CITY OF
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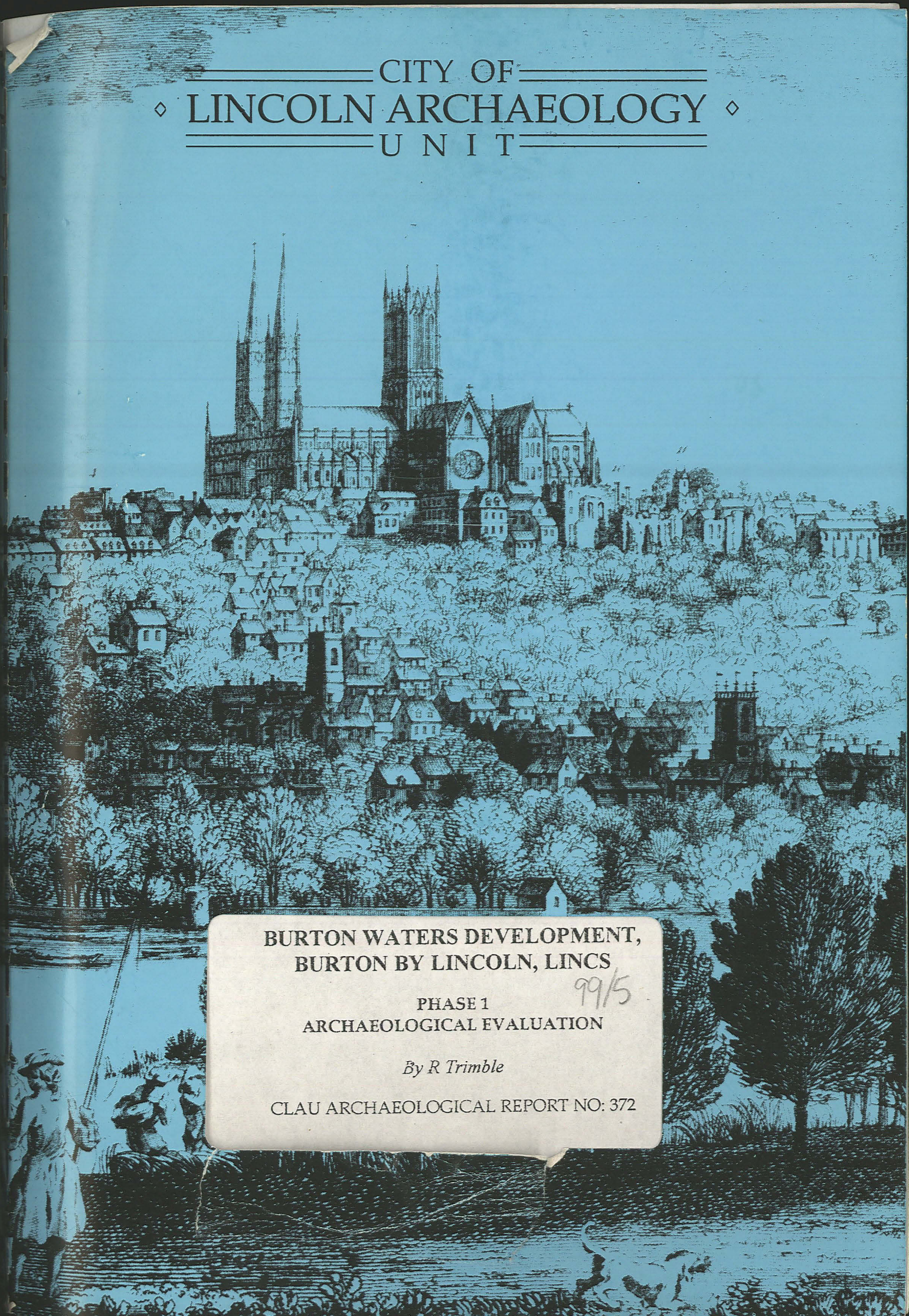
UNIT



BURTON WATERS DEVELOPMENT, BURTON BY LINCOLN, LINCS

99/5

PHASE 1 ARCHAEOLOGICAL EVALUATION

By R Trimble

CLAU ARCHAEOLOGICAL REPORT NO: 372

50617 - Prehistoric
54518 - Roman
54520 - Med-Mod
54521 - Undated

Event LI1124 - FWS
Event LI1125 - MGS
Event LI1126 - MGS
Event LI1128 - TT

A

Report to

Eastman Securities Limited

January 1999

Prepared by

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NGR: SK 933/736

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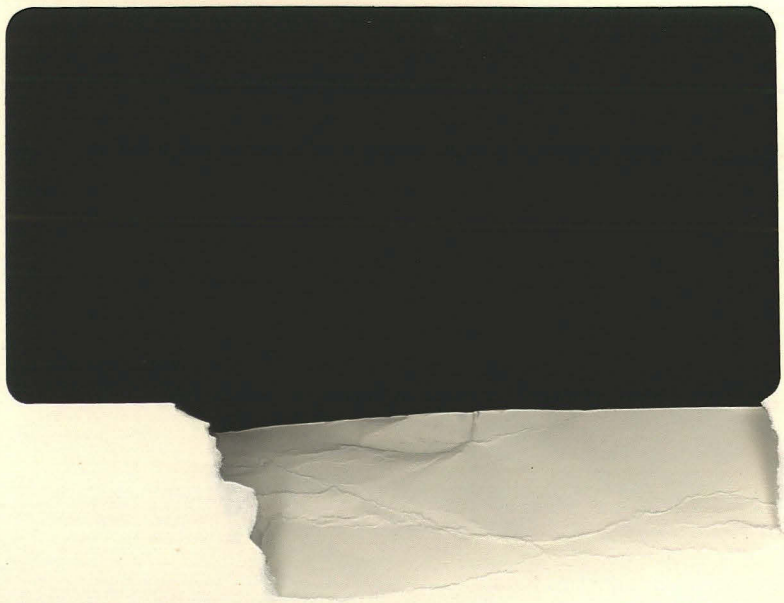
CLAU ARCHAEOLOGICAL REPORT NO: 372



BURTON WATERS DEVELOPMENT, BURTON BY LINCOLN, LINCS

Phase I Archaeological Evaluation

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PHASE I ARCHAEOLOGICAL EVALUATION

NON TECHNICAL SUMMARY

This report describes a programme of evaluation, commissioned by Eastman Securities Limited as the first phase in assessing the survival and importance of archaeological remains at the above site, in line with recommendations made by W.L.D.C.. This phase comprised rapid scan and intensive fieldwalking, a watching brief in conjunction with geotechnical investigations, a geophysical pilot study and subsequent detailed magnetometry survey and trial evaluation, over two of the four fields constituting the area for proposed development. Work on site commenced on 5 October 1998 and was completed on 8 January 1999.

The 53 hectare site lies in the parish of Burton at NGR SK 933 736 (approximate centre of site) at a distance of approximately 4 km west of Lincoln city centre, in an area of generally flat and low lying ground. The site, which is bounded to the south-west by the embanked Fossdyke Navigation and to the north-east by the slightly elevated A57 Trunk Road, contains the old by-passed section of the A57 road and The Woodcocks Hotel complex, and consists mainly of four large fields under arable cultivation. The site also contains several small areas of woodland and is subdivided by ditched, hedged and fenced boundaries. The fields contain a network of land drains which run into four surface water and flood relief drainage channels. Being only slightly higher than sea level, much of the site and surrounding area was subject to extensive seasonal flooding until it was drained by works begun in the 17th/18th centuries.

The earliest deposit on the site as recorded during geotechnical investigations was the Lower Lias clay which dipped sharply towards the Fossdyke. River terrace sands and gravels fill this depression and are in turn overlain by a layer of soft grey clay (often containing fragments of root or twig) and an oxidised brown clay (top surface at around 3.5m OD). Variable depths of sand with undulating top horizon then extend to form the the modern day landscape. The sands are absent over the low lying part of the site to the SW which probably contains more recent alluvial deposits overlapping the sands. Dates for the various deposits have yet to be determined but two alternative hypothesis have been suggested by J Rackham (Environmental Archaeology Consultant). According to the first scenario, alluvium below 3.3m OD may be Late Glacial in origin and was subsequently covered by glacio-fluvial sands or coversands, perhaps at 10,550+_250bc. Alternatively, the lower alluvium could be Late Glacial or early Holocene in date with the overlying sands being deposited during a period of dune formation in the Mesolithic.

Later Mesolithic to Late Neolithic/Early Bronze Age activity was represented by flints concentrating along the edge of the floodplain of the River Till - the precessor of the Fossdyke canal - with two distinct concentrations investigated by detailed fieldwalking. Magnetometry survey and trial trench evaluation over the SW part of the site and the field immediately to the the NE of The Woodcocks has demonstrated poor preservation in these areas, with evidence for activity confined primarily to the topsoil. It is possible, however, that better preserved deposits are contained in one of the areas yet to be evaluated on the opposite side of the former A57.

BURTON WATERS DEVELOPMENT, BURTON BY LINCOLN, LINCS

PHASE I ARCHAEOLOGICAL EVALUATION

1.0 INTRODUCTION

This report describes a programme of evaluation, commissioned by Eastman Securities Limited as the first phase in assessing the survival and importance of archaeological remains at the above site, in line with recommendations made by W.L.D.C.. This phase comprised rapid scan and detailed fieldwalking, a watching brief in conjunction with geotechnical investigations, a geophysical pilot study and subsequent magnetometry survey and trial trench evaluation in two of the four fields within the development area. Site work commenced on 5 October 1998 and was completed on 8 January 1999. The results of the fieldwalking and watching brief element have previously been outlined in an interim report (CLAU report no. 362).

The information in this document is presented with the proviso that further data may yet emerge. The Unit, its members and employees cannot, therefore, be held responsible for any loss, delay or damage, material or otherwise, arising out of this report. The document has been prepared in accordance with the terms of the Unit's Articles of Association, the Code of Conduct of the Institute of Field Archaeologists, and *The Management of Archaeological Projects 2* (English Heritage, 1991).

2.0 SITE DESCRIPTION

2.1 Location and Topography (Fig.1)

The 53 hectare site lies in the parish of Burton (NGR SK 933 736 - approximate centre of site) at a distance of approximately 4 km west of Lincoln city centre, in an area of generally flat and low lying ground at an average elevation of c.4.7m OD. The city boundary forms the south east limit of the development.

Bounded to the south-west by the embanked Fossdyke Navigation and to the north-east by the slightly elevated A57 Trunk Road, the site contains a now by-passed section of the A57 road and the former Woodcocks Hotel complex, and consists mainly of four fields under arable cultivation. The site also contains several small areas of woodland and is subdivided by ditched, hedged and fenced boundaries. The fields contain a network of land drains which run into four surface water and flood relief drainage channels. Being only slightly higher than sea level, much of the Site and surrounding area was subject to extensive seasonal flooding until it was drained by works begun in the 17th/18th centuries.

While the site does not contain any prominent topographical features to indicate ancient occupation or land use, two distinct topographical zones can be discerned. These comprise a flat and relatively low-lying silty clay zone which probably represents part of the floodplain of the River Till (since canalised to form the Fossdyke - see Historical and Archaeological background below) at a fairly uniform height of 4.30m OD) extending throughout the majority of the area to the NW of The Woodcocks and to the SW of the former route of the A57 with comparatively elevated sandy ground over the remainder of the site.

2.2 Geology

The site lies on a Flood Plain Terrace approximately 3km west of the Jurassic Limestone Scarp, known as the 'Lincoln Edge', which is now occupied by the valley of the river Witham at Lincoln, forming the 'Lincoln Gap'. It is believed that the gap was first cut in the Pliocene period, before the spread of the first ice-sheets nearly two million years ago, when the so-called 'Lincoln River' formed part of a pre-glacial pattern of drainage. The early gap was later modified by a series of ice-flows and an early course of the river Trent. The geology of the Site consists primarily of alluvial drift, river terrace sands and alluvial clays and gravels. Solid geology of Jurassic Lower Lias Clay is believed to underlie the whole area.

3.0 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The only formal archaeological work on the site has been a watching brief carried out by CLAU in March 1993 during the excavation of two 6m square x 2.8m deep groundwater monitoring pits in the large field to the SE of The Woodcocks. No archaeological features were seen but a general record of the sequence of alluvial deposits was obtained.

A comprehensive discussion of the site's archaeological and historical background is contained in a desk-top assessment (CLAU Report No. 38). The most salient details from this study are detailed below together with information from more recent SMR records.

3.1 Pre-Roman (1st century BC and earlier)

There is no record of prehistoric remains from within the study area but, a single flint thumbnail scraper dating to the Late Neolithic/Early Bronze Age was found a short distance to the north-west during archaeological investigations during construction of the adjacent Lincoln Relief Road in 1983 (Field 1985). The flint lay in close proximity to an extinct channel representing an ancient course of the now canalised River Till. A second worked flint was found immediately to the west of the site.

Pre-historic activity at or near the Site is suggested by finds of a polished flint axe close to the opposite bank of the Fossdyke at SK9298 7381and of worked flint within the boundaries of the site at SK9320 7395 and immediately outside the site boundary to the SE at SK9420 7325. A polished stone axe has also been found at SK9373 7420 to east of the site.

3.2 Romano-British Period (1st -4th century AD)

Although outside the study area, a Romano-British burial and traces of a stone building were recorded near Long Leys Road during construction of the Lincoln Bypass. There are also documented remains of Romano-British settlements in the parish areas of Saxilby, Burton and Skellingthorpe, whose existence, when considered in relation to sources of water and proximity to the city, demonstrates the potential for further remains and evidence of Roman utilisation of the landscape.

The Fossdyke canal, which connects the Witham west of Lincoln with the Trent at Torksey, is generally accepted as being of Roman construction but may be of later origin (the first documentary records date from the early 12th century). It is believed that the first 6km of the Fossdyke (closest to Linclon)was achieved by straightening the course of the river Till.

Possibly the most significant object of Roman date is a bronze statuette of Mars found near Torksey in the bed of the Fossdyke when it was being cleaned out in the 18th century. This discovery lends weight to the argument that the canal is of Roman date, and although the statuette could have been thrown away or lost at a later date it is much more likely to have been lost during the Roman period when such objects were in use for religious observances. Further evidence for Roman construction and use of the waterway is demonstrated by a rim and neck of an amphora which was found in 1969

during dredging of the Fossdyke adjacent to the Site at SK9300 7380. Several other finds have been made, and although they have not been formally recorded are generally of Roman date.

The southern limit of a linear feature of uncertain date and origin extends into the site immediately to the north of The Woodcocks. The feature, which is suggestive of a Roman road, is visible on aerial photographs as a light coloured band. Transcriptions by the Royal Commission of Historical Monuments of aerial photographic records indicate another linear feature, possibly a Roman road, centred on SK 948 729 immediately to the east of Waves Farm. The feature consists of two ditches with a cambered bank in between heading in the direction of the Fossdyke. Traces of a pair of parallel linear features on the opposite side of the canal could be a continuation.

3.3 Anglo Saxon and Anglo Scandinavian Period (5th - 11th centuries)

For the first 6km from Lincoln to the junction with the River Till at Odder the Fossdyke formed part of the southern limit of the Anglo-Saxon kingdom of Lindsey, establishing both the district and parish boundary which is maintained to the present day. While fields were probably in continued use from the 5th century, rural settlement also appears to have gathered pace in the Anglo-Saxon centuries, as later evidenced by the Domesday Survey in the late 11th century.

There is no recorded evidence of activity of this period in proximity to the site although the early registers of Burton by Lincoln make frequent reference to Haddow, the westernmost farm in the parish. It is possible that Haddow (later Haddo, Haddon, Hathow and now Odder), located immediately outside the north-west boundary of the Site, may derive its name from the Anglo-Saxon word `how' or burial place, possibly of a chieftain named Hadda, or more remotely from the Anglo-Saxon word for an area of heath or heather.

3.4 The Medieval Period (late 11th - 15th centuries)

The origins of many modern place-names in both the city and surrounding area, recorded by the Domesday survey of AD1086, indicate a broad spread of Anglo-Saxon and Danish settlement, including the villages of Skellingthorpe, Saxilby and Burton. The last mentioned name was derived from the Old English `burh-tun', `a farm by a burh' (a fortified place). Domesday records the village of Burtone as being the King's land held by the Bishop of Lincoln, Robert de Tosney, Gilbert de ghent, Peter de Valognes and Sortebrand.

The existence of a bridge known as Bishops Bridge to the east of the Site suggests the presence of a road or track linking the city with the village of Saxilby, along the line of the later A57 road. The first documented bridge at this location is believed to date from 1474-5 and gains its name from the Bishop of Lincoln who is known to have held land in this location. While it is likely that land in the area was in agricutural use during this period there is no evidence to suggest medieval occupation on or in the immediate vicinity of the site.

The 12th and early 13th centuries were a period of great prosperity for the city with a significant volume of trade being conducted via the Fossdyke canal, but by the early 14th century river traffic had stopped due to silting of the channel. While some attempts were made to re-open the waterway these met with little long-term success and trade via this route rapidly diminished.

3.5 Post-Medieval (16th -18th centuries)

Silting of the Fossdyke resulted in regular and increasingly extensive flooding of adjacent land. Attempts to reopen the waterway led to the appointment, by Henry VIII, of a Commission of Sewers in 1518. Clearing of the canal was started in 1520 but was abandoned in 1521, partly due to a lack of funds.

Structured use of the land in the area of the Site probably commenced early in the 16th century. Prior to this time much of the land had been common pasture but in 1518 the Common Council enclosed an area at Bishops Bridge which was let for 60 years. Further council revenue was generated by the enclosure and renting of land beyond Bishops Bridge, between the Fossdyke and John Hutchinson's close. In 1524 further land was enclosed which led to the origin of Waves Farm.

A new scheme to clear the Fossdyke was initiated in 1625 to assist in restablishing the wool trade in the city; work was started, but ended in failure in 1635. The Civil War and its aftermath led to further neglect of the waterway and a downturn in trade with the city, a situation not reversed until 1671 when an act was passed for improving the navigation between the town of Boston and the river Trent which resulted in an increase in trade. However the lack of a well-managed drainage system caused further problems.

The Fossdyke was once more recorded as being impassable in 1717, but navigable again by 1744. This was probably as a result of work started by Richard Ellison under a lease for the Fossdyke Navigation taken from Lincoln Corporation in 1740. These works probably established the present course and the towpath structured edge on the north bank of the canal.

Some drainage of the area was carried out in the last quarter of the 18th century. This had the effect of reducing the incidence of flooding and bringing more land into agricultural use.

During the second half of the 18th century the Brayford Pool was developed into an inland port, and by 1817 substantial wharves, warehouses and coalyards had been established on both north and east banks. Regular river traffic used both the Witham and Fossdyke for the transport of goods and people between Boston, Lincoln the Trent and beyond.

3.6 19th century and later

The 19th century saw further development of the city and wider area resultant from the raising of the south bank of the Foss Dyke, related drainage works, the mid-century introduction of a railway service, and further expansion of industry.

Following a series of major floods during the last ten years of the 18th century, extensive drainage of the area was accomplished under the West Drainage provisions of the Lincoln and County Drainage Act of 20th July 1804. .The Catchwater and Main Drains which traverse Burton Fen, to the north of the Site, between Carlton Bridge and Bishop, Bridge were formed under the 1804 act.

Although considerable effort was expended in maintaining a navigation depth in the Foss Dyke in 1819 traders were complaining that the channel was so silted up that they could not pass even with vessels drawing only two feet of water. The waterway had always been difficult to maintain. The banks stood 10-14 feet above the water, and being mainly sand were constantly collapsing, especially if a vessel ran against them. However the 1826 Plan of the Fossdyke Navigation suggests the waterway was navigable at that time.

By 1837 Richard Ellison IV, the lessee of the navigation, being aware of the activities of railway promoters, did not want to be committed to new expenditure and much of the upkeep of the canal was left in the hands of the city and the various merchants who continued to trade by water.

Following mid-19th century acquisition by the Great Northern Railway, the Foss Dyke ceased to be Lincoln's main commercial highway as waterborne trade gradually gave way to the age of steam. The acceleration of industrial development in the late 19th century led to rapid expansion of the railways with changes in land use and related development of the wider area being accurately depicted following the introduction of national survey maps.

Later 19th and early 20th century development on the Site is depicted by the 1906 OS map of the area including the construction of Fen Cottages in the area of the former Woodcocks Hotel and a small group of buildings alongside the southern site boundary

4.0 THE DEVELOPMENT PROPOSAL

The development area can be considered in terms of three main sections. The 27.50ha area to the SE of The Woodcocks will contain a 6.4ha marina with six basins connected to the Fossdyke canal. The scheme will entail the construction of 210 houses in association with the marina, together with retail units, a site administration centre, a hotel and conference centre, a boat club house, a boat repair workshop and marine management building. Car parking is to be be provided for the above facilities with additional parking space to cater for park and ride/sail schemes into Lincoln.

The 5.9ha field to the north of The Woodcocks will contain carp and coarse fishing lakes covering a combined 1.8ha area, together with holiday let log cabins, bailiffs accomodation, an angling shop, toilets and car parking.

The 11.5ha West Site currently comprises two fields lying to the NW of the former route of the A57. The nearest field to the Woodcocks will contain a touring caravan and camp site, toilet blocks and showers, and a leisure and tennis centre, while the westernmost field is to contain a 3.1ha watersport lake with an amenity building, changing rooms, offices, a cafe and a secure storage area.

Existing areas of woodland are to be retained within the development. The eastern end of the site is to be raised and planted with new woodland as is the edge of the site bordering the A57. Further large scale planting is to take place in the marina adjacent to the Fossdyke canal bank, in the touring caravan/ leisure centre area, and in the area between the water sports lake cabins and the canal footpath.

Construction will entail the re-use of material removed from the marina and lakes to make up ground levels in areas below the 4.4m retention level of the Fossdyke canal and for the creation of mounds to provide screening between different components of the development.

Topsoil is to be stripped from all areas of the site except where existing vegetation is to be retained. The material will be stored on site in mounds planted with grass. All subsoil from the site will be stored on site in separate mounds. Excavation for the marina will be preceded by the installation of piling. Excavation of the marina basins is expected to start at the western end of the area with excavation to a depth of 2.6m OD. Machinery for this work will include 360 degree excavators, bulldozers and heavy dumpers. Construction of the marina entrance will necessitate the installation of a piled coffer dam on both sides of the entrance, removal of the canal bank, and construction of the marina gates prior to opening up of the entrance.

5.0 AIMS AND OBJECTIVES

Within the limits of the investigation procedures the aims of the evaluation were to:

- provide information on the presence/absence, nature, date and quality of survival of archaeological deposits and remains which might be contained within the site and assess their importance.

- provide information that will allow the local planning authority to reconcile development proposals with their policy for preserving archaeological remains and make an informed and reasoned decision on a planning application.

- provide site specific archaeological information which (if necessary) would allow for the design and integration of timing and funding of any further archaeological work (or other mitigating strategy) which might be required in advance of or during any subsequent development programme.

- produce a project archive for deposition with the appropriate museum. and to provide information for accession to the County Sites and Monuments Record (SMR).

6.0 METHODOLOGY

The net survey area of the site comprises an area of c.40 hectares. In view of the scale of the project and of the absence of documentary evidence of ancient occupation, the initial stages of the evaluation (Fieldwalking and Geophysical Survey) were undertaken on a "broad" sampling basis in order to define areas which might contain buried remains which, should they be found, would then be subjected to more intensive investigation, ie, collection and plotting of surface-displaced artefactual material, and detailed magnetometry survey following which the scope of trial trenching was to be established.

6.1 Fieldwalking and Ditch Section Assessment (Fig.2)

Walkover survey

The project specification provided for a 50m transect rapid scan visual examination to record any extant features or other factors, such as previous or current land-use, that might have affected the survival or condition of archaeological remains, and the effect that prevailing conditions might have on the proposed investigation techniques and/or the location of trial trenches.

The rapid scan walkover was undertaken after ploughing and a subsequent two-week period to allow for weathering of the soils. Any noticeable concentrations of archaeological material were later fieldwalked more intensively (see below). In order to cater for the recovery of otherwise unassociated but possibly significant artefacts, a policy of collection on a judgmental basis was followed with plotting to an accuracy of an estimated +/- 15m in relation to the pre-determined transects. This methodology was slightly altered for the walkover in Field 4 to the south-east of the Woodcocks complex where the location of all retained finds was recorded by EDM total station.

Detailed Fieldwalking

Areas containing surface-displaced artefactual material recorded during the rapid scan examination were to be subjected to detailed fieldwalking. Concentrations of pottery and other artefactual material as well as any other visible features would be plotted on OS map(s) at an appropriate scale. Representative samples of artefactual material would be taken from localised concentrations for the purpose of preliminary identification and dating.

Following the completion of rapid scan fielwalking, two areas containing concentrations of worked flint (see below for further discussion) were selected for a programme of intensive fieldwalking. In view of the relatively low finds density in these areas it was decided that the most efficient and productive method of collection would be through a total area survey, with all finds plotted by EDM total station to facilitate the production of distribution plots.

Ditch Section Assessment

Existing drainage ditch sections were inspected to assess their suitability for recording during the subsequent trial trenching phase of the project.

6.2 Geophysical Survey

Geophysical Feasibility Study

The effectiveness of geophysical survey techniques can be influenced by a variety of factors. Of particular concern with regard to the Burton Waters site was the uncertain extent and potentially variable depth of alluvium across the site. It was therefore recommended that an initial feasibility study be carried out to assess suitability for geophysical survey and to establish the most appropriate survey method(s). (For further consideration of this aspect of the project see Appendix F).

6.3 Trial trench evaluation

The programme of trial trench evaluation in Field 4 was intended to determine the presence/absence of archaeological features associated with flint scatter A, and if present to establish their state of preservation and extent. The wider area of the field (see Figs. 2 and 4) had already been partially examined through excavation of the geotechnical trial pits, trial ponds and associated borrow pits. It was therefore decided that some additional trial trenching around the less intensively investigated NE and SW periphery would provide a sufficient sample. A topsoil survey, comprising a eight 1m square pits at 10m grid intervals, was carried out on the site of Scatter A. Material from all pits was sieved through a c.5mm mesh (see Fig.6 for survey location).

Trench positions in Field 2 were determined primarily by the need to investigate anomalies recorded by the geophysical survey. The majority of the trenching took place on the higher sandy ground although one trench (Trench 14) was extended almost to the SW field boundary in order to gain information on possible flood deposits on the lower lying ground.

7.0 RESULTS OF FIELDWALKING

The most significant result of the programme of fieldwalking was the collection of an assemblage of 43 worked flints ranging in date between the Later Mesolithic period and the Late Neolithic/Early Bronze Age. A preliminary assessment of the material was carried out by David Bonner of Network Archaeology Ltd prior to the production of an interim report following the completion of fieldwalking. A discussion of the finds from this element of the project has now been incorporated into a more comprehensive report including finds from the subsequent trial trench evaluation and topsoil survey phase (see Appendix B). Other categories of finds were comparatively sparse but they have similarly been included in updated tables to include finds from later fieldwork. Finds recovered during fieldwalking were allocated find spot nos. according to the following scheme (not all nos. were used):

Nos. between 100 and 200 - Field 1
Nos. between 200 and 300 - Field 2
Nos. between 300 and 400 - Field 3
Nos. between 400 and 500 and 500 and 600 - Field 4

7.1 Rapid scan walkover (Fig.2)

A small assemblage of prehistoric worked flints was recovered during this phase. All were derived from the elevated sands immediately flanking the floodplain of the River Till (see section 2.0 Site Description above) with two notable concentrations - one immediately to the east of The Woodcocks in the area closest to the Fossdyke canal (Field 4 - Scatter A) - the other in the field to the north of the former route of the A57 (Field 3 - Scatter B). A single sherd of probable Iron Age (but possibly Early Saxon) pottery was recovered from the area of Scatter B.

Evidence of activity from later periods (Roman, Anglo-Saxon/Scandanavian, Medieval and Post Medieval) was extremely sparse. This probable reflects increasingly adverse conditions for settlement due to rising flood levels.

7.2 Intensive Fieldwalking in Fields 3 and 4 (Fig.2)

Scatter A extended over an area of c.175m NW-SE by c.65m from the Fossdyke to the SW. The total area subjected to detailed fieldwalking was approximately 1 hectare.

Intensive fieldwalking of Scatter A in Field 4 resulted in a lower than anticipated yield of worked flints (combined total 15) - possibly due to the accumulation of fine wind blown sands across the area during the interval between rapid scan fieldwalking and intensive walking.
Scatter B in Field 3 more or less conforms in distribution to the edge of an area of higher ground - extending to the field boundary to the SW where it appears to continue towards the edge of the River Till floodplain. In all a c.1.9 hectare area was walked, the scatter extending over an area of 150m x 70m +. The total assemblage from within the area of the scatter was raised to 23 flints, including examples recovered during initial fieldwalking.

7.3 Ditch Section Assessment

Assessment of the ditch sections within the boundaries of the site was carried out in conjunction with the rapid scan walkover. This work established the presence of a number of sizeable ditches including one 3-4m deep running NW from the Woodcocks along the entire length of the boundary with the Fossdyke, a 1.5m deep ditch between Fields 1 and 2, a c.4m deep ditch separating Field 3 and the A57 to the north, and a similarly deep ditch running NW-SE along the centre of Field 4 to meet a ditch forming the SE site boundary. At the time of inspection all of these ditches were dry - containing only occasional areas of shallow water in their bases. All were covered by light vegetation only (grass,

nettles, and occasional small bushes) which would not for the most part have presented any obstacle to machine based cleaning.

In the event it was decided that the cleaning of ditch sections would not be constitute an effective method of further evaluation of the Site. This decision was based primarily upon the nature of the stratigraphy as revealed by Trial Pits excavated as part of the programme of geotechnical investigations, which showed an absence of deeply stratified archaeological remains and recently accumulated river sediments across the majority of the site.

8.0 RESULTS OF THE WATCHING BRIEF IN CONJUNCTION WITH GEOTECHNICAL INVESTIGATIONS

An archaeological watching brief was maintained during the execution of a programme of geotechnical work. including the excavation of geotechnical trial pits and borehole drilling by Lincslab, and the construction of trial ponds in Field 4 to test for soils permaeability.

8.1 Excavation of geotechnical trial pits and boreholes (Fig.3)

In general this work entailed the excavation of 2.00m long x 0.50m wide pits to a depth of c.2.00m. The most intensively examined area was Field 4 for which a reasonably conclusive interpretation of the archaeologically relevant stratigraphy can now be made. Fields 1,2, and 3 were much less intensively investigated - through a small number of trial pits only. Consequently there are as yet unanswered questions concerning the sequence and dates of deposition of alluvial sediments and sands. Further consideration of these issues is contained in a discussion by J Rackham of the results of later auguring in Field 2 (see Appendix E).

Fields 1 and 2

The majority of Field 1 and a large part of Field 2 is occupied by the flat and low lying floodplain of the River Till (see section above concerning Site Location and Topography). The primary objective of the watching brief in this area was to establish whether or not alluvial deposits might be sealing archaeologically significant horizons and if so to determine their depth and character.

The primary deposit, encountered in Trial Pits 1,2,5,6,7, TPF1,TPF2, and TPF3, was a loose red brown silty sand with an upper surface varying in elevation between 2.59m OD and 2.98m OD. There was, apparently, no uniform direction of slope between pits. This suggests a slightly undulating surface level. A comparable deposit containing a little subrounded medium gravel in Trial Pit 3 with its upper horizon at an elevation of 2.99m OD could be interpreted as a continuation of the same deposit although this may be regarded as somewhat uncertain in view of the radical difference in later stratigraphy in Trial Pit 3 in comparison to all other Trial Pits in the area. Trial Pits F1 and F2, which were excavated to a greater depth than the others, showed this deposit to be present, with slight variations, at their basal heights of 1.084m OD and 1.528m OD respectively.

In Trial Pit 3, which was more centrally located in Field 1, gravels were then encountered to an elevation of 4.145m OD. This contrasts sharply with the overlying sequences of clay and sand observed in other Test Pits and might indicate the presence of a raised area of ancient gravel terrace at the edge of or within a probably post glacial floodplain.

The secondary deposit occurring in Trial Pits 1,2,5,6,7 (height not recorded), F1, and F2, was a generally soft (occasionally soft to firm) grey silty clay often containing traces of organic roots. Its top horizon was encountered at elevations of between 3.035m OD and 3.227m OD with an apparently even rise from west to east. It is likely that a deposit described as soft to firm brown clay with small sand pockets in Trial Pit F3A (top elevation 2.99m OD) comprises a slight variation in this phase of sedimentation. It can be presumed that the soft grey silty clay correlates with the blue-grey

(unoxidised) clay located in auger holes 1,3,4 and 5 (see fig. 5 - for further discussion see Appendix E).

Various, on the whole firmer, brown (oxidised) clays then extend across the floodplain. These deposits were encountered in Trial Pits 1, 4, 6, 7 (height not recorded), F1, F2, F3A at top surface elevations of between 3.79m and 4.07m with a slightly lower reading in Trial Pit 1 of 3.63m OD. Two anomalous sequences occur (in Trial Pits 2 and 5) where there was no evidence of the oxidised clay layers; instead, sands extended throughout to 3.94m OD and 4.05m OD respectively.

Sands variously described as orange and buff also overlie the clays in Trial Pits 1,2,5,7 (height not recorded), 9, F2, and F3 with surface elevations ranging between 3.89m in F3 and 4.178 in F2. Trial Pits 4 and 9 were situated in more elevated positions off the more recent floodplain, consequently they contained sands to 4.768m OD and 5.968m OD respectively. Excavation in Trial Pit 9 did not in fact penetrate the sands which were still present at 4.268m OD.

It should be borne in mind that although oxidised clays are present beneath the areas of raised sand in Fields 1 and 2, the relationship between sand and the upper clay sequence is almost certain to be more complex than portrayed above and that at least part of the clay sequence on the flat floodplain may have accumulated subsequent to formation of the deep sand deposits. These issues, along with questions of dating, and possible implications for potential archaeological remains, are more comprehensively discussed by J Rackham (Appendix E).

Field 3

Trial Pits 8 and 10 revealed more complex recent deposits than those encountered elsewhere on the site. For this reason more detailed "archaeological" descriptions are used below. The lower deposits of the trench were recorded in less detail than the more superficial strata.

In Trial Pit 8, the earliest deposit recorded was a loose mottled mid grey and pinkish grey sand with occasional clay patches at c.4.15m OD (top surface). This was sealed by a deposit of loose mottled orange/light orange sand extending to 4.87m OD. Above this lay a 0.20m thick deposit of moderately compact dark grey silty sand containing frequent irregular orange sand patches and very occasional small grits whose upper surface lay at c.5.07m OD. The latter deposit may be interpreted as a buried soil horizon developed on the ancient sand deposits. Alternatively, the deposit may be lying within a hollow of natural origin similar to those recorded during the evaluation in Field 2 (see below). Overlying the possible buried soil was a shallow 80mm thick moderately compact mottled grey and brown silty sand including a large patch of pinkish brown clay. A deposit of moderately compact grey-brown clayey sand containing occasional small pebbles and occasional reddish brown iron pan flecks extended up to 5.37m where it was truncated by the modern plough horizon. Ploughsoil then extended to 5.75m OD.

In Trial Pit 10, the earliest deposit was a compact/plastic pinkish brown clay containing frequent large orange sand patches - sometimes in vertical fissures (top surface at 4.32m OD). This was sealed by a loose to moderately compact mid pinkish brown slightly clayey sand containing occasional light brown sand flecks and lenses (top surface at 4.42m OD). This was in turn sealed by a shallow band of loose, light greyish brown sand, a 60mm depth of loose-moderately compact mid greyish brown sand containing occasional lighter sand lenses (possibly representing a soil horizon), and a further shallow band of loose, light greyish brown sand (top surface at 4.52m OD). Topsoil then extended to ground level at 4.92m OD.

Field 4

Boreholes over the part of Field 4 to the SW of the centrally positioned NW-SE ditch recorded the upper surface of solid geology, consisting of the Lower Lias clay, at elevations of between -5.01m OD and -5.77m OD with a mean elevation across boreholes of c.-5.40m OD. There then appears to be sharp rise in elevation immediately opposite the ditch with elevations of -1.49m OD, -3.47m OD, and -3.82 recorded in boreholes 6,7, and 8 respectively. Boreholes 4 and 5, which lay still further to the NE, then record the surface at -0.68m OD and 0.31m OD respectively. These results appear to

indicate that the edge of a probable Pleistocene river valley falls within the NE part of the area with the valley floor extending towards and beyond the Fossdyke.

River terrace sands and gravels then fill the valley. The upper surface of these deposits varies between 2.03 and 2.65m OD over the SW part of field, and including boreholes 6,7, and 8 to the NE of the ditch giving a mean height of c.2.30m OD. A rise appears to occur at boreholes 4 and 5 which record elevations of 3.02m OD and 2.81m OD, while Trial Pits 11 to 15 along the NE periphery of Field 4 record elevations varying between 3.34m OD in Trial Pit 12 and 4.29m OD in Trial Pit 15. The mean elevation from these Trial Pits was 3.85m OD. The wide variation between individual pits in this area may be accounted for by their location at the margin of the floodplain which may have meandered to some extent, and also by the difficulty in determining the boundary between gravel terrace deposits from more recent sands where not separated by alluvial clays (see below).

A thick band of alluvial clay then extends over the river terrace sands and gravels. The boreholes record top surface elevations of between 2.95m OD in borehole 3 and 3.55m OD in borehole 15. However, mean heights of 3.33m OD, 3.31m OD and 3.37m OD respectively for the 3 main clusters of boreholes to the SW of the central ditch, to the NE of the ditch, and within the area between The Woodcocks and the copse flanking the Fossdyke, would tend to suggest an even level (perhaps with slight undulations) at around 3.35m OD. Mean Trial pit levels for the area to the SW of the ditch and from pits 16,18,19,20, and 21 to the NE would appear to indicate a general 0.35m - 0.40m increase in Trial Pit records as compared to those from Boreholes. The clay deposit was absent in pits 13 and 14 at the NE margin of Field 4 and present as only a shallow layer of 0.10m in Trial Pit 11. These pits would therefore appear to lie outside the area of the floodplain at this time.

The layers of alluvium had then been sealed by variable depths of sand extending up to the present day level of plough truncation to form the visibly undulating ground surface. Areas of lighter ploughsoil now define areas of raised sand which have almost certainly been considerably reduced through longstanding arable farming. It is therefore likely that the prehistoric landscape would have been much more dune-like in comparison to the flatter, modern appearance.

Archaeological inspection of all Trial Pits revealed no evidence of archaeologically significant deposits overlying the sands. It appears that the entire area has been thoroughly denuded of all earlier land surfaces and that any archaeological features will survive as negative features only (i.e., those such as pits or ditches which are cut into the underlying subsoil).

8.2 Excavation for Trial Ponds (Fig.3)

Extensive areas were stripped to the upper surface of the sand subsoil, primarily within the central zone of Field 4 in close proximity to the SE-NW ditch, in advance of work to form trial ponds and prior to clay extraction for lining material from adjacent borrow pits. Only the SW half of Pond 3 was cleaned in any detail. However, due to the presence of sandy subsoil, it was possible to machine strip the areas in such a way as to permit the recognition of all but the most indistinct archaeological features.

