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**LAND AT REIGHTON,  
NORTH YORKSHIRE**

**(WILLOWS SITE 'B')**

**ARCHAEOLOGICAL DESK-BASED ASSESSMENT  
AND DETAILED GRADIOMETER SURVEY**

NGR: 514862 473451

Report prepared for Roc Oil (UK) Ltd

by

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October 2003



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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 lie 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. Later prehistoric and Romano-British settlement remains are recorded within the /parish also.*
- *Based on the results of this study, the archaeological potential for the site is low – moderate. It lies between two concentrations of known later prehistoric and Romano-British settlement complexes (cropmark evidence). Geophysical evidence shows several enclosure-like anomalies that may be associated. Further anomalies may indicate the presence of quarry backfill, although no evidence for a former quarry pit was visible on the ground surface.*



Figure 1: Site location at scale 1:25,000. The site is outlined in red.  
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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. Records held by the Humber Archaeological Partnership were also consulted in relation to the southern extremes of the study area.

Research was conducted in accordance with national guidelines produced by the Institute of Field Archaeologists (IFA, 1999).

The report was researched and prepared by Alex Brett and Mark Allen of Pre-Construct Archaeology (Lincoln) (hereafter PCA), and Peter Masters of Pre-Construct Geophysics (Hereafter PCG) in September and October 2003.

## **2.0 Location and description**

Reighton lies less than 2km from the east coast, south east of the North York Moors and east of the Yorkshire Wolds, 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 rectangular unit of land of c.1 hectare that lies some 2.6km south east of Reighton and 1.2km south of Speeton (fig 1). It is bounded by New Road to the east and arable land on the other three sides. The National Grid Reference for the centre is 514862 473451.

### **2.1 Geology and topography**

The proposed development zone is situated over a drift geology of Devensian glacial till, which overlies Upper and Lower Cretaceous chalk (Kent 1980). The field is relatively flat, and the site mean altitude is approximately 105m OD.

## **3.0 Planning background**

The site is currently under consideration for a future development by Roc Oil (UK) Ltd. However, prior to submitting of a formal application for planning permission (acting on the advice of North Yorkshire County Council), the proposed developer has requested that PCA should undertake an archaeological assessment of the area, comprising a desk based study and complimentary fluxgate gradiometer survey. This assessment will provide information outlining the archaeological potential of the site, without the use of intrusive fieldwork. The approach is consistent with the recommendations of *Archaeology and Planning: Planning Policy Guidance Note 16*, 1990, which advises early consultation with regard to archaeological matters.

#### **4.0 Objectives and methods**

The purpose of this report is to identify and assess archaeological remains that may be vulnerable 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 any future development.

#### **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 Alex Brett on 19<sup>th</sup> September 2003)

##### **6.0 Archaeological and historical background**

A review of the information held at the North Yorkshire SMR and Humber Archaeological Partnership suggests that no formal archaeological excavations have been undertaken within the study area. Cropmark evidence however brackets the site within its archaeological landscape context; the landscape dating from the prehistoric period, with occupation continuing into subsequent periods (fig. 2).

The chance discovery of a number of artefacts of early prehistoric date has occurred within the study area. These finds have been grouped within the NYSMR, and are recorded within this study as Site No. 34. The finds include three Neolithic stone axes (one of quartz), a polished Neolithic axehead, a flint knife, and a Bronze Age bronze knife.

Two distinctive monument classes dominate evidence for Bronze Age activity in the area: funerary round barrows and extensive dykes. Round barrows date possibly from as early as the middle Neolithic to the end of the early Bronze Age (c.3500 BC – 1500BC) and generally concentrate in cemeteries. Examples are known within the area of study: Site Nos. 6 – 8 and 18. Three of the four (Nos 6 – 8) are grouped together 500m to the north of the site, within a compound known as 'the old foundry'. The fourth lies over 500m to the north-west of the site.

Elaborate and extensive systems of linear earthworks are recorded as cropmarks or soilmarks within the study area (and across North and East Yorkshire), known as 'Dykes' (Sites 4, 5, 16, 33, 40, 41, 42, 62 and 63). Few intrusive investigations of these monuments have been undertaken, although it is believed they emerged in the later Bronze Age, dividing the land into distinct territories. This system is believed to have continued in use throughout the Iron Age. The 1km study area is criss-crossed by a number of these linears, however none are shown to cross the application area itself.

