BURSCOUGH WASTE WATER TREATMENT AND INLET WORKS, BURSCOUGH, LANCASHIRE

Desk-Based Assessment, Strip and Record Excavation and Watching Brief

Oxford Archaeology North

January 2009

Issue No: 2008/09-706
OA North Job No: L9836
NGR: SD 42360 13395

Document Title: BURSCOUGH WASTE WATER TREATMENT AND INLET WORKS, BURSCOUGH, LANCASHIRE

Document Type: Desk-Based Assessment, Strip and Record Excavation and Watching Brief

Client Name: United Utilities

Issue Number: L9836
OA Job Number: L2008-09/706

Planning Reference No

National Grid Reference: SD 42360 413395

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SUMMARY

United Utilities proposed the modification of land at the Wastewater Treatment Works (WwTW) in Burscough, Lancashire (SD 42360 13395). As the development affects areas of potential archaeological significance, dating from the prehistoric and historic periods, Lancashire County Archaeological Service (LCAS) recommended a desk-based assessment be undertaken for the site. The development was divided between four areas around the current facility. Following the results of the desk-based assessment, and discussions with OA North and United Utilities, LCAS requested further works be undertaken including strip and record excavations in Areas 1 and 2, and watching briefs on groundworks taking place in Areas 1 and 4. This report sets out the results of the each phase of works, followed by a discussion of the findings and recommendations for any further work where appropriate.

The desk-based assessment and site visit was undertaken by OA North in April 2007. In total, 19 sites were identified through inspection of the Lancashire Historic Environment Record (LHER), archival sources, and the site visit. The LHER sites comprised four findspots of worked flint and chert (Sites **1**, **2**, **10**, and **11**), four areas of cropmarks identified by aerial photography (Sites **3**, **6**, **8**, and **9**), a pond (Site **7**), a well (Site **18**), two farmsteads with wells (Sites **14** and **16**), a railway station (Site **15**), and one archaeological event: an evaluation excavation that revealed possible prehistoric metalworking activity (Site **5**). The site visit and desk-based assessment revealed one road (Site **12**), one drainage channel (Site **13**), one stone wall (Site **4**), and one crop mark site, identified by aerial photography (Site **19**). Five of the sites were prehistoric in origin (Sites **1**, **2**, **10**, **11**, and **19**), with one site of possible prehistoric origin (Site **5**), eight dated to the post-medieval period (Sites **4**, **5**, **7**, **12**, **13**, **14**, **15**, and **18**), and a further five were of unknown date (Sites **3**, **6**, **8**, **9** and **19**).

Although all of the sites, except for the post-medieval drainage channel (Site **13**), road (Site **12**), and wall (Site **4**), lay outside of the proposed development area. The presence of flint scatters within the study area, and in the surrounding locale, suggested that this may be an area of prehistoric archaeological interest. The topographic location of the study area, on the fringes of the former lake at Martin Mere, also suggested the potential for the discovery of material of archaeological significance. The fringes of this wetland have produced Bronze Age metal work and possible early medieval dugout canoes, in addition to lithic and palaeo-environmental evidence for Mesolithic and Neolithic activity in the region. The potential of this area necessitated further archaeological investigations in Areas 1, 2 and 4, described below.

Further archaeological works within Area 1 included a strip and record excavation on the areas to be excavated for two access tracks into the works compound, and a watching brief on the placement of a settling tank, which were completed during July and August 2007 respectively. LCAS specified that the strip and record would be excavated to the level required for the construction of the access roads. Natural sub-strata, in this instance windblown sands, was only revealed in excavations for the eastern access track. The western access track was not excavated below the depth of the soil horizon. Although a number of field drains, a modern linear feature, and a modern pit were located during these works, no deposits or horizons of an archaeological significance was encountered.

Area 2 was also subject to a strip and record excavation during July 2007, prior to any work commencing at the site. Within this area the entirety of the soil horizon was removed to reveal any features cutting into the natural sands and the recovery of finds. Three post-medieval features were encountered, a north/south aligned drainage ditch, (***SG23***), and two ponds, features ***2*** and ***21*** (Fig 13).

In addition to the watching brief in Area 1, a further watching brief was undertaken in August 2007 during the removal of *c* 0.25m of topsoil within Area 4. A layer of soil was left over the underlying natural sands and any potential archaeological remains. A number of post-medieval and modern finds were recovered from the soil horizon, but no archaeological features were observed.

Although three post-medieval features were located, as well as a number of post-medieval finds from the soil horizons of each area, the archaeological remains which may potentially be disturbed by the development have been sufficiently characterised and understood during the current phase of work. It is, therefore, not necessary for any further archaeological work to be completed prior to or during the development of the site.

ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) would like to thank United Utilities for commissioning the project. Thanks are also due to the staff at the Lancashire Historic Environment Record (LHER) and the Lancashire Record Office (LRO). Further thanks are extended to the staff of the Burscough Wastewater Treatment Works and to Cheetham Hill Construction for their co-operation during the course of the project.

The rapid desk-based assessment was undertaken by Alastair Vannan, and the strip and record excavations and archaeological watching brief by Andy Bates, Pascal Eloy, Jo Hawkins and Sam Walsh, with drawings produced by Mark Tidmarsh. Alison Plummer managed the project and edited the report.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 United Utilities submitted a planning application for the construction of new retention tanks adjacent to their Wastewater Treatment Works (WwTW) at Burscough (SD 42360 13395). Lancashire County Archaeological Services (LCAS) recommended a programme of archaeological work prior to and during the development. Oxford Archaeology North (OA North) was asked to submit a project design by the client (*Appendix 1*), which was approved by LCAS, and were subsequently commissioned to undertake the work. The programme of archaeological works initially comprised a desk-based assessment, which was completed in April 2007. As a result of the desk-based assessment, LCAS requested a programme of strip and record excavations and archaeological watching briefs on groundworks within the three of the four areas of the development. A further project design (*Appendix 2*) was submitted and approved for this phase of works. The areas subject to further archaeological works comprised Area 1, the location of the works compound, and Areas 2 and 4, the locations for the new retention tanks.

1.1.2 Works within Area 1 included strip and record excavation on the areas to be excavated for two access tracks into the works compound, and a watching brief on the placement of a settling tank. Area 2 was subject to a strip and record excavation, prior to any work commencing at the site by United Utilities' principal contractor, Cheetham Hill Construction. Area 4 was subject to a watching brief during the removal of *c* 0.25m of topsoil.

1.1.3 This report sets out the results of each phase of work. The concluding chapter presents a discussion of the findings, and makes recommendations for any further work where appropriate.

1.2 SITE LOCATION AND TOPOGRAPHY

1.2.1 The Burscough WwTW lies around 2km to the west of Burscough and 4km to the south-west of Rufford, in the district of West Lancashire (Fig 1), within the Lancashire and Amounderness Plain (Countryside Commission 1998, 86). The site under investigation lies immediately to the south-west of Marsh Moss. This peat moss fringed the southern edge of the former lake of Martin Mere, which was the largest lake in England prior to drainage that began in the late seventeenth century (Middleton *et al*, forthcoming). The site occupies gently rising land that defined the southern extent of the wetlands to the north.

1.2.2 The underlying geology comprises till and marine clay which is overlain by a drift geology of primarily windblown Shirdley Hill Sands (Countryside Commission 1998, 88).

2. METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 OA North submitted a project design (*Appendix 1*) in response to a request by United Utilities for a desk based assessment to be completed on an area of land adjacent to the WwTW at Burscough. This was followed by a second project design (*Appendix 2*) for further works comprising a programme of strip and record and archaeological watching briefs. These project designs were adhered to in full throughout the archaeological programme. The work was consistent with the relevant standards and procedures of the Institute of Field Archaeologists, and generally accepted best practice.

2.2 DESK-BASED ASSESSMENT AND SITE VISIT

2.2.1 The assessment comprised a desk-based study and a site visit. For the desk-based assessment, a study area that extended 0.5km beyond the extent of the proposed development boundary was examined and all known archaeological sites within this area have been included in the gazetteer in order to assess the impact of the development (*Appendix 2*; Fig 2). A general historical and archaeological background of the area was compiled and map regression analysis was undertaken. Several sources of information were consulted as part of the assessment, which have provided a good understanding of the developmental history of the study area. Archive sources that were consulted include:

- ***Lancashire Historic Environment Record (HER), Preston***: the HER for Lancashire was consulted. The HER is a list of all known sites of archaeological interest within Lancashire, and is the primary source of information for a study of this kind.

- ***Lancashire Record Office, Preston***: the record office contains holdings of historic maps and aerial photographs, as well as substantial documentary archives and secondary sources relating to local history and archaeology.

- ***OA North Library***: OA North has undertaken numerous projects in the West Lancashire area, as well as large number of projects across the North West. As a result, it has a large library of secondary sources, as well as unpublished client reports in its offices in Lancaster.

- ***Ormskirk Library***: the library contains a local studies section that includes sources relating to the Burscough area.

2.2.2 The aim of the site visit was to relate the findings of the desk-based study to the existing site, and to identify any previously unrecorded evidence. The visit involved a rapid inspection of the development area and the surrounding locale in order to provide a context within which to place the archaeological findings.

2.3 STRIP AND RECORD EXCAVATION

2.3.1 Two areas were subject to a strip and record excavation, two access routes being inserted for the compound in Area 1 and the majority of Area 2. The methodology for Area 1 was a variation to that employed in Area 2 and, therefore, the full method is described for Area 2 first. Prior to any work commencing service plans were provided by United Utilities. A watervole exclusion zone was marked out by United Utilities adjacent to water courses, within which no work took place.

2.3.2 ***Area 2:*** the topsoil and subsoil covering field was removed under archaeological supervision by a 22 ton 360° mechanical excavator fitted with a toothless ditching bucket, with spoil stored in the northern half of the area having been transported by 25 ton dumper trucks. This process removed the entirety of the soil horizon down to the uppermost horizons of significant archaeological remains or natural substrate. The topsoil was be stockpiled separately from the subsoil and other deposits. The northern 14.0m of the field had been heavily disturbed by the current farmer. Two test pits in this area showed mixed soil deposits and plastic down to, and disturbing, the natural sand. This area was excluded from the strip and record excavations.

2.3.3 The topsoil was stripped in a systematic and logical manner, to ensure that where practicable the excavators and machines used to remove spoil did not rut, compact or otherwise damage buried or exposed archaeological features and deposits.

2.3.4 ***Mapping****:* the strip and record area was planned using a Global Positioning System (GPS) accurate to 40mm. Where appropriate hand cleaning of areas was completed to clarify the position of archaeological features. The resulting survey formed the site plan of the area (Fig 13), onto which further detail was added from hand drawn plans.

2.3.5 ***Sample Excavations****:* the excavation of exposed archaeological remains were completed to inform the LCAS planning officer concerning the potential for further excavation work, and the time required to complete such work. The exact sampling levels was determined by the nature of the remains. Any excavation, both by machine and by hand, was undertaken with a view to avoiding damage to any archaeological features or deposits which appear worthy of preserving *in-situ*.

2.3.6 Linear features were excavated to the extent that they were characterised and understood. This included 100% of terminals and ditch intersections, and sufficient further interventions to characterise deposits and date the feature. As a guide linear features up to 5m in length were subject to a 20% sample excavation, while linear features over 5m long were subject to 10% sample excavation, with all intervention at least 1m wide.

2.3.7 An appropriate range of discrete or non-linear features (pits, postholes etc) were investigated. In most cases, such features were subject to 50% excavation. However, where either no dating or functional evidence was obtained, or where artefacts were recovered of such a nature that the recovery

of additional material of a similar nature was thought to be worthwhile, then further excavation was undertaken. Where clusters of similar features occurred, a representative sample was excavated.

2.3.8 ***Recording:*** all archaeological contexts were recorded on OA North's *pro-forma* sheets, using a system based on that of the English Heritage Centre for Archaeology. Hand drawn plans and sections were drawn at scales of 1:10 or 1:20, geo-referenced using the GPS, and incorporated onto the overall site plan. A monochrome, colour slide and digital photographic record was maintained throughout the work.

2.3.9 ***Environmental Samples****:* bulk whole earth samples (30 litres each where possible) from well stratified deposits where taken where appropriate. This programme was undertaken to enable the recovery of carbonised and waterlogged remains, vertebrate remains, molluscs and small artefactual material. If appropriate, monolith samples were also to be taken for pollen and soil micromorphology.

2.3.10 ***Area 1:*** the methodology for Area 1 was largely identical as for Area 2, although on a reduced scale only covering the access tracks to be inserted into the compound. However, following conversations with the LCAS planning officer, it was agreed that the level of excavation would proceed to the depth required for the two access road by the developer, only excavating to the depth of natural substrata if this was required for the works being carried out. In this instance, the groundworks were completed by the developer, and monitored by OA North staff. If archaeological remains were located, further excavation of the areas to the natural substrata was required.

2.4 WATCHING BRIEF

2.4.1 A programme of field observation was completed in Area 1 (Fig 13) during the placement of a settling tank, and on the removal of topsoil in Area 4 to a depth of *c* 0.25m (Fig 1). These groundworks were conducted under constant archaeological supervision, with all exposed soil horizons examined and described and spoil heaps checked for unstratified finds.

2.4.2 A daily record of the nature, extent and depths of groundworks was maintained throughout the duration of the project. Archaeological contexts were recorded on OA North's *pro-forma* sheets, with a photographic record and drawings produced as per the strip and record excavations.

2.5 ARCHIVE

2.5.1 A full professional archive has been compiled in accordance with the current IFA and English Heritage guidelines (English Heritage 1991). The paper and digital archive will be deposited with Preston Record Office on completion of the project.

3. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 INTRODUCTION

3.1.1 In addition to a detailed investigation of the closely defined study area, it is also necessary to present a general archaeological and historical background of the wider locale related to the British archaeological periods as shown in Table 1. This will allow the site to be considered within the context of the differing systems of land use, ideology, and resource exploitation that helped to define the broader human landscapes in this area over time. The strongest recurring theme of human activity in this area is the relationship between people and the wetlands of Martin Mere, as a vital and valued resource and, conversely, as a hazardous element of the landscape that threatened to limit agricultural expansion.

Period	**Date Range**
Palaeolithic	30,000 – 10,000 BC
Mesolithic	10,000 – 3,500 BC
Neolithic	3,500 – 2,200 BC
Bronze Age	2,200 – 700 BC
Iron Age	700 BC – AD 43
Romano-British	AD 43 – AD 410
Early Medieval	AD 410 – AD 1066
Late Medieval	AD 1066 – AD 1540
Post-medieval	AD 1540 – *c*1750
Industrial Period	*c*AD1750 – 1901
Modern	Post-1901

Table 1: British archaeological periods and dates

3.2 THE PREHISTORIC PERIOD

3.2.1 ***The Mesolithic period:*** the earliest evidence for human activity in this area of south-west Lancashire is provided by finds of bone, worked flints, and charcoal datable to the late Mesolithic period. There were 777 flint artefacts recovered from a low ridge of glacial deposits occurring between Hesketh Banks and Banks, around 7km to the north of the study area, that could be confidently dated to the late Mesolithic period, based upon typological analysis (Middleton *et al* forthcoming). There were also 13 other concentrations of flint finds in this region that could date to the Mesolithic or Neolithic periods (*ibid*). Several additional finds of flints, including five within the study area (Sites **01**, **02**, **10**, **17** and PRN4161) may include artefacts that have been subject to Mesolithic modification, but have not been closely dated. Finds of bone from the wider area consisted of human remains, associated with red deer and horse bones, found in 1872 in Birkdale, beneath a deposit of blown sand that may have formed around 4500 cal BC, as well as

red deer antlers and a skull from Crossens Mill (*ibid*). Elk remains were also reputed to have been found at Crowland and a place named as 'The Meales' by Leigh (1700, 61), which may relate to the area currently known as Meols that lies just to the west of the former lake at Martin Mere.

3.2.2 The presence of charcoal layers predating the Elm Decline (*c* 3990–3640 cal BC (Hibbert *et al* 1971)) in the immediate vicinity of the study area at Tarlscough Moss and Langley Brook, just to the north-east and south-west of the study area respectively (Middleton *et al* forthcoming), may attest to deliberate episodes of burning. This woodland clearance would have encouraged the growth of plant shoots and attracted herbivores, which could then have been hunted, a strategy suggested by evidence from various sites in Lancashire (Cowell 1996, 28–30). A pattern of coastal base camps and inland specialist sites, such as seasonal hunting camps, has been suggested for lowland Lancashire during the Mesolithic (*op cit*, 28). The location of the study area, close to the edge of the rich wetland resource of the former lake of Martin Mere and within an area that appears to have been subjected to fire-induced woodland clearance, suggests that it is well placed as a possible locus of seasonal Mesolithic activity. Although these is some evidence for the continued reuse of established sites in this area, for example at Banks and Mawdesly (Middleton 1996, 37), it should be stressed that ephemeral sites, such as transient hunting camps and kill and butchery sites, might be more likely to be found in the marginal wetlands that fringed the lake at Martin Mere (Middleton *et al* forthcoming).

