



# **CROSTON FLOOD RELIEF MANAGEMENT SCHEME**

**CROSTON,  
LANCASHIRE**

**Archaeological Evaluation**



**Oxford Archaeology North**

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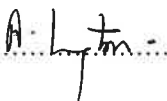
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## SUMMARY

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Oxford Archaeology North (OA North) was commissioned by Volker Stevin, acting on behalf of the Environment Agency, to undertake an archaeological evaluation along a section of the River Yarrow in advance of the development of a flood elevation scheme for the village of Croston in West Lancashire. The study area comprises land approximately 575m in length, extending between Roemoor Farm in the north (NGR 352162, 418521), Plump Farm to the south-west (NGR 352163, 417683) and Bradley Hall to the south-east (NGR 352744, 417825). The work comprised the excavation of 22 trenches, which followed on from archaeological monitoring of geotechnical boreholes and test pits in 2013 and 2014.

The wider peat bogs or ‘mosses’ of the Lancashire Plain have been the subject of comprehensive archaeological, palaeoecological and geomorphological survey previously. This research identified the potential of the mosses to mask archaeological activity, in particular relating to the prehistoric exploitation of the wetlands from the Mesolithic period onwards. This activity is thought to probably focus upon the many sandy islands that would have existed within the undulating land of the wetlands, which would have provided a secure base for the exploitation of the surrounding wetland resources, and are gradually emerging from below the retreating peat deposits. In contrast, later historical activity was identified as predominantly focusing upon the edge of the wetland areas, as represented by several Roman coin hoards and evidence for medieval and post-medieval agriculture.

The earliest evidence for earlier activity within the evaluation trenches comprised the basal remains of furrows associated with a potentially medieval ridge-and-furrow field system on the higher ground in the southern part of the site. A few abraded sherds of medieval pottery, spanning the late twelfth to early fourteenth centuries, were also recovered from the topsoil/natural subsoil interface within several of the trenches, demonstrating activity in the broad area during this period. Later agricultural features comprised a variety of land drain types, draining the thick plastic clays above the river into the alluvial deposits adjacent to the river banks. The earlier examples were of red sandstone, with presumably slightly later brick and sandstone drains forming a transitional phase to ceramic segmental pipes. Twentieth-century large ceramic and plastic land drains were also observed.

In the southern part of the site, two trenches were placed across a small infilled pond. This infill comprised tipped modern material, mainly comprising clinker and bottles, with several of the bottles being melted, all suggesting that the infill comprised more than domestic refuse from a nearby farm, possibly including hot ash from a nearby mill.

No buried soils or peat deposits were observed in any of the evaluation trenches. The likelihood of the development impacting upon any palaeo-environmental significant deposits is thus considered to be minimal.

Based upon the results of the evaluation trenching, there are little or no significant archaeological deposits of interest across the study area, and it is recommended that no further archaeological mitigation is merited.

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## ACKNOWLEDGEMENTS

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Oxford Archaeology North (OA North) would like to thank Richard Birchall and James Taylor of Volker Stevin for commissioning and supporting the project. OA North is also grateful to Stephen Kemp, Senior Archaeologist for the Environment Agency, and Peter Iles of Lancashire County Archaeology Service, for their advice and guidance.

The archaeological evaluation was undertaken by Chris Wild and Alex Batey. The report was written by Chris Wild and edited by Ian Miller, and the drawings were produced by Mark Tidmarsh. The project was managed by Ian Miller.

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## 1. INTRODUCTION

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### 1.1 PROJECT BACKGROUND

- 1.1.1 The Environment Agency has commissioned Volker Stevin to deliver a Flood Risk Management Scheme at Croston, Lancashire. The construction works required for the scheme will necessitate considerable earth-moving works, which has potential to have a negative impact on any buried archaeological remains that may survive within the development area. The wider peat bogs or ‘mosses’ of the Lancashire Plain have been the subject of comprehensive archaeological, palaeo-ecological and geomorphological survey and analysis by OA North, with the smaller moss of Croston/Mawdesley and Hoscarr being considered in a volume that was published in 2013 (Middleton *et al* 2013). This research identified the potential of the mosses to mask archaeological activity, in particular relating to the prehistoric exploitation of the wetlands from the Mesolithic period onwards. This activity is thought to probably focus upon the many sandy islands that would have existed within the undulating land of the wetlands, which would have provided a secure base for the exploitation of the surrounding wetland resources, and are gradually emerging from below the retreating peat deposits. In contrast, later historical activity was identified as predominantly focusing upon the edge of the wetland areas, as represented by several Roman coin hoards and evidence for later agricultural activity.
- 1.1.2 Following on from the submission of a desk-based assessment, geophysical survey and watching brief on a series of geotechnical pits in 2013-14, the Senior Archaeologist for the Environment Agency, in consultation with Lancashire County Council’s Archaeology Service, devised a Project Brief for an appropriate scheme of archaeological investigation. In the first instance, this allowed for the evaluation excavation of a large sample across the site, which was intended to determine the extent, depth, character and relative significance of any buried archaeological remains that survive, in line with the National Planning Policy Framework, Paragraph 128. The trenches were targeted on the proposed location of a borrow pit in the southern part of the scheme area, together with the route of the proposed new channel on the north bank of the River Yarrow and the line of the new embankment and haul road.
- 1.1.3 In May 2015, Volker Stevin, acting on behalf of the Environment Agency, commissioned Oxford Archaeology North (OA North) to undertake the required programme of archaeological evaluation trenching, which began on the week commencing 8<sup>th</sup> June 2015. This allowed for the excavation of eight evaluation on the northern side of the River Yarrow, and a further 14 to the south of the river.

## 1.2 SITE LOCATION

- 1.2.1 The development area straddles the River Yarrow a short distance to the south of Croston, and to the north-east of Ecclestone, in the Lancashire borough of Chorley (centred on NGR 352180 418000). The area and its surrounds largely comprises agricultural fields, and lies at a height of approximately 14m aOD.
- 1.2.2 The initial eight trenches were all placed to the north of the River Yarrow, with the remaining trenches to the south; four adjacent to the river, and a further 10 within the site of a proposed 'borrow pit' (Fig 2).

## 1.3 SOILS AND GEOLOGY

- 1.3.1 The underlying solid geology of the site is characterised as sedimentary bedrock of the Sidmouth Mudstone formation (BGS 2014).
- 1.3.2 The overlying drift geology is characterised as slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils upon the river terraces and loamy and clayey floodplain soils with naturally high groundwater within the immediate channel of the River Yarrow (Cranfield 2014).

## 1.4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 1.4.1 **Introduction:** prior to the archaeological watching brief outlined in this report, the PDA formed part of a much wider archaeological, palaeoecological and geomorphological survey programme conducted by OA North, and falls under the discussion and analysis relating to the general Croston/Mawdesley and Hoscar mosses featured in Volume 7 of the publication series (Middleton *et al* 2013). This survey identified the potential of peat deposits to mask archaeological activity extending as far back as the Mesolithic period and contributed a number of small assemblages to support this supposition.
- 1.4.2 **Prehistoric to Roman:** although there is no direct evidence for prehistoric sites, or finds, within the PDA, the surrounding area was certainly utilised during this broad period. Prior to the survey conducted by OA North (*ibid*), Croston and Mawdesley Mosses had produced the only Mesolithic site known in south-west Lancashire (Wymer 1977, 162-71). The site of Blackmoor (Lancashire Sites and Monuments Record LSMR:1952) was located south-west of the village of Mawdesley and comprised two distinct flint scatters recovered from a sand quarry. The composition of this assemblage may suggest it is the product of seasonal exploitation of the wetlands (Middleton *et al* 2013, 146). Excavations carried out in the area subsequently were unable to locate additional material and concluded the site had been destroyed by quarrying activity, but did identify layers of carbonised wood within adjacent peat deposits that probably relate to associated Mesolithic activity (*op cit*, 145). The more recent survey of the area recovered a limited number of Mesolithic flints close to the Blackmoor site, as well as several isolated flints and a small scatter from the Mawdesley area (*op cit*, 146, Site ref. LA268:LA271) and a single scrapper from Croston Moss (*ibid*, LA250), which may also be of Mesolithic origin.

- 1.4.3 All such sites were located adjacent to extant peat deposits and upon outcrops of sand deposits at relatively low altitudes. This probably indicates that Mesolithic peoples were making use of sandy within the surrounding wetland in order to exploit available resources. Evidence for Neolithic or Bronze Age activity is similarly limited, with a single find of a barbed-and-tanged arrowhead recovered from the southern edge of Mawdesley Moss (LSMR 1867). Additional isolated finds of flint tools and debitage, forming a diffuse scatter near the village of Croston, are probably of the same date and indicate a light but extensive utilisation of the boulder clay areas west of Chorley (*op cit*, 148).
- 1.4.4 No material relating to the Iron Age has been recovered from across the area although several Roman coin hoards were found along the northern edge of the moss, near the village of Croston (LSMR:1997; LSMR 0063). The paucity of finds may suggest a lack of sustained or intensive exploitation of the wetland areas during this period.
- 1.4.5 **Medieval to post-medieval period:** there is a distinct lack of artefactual material relating to this period, despite the fact that the village of Croston has been identified as the site of a pre-Domesday church and medieval crosses are known from the surrounding area (*op cit*, 148). The survey conducted by OA North did recover a single piece of medieval pottery as well as several other finds of a similar date. It also identified a number of fields containing ridge and furrow, which probably represent a remnant of a more extensive system of probable medieval date, organised around the edge of the mosses (*ibid*). While the field systems are poorly dated, they were probably in use up to a general reversion to pasture during the 19th century, and are known to pre-date a series of marl pits, which had clearly been cut through them, and were themselves out of use by the mid 19th century. These systems represent cultivation of the areas surrounding the mosses and indeed documentary sources suggest that the wetlands were not exploited greatly.
- 1.4.6 Efforts instead appear to be restricted to mitigating the danger posed by flooding from the wetlands as well as land reclamation, with numerous drainage schemes initiated from the 16th century onwards. This was followed and augmented by several programmes of canalisation during the 18th and 19th centuries, which not only provided transportation networks linked to the industrial development of townships across the Lancashire Plain but also improved drainage of the wider mosses.



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## 2. METHODOLOGY

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### 2.1 EVALUATION TRENCHING

- 2.1.1 Excavation of the modern ground surface was undertaken by a machine of appropriate power using a toothless bucket. The uppermost levels of topsoils were then removed using the same machine, using a toothless ditching bucket, to the top of the first significant archaeological level. The work was supervised closely by the archaeologist. Spoil from the excavation was stored adjacent to the trench, and was backfilled upon completion of the archaeological works.
- 2.1.2 Machine excavation was then used to define carefully the extent of any surviving remains, which were then cleaned manually to define their extent, nature, form and, where possible, date. All information identified in the course of the site works was recorded stratigraphically, using a system adapted from that used by the Centre for Archaeology Service of English Heritage. Results of the evaluation were recorded on *pro-forma* context sheets, and were accompanied with sufficient pictorial record (plans, sections and photographs) to identify and illustrate individual features.
- 2.1.3 **Photography:** a full and detailed photographic record of individual features was maintained and similarly general views from standard view points of the overall site at all stages of the evaluation were generated. Photography was undertaken using a high-resolution digital SLR camera. All frames included a visible, graduated metric scale, and a photographic record was maintained on special photographic *pro-forma* sheets.

### 2.2 ARCHIVE

- 2.2.1 A full professional archive has been compiled in accordance with the current CIfA (IfA 2008b) and Historic England guidelines (English Heritage 2006). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. A copy of this report will be forwarded to the Lancashire Historic Environment Record (HER).

