupting or in crypt; possibly from same individual as m3 in same context

(1007)	final fill of [1009]	late Iron Age / early Roman	3	?equus	?tibia	1	1					1				severe cortical wear; weathering; chalky; helical fractures; dry bone fractures;		
(1007)	final fill of [1009]	late Iron Age / early Roman	4	?equus ?bos	?humerus	1		1				1				weathering; severe cortical wear; helical fractures; chalky; dry bone fractures		severity of weatheirng precludes a more firm ID
(1007)	final fill of [1009]	late Iron Age / early Roman	5		tooth (frag)	1						1				enamel wear; weathering; ?root damage; post ex damage		may fit with (2)

(1007)	final fill of [1009]	late Iron Age / early Roman	6		tooth (frag)	1						1				enamel wear; weathering; ?root damage; post ex damage		may fit with (2)
(1007)	final fill of [1009]	late Iron Age / early Roman	7		tooth (frag)	1						1				enamel wear; weathering; ?root damage; post ex damage		may fit with (2)
(1007)	final fill of [1009]	late Iron Age / early Roman	8		fragment	1						1				severe weathering; chalky; cortical wear		
(1007)	final fill of [1009]	late Iron Age / early Roman	9		fragment	1						1				severe weathering; cortical wear; ?helical fractures; ?dry bone fractures; chalky		cortical wear prohibits pathology analysis and ID. Could be from a small mammal or a large one (eg, bos ulna or

																		sheep radius etc)
(1007)	final fill of [1009]	late Iron Age / early Roman	10		fragment	1						1				severe weathering; cortical wear; ?helical fractures; ?dry bone fractures; chalky		
(1007)	final fill of [1009]	late Iron Age / early Roman	11		fragment	1						1				severe weathering; cortical wear; ?helical fractures; ?dry bone fractures; chalky		

(1016)	earliest phase of [1009]	mid-late Iron Age	12	bos taurus	radius	3	1				1		1			cortical wear; weathering; root damage; ?dry bone fractures; ?helical fractures; post ex damage		cortical wear obscures any pathology; Proximal end only - fused and obliterated. (#37 part of this element)
(1016)	earliest phase of [1009]	mid-late Iron Age	13	bos taurus	ulna	2	1					1				weathering; cortical wear; post ex damage; ?charcoal staining?;	cut mark? (see photo)	cortical wear obscures any pathology; Proximal end ; possible juvenile
(1016)	earliest phase of [1009]	mid-late Iron Age	14	bos taurus	metacarpal	1						1				severe cortical wear; weathering; chalky; helical fractures ; dry bone fractures ;		cortical wear obscures any pathology;

(1016)	earliest phase of [1009]	mid-late Iron Age	15	?bos t	rib fragment	1						1				severe cortical wear; weatheiring; dry bone fractures; post ex damage		cortical wear obscures any pathology;
(1016)	earliest phase of [1009]	mid-late Iron Age	16		fragment	1						1				severe cortical wear; weathering; chalky; post ex damage; dry bone fractures;		cortical wear obscures any pathology;
(1016)	earliest phase of [1009]	mid-late Iron Age	17		?rib fragment	1						1				severe cortical wear; cut mark; weathering; chalky; post ex damage;		cut marks measures 7.1mm BUT cortical wear could truncate the cut.

(1016)	earliest phase of [1009]	mid-late Iron Age	18		fragment	1						1				severe cortical wear; weathering; chalky; dry bone fractures		
(1016)	earliest phase of [1009]	mid-late Iron Age	19		fragment	1						1				severe cortical wear; weathering; chalky; post ex damage; dry bone fractures;		
(1016)	earliest phase of [1009]	mid-late Iron Age	20		fragment	1						1				severe cortical wear; weathering; post ex damage;		

(1016)	earliest phase of [1009]	mid-late Iron Age	21		fragment	1						1				dry bone fractures; severe cortical wear; weathering; chalky		
(1016)	earliest phase of [1009]	mid-late Iron Age	22		?mandible fragment	1						1				severe cortical wear; chalky; post ex damage; ?cut mark; weathering		cut mark is debatable due to severe cortical wear and weathering
(1016)	earliest phase of [1009]	mid-late Iron Age	23		fragment	1						1				?gnawing; cortical wear; weathering; post ex damage		gnaw mark is debatable (photo)
(1016)	earliest phase of [1009]	mid-late Iron Age	24		fragment	1						1				severe cortical wear; weathering; post		

																ex damage;		
(1016)	earliest phase of [1009]	mid-late Iron Age	25		fragment	1						1				severe cortical wear; weathering; post ex damage;		
(1016)	earliest phase of [1009]	mid-late Iron Age	26		fragment	1						1				severe cortical wear; weathering; dry bone fractures;		
(1016)	earliest phase of [1009]	mid-late Iron Age	27		fragment	1						1				severe cortical wear; weathering; post ex damage;		
(1016)	earliest phase of [1009]	mid-late Iron Age	28		fragment	1						1				severe cortical wear; weathering; dry bone		

																fractures ;		
(1016)	earliest phase of [1009]	mid-late Iron Age	29		fragment	1						1				severe cortical wear; weathering; dry bone fractures ;		
(1016)	earliest phase of [1009]	mid-late Iron Age	30		fragment	1						1				severe cortical wear; weathering; post ex damage;		
(1016)	earliest phase of [1009]	mid-late Iron Age	31		fragment	1						1				severe cortical wear; weathering; post ex damage;		
(1016)	earliest phase of [1009]	mid-late Iron Age	32		fragment	1						1				severe cortical wear; weathering; post		

																ex damage;		
(1016)	earliest phase of [1009]	mid-late Iron Age	33		fragment	1						1				severe cortical wear; weathering; post ex damage; dry bone fractures		
(1016)	earliest phase of [1009]	mid-late Iron Age	34		fragment	1						1				severe cortical wear; weathering; post ex damage; dry bone fractures		
(1016)	earliest phase of [1009]	mid-late Iron Age	35		fragment	1						1				severe cortical wear; weathering; chalky		

(1016)	earliest phase of [1009]	mid-late Iron Age	36		fragment	1						1				severe cortical wear; weathering; chalky		
(1016)	earliest phase of [1009]	mid-late Iron Age	38	?Caprine	?mandible	1	1					1				severe cortical wear; weathering; chalky; dry bone fractures; helical fractures;		
(1016)	earliest phase of [1009]	mid-late Iron Age	39		?mandible	1						1				severe cortical wear; weathering; chalky; post ex damage; dry bone fractures;		
(1016)	earliest phase of [1009]	mid-late Iron Age	40	?Caprine	?metapodial	1						1				severe cortical wear; weathering;		

																chalky; post ex damage; dry bone fractures; helical fractures; ?root damage		
(1016)	earliest phase of [1009]	mid-late Iron Age	41		fragment	1						1				severe cortical wear; weathering; post ex damage; ?dry bone fractures; ?helical fractures		
(1016)	earliest phase of [1009]	mid-late Iron Age	42		fragment	1						1				severe cortical wear; chalky; weathering; post ex damage;		

(1016)	earliest phase of [1009]	mid-late Iron Age	43		fragment	1						1				severe cortical wear; chalky; post ex damage; weathering		
(1016)	earliest phase of [1009]	mid-late Iron Age	44		fragment	1						1				severe cortical wear; chalky; post ex damage; weathering		
(1016)	earliest phase of [1009]	mid-late Iron Age	45		?cranial fragment	1						1				severe cortical wear; chalky; post ex damage; weathering		
(1016)	earliest phase of [1009]	mid-late Iron Age	46	?bos t	vertebra (body)	1			?1				1			severe cortical wear; weathering; ?Gnawing		indications of gnawing but obscured by taphonomy.

																		Unconfirmed.
(1016)	earliest phase of [1009]	mid-late Iron Age	47		vertebra (neural arch)	1										severe cortical wear; chalky; post ex damage; weathering; dry bone fractures		
(1014)	sandy silt overlying (1016)	probable Iron Age	48		fragments	29						1				severe cortical wear; weathering; chalky; dry bone fractures and post ex damage		fragments are unidentifiable to species or element. Extreme weathring obscures any potential patholgy or anthropogenic taphonomy.

(1014)	sandy silt overlying (1016)	probable Iron Age	49		fragment	1						1				severe cortical wear; weathering; helical fracture;		scoring present on one side - likely post ex.
(1014)	sandy silt overlying (1016)	probable Iron Age	50	?bos t	?radius?	1						1				severe cortical wear; weatheirng; dry bone fractures; post ex damage;		
(1014)	sandy silt overlying (1016)	probable Iron Age	51		fragment	1						1				severe cortical wear; helical fractures; chalky; weathering; dry bone fractures		

(1014)	sandy silt overlying (1016)	probable Iron Age	52		?cranial fragment - occipital ?	1						1				?gnawing; severe cortical wear; weathering		poor preservation precludes confirmation of gnawing
(1014)	sandy silt overlying (1016)	probable Iron Age	53		fragment	1						1				severe cortical wear; weathering; dry bone fractures; ?gnawing		
(1014)	sandy silt overlying (1016)	probable Iron Age	54		fragment	1						1				severe cortical wear; weathering; dry bone fractures; ?gnawing		

Table 1 Faunal analysis data from Trench 1.

Trench 2

Context #	Context ID	Context dated to	[illegible]	Species	Element	Quantity	Side (L)	Side (R)	Age (F/J)	Age (S)	Age (A)	Complete (25)	Complete (50)	Complete (75)	Complete (100)	Taphonomy	Pathology	Comments
(1102)	plough soil	Modern	55	Rabbit (leporidae)	tibia (distal)	1		1			1	1				?helical fractures		preservation way better than Trench 1 materia
(1104)	secondary fill of [1105]	Post Roman	56	Bos	tooth (molar)	13						1				post ex damage		shattered tooth
(1106)	primary fill of [1105]	Post Roman	57	Caprine	tooth (Molar)	7						1				post ex damage		shattered tooth

Table 2 Faunal analysis data from Trench 2.

Trench 3

Context #	Context ID	Context dated to	Bone No.	Species	Element	Quantity	Side (L)	Side (R)	Age (F/J)	Age (S)	Age (A)	Complete (25)	Complete (50)	Complete (75)	Complete (100)	Taphonomy	Pathology	Comments
(1201)	Topsoil	Modern	58	large mammal	vertebra (epi plate)	1			1			1				dry bone fractures; cortical wear; weathering		
(1201)	Topsoil	Modern	59		fragment	1						1				dry bone fractures; light cortical wear		
(1201)	Topsoil	Modern	60	large mammal	tooth (PM))	1						1				dry bone fractures		enamel lost - dentine only
(1201)	Topsoil	Modern	61	Caprine	tooth (m3)	1	1				1				1		very heavily worn: no cusp left,	

																worn flat	
(1201)	Topsoil	Modern	62	bos	tooth (dp4)	1	1		1			1				dry bone fractures; post ex damage		
(1202)	ploughsoil	Modern	63	bos	tooth (M1)	2		1			1			1		post ex damage; significant wear		
(1202)	ploughsoil	Modern	64	large mammal	petromastoid	14							1			calcite formation giving irredescent sheen; dry bone fractures		
(1202)	ploughsoil	Modern	65	bos	tooth (frag)	1						1				dry bone fractures; post ex damage		
(1202)	ploughsoil	Modern	66		fragment	1						1				weathering; cortical wear; dry bone fractures		

(1202)	ploughsoil	Modern	67		fragment	1						1				weathering; cortical wear; dry bone fractures; post ex damage		
(1202)	ploughsoil	Modern	68		fragment	1						1				weathering; cortical wear; dry bone fractures		
(1202)	ploughsoil	Modern	69		fragment	1						1				weathering; cortical wear; dry bone fractures		
(1208)	deposit in [1207]	indeterminate	70	Caprine	tooth (M)	1	1					1				dry bone fractures; enamel cracked		

Table 3 Faunal analysis data from Trench 3.

Trench 4

Context #	Context ID	Context dated to	Bone No.	Species	Element	Quantity	Side (L)	Side (R)	Age (F/J)	Age (S)	Age (A)	Complete (25)	Complete (50)	Complete (75)	Complete (100)	Taphonomy	Pathology	Sex	Comments
(1301)	Topsoil	Modern	71		fragment	1						1				weathering; cortical wear; striations acorss surface look like bone was scraped against something at some point. Could be rock.; semi-circular indentation measuring 6.2mm in length on one end (photo)			
(1301)	Topsoil	Modern	72		fragment	1						1				weathering; dry bone fractures; light charring/staining			
(1302)	plough soil	Modern	73	rabbit (leporidae)	femur	1	1		1						1	cortical wear; root damage; chrcoal fleck/staining			

(1302)	plough soil	Modern	74		fragment	1						1				dry bone fractures; ?cut mark; post ex damage; weathering;			
(1306)	preserved bank	probable Iron Age/Roman	75		fragment	1						1				weathering; cortical wear; root damage; dry bone fractures			
UNSTRAT			n/a		comb fragment	1										some copper staining; dry bone fractures. Talk to Ashby			

Table 4 Faunal analysis data from Trench 4.

Trench 6

Context #	Context ID	Context dated to		Species	Element										Taphonomy	Pathology	Sex	Comments
(1221)	ploughsoil layer	Modern	76	Bos	tooth (m3)	1	1				1			1	post ex damage; root damage; heavy wear			
(1221)	ploughsoil layer	Modern	77	med-large mammal	mandible	1						1			cortical wear; weathering; dry bone fractures			
(1221)	ploughsoil layer	Modern	78		fragment	1						1			charcoal staining; weathering; cortical wear; dry bone fractures			
(1221)	ploughsoil layer	Modern	79		?cranial fragment	1						1			calcined bone (check against human)			
(1221)	ploughsoil layer	Modern	80		fragment	1						1			cortical wear; weathering; post ex damage			
(1221)	ploughsoil layer	Modern	81		fragment	1						1			cortical wear; weathering; post ex damage			
(1221)	ploughsoil layer	Modern	82		fragment	1						1			cortical wear; weathering; post ex damage			
(1221)	ploughsoil layer	Modern	83		fragment	1						1			cortical wear; weathering; post ex damage			
(1221)	ploughsoil layer	Modern	84		fragment	1						1			cortical wear; weathering; post ex damage			

Table 5 Faunal analysis data from Trench 6

Appendix 10 Crambeck Archaeology Project, 2014 Spring Season, Miscellaneous and Small Finds Report

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Tables

Table 1 The total number and weight of charcoal found by context.

Table 2 The context, weight, date, and description for the pieces of iron recovered.

Table 3 The context, total number, weight and description for burnt natural on site.

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Appendix 1 Miscellaneous Finds Data

Appendix 2 Small Finds Data

1. Introduction

There were a total of 1002 miscellaneous finds weighing 13.93kg from the 2014 spring excavation. Added to this are 5 small finds weighing 0.96kg. It must be noted that the iron object recovered from Trench 5 are not included in the discussion of small finds here, although they have been assigned small finds numbers (#3 and #7-13). These are discussed in the Trench 5 Post-Excavation Report.

2. Materials

There are a total of 11 identified materials of miscellaneous objects as well as several unknown objects. Each material will be dealt with in turn discussing the objects recovered and contextual and stratigraphic relationships.

2.1 Ceramic Building Material

This is most commonly referred to as CBM. There was a total of 6 pieces weighing 339.4g. The majority of these came from topsoil contexts (1201), (1301) and (1220) with 2 pieces coming from subsoil context (1302). All of the pieces recovered are of Post-Medieval to Modern date. There are 2 possible tiles ((1201) and (1301)), and a large piece of field-drain / pipe (1302).

The CBM recovered represents a Post-medieval – modern phase of activity, most likely related to field drainage.

2.2 Ceramic and Clay Pipe

There were a total of 15 pieces of clay pipe recovered, weighing 31.5g, the majority being stem fragments. There were no complete bowls. All of the fragments recovered came from topsoil and subsoil contexts:

Topsoil: (1001)	Subsoil: (1002)
(1201)	(1202)
(1301)	(1302)
(1220)	

There were a total of 755 pieces of ceramic recovered, weighing 10,787.4g. these are not pottery sherds. They are misshapen lumps of fired and unfired ceramic. Again the majority of these came from topsoil (421 weighing 5,692.0g) and subsoil (20 weighing 607.0g) contexts. A single piece was recovered from the fill (1208) of a north-south aligned cut [1207] in Trench 3. Perhaps unsurprisingly, 313 pieces weighing 4,482.9g were recovered from the collapse (1222) layer of the kiln in Trench 6.

The pieces seem to be clay packing that was once around a kiln or kilns. Evidence of this material in situ was recovered in Trench 6. This was given a context number of (1224) although it was not excavated. Those pieces recovered from the topsoil/subsoil and from context (1208) have most likely been displaced by agricultural activity in the centuries after the cessation of pottery production at the site.

2.3 Charcoal

There were a total of 47 pieces weighing 82.4g recovered from a range of context. The table below shows the number and weight of pieces recovered from the contexts as well as a description of what that feature is:

Context #	Description	Total #	Weight (g)
(1007)	Latest fill of defensive ditch [1009]	3	0.5g
(1102)	Subsoil	2	1.8g
(1201)	Topsoil	13	36.8g
(1202)	Subsoil	1	2.2g
(1301)	Topsoil	8	11.6g
(1304)	Subsoil	1	4.3g
(1220)	Topsoil	2	8.6g
(1221)	Subsoil	11	11.2g
(1222)	Kiln collapse layer	5	1.0g

Table 1: The total number and weight of charcoal found by context.

Those pieces recovered from topsoil and subsoil context cannot reveal much other than the fact that a fire was lit at some point on the site. Those pieces recovered from the ditch fill (1007) and the kiln collapse layer (1222) could reveal more information. If they are suitable, they may be able to provide a date through Carbon 14 processing. Specialist intervention would be required to take this forward if desired.

2.4 Glass

There were a total of 27 fragments weighing 116.6g recovered. All of them were found in topsoil and subsoil contexts with one fragment being unstratified in Trench 4:

Topsoil: (1001) Subsoil: (1102) Unstratified: Trench 4

(1201) (1202)

(1301) (1302)

(1221)

The majority of the pieces recovered were modern glass – given the sites location next to the busy A64 road this is not surprising. There were 2 fragments that most likely date somewhere between the Roman and post-medieval periods found in contexts (1102) and (1202). Specialist input would be required in order to say more about these two fragments.

2.5 Iron

All 8 pieces of iron were recovered from topsoil and subsoil contexts. Their total weight is 284.2g. The table below shows the context, date, weight and description of each piece.

Context	Weight (g)	Date	Description
(1001)	16.9g	Modern	Part of a horseshoe
(1102)	4.7g	Unknown	Small nail
(1102)	110.3g	Modern	Curved piece of possible farm equipment
(1201)	3.5g	Roman–Post-Medieval	Small nail
(1202)	16.3g	Roman–Post-Medieval	Small nail, missing head
(1301)	30.5g	Roman–Post-Medieval	Hinge / bracket / farm equipment
(1301)	31.8g	Modern	Bolt
TR3 Unstratified	70.2g	Unknown	Large nail, bent

Table 2: The context, weight, date and description for the pieces of iron recovered.

Without specialist attention, particularly to those pieces of Romano-post-medieval date, nothing more can be said about the recovered iron pieces.

2.6 Lead

A single piece of lead, weighing 6.8g, was recovered from topsoil context (1001). It is of post-medieval – modern date and probably comes from a window or roof. It is most likely related to the period when the village was a Reformatory School.

2.7 Metal

A single piece of unidentified, undated metal was recovered. This came from subsoil context (1102) and weighed 3.2g. It is a thin rectilinear fragment approximately 3.5cm long and 0.8cm wide. Without specialist attention nothing more can be said about this fragment at this time.

2.8 Noteworthy Natural

During the course of the excavation it was noted that some of the natural limestone showed signs of burning and the decision was taken to collect this to see if there was a pattern in its distribution. The table below shows the context, total number, weight and description of pieces recovered as well as a note on the reasons for their presence:

Context	Total #	Weight (g)	Description & Notes
(1106)	1	20.8	Burnt. From primary fill of ditch [1005]. Possible fire nearby at some point in time.
(1202)	16	257.3	Some burnt. Subsoil. A fire somewhere on site at some point in time.
(1204)	1	567.4	Burnt. Ephemeral grey feature. Possible fire nearby at some point in time.
(1208)	2	80.8	Fill of N-S cut [1207] in W end of trench. Possible fire nearby at some point in time.
(1211)	6	71.4	Burnt. Natural deposit. Possible fire nearby at some point in time.
(1301)	7	19.1	Topsoil. A fire somewhere on site at some point in time.
(1222)	34	364.3	Collapse layer above kiln. Natural probably from close by and burnt during kiln firing process.

Table 3: The context, total number, weight and description for burnt natural found on site. Possible reasons for their recovery from these locations are also given.

2.9 Shell

A total of 3 pieces of shell were recovered, weighing 7.6g. Two of these are oyster shell and came from topsoil layer (1001), weighing 7.2g. The other piece came from topsoil layer (1201), weighing 0.4g and belongs to some sort of sea creature/snail. Without specialist attention more cannot be said about the species of this piece at this time.

2.10 Slag

A total of 4 pieces of slag, weighing 46.0g were recovered. The majority of these came from topsoil contexts (1001) (1301). The subsoil (1303) above the southern defensive bank in Trench 4 contained 1 piece. The presence of slag on site is not surprising. Evans (1980) suggests that *"It is certainly possible that iron working was an ancillary activity on the main Crambeck site, especially since the mortaria trituration grits are fragments of iron slag…*

as it seems improbable that slag would have been brought in for this purpose when other materials would be available nearby." Unfortunately the pieces of slag found did not come from sealed Roman contexts.

2.11 Slate

There were a total of 10 pieces of slate recovered from the site, weighing 322.5g. These are all of post-medieval – modern date and are probably related to the period when Crambeck village was a Reformatory school. All pieces recovered came from topsoil (1001) (1201) (1301) and subsoil (1102) contexts.

2.12 Unknown

There were a total of 59 unknown items weighing 500.8g. The vast majority of these proved to be ironstone or deformed natural rock under closer inspection. There is 1 (5.6g) piece of possible glass from subsoil context (1002) of Romano – post-medieval date. Specialist input would be needed to say more about this piece.

3. Small Finds

There were a total of 13 small finds from the excavation. Eight of these (#3 and #7–#13) are from Trench 5 and are not discussed here (see Trench 5 Post-Excavation Report).

SF #1 – this is part of a copper buckle of probable post-medieval date. It is certainly not Roman. It weighs 2.7g and came from subsoil context (1002).

SF #2 – this is an iron band weighing 52.9g. It is most likely modern farm equipment but it was found in the subsoil (1221) of the kiln trench so was given a small find number.

SF #4 – this is an iron band in two parts, together weighing 40.7g. This came from a subsoil (1103) layer in Trench 2. This is interesting as it is strikingly similar to the Iron Age tyre banding recovered from trench 5. This piece was recovered from very nearby to Trench 5. Further specialist attention would be required to say whether SF #4 is modern or possibly relates to the Iron Age feature in Trench 5.

SF #5 – this is a large piece of fired ceramic, Crambeck Reduced Ware. It weighs 522.5g and came from a subsoil context (1202) in Trench 3, not far from the kiln identified in Trench 6. It has several large finger indents and one flat surface that it stands up on. This is either a piece of kiln furniture or a waste lump related to the production of Crambeck ware.

SF #6 – this is a complete CRA RE ware base. Unfortunately it was broken in excavation and is now in three pieces. The total weight of the base is 338.4g. This came from the subsoils context (1202) in Trench 3, not far from the kiln identified in Trench 6.

4. Discussion and Summary

The majority of the material collected that falls under this miscellaneous category was either from top and subsoil contexts or was undatable and therefore not of much use other than to indicate possible activities happening close by at some point in the past. Furthermore the majority of the finds date from the medieval to modern periods and do not have a direct impact on the research questions of this excavation. The pieces that are most likely to date from the Roman period are the ceramic packing material fragments. It is more likely that these relate to the period of Crambeck ware production.

More work and specialist attention would be required to say more about objects such as the charcoal recovered from sealed contexts. Without this specialist attention the objects recovered cannot add to the other information gathered from the site.

Bibliography

Evans, J. 1985 *Aspects of Later Roman Pottery Assemblages in Northern England, Volume I*, (unpub. thesis, University of Bradford).

