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**ARCHAEOLOGICAL
DESK-BASED ASSESSMENT,
LAND AT WILLOWS A NEAR REIGHTON,
NORTH YORKSHIRE**

NGR: TA 1200 7486



Report prepared for
Roc Oil (GB) Ltd.
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Feb 2005

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Summary

- An archaeological desk based assessment and geophysical survey has been prepared for Roc Oil (UK) Ltd. to assess the archaeological potential of a proposed well site on land in the parish of Reighton in North Yorkshire. It has been prepared to inform any future planning application to North Yorkshire County Council, and it will inform a decision making process that will seek to address the needs of the developer, whilst ensuring that archaeological resources are not needlessly destroyed as a result of developing the site.
- The site lies within a landscape rich in archaeological remains. The area is noted for a series of extensive dykes of prehistoric and later date, and for a number of prehistoric funerary monuments, specifically Bronze Age round barrows and Iron Age square barrows. Prehistoric settlement remains are also recorded in the vicinity.
- The archaeological potential for the site is considered to be **high**, based on the results of the desk based assessment geophysical surveys. The desk based assessment indicates that the site lies to the east of a potentially complex sub-square enclosure, probably a settlement of prehistoric date. An examination of aerial photographs, in conjunction with geophysical survey results, demonstrates that elements of this enclosure complex extend into the site. A long linear feature interpreted as a possible prehistoric land division (known from aerial photographs but not picked up by geophysical survey) traverses the site; at its south-west end is a circular cropmark; interpreted as a Bronze Age round barrow, but again not recorded by geophysical survey.
- The Fluxgate gradiometer survey has identified a series of rectilinear enclosures and associated linear features, possibly elements of an Iron Age or Romano-British field system.



Fig. 1: Site location. 1:25,000
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1.0 Introduction

This desk-based study and geophysical survey was commissioned by Roc Oil (UK) Ltd. Its purpose is to assess the overall archaeological potential of a prospective development site, without the use of intrusive fieldwork, and to assess the potential impacts that may be posed by development of a unit of land in the parish of Reighton, North Yorkshire. The report will inform the client of any archaeological constraints which may be of relevance to any future application.

This report draws on the resources of the North Yorkshire Sites and Monuments Record and was conducted in accordance with national guidelines produced by the Institute of Field Archaeologists (IFA, 1999).

Pre-Construct Geophysics was sub-contracted by Pre-Construct Archaeology (Lincoln) to undertake a fluxgate gradiometer survey along the southern edge of the field. The survey methodology used was based upon guidelines set out in the English Heritage document '*Geophysical Survey in Archaeological Field Evaluation*' (David, 1995).

The report was researched and prepared by Alex Brett of Pre-Construct Archaeology (Lincoln) (hereafter PCA) in January 2005.

2.0 Location and description

Reighton lies less than 2km from the east coast, south east of the North York Moors, in the administrative district of North Yorkshire (fig. 1). The village lies approximately 6km south-south-east of Filey and c.9.5km north-west of Bridlington. The land that is the subject of this report comprises a rhomboidal area, approximately 1 hectare in size, named 'Willows Site A2' (fig. 2). It lies some 1 km south-west of Reighton and approximately 2km north-east of the former settlement of Bartindale. It is located towards the south-west corner of an arable field, bordered to the south and west by bank and hedge field boundaries, with further arable fields beyond. The ground slopes away beyond these two boundaries, the western of which comprises the parish boundary. The National Grid Reference for the site centre is TA 1200 7486.

2.1 Geology and topography

The local geology is described as Quaternary Till over Flamborough Chalk Formation, however previous investigations in the area suggest that there is no overlying drift material in the vicinity (Allen *et al*, 2003). The field, within which the proposed site lies, drops down gradually from north east to south west; the site is at approximately 110m OD.

3.0 Planning background

The site is currently being considered for future development by Roc Oil (UK) Ltd. Prior to submitting a formal planning application, and acting on the advice of North Yorkshire County Council, Roc Oil (UK) Ltd has requested the undertaking of an archaeological assessment of the area, comprising an archaeological desk based study and a detailed gradiometer survey. This assessment will provide information regarding the archaeological potential of the site, without the use of intrusive techniques. This approach is consistent with the advice set out in *Archaeology and Planning: Planning Policy Guidance Note 16, 1990*.

4.0 Objectives and methods

The purpose of this report is to identify and assess archaeological remains that may be sensitive to construction works associated with the proposed development and, if necessary, to suggest further methods by which the site may be evaluated in advance of development.

