

ELI 498

SLI 3440

94/8

34889

ARCHAEOLOGICAL DESK TOP ASSESSMENT AND PHASE I FIELD  
EVALUATION

GREAT PONTON QUARRY,  
LINCOLNSHIRE



PRE-CONSTRUCT ARCHAEOLOGY

Site Code: GP94  
CCM Accession Number 122.94



LI CO NADIRE  
CO. 28 SEP 1944  
CITY AND COUNTY,  
MUSEUM

## CONTENTS

1.0	Non-Technical Summary	1
2.0	Introduction	1
3.0	Location	3
4.0	The Proposed Scheme	3
5.0	Planning Background	3
6.0	Report Objectives	3
7.0	Methods	4
8.0	Geology and Topography	4
9.0	The Archaeological and Historical Background	4
	9.1 Introduction	4
	9.2 Pre-Roman	4
	9.3 Roman	5
	9.4 Medieval, post-medieval and modern	5
10.0	Non-Intrusive Field Investigations	6
	10.1 Aerial Survey	6
	10.2 Magnetometer Survey	7
11.0	Archaeological and Archaeo-Environmental Potential	7
12.0	Impacts to Buried Archaeological Resources	8
13.0	Mitigations	8
14.0	Conclusions and Recommendations	9
	14.1 Summary of Potential	9
	14.2 Further Work	9
15.0	Acknowledgements	10
16.0	References	11
17.0	Appendices	12

Appendix 1: information derived from the Sites & Monuments Record (SMR) held by the City & County Museum, Lincoln and records held at Heritage Lincolnshire

Appendix 2: Magnetometer Survey by the Landscape Research Centre Ltd.

Appendix 3: Historical Maps

Appendix 4: Aerial Photographs

# GREAT PONTON QUARRY

## AN ARCHAEOLOGICAL ASSESSMENT AND PHASE I EVALUATION REPORT

FOR

SMITH VINCENT & Co.  
(ON BEHALF OF STARMIN plc)

BY

COLIN PALMER-BROWN

PRE-CONSTRUCT ARCHAEOLOGY  
66 SCHOOL LANE  
SILK WILLOUGHBY  
SLEAFORD  
LINCOLNSHIRE  
NG32 8PH

PHONE & FAX 0529 302874

© Pre-Construct Archaeology  
September, 1994



## 1.0 NON TECHNICAL SUMMARY

Starmin plc. propose to extend Great Ponton limestone quarry. The existing site is nearing exhaustion as the deeper strata becomes difficult to extract and less viable economically. An application has been made, therefore, to establish a new quarry immediately east of the current workings.

The Planning Committee has approved the application, subject to a series of conditions, one of which requires a written scheme of archaeological investigation prior to development.

This desk top study, incorporating non-intrusive field investigation results, represents the first phase of archaeological enquiry and will form the basis for any future archaeological management at the site.

On the basis of the historical, cartographic and previously-identified archaeological record, the archaeological potential of the site is considered to be moderate. However, on the basis of recent non-intrusive archaeological investigations, the archaeological **potential** may now be considered higher, though it is unlikely that this potential will be fully determined without intrusive investigation (ie limited excavation to establish the nature, depth, date, extent and condition of buried resources).

Central National Grid Reference: SK 9375 3008

Planning Application No.: S38/595/91

## 2.0. INTRODUCTION

This desk top study, incorporating phase I field investigations, was commissioned by Smith Vincent & Co., on behalf of Starmin plc, in advance of a scheme of limestone extraction on land approximately 700m east of the village of Great Ponton. (Fig.1). The commission was requested by the Client as a means of fulfilling a planning requirement.

The report was researched and written between July 30th and September 24th, 1994. Research included a visual inspection of the site; inspection of the Sites and Monuments Records (SMR) held at the City & County Museum, Lincoln; records held by Heritage Lincolnshire; the Local Studies Library, Lincoln and the Lincolnshire Archives Office. Aerial photographic cover-searches were requested from Cambridge University Dept. of Aerial Photography and the National Monuments Record Aerial Photographic Library in Swindon. Relevant published and unpublished records held by Pre-Construct Archaeology were also consulted as part of the assessment.

On July 30th, aerial photographs were taken of the site with a view to identifying cropmarks and, between 5th and 12th September, The Landscape Research Centre Ltd. undertook a selective programme of magnetometry.



Fig. 1. Site Location + Entries From Sites & Monuments Record





### 3.0 LOCATION

Great Ponton lies approximately 5km south of Grantham, within the Jurassic uplands of North Kesteven, Lincolnshire. The quarry is less than 1km east of the village, set within a widespread arable landscape at a point approximately 110m above sea level. The west boundary of the existing quarry is The East Coast main railway line to Scotland. The east boundary is arbitrary, though it will be adjacent to Ermine Street when the extended area is included. To the north of the site lies Dallygate Lane, which connects Great Ponton with Ermine Street.

The area of proposed mineral extraction encompasses approximately thirteen hectares of land, comprising two fields, divided by an east-west hedge line.

The site was visited on August 1st. At that time, a maturing wheat crop extended over the entire proposal area. No clearly-defined topographical variation was noted, the fundamental feature being gentle undulation in most areas, becoming more pronounced in the south-west corner.

### 4.0 THE PROPOSED SCHEME

Resources within the existing quarry at Great Ponton, which measures approximately 4.5ha in extent, are becoming difficult to extract. Starmin plc. intend, therefore, to extend the area of extraction in an easterly direction as far as Ermine Street.

Before limestone extraction commences, the site will be stripped of its topsoil, possibly in phases. It is understood that the entire development will take place in phases over an unspecified number of years.

### 5.0. PLANNING BACKGROUND

An application to extract limestone was originally submitted in 1991 (S38/595/91). Planning permission was granted, subject to a number of conditions. Condition No. 4 reads:

"No development shall take place within the permitted area until the operator has secured the implementation of a programme of archaeological work for each phase of the development in accordance with a written scheme of investigation which has been submitted to and approved by the Director of Highways and Planning."

### 6.0 REPORT OBJECTIVES

This combined report will aim to identify and assess archaeological deposits which may be threatened by mineral extraction at the Great Ponton site. It will, in essence, gather sufficient information to provide interested parties with the data from which a reasoned judgement may be made regarding future archaeological resource management. Desk-top assessment is the first stage in the process of archaeological investigation and may be procedurally followed by further assessments, exploratory trial work or an observation and recording brief within defined development areas. In the case of this development, it was considered more cost-effective that assessment and preliminary field investigations (ie geophysical survey, aerial photography) be undertaken and presented as one.



## 7.0 METHODS

The assessment is based partly on data contained within the Sites and Monuments Record (SMR) held at the City & County Museum, Lincoln, and records held by Heritage Lincolnshire, Heckington. Other data derives from records held by the Lincolnshire Archives Office and the Lincoln Local Studies Library, Lincoln, as well as published and unpublished accounts held by Pre-Construct Archaeology.

Requests were made to the University of Cambridge Aerial Photographic Library and the National Monuments Record for vertical and oblique cover searches. Other sources relating to the geological, historical, and archaeological heritage of Great Ponton have also been consulted to supplement the above.

In addition to the normal range of data consulted, this report will draw from information gathered during recent aerial reconnaissance and geophysical survey (below).

## 8.0 GEOLOGY AND TOPOGRAPHY

The geology of the site comprises oolitic limestone and calcareous sandstone, intermittently overlain with boulder clay of Pleistocene origin. These deposits overlie the earlier lower and middle liassic clay formations. The soils matrix is composed principally of light clay with frequent small limestone fragments.