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### 3. RESULTS

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#### 3.1 INTRODUCTION

- 3.1.1 The evaluation comprised the excavation of 22 trenches, each of 1.8m width, with six of the trenches measuring 30m in length, with the remaining 16 being of 60m length. Eight trenches were placed to the north of the River Yarrow, with four to the immediate south of the river, and the remaining ten trenches positioned within the site of a proposed 'borrow pit' at the southern end of the scheme area (Fig 2).
- 3.1.2 All trenches were excavated by mechanical excavator to the topsoil/natural subsoil interface. Features of potential archaeological interest were then hand-cleaned and investigated. The topsoils varied in depth from around 0.2m on the hillslope down to the river, to approximately 0.35m over the majority of the site. Mixed subsoils were absent in but two of the trenches, with the natural subsoils comprising either alluvial silty clays, alluvial gravels, or plastic clays.

#### 3.2 RESULTS

- 3.2.1 **Trench 1:** this trench, located in the northern part of the site and to the immediate north of the River Yarrow, was placed on an approximate north/south alignment, on a plateau to the immediate north of the River Yarrow (Fig 2). It measured 30m in length, and was excavated to a maximum depth of 0.85m. No buried remains of archaeological or palaeo-environmental interest were identified in the trench.
- 3.2.2 Excavation revealed 0.35m of dark loamy topsoil, overlying mid-brown, soft, friable silty clay natural subsoils (Plate 1). These had occasional flecks of manganese and fragments of shale, but were otherwise devoid of artefacts. A sondage excavated at the southern end of the trench revealed the deposit to be of greater than 0.5 m depth, and the adjacent geo-technical test pit (TP10) also encountered a similar deposit to its full depth (OA North 2014).



*Plate 1: Silty clay natural subsoils within Trench 1, viewed facing north.*

- 3.2.3 **Trench 2:** this trench was placed to the east of Trench 1, to the immediate north of the River Yarrow, was placed on an approximate north/south alignment, on a plateau to the immediate north of the River Yarrow (Fig 2). It measured 30m in length, and was excavated to a maximum depth of 2.1m. No buried remains of archaeological or palaeo-environmental interest were identified in the trench.
- 3.2.3 Excavation revealed 0.35m of dark loamy topsoil, overlying mid-brown, soft, friable silty clay natural subsoils, similar to those within Trench 1. A deep sondage excavated at the southern end of the trench revealed the deposit to be of greater than 2.0m depth, becoming gradually paler towards the bottom of the sondage (Plate 2).





*Plate 2: Sondage at southern end of Trench 2, revealing continuous depth of alluvial silty clays. Viewed facing west.*

- 3.2.5 **Trench 3:** this trench was placed to the east of Trench 2, to the immediate north of the River Yarrow, was placed on an approximate north/south alignment, on a plateau to the immediate north of the River Yarrow (Fig 2). It measured 30m in length, and was excavated to a maximum depth of 0.7m.
- 3.2.6 Excavation revealed 0.45m of dark loamy topsoil, which unlike the two trenches to the west, contained approximately 2% of small, rounded water-worn pebbles. This overlay mid-orangey-brown, soft, friable silty clay natural subsoils, similar to those within Trench 1. Two small fragments of tree root were observed within slightly greyer patches within the natural clay. A single undiagnostic sherd of decorated whiteware, of probable late nineteenth-century date, and the base of a glass bottle, stamped '1901' or possibly '1061', were recovered from the lower levels of the topsoil, and probably derived from nightsoiling activity.
- 3.2.7 **Trench 4:** this trench was placed to the east of Trench 3, to the immediate north of the River Yarrow, was placed on an approximate north/south alignment, on a plateau to the immediate north of the River Yarrow (Fig 2). It measured 30m in length, and was excavated to a maximum depth of 1m.
- 3.2.8 Excavation revealed a dark loamy topsoil of varying thickness between 0.25 and 0.40m, being shallower in the rising ground at the northern end of the trench. This overlay mid-brown, soft, friable silty clay natural subsoils, similar to those within Trench 1. This had occasional small roots within greyer clay patches, but was devoid of other inclusions or artefacts. A sondage was excavated at the northern end of the trench to examine differences within the natural clay as it rose onto a raised bank within the river plain. This revealed an increasingly orangey, and less friable clay with depth, but without evidence for peat deposits or sand bars.

- 3.2.9 **Trench 5:** trenches 5-8: were placed to the north of the southern four trenches, zig-zagging away from the river, on alternating west-south-west/south-south-east, and south-west/north-east alignments (Fig 2). The topsoil in all of the trenches was very similar to that exposed in Trenches 1-4, comprising friable silty-clays. No buried remains of archaeological or palaeo-environmental interest were identified in the trench.
- 3.2.10 Trench 5 was placed on an approximately south-east/north-west alignment, and measured 60m in length (Fig 2), and was excavated to a maximum depth of 0.5m. Excavation revealed 0.3m of dark brown silty clay topsoil, overlying mid-brown clean, friable silty clay, similar to that observed in the majority of Trenches 1-4. This was again mottled with small patches of greyer silty clay, several containing evidence for tree roots. A machine-made hard engineering brick was recovered from the topsoil, and although frogged, did not have a manufacturer's stamp, and was of probable mid-twentieth-century date.
- 3.2.11 **Trench 6:** this was placed on a raised bank within the plateau above the River Yarrow, on an approximately south-west/north-east alignment (Fig 2), and had a shallower than average topsoil depth, measuring only 0.23m. The mid-brown clean, friable silty clay subsoil contained sub-angular and rounded small pebbles, but only comprising approximately 1% of the deposit, which also had small patches of manganese and iron-pan staining. A fragment of hand-made red ceramic material recovered from the trench almost certainly represents a fragment of land drain, providing an indicator of the increasing clay content within the subsoils. No buried remains of archaeological or palaeo-environmental interest were identified in the trench.
- 3.2.12 **Trench 7:** Trench 7 was placed parallel to Trench 5, to the north of Trench 6 (Fig 2), and was of 60m length. Excavation of 0.3m of topsoil revealed grey, leached silty clays at the eastern end of the trench, which blended into yellowish plastic clays towards the west, into which two extant, and two removed land drains were revealed, cut into the clay subsoil (Figs 3 and 5). Both drains comprised hand-made roughly formed, rolled cylindrical ceramic drain pipes of 3" (0.07m) diameter and in 1' (0.30m) lengths, placed at the base of the topsoil, and only partially cut into the clay (Plate 3).
- 3.2.13 The western of the extant drains was so shallow that it was broken in a position aligning with two shallow north/south-aligned plough marks, suggesting that the drain was broken during ploughing (Plate 3). Two sherds of probable nineteenth-century pottery were recovered from the silty grey infill of the plough marks.



*Plate 3: Ceramic land drain probably damaged by later ploughing, Trench 7*

- 3.2.14 At the western end of the trench, an east/west-aligned U-shaped cut contained only pale grey plastic clay, whilst a V-shaped perpendicular drain to the west (Fig 3), retained part of a broken horse-shoe profile ceramic pipe, suggesting that it pre-dated the extant drains, and was also placed at a significantly greater depth (0.5m).
- 3.2.15 **Trench 8:** this trench was placed parallel to Trench 6 and excavated in two parts (Fig 2), being split by an extant field boundary ditch retaining water and amphibians. The presence of a mature English Oak, approximately 200m to the east of the trench, suggests that the boundary is of some antiquity, possibly forming the boundary between cultivated farmland and the floodplain of the River Yarrow. No buried remains of archaeological or palaeo-environmental interest were identified in the trench.
- 3.2.16 The southern part of the trench was 13.5m in length and comprised yellowish-brown plastic clay beneath 0.3m of topsoil, into which the base of five east/west-aligned plough marks were revealed (Fig 3), infilled with grey silty clay, and placed approximately 2' (0.61m) apart. An amorphous feature of approximately 0.35m diameter was revealed between the southern two plough marks, and had an irregular profile of only 60mm depth, strongly suggesting that it merely represented a root bole.
- 3.2.17 The northern part of the trench measured 46.5m in length, and was excavated up the relatively steep slope from the floodplain up to the farmland terrace above, and accordingly had a relatively shallow deposit of topsoil of only 0.23m depth. The natural subsoils below comprised a mid-brown plastic clay with up to 3% increasing sub-angular small pebbles, typical of colluvial deposits. The northern 10m of the trench also had very shallow basal remains of plough marks, again on approximate 2' (0.61m) spacings, and placed on an approximate north/south alignment, down the hillslope, and perpendicular to those in the southern part of the trench (Fig 3).

- 3.2.18 **Trench 9:** Trench 9 represented the first of ten 60m long trenches excavated at the southern end of the site, within a proposed 'borrow pit' for the flood defence scheme (Fig 2). It was placed in the north-eastern part of the proposed pit, and on a south-west/north-east alignment rising up a gentle slope towards the south-west (Fig 2). No buried remains of archaeological or palaeo-environmental interest were identified in the trench.
- 3.2.19 Excavation revealed 0.3m of topsoil at the north-eastern end of the trench, becoming up to 50mm shallower up the hillslope. This overlay natural banded clays and gravels which formed different lenses up the hill. The eastern 5.5m comprised mid-brown plastic clay with 15% sub-angular and rounded pebble inclusions of up to 0.1m diameter, but typically only 40mm. This blended to an orangey plastic clay to the south-west, with 2% pebble inclusions, and with grey lenses of plastic clay up to 4m wide, and with occasional pebble lenses in the eastern 20m of the trench.
- 3.2.20 At a distance of 13m from the north-eastern end of the trench, the orangey-brown clay was cut by a linear feature (**901**) of 0.3m width (Fig 3). This had vertical sides and was filled with mid-brown silty clay, above red sandstone, sub-angular tiles, which formed the sloping capping to a land drain. These were typically around 0.30m diameter, and were set at an angle of approximately 45°, with two courses of similar 40mm thick sandstone supporting the western side of the capping stone. The eastern side simply rested on the natural clay, with a drainage channel formed in the angle between the capping and the side wall, 0.55m below the ground surface. A similarly constructed land drain (**903**) was also observed 28m to the south-west (Fig 3), with the capping stone placed 0.45m below ground level. At a distance of 10m from the south-western end of the trench, a further drain of similar construction (**905**) had badly-damaged capping stones.
- 3.2.21 At the approximate mid-point of the trench, and an amorphous 0.28-0.37m diameter feature (**902**) was filled with dark sandy clay (Fig 3). Excavation revealed it to be of only 0.12m depth, with an irregular base and steep and shallow edges. Grey sandy narrow channels also merged from the south-eastern and south-western sides, strongly suggesting that the feature represented a tree bole. At a distance of 21m from the south-western end of the trench, a similar, but larger feature (**904**) extended from the northern section. It was approximately 0.6m diameter, and up to 0.24m deep, with several small pebbles in its base, but again appeared to represent a larger tree bole of natural origin.
- 3.2.22 A single north/south-aligned possible plough mark (**906**) was observed 5m from the south-western end of the trench (Fig 3), where the ground levelled onto a raised terrace above the river. It was only 40mm wide, and 55mm deep, with steep V-shaped sides, and filled with reddish-brown plastic clay.