The report will include the results of a desk-based assessment (see section 5.0, below) and a geophysical survey (section 6.0).

5.0 DESK-BASED ASSESSMENT

5.1 Desk-based methodology

Data for this report was, for the most part, obtained for a 1km radius, centred on the application area. This was drawn from the following sources:

- Records held by the County Sites and Monuments Record for North Yorkshire (NYSMR)
- Information supplied by the client
- Published and unpublished sources
- Aerial photographs held by the National Monuments Record, Swindon.
- A detailed inspection of the site (undertaken by Peter Masters on 11th January 2005)

5.2 Archaeological and historical background

Cropmark evidence shows the site lies within an archaeological landscape dating from the prehistoric onwards (fig. 2). No chance finds of prehistoric, or later, artefacts have been made within the study area.

Evidence for Bronze Age activity in the area is dominated by two distinctive monuments: funerary round barrows and substantial dykes that run across the landscape.

Round barrows date from the Middle Neolithic to the end of the Early Bronze Age (c.3500 BC – 1500BC) and are generally concentrated in cemeteries. A number of examples are known within the area of study: Site Nos. 6, 8, 12, 18, 21, 22, 24, 29 and 30. One of these, Site 21, is located almost central to the proposed development area.

Elaborate and extensive systems of linear earthworks are recorded as crop or soil marks within the study area (and across North and East Yorkshire), known as 'Dykes' (Sites 1, 3, 9, 17, 23, 28, 32, 33, 35 and 37). Few intrusive investigations of these monuments have been undertaken, although it is believed they originate in the later Bronze Age, dividing the land into distinct territories. This system is believed to have continued in use throughout the Iron Age. One of these linear boundaries appears to run across the site from the north east.

Settlement sites of early Bronze Age date are rare, and it is generally believed a predominantly mobile human existence continued into the middle Bronze Age (Woodward 2000). For the study area, a flint scatter (Site 10) and possibly associated curvilinear cropmarks may represent a focus of activity and possible settlement site. Five cropmark settlement sites (Nos. 4, 5, 14, 19 and 20) have been identified as being undated or of prehistoric date so it is possible that some or all of them reflect further Bronze Age settlement evidence.

The greatest numbers of monuments of a single type within the study area are distinctive square barrows, exclusively dating within the Iron Age (generally c.400 BC – after 100 BC). Over three hundred are known (from cropmark evidence), all to the south, south-west, west and north-west of the site that is the subject of this study. This 'Arras culture' tradition was concentrated mainly on the Yorkshire Wolds, although examples are known throughout England (Woodward 2000). These cemeteries are defined as inhumations placed under small square barrows, often with associated grave goods, such as brooches, beads, other ornaments and pottery. More rare examples contain the remains of two-wheeled carts. The SMR records both square enclosures and burial pit cropmarks as being of this distinctive funerary practice. Fifteen of these monuments are within the study area (Sites 25, 26, 27, 31 and 36), all of them to the south of the site

Many of the burial mounds listed in the SMR are recorded as having burial pits, however it is possible that rather than being original features these are evidence of relatively recent antiquarian activity.

Five sites dating from the medieval or post-medieval periods are known from the study area; Sites 13 and 16 are elements of the shrunken village of Reighton, comprising former crofts, tofts, small fields and roads. To the north of the village are a number of low mounds that may be former rabbit warrens. Site 7 may also have originated at this time; it appears to be a Hollow-way spur from the Hunmaby Road and aligns with the easternmost element of Site 13 as well as a portion of extant field boundary to the north of Site 11.

Two sites relating to the post-medieval enclosure of Reighton Parish are within the 1km study area, Site 15 is parallel to an existing post-enclosure field boundary to the west and aligns with a further boundary to the south; and seems to be a defunct boundary laid out at the same time. To the north west of Reighton Village were two mounds recorded during the earthwork survey and interpreted as either spoil heaps from mineral extraction or post-enclosure field clearance mounds.

The latest site recorded, Site 34, marks the location of a crashed WWII aircraft.

A program of archaeological evaluation was carried out by PCA some 850m to the south of the site in 2004; no archaeological remains were located, (Brett, 2004).

5.3 Archaeological potential

The information presented below has been collated from a variety of sources. Data from published and unpublished sources has been synthesised, as well as an inspection of the site itself. The sub-sections describe the information obtained from each source, and are followed by a brief summary. Finally, an assessment of archaeological potential is considered.