The land in the vicinity of Great Ponton is well drained, the principle water course being the River Witham to the west of the site.

## 9.0 THE ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

### 9.1 Introduction

There have been no archaeological excavations in Great Ponton, so the information used in this report is, by necessity, largely based on historical data, coupled with the limited entries recorded in the Sites & Monuments Record.

Cultural remains from almost every major period are represented within and around the parish, though site-specific resources are limited to a single flint blade which was found by the author on the south side of the proposal area.

### 9.2 Pre-Roman

There is a significantly dense distribution of prehistoric sites and artefacts around the Grantham area which form entries in the Sites & Monuments Record, though systematic field research (for all periods) has been extremely limited. A number of sites and finds lie close to the proposed development area.

Perhaps the most noteworthy discovery was that made in 1933 at the site of the Great Ponton Water Works, approximately 1.0km west of the quarry (SK 92452970). Here, during gravel digging, a complete Neolithic (New Stone Age) shelly ware pot was unearthed, bearing a resemblance to vessels recorded at a site in Abingdon (May, 1976). Also uncovered was a pit-like feature which measured approximately 2.1m in length and 60cm in depth. Around its periphery were traces of stake-holes and it contained fragments of human bone. It is possible that further settlement/ritual remains may lie in this part of Great Ponton. The pot, which was a Neolithic Type "A" vessel, is the only example of its kind found in south-west Lincolnshire.



A middle Bronze Age round barrow cemetery has been recorded at Stroxtun, straddling the boundary with the parish of Great Ponton (c. SK 897301). They were discovered in 1959 when one barrow was observed whilst being destroyed during ironstone working. A total of eleven monuments have been recorded, six of which are now scheduled ancient monuments.

Of the same cultural period as the above, possibly, are cropmarks which have been recorded in fields approximately 1.0km north-west of the proposed site at SK 926311 (RCHME ref. SF/1401/21). It is thought the cropmarks reflect the site of either a small enclosure or a barrow.

No site-specific prehistoric resources have been identified during the course of this assessment, except for a single flint flake which was picked up on the southern boundary of the proposal area (SK 93752987). It is possible, however, that some of the anomalies recorded in the recent geophysical survey are archaeological in origin and could, given the general proximity of known prehistoric sites, be early.

### 9.3 Roman

The site lies immediately west of the important Roman road, Ermine Street, probably one of the major lines of communication by which the Roman military advanced northwards through the county, though it should be noted that, in Lincolnshire, the route lies close to a less well-defined prehistoric predecessor, the Jurassic Way, which it met at the southern border of the county (Whitwell, 1992). Ermine Street connected the important settlements of Lincoln (*Lindum Colonia*), Navenby and Ancaster.

Although there is no record of settlement evidence on the present site, rural roadside development can occur almost anywhere on a major Roman route, encouraged sometimes by the trade possibilities created by the volume of north-south traffic.

Major Roman settlement remains have in fact been recorded adjacent to Ermine Street, approximately 3.0km south of the proposed development site (SK 93802680). H. Green, writing between 1900 and 1910 noted that "There is evidence that Great Ponton was a place of considerable importance in the Roman era. There have been found, here and at Little Ponton, numerous Roman coins, urns, bricks, tessellated pavements, arches, vaults etc." (Green, 1910). Although the latter writer seems to have been convinced that Great Ponton was "*Ad Pontem* of the Romans", most authorities would now place that site at Thorpe-by-Newark, Nottinghamshire (Todd, 1991), where a fort and a small town have been identified from aerial photographs. It is clear, however, that a settlement of some importance did exist at Great Ponton during the Roman period.

Closer to the present site, there is reference to a tessellated pavement, found c. 600m to the north-west on the north side of the school playing field. Unfortunately, no remains of this site can be seen today, though it is possible the mosaic pavement was part of a villa complex: a group of villas in the Grantham region was first recognised in the C19th: Gunby-and-Stainby, Newton-and-Haceby, Denton and Stoke Rochford (Whitwell, 1992).

No site-specific resources have been identified during the course of the present study though, again, some of the anomalies recorded during geophysical survey could date to within the Romano-British period (AD 43 - c. AD 410).

### 9.4 Medieval, post-medieval and modern

The earliest historical reference to Great Ponton occurs, not surprisingly, in the Domesday Book of 1086; a settlement is named *Magna Pamptune*: probably meaning 'farmstead by a hill' (Mills, 1993). At the time the survey was commissioned, The Conqueror himself held land in Great Ponton. Large areas were also owned by Drego de Beurere, a noble Fleming who had fought at Hastings and had in his ownership a mill and a wood, eight furlongs in length. The half-sister of William I, Countess Judith, also owned a considerable area of land: Nigel, who is described as one of the Countess's vassals (one who holds land from a superior), controlled five mills. It is stated



that Judith held two manors, the sites of which are not known.

The parish church, the Holy Cross, dates to the C13th, though its perpendicular (steep) tower has been cited as the work of Anthony Ellys, a C16th wool merchant of the staple of Calais who built the tower in 1519 as a thank-offering for preservation and material success (Mee, 1970) (as Ellys apparently never fathered a child, it is possible the gesture was born partly out of the fact that there was no heir to build on his riches (Green, 1910)).

Ellys built his manor close to the church (SK 92463042). This large, basically L-shaped, stone house has been much altered internally (Pevsner & Harris, 1990). In the C17th, it was almost destroyed and, in the C18th, was partitioned into tenements. From 1921 to 1984, it was rectory though is currently a private dwelling.

In 1980 a remarkable series of medieval wall paintings were uncovered beneath layers of whitewash when the property was being renovated (*The Times*, August 1980). Finance was provided by Lincolnshire County Council to help fund conservation and restoration, on the condition that the Church of England did not sell the building and that the paintings eventually be placed on public display.

During the Civil War (1642 - 46), there was considerable conflict in the Grantham region, though there is no evidence for direct confrontation at Great Ponton. Cromwell distinguished himself as a cavalry leader on Gonerby Moor, outside of Grantham, c. 9km south of Great Ponton. The Royalists captured Grantham in 1642, but it was reoccupied by Cromwell the next year (Mee, 1971).

In the 1850's, the village population dramatically increased, so much so that, for a time, there was a housing shortage. This temporary demographic change was influenced largely by railway construction and the inevitable need for labour (Beastall, 1978). The present day population of Great Ponton is no higher than three hundred, and has been decreasing steadily since the beginning of the present century, when many of the traditional industries declined. It was in the 1960's that large numbers of traditional stone houses were pulled-down to make way for private and council dwellings (Lincs. W.I., 1990)

## 10.0 NON-INTRUSIVE FIELD INVESTIGATIONS

### 10.1 Aerial Survey (Appendix 4)

As it did not prove possible (at short notice) to contract a company offering the geophysical technique, rapid magnetic susceptibility remote sensing (the preferred option), it was proposed in the project specification that an aerial survey of the site be undertaken, to be supplemented with selective magnetometry. The summer of 1994 was extremely dry, creating ideal circumstances for the physical expression of buried archaeological features as cropmarks. It was reported in the Times Newspaper, for example (August 1st), that hitherto unseen cropmarks were recorded by J. Pickering at the important Iron Age settlement, Old Sleaford.

Arrangements were made with Skytrain Training & Hire (Gamston Airport) to fly over and photograph the site in advance of crop removal. This company was selected as the pilot, P. Wilkes, is an accomplished commercial aerial photographer, offering a suitable aircraft (Cessna 175) with removable rear windows. All photographs were taken by C. Palmer-Brown.