Appendix 1: Miscellaneous Finds Data

Miscellaneous Material Totals and Percentages

	Total #	%	Weight (g)	%
CBM	6	0.60%	339.4g	2.44%
Clay Pipe	15	1.50%	31.5g	0.23%
Ceramic	756	75.44%	10810.3g	77.56%
Charcoal	46	4.59%	78g	0.56%
Glass	26	2.59%	116.6g	0.84%
Iron	8	0.80%	284.2g	2.04%
Lead	1	0.10%	6.8g	0.05%
Metal	1	0.10%	3.2g	0.02%
Natural	67	6.69%	1381.1g	9.91%
Shell	3	0.30%	7.6g	0.05%
Slag	4	0.40%	55.9g	0.40%
Slate	10	1.00%	322.5g	2.31%
Unknown	59	5.89%	500.8g	3.59%
Total	1002	—	13937.9g	—

Ceramic Building Material

Trench	Context	Weight (g)	Date	Form	Notes
3	**(1201)**	19.0	PMED - MOD	—	misshapen
3	**(1201)**	54.1	PMED - MOD	tile?	thick grey core, red exteriors
4	**(1301)**	31.3	PMED - MOD	tile?	—
4	**(1302)**	29.5	PMED - MOD	—	—
4	**(1302)**	147.3	PMED - MOD	field-drain / pipe	curved, grey core
6	**(1220)**	58.2	PMED - MOD	—	—

Totals: CBM

Context	Total #	Weight (g)
(1201)	2	73.1
(1301)	1	31.3
(1302)	2	175.8
(1220)	1	60.3
TOTAL	6	339.4

Ceramic and Clay Pipes

Trench	Context	# Pieces	Weight	Form
1	**1001**	2	2	Clay Pipe
1	**1001**	4	103	Ceramic
1	**1002**	2	40.9	Ceramic
2	**1102**	1	1.9	Clay Pipe
2	**1102**	2	116.7	Ceramic
3	**1201**	6	12.9	Clay Pipe
3	**1202**	2	3.4	Clay Pipe
3	**1202**	16	449.4	Ceramic
3	**1208**	1	5.5	Ceramic
4	**1301**	1	3.5	Clay Pipe
4	**1301**	14	51.1	Ceramic
4	**1302**	1	2.7	Clay Pipe
6	**1220**	2	5.1	Clay Pipe
6	**1220**	30	971.1	Ceramic
6	**1221**	373	4566.8	Ceramic
6	**1222**	313	4482.9	Ceramic
Unstrat	**Unstrat**	1	22.9	Ceramic

Totals: Clay Pipes

Context	Total #	Weight (g)
1001	2	2.0
1002	1	1.9
1201	6	12.9
1202	2	3.4
1301	1	3.5
1302	1	2.7
1220	2	5.1
Total	15	31.5

Totals: Ceramic

Context	Total #	Weight (g)
1001	4	103.0
1002	2	40.9
1102	2	116.7
1202	16	449.4
1208	1	5.5
1301	14	51.1
1220	30	971.1
1221	373	4566.8
1222	313	4482.9
Unstrat	1	22.9
Total	756	10810.3

Charcoal

Trench	Context	# Pieces	Weight (g)	Notes
1	**(1007)**	3	0.5	—
2	**(1102)**	2	1.8	—
3	**(1201)**	13	36.8	—
3	**(1202)**	1	2.2	—
4	**(1301)**	8	11.6	—
4	**(1304)**	1	4.3	—
6	**(1220)**	2	8.6	—
6	**(1221)**	11	11.2	—
6	**(1222)**	5	1.0	—

Totals: Charcoal

Total #	Weight (g)
46	78.0

Glass

Trench	Context	# Pieces	Weight (g)	Notes
1	**(1001)**	3	25.4	modern, clear
2	**(1102)**	3	6.8	modern, clear
2	**(1102)**	—	7.2	ROM-PMED, irridescent, same as (1202)
3	**(1201)**	11	29.6	modern, clear
3	**(1201)**	—	2.0	modern, brown
3	**(1202)**	1	6.9	ROM-PMED, irridescent, same as (1102)
4	**(1301)**	4	8.3	modern, clear
4	**(1302)**	2	23.2	modern, clear
4	**Unstrat**	1	5.5	PMED-MOD, green
6	**(1221)**	1	1.7	modern, clear
		NB: (1102) & (1202) possible gold iridescent paint/coating???		

Totals: Glass

	Total #	Weight (g)
PMED – MOD	24	102.5
ROM – PMED	2	14.1
Total	26	116.6

Iron

Trench	Context	# Pieces	Weight (g)	Date	Notes
1	**(1001)**	1	16.9	MOD	?horseshoe
2	**(1102)**	2	4.7	Unkown	small nail
2	**(1102)**	—	110.3	MOD	curved, possible farm equipment
3	**(1201)**	1	3.5	ROM – PMED	small nail
3	**(1202)**	1	16.3	ROM – PMED	small nail, missing head
3	**Unstrat**	1	30.5	ROM – PMED	large nail, bent
4	**(1301)**	2	31.8	MOD	hinge / bracket / farm equipment?
4	**(1301)**	—	70.2	Unkown	bolt

Totals: Iron

	Total #	Weight (g)
ROM – PMED	3	50.3
MOD	3	159.0
Unknown	2	74.9
Total	8	284.2

Lead

Trench	Context	# Pieces	Weight (g)	Date	Notes
1	**(1001)**	1	6.8	PMED – MOD	from roof / window?

Metal

Trench	Context	# Pieces	Weight (g)	Date	Notes
2	**(1102)**	1	3.2	Unknown	thin rectilinear fragment, 3.5cm long & 0.8cm wide

Natural

Trench	Context	# Pieces	Weight (g)	Notes
2	**(1106)**	1	20.8	burnt
3	**(1211)**	6	71.4	burnt
3	**(1208)**	2	80.8	—
3	**(1204)**	1	567.4	burnt
3	**(1202)**	16	257.3	some burnt
4	**(1301)**	7	19.1	—
6	**(1222)**	34	364.3	some burnt

Totals: Natural

Total #	Weight (g)
67	1381.1

Shell

Trench	Context	# Pieces	Weight	Notes
1	**(1001)**	2	7.2	oyster
3	**(1201)**	1	0.4	sea creature

Totals: Shell

Total #	Weight (g)
3	7.6

Slag

Trench	Context	# Pieces	Weight (g)	Notes
1	**(1001)**	2	16.2	—
1	**(1001)**	—	19.4	—
4	**(1301)**	1	16.0	—
4	**(1303)**	1	4.3	—

Totals: Slag

Total #	Weight (g)
4	55.9

Slate

Trench	Context	# Pieces	Weight (g)	Notes
1	**(1001)**	1	1.1	roofing?
2	**(1102)**	4	273.1	largest piece has part of nail hole, roofing?
3	**(1201)**	3	39.6	roofing?
4	**(1301)**	2	8.7	roofing?
		NB all PMED–MOD, probably related to Reformatory School		

Totals: Slate

Total #	Weight (g)
10	322.5

Unknown

Trench	Context	# Pieces	Weight (g)	Notes
1	**(1001)**	4	30.5	3 ?charcoal
1	**(1002)**	2	2.1	ironstone
1	**(1002)**	—	5.6	possible glass, ROM–PMED
1	**(1007)**	1	10.7	ironstone
1	**(1016)**	4	85.6	—
2	**(1102)**	3	37.5	ironstone
2	**(1103)**	2	11.1	ironstone
2	**(1104)**	2	15.9	ironstone
2	**(1106)**	1	11.9	ironstone
3	**(1201)**	1	4.5	—
3	**(1202)**	9	45.8	iron stone, 2 query charcoal
4	**(1302)**	3	21.1	ironstone
4	**(1304)**	1	6.5	ironstone
4	**(1305)**	1	18.2	ironstone
4	**(1308)**	2	4.7	ironstone
6	**(1222)**	23	189.1	ironstone

Totals: Unknown

Total #	Weight (g)
59	500.8

Appendix 2: Small Finds Data

SF #	Trench	Context	Fabric	Weight	Description
SF #1	**1**	**(1002)**	Copper	2.7	Copper buckle, probably PMED, not ROM
SF #2	**6**	**(1221)**	Iron	52.9	Iron band, probably MOD farm equipment but found in kiln trench subsoil so small finded
SF #4	**2**	**(1103)**	Iron	12.8	Iron band, in 2 pieces. From a subsoil 2 layer BUT proximity to TR5 is interesting. It is very similar to tyre banding from TR5
				27.9	
SF #5	**3**	**(1202)**	Ceramic	522.5	?kiln furniture / waste lump. Fired, CRA RE. NB large finger indents. One flat surface which it stands up on
SF #6	**3**	**(1202)**	Pottery	338.4	Crambeck reduced ware base in 3 pieces. Broken during excavation. 100% B

NB: SF #3 & #7 – #13 are from trench 5 and are discussed in the Trench 5 Post-Excavation Report

NB: SF #3 & #7 – #13 are from trench 5 and are discussed in the Trench 5 Post-Excavation Report

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Appendix 11 Crambeck Archaeology Project, 2014 Spring Season, Analysis of Cremation Deposit (1011)

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Table 1 Breakdown of Crambeck reduced sherds recovered.

Table 2 Breakdown of Lsy1 sherds recovered.

Table 3 Breakdown of beads recovered by material and colour.

1. Discovery and Stratigraphy

During excavations at the Jamie's Craggs Crambeck ware production site in spring 2014, a cremation burial was discovered. This was found towards the eastern end of the site (Fig. 1). It was inserted into the top of the tertiary fill of the large Iron Age defensive ditch running East–West, and the fill partially covered the edge of the northern bank associated with the ditch (Fig. 3). The section of the deposit partially excavated can be seen in Figure 2.

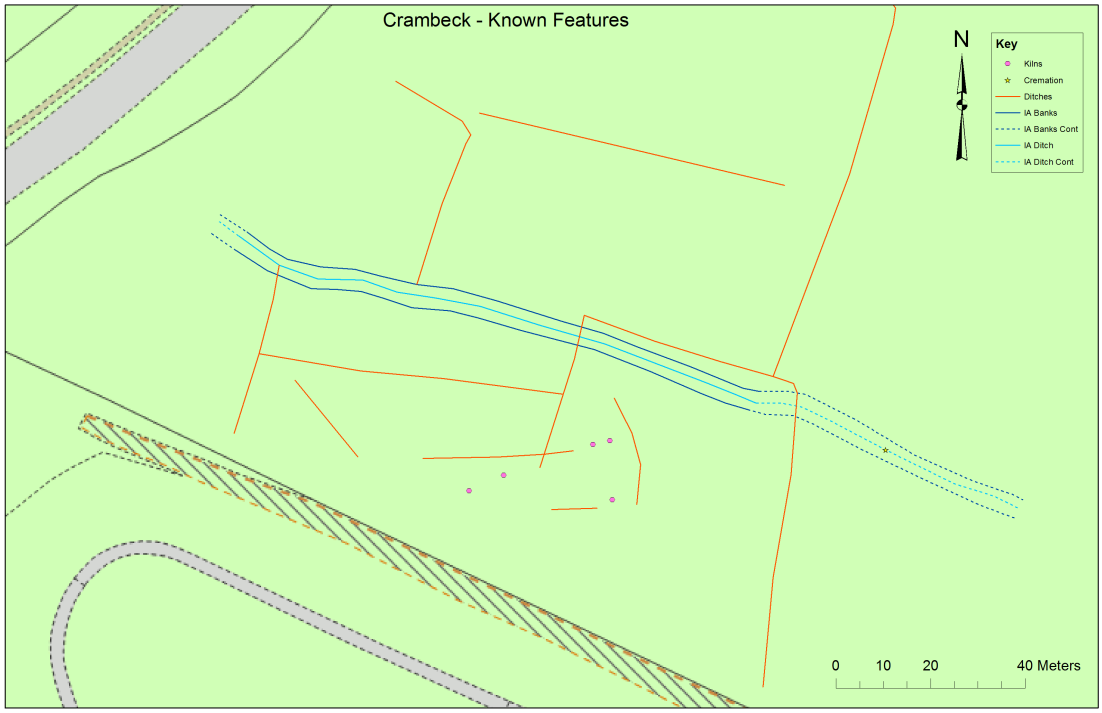

Fig. 1: Position of the cremation deposit (yellow star) in relation to the other known features at the site.

Fig. 2: Photo of the cremation deposit in situ.

Fig. 3: Photo of the cremation in relation to the Iron Age defensive ditch and its north bank. The cremation deposit extends to the east but stops short of the trench edge. A section was excavated of the western half.

At the time of excavation it was thought that the cremation was of Late Iron Age or Early Roman date given the presence of a poorly made reduced ware pot alongside a finer made vessel. Subsequent post-excavation analysis has proved this not to be the case. On initial discovery of the deposit it was thought that it was the remains of some sort of cooking fire along with some bones of animal consumed. The deposit was subsequently half sectioned. However, part way through the excavation of this section an osteology student on the site thought one piece of bone may be human. Malin Holst and Dr Terry O'Connor from the University of York were consulted and they confirmed that this piece (and possibly others) might be human. At this point excavation of the deposit halted as the Project did not have a licence to excavate human remains. Fortunately the section excavated had been 100% sampled. A licence was applied for and granted by the Ministry of Justice to allow the post-excavation processing and analysis of the collected sample. With hindsight it is estimated around a third of the total deposit was recovered.

The sample was subjected to environmental processing, overseen by Hayley McParland (University of York). This allowed the collection of bone, beads, and pottery sherds. The following sections will discuss the results from the analysis of this sample.

2. Human Remains

All except one small fragment of bone was subsequently identified as human. Malin Holst (York Osteoarchaeology Ltd) assessed the sample. The following are the results from her initial assessment of the deposit.

There were a total of 295g of bone present. Fragments of lower limb, upper limb, axial, long bone, skull and several teeth were identified in the sample as well as a number of unidentifiable fragments. These belong to a juvenile skeleton, aged 2.5–12 years. Beyond this, no more can be said about the individual. It is likely that the aged range could be narrowed down with the recovery and analysis of the remainder of the deposit. It is worth noting that cremations containing children are often found to also contain an adult. It is possible that there is a second individual in the deposit but this cannot be said for certain without the recovery of the remainder.

3. Pottery

The sample contained a total of 22 sherds, weighing 166.2g with an EVE of 0.63. Two wares were identified, Crambeck Reduced ware (CRA RE) and a Limestone quartz handmade ware (Lsy1). The tables below depict the weight and EVE of each of the sherds present, as well as any identifiable forms. Crambeck ware is dated predominantly to the fourth century AD although production may have begun in the latter half of the third. The date of Lsy is unknown but it is likely to date to a similar period as CRA RE.

	Weight	Diameter	Error	Rim	Error	Form
1011-1	9.0g	3.5	0.5	15	2.5	Beaker/jar e.g. Corder 89/90 (1989a, 18)
1011-2	4.4g	3.5	0.5	11.25	1.25	Beaker/jar e.g. Corder 89/90 (1989a, 18)
1011-3	7.8g	-	-	-	-	Beaker/jar e.g. Corder 89/90 (1989a, 18)
1011-4	7.5g	-	-	-	-	Beaker/jar e.g. Corder 89/90 (1989a, 18)
1011-5	2.0g	-	-	-	-	Unidentifiable
1011-6	1.7g	-	-	-	-	Unidentifiable
1011-7	0.6g	-	-	-	-	Unidentifiable
1011-8	0.7g	-	-	-	-	Unidentifiable
1011-9	3.3g	-	-	-	-	Possible bowl

Table 1: Breakdown of Crambeck Reduced sherds recovered.

	Weight	Diameter	Error	Base	Error
1011-10	35.9g	-	-	-	-
1011-11	16.9g	-	-	-	-
1011-12	35.1g	4	0	37.5g	0
1011-13	15.7g	-	-	-	-
1011-14	6.2g	-	-	-	-
1011-15	9.9g	-	-	-	-
1011-16	4.3g	-	-	-	-
1011-17	0.9g	-	-	-	-
1011-18	1.3g	-	-	-	-
1011-19	0.9g	-	-	-	-
1011-20	0.7g	-	-	-	-
1011-21	0.8g	-	-	-	-
1011-22	0.6g	-	-	-	-

Table 2: Breakdown of Lsy1 sherds recovered.

Note that 1011-10 and 1011-12 conjoin.

Of the forms present, four sherds of CRA RE were a beaker or jar (1011-1 – 4), while one was a possible bowl. The form of the vessel or vessels present in the deposit of CRA RE would be clearer on the recovery of the remainder of the burial. None of the Lsy1 sherds presented with an identifiable form and none of them were rim sherds. Again, recovery of the remainder of the deposit would provide more information as to the form and function of the Lsy1 vessel or vessels present.

4. Beads

The sample was subjected to environmental processing. This allowed the collection of all bones and pottery sherds but also revealed a number of beads within the deposit. A total of 71 beads were recovered weighing $_{c}$0.8g. Each of the beads has been photographed and can be seen in Appendix 2. The table below breaks them down by material and colour.

	Glass		Jet		Stone (Carnelian?)	
White / Opaque / Yellow	10	<0.01g				
White / Opaque	1	<0.01g				
Blue / Green-Blue / Green	5	0.3g				
Blue Iridescent	27	<0.01g				
Gold-in-Glass	18	0.4g				
Black			8	<0.01g		
Red					2	<0.01g
Total by Material	61	0.7g	8	<0.01g	2	<0.01g

Table 3: Breakdown of beads recovered by material and colour.

Professor Jennifer Price (Durham University) was consulted about the beads and the following is from the resulting discussion. First, Prof. Price identified the two red beads as stone rather than glass. These are likely to be carnelian that, amongst other places, was imported to Britain from West Africa. Of the gold-in-glass beads, Prof. Price noted that the globular shaped ones were likely to have come from segmented beads that had broken up. She also noted that these gold-in-glass beads were unusual "but nice". Of the white beads, Prof. price suggested their colouring could have been caused by weathering, and that they could originally have been opaque/colourless. This is very unusual to find. Lastly Prof. Price noted that there are no signs of burning on the beads. This suggests that they were not cremated with the individual but placed in the deposit on the point of burial, that is to say post-burning. Lastly Prof. Price commented that the beads present are typical of the third-fourth centuries. This dating ties in with the presence of Crambeck Reduced ware.

The beads have been compared to the collection from *Vindolanda*, using the relevant chapter from the fascicule by B. Birley and E. Greene *The Roman Jewellery from Vindolanda* (2006). The comparison can be seen in the break down of the beads in Appendix 1.

It is likely that more beads of a similar nature remain in the two thirds of the deposit that were not recovered. A hope for the future is to block lift the remainder of the deposit and micro-excavate it in a lab. This, amongst other things, may reveal the nature of the deposition of the beads as well as the identity of the item they belonged to.

5. Miscellaneous

A quantity of natural material was recovered from the cremation deposit (1011) through environment processing. This included 631.7g of geology, 3.8g of ironstone, and 1 piece of geology that included a fossil. While these are not directly related to the deposit itself it is interesting to note that these could be intrusions from the covering over of the deposit at the time of burial. Alternatively they may be intrusions caused by the gradual collapse of the north bank, itself made up of natural geology.

6. Discussion and Future Investigation

This cremation is not the only Romano-British burial on the Jamie's Craggs site. In the 1920s P. Corder excavated two cist burials (Corder 1989). The remains from at least one of these is held by Malton museum and has been subjected to an osteoarchaeology report at the request of the author, conducted by Malin Holst. A sample has also been sent away for C14

dating. It is hoped that if/when the remainder of the cremation deposit is recovered, a C14 date can be taken from it and therefore a comparison made between it and the cist burials.

As mentioned, it is hoped to return to the site to recover the remainder of this cremation deposit. This would, ideally, be done by block-lifting it on site, and micro-excavating it in lab conditions. This could reveal if there is any pattern to the deposition of the bead in particular, and possible the relationship between the two vessels of strikingly differing material.

Unfortunately without the remainder of the deposit, nothing more can be said at this point about the individual buried in it and whether this child was accompanied by an adult burial of a similar nature. Retrieval would allow a complete osteoarchaeological report to be undertaken as well as the possibility of retrieving a sample suitable for C14 dating. Anything more said about the deposit on the basis of the martial currently retrieved would, unfortunately, be purely conjecture.

The cremation appears to be of a child aged between 2 and 12years. At this stage it seems to date to the late third or fourth centuries and the presence of the glass, jet and carnelian beads suggest the individual(s) was of high status within society. The relationship of the cremation with the pottery production phase is unknown but the dates are contemporary. Whether the individual(s) had any connection to the pottery production industry is possible but again unknown. Retrieval and further study of the remainder of the deposit could shed light on these issues.

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Birley, B 2006 ‘1. The Beads’, in Birley, B and Greene, E. *The Roman Jewellery from Vindolanda*, Research Reports, New Series Volume IV, Fascicule V: Beads, Intaglios, Finger Rings, Ear-Rings and Bracelets (Roman Army Museum Publications, Greenhead Northumberland), P9-52.

Corder, P 1989 ‘The Roman Pottery at Crambeck, Castle Howard’, in Wilson, P (ed.) *Crambeck Roman Pottery Industry*, (Roman Antiquities Section, Yorkshire Archaeological Society, Leeds), p3-24.

APPENDICIES

1: Break down of beads recovered from cremation deposit (1011)

2: Images of beads recovered from cremation deposit (1011)

3: images of Crambeck Reduced ware recovered from cremation deposit (1011)

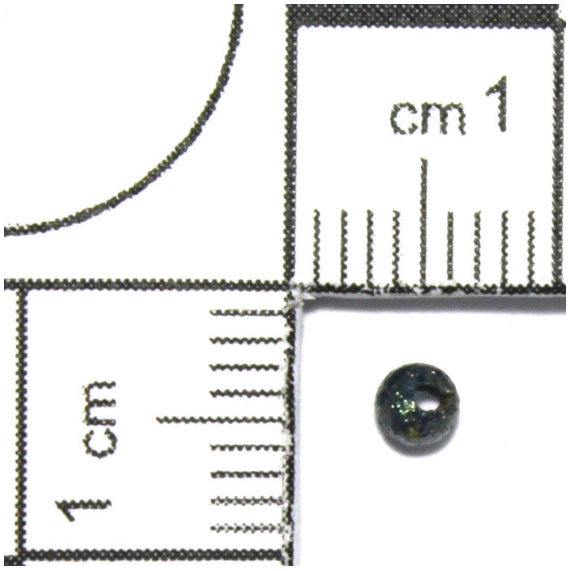
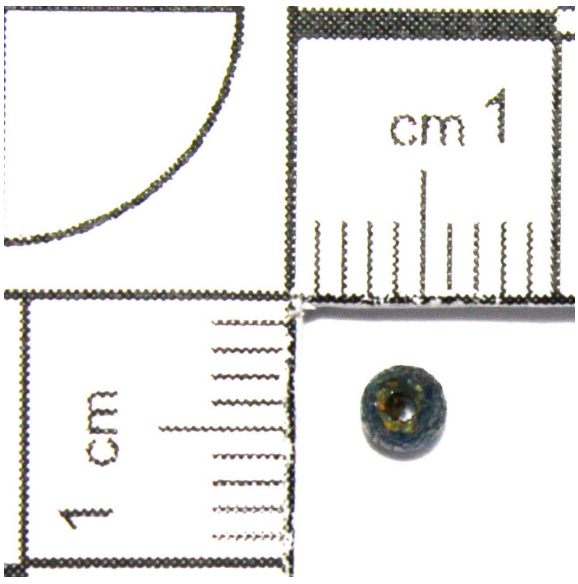
4. Images of Lsy1 ware recovered from cremation deposit (1011)

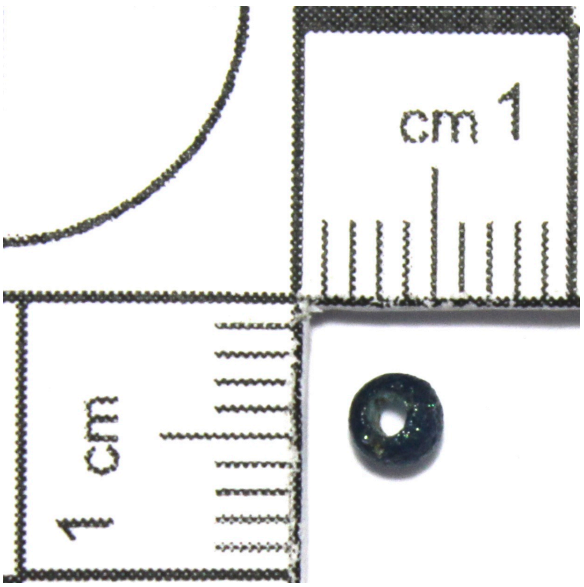
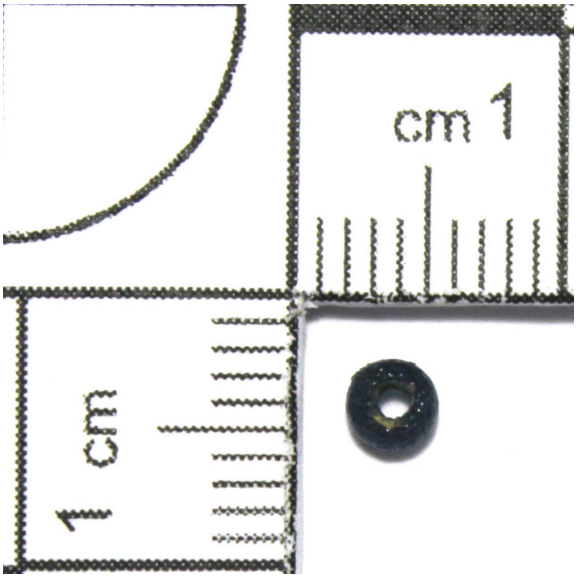
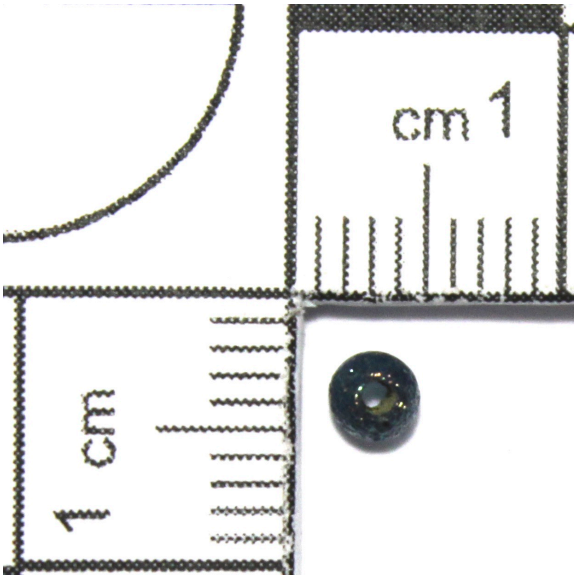
APPENDIX 1: BREAKDOWN OF BEADS RECOVERED FROM CREMATION DEPOSIT (1011)