3.2.3 ***The Neolithic and Bronze Age periods:*** it has been suggested (Middleton 1996, 36–9) that, although the Neolithic period marks the transition from generally transient hunting, fishing, and gathering based subsistence strategies to the adoption of more settled agricultural communities, there may still have been a great deal of wild resource exploitation during the Neolithic in Lancashire. As a result, many Neolithic sites are situated in coastal, riverine, and wetland locations that mirror the Mesolithic zones of activity (*op cit*, 40). Neolithic activity in the locale of the water treatment works site is represented by flint artefacts, such as a flint knife from Churchtown and a flint axe found to the north of Ormskirk (Middleton *et al* forthcoming). The five previously mentioned undated flint finds within the study area (Sites **01**, **02**, **10**, **17**, and PRN4161) include a 'flint knife' (Site **10**) and a large flake (Site **17**), which are likely to date to the Neolithic or Bronze Age. An auroch skeleton found at the edge of Martin Mere, at Clay Brow, was dated to the Neolithic (*ibid*). Around 4km to the north-east of the study area, at Rufford, excavations at Manor House Farm have revealed the remains of three probable prehistoric structures, including an oval structure dated to the early Neolithic (3640–3380 cal BC) and a large pit or post hole dated to the late Neolithic or Early Bronze Age (2200–1960 cal BC) (S Baldwin *pers comm*). This settlement would have occupied the area of land just to the east of the lake at Martin Mere and to the north of the watercourse that enabled the lake to empty into the River Douglas.

3.2.4 Evidence for the continued clearance of woodland in the early Neolithic period comes from post-Elm Decline charcoal layers and pollen evidence from Langely Brook and Back Moss Lane, to the south-west and north-east of the

study area respectively. The significance of the flint axe and the environmental evidence of woodland clearance, beyond the use of hunting strategies, is supported by cereal grains from Greenings Farm (Middleton *et al* forthcoming) that give direct evidence of early attempts to practice arable agriculture in the area. An increase in the use of agriculture during the late Neolithic and early Bronze Age is suggested by the presence of cereal grains from Langley's Brook, dated to 3610 ± 110 BP (Coney and Whittaker 2005, 68).

3.2.5 Bronze Age finds from the area include a stone hammer from Derby Farm, which lies less than 1km west-south-west of the proposed development site, as well as numerous finds of metalwork, including an axe, two palstaves, one of which was dated to 1500–100 cal BC (*op cit*, 69), a spearhead, and a flat axe, from Martin Mere (Middleton *et al* forthcoming). Two Bronze Age swords were also reported to have been found in this area in 1899 (Coney and Whittaker 2005, 74). Several finds of crudely-worked flints that utilised poor-quality flint have also been found in this area (Middleton *et al* forthcoming). It is suggested that the finds of flint around the southern fringes of Martin Mere, where the study area is situated, are unlikely to represent extensive settlement in these occasionally saturated transitional areas between the wetlands and drier areas (*ibid*). Instead, they may represent casual losses associated with a wider distribution to the south and east (*ibid*).

3.2.6 The presence of metalwork around the edges of the lake, and possibly some of the flint tools, may, however, suggest the purposeful deposition of objects, rather than simply object loss. Beginning in the Neolithic period, a tradition of the votive deposition of valuable objects in watery places, such as rivers and mosses, developed throughout the prehistoric period (Middleton 1996, 45). This practice was not restricted to Lancashire but was a phenomenon that occurred throughout Britain and Ireland (*ibid*; Waddell 2000, 47). These practices are relevant to the study area as it is situated on the edge of a former lake, where apparent votive depositions have been found in the past. The study area is within an area that may have been subject to periodic inundation and where the presence of former bog land is attested by the observation of peat levels during the site visit (Plate 1).

3.2.7 ***The Iron Age:*** although an Iron Age settlement has been discovered at Duttons Farm, Lathom, around 3.5km to the south-east of the study area, on land elevated from the surrounding clay and mossland (*c* 17 m AOD) (Cowell 2005, 68–9), there is little evidence of Iron Age activity in the immediate locale of Martin Mere. An iron arrowhead was found embedded in a bog oak at Clay Brow Farm (Coney and Whittaker 2005, 231), however, the date of this artefact is not known.

3.2.8 The topographical location of the study area is, once again, relevant to the discussion of the Iron Age in the region. The remains of human bodies have been found in boglands and peat mosses at Lindow Moss, Pilling Moss, Red Moss, Bolton, and Worsley in the north-west of England (Turner and Briggs 1986, 148–9; Haselgrove 1996, 70). In 1700, Leigh observed that 'sometimes

in mosses are found human bodies entire and uncorrupted, as in a moss near the Meales in Lancashire' (Turner and Briggs 1986, 148–9).

3.2.9 Although the wetlands in the immediate vicinity of the study area appear to have been marginal to the main areas of occupation in the area (Middleton *et al* forthcoming), the dangerous and conspicuous nature of this vast lake might have allowed the area to remain a prominent focal point. This idea is supported by the finds of early Roman coins in the vicinity of Martin Mere, which may be the result of deliberate deposition (*ibid*).

3.3 THE HISTORIC PERIOD

3.3.1 ***The Romano-British Period (c AD 43 – AD 409)*:** as with the preceeding Iron Age period, there is little evidence of Romano-British settlement in the immediate locale of the study area. At Duttons Farm, in Lathom, an Iron Age settlement continued in use into the second century and was suceeded by a Romano-British field system with associated trackways (Cowell 2005, 69–70). Most of the Romano-British evidence from the Martin Mere area consists of coin finds. These include hoards from Scarisbrick and Tarleton Moss, as well as a coin of Vespasian found in Martin Mere in 1899 (Middleton *et al* forthcoming). All of the known dates for these coins place them in the first or early second centuries and it is possible that they represent deliberate deposition. Several coarseware pottery sherds that may date to the Romano-British period (*ibid*), have been found to the east of Martin Mere, between Burscough and Rufford. A series of enigmatic, mainly unworked, flint pebble scatters between Holmeswood and Tarleton Mosses have been tentatively dated to the late fourth century on the basis of a sherd of late Roman Huntcliffe Ware (*ibid*).

3.3.2 ***Early Medieval (c AD 410 – AD 1066)*:** although there is little archaeological evidence for the early medieval period in this area, local placenames suggest that there was pre-Conquest activity in the locale. Martin is first mentioned in Domesday Book as *Merretun*, meaning a settlement by a lake, and Holmes, Meols, Scarisbrick, Ormskirk, and Burscough all feature Scandinavian linguistic elements (Coney and Whittaker 2005, 76–79). These placenames might indicate activity during the ninth and eleventh centuries, when Scandinavian and Hiberno-Norse influences pervaded in Lancashire (Newman RM 1996, 95); however, this does not offer definitive proof of Viking occupation in the area. Some of the placenames, such as Ormskirk and Burscough, are hybrid word-forms with both Scandinavian and old English elements (Coney and Whittaker 2005, 79; Mills 1976, 118), while it is suggested that 'Tarlescough' might preserve prehistoric terminology (Coney and Whittaker 2005, 79). Such placenames might reflect a mixture of incoming settlers of Anglo-Saxon and Scandinavian origin into the region or could attest to a high level of political influence that was not necessarily accompanied by a high degree of new settlement (Newman RM 1996, 95). Incoming settlement in the wider area is suggested by Padfield (1978, 1) who states that Ormskirk was founded by Viking settlers in the ninth century and Ormskirk is also referred to as a 'Saxon or Viking village' by Duggan (1998, 16). The possibility of activity in the Ormskirk area around this time might be

supported, archaeologically, by the presence of a fragment of an early medieval cross that was reused in the wall of Ormskirk Parish Church (*ibid*), although this has not been closely dated.

3.3.3 Martin is described in Domesday Book as being divided into two parts, half united to Harleton (Hurlston?) and half to Lathom (Farrer and Brownbill 1966, 260). The half united with Harleton was held by Uctred in 1006 but there is no mention of the half united with Lathom, which would later become Burscough. There may be evidence of the use of the lake at Martin Mere, during the Dark Ages, from dugout canoes that have been found within the former lake and around its shores (Middleton *et al* forthcoming). One of the 15 vessels recovered from this area has provided a C14 date range of AD 380–645 (Coney and Hale 2005, 70), although some of the vessels may date to the medieval period (Middleton *et al* forthcoming). These vessels reinforce the potential of the wetlands and peat deposits in this area to preserve organic material.

3.3.4 ***The Late Medieval Period (*c *AD 1066 – AD 1540)*:** the first historic mention of Burscough was in 1189 when the half of Martin that was united with Lathom was granted to the priory as *Burgastud* (Farrer and Brownbill 1966, 258; 260). At this time, Burscough consisted of an extended area that included the eastern part of Martin Mere, where the study area is situated, and was known as 'Burscough with Martin' until at least 1366 (*op cit*, 260). The priory owned a windmill and watermill and held fishing rights in the area, as well as acting as a landlord for tennant producers, such as John Scarisbrick at Burscough Mill (*op cit*, 258–9). The priory retained control of these lands until the Dissolution, in 1536, when it passed into the hands of Henry VIII. There is evidence for several moated halls in the local area, for example, at Scarisbrick Hall, Rufford, and Martin Hall (Middleton *et al* forthcoming). Martin Hall lies within 1km of the study area, to the south, and was first mentioned in 1206, when it was held by Robert de Lathom (Rosbottom 1987, 40). The hall became a grange of the priory before passing into the hands of the king, along with the lands of the priory in 1536. Martin Hall was finally demolished in 1965 and replaced by a farmhouse. The foundation of such moated sites in western Lancashire may reflect the expansion of settlement into mossland areas during the 13th century (Newman R 1996, 117).

3.3.5 Three aerial photographs of the study area show a variety of undated linear cropmarks (Sites **03**, **06** and PRN 4446), most of which are described in the HER as probable field boundaries. It is possible, as has been suggested for field systems to the east of Martin Mere (Middleton *et al* forthcoming), that these might date to the medieval period, although this is purely speculative.

3.3.6 Some of the numerous stone crosses in the local area, at least 18 of which were depicted on the Ordnance Survey (OS) mapping of 1845, may also date to the medieval period, as such monuments were mentioned in deeds dating to the thirteenth and fourteenth centuries (Rosbottom 1987, 55). Many of these appear to have been wayside crosses and boundary markers (Middleton *et al* forthcoming).

3.3.7 ***The Post-Medieval Period (AD 1540 – present):*** this period saw the most substantial changes to the character of the Martin Mere area, as occupation in the area increased and the demand for agricultural land outweighed the inherent value of the wetlands as an exploitable resource. In 1694 Thomas Fleetwood, of Bank Hall in Bretherton, undertook the draining of the lake at Martin Mere in order to increase the amount of available agricultural land (Brazendale 2005, 242). This endeavour was, however, of limited success and further extensive drainage works were undertaken by Thomas Eccleston in 1778 (Middleton *et al* forthcoming). There were floods of the area during the eighteenth and nineteenth centuries and it was only the introduction of a steam powered pump in 1849, by Thomas Dalrymple Hesketh, that finally allowed the mere to remain relatively free of inundation (*ibid*). Continued problems, culminating in severe floods in 1952 and 1954, motivated a reorganisation of the drainage scheme and the construction of a pumping station in 1961 (*ibid*). The drainage of Martin Mere, from the seventeenth century onwards, gradually allowed previously unavailable land to become suitable for agricuture around the moss fringes, as well as within the main area of the lake (*ibid*). Wood End Farm lies within the study area, to the east of the water treatment works, and utilises land to the west and east of the treatment works for agriculture. It is unclear when this land first became suitable for farming, however, Yates' map of 1786, the first map to show any detail of the area, does depict buildings and a road or trackway in positions that correspond to the current structures.

3.3.8 During the post-medieval period, peat cutting was an important industry in the area and, by the seventeenth century, was under the control of the landlords who occupied the manors within the region (*ibid*). The importance of this industry continued until the early twentieth century, by which time the price of coal had reduced enough to overtake peat as the main fuel source and the peat industry was abandoned (*ibid*). The harvesting of local osiers around Martin Hall enabled a basketing industry to flourish in the eighteenth and nineteenth centuries (Rosbottom 1987, 119–20). A small furnace found to the north of Rufford has yielded results that suggest local bog iron was being exploited as a raw material. Within the study area, Site **05** represents an archaeological evaluation in 2006 that revealed evidence of metalworking, mainly in the form of slag. Although undated, it is possible that this site may represent further evidence of localised resource exploitation in order to supply raw materials for a small-scale industry (OA North 2006).

3.3.9 The drainage of Martin Mere was not the only major engineering project to be executed within the Burscough area during the post-medieval period and by 1780 the stretch of the Leeds and Liverpool canal running between Liverpool and Wigan had been completed (Ashmore 1969, 166). This canal runs to the south, and within 1km, of the study area. A turnpike road, which is represented by the current A59, was also built and at the crossing points of this road and the Leeds and Liverpool canal the village of Burscough Bridge gradually developed (*op cit*, 157). This village straddles the boundary between the Lathom and Burscough townships and, although it is known locally as Burscough, was one of the most recent additions to the built landscape of the locale. The improved communication networks provided support for local

industry and cotton-spinning mills developed around Burscough, which were later replaced by steam-powered flour mills (Farrer and Brownbill 1966, 258). In the mid-nineteenth century, the Manchester and Southport railway line was constructed, further improving the communication networks in the Burscough area. The railway station at New Lane (Site **15**), within the study area, was built in 1855.

3.3.10 The most dramatic modification of the land within the study area was associated with the construction, and subsequent expansion, of the waste water treatment works in the early twentieth century. This treatment facility was shown as a very small scale plant on the OS map of 1908 and had expanded to around half of its current size by the time an aerial photograph was taken in 1945 (Plate 1). This photograph shows cropmarks in the area that is now occupied by the western part of the treatment works. These include several linear features that may represent early field boundaries, as well as part of a sub-semicircular curvilinear feature of uncertain date and function.

3.4 MAP REGRESSION ANALYSIS

3.4.1 Several historic cartographic sources were consulted in order to trace the physical development of the study area. Although there were several maps produced of this area during the seventeenth century, and even as early as 1598 with the map from the Harleian manuscripts (Coney and Whittaker 2005), they all show a similar degree of detail to that presented on Speed's map of 1610 (Fig 3). This depicted 'Marton Mere' as a large lake with three islands, which emptied eastwards into the River Douglas at Rufford, which then ran northwards into the Ribble estuary. Scarisbrick (Scarbrik) and Martin (Marton) Halls were depicted to the south of the lake but little other detail was shown. Leigh's map of 1700 (Fig 4) and Bowen's map of 1745 (Fig 5) record the area in similar detain to that of Speed, but following the initial reduction of the lake area by drainage works that had been initiated in 1694.

3.4.2 The first map to show the area in detail was Yates' map of 1786 (Fig 6). This shows the greatly reduced overall area of Martin Mere and states that it is 'dry in the summer months'. This map depicted the course of the Leeds and Liverpool canal, this stretch of which had been completed by 1780, and also showed for the first time Marsh Moss Lane, New Lane, and the farm access roads and buildings in the location occupied by the present day Wood End Farm. Martin Hall is shown to the south of the canal. The map also depicted a stream or drainage channel running in a roughly west-north-west to east-south-east alignment that corresponds with the current drainage ditch that runs through the eastern part of the study area (Site **13**). A stand of trees was shown in the south-eastern part of the study area.

3.4.3 Greenwood's map of 1818 (Fig 7) depicted similar detail to that shown on Yates' map but showed further extensions of the Wood End Farm access roads (Site **12**) and neglected to depict Martin Hall and the previously mentioned drainage channel. This detail was again reproduced on Hennet's map of 1830 (Fig 8), however further buildings were shown in the north-east of the study area, north of Wood End Farm.

3.4.4 The Ordnance Survey map of 1848 (Fig 9) showed the area in greater detail than the previous maps, at a scale of six inches to one mile. The pattern of access roads, associated with Wood End Farm, with a further well shown with greater accuracy than before, and the buildings shown on the map appear to correspond to the current buildings at the farm. A well was also depicted to the west of Wood End Farm and another one (Site **18**) was shown to the north of Marsh Moss House. New House Farm (Site **16**) was also depicted on the map. The extensive pattern of field systems suggests that by 1848 the whole of the study area was situated within farmland interspersed with ponds. An area marked with the annotations 'Mere Hey Covert' and 'Furze' was shown in the north-west of the study area. Ponds were depicted in the area of 'Battle Holmes', which would later be corrupted to 'Batloom'.