The flight took place on July 30th. Within minutes of being airborne, distinct cropmarks were observed in several areas, some of which were photographed to demonstrate the potential and suitability of this technique.



The proposed mineral extraction site was inspected at an altitude of approximately 500 feet (the lowest level possible) and was photographed from all angles. The wheat crop which extended over the entire site was almost ripened though, in places, the crop was still green, reflecting sub-surface moisture variation. No distinct cropmarks were seen on any part of the site. However, in the field immediately north of the proposed extended quarry area, a number of green areas were present, though these do not necessarily reflect man-made features.

In the south-west corner of the proposal site, green areas were visible though, again, they were poorly-defined and could not be assigned an archaeological origin with any degree of certainty, given their proximity to an 'Old Stone Pit' which is visible on the Ordnance Survey Second Addition (1888). However, as better-defined anomalies were subsequently detected in this area during the more recent magnetometer survey (Appendix 2), it now seems at least possible that the variation is associated with human activity, though clearly this can only be verified by trial excavation.

## 10.2 Magnetometer Survey (Appendix 2)

The full results of the magnetometer survey, which was undertaken by The Landscape Research Centre Ltd. is presented in Appendix 2, though a summary may be presented as follows:-

Approximately 50% of the site was surveyed using a *Geoscan Research* fluxgate gradiometer. An emphasis was placed on the east side of the site due to the proximity of Ermine Street, though the overall objective was to select a representative section of the entire site. No significant remains appear (on the basis of this survey) to lie on the east side of the site, though evidence of medieval cultivation is expressed as ridge and furrow over a wide area.

On the west side of the site (transects three and four), a number of magnetic anomalies were recorded. Some of these may be entirely modern, others possibly the backfilled pits of earlier quarries. However, the only method of demonstrating the true archaeological status of these features would be a programme of limited, rapid excavation; it may also be prudent to examine a random sample within areas on the western half of the site which did not form part of the magnetometer survey area.

## 11.0 ARCHAEOLOGICAL AND ARCHAEO-ENVIRONMENTAL POTENTIAL

The combined desk top assessment, aerial survey and geophysical survey has established that the site of proposed mineral extraction lies **within** a complex historical environment which has produced evidence of past human settlement from the early prehistoric to modern periods. The combined evidence suggests that there may be site-specific resources within the proposed development site, though the data cannot be quantified and may be dependant on a programme of limited intrusive investigation (evaluation trenching).

If archaeological remains are present, it is unlikely that important environmental evidence would be well-represented, due to the nature of the parent geology. Features dug into well-draining limestone at c. 110m ODN are unlikely to contain waterlogged deposits capable of preserving macro and micro-fossils such as pollen and insect remains, though other faunal remains (eg snail shells, animal bone) may be present in some numbers. The nature of such preservation would be fully assessed if a further phase of evaluation were to be deemed appropriate by the planning authority.

It is more likely than not that archaeological remains, if present within the proposal area would be earlier, rather than later: in modern and medieval times, the principal use of the site seems to have been agriculture, though intermittent limestone or ironstone quarrying may have occurred at almost any time. The geophysical survey has demonstrated well-defined medieval cultivation scars, in the form of ridge and furrow on the eastern side of the site. Early maps of the area seem to confirm the basically agrarian tradition: Bryant's map of the County of Lincoln (c. 1834, Appendix 3) shows that there were no buildings occupying the site in the early C19th, a situation mirrored in the later C19th, where the Ordnance Survey 2nd Edition indicates a site with boundaries the same as those of



the present day: by 1888, the railway was firmly established and an 'Old Stone Pit' is indicated immediately south-west of the proposal area.

## 12.0 IMPACTS TO BURIED ARCHAEOLOGICAL RESOURCES

Impacts to buried archaeological deposits, if present, may already have taken place within this development site, principally from ploughing. Topsoils on the Lincolnshire uplands are usually thin and it is inevitable that some truncation of archaeological remains will have occurred. Impacts may also have taken place as a result of quarrying in the recent and remote past.

It is an inevitability that impacts to archaeological resources from the proposed scheme, if present, would be total: quarrying, by necessity, would remove all archaeological deposits.

## 13.0 MITIGATIONS

The procedures for dealing with archaeological remains, where threatened by development, are based on advice contained within the Department of the Environment's *Planning and Policy Guidance; Archaeology and Planning*. (PPG 16), November 1990.

English Heritage in a recent publication (Wainwright. et al. 1991) have summarised the key points of this document:

- i) "that archaeological remains should be seen as a finite, non-renewable resource, in many cases highly fragile and vulnerable to damage and destruction;
- ii) that development plans should reconcile the need for development with the interests of conservation including archaeology - and that detailed development plans should include policies for the protection, enhancement and preservation of sites of archaeological interest and their settings;
- iii) that where nationally important remains, whether scheduled or not, and their settings are affected by proposed development, there should be a presumption in favour of their preservation - and that in such cases preservation by record (excavation) should be regarded as the second best option after physical preservation *in situ*;
- iv) that the needs of archaeology can be reconciled, and potential conflict very much reduced, if developers discuss their preliminary plans for development with the planning authority at an early stage (the PPG gives detailed guidance on how this can be achieved);
- v) that decisions by planning authorities on whether to preserve archaeological remains *in situ* in the face of proposed development are to be taken on merit, taking account of development plan policies and all other material considerations - including the importance of the remains - and weighing these against the need for development;
- vi) that planning authorities, when they propose to allow development which is damaging to archaeological remains, must ensure that the developer has satisfactorily provided for excavation and recording, either through voluntary agreement with the archaeologists or, in the absence of agreement, by imposing an appropriate condition on the planning permission."

Where archaeological features, as identified by desk top assessment, are likely to be encountered, strategies should be developed to deal with them. These may include preservation *in situ*, by limiting the archaeological impact, redesigning plans or raising floor levels, or preservation by record. If the latter is the favoured or apposite course for sub-surface deposits, archaeological trial excavations to assess the nature, depth, level of survival etc. may be conducted. This would usually involve the cutting of archaeological trenches in one or more locations, usually not exceeding 10%



of the area to be developed.

The Department of the Environment's Planning Policy Guidance Note 16 states that, where preliminary research suggests survival of important archaeological remains, "it is reasonable for the planning authority to request the prospective developer to arrange for an archaeological field evaluation to be carried out before any decision on the planning application is taken. This sort of evaluation is quite distinct from full archaeological excavation. It is normally a rapid and inexpensive operation, involving ground survey and small scale trial trenching, but it should be carried out by a professionally qualified archaeological organisation or archaeologist. Evaluations of this kind help to define the character and extent of the archaeological remains that exist in the area of a proposed development, and thus indicate the weight which ought to be attached to their preservation. They also provide information useful for identifying potential options for minimising or avoiding damage. On this basis, an informed and reasonable planning decision can be taken."

It continues, "Local planning authorities can reasonably expect developers to provide this information as part of their application for sites where there is good reason to believe there are remains of archaeological importance. If developers are not prepared to do so, the planning authority may wish to consider whether it is appropriate to direct the applicant to supply further information under the provisions of Article 4 of the Town and Country Planning (Applications) Regulations 1988".

The results of trial work may lead to a redesign or realignment of the proposed scheme, further trial or survey work or open area archaeological excavations.

## **14.0 CONCLUSIONS AND RECOMMENDATIONS**

### **14.1 Summary of potential**

This report has identified that the site at Great Ponton is one of moderate archaeological potential, and that there now exists evidence (ie geophysical survey data) to suggest, as a possibility, the presence of archaeological deposits within the site of proposed mineral extraction. The actual status and extent of these remains cannot be determined on present evidence.

