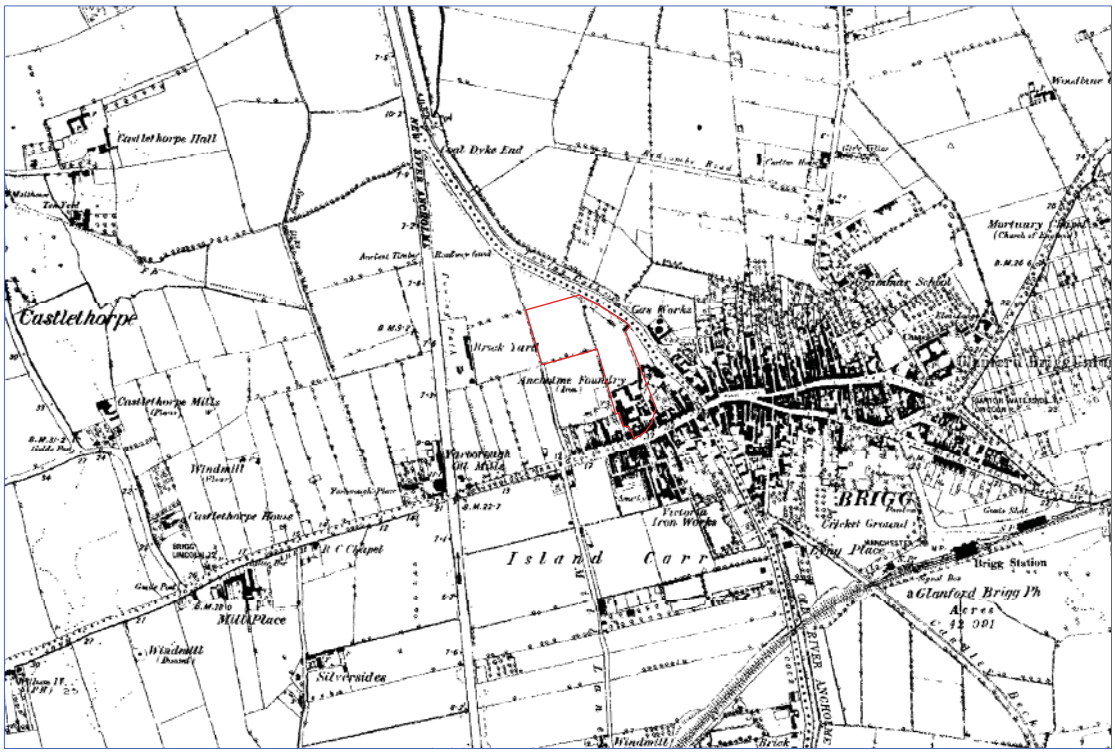
ARCHAEOLOGICAL EVALUATION REPORT: TRIAL TRENCHING AND AUGER SURVEY AT ISLAND CARR, BRIGG, NORTH LINCONSHIRE

Planning Ref.: Pre-Planning
North Lincs SMR No. BRIAS
AAA Site Code: BIC 07
NGR: SE 99631 07315



Report prepared for
Keigar Homes Limited

by Mark Allen

March 2007

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Contents

	Summary	1
1.0	Introduction	2
2.0	Site location and description	2
3.0	Planning background	2
4.0	Archaeological and historical background	2
5.0	Previous archaeological investigations	4
6.0	Palaeoenvironmental background	5
7.0	Methodology	5
8.0	Evaluation Trench Results	6
9.0	Evaluation Test Pit Results	6
10.0	Discussion and conclusion	7
11.0	Effectiveness of methodology	8
12.0	Acknowledgements	8
13.0	Bibiliography	9

Appendices
Appendix 1: Colour plates
Appendix 2: Waterlogged wood analysis
Appendix 3: Radiocarbon dates
Appendix 4: Geoarchaeological Assessment
Appendix 5: List of archaeological contexts

List of Figures

Figure 1: Site location at scale 1:25,000
Figure 2: Trench location plan, with the site boundary outlined in red (scale 1:500)
Figure 3: Trenches 1 – 4 sections at scale 1:50
Figure 4: Trenches 5 – 8 sections at scale 1:50
Figure 5: Test Pits 1 – 4 sections at scale 1:50

List of Plates

Plate 1: Areas A and B during evaluation. Taken from south-east corner of Area A, looking west
Plate 2: Area C road. Taken from north end of Area C, looking south
Plate 3: Trench 1 north-east facing section, looking south-west
Plate 4: Trench 2 south-east facing section, looking north-west
Plate 5: Trench 8 north-east facing section, looking south-west
Plate 6: Test Pit 1 north facing section, looking south
Plate 7: Test Pit 4 following excavation looking north-east
Plate 8: Close-up shot of worked stake from Context 41 in Test Pit 4

Cover image: First Edition Ordnance Survey map of Brigg (1889) with site outlined in red

Summary

- A programme of archaeological trial trenching and auger surveying was undertaken on land at Island Carr in Brigg, in advance of an application for a residential development by Keigar Homes Limited.

- Previous archaeological discoveries in the area, including the waterlogged remains of a trackway, dugout boat and the 'Brigg Raft', have shown that the area has the potential to contain important waterlogged archaeological deposits of prehistoric date.

- The evaluation did not expose any deposits of archaeological significance; however a peat horizon at the southern end of the development area was identified, and a desiccated peat horizon that was identified throughout the rest of the site is likely to be associated. A radiocarbon sample from the southern end of the site suggests the peat began to form approximately 390 – 200 Cal BC (at 95% confidence). A second radiocarbon sample, a worked wooden stake from a clay layer sealing the peat, was found to be of 17th – 20th century date.

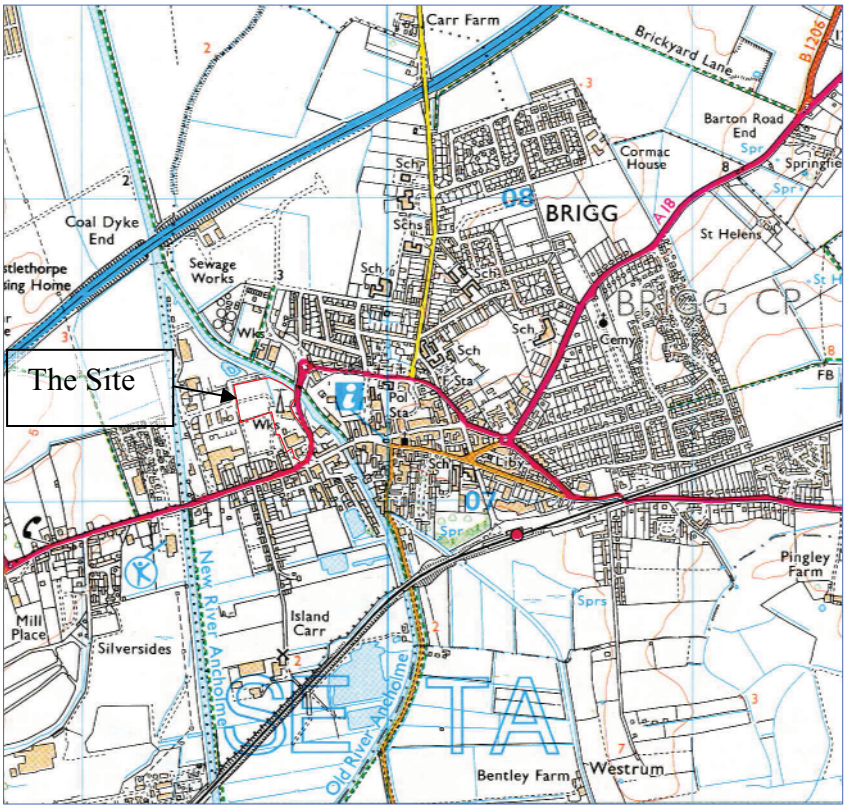


Figure 1: Site location at scale 1:25,000

1.0 Introduction

1.1 Allen Archaeological Associates (hereafter AAA) was commissioned by Keigar Homes Limited to carry out an archaeological evaluation in advance of an application for planning consent for a residential development on land at Island Carr in Brigg, North Lincolnshire.

1.2 The site works and reporting conform to current national guidelines, as set out in the Institute of Field Archaeologists '*Standards and guidance for archaeological evaluations*' (IFA 2001), and a specification prepared by AAA (Allen 2007).

1.3 Following completion of the works the paper and object archive will be submitted to North Lincolnshire Museum for long-term storage within 6 months of completion of the report, under the North Lincolnshire SMR Entry Code BRIAS.

2.0 Site Location and Description

2.1 Brigg lies 11.3km east-south-east of the centre of Scunthorpe and 26.2km west of Grimsby. The site lies at the west end of the town, between the modern canalised River Ancholme and the Old River Ancholme (Figure 1).

2.2 The proposed development area comprises four areas (Areas A – D). Area A forms the north-east part of the site, is 0.93 hectares in size, and currently waste ground. It is bounded by the Old River Ancholme to the north-east, Area B to the west and Area C to the south. Area B lies to the west of Area A, is of similar size and land use, and is bounded to the north by a pond and industrial development to the west. Area C is located to the south of Area A, is bounded to the west by a caravan park, and Area D and Ancholme Way to the east. It is approximately 0.53 hectares in size and is currently in use as an agricultural and garden machinery wholesaler, with a tarmac road running along its length, and farm machinery and large sheds scattered throughout. Area D is approximately 0.77 hectares, and is bounded to the west and north by Area C and the A18 to the south and east.

2.3 The local geology comprises drift estuarine or marine alluvium, overlying the solid Jurassic Ancholme Clay Group (British Geological Survey 1982). The site lies at approximately 2.5m OD on fairly level ground, centred on National Grid Reference SE 99631 07315.

3.0 Planning Background

3.1 The site has not yet been subject to a planning application. Areas A and B are currently owned by Keigar Homes Limited, and it is expected that a planning application will be submitted for these areas shortly.

3.2 Keigar Homes Limited has an option on purchasing Areas C and D from the current owners, Peacock and Binnington, for a future application for development.

4.0 Archaeological and Historical Background

4.1 Brigg lies at the narrowest point (c.300m wide) of the Ancholme Valley (Neumann 1998, 85), and as such has featured as a crossing point throughout prehistory and beyond.

4.2 The site itself lies within a landscape rich in prehistoric archaeological remains. The earliest evidence recovered nearby is a Mesolithic flint pick that was found during brickwork excavations immediately to the west of the current site (west of Area B). At the same location, a Neolithic polished stone axe and Bronze Age material, including quantities of pottery and other domestic refuse, and a bronze spearhead and pin, were also found during the brickworks (SMR Ref: 1799).

4.3 Waterlogged remains of Bronze and Iron Age date have been recorded in the vicinity due to the location being within the Ancholme Valley floodplain. Of these, several are of national importance, including a causeway or trackway that was discovered in 1884, running east – west to the north of the site (SMR Ref: 1783). The timber structure was found to be sealed by approximately 6 feet of deposits, and a radiocarbon date obtained from a piece of wood adjacent to the causeway indicates that it was probably of late Bronze – early Iron Age date. A number of artefacts were associated with the trackway, including pottery, animal bone, a late Bronze Age spearhead, and a disc headed bronze pin. The latter two bronze objects were recovered when the structure was re-exposed in 1933.

4.4 A large dugout boat was also exposed in the late 19th century (in 1886), during the construction of a gasometer to the east of the site (SMR Ref: 1789). The boat was nearly 15m in length, and was unfortunately destroyed during an air raid over Hull in 1943 (May 1976, 117-119). A radiocarbon date obtained from the vessel suggested a late Bronze Age date for its manufacture and use.

4.5 In the same year a series of planks that were thought to represent a raft were discovered close to the dugout site, approximately 100m to the north of the prehistoric causeway site (SMR Ref: 1790). Assessment of the timbers following re-excavation in the early 1970's has suggested however that the timbers were probably sewn planks from the bottom of a boat and not the remains of a raft (Chapman et al 1998, 224). Radiocarbon sampling dated the vessel to 823 – 789 cal BC.

4.6 Although a number of Roman artefacts have been recovered in the town, no associated archaeological deposits have been encountered to date (*ibid.*). Several Roman coins were discovered approximately 500m to the north-east of the current site, including a denarius of Caracalla (SMR Ref: 1787). Closer to the site, a Roman copper alloy fibula brooch was recovered close to the location of the Brigg trackway (SMR Ref: 1808).

4.7 Brigg was initially known as Glanford, being mentioned in the Pipe Rolls of 1183, with the addition of Brigg to the placename by 1318 (Cameron 1998). The name came from the Old English *glēam* and *ford*, meaning 'the ford where sports are held' (*ibid.*). The Brigg addition refers to a bridge over the River Ancholme.

