

**Archaeological Evaluation of Peat  
Deposit,  
Killerby Prospect, North Yorkshire**



**ARS Ltd Report No. 2012/92**  
October 2012

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**Compiled By:**  
Philippa Cockburn and Chris Scott MifA  
Archaeological Research Services Ltd  
Suite 27, Baltic Business Centre  
Saltmeadows Road  
Newcastle-Gateshead  
NE8 3DA

**Checked By:**  
Mike Wood MifA  
Tel: 0191 477 5111  
Fax: 0191 477 7687  
[admin@archaeologicalresearchservices.com](mailto:admin@archaeologicalresearchservices.com)  
[www.archaeologicalresearchservices.com](http://www.archaeologicalresearchservices.com)

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## **Executive Summary**

*In August 2012 Archaeological Research Services Ltd. were commissioned by Tarmac Ltd. to undertake an archaeological evaluation of a peat deposit in a field adjacent to the Killerby Prospect Quarry site, North Yorkshire. It is likely that access and infrastructure for the future sand and gravel extraction workings on the site will run through this area, and therefore North Yorkshire County Council have requested further evaluation work to delimit and assess the potential of known peat deposits within the field. The overall extraction area of the quarry comprises a number of agricultural fields comprising four proposed extraction areas that occupy c.153ha of farmland which is currently used primarily for cereal cultivation*

*Due to the presence of groundwater on the site, one of the evaluation trenches was unable to be excavated in the location that had been intended. After discussion with the County Archaeologist it was agreed that the other trench would be extended to measure 50 x 3m. The trench was positioned in order to specifically target an area of peat within the field to the south of West Lodge, which lies adjacent to the Killerby Prospect site.*

*The evaluation trench recorded no archaeological features, although the peaty organic layer was identified and removed by hand. A sample of preserved wood was recovered and a single cow tooth.*

*One radiocarbon date was obtained on the cow (Bos) tooth from the excavation. The date obtained on the tooth indicates that Early Bronze Age deposits survive in this organic deposit and that remains of this sort could provide important information on the local faunal population at this period.*

*The environmental samples recovered from the evaluation at Killerby have demonstrated that although preservation of plant macrofossils and invertebrates is poor there is the potential for landscape characterisation using the pollen record. The site has the potential to yield information on past animal populations and landscape change and human interaction for the early prehistoric period.*

*Set alongside earlier investigations on the site, the radiocarbon date from the cow tooth recovered from this evaluation lends further weight to evidence the importance of the site in providing information on the faunal population of this area from the late Mesolithic period to the Early Bronze Age.*

*Should this peat deposit be impacted upon by future development an appropriate sampling strategy should be undertaken in order to record surviving faunal remains. A palaeoenvironmental sampling strategy should also be undertaken to include detailed pollen analysis coupled with a programme of radiocarbon dating,*

## **1. Introduction**

1.1. In August 2012 Archaeological Research Services Ltd. were commissioned by Tarmac Ltd. to undertake an archaeological evaluation in a field within the Killerby Prospect Quarry site, North Yorkshire. It is likely that access and infrastructure for the future sand and gravel extraction workings on the site will run through this area, and therefore North Yorkshire County Council have requested further evaluation work to delimit and assess the potential of known peat deposits within the field.

1.2 This evaluation comprised the excavation of one trench, positioned in order to specifically target an area of peat within the field to the south of West Lodge, which lies adjacent to the Killerby Prospect site.

## **2. Location and Geology**

2.1. The site is located in North Yorkshire and is situated to the south-east of Catterick Village (NGR centre point: SE 263 958). To the west of the site is the modern A1 road and to the north the River Swale. The overall extraction area comprises a number of agricultural fields around comprising four proposed extraction areas occupying c.153ha of farmland currently used primarily for cereal cultivation. The field is centred on grid reference SE 2556 9533, and sits adjacent to the A1.

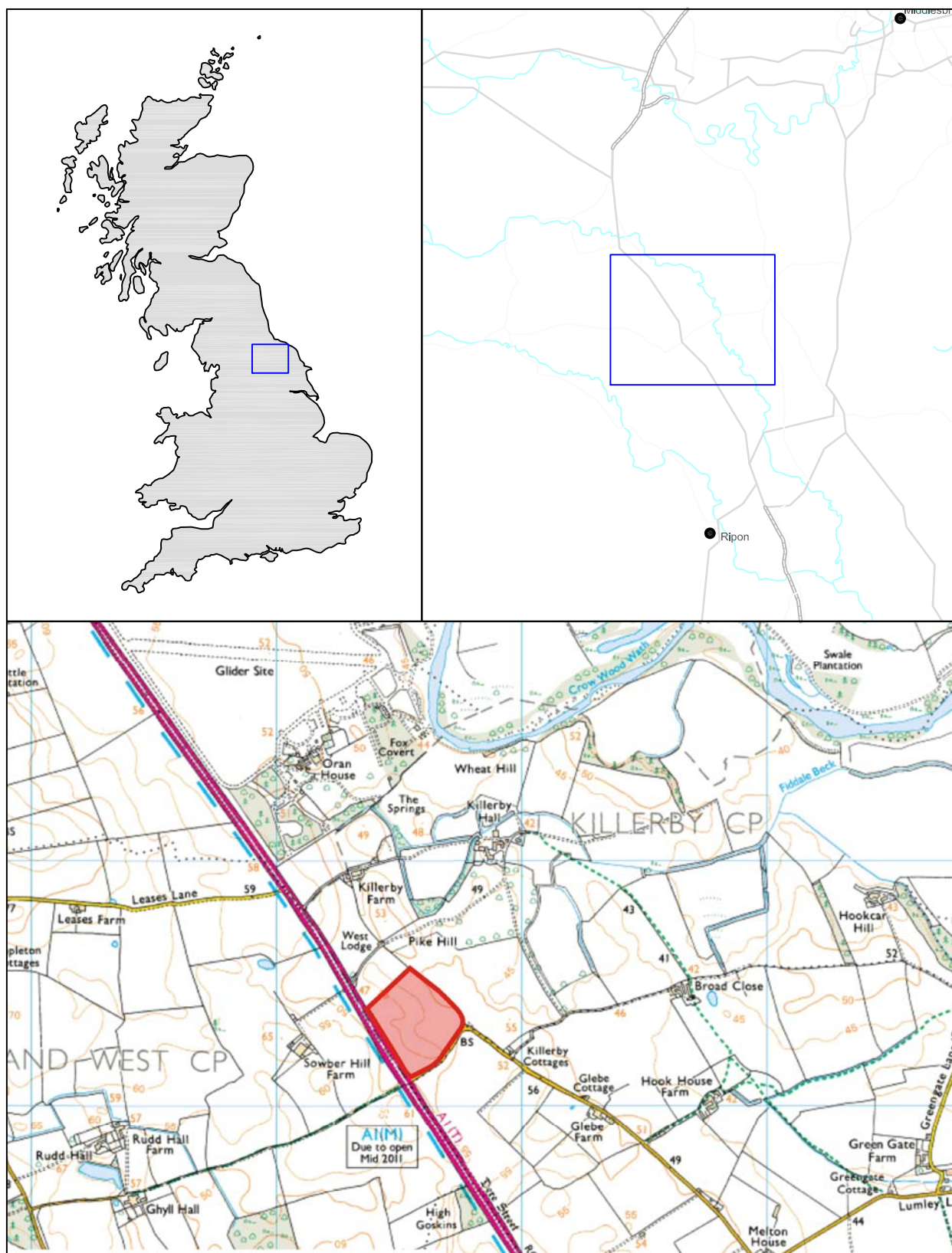


Figure 1: Location map of the development site



### **3. Background**

3.1. A desk based assessment of the site was undertaken by Archaeological Research Services Ltd in 2008 (Waddington 2008). Prior to this no archaeological assessment or intervention had taken place on the site apart from a small evaluation close to the A1 which is outside the current development area (Speed 2007). The desk based assessment revealed no certain historic environment remains surviving within the proposed development area although the areas to the north-west and north of the site have been found to be rich in archaeological remains dating from all periods from the Mesolithic through to the modern era. Following the submission of the desk based assessment an archaeological evaluation programme was agreed with North Yorkshire County Council which included the following:

- A fieldwalking programme across the development area identified pottery from the Roman and later periods together with lithic remains dating principally from the Mesolithic period.
- Peat filled kettleholes, enclosed basins and palaeochannels on the site were cored and radiocarbon dated to the Late Upper Palaeolithic, Mesolithic, Bronze Age, Iron Age and early medieval periods, the earlier of which correspond with the lithic assemblage collected from the fieldwalking programme. These kettleholes have been shown to have the potential to contain faunal remains dating from the Mesolithic – Bronze Age period as well as providing an excellent resource for palaeoenvironmental reconstruction and human impacts on the environment (Speed 2007).
- A detailed gradiometer survey was undertaken across 8.2 hectares of pasture which revealed numerous potential archaeological features.
- Evaluation trenches were excavated to test the anomalies identified by the geophysical survey and aerial photograph assessment but no archaeological features were identified as a result of this evaluation.
- A watching brief was undertaken in 2010 on the evaluated areas but no significant features were recovered.

3.2 There have been two previous interventions carried out in the field. The first of these in 2006 (Northern Archaeological Associates) involved a programme of geophysical survey and evaluation trenching. The trenching revealed two shallow hollows containing peat that produced bones of possible domesticated dog and aurochs as well as deer antler. The aurochs' bone gave a radiocarbon date of c.2140-1930 cal BC. The second phase of work carried out on the site (Archaeological Services Durham University) involved a borehole survey covering the areas of the two hollows.



## **4. Aims and Objectives**

4.1 The aim of the archaeological evaluation was to gather sufficient information to establish the extent, condition, character and date of any archaeological features and deposits within the area of proposed development, and to record any features or deposits at an appropriate level. The objective of the evaluation trenching was to provide sufficient information for informed decisions to be made regarding:

- i) the presence or absence of the peat deposit and associated archaeological features/residues
- ii) the presence or absence and assessment of organic residues relating to past environments
- iii) identification of the age of the two peat sediment units
- iv) an assessment of their significance and importance in line with PPS5 (Planning for the Historic Environment) (CLG 2010)
- v) the likely impact of the development upon any such features
- vi) the appropriate mitigation of the development's impact upon those remains

## **5. Methodology**

5.1 All archaeological fieldwork, recording of archaeological features and deposits and post-excavation analysis will be carried out to acceptable standards as set out in the Institute for Archaeologists' *Code of Practice* (2000) and *Standard and Guidance for Archaeological Evaluation* (2008).

5.2 The trenching will consist of two trenches covering a total area of 200m<sup>2</sup>. The trenches will each measure 2m x 50m, and will be placed over the known peat deposits, as illustrated in Figure 2, subject to the agreement of the North Yorkshire County Council Historic Environment Team in advance of the work.

5.3 The topsoil in each trench will be machine stripped under continuous archaeological supervision to identify the extent of the peat deposits in successive level spits or to a level where it is possible to assess the presence or absence of archaeological features. A toothless bucket will be used. A section through the peat will then be excavated by hand in successive spits to identify and sample for any archaeological artefacts or ecofacts and to produce a clear section through the deposit which can be recorded and sampled at different depths for environmental assessment and collection of dating samples.

5.4 Following excavation and recording of each trench they will be backfilled using excavated material.

5.5 Each trench will be cleaned by hand sufficiently to allow the identification and planning of any archaeological features and the peat will then be removed by hand in level spits in order to gain a section which can be used to take satisfactory samples, but also to maximize the recovery of artefactual material (for example, faunal remains).

5.6 Where archaeological features appear to be absent, sufficient work will be done to demonstrate this. Each trench will be planned at an appropriate scale; 1:20 where complex deposits are present or 1:50 in areas of lesser complexity (to be omitted if the trench is completely blank). One representative long section of each trench will be produced, at an appropriate scale, if necessary. Sections and profiles of each feature sampled will be drawn

at 1:10 or 1:20, depending on the size of the feature. Spot levels relative to ordnance datum in metres will be taken as appropriate.

5.7 Identified archaeological features will be sufficiently sampled by manual excavation to allow their date, nature and degree of survival to be ascertained. All features thus investigated will be recorded in plan and section and all finds recovered retained for analysis.

5.8 All identified archaeological features will be accurately fixed using an EDM/Total Station.

5.9 The site archive will include plans and sections at an appropriate scale, a photographic record, and full stratigraphic records on recording forms/context sheets. Each context will be recorded on pro-forma records which will include the following: character and contextual relationships; detailed description (dimensions and shape; soil components, colour, texture and consistency); associated finds; interpretation and phasing as well as cross-references to the drawn, photographic and finds registers. Each context will be recorded on an individual record.

5.10 A photographic record will be maintained including photographs of all significant features and overall photographs of each area or trench. All images will be taken in black and white print, and digital format, and will contain a graduated photographic scale. The main photographic archive will comprise 35mm b/w SLR print film, supplemented by digital SLR (minimum 12 megapixels).

5.11 All stratified finds will be collected by context or, where appropriate, individually recorded in 3 dimensions. Unstratified finds will only be collected where they contribute significantly to the project objectives or are of particular intrinsic interest. All pottery of early post-medieval date or earlier will be retained, whether stratified or un-stratified.

5.12 Once the deposits have been assessed those that show good potential for further results will be floated in full. This strategy will ensure that all deposits with potential for containing palaeoenvironmental residues (such as botanical macrofossils, animal bone and invertebrates) are assessed while at the same time ensuring that excessive time is not wasted on sterile deposits that will add nothing to furthering understanding. Furthermore, it will mean that any further work can be targeted specifically to those deposits that have demonstrable potential.

5.13 Samples for pollen assessment at 0.2m intervals throughout each peat profile. plant remains *etc.*

5.14 All samples will be assessed by a suitable specialist with provision for further analysis as required.

5.15 All retained finds and palaeoenvironmental samples will be treated in accordance with the English Heritage guidance document *A Strategy for care and investigation of find (1995)* and the UKIC's document *Guidelines for the preparation of excavation archives for long term storage*.

5.16 Provision will be made for additional specialist advice, e.g. for finds analysis and conservation.

5.17 Finds of "treasure" will be reported to the Coroner in accordance with the Treasure Act procedures.

5.18 If grave cuts are discovered on site, then they will be sampled through hand excavation to determine the presence/absence, depth and preservation of the uppermost burials, before being initially left in situ. Where excavation of human remains is necessary, a license will be obtained from the Ministry of Justice and work will be carried out under appropriate environmental health regulations and, if appropriate, in compliance with the Disused Burial Grounds (Amendments) Act 1981.

5.19 Disarticulated human bone will be quantified and characterised prior to reinterment on site.

5.20 The record of the extent and vulnerability of features will be sufficiently detailed to facilitate discussions regarding the need for preservation beneath any future potential development, or any other mitigation measures including further excavation or recording.

5.21 A risk assessment will be undertaken before commencement of the work and health and safety regulations will be adhered to at all times.

5.22 Samples will be double bagged in sealed plastic bags and labelled accordingly.

5.23 All sampled points will be surveyed in using a total station and an accurate plan of the location of the cores produced as part of the report. The site will be accurately tied into the National Grid and located on a 1:2500 or 1:1250 map of the area.

## **6. Evaluation Results**

6.1 Due to the presence of groundwater on the site, one of the evaluation trenches was unable to be excavated in the location that had been intended. After discussion with the County Archaeologist it was agreed that the one remaining trench would be extended to measure 50 x 3m.