Five approximately 14/15m square areas were stripped for ponds but only Ponds 4 and 5 (see Fig.3) were eventually completed. Ponds 4 and 5 were each lined with clay from adjacent borrow pits.

Pond 1

Pond 1 was situated in the NE part of Field 4. The natural subsoil revealed across the base of the trench was a mix of light brown/orange sand with frequent small iron pan fragments and very light grey sand. There was evidence of considerable disturbance through deeper ploughing ("sub-soiling") and also a service trench running in the direction of The Woodcocks, and a field drain. Topsoil was present to a depth of c.0.45m.

Pond 2

Pond 2 was situated in the NW part of Field 4. Cutting into the natural sands was a 0.35m wide and 0.25m deep gully (606) orientated approximately E-W. The feature had generally steep sides with rounded breaks of slope to a concave base and was filled by (607) a loose, light brownish grey sand containing frequent yellow, dark grey and mid grey mottles representing probable animal and root disturbance. At the NW corner of the trench there was a shallow dark grey/black sand which had been cut by 606. A single flint, identified as a flake of Neolithic/Bronze Age date, was found in the fill of 606.

Pond 3

Soil stripping for Pond 3 took place across the NW end of the existing SE-NW ditch transecting Field 4. The stripped surface on the NE side of the ditch contained no evidence of archaeological activity but a series of ditches or gullies was recorded on the NW side. These included 608, a 0.60m - 0.80m wide x c.0.10m deep gully with a shallow concave profile, running parallel with the present day ditch. The fill of 608 (609) was a moderately compact mid grey silty sand containing frequent indistinct reddish brown mottles, occasional charcoal flecks, and occasional more sandy patches.

A WSW-ENE gully (610) intersected with 608 at c.3m from the SE trench edge. This feature was identical to 608 in form and in the composition of its fill (611) and therefore probably represents a contemporary land dividing or drainage feature. Gully 610 had a concave/dished profile and measured between 0.60 and 0.85m wide. A maximum depth of 0.18m was recorded for the sectioned part of the feature.

A further gully branching off from 608 (612) headed westward, towards the Fossdyke from a point further to the NW. A small section across 612 revealed steep sides with a rounded break of slope to a flattish base. Dimensions were recorded as 0.22m wide x 022m deep. The fill (613) was identical to 609 and 611 but was possibly more compact and included sandier patches.

Topsoil in the area of Pond 3 was approximately 0.50m deep and sealed a lighter soil of approximately 0.20m deep.

Pond 4

Pond 4 lay at an approximate mid point along the SE-NW ditch. Here, a pair of E-W ditches was recorded to the NE of the ditch. The northernmost of the two (600) was 0.90m wide and was filled by a moderately compact mid grey silty sand containing frequent light grey and dark grey mottles (601). The southernmost ditch (602) was 0.50m wide and contained a moderately compact, mid brownish grey, silty sand with occasional light grey mottles. The ditches lay 2.30m apart as measured from their inner edges. Unfortunately it was not possible to obtain an accurate plan owing to site circumstances and neither ditch was excavated. Older Ordnance Survey maps show an E-W field boundary that may be represented by 600 and 602 but no attempt has been made as yet to achieve an accurate correlation.

An irregularly shaped feature (604) measuring 1.35m N-s x 0.60m E-W lay to the NW of 602. A small section at the N end indicated a depth of around 0.15m and 45 degree sides breaking gradually to a flattish base. The fill of 604 (605) was a moderately compact mid grey-brown silty sand with light grey mottles which had possibly been cut by ditch 602. Comparison between 604 and similar features identified during other work across Field 4 would suggest a natural origin - possibly the result of a tree throw.

Pond 5

Pond 5 was also situated on the line of the SE-NW ditch - lying further to the SE than Pond 4. The natural subsoil in Pond 5 was a pale yellow/light grey sand with occasional flecks of iron pan but much disturbed, with irregular areas of dark/light grey sand presumed to represent animal and/or root action. Further irregular patches of dark grey/black sand could have been the remains of burnt tree roots.

A slot excavated into the SW face of the main ditch in Pond 5 revealed a very shallow black (possibly organic?) layer at the interface between the upper sands and the underlying clays overying a shallow grey sand deposited on the clays. This material may mark a sharp transition in environmental conditions prior to the deposition of the sands.

Clay extraction pit for Pond 4 (Extraction Pit 1)
Extraction Pit 1 entailed topsoil stripping from an area of c.50m SE-NW x c.22-28m SW-NE. The area appeared to be devoid of archaeological features.

Clay extraction pit for Pond 5 (Extraction Pit 2)
Extraction Pit 2 entailed the topsoil stripping over a c.37m SE-NW x c.27m SW-NE area. There was no evidence of archaeological features.

9.0 RESULTS OF GEOPHYSICAL SURVEY

Preliminary indications as outlined in the Geophysical Pilot Study Interim Statement suggested that the immediate subsoil geology of fine sands which predominates across much of the site offered only a low potential for the identification of archaeological deposits by rapid scan magnetometry. For this reason, it was decided that areas for further detailed geophysical survey be selected on the basis of existing information derived from field walking, geo-technical test pitting, and visual examination of the topography. Suitable areas for magnetometry survey included the flint scatters A and B together with their wider contexts to encompass areas of potential buried soil, the immediate floodplain margins in Field and 2, and the area of Scatter A in Field 4. It was concluded from the Pilot Study results that magnetometry would probably not prove effective in the location of a possible palaeochannel on the floodplain.
Detailed magnetometry survey on the site of Flint Scatter B in Field 3 detected a small number of linear anomalies as did survey across the elevated sand zone in Field 2. In addition, a circular anomaly of 30-35m diameter was located on the lower lying area of floodplain in Field 2. Field 4 produced no anomalies considered to be of archaeological potential. The detailed results of this work are contained in Appendix (G).

10.0 RESULTS OF TRIAL TRENCH EVALUATION

In addition to the programme of trial trenching described below, a topsoil survey was carried out on part of Flint Scatter A. For the results of this survey see Appendix B.

10.1 Land to the SE of The Woodcocks (See Figs. 4 and 6)

Trench 1
Trench 1 measured c.60m in a SW-NE direction and was located near to the southern corner of Field 4. The trench contained no evidence of archaeological activity. A 0.40m depth of dark greyish brown topsoil was present throughout the majority of the trench, grading into lighter brown deposit over higher ground to its NE extremity.

Trench 2
Trench 2 measured c.42m in length and lay on a SE-NW orientation in the southern part of the field to the SE of the small copse flanking the Fossdyke. The trench produced no evidence of archaeological activity.

Trench 3
Trench 3 was positioned in close proximity to the area of Pond 2 (see above) to determine whether a shallow ditch (606) was continuous across the field. This feature was located and plotted by EDM total station.

Trenches 4 and 5
Trenches 4 and 5 were located against the NE Field boundary and measured c.33m and c48.5m in length respectively. Both trenches produced a negative result.

Trench 6 (Fig.6 and 7)
Trench 6 had a length of 61m and lay on a SW-NE orientation at the NE periphery of Field 4.

The primary deposit in Trench 6 was a mottled (cream, buff, light orange and light grey) sand of natural origin containing occasional rounded pebbles.

A linear SE-NW cut (652) - probably representing a ditched field boundary - was partially revealed at the very NE end of the trench. Its visible S side sloped at around 50 degrees from horizontal before breaking to flat base to give a maximum depth of c.300mm. The feature contained a fill (659) of moderately compact, mottled (cream, yellow-brown and orange) sandy earth. A slightly deeper cut beneath 652 (679) was partially revealed in close proximity to the SE limit of excavation. It contained a fill of moderately compact dark grey-brown sandy earth.

A shallow linear depression (650) containing fills of sand lay at a distance of c.18m from the NE end of the trench. The feature lay on an approximate N-S orientation and had dimensions of c.1.60m wide x 250mm deep. This feature may be interpreted as having a natural origin; partly from the presence of several small and irregular pits resembling tree root action across its base, and partly from the character of its principal fill (657), which resembled that contained within features more securely interpreted as tree throw holes elsewhere in Field 4.

A lower horizon of probable ploughsoil (656), deepening gradually towards the NE end of the trench, extended over the above features and was itself sealed by topsoil (655).

Trench 7 (Fig.6 and 7)

An earlier sand and gravel (673) underlay a comparable sand deposit (672) to 660 in Trench 6. Over the NE part of the trench these natural deposits appear to have been cut away as a result of gravel/sand extraction over an area of c. 33.50m. An exploratory section at the SW edge of the putative quarry revealed a steep sided cut (653) containing a primary fill of light grey and dark grey/black ashy sand sealed by a mixed deposit of orange sand, blackish sand, and mid brown sandy earth. A possible recut was represented by 671 to the NE. This contained a primary fill (676) of dark brown/black sandy, slightly silty earth and a secondary fill (677).

Trench 8 (Fig.8)

Trench 8 lay on a SW-NE orientation and was located close to the NW field boundary adjacent to the Woodcocks. The purpose of the trench was to further examine a low lying area identified during geotechnical investigations as containing a possible "buried soil horizon". The trench measured 17.3m long and was machine excavated to a maximum depth of c.0.55m.

Trench 8 produced no evidence for any preservation above the natural sands and the "buried soil" in geotechnical Trial Pit 31 must therefore be explained as a deposit filling a localised depression of probable natural origin.

A natural sand (691) extended throughout the base of the trench. This material was cut by a pair of parallel ditches (667 and 668) orientated SE-NW towards the SW end of the trench. The mixed fill of the smaller SW ditch (667), was suggestive of intentional backfilling, while the larger ditch to the NE 668 may have undergone a process of more gradual sedimentation, as represented by the primary fills (689, 686, and 687), at least during the earlier stages of infilling. A small recut along the line of 668 may be represented by deposits 684 and 685 but this is uncertain and it is equally likely that they represent the latest phase of sedimentation within the original ditch. It was unclear whether the deposit situated upon the stepped NE shoulder of 668 was contained within 668 or whether it actually comprised the fill of an earlier cut (possibly of a tree throw). The latter was regarded as quite likely on the basis of the deposit's composition and distinctiveness in contrast to the more certain ditch fills.

The position of the ditches 667/668 more or less coincides with the line of the now defunct field division shown on early OS maps. The only datable find from the features - a modern glass bottle fragment contained in an upper fill (684) of ditch 668 - would appear to confirm a recent date for levelling of the ditches, probably as consequence of consolidation of the property into a larger unit. It is likely that the boundary originated as part of post medieval enclosure of the land.

A partially revealed cut feature extending beyond the SE limit of excavation (669) lay to the NE of 667 and 668. It can be interpreted as a part of a pit or as a ditch terminal but is considered more likely to represent part of a tree throw hole similar to those encountered elsewhere in Field 4.

A modern SE-NW pipe trench (670) transected Trench 8 at a mid point along. All of the above deposits were overlain by a lower horizon of 0.15m to 0.20m thick ploughsoil (681). This was in turn sealed by topsoil (680).

Trench 9 (Fig.9)

Trench 9 was situated within the NW part of the Field 4, immediately to the NW of the gridded topsoil survey. The trench ran SW-NE and measured c.56.5m in length.

Natural sand (712) formed the primary deposit throughout the trench. This material was cut by a linear or possibly curvilinear N-S ditch (706) at the SW end of the trench. Fills (709,708) represented primary silting of the ditch while a more mixed material (707) extended through its upper levels. The latter deposit included a single fragment of modern glass. The ditch may therefore be interpreted as another element within the post-medieval or modern pattern of enclosure. On the other hand it can be suggested that because of its possible curvilinear plan shape, 706 may form part of a prehistoric ring ditch. Further consideration of the enclosure pattern as depicted on historical maps may help to resolve this problem.

Trench 10

Trench 10 was placed within the area of the topsoil survey of Scatter A in order to ascertain the potential for negative features associated with the flint assemblage. The trench, which lay on an NE-SW orientation and measured c.61m in length, produced no evidence of archaeological remains.

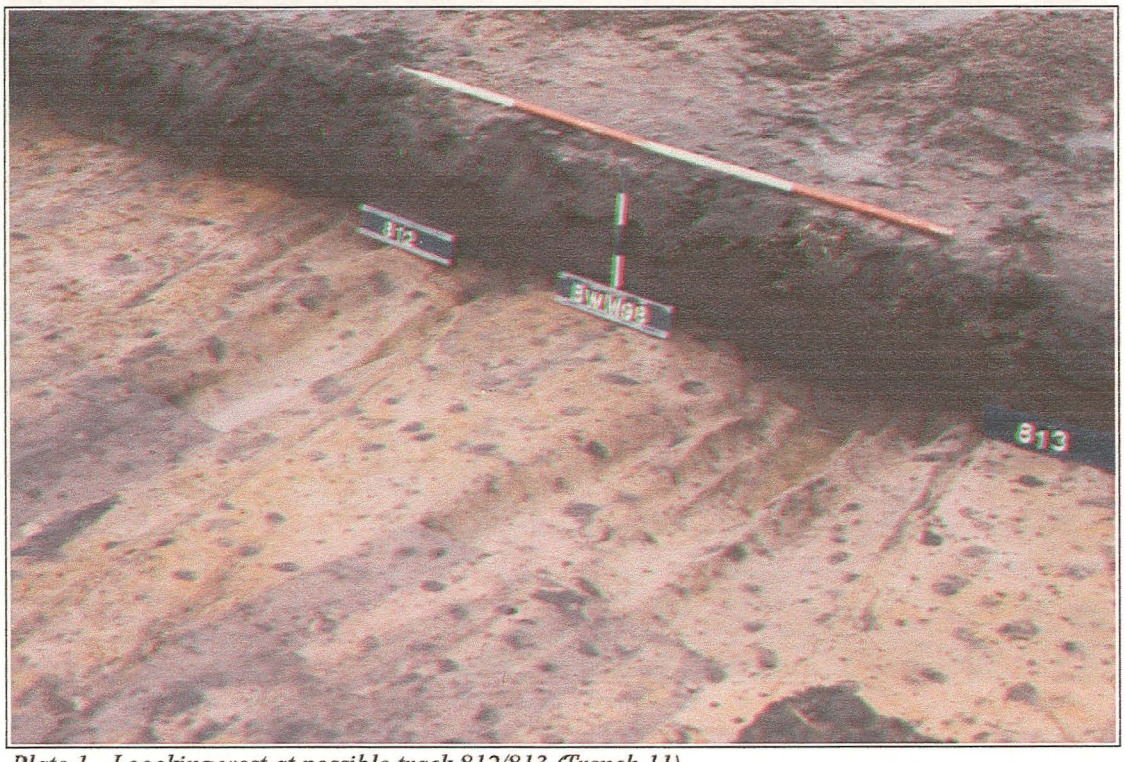

Plate 1 - Loooking west at possible track 812/813 (Trench 11)

Trench 11(Fig.9 – Plate1)

With the same objective as Trench 10 this trench, which measured c.63m in length was placed immediately to the SE of the topsoil survey area. The majority of the trench proved to be devoid of archaeological features but a pair of parallel, shallow linear depressions (812 and 813) orientated NNW-SSE, each comprising several narrow hollows or gullies was located in the area closest to the Fossdyke. In order to facilitate better interpretation of these features the trench was widened at this point. The most plausible explanation of these features is that they represent the remnants of ruts within a track or hollow way. Cuts 812 and 813 are very similar in form, each having a narrow 'rut' to the west, flanked by broader areas of rutting to the east, possibly representing a slight shift in position of the track. Measurement between possibly corresponding ruts would suggest an axle width of around 1.5m for vehicles using the track. The feature appears to have silted naturally with adjacent materials (814). These deposits were devoid of finds; the features therefore remain undated.

10.2 Land to the NW of Woodcocks (see Figs.4 and 5)

Trench 12(Figs 10 and 12- Plate 2)

Trench 12 was L-shaped in plan and was designed to intersect with a series of linear anomalies detected as a result of the geophysical survey carried out by GSB (see Appendix G).

At the NE end of the longer NE-SW arm of Trench 12 two parallel ditches (741 and 743) were found to run close to and parallel with the existing field boundary. Both features contained as their primary fills light greyish brown sand and had been truncated heavily at their upper levels by a much broader ditch (731). Much darker sands and clayey sands (739, 738, 737, 736) filled the later feature. The features remain undated and may be regarded as serving a demarcation or drainage function –

possibly in relation to the former A57 and its predecessors. This need not necessarily preclude an earlier and more archaeologically significant date since the route, which skirts the edge of an ancient floodplain of the River Till may itself be of considerable antiquity.

Plate 2 – Looking north at ditches 741,743 and 731 (Trench 12)

A shallow, undated SE-NW gully (732) containing a sole fill (733) of probably natural origin lay a short distance to the SW. A small extension to the main trench of c 6.20m x 3.00m (max) succeeded in tracing the 732 to a point where it gradually disappeared. There was no evidence of associated features.

At the junction between the two arms of the trench a further small extension was opened up to examine an area showing much disturbance within the natural sands. All deposits in the area were shown to be natural in origin, primarily reflecting root disturbance and extensive iron panning.

The major ditch found in trenches 21,16,13, 14 and 15 was also located at the end of the SE-NW extent of the trench. The feature intersected the trench at an acute angle and was not excavated. Also present in the latter part of Trench 12 was evidence for further root/tree disturbance and a N-S orientated land drain.

Trench 13 (Figs.11 and 13 – Plate 3)

Trench 13 was orientated SE-NW, and lay at the base of the sands and at the edge of the floodplain. Small extensions were made to the trench at selected points. The linear part of the trench and the widened area to the NW displayed a high degree of disturbance from tree roots and tree throw holes. In order to confirm that these were in fact natural in origin a sample area (see plan) was cleaned and partially excavated. Cut 773, which was initially thought to resemble a ditch, was sectioned to reveal very irregular sides and base and an equally irregular plan shape. An adjacent linear cut (778) was also sectioned and produced a similar characteristics – irregularly sloping sides with areas of undercutting. Cleaning over the wider area demonstrated the presence of other irregular patches containing generally black silts with a possible organic content. The natural in this area comprised a mix of mottled clays and silts extending throughout.

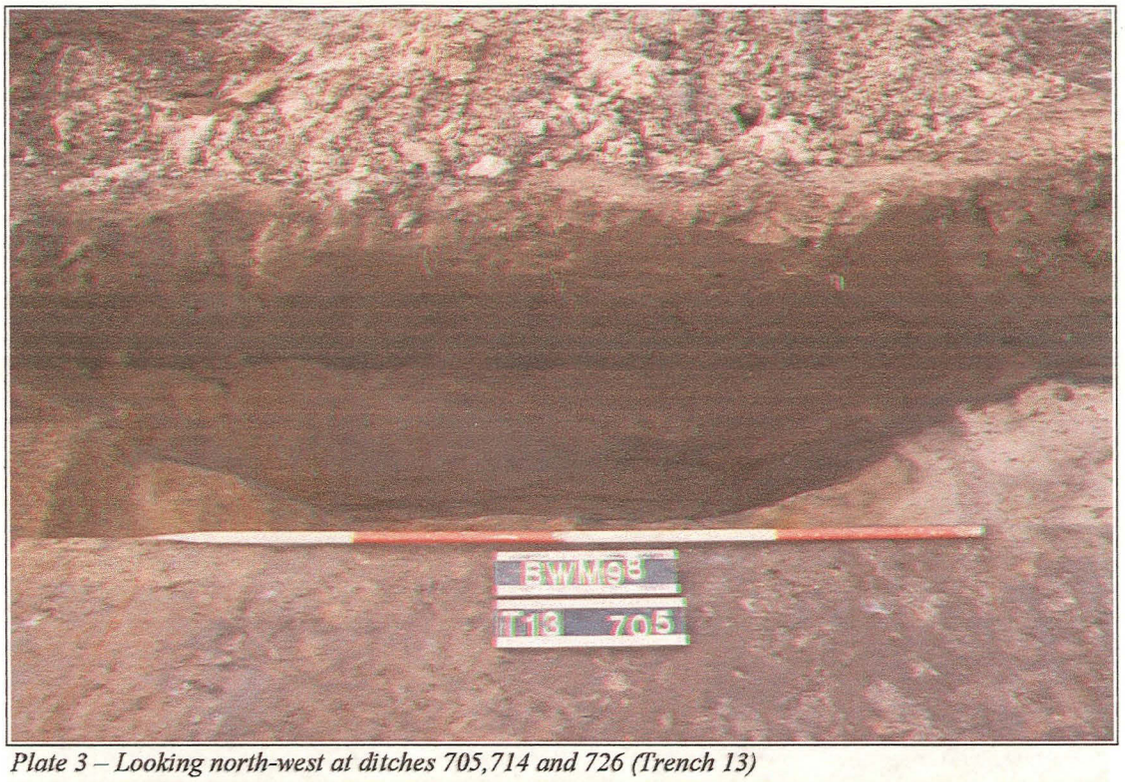

Plate 3 – Looking north-west at ditches 705,714 and 726 (Trench 13)

The extension to the NE from close to the SE end of Trench 13 was intended to intersect at right angles with ditch 726 and its recuts (705 and 714). The primary cut (726), which had been severely truncated on its NE side by the recut 705, was filled by primary depositions of a clayey deposit (729) and a silty sand (728) and then by an apparently slumped material (727). The recut to the NE (705) contained on the whole darker deposits, especially at its upper levels, but also seems to have become infilled through a process of slumping and natural sedimentation. Fills 721, 717,719,720 and 716 may have lain within a further recut but this could not be established with certainty. The latest of these fills (716) contained 2 fragments of a late post medieval or modern tile. A much slighter recut (714) only just cut the SW edge of 705.
A very dark grey-brown slightly clayey silty sand (713) of up to 0.20m in thickness extended throughout the area - sealing the ditches. This deposit, which was more humic in appearance than the ploughsoil, appears to have accumulated on the lower slopes of the sandy high ground as a result of colluviation. Topsoil (704) to 0.48m in thickness then extended to ground level.

Trench 14 (Fig.13)
Trench 14 was designed to provide an unbroken transect, extending from the former A57 towards the Fossdyke, across the elevated sands and a darker sandier band following the lower contour, and on to what is thought to be the floodplain of the River Till. The SW end of Trench 14 was positioned to intersect with a circular anomaly detected by geophysical survey.

The major ditch recorded in Trenches 13 and 14 was located on the lower slopes of the sand. This was flanked by a shallow gully (701) containing a fill of mixed silty sand resembling that encountered in the probable natural features in Trench 13.

Despite considerable widening of Trench 14 at the Fossdyke end, no evidence for the circular anomaly detected by geophysical survey was found. The northern side of the anomaly may have been produced by an undated E-W ditch (695) which was investigated through the excavation of a 2m wide section. Fills (698,697,696) consisted primarily of clay deriving from the adjacent natural clays material. The E section across 695 was extended to provide a longtitudinal section through a very shallow, clay filled, apparently linear feature running at a right angle to 695 (699). This feature, which predated

695, was not located in a short trench (Trench 22) placed to the SE and may best be interpreted as another natural hollow.

Trench 15 (Fig. 12 – Plate4)
Trench 15 lay on a SE-NW orientation on the lower part of the slope to the floodplain and was in part positioned with the intention of establishing the relationship between ditch 764 (recorded as 726/705 in Trench 13) and 695 in trench 14 (see above).

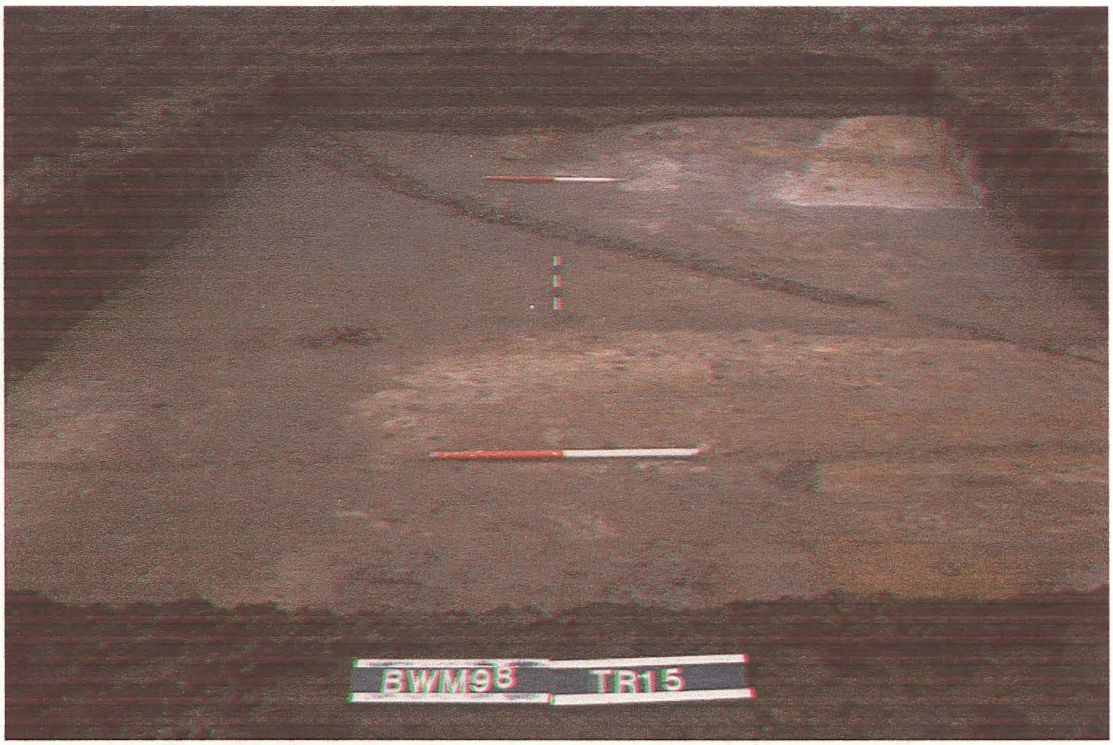

Plate 4 – Looking east at ditches 746, 750, 753, 760, 762, and 764 (Trench 15)

The natural subsoil in the area (756) was a mixed yellow/orange and white grey sand. The extension to the NE at the NW end of the trench revealed an intersection containing a complex of ditches including the SE-NW feature (764). Two ditches radiating to the NE (762) and to the WSW (746) could form an earlier phase of activity contemporary with the earliest cut along the line of 764 (not identified here but recorded in Trench 13 as 726. The NE ditch (762) had been cut by 746. It measured 0.60m wide x at least 0.23 m deep and contained a primary fill of silty clay (768) with more mixed deposits including possible organic material (767) above prior to the deposition of the upper fill (763). On the opposite side of 764, ditch 746 appears to have respected the line of 764 or its precessor by terminating a short distance to the west. It contained layers of clay (748,766) with interspersed silty sand (747).

It is likely that cut 764 represents a slight shift in line to the NE (as demonstrated by 705 in Trench 13). This may account for the truncation of 762, and for the digging of a successor to 762 a short distance to the NW (760). This shallow feature appears to respect 764. Ditch 750, which runs parallel with 746 and also respects 764 may form a corresonding recut on the opposite side of 764. This feature contained predominately silty sands (751 and 752).

Ditches 746 and the 764 were both cut by a shallow SE-NW sandy silt filled ditch (753) which extends as far as the line of 750, where it either respects the latter feature or is cut by it. Ditch 753 represents a continuation of the final recut observed in Trench (726).

Further evidence of probable natural cuts was found in Trench 15. Topsoil (incorporating the darker horizon recorded in Trench 13) was present to a depth of 0.48m.

Trench 16 (Fig.16)
Trench 16 lay on an SW-NE orientation extending from the elevated sands and on to the periphery of the floodplain of the River Till.

The ditch recorded elsewhere in Field 2 (see 764, 705/714, 782/784) was encountered near to the SW end of Trench 16. At this point, a section was excavated by machine but unfortunately the sides of the trench soon collapsed, owing to the unstable character of the sandy fills, without an opportunity to obtain more than a photographic record of the feature. In addition, the relationship between the main ditch and a pair of smaller, ditches, orientated SW-NE to the SW (800 and 802), was lost. These last mentioned features appear to form field boundaries linking to the main ditch. The earlier feature (802) seems to have terminated a short distance to the SW, suggesting the presence of a corner entrance/exit between fields while the later cut (800) continues to beyond the SW limit of Trench 16. Two excavated segments were devoid of finds.

Fig.5 – Looking south-east at feature 769 (Trench 20)

Trench 17 (Fig.14)
Trench 17 lay in the SE part of Field 2, extending to the SW from the NE field boundary. Ditches (731,741 and 743) probably intersected with the NE end of the trench but excavation was not carried out at sufficient depth to locate them at this point.

A steep drop in level of the underlying pale to bright orange natural sands (808) occurred at a point 8.7m from the SW end of Trench 17. At the base of this depression lay a sequence of shallow sand and silt layers of possible alluvial origin (811,810, and 809). These were overlain by a layer which orininally appeared to represent a possible buried soil (806), but which might now be regarded as a layer which, in the light of the environmental finds, brick, coal and cinder, once functioned as a land surface (see Environmental Archaeology Assessment - Appendix D).

A layer of sandy silty loam to a maximum depth of 0.40m (805), representing probable colluviation as a result of ploughing, then sealed 806 with a 0.60m (max) depth of topsoil (804) extending to ground level.

Trenches 18 and 19
Trenches 18 and 19, which lay in close proximity to The Woodcocks, contained no evidence of archaeological activity.

Trench 20 (Fig. 13 – Plate 5)
Trench 20 lay on a SW - NE orientation and was situated within the southern part of Field 2 on the area of elevated natural sands.

Orange sands overlain by greyish yellow/brown sands (793) and then by light grey/white sands (792) formed the underlying natural subsoil in Trench 20.

A single undated feature considered to represent a possible track or "hollow way" was recorded in Trench 20. This feature took the form of a linear series of shallow hollows orientated N-S (769) with an overall width of 2.30m which corresponds to that for 812/813 combined in Trench 11. Hollows 769 and 812/813 are on the same alignment in it is possible that they represent parts of the same feature. The hollow (769) contained initial fills of sands (797,795,770) prior to the deposition of a very mixed and darker sand (789) across the residual hollow and a broader shelf to the SW.

Trench 21(Fig.14)
Trench 21 was situated on the lower slopes of the elevated sand where it transected the ditch previously recorded as 705/714 in Trench 13. The sequence here appears to be identical to that in Trench 13 with an earlier ditch containing lighter sediments to the floodplain side (784) equating to 714, and a recut higher up the slope containing darker material (782) equating to 705.

A probable tree throw hole was partially excavated in the SW part of the trench. The natural became more clayey at this point.

Trench 22
A short trench was excavated the south of Trench 14 to locate the further extent of the apparently linear feature already encountered in Trench 14 (699). There was no evidence of such a continuation and natural clays extended throughout the trench.

11.0 CONCLUSIONS

11.1 Early environment

Geotechnical investigations over the part of Field 4 to the SW of the centrally positioned NW-SE ditch established the height of solid geology, consisting of Lower Lias clay at a mean of c.-5.40m OD. A sharp rise in level appears to occur in the area to the NE of the ditch with heights of –0.68m OD and 0.31m OD recorded. River terrace sands and gravels fill the valley to the SW to a height of c.2.30m OD, rising to an average of around 3.85m OD at the NE periphery of Field 4. A thick deposit of dense brown sand at the top of this sequence probably correlates with one encountered in auger holes (see report by J Rackham, Appendix E) and test pits at other locations across the site. A layer of soft grey clay (often containing fragments of root or twig) overlain by an oxidised brown clay (top surface at around 3.5m OD) then extends over the sands and gravels across the majority of the site with the exception of the NE edge of Field 4 which may represent the edge of the contemporary floodplain. Variable depths of sand with an undulating top horizon then extends to form the the modern day landscape. The sands are absent over the low lying part of the site to the SW which probably contains more recent alluvial deposits overlapping the sands.

Dates for the various deposits described above have yet to be determined but two alternative hypotheses have been suggested (J Rackham, Appendix E). According to the first scenario, alluvium below 3.3m OD may be Late Glacial in origin and was subsequently covered by glacio-fluvial sands or coversands, perhaps at 10,550+_250bc. Alternatively, the lower alluvium could be Late Glacial or

early Holocene in date, with the overlying sands being deposited during a period of dune formation in the Mesolithic.

11.2 Mesolithic to Late Prehistoric (c.10 000bc - c.43ad)

Later Mesolithic to Late Neolithic/Early Bronze Age activity, as represented by an assemblage of 96 worked flints, appears to concentrate on the elevated sands flanking the floodplain of the River Till. Distinct concentrations were identified during fieldwalking to the centre of Field 3 (Scatter B) and to the NW of Field 4 (Scatter A) and additional random finds were made in Field 2 during trial trenching.

The distribution of flints across Field 3 may at least in part be determined by the presence or absence of possible alluvial layers in TP8 and possibly in TP10. The possible buried soil observed in TP8 was not dated but may well represent a land surface in existence at the same time as prehistoric activity in the area. Evidence from other river valley locations across the region (such as the Trent and the Welland) indicates flooding and the consequent deposition of fine grained alluvial sediments from the Neolithic period onwards (probably due to land clearance for agriculture and consequent increased runoff levels), with a marked acceleration during the Iron Age and Romano-British periods. Earlier settlement remains are commonly buried below or interleaved within such alluvial horizons. Field 3 may, therefore, offer the potential for excellent preservation of even comparatively fragile structural, artefactual and environmental evidence.

A Magnetometry survey was carried over the the majority of the area immediately adjacent to the floodplain to test for surviving remains associated with the flint scatters. Several linear anomalies were detected in Fields 2 and 3. However, trial trench evaluation in Field 2 demonstrated these to be mostly be geological in origin, probably resulting from variations in composition of the naturally deposited sands. The anomalies in Field 3 may have a similar origin.

The trial trench evaluation succeeded in locating a number of largely undated linear features in Fields 2 and 4, some of which might have an early origin. Of particular interest, in Field 2, was the sizeable ditch located in Trenches 14,15,13,16,and 21. This feature follows a uniform contour towards the base of the slope towards the floodplain across Field 2. A continuation of the ditch was noted within the small copse separating Fields 2 and 4. It is almost certain that the ditch defines the edge of marshy ground and probably served a drainage function.

The possible track identified in Fields 2 and 4 could date from the later prehistoric period. Comparable features have recently been excavated at a site in the Welland valley (Pryor, 1998).

11.3 Romano-British - Modern (43ad to present)

Evidence for Romano-British activity was sparse and is represented only by the very abraded sherds of pottery collected during the rapid scan walkover in Field 1. It may indicate activity relating to this period across the higher ground at the NW extremity of the site. There was also a single sherd from Field 3.

Fieldwalking produced no evidence for medieval or post-medieval settlement. This probably reflects the low-lying, flood-prone nature of the land during these periods.

While a prehistoric origin cannot entirely be discounted it is possible that most of the linear features recorded during trial trenching originated during the Post Medieval period to serve either a land dividing or drainage function. Comparatively recent material in some of the latest fills attests to recent abandonment – probably as a result of boundary changes.

12.0 ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL

12.1 Area to the SE of the Woodcocks (Field 4)

The potential for well preserved stratified remains is considered to be low for this area with evidence for Mesolithic to Early Bronze Age activity primarily surviving as a flint scatter in the topsoil. However, to cater for the possibility of occasional fragmentary remains associated with the period it is suggested that a careful topsoil strip be carried out under archaeological supervision in the immediate area of the flint scatter with provision for archaeological recording should this be required.

While it has not been possible to examine the Fossdyke embankment during the evaluation stage a co-ordinated approach during the breaking of the embankment is considered desirable as this could provide useful evidence for the date of formation and any subsequent reworking of the waterway.

The remainder of the field could be subject to a less intensive archaeological watching brief. It is important to bear in mind that Palaeolithic and possibly later land surfaces may be preserved beneath the layers of alluvial sediment which extend throughout the field. The probability of this type of survival is almost impossible to predict given the depth of overlying deposits: a structured watching brief coordinated with excavations for the marina may therefore constitute the most appropriate response.

12.2 Area to the NW of The Woodcocks (Field 2)

Indications from fieldwork to date suggests that Mesolithic to Early Bronze activity as represented by the assemblage of worked flints extends into the sandy elevated areas of Field 2. The potential for well preserved stratified remains is therefore probably comparable to that for Field 4. For this reason a similar archaeological response can be envisaged prior to construction in the area of the leisure centre immediately adjacent to The Woodcocks. The quality of archaeological preservation is to some extent uncertain in the area of the low floodplain which extends through much of Field 2. Any archaeological response in this zone ought to be determined by the level of impact of proposed development. At present this is expected to be light.

12.3 Field 3

Field 3 has not yet been subject to trial trench evaluation but it is possible, in the light of observations from Geological Trial Pits 8 and 10, that preservation of deposits, particularly in areas of slightly lower elevation, may be comparatively good. This raises the possibility of finding *in situ* deposits associated with the activity denoted by Flint Scatter B. Magnetometry survey over the area of the flints has revealed some linear anomalies which could, in view of results from Field 2, represent variations in geologically derived sediments. It is proposed that these anomalies be investigated through further trial trenching, with additional limited trenching to determine the potential for preservation in adjacent lower-lying areas. Sample trenching across the Field as a whole could be determined by topographical factors.

12.4 Field 1

The results of fieldwalking and the visible topography suggests that the majority of Field 1 is likely to be covered by layers of comparatively recent alluvium which may seal deposits of archaeological significance. Given extensive excavations required for the water sports lakes in this area, it is considered a priority that an evaluation trench is excavated for the purpose of establishing the sequence of dates of deposition of the layers of alluvium and of the upper sands.

13.0 ACKNOWLEDGEMENTS

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14.0 BIBLIOGRAPHY

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15.0 LHA NOTE/ARCHIVE DETAILS

15.1 LHA NOTE DETAILS

CLAU CODE: BWM98

PLANNING APPLICATION NO.: ****

FIELD OFFICER: R.Trimble

NGR: SK 933/736

CIVIL PARISH: Burton

SMR No.: ****

DATE OF INTERVENTION: 5/10/98 - 8/1/99

TYPE OF INTERVENTION: Archaeological Field Evaluation

UNDERTAKEN FOR: Eastman Securities Limited

15.2 ARCHIVE DETAILS

PRESENT LOCATION: City of Lincoln Archaeology Unit, Charlotte House, The Lawn, Union Road, Lincoln, LN1 3BL.

FINAL LOCATION: The City and County Museum, Friars Lane, Lincoln.