4.8 The Ancholme wetlands were the subject of drainage works in 1288, and in 1294 parts of the river were straightened to aid the passage of cargo boats to and from the Humber (Neumann 1998, 76). Further attempts at drainage were undertaken, with little success, until in 1637 a new cut for the River Ancholme was begun upstream of Brigg. The area remained prone to flooding into the late 19th century, with historical documents indicating the valley bottom was seasonally submerged and unfit for tillage (*ibid.*). In 1825 a programme of straightening, widening and deepening of the river was initiated, opening up previously wet ground to agriculture. This allowed the excavation of brick clay on the site, which resulted in a number of the archaeological discoveries previously mentioned (see above).

5.0 Previous Archaeological Investigations

5.1 Trial trenches were dug in 1990 at various locations along the route of the then proposed Brigg Bypass (now Ancholme Way) immediately to the west of this site (SMR Ref: 18097). The works showed considerable disturbance of 2.5m of clay and silt deposits containing pottery, glass and clay pipes indicating this possibly occurred c.1830 – 1850. Beneath this material, at 1.33m OD, a 0.25m thick peat horizon was identified. Below this peat however was a clay horizon containing a handmade brick, indicating a post-medieval date. Of particular relevance to this scheme, was a note within this unreferenced document that staff at Peacock and Binnington's (the current occupiers of Areas C and D) had told the author that substantial areas of peat had been exposed at a depth of approximately 0.5m during the construction of fuel pumps and tanks a number of years previously.

5.2 A watching brief was undertaken during the Brigg resewerage scheme at the Old Stockmarket in 1995, immediately to the east of the site (Tann 1995). The works were not conducive to close monitoring although two undated worked wooden stakes were recovered.

5.3 In 1997, as part of the Humber Wetlands Project, a series of auger cores were taken at various locations in the Ancholme Valley (Van de Noort and Ellis 1998), including a transect that was positioned near the boat club house in an unsuccessful attempt to locate the Brigg trackway (SMR Event ID: ELS951).

5.4 At a Tesco supermarket to the east of the site, a trench measuring 15m by 5m was excavated in advance of the groundworks for a new petrol tank (SMR Event ID: ELS1818) (Oxford Archaeology 2000). The trench exposed a number of horizontally-lain hazel rods, radiocarbon dated to 1000 – 540 cal BC at 95% confidence, wooden chips from the heart of a large oak, and a series of stakes driven through an alluvial horizon. Radiocarbon dates obtained from two of the stakes indicated that they were of late Bronze Age date. The alluvial horizon was sealed by a flint gravel spread upon which the hazel rods were placed.

5.5 An auger and walkover survey and watching brief during geotechnical trenching was carried out at Yarborough Mills some 900m to the west of the current site in 2002 (Hall 2002). The auger survey identified a sequence of basal sands, overlain by a shallow peat horizon (c.0.1m thick), then silts, clays and the modern topsoil. A sample of the peat indicated that reedswamp and wet woodland vegetation existed on the extreme western edge of the Old Ancholme floodplain around 4500 – 3000 years ago. In 2003 Humber Field Archaeology excavated five trial trenches on the site (Tibbles 2003). The evaluation did not expose any archaeological deposits of significance, although a single fragment of possible human skull was radiocarbon dated to cal AD 1460 – 1650. A subsequent watching brief during the groundworks for the development did not expose any archaeological deposits or finds (Atkinson 2004).

5.6 North of the current site, at 9 Atherton Way in Brigg, a watching brief was carried out in 2004 (Tann 2005). The results of the first phase of works proved negative so no further monitoring was required.

5.7 An auger survey undertaken in 2005 at Almond Grove, approximately 150m to the north-east of the current evaluation, was limited in scope, only reaching a depth of 2m (Heath and O'Neill 2005). The work suggested that the uppermost alluvial deposits formed in a low-energy floodplain environment, forming a complex series of clays and silts, becoming more clay-rich at depth.

5.8 More recently, a desktop assessment and walkover survey was undertaken in 2006 at Island Carr immediately to the west of the current site (Olesky 2006). The survey did not identify any new archaeological sites or artefacts, beyond those already discussed above.

6.0 Palaeoenvironmental Background

6.1 Previous archaeological investigations from the 19th century onwards have contributed evidence that has provided an overall picture of the palaeoenvironmental history of the floodplain that is of relevance to this investigation.

6.2 In the 19th century the discovery and recording of the Brigg trackway included an assessment of the sequence of deposits in which the timbers lay (Wylie 1884). The trackway was shown to lie upon a peat and forest bed (with oak and pine) that is found around -2.5m to -3m OD, dropping to c. -7.2m OD near the channel (Chapman et al 1998). The trackway was probably built around the later Bronze Age – early Iron Age transition. Overlying the causeway was a thin reed peat that is believed to be evidence of the development of a 'swamp carr' during a rise in the water table. Overlying this thin reed peat the onset of marine influence created a substantial alluvial clay horizon that may be separated into two distinct horizons, a dark grey alluvial clay and an upper brown alluvial clay. Although these two layers appear distinct it has been suggested that the change in colour represents the partial desiccation and oxidisation of the upper clays. This loss of marine influence allowed the renewed formation of peat, with substantial oaks recovered from this deposit indicating it is likely to have formed over a significant period of time (Wylie 1884). The recovery of Roman artefacts from this peat horizon has led to suggestions the peat began to form in the Roman period. This peat, which was still well-preserved until the end of the 19th century, has in the majority of places dried out and is only recognisable as peaty topsoil (Chapman et al 1998).

7.0 Methodology

7.1 In order to evaluate the archaeological resource within the development area, a programme of intrusive archaeological investigation comprising trial trenching and auger surveying was undertaken between 26th January and 2nd February 2007.

7.2 The trenching comprised eight trenches measuring 30m x 4m wide, positioned in Areas A and B. The trenches were 4m wide to allow the excavation of a central step to safely examine a total depth of 2m of deposits in each trench.

7.3 Four test pits were excavated in Areas C and D, each measuring 3m x 3m and 1m deep. In the centre of the test pits a hand dug slot measuring 1m x 1m, and up to 1m deep was excavated.

7.4 The auger survey was sub-contracted to Birmingham Archaeo-Environmental, who undertook the works between 31st January and 2nd February 2007. The methodology, results and interpretation are included in this report as Appendix 2.

7.5 All trenches, test pits and auger points were located using a Thales Zmax survey grade GPS, with centimetre accuracy in real time.

7.6 Initial excavation of the trenches and test pits was undertaken using a wheeled 360^0 excavator with a 1.8m wide toothless ditching bucket. The deposits were removed in spits no greater than 0.2m in depth, under close archaeological supervision, until the first archaeologically significant horizon was exposed or until a safe working depth limit was reached.

7.7 A full written record of all archaeological features and deposits was made on standard AAA recording sheets, accompanied by plan and section drawings at an appropriate scale (1:20 and 1:50). A full photographic record was also made, and selected prints have been included as an appendix in this report (Appendix 1).

8.0 Evaluation Trench Results

8.1 Seven of the eight trenches (Trenches 1 – 6 and 8) in Areas A and B produced relatively uniform results and have been described as a group. Trench 7 exposed a large feature throughout the trench and is therefore described separately (see 6.6 below).

8.2 The uppermost deposit encountered was a loose rubble horizon of brick, mortar and large slabs of concrete, with some modern pottery. Towards the west end of the site there was evidence of dumps of refuse on the surface (context 100 in Trench 1) and below the modern brick rubble spread (context 301 in Trench 3). This spread of dark grey/black sandy silt contained abundant modern (19^{th} and 20^{th} century) glass bottles, brick, metal, and plastic.

8.3 Beneath the modern brick spread and refuse deposits was a mid brown dry and crumbly silt with a moderate spread of small fragments of coal that was interpreted as a desiccated peat horizon. Two fragments of clay pipe (a bowl and a pipe stem) were recovered from this deposit in Trench 1; unfortunately these were mislaid on route to the specialist.

8.4 The desiccated peat horizon sealed light blue clayey silt that is likely to have formed underwater in a reduced atmosphere. The upper surface of this deposit was cracked indicating that it had dried sufficiently to cause fissuring (the cracks were filled with the desiccated peat from above). No cultural material or other inclusions were exposed within this alluvial layer.

8.5 The light blue clay merged into a light brown clayey silt below, which was also devoid of archaeological artefacts. In Trench 1 this deposit (context 103) was found to be approximately 0.8m deep, merging into a further alluvial horizon of mid blue/grey clayey silt with black mottling, 104.

8.6 Trench 7 revealed the western edge of a large feature that ran the length of the trench beneath modern brick rubble spread 700. The feature, [702], was filled with 701, comprising building material (brick, tile and concrete) and modern debris, including metal, plastic and other contaminants. Due to the nature of the deposit it was left unexcavated.

9.0 Evaluation Test Pit Results

9.1 As Areas C and D were currently in use for the storage and selling of agricultural machinery it was decided that only four test pits would be excavated on health and

safety grounds. At each location an auger core was also taken from the base of the test pits to obtain a model of the underlying stratigraphy (Appendix 4, TP 1 – 4).

9.2 Test Pit 1 was located at the north end of Area C, between a large open-sided shed and a brick platform. The sequence of deposits encountered were a 0.2m thick layer of compacted concrete and gravel, 10, overlying brick rubble spread 11, approximately 0.5m deep. This sealed black moist silty clay, 12, identified as a possible degraded peat horizon. Below this, and extending to the limit of excavation was context 13, light blue clay that gradually changed in colour to light brown clay.

9.3 Test pit 2 lay at the south-west end of Area C, on an area of gravel. The sequence was similar to Test Pit 1 in that brick rubble 20 sealed wet black silty clay, 21, that in turn overlay a light blue clay, 22. Blue clay 22 merged into brown silty clay within the hand-dug slot in the test pit.

9.4 Test Pit 3 was positioned towards the north-east end of Area D, to the west of the Ancholme Way. The deposits encountered comprised a dense stone or concrete hardcore layer, 30, sealing 31, brick and concrete rubble. This overlay 32, black clayey silt that in turn sealed blue/grey clay, 33.

9.5 Test Pit 4 was located at the south end of Area D, on an area of stone hardcore adjacent to an office building. The sequence exposed differed to that exposed elsewhere in Areas A – D, with the upper horizon, brick rubble 40, sealing a stiff brown clay layer, 41. During machining of this 0.41m deep deposit a vertical stake was exposed that was carefully excavated by the author (Appendix 2, Plate 8). The roundwood stake had been trimmed at one end from 3 directions using a flat axe probably made of iron. Unusually, there appeared to be a small parallel sided hole, almost like a rivet hole, at the trimmed end. A sample of the stake that was sent to the Beta Analytic Laboratory in Miami, Florida, USA for radiocarbon dating suggested the stake was of post-medieval to early modern date c.17th – 20th century AD (at 95% confidence). Below this clay was dark brown wet peat 42, containing well-preserved twigs and leaves and other organic matter. A second radiocarbon sample was obtained from the base of this horizon, suggesting the onset of peat formation occurred here at 2.38m OD approximately 390 - 200 Cal BC at 95% confidence. The peat sealed light blue stiff clay 43 that merged into light brown clay 44.

10.0 Discussion

10.1 The archaeological trenching did not expose any archaeological remains of significance in Areas A – D.

10.2 The stratigraphic sequence encountered closely resembles the results of other studies in the floodplain at Brigg. The lowest horizons encountered form part of the estuarine clay sequence that is likely to have begun to form after the later Bronze Age – early Iron Age transition (post-construction of the Brigg prehistoric trackway). The suggestion that the upper part of this clay has become discoloured through desiccation is also born out by the results of the trenching, in that the upper surface of the brown clay was cracked and had changed to a light blue hue.

10.3 The peaty topsoil exposed throughout Areas A and B that seals the estuarine clays is almost certainly the upper peat and forest bed that has been identified elsewhere. Its desiccation can be put down to an artificial lowering of the water table following the programme of drainage initiated in the medieval period but expanded significantly in the 19th century.

10.4 The peaty soil exposed in Areas A and B were also revealed in Areas C and D. In these areas the degree of desiccation was less however, and in the southernmost test pit (Test Pit 4), well-preserved waterlogged peat was identified. A radiocarbon date from the base of the peat in Test Pit 4 (at 2.38m OD) indicated that peat began to form from c. 390 – 200 Cal BC. This indicates that the upper peat bed did not begin to form in the Roman period as has previously been thought, but that the process began much earlier, in the mid – late Iron Age. The mislaid clay pipe stems from the desiccated peat in Trench 1 are likely to be intrusive, having sunk into the then soft waterlogged soil.

10.5 Overlying the peat in Test Pit 4 was a previously unrecorded layer of clay that provides evidence for a sustained flood event that sealed the upper forest and peat bed. This clay horizon remains undated, although a radiocarbon date from a worked wooden stake driven through this deposit indicated it had formed by the 17th – 20th century AD.

10.6 The results of the auger survey show that the upper deposits encountered were fine-grained silt and clay alluvium, becoming shallower from west to east (Appendix 4). These deposits, which were the estuarine deposits identified from the trenching, were likely formed through floodplain alluviation by suspension deposition.