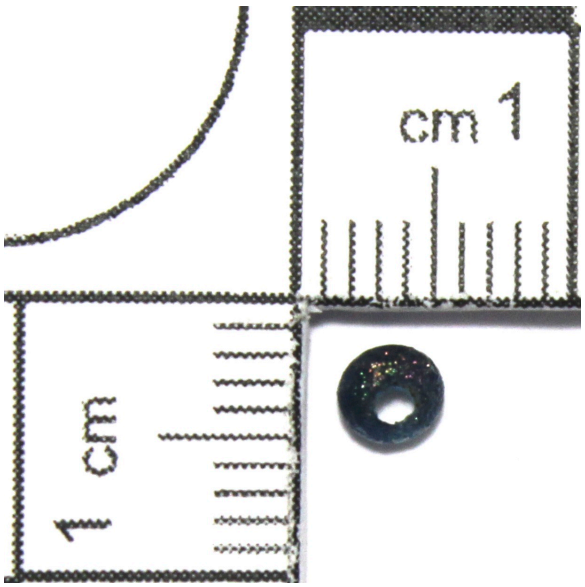
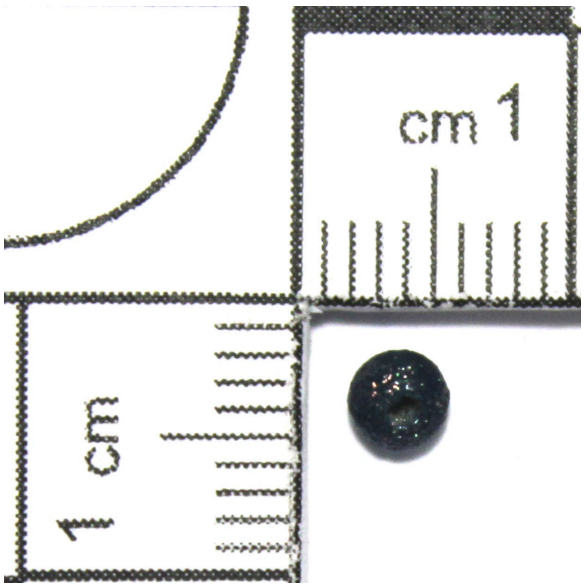
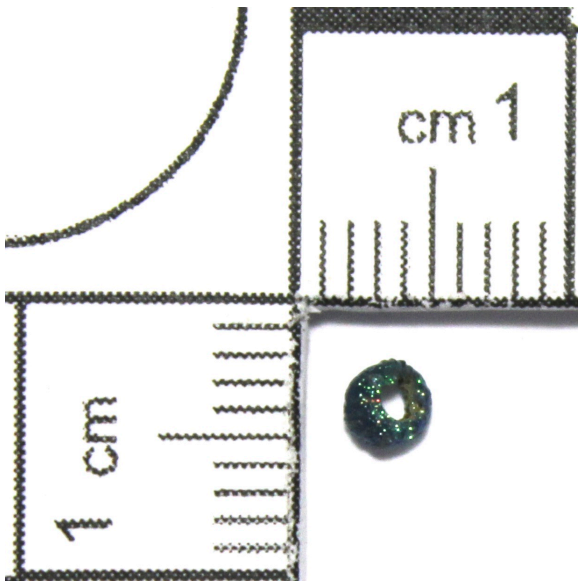
Bead #	Material	Shape	Colour	Photo #	Vindolanda Comparison	Notes
B001	Glass	Annular	Blue - iridescent	3168	SF8614 / SF8744 / SF8750 (pg. 18-19)	off centre perforation
B002	Glass	Annular	Blue - iridescent	3169	SF8614 / SF8744 / SF8750 (pg. 18-19)	— —
B003	Glass	Annular	Blue - iridescent	3170	SF8614 / SF8744 / SF8750 (pg. 18-19)	— —
B004	Glass	Annular	Blue - iridescent	3171	SF8614 / SF8744 / SF8750 (pg. 18-19)	— —
B005	Glass	Annular	Blue - iridescent	3172	SF8614 / SF8744 / SF8750 (pg. 18-19)	— —
B006	Glass	Annular	Blue - iridescent	3173	SF8614 / SF8744 / SF8750 (pg. 18-19)	off centre perforation
B007	Glass	Annular	Blue - iridescent	3174	SF8614 / SF8744 / SF8750 (pg. 18-19)	— —
B008	Glass	Annular	Blue - iridescent	3175	SF8614 / SF8744 / SF8750 (pg. 18-19)	off centre perforation
B009	Glass	Annular	Blue - iridescent	3176	SF8614 / SF8744 / SF8750 (pg. 18-19)	off centre perforation
B010	Glass	Annular	Blue - iridescent	3177	SF8614 / SF8744 / SF8750 (pg. 18-19)	off centre perforation
B011	Glass	Annular	Blue - iridescent	3178	SF8614 / SF8744 / SF8750 (pg. 18-19)	off centre perforation
B012	Glass	Annular	Blue - iridescent	3179	SF8614 / SF8744 / SF8750 (pg. 18-19)	off centre perforation
B013	Glass	Annular	Blue - iridescent	3180	SF8614 / SF8744 / SF8750 (pg. 18-19)	perforation almost oval in shape
B014	Glass	Annular	Blue - iridescent	3181	SF8614 / SF8744 / SF8750 (pg. 18-19)	off centre perforation
B015	Glass	Annular	Blue - iridescent	3182	SF8614 / SF8744 / SF8750 (pg. 18-19)	— —
B016	Glass	Annular	Blue - iridescent	3183	SF8614 / SF8744 / SF8750 (pg. 18-19)	— —
B017	Glass	Annular	Blue - iridescent	3184	SF8614 / SF8744 / SF8750 (pg. 18-19)	off centre perforation
B018	Glass	Annular	Blue - iridescent	3185	SF8614 / SF8744 / SF8750 (pg. 18-19)	
B019	Glass	Annular	Blue - iridescent	3186	SF8614 / SF8744 / SF8750 (pg. 18-19)	off centre perforation
B020	Glass	Annular	Blue - iridescent	3187	SF8614 / SF8744 / SF8750 (pg. 18-19)	large, off centre perforation
B021	Glass	Oblate	Blue - iridescent	3188	SF125 / SF8c (pg. 18, 24)	— —
B022	Glass	Annular	Blue - iridescent	3189	SF8614 / SF8744 / SF8750 (pg. 18-19)	— —
B023	Glass	Annular	Blue - iridescent	3190	SF8614 / SF8744 / SF8750 (pg. 18-19)	— —
B024	Glass	Spherical	Blue - iridescent	3191	SF125 (pg. 18, 24)	— —
B025	Glass	Annular	Blue - iridescent	3192	SF8614 / SF8744 / SF8750 (pg. 18-19)	perforation almost worn through on one side
B026	Glass	Annular	Blue - iridescent	3193	SF8614 / SF8744 / SF8750 (pg. 18-19)	— —

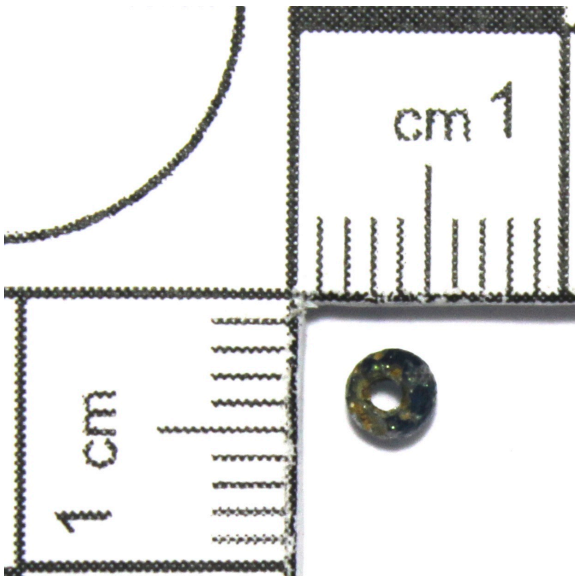
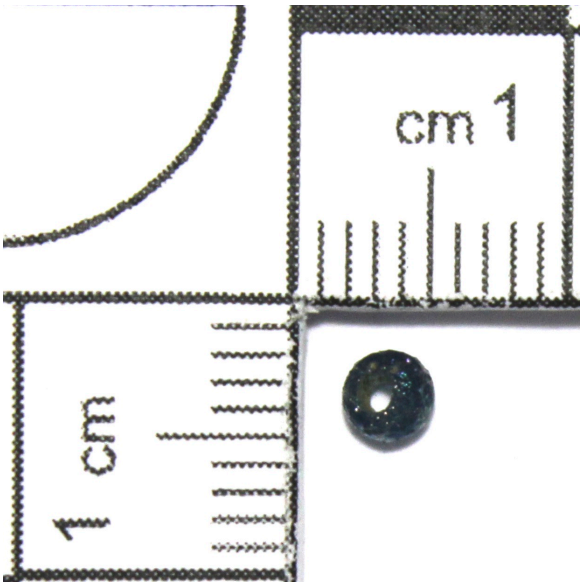
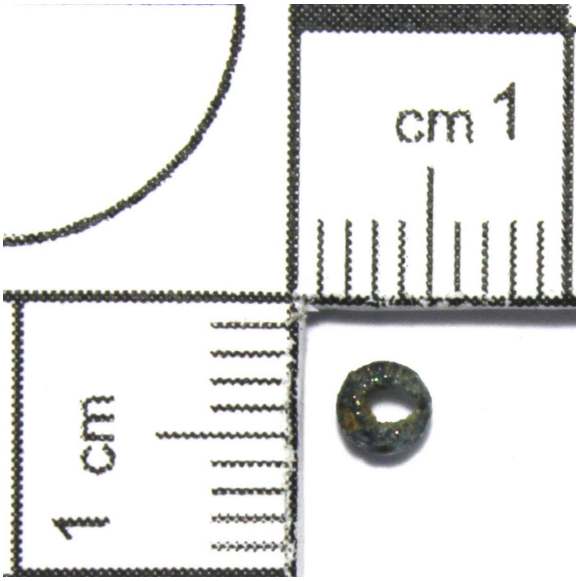
B027	Glass	Annular	Blue - iridescent	3194	SF8614 / SF8744 / SF8750 (pg. 18-19)	— —
B028	Glass	Annular	Blue / Green	3195	SF8614 / SF8744 / SF8750 (pg. 18-19)	mid blue
B029	Glass	Spherical	Blue / Green	3196	SF1504 (pg. 25, 28-29)	dark green
B030	Glass	Annular	Blue / Green	3197	SF3300 (pg. 25-27)	mid green
B031	Glass	Annular	Blue / Green	3198	SF8614 / SF8744 / SF8750 (pg. 18-19)	light blue
B032	Glass	Spherical	Blue / Green	3199	SF125 (pg. 18, 24)	mid/dark blue
B033	Glass	Oblate	Gold-in-Glass	3200	None	pinched end
B034	Glass	Oblate	Gold-in-Glass	3201	None	— —
B035	Glass	Oblate	Gold-in-Glass	3202	None	— —
B036	Glass	Oblate	Gold-in-Glass	3203	None	— —
B037	Glass	Oblate	Gold-in-Glass	3204	None	chipped
B038	Glass	Oblate	Gold-in-Glass	3205	None	— —
B039	Glass	Oblate	Gold-in-Glass	3206	None	— —
B040	Glass	Oblate	Gold-in-Glass	3207	None	pinched end
B041	Glass	Oblate	Gold-in-Glass	3208	None	— —
B042	Glass	Oblate	Gold-in-Glass	3209	None	— —
B043	Glass	Spherical	Gold-in-Glass	3210	SF247 / SF2019 (pg. 33-34)	chipped
B044	Glass	Spherical	Gold-in-Glass	3211	SF247 / SF2019 (pg. 33-34)	chipped
B045	Glass	Spherical	Gold-in-Glass	3212	SF247 / SF2019 (pg. 33-34)	minor chipping
B046	Glass	Spherical	Gold-in-Glass	3213	SF247 / SF2019 (pg. 33-34)	chipped
B047	Glass	Spherical	Gold-in-Glass	3214	SF247 / SF2019 (pg. 33-34)	fracturing to exterior
B048	Glass	Spherical	Gold-in-Glass	3215	SF247 / SF2019 (pg. 33-34)	chipped and external fracturing
B049	Glass	Segmented	Gold-in-Glass	3216	None	2 segments, chipped and external fracturing
B050	Glass	Segmented	Gold-in-Glass	3217	None	2 segments, minor chipping
B051	Glass	Annular	Opaque / White	3218	None	opaque (yellow?), same as B057, B061
B052	Glass	Spherical	Opaque / White	3219	None	white
B053	Glass	Annular	Opaque / White	3220	None	white
B054	Glass	Annular	Opaque / White	3221	None	white

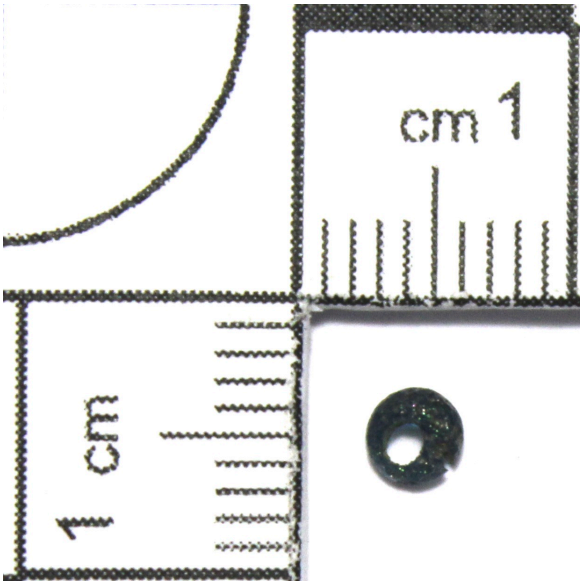
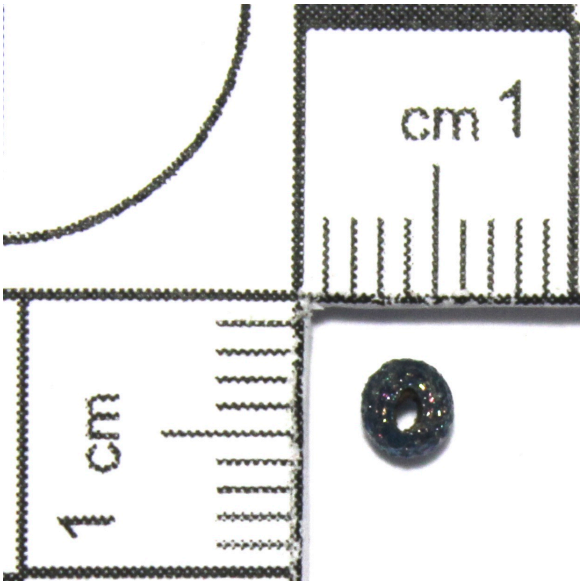
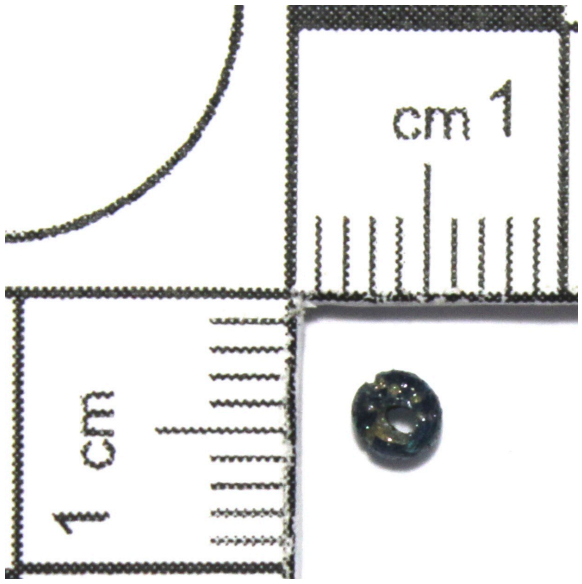
B055	Glass	Annular	Opaque / White	3222	None	white
B056	Glass	Annular	Opaque / White	3223	None	opaque (yellow?)
B057	Glass	Annular	Opaque / White	3224	None	opaque (yellow?), same as B051, B061
B058	Glass	Annular	Opaque / White	3225	None	white
B059	Glass	Annular	Opaque / White	3226	None	opaque (white) fragment
B060	Glass	Unidentifiable	Opaque / White	3227	None	opaque (yellow) fragment
B061	Glass	Unidentifiable	Opaque / White	3228	None	opaque (yellow?), same as B051, B057. Contains possible organic material
B062	Stone - carnelian?	Annular	Red	3229	SF8a / SF2101 (terracotta) (pg. 31-32)	has off white / opaque vertical stripe on one side
B063	Stone - carnelian?	Annular	Red	3230	SF8a / SF2101 (terracotta) (pg. 31-32)	has off white / opaque vertical stripe on one side
B064	Jet	Cylinder	Black	3231	SF2482 (pg. 44-49)	Carved stripes end-mid-end (2-6-2), slight diagonal wear to one end? Similar to but shorter than B065
B065	Jet	Cylinder	Black	3232	SF2482 (pg. 44-49)	Carved strikes end-mid-end (2-7-2), small chip to one end. Similar to but longer than B064
B066	Jet	Segmented	Black	3233	SF810 (pg. 44-49)	carved, 5 segments
B067	Jet	Cylinder	Black	3234	None	plain, chipped
B068	Jet	Cylinder	Black	3235	None	plain
B069	Jet	Annular	Black	3236	SF3896 (pg. 44-49)	raised area around perforation on one side
B070	Jet	Unidentifiable	Black	3237	None	fragment
B071	Jet	Unidentifiable	Black	3238	None	fragment

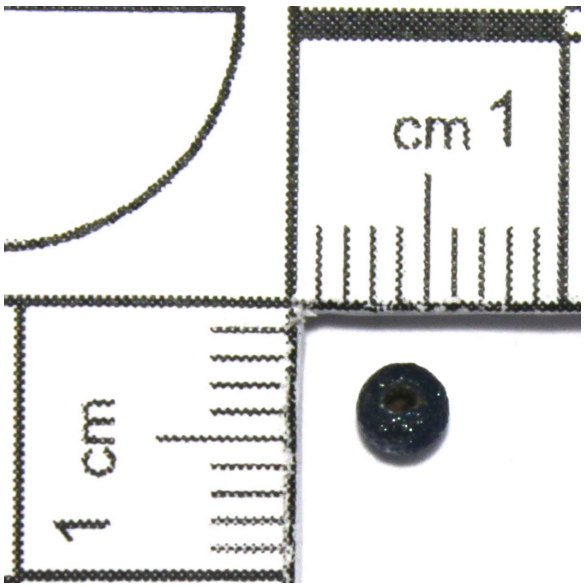
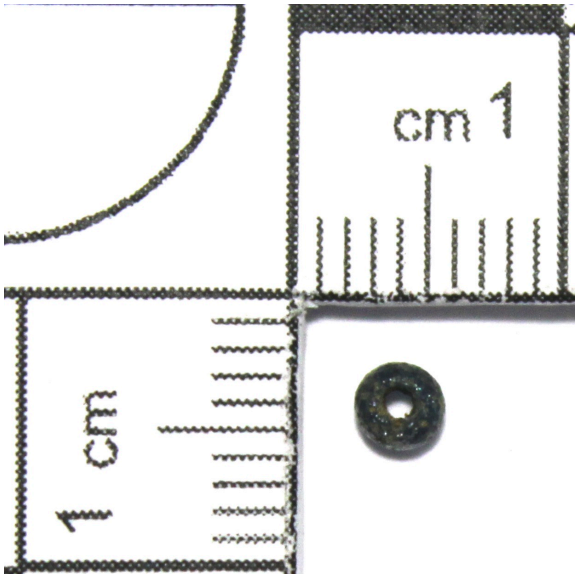
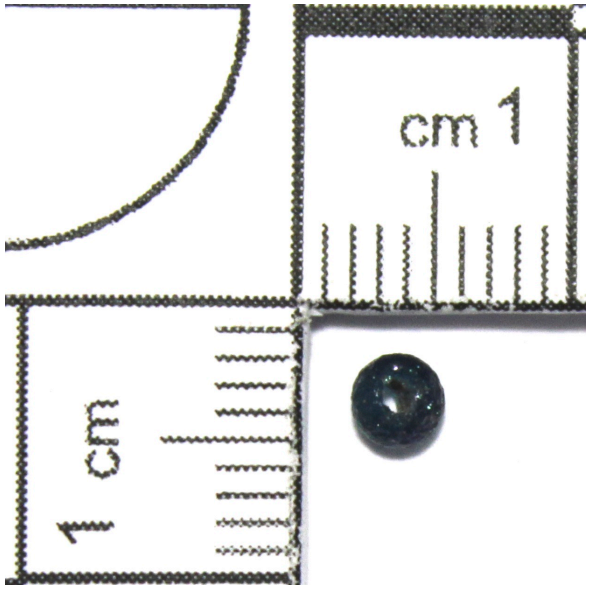
APPENDIX 2: BEADS RECOVERED FROM CREMATION DEPOSIT (1011)	
B001 PH#3168	
B002 PH#3169	

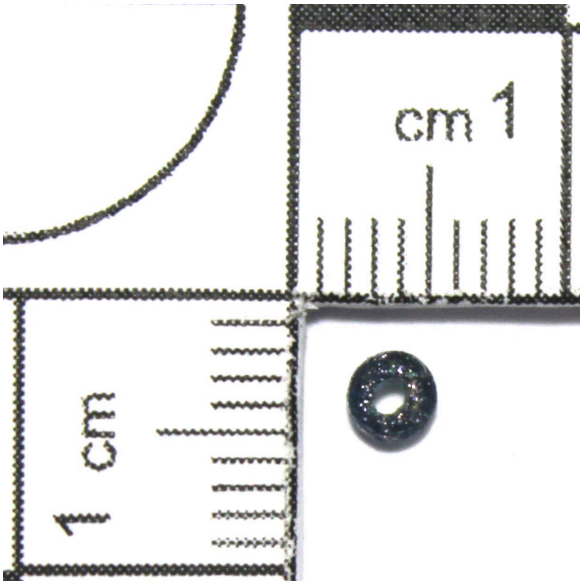
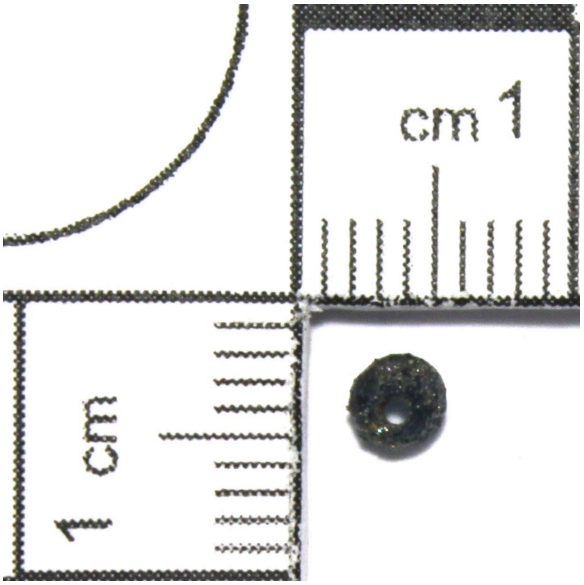
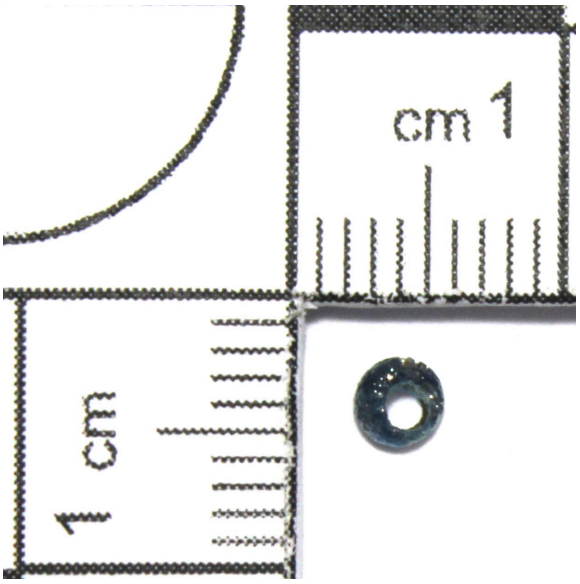
B003 PH#3170	
B004 PH#3171	
B005 PH#3172	