MUSEUM ACCESSION No.: 222.98

ACCESSION DATE: ****

APPENDIX A - LIST OF CONTEXT DESCRIPTIONS FROM TRIAL TRENCH EVALUATION

No.:	Trench	Interpretation:	Description:
650	6	Cut of tree throw or ditch.	Shallow linear cut orientated approximately N-S with gradually sloping sides breaking gradually to a flat base containing several small cuts.
651	6	Primary fill of 650.	Moderately compact mottled yellowish-grey/orange/reddish brown / dark brown sand containing no obvious inclusions.
652	6	Ditch	Linear cut running NW-SE. S side sloping at around 50 degrees from horizontal and breaking to a flat base. Extends beyond LOE to N.
653	7	Cut of probable gravel/sand extraction pit.	Shape in plan not known - feature only partially excavated. S side vertical breaking sharply to a flat base. Truncated by 671 to the north.
654	7	Cut of probable gravel/sand extraction pit (same as 653/671?)	Only partially excavated. Extent therefore unknown. Visible edge to the north-east of trench slopes at 40 degrees from horizontal.
655	6	Topsoil	Moderate to loosely compacted mid yellow-brown sandy earth containing moderate rounded pebble, plant roots and patches of light yellow/brown sand.
656	6	Topsoil - lower horizon?	Moderately compact sandy mid grey/brown earth containing moderately rounded pebbles, occasional small patches of red/brown sand and occasional small patches of charcoal.
657	6	Secondary fill of 650.	Moderately compacted very fine sand. Mixed light grey and dark grey with occasional patches of red/brown. No obvious inclusions.
658	6	Fill of 679.	Moderately compact dark grey-brown/ black sandy earth containing only very occasional small patches of charcoal and small patches of buff sand.
659	6	Fill of 652.	Moderately compact sandy earth. Mottled cream/ yellow-brown/ orange/red-brown/mid brown. Contains small patches of charcoal and occasional small rounded pebbles.
660	6	Natural sand	Mottled cream/buff/light orange/light grey sand containing occasional rounded pebbles.
661	7	Fill of 654	Moderately compact dark brown/black sandy slightly clayey earth containing occasional small rounded pebbles, occasional patches of mid yellow/brown sand and small grit-like pebbles.
662	7	Secondary fill of 654	Moderately compacted mid grey/brown sandy earth containing frequent rounded pebbles, occasional small patches of charcoal and occasional small patches of mid yellow/brown sand.
663	7	Fill of 654	Moderately compacted mid yellow/brown sand with patches of mid brown sandy earth. Contains only occasional small rounded pebbles.
664	7	Fill of 671	Moderately compact mid orange/brown sand mixed with frequent small-medium rounded pebbles. and occasional small patches of mid brown sandy earth.
665	7	Layer /topsoil	Moderately compact mid yellowish-grey/brown sandy earth containing frequent small - medium rounded pebbles, occasional roots and very occasional angular pebbles.
666	7	Topsoil	Identical to 665 but looser and very pebbly.
667	8	Ditch	Very regular shaped linear feature on NW-SE orientation with very straight near vertical edges breaking sharply to a flat base. Dimensions 1.55m + long x 1.22m wide x 0.37m deep.
668	8	Ditch	NW-SE orientated linear feature with a concave NE edge and a rounded base. The southern edge was concave but stepped. Dimensions 1.55m + long x 3.00m wide x 0.74m deep.
669	8	Pit or ditch gully terminus.	Partially exposed feature. Exposed part circular in plan with near vertical edges and a flat base. Dimensions 0.60m + x 0.87m x 0.44m deep.
670	8	Modern pipe trench	SE-NW orientated with vertical sides and flat base. Dimensions 1.55m + long x 0.34m wide x 0.28m deep.
671	7	Edge of quarry?	Very SW edge only. Plan shape unknown. Side sloping at approx. 45 degrees.
672	7	Natural sand	Description as for 660
673	7	Natural gravel	Mixed mid orange/brown sand and very small-medium pebbles.
674	7	Primary fill of 653	Mod comp v fine lt grey and dk grey/black ashy sand.
675	7	Fill of 653	Mod comp mixture of orange sand, blackish sand and mid brown sandy earth. Only v v occ sm rounded pebbles.
676	7	Primary fill of 671	Mod comp dk brown/black sandy, slightly silty earth containing occ patches dk orange/brown sand and occ sm rounded pebbles.

677	7	Fill of 671	Mod comp mixture of mid yellow/brown, mid grey and buff sands with mid grey/brown sandy earth. occ v sm patches of lt grey clay and charcoal, occ sm rounded pebbles.
678	7	Fill of 671	Mod-well comp mid grey/brown sandy earth containing only v occ sm rounded pebbles, occ sm patches of lt yellow/brown and dk red/brown sand.
679	6	Cut	Partially exposed cut at SE LOE. Side slopes at c 45 degrees to an uneven base.
680	8	Topsoil	Soft, loose comp mid greyish brown sand with organic remains.
681	8	Lower ploughsoil	Medium comp mid greyish brown sand.
682	8	Final fill of 668 (or in recut?)	Loose to mod comp mid to dk greyish brown sand.
683	8	Fill of 668 (or in recut?)	Loose lt yellowish brown sand.
684	8	Fill of 668 (or in recut)	Mod comp mid brown sand.
685	8	Fill of 668 (or in recut?)	Mod comp mid grey sand.
686	8	Fill of 668	Mod comp mid greyish brown sand.
687	8	Fill of 668	Mod comp mid greyish brown silty sand.
688	8	Fill of 668	Mod to firm comp. V mottled mid brown/white/black sands.
689	8	Fill of 668	Loose to mod comp. Mid to dk greyish brown silty sand.
690	8	Fill of 667	Mod comp v mottled mid grey/brown/white sand.
691	8	Natural	Mod to firm comp, v mottled white/yellowish brown/reddish brown/grey sand. Seen throughout trench.
692	8	Fill of 670	Soft to mod comp mid greyish brown and lt yellowish brown sand.
693	8	Fill of 669	Soft to mod comp mid to dk greyish brown silty sand.
694	8	Fill of 668	Soft to mod comp mid to dk greyish brown sand.
695	14	Ditch	Linear cut orientated approx E-W. Excavated in 2.0m section to reveal sides sloping at around 45 degrees to a flat base. Width 1.70m x 0.40m depth.
696	14	Fill of 695	Firm dk brownish grey clay. Reddish brown staining.
697	14	Fill of 695	Firm mid grey clay with orangy brown staining.
698	14	Primary fill of 695	V dk grey silty clay comprising a mix of firm grey clay and loose grey silt. Includes occ sm sub rounded pebbles.
699	14	Cut (Ditch, pit or tree throw?)	Partially excavated feature extending beyond LOE to SE. Steep sided with flat base. Approx. 2.0m + long x 1.5m wide x 0.20m deep. Truncated by 695.
700	14	Fill of 699	Quite firm orangy green silty clay.
701	14	Ditch?	NW-SE orientated gully. Excavated in 0.50m section to reveal v-shaped profile and concave base. Width 0.60m x 0.23m depth.
702	14	Fill of 701	Loose mixed dk grey/lt grey silty sand.
703	14	Topsoil	Dk greyish brown clay loam (0.27m thick) to mid brown sandy loam (0.28m thick) to NE.
704	13	Topsoil	Loose becoming more comp towards interface with 713, mid to dk orange-brown sandy loam containing freq straw, occ sm to med rounded and ang stones, rare charcoal flecks. Max observed depth in Tr 13 of 0.48m.
705	13	Ditch	Linear cut orientated NW-SE. Sides uneven and sloping gradually before breaking gradually to a concave and eneven base. NE side slightly stepped while SW side slightly steeper. Excavated within 0.75m wide section to reveal width of 2.65m x depth of 0.73m.
706	9	Ditch	Linear (or curvilinear?) cut on approx. N-S orientation. Shallow concave edges breaking gradually to a concave base. Excavated in 0.70m wide section. Width 3.26m x depth 0.50m.
707	9	Fill of 706	Soft to mod comp mid greyish brown sand with occ mixed lt yellowish brown patches and occ charcoal flecks.
708	9	Fill of 706	Soft comp lt yellowish brown sand.
709	9	Fill of 706	Soft, fine sand.
710	9	Topsoil	Soft/loose comp mid greyish brown sand with organic remains.
711	9	Layer/ploughsoil	Mod comp mid greyish brown sand.
712	9	Natural	Mod comp lt to mid yellowish brown sand.
713	13	Layer	V comp, v dk grey-brown slightly clayey silty sand containing occ sm to med rounded stones. Occurs throughout to max. 0.20m.
714	13	Cut of gully	Linear cut orientated SE-NW. Sides gently sloping breaking gradually to a concave base. Excated in 0.75m wide segment revealing width of 0.72m and depth of 0.19m.
715	13	Fill of 714	Loose, lt orange-brown with v pale yellow mottling silty sand.
716	13	Fill of 705	Friable, mid greyish brown silty sand with occ sm stones.
717	13	Fill of 705	Friable, lt to mid orange (mottled with lt grey) silty sand with v rare charcoal flecks.
718	13	Fill of 705	Firm, lt grey slightly clayey silty sand.
719	13	Fill of 705	Firm, mid grey clayey sand.
720	13	Fill of 705	Firm, mid to lt orange mottled with mid grey silty sand containing occ sm rounded and angular stones.

721	13	Fill of 705 (or possible recut?)	Compact mid grey clayey sand containing occ sm rounded and angular stones and occ charcoal flecks.
722	13	Fill of 705	Compact lt grey with orange mottling silty sand containing v occ sm rounded and angular stones.
723	13	Fill of 705	Compact mid grey silty sand.
724	13	Fill of 705	Compact mid to dk grey silty sand.
725	13	Fill of 705	Compact mid grey silty clay with orange mottling.
726	13	Ditch cut	Linear cut orientated NW-SE. NE side truncated by 705 and remaining upper levels to SW by 714. Residual part of SW edge is stepped with a gradual break of slope to a concave base. Excavated in 0.75m wide segment. Surviving width 1.30m x 0.58m depth.
727	13	Fill of 726	Friable mid to lt orange silty sand.
728	13	Fill of 726	Friable mid to lt grey (some orange mottling) silty sand with v occ sm rounded and angular stones.
729	13	Fill of 726	Compact mid to lt sandy clay.
730	13	Natural	Upper levels loose becoming comp at base of 705/726. White/ pale grey/mid orange/dk orange in colour. Generally silty sand.
731	12	Ditch cut	Linear cut orientated SE-NW. Only SW edge excavated - the remaining part extending beyond the NE LOE - to reveal slightly concave profile breaking gradually to a flat base. Dimensions 1.55m + long x 4.70m + wide x 0.58m deep.
732	12	Linear cut	Shallow linear cut orientated approx. SE-NW. Irregular sides ranging from vertical to gradual in slope. Uneven base with several shallow depressions. Length 4.05m, lensing out to SE and extending beyond LOE to NW. Width 220 to 450mm. Depth 80 to 160mm.
733	12	Fill of 732	Mod comp mottled lt grey and mid grey fine sand with occ sm patches of mid yellow/brown sand. Contains vv occ sm rounded pebbles.
734	12	Topsoil	Soft mid brown sand with organic inclusions. Depth - 0.40m.
735	12	Layer/ploughsoil	Soft mottled mid brown/lt yellow brown sand throughout NE end.
736	12	Fill of 731	Soft mottled dk brown clayey sand/ lt yellow-brown sand. Some root disturbance and charcoal inclusions.
737	12	Fill of 731	Soft mottled mid brown/lt yellow-brown sand with charcoal flecks.
738	12	Fill of 731	Soft mottled mid to dk greyish brown/lt yellowish brown sand.
739	12	Fill of 731	Soft dk brown clayey sand with charcoal flecks and roots.
740	12	Fill of 741	Soft lt greyish brown sand.
741	12	Gully	Linear SE to NW orientated feature with concave edges and gently breaking to a concave base. Length 1.55m + x width 0.98m x depth 0.50m.
742	12	Fill of 743	Soft lt greyish brown sand.
743	12	Gully cut	Linear SE-NW orientated feature with concave sides gently breaking to a concave base. Length 1.55m+ x width 0.65m x depth 0.37m.
744	12	Layer	Soft lt greyish brown sand slightly mixed with natural 745.
745	12	Natural	Mod comp mottled lt yellowish brown/mid yellowish brown sand.
746	15	Ditch cut	ENE-WSW orientated linear cut terminating within Tr15. Excavated NW half has side sloping at around 45 degrees to a narrow flat base. Length 2.0m+ x 1.60m wide x 0.65m deep.
747	15	Fill of 746	Loose mid brownish grey silty sand containing occ sm subangular stones and orange flecks interpreted as iron panning.
748	15	Fill of 746	Firm, orangy yellow-olive clay.
749	15	Primary fill of 746	Friable, dk grey silty clay.
750	15	Ditch cut	ENE-WSW orientated linear cut terminating within Tr15 and extending beyond LOE to W. Sides slope steeply to a flat base. Excavated within two longtitudinal sondages. Length 3.0m + x 1.10m wide x 0.38m deep.
751	15	Fill of 750	Loose mid grey (with orange) silty sand.
752	15	Primary fill of 750	Loose, mixed and mottled mid dk brownish grey silty clay.
753	15	Gully cut	Narrow cut orientated approx SE-NW. Steep sided with flat base. Length at least 10m (cut by 750 to NW and extending beyond LOE to SE. Width 0.32m x depth 0.12m at point of 1m wide section across.
754	15	Fill of 753	Loose, mid greyish brown mottled sandy silt with occ sandy pockets.
755	15	Topsoil	V dk brown loam/sandy loam to 0.48m deep.
756	15	Natural	Mixed yellow, orange and white/grey sand.
757	-	Unstratified finds	Surface finds from evaluation area to the NW of Woodcocks.
758	-	Unstratified finds	Surface finds from the S corner of area to the SE of Woodcocks
759	-	Unstratified finds	Surface finds from the area of the topsoil survey.
760	15	Cut of gully	Small WSW-ENE linear cut. Cut by land drain to NW. Surviving SE side steep. Dimensions 0.60m long (extending beyond LOE to E) x 0.32m wide x 0.45m deep.
761	15	Fill of 760	Loose, dk brownish grey silty sand with some yellow patches of sand and orange flecks representing possible iron panning.

762	15	Gully	Linear feature excavated in 0.75m longtitudinal section only. Side sloping at c.45 degrees. Base not visible. Total length to LOE 1.79m x 0.60m wide x 0.23m deep.
763	15	Fill of 762	Loose, lt to mid grey silty sand containing mod sm lenses of v lt grey sand, mod sm darker lenses and mod charcoal flecks.
764	15	Ditch cut	Linear cut orientated approx. SE-NW. Extending beyond LOE in each direction. True dimensions uncertain due to truncation and only very limited excavation.
765	15	Fill of 764	Friable, mid grey silty sand.
766	15	Fill of 746	Firm, mid grey clay.
767	15	Fill of 762	Firm, mid to lt grey silty sand with freq dk greyish brown clay lenses containing freq charcoal flecking.
768	15	Fill of 762	Compact, lt to mid grey silty clay.
769	20	Linear cut or hollow (track?)	Orientated approx. N-S and comprising 4 separate parallel channels. Sides sloping at around 45 degrees. Overall width 2.50m x length 1.70m + x 500mm deep (max).
770	20	Fill of 769	Mod comp, mottled lt grey, lt brown, yellow/brown, dk grey/purple fine sand containing v occ sm rounded pebbles.
771	15	Fill of 772	Friable, mid to lt grey with dk brown and black mottling silty sand containing v occ sm rounded and ang stones, v occ sm orange sand lenses.
772	15	Cut (pit or tree throw?)	Oval shaped cut orientated SE to NW. Sides sloping gradually to irregular base. Dimensions 1.38m x 0.58m x 0.13m deep.
773	13	Cut (tree throw?)	Curvi-linear N-S orientation with irregular sides gently breaking to a v uneven base. Length 3.00m + (extending beyond LOE to N) x width 2.10m x depth 0.19m.
774	13	Fill of 773	Soft to mod comp dk grey clayey silt with occ sub ang gravel and organic remains.
775	13	Fill of 773	Soft, mid grey clayey silt.
776	13	Fill of 773	Soft, lt grey silt.
777	13	Fill of 773	Firm, mottled lt to mid grey/ yellow clay with occ sub ang sm gravel.
778	13	Linear cut (tree throw?)	Linear N-S orientated cut with irregular sides and base. Length 1.55m + x width 0.90m x depth 0.43m.
779	13	Fill of 778	Soft to mod comp black sandy silt with occ sub ang sm gravel and organic remains.
780	21	Cut (tree throw?)	Partially exposed in trench extending beyond LOE to S. Plan shape semi-circular with irregular profile and base. Measures 1.20m+ N-S x 1.45m E-W x 0.42m deep.
781	21	Fill of 780	Mid grey clay, Loose to mod compact greyish brown silty sand, and dk greyish brown silty sand.
782	21	Ditch cut	Unexcavated feature orientated SSE-NNW. Measures 1.80m wide and extending beyond LOE in each direction.
783	21	Fill of 782	Loose to mod comp mid grey and brown mottled silty sand containing freq sm iron pan flecks and lt grey sandy flecks.
784	21	Ditch cut	Linear cut orientated SSE-NNW, heavily truncated on NE side by 782. Surviving plan width 0.60m max. - extending beyond LOE in each direction.
785	21	Fill of 784	Loose to mod comp lt brown silty sand containing occ lt grey-brown flecks.
786	21	Cut (of pipe trench?)	Linear cut orientated SSE-NNW. Between 0.20m and 0.32m wide. Extending beyond LOE in each direction. Not excavated.
787	21	Fill of 786	Loose to mod comp v mixed deposit of lt greyish brown/lt grey/orange silty sand containing occ iron pan flecks.
788	20	Topsoil	Mod to loose comp mid brown fine sandy silty earth containing mod sm-med rounded pebbles and plant roots.
789	20	Layer/Fill?	Mod comp mixed dk grey/black, grey/purple, lt grey, occ greyish brown fine silty sand containing occ sm rounded pebbles.
790	20	Layer (Natural?)	Mod comp lt greyish yellow/brown silty sand mixed with occ sm patches of dk grey sand, occ v sm patches of mid orange/brown sand and patches of lt grey/buff sand.
791	20	Layer (Natural?)	Mod-well comp v lt brownish buff silty sand containing v freq sm specks of orange-brown sand and occ sm lumps of iron panning, v occ sm rounded pebbles.
792	20	Layer (Natural?)	Mod comp lt grey/white sand with freq sm patches of dk grey sand and mid orange/brown sand and occ sm lumps of iron panning. V occ sm rounded pebbles.
793	20	Layer (Natural?)	Mod comp lt greyish yellow/brown sand mixed with occ patches of dk grey sand and occ patches of mid orange/brown sand and iron panning. Contains sm rounded pebbles.

794	20	Natural sand	Mid orange sand with occ patches of mid grey sand, gradually becomes paler in colour, mottled with buff and grey sand with patches of orange sand. In SW part of sondage it contains freq patches of orange sand and lumps of iron panning and v v occ sm rounded pebbles.
795	20	Fill of 769	Mod comp mix of lt grey and yellow/brown sand with streaks of darker grey sand.
796	20	Fill of 769	Mod comp pale blue/grey sand.
797	20	Fill of 769	Mod comp yellow/cream sand.
798	16	Topsoil	Soft, dk brown sandy loam with occ sub rounded and sub ang gravel inclusions, and organic material.
799	16	Fill of 800	Soft, mottled mid grey/yellow brown silty sand with v infreq sub ang gravel and some iron panning.
800	16	Cut of ditch	Linear cut on SW-NE orientation. Sides sloping at approx 45 degrees then breaking sharply to a flat base. Extends to line of N-S ditch to NE and beyond LOE to SW. Also extends beyond LOE to SE. Length 6.00m+ x 1.00m+ wide x 0.49m deep.
801	16	Fill of 802	Soft, mid grey silty sand with infreq sub ang gravel and slight iron panning.
802	16	Cut of ditch	Linear cut on SW-NE orientation. Sides slope at arouind 45 degrees breaking sharply to a flat base. Cut by 800 along SE side. To the NE extends to line of N-S ditch. Appears to terminate within trench to the SW. Length 3.00m+ x width 0.98m+ x 0.54m deep.
803	16	Natural	Firm, mid yellowish brown sandy clay with occasional sm sub ang gravel.
804	17	Topsoil	Loose, v dk greyish brown sandy loam containing mod to freq sm to med rounded and ang stones.
805	17	Layer	Loose mid to dk greyish brown sandy silty loam containing mod sm rounded and ang stones.
806	17	Layer	Friable, V dk greyish brown/black sandy silt with high organic content. Contains freq charcoal flecks, mod sm sand lenses and occ sm stone.
807	17	Layer	Loose, mid brownish grey silty sand containing occ sm rounded and ang stones. Mottled with brown lenses.
808	17	Natural	Friable, pale yellow to bright orange sand.
809	17	Layer	Loose/friable, mid/dk greyish brown sandy silt (quite mixed) with patches of dk grey sandy silt.
810	17	Layer	Mid brown silty sand with yellowish sandy band similar to 805.
811	17	Layer	Mixed deposit of mid to dk greyish brown sandy silt with yellowish sandy lenses and red/brown iron panning.
812	11	Cut (track?)	Series of parallel shallow linear hollows orientated NNW to SSE. Together form corrugated base. Extends beyond LOE to NNW and SSE. Length 5.65m+ x width 1.00m (max) x depth 120mm (max.).
813	11	Cut (track?)	Series of parallel shallow linear hollows orientated NNW to SSE. Together form corrugated base. Extends beyond LOE to NNW and SSE. Length 5.65m+ x width 0.80m (max) x depth 170mm (max.).
814	11	Fill of 812	Mid to lt grey silty sand with patches of dk grey silty sand and buff sand.
815	11	Fillof 813	Mid to lt grey silty sand with patches of dk grey silty sand and buff sand.
816	11	Topsoil	Soft/loose comp mid greyish brown sand with organic remains.
817	11	Natural	Mod comp lt to mid yellowish brown sand.
818		Topsoil	Finds from sieving in 1m sq. pit at grid point 5060E/4680N
819		Topsoil	Finds from sieving in 1m sq. pit at grid point 5060E/4700N
820		Topsoil	Finds from sieving in 1m sq. pit at grid point 5060E/4710N
821		Topsoil	Finds from sieving in 1m sq. pit at grid point 5070E/4690N
822		Topsoil	Finds from sieving in 1m sq. pit at grid point 5070E/4700N
823		Topsoil	Finds from sieving in 1m sq. pit at grid point 5070E/4710N
824		Topsoil	Finds from sieving in 1m sq. pit at grid point 5080E/4690N
825		Topsoil	Finds from sieving in 1m sq. pit at grid point 5080E/4700N

Key to abbreviations used in context descriptions:

ang	angular	*mod*	moderate
comp	compact	*occ*	occasional
dk	dark	*sm*	small
lt	light	*v*	very
med	medium		

APPENDIX B - FLINT

Burton Waters Marina
Flint
by David Bonner and Robin Holgate

Summary
The investigations have identified a Mesolithic flint assemblage at what appears to be a short- to medium-term, and/or repeat visit activity site. There is additionally a smaller, Late Neolithic/Bronze Age component, indicating the long term importance of the Burton Waters Marina site.

Introduction
Ninety-six knapped flints were submitted for analysis. These include four flints found by field walking in Area 2 (200's), twenty-five flints found by field walking in Area 3 (300's), sixteen flints found by field walking in Area 4 (500's), twenty-two flints found by trench evaluation in Area 2 (757), twenty-two flints found in test pits in Area 4 (800's), and a further seven flints found in various locations (600's, 758, 759 and 788). One of these flints was recovered from a ditch (607) to the east of the marina complex.

This report is divided into five main sections, which deal with the choice of raw materials, the condition, the morphology of the assemblage, and its distribution, followed by an overall discussion.

Raw Materials
Four main categories of flint type have been identified (in order of frequency):

- Pale to dark (brown) grey material with occasional opaque/ cherty mottles and a dusky or semi-gloss finish
- Mid honey-yellow semi translucent or opaque material with a semi-gloss finish
- Indeterminable material, usually burnt, or sometimes with a high level of patination
- Mid to dark brown semi-translucent material with a gloss finish

Persistently thin, eroded cortex indicates that the majority of the flint is from a derived flint source, probably local fluvioglacial drift, or river terrace gravels of the Witham.

Condition of Flint
The assemblage is varied in terms of abrasion; most examples are relatively fresh, suggesting that they have been incorporated into the ploughsoil in recent years. However, this is at odds with the high incidence of breakage (see below). Some flints exhibit typical wear traits reflecting that they have been within the ploughsoil for some time. Almost half of the flakes are broken, suggesting intensive agricultural land use.

A small number of flints (5%) exhibit a surface patina. Patination is present on material dating from the Mesolithic to Bronze Age, suggesting that this process is *not* chronologically significant at the site.

Morphology of the Flint Assemblage
The flints have been divided into tools, cores and flakes (and shattered pieces) (Tables 1-3).

Tools
Tools have been distinguished from the debitage (cores, waste flakes and shattered pieces) by macroscopic examination for 'retouch', the deliberate alteration of the flint edge. Of twenty-eight tools, almost two-thirds are scrapers, and most of the remainder are cutting flakes/blades. There are additionally, three notched flakes, two possible piercers, and a couple of flakes with miscellaneous retouch (Table 1).

The scrapers include side and side/end scrapers. One scraper incorporates a small side notch. Two of the notched flakes have bifacial retouch.

Just over half of the tools appear to be Mesolithic, whilst the remainder are either (Late) Neolithic/Bronze Age, or exhibit no diagnostic traits. The semi-invasive flaking characteristics of two scrapers and a cutting flake suggests a more restricted date range in the Late Neolithic/*Early* Bronze Age for some of the later prehistoric assemblage.

Cores

Nine cores, weighing between 7g and 55g were found (Table 2). The cores are of single, double and multi-platform type. All of them are heavily flaked, some to near-exhaustion, confirming that the local flint resources were limited. Diagnostic flaking traits place most of the cores in the (Late) Neolithic/Bronze Age period, whilst only two are Mesolithic.

Flakes

There are fifty-six waste flakes and three shattered pieces (Table 3). The flakes have been subdivided into primary, secondary and tertiary flakes on the basis of the degree of cortication of the dorsal surface (Table 3). Almost two-thirds of the flakes are tertiary, and nearly all of the remainder are secondary.

Macroscopic examination of the flakes shows that almost one third are blades or bladelets, and exhibit the traits of soft-hammer manufacture, which is normally associated with Mesolithic technology. Most of these blades/bladelets (the most vulnerable group) are broken (see *Condition of Flint* above).

There is however, a significant number of hard-hammer struck, squat-shaped flakes suggesting that there is additionally a Late Neolithic/Bronze Age component to the assemblage.

Significant finds include an axe sharpening flake of Mesolithic or possibly Neolithic date, a core rejuvination flake and a core trimming flake.

Metrical analysis, involving the measuring of length and breadth was not undertaken, due to the small sample size, and also due to the high incidence of blade breakage which would have skewed the results.

Distribution of material

The flints come from three main areas separated by the marina complex and a road. Most of the flints were unstratified, as they were collected by field walking the surface of ploughed fields. A smaller number were recovered by machine trench evaluation and hand-dug test-pits.

The flint found by field walking and trench evaluation shows no significant variation in class type or date. Significantly perhaps, the flints recovered from test-pits (800's) are exclusively Mesolithic. One flint of Neolithic/Bronze Age date was recovered from a ditch (607).

Discussion

Most of the flint is Mesolithic, but due to the absence of microliths it is impossible to say with any confidence whether the assemblage is early, mid or late Mesolithic. The small size of much of the material may indicate a later Mesolithic date.

The number of cutting flakes and the axe thinning flake suggest that the site is probably a short- to medium-term, and/or repeat visit activity site, rather than simply a transient stopover, whilst hunting through the landscape. The exact nature of this possible 'settlement' or 'task specific' site is uncertain. Significantly perhaps, there are only a few Mesolithic cores and primary flakes, indicating that the earlier prehistoric activities relate more to 'finishing' and tool use than to core procurement and roughing out. There is no positive evidence of spatial or temporal patterning.

A small number of flints, including a cutting flake and a side/end scraper are hard-hammer struck and are less likely to be Mesolithic. These appear to represent a later phase of activity in the (Late)

Neolithic/(Early) Bronze Age, but due to the small size of this sample, it is impossible to say what level and what type of activity took place at this later time.

This pattern of multi-period interest may indicate that the Burton Waters Marina is a favoured location, and is typical of other Mesolithic river margin sites.

Table 1. Tool Quantification Table

Context	R.F No	Class	Notes	Date
204	7	Side/end scraper	Heat affected (?stubble burnt)	LN/BA
208	8	?Piercer	Non flake	Preh
211	9	Misc. tool	Misc. retouch	LN/BA
306	10	Notched flake	Bifacial retouch	?Meso
324	14	Scraper/ notched flake	Bifacial retouch	?Meso
337	16	?Side scraper		Preh
338	17	End scraper		Meso
339	18	Side/end scraper		LN
341	19	Cutting blade		Meso
342	20	End scraper		?LN/EBA
345	22	Misc. tool	Blade with misc. retouch	Meso
348	23	End scraper		?Meso
350	25	Disc scraper		LN/EBA
352	27	Cutting flake		?Meso
357	32	Side/end scraper	Non flake	LN/BA
383	33	Piercer		LN/BA
384	34	Misc. tool	Narrow flake with misc. retouch	?Meso
509	38	Cutting blade		Meso
514	42	Scraper		LN/BA
551	48	Scraper		LN/BA
553	49	?Cutting flake		?Meso
614	56	Cutting blade fragment		?Meso
757	60	Cutting flake	Hard hammer struck	Neo/EBA
757	62	Notched blade/ ?piercer fragment	Tertiary flake, hard hammer struck	Neo/BA
757	63	Side/end scraper	Primary flake, hard hammer struck	Neo/BA
757	77	?End scraper fragment	Fire fractured	?Meso
788	84	Cutting flake fragment		?Meso
822	95	Cutting blade fragment		Meso

Table 2. Core Quantification Table

Context	R.F No.	Plats	Expl	Wt	Note	Date
343	21	-	-	-	Core fragment	Preh
355	30	-	-	-	Core fragment	Neo or later
513	41	-	-	-	Multi-platform core	LN/BA
522	45	-	H	-	Multi-platform core	LN/BA
527	46	-	H	-	Multi-platform core	LN/BA
757	61	1	H	18g	Discoidal core	Neo
757	68	2	H	25g		LN/BA
757	73	1	H	7g	Bladelet core	Meso
759	82	1	H	55g	Blade/flake core	?Meso

[Plats= no. platforms: opp = 2 opposing platforms; Expl = exploitation: H = high; Col = colour; hh = hard hammer]

Table 3. Flake Quantification Table

Context	R.F. No.	C	B	P	Form	Notes	Date
213	50	S			20/42		Neo/BA
310	11	S					Preh
315	12	S					Preh
319	13		Y			Blade fragment	Meso
328	15		Y			Blade fragment	Meso
349	24					Blade	Meso
351	26					Blade scars	?Meso
353	28					Rejuvenation flake	Preh
354	29					Shattered piece	Preh
356	31	S					Preh
501	35			P		Bladelet	Meso
504	36					Core trimming flake	Meso
507	37		Y			Blade fragment	Meso
510	39	T					Preh
512	40	S					Preh
519	43		Y			Bladelet fragment	Meso
520	44	S					Preh
528	47	P					Preh
607	55	P			25/19		Neo/BA
614	57	S			18/30		Neo/BA
662	58					Blade fragment	Meso
757	59	T		P	27/32		Neo/BA
757	64	T			18/50	Blade, soft hammer struck, chert	Meso
757	65	-			-	Shattered piece	Neo/BA
757H	66	T			24/38	Chert	Neo/BA
757	67	T		P	16/22	Axe sharpening flake, soft hammer struck	Meso/?Neo
757	69	T			15/34	Soft hammer struck	Meso
757	70	T	Y		-	Blade fragment, chert	Meso
757	71	S			13/30		?Meso
757	72	-			-	Shattered piece	Preh
757	74	T	Y		-	Blade fragment	Meso
757	75	T	Y		-	Blade fragment, soft hammer struck	Meso
757	76	T	Y		-	blade fragment, fire fractured, soft hammer struck	?Meso
757	78	T	Y	P		Flake fragment, soft hammer struck	Meso
757	79	-			-	Shattered piece	
757	80	T	Y			SF51, blade fragment, soft hammer struckfire fractured,	Meso
758	81	S	Y		-	Flake fragment	Neo/BA
788	83	S			25/47	Hard hammer struck	Neo/BA

Context	R.F. No.	C	B	P	Form	Notes	Date
818	85	T	Y		-	Flake fragment	Meso
819	86	T			8/23	Bladelet, soft hammer struck	Meso
820	87	T	Y			Flake fragment	?Meso
820	88	T	Y			Flake fragment	?Meso
820	89	T	Y			Flake fragment, fire fractured	?Meso
820	90	P				Fire fractured flake	?Meso
820	91	T	Y			Bladelet fragment	?Meso
820	92	T	Y			Bladelet fragment, soft hammer struck	?Meso
821	93	T	Y			?Flake fragment, chert	Preh
821	94	T			5/14	Bladelet, soft hammer struck	Meso
822	96	T		P	13/25	Blade, soft hammer struck	Meso
822	97	S	Y			Blade fragment	Meso
822	98	T	Y		12/15	Flake fragment	?Meso
822	99	T	Y			Flake fragment, fire fractured	Preh
822	100	T	Y			Flake fragment	Preh
823	101	S	Y		116/26	Flake fragment	Preh
823	102	S			10/21		Preh
824	103	T	Y		-	Flake fragment	?Meso
825	104	T	Y		-	Flake fragment	?Meso
825	105	T	Y		-	Flake fragment	?Meso
825	106	-				Fire fractured	?Meso

[C = class; P = primary, S = secondary, T = Tertiary; B = broken; P = patination]

APPENDIX C - FINDS LISTS

i) POST-ROMAN POTTERY ARCHIVE

By Jane Young

Horizon Dating

Context	*Earliest Horizon*	*Latest Horizon*
662	PMH8	PMH10
663	PMH8	PMH10
664	PMH8	PMH10
692	PMH9	EMH
818	EMH	EMH
819	PMH8	EMH
822	PMH8	EMH
823	PMH8	EMH
824	PMH8	EMH

Ware Types By Context

Context	*Ware*	*Sherds*	*Form*	*Comments/Date range*
001	BS	1	-	18-20TH
003	R	1	-	WORN
015	LSTON	1	-	19/20TH
019	LSTON	1	-	19-20TH
022	LSTON	1	-	19/20TH
023	R	1	-	WORN
024	LPM	1	-	L18/19TH;POSS SV 034
029	MISC	1	-	V ODD;SHELL IN HARD GREY FABRIC; 18-20TH; STEM/PEDESTAL
034	LPM	1	-	L18/19TH;POSS SV AS 024
040	BL	1	-	18-20TH
042	LERTH	1	-	18-20TH
044	BS	1	-	18-20TH
049	BL	1	-	18/19TH
207	LERTH	1	-	19-20TH;SEMI VITR
308	LERTH	1	-	18-20TH
313	BL	1	-	18/19TH
317	IA	1	-	H-M;?? ID OR PREH/ESAX;HARD FIRED; QUARTZ FABRIC WITH INCISED/CORD DEC
321	BS	1	-	18/19TH
331	MISC	1	-	PROB ROM;VERY WORN WHITE/PALE GREY; FINE FABRIC
340	BL	1	-	18/19TH
344	LSW2/3	1	JUG	-
347	FREC	1	-	WORN
380	LPM	1	-	19/20TH
385	LSTON	1	-	19/20TH
402	TB	1	-	-
406	LSTON	1	-	18-20TH
515	MISC	1	-	PROB 18/19TH LERTH;OR ROM OXID
518	BERTH	1	-	18/19TH

521	BL	1	-	18/19TH
523	LERTH	1	-	19/20TH;OR LESS LIKELY ROM
526	BS	1	-	18/19TH
529	BS	1	-	18/19TH
531	MEDLOC	1	-	13-14TH
662	CRMWARE	2	-	18/E19TH
663	CRMWARE	1	-	18/E19TH
664	LSTON	1	-	
664	SLIP	1	-	
				18/E19TH (OVERALL CONTEXT DATE - 664)
692	LPM	1	-	
692	SLIP	1	-	
				18-20TH (OVERALL CONTEXT DATE - 692)
818	LPM	3	-	L18-20TH
819	LERTH	1	-	18-20TH
822	LERTH	1	-	18-20TH
823	LERTH	1	-	18-20TH
824	LERTH	1	-	18-20TH
824	R	1	-	ROMAN

Key to Ware codes:

BERTH	BROWN EARTHENWARE
BL	BLACKWARE
BS	BROWN STONEWARE
CRMWARE	CREAMWARE
FREC	FRECHEN/COLOGNE STONEWARE
IA	IRON AGE
LERTH	LATE EARTHENWARE
LPM	EARLY MODERN OR MODERN
LSTON	LATE STONEWARE
LSW2/3	GLAZED LINCOLNWARE
MEDLOC	MEDIEVAL LOCAL FABRICS
MISC	UNDATED MISCELLANEOUS FABRICS
R	ROMAN
SLIP	SLIPWARE (GENERAL)
TB	TOYNTON OR BOLINGBROKE-TYPE WARE

ii) CERAMIC AND NON-CERAMIC BUILDING MATERIALS

By Jenny Mann

Context	*Form*	*Count*	*Weight*	*Subform*	*Fabric*	*Comments/Date*
004	PNR	1	90	-	-	ROM/LMED-PMED?
006	TILE	1	20	-	-	PIPE?;MOD
007	PNR	2	20	-	-	PMED?
008	PNR	1	20	-	-	PMED?
011	BRK	1	30	-	-	PMED-MOD?
012	PNR	1	0	-	-	PMED-MOD
012	TILE	1	0	-	-	PIPE?;MOD
014	STILE	1	20	ROOF	SLA	-
017	STILDISC	4	5	ROOF	SLA	-
018	TILE	1	60	-	-	RID/DRAIN;MOD?
020	PNR	2	75	-	-	PMED?
028	GPANT	1	45	-	-	BLACK GLZE DUTCH/E COAST (BITUMEN?);PMED 17C
032	BRK	1	90	-	-	CORNER SOOT?;MOD
038	FLOORDISC	1	115	-	-	CORNER M[ARLEY]?;MOD
047	TILE	1	5	-	-	IDENT? POT LERTH/PNR PMED?
048	PNR	1	60	-	-	MAREHAM TYPE;MED 13-14C
201	PNR	1	5	-	-	MOD
201	TILE	1	110	-	-	IDENT? WHITE FABRIC PANT?;PMED?
212	TILE	1	20	-	-	RID/DRAIN;MOD?
301	PNR	1	5	-	-	PMED
303	BRK	1	90	-	-	'A' INCUSE;LPMED-MOD
307	TILE	1	90	-	-	IDENT? DRAIN/PANT;MOD
323	PNR	1	35	-	-	PMED?
329	BRK	1	120	-	-	CORNERX2;LPMED-MOD;18+
332	DRNDISC	1	20	-	-	STONEWARE DRAIN/PIPE?;MOD
334	TILE	1	10	-	-	IDENT? DRAIN/PANT;MOD
335	TILE	1	20	-	-	IDENT? DRAIN/PANT;MOD
336	RTIL	1	65	-	-	-
400	TILE	1	0	-	-	PIPE?;MOD
503	PNR	1	20	-	-	VITR;LMED-PMED
517	GPANT	1	25	-	-	BLACK GLZE DUTCH/E COAST (BITUMEN?);PMED 17C
524	DRAIN	1	20	-	-	MOD
525	PNR	1	70	-	-	CORNER;PMED?
662	BRKDISC	1	25	-	-	MOD
662	BRK	1	15	-	-	PMED-MOD

662	PNR	1	50	-	-	MED-PMED;MIXED RED/WHITE FABRIC
663	PNR	1	5	-	-	PMED?
664	BRK	1	10	-	-	PMED-MOD
664	TILE	1	20	-	-	PMED;PANT?
677	BRK	1	10	-	-	PMED
677	PANT	2	5	-	-	PMED-MOD;SAME TILE
716	PANT	2	160	-	-	LPMED-MOD;SAME TILE
736	PNR	1	80	-	-	MED?;CORNER
818	BRK	5	20	-	-	IDENT?;PMED-MOD
818	PLAS	1	0	-	-	ROM?;PAINT
819	BRK	2	5	-	-	IDENT?;PMED-MOD
819	TILE	1	10	-	-	MOD;FLOOR?
819	TILE	2	0	-	-	IDENT?;PMED-MOD
820	TILE	3	5	-	-	IDENT?;PMED-MOD
821	BRK	2	5	-	-	PMED-MOD
821	TILE	3	5	-	-	MOD
822	BRK	2	5	-	-	IDENT?;PMED-MOD
823	BRK	1	5	-	-	MOD
823	TILE	1	5	-	-	PMED-MOD;PANT?
823	TILE	3	10	-	-	IDENT?;PMED-MOD
825	BRK	1	15	-	-	MOD
825	BRK	2	15	-	-	IDENT?;MOD?
320	-	1	6500	-	-	CONCRETE SLAB DIS

Key to form codes:

BRK	MEDIEVAL/POST-MEDIEVAL BRICK
BRKDISC	DICSARDED MEDIEVAL/POST MEDIEVAL BRICK
DRAIN	UNGLAZED DRAIN OR WATER PIPE
DRNDISC	DISCARDED UNGLAZED DRAIN OR WATER PIPE
FLOORDISC	DISCARDED MODERN FLOOR TILE
GPANT	GLAZED PANTILE
PANT	PANTILE
PLAS	PLASTER
PNR	UNGLAZED PEG/NIB/RIDGE TILE
RTIL	ROMAN TILE
STILDISC	DISCARDED STONE ROOF TILE
STILE	STONE ROOF TILE
TILE	TILE

iii) REGISTERED FINDS *By Jenny Mann*

Area	*Context*	*R.F. No.*	*Material*	*Form*	*Comments*
FIELD 4	505	1	COPP	-	SHEET
FIELD 3	325	2	COPP	BUTT	PMED-MOD;18-19
FIELD 2	205	3	IRON	HOSH	MOD;E/M19-20;WHOLE
FIELD 1	033	4	STON	PENC	PMED-MOD;SLA
FIELD 1	039	5	STON	HONE	LPMED-MOD;
FIELD 4	533	6	IRON	-	HOSH?