### **14.2 Further work.**

The situation regarding possible further stages of archaeological intervention must now await the results of consultations between Pre-Construct Archaeology, the County Archaeological Officer and the Client. This report, supplemented by the work of the Landscape Research Centre Ltd. (Appendix 2) has indicated that there are magnetic anomalies on the site, some of which **may** reflect archaeological features. However, in order that the nature of these anomalies be fully understood, it would be necessary to undertake a rapid programme of strategic trenching, possibly incorporating both areas where magnetic variability has been noted (transects three and four of the geophysical survey) and areas where the latter technique was not applied.

Only after a programme of limited intrusive excavation would it be possible, either to refrain from further intervention, or to develop strategies whereby the archaeological resource can be adequately recorded prior to its destruction. No such decisions can be taken until the nature of resources are fully understood by all interested parties.



## **15.0 ACKNOWLEDGEMENTS**

Pre-Construct Archaeology (PCA) would like to thank Smith Vincent & Co. for commissioning this report which was researched and written by Colin Palmer-Brown of PCA. Sincere thanks are expressed to Mike Jervis of Smith Vincent & Co. and to Laurie Croydon-Fowler of Starmin plc for assisting in every way during compilation. Thanks are due to Padraicin Ni Mhurchu of Cambridge University Dept. of Aerial Photography and also the RCHME Aerial photography Library. Thanks are also given to Ian George, Mark Bennett and Julia Wise, of the Lincolnshire County Council Archaeology Section for allowing access to the Sites & Monuments Record held at Lincoln.



## 16.0 References

- Beastall, TW 1978 *Agricultural Revolution in Lincolnshire: History of Lincolnshire Vol. VIII*
- Department of the Environment. 1990: *Planning Policy Guidance: Archaeology and Planning (PPG16)*
- Green, H 1910 *Lincolnshire Town and Village Life, Vol. 8, 172 - 173 (1900 - 1910)*
- Lincolnshire W. I. 1990 *The Lincolnshire Village Book*
- May, J 1976 *Prehistoric Lincolnshire*
- Mee, A 1971 *The Kings England: Lincolnshire*
- Mills, A D, 1993 *English Place-Names*
- Pevsner, N & Harris, J 1989 *The Buildings of England: Lincolnshire (2nd edition).*
- Todd, M 1991 *The Coritani*
- Wainwright, G. et al. 1991: *Exploring Our Past. Strategies For The Archaeology Of England.*
- Whitwell, J.B. 1992: *Roman Lincolnshire. (Revised Edition)*



## **17.0 APPENDICES**

### **APPENDIX 1**

**Information derived from the Sites and Monuments Record (SMR) held by the City and County Museum, Lincoln, and records held at Heritage Lincolnshire**

### **APPENDIX 2**

**Magnetometer Survey by the Landscape research Centre Ltd.**

### **APPENDIX 3**

**Historical maps**

### **APPENDIX 4**

**Aerial photographs**



## APPENDIX 1

**Information derived from the Sites & Monuments Record (SMR) held by the City & County Museum, Lincoln, and records held at Heritage Lincolnshire**

CCM ref.	HTL ref.	SGR	Description
33955	33955	c. 926303	Neolithic "A" bowl: chance discovery, 1933 during Water Works gravel digging. In pit measuring 7' long, 2' deep. Signs of stake holes around periphery (?hut). The bowl = the only example of its kind found in S/W Lincs. Parallels with bowls from Abingdon. Flint flake + hammer stone
		c. 9230	Perforated axe hammer (in Grantham museum)
		88733010	5 barrows, north-west of Heath Farm
33954	33954	92843058	Tessellated pavement (found 1826). OS records; site of villa. Nothing now visible
	33959	928308	Water mill, Mill Farm
33956	33956	925305	Holy Cross Church: C13th with C16th perpendicular tower
		926311	Cropmarks: ?enclosure/barrow. RCHME ref. SF/1401/21 (J. Pickering)
		93802680	Major settlement remains: Roman
33957		92463042	Manor house; semi-ecclesiastical in style; apparently C16th; now, it is the rectory

Extensive Middle Bronze Age barrow cemetery sited around Stoxton/Great Ponton boundary. Eleven recorded barrows, six of which are scheduled ancient monuments

### **Aerial photographs**

Very few held by CCM, Lincoln or HTL, Heckington: nothing in area of proposed development site

Oblique/vertical cover searches requested from Cambridge/NMR; to no effect.



## **Appendix 2**

**Landscape Research Centre Ltd**

**Magnetometer Survey**

**Great Ponton, Lincolnshire**

**5th-12th September, 1994**



**Summary :**

A magnetometer survey was carried out by the Landscape Research Centre Ltd. for Pre-Construct Archaeology, as part of an archaeological assessment of a proposed quarry extension by Star Quarries at Great Ponton, Lincolnshire. The proposed development area had a number of magnetic anomalies which are discussed in detail below.

**Enclosed :**

The report consists of this document, several plans and images, and one table, numbered below. All plans have north pointing to the top of the page.

Plan Three is a plan of the magnetometer data displayed as a greyscale image. The plan is at a scale of 1:1000. The grid is at 30 metre intervals. Due to the extent of the area surveyed, the image could not be clearly displayed on A4 sheets and is thus included as a separate sheet. The plan shows the extent of the survey area and is backed by card to give greater stability.

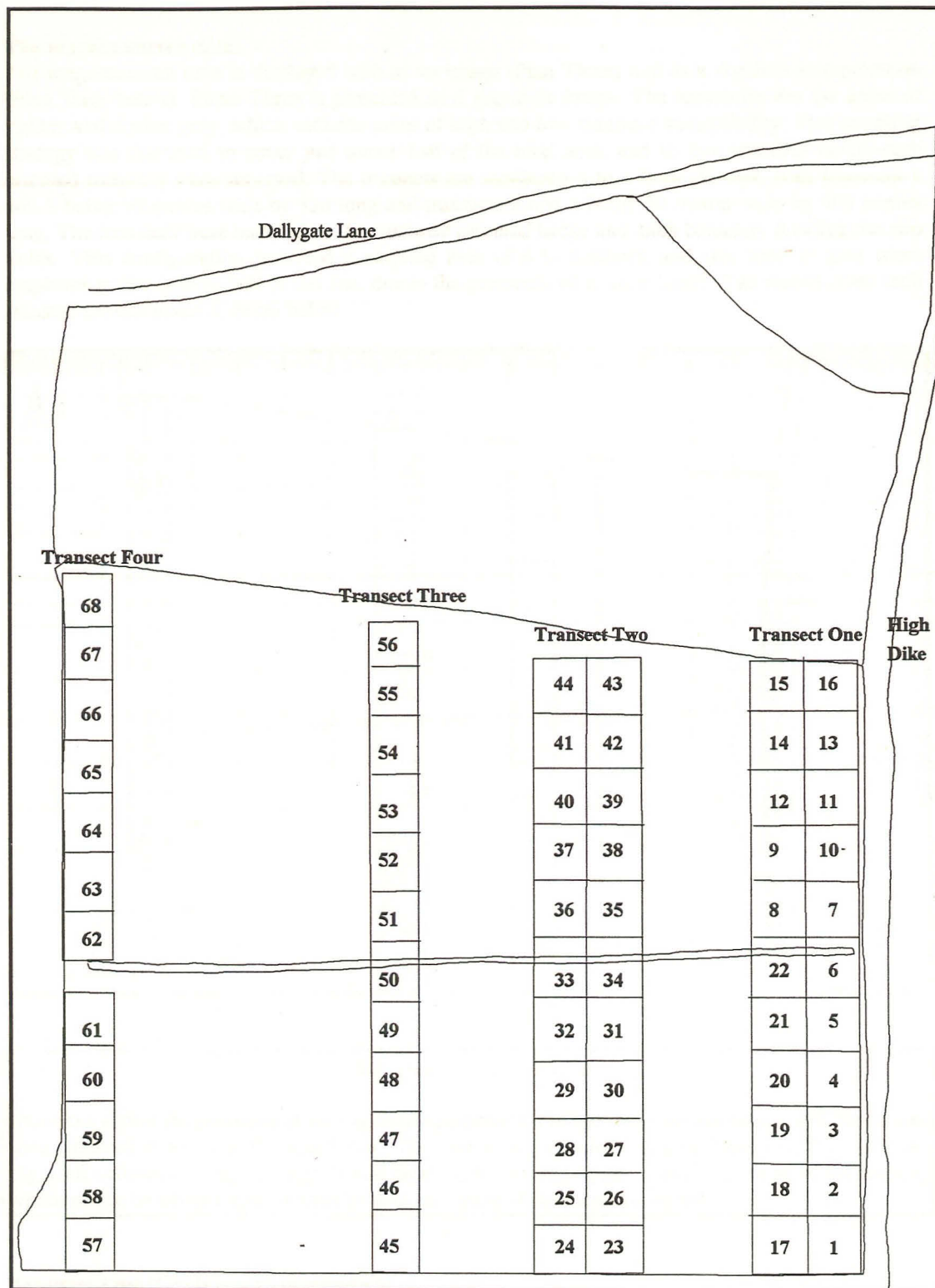
Appendix One consists of a table giving the raw data in NanoTesla and the statistics of each individual grid. Included are the minimum and maximum values, the range, the average value and standard deviation for each of the sixty-eight grids.