10.7 This alluvial sequence had replaced a series of interbedded clayey silts and fine sands that probably formed through suspension deposition from standing water on the floodplain. The presence of fine sands in the sequence shows probable periods of lowland flooding from the Old River Ancholme.

10.8 Although the trenching or test pitting did not reach the depth of the prehistoric trackway (approximately 0.3m OD), the augering showed a relatively uniform sequence across the site to a maximum depth of -4.12m OD, with no evidence of the lower peat and forest bed upon which the trackway was laid.

10.9 The large feature filled with modern refuse in Trench 7 may be a hollow associated with 19th and 20th century clay extraction; however it was not possible to ascertain if this was the case.

10.10 The brick rubble spread that was ubiquitous to the site is believed to be associated with the destruction of the 19th century Ancholme Iron Foundry buildings in Areas C and D during the development of the Peacock and Binnington site in the 20th century.

11.0 Effectiveness of Methodology

11.1 The trial trenching and auger survey methodology employed was appropriate to the scale and nature of the development. It provided a model of the palaeoenvironmental deposits that exist across the site, and demonstrated that few, if any, archaeological deposits are likely to exist across the site. It is however recognised that the trenching, particularly in Areas C and D was keyhole, and that isolated waterlogged remains of potential interest within the estuarine clays may have been missed by the evaluation.

12.0 Acknowledgements

12.1 Allen Archaeological Associates would like to take this opportunity to thank Keigar Homes Limited, especially Garry and Keith Whall, for their swift response to

requests and their help throughout the project. The staff at Peacock and Binnington's are also thanked for their help during the fieldwork. The author would also like to express his thanks to Birmingham Archaeo-Environmental for their rapid deployment and subsequent reporting during the works. Alison Williams of North Lincolnshire Museum is thanked for providing helpful information prior to and during the evaluation.

13.0 Bibliography

Allen, M., 2007**,** *Project Design for an Archaeological Evaluation by Trial Excavation and Auger Survey: Proposed Residential Development at Island Carr, Brigg, North Lincolnshire.* Allen Archaeological Associates. Unpublished.

Atkinson, D., 2004, An Archaeological Watching Brief at Water's Edge, Brigg. Humber Field Archaeology. Unpublished client report.

British Geological Survey, 1982, *Brigg. England and Wales Sheet 89*. Solid and Drift Edition.

Cameron, K., 1998, *A Dictionary of Lincolnshire Place-Names*. English Place-Name Society Popular Series Vol. 1

Chapman, H., Head, R., Fenwick, H., Neumann, H. and Van de Noort, R., 1998, The archaeological survey of the Ancholme Valley, in Van de Noort, R. and Ellis, S. (eds), *Wetland Heritage of the Ancholme and lower Trent Valleys: An Archaeological Survey*. Humber Wetlands Project, centre for Wetland Archaeology, The University of Hull.

English Heritage, 1991, *Management of Archaeological Projects*. Historic Buildings and Monuments Commission for England. London.

Hall, N., 2002, *Land at Yarborough Mills, Brigg, North Lincolnshire: An Assessment of Potential.* Humber Field Archaeology. Unpublished client report.

Heath, A and O'Neill, R., 2005, Archaeological Evaluation by Auger Survey on Land at The Bungalow, Almond Grove, Brigg, North Lincolnshire. ARCUS. Unpublished client report.

I.F.A., 2001, *Standards and guidance for archaeological evaluations*, Institute of Field Archaeologists, Reading

May, J., 1976, *Prehistoric Lincolnshire*. History of Lincolnshire Volume 1, History of Lincolnshire Committee.

Neumann, H., 1998, the palaeoenvironmental survey of the Ancholme Valley, in Van de Noort, R. and Ellis, S. (eds), *Wetland Heritage of the Ancholme and lower Trent Valleys: An Archaeological Survey*. Humber Wetlands Project, centre for Wetland Archaeology, The University of Hull.

North Lincolnshire Council, 2003, *Development Brief for Island Carr North*.

Olesky, V., 2006, *Island Carr Industrial Estate, Brigg: A Cultural Heritage Desk-Based Assessment.* AOC Archaeology Group. Unpublished client report.

Oxford Archaeology, 2000, *Site of the Former Stock Market at Brigg, North Lincolnshire. Client Report and Summary Publication*. Unpublished client report.

Tann, G., 1995, Brigg (West) *Resewerage Scheme: Old Stockmarket, Brigg. Archaeological Monitoring of Groundworks*. Lindsey Archaeological Services. Unpublished client report.

Tann, G., 2005, *Land at 9 Atherton Way, Brigg: Archaeological Watching Brief*. Lindsey Archaeological Services. Unpublished client report.

Tibbles, J., 2003, *An Archaeological Excavation at Water's Edge, Brigg, North Lincolnshire*. Humber Field Archaeology. Unpublished client report.

Van de Noort, R. and Ellis, S. (eds), 1998, *Wetland Heritage of the Ancholme and lower Trent Valleys: An Archaeological Survey*. Humber Wetlands Project, centre for Wetland Archaeology, The University of Hull.

Wylie, W.M., 1884, *Brigg timber roadway*, in Proceedings of the Society of Antiquaries, X.

Appendix 1: Colour Plates

Plate 1: Areas A and B during evaluation. Taken from south-east corner of Area A, looking west

Plate 2: Area C road. Taken from north end of Area C, looking south

Plate 3: Trench 1 north-east facing section, looking south-west

Plate 4: Trench 2 south-east facing section, looking north-west

Plate 5: Trench 8 north-east facing section, looking south-west

Plate 6: Test Pit 1 north facing section, looking south

Plate 7: Test Pit 4 following excavation looking north-east

Plate 8: Close-up shot of worked stake from Context 41 in Test Pit 4

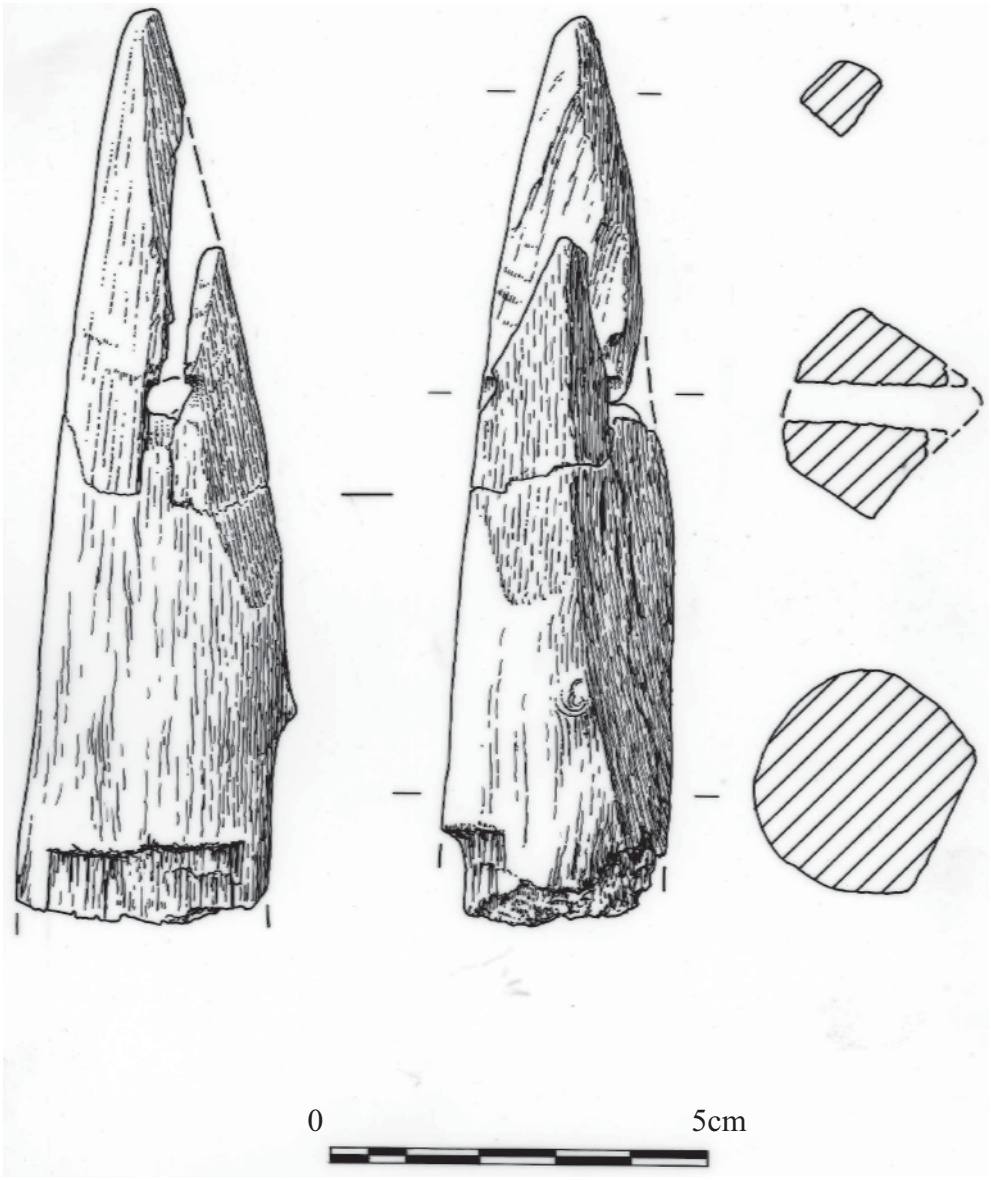
Appendix 2: Waterlogged wood analysis

Island Carr Brigg – Wooden stake

The vertical stake is roundwood, trimmed at one end from 3 directions with a completely flat axe (probably iron). Through the trimmed end there appears to be a small parallel sided hole, almost like a rivet hole.
The wood is quite slow grown and fairly dense. It is completely waterlogged, and although it has lost all flexibility, it is still quite hard and strong.
It is unlikely to be either very ancient or very recent.. It is notoriously difficult to gauge how old a piece of waterlogged wood might be because there can be such great variability in the burial conditions, but a Saxon or early Medieval date seems likely.

Roundwood, oak (*Quercus* sp.), trimmed 1 end/3 directions L.120 D.30/33mm

Maisie Taylor
Flag Fen Research Centre



Detailed illustration of the worked wood from Test Pit 4 (Context 41) at scale 1:1
By D Hopkins (Archaeological Project Services)

Appendix 3: Radiocarbon dates

Mr. Mark Allen — Report Date: 3/16/2007

Allen Archaeological Associates — Material Received: 2/26/2007

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 228151	190 +/- 40 BP	-25.8 o/oo	180 +/- 40 BP
SAMPLE : BIC07 TP4 41			
ANALYSIS : AMS-ADVANCE delivery			
MATERIAL/PRETREATMENT : (wood): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal AD 1650 to 1710 (Cal BP 300 to 240) AND Cal AD 1710 to 1880 (Cal BP 240 to 60) Cal AD 1910 to 1950 (Cal BP 40 to 0)			
Beta - 228152	2260 +/- 40 BP	-26.4 o/oo	2240 +/- 40 BP
SAMPLE : BIC07 TP4 42			
ANALYSIS : AMS-ADVANCE delivery			
MATERIAL/PRETREATMENT : (wood): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal BC 390 to 200 (Cal BP 2340 to 2150)			

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.8:lab. mult=1)

Laboratory number: **Beta-228151**

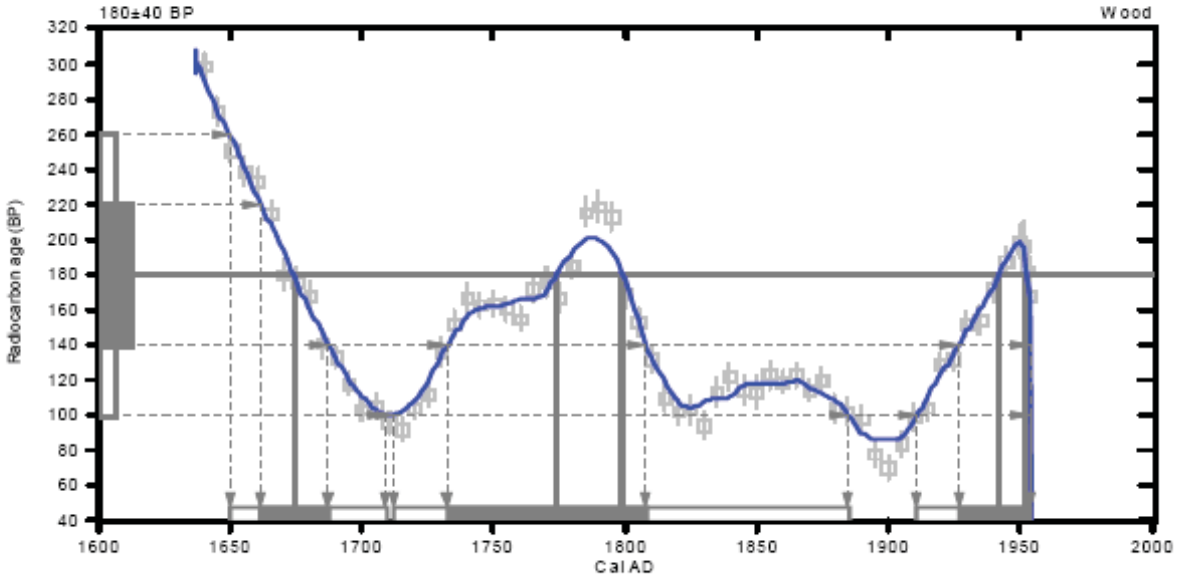
Conventional radiocarbon age: **180±40 BP**