3.4.5 The Ordnance Survey map of 1893 (Fig 10) gives greater detail than that of 1848, with a scale of 25 inches to one mile. The most dramatic modification was the addition of the Manchester and Southport railway line, which runs west-north-west to east-south-east through the centre of the study area. The wells at Wood End House and Marsh Moss House were not depicted on this map and the areas marked as 'Mere Hey Covert' and 'Furze' were depicted as empty fields on this map. The ponds were once more depicted in the area now known as 'Batlooms', which was shown as 'Battle Holmes' on the 1848 map.

3.4.6 The Ordnance Survey map of 1908 (Fig 11) was the first map to depict the 'sewage works' on the site of the current Burscough Wastewater Treatment Works. This was the only major addition following the 1890 map and it showed six structures, including a filter bed and a long linear feature, which appeared to be a pipe or a channel and ran from north-west to south-east. Several manholes were also marked on the map.

3.4.7 The Ordnance Survey map of 1928 (Fig 12) showed an enlargement of the sewage works, with larger settling tanks and filter beds than those depicted on the 1908 map. Tracks, or paths, were depicted around the edges of the field to the west of the main sewage works area. The Batloom ponds were once again depicted on this map and little change is evident in the layout of the field systems from those depicted on the 1908 map. This map depicted a small square structure in the western part of the site that appears to correspond with the stretch of walling observed during the site visit (Site **4**). The function of this structure is not clear, however, it appears to lie within the area of the railway cordon.

4. SITE VISIT

4.1 INTRODUCTION

4.1.1 A site visit was made on 3rd April 2007. This comprised a visual inspection of the site by walkover survey and the compilation of a photographic record of the proposed development area. The extent of each of the four areas that would be affected by the development was examined individually. Area 1 comprised approximately two thirds of an agricultural field, while Areas 2 and 4 corresponded to well defined fields that were delimited by ditches, fences, and other obvious landscape features, such as a farm track and substantial raised ponds. Area 3 included part of the current wastewater treatment working area, which is enclosed by wire fencing.

4.2 RESULTS

4.2.1 Area 1 was situated in the south-eastern part of the site and occupied the western portion of a well defined field that was bounded by deep irrigation channels to the northern and western sides, and a post and wire-mesh fence along the southern side. The irrigation channels measured around 5m wide and 3m deep and were depicted on the first edition OS mapping of 1848. The east/west orientated section of ditch, and the portion of ditching that led northwards from the western end of this channel (Site **13**), were also shown on Yates' map of 1786. They were free flowing with light tree and shrub growth along the edges of the cuttings (Plate 2). These ditches drained the land northwards towards the wetland area associated with the former lake at Martin Mere, which was, in turn, drained into the River Douglas by water courses and channels running through Rufford. Although the depth of the ditches was substantial, there was very little evidence for associated banking, which is common on the Fylde coast. Even allowing for the effects of sustained natural erosion and plough damage, it must be assumed that the lack of banking is indicative of either the removal of the excavated soil from the area or the use of some of this soil to elevate the surrounding land from the ever-proximate water table. The field showed clear evidence of sharply contoured ridge and furrow, presumably a result of recent agricultural activity, but had become covered with grass and weeds, which precluded an examination of the plough soil for artefactual assemblages (Plate 3). A narrow causeway, over a modern concrete-piped culvert, in the north-eastern corner allowed access to Area 2.

4.2.2 Area 2 comprised a grassed field in the north-western part of the site that was bounded by the previously mentioned irrigation channels (Site **13**) to the south and west and by a large raised pond system to the east. The northern limit of the proposed development corresponded to an east/west track that was depicted, cartographically, by Greenwood as early as 1818. This area was again grass and weed covered and, therefore, a field-walking examination of the plough soil was not possible (Plate 4). The farm track (Site **12**) along the northern edge of the area was visible on the surface as a grassed, use-worn, set of tyre ruts (Plate 4, right hand side of photograph). However, a deep, sub-square, trench excavation that was open at the time of the visit had revealed *in*

situ stone sett road fabric that had once formed the upper surface of the road but was now overlain by up to 0.30m of topsoil (Plate 1).

4.2.3 Area 3 consisted mainly of a section of the previously described north-north-west to south-south-east aligned irrigation ditch (Plate 5). Part of this area also included a standing building, associated with the water treatment works, and other areas occupied by modern surfaces and structural elements that were components of this facility.

4.2.4 Area 4 was the largest of the four areas and occupied a trapezoidal field to the west of the treatment works (Plate 6). This field was bounded to the south by the Wigan to Southport railway line embankment (Plate 7), and to the west by a modern post and wire fence that enclosed the faint remains of a silted stream or drainage channel that ran north to south. The northern extent was bounded by a modern post and wire fence. This field had clearly been ploughed during the previous year but had become obscured by grass and weeds so that, once more, the effective examination of the plough soil for artefactual remains was not possible. A low, dry stone, wall (Site **4**) measuring 0.35m high and 0.15m wide and comprising a single row of squared stones, two courses high, was visible in the south-western corner of the field (Plate 8). This was obscured by shrubs, however, and it was not possible to ascertain the relationship between this feature and the railway embankment or to ascribe a function to the wall. This feature was first depicted on the Ordnance Survey map of 1928.

5. SIGNIFICANCE OF THE REMAINS

5.1 INTRODUCTION

5.1.1 In total, 19 sites were identified during the desk-based assessment. 15 of these had been previously recorded in the Lancashire HER and 4 additional sites (Sites **4**, **12**, **13**, and **19**) were identified through the examination of aerial photography, cartographic analysis, and the site inspection (Section 4). The results are summarised by period in Table 1 below:

Period	**No of Sites**	**Sites**
Prehistoric	5	Martin Mere flint findspot (Site **1**), Near Disposal Works flint findspot (Site **11**), New Lane flint findspot (Site **17**), Shirdley Hill Sands flint findspot (Site **2**), Batloom flint findspot (Site **10**),
Romano-British	0	-
Early Medieval	0	-
Late Medieval	0	
Post-medieval	8	New Lane (Site **15**), New House Farm (Site **16**), Woodend Farm (Site **14**), Marsh Moss (Site **18**), Batloom (Site **7**), Stone Wall (Site **4**), Road (Site **12**), Drainage Channel (Site **13**)
Modern	0	
Unknown	6	Bank Top Farm (Site **5**), Langley's Farm and Derby Farm (Site **3**), Crop Marks (Site **9**), Langley's Brook (Site **8**), Langley's Brook (Site **6**), Crop Marks (Site **19**)

Table 2: Number of Sites by Period

5.1.2 There are no Scheduled Monuments or listed buildings within the study area.

5.2 CRITERIA

5.2.1 The methodology that will be used to assess the archaeological significance of sites is 'Secretary of State's criteria for scheduling ancient monuments', which is included as Annex 4 of Planning Policy Guidance 16 (Department of the Environment 1990). The sites listed in the gazetteer (*Appendix 2*) that were considered likely to be affected were each considered according to these criteria.

5.2.2 ***Period***: Sites **1**, **11**, **17**, **2**, and **10** all consist of find-spots of worked flint and chert that are broadly dated to the prehistoric period. Any remains of Mesolithic or Neolithic date would be important in informing our understanding of the transition to farming in south-west Lancashire (Cowell

1996, 31). The drainage channel (Site **13**), depicted on Yates' map of 1786, is clearly related to one of the phases of wetland drainage in this area, which increased in scale significantly from 1694 onwards. This sequence of drainage events dramatically altered the character of the surrounding area and is of local significance. As these works constituted the largest lake draining endeavour in England, and probably the British Isles, this event is also of national importance. It is important to note that this channel flows towards the former lake and, therefore, drains the land into the wetland area, rather than acting as an outlet for the lake water.

5.2.3 ***Rarity***: Mesolithic sites, which could be represented at Sites **1**, **11**, **17**, **2**, and **10**, are well represented in north-west England in association with a broad range of associated environmental and archaeological evidence (Cowell 1996, 30). This is not the case nationally and, as such, Mesolithic sites in the north-west are of national importance. The evidence from the sites within the study area has not been closely dated, however, and, if representative of Neolithic or Bronze Age activity, these sites could be rare examples in the local area. Although the draining of Martin Mere was a significant event, drainage ditches, such as Site **13**, are predictably common in the area.

5.2.4 ***Documentation***: Sites **16**, **18**, **14**, and **7** were depicted on the Ordnance Survey first edition map of 1848. The Batloom ponds (Site **7**) were also depicted on the tithe map of 1839, and New Lane railway station (Site **15**) was shown on the Ordnance Survey map of 1893. The road (Site **12**) was first depicted on Greenwood's map of 1818, and was shown on every subsequent map. A small stone structure (Site **4**) was first shown on the Ordnance Survey map of 1928. Sites **3**, **6**, **8**, **19**, and **9** are known only from aerial photographs. The archaeological evaluation at Bank Top Farm is documented in a client report (OA North 2006).

5.2.5 ***Group Value***: although not closely dated, Sites **1**, **2**, **10**, **11**, and **17** may represent similar events relating to the exploitation of the wetlands of Martin Mere during the prehistoric period. These sites could, however, cover a very long time-scale within the prehistoric period and may only be related by the repeated recognition of the environmental conditions that made this area suitable for certain types of human activity.

5.2.6 ***Survival/Condition***: Sites **1**, **2**, **10**, **11**, and **17** were observed as flint and chert scatters and it is not known whether any associated finds survive *in situ*. The features associated with metalworking at Bank Top Farm (Site **5**) were excavated prior to the construction of an irrigation lake on the site. The cropmarks at Site **19** (Plate 9), indicative of sub-surface remains, are situated under the western part of the current wastewater treatment works, although the likelihood of their survival is dependant upon the depths of the tanks that are situated in this area. The current condition of the other cropmarks shown on aerial photographs (Sites **3**, **6**, **8**, and **9**) is unknown, however, their location amongst agricultural land might suggest some degree of erosion by ploughing. New Lane railway station (Site **15**) was built in 1855 and currently remains in place. Whether there have been modifications to the original building is not known. The stone wall (Site **4**) survives as two sides of a two-course

rectangular structure that is now party subsumed by the railway embankment and shrub growth.

5.2.7 The farm access road (Site **12**) appeared, on the surface, as a grassed track defined by recent wheel-ruts. Beneath the topsoil, an excavated pit that was open during the site visit revealed stone setts that represented an earlier road surface (Plate 1). The drainage channel (Site **13**) survives as a free-flowing open ditch with steep, sharply defined sides that are subject to shrub and tree growth (Plates 2 and 5). The ponds at Batloom (Site **7**) are not shown on the current Ordnance Survey map and it is unclear whether any trace survives on the ground. A house currently stands where New House Farm (Site **16**) was depicted on the Ordnance Survey map of 1848, although no sign of the associated well is shown on the current mapping. It is not clear whether the current house has been modified or represents the original building. The well at Marsh Moss House (Site **18**) was shown on the Ordnance Survey map of 1848 but is not shown on the current mapping. It is unclear whether or not any remains of this feature survive. The buildings at Wood End Farm (Site **14**) survive to the present day, however no trace of the well shown on the Ordnance Survey map of 1848 was visible during the site visit. The possibility of sub-surface structural evidence remains.

5.2.8 ***Fragility/Vulnerability***: all of the sites relating to flint/chert scatters (Sites **1**, **2**, **10**, **11**, and **17**) and those identified as crop marks by aerial photography (Sites **3**, **6**, **8**, and **9**), excluding Site **19**, are situated in agricultural areas and are, therefore, exposed to potential damage by ploughing. The vital role of the drainage channel (Site **13**) ensures that it will be retained as part of the new development proposal, however, it will be subject to modification. The road (Site **12**), at the northern end of the proposed development in Area 2, lies just outside the proposed development but could be affected by associated works. Pits that had been dug prior to the site visit had encroached upon the northern edge of the road and revealed the sub-surface remains of an earlier road surface. Without the impact of intrusive works, the remains of the road are unlikely to be detrimentally affected by continued use as an access track. The drystone construction and diminutive size of the structure at Site **4** means that it would be vulnerable to destruction from works in that area of the site.

5.2.9 ***Diversity***: the combination of the wetland environment, and associated peat deposits, with sites representing human activity in the past creates an increased likelihood of the deposition and survival of remains of archaeological interest, including organic remains. Associated palaeo-environmental evidence is also likely to be recoverable from this area due to the high rate of organic preservation.

5.2.10 ***Potential***: the combination of the wetland environment, and associated peat deposits, with sites that represent human activity in the past creates an increased likelihood of the survival of remains of archaeological interest, including organic remains, in this area. As a focus of activity throughout the prehistoric and historic periods, and having produced artefactual and ecofactual remains from various locations in the surrounding area, the fringes of Martin Mere retain the potential to produce further evidence of archaeological significance. As the study area represents part of the southern

fringe of the former lake and wetland of Martin Mere, there is the potential for evidence relating to both dry-land activity, such as early agriculture and hunting practices, as well as wetland exploitation. Wetland exploitation could include fishing on the lake, as has been attested by finds of dugout canoes elsewhere in the area (Middleton *et al* forthcoming), or the ritualistic use of the area for votive depositions, which may be attested by finds of Bronze Age metalwork in the area (Middleton 1996, 45). Although now subsumed within the treatment works, the cropmarks at Site **19** provide evidence of land use within the study area that predates the building of the railway in the 1850's and the pattern of field systems as depicted on the Ordnance survey map of 1848.

5.3 SIGNIFICANCE

5.3.1 Using the above criteria, and particularly period, rarity, diversity, and potential, the study area may contain non-statutory remains of a high local, regional, and national significance.

5.3.2 The flint and chert find spots (Sites **1**, **11**, **17**, **2**, and **10**) have the potential to inform archaeological study in Lancashire, with regard to refining the chronologies, typologies, and lithic procurement models associated with stone tool making in the prehistoric periods (Cowell 1996, 31). In addition to the data that might be retrieved from artefactual analysis, any associated sub-surface remains could substantially augment our understanding of site-types that have previously been characterised according to lithic assemblages alone (Middleton 1996, 55). Remains of Mesolithic or Neolithic date could be important in helping us to understand the development of early farming in the region (Cowell 1996, 31). The location of the study area, at the fringes of a former wetland and lake, not only provides potential as a possible setting for past activity, both ritual and secular, but also increases the likelihood of the preservation of material remains. This peat-rich environment also provides the opportunity to retrieve environmental data relating to the past landscape and the human impact upon it.

6. IMPACT OF DEVELOPMENT

6.1 IMPACT

6.1.1 In broad terms, the archaeological impact of any development of the study area can be assessed as being either direct or indirect and be viewed as either positive or negative. A direct impact would involve an alteration to the physical condition of the site, whilst an indirect impact would involve an alteration to the setting of a site, and may again be either positive or negative.

6.2 SUB-SURFACE REMAINS

6.2.1 Redevelopment of the site may have a direct negative impact on buried remains in the study area, involving their damage or destruction as a result of ground-disturbance. In particular, such works within Areas 1, 2 and 4 could disturb previously undetected areas of archaeological interest, especially given their proximity to flint and chert finds at Sites **2**, **11**, and **17**. Fieldwalking, in order to identify any artefactual assemblages within the topsoil, would be an appropriate strategy of further works, but this was precluded by the grassed nature of the fields. It was recommended that a further programme of strip and record should be implemented, subject to approval by LCAS.

6.2.2 The proposed development will also affect three specific sites (sites **4**, **12** and **13**) identified within the study area. These are shown on Figure 2, and summarised in Table 3 below:

Site No.	Type	Period	Impact	Recommendations
4	Structure	Post-medieval	Unclear	No further work
12	Road	Post-medieval	Unclear	Watching brief
13	Drainage Channel	Post-medieval	This site will be affected by the development	No further work

Table 3: Sites likely to be affected by the development

6.2.3 Site **4** comprises very modern brickwork, and as such, no further work was deemed necessary. Similarly, in the case of Site **13**, topographic survey was not thought to be essential as the channel was not going to be destroyed. Moreover, unless a cross-section could have been revealed during the ground works, which seemed unlikely, it was felt that archaeological recording would not offer any useful information.

7. STRIP AND RECORD EXCAVATION

7.1 INTRODUCTION

7.1.1 Areas 1 and 2 (Fig 13) were subject to strip and record excavations during July 2007, as detailed in the Methodology (*Section 2*). Strip and record excavations in Area 1 were conducted on the two access tracks excavated by Cheetham Hill Construction (CHC) down to either the depth required by CHC or natural sand. In Area 2 the strip and record excavations were completed by OA North prior to work by CHC, removing the soil horizon in its entirety (Plate 2), covering majority of the field with the exception of the vole exclusion zones. In addition, two test pits were excavated at the northern end of Area 2 to investigate reports from Wood End Farm that they had heavily disturbed the northern 14m of the field across its width. Detailed accounts of these test pits are given in *Appendix 4*. The two test pits revealed layers of mixed soil deposits and plastic down to the depth of the natural sub-strata, ***8***, which in this location comprised deposits of wind-blown sand overlying clay till or boulder clay (Plates 2 and 3). The northern 14m of the field was, therefore, excluded from the strip and record excavations. Below is given a summary account to the archaeological features and finds located during the works. Detailed descriptions of each context are provided in *Appendix 5*.