**Report :**

The subject of this report is the discussion of the results of a magnetometer survey carried out on behalf of Pre-Construct Archaeology for Star Quarries. The site in question is a proposed quarry extension to the east of Great Ponton, Lincolnshire. The magnetometer survey was conducted using a *Geoscan Research* fluxgate gradiometer (model FM36), hereafter referred to as a magnetometer. Four north/south transects were surveyed in order to provide an adequate sample of the area. Because the eastern extent of the site runs parallel to Ermine Street, it was felt that this part of the site would require particular attention, thus the transects were divided into two 1.98 hectare surveys to the east and two 1.08 hectare surveys to the west. The zigzag traverse method of survey was used. The survey was conducted by taking readings every 25cm along the north/south axis and every metre along the east/west axis (thus 3600 readings for every 30m grid). The data has been processed and presented using the programs GeoImage (a program dealing with the processing of geophysical data) and GSys (a program which can display, process and present digitised plans and images).

The survey was carried out between the 5th and the 12th September, 1994. The personnel involved were James Lyall and Heather Clemence. The proposed site was 13.5 hectares in area and consisted of two fields, divided by an east/west oriented ditch and hedge boundary. The two fields were covered in stubble ranging from 15 to 35 cm in height, and the underlying soil had a high clay content with flint inclusions. The base geology is sandstone. Four transects covering a total area of 6.12 hectares were surveyed.





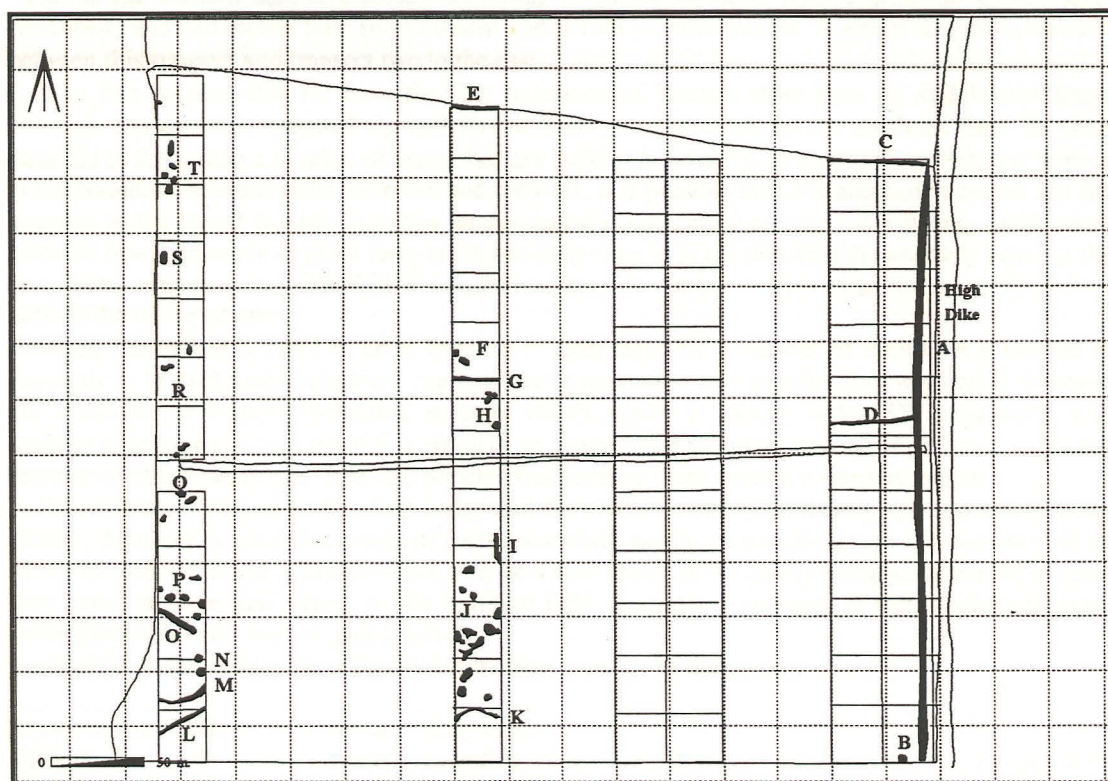
Plan One Scale 1:3300

This plan gives the position and numbers of the grid used in the magnetometer survey. The plan also shows the position of the two roads, Dallygate Lane and High Dike. Because the magnetometer image is presumed to be a flat surface, whereas the actual topography of the land has contour variation, it was necessary to stretch some parts of the image grid in order to provide a plan which has relevance to the ground topography.



### The magnetometer data:

The magnetometer data is displayed both as an image (Plan Three) and as a digitised interpretation (Plan Two, below). Plans Three is presented as a greyscale image. The anomalies are the areas of lighter and darker grey, which indicate areas of high and low magnetic susceptibility. The sampling strategy was intended to cover just under half of the total area, and to this end four north/south oriented transects were surveyed. The transects are numbered 1 to 4 from the east, with transects 1 and 2 being 60 metres wide by 330 long and transects 3 and 4 being 30 metres wide by 360 metres long. The transects were bisected by the east/west oriented hedge and ditch boundary dividing the two fields. This configuration provided a sampling area of 6.12 hectares, and was used to give more emphasis to the eastern half of the site, due to the proximity of Ermine Street. The results from each transect are discussed in detail below.



Plan Two Scale 1:4000

This plan shows the positions of the digitised interpretation of the magnetic anomalies with the letters used (lettered A to T) in the text below. The grid is at 30 metre intervals. Note that these are the digitised outlines of magnetic signals and need not necessarily equate with the true size of the feature, which might be either larger or smaller than the extent of the magnetic signal.