5.3.1 Cartographic and other evidence

The first edition Ordnance Survey map, published in 1854 was consulted. It shows a feature in the same location as Site 8, which is described in the SMR as a round barrow with traces of mound and a linear feature extending to the south east. The first edition O.S. records a chalk pit approximately equivalent to the linear feature and to the north of it a small feature labelled 'Grey Stone'. It seems possible that the linear feature is a remnant of the former chalk pit; the 'Grey Stone' may be a local name for the barrow, possibly related to a lost standing stone that may once have stood on the site.

To the west of the site the map shows Wandale Plantation, the presence of which will have protected the features it covers (Site 20) from ploughing, but at the same time rooting may have had at least some effect. The copmark that extends to the north of the proposed development area (Site 15) does not appear on the 1854 map, suggesting that it had already been removed by this date.

A previous desk-top assessment, prepared prior to the construction of a Reighton Bypass (Dennison, 1993), and a study of the aerial photographs of the Yorkshire Wolds, (Stoetz, 1997) were also consulted. In places there is some discrepancy between monuments plotted by these two projects, in which case both are shown on fig. 2. The former consisted of a program of fieldwalking, earthwork surveys, geophysical survey and desk based research in advance of a proposed bypass to run to the west of Reighton. It contained plots of many of the listings in the NYSMR, as well as a number of previously unknown sites: these are shown on fig. 2 and described on table 1 and in section 5.2 above. Stoetz's book contains tracings and interpretations of the many aerial photographs that have been taken of the Yorkshire Wolds, in part as a result of the large number of surviving monuments. Sites that had been plotted within the study area were traced and, where possible, matched to existing NYSMR entries. In some cases no match was apparent, in which case they have been interpreted according to their apparent form.

5.3.2 The County Sites and Monuments Record

Forty-one records of direct or indirect relevance (within 1km) to the proposed scheme are incorporated as part of the SMR (fig. 2 and Appendix 1). The data from the SMR has been described in the general archaeological background above (see Section 5.2).

5.3.3 Aerial photographic evidence

A priority cover search of the aerial photographic archive at the National Monuments Record in Swindon was requested. Three photographs of potential significance were highlighted by this search (reference nos.: TA 1174/2, NMR221/261; TA 1275/4, NMR 2146/1096 and OS 94256, frame 007). Of these the last two were deemed the most significant and have been included in this report as figs. 4 & 5.

The first (TA 1275/4, NMR 2146/1096, fig. 4) shows a complex of cropmark remains to the immediate west of the site, with elements of this possibly extending south eastwards into the proposed development area. These features correlate with site 20 on fig 2, but are not clearly observable on the reproduced aerial photograph, fig 4. Also visible are two sections of dyke; a broad dark stripe to the bottom left of the image is interpreted as ploughed-out bank material, while in the bottom right of the image, the narrower stripes are part of the monument listed as Site 35.

The second (OS 94256, frame 007, fig. 5) also shows the cropmark group (Site 20) to the west of the proposed development area and the extension south eastwards from it. To the upper left of the image, disjointed elements of Site 5 are visible, and the post-medieval field boundary (Site 15) is visible to the north east. Neither of these photographs shows the two monuments that are recorded actually within the proposed development area (Sites 17 and 21).

5.3.4 Site visit

The site was visited by P. Masters on 11th January 2005. It occupies the south-western corner of a more extensive field, where the south and western boundaries comprise earth banks surmounted by hawthorn hedges, the western boundary also being the parish boundary with Hunmaby. The ground surface slopes slightly downwards to the southwest, and a considerable drop into the field towards the south was noted. To the north of the proposed development area is a substantial dry valley, running east-west and, beyond this on the south facing slope, was an area of considerably darker soil; this seems to coincide with an enclosure recorded in the NYSMR and shown on fig. 2 as Site 14.

At the time of the visit, the majority of the field was under a young cereal crop, with a strip some 100m wide along the western edge roughly ploughed. The ploughsoil was mixed light and dark brown, particularly to the south of the field, where darker patches were noted in the south eastern and south western corners. It contained frequent flints and chalk pieces. Several pieces of modern brick were recognised during the visit, as well as two sherds of pottery, one medieval and one non-diagnostic, (M. Darling, pers. comm.).

6.0 Geophysical survey

6.1 Methodology

Detailed area survey using a fluxgate gradiometer is a non-intrusive method of evaluating the archaeological potential of a site. The gradiometer detects magnetic anomalies created by areas of high or low magnetic susceptibility. These variations are caused by changes in the composition of the subsoil or the underlying geology. Archaeological features result from man-made alterations to the soil and they may also incorporate intrusive materials such as brick and stone. These features can create detectable magnetic anomalies. In addition, activities that involve heating and burning can generate magnetic anomalies, as will the presence of ferrous metal objects.