### **6.2 Trench One**

6.2.1 The evaluation trench was excavated through finely textured, pale brown, silty clay ploughed topsoil (001) that had an average depth of 0.2m. This context contained frequent small stones. Below the topsoil, towards the southern end of the trench, a stone-lined drain with slate capping stones (003) was encountered running from east to west within a linear cut (004) that had been backfilled with finely textured grey clay (002). Due to the requirement that this evaluation concentrate on the peat deposit, the drain was not excavated further and therefore the depth of the cut remains unknown.



Figure 3: Trench 1, looking north. Scale = 2 x 2m

Across the remainder of the trench, below the topsoil (001), a layer of peat (005) was encountered in the lowest part of the trench, towards the centre. The peat deposit had a maximum depth of 0.31m and was excavated with spades and shovels in level spits. The linear cut (004) for the stone-lined drain (003) had been cut into this peat deposit.



Figure 4: West facing section of Trench 1. Scale = 1m

Discovered within the uppermost layer of the peat, just to the north of the stone-lined drain (003), was a length of preserved wood. The wood was cleaned and recorded before it was excavated, after which a sample was taken for analysis. Also discovered within the peat was a cow's tooth (see faunal remains assessment below). Beneath the peat, across the entire trench, was a finely textured pale grey/orange gleyed clay layer (006) that was sitting above the glacial till (007).





Figure 5: Length of preserved wood found within peat (005). Scale = 1m.

## **7. Faunal Remains Assessment**

Kate Mapplethorpe

7.1 The faunal assemblage recovered from the site of Killerby was comprised of a single tooth from context (005). The preservation of this tooth was good, with almost no surface erosion. The enamel was stained from the peaty environment in which it was buried, but otherwise was well preserved.

7.2 The tooth was identified as a bovine (*Bos*) adult upper left 2<sup>nd</sup> molar showing a small amount of wear. This would suggest that the individual was a young adult at time of death. Due to the absence of the other molars, a more precise age determination is not possible.

## **8. Macrobotanical Assessment**

E-J. Hopla, K. Krawiec and J. Carrott

### *Summary*

In August 2012 BAE were commissioned to undertake sampling at Killerby, south of Catterick, N.Yorks. The area had been subject to trial trenching and during this a thin deposit of organic sediment was encountered. The trench was located over a low-lying area of the field and was waterlogged at the time of sampling due to poor weather conditions. The samples were taken in a single 50cm monolith tin and four 10l bulk samples. The sediment was an organic silt clay which was dry and crumbly in texture. No archaeological features were recorded in this trench. The pollen illustrates an alder carr dominated woodland on the sampling site with a mixed deciduous woodland on the dryland. There were no identifiable plant or invertebrate macrofossil remains present in the bulk samples. The deposit has demonstrated that environmental proxies were adversely affected by fluctuating ground water levels although the pollen was still identifiable to species.

### **8.1. Introduction**

In August 2012 BAE were commissioned to undertake sampling for palaeoenvironmental analysis at Killerby, N.Yorks (NGR SE 2556 9533). The site is situated in an arable field to the east of the A1, south of Catterick (Figure 1). The area has been subject to an archaeological evaluation and it was during this process that deposits that had the potential to yield palaeoenvironmental material were identified. A programme of sampling for palaeoenvironmental analysis was undertaken.

### **8.2. Methods**

#### *8.2.1 Sampling*

The trial trench exposed a thin deposit of organic silt clay which was recorded in section prior to sampling. A single monolith tin (50cm) was recovered accompanied by four bulk samples of 8L. The sediment was recorded using the Troels-Smith method (1955) and the tin was photographed in situ.

#### *8.2.2 Pollen*

A total of 8 subsamples were submitted for pollen assessment from the monolith tin. Pollen preparation followed standard techniques including potassium hydroxide (KOH) digestion, hydrofluoric acid (HF) treatment and acetylation (Faegri and Iversen, 1989). At least 125 total land pollen grains (TLP) excluding aquatics and spores were counted for each sample.

#### *8.2.3 Plant macrofossils and Beetles*

Two samples (0.48-0.58m and 0.78-0.83m) were inspected and their lithologies recorded following a standard *pro forma* prior to processing for the recovery of plant and invertebrate macrofossils, broadly following the techniques of Kenward *et al.* (1980) yielding a largely

organic washover in each case; the mineral component was very small for both samples and separate residue fractions were not obtained.

The washovers exhibited waterlogged preservation of organic material and were kept wet and examined for plant and invertebrate remains (see Kenward *et al.* 1986). Low-power microscopy (x7 to x45) was employed and the washovers were separated into fractions to facilitate recording were necessary. In the event no identifiable plant or invertebrate macrofossil remains were present.

### **8.3. Results**

#### *8.3.1 Sediment*

The trial trench was located over a pronounced dip in the field topography with a similar hollow located to the east. This second hollow was under water at the time of the sampling indicating that further waterlogged deposits may be present in the area.

The exposed deposit that lay within a topographic dip in the field and was c.0.37m thick at the sample site. The deposit comprised a dark brown, dry crumbly silt clay with a well-humified organic component. The sediment also contained frequent pale rootlets. The deposit was extremely dry despite recent heavy rainfall and was not cohesive. This was overlain by a light brown silt clay topsoil 0.48m thick.

A single 50cm monolith tin was recovered accompanied by four 8L bulk samples (Figure 2, Plates 1&2). The tin was sub sampled at the BAE laboratory for pollen analysis at 4cm intervals. A total of 8 pollen samples were prepared for analysis and two bulk samples for plant macrofossils and beetle analysis (Top and bottom of deposit).

#### *8.3.2. Pollen Assessment*

All of the pollen samples provided sufficient counts for palaeoenvironmental assessment. The results are presented in the form of a pollen diagram (Figure 3), produced using TILIA and TILIA\*GRAPH (Grimm 1991). To facilitate discussion, the diagram has been divided into three local pollen assemblage zones with the site prefix 'KIL'. Percentage figures are of Total Land Pollen (TLP) unless otherwise specified. The preservation was poor throughout the sequence with most grains exhibiting signs of pitting and crumpling. There were relatively high counts of unidentifiable grains in each sample and high counts of Pteropsida (monolete) indet which can often be indicative of differential preservation.

##### *KIL-1: 0.83m-0.64m, Corylus avellana-type-Alnus glutinosa-Betula*

The basal zone (KIL-1) is dominated by tree and shrub pollen (c.90-100%). The majority of this consists of *Alnus glutinosa* (alder) which expands from 0.75m to values up to 50%. *Corylus avellana*-type (hazel but may include sweetgale) is represented up to 60% in the basal sample but steadily declines to values c. 30%. *Betula* (birch) is present (up to 20%) with *Quercus* (oak), *Tilia* (lime) and *Ulmus* (elm) up to 5%. *Pinus sylvestris* (scots pine) is also recorded at low values. Herbs are scarce other than Cyperaceae (sedges) and Poaceae (wild grasses) which are recorded up to 5% and a single grain of Ericaceae (heath family).



The local environment in this zone would have largely been alder fen carr woodland with small open areas of grassland, most likely *Phragmites* (common reed) and sedges on the wetter areas. The dryland woodland would have been dominated by *Corylus* and *Betula* with *Quercus*, *Pinus*, *Tilia* and *Ulmus* also present.

*KIL-2: 0.64m-0.55m, Corylus avellana-type-Alnus glutinosa-Poaceae-Cyperaceae*

The opening of this zone sees an increase in herbaceous pollen. The bulk of this consists of Poaceae (up to 25%) and Cyperaceae (up to 23%). *Alnus* declines slightly although it still continues to be a dominate component of the local woodland indicating that fen carr remained significant locally. *Corylus* maintains values c. 30% and dominates the dryland woodland with *Quercus* and *Tilia* but *Ulmus* and *Betula* have declined to trace values. Other herbs remain scarce but do include occasional grains of Apiaceae (carrot family), Brassicaceae (cabbage family), Lactuceae (dandelions), *Plantago lanceolata* (ribwort plantain) and Rosaceae (rose family).

The increase in grasses and sedges indicates a reduction in woodland on the wetter areas around the sampling site, but the presence of *P.lanceolata* and Lactuceae along with the decline in *Betula* and *Ulmus* also indicates an expansion of small open areas in the wider dryland woodland.