Plate 4: Angled capping of sandstone-built drain, Trench 9

- 3.2.23 **Trench 10:** this trench was placed on an approximately north/south alignment, and was excavated for a length of 60m in the northern part of the proposed borrow pit (Fig 2). No buried remains of archaeological or palaeo-environmental interest were identified in the trench.
- 3.2.24 The surface of the trench comprised 0.3m of topsoil, which overlay orangey-brown plastic clay that had lenses of other natural deposits throughout the trench. At a distance of 25m from the southern end of the trench was a band of soft sandy clay, perpendicular to the trench and between 1m and 2m in width. Situated some 15m to the north, the trench was crossed by a 5m wide layer of pebbly, darker brown natural plastic clay, with a similar, but slightly paler, and narrower (2m) band of natural clay 7m to the north, beyond which the natural clay was a darker brown colour than to the south.
- 3.2.25 Five parallel plough marks (**1001**) ran perpendicular to the trench at a distance of 6m from the southern end (Fig 3; Plate 5). Each was approximately 50mm wide and deep, and was placed approximately 0.6m apart. Sherds of medieval pottery were recovered from the mid-brown silty clay fill of two of the furrows, although their relatively close spacing would be more indicative of later ploughing.
- 3.2.26 At a distance of 15m from the southern end of the trench, a 0.3m wide linear feature crossed the trench on an approximately south-west/north-east alignment (Fig 3). The vertical cut was filled with mid-brown soft silty clay, mixed with pinkish plastic clay and overlay angular limestone chips at a depth of 0.7m below ground level. These capped a plastic land drain pipe.





Plate 5: Plough marks **1001**, within Trench 10

- 3.2.27 **Trench 11:** Trench 11 was placed in the north-western part of the proposed borrow pit, on an approximate south-east/north-west alignment, and was excavated for a length of 60m (Fig 2). Excavation of 0.3m of topsoil revealed mixed bands of mid and orangey-brown natural plastic clays. An irregular lens of rounded small cobbles and pebbles was revealed between 13 and 15m from the southern end, comprising up to 25% stone, within a plastic grey clay matrix. A further stoney lens, comprising smaller, more angular pebbles was also observed within the eastern part of the trench (Fig 3). A slightly darker, siltier natural clay band, observed between 28 and 32.6m, at the mid-point of the trench, contained fragments of decayed timber, rather than peat, possibly representing a former hedge-line, several of which were removed in the late twentieth century according to local knowledge.
- 3.2.28 An approximate north-east/south-west-aligned linear feature (**1101**) of only 90mm width cut the natural clay approximately 8m from the southern end of the trench (Fig 3). The 0.1m deep feature had a steep V-shaped profile, infilled with a silty mid-brown clay fill, and probably represented a deeper plough mark, rather than a highly-truncated ditch. A single small fragment of clay pipe stem was recovered from within the fill, consistent with the feature representing a nineteenth-century plough mark.
- 3.2.29 A further east/west-aligned linear feature (**1102**) was observed 6m from the northern end of the trench (Fig 3). It was 0.9m wide, and filled with the topsoil. It had a shallow irregular profile of only 0.08m depth, apparently simply representing an undulation within the natural clay subsoil.
- 3.2.30 The natural clays and gravels were also cut by three land drains (Fig 3). The southern two were placed on a parallel south-west/north-east alignment, 3 and 15m from the south-eastern end of the trench, and comprised 0.15m wide vertical-sided cuts filled with angular stones and a modern plastic pipe.

- 3.2.31 **Trench 12:** this trench was placed approximately parallel to Trench 10, and to the south of Trench 11, and was excavated for a length of 60m, in the western part of the borrow pit (Fig 2). Excavation of 0.3m of topsoil revealed a 0.1m thick deposit of mixed mid-brown silty clay subsoil, with occasional pebbles up to 40mm diameter and from which two sherds of medieval pottery were recovered. This represents one of only five examples of buried subsoil observed within the evaluation trenching, with none being observed in the 50 test pits excavated within the same area during the earlier project (OA North 2014). This overlay orangey-brown natural plastic clay, with a lens of darker brown pebbly clay between 4 and 8m from the southern end of the trench. This was cut by a shallow single plough mark, on an approximate south-west/north-east alignment, and of only 0.1m width (Fig 3).
- 3.2.32 An east/west-aligned linear feature to the north (**1201**) was 0.25m wide, but was only 50mm deep, possibly representing the remains of an earlier plough furrow. A perpendicular feature to the immediate north (**1202**), was again 0.25m wide, but filled with reddish-brown mixed clay, and had a V-shaped profile to a depth of 0.15m, possibly representing a deeper plough mark. A broadly parallel feature towards the northern end of the trench (**1203**) was only 90mm wide, but was filled with mid-brown silty clay to a depth of 120mm, and again probably represents the base of a plough mark. Only a single north/south-aligned drain cut the natural clay towards the centre of the trench (Fig 3), and comprised a narrow cut with limestone chips and a plastic pipe.
- 3.2.33 **Trench 13:** Trench 13 was placed in the centre of the borrow pit, on a north-north-west/south-south-east alignment (Fig 2), through a shallow depression in the ground. Between 0.2 and 0.3m of topsoil overlay orangey-brown plastic clay in the southern 1.2m of the trench, but this dipped sharply to the north to form the base of a 31m wide shallow pond of up to 1.6m depth at its centre (Fig 3; Plate 6). The clay base was continuous in its consistency, but merged from orangey-brown at its margins, to a dark black within the central 25m of the pond, which retained leached groundwater in the lower 0.2m depth shortly after initial excavation.
- 3.2.34 The pond had been backfilled, mainly with boiler clinker, and several tipping planes observed within the sections of the trench suggested that this was undertaken in several episodes, including an apparent recut and infilling 15m from the southern side, where a steep tipping plane was observed, in contrast to the more gently sloping planes of infill to the south (Plate 7). The clinker contained large quantities of artefacts, primarily glass bottles and jars (Plate 8), but also ceramics, metal work, including a fire grate and parts of a motorcycle and a pram, and plastics. The quantity of clinker, and the presence of many warped bottles (Plate) suggests that it was imported in large quantities, very shortly after combustion, and probably represented a dump for the boilers of a mill within nearby Ecclestone, rather than as a domestic rubbish pit for a farm. However, the presence of domestic metalwork and plastic bottles suggests that it was also used for this purpose, although the sheer quantity of bottles observed also suggests that this did not represent the refuse from a single farm, instead representing a rubbish dump for a wider community.





*Plate 6: Excavated section through former pond, Trench 13. Viewed facing north.*



*Plate 7: Tipping planes within infill of pond, Trench 13*





*Plate 8: Selection of bottles from within backfill of pond, Trench 13*

3.2.35 To the north of the pond, an east/west-aligned drain cut the orangey-brown plastic clay, 8m from the northern end of the trench (Fig 3; Plate 9). It had flat, angular sandstone capping stones, 0.4m below ground level, and typically of 0.4m diameter and only 20mm thickness, forming a drain of approximately 0.36m width. Below the capping stones, two side walls of 0.15m width comprised three shallow courses of sandstone tile to form a central channel of 0.1m width and 0.15m depth.



*Plate 9: Sandstone land drain at southern end of Trench 13*



3.2.36 **Trench 14:** this trench was placed on a perpendicular alignment to Trench 13, adjacent to its mid-point in a north-easterly direction for a length of 60m (Fig 2). Excavation of between 0.25 and 0.3m of topsoil revealed that it clipped the northern edge of the pond within its south-western 11m, with the orangey-brown natural clay sloping sharply to the south across the trench (Plate 10). The excavated section of the pond was filled with the same artefact-rich clinker as that observed within Trench 13 (Plates 11 and 12).



Plate 10: Black organic deposit marking northern extent of pond within Trench 14





*Plate 11: Section across northern edge of former pond, Trench 14. Viewed looking south*



*Plate 12: Selection of glass bottles recovered from backfill of pond, Trench 14*

- 3.2.37 To the east of the pond, the trench was bisected by a series of north/south-aligned features, all of approximately 0.2m width (Fig 3), and with a V-shaped profile to a depth of 0.2m, filled with mixed plastic and silty clays. No evidence for a drainpipe or stone was observed within any of the features, and although they were spaced between 2m and 10m apart (Fig 3), their parallel nature and profile suggested that they may represent deep plough marks. Two earlier shallow plough marks, more consistent with those observed in many of the other trenches were revealed, on a similar alignment, 31m and 35m from the western end of the trench, and of only 0.1m width and up to 0.1m depth.
- 3.2.38 **Trench 15:** Trench 15 was placed parallel to Trench 10 on the western edge of the borrow pit, and was excavated for a length of 60m (Fig 2). Excavation of 0.3m of topsoil revealed orangey-brown plastic clay for the entire length of the trench. This was cut by a single south-west/north-east-aligned drain, of 0.2m width, with vertical sides to a depth of 0.4m, and filled with mixed brown silty clay. No buried remains of archaeological or palaeo-environmental interest were identified in the trench.
- 3.2.39 **Trench 16:** Trench 16 was placed in the south-eastern part of the borrow pit, and was excavated for a length of 60m on an approximately east/west alignment (Fig 2). Excavation of 0.3m of topsoil revealed orangey-brown plastic clay, cut by a single south-west/north-east-aligned drain. This was of 0.25m width, with vertical sides to a depth of 0.4m, and filled with mixed brown silty clay. No buried remains of archaeological or palaeo-environmental interest were identified in the trench.
- 3.2.40 **Trench 17:** Trench 17 was placed at the southern edge of the borrow pit, and was excavated for a length of 60m on an approximately south-west/north-east alignment (Fig 2). Excavation of 0.2m of topsoil revealed a shallow deposit of 0.11m of greyish-brown silty clay subsoil, similar to that observed within Trench 12. This overlay orangey-brown natural plastic clay into which several features were cut (Fig 4).
- 3.2.41 Five parallel linear features (**1701-1705**) were observed on an approximately east/west alignment, on relatively uniform spacing of approximately 4.5m apart (Fig; Plate 13). All were filled with light brownish-grey silty sand (Plate 14). Excavation of the southern two examples revealed both to have shallow sloping sides to a concave base of only around 0.1m depth (Fig 5; Plate 15), demonstrating the features to have been heavily truncated, but probably representing the remains of furrows associated with a ridge and furrow field system.
- 3.2.42 The natural plastic clay was also cut by a series of seven field drains (Fig 4). All but one were aligned broadly parallel with the furrows, with the latter, placed at the northern end of the trench, cutting that 10m to the south of the northern end of the trench (Fig 4). These varied from 0.15 – 0.45m in width, and all had steep-sided cuts, but with only a single example, placed 25m from the southern end of the trench, retaining segmental ceramic pipes, similar to those observed within Trench 7.





*Plate 13: Trench 17 from the south, bisected by linear features 1701-1705*



*Plate 14: Linear feature 1702 prior to excavation*





Plate 15: Excavated furrow base (1701)

- 3.2.43 **Trench 18:** Trench 18 was placed to the north of Trench 17, and to the south of Trench 12, and was excavated on an east/west alignment for a length of 60m (Fig 2). Excavation of 0.3m of topsoil revealed a 0.05-0.15m deposit of greyish silty clay subsoil, similar to that observed within Trench 17. This overlay orangey and mottled mid-brown plastic clay natural subsoil, into which several features were cut (Fig 4).
- 3.2.44 Approximately 8m from the western end of the trench, a sub-circular feature (1801) extended 0.6m from the northern section of the trench (Fig 4). It had a darker fill, with black organic residues in the base of the shallow, 0.15m deep irregular base, strongly suggesting that it represented a root bole. Some 22m from the western end of the trench, a linear feature of up to 0.5m width (1802) was also observed. It was filled with a greyish friable silty clay, but was only 40mm deep, suggesting that it represented the base of a heavily truncated furrow, similar to those within Trench 17, but placed on an approximately perpendicular alignment. The natural subsoils were also cut by seven land drains, varying from 0.2 to 0.3m width, all with steep sides, but without pipes in their bases. Most were approximately parallel to feature 1802 (Fig 4), with a single example at the western end of the trench placed on a more north-east/south-west alignment.
- 3.2.45 **Trench 19:** Trench 19 represented the most northerly trench of those to the south of the River Yarrow, and was placed on the flood plain, approximately 75m to the south of the river, and on a parallel alignment (Fig 2). Excavation of the south-west/north-east-aligned trench for a length of 60m revealed 0.35m of topsoil, overlying up to 0.2m of mid brown silty clay subsoil. This overlay orangey-brown silty, rather than plastic clay, with occasional pebble inclusions.