2 Sigma calibrated results: **Cal AD 1650 to 1710 (Cal BP 300 to 240) and**
(95% probability) **Cal AD 1710 to 1880 (Cal BP 240 to 60) and**
Cal AD 1910 to 1950 (Cal BP 40 to 0)

Intercept data

Intercepts of radiocarbon age with calibration curve: Cal AD 1670 (Cal BP 280) and
Cal AD 1770 (Cal BP 180) and
Cal AD 1800 (Cal BP 150) and
Cal AD 1940 (Cal BP 10) and
Cal AD 1950 (Cal BP 0)

1 Sigma calibrated results: Cal AD 1660 to 1690 (Cal BP 290 to 260) and
(68% probability) Cal AD 1730 to 1810 (Cal BP 220 to 140) and
Cal AD 1930 to 1950 (Cal BP 20 to 0)



References:

Database used
Intcal04
Calibration Database
INTCAL04 Radiocarbon Age Calibration
IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).
Mathematics
A Simplified Approach to Calibrating C14 Dates
Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-26.4:lab. mult=1)

Laboratory number: **Beta-228152**

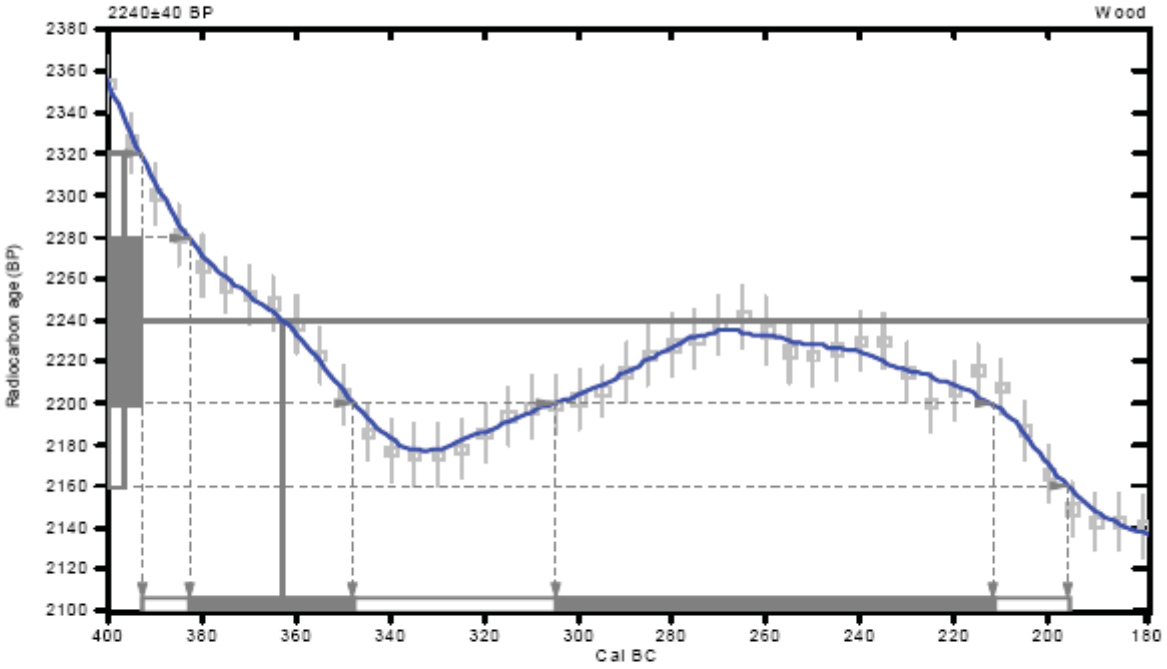
Conventional radiocarbon age: **2240±40 BP**

2 Sigma calibrated result: (95% probability) **Cal BC 390 to 200 (Cal BP 2340 to 2150)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal BC 360 (Cal BP 2310)

1 Sigma calibrated results: (68% probability) Cal BC 380 to 350 (Cal BP 2330 to 2300) and Cal BC 300 to 210 (Cal BP 2260 to 2160)



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Appendix 4: Geoarchaeological Assessment of the Floodplain Deposits at Island Carr, Brigg

March 2007

Client: Allen Archaeological Associates

By

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Summary

- Allen Archaeological Associates on behalf of Keigar Homes Limited undertook a project design for an archaeological evaluation of land at Island Carr in Brigg. Due to the abundance of both archaeological and palaeoenvironmental discoveries in the Ancholme Valley around Brigg, the site potentially contained a sedimentary archive of considerable importance. Birmingham Archaeo-Environmental undertook a geoarchaeological auger survey programme on behalf of Allen Archaeological Associates to establish the stratigraphy, sub-surface topography and character of alluvial deposits across the site.

- This report presents the results of auger survey across the area in order to record the alluvial sediments and, where appropriate, recover samples for palaeoenvironmental assessment and radiocarbon dating. The site was divided into four areas (A, B, C and D) according to the site's development potential.

- Initial coring and stratigraphic analysis within site areas A-D suggested that the sedimentary archive was broadly homogenous across the site. Consequently, the number of cores was reduced from 25 to18.

- Taking into account the Made Ground commonly overlying the natural strata, coring allowed a maximum depth of 6.80m below ground level (bgl) to be reached. The Jurassic Ancholme Clay bedrock, which underlies the region, was not encountered during coring, suggesting the alluvial deposits may exceed 7.00m in thickness across the site.

- The stratigraphic archive can be broadly divided into two lithologically distinct units. The majority of cores encountered a basal unit comprising interbedded grey-brown clayey silts and fine sands, with the concentration of fine sand laminations commonly increasing with depth. These were overlain by a unit comprising grey-brown clayey silts with varying abundances of organic and iron mottling. The basal unit was encountered at shallower depths with distance east towards the Old River Ancholme.

- Organic-rich sediments were only present within Trial Pit 4, located at the extreme southeast of the site. Here, a *c*. 0.22m thick dark brown peat unit was encountered at *c*. 1.05m depth and was both overlain and underlain by clayey silts. It is suggested that the deposits developed through gradual accumulation on a waterlogged former floodplain palaeo-landsurface.

- Sample cores were extracted from the extreme east of Area A and extreme west of Area B in order to assess the spatial variation in palaeoenvironmental conditions relative to the Old River Ancholme. In addition, samples were taken from the peat unit as well as the overlying and underlying clayey silt units within Trial Pit 4. The program of geoarchaeological work undertaken at the Island Carr site has identified sediments of significant palaeoenvironmental potential.

1. Introduction

An archaeological overview of floodplain land in the Ancholme valley around Island Carr, Brigg, was prepared by Allen Archaeological Associates (Allen, 2007), in order to assess the palaeoenvironmental and archaeological potential of the area prior to construction activities. Previous palaeoenvironmental studies (Neumann, 1998) suggest the presence of up to two peat layers within the region, overlain and underlain by fine clays and silts. Reed swamp and wet woodland environmental conditions are likely to have been responsible for the development of these peat units, whilst a combination of floodplain alluviation and marine/estuarine inundation would have contributed to the minerogenic sedimentation. Consequently, a design for geoarchaeological field investigation was prepared by Allen Archaeological Associates (2007) for the purposes of mitigation. This report presents the results of geoarchaeological investigations (hand-held auger coring, recording and sampling) associated with this scheme of treatment.

The work had two main aims:

- To identify, record, characterise and sample organic deposits, primarily peats, encountered and described during previous geotechnical surveys. Assess this material for biological preservation (pollen, insects, diatoms, macroscopic plant remains) and identify suitable samples for radiocarbon dating.

- To provide a detailed understanding of the subsurface stratigraphy of any peat and fine grained alluvial silts and clays, which may aid in the development of archaeological prospection strategies.

2. Coring and Sampling Methodology

The site under assessment had previously been divided into four zones in relation to land ownership and subsequent development potential (Areas A, B, C & D; Figure 1). The original coring strategy required a total of 21 cores to be extracted on a 30m^2 coring grid within Areas A and B. In addition, cores were also to be taken from within four trial pits located within Areas C and D. The position of each core location had been recorded by Mark Allen (Allen Archaeological Associates).

Coring took place over three days during January (31st) and February (1st, 2nd) 2007 and was undertaken by Birmingham Archaeo-Environmental. Coring was undertaken using a manual gauge 'Eijkelcamp' corer. On arrival to the site, the presence of large piles of debris in the south-western corner of Area B prevented access for two of the proposed core locations. In addition, initial coring indicated that the stratigraphic archive preserved within Areas A and B was relatively homogenous. Previous studies into the stratigraphy of the Ancholme Valley region had identified layers of peat interbedded within alluvial clays and silts (Neumann, 1998). However, these were not evident within the Island Carr site, and as a consequence, through consultation with Mark Allen and Alison Williams (Lincolnshire County Council), the coring resolution within Areas A and B were reduced from 21 to 14 cores. Cores were commonly terminated at a depth of 5.5 to 6.0m below ground level (bgl) although coring reached a depth of up to 6.8m bgl to ensure that no organic units were present at greater

depths. The glacial sands and clays known to underlie the region were not encountered during coring. It was therefore not possible to assess the full thickness of the alluvial deposits that overlie the glacial sediments. Once coring across the Areas A and B had been undertaken, two of the core locations were identified as having sedimentary sequences typical of the stratigraphic archive in this area and were revisited to recover suitable samples for environmental assessment. All sediment samples were extracted, stored in 1m lengths of plastic guttering and returned to the laboratory at the University of Birmingham for palaeoenvironmental assessment. Trial Pitting in Area D had identified a thin (*c*. 0.22m) layer of peat overlain and underlain by organic silts and clays. In order to undertake a full palaeoenvironmental assessment of the sedimentary sequence, the peat unit was sampled using two 0.25m length monolith tins. In addition, bulk samples were taken from the peat unit (two bulk samples) as well as the underlying and overlying silt units.

3. Preliminary Results of Fieldwork

At the time of coring, Areas A and B were derelict, comprising sparse vegetation and domestic waste and building rubble. Areas C and D were still active sites used for the construction and storage of agricultural machinery. The site is located between the modern and Old River Ancholme. Although the surface showed subtle altitudinal variations, no significant topographic features were identified.

The results of the coring allowed the sediments encountered to be broadly divided into two lithological units: upper fine-grained silts and clays and basal interbedded clayey silts and fine sands. The transition between the two units however was gradual, with increasing fine sand laminations occurring with depth. This sedimentary sequence was present throughout Areas A, B and C as well as the northern part of Area D. Organic deposits were only encountered within the southern margin of Area D in Trial Pit 4, where a *c*. 0.22m peat unit was overlain and underlain by organic-rich silts and clays. Core stratigraphy is summarised in Appendix 1. The coring data was modelled using ESRI ArcGIS 9 sofware following methods developed previously (Chapman and Van de Noort, 2001; Chapman and Gearey, 2003). Values were extracted from the core data representing three levels: the absolute heights of ground surface (Figure 2), the transition between clay silts and sandy silts (Figure 3), and base of cores (Figure 4). These point values were interpolated using tension spline to generate continuous surfaces of deposits. This method effectively 'rubbersheets' a surface through the data points without generalising the input points and without generating excessive interpolation artefacts (cf. Burrough, 1986; Wheatley and Gillings, 2002; Chapman 2006).

Levelling of each core location by Allen Archaeological Associates allowed lithostratigraphic units to be correlated across the Areas A and B. Except from the core extracted from Trial Pit 4 (levelled to 2.68m O.D), the top of all core locations were levelled to between 1.74m O.D. and 2.33m O.D. Considering the size of the site, there was therefore relatively minimal altitudinal variation present across the stratigraphic archive.

3.1 Sedimentology

3.1.1 Interbedded clayey silts and fine sands

All cores extracted terminated in a unit comprising light grey-brown fine-grained silts and clays of alluvial origin with an abundance of interbedded fine sand laminations within. The abundance of the fine sand laminations increased with depth, although the laminations rarely exceeded *c*. 1cm thickness (Figure 5). The depth at which the fine sand laminations are first encountered decreased with distance towards the Old River Ancholme to the east (see Figure 3). For example, in Core 21 towards the Old River Ancholme, fine sand laminations are encountered from 1.90m bgl depth (0.95m O.D.). In contrast, Core 5, located to the extreme west of the site contained very few sand horizons within the 5.65m thick minerogenic sequence (base of core -3.11m O.D.). It is suggested that these clayey silts have developed through suspension deposition from standing water on the floodplain of the Old River Ancholme. In contrast, the fine sand laminations reflect periods of increased depositional energy, likely to have occurred in response to periods of lowland flooding from the Old River Ancholme. This is supported by the increased abundance of sands proximal to the rivers former main channel.