### Transect One (Grids one to twenty-two)

This is the easternmost transect, consisting of twenty-two 30 metre square grids, 60 metres wide (east/west) and 330 metres long (north/south) and is 1.98 hectares in area. This transect ran parallel to the existing road and along the line of Ermine Street.

The most obvious feature in this transect is the powerful signal oriented north/south (Anomaly A) which runs parallel with the existing road to the east. The signal is almost certainly caused by a cable laid by one of the utilities, although both the electricity board and British Telecom have no knowledge of any cables in this area. The strong signal visible in grid one (Anomaly B), is almost certainly caused by a lump of metal. The line of the field boundary in the north field is visible in grids twenty-one and twenty-two (Anomaly C). Probable rig and furrow lines are visible in the southern and northern halves of this transect. These plough lines were not digitised as they are clearly visible in the greyscale image (see Plan Three). In the south, the lines are east/west oriented, and in the north the lines are north/south oriented, although east/west lines are also visible (probably the remains of more



recent ploughing). No other anomalies are visible in this transect, although Anomaly D, situated just north of the existing field boundary, may be an older field boundary line or field drain.

#### **Transect Two (Grids twenty-three to forty-four)**

This is the eastern central transect, consisting of twenty-two 30 metre square grids, 60 metres wide (east\west) and 330 metres long (north\south) and is 1.98 hectares in area. A gap of 60 metres was left between this transect and transect one to the east.

The only anomalies visible in this transect are the continuation of the probable rig and furrow lines seen in transect one. Again they run east\west in the southern field and roughly north\south in the northern field, although in this transect they are turning slightly more to the east.

#### **Transect Three (Grids forty-five to fifty-six)**

This is the western central transect, consisting of twelve 30 metre square grids, 30 metres wide (east\west) and 360 metres long (north\south) and is 1.08 hectares in area. A gap of 60 metres was left between this transect and transect two to the east.

It is in this transect that we have the first indication of features other than rig and furrow lines, although the east\west oriented rig and furrow lines are still visible in the southern field. In grids forty-six to forty-nine a number of anomalies are visible. Anomaly K is a possible curvilinear feature at the boundary between grids forty-five and forty-six. It is possible that this anomaly is round, but the strength of the signal is weak and thus interpretation is difficult. Anomaly I is a strong north\south oriented linear anomaly in grids forty-eight and forty-nine. It is possible that the anomaly turns to the east before returning in a NNE\SSW orientation, but this cannot be proven as the anomaly is here outside the surveyed area.

Between Anomalies K and I in grids forty-six to forty-eight are a number of anomalies classified as Anomaly J. In grid forty-eight there are two strong anomalies and in grids forty-six and forty-seven are a number of weaker anomalies, some of which appear to form a NNE\SSW alignment. It is difficult to interpret the nature of this group of anomalies; they could be a group of pits or possibly the remains of older quarry pits. It is also possible that some of them are of a geological origin.

In the northern field, just north of the hedge and ditch field boundary, grids fifty-one and fifty-two are of note. Anomaly H is another group of weak anomalies, similar to Anomaly group J. Anomaly G is an east\west oriented linear anomaly which may be a field drain, as the quarry manager informed me that they know of three field drains in the northern field. Anomaly F consists of two medium strength anomalies in the mid-west of grid fifty-two.

Anomaly E in the north of grid 56 is the northern boundary of the field.

#### **Transect Four (Grids fifty-seven to sixty-eight)**

This is the westernmost transect, consisting of twelve 30 metre square grids, 30 metres wide (east\west) and 377 (a gap of 17 metres was left at the hedge boundary which bisects the two fields of the survey area) metres long (north\south) and is 1.08 hectares in area. The grid for the first three transects was based on the eastern edge of the survey area, and all measurements for these transects used the eastern field boundaries as a starting point. During the weekend of the 10th/11th September, the two fields of which the survey area consisted were almost completely ploughed and harrowed. Because all our grid pegs were thus removed, transect four was based on the western edge of the survey area, and runs parallel with the western edge of the field, which is delineated by the bank of spoil from quarry activities. The southern field was totally ploughed, but the northern field had a strip of unploughed land next to the quarry bank. The line in the image (particularly visible in grid sixty-four) on the eastern edge of the northern part of this transect is due to the fact that this part of the survey area was also ploughed.

Anomaly L is a NE\SE oriented linear anomaly, possibly a field drain, but this is not certain. Grids fifty-eight, fifty-nine and sixty contain an interesting anomaly (Anomalies O and M), apparently curvilinear. It is possible that this may be a geological feature, but it is of note that the topography in this area is a slight hollow with a steep rise to the north in grids fifty-nine and sixty. The area just to the east of these grids showed a high concentration of sandstone. Anomaly N appears to be a group of anomalies along the curvilinear line of Anomaly M/O.

Anomaly F is another group of relatively weak anomalies. It is possible that they are the result of quarry pits, but this interpretation cannot be verified by magnetometer data alone. It is particularly interesting to note that it is in this area that the highest concentration of high spots (shown as black and white on the image), occurs in this area, specifically in grids fifty-nine and sixty. These spots indicate scraps of metal. The rest of the surveyed area has a random distribution of high spots, and there may be significance in this higher distribution, although there is no way of telling the age of these metal fragments from geophysical data alone.



**Plan Three**  
**Greyscale Image of**  
**Magnetometer Data**

Scale = 1:1000

*Raw data?*



Ermine Street



Anomaly O is another group of anomalies, occurring in grids sixty-one and sixty-two.

Anomaly R (Grid sixty-three) may be caused by the presence of metal, and the groups of anomalies noted to the south and east are not present in this part of the survey area.

Anomaly S is a strong signal, and although this may be a pit, it is also possible that this anomaly is caused by the presence of metal, albeit somewhat deeper than the other fragments.

Anomaly T is another group of weak anomalies, apparently having a north/south alignment. Again it is possible that they may equate to a field drain, but this interpretation cannot be certain, as the anomaly is not seen as a singular unit in the image, but rather a sequence of medium and weak magnetic anomalies.

#### Conclusion :

The eastern part of the site is dominated by the presence of a mains cable, which runs parallel to the existing road. Remnant plough lines in two orientations are also visible. No other magnetic anomalies are visible in the two eastern transects. The western transects are dominated by small groups of localised anomalies. These anomalies occur predominantly in the southern field, although some are visible in the northern field. It is not possible to interpret these anomalies with any degree of certainty from the magnetometer data alone, although one possibility is that they may be earlier quarry pits. Most of the anomalies occur in the western part of the surveyed area, interestingly away from the line of Ermine Street.

The plans should allow any archaeological investigation (if such is deemed to be necessary) of the area to concentrate in the specific areas believed to be significant. The United Kingdom latitudes are such that there can be a distortion of up to half a metre in position between the magnetic anomalies shown and the position of the actual features themselves.

Report by James Lyall

Landscape Research Centre Ltd.

Table One

The table gives the statistics in Nemo 1000 for each of the 10 grids. Values shown are the minimum value, maximum value, range, average value and the standard deviation of each grid.