- 3.2.46 A sub-circular feature (**1901**) of 0.6m diameter was revealed 28m from the eastern end of the trench (Fig 4). This had an irregular shallow base that contained fragments of tree root, demonstrating it to be a root bole. This appears to have been a tree on the bank of a wider linear feature (**1902**) of 1.8m width, filled with mid-brown silty clay (Plate 16). It had a clear cut on its western side (Plate 16), with a more gradual merging into the natural clay to the east, possibly suggesting that the feature was recut on this side. Excavation revealed it to be of only 0.3m deep, with a steeper western face, and with a 5" (0.13m) diameter ceramic pipe in its base. To the north, the feature aligned with a spur of an extant ditch into the River Yarrow, suggesting that the feature represented a field boundary ditch that was recut to house a drain following the removal of the field boundary.



*Plate 16: Linear ditch **1902** with sandstone drain **1903** on its western side*



- 3.2.47 The western side of feature **1902** was also cut by the northern end of sandstone-capped drain **1903** (Fig 4; Plate 16). This was 0.34m wide, with angular sandstone tiles placed 0.52m below present ground level. Removal of these capping stones revealed a 4" (0.1m) diameter segmental ceramic pipe had been inserted into the channel of the drain (Plate 17).



*Plate 17: Detail of excavated drain 1903*

- 3.2.48 Approximately 8m to the west, and on a similar north/south alignment, a further sandstone drain (**1904**) cut the natural clay subsoil (Fig 4). This was 0.36m wide, with 0.07m thick angular sandstone tile cappings above single tile side-walls of similar thickness to a 0.09m wide central channel (Plate 18).



*Plate 18: Detail of excavated drain 1904*

- 3.2.49 **Trench 20:** Trench 20 was placed to the south of Trench 19, forming a zig-zag arrangement, similar to that seen in the northern part of the site between Trenches 5-8 (Fig 2). It was excavated to a length of 60m on an approximate east/west alignment. 0.35m of topsoil overlay greyish brown plastic clay in the western 12m of the trench, which slowly blended into a more orangey-brown with sub-rounded pebble inclusions up to 70mm diameter. Several sherds of probably eighteenth-century pottery were recovered from the interface between the topsoil and natural subsoils at the western end of the trench. Beyond 24m from the western end, the trench rose up a small hill towards the plateau above, with the natural clays becoming sandier and more gravelly, with lenses of gravels and pebbles up to 2m in diameter. The eastern 5m of the trench comprised a deep lens of orange silty sand.
- 3.2.50 All features cut into the subsoils comprised drains cut into the plastic clays of the lower western end of the trench (Fig 4). The westernmost of the comprised a south-west/north-east-aligned drain (**2001**) of 0.27m width, with vertical sides to a depth of 0.7m below present ground level. It was filled with mid-brown plastic clay, and did not have a ceramic or plastic drain in its base. It was cut by an L-shaped drain, **2002** (Fig 4), of 0.25m width and filled with a loamy dark brown silty clay (Plate 19), with charcoal and ceramic brick, or more probably pipe fragments. It had a V-shaped cut, to a depth of only 0.15m, and had a right-angled return, cutting drain **2001**, and aligned towards the river to the north. To the east of the exposed section of drain **2002**, a further approximately north/south-aligned drain, **2003** (Fig 4; Plate 20). This was 0.35m wide, comprising flat angular sandstone flags (Plate 21) placed 0.5m below ground level, and almost certainly representing a continuation of drain **1904** observed in the trench to the immediate north (Fig 4).





*Plate 19: Trench 20 looking east, with L-shaped drain 2002, cutting 2001 in foreground*





Plate 20: Detail of sandstone drain 2003

- 3.2.51 **Trench 21:** this shorter trench was of only 30m length, and was placed to the south of Trench 20, on a similar north-east/south-west alignment to Trench 19 (Fig 2). The 0.35m deposit of topsoil had approximately 5% gravel and small pebble inclusions, but was otherwise similar to that observed elsewhere. This overlay banded lenses of natural subsoils up the hillslope to the south. At the eastern end of the trench these comprised a 10.6m wide deposit of orangey brown plastic clay with 20% small and medium-sized pebbles, typically of 25mm diameter, but up to 100mm. This was overlain by a thick deposit of pinkish plastic clay of approximately 2m width. The remainder of the trench had alternating wide bands of gravelly and plain plastic clay (Fig 4).
- 3.2.52 Only a single, approximately east/west-aligned linear feature, **2101**, was cut into the natural clay. It was 1.95m wide and filled with a dark brown loamy fill with 5% small pebbles (Fig 4). Excavation revealed it to be very shallow-sided, and only up to 0.15m deep, with root holes into the gravelly clay beneath, suggesting that it represented a natural depression in the subsoils providing a natural gully for vegetation.
- 3.2.53 **Trench 22:** the final trench was placed to the south of Trench 21, on a north-west/south-east alignment for a length of 30m. Excavation of 0.4m of topsoil revealed a 0.1m thickness of mixed gravelly-clay subsoil with up to 10% pebble inclusions. This overlay banded natural gravels and clays similar to those in Trench 21, and comprising alternating pinkish plastic clay and orangey-brown gravels. The gravels were cut by a 0.45m wide, north/south aligned linear feature, **2201** (Fig 4; Plate 21). This had a shallow U-shaped profile to a depth of only 0.18m, and was filled with a grey silty clay (Plate 22) that diminished towards the northern side of the trench, merging into the natural gravels, suggesting that the feature represented the truncated remains of a plough furrow.





*Plate 21: Linear feature 2201 within Trench 22*



*Plate 22: Excavated section through feature 2201 within Trench 22*

- 3.2.54 A further north/south-aligned feature (**2202**) bisected the trench 10m from the western end. It comprised a sandstone drain (Fig 4), with angled sandstone cappings above a single sandstone side wall (Plate 23), and similar to drains **901** and **903** within Trench 9.





Plate 23: Angled capping land drain 2202, within Trench 22

### 3.3 FINDS AND PALAEO-ENVIRONMENTAL MATERIAL

3.3.1  **Finds:** a large assemblage of artefacts was recovered from the evaluation, although the majority was of a mid- to late twentieth-century date of little archaeological interest. The assemblage was dominated by glass bottles, together with some pottery sherds and a few pieces of ironwork. Other common material classes, such as animal bone and clay tobacco pipe were absent.

3.3.2 Most of the pottery dated to the period spanning the late nineteenth to twentieth century, although there were also several fragments of post-medieval pottery and a group of eight sherds of medieval ceramics. For the most part, the pottery was in good condition, with the exception of the medieval sherds, which were all small and abraded. These sherds, moreover, were all recovered from the topsoil (Trenches 17 and 18) or a plough furrow (Trench 10), and were thus essentially unstratified. The small assemblage comprises two broad fabric types:

**Fabric 1 (Gritty-ware):** two sherds were recovered in this fabric, which forms part of the widespread Northern Gritty tradition, and dates broadly from the mid-twelfth to the mid-fourteenth century (McCarthy and Brooks 1988). Both sherds were recovered from the plough furrows (**1001**) in Trench 10, and were of a small size with no diagnostic features to elucidate their form;



**Fabric 2:** six sherds in this broad fabric group were present in the assemblage. The sandy fabric varies in colour between pale pink and pale orange, to buff, commonly with a pale grey reduced core. Two of the sherds exhibit traces of olive green glaze. One sherd incorporated evidence for an everted rim, probably from a jar form. The source of the pottery is unknown, although it is similar to material recovered from excavations in Lancaster and Wigan (*cf* OA North 2011), and is almost certainly local.

- 3.3.3 The two sherds of Gritty-ware from the trenches form part of a widespread tradition, which was dominant in the twelfth and thirteenth centuries (McCarthy and Brooks 1988, 142). Thus, their presence implies some activity in the area during this period. Apart from their date, however, the Gritty-ware component of the assemblage is too small to comment upon further.
- 3.3.4 Gritty wares were superseded across the North West by Partially Reduced Greywares during the later thirteenth and fourteenth centuries (*cf* McCarthy and Brooks 1988; Edwards 2000), which were accompanied by the more widespread use of oxidised Sandy wares. The four fragments from the evaluation trenching belong to the latter type, and may be dated broadly to the thirteenth and early fourteenth centuries.
- 3.3.5 The post-medieval pottery comprised fragments of yellow ware and dark-glazed earthenware, recovered from the topsoil in Trench 7, together with a fragment of mottled ware and more dark-glazed earthenware from the topsoil in Trench 8. An eighteenth-century date may be ascribed to all of these fragments.
- 3.3.6 Barker suggests that manufacture of mottled ware occurred in *c* 1700-70. There are variations in the colour of the glaze from dark to light, with the lightening seen as a later trait (Barker 2008). The fabric range is also quite broad, from buff (resembling the slip-coated material) to darker beiges, and red. These differences suggest that this ware was derived from several different, and widely spread, production centres. These may have included Buckley in North Wales, and Prescot in Merseyside (McNeil 1989, 60-1).
- 3.3.7 Dark-glazed earthenwares were ubiquitous in the North West, and largely represents coarse or kitchen wares. Notable groups of this pottery type have been recovered from numerous excavations in Lancashire and Greater Manchester. In terms of source, the dark-glazed earthenwares could have been produced at any of a number of different local manufacturing sites using the clays of the South Lancashire coalfields. The dark-glazed earthenwares from the evaluation all had a medium to coarse fabric with medium to large gritty inclusions. The identifiable forms included fragments of large bowls or pancheons and tall, cylindrical storage jars with lug handles close to the rim, typical of the forms produced in a number of centres within the south Lancashire coalfields from the eighteenth century onwards. For a while these potteries flourished and multiplied, their market increasing as the population rose during the eighteenth century. In response, there was a corresponding rise in the number of relatively small-scale country potteries, many appearing in the later eighteenth and early nineteenth centuries (Brears 1971, 56-8).