3.1.2 Silt and Clay Alluvium

All cores contained light grey-brown, fine-grained alluvial silts and clays towards the surface of the 'natural' stratigraphic archive. These deposits were thickest towards the west, thinning progressively eastward. The thickness of the unit varied from *c*. 0.75m towards the Old River Ancholme, to *c*. 5.00m within Core 5 to the west, where very few sand laminations were evident within the stratigraphic archive. Orange iron oxide mottling was common towards the top of the unit, whilst organic mottling was also evident in varying abundance throughout the alluvium, reflecting the fluctuating influence of groundwater conditions. Considering the proximity of the Old River Ancholme to the eastern margin of the site, floodplain alluviation, occurring through suspension deposition, is the likely mode of deposition of the clays and silts. The clayey silt unit is thickest with distance away from the Old River Ancholme (See Figure 3). This is likely due to the inability of the fine sands to be transported any considerable distance away from the river channel during flood events.

3.1.3 Peat

Trial pitting in the south-east of Area D (TP4) identified a single peat unit at a depth of 1.05m bgl (2.68m O.D.; Figure 6). The unit was c. 0.22m thick and was predominantly comprised of well-humified organics with occasional rootlets, leaf, reed and wood fragments. The peat unit was underlain by a light grey organic-rich clayey silt unit that contained an increasing abundance of reed fragments towards the upper boundary with the peat. The peat was in turn overlain light grey-brown clayey silt unit. The upper and lower minerogenic units are likely to correlate with the clayey silts found in Areas A, B and C to the north. Coring within TP4 failed to identify the presence of any further peat units below the excavated trial pit. As the trial pit was located within an active commercial site, the surrounding land either contained buildings or was capped by tarmac. It was therefore impossible to undertake further coring to assess the spatial distribution of the peat unit identified in TP4. The visual assessment of the peat unit, combined with the associated underlying and overlying clayey silt units suggests the organic horizon developed through gradual *in-situ* organic sedimentation on the former floodplain of the Old River Ancholme. The

saturated nature of the floodplain environment would have enabled the accumulation of organic remains on the waterlogged palaeo-landsurface. Although it cannot be discounted that the organic unit may in fact be a relict infilled palaeochannel, the clayey silt unit that underlies the peat contains organic remains, which increase in abundance towards the upper unit boundary. This is suggestive of a gradational transition from floodplain minerogenic sedimentation to *in-situ* organic floodplain accumulation.

3.2 Sampling Strategy

Core locations 5 and 9 were revisited and adjacent cores sampled for material suitable for further palaeoenvironmental analysis. In addition, the stratigraphic sequence contained within TP4 was also sampled. Monolith tins were taken from the peat unit, whilst bulk samples were also taken from the peat unit as well as from the clayey silts that both underlie and overlie the peat.

Core 5

0.00-0.65m	Made Ground
0.65-0.78m	Dark grey-brown clayey silt with occasional organic mottling
0.78-1.30m	Light grey-brown clayey silt with iron mottling
1.30-5.35m	Light grey-brown clayey silts
5.35-5.65m	Dark grey clayey silt with abundant organic 'Sh' mottling

Core 9

0.00-0.75m	Made Ground
0.75-0.95m	Dark grey-brown clayey silt with organic mottling
0.95-1.60m	Light grey-brown clayey silt with iron mottling
1.60-2.55m	Light grey clayey silts with occasional fine sand laminations
2.55-5.75m	Light grey-brown interbedded clayey silts and fine sands

Trial Pit 4 (TP4)

0.00-0.70m	Made Ground (previously excavated and recorded by AAA)
0.70-1.05m	Light brown clayey silts
1.05-1.37m	Dark brown-black well humified peat with herbaceous remains and occasional wood fragments
1.37-1.45m	Light grey-brown rooty organic-rich clayey silts. Well preserved reed fragments also present, decreasing in abundance with depth
1.45-2.05m	Light grey-brown clayey silts with occasional organic remains

4. Conclusions

The peat unit present within TP4 and is suggested to be indicative of *in-situ* organic accumulation on the floodplain of the Old River Ancholme. The manual auger survey to the north however failed to identify the peat units known to be present elsewhere within the Ancholme Valley. The stratigraphic sequence present within Areas A and B are concluded to represent floodplain deposition that took place primarily through vertical accretion. The archive is dominated by light grey-brown clayey silts, which accumulated within standing water on the floodplain of the Old River Ancholme. However, the influence of fine sands proximal to the Old River Ancholme is

suggestive of episodic flooding from the river and the deposition of coarser minerogenic sediments during higher energy conditions. One question that could not be addressed through fieldwork alone is the influence of estuarine conditions within the stratigraphic sequence. The Old River Ancholme is believed to have acted as an inlet of the Humber in fully open marine conditions prior to 3,990-3,630 Cal. yrs BC (4,990±75 BP OxA-7137; Neumann, 1998). Over time, there was believed to be a reduction in marine influence so that marine input only occurred during high tides, depositing laminated sands and clays. It is therefore suggested that the interbedded clayey silts and fine sands evident within the stratigraphy post date *c*. 3,990-3,630 Cal. BC and represents periodic estuarine inundation during high tide. The reduction in sand laminations with height through the sedimentary sequence could also therefore reflect the reduction in estuarine influence over time. The vertical accretion on the floodplain would have eventually raised the palaeo-landsurface above the influence of Highest Astronomical Tide (HAT), resulting in sedimentation occurring only through terrestrial floodplain deposition.

5. Recommendations

The peat unit identified within TP4 should be considered for palaeoenvironmental analysis. Allen Archaeological Associates have submitted an organic sample from the base of the peat unit for radiocarbon dating. In addition, a wooden stake discovered from within the silts that overlie the peat is also being dated. Therefore, a chronological understanding of the stratigraphic archive will be available. To obtain a full understanding from the trial pit sequence, the following palaeoenvironmental assessment is suggested:

- Pollen analysis from the top, middle and bottom of the peat unit in order to assess the palaeoecological conditions present at the time of deposition
- Diatom analysis from the clayey silt units that overlie and underlie the peat unit to assess whether estuarine or freshwater conditions were prevalent at the time of minerogenic deposition
- Beetle analysis of two bulk samples from within the peat unit and bulk samples from the clayey silts that overlie and underlie the peat unit.

The cores extracted from Areas A and B should also be considered for palaeoenvironmental analysis. Although the absence of organic material from within the stratigraphic sequence restricts the potential for in-depth analysis to be undertaken, the following palaeoenvironmental assessment is suggested:

- Diatom analysis of three samples from Core 5 at depths 1.10m, 2.90m and 4.75m bgl to assess the influence of estuarine conditions on the accumulation of the clayey silt unit.
- Diatom analysis of four samples from Core 9. Sampling should be undertaken in pairs with each pair consisting of a sample from a sand horizon and clayey silt horizon. One pair of samples would be taken from the base of the interbedded unit (4.94m and 4.96m bgl) and one pair of samples from the top of the interbedded unit (1.75m and 1.77m bgl). This will identify whether a) estuarine conditions did indeed contribute to the development of the

interbedded sedimentary sequence and b) if there was a reduction in estuarine influence over time

- The remaining sediments from the two cores should be considered for beetle analysis. Each core should be bulk sampled into top, middle and bottom samples to be assessed for insect remains (six samples in total) to infer the spatial and temporal variations in environmental conditions at the site.

References

Allen, M.R. (2007) *Project design for archaeological evaluation by trial excavation and auger survey: proposed residential development at Island Carr, Brigg, North Lincolnshire*. Allen Archaeological Associates, Lincoln.

Burrough, P.A. (1986). *Principles of geographical information systems for land resource management*. Oxford: Oxford University Press

Chapman, H.P. & Gearey, B.R. (2003). Archaeological predictive modelling in raised mires - concerns and approaches for their interpretation and management. *Journal of Wetland Archaeology* 2, 77-88

Chapman, H. 2006. *Landscape archaeology & GIS*. Stroud: Tempus Publishing

Chapman, H.P. & Van de Noort, R. (2001). High-resolution wetland prospection, using GPS and GIS: landscape studies at Sutton Common (South Yorkshire), and Meare Village East (Somerset). *Journal of Archaeological Science* 28, 365-75

Neumann, H. (1998). The palaeoenvironmental survey of the Ancholme Valley. In Van de Noort & Ellis (eds): *Wetland Heritage of the Ancholme and Lower Trent Valleys: An Archaeological Survey*. English Heritage.

Wheatley, D. & Gillings, M. (2002). *Spatial technnology and archaeology - the archaeological applications of GIS*. London: Taylor and Francis

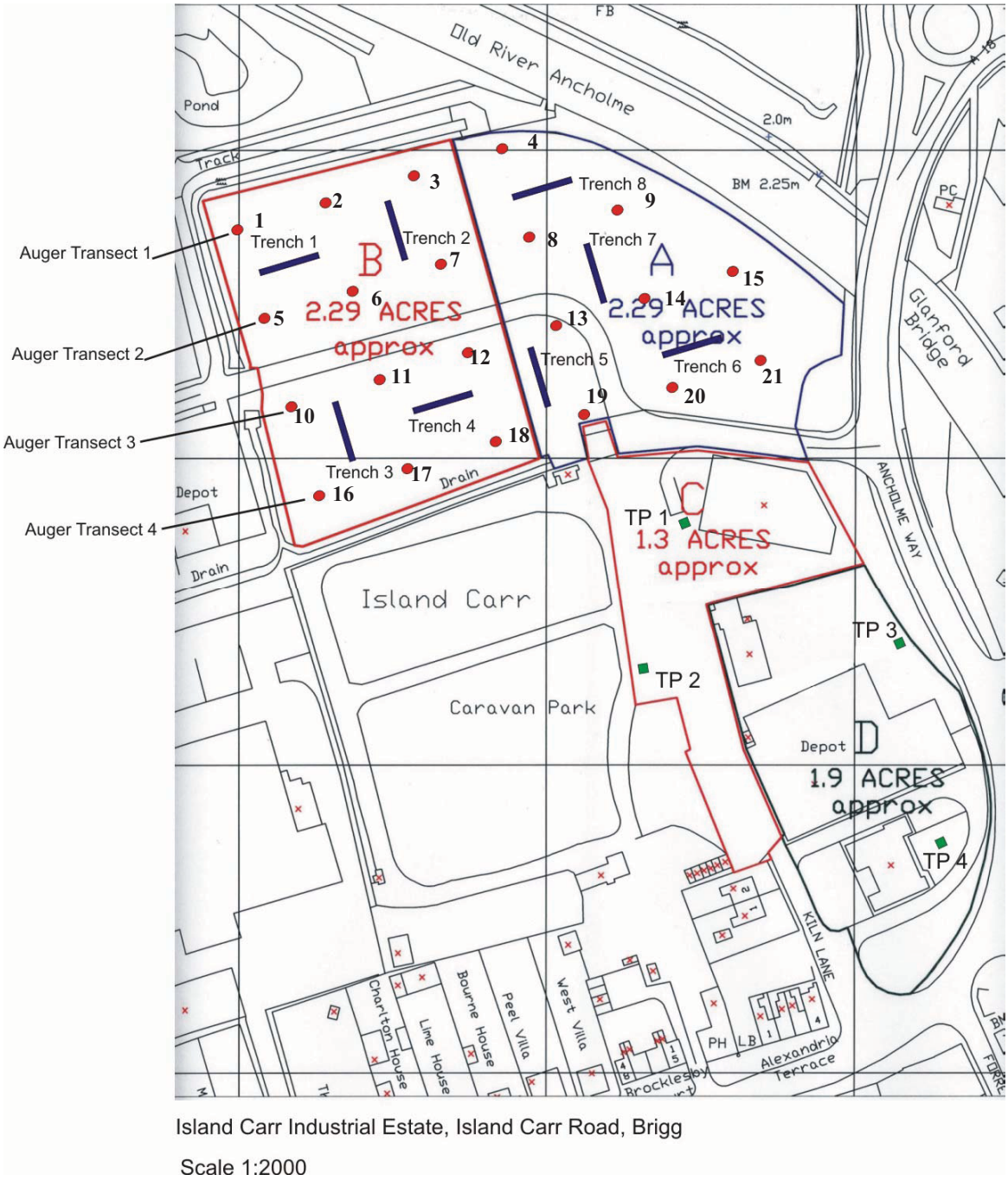


Figure 1: Coring Strategy proposed by Allen Archaeological Associates. Cores 16 and 17 could not be taken due to the presence of debris piles in the south-western corner of Area B.