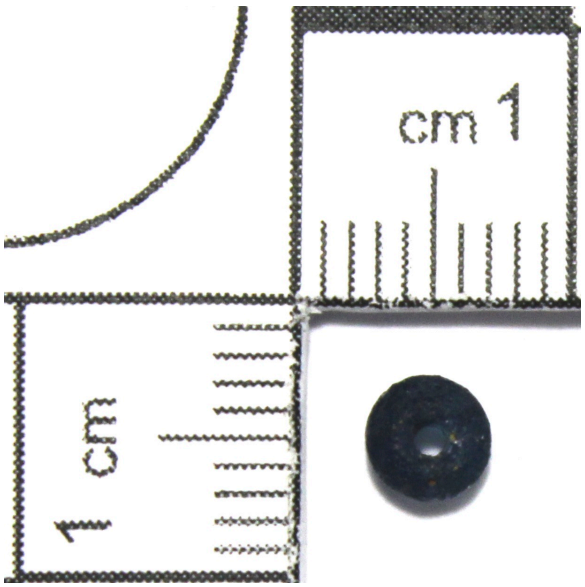
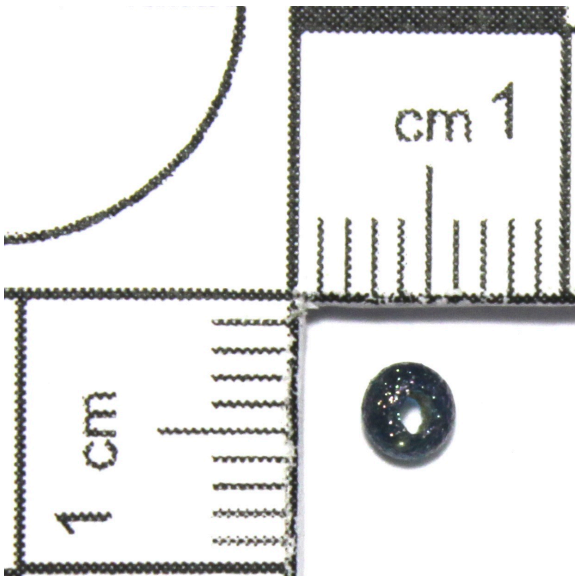
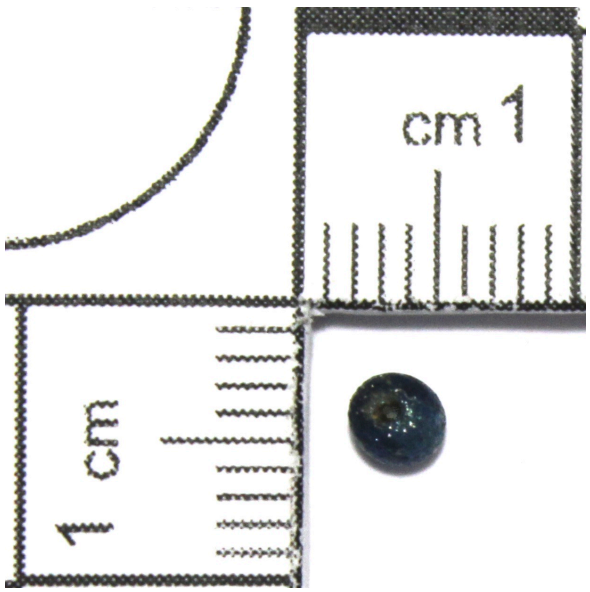
B006 PH#3173	
B007 PH#3174	
B008 PH#3175	

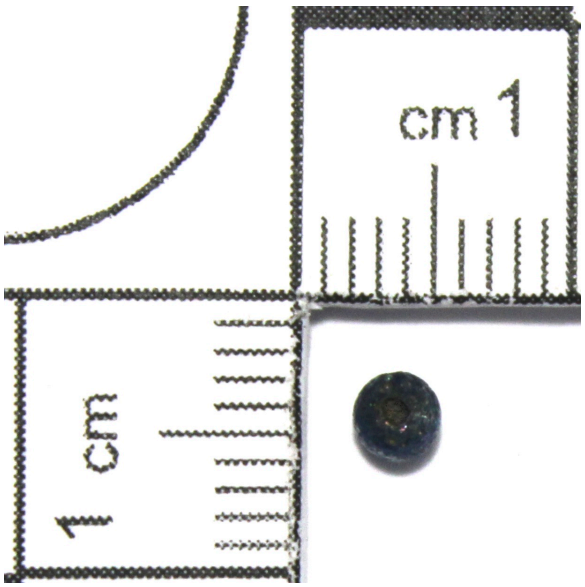
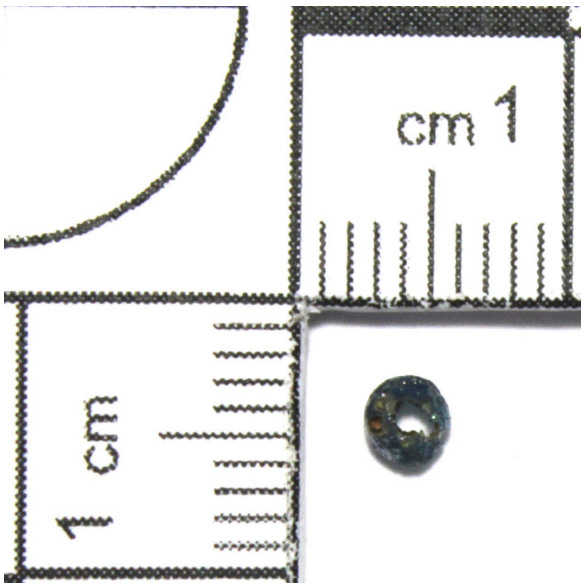
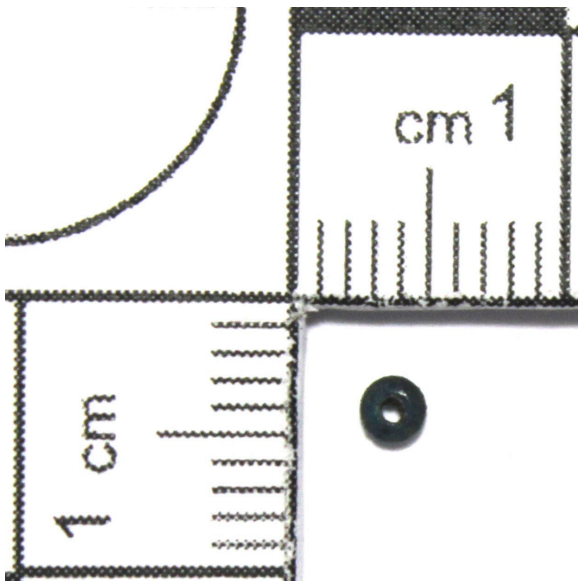
B009 PH#3176	
B010 PH#3177	
B011 PH#3178	

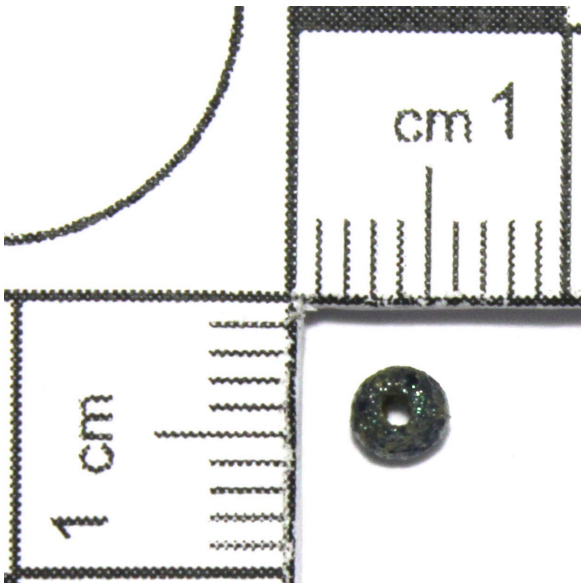
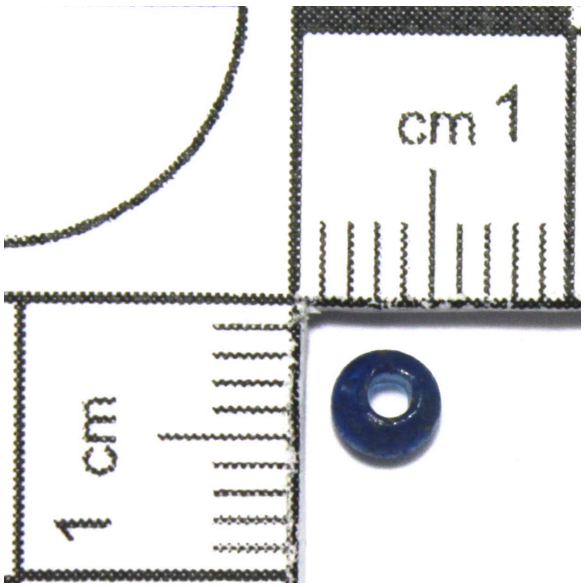
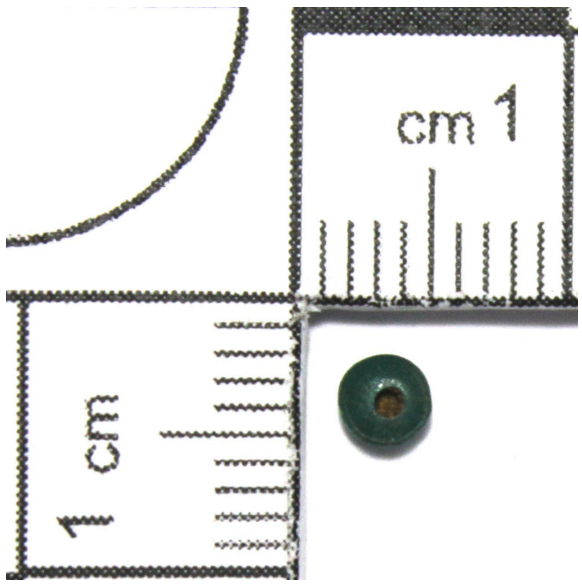
B012 PH#3179	
B013 PH#3180	
B014 PH#3181	

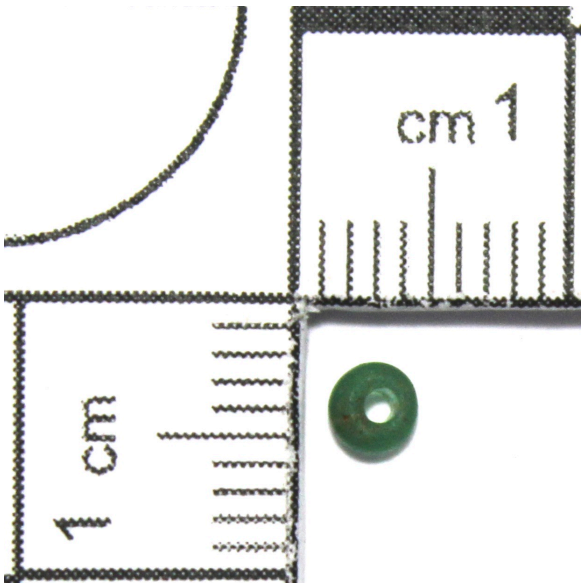
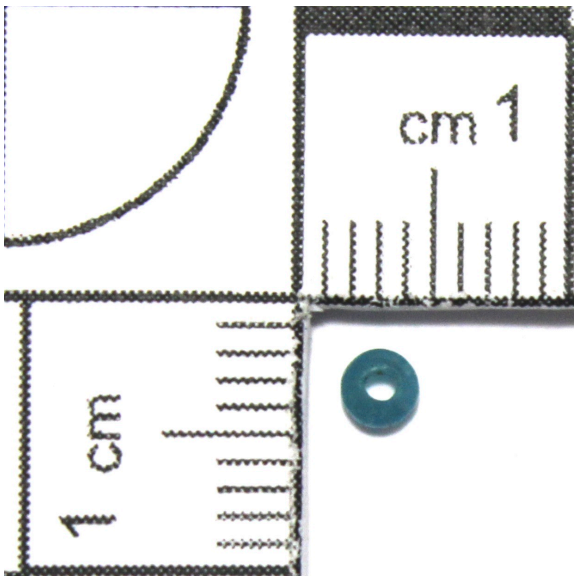
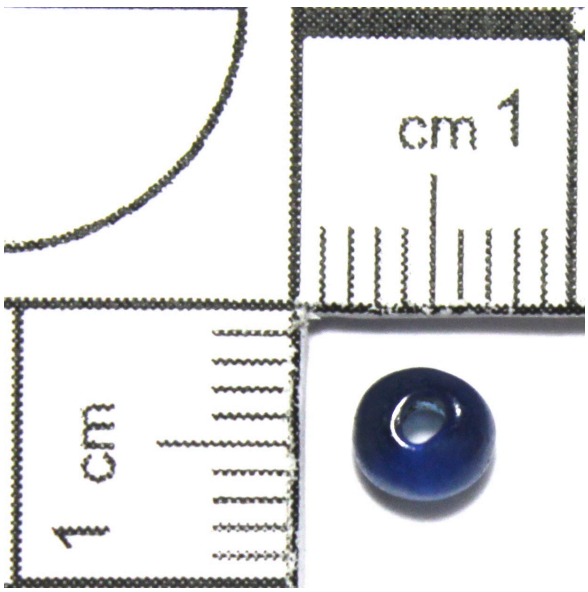
B015 PH#3182	
B016 PH#3183	
B017 PH#3184	

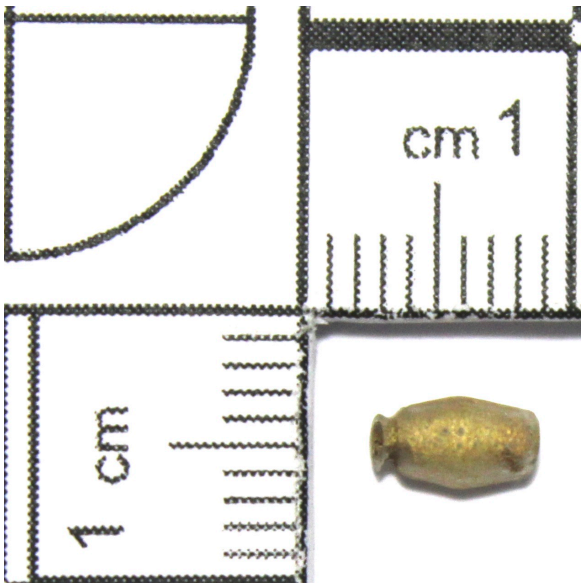
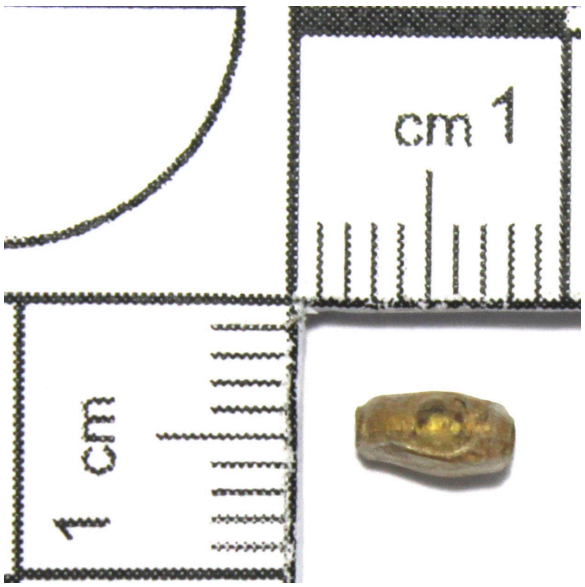
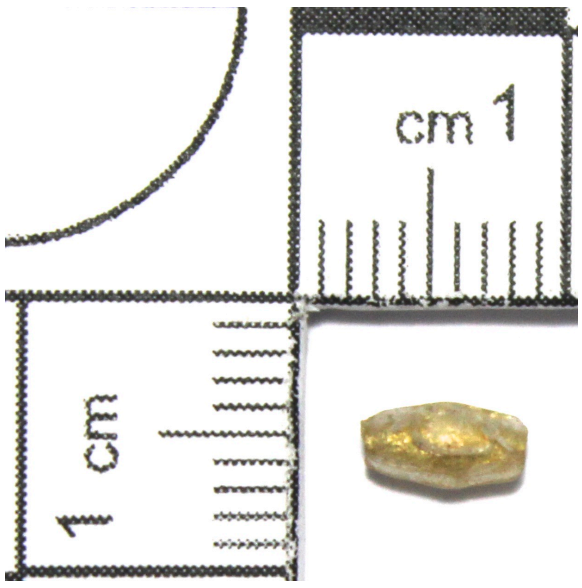
B018 PH#3185	
B019 PH#3186	
B020 PH#3187	

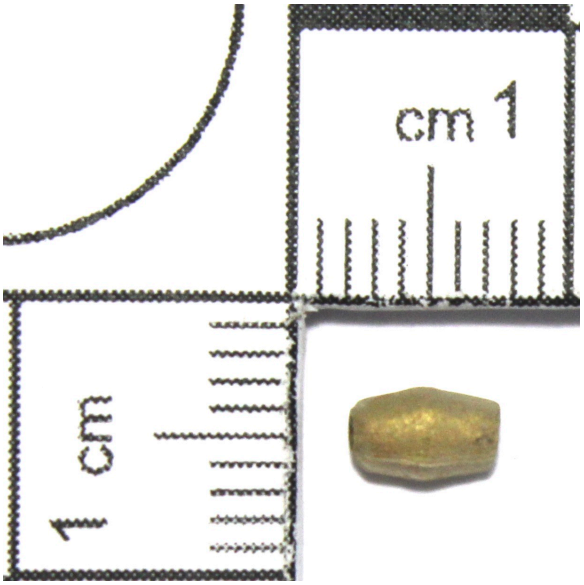
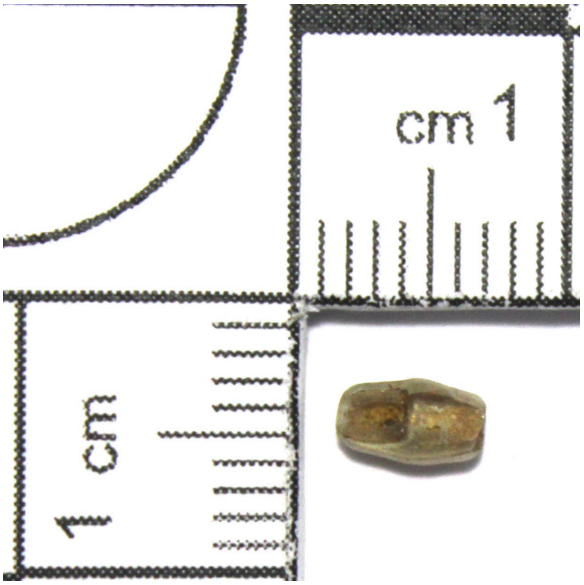
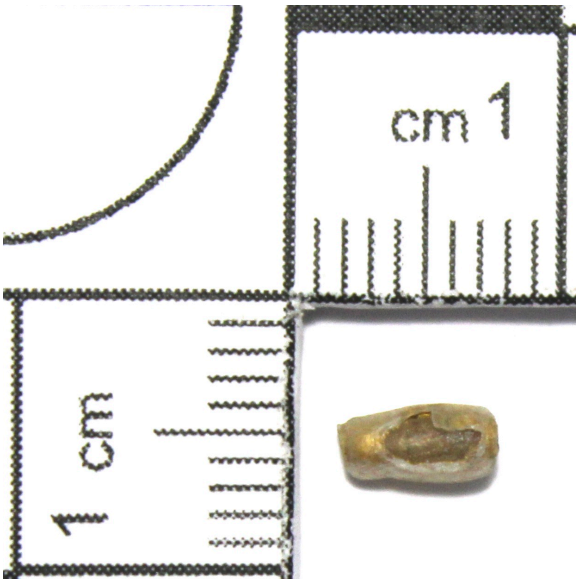
B021 PH#3188	
B022 PH#3189	
B023 PH#3190	

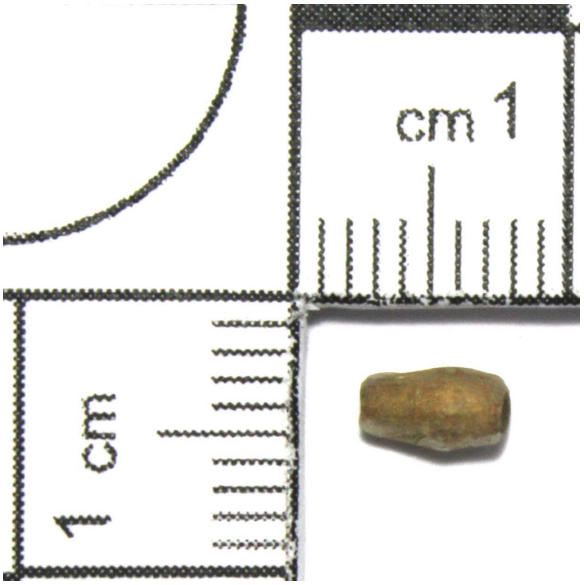
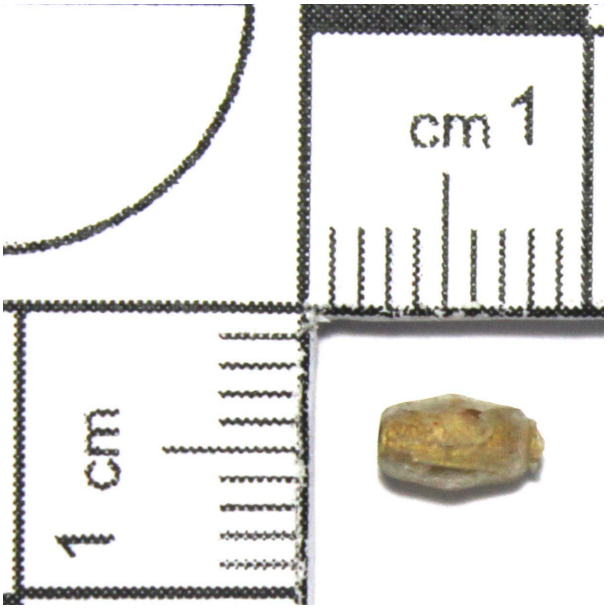
B024 PH#3191	
B025 PH#3192	
B026 PH#3193	

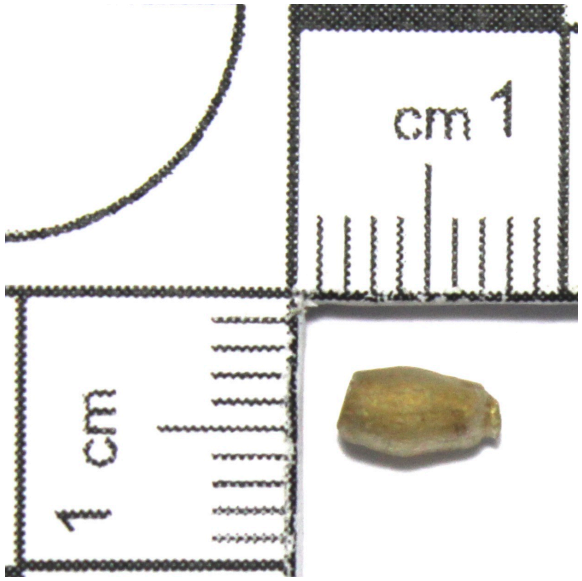
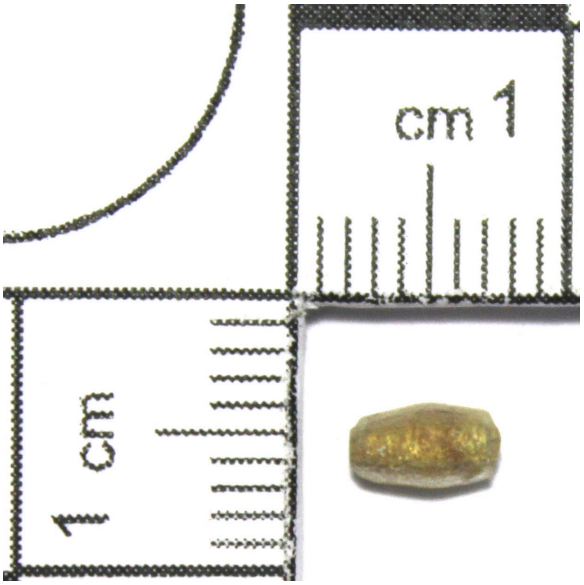
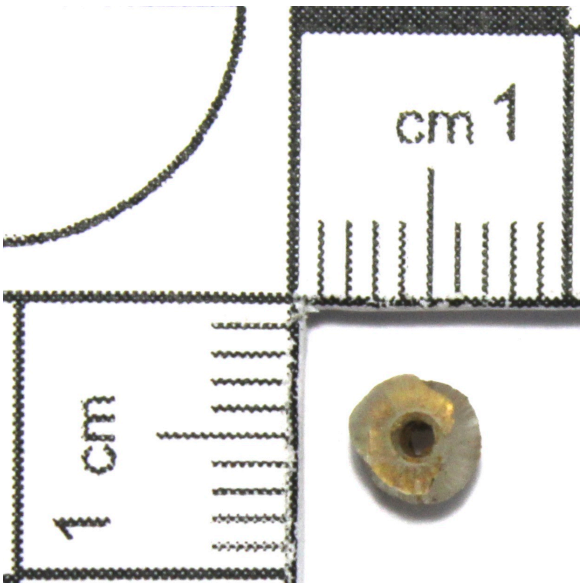
B027 PH#3194	
B028 PH#3195	
B029 PH#3196	