7.2 RESULTS

7.2.1 ***Area 1:*** two access tracks constructed to the new compound were subject to strip and record excavations. For the eastern access track 0.50m of topsoil, ***27***, was removed from the area to reveal natural sand, ***28*** (Fig 13; Plate 4). In the southern 12m of the area part of the soil horizon was left *in-situ*, as the surface of the natural sand lay at a greater depth. Although a number of modern features were identified, dated by their steel, plastic and polystyrene content (Fig 13), no archaeologically significant features or horizons were encountered.

7.2.2 The excavation of the western access track removed 0.50m of topsoil, ***27***, from the area, but a significant thickness of soil was left *in-situ*, (Fig 13; Plate 5). No natural sand or archaeologically deposits were encountered in this second area.

7.2.3 ***Area 2:*** following the removal of the topsoil (***5***) and subsoil (***6***), three archaeological features were encountered within the natural (***8***), during the strip and record excavations completed in Area 2. ***SG26*** (Stratagraphic Group ***26***) comprised a drainage ditch, aligned on a north/south orientation. Although no dating evidence was recovered from this feature, it was aligned parallel to the current drainage system (Fig 13 and 14; Plate 6).

7.2.4 Two large sub-circular pits were located, ***2*** and ***21***, both only partially within the excavation area (Fig 13). In each of these a sondage was excavated by machine. The first of these had a radius of at least 12m, measured 0.9m in depth, and was located in the north-western corner of the excavation area (Plate 7). This feature rapidly filled with water, but two deposits were

identified. The lower 0.55m, ***25***, comprised sediment eroded from the surrounding topsoils and contained post-medieval pottery. The upper 0.35m comprised a clay deposit, ***24***, which had been utilised to backfill, and possibly cap, the feature.

7.2.5 The second of these pits comprised a similar feature in the south-western corner of the excavation area, with a radius of at least 11m and measuring 1.1+m deep. At this depth excavation ceased for health and safety reasons. As with the previous pond, this feature rapidly became waterlogged. Four deposits were identified within the pond. The lowest fill located, deposit ***20***, measured at least 0.3m thick below deposit ***19***, which measured at least 0.84m thick (Fig 4; Plate 8). Both of these deposits comprise sediment eroded from surrounding topsoils mixed with a high organic content, formed in waterlogged conditions. The lower of these two deposits contained post-medieval pottery. Above these layers, deposits ***17*** and ***18*** measured 0.28m and 0.15m thick respectively (Fig 4), and represent the deliberate backfilling of the feature.

7.2.6 Some areas of peat, ***9***, were located within the natural undulations of the wind-blown sands, ***8***, below the soil horizon, layers ***5*** and ***6***, although such peat typically measured less than 0.30m thick (Fig 13). The peat was at its thickest in the north-eastern corner of the site (Fig 16).

8. WATCHING BRIEF

8.1 INTRODUCTION

8.1.1 A permanent presence watching brief was maintained during groundworks within Areas 1 and 4. Within Area 1 this included a watching brief during the excavation for a settling tank. In Area 4 this involved a permanent presence during the removal of *c* 0.25m of the soil horizon. Both phases of work were completed in August 2007.

8.2 RESULTS

8.2.1 The results of this monitoring are presented by area in Table 4 below.

Area	Description
1	Excavation of a pit measuring 4.9m by 2.4m, with a 22 ton 360° excavator, aligned on a north/south orientation, for a settling tank. Excavation removed 0.8m of soil horizon, ***27***, to reveal the underlying natural sand, ***28*** . A field drain cut across the trench on a north/south orientation, but no archaeologically significant deposits or horizons were encountered (Plate 8).
4	*c* 0.25m of topsoil was removed from the area with a 7 ton bulldozer, leaving a protective layer of soil horizon, ***29***, over the natural sand and any potential archaeological features (Plates 19 and 20). A number of post-medieval and modern finds were recovered during the watching brief. No archaeologically significant deposits or horizons were encountered

Table 4: Results of Watching Brief by Area

9. FINDS

9.1 INTRODUCTION

9.1.1 In total, 91 fragments of artefacts were recovered from a variety of deposits within Area 2, although a large proportion (70%) derived from topsoil (***1***). The material was dominated by 46 sherds of broken pottery representing half of the assemblage. Other material included: glass (11); clay tobacco pipe (11); worked flint (5); oyster shell (2); an iron nail; lead; and fragments of industrial residue. All of which were post-medieval in date. The full finds catalogue is shown in *Appendix 6*.

9.2 POTTERY

9.2.1 The assemblage as a whole represents a typical cross-section of post-medieval and more recent domestic pottery types. A large amount of the pottery (41) was recovered from topsoil ***1***, although smaller amounts were collected from silt deposits ***11*** (1), ***15*** (3) and ***19*** (1) within Area 2. The assemblage was dominated by numerous fragments of nineteenth and twentieth century tablewares, such as glazed white earthenware transfer-printed plates, a porcelain cup, and industrial slipware mugs and teapots. There was, however, some indication of eighteenth century activity represented by several light brown and grey stoneware bottles and tin glazes from the topsoil, in addition to a partially reduced lead glazed bowl from silt layer ***15***. The bowl fabric is similar to the type of dark glazed red earthenware forms commonly produced between the seventeenth and nineteenth centuries.

9.3 GLASS

9.3.1 This group largely comprised 10 fragments of green and clear bottles, dating no earlier than the nineteenth century, and a clear bottle stopper dating no earlier than the twentieth century. The fragments were retrieved from disturbed deposits across the site.

9.4 CLAY TOBACCO PIPE

9.4.1 In total, 11 fragments, (two undecorated bowls, and nine stems) were recovered from topsoil ***1***. The stems were generally narrow and medium bored types that may date to the seventeenth of eighteenth century. The dimensions of the bowls suggest a type that may have been manufactured in Liverpool, Manchester or Bristol during the eighteenth or nineteenth century.

9.5 FLINT

9.5.1 In total, five possible flakes pertaining to flint cores were recovered from the topsoil and unstratified deposits. Of these, two were blue-white in colour, suggesting that they had either been exposed to heat or affected by frost

shattering. No incidental strike marks were determined which may have enabled tool identification. In light of these factors, the fragments could not be ascribed an approximate date.

9.6 IRON/LEAD/INDUSTRIAL RESIDUE

9.6.1 In total, a round headed nail, a fragment of lead sheet fixing plate and a piece of coke fuel waste was recovered from the topsoil. These could generally be dated no earlier than the nineteenth century.

9.7 CONCLUSION

9.7.1 Although a relatively small finds assemblage was recovered from the evaluation, it provided a good example of the types of finds commonly recovered from post-medieval agricultural sites. The presence of the flint however, suggests that the material may have some significance with known flint scatters in the surrounding area.

10. CONCLUSION

10.1 INTRODUCTION

10.1.1 Three phases of archaeological work were carried out prior to and during the development process. This included a preliminary desk-based assessment, strip and record excavations and an archaeological watching brief. Below is presented the conclusions of each phase of work, with a concluding paragraph outlining recommendations for further work where appropriate.

10.2 DESK-BASED ASSESSMENT

10.2.1 ***Results:*** the desk-based assessment concluded that there was some potential for buried remains of archaeological significance to survive *in-situ* within the development area. As such, in accordance with current planning policy guidance, it was recommended that Areas 1, 2, and 4 should be targeted for archaeological works, based upon the proximity of prehistoric lithic scatters in the surrounding area. Following discussions with Lancashire County Archaeology Service and United Utilities, it was decided that in Area 1 the two access tracks being inserted into the works compound under construction would be subject to strip and record excavations during groundworks completed by Cheetham Hill Construction (CHC) on behalf of United Utilities. In addition, an archaeological watching brief would be conducted on excavations completed by CHC for a settling tank. Area 2 would be subject to strip and record excavations by OA North prior to any and groundworks by CHC. Area 4 would be Subject to an archaeological watching brief during the removal of *c* 0.25m of topsoil. In Area 4 a layer of soil was left *in-situ* to protect any potential archaeological remains from disturbance.

10.3 STRIP AND RECORD EXCAVATION AND WATCHING BRIEF

10.3.1 In accordance with these recommendations, the three areas described above were subject to archaeological investigation or monitoring. During these works three post-medieval features were located in Area 2, and post-medieval finds recovered from the soil horizon of each area. The features included a drainage ditch, ***SG26***, and two backfilled ponds, features ***2*** and ***21***, which would probably have originated as clay extraction pits for either marl or brick making. Both ponds are marked on the 1848 first edition 6 inch Ordnance Survey (OS) map of the area, but are absent on the 1893 second edition 25 inch OS map. The drainage ditch, ***SG26***, does not appear on the earlier OS mapor any subsequent maps, and must therefore have gone out of use and been in-filled prior to 1848.

10.4 RECOMMENDATIONS FOR FURTHER WORK

10.4.1 Following the three phases of archaeological inestigation, no further work is considered necessary prior to or during the current development. Although

three post-medieval features were encountered in Area 2, these have been located and sufficiently characterised during the strip and record excavations.

11. BIBLIOGRAPHY

11.1 PRIMARY SOURCES

Cartographic Sources

Bowen, E, 1745 *Lancashire*

Greenwood, C G, 1818 *A map of the county Palatine of Lancaster*

Hennet, G, 1830 *A map of the county Palatine of Lancaster*

Leigh, C, 1700 *Map of Lancashire*

Ordnance Survey 1848 *Lancashire Sheet 84*, 6" : 1 Mile

Ordnance Survey 1893 *Lancashire Sheet 84.1*, 25" : 1 Mile

Ordnance Survey 1893 *Lancashire Sheet 84.5*, 25" : 1 Mile

Ordnance Survey 1908 *Lancashire Sheet 84.1*, 25" : 1 Mile

Ordnance Survey 1908 *Lancashire Sheet 84.5*, 25" : 1 Mile

Ordnance Survey 1928 *Lancashire Sheet 84.1*, 25" : 1 Mile

Ordnance Survey 1928 *Lancashire Sheet 84.5*, 25" : 1 Mile

Ordnance Survey 1957 *Geological Survey Wigan sheet 84 solid* 1:63,360

Ordnance Survey 1970 *Geological Survey Wigan sheet 84 drift* 1:63,360

Ordnance Survey 1970 *Soil Survey* Lancs1:250,000

Speed, J, 1610 *The countie (sic) Pallatine (sic) of Lancaster described and divided into hundreds*

Yates, W, 1786 *The county Palatine of Lancaster*

Lancashire Historic Environment Record (Preston)

PRN4161 Near Disposal Works, flint scatter

PRN4446 Martin Hall, linear crop mark

Lancashire Records Office (LRO)

LRO 106G/UK.623.10 AUG 45: F/20://541 SQDN (Aerial photograph)

11.2 SECONDARY SOURCES

Ashmore, O, 1969 *The industrial archaeology of Lancashire*, Newton Abbot

Brazendale, D, 2005 *Lancashire's historic halls*, Lancaster

Coney A, and Hale, W, G, 2005 *A History of Martin Mere: Lancashire's Lost Lake*, Liverpool University Press

Coney, A, and Whittaker, A, 2005 Archaeology, placenames and settlement, and traditions of the mere, in A Coney and W G Hale (eds) *A History of Martin Mere: Lancashire's Lost Lake*, Liverpool University Press, 64–97

Countryside Commission, 1998 *Countryside character volume 2: North West*, Northampton

Cowell, R W, 1996 The Upper Palaeolithic and Mesolithic, in R Newman (ed) *The archaeology of Lancashire, present state and future priorities*, Lancaster, 19–34

Cowell, R, 2005 Late prehistoric lowland settlement in North West England, in M Nevell and N Redhead (eds) *Mellor: living on the edge*, Manchester Arch Monograph, **1**, 65–77

Department of the Environment, 1990 *Planning Policy Guidance 16: Archaeology and Planning* (PPG 16)

Duggan, M, 1998 *Ormskirk, the making of a modern market town*, Gloucestershire

English Heritage, 1991 *Management of Archaeological Projects*, 2nd edn, London

Farrer, W, and Brownbill, J (eds), 1966 *The Victoria history of the county of Lancaster*, **3**, London

Haselgrove, C, 1996 The Iron Age, in R Newman (ed) *The Archaeology of Lancashire: Present State and Future Priorities*, Lancaster University Archaeology Unit, 61-74

Hibbert, F A, Switzur, V R, and West, R G, 1971 Radiocarbon dating of Flandrian pollen zones at Red Moss, Lancashire, *Proc Royal Soc London Bull*, **177**, 161–76

Leigh, C, 1700 *The natural history of Lancashire, Cheshire, and The Peak, in Derbyshire*, Oxford

Middleton, R, 1996 The Neolithic and Bronze Age, in R Newman (ed *The Archaeology of Lancashire: Present State and Future Priorities*, Lancaster University Archaeology Unit, 35–60

Middleton, R, Tooley, MJ, Innes, JB, forthcoming *The wetlands of South-West Lancashire*

Mills, D, 1976 The Place Names of Lancashire, Batsford, London

Newman, R M, 1996 The Dark Ages, in R Newman (ed) *The Archaeology of Lancashire: Present State and Future Priorities*, Lancaster University Archaeology Unit, 93–107

Newman, R, 1996 Medieval rural settlement, in R Newman (ed) *The Archaeology of Lancashire: Present State and Future Priorities*, Lancaster University Archaeology Unit, 109–24

OA North 2006, Land at Bank Farm, Martin Lane, Burscough, Lancs, unpubl report

Padfield, H, 1978 *The story of Ormskirk*, Ormskirk

Rosbottom, E, 1987 *Burscough, the story of an agricultural village*, Preston

Turner, R C and Briggs, C S, 1986 The bog burials of Britain and Ireland, in I M Stead, J B Bourke, and D Brothwell (eds) *Lindow Man, the body in the bog*, London, 144–161