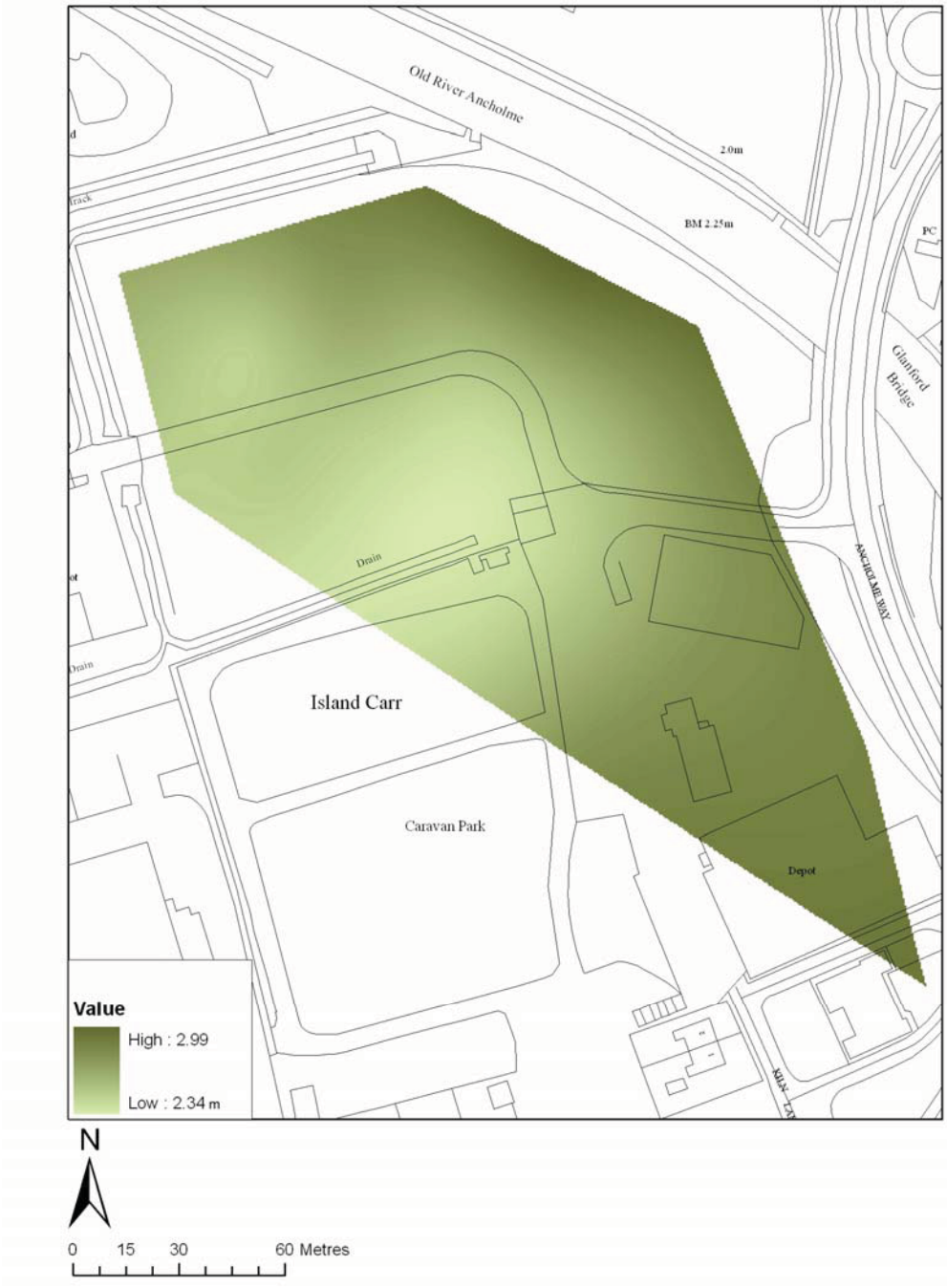


Figure 2: GIS generated model of ground surface conditions (m OD) encountered during the stratigraphic survey. The model has inferred the surface altitude of the site in between core locations.

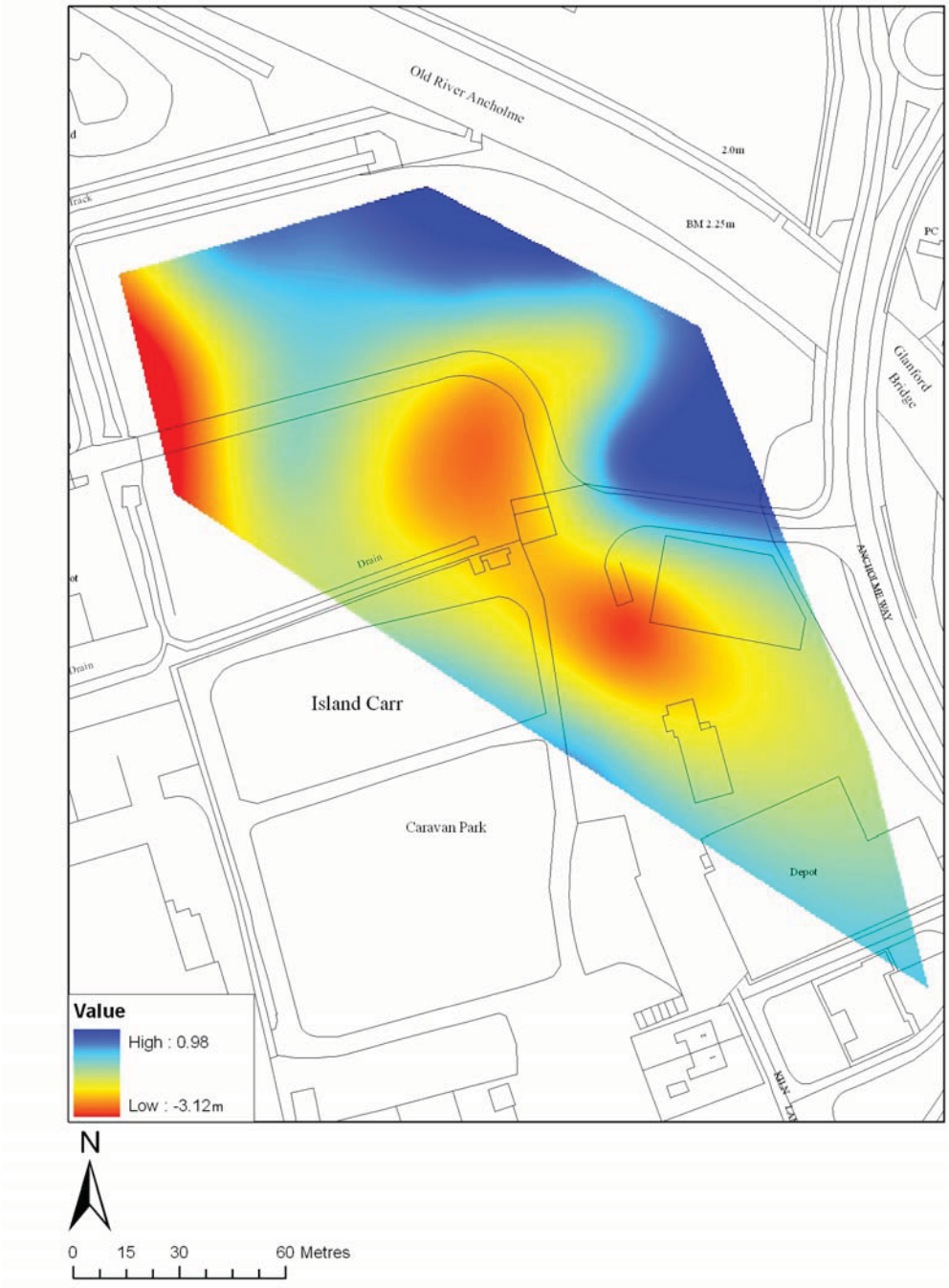


Figure 3: GIS generated model of the depositional altitude (m OD) at which the boundary between the upper clays and silts and the lower interbedded sands and silts was encountered during the stratigraphic survey. The model has inferred the depositional altitude of the unit boundary in between core locations.

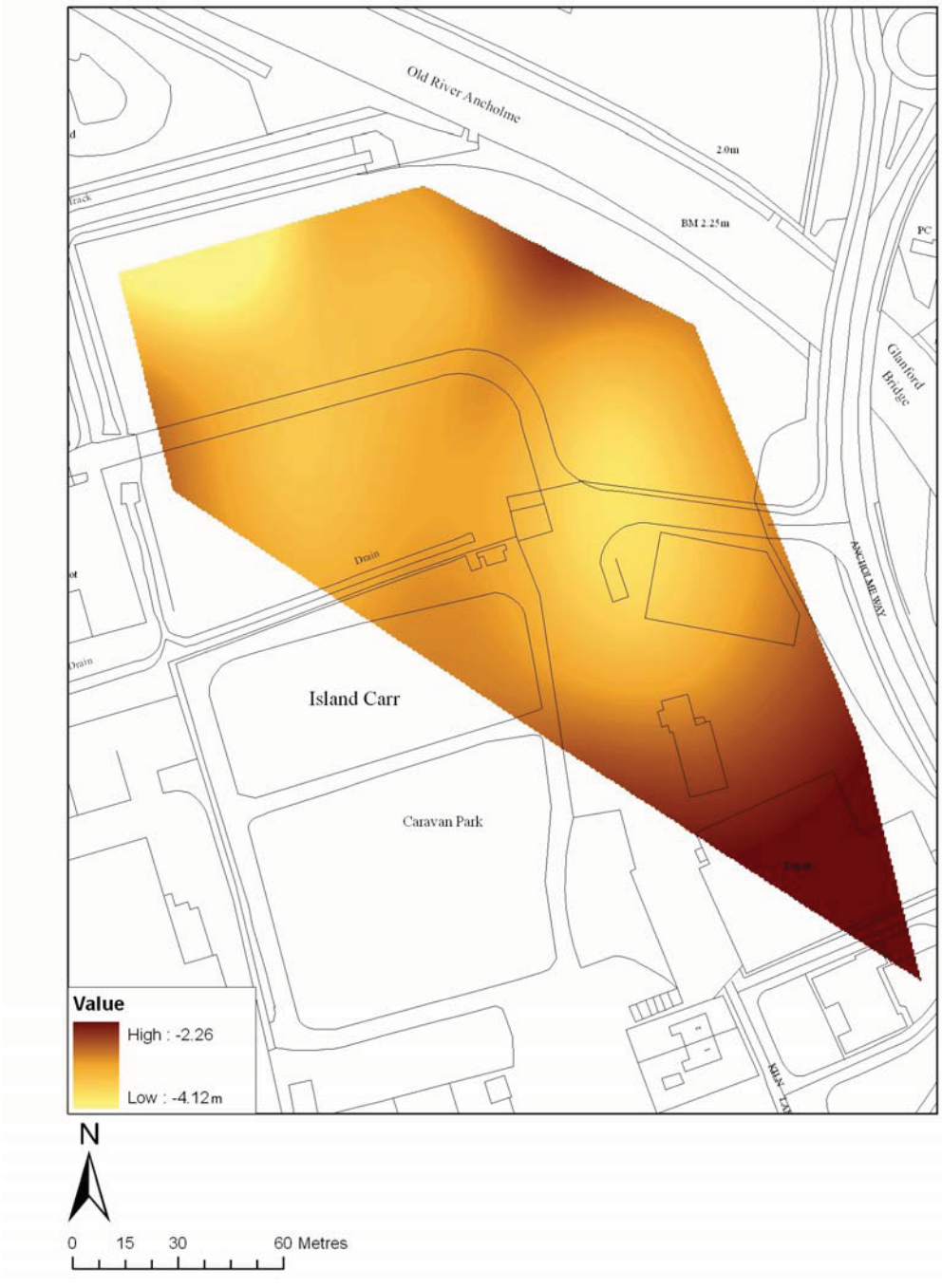


Figure 4: GIS generated model of the depositional altitude (metres OD) at which coring was abandoned during the stratigraphic survey. The model has inferred the depth in between core locations.

Figure 5: Photograph of interbedded clayey silts and sands encountered towards the base of all extracted cores. Photograph from Core 3, 3.50-4.00m depth.

Figure 6: Photograph of Trial Pit 4, identifying peat unit overlain and underlain by clayey silts. To assist subsequent palaeoenvironmental analysis, two monolith tins were taken from the peat unit (pictured) in addition to bulk samples from the peat and the clayey silts overlying and underlying the peat

Appendix I

Summary of coring stratigraphy from Island Carr, Brigg

Trial Pit 1 (TP1) 2.64m O.D.

0.00-1.10m	Made Ground (previously excavated and recorded by AAA)
1.10-2.30m	Light grey-brown clayey silt with occasional iron and organic mottling
2.30-2.60m	Dark grey clayey silt with occasional organic mottling
2.60-2.80m	Light grey-brown clayey silt
2.80-3.10m	Grey grown organic-rich clayey silt with some sand
3.10-3.60m	Grey-brown silt
3.60-4.10m	Sediment not sampled within chamber
4.10-4.20m	Grey-brown silty clay
4.20-4.70m	Dark grey-brown clayey silt with occasional fine sand laminations
4.70-5.10m	Grey-brown clayey silts
5.10-6.10m	Grey-brown interbedded layers of clayey silts with fine sands. Individual layers rarely exceed 1cm thickness.