### 8.3.3 Plant macrofossils and Beetles

The results of the investigations are presented below in stratigraphic sequence uppermost sample first. A brief summary of the processing method and an estimate of the remaining volume of unprocessed sediment follows (in round brackets) after the sample numbers.

*Sample at 0.48-0.58 metres depth*

Sample 1/T (1 kg/~1 litre sieved to 300 microns with washover; ~1 litre of unprocessed sediment remains). More or less dry, mid to dark grey to mid to dark grey-brown, crumbly, slightly sandy well humified organic sediment, with very occasional fine rootlet present.

The relatively large washover (400 ml) was mostly small lumps of undisaggregated organic sediment (to 1 mm), with a little sand and occasional angular stones (to 18 mm). The botanical component comprised abundant fine rootlet, with traces of indeterminate rotted wood (to 4 mm), pieces of root/rhizome (to 2 mm) and unidentified plant epidermis fragments. Invertebrate remains were restricted to occasional 'scraps' of indeterminate cuticle. There was no separate residue fraction from this sample.

*Sample at 0.78-0.83 metres depth*

Sample 4/T (1 kg/~1 litre sieved to 300 microns with washover; ~1 litre of unprocessed sediment remains). Moist, dark grey to dark grey-brown, crumbly (working soft, with a rather 'gritty' texture), very slightly sandy well humified organic sediment, with very occasional small clasts (to 15 mm) of light grey sandy clay. There were no obvious inclusions.

The medium-sized washover (245 ml) was largely composed of small lumps of undisaggregated organic sediment (to 1 mm), with two larger wood fragments (to 20 mm), a little sand and occasional angular stones (to 15 mm). The washover also contained an

abundance of smaller degraded wood fragments (to 2 mm), fine rootlets, occasional small pieces of bark (to 3 mm) and some unidentified plant epidermis. Invertebrate remains were, again, restricted to occasional 'scraps' of indeterminate cuticle. There was no separate residue fraction from this sample.

#### **8.4. Discussion**

The deposit encountered at Killerby during the trial trenching was a silt clay with an extremely humified organic component that had formed within a natural hollow. This type of feature had been investigated previously by Northern Archaeological Associates and was found to contain evidence for Mesolithic activity at the site in the form of faunal remains with evidence for butchery (SUERC-13999. 5570-5470 Cal BC, 6555 $\pm$ 35BP). These remains were accompanied by flint scatters and a second faunal assemblage dating to the Beaker period (SUERC-13998. 2140-1930 Cal BC, 3660  $\pm$ 35BP). It seemed likely that this second evaluation may encounter similar remains although none were identified despite the hand removal of the deposit.

The minerogenic component of the deposit indicates that the parent material was probably washed into the hollow from the surrounding higher ground. The highly humified nature of the organic component and its desiccation indicates that this deposit is not currently waterlogged and is more likely to be affected by seasonal fluctuations in water tables. At the time of sampling the site had been flooded and indeed some parts of the field still contained standing water yet the deposit itself remained dry. A previous borehole survey undertaken by Durham University Archaeological Services identified four areas of what has been termed 'peat' although what was encountered during this investigation was more of an organic silt/clay (Speed 2007 borehole logs).

The preservation of plant macrofossils and beetle remains was very poor and no identifiable remains were present. The pollen concentrations were however very good but the overall preservation was also poor. The dry 'crumb' texture noted from the lower of the two bulk samples (0.78-0.83m), and exhibited by the predominance of small lumps of undisaggregated organic sediment in both washovers, suggests a degree of desiccation which most likely reflects a fluctuating water table and repeated wetting and drying of the deposit. The regular influx of oxygenated water would result in an environment highly destructive to organic macrofossils and palynomorphs consistent with the dearth of remains recovered and the amount of unidentifiable pollen grains.

The pollen record however does shed some light on the environmental history of the Killerby area. The sampling site would have been dominated by alder carr woodland which eventually opened up in areas for sedges and wild grasses to colonise. The dryland woodland would have been mixed consisting largely of hazel with stands of birch, pine and lime. The presence of *Plantago lanceolata* could indicate human disturbance in the wider landscape (*sensu* Behre, 1981) but without radiocarbon dates to define the chronology it is impossible to assign this sequence to any archaeological time period.

Previous palynological investigations at the Killerby Prospect Development site (Hopla and Gearey, 2009) suggested that the pollen spectra indicated that peat accumulation may have commenced during the early Holocene in cores KB3 2.30m, KB5 2.31m and KB8 2.20m. The other samples are dominated by a range of tree and shrub pollen reflecting deciduous woodland probably dating to the mid-Holocene. The range of trees present in this new sequence at Killerby is likely to be contemporaneous with the mid-Holocene spectra

exhibited in previous investigations. It is perhaps notable that *Alnus* is recorded at high values throughout the sequence as this species tends to dominate floodplain environments from around 7000 BP (5000 BC) which could imply that these deposits cover at least part of this timeframe. The 2009 investigations also contained indications of human activity and possible cereal cultivation in some of the cores. This is not really reflected in the new sequence apart from occasional grains of *Plantago lanceolata* which could suggest possible disturbances in the landscape. However without a secure chronology it is difficult to correlate all these sequences with confidence.

The site lies within the northern extent of the recent Swale-Ure Washlands project (Bridgland *et al*, 2011) which collected palaeoenvironmental data from sites that are comparable to the samples collected at Killerby. Langland's Farm, Morton-on-Swale (LF1) is approximately 9 miles south of Killerby on the River Swale. The pollen record is from a former channel of the Swale and is dated to 5520±50BP (6410-6210 cal.BP; 4460-4260 cal. BC, GrA-24660) at 0.70m when *Alnus* is fully established on the floodplain. The pollen spectra is very similar to that found in the sequence from the borehole at Killerby with trees, sedges and grasses indicating a possible correlation in terms of dating for the part of the sequence.

## **8.5. Conclusions and Recommendations for Further Analysis**

The material recovered from the evaluation at Killerby has demonstrated that although preservation of plant macrofossils and invertebrates is poor there is the potential for landscape characterisation using the pollen record. However, without a secure chronology it remains difficult to relate this to other sequences or archaeological remains with any confidence. Although no further work is recommended for this material should further investigations be carried out at the site a more extensive sampling programme is recommended with appropriate chronological control (i.e. radiocarbon). The site has the potential to yield valuable evidence for landscape change and human interaction for the early prehistoric period.

## **8.6. Acknowledgements**

Thanks are due to Chris Scott and team for their assistance on site.



Figure 6: General shot of sample site



Figure 7: Monolith tin in situ (50cm long)