*Plate 24: Fragments of medieval pottery recovered from topsoil 1001, Trench 10*



*Plate 25: Fragments of medieval pottery recovered from the topsoil in Trench 17*





*Plate 26: Fragments of medieval and post-medieval pottery recovered from the topsoil in Trench 18*



*Plate 27: Fragments of post-medieval pottery recovered from the topsoil in Trench 18*

- 3.3.8 The finds assemblage was dominated by glass bottles, which were recovered from the infilled feature exposed in Trenches 13 and 14. All of the bottles were of a modern date, and were found together with plastic containers that probably date to the 1970s or 1980s. The bottles were recorded by photographs on site, and a selection were retained, although these are of little, or no, archaeological interest.
- 3.3.9 The single iron object comprised a heavily corroded horseshoe. This is probably of a late nineteenth- or twentieth-century date, and again of no archaeological interest.
- 3.3.10 **Palaeo-environmental Material:** as part of the work carried out in conjunction with the geo-technical trial excavations in 2014, environmental specialists at OA North reviewed the ground investigation report produced by Halcrow (2014) in order to determine the likelihood of the development impacting upon any significant palaeo-environmental deposits, such as buried soil horizons or peat. South-west Lancashire is home to many wetlands, the remnants of former lowland peat located fairly nearby at Croston Moss, Mawdesley Moss, and Hoscar Moss (Middleton *et al* 2013).
- 3.3.11 The ground investigations indicated that much of the area of development consisted of topsoil overlying clays and silts (cohesive alluvium), which, in turn, overlay sands and gravels (granular alluvium). The underlying deposits consisted of glacial till and/or glaciofluvial sands. The alluvium is likely to represent a riverine deposit laid down in fairly high-energy conditions. Bands of peat, representing periods of lower-energy conditions were recorded at three locations north of the River Yarrow (TP06, TP08 and WS02) (Halcrow 2014). A more in-depth study of the logs recorded at each of these locations suggested these organic layers were quite ephemeral, probably developing during temporary reductions in alluvial sedimentation, leading to a subsequent increase in organic accumulation. This conclusion has been reinforced by the results obtained from the evaluation, which did not identify any deposits with palaeo-environmental potential.
- 3.3.12 **Conclusion:** in conclusion, the finds assemblage recovered from the evaluation is of limited interest and, for the most part, comprises material that can be dated with confidence to the twentieth century. It is recommended that this material is discarded.
- 3.3.13 The fragments of medieval pottery, although small and abraded, are of some intrinsic interest, although none were associated with any discrete features. Whilst the pottery provides some evidence for human habitation in the area between the late twelfth and early fourteenth centuries, the focus of this activity is likely to be beyond the boundary of the present development area.

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## 4. DISCUSSION

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- 4.1 The evaluation trenching revealed results broadly consistent with those of the watching brief accompanying the earlier test pit excavation across the site (OA North 2014). No buried soils or peat deposits of palaeo-environmental interest were observed during the trenching, and the likelihood of the development impacting upon any palaeo-environmental significant deposits is thus considered to be minimal. Evidence for human activity, however, was observed across the entire site, relating almost exclusively to agricultural use, and predominantly comprising land drains cut through the natural clays to drain groundwater into the River Yarrow. Standing water is a common feature of the site during all but the summer months, and thus drainage would have been a vital factor in attempts to cultivate the land for anything other than grass pasture.
- 4.2 The earliest features appear to represent the basal remains of a ridge and furrow field system in the south-western part of the site. Five east/west-aligned furrows, each spaced approximately 4.5m apart, identified within Trench 17, are consistent with that of late medieval, or more probably early post-medieval field systems. These features certainly predate the much narrower and shallower plough marks associated with industrial period steam-powered ploughing, evidence for which was observed in many of the trenches above the immediate river plain. Several sherds of medieval and post-medieval pottery were recovered in the southern part of the site, either within the topsoil, or within the occasional shallow subsoils that were observed within a handful of the trenches. These were all abraded, and rather than indicating the presence of medieval features or structures within the immediate vicinity of their retrieval, merely demonstrate that there was medieval activity within the broader locality within this period; a fact demonstrated by the number of medieval crosses within the surrounding area (Wymer 1977, 148).
- 4.3 A definite chronology can be established for drainage of the site, demonstrating that the land was farmed from the early post-medieval period, at the latest, with well-built sandstone drains with a central channel between side-walls and a flat capping stone forming a standard method of construction until the industrial period. However, a somewhat unusual variant was also observed, with the omission of one side wall and the use of a sloping capping stone providing a cheaper, and presumably more easily and rapidly constructed alternative typology. A hybrid drain within Trench 19 contained a segmental ceramic pipe within a sandstone drain, almost certainly representing a refurbishment of the earlier structure. The earliest ceramic drain pipes comprised segments of 'horseshoe' profile open pipe, formed by bending flat slabs of clay, typically 12" (0.3m) in length, into U-shapes of approximately 2½" (0.06m) height before firing. These became common in the earlier part of the nineteenth century, with many dating from after 1826 being stamped with the word 'DRAIN' to exempt them from taxation.

- 4.4 Following the introduction of extrusion machinery in 1840, 'horseshoe' drains were rapidly replaced with full cylindrical drain segments, again of 1' (0.3m) length, and typical of a slightly larger 3" (0.07m) diameter. Specialised trenching machines were introduced in the 1880s, allowing drains to be installed much more rapidly and cheaply, with all the vertical-sided drains observed on the site having been excavated in this manner. The 5" (0.12m) diameter cemented ceramic pipes, not found in any large quantity within the site, are typical of the late nineteenth to mid-twentieth century, with the plastic pipe and limestone chipping French drains being typical of the late twentieth century.
- 4.5 The infilled pond observed within Trenches 13 and 14, provided an interesting finds assemblage, and the quantity and apparent heat of dumped clinker strongly suggests that it was used as a commercial tip for one of the nearby mills in Ecclestone. Refuse deposition within rural communities was undertaken in a very *ad hoc* manner until the second half of the twentieth century, with many small rural ponds being infilled in such a manner as the village rubbish pit. In comparison with urban sites, rural rubbish pits contain far less organic material, as this was re-used on the farm to feed animals, with waste products being spread on the land as fertiliser, rather than collected as nightsoil, as was necessary within the urban environment. Thus, rubbish pits tended to become 'bottle dumps' for non-reusable items. That within the Croston site was also clearly used until the mid-/late twentieth century on a small scale, as plastic detergent bottles (pre-dating decimalisation in 1971) and other domestic wares were recovered from within the fill.



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## 5. CONCLUSION

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- 5.1 The evaluation trenching has provided a valuable opportunity to examine an area of Lancashire that has not previously been subject to comprehensive intrusive archaeological evaluation, and yet had some potential to retain buried remains of interest. In particular, background research has highlighted the potential importance of palaeo-environmental deposits across the present study area. However, No buried soils or peat deposits were observed in any of the evaluation trenches. The likelihood of the development impacting upon any palaeo-environmental significant deposits is thus considered to be minimal. Similarly, whilst a few fragments of medieval pottery were recovered from the evaluation trenches, these were small and abraded, and had probably been removed from their original place of deposition by ploughing activity. Thus, whilst the presence of the pottery points to human activity in the general area during the medieval period, there is no evidence to show that the focus of this activity was within the present study area.
- 5.2 Based upon the results of the evaluation trenching, there are little or no significant archaeological deposits of interest across the study area, and it is recommended that no further archaeological mitigation is merited.



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## APPENDIX 1: WRITTEN SCHEME OF INVESTIGATION

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June 2015

**Oxford  
Archaeology  
North**

### CROSTON FLOOD RELIEF MANAGEMENT SCHEME, CROSTON, LANCASHIRE



### ARCHAEOLOGICAL EVALUATION WRITTEN SCHEME OF INVESTIGATION

Version 3.2

#### ***Proposals***

*The following Written Scheme of Investigation is offered in response to a request from Volker Stevin for an archaeological evaluation in advance of the proposed Flood Relief Management Scheme at Croston, Lancashire.*

# 1. BACKGROUND

## 1.1 CIRCUMSTANCES OF PROJECT

- 1.1.1 The Environment Agency is carrying out a Flood Risk Management Scheme at Croston, Lancashire. The construction works required for the scheme will necessitate considerable earth-moving works, which will inevitably have a negative impact on any buried archaeological remains. The wider peat bogs or 'mosses' of the Lancashire Plain have been the subject of comprehensive archaeological, palaeoecological and geomorphological survey and analysis by OA North, with the smaller moss of Croston/Mawdesley and Hoscar being considered in a volume that was published in 2013. This research identified the potential of the mosses to mask archaeological activity, in particular relating to the prehistoric exploitation of the wetlands from the Mesolithic period onwards. This activity is thought to probably focus upon the many sandy islands that would have existed within the undulating land of the wetlands, which would have provided a secure base for the exploitation of the surrounding wetland resources, and are gradually emerging from below the retreating peat deposits. In contrast later historical activity was identified as predominantly focusing upon the edge of the wetland areas, as represented by several Roman coin hoards and evidence for later agricultural activity.
- 1.1.2 Following on from the submission of a desk-based assessment, geophysical survey and watching brief on a series of geotechnical pits, the Senior Archaeologist for the Environment Agency, in consultation with Lancashire County Council's Archaeology Service, has devised a Project Brief for an appropriate scheme of archaeological investigation. In the first instance, this allows for the excavation of a *c* 5% sample across the site, which is to be addressed via the excavation of 22 evaluation trenches. All of the trenches will measure 1.8m wide, six will be 30m long and 16 will be 60m long (Fig 1). These trenches are intended to determine the extent, depth, character and relative significance of any buried archaeological remains that survive, in line with the National Planning Policy Framework, Paragraph 128. The trenches are targeted on the proposed location of a borrow pit in the southern part of the scheme area, together with the route of the proposed new channel on the north bank of the River Yarrow and the line of the new embankment and haul road. The Project Brief also allows for a watching brief to be carried out during topsoil stripping within the area of a second borrow pit at the northern end of the scheme, should the excavation of this pit prove necessary.
- 1.1.3 This Written Scheme of Investigation (WSI) has been formulated to meet the requirements of the Project Brief, and is offered in response to a request from Volker Stevin to submit a costed proposal to carry out the required programme of archaeological evaluation and watching brief. In the event of significant archaeological remains being discovered in the trenches, further archaeological investigation is likely to be required. Any such additional works will be carried out in accordance with an Updated WSI.

## 1.2 OXFORD ARCHAEOLOGY

- 1.2.1 Oxford Archaeology is an educational charity under the guidance of a board of trustees with over 40 years of experience in archaeology, and can provide a professional and cost-effective service. We are the largest employer of archaeologists in the country (we currently have more than 300 members of staff), and can thus deploy considerable resources with extensive experience to deal with any archaeological obligations you or your clients may have. OA is an Institute for Archaeologists Registered Organisation (No 17). We have offices in Lancaster and Oxford, trading as Oxford Archaeology North (OA North) and Oxford Archaeology South (OA South) respectively, enabling us to provide a truly nationwide service. All work on the project will be undertaken in accordance with relevant professional standards, including:
- CIfA's *Code of Conduct* (1999); *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology* (1999); *Standard and Guidance for Archaeological Evaluations* (1999);
  - English Heritage's *Management of Archaeological Projects*, 1991;
  - The European Association of Archaeologists *Principles of Conduct for Archaeologists Involved in Contract Archaeological Work* (1998).
- 1.2.2 OA North has unrivalled experience in the assessment, evaluation and excavation of sites of all types and periods, particularly in the context of the Northwest of England. We have an extensive portfolio of evaluating and excavating buried remains Lancashire.
- 1.2.3 Of particular relevance, OA North has undertaken a large number of evaluations and excavations on behalf of the Environment Agency. This includes recent projects at Derby Flood Defences (as part of the 'Our City Our River' scheme, which is a partnership between the EA and Derby City Council), Salford Flood Alleviation Improvements (on behalf of the Environment Agency), and Willerby to Derringham Flood Alleviation in East Yorkshire (currently ongoing, also on behalf of the Environment Agency).

## 2. AIMS AND OBJECTIVES

### 2.1 ACADEMIC AIMS

- 2.1.1 The main research aim of the investigation, given the commercial nature of the development, will be to establish the presence or absence of buried archaeological remains on the site and, if present, characterise the level of preservation and significance, and provide a good understanding of their potential.