Waddell, J, 2000 *The prehistoric archaeology of Ireland*, Bray

12. ILLUSTRATIONS

12.1 LIST OF FIGURES

12.2 LIST OF PLATES

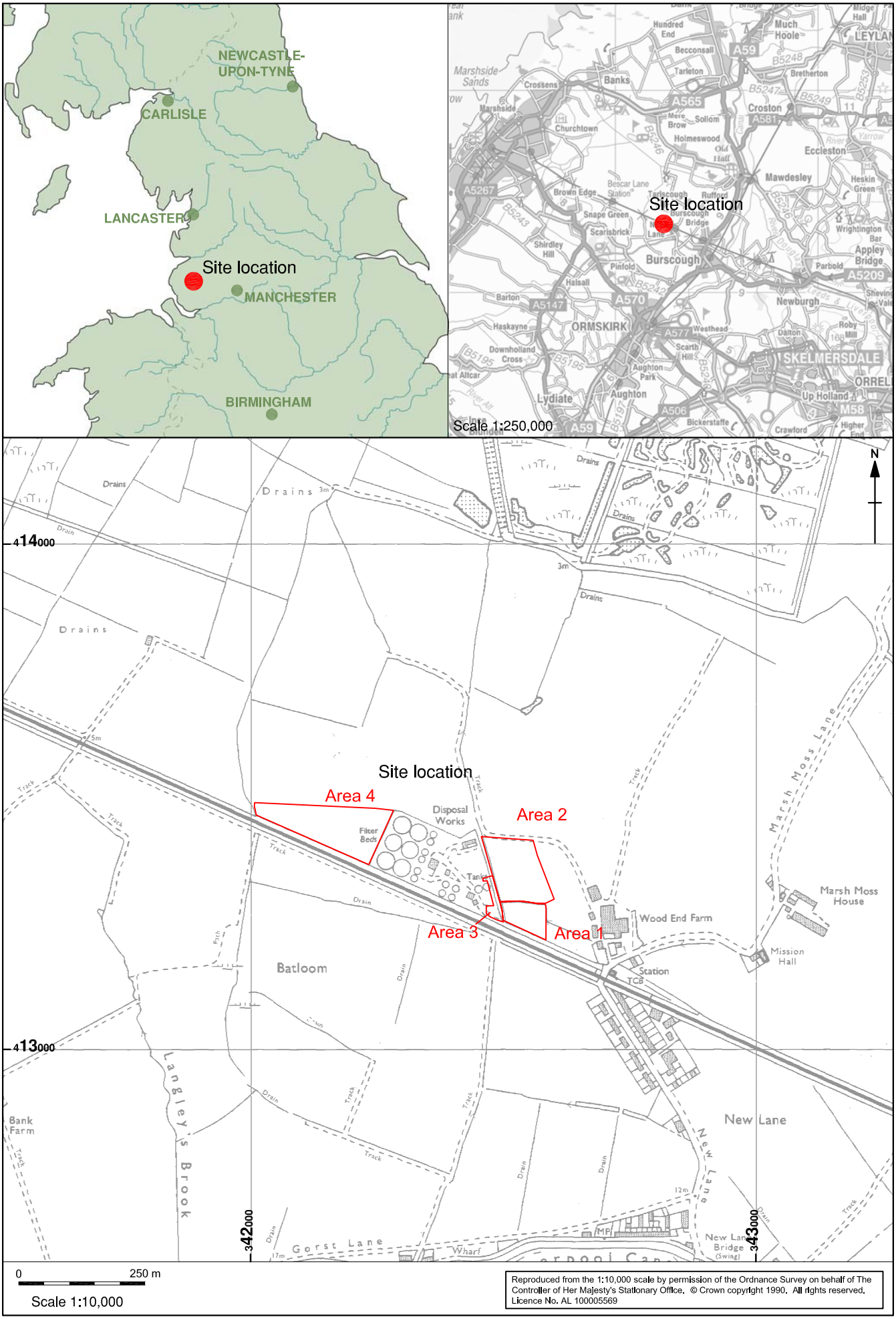

Figure 1: Site Location

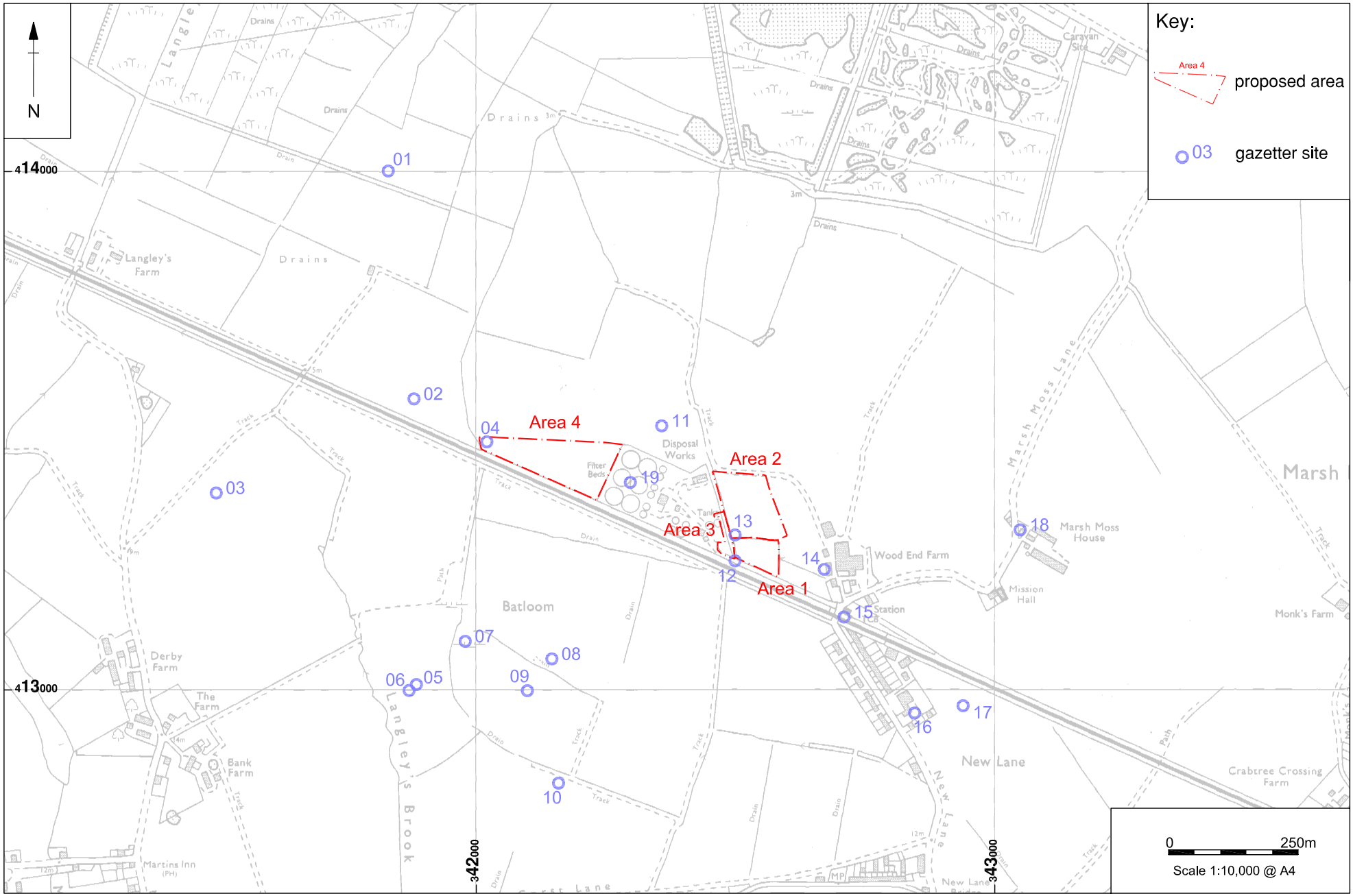

Figure 2: Gazetteer sites plan

Figure 3: Speed's map of 1610

Figure 4: Leigh's map of 1700

Figure 5: Bowen's map of 1745

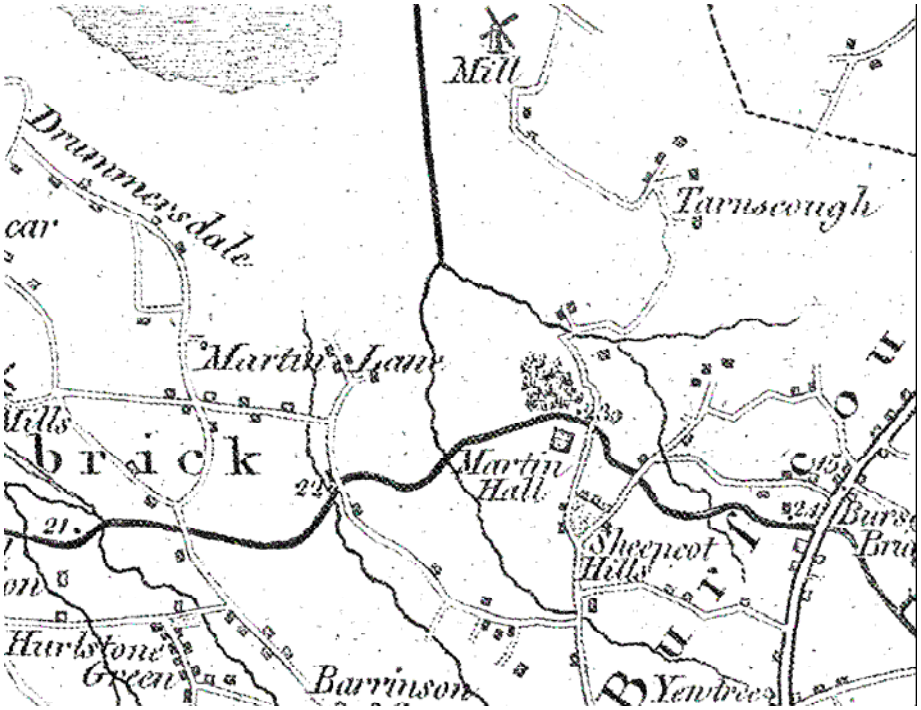

Figure 6: Yates' map of 1786

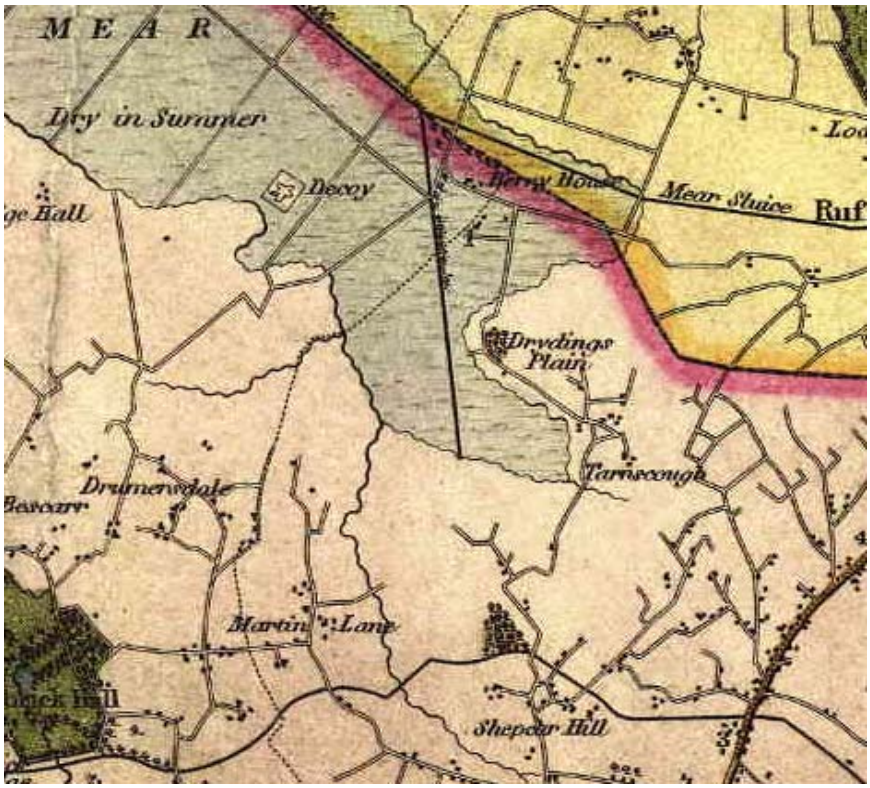

Figure 7: Greenwood's map of 1818

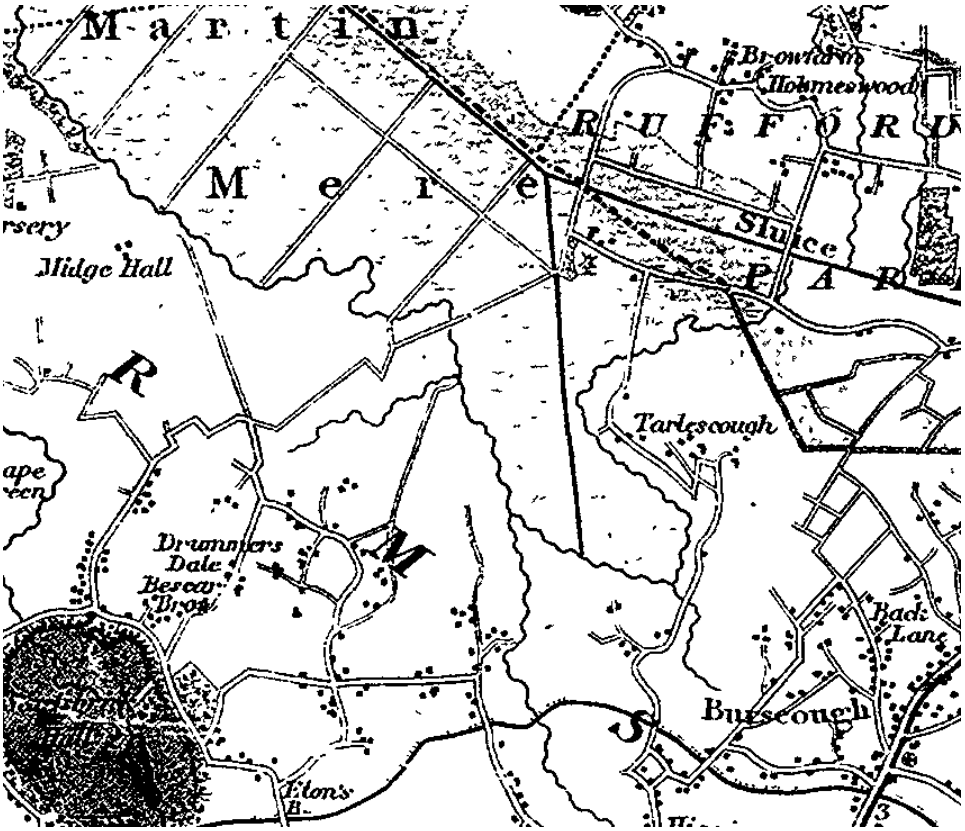

Figure 8: Hennet's map of 1829

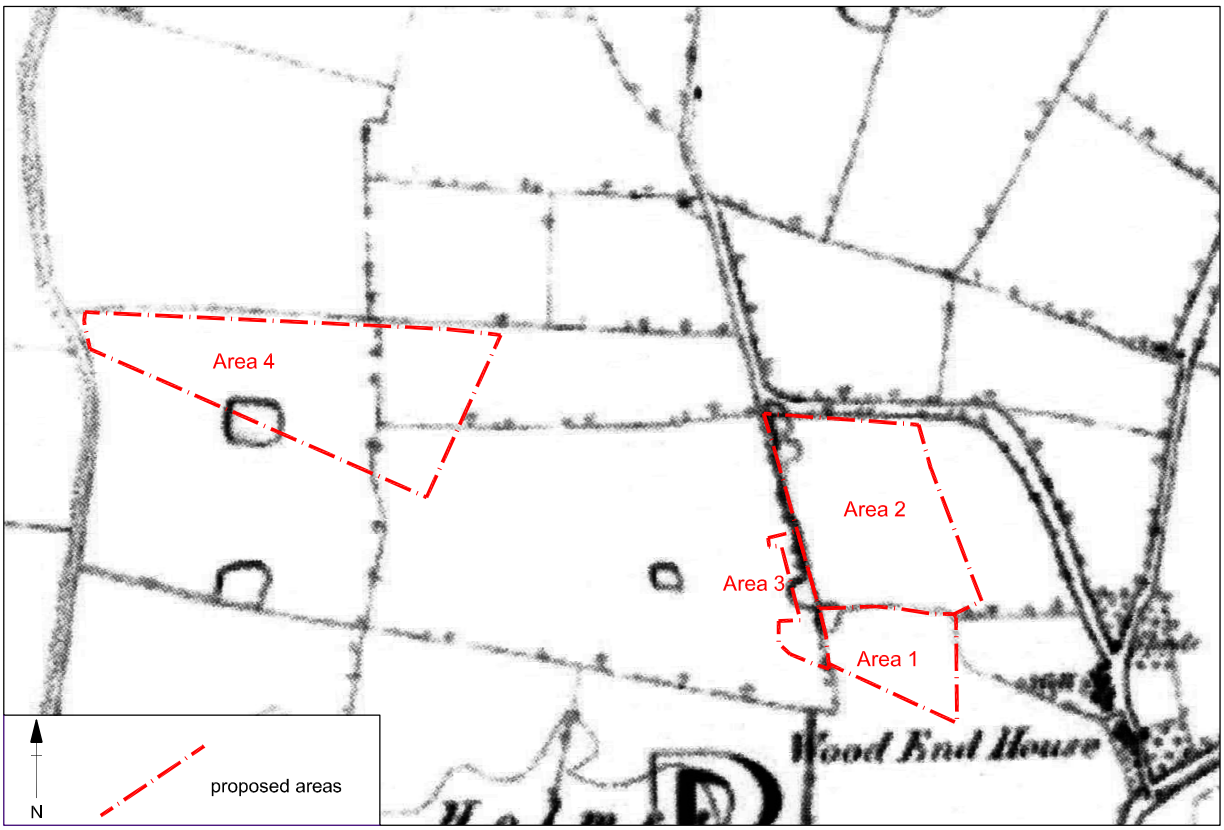

Figure 9: Proposed developmet areas superimposed upon the Ordnance Survey map, 1848