-	204	7	FLIN	SCRA	PREH;LNEOL-BRNZ BURNT
-	208	8	FLIN	TOOL	PREH;PIERCER?
-	211	9	FLIN	TOOL	PREH;LNEOL-BRNZ
-	306	10	FLIN	TOOL	PREH;MESO?;NOTCH
-	310	11	FLIN	FLAK	PREH;
-	315	12	FLIN	FLAK	PREH;
-	319	13	FLIN	FLAK	PREH;MESO BLADE
-	324	14	FLIN	TOOL	PREH;MESO?;SCRA/NOTCH FLAK
-	328	15	FLIN	FLAK	PREH;MESO;BLADE
-	337	16	FLIN	SCRA	PREH;
-	338	17	FLIN	SCRA	PREH;MESO
-	339	18	FLIN	SCRA	PREH;LNEOL
-	341	19	FLIN	TOOL	PREH;MESO;BLADELET
-	342	20	FLIN	SCRA	PREH;LNEOL-EBRNZ?
-	343	21	FLIN	CORE	PREH;
-	345	22	FLIN	TOOL	PREH;MESO BLADE
-	348	23	FLIN	SCRA	PREH;LMESO
-	349	24	FLIN	FLAK	PREH;MESO;BLADE
-	350	25	FLIN	SCRA	PREH;LNEOL-EBRNZ
-	351	26	FLIN	FLAK	PREH;MESO?
-	352	27	FLIN	FLAK	PREH;MESO?
-	353	28	FLIN	FLAK	PREH;
-	354	29	FLIN	FLAK	PREH;SHATTERED
-	355	30	FLIN	CORE	PREH;NEOL+
-	356	31	FLIN	FLAK	PREH;
-	357	32	FLIN	SCRA	PREH;LNEOL-BRNZ
-	383	33	FLIN	TOOL	PREH;LNEOL-BRNZ;PIERCER
-	384	34	FLIN	TOOL	PREH;MESO?;FLAK
-	501	35	FLIN	TOOL	PREH;MESO;BLADELET
-	504	36	FLIN	FLAK	PREH;MESO
-	507	37	FLIN	FLAK	PREH;MESO;BLADE
-	509	38	FLIN	TOOL	PREH;MESO;BLADE
-	510	39	FLIN	FLAK	PREH;
-	512	40	FLIN	FLAK	PREH;
-	513	41	FLIN	CORE	PREH;LNEOL-BRNZ
-	514	42	FLIN	SCRA	PREH;LNEOL-BRNZ
-	519	43	FLIN	FLAK	PREH;MESO BLADELET
-	520	44	FLIN	FLAK	PREH;
-	522	45	FLIN	CORE	PREH;LNEOL-BRNZ
-	527	46	FLIN	CORE	PREH;LNEOL-BRNZ
-	528	47	FLIN	FLAK	PREH;
-	551	48	FLIN	SCRA	PREH;LNEOL-BRNZ
-	553	49	FLIN	TOOL	PREH;MESO?;FLAK
-	213	50	FLIN	FLAK	PREH;NEOL-BRNZ
-	823	51	GLAS	VESS	ROM-PMED;HDIST?
-	824	52	IRON	-	ROM?;HOB?
-	820	53	COPP	BUTT	PMED-MOD;18-20;WHOLE
-	206	54	GLAS	VESS	ROM?;HAND? HDIST?
-	607	55	FLIN	FLAK	PREH;NEOL-BRNZ
-	614	56	FLIN	TOOL	PREH;MESO?;BLADE
-	757	57	FLIN	FLAK	PREH;NEOL-BRNZ
-	757	58	FLIN	TOOL	PREH;NEOL-EBRNZ;CUTTING FLAK
-	757	59	FLIN	CORE	PREH;NEOL
-	757	60	FLIN	TOOL	PREH;NEOL-BRNZ;NOTCH

					BLADE/PIERCER?
-	757	61	FLIN	SCRA	PREH;NEOL-BRNZ
-	757	62	FLIN	FLAK	PREH;MESO;BLADE
-	757	63	FLIN	FLAK	PREH;NEOL-BRNZ;SHATTERED
-	757	64	STON	FLAK	PREH;NEOL-BRNZ;CHERT FLAK
-	757	65	FLIN	FLAK	PREH;MESO-NEOL;AXE SHARPENING
-	757	66	FLIN	CORE	PREH;LNEOL-BRNZ
-	757	67	FLIN	FLAK	PREH;MESO
-	757	68	FLIN	FLAK	PREH;MESO
-	757	69	FLIN	FLAK	PREH;MESO?
-	757	70	FLIN	FLAK	PREH;SHATTERED
-	757	71	FLIN	CORE	PREH;MESO;
-	757	72	FLIN	FLAK	PREH;MESO;BLADE
-	757	73	FLIN	FLAK	PREH;MESO;BLADE
-	757	74	FLIN	FLAK	PREH;MESO?;BLADE
-	757	75	FLIN	TOOL	PREH;MESO?;SCRA?
-	757	76	FLIN	FLAK	PREH;MESO
-	757	77	FLIN	FLAK	PREH;SHATTERED
-	757	78	FLIN	FLAK	PREH;MESO BLADE
-	758	79	FLIN	FLAK	PREH;NEOL-BRNZ
-	759	80	FLIN	CORE	PREH;MESO?
-	788	81	FLIN	FLAK	PREH;NEOL-BRNZ
-	788	82	FLIN	TOOL	PREH;MESO?;CUTTING FLAK
-	818	83	FLIN	FLAK	PREH;MESO
-	819	84	FLIN	FLAK	PREH;MESO;BLADELET
-	820	85	FLIN	FLAK	PREH;MESO?
-	820	86	FLIN	FLAK	PREH;MESO?
-	820	87	FLIN	FLAK	PREH;MESO?;FIRE FRAC
-	820	88	FLIN	FLAK	PREH;MESO?;FIRE FRAC
-	820	89	FLIN	FLAK	PREH;MESO?;BLADELET
-	820	90	FLIN	FLAK	PREH;MESO?;BLADELET
-	821	91	STON	-	PREH;CHERT FLAK?
-	821	92	FLIN	FLAK	PREH;MESO;BLADELET
-	822	93	FLIN	TOOL	PREH;MESO;CUTTING BLADE
-	822	94	FLIN	FLAK	PREH;MESO;BLADE
-	822	95	FLIN	FLAK	PREH;MESO;BLADE
-	822	96	FLIN	FLAK	PREH;MESO?
-	822	97	FLIN	FLAK	PREH;FIRE FRAC
-	822	98	FLIN	FLAK	PREH;
-	823	99	FLIN	FLAK	PREH;
-	823	100	FLIN	FLAK	PREH;
-	824	101	FLIN	FLAK	PREH;MESO?
-	825	102	FLIN	FLAK	PREH;MESO?
-	825	103	FLIN	FLAK	PREH;MESO?
-	825	104	FLIN	FLAK	PREH;MESO?;FIRE FRAC

iv) BULK FINDS *By Jenny Mann*

Context:	*Type:*	*Count:*	*Comments:*
002	BOTT	1	MOD;19-20;
005	SLAG	1	138GMS MOD?
009	SLAG	6	32GMS INCL MOD BLAST?
010	SLAG	2	40GMS 1XMOD?
013	MSTO	1	17GMS CHLK DIS
016	BOTT	1	MOD;L19-E20;ARNOLD?
020	OMIS	1	MOD;TARMAC DIS
021	OMIS	2	MOD;20;BITUMEN PIPE COATING DIS
021	SLAG	2	41GMS MOD BLAST FURNACE
025	SLAG	2	35GMS MOD BLAST FURNACE?
025	OMIS	2	MOD;20;BITUMEN PIPE COATING DIS
026	OMIS	1	MOD;20;BITUMEN PIPE COATING DIS
027	BOTT	1	MOD;L18-19;BEER/WINE BASE ABRA
030	BOTT	1	MOD;L19-M20;1880-1940;MINERAL BASE ARNOLD
031	SLAG	1	32GMS PMED-MOD?
035	OMIS	1	MOD;20;BITUMEN PIPE COATING DIS
036	COAL	1	4GMS DIS
037	SLAG	1	30GMS CLINK?
041	SLAG	1	11GMS SSL?
043	COAL	1	7GMS BURNT DIS
045	COAL	1	2GMS BURNT DIS
046	COAL	1	1GM BURNT DIS
047	MSTO	1	CLST DIS
202	OGLA	1	MOD;M19-L19;BEAD
203	SLAG	1	50GMS SSL?
209	BOTT	1	MOD;19-E20?;GOLD PAINT/POWDER WHOLE
210	SLAG	1	51GMS SSL
301	COAL	2	2GMS DIS
302	SLAG	1	27GMS MOD?
304	OMIS	1	MOD;20;BITUMEN PIPE COATING DIS
305	SLAG	1	8GMS CIND
309	COAL	1	2GMS DIS
311	COAL	4	10GMS DIS
311	SLAG	1	8GMS SSL/FAS?
312	SLAG	1	14GMS CIND?
314	COAL	1	2GMS BURNT DIS
316	SLAG	1	87GMS SSL/CIND?
318	COAL	1	1GM DIS
322	SLAG	2	18GMS 1XSSL?
327	COAL	1	10GMS BURNT DIS
330	COAL	1	2GMS DIS
333	COAL	1	3GMS DIS
336	COAL	1	19GMS BURNT DIS
346	CTPS	1	MOD;19;FRE MARK FIOLET
382	OMIS	1	MOD;20;BITUMEN PIPE COATING DIS
386	SLAG	1	5GMS;MOD BLAST
401	SLAG	1	5GMS CIND?
403	OMIS	1	MOD;20;CLAY PIGEON DIS

404	OMIS	2	MOD;20;CLAY PIGEON DIS
405	OMIS	1	MOD;20;CLAY PIGEON DIS
500	SLAG	6	33GMS FAS/CIND?
506	BOTT	1	PMED;18?;WINE
508	OMIS	2	MOD;20;CLAY PIGEON DIS
509	OMIS	1	MOD;20;CLAY PIGEON DIS
511	OMIS	9	MOD;20;CLAY PIGEON DIS
516	SLAG	4	12GMS CIND?
524	BOTT	1	MOD;L18-E19;BEER/WINE BASE
532	BOTT	1	MOD;19-20;
550	CTPS	1	MOD;19;DEC
662	BOTT	5	MOD;19-20;1XWINE/BEER
663	CTPS	1	PMED-MOD;L17-L18;DIS
684	BOTT	1	MOD;20
693	MSTO	1	SST BURNT DIS
707	OGLA	1	MOD;19-20;LGE VESS BELL-JAR/CLOCHE?
736	WIND	1	MOD;20
818	COAL	3	6GMS PART BURNT/CLINK DIS
818	OMIS	1	MOD;20;TIN WHISTLE
820	NAIL	1	PMED-MOD
820	SLAG	1	3GMS CLINK?
823	SLAG	2	3GMS CIND/FAS
823	SLAG	2	3GMS CIND

Key to Type codes:

COAL	COAL
CTPS	CLAY TOBACCO PIPE STEM
BOTT	BOTTLE GLASS
MSTO	MISCELLANEOUS STONE
OGLA	OTHER GLASS
OMIS	OTHER MISCELLANEOUS
NAIL	NAIL
SLAG	SLAG

v) BONE FINDS *By Jenny Mann*

Context	*Count*	*Type*	*Comments*
524	1	0	ANBN

Key to Type codes:

ANBN	ANIMAL BONE

APPENDIX D - ENVIRONMENTAL ARCHAEOLOGY ASSESSMENT

Burton Waters Marina - BWM98

Environmental Archaeology Assessment

Introduction

Evaluation excavations conducted by the City of Lincoln Archaeological Unit at Burton Waters uncovered a series of ditches and features from which four samples were collected for environmental assessment (Table 1) and an auger transect of five bores taken north south across Field 2.

Table 1: Samples taken for environmental analysis

site	sample	trench	context	volume in l.	description
BWM98	1	9	709	10	primary fill of ditch 706
BWM98	2	13	724	4	early fill of ditch 705
BWM98	3	15	749	5	primary fill of butt-end of ditch 746
BWM98	4	17	806	8.5	buried soil horizon?

Methods

The soil samples were processed in the following manner. Sample volume and weight was measured prior to processing. The samples were washed in a 'Siraf' tank (Williams 1973) using a flotation sieve with a 0.5mm mesh and an internal wet-sieve of 1mm mesh for the residue. Both residue and float were dried, and the residues subsequently re-floated to ensure the efficient recovery of charred material. The dry volume of the flots was measured, and the volume and weight of the residue recorded. A total of 27.5 litres of soil was processed in this way.

The residue was sorted by eye, and environmental and archaeological finds picked out, noted on the assessment sheet and bagged independently. A magnet was run through each residue in order to recover magnetised material such as hammerscale and prill. The residue was then discarded. The float of each sample was studied under a low power binocular microscope. The presence of environmental finds (ie snails, charcoal, carbonised seeds, bones etc) was noted and their abundance and species diversity recorded on the assessment sheet. The float was then bagged. The float and finds from the sorted residue constitute the material archive of the samples.

The individual components of the samples were then preliminarily identified and the results are summarised below in Table 2.

Results

All four samples contained small quantities of recent fibrous root material and uncharred seeds of *Chenopodium* sp. (goosefoots) or *Sambucus* sp. (elder). There was no evidence of waterlogging in the samples and these therefore almost certainly represent elements intrusive into the deposits. Samples 1 and 3 also contained very small fragments of coal whose size is such that they probably moved down through the soil as a result of soil processes and should also be viewed as contaminants.

Sample 1, context 709. Archaeological finds were absent from the sample which was composed of fine sands, with a little fine gravel and numerous iron concreted root pseudomorphs. A few fragments of indeterminate organic material had survived through mineralisation. The only environmental finds from the sample were charcoal fragments mainly from wood but also including small twigs. Some of this material would be identifiable to species if submitted to a specialist.

Table 2: Archaeological and environmental finds from the samples

S'mple no.	cont	vol in l.	res. vol ml.	flot vol. ml.	brick /tile *	coal *	slag *	char coal #	charred seed $	snail $	comments
1	709	10	22	14		+		3			some modern seeds and beetle fragments
2	724	4	25	<1				1			some modern seeds and beetle fragments
3	749	5	10	1		+		1			some modern seed and beetle fragments
4	806	8.5	60	50	<1	11	<1	4	4/3	2/1	numerous charred plant stem fragments; small fragments of slag (fuel ash slag?); rodent; some modern seeds and insect fragments

(+ - present; *- weight in g.; # categories for frequency of items: 1=1-10; 2=11-50; 3=51-150; 4=151-250)
($ - frequency/diversity- frequency as above, diversity as follows - 1=1-3; 2=4-10; 3=11-25)\
(res.- residue caught on 1mm sieve)

Sample 2, context 724. No archaeological finds were recovered from this sample which was composed of fine sand with some fine gravel and frequent mineralised root pseudomorphs. The flot was very small and the only environmental material recovered was a few small fragments of charcoal.

Sample 3, context 749. The sample was a fine sand with some fine gravel and small pebbles, and included a number of iron concreted root pseudomorphs. There were no archaeological finds and the small flot produced only a small number of unidentifiable fragments of charcoal.

Sample 4, context 806. This sample was composed of a fine sand with some fine sediment that produced a residue of fine gravel with a large, possibly heated, fragment of limestone. A few very small fragments of brick or tile were recovered from the residue which included a significant quantity of coal and cinder (Table 2) and a number of very small fragments of slag, probably fuel ash slag. A large flot was composed largely of charred plant stem fragments, all apparently of the same type and many charred weed seeds, but no wood charcoal. Two fragments of rodent bone were also recovered. A few mollusc shells of the burrowing blind snail, *Cecilioides acicula*, a probable contaminant, and *Vallonia excentrica*, a species characteristic of grassland habitats (Evans 1972), were recovered.

Discussion

Samples 1-3 produced very little material and suggest little evidence of occupation or activity in the immediate vicinity of the sampled ditches. The small amounts of charcoal could have washed down the ditches and do not allow any interpretation.

Sample 4 has produced an interesting assemblage whose botanical study is likely to clarify the origin and character of the charred remains. Without specific identification of the seeds and charred stems no interpretation can be offered at this stage. The presence of coal and cinder in the sample suggests that this may be a post-medieval layer. Layer 806 does not appear to be in a cut but lies in a large depression, hence the field interpretation of this layer as a buried soil. The environmental finds, brick, coal and cinder suggest that this layer functioned as a land surface at some time in the recent past and that the infill above it of the depression it lies in is probably due to ploughing and soil movement. Clearly the deposits derive from activity taking place on this now buried surface and involved burning. Specific botanical analysis of the remains may permit interpretation of this activity. There was no organic preservation in the washed sample.

Conclusions

The soil samples have yielded little information although there is further potential from sample 4 if this is studied by an archaeobotanist. Waterlogged material was not present in any of the samples and only charred remains can be viewed as having potential in the sandy areas of the site. No samples were studied from the floodplain so the survival of material in this part of the site has not been assessed.

There appears to be little palaeoenvironmental potential from the sampled features of the site, and unless occupation features, rather than field or boundary ditches, are uncovered further environmental sampling is not recommended in the sandy areas of the site. However, study of the material recovered in sample 4 is recommended if further interpretation of the large hollow or depression in which this layer lies is required.

Acknowledgments

Alison Foster processed and sorted the samples.

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APPENDIX E - BOREHOLE TRANSECT

Burton Waters Marina

Borehole transect across Field 2

A sequence of five boreholes was taken with a gouge auger down to a depth of approximately 2.3m below modern ground level. Two boreholes were located on the recent floodplain and the remaining three were sunk through the elevated sand deposits on the north east side of the field. A diagramatic reconstruction of the sequence is presented in the figure. The stratigraphy was a little more complicated than was first evident and it is clear that a greater number of boreholes would be needed to clarify the sequence. However the following preliminary interpretation is offered.

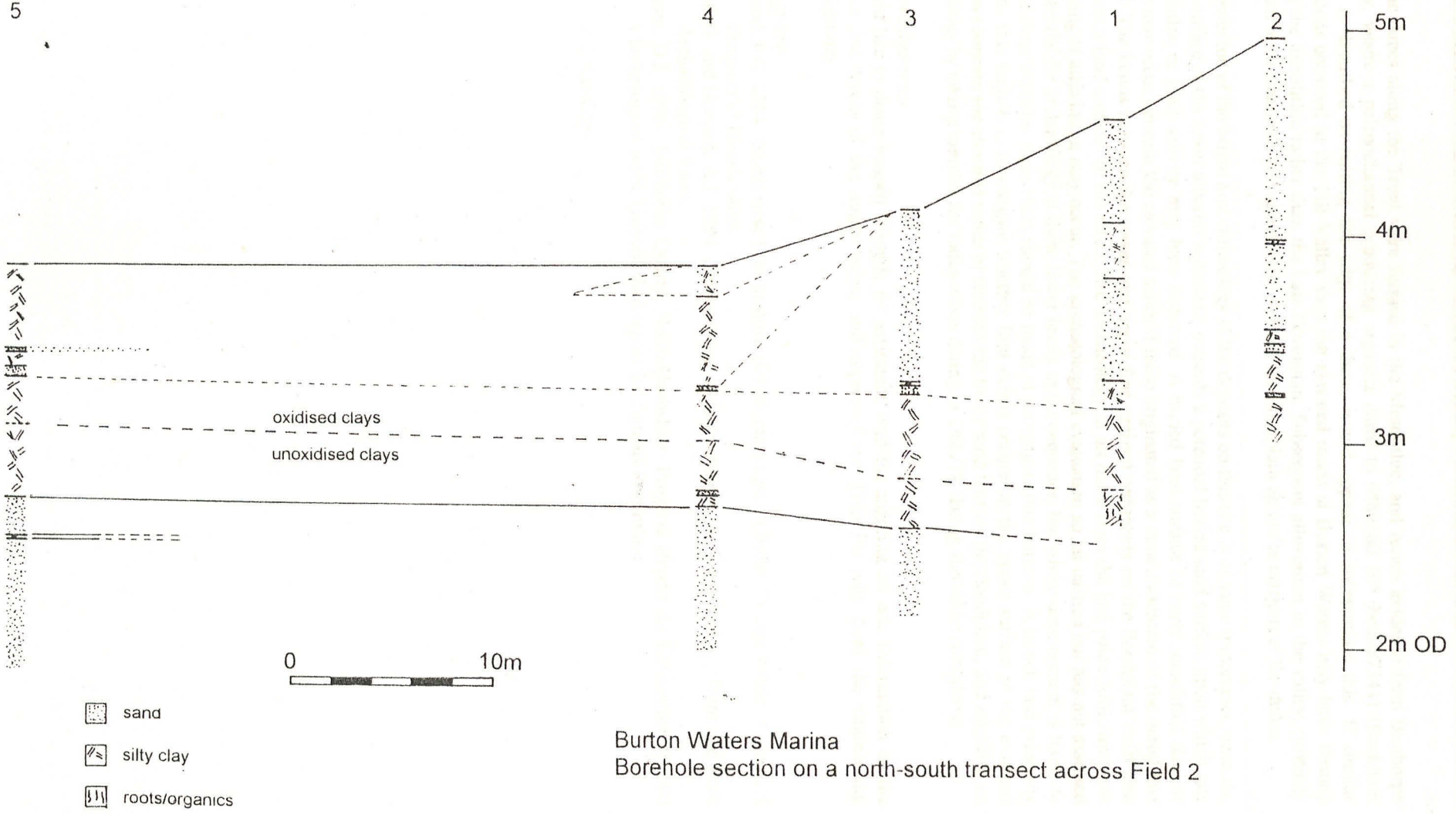
The base of the sequence, observed in bores 3-5, is a wet brown sand. This was observed in Trial Pits 3A and 6 to the north west of the transect and its top is recorded between 2.59 and 2.98m OD. The other Trial pits and augerholes in this survey failed to reach this level. Immediately overlying these sands is an unoxidised blue grey silt/clay. Although this relationship was not proved in Auger holes 1 and 2 it is presumed that sands underly the clays recorded at the base of these bores. In Auger1 this blue grey clay contains preserved organic remains, particularly roots. These organic remains, even though they include roots, almost certainly pre-date the overlying sands and a radiocarbon analysis of this material should offer a *terminus post quem* for the sands. In Auger 2 the bore did not go deep enough to reach these unoxidised clays. The base of the silt/clays is lower beneath the sand deposits than beneath the recent floodplain which suggests either a local hollow in the underlying sands, or possibly that these alluvial sediments orginate from a channel to the north or north-east of the transect and do not derive from the present course of the River Till to the south. The upper part of these silt/clays is oxidised and red brown in colour and they reach a height of 3.55m OD in Auger 1 beneath the sands.

In Augers 4 and 5 a sand lens is recorded at 3.25 to 3.3m OD whose origin is presumed to be downwash from the elevated sands to the north east, augered in bores 1, 2 and 3. If this interpretation is correct then this horizon would appear to represent a hiatus between the lower and upper alluvial sediments in bores 4 and 5. During this hiatus the sand sediments in bores 1-3 must have been deposited. All subsequent alluvial deposition on the floodplain (ie that revealed in bores 4 and 5) must relate to flood events associated with the river to the south of the site. Relatively recent disturbance of the elevated sands has lead to some inter leaving or mixing of sand and fine grained sediments and is presumably responsible for other sand lenses in the upper alluvial silt/clays and the silty and clayey sands at the top of bore 4.

The major element inhibiting the interpretation of this sequence is a lack of chronology. Flint finds attributed to the Bronze Age have been found on the elevated sands (Trimble pers comm.) and if *in situ* these sands must predate this period. Two alternative hypotheses can be considered.

The basal alluvial sediments beneath the elevated sands and across the floodplain at levels below 3.3m OD may have originated in the late glacial and subsequently been covered by glacio-fluvial sands or coversands, the latter have been dated at Messingham, in north Lincolnshire, to 10,550±250 bc (Birm 707) (Buckland 1984). Subsequent alluvial deposition on the floodplain may have originated in late prehistory, possibly after a period of erosion, and continued until the cutting of the Fossdyke removed this area from the floodplain of the River Till. In this scenario prehistoric occupation on the elevated sands will have been truncated, possibly severely, by later and particularly recent agricultural activity, while prehistoric activity on the floodplain may have been buried beneath colluvial sands and alluvium.

An alternative interpretation might place the lowest alluvial sediments in the Late Glacial or early Holocene with the sands being deposited during a period of inland dune formation similar to that postulated on the east side of the Trent north of Newark (Knight and Howard 1994). It is suggested



Burton Waters Marina
Borehole section on a north-south transect across Field 2

that the dunes along the Trent were formed in the Mesolithic, and recent evidence from Besthorpe Quarry, where a palaeochannel producing organics dated to 6880±60 BP (beta-87341) (Rackham 1996) is described as cutting the edge of a dune, would appear to substantiate this. If similar formations occurred in the Till Valley then the elevated sands at Burton Waters may have formed during the mesolithic rather than the Late Devensian. Subsequent alluviation in the valley, probably resultant upon clearance and agriculture, covered the floodplain up to the margins of the dunes.

The resolution of the origin and chronology of the deposits on this site is of some importance since the upper surface of the lower alluvial sediments presents a potential buried land surface upon which late palaeolithic or later activity may have occurred. A buried land surface of early mesolithic date or earlier may occur beneath the elevated sands if these originated as a dune formation in the mesolithic period. The hiatus between the lower and upper fine grained sediments on the floodplain must also represent a land surface. In the latter case archaeology of all dates from the late palaeolithic until the beginning of alluviation may occur. The archaeological evaluation so far carried out has not assessed the potential for archaeology at these lower levels in the sequence, but where development is likely to remove these deposits some effort should be made to investigate this horizon. A trench laid primarily to study this sequence, investigate whether flint debris occurs on the upper surface of the oxidised silt/clays beneath the elevated sands or beneath the lower sand lens on the floodplain, and establish its chronology by taking samples for radiocarbon dating or OSL/TL dating should be considered.

Acknowledgements

I should like to thank Russell Trimble for assistance with the augering on site, information on the location and levels of the auger holes, and copies of the Trial Pit logs from the engineering investigations.

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APPENDIX F – GEOPHYSICAL SURVEY PILOT STUDY

SITE SUMMARY SHEET

98 / 112 Burton Waters Marina
Pilot Study

NGR: SK 935 737 (approx. centre)

Location and topography

The site lies approximately 5km northwest of Lincoln city centre. The application area covers approximately 40ha and is limited by the Foss Dyke to the southwest and the A57 road to the northeast. The proposed development area occupies several adjoining fields all of which are generally level and were ploughed or rolled at the time of survey.

Aims of Survey

This survey is a pilot geophysical scheme, based on gradiometry and soil sampling, designed to answer three questions:

1) Does the depth of alluvium preclude the use of geophysics?
2) Is there sufficient magnetic susceptibility contrast between the topsoil and subsoil to allow detection by gradiometry?
3) Can gradiometry locate a presumed former river channel?

Summary of Results *

The results from the auger survey suggest a substantial depth of sandy deposits. However, on the basis of their clastic inclusions, these deposits appear to be predominantly fluvioglacial. There was no evidence of a significant cover of recent alluvium at the points sampled. However, the level of magnetic susceptibilities recorded from the soil samples is very low and there is minimal contrast between the topsoil and subsoil. This suggests that these soils have not developed magnetic enhancement under ongoing pedological processes. As such, buried archaeological cut-features are likely to produce very weak signals which may not be detectable by the gradiometer unless they contain magnetically enhanced occupational debris.

Gradiometry has failed to locate the presumed palaeochannel. The soil auger survey does not indicate the possible palaeochannel, although there are suggestions of a possible channel further to the southwest and/or northeast.

*** It is essential that this summary is read in conjunction with the detailed results of the survey.**

SURVEY RESULTS

98 / 112 Burton Waters Marina
Pilot Study

1. Survey Area

1.1 Two transects were investigated as indicated on Figure 1 at a scale of 1:1000. Transect A, approximately 150m in length, lies in the northwest of the application area while Transect B crosses the eastern half of the application area and is approximately 300m long.

1.2 Soil auger samples were taken at 50m intervals along both transects.

1.3 A gradiometer survey was carried out along Transect A. This survey covers an area of 140m by 20m over the presumed palaeochannel.

1.4 Both transects and the gradiometer survey area were tied in by the client.

2. Display

2.1 The results from the gradiometer survey are displayed as an XY trace, dot density plot and an interpretation diagram (Figure 2) at a scale of 1:500. These display formats are discussed in the *Technical Information* section at the end of the text.

3. General Considerations

3.1 The topography was flat and free of ground cover and, as such, presented no obstacles to survey.

4. Soil Auger Survey

Transect A

4.1 The typical soil profile along this transect is 0-*c.*30cm plough soil (7.5 YR 3.5/3) of loamy sands; these overlie deep sands down to *c.*80-90 cm which, in some areas, overlie a thin horizon of stiff silt clays, which in turn overlie further sandy deposits.

4.2 This transect found no evidence for a palaeochannel. However, variations in the height of the stiff red silt clay deposits would support the view that any palaeochannel lay further to the northeast and/or southwest of the area surveyed.

Transect B

4.3 The typical soil profile along Transect B is: 0-*c.*35 cm plough soil; coarse sands (7.5 YR 5/7) of *c.* 20-30 cm thick; and pale sands (7.5 Y/R 7/2) > *c.*30 cm thick.

Discussion

4.4 There were few clastic inclusions in the ploughsoil. However, those present were predominantly subangular. This suggests the plough soils predominantly comprise fluvioglacial deposits rather than recent alluvium. Close to the Foss Dyke, the plough soils do contain a slightly higher proportion of silts (silt sand loams rather than sand loams), which may reflect minor inputs of recent alluvial materials.

4.5 However, the lack of horizonal differentiation, described in paragraphs 4.1 - 4.3, tends to present problems to gradiometer survey. This is because the technique depends upon there being a magnetic gradient caused by the contrast in susceptibilities between two bodies of soil, such as a cut-feature and the surrounding soil. Within deep homogeneous soils, unless a feature contains magnetically distinct materials - such as burnt or imported materials associated with occupation, it will tend to infill with the magnetically indistinguishable soils of the soil profile. It is for this reason that the magnetic susceptibility of the soils has also been determined. This indicated that, at the points sampled, there is very little variation in susceptibility within the soils and little contrast between the topsoil and subsoil.

5. Results of Gradiometer Survey

5.1 Gradiometry was carried out along a short transect (140 x 20 m) with the aim of locating a possible palaeochannel. Past surveys in similar landscapes and over similar pedologies have proved successful in detecting the anomaly produced by such gross landscape features.

5.2 The data indicate a quiet level of background response typical of such soils. Although several weak isolated responses are discernible in the data these are most likely to reflect pedological variations. A few weak linear trends are also visible in the data. While an archaeological origin for these cannot be dismissed, an agricultural origin is probable.

5.3 The gradiometer data shows no evidence for the existence of a palaeochannel. The soil survey does not indicate a palaeochannel in this area.

6. Conclusions

6.1 The results from the auger survey suggest a substantial depth of sandy alluvial deposits. However, these sands, including the present plough soil, appear, on the basis of their subangular clastic inclusions, to be fluvioglacial. Along the sample transect, therefore, there was no sign of a significant overburden of recent alluvium.

6.2 The level of magnetic susceptibilities recorded from the soil samples is very low and there is minimal contrast with the topsoil. This suggests that these soils have tended not to develop magnetic enhancement under natural processes. As such, any buried archaeological features are, unless they contain occupational debris, likely to produce very weak signals which may not be detectable by the gradiometer. The response is also likely to be highly dependent on the varying depth of any recent alluvial cover which may be present locally within the rest of the proposed development area. Given the weak nature of the likely responses from any archaeological features, gradiometer scanning or volume magnetic susceptibility measurement across the site are unlikely to provide useful information.

6.3 Gradiometry has failed to locate the presumed palaeochannel. However, the soil auger survey suggests that any palaeochannels may lie further to the southwest or northeast.

6.4 If geophysics is to be used the best approach would be to initially target areas on the basis of other information, for example fieldwalking data. Detailed recorded survey over an area should be able to locate weak anomalies which would not be detectable by scanning. If such small target surveys produced positive results the remaining area could be investigated by a series of random sample blocks.

Project Co-ordinators:	D Weston
Project Assistants:	Dr S Ovenden-Wilson and A Shields
Date of Survey:	12th & 13th October 1998
Date of Preliminary Report:	26th October 1998

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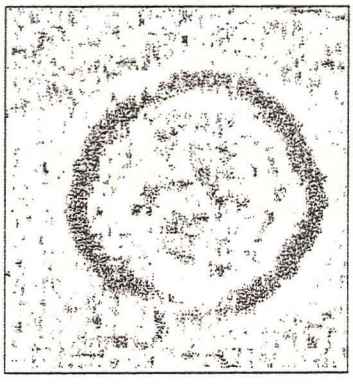
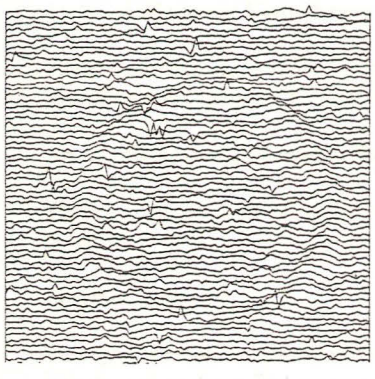


(a) **Dot-Density** In this display, minimum and maximum cut-off levels are chosen. Any value that is below the minimum will appear white, whilst any value above the maximum will be black. Any value that lies between these two cut-off levels will have a specified number of dots depending on the relative position between the two levels. The focus of the display may be changed using different levels and a contrast factor (C.F.). Usually the C.F. = 1, producing a linear scale between the cut-off levels. Assessing a lower than normal reading involves the use of an inverse plot, This plot simply reverses the minimum and maximum values, resulting in the lower values being presented by more dots. In either representation, each reading is allocated a unique area dependent on its position on the survey grid, within which numbers of dots are randomly placed. The main limitation of this display method is that multiple plots have to be produced in order to view the whole range of the data. It is also difficult to gauge the true strength of any anomaly without looking at the raw data values. This display is much favoured for producing plans of sites, where positioning of the anomalies and features is important.



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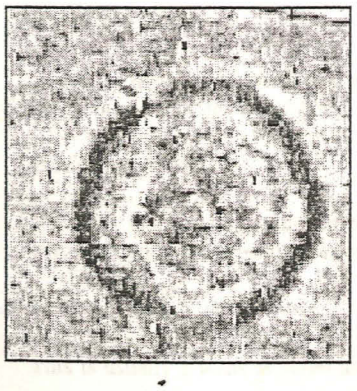

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This format divides a given range of readings into a set number of classes. These classes have a predefined arrangement of dots or shade of grey, the intensity increasing with value. This gives an appearance of a toned or grey scale.

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These are isolated or grouped linear responses. They are normally narrow and are presumed modern when aligned to current field boundaries or following present ploughing.

Linear Trend

This is usually a weak isolated linear anomaly of unknown cause or date.

List of Figures

N

Former route of A57

Boundary ditches?