### 2.2 OBJECTIVES

- 2.2.1 The objectives of the project may be summarised as follows:
- to determine the presence, character, and extent of any below-ground remains within the study area via the excavation of 22 evaluation trenches;
  - to carry out an archaeological watching brief during soil stripping within the areas of the second borrow pit, should the excavation of this pit prove to be necessary, together with any other areas that are shown from the results of the evaluation trenching to have archaeological sensitivity.

## 3. METHOD STATEMENT

- 3.1 Experience has shown the importance of a close working relationship between the client and their archaeological contractor on complex development projects. Such a relationship will help to ensure the timely and successful completion of the project in an efficient and cost-effective manner, achieving high technical and academic standards, whilst meeting all the requirements of the tender documentation, and fulfilling all the client's archaeological obligations. This ethic is at the heart of our approach to this project.
- 3.2 The development area will be investigated initially via the excavation of *c* 5% sample of the area, comprising 22 evaluation trenches. It is proposed that six trenches will measure 30m long, and 16 trenches will each measure 60m long. The proposed location of these trenches is shown on Figure 1. The trenches have been targeted on the site of a borrow pit, together with the proposed new embankments, haul road and flow channel to the north of the River Yarrow. Additionally, any soil stripping being carried out in the areas of any haul roads, compounds and the site of the second borrow pit in the north part of the site area will be subject to an archaeological watching brief. In the event of significant archaeological remains being discovered during the evaluation trenching or watching brief, it is likely that further archaeological investigation will be required. Any such additional works will be carried out in accordance with an Updated Written Scheme of Investigation, which will be devised in consultation with the Senior Archaeologist for the Environment Agency and Lancashire County Council Archaeology Service.

## 3.2 EVALUATION

- 3.2.1 Excavation of the modern ground surface will be undertaken by a machine of appropriate power using a toothless bucket and, where necessary, a breaker. The uppermost levels of overburden/demolition material will then be removed using the same machine, using a toothless ditching bucket, to the top of the first significant archaeological level. The work will be supervised closely by a suitably experienced and qualified archaeologist. Spoil from the excavation will be stored adjacent to the trench, and will be backfilled upon completion of the archaeological works.
- 3.2.2 Machine excavation will then be used to define carefully the extent of any surviving remains. Thereafter, remains will be cleaned manually to define their extent, nature, form and, where possible, date. If the excavation is to proceed below a depth determined to be potentially hazardous, then the trenches will be widened sufficiently to allow the sides to be made safe by stepping in or battering to a safe angle of repose.
- 3.2.3 All information identified in the course of the site works will be recorded stratigraphically, using a system adapted from that used by the Centre for Archaeology Service of English Heritage. Results of the evaluation will be recorded on *pro-forma* context sheets, and will be accompanied with sufficient pictorial record (plans, sections and photographs) to identify and illustrate individual features.
- 3.2.4 **Context Recording:** all contexts will be recorded using *pro-forma* sheets, and details will be incorporated into a Harris matrix. Similar object record and photographic record *pro-formas* will be used. All written recording of survey data, contexts, photographs, artefacts and ecofacts will be cross-referenced from *pro-forma* record sheets using sequential numbering.
- 3.2.5 **Photography:** a full and detailed photographic record of individual contexts will be maintained and similarly general views from standard view points of the overall site at all stages of the evaluation will be generated. Photography will be undertaken using high-resolution digital cameras. All frames will include a visible, graduated metric scale. Photographs records will be maintained on special photographic *pro-forma* sheets.
- 3.2.6 **Planning:** the precise location of the evaluation trenches, and the position of all archaeological structures encountered, will be surveyed by either GPS or EDM tacheometry using a total station linked to a pen computer data logger. This process will generate scaled plans within AutoCAD, which will then be subject to manual survey enhancement. The drawings will be generated at an accuracy appropriate for 1:20 scale, but can be output at any scale required. Sections will be manually drafted, where required, at an appropriate scale. All information will be tied in to Ordnance Datum.



- 3.2.7 **Archaeological Watching Brief:** pending the results obtained from the trenching, and the requirement to excavate a second borrow pit, a watching brief may be maintained by OA North during the soil stripping works. A watching brief will also be maintained during topsoil stripping within the areas of the embankment and on works for any haul roads or compounds. The archaeologist will monitor any such works and, if any remains of archaeological significance are encountered, will stop any works in order to record the remains and assess their significance. Any such remains will, as a minimum, be photographed, sketched and the location recorded and, following this recording, the curatorial archaeologist will advise on whether further excavation work will be necessary on any such remains uncovered during these works. An iterative approach will be taken towards the duration of the watching brief, and the merits of continuing monitoring will be reviewed regularly by the OA North site director, in consultation with the EA and LCAS.
- 3.2.8 Human remains are not expected to be present, but if they are found they will, if possible, be left *in situ* covered and protected. If removal is necessary, then the relevant Home Office permission will be sought, and the removal of such remains will be carried out with due care and sensitivity as required by the *Burials Act 1857*.
- 3.2.9 Any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996.
- 3.2.10 **Finds policy:** finds recovery and sampling programmes will be in accordance with best practice (following current Chartered Institute for Archaeologists' guidelines) and subject to expert advice in order to minimise deterioration. OA North employs in-house artefact and palaeoecology specialists, with considerable expertise in the investigation, excavation, and finds management of sites of all periods and types, who are readily available for consultation.
- 3.2.11 Finds storage during fieldwork and any site archive preparation will follow professional guidelines (UKIC). Emergency access to conservation facilities is maintained by OA North with the Department of Archaeology, the University of Durham. Samples will also be collected for technological, pedological and chronological analysis as appropriate.
- 3.2.12 **Environmental Remains:** there is a possibility of encountering deep peat deposits during the trenching. OA North suggest a contingency figure be set aside to deal with such deposits should they be uncovered. This contingency would only be accessed following discussion with and agreement from Volker Stevin, the Environment Agency Senior Archaeologist and Lancashire County Council Archaeology Service. Cores will be taken within any such deposits using a hand-held Russian-type peat corer. Each profile will be recorded on a summary *pro-forma* sheet, and significant layers identified. Relative depths will be noted, and a description of the deposits will be made, using standard quaternary (Late Devensian and Holocene) terminology (colour texture, compaction and inclusions). This will follow the relevant Historic England and the Chartered Institute for Archaeologists' guidelines.

- 3.2.13 Material will be retrieved from each unit of peat or other organic deposits for radio-carbon dating. The position of the dating samples will be chosen so as to provide range-finder dates for the top and bottom of the peat units, or other types of organic deposit. It is proposed that single plant macrofossils will be dated, as is the best practice. However, if no such suitable material has been preserved it may be necessary to date both the humin and humic content in the sediment. This will require a variation in the price as two dates would be required from each depth although, again, this would only be implemented follow consultation and agreement with Volker Stevin, the Environment Agency Senior Archaeologist and LCAS.
- 3.2.14 The material will be submitted to Dr Gordon Cook at Scottish Universities Environmental Research Centre (SUERC) for dating. The cores will be then stored in the offices of OA North in Lancaster for future environmental assessment and analysis. The costs and methodology for such an assessment can be provided if required. Samples for pollen, fungal spores and plant macrofossils will be processed in house by the OA North environmental team, but if any sediments where diatoms or ostracods are recorded two samples for each type of remain will be submitted to the relevant specialist.
- 3.2.15 The pollen in the sediment will be assessed to help understand the nature and processes of accumulation of the waterlogged deposits and also the local environment. The monolith sample will be cleaned and recorded on *pro-forma* sheets following the standard guidelines for geoarchaeology.
- 3.2.16 Four small sub-samples will be taken from the monolith for the assessment of pollen and fungal spores. A further four samples will be taken for the assessment of diatoms. Four sub-samples, 10-20ml in volume, will prepared for pollen analysis using a standard chemical procedure, using HCl, NaOH, sieving, HF, and Erdtman's acetolysis, to remove carbonates, humic acids, particles > 170 microns, silicates, and cellulose, respectively.
- 3.2.17 Slides will be examined at a magnification of 400x (1000x for critical examination) by ten equally-spaced traverses or a total 100 land pollen and spores if fewer transects are needed across two slides to reduce the possible effects of differential dispersal on the slide. The data will be presented in tables as either percentage values or actual numbers of pollen grains and spores. The interpretation of the data may help in our understanding of the nature in which the waterlogged deposits accumulated and also of the local and regional environment. Four subsamples will also be taken from the cores to assess for the presence or absence of plant macrofossils by the OA North in house environmental team. Each sample will be washed through 250 micron mesh, retained wet and examined under a low powered binocular microscope. If present the plant macrofossils will be identified, where possible, quantified and the potential for further analysis will be recorded. Waterlogged plant remains are good indicators of the local flora. They can be used as proxy indicators of climate change and hydrological conditions.

### 3.3 HEALTH AND SAFETY

- 3.3.1 Full regard will be given to all constraints during the course of the project. OA North provides a Health and Safety Statement for all projects and maintains a Safety Policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers.
- 3.3.2 OA North undertakes to safeguard, so far as is reasonably practicable, the health, safety and welfare of its staff and of others who may be affected by our work. OA North will also take all reasonable steps to ensure the health and safety of all persons not in their employment, such as volunteers, students, visitors, and members of the public (this includes trespassers).
- 3.3.3 OA North is fully familiar with and will comply with all current and relevant legislation, including, but not limited to:
- The Health and Safety at Work Act (1974);
  - Management of Health and Safety at Work Regulations (1999);
  - Manual Handling Operations Regulations 1992 (as amended in 2002);
  - The Construction (Design and Management) Regulations (2007);
  - The Control of Asbestos Regulations (2006);
  - The Workplace (Health, Safety and Welfare) Regulations (1992);
  - Construction (Health, Safety and Welfare) Regulations (1996);
  - The Health and Safety (Miscellaneous Amendments) Regulations (2002);
  - The Work at Height Regulations (2005);
  - The Control of Substances Hazardous to Health Regulations (2002);
  - The Health and Safety (First-Aid) Regulations (1981);
  - The Regulatory Reform (Fire Safety) Order (2005);
  - The Provision and Use of Work Equipment Regulations (1998);
  - Lifting Operations and Lifting Equipment Regulations (1998).
- 3.3.4 OA North has professional indemnity to a value of £2,000,000, employer's liability cover to a value of £10,000,000 and public liability to a value of £15,000,000. Written details of insurance cover can be provided if required.
- 3.3.5 Normal OA North working hours are between 9.00 am and 5.00 pm, Monday to Friday, though adjustments to hours may be made to maximise daylight working time in winter and to meet travel requirements. It is not normal practice for OA North staff to be asked to work weekends or bank holidays and should the Client require such time to be worked during the course of a project a contract variation to cover additional costs will be necessary,
- 3.3.6 It is understood it will not be necessary to provide HERAS fencing for the evaluation trenches as the site will be secured by Volker Stevin.

### 3.4 OTHER MATTERS

- 3.4.1 **Project Monitoring:** the aims of monitoring are to ensure that the archaeological works are undertaken within the limits set by the Written Scheme of Investigation, and to the satisfaction of the Senior Archaeologist for the Environment Agency and Lancashire County Council Archaeology Service. The curatorial archaeologist will be given at least five days' notice of when work is due to commence, and will be free to visit the site by prior arrangement with the project director. It is anticipated that there will be at least one formal monitoring meeting during the course of the evaluation.
- 3.4.2 **Reinstatement:** OA North will backfill completed trenches to a safe standard with the material excavated from those trenches.
- 3.4.3 Any further requirement for reinstatement will be subject to negotiation and the provision of a revised cost and WSI.
- 3.4.4 **Public Engagement:** the National Planning Policy Framework stresses the value of engaging local communities in archaeological projects and disseminating the findings in a manner appropriate to their significance. It will prove very difficult logistically, not least for Health and Safety considerations, to facilitate public access to the development site. However, updates on the progress of the evaluation trenching and emerging results will be posted regularly on OA North's website. In the event of significant archaeological remains being encountered, and a stage of more detailed archaeological investigation implemented, then opportunities for the public to visit the site will be afforded due consideration in consultation with the Environment Agency, LCAS and Volker Stevin.