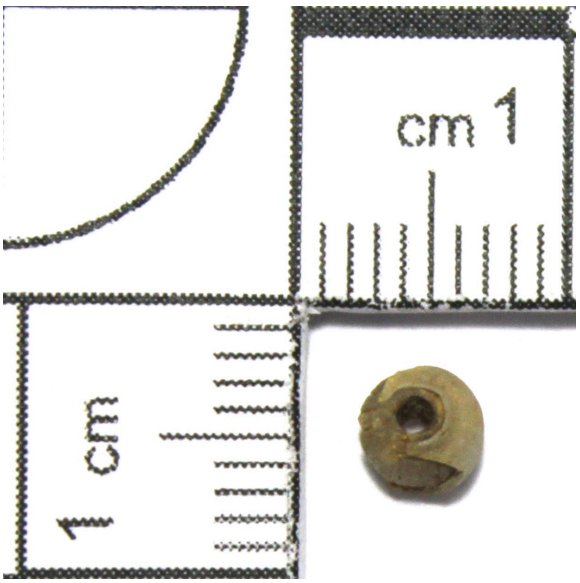
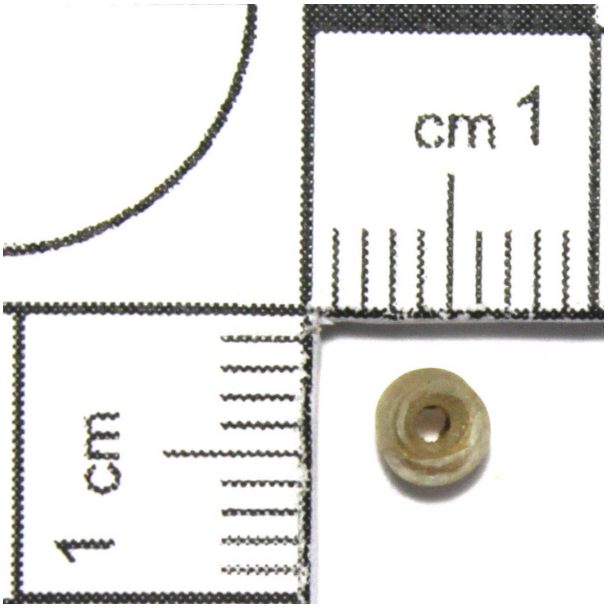
B030 PH#3197	
B031 PH#3198	
B032 PH#3199	

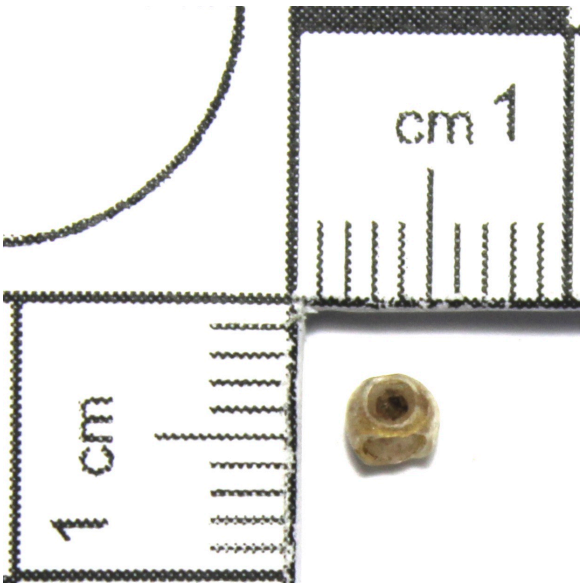
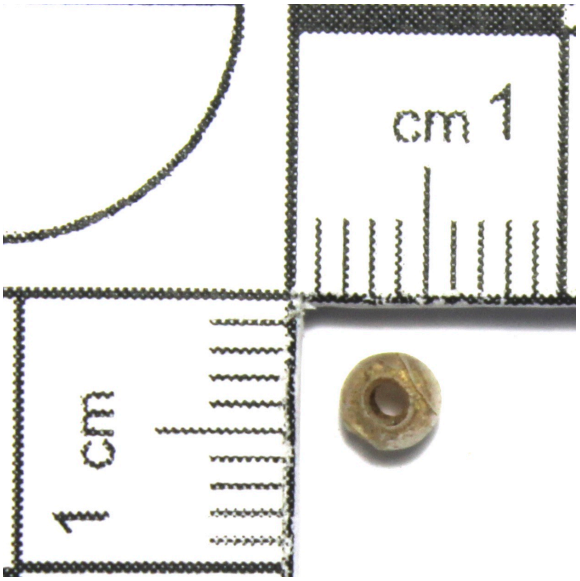
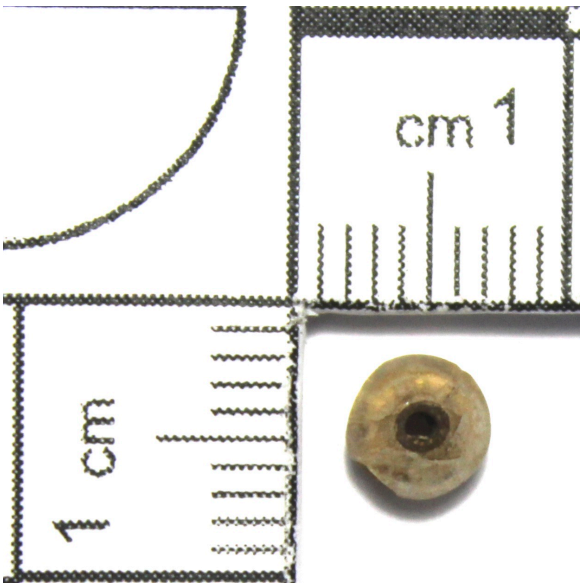
B033 PH#3200	
B034 PH#3201	
B035 PH#3202	

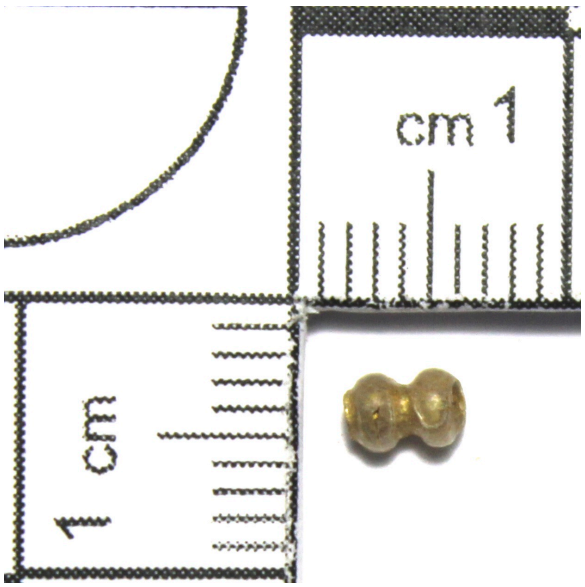
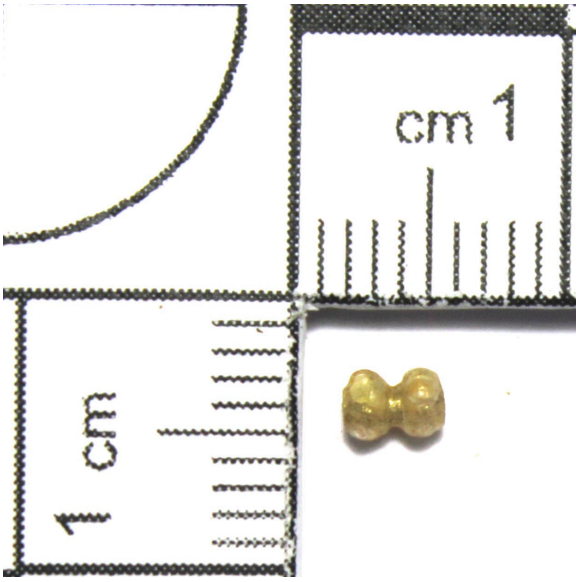
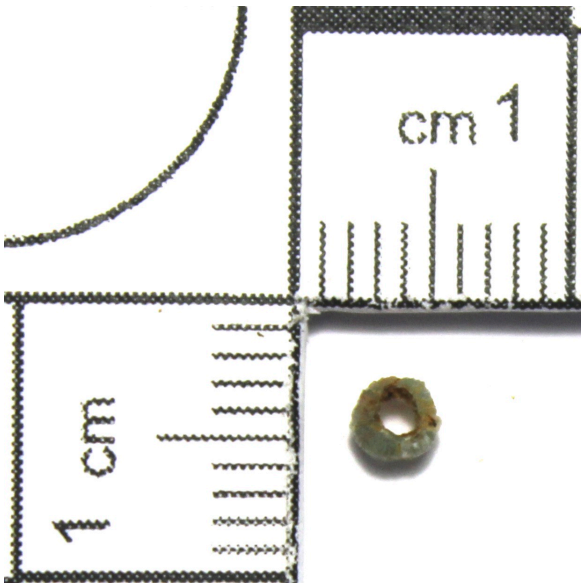
B036 PH#3203	
B037 PH#3204	
B038 PH#3205	

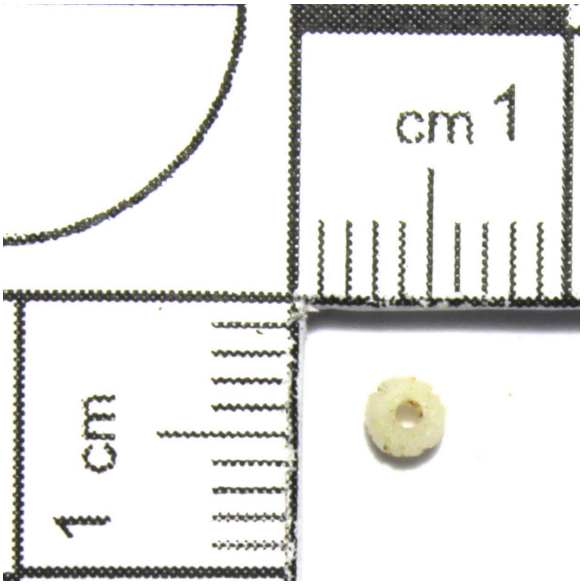
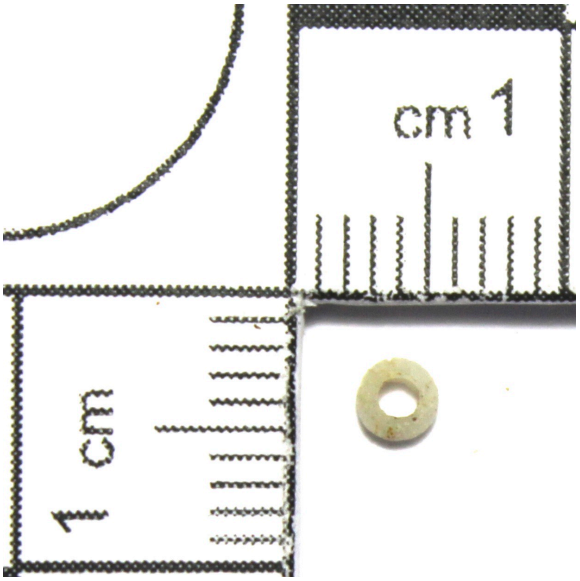
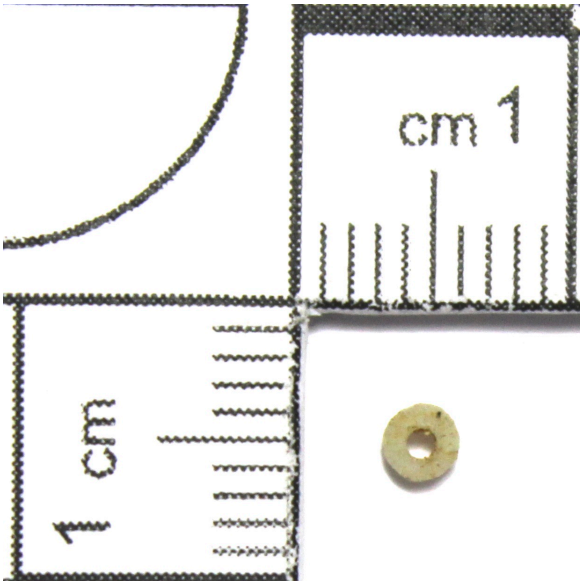
B039 PH#3206	
B040 PH#3207	

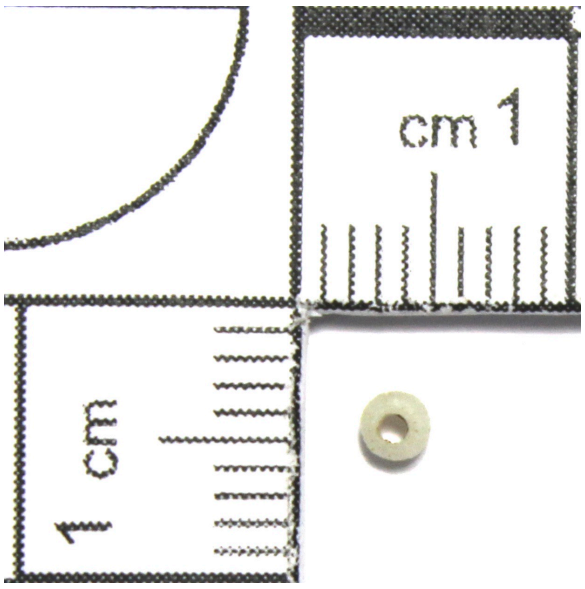
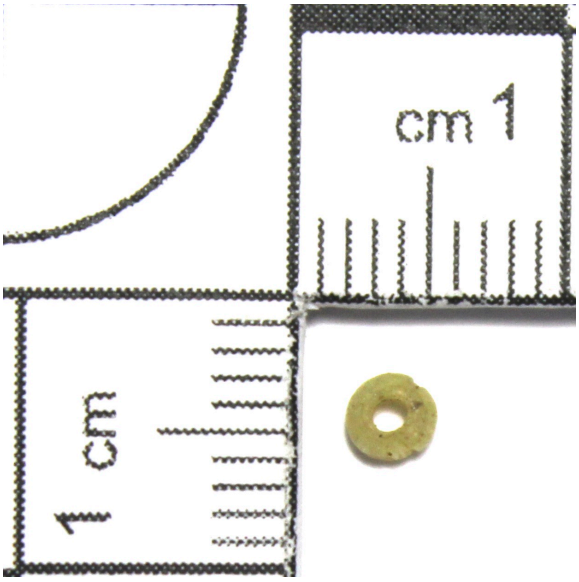
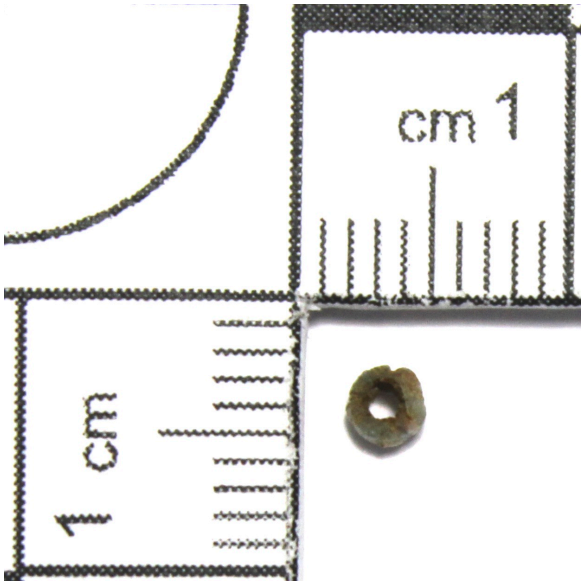
B041 PH#3208	
B042 PH#3209	
B043 PH#3210	

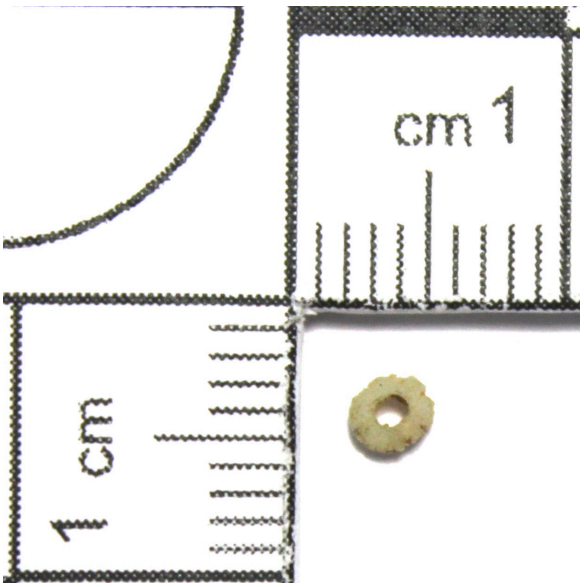
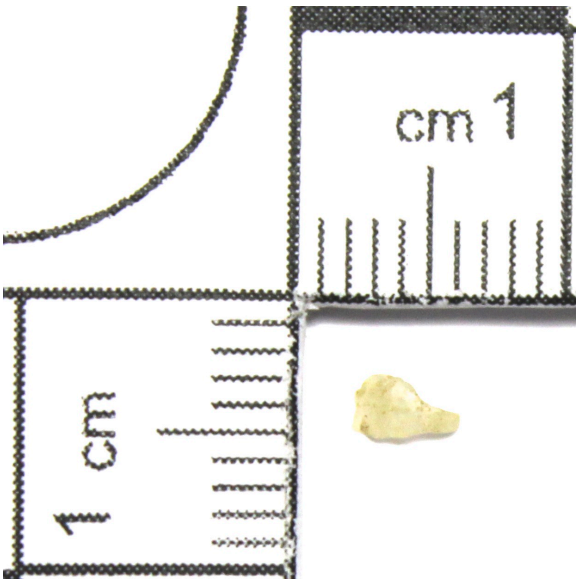
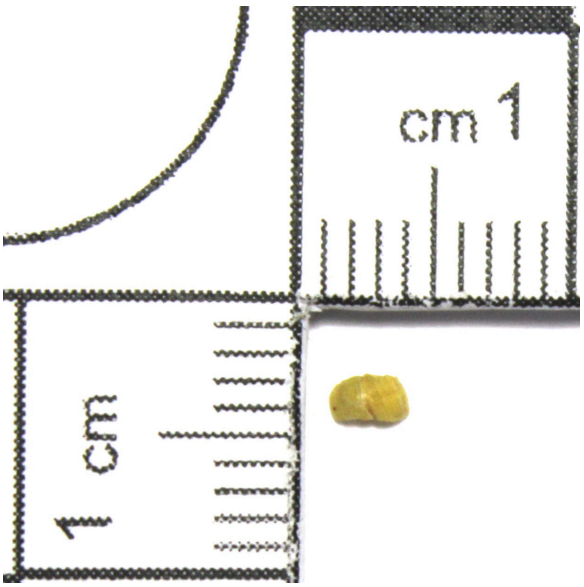
B044 PH#3211	
B045 PH#3212	

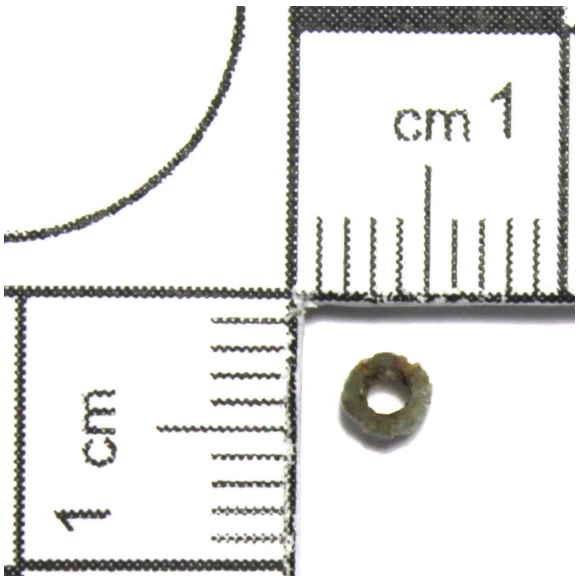
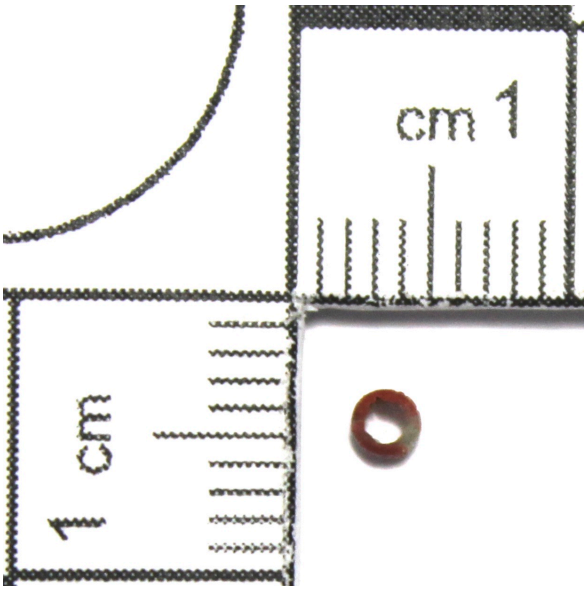
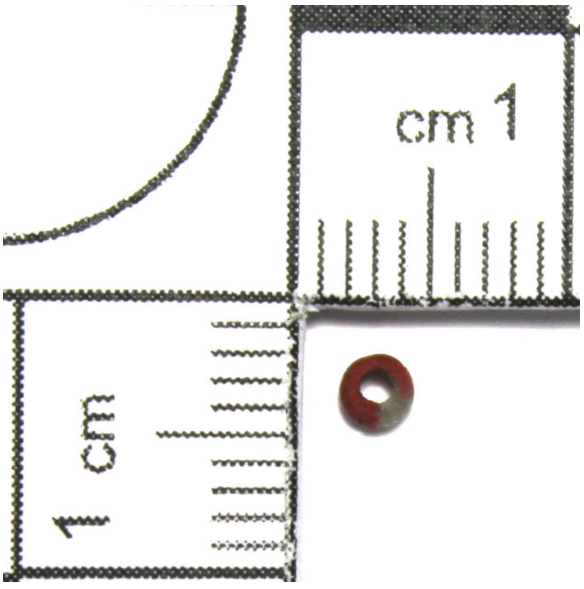
B046 PH#3213	
B047 PH#3214	
B048 PH#3215	

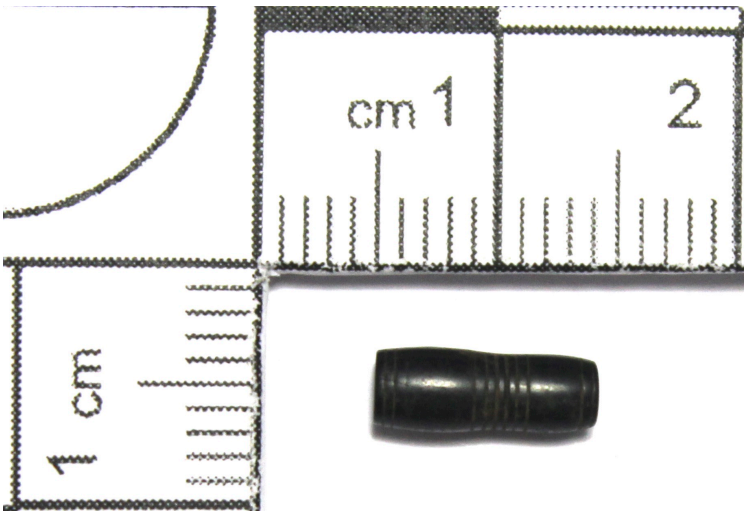
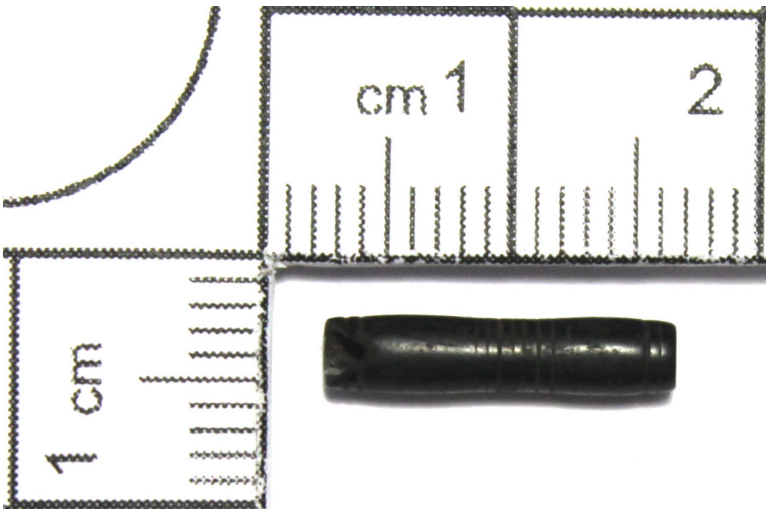
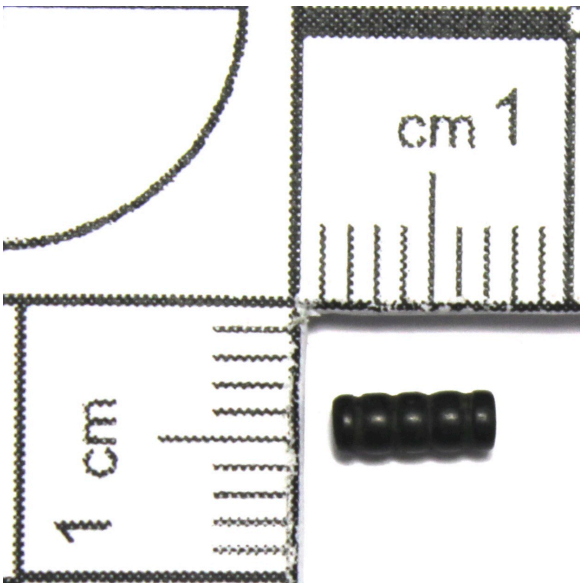
B049 PH#3216	
B050 PH#3217	
B051 PH#3218	