Shallow ditch/gully

17

Section 18

18

Auger Survey Line

15

13

16

769

14

Projected lines of ditches

20

19

12

22

Ditches 801 and 802

21

Woodcocks

Fossdyke

CLAU January 1999

Plan showing evaluation trenches and salient features in Field 2 – Scale 1:1000

Fig.5

N

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Woodcocks

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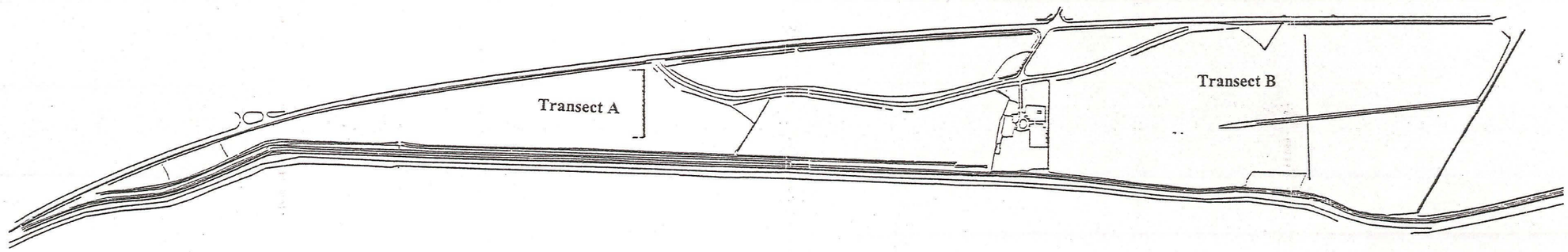
Plan showing evaluation trenches and salient features in Field 2 – Scale 1:1000

Fig.5

BURTON WATERS MARINA
Location of Pilot Study Transect



Based on a plan supplied by
Lincoln Archaeology

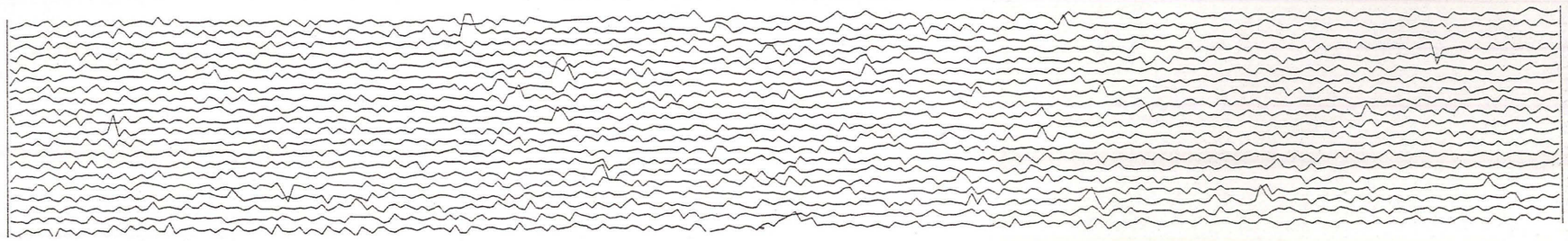
1:10 000

GSB Prospection 98/112

Figure 1

BURTON WATERS MARINA

Gradiometer Data



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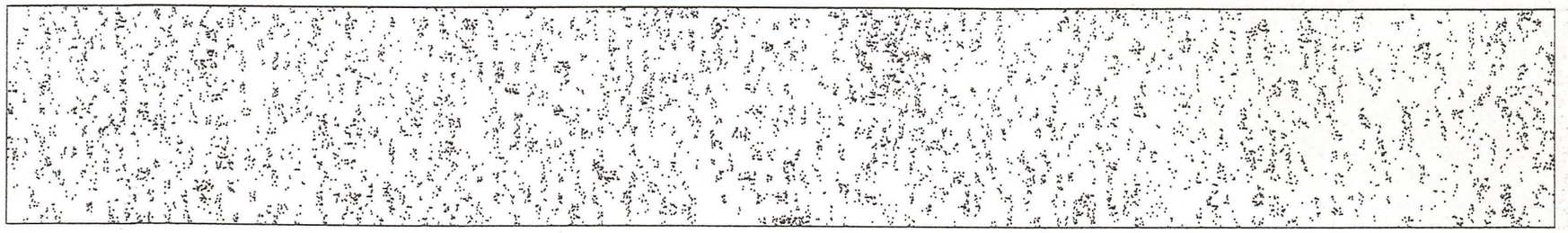
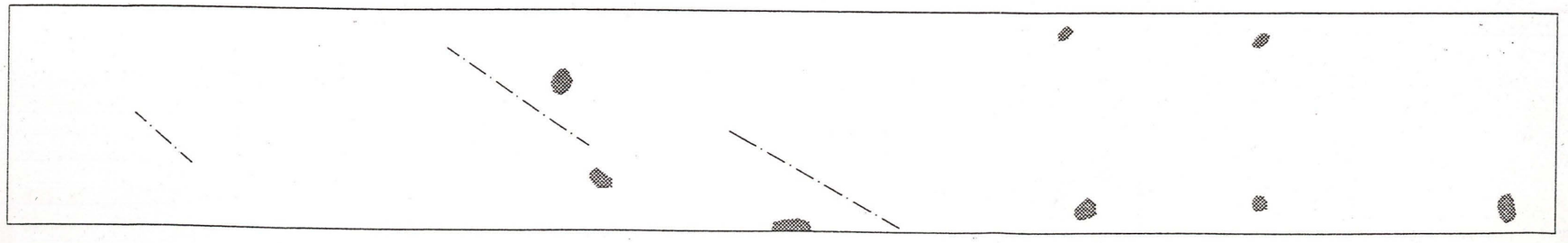


1.0

nT

0.1



Linear Trend

?Natural

0 m 20

GSB Prospection 98/112

Figure 2

APPENDIX G – GEOPHYSICAL SURVEY

SITE SUMMARY SHEET

98 / 137 Burton Waters Marina, Lincoln

NGR: SK 935 737 (approximate centre)

Location and topography

The site lies about 5km northwest of Lincoln city centre. The application area covers approximately 40ha and is limited by the Foss Dyke to the southwest and the A57 road to the northeast. The proposed development area occupies three adjoining fields all of which are generally level and were free of vegetation at the time of survey. The soils can be grouped as brown sands and gleyic brown sands formed in a parent of fluvioglacial sands and gravels, with intervening horizons of clays locally. Further details can be found in Burton Waters Marina: pilot study (GSB Report 98/112).

Archaeology

The Foss Dyke is adjacent to the south-west of the application area and several flint scatters, believed to be later Mesolithic or late Neolithic/early Bronze Age in date, were noted during field walking by staff of **Lincoln Archaeology** (**CLAU**)

Aims of Survey

The aims of the survey were to attempt to locate any anomalies of archaeological potential which might be associated with the flint scatters. This survey forms part of a wider investigation by **CLAU**.

Summary of Results *

The levels of magnetic response are low and many of the anomalies recorded are at the limits of detectability. It is for this reason that any archaeological interpretations remains tentative. In Field A (Survey Areas 1 and 2) several weak linear and rectilinear anomalies were located. Ferrous type anomalies associated with field boundaries and scattered debris, and anomalies aligned with the direction of current ploughing were also detected.

In Field B (Survey Areas 3 - 6) several magnetically weak positive and negative linear anomalies were recorded. These are too weak to be interpreted firmly but, in some cases, may reflect former field divisions. A faint circular anomaly was also noted. Ferrous anomalies associated with field boundaries and scattered magnetic debris were also detected.

In Field C, the data are dominated by the response from field drains and scattered ferrous debris. No anomalies of archaeological interest were noted.

*** It is essential that this summary is read in conjunction with the detailed results of the survey.**

SURVEY RESULTS

98 / 137 Burton Waters Marina, Lincoln

1. Survey Area

1.1 Three survey blocks, totalling 6.4 ha, in three separate fields (A to C) were surveyed using gradiometers collecting data at four samples per metre.

1.2 The baselines for the survey grids were set out and tied in by **CLAU.**

2. Display

2.1 Figure 1 is a location plan showing the survey areas at a scale of 1:2500. For ease of display the three survey blocks, in Fields A to C, have been subdivided into nine areas (Areas 1-9).

2.2 Figure 2 is a summary greyscale image of the entire gradiometer data at a scale of 1:2000; Figure 2A is the accompanying summary interpretation diagram at the same scale. Figures 3-32 are XY traces, dot density plots, greyscale images and interpretation diagrams of the survey results for Areas 1 to 9 at a scale of 1:500. These display formats are discussed in the *Technical Information* section at the end of the text.

3. General Considerations - Complicating factors

3.1 Given the flat topography and absence of ground cover, conditions for survey were generally good. However, the cloddy and sticky nature of the soil made walking at an even pace difficult.

3.2 The data contain frequent scattered ferrous type anomalies that are usually considered to reflect modern ferrous debris within the topsoil. However, given the geology it is also possible that some of these responses are the result of magnetic gravels. The most prominent of these responses are noted on the interpretation diagrams, although they are not referred to in the text unless considered especially relevant.

4. Results of Gradiometer survey

4.1 Field A (Areas 1 and 2)

4.1.1 A series of faint parallel linear trends are evident within the data. These coincide with the direction of present ploughing and are concluded to be modern in origin. Two faint linear trends, on a different alignment to the current ploughing trend, have also been detected. The two linears are interpreted as being of possible archaeological interest, however, given their diffuse nature, any interpretation remains tenuous.

4.1.2 A number of faint linear anomalies, perhaps forming an enclosure, have been detected. These have been tentatively interpreted as being of possible archaeological interest.

4.1.3 The southern edge of the data are dominated by the response from an adjacent metal fence.

4.2 Field B (Areas 3 to 6)

4.2.1 The ferrous type responses along the northeastern edge of the survey block are due to an adjacent field boundary and magnetic materials which may originate from the road (the former A57) beyond. A concentration of isolated ferrous anomalies along the eastern margin of the survey area is probably due to contamination from the adjacent buildings.

4.2.2 A circular anomaly, some 30-35m across, has been noted in Area 3. It is very faint and can only really be seen on the summary greyscale (Figure 2). The archaeological interpretation of this anomaly as a circular ditched feature must remain highly cautious.

4.2.3 A diffuse linear anomaly has been detected, running north-south (Area 4). This is interpreted as being of possible archaeological interest, although the anomaly is too weak to give a definitive interpretation.

4.2.4 Two linear anomalies, running approximately north-south (Areas 5 & 6), have been detected and are interpreted as being of potential archaeological significance. Similarly, a linear negative anomaly, aligned approximately east-west along the northern edge of the survey block, has also been detected. The positive and negative anomalies are perpendicular to each other, and it is possible that these responses reflect former field divisions that may be of archaeological interest.

4.2.5 Two smaller negative linear responses are visible to the east of the positive linear, and may also be of archaeological interest, although the weak nature of the responses means any interpretation is tentative.

4.3 Field C (Areas 7 to 9)

4.3.1 The data are dominated by the responses from two groups of parallel linear responses; each group having a different alignment. These are thought to result from the presence of field drains.

4.3.2 No anomalies of archaeological potential have been identified within this survey area.

5. Conclusions

5.1 The general level of magnetic response was low and the anomalies of possible archaeological interest which were detected are very faint, being close to the limits of detectability. At these low levels of signal-to-noise interpretation is considerably more subjective than normal. Each visual inspection of the summary grey scale in particular reveals 'new' patterns that are within the background noise. As a result any archaeological interpretation of these geophysical anomalies remains tentative.

5.2 Ferrous anomalies, associated with field boundaries, former roads and scattered magnetic debris within the soil were detected across all survey areas.

5.3 Field A. Several weak linears and apparently rectilinear anomalies were detected in Areas 1 and 2. Whilst these are of potential archaeological interest, their nature is uncertain.

5.4 Field B. A faint circular anomaly was noted in Area 3. Several positive and negative linear anomalies were detected in Areas 4, 5 and 6. These may be of archaeological interest, however, their nature is unclear. The longest two of these anomalies appear to abut perpendicularly and may reflect former land divisions.

5.5 Field C. No anomalies of archaeological interest were detected in Areas 7, 8 or 9; these areas were dominated by the responses from field drains.

Project Co-ordinators:	D Weston
Project Assistants:	Dr C Gaffney, C Martinez, J Nicholas, A Shields & C Stephens
Date of Survey:	24th - 27th November 1998
Date of Report:	8th December 1998

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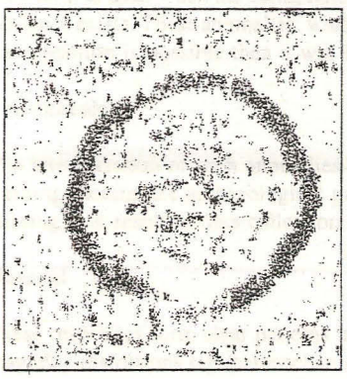

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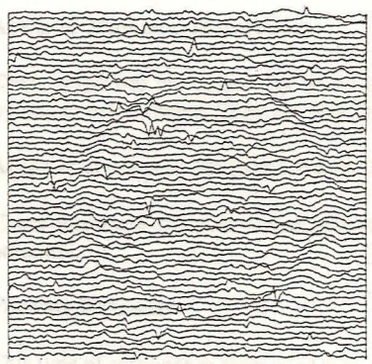

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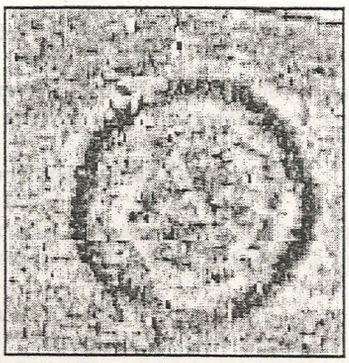

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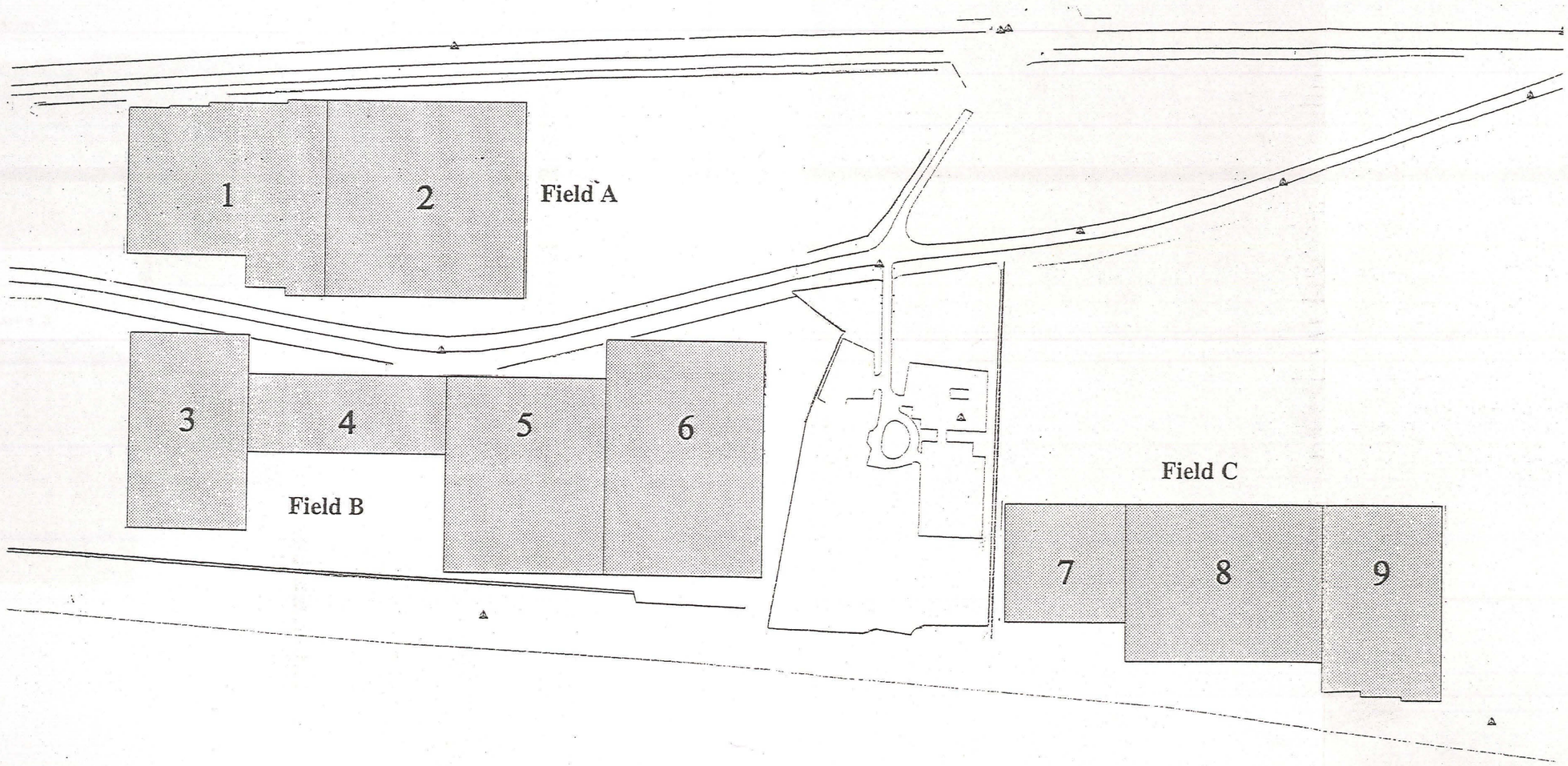
List of Figures