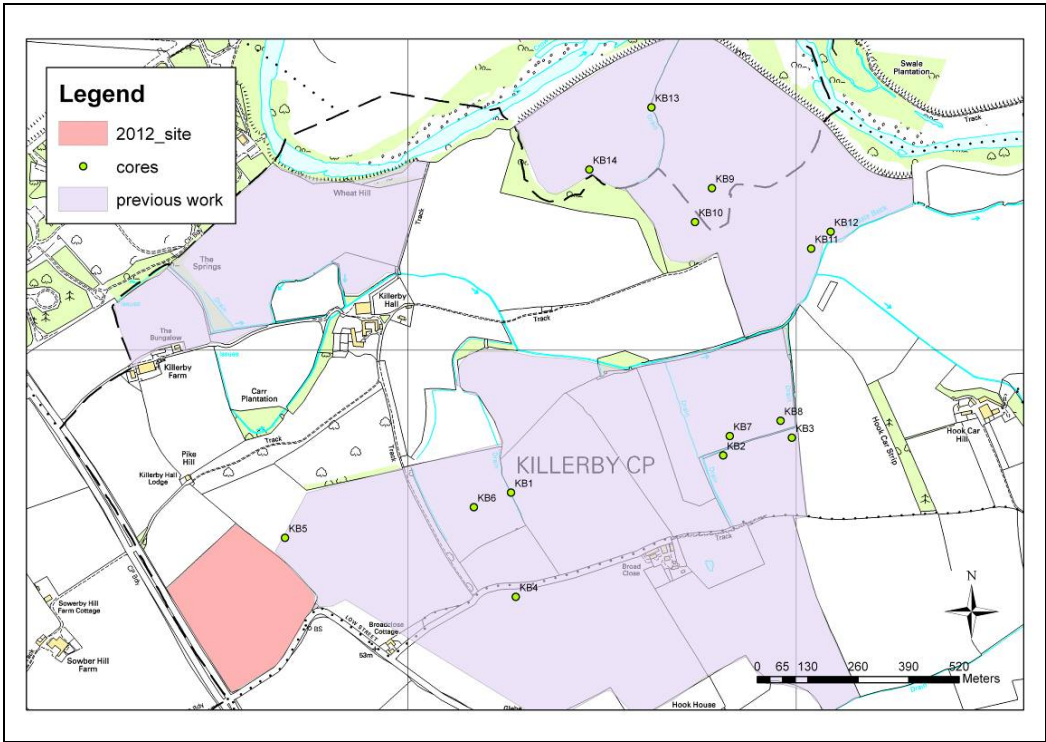


Figure 8: Site and previous work

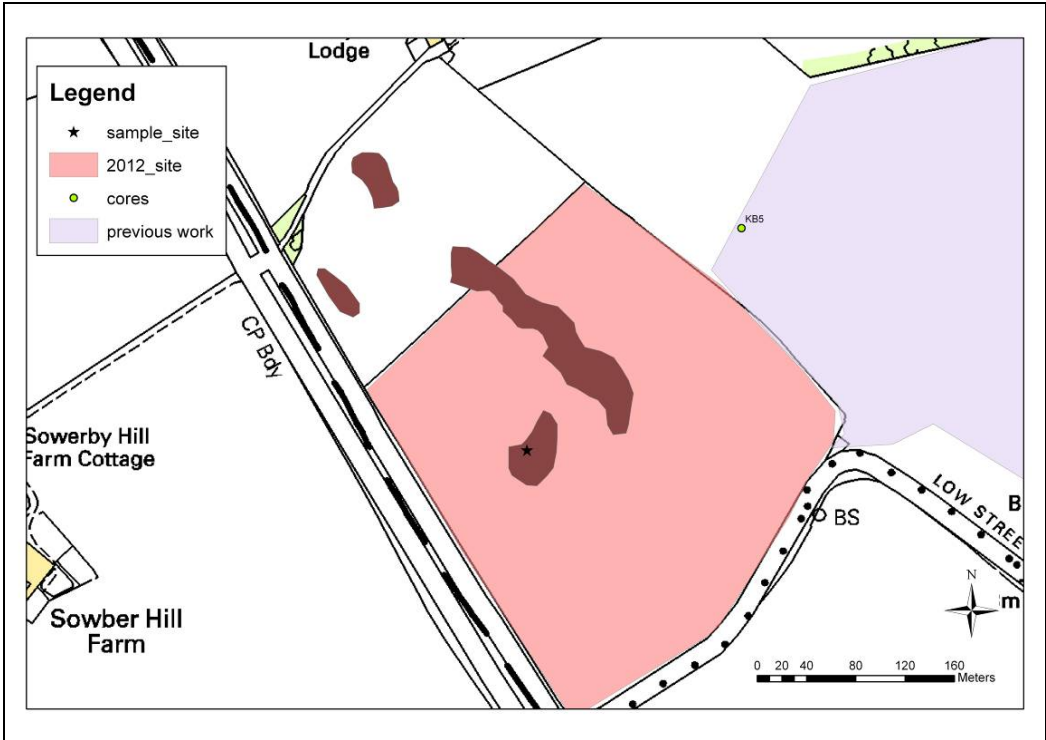


Figure 9: Sample location





Feature	Context	Sample	Lab No.	RC Age (BP)	$\delta^{13}\text{C}$ (‰)	Calibrated date range (95.4% confidence)
Organic silt clay deposit	005	Cow (Bos): tooth	SUERC-42599	3476±26	-23.6	1738 – 1699 cal BC

Table 1: Radiocarbon dating results

10.2 The date obtained on the tooth indicates that Early Bronze Age deposits survive in this organic deposit and that remains of this sort could provide important information on the local faunal population at this period.

## 11. Discussion

11.1 The environmental information recovered from the evaluation at Killerby demonstrates that although preservation of plant macrofossils and invertebrates is poor there is the potential for landscape characterisation using the pollen record. However, without a secure chronology it remains difficult to relate this to other sequences or archaeological remains with any confidence. Despite this, the site has the potential to yield valuable evidence for landscape change and human interaction for the prehistoric period.

11.2 Set alongside earlier investigations, the radiocarbon date from the cow tooth recovered from this evaluation also lends further weight to evidence the importance of the site in providing information on the faunal population of this area from at least the Mesolithic period to the Early Bronze Age.

## 12. Conclusions

12.1 Should this peat deposit be impacted upon by future development an appropriate recording strategy should be undertaken to record surviving faunal remains. Should further investigations be carried out at the site a more extensive sampling programme is recommended with appropriate chronological control (i.e. radiocarbon). The site has the potential to yield valuable evidence for landscape change and human interaction in particular for the early prehistoric period.

### **13. Publicity, Confidentiality and Copyright**

13.1. Any publicity will be handled by the client.

13.2. Archaeological Research Services Ltd will retain the copyright of all documentary and photographic material under the Copyright, Designs and Patent Act (1988).

### **14. Statement of Indemnity**

14.1 All statements and opinions contained within this report arising from the works undertaken are offered in good faith and compiled according to professional standards. No responsibility can be accepted by the author/s of the report for any errors of fact or opinion resulting from data supplied by any third party, or for loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in any such report(s), howsoever such facts and opinions may have been derived.

### **15. Acknowledgements**

15.1 Archaeological Research Services Ltd would like to thank all those involved with this work, in particular John Earle and Lucie Hawkins of North Yorkshire County Council.