Trial Pit 2 (TP2) 2.78m O.D.

0.00-0.85m	Made Ground (previously excavated and recorded by AAA)
0.85-205m	Light grey-brown clayey silt with occasional iron and organic mottling
2.05-2.85m	Grey-brown clayey silts with occasional fine sand laminations
2.85-5.65m	Grey-brown interbedded layers of clayey silts with fine sands. Increasing concentration of sand laminations with depth.
>5.65m	*Repeated borehole collapse encountered, possibly due to saturated nature of substrate and high sand content*

Trial Pit 3 (TP3) 2.85m O.D.

0.00-0.90m	Made Ground (previously excavated and recorded by AAA)
0.90-1.10m	Dark grey-brown organic-rich clayey silts with occasional sands
1.10-1.40m	Grey-brown clayey silt with occasional organic mottling
1.40-1.90m	Light brown clayey silt with occasional organic mottling
1.90-3.60m	Grey-brown clayey-silt with occasional fine sand laminations
3.60-3.90m	Dark grey-brown silt with organic mottling
3.90-4.60m	Grey-brown interbedded layers of clayey-silts and fine sands
4.60-5.50m	Same as above but increasing concentration of sand laminations with depth.

Trial Pit 4 (TP4) 3.68m O.D.

0.00-0.70m	Made Ground (previously excavated and recorded by AAA)
0.70-1.05m	Light brown clayey silts
1.05-1.37m	Dark brown-black well humified peat with herbaceous remains and occasional wood fragments
1.37-1.45m	Light grey-brown rooty organic-rich clayey silts. Well preserved reed fragments also present, decreasing in abundance with depth.
1.45-2.05m	Light grey-brown clayey silts with occasional organic remains
2.05-4.50m	Light grey clayey silts with occasional fine sand laminations
4.50-6.20m	Light grey-brown interbedded layers of clayey silts and fine sands

Core 1 (2.58m O.D.)

0.00-0.65m	Made Ground
0.65-0.75m	Dark grey-brown, dense, clayey silt with abundant iron mottling
0.75-1.15m	Light grey-brown, dense, clayey silt
1.15-1.90m	Light grey-brown clayey silt
1.90-2.10m	Dark grey clayey silt with occasional organic mottling
2.10-3.05m	Grey clayey silt with occasional organic mottling fine sand laminations
3.05-3.80m	Light grey-brown interbedded layers of clayey silts and fine sands
3.80-4.10m	Grey-brown clayey silt
4.10-5.70m	Light grey interbedded layers of clayey silts and fine sands

Core 2 (2.68m O.D.)

0.00-1.00m	Made Ground
1.00-2.00m	Light grey-brown clayey silt
2.00-2.25m	Light grey-brown clayey silt with occasional sand laminations
2.25-2.50m	Dark grey clayey silt with occasional organic mottling
2.50-2.80m	Dark grey clayey silt with occasional sand laminations
2.80-6.80m	Grey-brown interbedded layers if clayey silts and fine sands *Becoming dark grey-brown with depth*

Core 3 (2.81m O.D.)

0.00-1.10m	Made Ground
1.10-2.10m	Light grey brown clayey silt
2.10-2.60m	Light grey-brown clayey silt with occasional fine sand laminations
2.60-6.10m	Light grey-brown interbedded layers of clayey silts and fine sands. Increasing concentration of sand laminations with depth

Core 4 (2.92m O.D.)

0.00-1.00m	Made Ground
1.00-2.20m	Light grey-brown clayey silts
2.20-2.50m	Dark grey clayey silts with occasional organic mottling
2.50-3.10m	Dark grey interbedded layers of clayey silts and fine sands
3.10-5.60m	Same as above but light grey-brown, with increasing concentrations of sand laminations with depth

Core 5 (SAMPLED; 2.54m O.D.)

0.00-0.65m	Made Ground
0.65-0.78m	Dark grey-brown clayey silt with occasional organic mottling
0.78-1.30m	Light grey-brown clayey silt with iron mottling
1.30-5.35m	Light grey-brown clayey silts
5.35-5.65m	Dark grey clayey silt with abundant organic ‘Sh’ mottling

Core 6 (2.48m O.D.)

0.00-0.55m	Made Ground
0.55-0.65m	Dark brown soil horizon
0.65-1.00m	Light grey clayey silt
1.00-1.90m	Light brown clayey silt
1.90-3.55m	Light grey-brown clayey silt
3.55-5.90m	Light grey interbedded layers of clayey silts and fine sands

Core 8 (2.71m O.D.)

0.00-0.80m	Made Ground
0.80-1.00m	Dark grey silty clay with occasional organic mottling
1.00-2.00m	Grey-brown silty clay
2.00-2.80m	Light grey clayey silt with occasional fine sand laminations
2.80-6.00m	Light grey-brown interbedded layers of clayey silts and fine sands. Layers become both thinner and increase in sand content with depth

Core 9 (2.99m O.D.)

0.00-0.75m	Made Ground
0.75-0.95m	Dark grey-brown clayey silt with organic mottling
0.95-1.60m	Light grey-brown clayey silt with iron mottling
1.60-2.55m	Light grey clayey silts with occasional fine sand laminations
2.55-5.75m	Light grey-brown interbedded clayey silts and fine sands

Core 11 (2.51m O.D.)

0.00-0.75m	Made Ground
0.75-0.90m	Dark grey silty clay with occasional organic mottling
0.90-1.75m	Light grey-brown clayey silt with occasional iron and organic mottling
1.75-3.30m	Grey-brown clayey silt with occasional sand laminations
3.30-5.90m	Light grey interbedded layers of clayey silts and fine sands

Core 13 (2.48m O.D.)

0.00-0.55m	Made Ground
0.55-0.75m	Dark grey silty clay
0.75-1.60m	Grey-brown clayey silts
1.60-4.50m	Light grey clayey silts with occasional fine sand laminations
4.50-5.60m	Light grey interbedded layers of clayey silts and fine sands

Core 14 (2.73m O.D.)

0.00-0.70m	Made Ground
0.70-0.85m	Dark grey dense silty clay
0.85-1.50m	Light grey-brown clayey silt
1.50-4.00m	Light grey-brown clayey silt with occasional sand laminations
4.00-6.00m	Light grey interbedded layers of clayey silts and fine sands

Core 15 (2.95m O.D.)

0.00-0.80m	Made Ground
0.80-1.50m	Grey-brown silty clay
1.50-2.60m	Grey-brown clayey silts with occasional sand laminations
2.60-2.80m	Light grey interbedded layers of clayey silts and fine sands
2.80-5.80m	Same as above but increasing content of fine sands with depth

Core 20 (2.60m O.D.)

0.00-0.85m	Made Ground
0.85-1.90m	Grey-brown clayey silt
1.90-2.20m	Grey clayey silt
2.20-4.10m	Light grey clayey silts with occasional sand laminations
4.10-6.20m	Light grey interbedded layers of clayey silts and fine sands

Core 21 (2.85m O.D.)

0.00-0.65m	Made Ground
0.65-0.90m	Medium brown silty clay
0.90-1.00m	Light brown silty clay
1.00-1.30m	Light brown silty clay with iron mottling
1.30-1.90m	Light grey-brown clayey silts with occasional fine sands
1.90-2.65m	Light grey interbedded layers of clayey silts and fine sands
2.65-4.70m	Same as above but increasing sand content with depth
4.70-5.30m	Grey silt with occasional sand laminations
5.30-6.00m	Grey interbedded layers of clayey silts and fine sands.

Appendix 5: Context Summary List

Test Pit 1

Context No	Type	Description	Interpretation	OD height (top)
10	Layer	Compacted concrete and gravel	Modern surface	2.64m OD
11	Layer	Spread of bricks and mortar	Modern demolition spread	2.46m OD
12	Layer	Black organic silt	Decomposed peat?	2.01m OD
13	Layer	Light blue clayey silt	Alluvium	1.82m OD

Test Pit 2

Context No	Type	Description	Interpretation	OD height (top)
20	Layer	Spread of bricks and mortar	Modern demolition spread	2.78m OD
21	Layer	Black organic silt	Decomposed peat?	2.30m OD
22	Layer	Light blue clayey silt	Alluvium	2.08m OD
23	Layer	Light brown clayey silt	Alluvium	1.82m OD

Test Pit 3

Context No	Type	Description	Interpretation	OD height (top)
30	Layer	Spread of bricks and mortar	Modern demolition spread	2.85m OD
31	Layer	Black organic silt	Decomposed peat?	2.61m OD
32	Layer	Light brown clayey silt	Alluvium	2.20m OD
33	Layer	Blue/grey clayey silt	Alluvium	1.64m OD

Test Pit 4

Context No	Type	Description	Interpretation	OD height (top)
40	Layer	Spread of bricks and some concrete	Modern demolition spread	3.66m OD
41	Layer	Light brown clayey silt	Alluvium	3.08m OD
42	Layer	Brown peat, waterlogged	Peat	2.68m OD
43	Layer	Light blue clayey silt	Alluvium	2.38m OD
44	Layer	Light brown clayey silt	Alluvium	2.18m OD

Trench 1

Context No	Type	Description	Interpretation	OD height (top)
100	Layer	Spread of bricks and some concrete	Modern demolition spread	2.86m OD
101	Layer	Mid brown silt, dry and crumbly	Desiccated peat	2.36m OD
102	Layer	Light blue clayey silt	Alluvium	1.86m OD
103	Layer	Light brown clayey silt	Alluvium	1.62m OD
104	Layer	Mid blue/grey clayey silt with black mottles	Alluvium	0.82m OD

Trench 2

Context No	Type	Description	Interpretation	OD height (top)
200	Layer	Spread of bricks and some concrete	Modern demolition spread	2.77m OD
201	Layer	Mid brown silt, dry and crumbly	Desiccated peat	2.18m OD
202	Layer	Light blue clayey silt	Alluvium	2.00m OD
203	Layer	Light brown clayey silt	Alluvium	1.70m OD

Trench 3

Context No	Type	Description	Interpretation	OD height (top)
300	Layer	Spread of bricks and some concrete	Modern demolition spread	2.52m OD
301	Layer	Dark grey/brown silt with modern debris	Victorian-modern refuse	2.28m OD
302	Layer	Mid brown silt, dry and crumbly	Desiccated peat	2.00m OD
303	Layer	Light blue fine clayey silt	Alluvium	1.70m OD
304	Layer	Light brown fine clayey silt	Alluvium	1.62m OD

Trench 4

Context No	Type	Description	Interpretation	OD height (top)
400	Layer	Spread of bricks and some concrete	Modern demolition spread	2.47m OD
401	Layer	Mid brown silt, dry and crumbly	Desiccated peat	1.99m OD
402	Layer	Light blue fine clayey silt	Alluvium	1.77m OD
403	Layer	Light brown fine clayey silt	Alluvium	1.47m OD

Trench 5

Context No	Type	Description	Interpretation	OD height (top)
500	Layer	Spread of bricks and some concrete	Modern demolition spread	2.48m OD
501	Layer	Mid brown silt, dry and crumbly	Desiccated peat	2.09m OD
502	Layer	Light blue clayey silt	Alluvium	1.87m OD
503	Layer	Light brown clayey silt	Alluvium	1.69m OD

Trench 6

Context No	Type	Description	Interpretation	OD height (top)
600	Layer	Spread of bricks and some concrete	Modern demolition spread	2.84m OD
601	Layer	Grey/brown silt with some bricks	Modern demolition spread	2.52m OD
602	Layer	Mid brown silt, dry and crumbly	Desiccated peat	2.28m OD
603	Layer	Light blue clayey silt	Alluvium	1.92m OD
604	Layer	Light brown clayey silt	Alluvium	1.70m OD

Trench 7

Context No	Type	Description	Interpretation	OD height (top)
700	Layer	Spread of bricks and some concrete	Modern demolition spread	2.85m OD
701	Fill	Brick, glass, plastic	Backfill of modern refuse pit	2.45m OD
702	Cut	Large unexcavated feature	Modern refuse pit	2.45m OD
703	Layer	Light blue clayey silt	Alluvium	1.95m OD

Trench 8

Context No	Type	Description	Interpretation	OD height (top)
800	Layer	Spread of bricks and some concrete	Modern demolition spread	2.81m OD
801	Layer	Mid brown silt, dry and crumbly	Desiccated peat	2.37m OD
802	Layer	Light blue clayey silt	Alluvium	1.97m OD
803	Layer	Light brown clayey silt	Alluvium	1.87m OD