BURTON WATERS MARINA
Location of Survey Areas



Based on a plan supplied by
City of Lincoln Archaeology

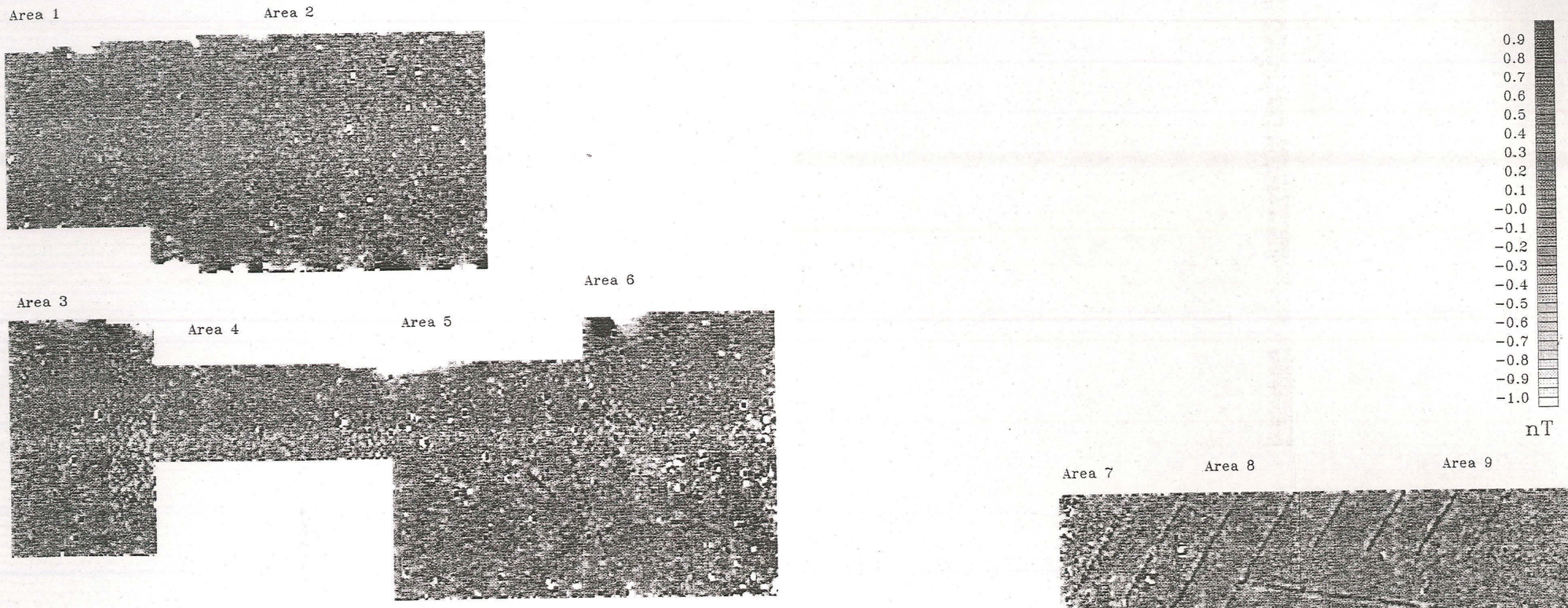
1:2500

GSB Prospection 98/137

Figure 1

Burton Waters Marina

Summary Greyscale

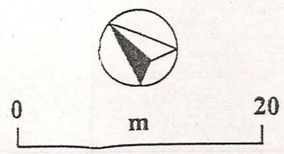


GSB Prospection 98/137

Figure 2

BURTON WATERS MARINA
Area 1

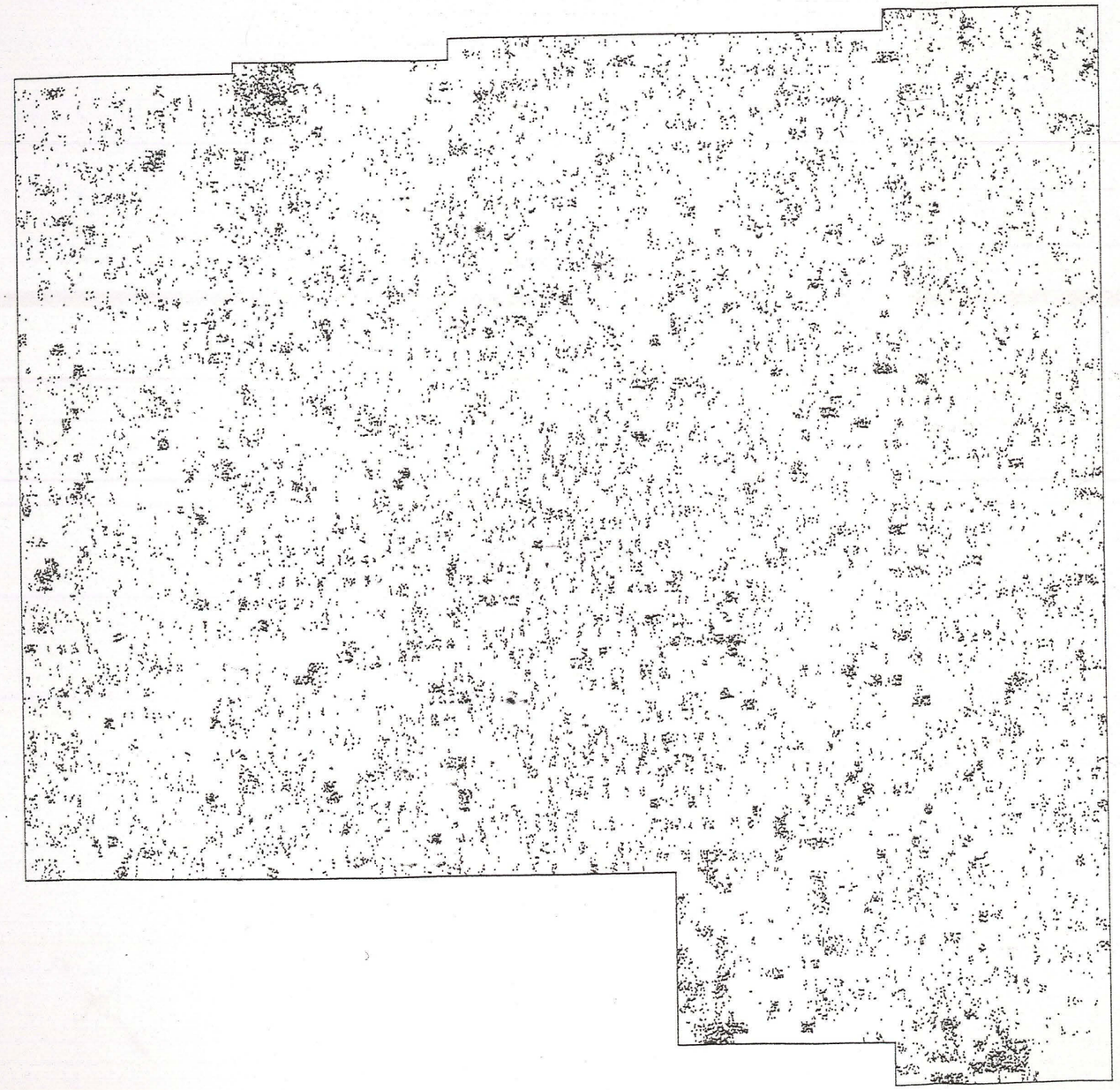
15 nT

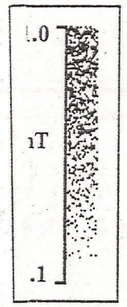


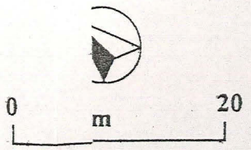
GSB Prospection 98/137

Figure 3

BURTON WATERS MARINA
Area 1



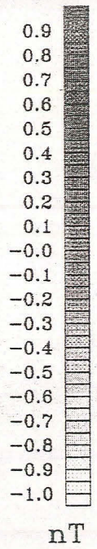


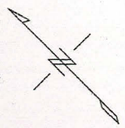


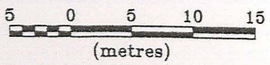
GSB Prospection 98/137

Figure 4

Burton Waters Marina







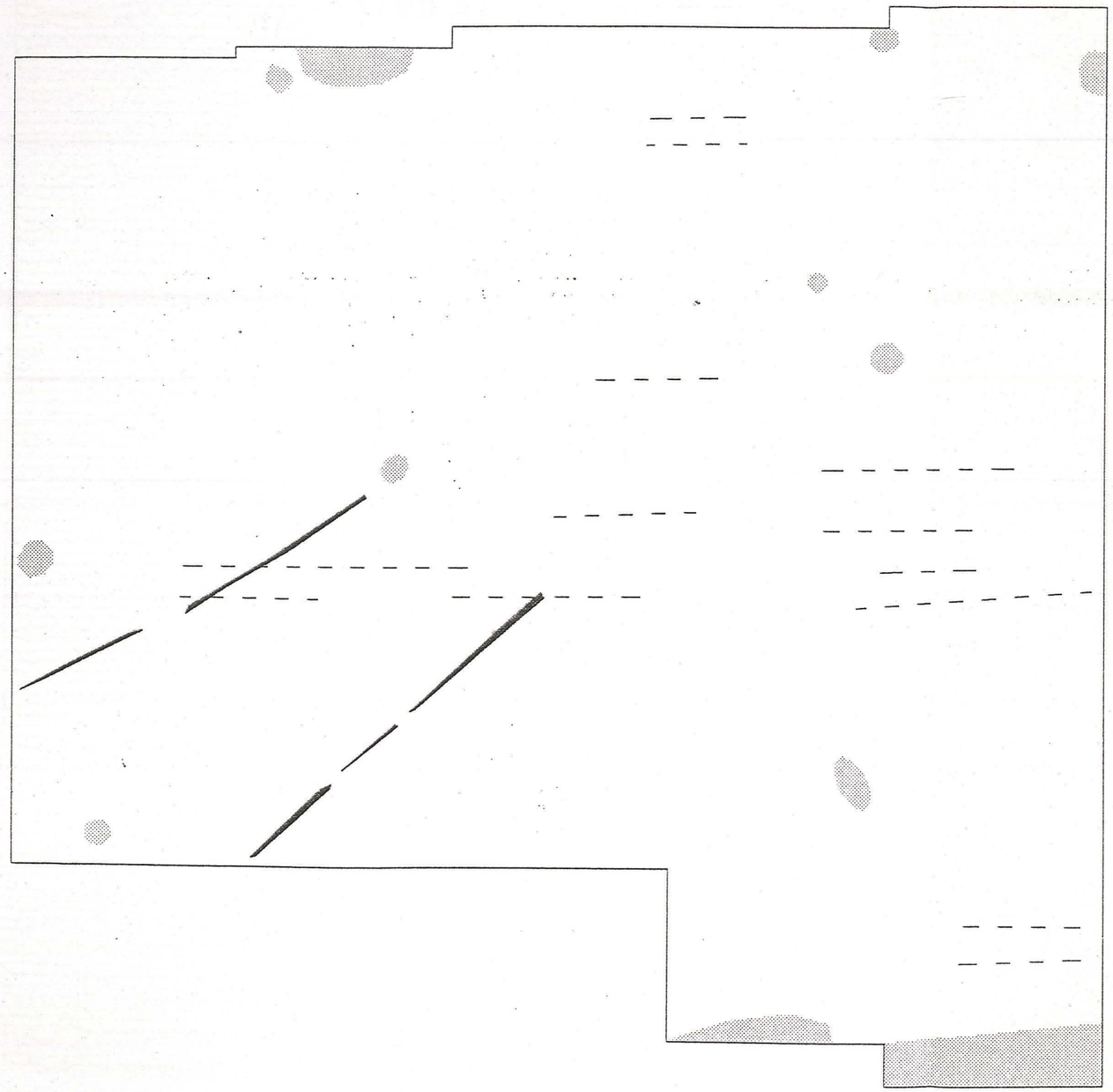
GSB Prospection 98/137

Gradiometer Data

Area 1

Figure 5

BURTON WATERS MARINA
Area 1



?Archaeology

Ploughing Trend

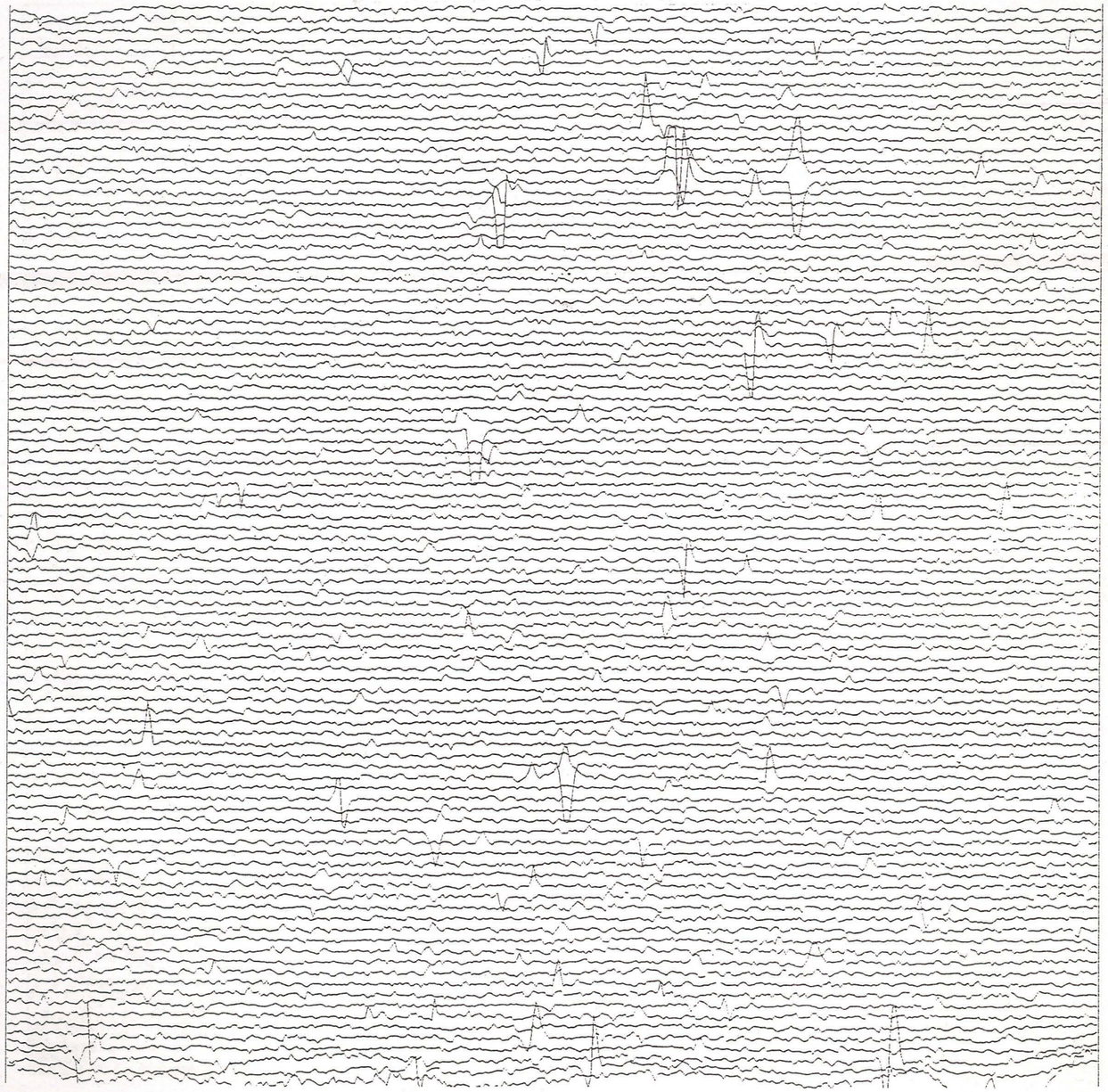
Ferrous

0 m 20

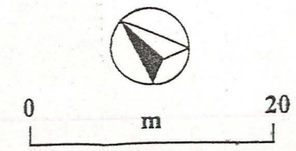
GSB Prospection 98/137

Figure 6

BURTON WATERS MARINA
Area 2



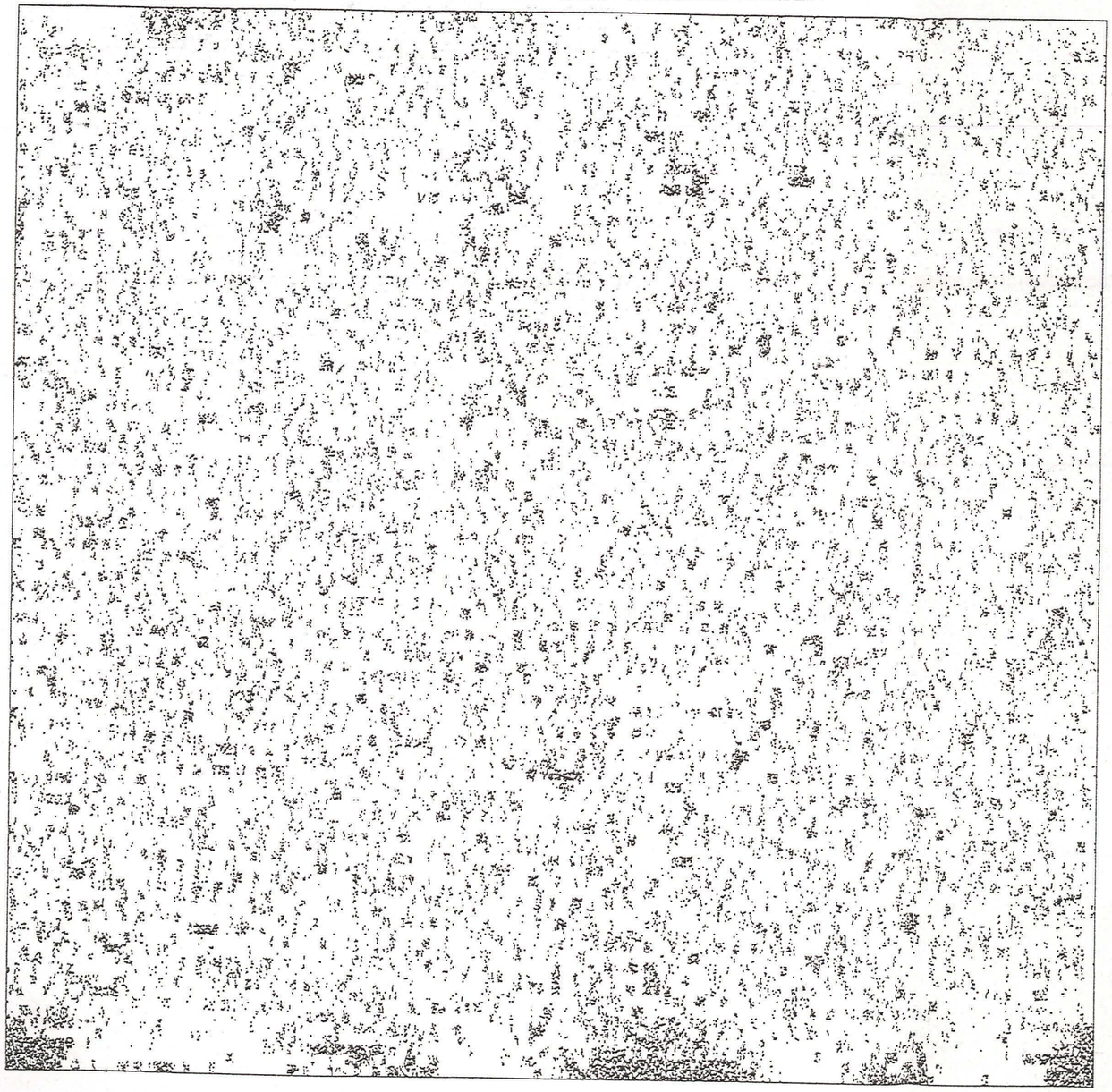
15 nT

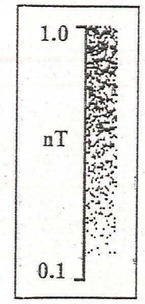


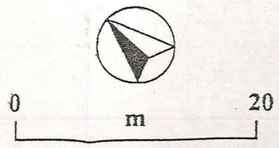
GSB Prospection 98/137

Figure 7

BURTON WATERS MARINA
Area 2



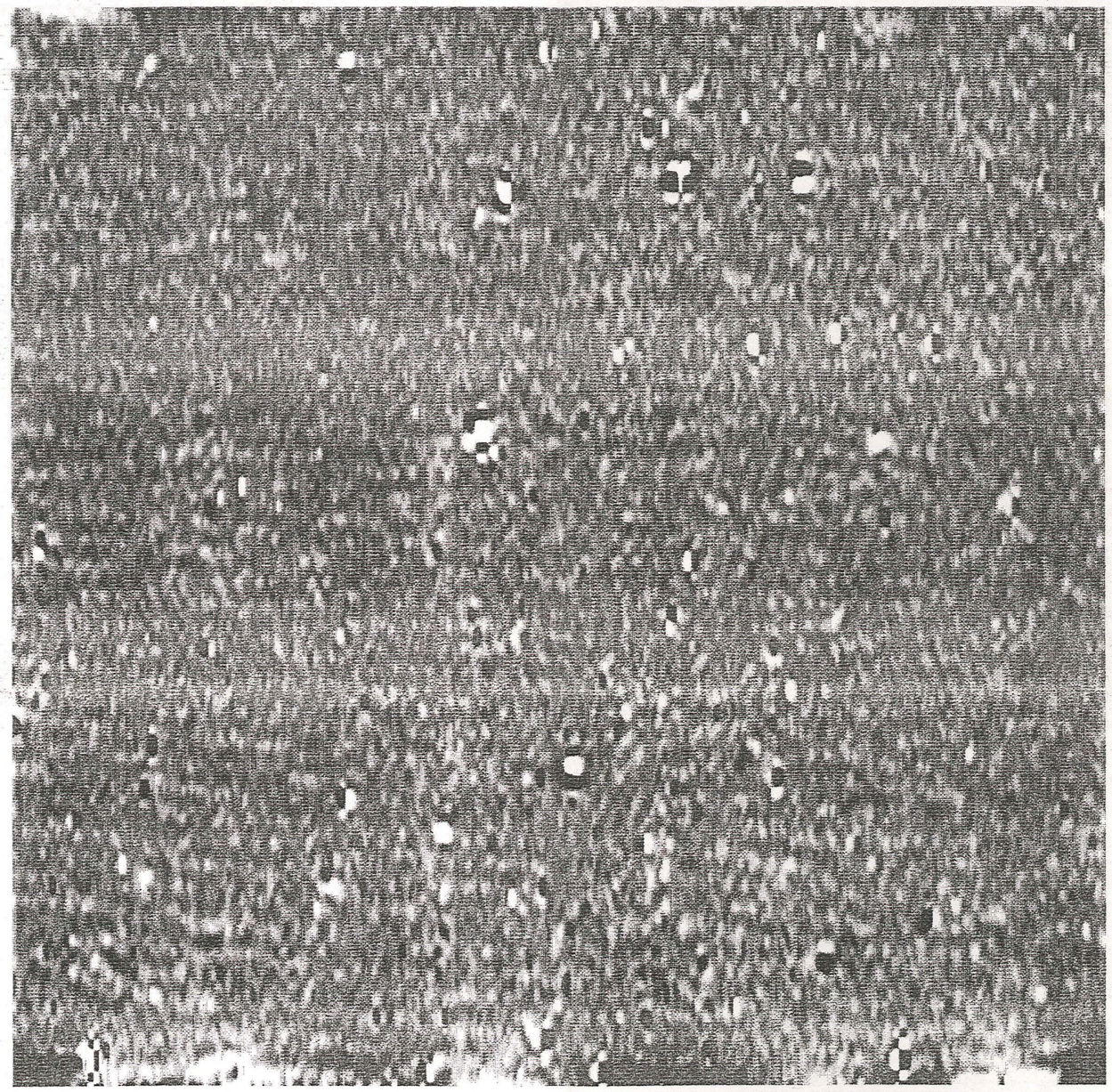


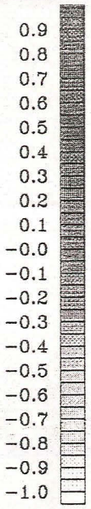


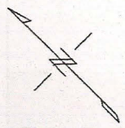
GSB Prospection 98/137

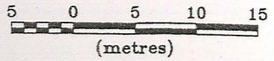
Figure 8

Burton Waters Marina









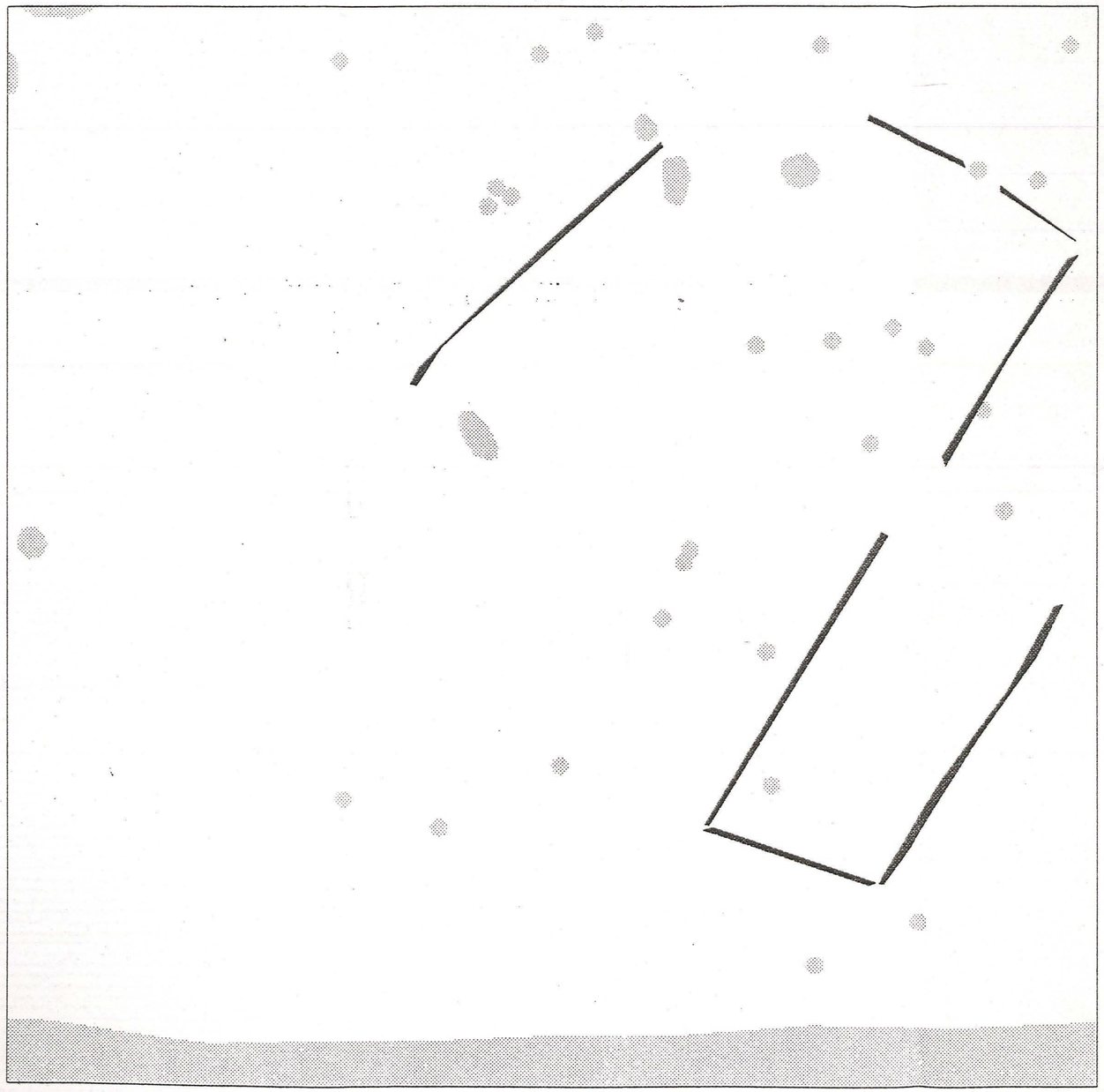
GSB Prospection 98/137

Gradiometer Data

Area 2

Figure 9

BURTON WATERS MARINA
Area 2



?Archaeology

Ferrous

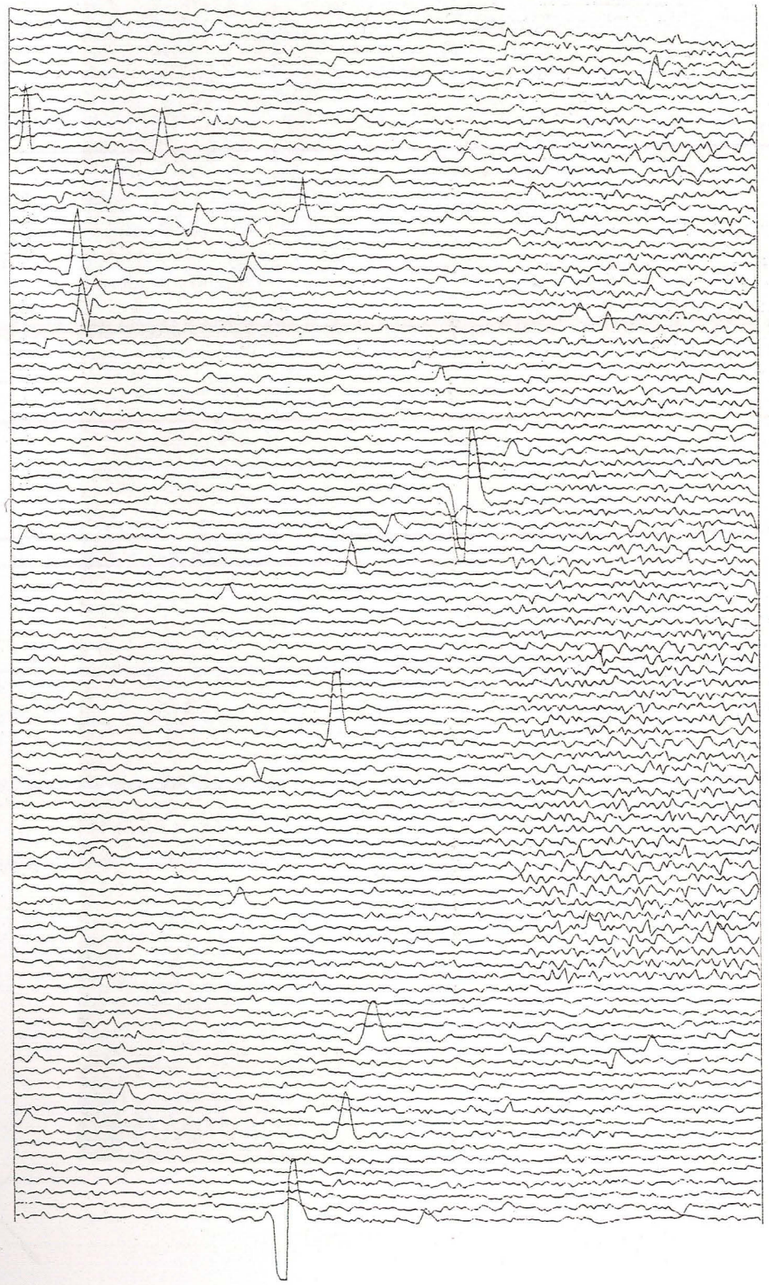
0 m 20

GSB Prospection 98/137

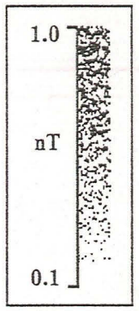
Figure 10

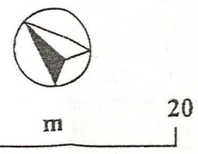
BURTON WATERS MARINA

Area 3

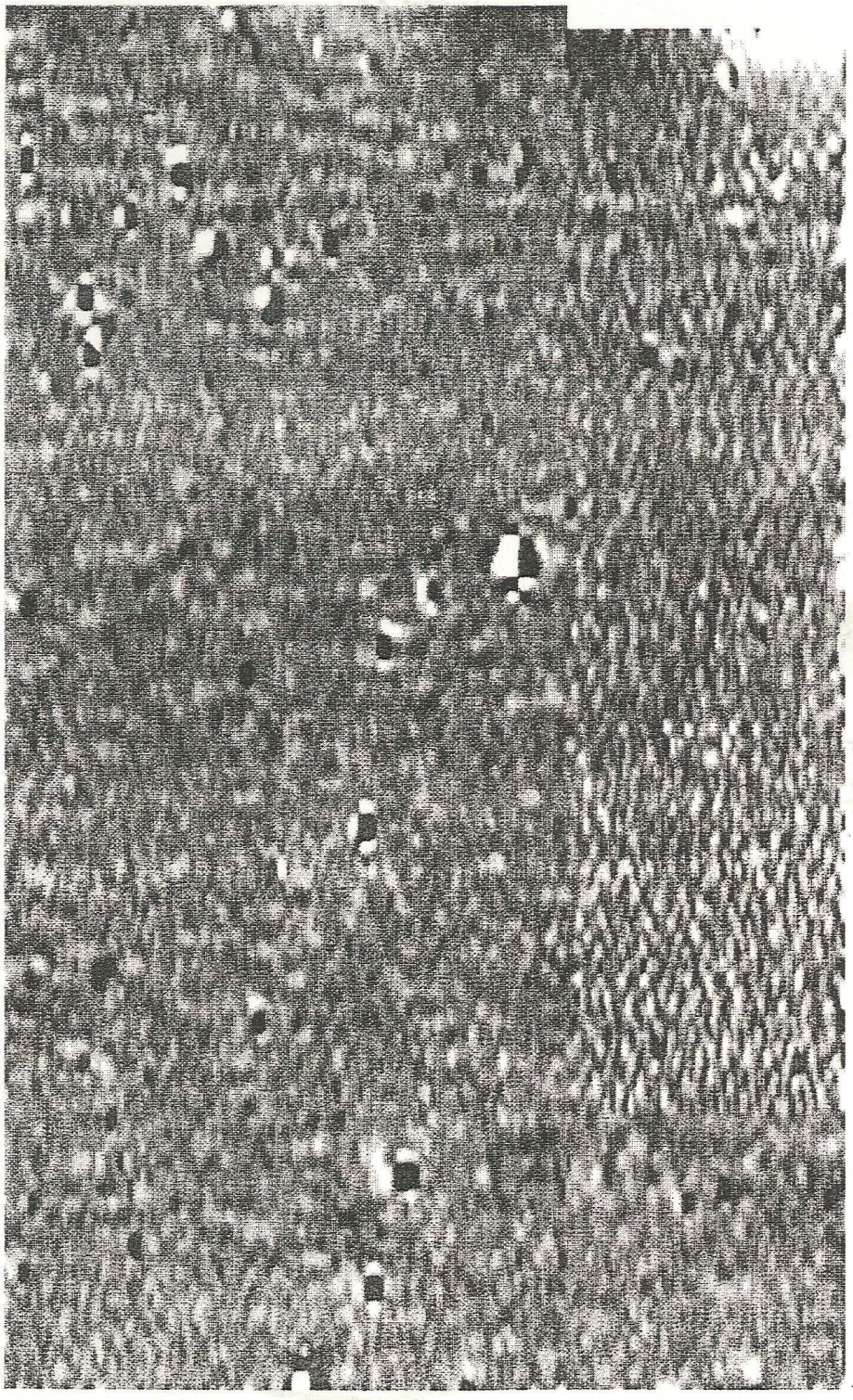


15 nT





Burton Waters Marina



0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
−0.0
−0.1
−0.2
−0.3
−0.4
−0.5
−0.6
−0.7
−0.8
−0.9
−1.0

nT

Gradiometer Data

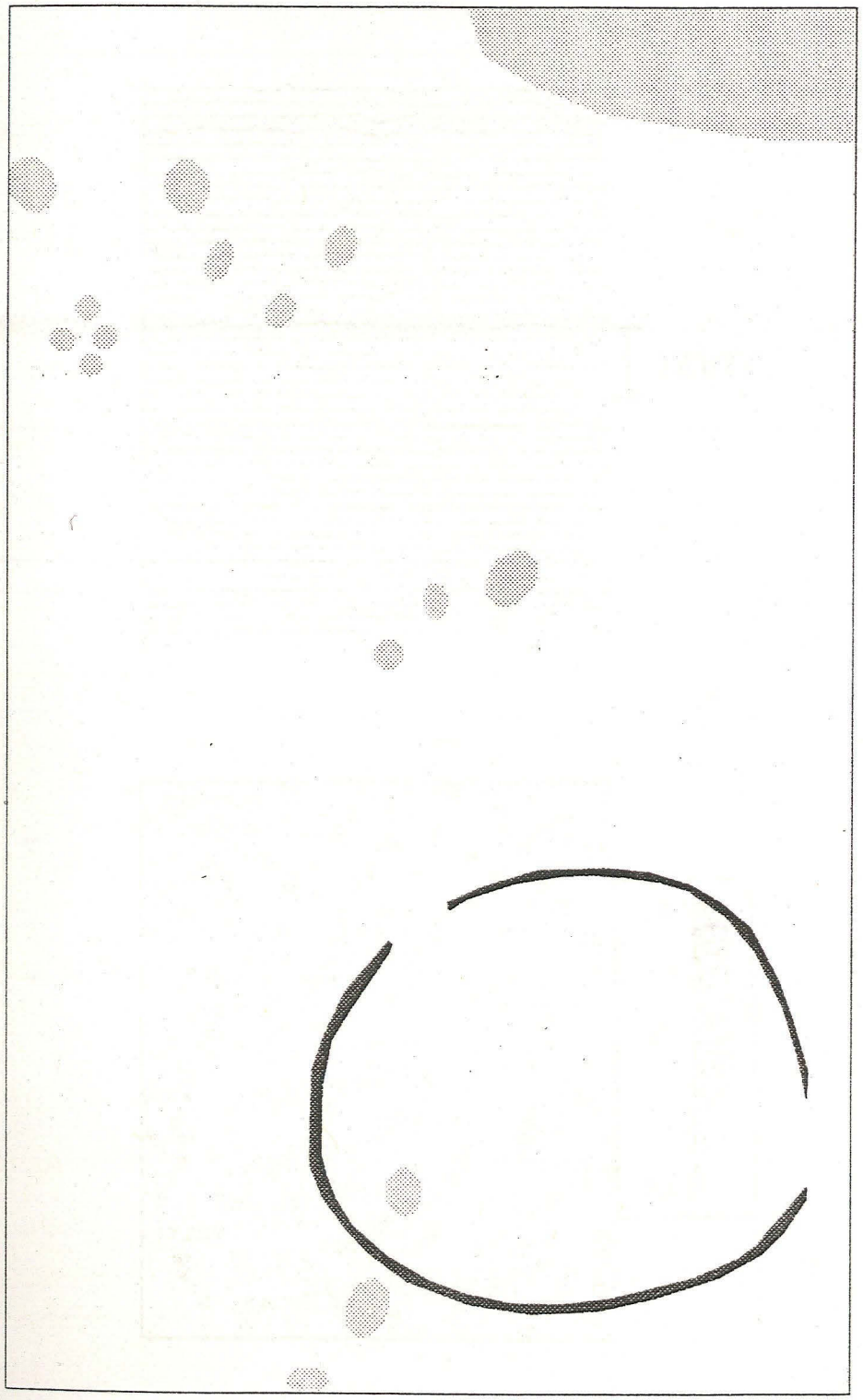
Area 3

10 0 10
(metres)

GSB Prospection 98/137

Figure 12

BURTON WATERS MARINA
Area 3



?Archaeology

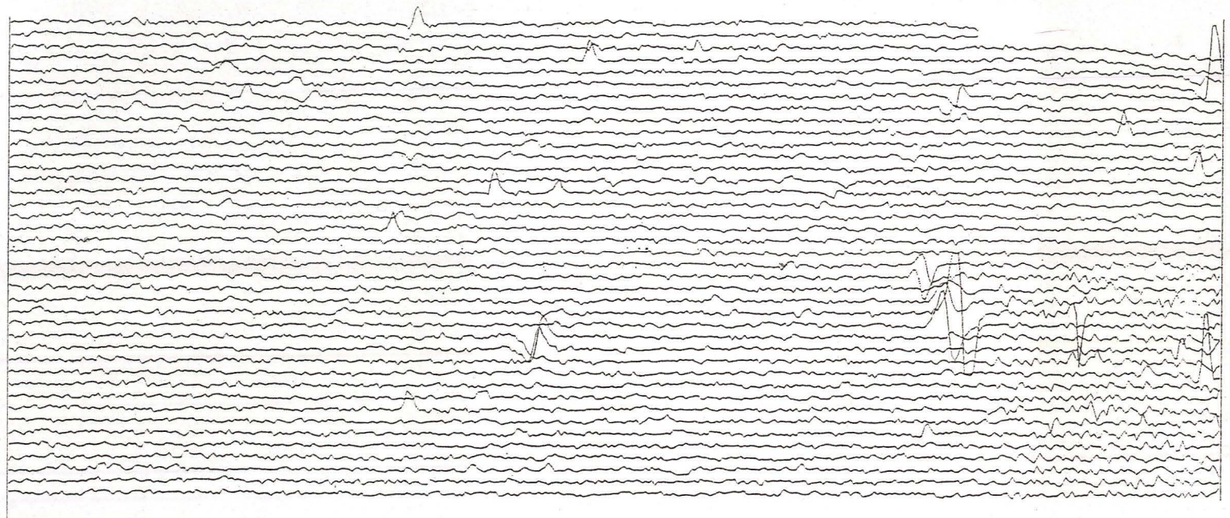
Ferrous

0 m 20

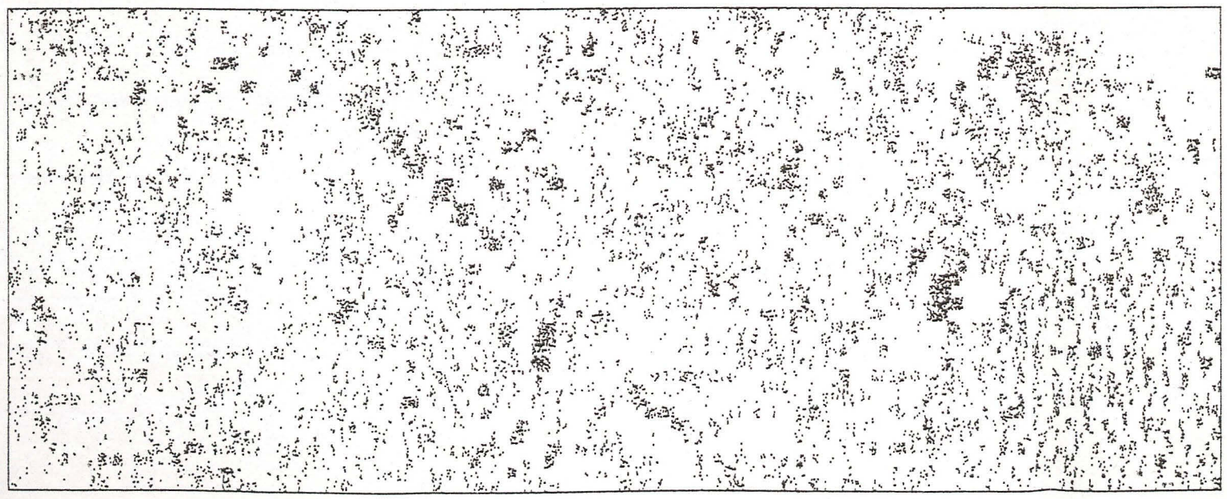
GSB Prospection 98/137

Figure 13

BURTON WATERS MARINA
Area 4



15 nT



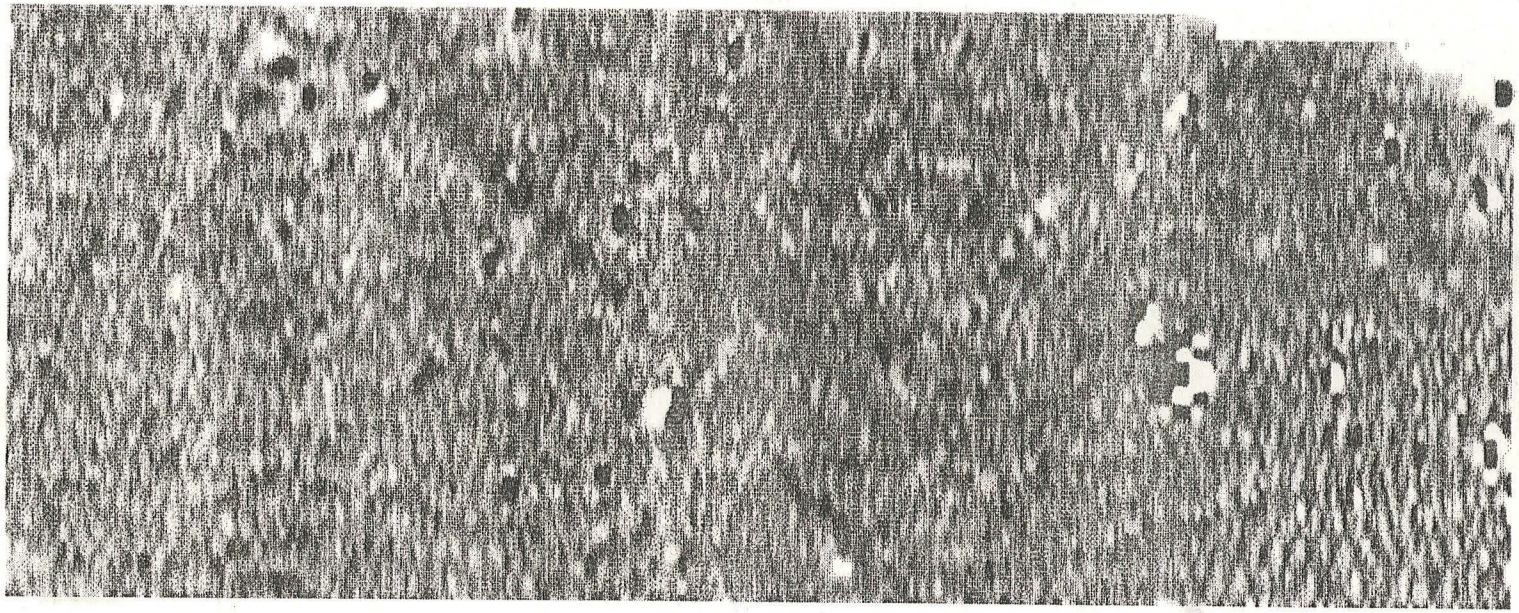
1.0
nT
0.1

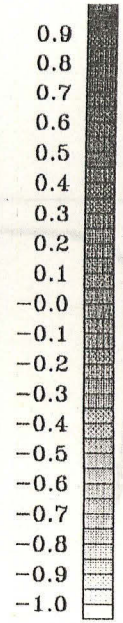
0 m 20

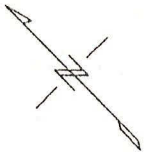
GSB Prospection 98/137

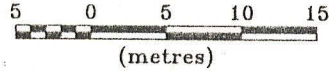
Figure 14

Burton Waters Marina









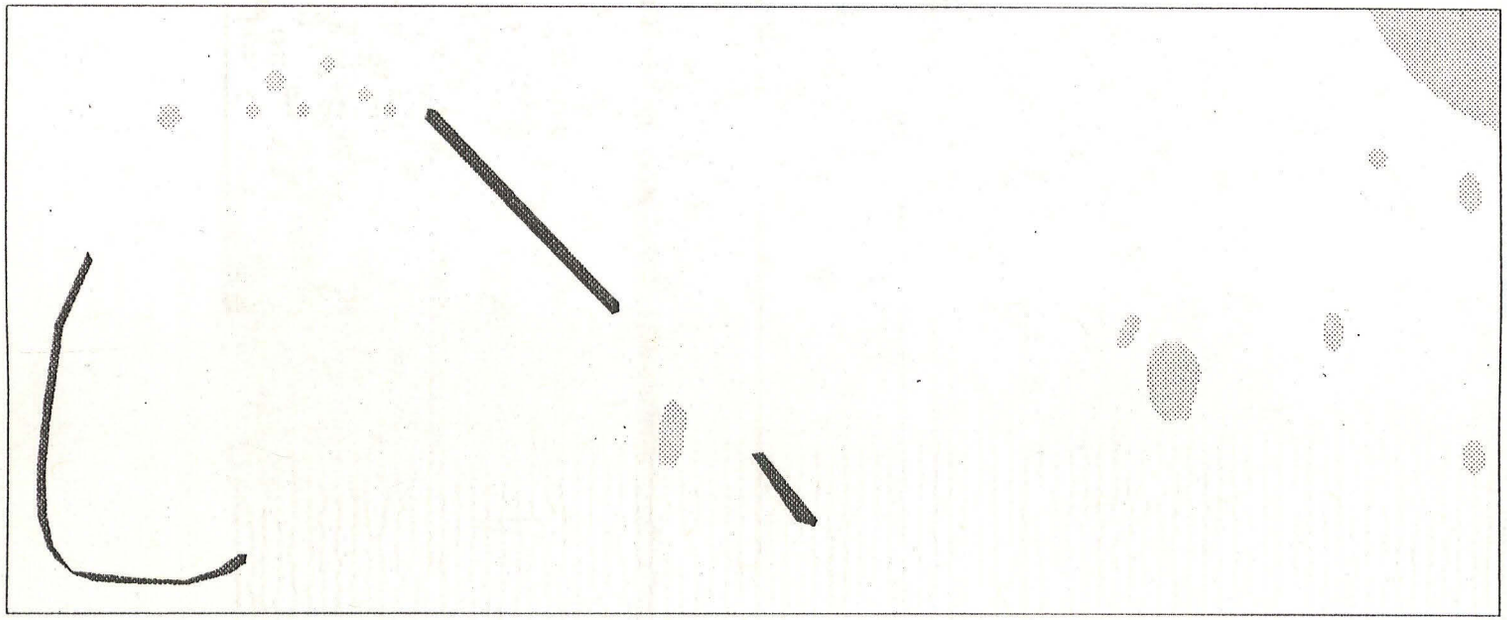
Gradiometer Data

Area 4

GSB Prospection 98/137

Figure 15

BURTON WATERS MARINA
Area 4



?Archaeology

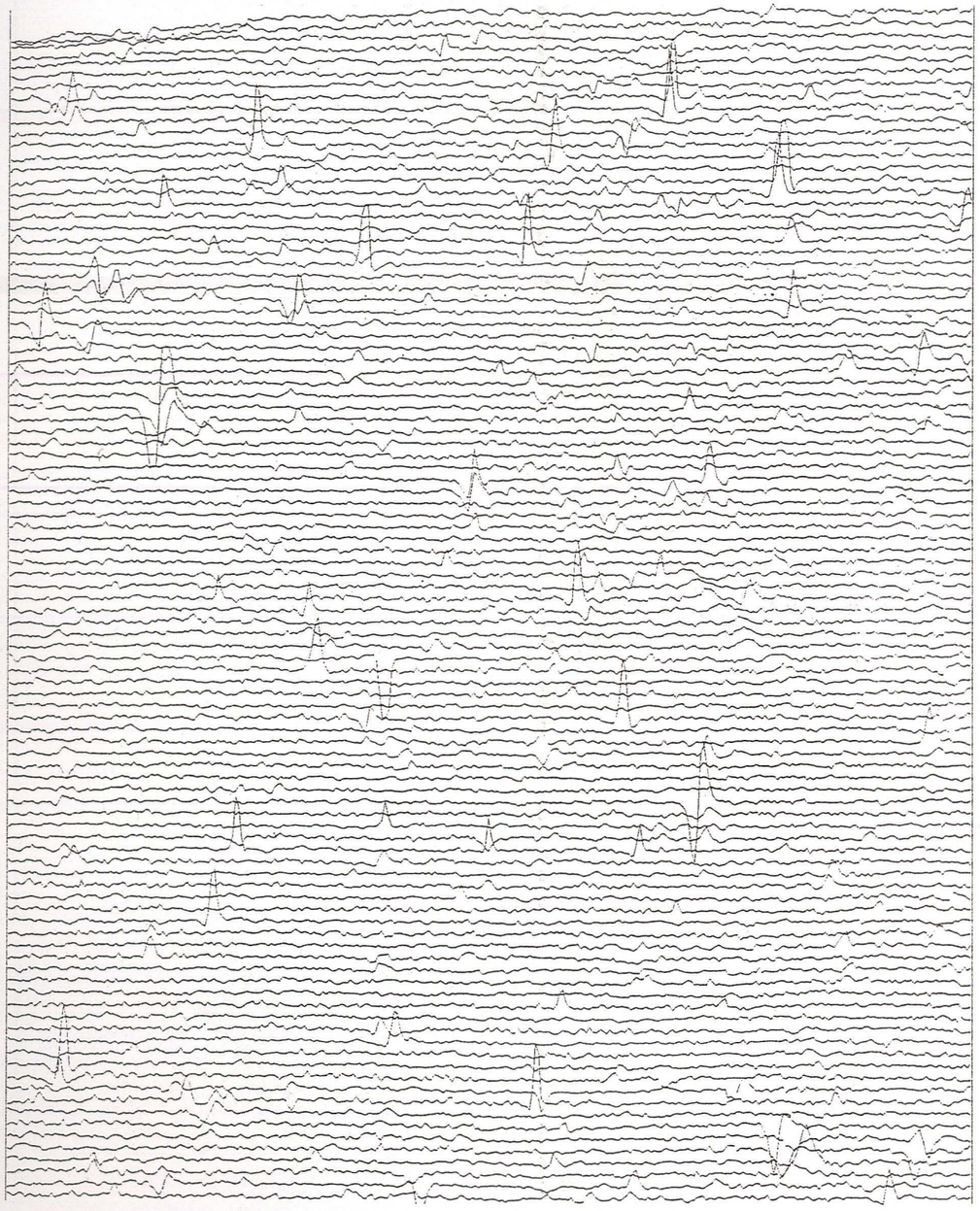
Ferrous

0 m 20

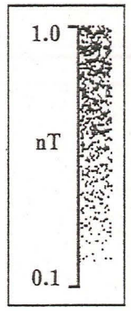
GSB Prospection 98/137

Figure 16

BURTON WATERS MARINA
Area 5



15 nT



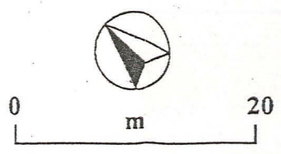
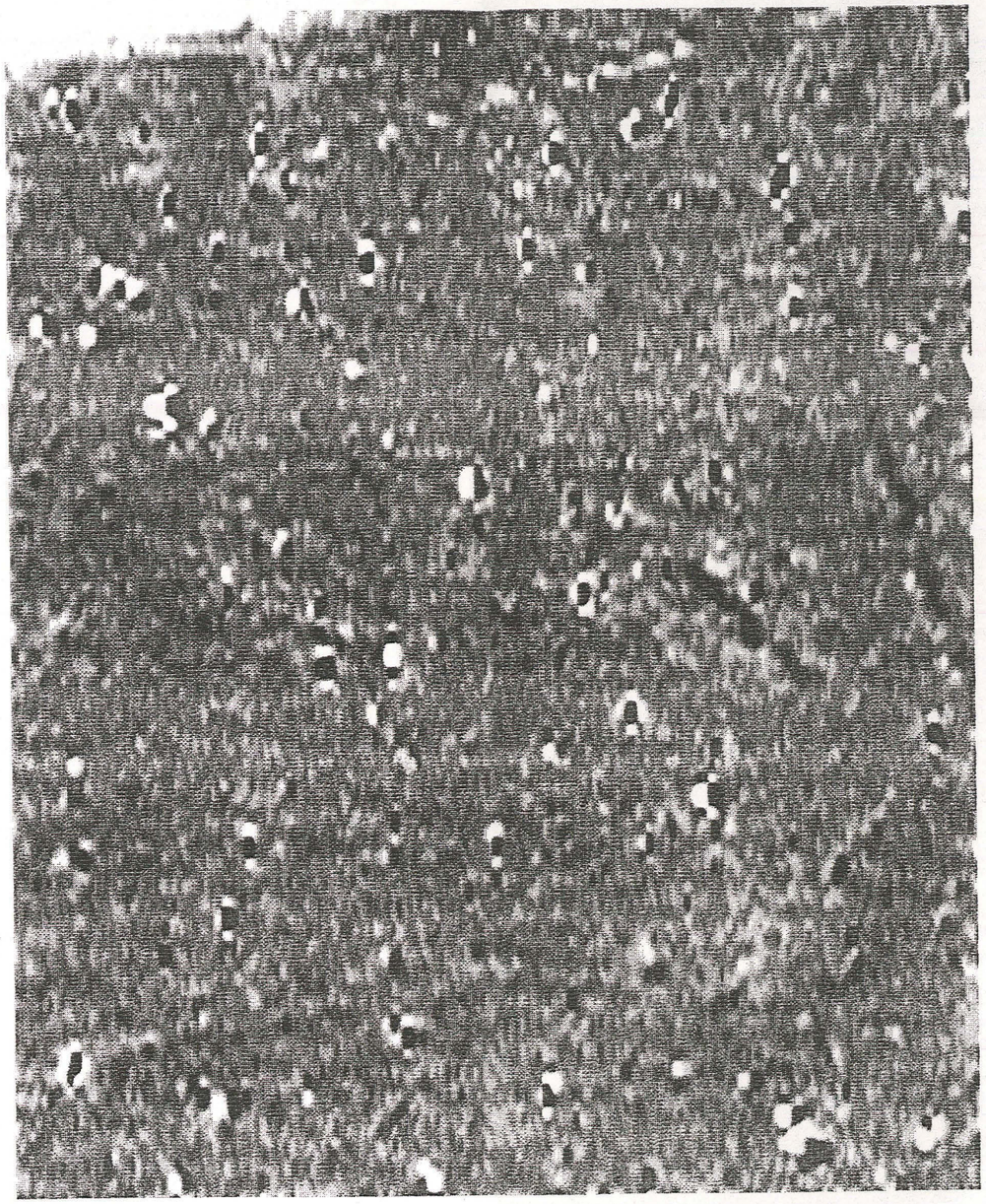
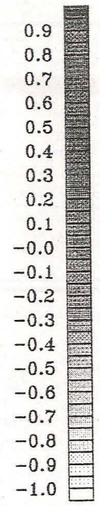
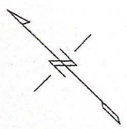


Figure 17

Burton Waters Marina







5 0 5 10 15
(metres)