The anomalies detected by a fluxgate gradiometer survey can often be resolved into entities sharing morphological similarities with features of known archaeological provenance. This enables the formulation of an informed, but subjective, interpretation.

The Gradiometer survey was undertaken using a Bartington Grad-01 Dual Fluxgate Gradiometer. The zigzag traverse method of survey was used across 30m x 30m grids, at 0.25 m sample intervals along 1.0m wide traverses. A 60m wide corridor was surveyed at the south end of the site, taking in both the southern element of the site itself and a proposed easterly access route.

Data from the survey was analysed using Archeosurveyor (ver. 1.2.4.1). In the resultant plots, low magnetism is shown as white and high magnetism as black. The plots are shown as raw and enhanced data.

The survey data has been processed using zero mean functions to correct the unevenness of the plots in order to give a smoother graphical appearance. It was also processed using algorithm to remove magnetic spikes, thereby reducing extreme readings sometimes caused by stray iron fragments and spurious effects due to the inherent magnetism of soils.

The results are presented as greyscale and traceplot images, along with an interpretative plan (Figures 6&7).

Instruments	Bartington Grad – 01 – 1000 fluxgate gradiometer with DL601 data logger
Grid size	30m x 30m
Sample interval	0.25m
Traverse interval	1.0m
Traverse method	Zigzag
Sensitivity	0.1nT
Processing Software	Archeosurveyor (v.1.2.4.1)
Area Surveyed	2ha
Date of survey	11the January 2005
Survey personnel	Peter Masters

Table 1: Summary of survey parameters

6.2 Results

The survey detected a series of linear and rectilinear anomalies (red lines), some of which define at least three diagnostic enclosures (1-3). The spatial characteristics of these features suggest that they date from the Romano-British period.

Enclosures 1 and 2 straddle a northeast to southwest-aligned ?trackway (annotated) that extends across, and beyond, the survey area.

Potentially significant anomalies were detected within the confines of the enclosures and in other parts of the site. A number of these may be representative of pits or burnt materials, including possible hearth/kiln-like features (clearest examples circled in red). Others appear to indicate ditches (red lines). A group of anomalies recorded in enclosure 1 possibly resolves as a sub-circular or oval feature (4), such as a ring ditch. However, this interpretation is offered tentatively, given the lack of a clear morphological definition in the greyscale images.

Enclosure 3 is attached to the northwest corner of 1 and appears to contain a small (and magnetically ephemeral) rectilinear feature (5) along its northern boundary. An absence of distinct magnetic variation within the confines of enclosure 3 implies that this feature was not intensively occupied.

Other linear anomalies may define boundaries of larger enclosures or other land divisions. Linear anomaly 6 extends across the southwest corner of the site and turns towards the northeast to run parallel to the current field boundary (which also serves as a parish boundary). The results suggest that linear 7 could be a westerly continuation of a boundary defined by 6. Linear anomaly 8 lies to the south of 6 and appears to align with a linear cropmark that has been recorded on land to the immediate west of the site, (Site 20). The cropmark is attached to an enclosure (also identified as a cropmark) at its western end. Cumulatively, and including two further ditch-like features (9 and 10), the linear anomalies suggest that a north to south-aligned track (flanked by ditches) may have extended across the site. Given the cropmark evidence, the shared alignments of the current (western) field boundary and the putative track may be coincidental. Consequently, it is hypothesised that linear features in this area predate the field boundary.

A zone of relatively weak magnetic variation was detected in the area traversed by the putative track (circled in yellow). The survey has not established the precise origin of this anomaly, although it may reflect a pit- possibly a quarry site that post-dates the linear features.

Interestingly, other cropmarks, including a potential ring ditch (Site 21) and a northeast to southwest-aligned linear (Site 17), have not been recorded as magnetic anomalies. These inconsistencies may be the result of variations of depth, fill and moisture retention of buried ditches, or it may be that some cropmarks have not been plotted precisely.

It should be noted that elements of the magnetic variation recorded may be indicative of natural processes, such as variations within the glacial till, glacial reticulations of underlying chalk deposits or palaeochannels (glacial meltwater). For example, weakly magnetic and linear and discrete anomalies (shown as green) at the eastern edge of the survey area do not resolve as clearly-defined archaeological remains.