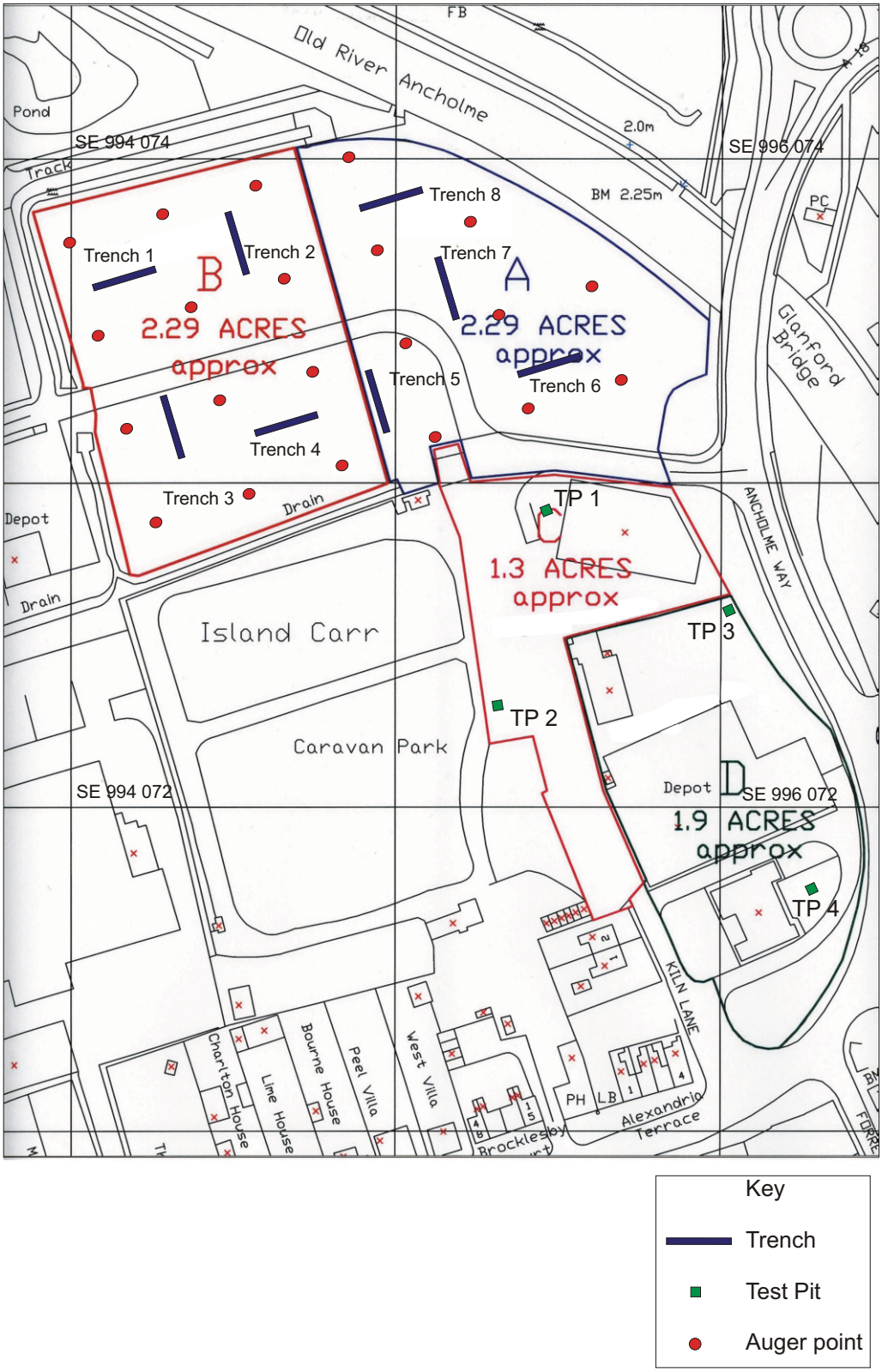
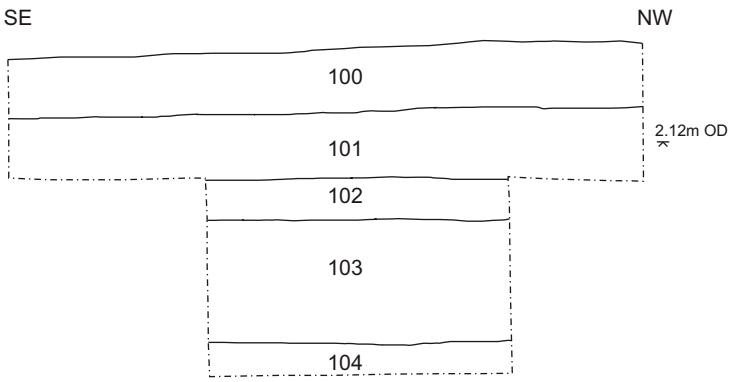
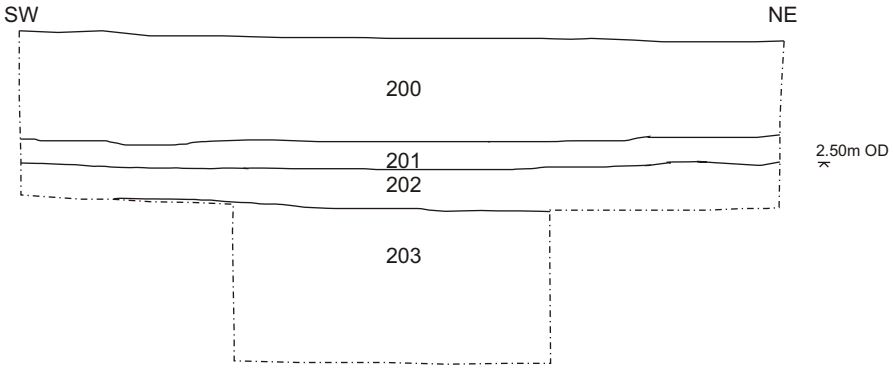


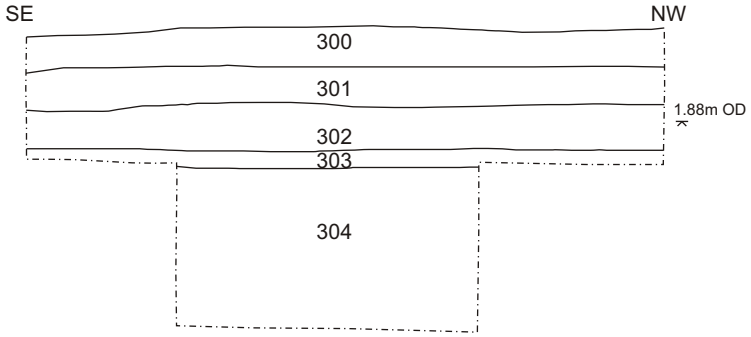
Figure 2: Trench, Test Pit and augering location plan at scale 1:2000



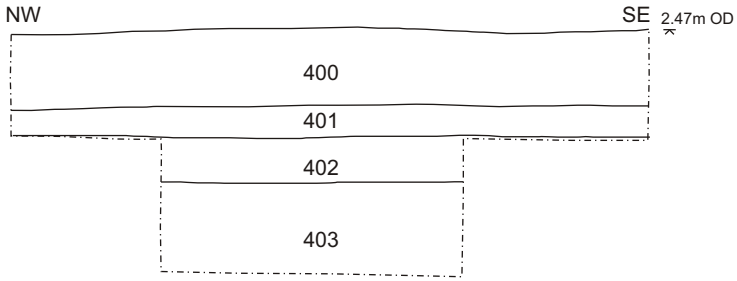
Trench 1 North-East facing section



Trench 2 South-East facing section



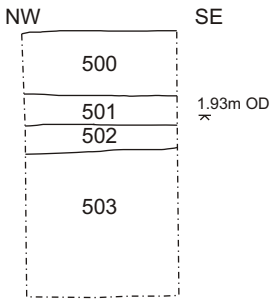
Trench 3 South-East facing section



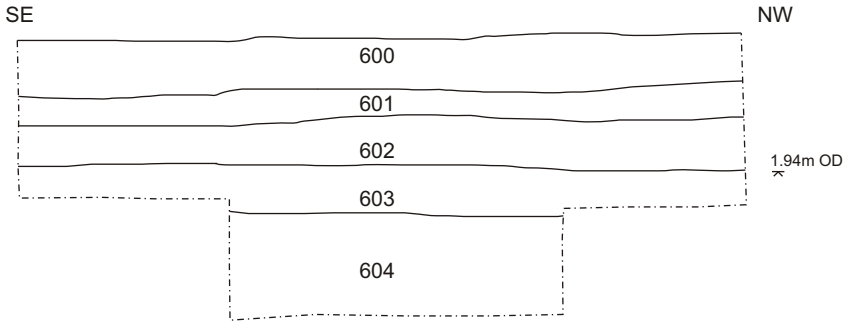
Trench 4 North-East facing section

Scale 1:50

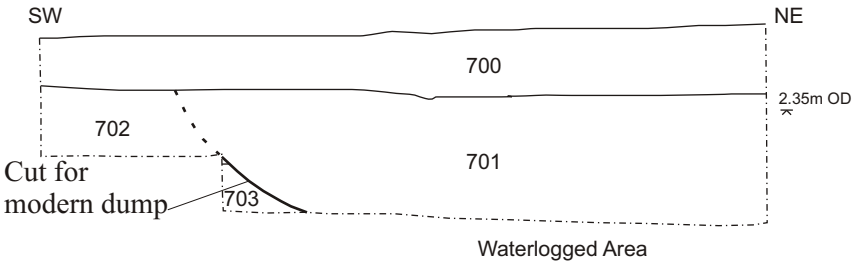
Figure 3: Trenches 1 - 4 Sections at scale 1:50



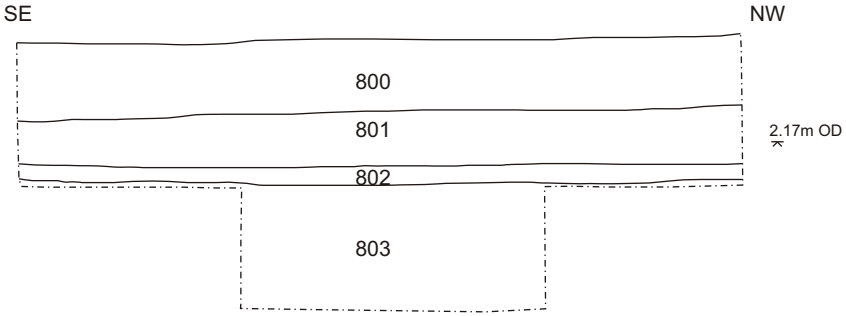
Trench 5 South-West facing section



Trench 6 North-East facing section



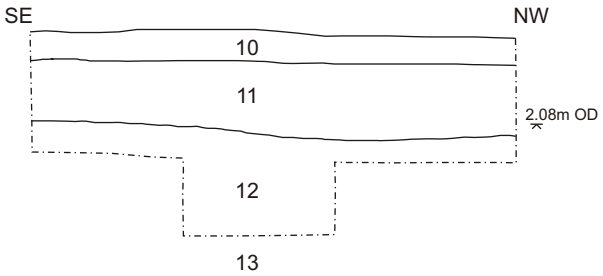
Trench 7 South-East facing section



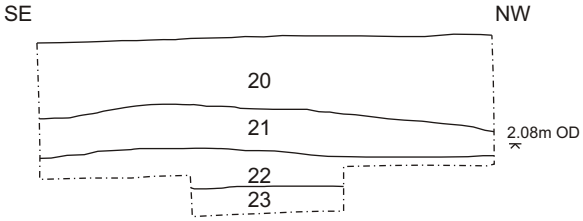
Trench 8 North-East facing section

Scale 1:50

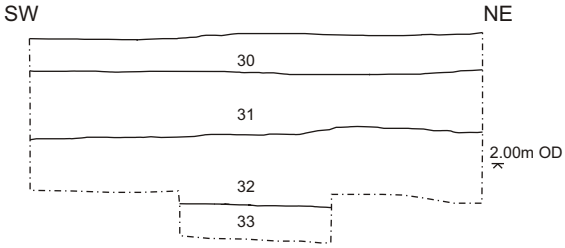
Figure 4: Trenches 6 - 8 Sections at scale 1:50



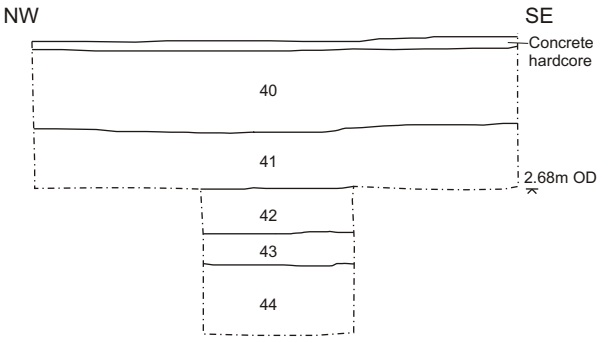
Test Pit 1 North-West facing section



Test Pit 2 North-East facing section



Test Pit 3 South-East facing section



Test Pit 4 South-West facing section

Scale 1:50

Figure 5: Test Pits 1 - 4 Sections at scale 1:50