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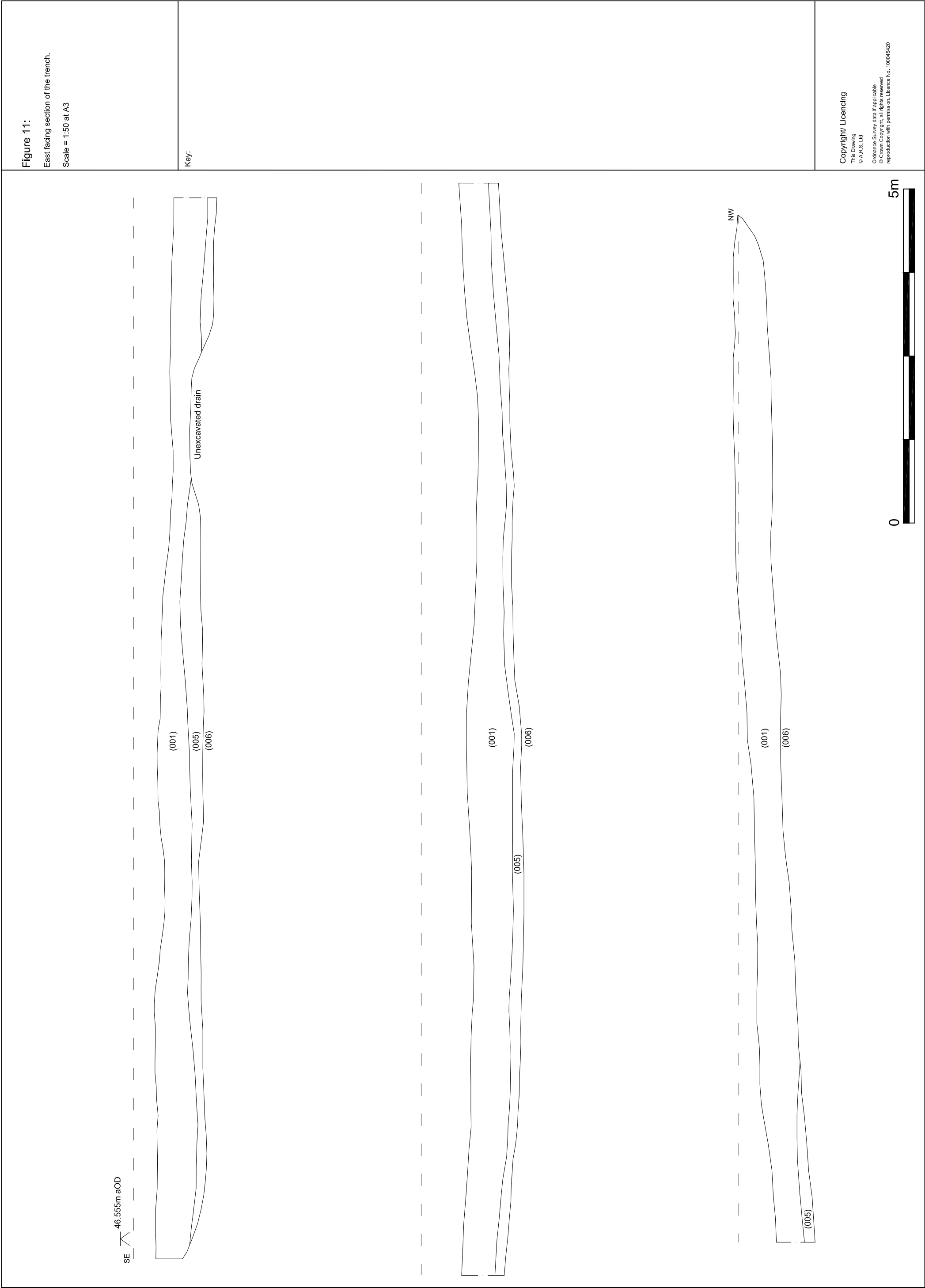
British Geological Survey: <http://www.bgs.ac.uk/>



## **APPENDIX I – CONTEXT REGISTER**

Context No.	Within	Description
001	Trench 1	Ploughed topsoil
002	Trench 1	Grey clay fill of cut for stone-lined drain
003	Trench 1	Stones of drain
004	Trench 1	Cut for drain
005	Trench 1	Peat
006	Trench 1	Gleyed layer above glacial till
007	Trench 1	Glacial till

## **APPENDIX II – DRAWINGS**



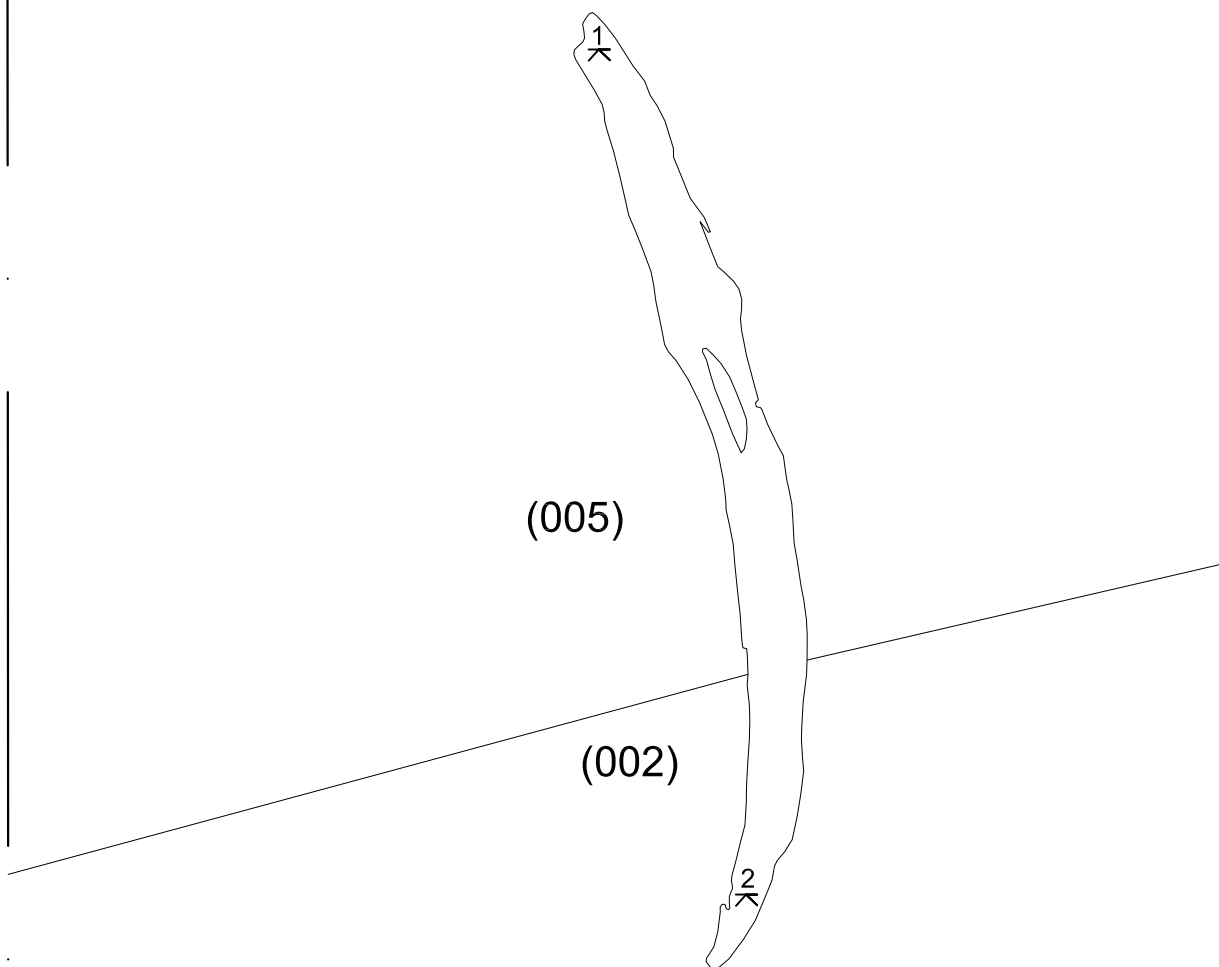


Figure 12:

A plan of the preserved wood discovered within the peat (005).

Scale = 1:20 at A4

Levels OD:

1: 44.704m AOD  
2: 44.801m AOD



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## **APPENDIX III – WSI**



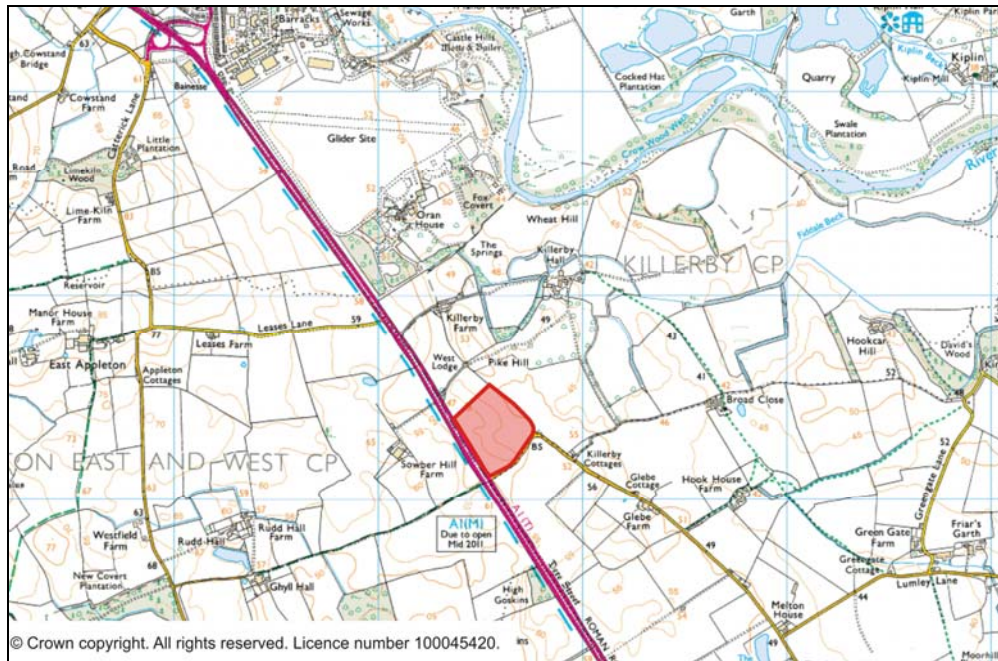
### **WRITTEN SCHEME OF INVESTIGATION**

#### **Targeted Evaluation Trenching at Killerby Prospect 2012**

##### ***1. Introduction***

1.1 This document is a Written Scheme of investigation for a 2012 phase of archaeological evaluation at the Killerby Prospect Quarry site in North Yorkshire. The site is located in North Yorkshire and is situated to the south-east of Catterick Village (NGR centrepoin: SE 263 958). To the west of the site is the modern A1 road and to the north the River Swale. The overall extraction area comprises a number of agricultural fields around comprising four proposed extraction areas occupying c.153ha of farmland currently used primarily for cereal cultivation.

1.2 This written scheme of investigation covers specifically a targeted trial trench evaluation comprising two trenches located over a preserved peat deposit within the field to the south of West Lodge, which now lies adjacent to the Killerby Prospect. The field is centered on grid reference SE 2556 9533, and sits adjacent to the A1 (Fig 1) It is likely that access and infrastructure for the future sand and gravel extraction workings will run through this area, and so NYCC have requested further evaluation work to delimit and assess the potential of known peat deposits within the field.



## 2. Policy Background and guidance

2.2 The North Yorkshire County Council Historic Environment Team, has advised that this targeted evaluation be undertaken at the site to more fully inform the planning application. This is in line with PPS5 Policy HE 6.1 (CLG 2010, 6).

3.1 Within the field to the south of West Lodge, two previous interventions have taken place. These are:

As part of archaeological works along the A1 corridor in 2006, geophysical (magnetometry) survey, and evaluation trenching took place in the field. The geophysical survey was largely inconclusive, but evaluation trenching revealed a number of features. Two shallow hollows, containing peat inset within the natural clay-dominated till, were found to contain animal bones. These bones included possible domesticated dog, aurochs and also flint-cut red deer antler. Unidentified charcoal associated with the red deer antler from the first hollow gave radiocarbon dates of  $\approx 5570\text{--}5470$  cal. BC at 2 sigma (6555  $\pm$  35 bp, SUERC-13999

(GU-15322)) indicating a late Mesolithic date and unidentified charcoal associated with the aurochsen bone from the other hollow gave a radiocarbon date of  $\pm 2140-1930$  cal BC at 2 sigma (3660+/-35 bp, SUERC-13998 (GU-15321)) indicating a Beaker period date (Speed 2007). A nearby scatter of flints was dated from the Mesolithic to Neolithic periods on the basis of its typological associations.

### 3.3 *Archaeological Services Durham University*

Following the limited evaluation, a borehole survey covering the area where the two hollows was undertaken by Archaeological Services Durham University in order to delimit the areas of peat deposit (O'Brien and Innes 2007). A simplified GIS plan showing the field, the borehole previous trench locations, and the delimited areas of peat is provided below (Fig. 2).

## 4. **Overall Methodology**

4.1 A programme of archaeological evaluation trenching will be undertaken that will target two areas of peat within the field to the south of West Lodge. This work will be proportionate to the significance of heritage assets in accordance with PPS5, and has been agreed with the North Yorkshire County Council Historic Environment Team.

4.2 The proposed scheme of works comprises two evaluation trenches (see Fig. 2) to identify, delimit and characterize areas of peat: a deposit with high archaeo-environmental potential (see above).

## 5. **Project Management and Standards**

5.1 The project will be carried out in compliance with the codes of the Institute for Archaeologists (IfA) (2008) and will follow the IfA Standard and Guidance for Excavations (2008).

5.2 All staff employed on the project will be suitably qualified and experienced for their respective project roles and have practical experience of archaeological excavation and recording. All staff will be made aware of the archaeological importance of the area surrounding the site and will be fully briefed on the work required by this specification. Each member of staff will be fully conversant with the aims and methodologies and will be given a copy of this written scheme of investigation to read. All members of staff employed by Archaeological Research Services Ltd are fully qualified and experienced archaeologists which will ensure that appropriate decisions regarding environmental and dating sampling will be made in the field.

## 6. ***Evaluation Objectives***

6.1 The objective of the evaluation trenching is to provide sufficient information for informed decisions to be made regarding:

- vii) the presence or absence of the peat deposit and associated archaeological features/residues
- viii) the presence or absence and assessment of organic residues relating to past environments
- ix) identification of the age of the two peat sediment units
- x) an assessment of their significance and importance in line with PPS5 (Planning for the Historical Environment) (CLG 2010)
- xi) the likely impact of the development upon any such features
- xii) the appropriate mitigation of the development's impact upon those remains

6.2 The research aims for any further work required following the evaluation will be developed in an additional WSI.

6.3 If significant archaeological remains are identified during the evaluation that require further examination, a site meeting will be arranged with the client, ARS Ltd and the Development Management Archaeologist in order to agree the requirement and timetable for further work. This is in accordance with Planning Policy Statement 5 (PPS5) (CLG 2010).

6.4 Any changes to the agreed WSI will be discussed with, and agreed with, the Development Management Archaeologist before implementation.

## **7. *Evaluation Methodology***

7.1 All archaeological fieldwork, recording of archaeological features and deposits and post-excavation analysis will be carried out to acceptable standards as set out in the Institute for Archaeologists' *Code of Practice* (2000) and *Standard and Guidance for Archaeological Evaluation* (2008).

7.2 The trenching will consist of two trenches covering a total area of 200m<sup>2</sup>. The trenches will each measure 2m x 50m, and will be placed over the known peat deposits, as illustrated in Figure 2, subject to the agreement of the North Yorkshire County Council Historic Environment Team in advance of the work.

7.3 The topsoil in each trench will be machine stripped under continuous archaeological supervision to identify the extent of the peat deposits in successive level spits or to a level where it is possible to assess the presence or absence of archaeological features. A toothless bucket will be used. A section through the peat will then be excavated by hand in successive spits to identify and sample for any archaeological artefacts or ecofacts and to produce a clear section through the deposit which can be recorded and sampled at different depths for environmental assessment and collection of dating samples.

7.4 Following excavation and recording of each trench they will be backfilled using excavated material.

7.5 Each trench will be cleaned by hand sufficiently to allow the identification and planning of any archaeological features and the peat will then be removed by hand in level spits in order to gain a section which can be used to take satisfactory samples, but also to maximize the recovery of artefactual material (for example, faunal remains).



7.6 Where archaeological features appear to be absent, sufficient work will be done to demonstrate this. Each trench will be planned at an appropriate scale; 1:20 where complex deposits are present or 1:50 in areas of lesser complexity (to be omitted if the trench is completely blank). One representative long section of each trench will be produced, at an appropriate scale, if necessary. Sections and profiles of each feature sampled will be drawn at 1:10 or 1:20, depending on the size of the feature. Spot levels relative to ordnance datum in metres will be taken as appropriate.

7.7 Identified archaeological features will be sufficiently sampled by manual excavation to allow their date, nature and degree of survival to be ascertained. All features thus investigated will be recorded in plan and section and all finds recovered retained for analysis.