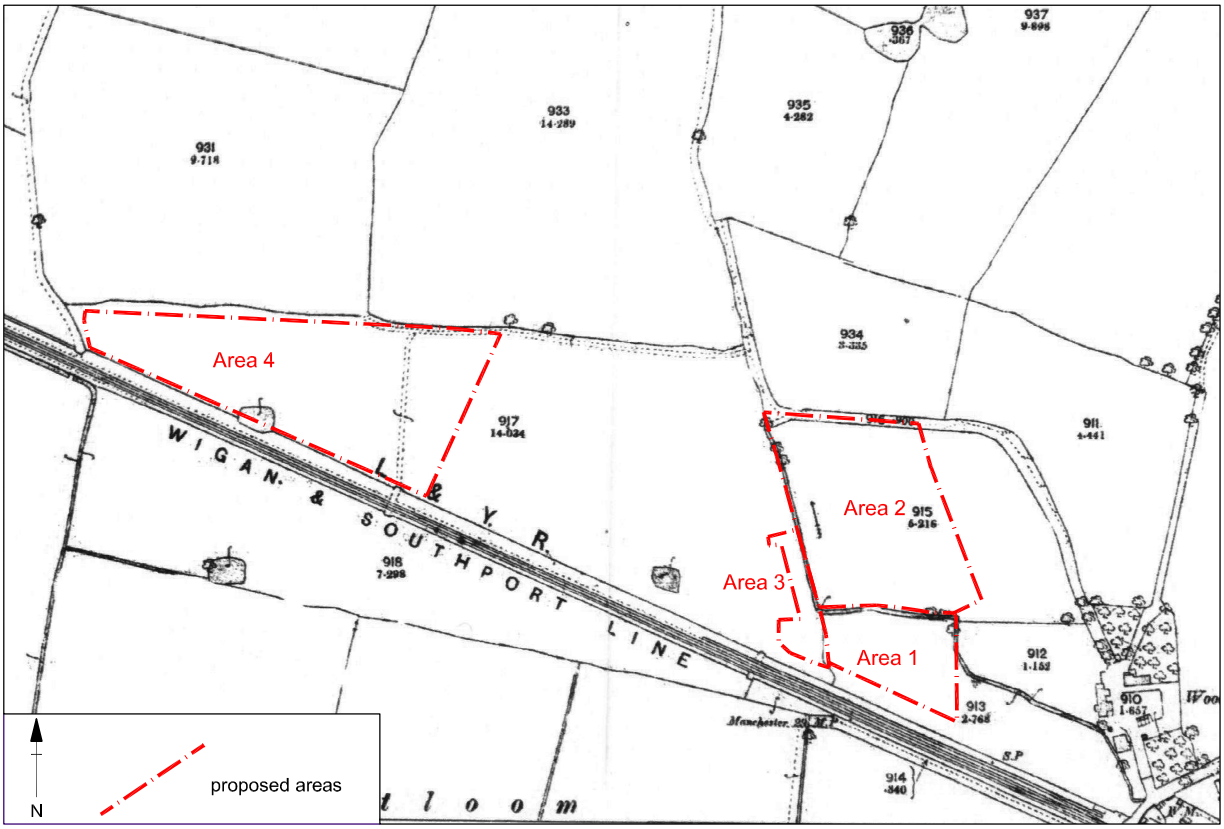

Figure 10: Proposed development areas superimposed upon the Ordnance Survey map, 1890

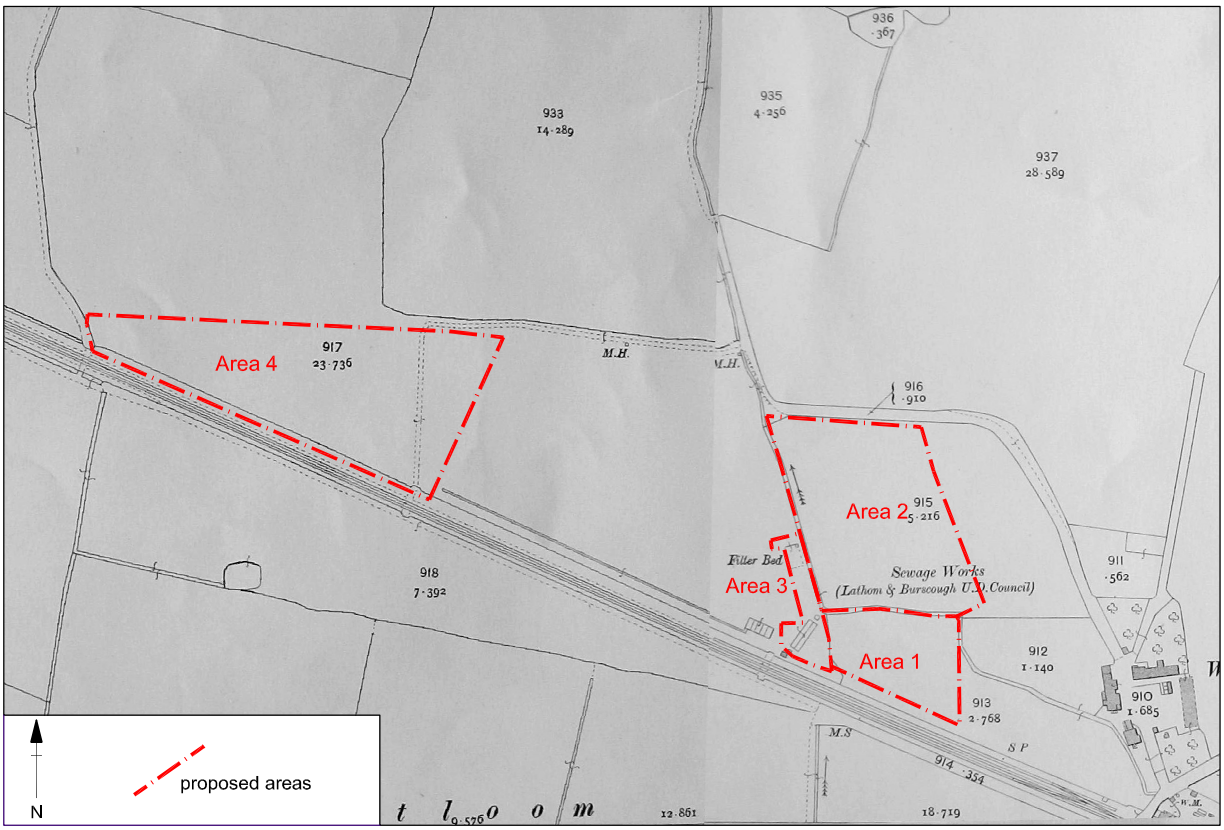

Figure 11: Proposed development areas superimposed upon the Ordnance Survey map, 1908

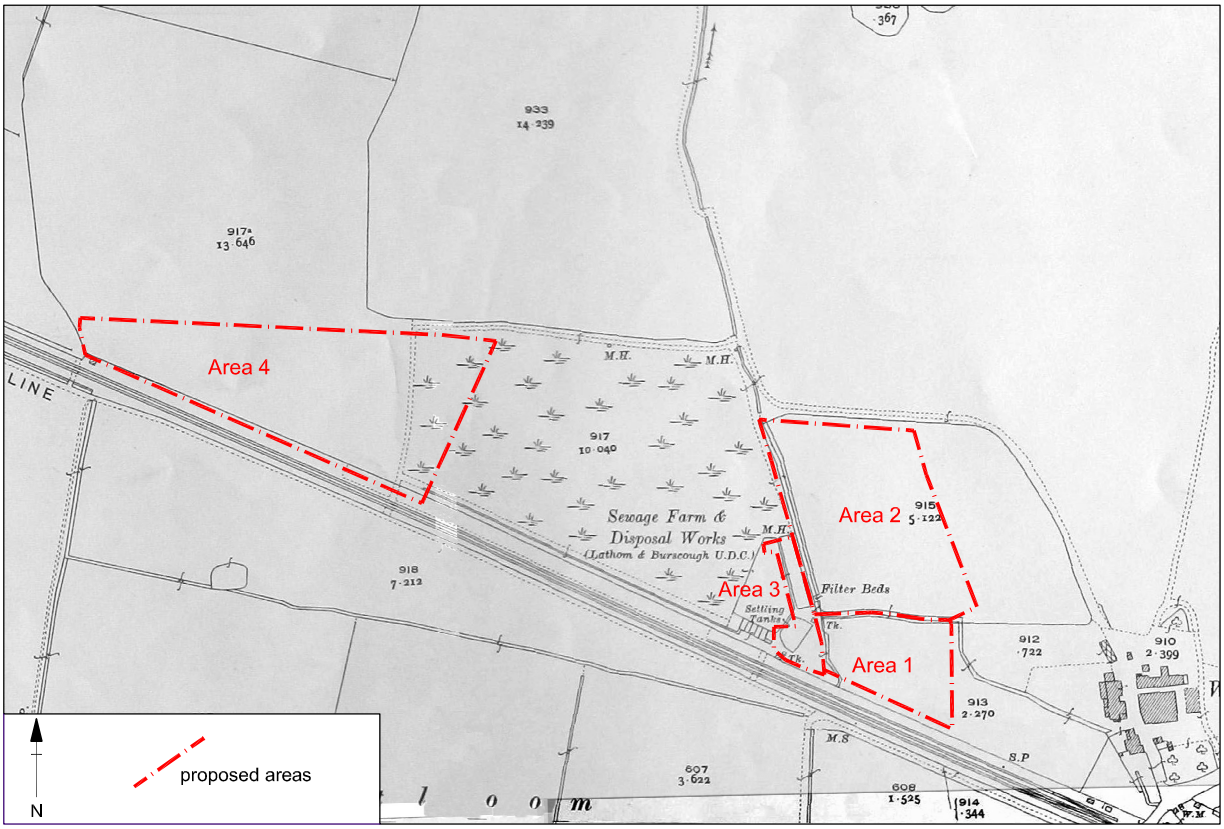

Figure 12: Proposed development areas superimposed upon the Ordnance Survey map, 1928