## APPENDIX ONE

GRID NO	MIN	MAX	RANGE	AVE	STD. DEV
1	-396	405	801	-3	56
2	-409	409	818	0	60
3	-405	403	808	-2	55
4	-392	404	796	-1	40
5	-397	380	777	1	41
6	-291	408	699	0	51
7	-401	396	797	3	51
8	-34	17	51	0	2
9	-31	58	89	-1	3
10	-401	394	795	0	45
11	-405	404	809	1	50
12	-14	15	29	0	2
13	-404	401	805	-1	49
14	-105	113	218	-2	5
15	-59	169	228	0	8
16	-394	399	793	2	51
17	-17	14	31	-2	2
18	-82	17	99	-1	2
19	-10	19	29	0	2
20	-9	23	32	-1	2
21	-105	24	129	-2	3
22	-24	42	64	0	3
23	-38	66	104	1	2
24	-19	55	74	-1	3
25	-22	27	49	0	3
26	-25	89	114	-3	4
27	-8	18	26	2	2
28	-25	37	62	2	2
29	-7	79	86	0	3
30	-21	36	57	-2	2
31	-16	16	32	1	2
32	-70	368	438	0	8
33	-15	25	40	-1	2
34	-7	13	20	0	2
35	-20	20	40	0	2
36	-65	45	110	1	3
37	-11	38	49	1	2
38	-11	18	29	1	2
39	-5	14	19	1	1
40	-3	13	16	2	2
41	-12	29	41	-2	2
42	-6	45	51	1	2
43	-10	17	27	-2	2
44	-18	36	54	-2	2
45	-13	24	37	-4	2
46	-11	15	26	-1	2
47	-12	194	206	-2	5

GRID NO	MIN	MAX	RANGE	AVE	STD. DE
48	-61	194	255	-2	7
49	-47	34	81	-2	3
50	-22	27	49	-3	3
51	-20	71	91	-2	3
52	-10	67	77	0	2
53	-8	21	29	2	1
54	-32	18	50	-2	2
55	-11	9	20	0	1
56	-24	42	66	-3	3
57	-364	30	394	-4	16
58	-19	32	51	-4	3
59	-84	291	375	2	10
60	-94	67	161	-1	5
61	-48	48	96	-2	3
62	-32	106	138	0	4
63	-36	123	159	2	5
64	-51	50	101	4	4
65	-34	117	151	1	4
66	-35	51	86	3	3
67	-16	76	92	2	3
68	-40	124	164	1	4

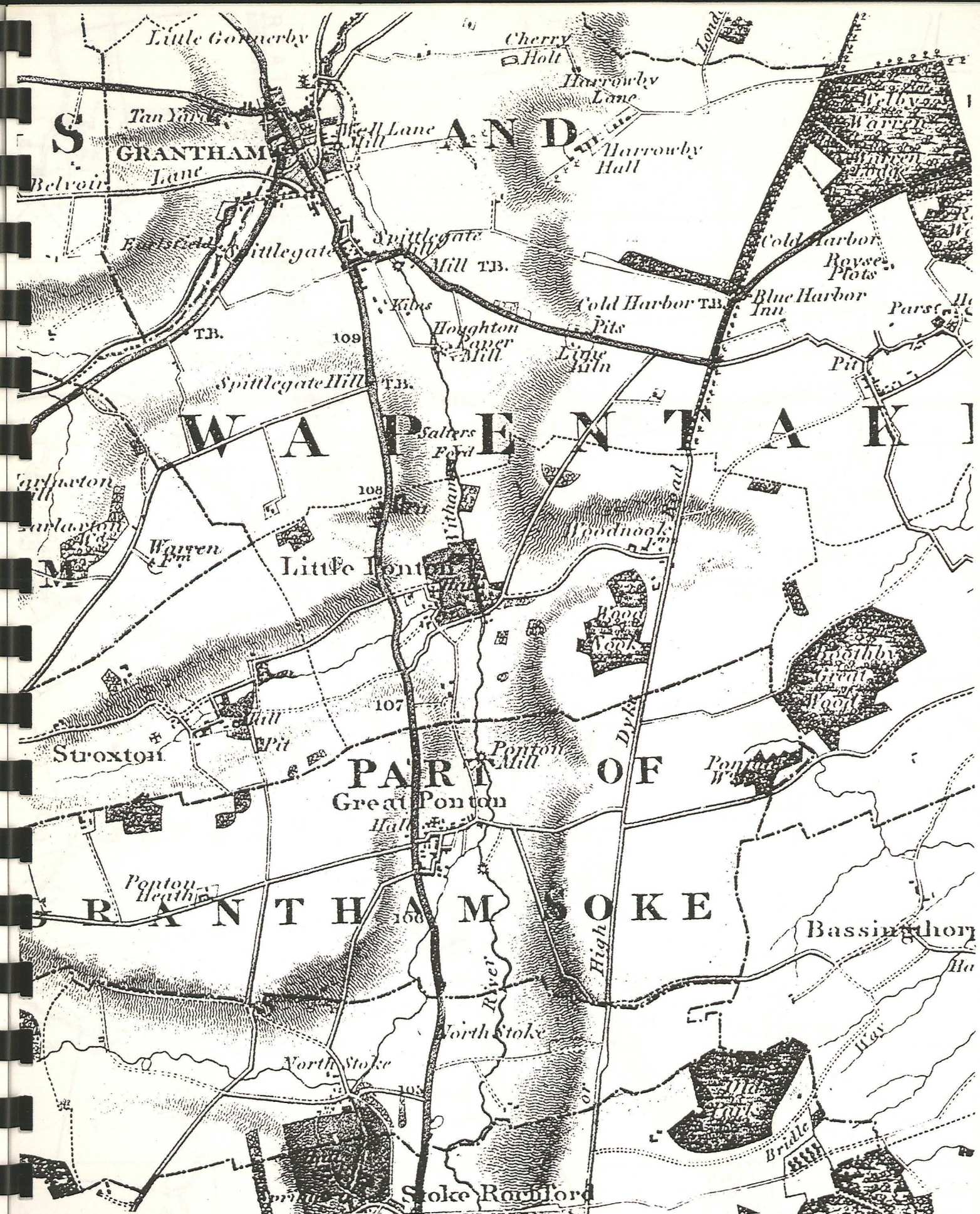
Table One

The table gives the statistics in NanoTesla for each of the 68 grids. Values shown are the minimum value, maximum value, range, average value and the standard deviation of each grid.



**Appendix 3: Historical Maps**





Extract from Bryant's map of the County of Lincolnshire (c. 1834)