7.8 All identified archaeological features will be accurately fixed using an EDM/Total Station.

7.9 The site archive will include plans and sections at an appropriate scale, a photographic record, and full stratigraphic records on recording forms/context sheets. Each context will be recorded on pro-forma records which will include the following: character and contextual relationships; detailed description (dimensions and shape; soil components, colour, texture and consistency); associated finds; interpretation and phasing as well as cross-references to the drawn, photographic and finds registers. Each context will be recorded on an individual record.

7.10 A photographic record will be maintained including photographs of all significant features and overall photographs of each area or trench. All images will be taken in black and white print, and digital format, and will contain a graduated photographic scale. The main photographic archive will comprise 35mm b/w SLR print film, supplemented by digital SLR (minimum 12 megapixels).

7.11 All stratified finds will be collected by context or, where appropriate, individually recorded in 3 dimensions. Unstratified finds will only be collected where they contribute significantly to the project objectives or are of particular intrinsic interest. All pottery of early post-medieval date or earlier will be retained, whether stratified or un-stratified.

7.12 Once the deposits have been assessed those that show good potential for further results will be floated in full. This strategy will ensure that all deposits with potential for containing palaeoenvironmental residues (such as botanical macrofossils, animal bone and invertebrates) are assessed while at the same time ensuring that excessive time is not wasted on sterile deposits that will add nothing to furthering understanding. Furthermore, it will mean that any further work can be targeted specifically to those deposits that have demonstrable potential.

7.13 Samples for pollen assessment at 0.2m intervals throughout each peat profile. plant remains *etc.*

7.14 All samples will be assessed by a suitable specialist with provision for further analysis as required.

7.15 All retained finds and palaeoenvironmental samples will be treated in accordance with

the English Heritage guidance document *A Strategy for care and investigation of find (1995)* and the UKIC's document *Guidelines for the preparation of excavation archives for long term storage*.

7.16 Provision will be made for additional specialist advice, e.g. for finds analysis and conservation.

7.17 Finds of "treasure" will be reported to the Coroner in accordance with the Treasure Act procedures.

7.18 If grave cuts are discovered on site, then they will be sampled through hand excavation to determine the presence/absence, depth and preservation of the uppermost burials, before being initially left in situ. Where excavation of human remains is necessary, a license will be obtained from the Ministry of Justice and work will be carried out under appropriate environmental health regulations and, if appropriate, in compliance with the Disused Burial Grounds (Amendments) Act 1981.

7.19 Disarticulated human bone will be quantified and characterised prior to reinterment on site.

7.20 The record of the extent and vulnerability of features will be sufficiently detailed to facilitate discussions regarding the need for preservation beneath any future potential development, or any other mitigation measures including further excavation or recording.

7.21 A risk assessment will be undertaken before commencement of the work and health and safety regulations will be adhered to at all times.

7.22 Samples will be double bagged in sealed plastic bags and labelled accordingly.

7.23 All sampled points will be surveyed in using a total station and an accurate plan of the location of the cores produced as part of the report. The site will be accurately tied into the National Grid and located on a 1:2500 or 1:1250 map of the area.

## **8. Access**

8.1 Archaeological Research Services Ltd will give the Development Control Archaeologist 10 working days (or less if so agreed) notice of the commencement of fieldwork.

8.2 Archaeological Research Services Ltd will afford access to the Development Control Archaeologist or their representative at all times, for the purposes of monitoring the archaeological mitigation.

8.3 Archaeological Research Services Ltd will maintain regular communication with the Development Control Archaeologist to ensure that the project aims and objectives are met.

## **9. Site archive**

9.1 The archive will be compiled in an orderly fashion in accordance with the Guidelines for the Preparation of Excavation Archives for Long Term Storage (UKIC 1990). The archive will be deposited with the appropriate Museum within 6 months of the fieldwork once all post-excavation work is completed and the final report produced.

9.2 The archive will include results of all archaeological work carried out. The project archive represents the collation and indexing of all the data and material gathered during the course of the project. A properly ordered and indexed project archive will also ultimately be deposited with the North Yorkshire Historic Environment Team.

## **10. Report**

10.1 An archive report will be produced One copy of the report will be submitted to the client, and one bound hard copy and a digital copy in word or pdf format will be submitted to the North Yorkshire HER within fourteen working days of the completion of the report.

10.2 Following completion of the evaluation ARS Ltd will produce a report which will include:

- A non-technical summary.
- Introduction and objectives of the trenching.
- Methodology of the evaluation.
- An objective summary statement of results.
- A phased stratigraphic discussion of the archaeological features.
- An interpretive discussion of the results, placing them in a local and regional framework and an assessment of the importance of the remains in relation to the criteria in PPS 5.
- Appropriate supporting illustrations, including a site plan, trench and section plans, feature sections and plans and a phased site plan.
- A site location plan at 1:2500 or 1:10000 as appropriate and a phased interpretation of the site as appropriate.
- The results of analyses of artefacts and ecofacts carried out by suitable specialists.
- In the event that significant remains are encountered, then a publication proposal and timetable will be included in the report.
- A detailed context index and supporting data in tabulated form or in appendices.
- An index to and the proposed location of the archive.
- The proposed date of deposition of the archive
- References.
- A copy of the brief and OASIS form

10.3 Within the report:

- All plans will be clearly related to the national grid.
- All levels will be quoted relative to ordnance datum.

10.4 If significant archaeological remains are identified the report will include

- Detailed description and plans (at 1:50 scale) of any trial trenches which provided significant archaeological information, all feature plans and sections (at 1:10 or 1:20 scale), select artefact illustrations, photographs and an overall site plan showing all recorded archaeological features.
- Finds quantification and assessment.
- Assessment of any palaeo-environmental samples taken.
- A summary of the extent, depth and state of preservation of archaeological deposits across the site.

10.5 Copies of the final report will be deposited with the North Yorkshire County Council Historic Environment Team Historic Environment Record, and will be submitted to the Assistant County Archaeologist within six weeks of the completion of fieldwork.

## **11. Archive Deposition**

11.1 A digital, paper and artefactual archive, which will consist of all primary written documents, plans, sections, photographs and electronic data will be submitted to the a suitable repository museum, most probably Pontefract Museum in a format agreed in discussion with Lucie Hawkins of North Yorkshire County Council Historic Environment Team.

11.2 All artefacts and associated material will be cleaned, recorded, properly stored and deposited in the archive (see above).

11.3 A full set of annotated, illustrative pictures of the site, excavation, features, layers and selected artefacts will be supplied to the HER and deposited with the archive as digital images on a CD ROM along that will be attached with the report.

11.4 The North Yorkshire County Council Historic Environment Team will be notified on completion of fieldwork, with a timetable for reporting and archive deposition.

11.5 Written confirmation of the archive transfer arrangements, including a date (confirmed or projected) for the transfer, will be included as part of the final report.

11.6 An OASIS online record <http://ads.ahds.ac.uk/project/oasis/> has been initiated for the building recording phase of this project, and the watching brief data will be added to this record. Key fields will be completed on Details, Location and Creators forms. All parts of the OASIS online form will be completed for submission to the HER. This will include an uploaded .pdf version of the entire report (a paper copy will also be included within the archive).

11.7 The North Yorkshire County Council Historic Environment Team will be notified of the final deposition of the archive.

## **12.    *Formal Publication and Publicity***

12.1.   A publication report will be prepared for the entire Killerby Prospect project in line with the guidelines set out by English Heritage in 'Management of Research Projects in the Historic Environment' (English Heritage 2006). Copies of the report will be submitted to Tarmac and the HER upon completion.

12.2.   If significant remains are discovered which merit formal publication an academic article or monograph will be prepared and submitted for publication within 18 months of completion of the project.

12.3    Project results will be regularly reported on the ARS Ltd and/or Tarmac web site targeted towards the general reader but with links to further and more in-depth reports for those who would like to find out more.

## **13.    *Monitoring***

13.1    Reasonable access to the site will be allowed to the Development Control Archaeologist or their nominee for the purpose of monitoring the archaeological scheme. Prior notification of a site visit is required and Tarmac Ltd and Archaeological Research Services Ltd should be notified accordingly.

## 14 References

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