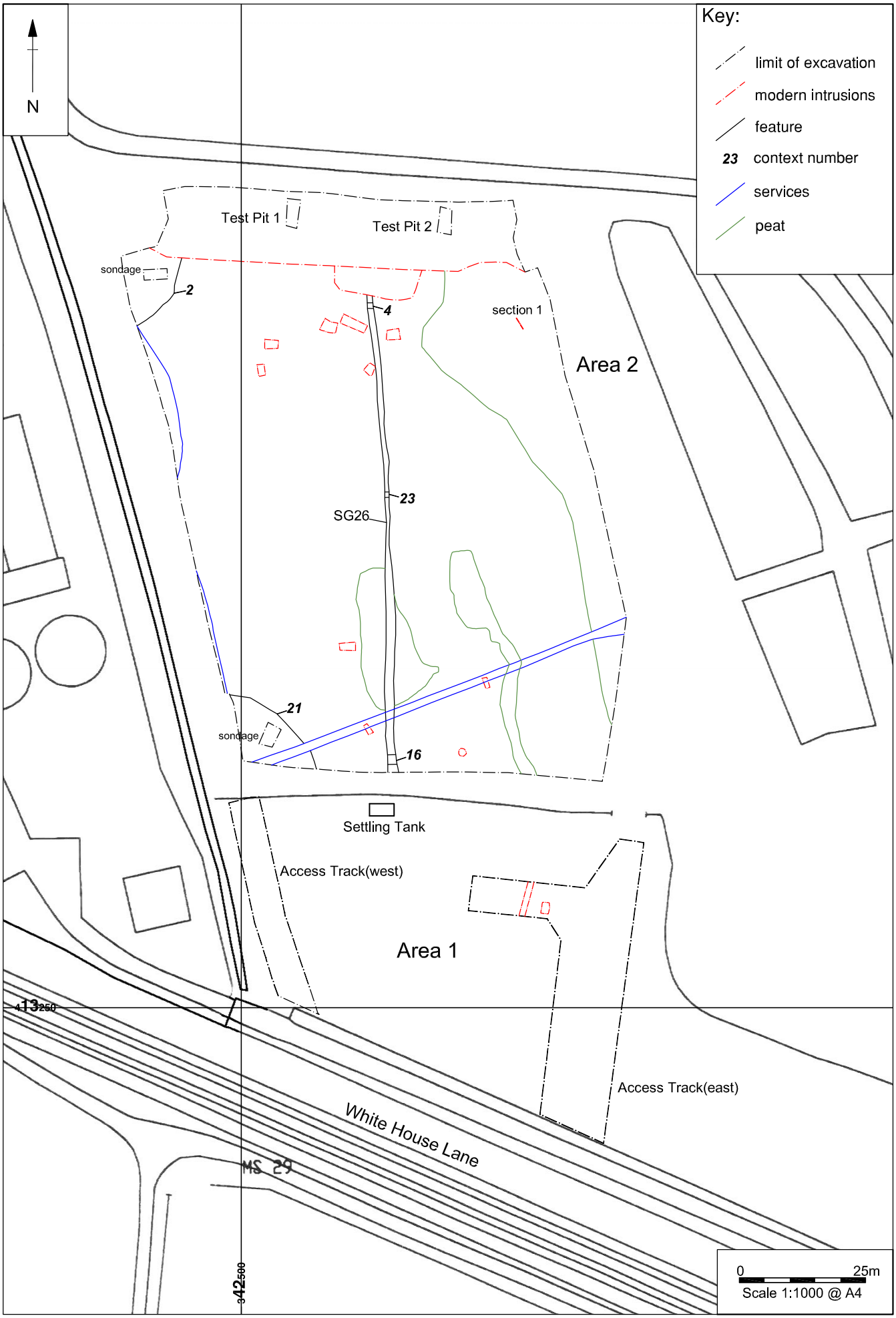

Figure13: Site plan of strip and record areas 1 and 2

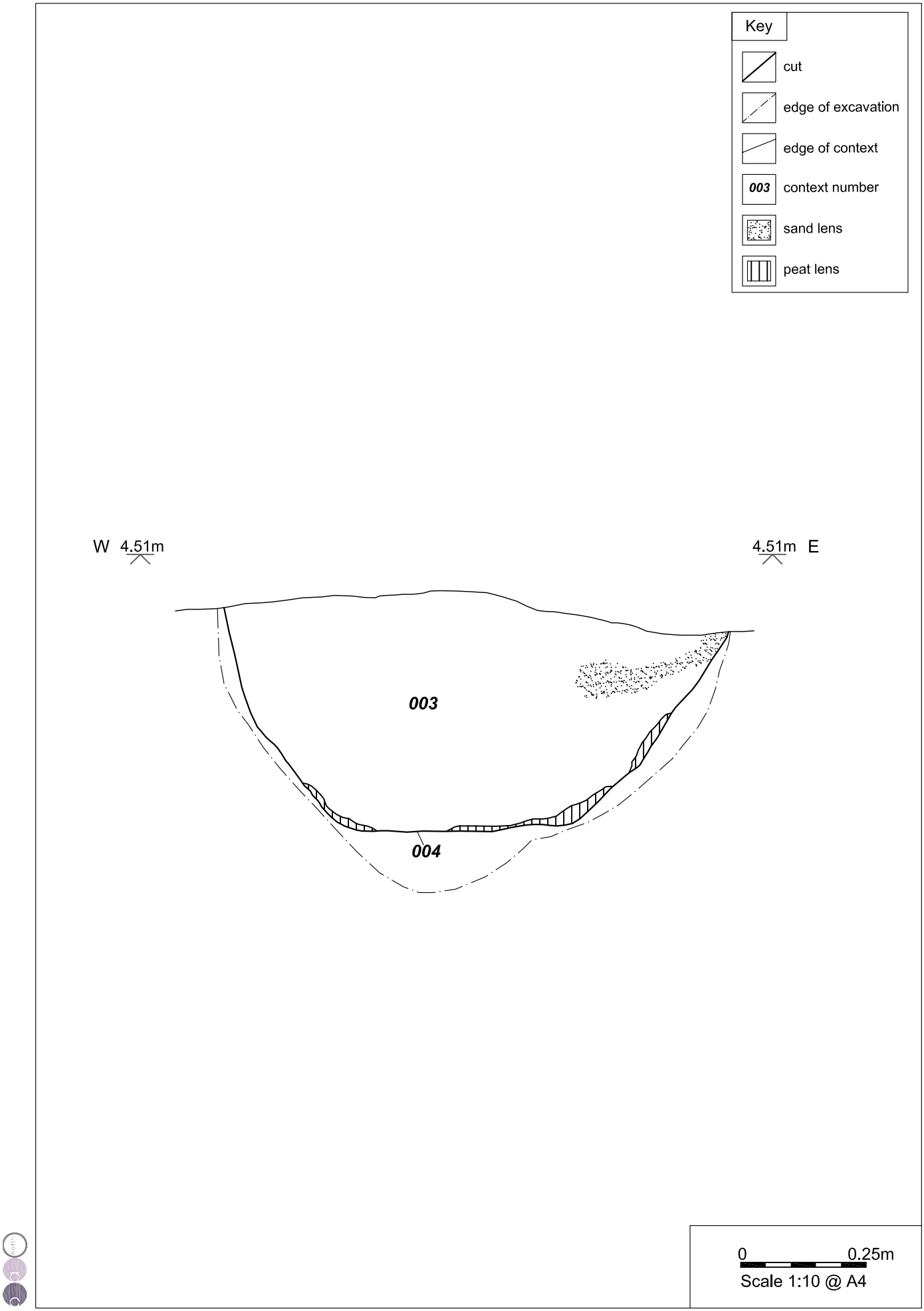

Figure 14: South-facing section of ditch ***4***, of ***SG26***, Area 2

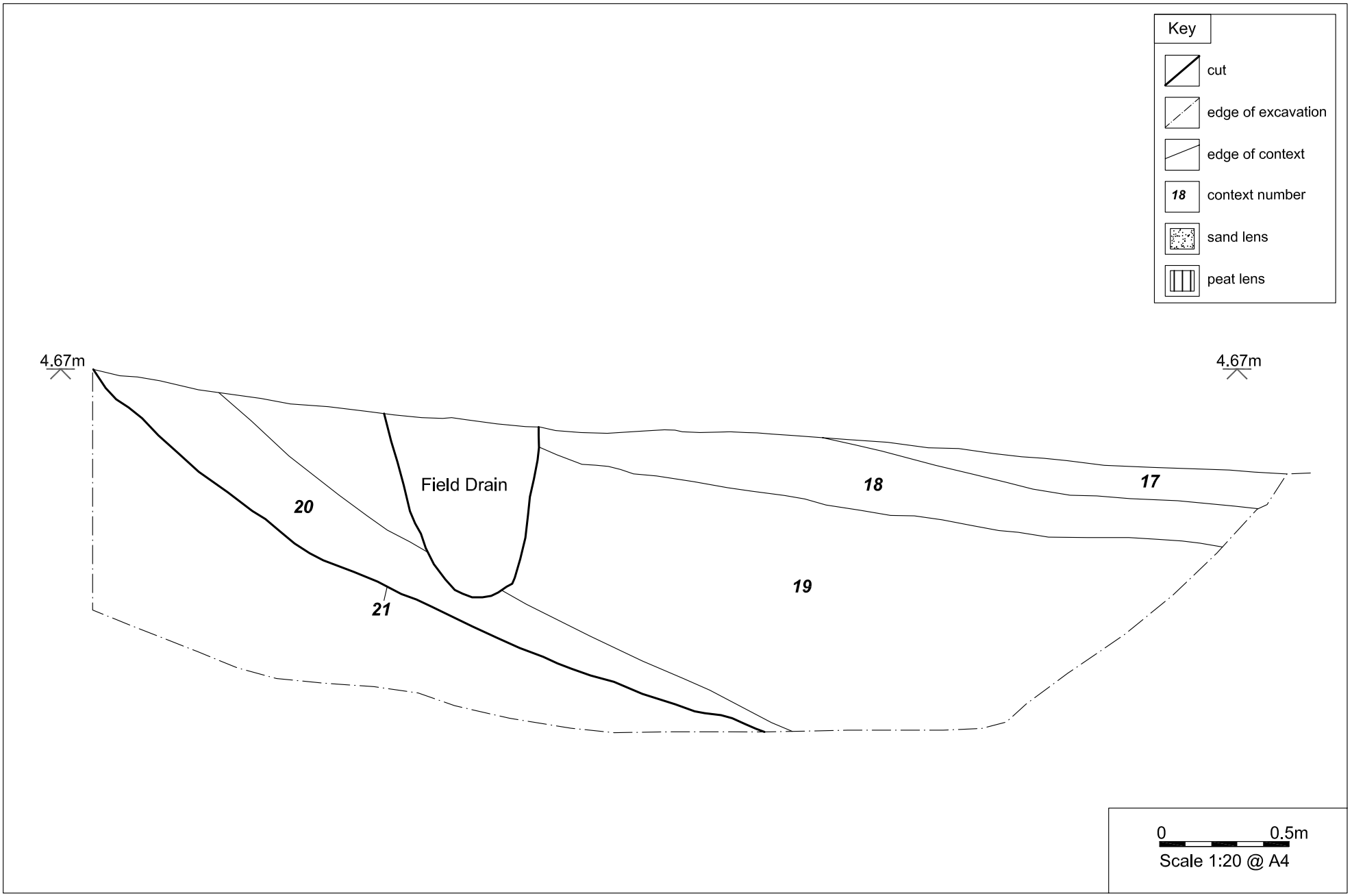

Figure 15: North-west-facing section of sondage in pond ***21***, Area 2

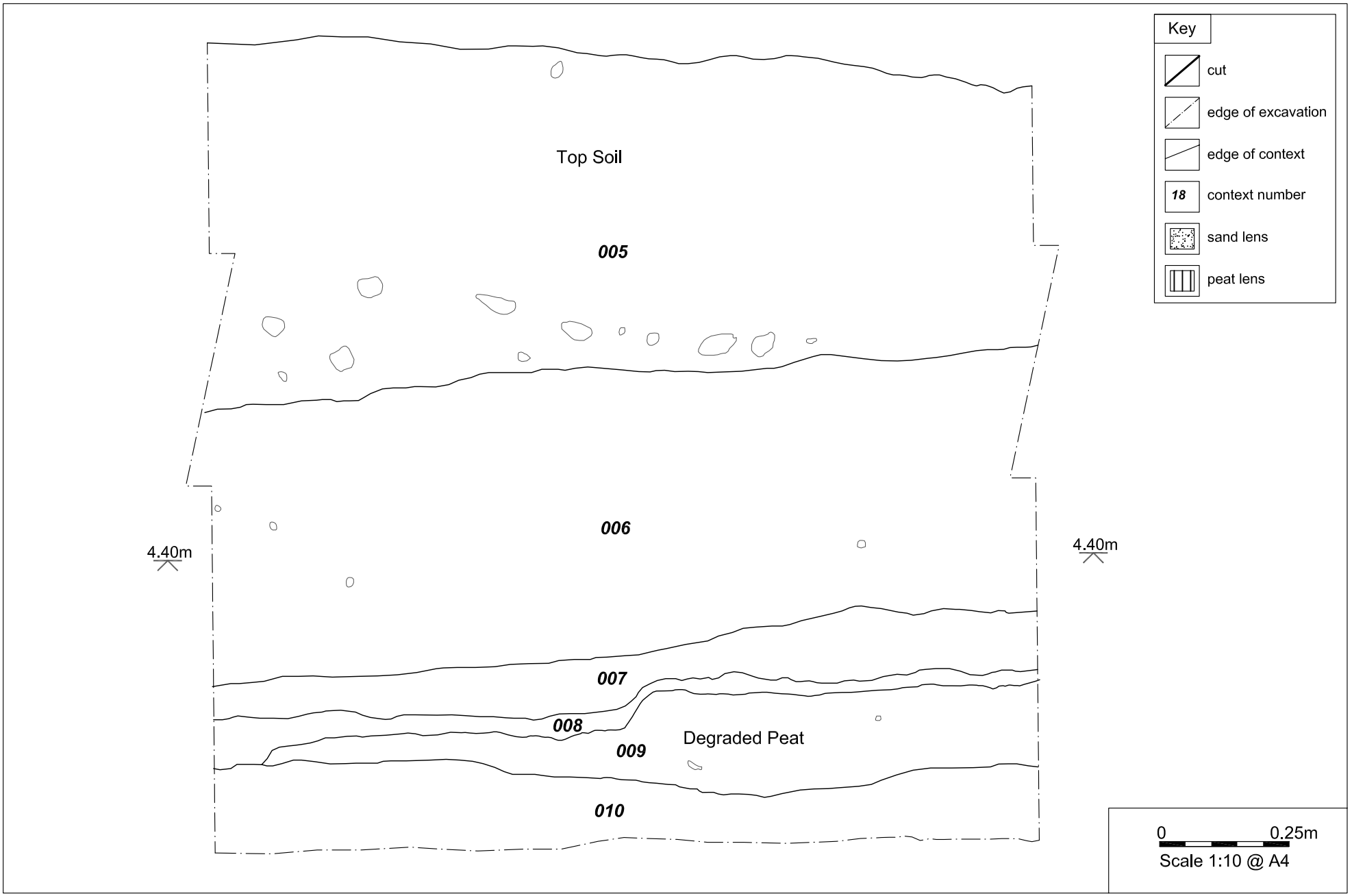

Figure 16: West-facing section from baulk in north-eastern part of Area 2, showing peat ***9***

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Plate 18: Excavation for settling tank, Area 1, looking west

Plate 19: Area 4, eastern end looking south-west

Plate 20: Area 4, western end looking north-west

APPENDIX 1: PROJECT DESIGN FOR STRIP AND RECORD EXCAVATION AND WATCHING BRIEF

BURSCOUGH WwTW UID AND INLET WORKS BURSCOUGH, LANCASHIRE

Strip and Record Project Design

Oxford Archaeology North

May 2007

United Utilities

OA North Job No: L9836
NGR: SD 4236 1339

1. INTRODUCTION

1.1 United Utilities (hereafter the client) has proposed the construction of retention tanks on land adjacent to the Wastewater Treatment Works in Burscough, Lancashire (SD 42360 13395). Following recommendations made by the Lancashire County Archaeology Service (LCAS), Oxford Archaeology North were commissioned by United Utilities to undertake a desk-based assessment and walkover survey of the site. Following the results of this initial phase of work, and in verbal consultation with the Planning Archaeologist, a further phase of investigation has been proposed.

1.3 The Planning Archaeologist at LCAS has issued verbal recommendations for an archaeological strip and record exercise to be undertaken for all areas of ground disturbance within the proposed improvement works. The following document represents a project design for this task.

1.4 OA North has considerable experience of the assessment, evaluation and excavation of sites of all periods, having undertaken a great number of small and large-scale projects during the past 20 years. Watching briefs, evaluations and excavations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables.

1.5 OA North has the professional expertise and resources to undertake the project detailed below to a high level of quality and efficiency. OA North is an Institute of Field Archaeologists (IFA) registered organisation, registration number 17, and all its members of staff operate subject to the IFA Code of Conduct.

2 OBJECTIVES

2.1 The following programme has been designed to provide for the identification and recording of any archaeological deposits in the area to be affected by the construction of the retention tanks and compound area.

2.2 ***Strip and Record:*** the objective of this exercise is to make a full graphic, photographic and written record of the archaeological evidence, in a manner whereby the extent, nature, form, date, function and relationships of archaeological features and/or deposits can be established to achieve reservation by record in advance of the development;

2.3 ***Report and Archive:*** production of a report following the collation of data during *Sections 2.3* above.

3 METHOD STATEMENT

3.1 The excavation methodology would follow the principles and guidelines for archaeological excavation as set down out in the Institute of Field Archaeologists: Standard and Guidance for Archaeological Excavations (IFA 2001).

3.2 The programme of archaeological works will take the form of strip and record investigations in two stages: Stage 1 - in the first instance, topsoil and

overburden material will be removed to expose the first archaeological horizon. All archaeological features thus exposed will be sufficiently cleaned to allow them to be recorded, and a pre-excavation plan will be produced; Stage 2 - then, following agreement of a strategy with the LCAS Planning Archaeologist, any archaeology revealed in the strip will be sample excavated and recorded. The sample will be appropriate and proportional to the importance, quantity and complexity of the archaeology exposed, as well as its perceived research value.

3.3 ***Stage 1***: the initial topsoil stripping will be designed to expose the character and nature of the archaeological remains and assess their potential research value. The primary aims will be:

- To expose archaeological remains across the whole archaeological site by the mechanical removal of topsoil and any masking subsoil;
- To create a pre-excavation plan of exposed deposits;
- To collect datable/activity specific material from the surface of exposed deposits;
- To confirm the priorities for further archaeological investigation.

3.4 ***Stage 2***: further archaeological investigations will be designed to recover data sufficient to allow for "preservation by record" and establish the extent, date, character and significance of the archaeological remains. The primary aims will be:

- To characterise the overall nature of the archaeological resource and to understand the process of its formation;
- To create a detailed plan of all archaeological features;
- To establish the character of those features in terms of cuts, soil matrices and interfaces;
- To recover, where appropriate, across the archaeological site representative ecofactual and palaeoenvironmental samples to provide evidence of function and past landuse;
- To establish in outline a dated sequence of structures and/or deposits and thus to define changes in site organisation over time.

3.5 ***Stripping***: during the strip and record exercise, the topsoil and subsoil will be removed under archaeological supervision by a mechanical excavator fitted with a toothless ditching bucket. Stripping will proceed until the uppermost horizons of significant archaeological remains have been revealed or, where these are absent, the natural substrate. The topsoil will be stockpiled separately from the subsoil and other deposits. The stripped areas, including the edges if necessary, will be cleaned sufficiently to enhance the definition of features.

3.6 The mechanical excavator used to accomplish the topsoil strip will be fitted with a toothless ditching bucket. If appropriate, further machine excavation will be carried out after hand excavation and recording of such deposits has been completed. (Such techniques are only appropriate for the removal of homogenous low-grade deposits, which may give a "window" into underlying levels; or for characterising features where there is no danger of removing important stratigraphic relationships and sufficient stratigraphy will remain to allow the excavation of hand excavated samples). The machine used will be safe, in good working order and powerful enough for the work and to be able to mound spoil and overburden neatly, at a minimum distance of 1m from the trench edges. The topsoil will be stripped in a systematic and logical manner, to ensure that where practicable the excavators and machines used to remove spoil do not rut, compact or otherwise damage buried or exposed archaeological features and deposits by crossing previously stripped areas.

3.7 ***Mapping***: the strip and record area will be planned using a Total Station and the resulting plan tied into the national grid. The stripping team will pay close attention to achieving a clean stripped surface, using the mechanical plant under close archaeological supervision, to reduce the need for extensive hand cleaning. Limited areas may still require hand cleaning, to clarify complex feature intersections. The principal aim of the initial work will be to produce a plan of the revealed features that can be used to define and quantify the second stage of formal and detailed excavation. Plans will be maintained as stripping progresses and features will be defined on the ground. A general site plan will be produced at an appropriate scale to map the exposed features.

3.8 ***Sampling***: the research value of the archaeology and the necessity to achieve "preservation by record" in advance of the development will inform the second stage excavation sampling strategies. The exact sampling levels will be determined by the nature of the remains.

3.9 Any structures will be excavated to the extent that they are sufficiently characterised and understood, this will involve excavating a representative range of structural elements such as post-holes, construction trenches, hearths etc. Some sufficiently important structures eg hearths, kilns, midden deposits etc may require 100% samples.

3.10 Any positive feature, archaeological feature or deposit likely to obscure earlier features will be completely removed in the most appropriate fashion, after being recorded.

3.11 Linear features will excavated to the extent that they are characterised and understood. This will include 100% of terminals and ditch intersections and sufficient interventions to provide evidence of dating and formation. As a guide linear features up to 5m in length will be subject to a 20% sample while linear features over 5m long will be subject to 10% (samples to be at least 1m wide);

3.12 An appropriate range of discrete/isolated features (pits, postholes etc) and non-linear negative features will be investigated. It should be noted that in most cases such features will be half-sectioned, but where either no dating/functional

evidence has been obtained, or where artefacts have been recovered of such a nature that the recovery of additional material of a similar nature is thought to be worthwhile, then further sampling will be undertaken. Where clusters of like features occur, it may prove sufficient to investigate a representative sample.

3.13 All contexts will be recorded using standard recording systems in accordance with the IFA Standards and Guidance for archaeological excavations; planning and surveying will be based on a site grid tied into the Ordnance Survey National Grid and ordnance datum levels will be taken where appropriate.

3.14 Any excavation, both by machine and by hand, will be undertaken with a view to avoiding damage to any archaeological features or deposits, which appear to be worthy of preservation *in situ*. Any hand excavation will respect the stratigraphy of archaeological layers, features, deposits and structures. When required, each context will be excavated in sequence.

3.15 Complex features and excavated interventions will be recorded by , individual hand-drawn plans made at a scale of 1:20 or 1:10. These detailed plans and the area plan produced in Stage 1 will be digitised and combined to produce a post-excavation plan of the site. Sections will be drawn at 1:10 or 1:20 unless circumstances dictate otherwise. All features revealed in the excavated area will be planned.

3.16 A full photographic record comprising black and white negative archivable film will be made. In addition digital photographs taken with an optical zoom camera of at least 300 dpi will be taken.

3.17 All finds will be processed according to the IFA Guidelines for Finds Work. In all cases, all bags and boxes will be marked with the site code and context number and Museum Accession Number.

3.18 Consideration should be given to taking environmental samples (30 litres each where possible) from well stratified, datable deposits. This programme will be undertaken to enable the recovery of carbonised and waterlogged remains, vertebrate remains, molluscs and small artefactual material. An environmental specialist will be consulted as to the validity of any sampling strategy employed. If appropriate monolith samples will be taken for pollen etc.

3.19 Any finds of human remains will be left *in situ*, covered and protected and the local Coroner informed. If removal is essential it will only take place under appropriate Home Office licence, section 25 of the Burial Act 1857 and local environmental health regulations, and if appropriate in compliance with the Disused Burial Grounds (Amendment) Act 1981.

3.201 All finds of gold and silver will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act of 1996. Where removal can not be effected on the same working day as the discovery, suitable security measures will be taken to protect the finds from theft.

4. GENERAL WORKING PRACTICES AND STANDARDS

4.1 The work will be undertaken in accordance with the submitted project design (this document) and in general accordance with the methods and practices described in the Management of Archaeological Projects (English Heritage, 1991 (revised 1996)).

4.2 All OA North staff are appropriately qualified and experienced professionals, and work in compliance with the 'Standard and Guidance for Archaeological Field Evaluation (Institute of Field Archaeologists, 1994 (revised 2001)).

4.3 The fieldwork will be undertaken in a manner likely to cause the minimum of disturbance commensurate with achieving its objectives.

4.4 ***Health and Safety***: OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. A written risk assessment will be undertaken in advance of project commencement and copies will be made available on request to all interested parties.