Magnetically stronger and dipolar anomalies (examples circled in pink) may reflect the presence of ferrous or ceramic materials, typically ploughshares, horseshoes and large fragments of brick or tile.

6.3 Geophysical survey conclusions

The survey has identified a series of rectilinear and linear ditches denoting enclosures and trackways. Within these a number of discrete anomalies were recorded. Some of these could represent the remains of pits, or possibly areas of burning.

One enclosure may contain traces of a diffuse circular feature, such as a ring ditch. Although existing cropmark evidence suggests that one ring ditch lies within the survey area, its recorded location lies to the north-west of the example recorded by this survey.

7.0 General considerations

In the light of information that has been variously described, it is possible to present a generalised historical context for the proposed development site, before consideration is made of the impacts that have taken place in the past, and which may have affected the quality and survival of any archaeological resources that are present.

Geophysical survey has revealed a complex of enclosures, seemingly comprising at least three separate units, two of which may contain smaller internal features. These enclosures are divided by a trackway running northeast-southwest with further linear anomalies extending to the west, which morphologically seem to be of late pre-historic or Romano-British date. They may be elemental continuations of the enclosure feature described as Site 20.

Of the features listed in the SMR, some are on or in the immediate vicinity of the site, dating from the Bronze Age, or later prehistoric periods. Directly to the west is a complex of cropmarks making up what appears to be a rectilinear enclosure with elements projecting from the northern and eastern corners and a small sub-enclosure on the western side. There is also what appears to be an internal ring ditch; possibly a circular building. The geophysical survey results suggest that elements of this feature complex continue into the proposed development area.

Examination of the aerial photographs (figs. 4 & 5) suggest that the site environs are more complex than shown in the 2003 DTA (Dennison, 2003).

Approximately 650m to the south of the site are two Bronze Age round barrows. These appear to be aligned on the field boundary that makes up the western edge of the site and so it is possible that hitherto unknown examples will be present along this boundary towards or within the development area itself.

The falls within a complex prehistoric landscape, comprising cemeteries, settlement remains and field systems. These appear to respect or be defined by a series of long linear features made up of a variety of banks and ditches in differing combinations.

Many of these linear features have continued in use into the medieval period as trackways, and some are fossilised in the modern landscape as parish or field boundaries. Given that the parish boundary makes up the western edge of the site, there is potential for further as yet unknown archaeological sites to be adjacent to it.

There is no direct evidence for activity dating to the Romano-British period within the study area, although a number of sites of medieval and post-medieval date are recorded. To the north east of the proposed development area are a number of sites relating to the shrunken medieval village of Reighton, however these are likely to be concentrated in the vicinity of the existing settlement, with the proposed development site in an area covered by the village's open fields.

Two post-medieval sites are also known: directly to the east of the site is a linear anomaly recorded as a defunct enclosure period field boundary, while a pair of mounds to the north may be a result of field clearance from a similar period, or

possibly mineral extraction spoil heaps. Neither of these features is of great archaeological significance.

8.0 Impacts to archaeological resources

Based on the site visit, there is no reason to assume that there has been any excessive damage to any archaeological remains, beyond that resulting from prolonged ploughing: any former earthworks will have been levelled and archaeological horizons truncated. up to approximately 300mm below existing ground level.

9.0 Conclusions

It is variously concluded that the archaeological potential of the site is **high**.

The geophysical survey has produced clear evidence of a series of rectilinear enclosures, some of which seem to have smaller internal features. The presence of these internal features and the large number of pit-like anomalies may indicate that these enclosures had a settlement rather than an agricultural function.

There are also elements of two further, seemingly prehistoric, sites within the proposed development area, one of which could be a Bronze Age barrow. To the west of the site is what appears to be a settlement enclosure, which appears to have minor elements continuing into the proposed development area (detected by geophysical survey).

Given the general setting of the site, the presence of the remains (or the putative remains) described in this report is unsurprising: it is situated within a well-preserved Bronze and Iron Age agricultural and funerary landscape.

10.0 Mitigation

Given the density of potential remains identified, from recorded cropmark evidence and from the geophysical survey, a further program of intrusive trial excavation is recommended to investigate and evaluate the potential of these features. The results of such an investigation could then be used as a basis for mitigating against the effects of the proposed development.

11.0 Acknowledgements

Sincere thanks are expressed to the commissioning body Roc Oil (UK) Ltd. Thanks are also expressed to the staff at the North Yorkshire Sites and Monuments Record, particularly Nick Boldrini, and Ms. Liz Gawith and Graham Deacon at the National Monuments Record.

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