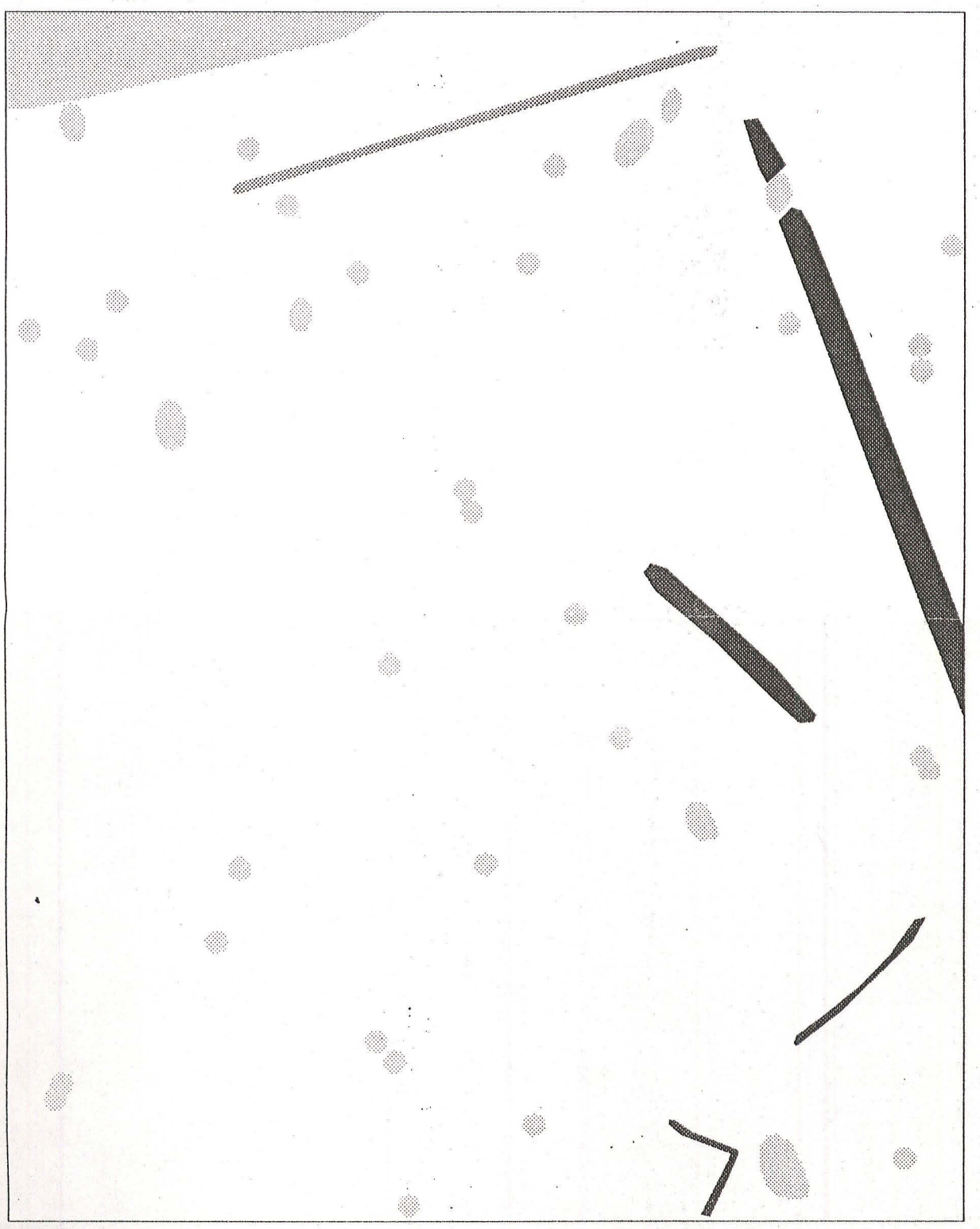
GSB Prospection 98/137

Gradiometer Data

Area 5

Figure 18

BURTON WATERS MARINA
Area 5



GSB Prospection 98/137

Figure 19

BURTON WATERS MARINA
Area 6

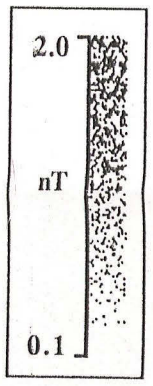
15 nT

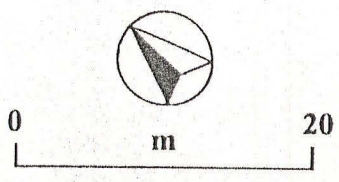
0 m 20

GSB Prospection 98/137

Figure 20

BURTON WATERS MARINA
Area 6

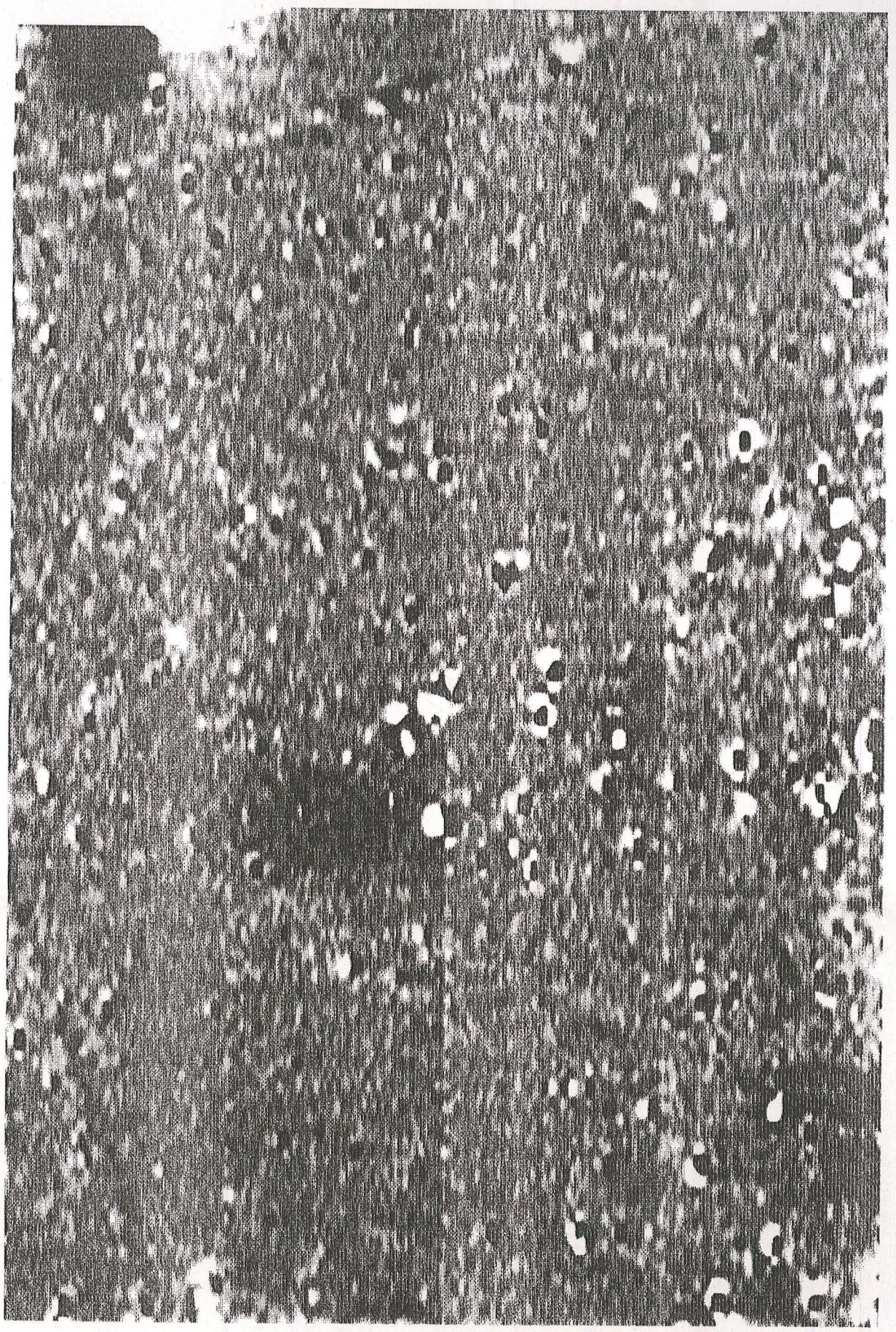


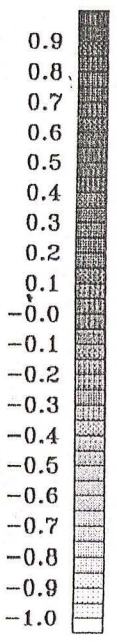


GSB Prospection 98/137

Figure 21

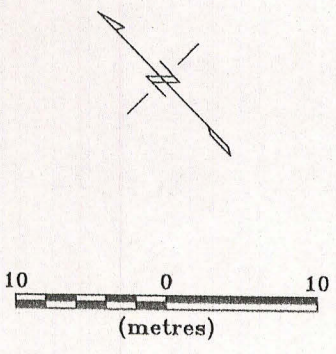
Burton Waters Marina





Gradiometer Data

Area 6



GSB Prospection 98/137

Figure 22

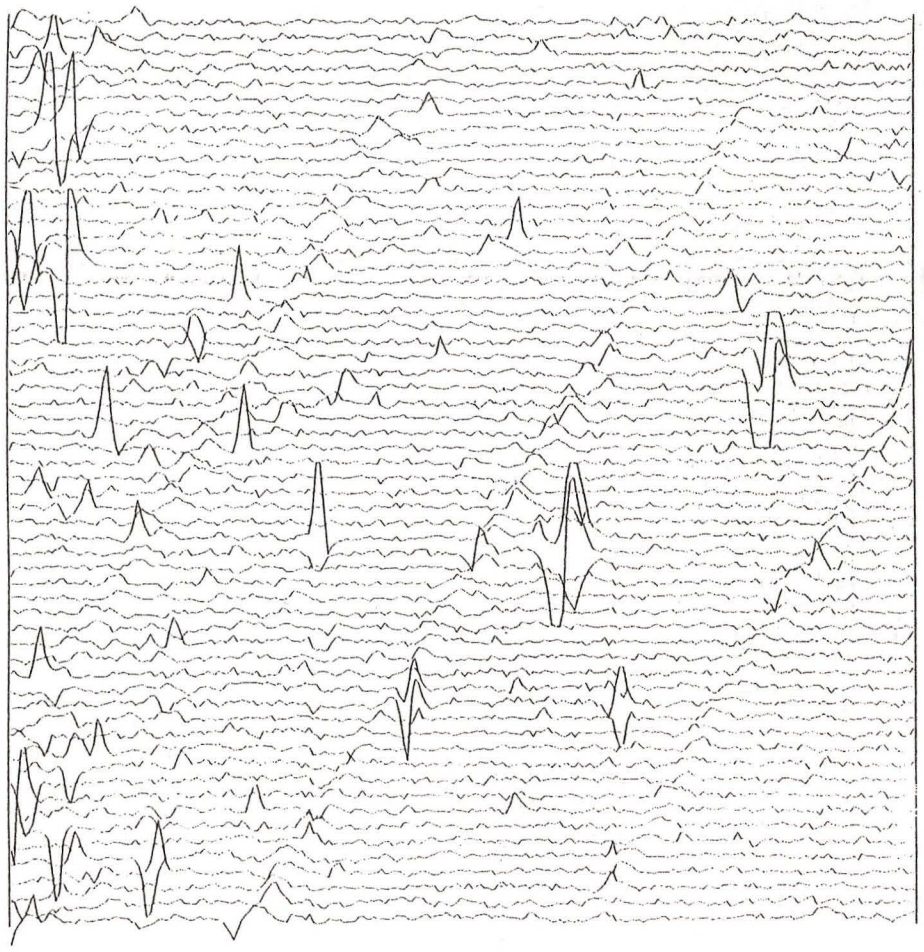
BURTON WATERS MARINA
Area 6

0 m 20

GSB Prospection 98/137

Figure 23

BURTON WATERS MARINA
Area 7



15 nT

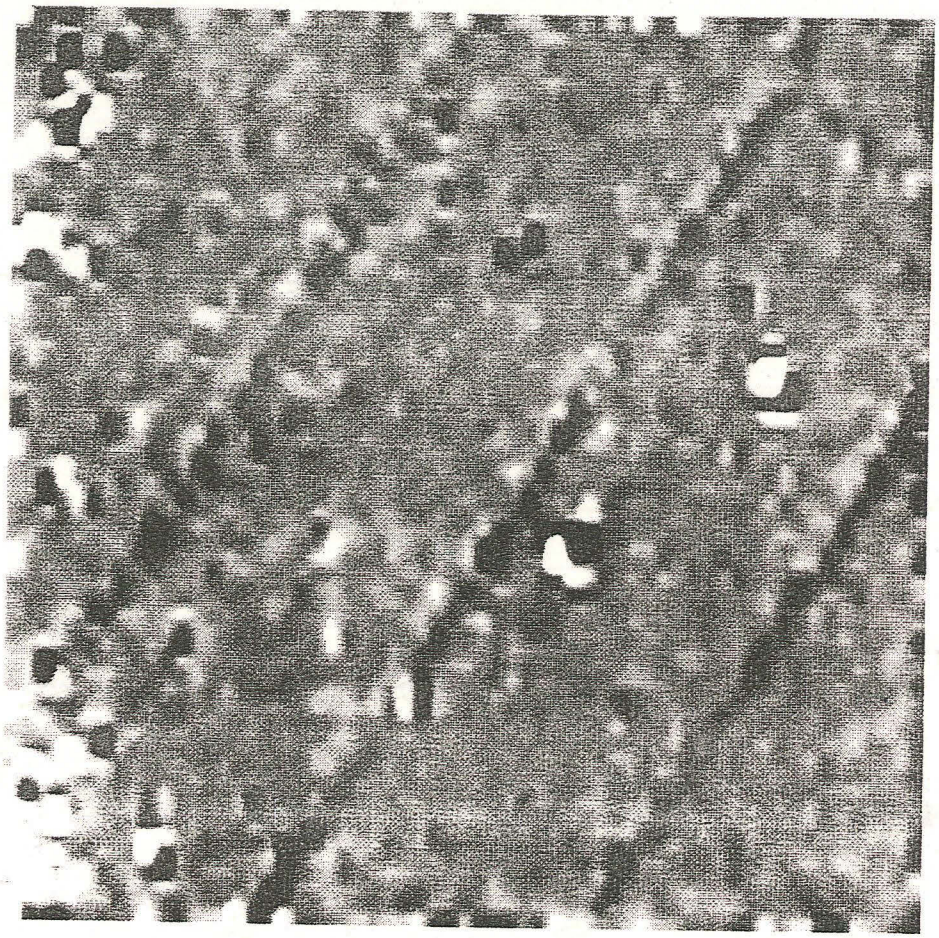
1.0 nT 0.1

0 m 20

GSB Prospection 98/137

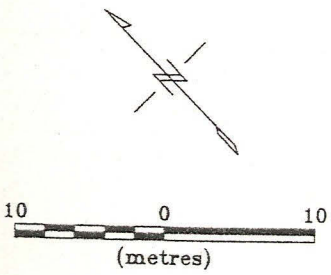
Figure 24

Burton Waters Marina



Area 7

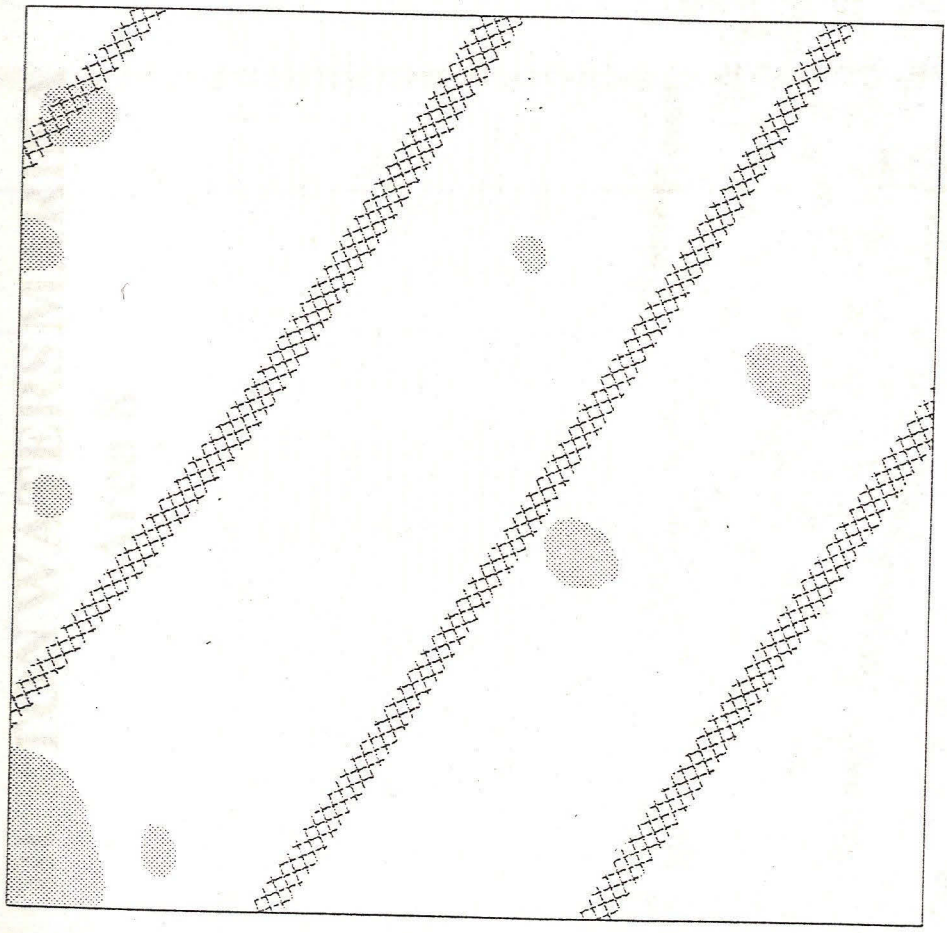
Gradiometer Data



GSB Prospection 98/137

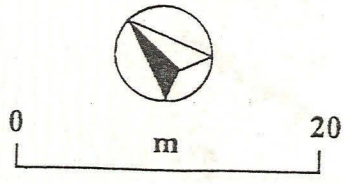
Figure 25

BURTON WATERS MARINA
Area 7



Drains

Ferrous

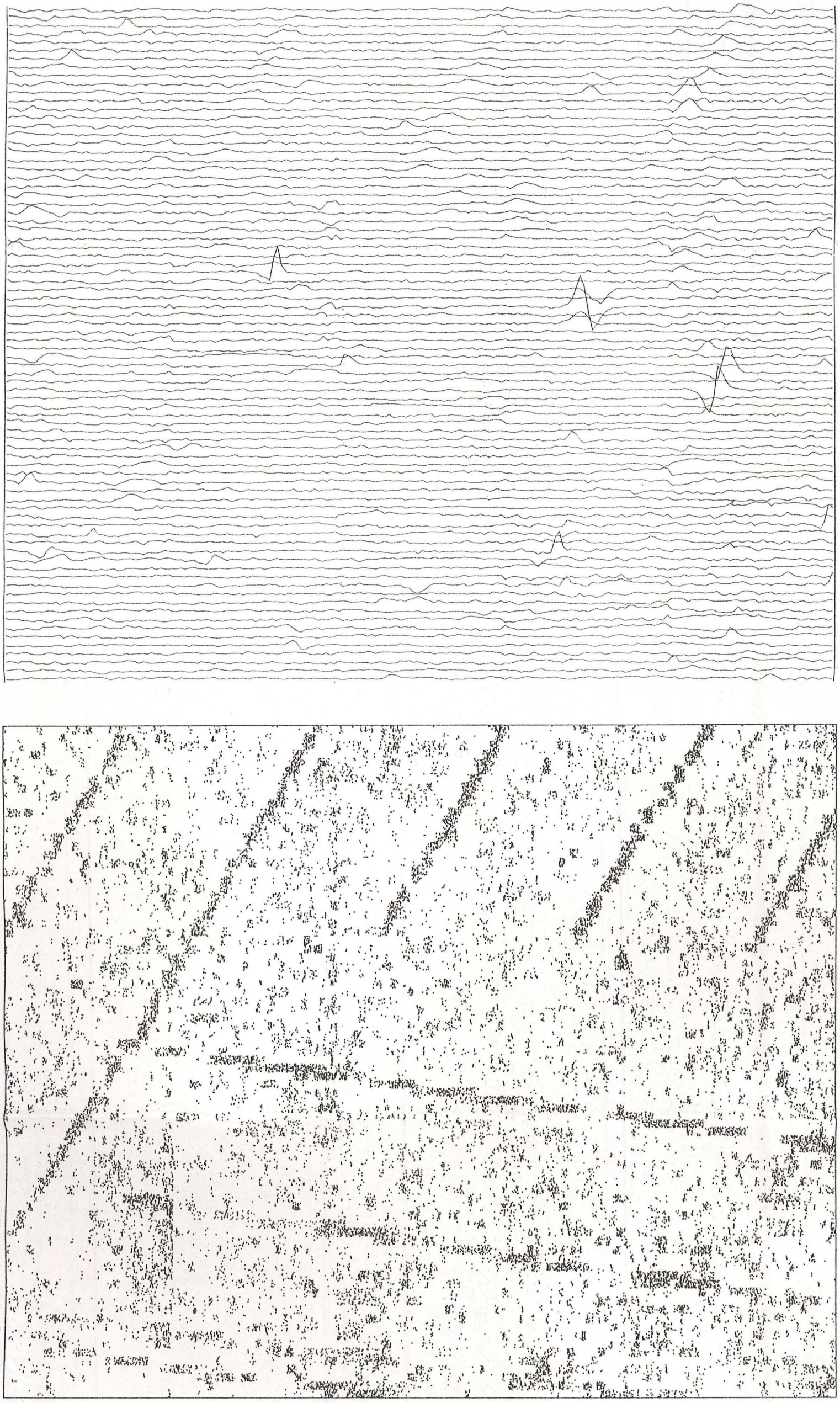


GSB Prospection 98/137

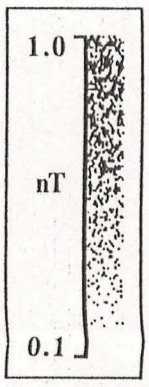
Figure 26

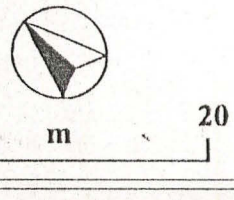
BURTON WATERS MARINA

Area 8



15 nT

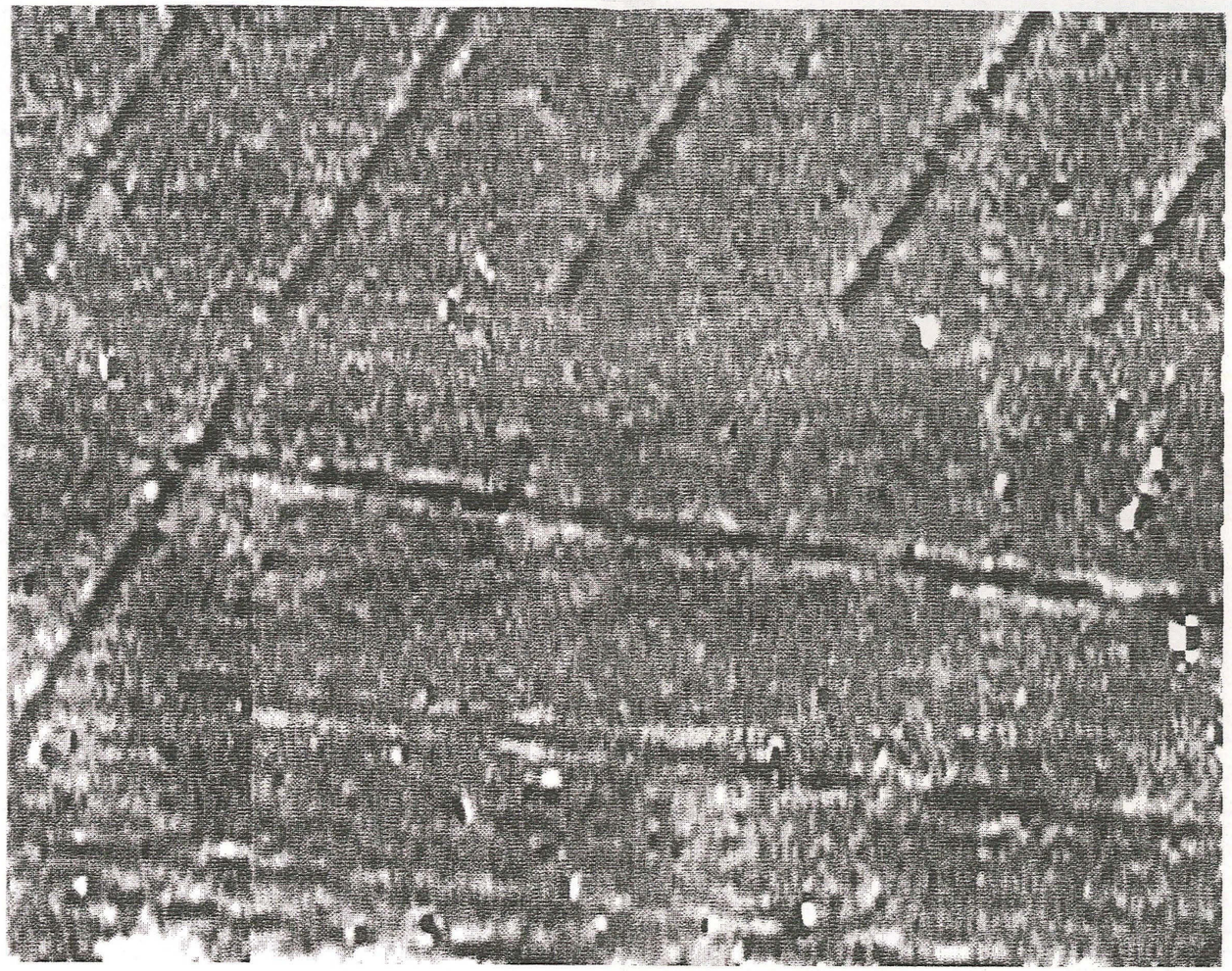


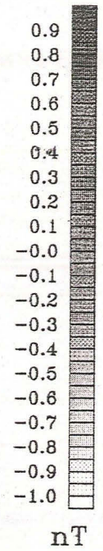


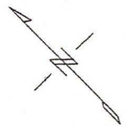
GSB Prospection 98/137

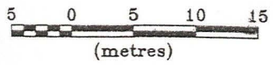
Figure 27

Burton Waters Marina









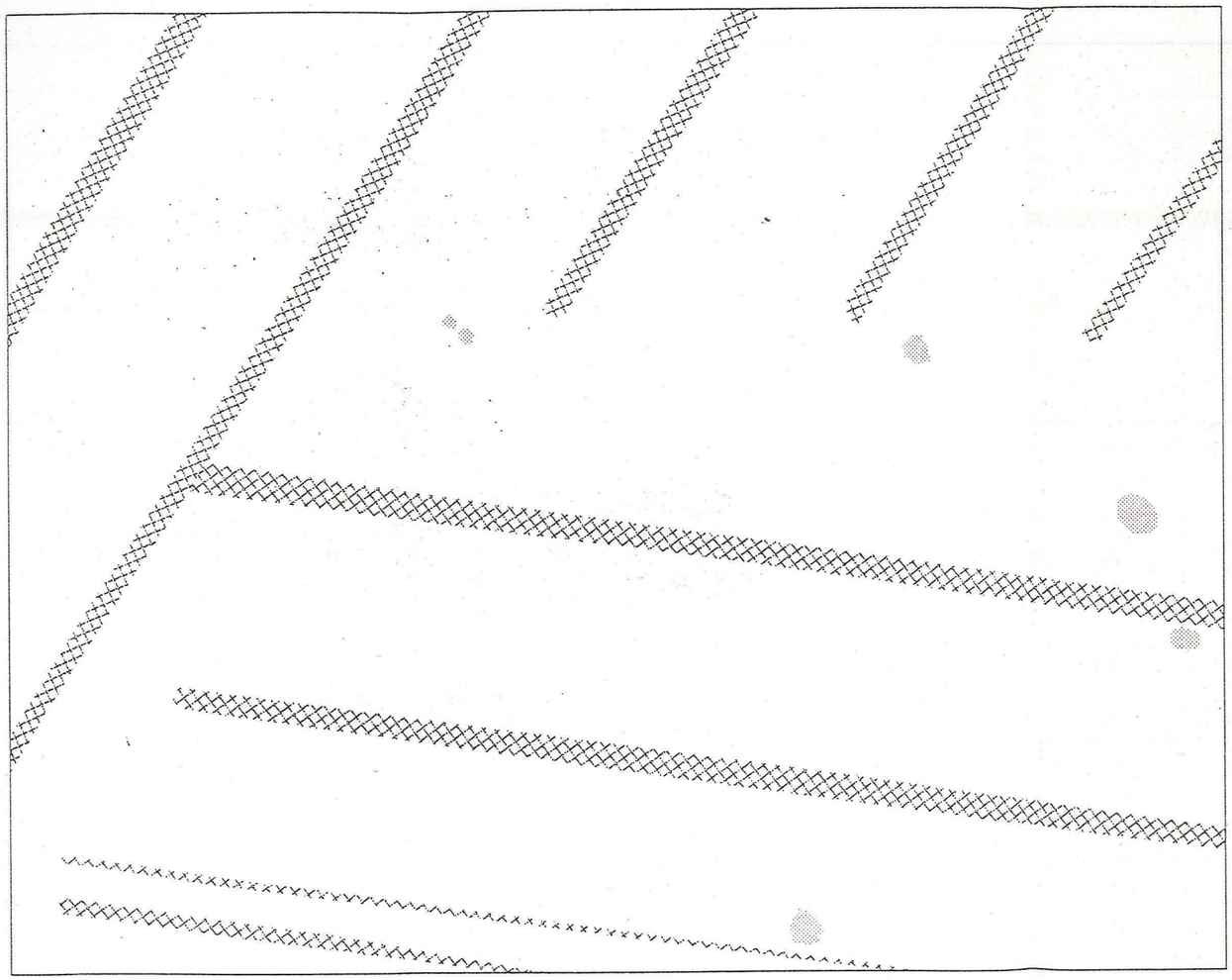
Gradiometer Data

Area 8

GSB Prospection 98/137

Figure 28

BURTON WATERS MARINA
Area 8



Drains

Ferrous

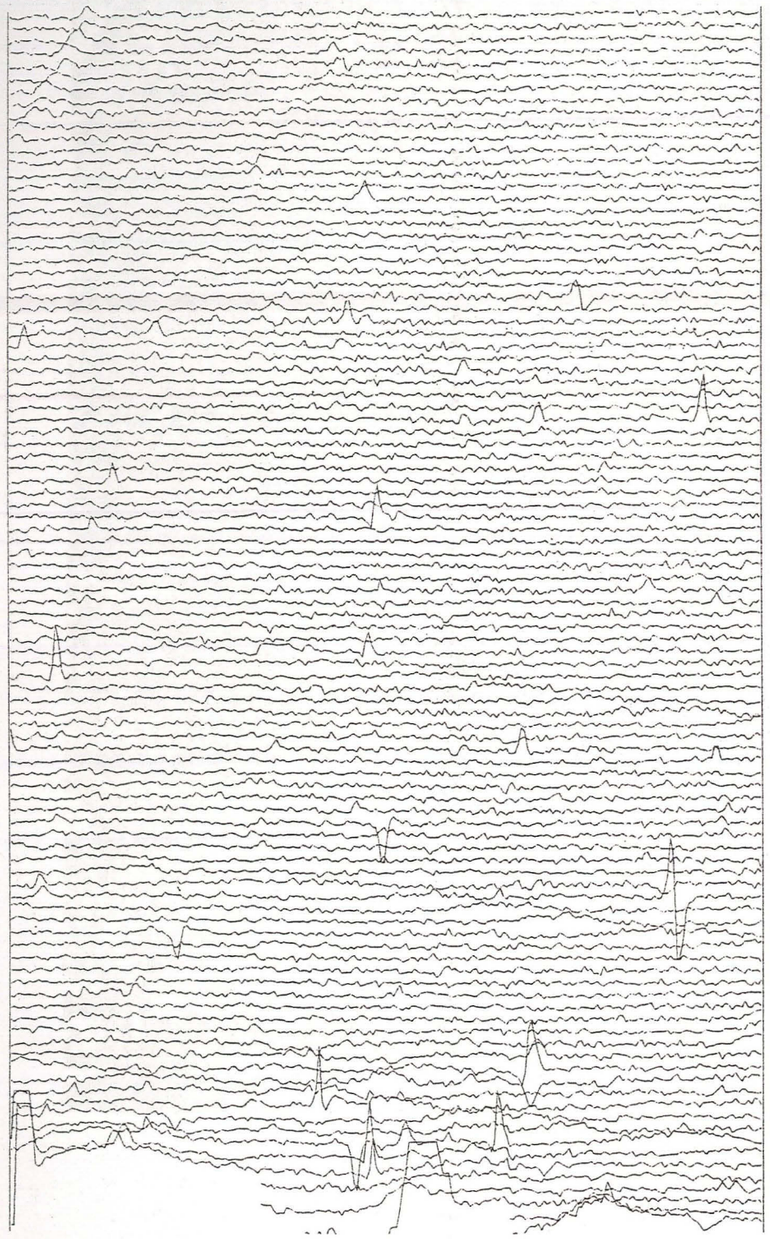
0 m 20

GSB Prospection 98/137

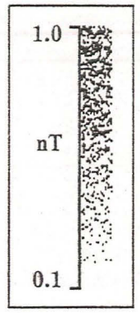
Figure 29

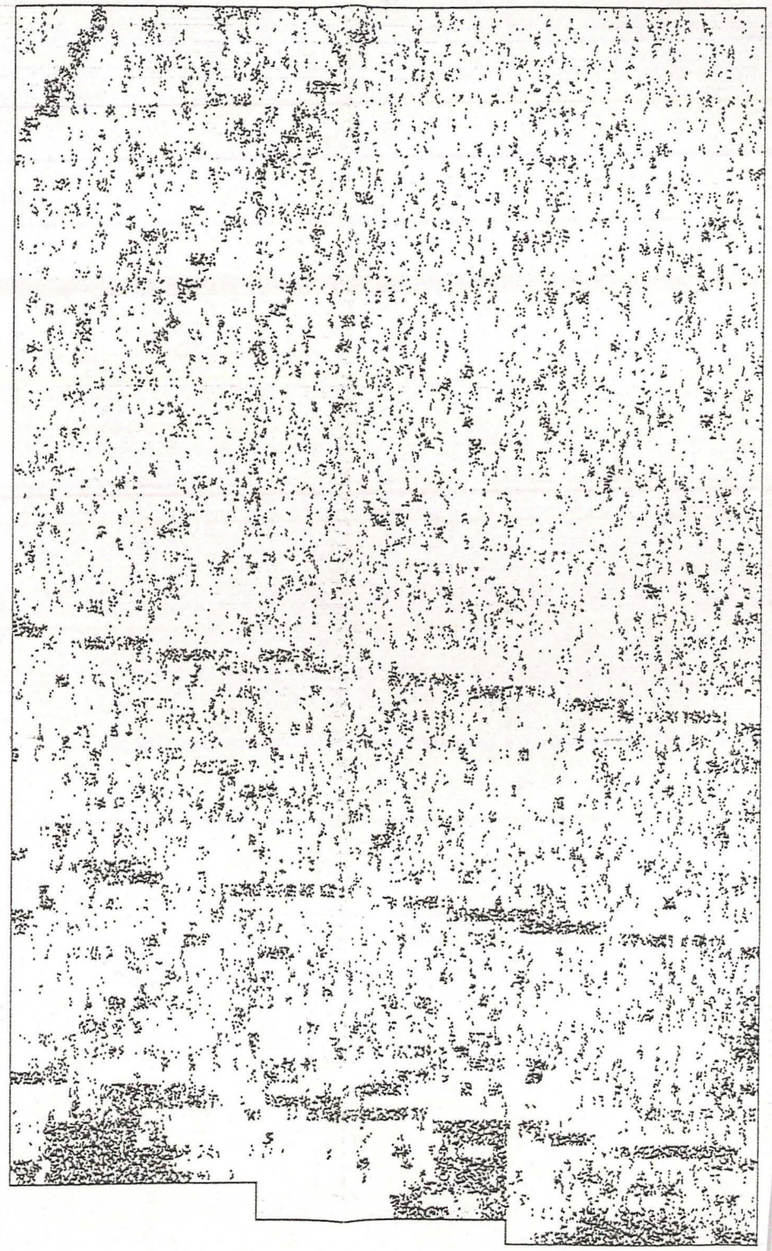
BURTON WATERS MARINA

Area 9



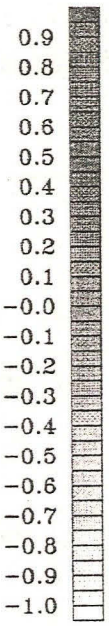
15 nT

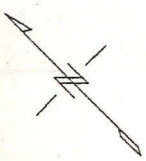


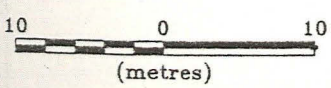


0 m 20

Burton Waters Marina







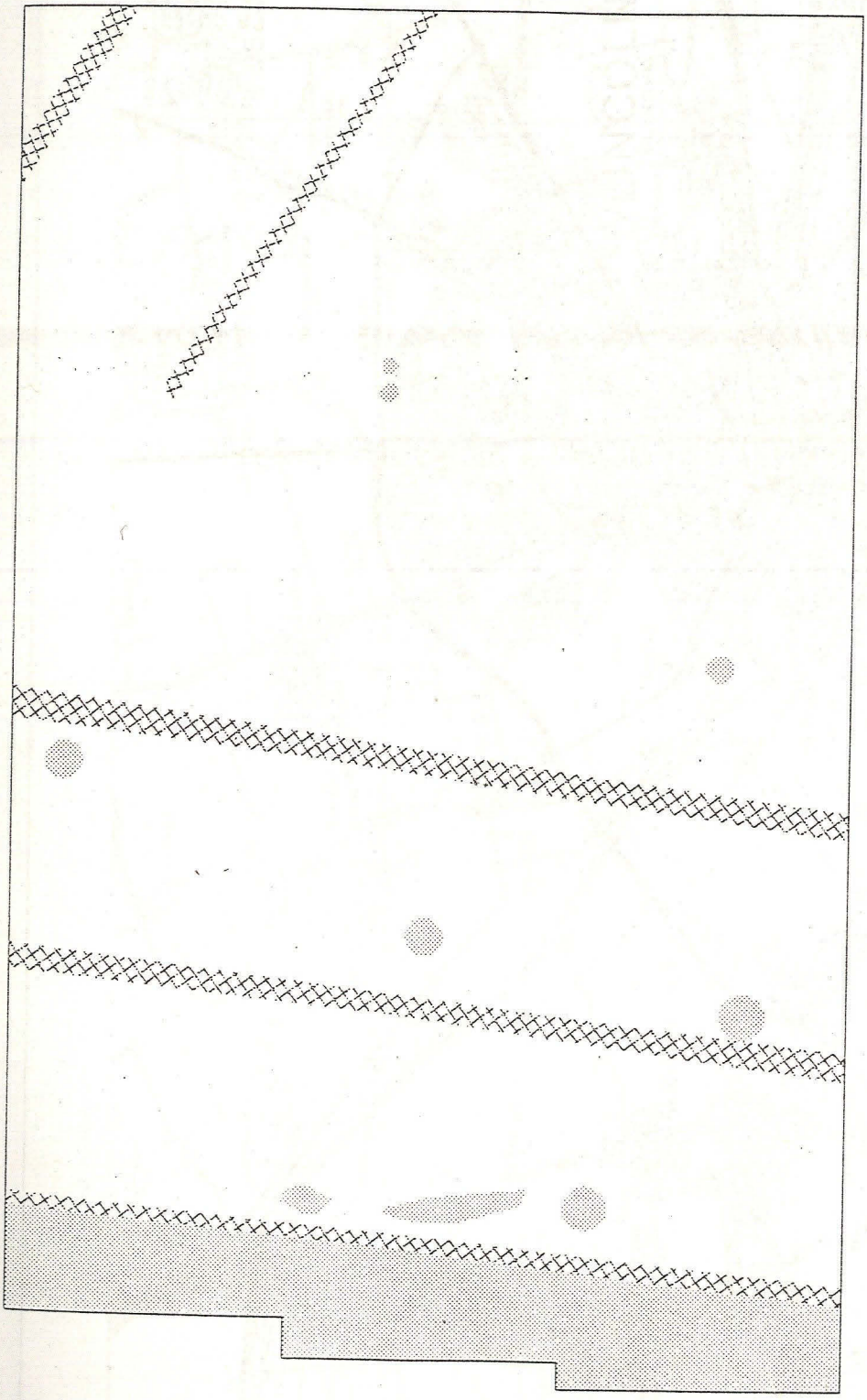
Gradiometer Data

Area 9

Figure 31

GSB Prospection 98/137

BURTON WATERS MARINA
Area 9



Drains

Ferrous

0 m 20

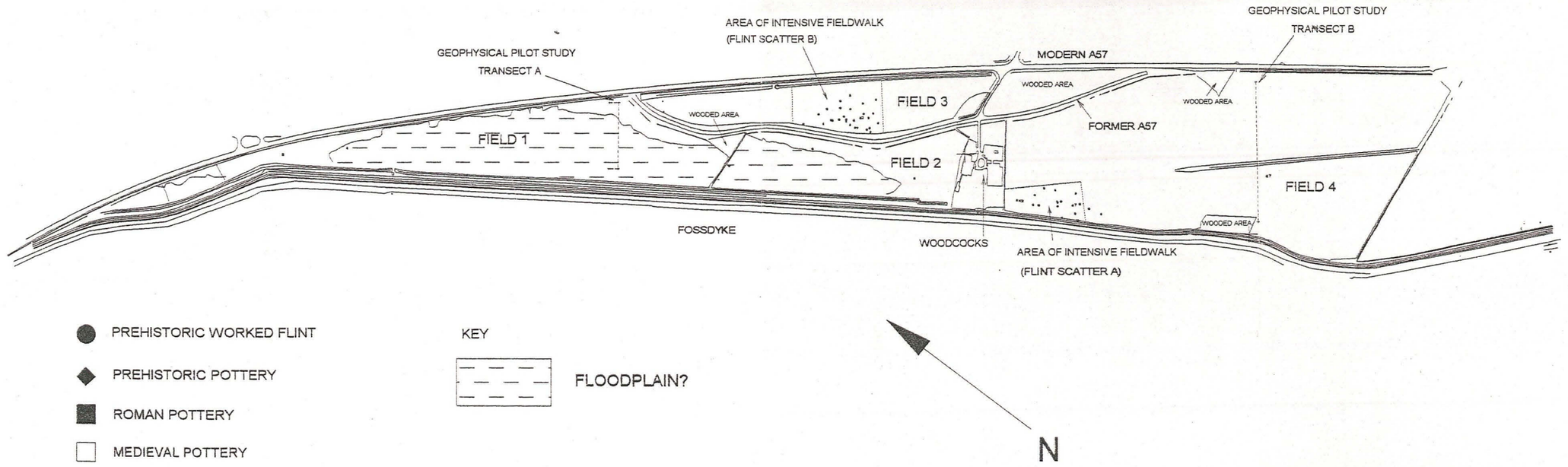
GSB Prospection 98/137

Figure 32

CLAU 1999

General location map Scale 1:50 000

Fig.1

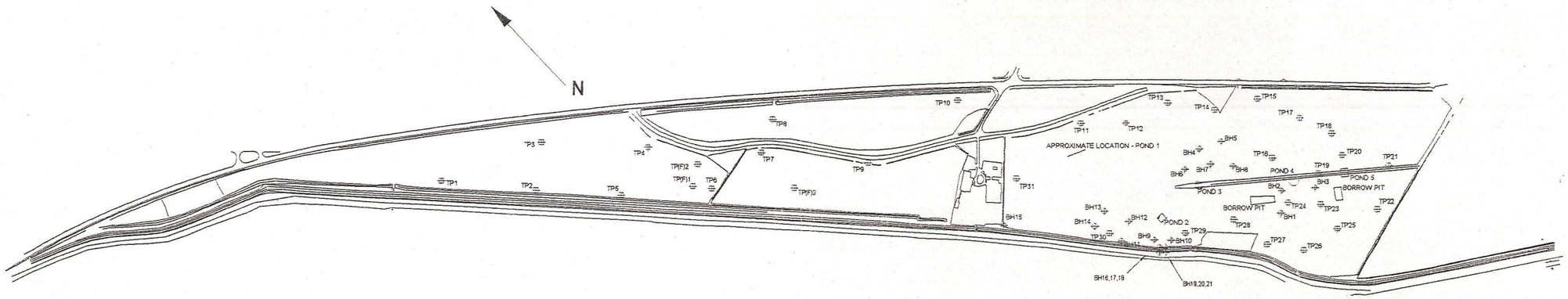


CLAU January 1999

Plan showing fieldwalking find locations

Scale 1:10 000

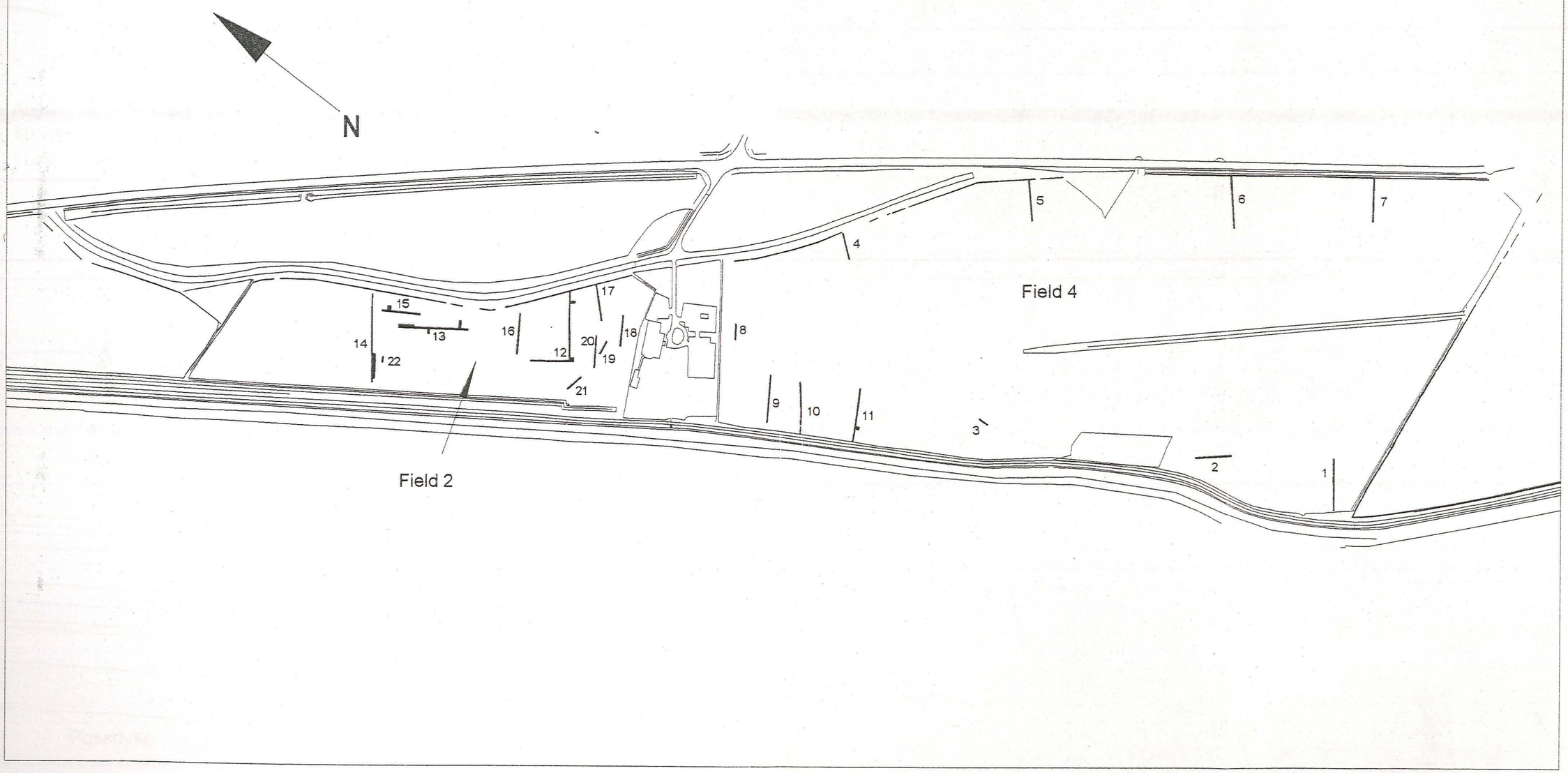
Fig.2



CLAU January 1999

Plan showing locations of geotechnical trial pits and boreholes together with test ponds Scale 1:10 000

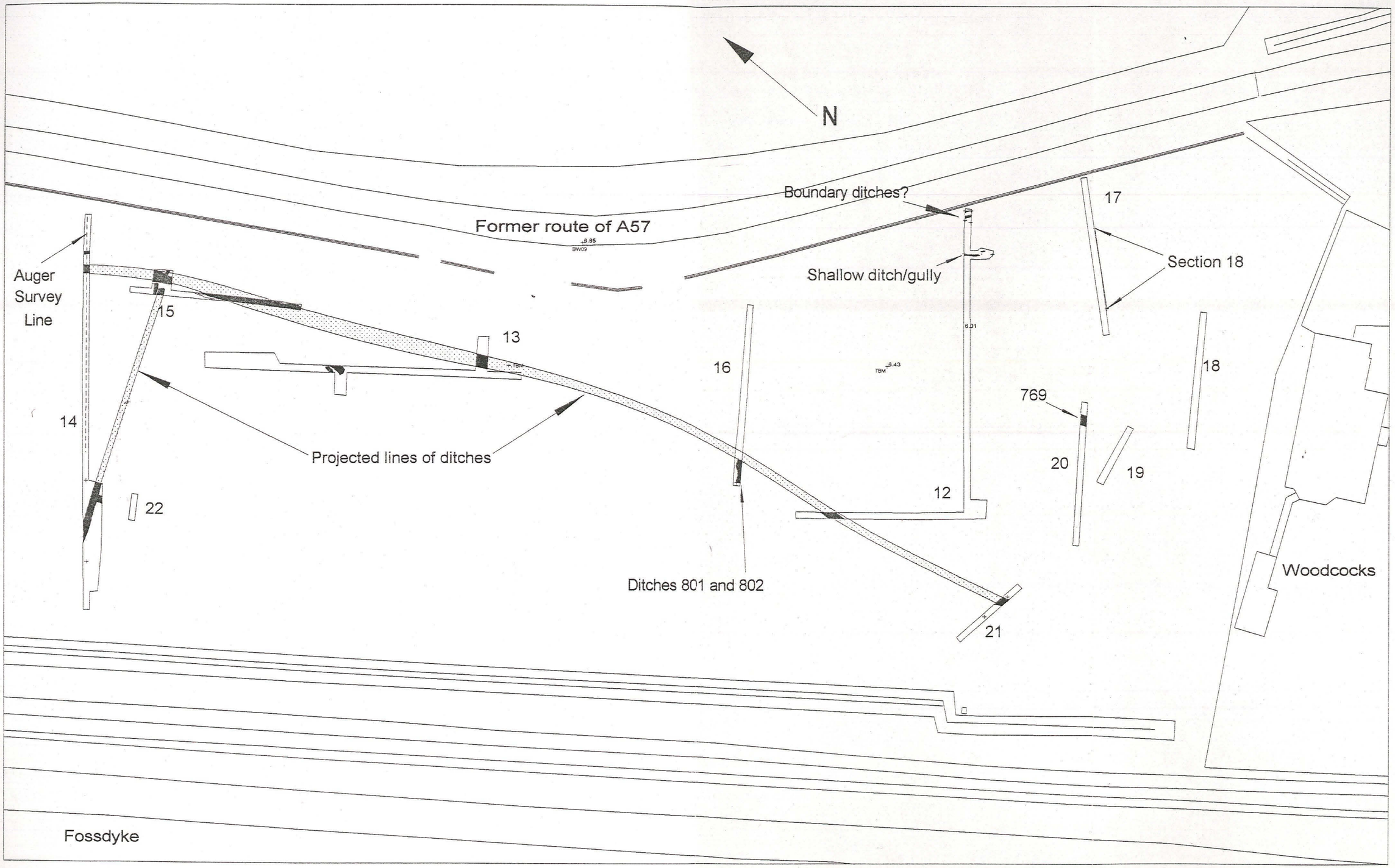
Fig.3



CLAU January 1999

Plan showing trench locations - Scale 1:5000

Fig.4



CLAU January 1999

Plan showing evaluation trenches and salient features in Field 2 – Scale 1:1000

Fig.5

N

8

Ditches 667 and 668

Topsoil sieving area

The Woodcocks

9

10

Ditch 706

11

Possible track 812/813

Ditch 606

3

Fossdyke

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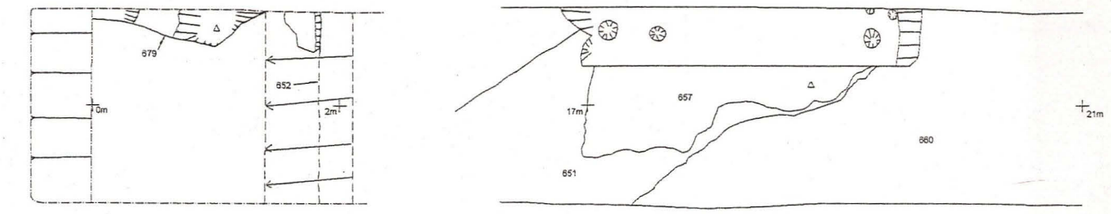