## Appendix 4 Aerial Photographs

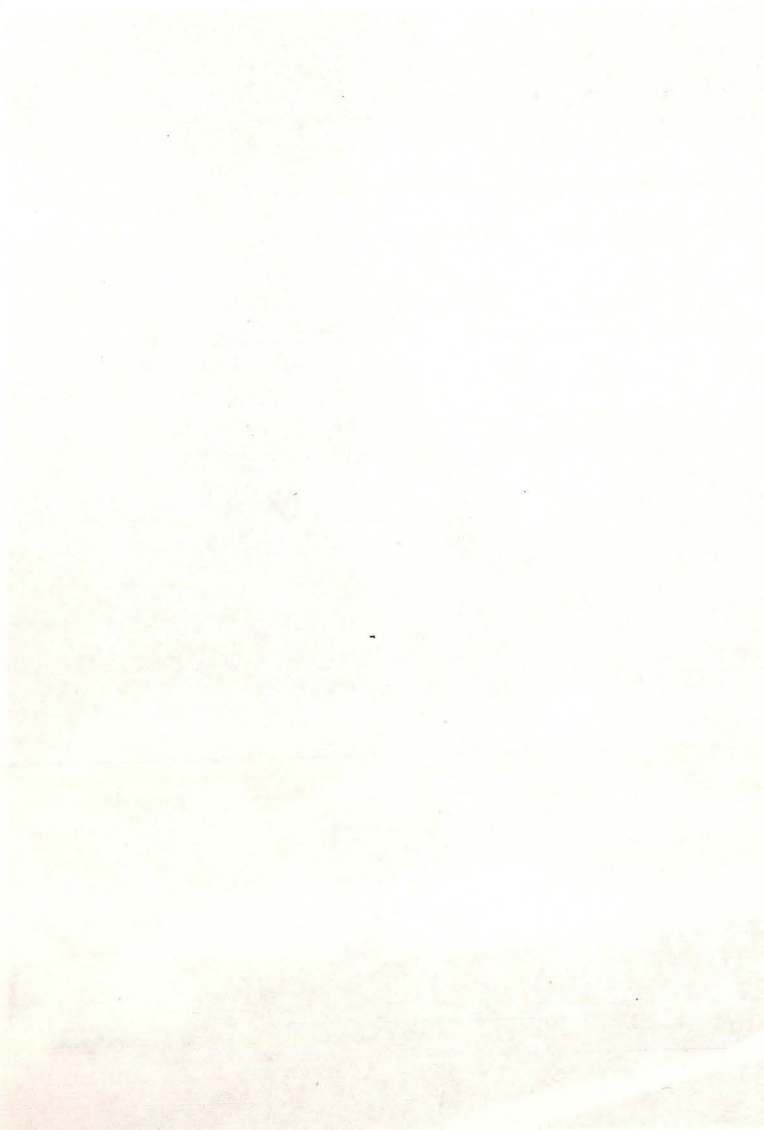
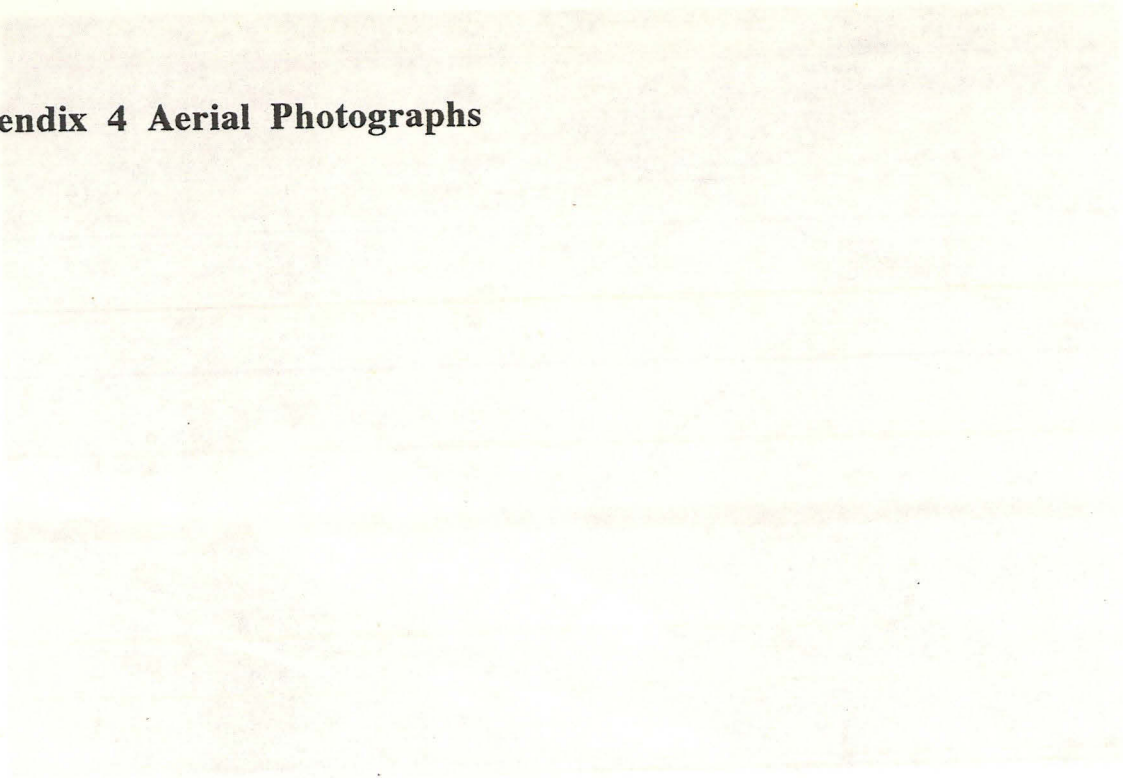


Figure 4. Aerial photograph of the proposed  
development area, looking  
west.



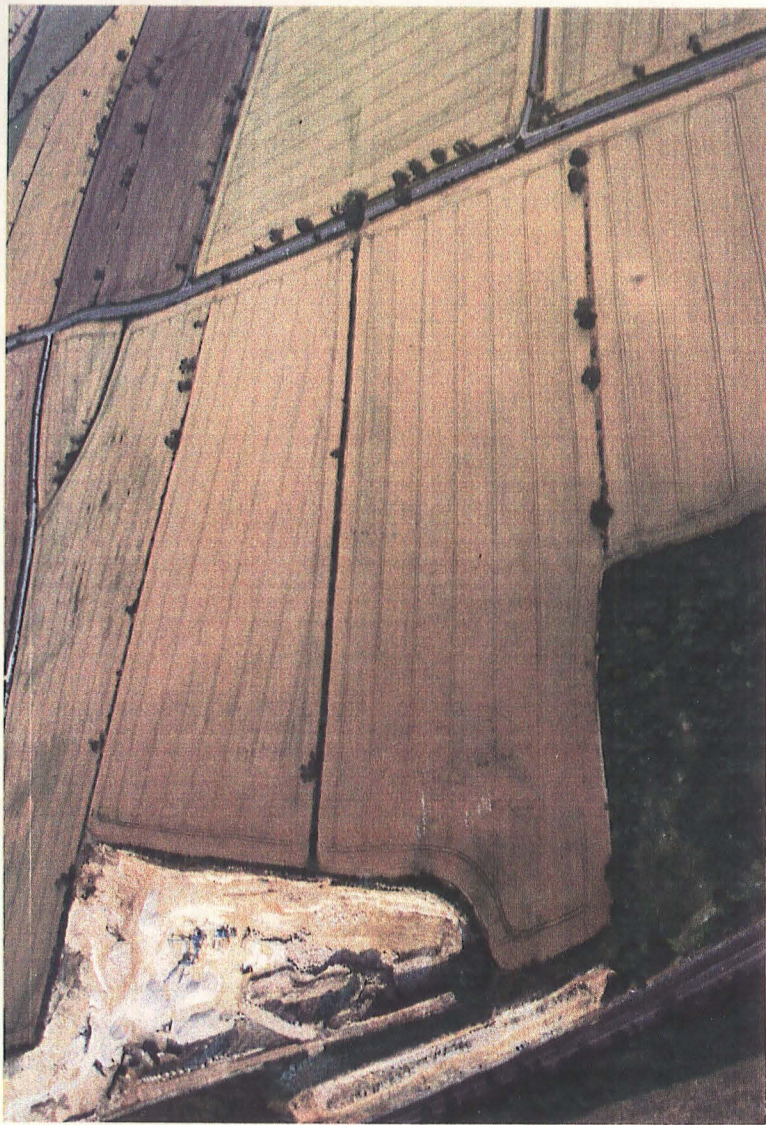


Photo. 1 The Great Ponton site, looking north-east



Photo. 2 The north field of the proposed quarry extension, looking east





**Photo. 3** The Great Ponton site, looking north-east  
(note green areas in foreground)



**Photo. 4** Cropmarks seen in Foston parish, centred on  
national grid reference SK 871445