### 3.5 POST-EXCAVATION AND REPORT PRODUCTION

- 3.5.1 **Report:** a report will be produced within four working weeks of the completion of the fieldwork, and will include:
- a summary statement of the findings;
  - the background to the evaluation, including location details;
  - an outline of the methodology of the survey;
  - a description of the site's setting, including topography and geology;
  - an account of the documented historical background to the site;
  - a summary, assessment, and interpretation of the results of the evaluation;
  - an assessment of any finds and samples recovered from the trenches;
  - a description of the significance of the site in its local and regional context;
  - recommendations for any further archaeological investigation that is considered merited to mitigate the impact of the development works;
  - a catalogue of archive items, including a list of photographs, and details of the final deposition of the project archive.

- 3.5.2 **Artefacts and Ecofacts:** any recovered artefacts and faunal remains will be processed so that they are clean, appropriately packaged, organised and ready for assessment. Cleaning will be undertaken in a manner appropriate to the material, using tools and techniques that will minimise abrasion, degradation or any other form of damage. Wet materials will be dried thoroughly at a low, stable temperature. The assemblage will then be packaged appropriately according to context and material-type. All bags will then be allocated a unique object record number (ORN), preferably ascending in context order, boxed by material, and catalogued within the OA North computerised finds system. Summary data will be abstracted from the OA North finds database for inclusion within the site database, and as a catalogue to send to the appropriate specialists. The fully processed finds assemblage will be organised by material type, loan forms completed, and will be then transported, as required (by hand, van or courier), to appropriate internal and external specialists.
- 3.5.3 All finds work will be carried out in accordance with the Chartered Institute for Archaeologists *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials* (IfA 2001). Each of the recovered material categories will be assessed by suitable specialists to record information fully and adequately on all pertinent aspects of the assemblage, in accordance with current and accepted industry guidelines for the various material types.
- 3.5.4 **Archive:** the results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with current Historic England guidelines. The project archive represents the collation and indexing of all the data and material gathered during the course of the project.
- 3.5.5 The deposition of a properly ordered and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the CIfA in that organisation's code of conduct. OA North conforms to best practice in the preparation of project archives for long-term storage. OA North will deposit the original record archive (paper, magnetic and plastic media) with the Lancashire Record Office (Preston), and the material archive will be submitted to the Lancaster County Museum Service in Preston.
- 3.5.6 The Arts and Humanities Data Service (AHDS) online database project *Online Access to index of Archaeological Investigations* (OASIS) will be completed as part of the archiving phase of the project.

## 4. WORK TIMETABLE

- 4.1 A four-week period should be allowed to excavate and record the evaluation trenches. Prior to excavation the trench locations will be scanned by Volker Stevin for live services with a CAT.
- 4.2 In the event of significant archaeological remains being discovered in the evaluation trenches, a programme of further investigation may be anticipated. The time required for any additional investigation cannot be determined until the results of the evaluation are known.
- 4.3 Backfilling of the trenches will be carried out immediately upon completion of the archaeological works.
- 4.4 A report will be submitted within four weeks of the completion of the fieldwork.
- 4.5 A member of OA North staff will be available to carry out the watching brief given 24 hours notice in advance of any soil stripping works.

## 5. STAFFING PROPOSALS

- 5.1 The project will be under the overall charge of **Ian Miller BA FSA** (OA North Senior Project Manager) to whom all correspondence should be addressed. Ian has over 20 years experience of commercial archaeology. He has managed a large number of evaluation and excavation projects in Lancashire and on behalf of the Environment Agency, including Derby Flood Defences (as part of the 'Our City Our River' scheme) and Salford Flood Alleviation Improvements. He has also managed many other evaluations and excavations of sites in the north-west of England.
- 5.2 His role will be to ensure that the Written Scheme of Investigation is implemented within the framework of the Project Objectives. He will be responsible for all aspects of staff and resource logistics, ensuring the smooth running of the project programme. He will liaise with the Client, Environment Agency Senior Archaeologist and Lancashire County Archaeology Service with regard to progress, and will maintain relationships with other contractors.
- 5.3 It is not possible to provide details of specific supervisors and technicians that will be involved with the fieldwork at this stage, but all OA North staff are suitably qualified archaeologists with proven relevant experience. It is anticipated that one project officer and up to two technicians will be required for the initial stage of the fieldwork.
- 5.4 Assessment of any finds recovered from the evaluation will be undertaken by OA North's in-house finds specialist **Christine Howard-Davis BA** (OA North Finds Manager). Christine has extensive knowledge of all finds of all periods from archaeological sites in northern England, and is a recognised expert in the analysis of post-medieval artefacts.



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## ILLUSTRATIONS

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### LIST OF FIGURES

- Figure 1: Site location
- Figure 2: Trench location plan
- Figure 3: Plan of Trenches 7-14
- Figure 4: Plan of Trenches 17-22
- Figure 5: Sections