5. ARCHIVE/REPORT

5.1 ***Archive:*** the results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of Archaeological Projects*, 2nd edition, 1991). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. 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 IFA in that organisation's code of conduct. OA North conforms to best practice in the preparation of project archives for long-term storage. This archive will be provided in the English Heritage Centre for Archaeology format and a synthesis will be submitted to the CSMR (the index to the archive and a copy of the report). OA North practice is to deposit the original record archive of projects (paper, magnetic and plastic media) with the appropriate County Record Office, and a full copy of the record archive (microform or microfiche) together with the material archive (artefacts, ecofacts, and samples) with an appropriate museum. Wherever possible, OA North recommends the deposition of such material in a local museum approved by the Museums and Galleries Commission, and would make appropriate arrangements with the designated museum at the outset of the project for the proper labelling, packaging, and accessioning of all material recovered.

5.2 The Arts and Humanities Data Service (AHDS) online database *Online Access to index of Archaeological Investigations* (OASIS) will be completed as part of the archiving phase of the project.

5.3 ***Report:*** one bound and one unbound copy of a written synthetic report will be submitted to the client, and a further two copies submitted to the Lancashire SMR within eight weeks of completion of fieldwork. The report will include a copy of this project design, and indications of any agreed departure from that

design. It will present, summarise, and interpret the results of the programme detailed above and will include a full index of archaeological features identified in the course of the project, with an assessment of the overall stratigraphy, together with appropriate illustrations, including detailed plans and sections indicating the locations of archaeological features. Any finds recovered will be assessed with reference to other local material and any particular or unusual features of the assemblage will be highlighted and the potential of the site for palaeoenvironmental analysis will be considered. The report will also include a complete bibliography of sources from which data has been derived.

5.4 This report will identify areas of defined archaeology. An assessment and statement of the actual and potential archaeological significance of the identified archaeology within the broader context of regional and national archaeological priorities will be made. Illustrative material will include a location map, section drawings, and plans. This report will be in the same basic format as this project design; a copy of the report can be provided on CD ROM, if required.

5.5 Provision will be made for a summary report to be submitted to a suitable regional or national archaeological journal within one year of completion of fieldwork, if relevant results are obtained.

5.6 ***Confidentiality:*** all internal reports to the client are designed as documents for the specific use of the Client, for the particular purpose as defined in the project brief and project design, and should be treated as such. They are not suitable for publication as academic documents or otherwise without amendment or revision.

6 PROJECT MONITORING

6.1 Monitoring of this project will be undertaken through the auspices of the LCAS Planning Archaeologist, who will be informed of the start and end dates of the work.

7 STAFFING

7.1 The project will be under the direct management of **Alison Plummer BSc (Hons)** (OA North Senior Project Manager) to whom all correspondence should be addressed.

7.2 Present timetabling constraints preclude detailing at this stage exactly who will be undertaking the strip and record, but this element of the project is likely to be supervised by an OA North project officer experienced in these types of project. All OA North project officers are experienced field archaeologists capable of carrying out projects of all sizes.

8 INSURANCE

8.1 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.

APPENDIX 2: GAZETTEER OF SITES

Site Name Martin Mere
Site number **01**
NGR SD 41831 14002
HER no PRN4162 - MLA4162
Site Type Findspots
Period Prehistoric
Source HER
Description
A worked flint and large flake of chert.
Assessment
The find spot lies outside the development area and will not be affected by the works.

Site Name Shirdley Hill Sands, Martin Mere
Site number **02**
NGR SD 41880 13560
HER no PRN4158 - MLA4158
Site Type Find spot
Period Prehistoric
Source HER
Description
Two worked flints and six unworked pieces, undated.
Assessment
The find spot lies outside the development area and will not be affected by the works.

Site Name Langley's Farm and Derby Farm, Burscough
Site number **03**
NGR SD 41500 13380
HER no PRN4442 - MLA4442
Site Type Cropmarks
Period Undated
Source HER
Description
The aerial photograph shows cropmarks in a field to the south of the railway, and north of Derby Farm. Some marks are linear but not straight and may be former field boundaries and/or pathways. Narrower straight cropmarks probably indicate drainage channels. In a field to the west, two parallel cropmarks are also presumably field boundaries.
Assessment

The site lies outside the development area and will not be affected by the works.

Site Name Wall north of railway embankment- previously unrecorded
Site number **04**
NGR SD 42020 13480
Site Type Structure
Period Modern
Source Site visit
Cartographic material: - 1928 OS map 25": 1 Mile, HER
Description
L-shaped stretch of single-thickness drystone walling. Two courses high and measuring 0.35m high and 0.15m wide, comprising a single row of squared stones.
Assessment
The site lies within the development area and might be affected by the works.

Site Name Bank Top Farm
Site number **05**
NGR SD 41887 13009
HER no PRN26274 - MLA26219
Site Type Monument
Period Later prehistoric
Source OA North. 2006
Description
Archaeological evaluation in advance of excavations for an irrigation lake. Trenching uncovered field boundaries (PRN 4443) and pits with evidence for metal working, possibly prehistoric in date. There were no recommendations for further archaeological work.
Assessment
The site lies outside the development area and will not be affected by the works.

Site Name Langley's Brook
Site number **06**
NGR SD 41870 13000
HER no PRN4443 - MLA4443
Site Type Cropmarks
Period Undated
Source HER
Description
The aerial photographs show a series of cropmarks in a field to the north east of Langley's Brook. The cropmarks are linear and enclose roughly rectangular areas and are presumably old field boundaries.
Assessment
The find spot lies outside the development area and will not be affected by the works.

Site Name Batloom
Site number **07**
NGR SD 41980 13094
HER no PRN4157 - MLA4157
Site Type Ponds
Period Post medieval
Source HER
Description
Ponds shown on the 1839 tithe map and on all later maps. The ponds are water filled.
Assessment
The site lies outside the development area and will not be affected by the works.

Site Name Langley's Brook
Site number **08**
NGR SD 42150 13060
HER no PRN4445 - MLA4445
Site Type Cropmarks
Period Undated
Source HER
Description
The aerial photograph shows cropmarks in a field to the east of Langley's Brook. One large irregular dark cropmark, probably natural, can be seen. Two roughly circular parchmarks may be something of interest.
Assessment
The find spot lies outside the development area and will not be affected by the works.

Site Name none given
Site number **09**
NGR SD 42100 13000
HER no PRN1553- MLA1553
Site Type Cropmark
Period Undated
Source HER
Description
None recorded
Assessment
The site lies outside the development area and will not be affected by the works.

Site Name Batloom
Site number **10**
NGR SD 42160 12820
HER no PRN4159 - MLA4159
Site Type Find spot
Period Prehistoric
Source HER
Description
Flint knife and two other flakes.
Assessment
The find spot lies outside the development area and will not be affected by the works.

Site Name Near disposal works
Site number **11**
NGR SD 42360 13510
Site Type Find spot
Period Prehistoric
Source HER
Description
A small crudely worked scatter of flakes.
Assessment
The find spot lies outside the development area and will not be affected by the works.

Site Name Track leading to Wood End Farm
Site number **12**
NGR SD42500 32500
Site Type Track
Period Post medieval
Source Site visit
Cartographic material: Greenwood, C G, 1818
Description
Track defined by grassed wheel ruts. Stone sett road surface fabric was visible beneath the topsoil in a maintenance trench that was open during the visit.
Assessment
The site lies along the northern edge of the development area and is likely to be affected by the works.

Site Name Drainage channel - previously unrecorded
Site number **13**
NGR SD42500 13300
Site Type Drainage Channel
Period Post medieval
Source site visit
Cartographic material: Yates, W, 1786

Description
A large drainage channel *c* 5m wide and 3m deep, to the east of the wastewater treatment works. Shown on the mapping of 1786 and presumably part of the works associated with the drainage of Martin Mere.
Assessment
The site lies within the development area and is likely to be affected by the works.

Site Name Wood End Farm, Marsh Moss, Burscough
Site number **14**
NGR SD 42671 13233
HER no PRN8871 - MLA8871
Site Type Farmstead
Period Post medieval
Source HER
Description
Farmstead and well shown on the OS first edition 1:10,560 map. The well is not shown on the current sheet. The walkover was unable to confirm the existence of the well.
Assessment
The site lies outside the development area and will not be affected by the works.

Site Name New Lane, Burscough
Site number **15**
NGR SD 42710 13140
HER no PRN19182 - MLA19144
Site Type Railway Station
Period Post Medieval
Source HER
Description
1855. Built by Manchester and Southport railway. Sandstone with Tudor details and original low platforms.
Assessment
The site lies outside the development area and will not be affected by the works.

Site Name New House Farm, New Lane, Burscough
Site number **16**
NGR SD 42846 12957
HER no PRN8879 - MLA8879
Site Type Farmstead
Period Post Medieval
Source HER
Description
Farmstead and well shown on the OS first edition 1:10,560 map. The well is not shown on the current sheet.
Assessment
The site lies outside the development area and will not be affected by the works.

Site Name New Lane
Site number **17**
NGR SD 42940 12970
HER no PRN4160 – MLA4160
Site Type Find spot
Period Prehistoric
Source HER

Description
A large flint flake and twelve other flints.
Assessment
The find spot lies outside the development area and will not be affected by the works.

Site Name Marsh Moss
Site number **18**
NGR SD 43050 13310
HER no PRN8870 - MLA8870
Site Type Well
Period pre 1845, Post medieval - AD 1540 to AD 1900
Source (1) Cartographic material: - 1957 OS geol surv Wigan sheet 84 solid 1:63,360
(2) Cartographic material: - 1970 OS geol surv Wigan sheet 84 drift 1:63,360
(3) Cartographic material: - 1970 OS soil surv Lancs1:250,000
(4) Cartographic material: - 1848 OS first edition
Description
Well shown on the OS first edition 6": 1 mile map. The well is not shown on the current sheet
Assessment
The site lies outside the development area and will not be affected by the works.

Site Name Crop Marks at Waste Water Treatment Works, Burscough, previously unrecorded
Site number **19**
NGR SD 42300 13400
Site Type Cropmarks
Period Undated
Source Aerial photograph LRO 106G/UK.623.10 AUG 45: F/20://541 SQDN
Description
Two linear cropmarks orientated north/south and north-north-east/south-south-west. These may represent field boundaries or drainage channels. One semi-circular curvilinear cropark, truncated by the railway embankment to the south, which may represent an enclosure. None of these features are depicted on the Ordnance Survey first edition map of 1848.
Assessment
The site lies outside the development area and will not be affected by the works.

APPENDIX 3: TEST PIT DESCRIPTIONS

Test Pit	Length (m)	Width (m)	Depth (m)	Description
1	6.0	1.3	1.5	Excavation revealed a deposit, 0.9m thick, of mixed soils containing abundant quantities of plastic and other modern rubbish above natural sands. The sands themselves had been disturbed, its upper layer also containing plastic.
2	6.0	1.3	1.45	Excavation revealed 1.10m of mixed soils containing abundant quantities of plastic and other modern rubbish above natural sand. The natural had also been disturbed, its upper layers also containing plastic.

APPENDIX 4: CONTEXT LIST

Context Number	Site Subdivision	Category	Fill Of	Depth (m)	Description
1	Area 2	Layer	-	1.7	Topsoil. A very dark grey fine sand silty clay.
2	Area 2	Pond	-	0.9	A large sub-circular pit or pond, at least 12.0m in diameter and 0.9m deep. Possibly a clay extraction pit, either for marl or brick making.
3	Area 2	Ditch	-	0.5	A dark brown fine sandy-silt. An accumulation of sediment eroded from the surrounding area.
4	Area 2	Ditch	-	0.5	A shallow linear, measuring 1.2m wide and 0.5m deep, with concave sides and base. It was aligned on a north-south orientation. See ***SG23***
5	Area 2	Layer	-	0.6	Same as ***1***
6	Area 2	Layer	-	0.5	Subsoil. A dark reddish brown fine sandy-silt.
7	Area 2	Layer	-	0.17	A mid-brown grey sine sand slit. The interface between subsoil ***6*** and natural sand ***8***
8	Area 2	Layer	-	-	Natural. A layer of very light grey and mid-brownish red wind blown sand above a mid-orange clay.
9	Area 2	Layer	-	0.18	A reddish brown silt with a very high humic content. A layer of peat in varying stages of decomposition.
10	Area 2	Layer	-	0.15	A blue-grey medium sand. A variation in the natural sand. Same as deposit ***8***.
11	Area 2	Natural undulation in the sand	***13***	0.24	A dark brown fine sandy silt with a very high humic content. A layer of decayed peat.
12	Area 2	Natural undulation in the sand	***13***	0.1	A light brown medium sand. Sediment eroded from the sided of channel ***13***.
13	Area 2	Natural undulation in the sand	-	0.37	A shallow u-shaped linear, a maximum of 2.4m wide, with irregular side and a concave base. This feature represents a shallow natural channel in the sand which has been filled with a peaty deposit.
14	Area 2	Natural undulation in the sand	***13***	0.22	Dark reddish brown medium sand. Sediment eroded from the sides of channel ***13***.
15	Area 2	Ditch	***16***	0.52	Very dark brown fine sandy-silt. An accumulation of sediment eroded from surrounding topsoils.

16	Area 2	Ditch	-	0.52	Linear drainage ditch, with straight sides and a flat base. It measured 1.5m wide and 0.52m deep, aligned on a north-south orientation. See ***SG26***.
17	Area 2	Pit/pond	***21***	0.15	A dark grey, friable, medium sand. A deliberate backfill of pit/pond ***21***.
18	Area 2	Pit/pond	***21***	0.28	A mid-orange, friable, medium sand. A deliberate backfill of pit/pond ***21***.
19	Area 2	Pit/pond	***21***	0.84+m	A dark grey, firm, fine sandy-silt. An accumulation of sediment eroded from surrounding topsoils, with a high humic content, deposited in waterlogged conditions.
20	Area 2	Pit/pond	***21***	0.3	A very dark grey, friable, fine sandy-silt. An accumulation of sediment eroded from surrounding topsoils, with a high humic content and with less than 1% small wood and twig inclusions. Deposited in waterlogged conditions.
21	Area 2	Pit/pond	-	1.1+m	A sub-circular pit or pond, with a radius of at least 11m and at least 0.9m deep, with steep, concave, sides. Most likely a clay extraction pit, either for marl or brick making.
22	Area 2	Ditch	***23***	0.34	A very dark brown fine sandy-silt. An accumulation of sediment eroded from surrounding topsoils.
23	Area 2	Ditch	-	0.34	A shallow, flat bottomed, U-shaped linear with straight near vertical sides. It measured 1.6m wide and 0.23m deep, aligned on a north-south orientation. See ***SG26***
24	Area 2	Pit/pond	***2***	0.35	Mixed grey and orange medium sands. A deliberately backfill deposit of pit/pond ***2***.
25	Area 2	Pit/pond	***2***	0.55	A dark grey silt clay. An accumulation of sediment eroded from surrounding topsoils.
26	Area 2	Stratigraphic Group	-	0.5-0.55	Stratigraphic group comprising cut numbers ***4***, ***16*** and ***23***, interventions into a single linear, aligned on a north-south orientation across the centre of the excavation area. Its sides and base varied somewhat across its length, but is essentially a shallow drainage ditch measuring between 1.2m and 1.6m wide, and 0.23m by 0.5m deep. Its fills comprise an accumulation of sediments eroded from the surrounding topsoils.
27	Area 1	Layer	-	0.5	Topsoil. A very dark fine sand silty-clay.
28	Area 1	Layer	-	-	Natural sand. A layer of very light grey and mid-brownish red wind blown sand above a mid-orange clay till.

29	Area 4	Layer		0.2+m	Topsoil. A very dark fine sand silty clay.

APPENDIX 5: SUMMARY FINDS CATALOGUE

Context	Quantity	Material	Description	Period
1	10	Glass	Thick-walled brown bottle, thin walled milk bottle	19th/20th century
1	2	Iron	Nails; round-headed	19th/20th century
1	11	Clay Pipe	Bowls (complete and 2 undecorated), stems (narrow and medium bored)	18th/19th century
1	41	Pottery	Press moulded stonewares (3), porcelain (egg cup and ornament), English and imported stoneware (bottles and jars 7), Dark glazed red earthenware (1), Jackfield type teapot (1), brown glazed red earthenwares (2), annular ware, tin glaze cup, glazed white earthenware (black and blue transfer/sponge printed pitcher, jug, cup, bowl-23)	18th-20th century
1	1	Flint	Possible core flake, although there was no obvious indication that it had been struck	Unknown
1	1	Shell	Oyster	Not datable
1	1	Lead	Folded perforated fixing plate/shutter	19th/20th century
1	1	Industrial Residue	Fuel ash	
11	1	Pottery	Glazed white earthenware mug	20th century
15	3	Pottery	Partially reduced thick-walled lead glazed red earthenware jar ?, glazed white earthenware plates with transfer print (2)	18th/19th century
19	1	Shell	Mussel	
19	1	Pottery	Chinese style hand decorated glazed earthenware cup	19th century
Unstrat	4	Flint	Possible core or fire cracked blue and white flakes	Unknown
Unstrat	1	Glass	Clear bottle stopper	20th century