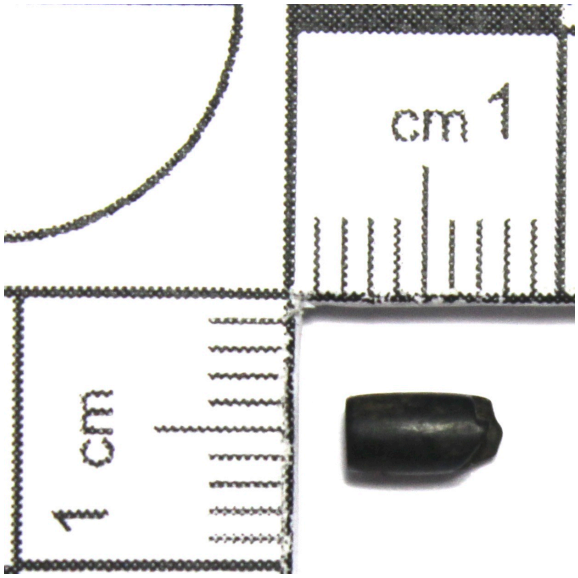
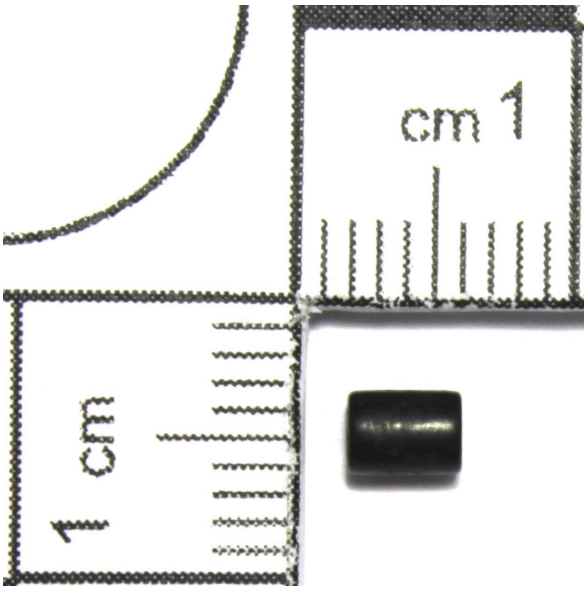
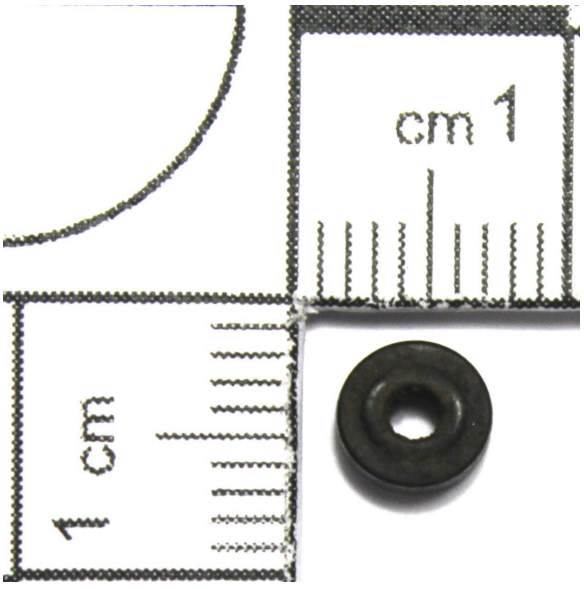
B052 PH#3219	
B053 PH#3220	
B054 PH#3221	

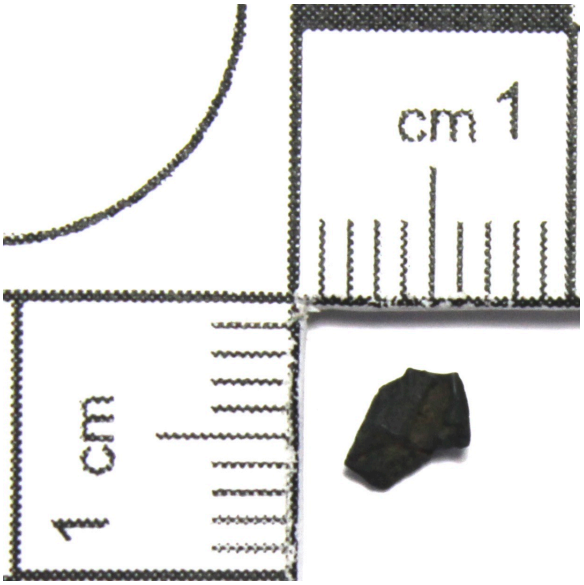
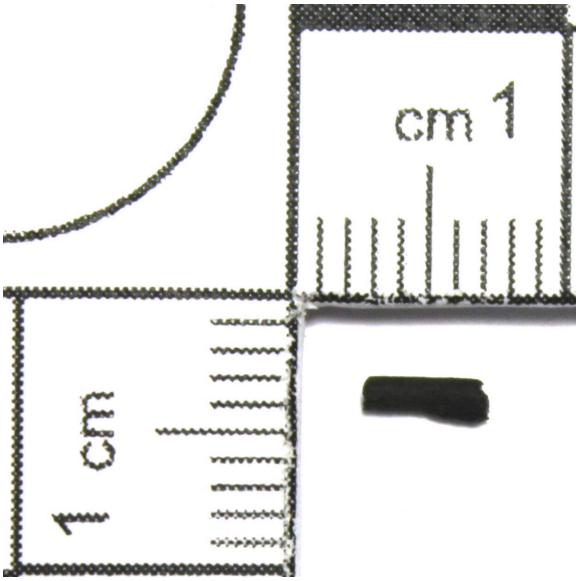
B055 PH#3222	
B056 PH#3223	
B057 PH#3224	

B058 PH#3225	
B059 PH#3226	
B060 PH#3227	

B061 PH#3228	
B062 PH#3229	
B063 PH#3230	

B064 PH#3231	
B065 PH#3232	
B066 PH#3233	

B067 PH#3234	
B068 PH#3235	
B069 PH#3236	

B070 PH#3237	
B071 PH#3238	

APPENDIX 3: CRAMBECK REDUCED WARE RECOVERED FROM CREMATION DEPOSIT (1011)

PH#3239	
PH#3240	

APPENDIX 4: Lsy1 RECOVERED FROM CREMATION DEPOSIT (1011)

PH#3241 NB these sherds conjoin.	
PH#3242 NB these sherds conjoin (same as above).	

PH#3243	
PH#3244	

Appendix 12 Crambeck Archaeology Project, 2014 Spring Season, Trench 5 Post Excavation Report

Rachel Wood

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Figures

Figure 1. The highly magnetic anomaly investigated by Trench 5

Figure 2. Plan view of Trench 5

Figure 3. The possible line of the grave cut is indicated by the dashed red line

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    3.3 Unstratified
    3.4 Cart Fittings

4. Further Investigation

5. Summary

Appendix 1 Trench 5 post-excavation data

Appendix 2 Conservation assessment report

Appendix 3 Investigative conservation report

1. Introduction

Trench 5 was placed over a magnetic anomaly identified by the 2013 magnetometry survey. This and similar anomalies have been assumed to be Crambeck ware kilns in the past. The aim of this 3m x 3m trench was to test this theory by groundtruthing the magnetometry results. The map blow indicates the response excavated in Trench 5 (Figure 1).

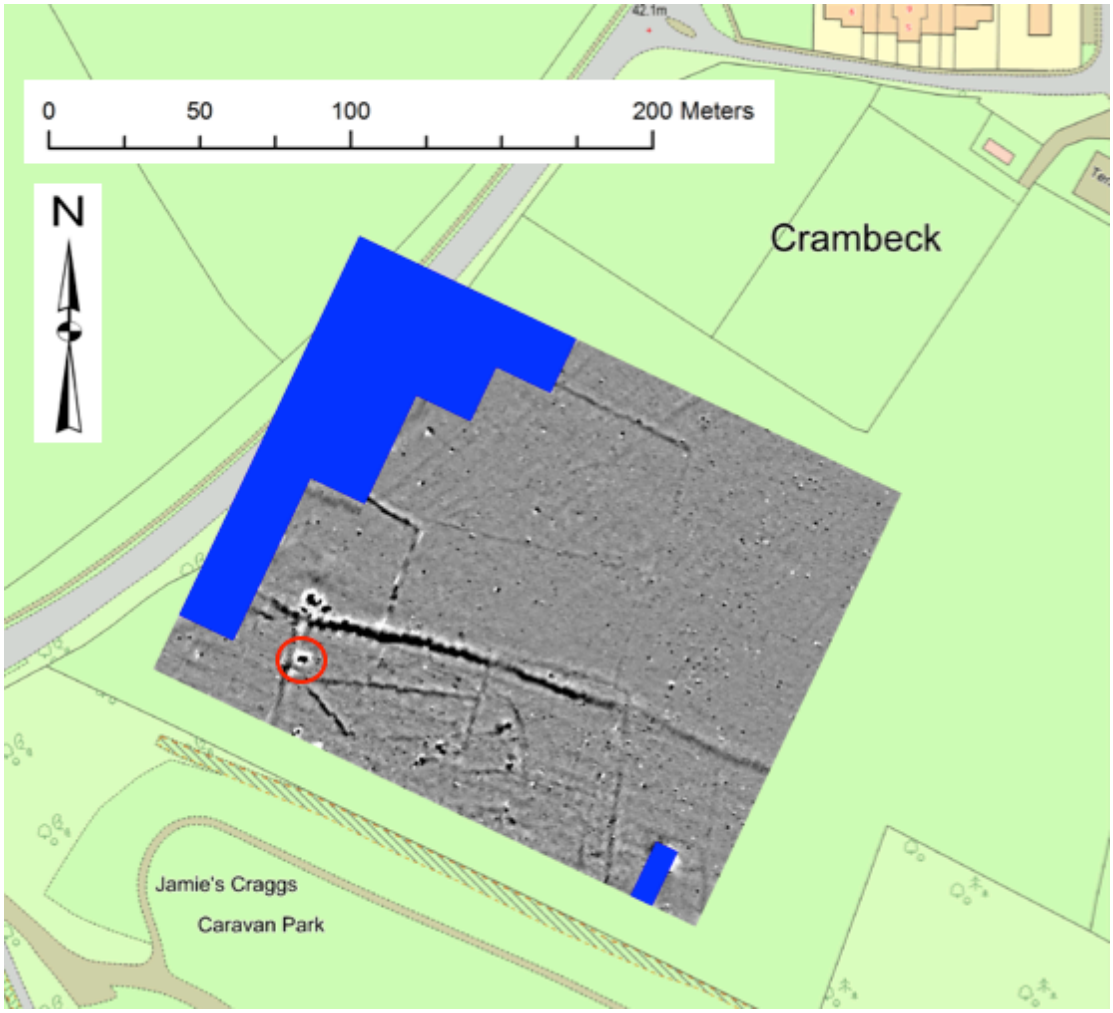


Fig. 1. The highly magnetic anomaly investigated in Trench 5.

Trench 5 was placed over a roughly medium sized response. It quickly became apparent that the response was not a kiln as previously thought. The top of an iron bar emerged a few centimeters down, although no measurement was taken at this stage (unfortunately the iron bar broke before a depth measurement could be established). As excavation progressed it became clear that this was the upper part of a circular or curved object protruding up from a lower context or that have been driven down into the natural soil. It was first assumed to be modern given its relatively high location in the matrix and its good state of preservation. It quickly became clear that the iron piece was much larger than originally thought. Mark

Whyman (YAT), who visited the site, was the first to suggest that it might be an iron tyre in an Iron Age cart burial. The trench was re-examined after this suggestion and the context sheets re-evaluated and clarification added to them with this possibility in mind.

During excavation it was established that the northern side of the tyre was split by an old break. The southern part was quite thin in one area with a large hole and subsequently split during excavation, thus allowing a section c60cm long to be removed. Roughly 10cm directly underneath the top arch of the tyre were excavated a lynch pin as well as part of one, possibly two, nave hoops. It is likely that the grave extends to the east as traces of a possible cut on the western side of the tyre were identified. Figure 2 below shows the plan view of the trench with the remains of the iron tyre (post-break) centre-left. Figure 3 shows the possible line of the grave cut.

Fig. 2. Plan view of Trench 5.

(Image credit: Crambeck Archaeology Project)

Fig. 3. The possible line of the grave cut is indicated by the dashed red line.

(Image credit: Crambeck Archaeology Project)

2. Discussion of Contexts and Stratigraphy

The Harris matrix for this trench is as follows:

(1122) Topsoil	
(1121) Subsoil	
[1124] Grave Cut	(1125) Grave Fill

Table 1: Harris matrix for Trench 5.

Finds were recovered from (1122) and (1121). The iron wheel banding protruded up through the subsoil into the bottom of the topsoil. The cart fittings were recovered from (1121) although it is possible this was the grave fill that was almost impossible to distinguish from the top- and subsoils. It is certain that these items were originally located within the grave fill. This was given the context number (1125) although it was not excavated. During excavation there was nothing about the top- and subsoils to indicate the magnetic anomaly

was anything unusual. Excavators certainly did not expect to find a cart burial. The table below list the contexts from this trench and gives a brief description for each.

Context	Description
(1122) Topsoil	Light grey-brown material. Depth 0.40m. Finds: pottery, metal. Date: modern.
(1121) Subsoil	Brown-orange material. Depth 0.40m. Finds: pottery, metal
[1124] Grave Cut	Possible cut of grave. Identified but unexcavated.
(1125) Grave Fill	Fill of grave. This may have been partially excavated but it is unclear.
(1123) Natural Limestone	Deposit of yellow limestone, capped by c2cm of natural gravel.

Table 2: Trench 5 contexts and brief descriptions of each.

All excavated contexts were done so by hand – the top- and subsoils being mostly removed by mattock. A conservationist was consulted about how best to deal with the section of tyre left in the deposit. It was recommended that this was packed with soil so as to support it and the trench be backfilled. This was done at the end of the excavation period and the trench re-turfed.

3. Finds

Including the iron cart fittings and unstratified finds, there were a total of 73 objects recovered from the excavated contexts of this trench. Perhaps unsurprisingly the topsoil contained the most finds, 63 in total, 86.30% of the total assemblage. The subsoil revealed a singular sherd of Roman pottery, 1.37% of the assemblage. There were two unstratified items, 1 lump of unidentified metal and 1 sherd of Roman pottery. Together these consist of 2.74% of the assemblage. The 7 iron items related to the cart burial (including the wheel rim fragments) consist of 9.59% of the assemblage.

3.1 Topsoil (1122)

A total of 12 miscellaneous objects were recovered from this context (Table 3). The material, weight and descriptions are below.

Material	Weight (g)	Description
Ceramic	3.9g	Misfired fragment
Ceramic	222.7g	Possible kiln furniture, CRA RE
Charcoal	1.3g	———
Charcoal	1.4g	———
Charcoal	7.0g	———
Iron (FE)	21.6g	SF# 3; medieval-nineteenth century buckle fragment
Shell	1.1g	Oyster shell
Slag	11.5g	———
Slate	20.5g	Roof tile fragment? Post-medieval–modern
Slate	4.6g	Roof tile fragment? Post-medieval–modern
Unknown	3.8g	Ironstone
Stone / Chalk?	13.6g	Possibly some form of burnt stone / chalk?

Table 3: The miscellaneous finds from the topsoil (1122), their material, weight, and descriptions.

These objects were no different from the topsoil excavated elsewhere on site. The piece of possible kiln furniture was interesting and we were hopeful of uncovering the remains of a kiln or some sort of rubbish dump. However, this was not the case and it is likely that this object has been dragged here from elsewhere on site by the plough.

There were a total of 52 pottery sherds in this context. There was a small amount dating from the medieval period to the nineteenth century (6 sherds). The rest were of Roman date. Of these, 16 were of unknown reduced wares of various fabrics (at least 9 different fabrics). These had a total weight of 383.4g and an EVE of 0.45. There was one possible fragment of a straight sided bowl and one fragment of a bowl. There were 2 sherds of unknown oxidised ware of 2 different fabrics. These had a total weight of 9.6g. A total of 2 Pink Grog Tempered ware (PNK GT) sherds were recovered with a total weight of 3.7g. There were also 3 sherds of Holme-on-Spalding Moore Reduced ware (HSM RE) weighing 17.4 and 1 sherd of Eboracum White Slipped ware (EBO WS) weighing 2g.

The rest of the assemblage consisted of Crambeck wares. There were 2 sherds of Crambeck Parchment ware (CRA PA), weighing 48.3g. One was a base fragment although it was too abraded for measurement, the other a flanged rim sherd of a mortarium with an EVE of 0.04. There were 20 sherds of Crambeck Reduced ware (CRA RE), weighing 176.5g with a total EVE of 0.26. Of these 4 were identified as being from mortaria. One was a misfired lump of CRA RE material.

3.2 Subsoil (1121)

This context revealed only one object, a single sherd of unkown reduced ware of Roman date, weighing 3.2g. This was given the code of Xnw1 (unknown inclusions, white slipped, wheelthrown).

The top of the iron wheel band protruded into this context. The other cart fittings were originally thought to be within the subsoil context. However, on identification of the feature and subsequent reflection, it is clear that these must have been in the fill of the grave (1125), and the subtle changes in the soil were too ephemeral to be seen at the time of excavation.

3.3 Unstratified Finds

There were two object recovered that had not been assigned a context. One was a single sherd of Holme-on-Spalding Moor Reduced ware (HSM RE). This is of Roman date and weighed 23.7g. The other was a large iron object, rough 'D' shaped in plan with a flat back and side, the other side being rounded. This weighed 227.7g. It is possible, indeed likely, that this relates to the cart burial in some way although it is difficult to know for sure. Looking at the exposed section of this object it appears that it could be a fragment of the iron wheel banding with a large chunk of soil attached. Specialist attention is required before anything more can be said about this object for certain,

At the time of excavation, the finds from both the subsoil and topsoil contexts certainly did not indicate the presence of a cart burial. This is encouraging as it suggests that the burial itself is most likely to be intact and undisturbed by agricultural activity. It must be noted that, put alongside the identification of the feature and the recovery of the cart fittings, it is possible that the iron lump from an unstratified context is in fact part of the cart burial, most likely a piece of the iron wheel banding.

3.4 Cart Fittings

A total of 7 iron fragments were recovered from what was initially thought to be a continuation of the subsoil (1121). In reality these must have some from the fill of the grave (1125) and the changes in soil were too indistinct to be seen at the time of excavation. The original conservation assessment table for the iron objects compiled by M. Felter, York Archaeological Trust, is below (Table 4).

Photograph	Assessment
	**Piece 1** Probably a fragment of the iron tyre of the chariot. The piece is in two joining fragments and the break looks like recent physical damage. The fragment is in good condition, covered with a relatively stable thick corrosion crust of red/orange corrosion products and encrusted soil. Observation under magnification reveals areas of mineral preserved wood on the inner surface of the fragment; evidence of the wooden wheel. There may be enough present for a species identification using the scanning electron microscope. X-ray shows the metal core to be present but patchy, with very little metal surviving in the small triangular piece, and this is also confirmed by the broken edges. **Recommendations: investigation of a cross-section to show the shape of the tyre (estimate 3 hours), sampling and analysis of the mineral preserved wood.**
	**Piece 2** Iron lynch pin from the chariot with a square cross-section, sub-rectangular perforation at one end and a rounded knop terminal. The object is in fair to good condition, covered with relatively thin dark red/orange corrosion products and patches of encrusted soil. There are a few minor cracks indicating the beginnings of active corrosion but this is being kept at bay by dry storage. X-ray shows the metal core to be fairly solid though with extensive mineralisation of the outer edges. **Recommendations: investigation of three cross-sections to show the shape of the lynch pin if required (estimate 4 hours).**
	**Piece 3** Small fragment of slightly curved iron strip with 'D'-shaped cross-section (similar to piece 4 and piece 5). The surface is covered with a crusty mix of dark red corrosion products and encrusted soil and the interior surface has mineral preserved wood remains running at right angles to the length of the strip, though probably not enough for further analysis. The object is stable and in good condition, though with a fresh break at one end. X-ray shows the metal core to be almost completely mineralised and this is also confirmed by the break edge. **Recommendations: no further work.**

Piece 4

Fragment of iron strip similar in shape to piece 3 and piece 5. The fragment is in fair condition, being fractured and bent in two places, almost to breaking point, with associated active corrosion in these areas and the metal core being exposed. The rest of the surface is more stable, being covered with a crusty mix of dark red corrosion products and encrusted soil, however some horizontal cracks show the beginnings of active corrosion which is being kept at bay by dry storage. There is also a fresh break at one end. Again, mineral preserved wood runs perpendicular to the length of the strip, but not enough for further analysis. X-ray shows the metal core to be limited to a thin central ribbon.

Recommendations: investigation of a cross-section to show the shape if required (estimate 2 hours).

Piece 5

Fragment of iron strip similar in shape to piece 3 and piece 4. The piece is curved but is misshaped due to two fractures with associated bends and exposure of the metal core. Some horizontal fractures indicate the beginnings of active corrosion and this is being kept at bay by dry storage. The surfaces are covered with a crusty mix of dark red corrosion products and encrusted soil and again, there are mineral preserved wood remains on the inner surface, running at right angles to the length of the strip, though not enough for further analysis. X-ray shows the metal core to be present but heavily mineralised and this is confirmed by the fractured areas.

Recommendations: investigation of a cross-section to show the shape if required (estimate 2 hours).

	**Large tyre fragment** The large tyre fragment (similar in shape to piece 1), of slightly curved iron, is in fair condition, generally quite stable, but with three fractures running perpendicular to the length of the fragment and a fresh, jagged fresh break to one end, all of which have associated surface losses and active corrosion, however, this is being kept at bay by dry storage. The surfaces are covered with relatively thin orange red corrosion products and encrusted soil with roots and some large corrosion blisters showing through. The inner surface has fragments of mineral preserved wood, running parallel to the length of the fragment, but probably not enough for further analysis. **Recommendations: investigation of a cross-section to show shape if required (estimate 3 hours).**

Table 4: Table from the Conservation Assessment Report including identification and description of the condition of each iron fragment along with recommendations for further investigation and conservation. (Felter, M. (York Archaeological Trust) 2014 Conservation Assessment Report, Crambeck CB14, (Report produced for project purposes), Assessment Table, Report # 2014/59).

The further investigation recommended in the conservation assessment report was undertaken. The reports for both are attached as appendices at the back of this document.

4. Further Investigation

It is clear that the extent of the grave needs to be established. It will need carful specialist attention during excavation in order to maximise the information recovered from the deposit. A Committee has been set up to support and aid this process. English Heritage are keen to support this going forward as much as they are able and will grant permission for excavation based on a sound project design.

Prior to production of the PD, a program of geophysics will be undertaken. The area around this response and another very similar larger response close by will be surveyed at a high resolution in an attempt to establish the extent of the grave(s). The features will be excavated in 10cm spits through the top- and subsoils, each of which will be resurveyed until either, archaeological deposits are reached or clear results from the geophysics are achieved. At which point work will stop, the area be recovered, and the project design produced. This program of work is designed to inform the PD as much as possible with things such as the depth of the features, their extent and therefore the best way to proceed with investigations.