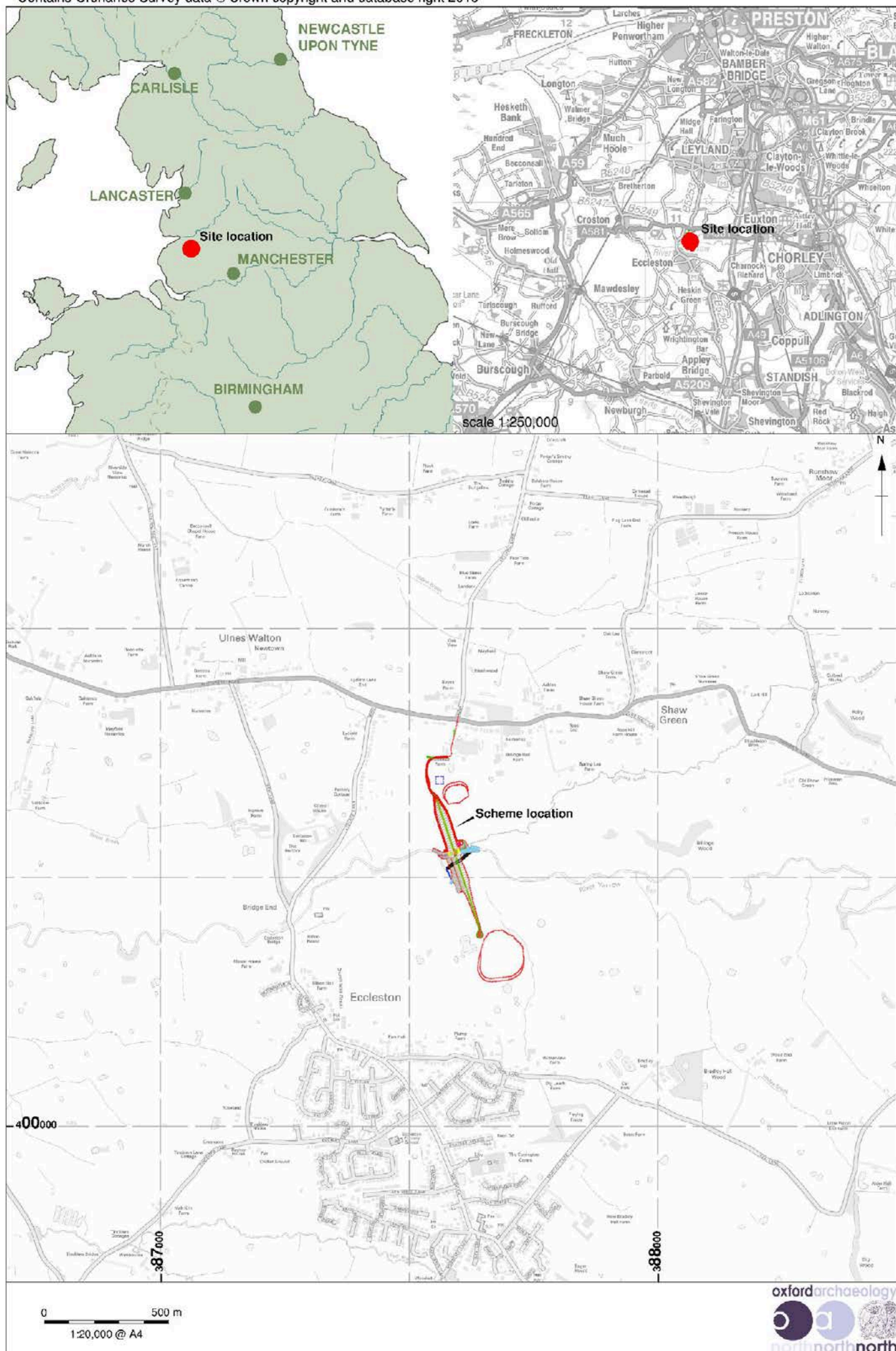


Figure 1: Site location

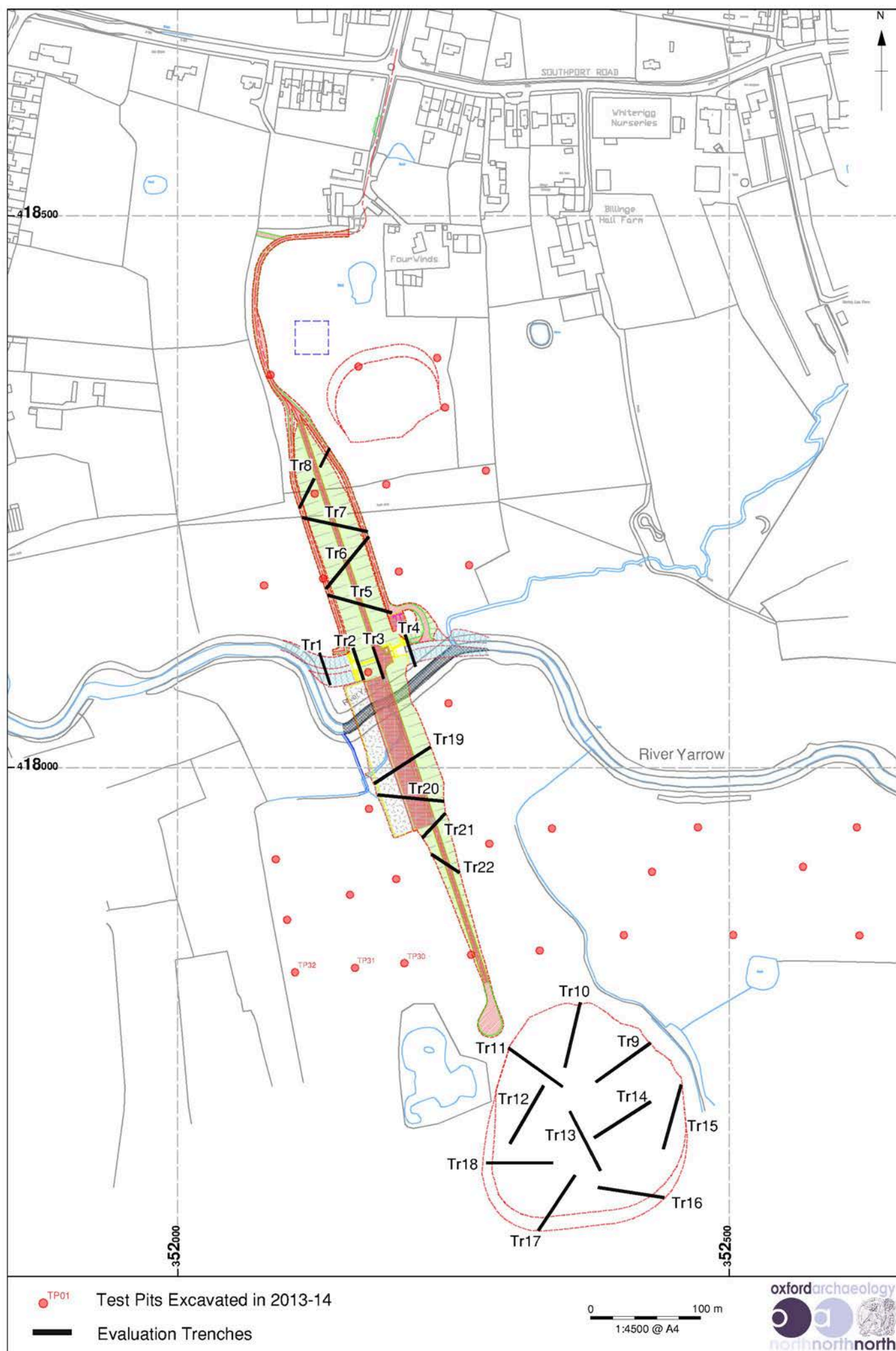


Figure 2: Trench location plan



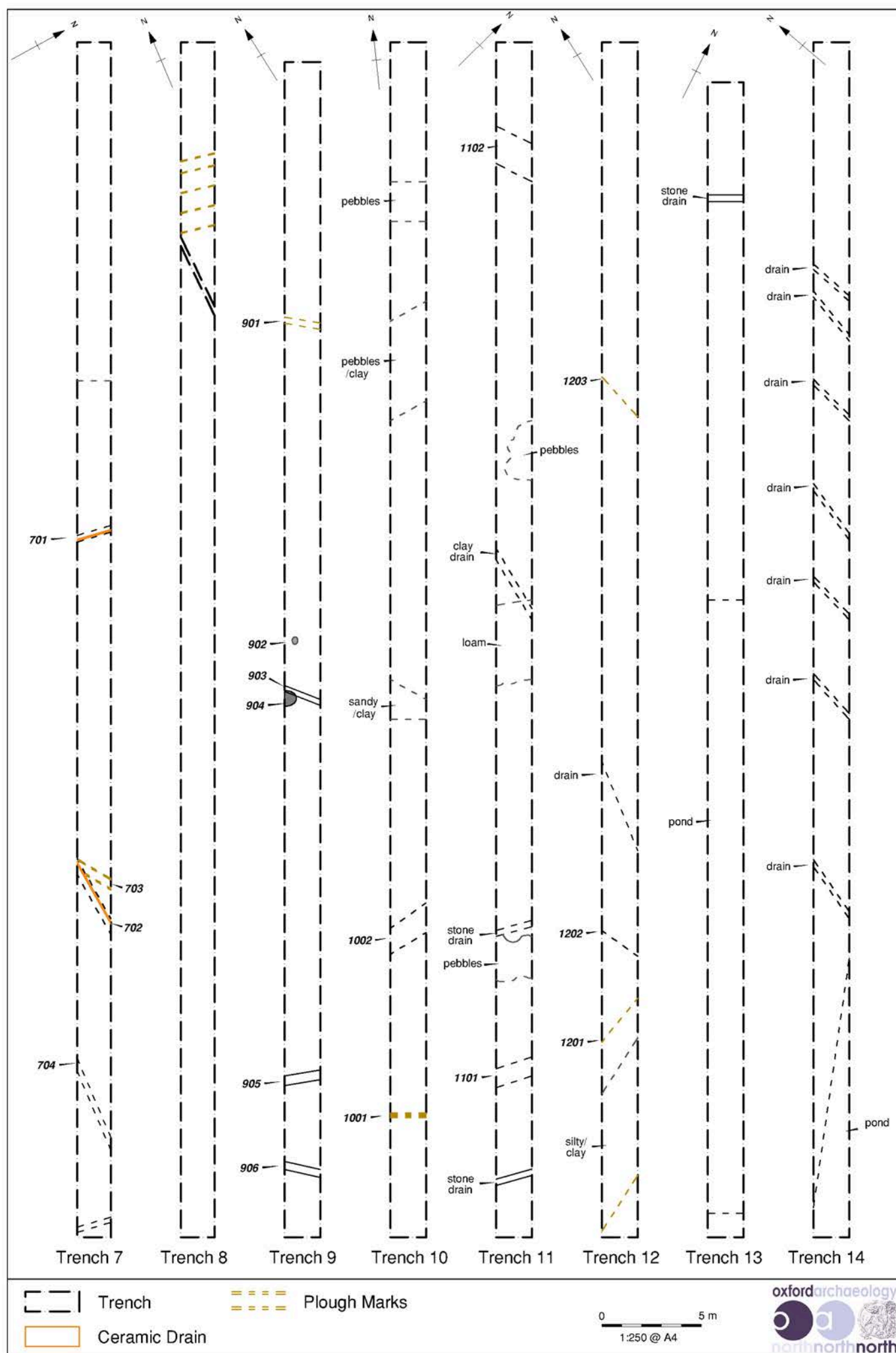


Figure 3: Plans of Trenches 7-14



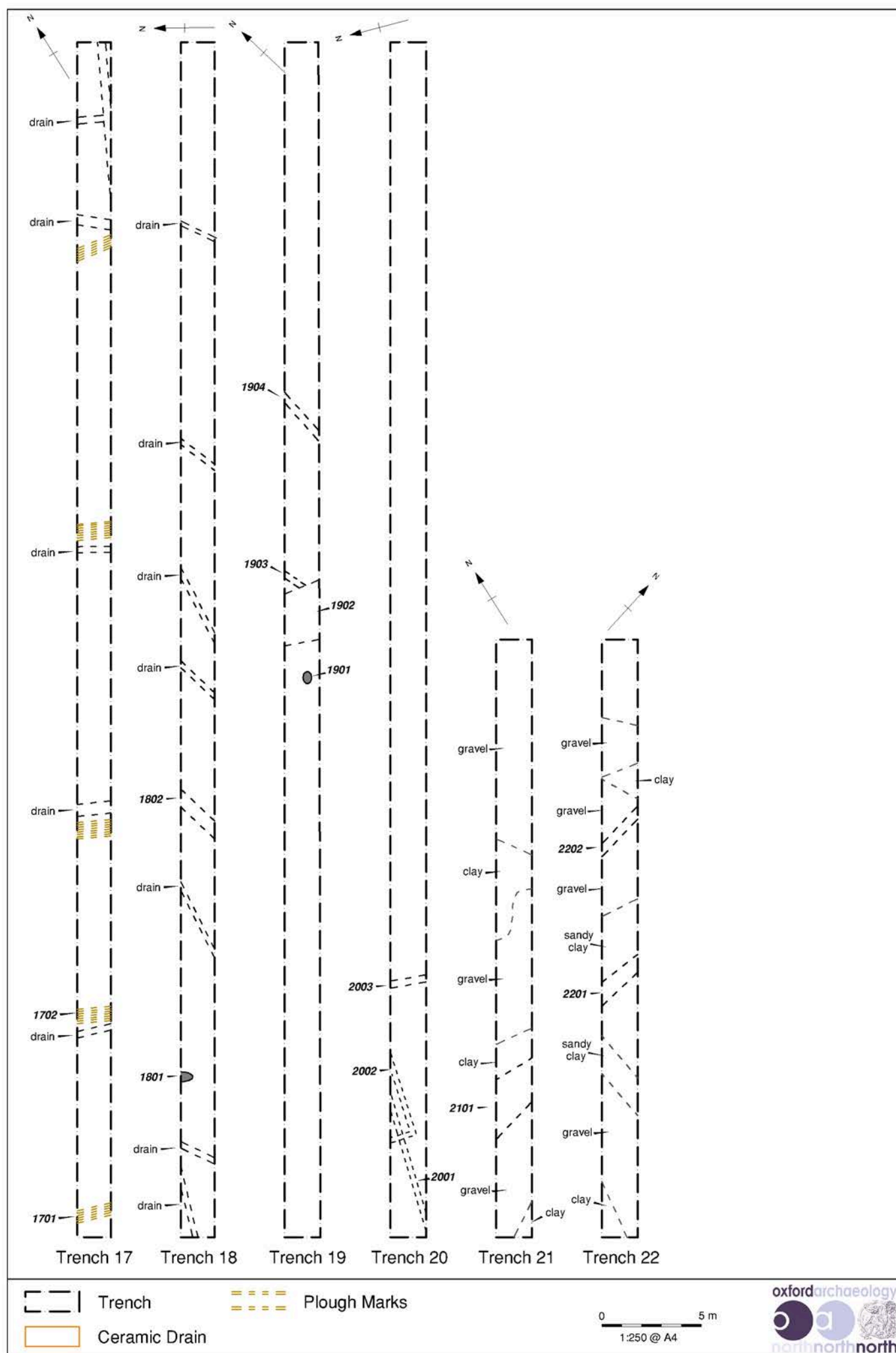
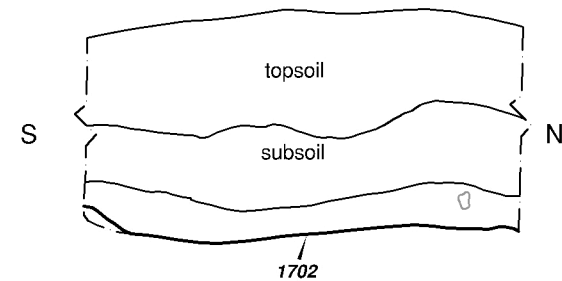
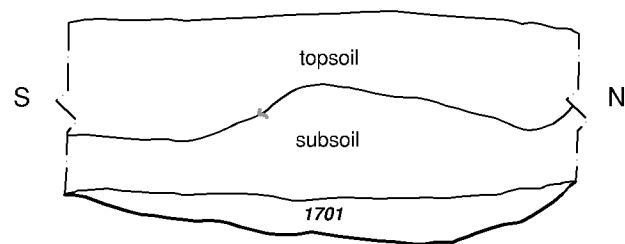
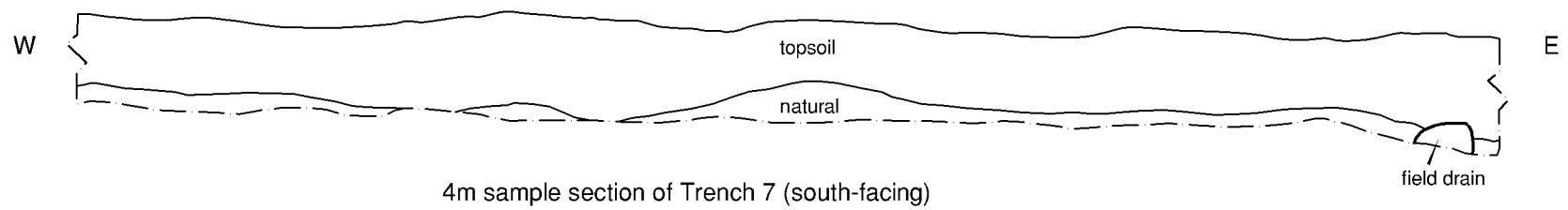


Figure 4: Plans of Trenches 17-22



 Trench  
 Layer/deposit  
 Cut

0 0.5 m  
 1:20 @ A4

Figure 5: Sections



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