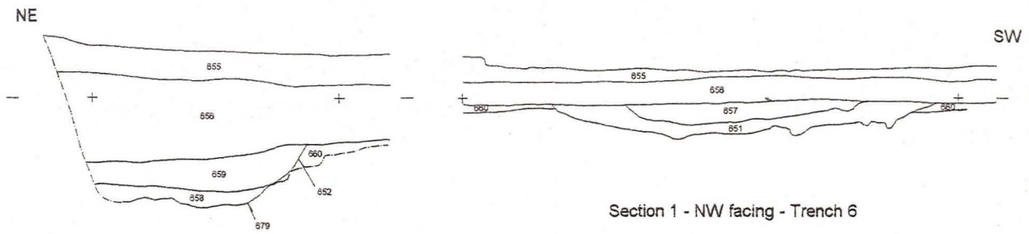
Plan showing salient archaeological features in Field 4 Scale 1:1000

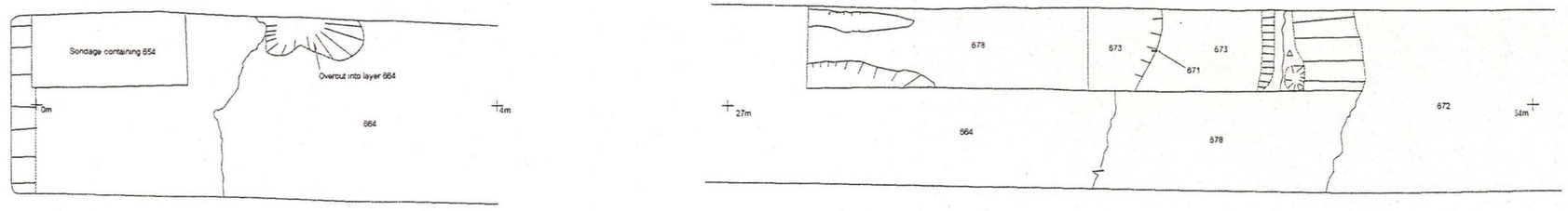
Fig.6



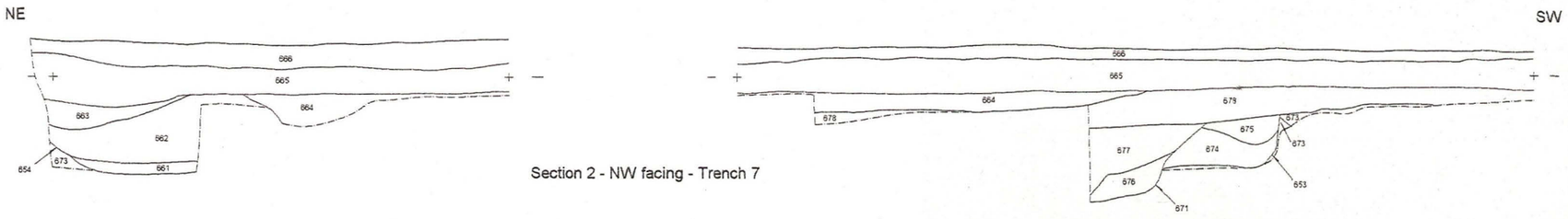
Plan 1 - Trench 6



Section 1 - NW facing - Trench 6



Plan 2 - Trench 7



Section 2 - NW facing - Trench 7

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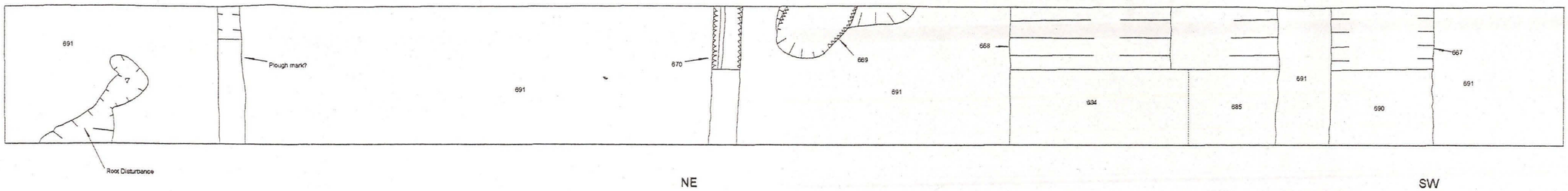
Plans and sections showing archaeological features in Trenches 6 and 7 Scale 1:50

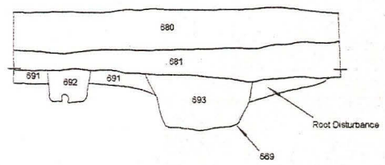
Fig.7

N



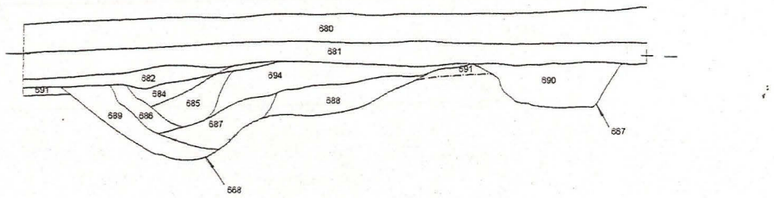
Plan 3 - Trench 8

NE



Section 4 - NW facing section - Trench 8

SW



Section 3 - NW facing - Trench 8

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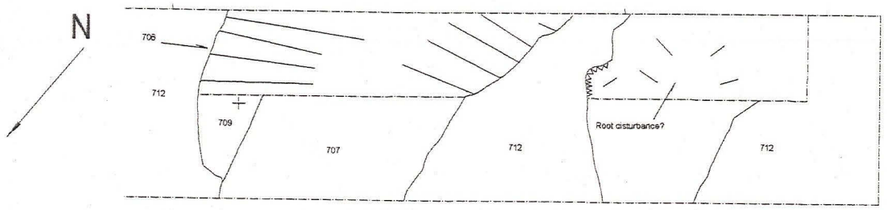
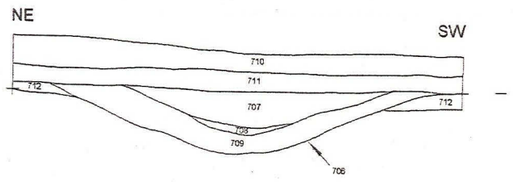
Plans and sections showing archaeological features in Trench 8 Scale 1:50

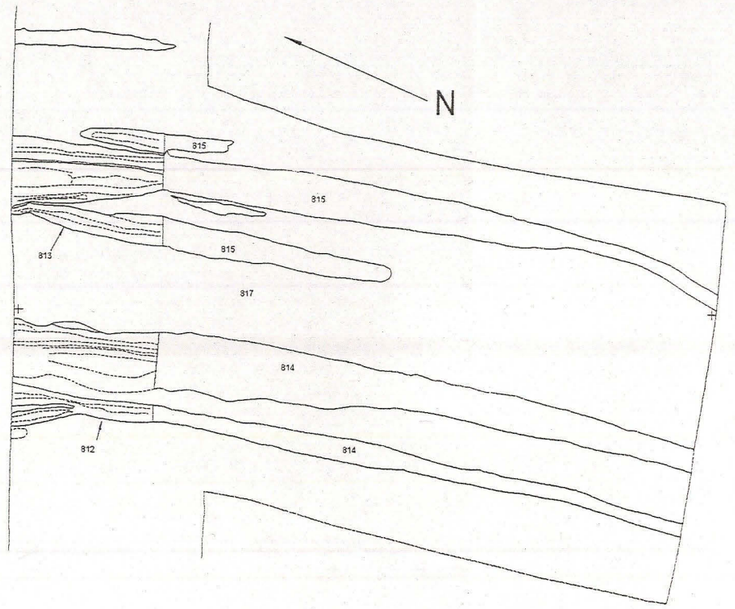
Fig.8



Plan 4 - Trench 9



Section 8 - NW facing - Trench 9



Plan 16 - Trench 11

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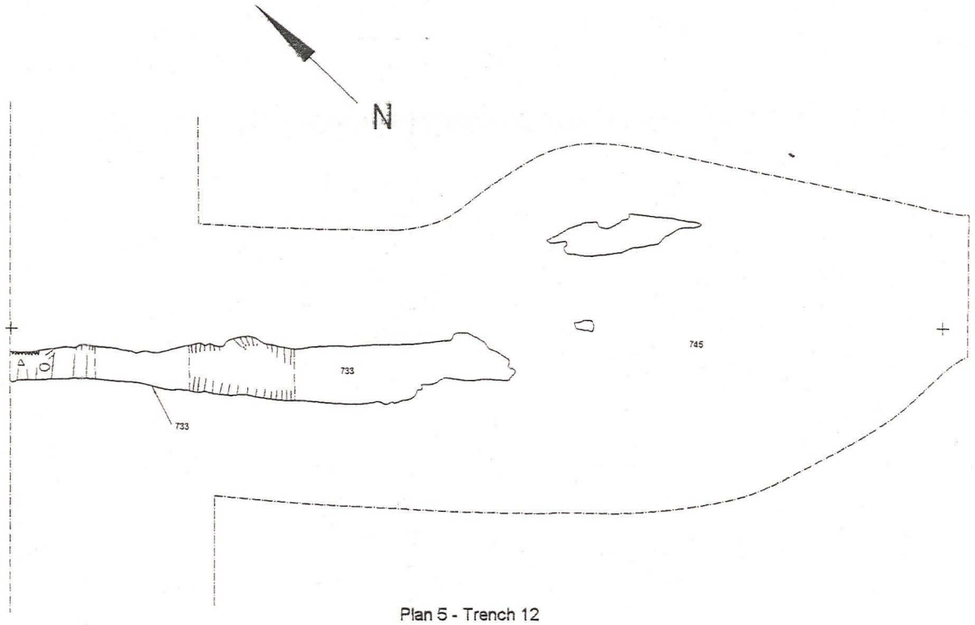
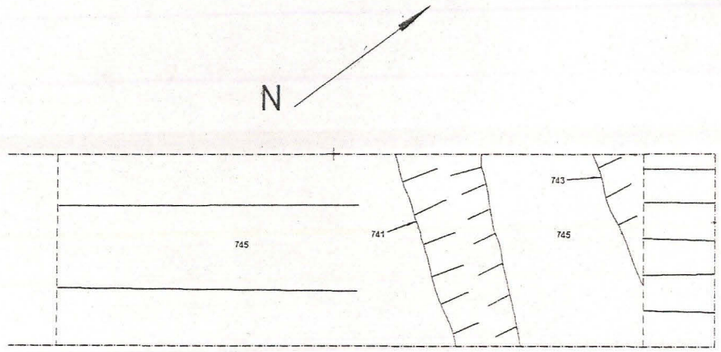
Plans and sections showing archaeological features in Trenches 9 and 11

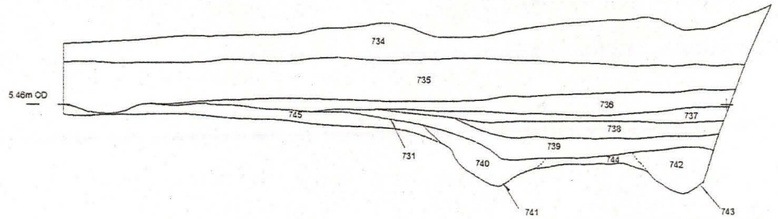
Fig.9



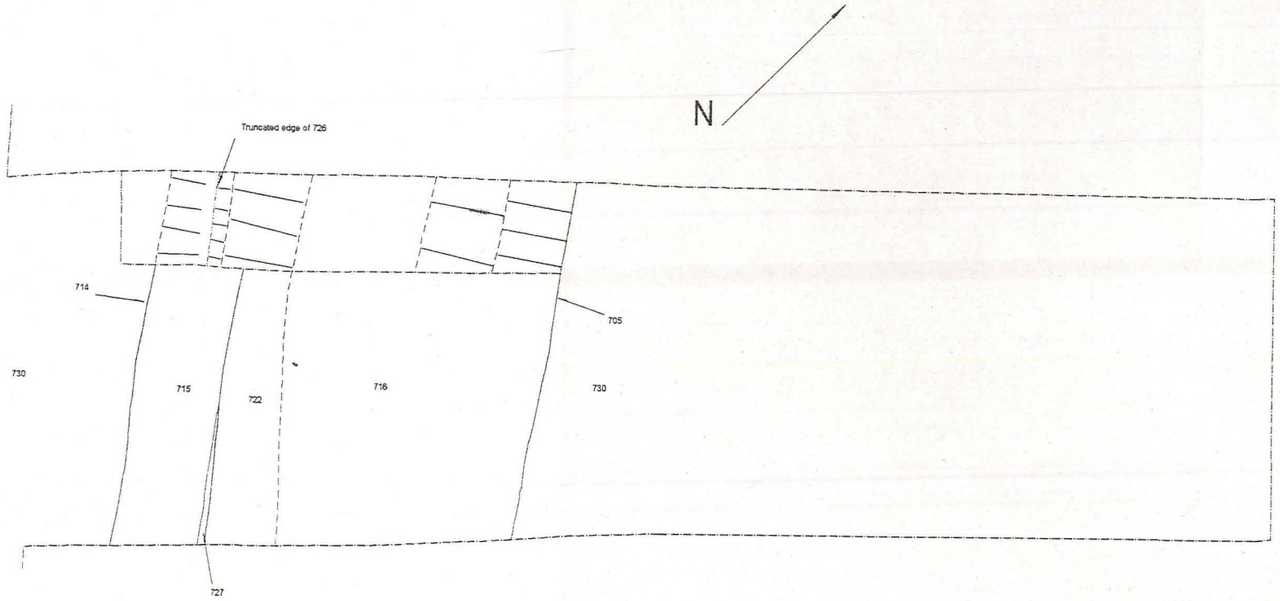
Plan 5 - Trench 12

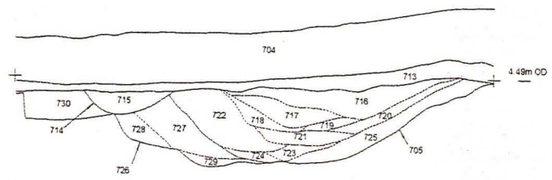


Plan 6 - Trench 12



Section 6 - SE facing - Trench 12





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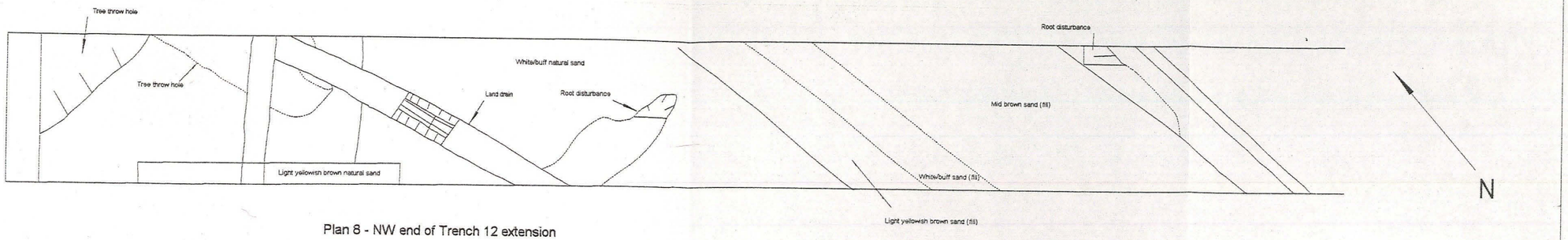
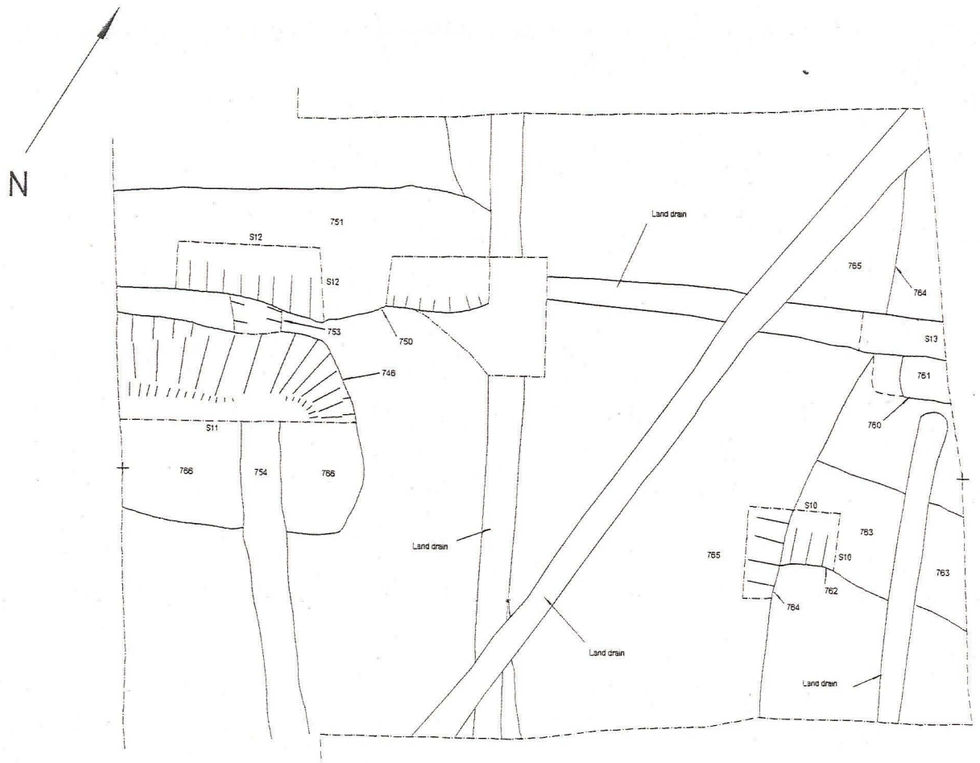
Plan and section showing archaeological features in Trench 11 Scale 1:50

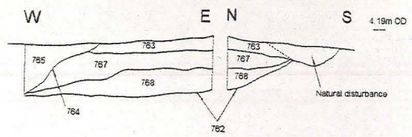
Fig.11



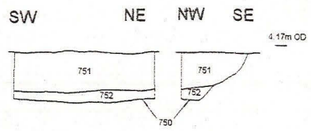
Plan 8 - NW end of Trench 12 extension



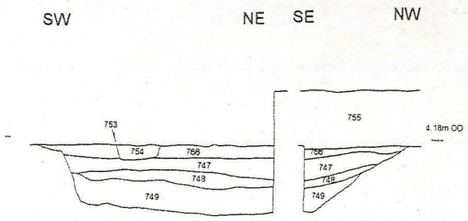
Plan 9 - Trench 15



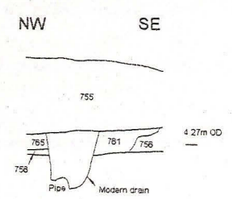
Section 10 - S and W facing - Trench 15



Section 12 - SE and SW facing - Trench 15



Section 11 - NW and NE facing - Trench 15



Section 13 - SW facing - Trench 15

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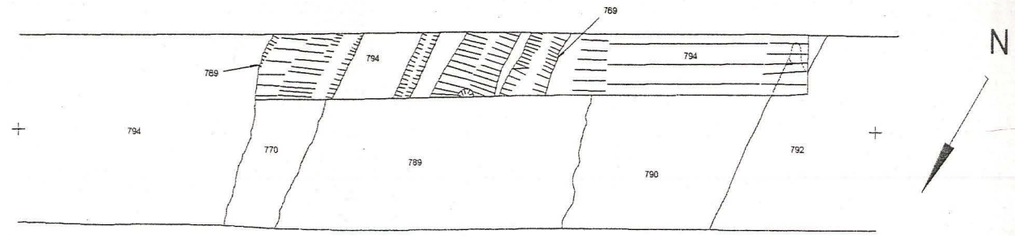
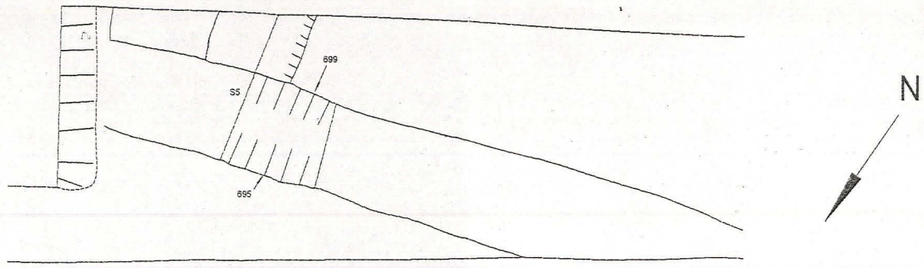
Plans and sections showing archaeological features in Trenches 12 and 15 Scale 1:50

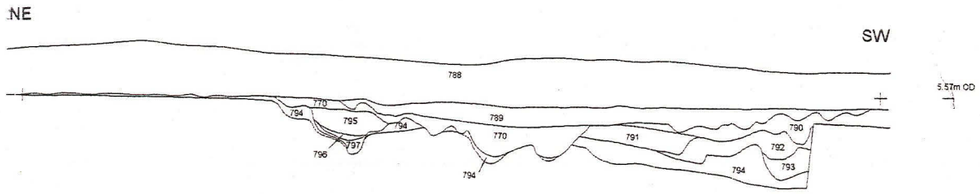
Fig.12



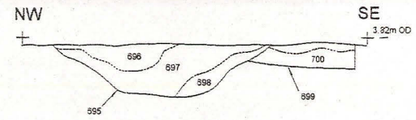
Plan 10 - Trench 20



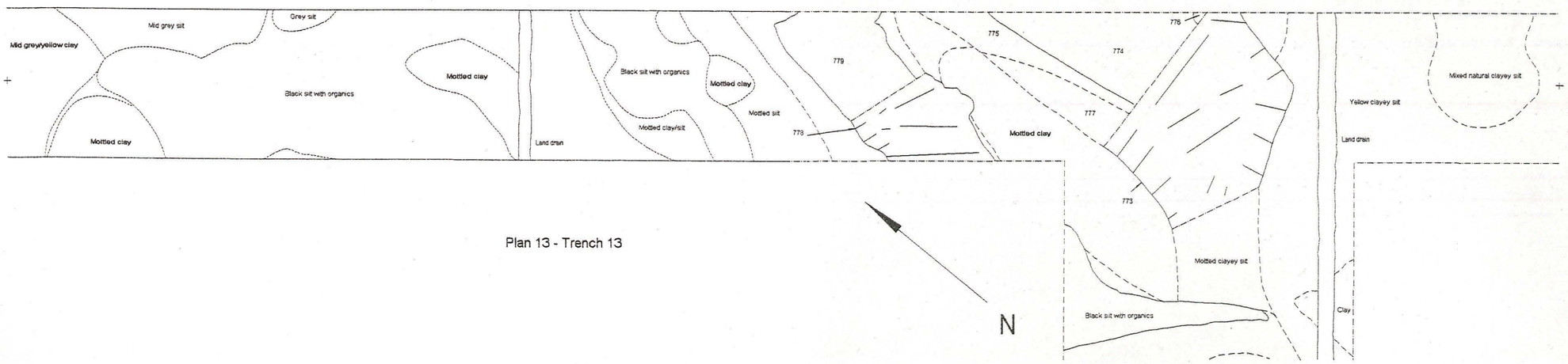
Plan 12 - SW end of Trench 14



Section 14 - N facing - Trench 20



Section 5 - SW facing Trench 14



Plan 13 - Trench 13

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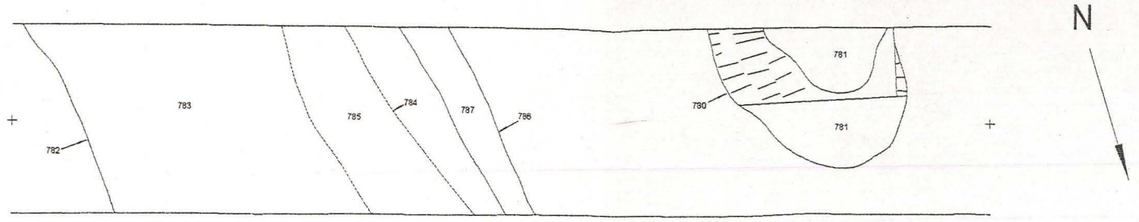
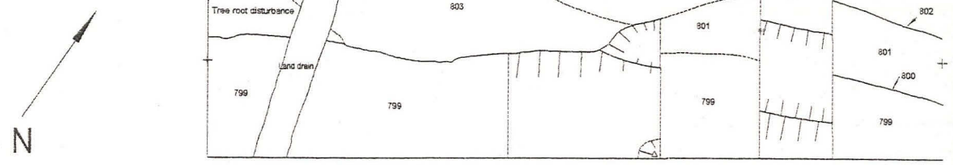
Plans and sections showing archaeological features in Trenches 13,14 and 20

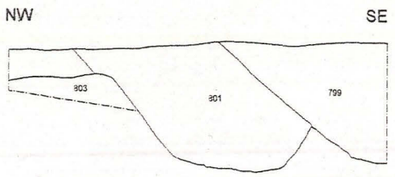
Fig.13



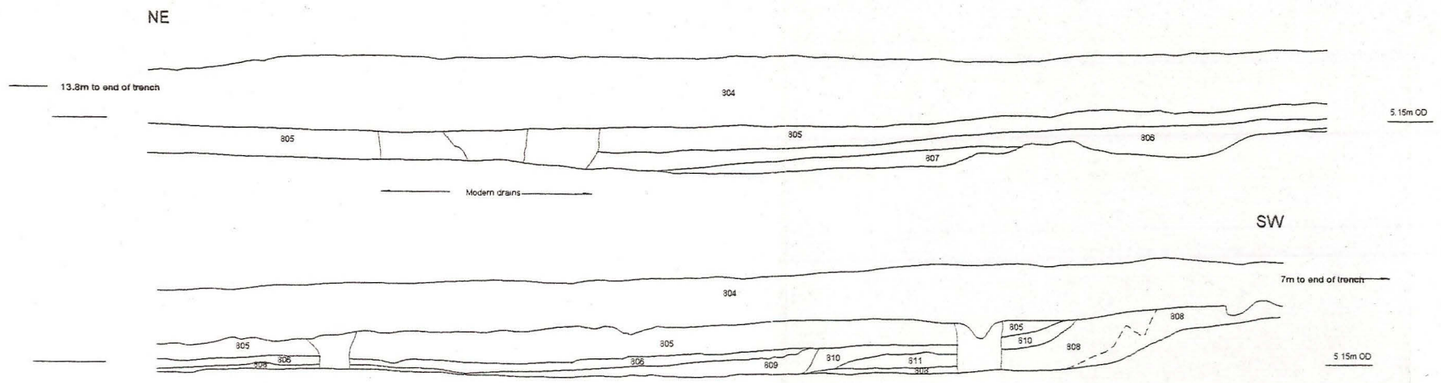
Plan 14 - Trench 21



Plan 15 - South end ofTrench 16



Section 19 - SW facing - Trench 16



Section 18 - NW facing - Trench 17

CLAU January 1999

Plans and sections showing archaeolological features in Trenches 16,17 and 21

Fig.14