5. Summary

The discovery of an Iron Age cart burial at the Jamie's Craggs site was completely unexpected. There are around 30 of these burials in East Yorkshire and seem to be unique to the region, the closest known one to the Jamie's Craggs site is at Wetwang and Garton Slack roughly 20 miles to the south-east. Further investigation is required to establish the contexts for this burial as well as if similar geophysics responses in the immediate surrounding area are more of the same.

Due to the continuing corrosion, a much more detailed full excavation of the cart burial needs to take place after the program of geophysics and spitting and the production of a suitable project design. This will require careful planning and integration of on-site and off-site conservation processes. The site is a security risk given its location next to the A64. It is highly visible from the road and swift action regarding the cart burial(s) is needed to reduce the chance of illegal action at the site.

PLEASE NOTE: due to the highly sensitive nature of the find in Trench 5, the discovery is currently being kept between the committee and Gail Faulkingham at North Yorkshire County Council. The landowners have been informed and the need for discretion, at least for now, impressed upon them. All those who attended the Spring 2014 excavation have signed a disclaimer agreeing not to discuss the excavation or its finds. The committee consists of:

Steve Roskams (University of York)

Dr Pete Wilson (English Heritage)

Dr Keith Emerick (English Heritage)

Dr Ian Stead

Dr Sonia O'Connor (University of Bradford)

Dr Melanie Giles (University of Manchester)

Dr Mark Whyman (York Archaeological Trust)

Dr Dominic Powlesland (The Landscape Research Project)

Dr Cath Neal (Universities of York and Hull)

Appendix 1: Trench 5 Post-Excavation Data

Topsoil (1122) Miscellaneous Materials

Material	Weight (g)	Notes
Ceramic	3.9	missfired fragment
Ceramic	222.7	possible kiln furniture, CRA RE
Charcoal	1.3	—
Charcoal	1.4	—
Charcoal	7.0	—
Iron (FE)	21.6	SF#3; med-C19th buckle fragment
Shell	1.1	oyster
Slag	11.5	—
Slate	20.5	roof tile fragment?
Slate	4.6	roof tile fragment?
Unknown	3.8	ironstone
Stone/Chalk?	13.6	possibly burnt stone/chalk? etc.

Topsoil (1122) Pottery

Ware	Date	Weight (g)	R/B/BS/H	R/B EVE	Diameter	Form	Decoration	Notes
CRA RE	301-400AD	20.9	R	N/A	N/A	Unknown	3 incised lines on top of flange	flanged
CRA RE	301-400AD	13.7	R	3	15	Mortaria	2 incised lines on top of flange	flanged
CRA RE	301-400AD	9.3	R	N/A	N/A	Unknown	None	very abraded, flanged
CRA RE	301-400AD	9.5	R	N/A	N/A	Unknown	None	very abraded
CRA RE	301-400AD	6.5	R	5.5	8	Unknown	None	flanged
CRA RE	301-400AD	36.9	BS+B	17.5	3	Mortaria	None	large ironstone

								trituration grits
CRA RE	301-400AD	22.4	BS	N/A	N/A	Mortaria	None	very small ironstone trituration grits
CRA RE	301-400AD	7.2	BS	N/A	N/A	Mortaria	None	large ironstone trituration grits
CRA RE	301-400AD	5.7	BS	N/A	N/A	Unknown	None	——
CRA RE	301-400AD	7.4	BS	N/A	N/A	Unknown	None	——
CRA RE	301-400AD	5.5	BS	N/A	N/A	Unknown	None	——
CRA RE	301-400AD	5.5	BS	N/A	N/A	Unknown	None	——
CRA RE	301-400AD	2.1	BS	N/A	N/A	Unknown	None	——
CRA RE	301-400AD	1.7	BS	N/A	N/A	Unknown	None	——
CRA RE	301-400AD	5.2	BS	N/A	N/A	Unknown	None	——
CRA RE	301-400AD	3.9	BS	N/A	N/A	Unknown	None	——
CRA RE	301-400AD	2.3	BS	N/A	N/A	Unknown	None	——
CRA RE	301-400AD	1.9	BS	N/A	N/A	Unknown	None	——
CRA RE	301-400AD	2.7	BS	N/A	N/A	Unknown	None	——
CRA RE	301-400AD	6.2	Missfire?	N/A	N/A	Missfire?	None	missfired lump
CRA PA	301-400AD	21.2	B	N/A	N/A	Unknown	None	very abraded
CRA PA	301-400AD	27.1	R	4	12	Mortaria	1 incised line on top of flange	flanged
EBO WS	101-200AD	2.0	BS	N/A	N/A	Unknown	None	——
HSM RE	43-410AD	19.4g	BS	N/A	N/A	Unknown	None	——
HSM RE	43-410AD	12.1	BS	N/A	N/A	Unknown	None	——
HSM RE	43-410AD	5.3	BS	N/A	N/A	Unknown	None	——

PNK GT	101-400AD	2.8	BS	N/A	N/A	Unknown	None	——
PNK GT	101-400AD	0.9	BS	N/A	N/A	Unknown	None	——
Gmw1	43-410AD	6.1g	BS	N/A	N/A	Unknown	None	Reduced
Isw1	43-410AD	4.0	BS	N/A	N/A	Unknown	None	Reduced
Isw1	43-410AD	2.5	BS	N/A	N/A	Unknown	None	Reduced
Isw1	43-410AD	2.7	BS	N/A	N/A	Unknown	None	Reduced
Lsmw1	43-410AD	18.0	BS	N/A	N/A	Unknown	None	Reduced , red-grey core, beige inner margins, brown-grey external margins
Msow1	43-410AD	16.3	R	12.5	9	Bowl	None	Reduced
Msw1	43-410AD	4.1	BS	N/A	N/A	Unknown	None	Reduced
Msw1	43-410AD	3.0	BS	N/A	N/A	Unknown	None	Reduced
Msbw1	43-410AD	11.4	BS+B	2.5	14	straight-sided bowl?	None	Reduced, mid grey internal burnish
Mw1	43-410AD	2.2	BS	N/A	N/A	Unknown	None	Reduced, white/light-grey upper margin and external; surface, dark grey core, mid grey bottom margin
Smow1	43-410AD	14.3	BS	N/A	N/A	Unknown	None	Reduced
Smow1	43-410AD	11.2	BS	N/A	N/A	Unknown	None	Reduced
Smow1	43-410AD	8.3	BS	N/A	N/A	Unknown	None	Reduced
Smow1	43-410AD	5.2	BS	N/A	N/A	Unknown	None	Reduced
Smbw1	43-410AD	11.1	BS	N/A	N/A	Unknown	None	Reduced, red-brown

								core, dark grey margins
Smbw1	43-410AD	11.6	BS	N/A	N/A	Unknown	None	Reduced, red-brown core, dark grey margins
Slw1	43-410AD	5.2	BS	N/A	N/A	Unknown	None	Oxidised, orange-red colour throughout
Smow2	43-410AD	4.4	BS	N/A	N/A	Unknown	None	Oxidised, orange-red fabric, mid grey slip internal and external

Subsoil (1121) Pottery

Ware	Date	Weight (g)	R/B/BS/H	R/B EVE	Diameter	Form	Decoration	Notes
Xnw1	43-410AD	3.2g	BS	N/A	N/A	Unknown	None	Reduced

Unstratified Materials

Material	Ware	Date	Weight (g)	R/B/BS/H	Form	Notes
Iron (FE)	—	Iron Age??	227.7	—	unknown	iron object - unknown if related to cart burial
Pottery	HSM RE	Roman	23.7	BS	—	—

Pottery Analysis

Ware	TSC	Weight	EVE
CRA PA	2	48.3	0.04
CRA RE	20	176.5	0.26
EBO WS	1	2.0	—
HSM RE	3	36.8	—
PNK GT	2	3.7	—
Reduced Roman	17	129.1	0.15
Oxidised Roman	2	9.6	—
Medieval-Modern	6	110.7	—
Totals	**53**	**516.7**	**0.45**

NB. Excludes unstratified sherd.

YORK ARCHAEOLOGICAL TRUST
CONSERVATION LABORATORIES

Conservation Assessment Report
Crambeck CB14

Client/Archaeological Unit: University of York
Conservator: M Felter
Date: 7.8.2014

York Archaeological Trust Conservation Report Number 2014/59

Number of artefacts

Material	Quantity
Iron	7 fragments

AIMS AND OBJECTIVES

This report aims to meet the requirements of MAP2 (English Heritage, 2001) and MoRPHE (English Heritage, 2006) to produce a stable site archive. This has involved X-radiography and an assessment of the condition, stability and packaging of the finds.
The condition of the various classes of material is summarised and indicators of unusual preservation noted. The potential of the assemblage for further analysis and research is discussed, and recommendations made for further investigative conservation and long term storage.

PROCEDURES

6 fragments from TR5 (1120) were X-rayed using standard Y.A.T. procedures and equipment (the largest piece was not X-rayed due to its size). 1 plate was used, and the plate was given a reference number in the YAT conservation laboratory series (X8415). The X-ray number was written on each small find bag. Each image on the radiograph was labelled with its piece number (please note, the smaller fragments were given numbers from 1-6 for ease of reference, see table in the appendix). The plate was packaged in an archival paper pocket.

All the finds were examined under a binocular microscope at X20 magnification. The material identifications were checked and observations made about the condition and stability of the finds, and recorded below. An assessment of each find is presented in the table in the Appendix.

CONDITION ASSESSMENT SUMMARY

In general, the iron was found to be in good to fair condition, mostly stable, with active corrosion being limited to fractured areas or to beginnings of small horizontal cracks, which is being kept at bay by dry storage. The objects have suffered physically, with many severe fractures and bends, which could possibly be plough damage. Many of the fragments have mineralised wood remains on the inner surfaces, but only piece 1 has enough to warrant further analysis.

STATEMENT OF POTENTIAL
Indicators of preservation

There were no specific indicators of a particular burial environment, all pieces having come from well-aerated deposits.

Dating evidence

The fragments themselves are not specific indicators of date.

RECOMMENDATIONS

Further Investigative Conservation

Investigative conservation is proposed for the following artefacts to aid identification and clarification:

Fragment	Aim	Estimated time
Piece 1	Cross-section to show the shape of the tyre	3 hours
Piece 2	Clarify shape of the lynch pin	4 hours
Piece 4	Cross-section to show the shape of the strip	2 hours
Piece 5	Cross-section to show the shape of the strip	2 hours
Large tyre fragment	Cross-section to show the shape of the tyre	3 hours

Selected items could have corrosion removed fully for publication or display, quotes for the items selected can be arranged individually to suit your requirements.

Recommendations for further work are highlighted in bold in the tables in the appendix.

Analysis and specialist Support

To be arranged after the investigative conservation has been completed and not included in the costs itemised below.

Species ID: mineralised wood on piece 1 could be sampled and analysed using the Scanning Electron Microscope.

Packaging and Long Term Storage

All finds were well-packed in suitable sealed containers to provide the appropriate desiccated and damp environments. However, further physical protection was afforded by packing the objects in individual bags with Jiffy-foam supports. Also, a larger amount of silica gel was required to maintain the <15%

Relative Humidity required to keep active corrosion at bay, and this was added to the boxes. The large tyre fragment was placed in a sealed lay-flat tube with silica gel and an indicator strip to provide extra barriers against moisture.

All materials used are archive stable and acid-free. The desiccated environment will need to be maintained.

RESOURCE REQUIREMENTS

The following costs are based on the objects identified above and may not reflect the aims and objectives of the project. It is recommended that requirements for further conservation are discussed with the project director.

Investigative conservation (if all objects are to be investigated)	£560.00
Materials	£60.00
Conservation report	£80.00
ESTIMATED TOTAL COST (excluding V.A.T)	**£700.00**

REFERENCES

English Heritage, Management of Archaeological Projects, 1991.

English Heritage, Management of Research Projects in the Historic Environment, 2006.

Appendix: Assessment Table

Photograph	Assessment
	**Piece 1** Probably a fragment of the iron tyre of the chariot. The piece is in two joining fragments and the break looks like recent physical damage. The fragment is in good condition, covered with a relatively stable thick corrosion crust of red/orange corrosion products and encrusted soil. Observation under magnification reveals areas of mineral preserved wood on the inner surface of the fragment; evidence of the wooden wheel. There may be enough present for a species identification using the scanning electron microscope. X-ray shows the metal core to be present but patchy, with very little metal surviving in the small triangular piece, and this is also confirmed by the broken edges. **Recommendations: investigation of a cross-section to show the shape of the tyre (estimate 3 hours), sampling and analysis of the mineral preserved wood.**
	**Piece 2** Iron lynch pin from the chariot with a square cross-section, sub-rectangular perforation at one end and a rounded knop terminal. The object is in fair to good condition, covered with relatively thin dark red/orange corrosion products and patches of encrusted soil. There are a few minor cracks indicating the beginnings of active corrosion but this is being kept at bay by dry storage. X-ray shows the metal core to be fairly solid though with extensive mineralisation of the outer edges. **Recommendations: investigation of three cross-sections to show the shape of the lynch pin if required (estimate 4 hours).**
	**Piece 3** Small fragment of slightly curved iron strip with 'D'-shaped cross-section (similar to piece 4 and piece 5). The surface is covered with a crusty mix of dark red corrosion products and encrusted soil and the interior surface has mineral preserved wood remains running at right angles to the length of the strip, though probably not enough for further analysis. The object is stable and in good condition, though with a fresh break at one end. X-ray shows the metal core to be almost completely mineralised and this is also confirmed by the break edge. **Recommendations: no further work.**

	**Piece 4** Fragment of iron strip similar in shape to piece 3 and piece 5. The fragment is in fair condition, being fractured and bent in two places, almost to breaking point, with associated active corrosion in these areas and the metal core being exposed. The rest of the surface is more stable, being covered with a crusty mix of dark red corrosion products and encrusted soil, however some horizontal cracks show the beginnings of active corrosion which is being kept at bay by dry storage. There is also a fresh break at one end. Again, mineral preserved wood runs perpendicular to the length of the strip, but not enough for further analysis. X-ray shows the metal core to be limited to a thin central ribbon. **Recommendations: investigation of a cross-section to show the shape if required (estimate 2 hours).**
	**Piece 5** Fragment of iron strip similar in shape to piece 3 and piece 4. The piece is curved but is misshaped due to two fractures with associated bends and exposure of the metal core. Some horizontal fractures indicate the beginnings of active corrosion and this is being kept at bay by dry storage. The surfaces are covered with a crusty mix of dark red corrosion products and encrusted soil and again, there are mineral preserved wood remains on the inner surface, running at right angles to the length of the strip, though not enough for further analysis. X-ray shows the metal core to be present but heavily mineralised and this is confirmed by the fractured areas. **Recommendations: investigation of a cross-section to show the shape if required (estimate 2 hours).**

	**Large tyre fragment** The large tyre fragment (similar in shape to piece 1), of slightly curved iron, is in fair condition, generally quite stable, but with three fractures running perpendicular to the length of the fragment and a fresh, jagged fresh break to one end, all of which have associated surface losses and active corrosion, however, this is being kept at bay by dry storage. The surfaces are covered with relatively thin orange red corrosion products and encrusted soil with roots and some large corrosion blisters showing through. The inner surface has fragments of mineral preserved wood, running parallel to the length of the fragment, but probably not enough for further analysis. **Recommendations: investigation of a cross-section to show shape if required (estimate 3 hours).**

YORK ARCHAEOLOGICAL TRUST
CONSERVATION LABORATORIES

Crambeck CB14
Report on the investigative conservation of iron-work

Site Director/Unit: University of York
Conservator: M Felter
Date: 3.10.2014

York Archaeological Trust Conservation Report Number 2014/77

Number of artefacts

Material	Quantity
Iron	5

INTRODUCTION

This report describes the investigative conservation work of a group of iron objects from the site of Crambeck as excavated by the University of York. The work carried out has been the investigative surface corrosion removal and mineral preserved organic residue investigation of the objects submitted. Following radiography and assessment the objects were authorised for treatment. For detailed condition notes and description of each object, please refer to the conservation assessment report.

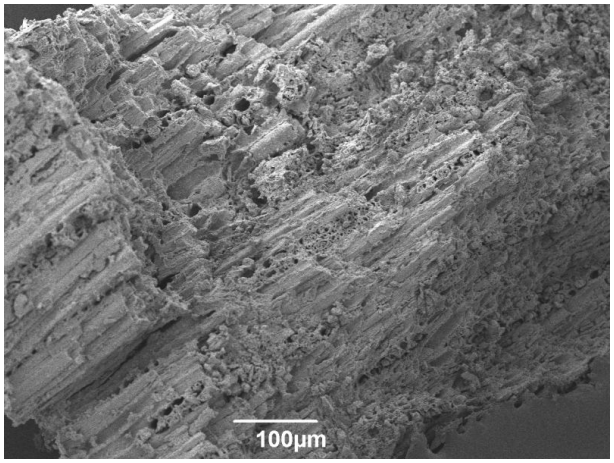
METHODOLOGY

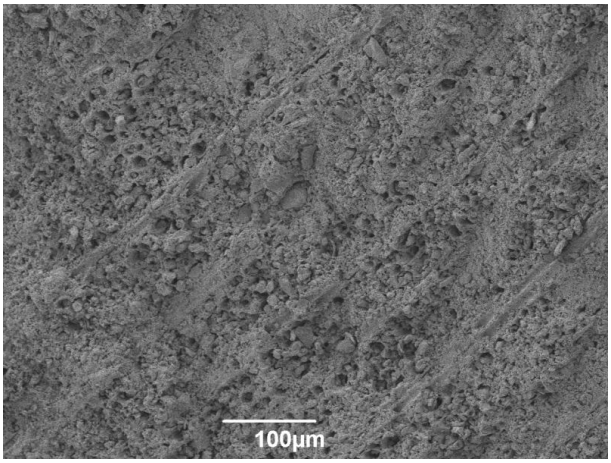
Corrosion was removed selectively from all five objects using the air abrasive with 29 micron aluminium oxide powder. Cross-sections were selected on each object to give information about the shape of the core below the corrosion products.

ANALYSIS

The mineralised wood remains on piece 1 was analysed by Steve Allen, Wood Technologist, York Archaeological Trust. This was done initially using a binocular microscope at x20 magnification but further magnification was required. Samples were therefore taken of the wood and mounted on stubs ready for the Scanning Electron Microscope. The instrument used was a Jeol JSM-6490LV, at the Department of Biology, University of York.

From the images generated from the Scanning Electron microscopy, the wood has been identified as probably ash (*Fraxinus excelsior* L.)





RECOMMENDATIONS

The objects are stable but should be stored in a dry environment of less than 15% Relative Humidity to avoid active corrosion. The objects should be handled with care due to the fragile nature of the exposed surfaces.

Treatment record table:
For further information about the condition of the objects before treatment, please refer to the conservation assessment report dated 7th August, 2014.

Photograph Before	***After***	***Identification, Condition and Treatment***
	 	*Piece 1* Probably a fragment of the iron tyre of the chariot. The piece is in two joining fragments and the break looks like recent physical damage. Treatment: a cross-section of the surface was revealed by removing corrosion with the air abrasive. The shape of the tyre is flat and fairly thin, with the outer edges curving back slightly to shape around the wooden wheel. The tyre is 34 mm wide and 4 mm thick.
		*Piece 2* Iron lynch pin from the chariot with a square cross-section, sub-rectangular perforation at one end and a rounded knop terminal. Treatment: The shape of the lynchpin was clarified by removing corrosion using the air abrasive with 29 micron aluminium oxide powder. Both ends were revealed in this way showing the slightly misshaped and off-set sub-square perforation (a small portion of corrosion was left in situ as this contained some mineral preserved wood, though not enough to

		allow further investigation) and the terminal at the other end which has an incised groove running all the way round near the tip.
	 	*Piece 4* Fragment of iron strip similar in shape to piece 3 and piece 5. Treatment: One end was investigated by removing corrosion with the air abrasive and 29 micron aluminium oxide powder. This revealed an oval to 'D'-shaped cross-section 3.5mm thick and 4mm wide, again with mineralised wood remains on the inner surface.
	 	*Piece 5* Fragment of iron strip similar in shape to piece 3 and piece 4. Treatment: corrosion was removed from both ends and a central cross-section using the air abrasive with 29 micron aluminium oxide powder. This revealed a 'D'-shaped cross-section, 8.5mm wide and 4 mm thick. On further investigation, the mineralised wood remains on one side were deemed substantial enough for further analysis. However, SEM images revealed

		the samples to be too mineralised for a positive identification of species. The function of these strips is unclear at this point, but their curved nature with wood on the inner surface suggests them to be reinforcing bands of some form.
	  	*Large tyre fragment* Large fragment of tyre (similar in shape to piece 1), of slightly curved iron. Treatment: a cross-section near the end was revealed by removing corrosion using the air abrasive with 29 micron aluminium oxide powder. This revealed a shape very similar to that of piece 1. The broken end was also investigated by removing corrosion to reveal the shape. A thick layer of mineralised wood was also revealed beneath the soil, especially at the left hand side (see image). The Tyre is 4mm thick and 35mm wide.

Appendix 13, Osteological Analysis, Crambeck, North Yorkshire

NGR: SE 7206 6802

Report No 1814

December 2014

Prepared for

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A APPENDIX A

Summary

In November 2014 York Osteoarchaeology was commissioned by the University of York to carry out the osteological analysis of two inhumed skeletons. These individuals were excavated in the 1920s at Crambeck, Welburn, in North Yorkshire (SE 7206 6802). The skeletons are thought to be Roman, dating to the late 4th/early 5th centuries AD.

The remains at Crambeck were of an older middle adult female and an adult whose age could not be determined more precisely, of undetermined sex. The older female had signs of a developmental anomaly but no visible pathology was seen on the unsexed individual. The female was also slightly shorter than the average height for females of this period. The unsexed individual (skeleton from cist III) was only a partial skeleton and the exact context of this burial is unknown. Only some rib fragments, tarsals and long bone fragments and a lateral incisor were recovered.

The female (skeleton from cist II) was found in a supine extended position in a stone-lined cist. The skeleton was orientated in a north-east to south-west alignment with the head to the north-east. This individual was also interred with a cooking pot and a tumbler-shaped vessel.

Acknowledgements

York Osteoarchaeology Ltd would like to thank Rachel Wood and Steve Roskams from the Department o of Archaeology of the University of York for their help and support during this project.

1.0 INTRODUCTION

In November 2014 York Osteoarchaeology Ltd was commissioned by the University of York to carry out the osteological analysis of two inhumed individuals from Crambeck, Welburn, North Yorkshire (SE 7206 6802) as part of a PhD project being undertaken at the university.

Two stone cists were excavated in the 1920ies at Crambeck by Corder (1928). They were located beside one another, with Cist I truncating a kiln thought to have been abandoned in the 4th century AD. As such, it has been assumed that the burials post-date the kiln, and probably date to the 4th or 5th century AD. It has been possible to locate the skeleton from Cist II in Malton Museum, but the skeleton from Cist I, thought to consist of a calvarium, could not be found. Notably, a small bone assemblage labelled Cist III was recovered and was included in this analysis.

The individual buried in Cist II was interred a supine extended position in the cist measuring approximately 1.98m in length. No contextual information was available for the second, much less complete individual, thought to have been interred in Cist III, and so assessing the partial remains in comparison to other Roman sites was difficult.

Table 1 Summary of archaeological information of complete skeletons

Skeleton No	Position	Orientation	Artefacts	Feature Type	Date
II	Supine, extended	Northeast-southwest	Cooking pot, tumbler	Cist	Romano-British
III	Unknown	Unknown	None	Cist?	Presumed Romano-British

1.1 AIMS AND OBJECTIVES

The aim of the skeletal analysis was to determine the age, sex and stature of the skeletons, as well as to record and diagnose any skeletal manifestations of disease and trauma.

1.2 METHODOLOGY

The skeletons were analysed in detail, assessing the preservation and completeness, as well as determining the age, sex and stature of the individuals (Appendix A). All pathological lesions were recorded and described.

2.0 OSTEOLOGICAL ANALYSIS

Osteological analysis is concerned with the determination of the demographic profile of the assemblage based on the assessment of sex, age and non-metric traits. This information is essential in order to determine the prevalence of disease types and age-related changes. It is also crucial for identifying sex dimorphism in occupation, lifestyle and diet, as well as the role of different age groups in society.

2.1 PRESERVATION

Skeletal preservation depends upon a number of factors, including the age and sex of the individual as well as the size, shape and robusticity of the bone. Burial environment, post-depositional disturbance and treatment following excavation can also have a considerable impact on bone condition. Preservation of human skeletal remains is assessed subjectively, depending upon the severity of bone surface erosion and post-mortem breaks, but disregarding completeness. Preservation is important, as it can have a large impact on the quantity and quality of information that it is possible to obtain from the skeletal remains.

Surface preservation, concerning the condition of the bone cortex, was assessed using the seven-category grading system defined by McKinley (2004), ranging from 0 (excellent) to 5+ (extremely poor). Excellent preservation implied no bone surface erosion and a clear surface morphology, whereas extremely poor preservation indicated heavy and penetrating erosion of the bone surface resulting in complete loss of surface morphology and modification of the bone profile. The degree of fragmentation was recorded, using categories ranging from 'minimal' (little or no fragmentation of bones) to 'extreme' (extensive fragmentation with bones in multiple small fragments). Finally, the completeness of the skeletons was assessed and expressed as a percentage: the higher the percentage, the more complete the skeleton.

The condition of the bone from Cist II was moderate (Grade 3) There was some loss of detail and surface erosion on the bone and determining any evidence of pathology was difficult due to a lacquer/varnish used in the conservation of the skeleton. The skeleton was also moderately fragmented and deemed to be 50-60% complete. The partial skeleton from Cist III was in a good state of preservation (Grade 2). There was minimal erosion of the surface of the bone but there was also a moderate degree of fragmentation. This skeleton was approximately 5% complete.

Table 2 Summary of osteological and palaeopathological results

Skeleton No	**Preservation***			**Age**	**Sex**	**Stature (cm)**	**Dental Pathology**	**Pathology**
	SP	**F**	**C**					
II	3 (moderate)	Moderate	50-60%	35-39	F	152cm	none	Possible developmental defect of the sacral vertebrae. Small ridge of bone evident on retro-auricular surface of the pelvis (24.2mm long) This is possibly due to the presence of 4 sacral vertebral segments rather than 5
III	2 (good)	Moderate	5%	+20	-	-	None	None

* Preservation: SP = surface preservation, graded according to McKinley (2004); F = fragmentation; C = completeness

2.2 MINIMUM NUMBER OF INDIVIDUALS

A count of the 'minimum number of individuals' (MNI) recovered from a cemetery is carried out as standard procedure in osteological reports on inhumations in order to establish how many individuals are represented by the articulated and disarticulated human bones (without taking the archaeologically defined graves into account). The MNI is calculated by counting all long bone ends, as well as other larger skeletal elements recovered. The largest number of these is then taken as the MNI. The MNI is likely to be lower than the actual number of skeletons which would have been interred on the site, but represents the minimum number of individuals which can be scientifically proven to be present.

The MNI was two, with bones from at least two adults present. Only one bone was duplicated; this was the left part of the mandible.

2.3 ASSESSMENT OF AGE

Age was determined using standard ageing techniques, as specified in Scheuer and Black (2000a; 2000b) and Cox (2000). For non-adults, age estimation is based on dental development and eruption, skeletal development (epiphyseal fusion) and long bone lengths (Scheuer and Black 2000b). In adults, age estimation largely relies on the presence of the pelvis and ribs and uses different stages of bone development and degeneration in order to calculate the age of an individual. It can be supplemented though examination of dental wear (Brothwell 1981). Age is split into a number of categories, from foetus (up to 40 weeks in *utero*), neonate (around the time of birth), infant (newborn to one year), juvenile (1-12 years), adolescent (13-17 years), young adult (ya; 18-25 years), young middle adult (yma; 26-35 years), old middle adult (oma; 36-45 years), mature adult (ma; 46+) to adult (an individual whose age could not be determined more accurately than that they were eighteen or over).

The skeleton from Cist II was an older middle adult aged between 36-45years. The pubic symphyses had not survived, nor were any teeth recovered, so the age of the skeleton was established using the auricular surface of the left ilium (Lovejoy *et al.* 1985). This was the only surviving part of the skeleton with ageing criteria. The skeleton from Cist III was at least a young adult aged twenty years. This was established by assessing the epiphyseal fusion of the calcaneus, which was the only complete bone (Scheuer and Black 2000). This is a very tentative estimate as there was no other morphological bone present and it is possible that this individual was considerably older.

2.4 SEX DETERMINATION

Sex determination was carried out using standard osteological techniques, such as those described by Mays and Cox (2000). Assessment of sex relies on the preservation of the skull and the pelvis and can only be carried out once sexual characteristics have developed, during late puberty and early adulthood. For this reason it was not possible to determine the sex of Skeleton III.

The sex of the skeleton from Cist II was established by analysing the pelvis. The sciatic notch was distinctively female in shape. The long bones were quite gracile and their measurements also fell within the female range. As no dimorphic bone was present in the case of the second individual, the sex was undetermined.

2.5 METRIC ANALYSIS

Stature depends on two main factors, heredity and environment; it can also fluctuate between chronological periods. Stature can only be established in skeletons if at least one complete and fully fused long bone is present, but preferably using the combined femur and tibia. The bone is measured on an osteometric board, and stature is then calculated using a regression formula developed upon individuals of known stature (Trotter 1970).

The skeleton from Cist II was around 152cm (±3.72) tall based on the length of the left femur, which was complete. As stated by Roberts and Cox (2003, 142) female stature in Roman Britain was 159cm on average with a range of 150-168cm. Although quite short, this individual fits within the range for the period. None of the long bones of the skeleton from Cist III were present so stature was impossible to calculate.

Measurements of the femora and tibiae are used to calculate the shape of the shafts (Bass 1987). In femora this is termed the *meric* index, and in tibiae it is the *cnemic* index. Both the femora of the individual from Cist II were *platymeric* with an index of 65.04 for the right and 72.01 for the left. The tibiae were also quite flat and *platycnemic* with an index of 59.45 for the right and 57.50 for the left tibia. The fragmentation of the skull meant that no cranial measurements could be taken so the cranial index could not be calculated.

2.6 NON-METRIC TRAITS

Non-metric traits are additional sutures, facets, bony processes, canals and foramina, which occur in a minority of skeletons and are believed to suggest hereditary affiliation between skeletons (Saunders 1989). The origins of non-metric traits have been extensively discussed in the osteological literature and it is now thought that while most non-metric traits have genetic origins, some can be produced by factors such as mechanical stress (Kennedy 1989) or environment (Trinkhaus 1978). A total of thirty cranial (skull) and thirty post-cranial (bones of the body and limbs) non-metric traits were selected from the osteological literature (Buikstra and Ubelaker 1994, Finnegan 1978, Berry and Berry 1967) and recorded.

Cranial non-metric traits were not observed. One possible squatting facet was noted on the right tibia on the anterio-lateral surface. The anterior surface of the left tibia was too damaged to assess if there was one present. This facet may be related to habitual squatting (Boulle 2011). Non-metric traits were not seen in the remains of the skeleton from Cist III.

2.7 CONCLUSION

The osteological analysis of the skeletal remains excavated from Crambeck established the presence of an older middle adult female and an adult of undetermined sex. The female was slightly below the average height for the Roman period and had one post-cranial non-metric trait.

3.0 PATHOLOGICAL ANALYSIS

Pathological conditions (disease) can manifest themselves on the skeleton, especially when these are chronic conditions or the result of trauma to the bone. The bone elements to which muscles attach can also provide information on muscle trauma and excessive use of muscles. All bones were

examined macroscopically for evidence of pathological changes.

3.1 CONGENITAL CONDITIONS

The embryological development of an individual can be affected by heredity and the environment, leading to the development of a congenital defect or anomaly (Barnes 1994). The most severe defects are not usually seen in archaeological populations as affected babies are usually miscarried or stillborn, or die shortly after birth. However, less-severe developmental anomalies are frequently observed in archaeological populations, and in many cases the affected individual will not have been aware of their condition. The frequency with which these minor anomalies occur may provide information on the occurrence of the severe expressions of these defects in the population concerned (*ibid*). The prevalence of minor anomalies may also inform on maternal health, as poor maternal health can lead to increased frequencies of developmental anomalies (Sture 2001).

3.1.1 Transitional Vertebrae

The normal human spine consists of seven cervical (neck), twelve thoracic (chest) and five lumbar (lower back) vertebrae, making a total of 24 independent segments. The sacrum (at the base of the spine, forming the back of the pelvis) is usually composed of five fused vertebral segments, and the coccyx (vestigial tail) is normally made up of four fused vertebral segments. The overall total of vertebral segments is therefore 33.

Transitional vertebrae can occur at the borders between different types of vertebra, when a vertebra from one group takes on some or all of the characteristics of an adjacent group, for example the first lumbar vertebra (in the lower back) may develop vestigial ribs (Barnes 1994, 79-116). The process by which this happens is known as 'border shifting'. The end result is to increase the number of segments in one part of the spine at the expense of the adjoining part (e.g. increasing the number of thoracic vertebrae to 13 through incorporating the first lumbar vertebra, but decreasing the number of lumbar vertebrae to four). Transitional vertebrae are reasonably common, particularly at the lumbosacral border (between the fifth lumbar vertebra and the sacrum, at the base of the spine), but the consequences of the border shift become more severe the higher up the spine it occurs (Barnes 1994, 79-116).

A complete and well preserved spine is required to determine whether any variation in the expected number of vertebrae in each group is the result of a genuine extra vertebral segment (i.e. an additional vertebra) or due to a border shift, and if the latter, what kind of shift has taken place. Unfortunately, the skeleton in Cist II (old middle adult female) did not have a complete spine. However, the presence of a protruding ridge on the retro-auricular surface of the pelvis (24.2mm) was recorded, which frequently develops in individuals with four instead of the normal five sacral vertebrae. It is therefore likely that the skeleton had border shifting at the sacro-lumbar border, with a cranial (upward) shift, or their first sacral vertebra was partially lumbarised (separated from the sacrum and taking on lumbar characteristics). According to Barnes (1994, 80), cranial shifting is not as commonly observed as caudal (downward) shifting, and it tends to be more common in females.

3.2 CONCLUSION

Only one pathological condition was observed in the skeletons from Crambeck. This consisted of transitional vertebrae, which is a congenital anomaly. Due to the lacquer on the bone it was difficult

to ascertain if any other pathological conditions were present. No obvious pathologies were identified on the skeleton from Cist III.

4.0 DENTAL HEALTH

Analysis of the teeth from archaeological populations provides vital clues about health, diet and oral hygiene, as well as information about environmental and congenital conditions.

Only one tooth was recovered from the two skeletons at Crambeck. Although a partial left mandible was recorded from the skeleton in Cist II, no tooth positions were present. The only tooth was a maxillary lateral incisor from Cist III. Although the dentine was worn, no obvious dental pathology was present.

5.0 MORTUARY PRACTICE

The contextual evidence for the individuals from Crambeck is quite limited. The evidence that is there suggests a correlation with burial practices in that period. The burials have been provisionally dated to the late 4th/early 5th centuries AD, at a time when inhumations had become the dominant form of burial.

The skeleton from Cist II was buried in an extended position and orientated in a north-east to south-west alignment with the head in the north-eastern part of the cist. This orientation was also common at Driffield Terrace in York, where 22% of the inhumed individuals were buried in this orientation (Caffell and Holst 2010). The direction of burial orientation varies considerably between different cemeteries in Roman Britain (Clarke 1979, 352). At Horncastle, the majority of skeletons were oriented in a north to south direction (Caffell and Holst 2008), whereas at Cannington most skeletons were broadly aligned west-east (Rahtz*, et al.* 2000). It is possible that a west-east orientation may have been more widely adopted in the later Roman period (Rahtz*, et al.* 2000). O'Brien (1999, 5) has observed that burial orientation at many of the smaller cemeteries favoured a north-south (or inverted) alignment, whereas burials in the larger organised cemeteries near urban or military centres were more likely to have a west-east alignment. No contextual information exists for the partial skeleton in Cist III so its orientation is unknown.

Cist II was composed of six large limestone slabs and measured 1.98m in external length. A cover slab was also present at the foot end of the grave. This kind of grave construction is a common form for the Romano-British period. Smith found that approximately 4.7% of inhumations were placed in stone-lined cists in the north-east of England (Smith 2014). The individual was interred with a black pitted cooking pot placed by the hip and on the right side of the skull a tumbler-shaped vessel was found (Corder 1928, 20). According to research undertaken by Smith, grave goods were found in 14% of inhumations during this period (Smith 2014). Similar patterns were also seen at Driffield Terrace (Caffell and Holst 2010) and early excavations at Baldock in Hertfordshire (Burleigh and Matthews 2010). It is unfortunate that the skeleton from Cist III and its associated information is too incomplete as no comparisons can be made.

6.0 DISCUSSION AND SUMMARY

The analysis of the two inhumations at Crambeck excavated in the 1920s has revealed some insight into burial practices during the Romano-British period in Yorkshire. Based on the contextual information the skeleton in Cist II seems to be interred according to the customs of the time. The fact that there is no contextual information associated with the skeleton from Cist III means that any suppositions about the individual are the conjectures of the author. The provenance of this partial individual is also unknown. Considering that the bone has not been treated in the same way as the individual from Cist II, as there was no evidence of any lacquer/varnish used on the bone, may suggest that it was not excavated at the same time or may even derive from a different site.

The dates of the individual from Cist II are also not definite. This was determined based on the evidence from the kilns that Cist I was cut into (as described by Corder 1928, 18). These kilns were determined to have been abandoned in the latter part of the 4th century AD so it is probable that the burial of the individual in Cist II occurred after this event. More exact dating should be conducted in order to determine this, however.

Cist II contained the remains of an older middle adult female aged approximately 36-45 years. She was buried in a supine extended position which is a typical position during the later Romano-British period. Two ceramic vessels were placed in the grave with the individual, which would also fit in with normal burial practices of the time (Smith 2014). The alignment of the individual was common in the Roman period.

Notably, two left mandibular fragments were recorded from Cist II. Both fragments have been treated with lacquer, so it is unlikely that the second mandibular fragment belongs to Cist III. From Corder's 1928 report there was an individual in Cist I. According to the skeletal description, only a calvarium was found in that grave and it was also located approximately half a metre from Cist II Corder 1928, 18). Therefore, the likelihood of the mandible belonging to the individual from Cist I is slim.

Neither of the individuals suffered from pathological conditions other than the probable transitional vertebrae in the skeleton from Cist II, with a likely four instead of the usual five sacral vertebrae, causing a ridge to form on the pelvis. Only one tooth was recovered. This maxillary incisor was found in Cist III and showed signs of wear, but no obvious dental pathology.

It is not known if other skeletons were found in the area so that a more accurate comparison could be made between contemporary local skeletal assemblages.

7.0 FUTURE RECOMMENDATIONS

It is recommended that AMS dating be undertaken in order to more accurately date the individuals. This is especially important as the provenance of the partial individual from Cist III is unknown. Tying down the individuals to a more definitive period would also mean that more accurate comparisons can be made with other assemblages from the same period and region.

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APPENDIX A: OSTEOLOGICAL AND PALAEOPATHOLOGICAL CATALOGUE

Skeleton Number	**II**
Preservation	Surface preservation = 3 (moderate); moderate fragmentation
Completeness	50-60% Skull fragments, mandible fragment, some rib fragments, both humerii radii and ulnae, both iliums, femora, tibiae and fibulae. Two metatarsals and cuneiforms
Age	35-39 y.o.a (older middle adult)
Sex	Female
Stature	152cm ± 3.72 cm (femur)
Non-Metric Traits	Squatting facet on the left anterio-lateral surface of the tibia.
Pathology	Transitional vertebrae. This is manifested by a small bony ridge (24.2mm) on the retro-auricular surface of the left pelvis.
Dental Health	No dentition recovered

Skeleton Number	**III?**
Preservation	Surface preservation = 2 (Good); moderate fragmentation
Completeness	5-6%)
Age	An adult +20 years
Sex	-
Stature	-
Non-Metric Traits	None observed
Pathology	-
Dental Health	None

	Right Dentition								Left Dentition							
Present	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-
Maxilla	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Mandible	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Present	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calculus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DEH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Caries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wear	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

KEY:

Present - Tooth presence; am - ante-mortem tooth loss; pm - post-mortem tooth loss; p - tooth present; - - jaw not present; o - erupting

Caries - Calculus; F - flecks of calculus; S - slight calculus; M - moderate calculus; H - heavy calculus; a - all surfaces; b - buccal surface; d - distal surface; m - mesial surface; l - lingual surface; o - occlusal surface

DEH - dental enamel hypoplasia; l - lines; g - grooves; p - pits

Caries - caries; s - small lesions; m - moderate lesions; l - large lesions

Wear - dental wear; numbers from 1-8 - slight to severe wear

Appendix 14 Radiocarbon Dating Results, Radiocarbon Dating Laboratory, The University of Waikato, New Zealand

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Tuesday, 3 March 2015

Radiocarbon Dating Laboratory

Report on Radiocarbon Age Determination for Wk- 40903

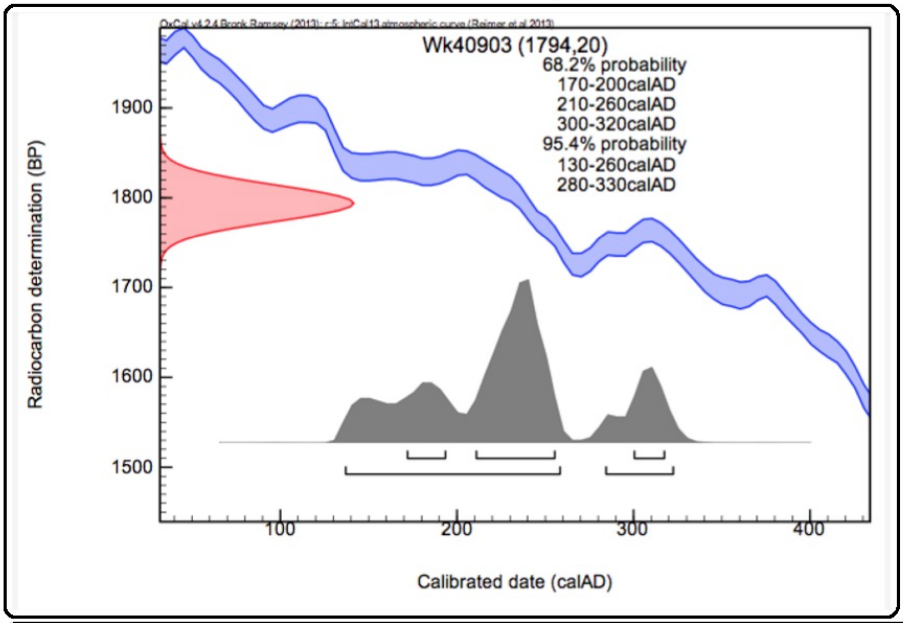
Submitter	R Wood
Submitter's Code	Cranbeck Cist III? C1
Site & Location	Crambeck, United Kingdom
Sample Material	human bone
Physical Pretreatment	Sample cleaned and ground.
Chemical Pretreatment	Sample was decalcified in 2% HCl, rinsed and dried. Then gelatinised at pH=3 with HCl at 90 degrees for 4 hours. Ultrafiltered and freezedried.

$D^{14}C$	-200.1 ±	2.0 ‰
$F^{14}C\%$	80.0 ±	0.2 %
Result	**1794 ± 20 BP**	

(AMS measurement)

Comments

Please note: The Carbon-13 stable isotope value ($\delta^{13}C$) was measured on prepared graphite using the AMS spectrometer. The radiocarbon date has therefore been corrected for isotopic fractionation. However the AMS-measured $\delta^{13}C$ value can differ from the $\delta^{13}C$ of the original material and it is therefore not shown.



- Explanation of the calibrated Oxcal plots can be found at the Oxford Radiocarbon Accelerator Unit's calibration web pages (http://c14.arch.ox.ac.uk/embed.php?File=explanation.php)
- Result is *Conventional Age or Percent Modern Carbon (pMC)* following Stuiver and Polach, 1977, Radiocarbon 19, 355-363. This is based on the Libby half-life of 5568 yr with correction for isotopic fractionation applied. This age is normally quoted in publications and must include the appropriate error term and Wk number.
- Quoted errors are 1 standard deviation due to counting statistics multiplied by an experimentally determined Laboratory Error Multiplier.
- The isotopic fractionation, $\delta^{13}C$, is expressed as ‰ wrt PDB and is measured on sample CO_2.
- $F^{14}C\%$ is also known as *Percent Modern Carbon (pMC)*.

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Tuesday, 3 March 2015

Radiocarbon Dating Laboratory

Report on Radiocarbon Age Determination for Wk- 40904

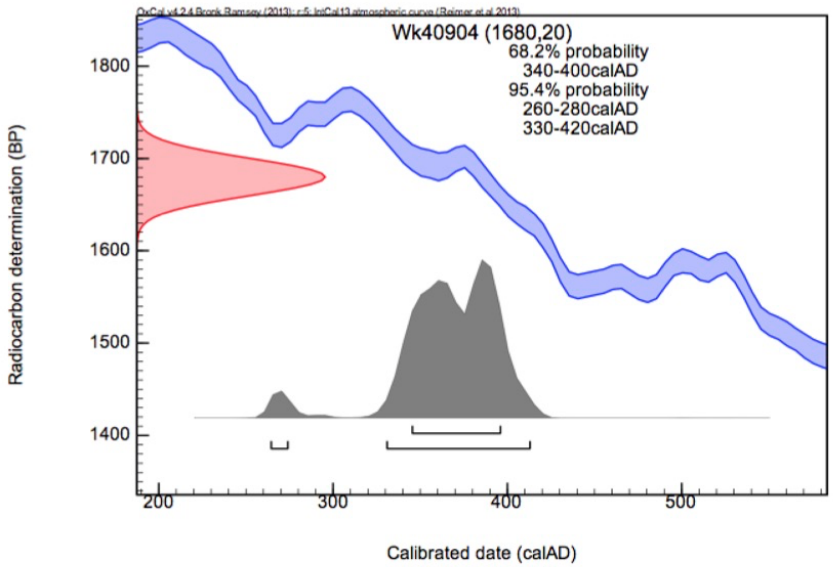
Submitter	R Wood
Submitter's Code	Crambeck Cist II
Site & Location	Crambeck, United Kingdom
Sample Material	human bone
Physical Pretreatment	Sample cleaned and ground.
Chemical Pretreatment	Sample was decalcified in 2% HCl, rinsed and dried. Then gelatinised at pH=3 with HCl at 90 degrees for 4 hours. Ultrafiltered and freezedried.

$D^{14}C$	-188.8 ±	2.0 ‰
$F^{14}C\%$	81.1 ±	0.2 %
Result	**1680 ± 20 BP**	

(AMS measurement)

Comments

Please note: The Carbon-13 stable isotope value ($\delta^{13}C$) was measured on prepared graphite using the AMS spectrometer. The radiocarbon date has therefore been corrected for isotopic fractionation. However the AMS-measured $\delta^{13}C$ value can differ from the $\delta^{13}C$ of the original material and it is therefore not shown.



- Explanation of the calibrated Oxcal plots can be found at the Oxford Radiocarbon Accelerator Unit's calibration web pages (http://c14.arch.ox.ac.uk/embed.php?File=explanation.php)
- Result is *Conventional Age or Percent Modern Carbon (pMC)* following Stuiver and Polach, 1977, Radiocarbon 19, 355-363. This is based on the Libby half-life of 5568 yr with correction for isotopic fractionation applied. This age is normally quoted in publications and must include the appropriate error term and Wk number.
- Quoted errors are 1 standard deviation due to counting statistics multiplied by an experimentally determined Laboratory Error Multiplier.
- The isotopic fractionation, $\delta^{13}C$, is expressed as ‰ wrt PDB and is measured on sample CO_2.
- $F^{14}C\%$ is also known as *Percent Modern Carbon (pMC)*.

Appendix 15

Isotope Analysis

Radiocarbon Dating Laboratory

The University of Waikato

New Zealand

Sample ID	$d^{15}N$ vs Air*	Total N	$d^{13}C$ vs PDB*	Total C	C:N
	‰	%N	‰	%C	
40903 Wood	11.26	15.62	-19.25	44.01	3.29
40904 Wood	10.03	15.81	-20.42	44.21	3.26

*Precision = ± 0.2 ‰

Note: All isotope values measured on bone gelatin.

Isotope Analysis ($\delta^{15}N$ and $\delta^{13}C$)- explanation:

Humans that obtain the majority (>90%) of their protein from marine food typically have $\delta^{15}N$ values between 12 and 22 per mil. While those that consume only terrestrial protein (C3 pathway plants) have $\delta^{15}N$ values ranging from 5 to 12 per mil. Similarly, human bone collagen $\delta^{13}C$ values of –11 or –12 per mil indicate a diet composed almost entirely (>95%) of marine protein, while a value of –20/-21 indicates a predominantly (>95%) terrestrial protein diet.

(Please note: these values reflect the protein component of the diet that is routed to collagen, it does not reflect the total diet contribution).

Combined these isotope results suggest a predominantly terrestrial diet. The radiocarbon result has been calibrated accordingly. If you have additional data that may affect this result, please contact the lab and we will recalibrate the result for you.

Quality Control (%N, %C and C:N) - explanation:

Modern collagen has about 43% carbon and 16% nitrogen, and should have a C:N value of about 3.2. Most well preserved archaeological bone averages 35wt%C with between 11 and 16 wt%N and a CN ratio of 3.1-3.5. All results fall within acceptable parameters.

For more information on bone dating see:

2011 **Petchey F.**, M. Spriggs, F. Leach, M. Seed, C. Sand, M. Pietrusewsky, K. Anderson. Testing the human factor: Radiocarbon dating the first peoples of the South Pacific. *Journal of Archaeological Science*, 38:29-44.

2013 Carvalho, A.F., **F. Petchey**, 2013. Stable isotope evidence of Neolithic Palaeodiets in the coastal regions of southern Portugal. Journal of Island and Coastal Archaeology, 8(3):361-383.

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