Settlement sites of early Bronze Age date are rare, and it is generally accepted that a predominantly mobile human existence continued into the middle Bronze Age (Woodward 2000). Certainly, for the study area there are no settlement sites that can be positively identified as being contemporary with the round barrows, or later. There is however extensive cropmark evidence for later prehistoric and Romano-British settlement, concentrated both to the south (Site Nos. 23 – 28, 31 and 37) and north of the site (1, 2, 12, 13, 19, 20 and 22). These mainly comprise rectilinear and rectangular ditched enclosures, likely to represent field systems and/or settlement enclosures. A number of sites that remain undated (Site Nos. 4, 33, 35 and 36) are likely to form elements of this extensive settlement landscape.

Distinctive square barrows are also recorded, exclusively dating between the middle to later Iron Age (generally c.400 BC – post 100 BC). Only two examples are noted, one c.600m to the east (Site No. 30), and the other c.800m to the north-west (Site 21). This 'Arras culture' tradition was concentrated mainly on the Yorkshire Wolds, although examples are known throughout England (Woodward 2000). Inhumations were placed under small square burial mounds, often with associated grave goods, such as brooches, beads, other ornaments and pottery. More rare examples contain the remains of two-wheeled carts.

More unusually, a ring ditch cropmark 500m to the north has been identified as being of late Iron Age date (Site No. 10). This site lies adjacent to a known Bronze Age round barrow cemetery (Sites 6 – 8, see above). An earthwork mound at the same location is believed to be the terminal of ditch and trackway Site No. 5. A standing stone is recorded on the mound, although no further details are known.

A complex of cropmarks approximately 700m to the north-west of the site have been interpreted as a large field with internal sub-divisions and associated enclosures (Site No. 17).

There is no evidence of Anglo-Saxon activity within the study area, beyond the settlement name of Reighton that gives its name to the parish. In 1086 the settlement was recorded as '*Rictone*', from the Old English meaning 'farmstead by the straight ridge' (Mills 1996). Also, no remains of medieval date have been recorded within the study area.

## **7.0 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.

## 7.1 Cartographic evidence

The first edition Ordnance Survey map (1851 – 1854) for Reighton (fig. 3) forms the basis for all subsequent maps produced by the survey to the present day.

The form of the 19<sup>th</sup> century field system has changed relatively little over the last 150 years. The single exception within the field that contains the site is the removal of a field boundary to the south of the site. The York and North Midland Railway (Scarborough and Bridlington Branch), which forms the northern boundary to the field containing the site, was in existence, along with the current road network. A disused pit to the south of the site, which is depicted on modern maps (fig. 2), is identified on the first edition OS map as a chalk pit.

## 7.2 The County Sites and Monuments Record

34 records of direct or indirect relevance (within 1km) to the proposed scheme are incorporated as part of the North Yorkshire SMR and 4 records from Humber Archaeological Partnership (fig. 2 and table 1 below). The data from the SMR has been described in the general archaeological background above (see section 6.0).

Site No.	SMR No.	NGR	Description
1	NYM7595	TA1472 7419	Prehistoric cropmark, enclosure
2	NYM7596	TA1485 7412	Prehistoric cropmark, enclosure
3	NYM7627	TA1499 7420	Undated earthwork, bank
4	NYM7376	TA1488 7478	RB-Mod earthwork/documentary, shrunken village
5	NYM7608	TA1480 7405	LIA cropmark, ditch/trackway
6	NYM7592	TA1489 7403	BA cropmark, round barrow
7	NYM7591	TA1488 7401	BA cropmark, round barrow
8	NYM7590	TA1485 7402	BA cropmark, round barrow
9	NYM7607	TA1500 7395	LIA cropmark, ditch
10	NYM7597	TA1499 7399	LIA earthwork mound
11	NYM7598	TA1499 7399	Undated, standing stone on mound NYM 7597
12	NYM7609	TA1511 7397	Prehistoric-RB cropmark ditched enclosure
13	NYM7610	TA1538 7412	Prehistoric-RB cropmark ditched enclosure
14	NYM7611	TA1540 7403	Prehistoric-RB cropmark trackway
15	NYM7622	TA1573 7375	LBA – LIA earthwork/cropmark dyke
16	NYM7612	TA1500 7315	LIA cropmark ditch
17	NYM7602	TA143 740	Prehistoric cropmarks, fieldsystem
18	NYM7594	TA1444 7405	BA cropmark, round barrow
19	NYM7604	TA1444 7401	Prehistoric cropmark, rectangular enclosure
20	NYM7603	TA1437 7395	Prehistoric cropmark, rectangular enclosure
21	NYM7606	TA1411 7385	IA cropmark, square barrow
22	NYM7605	TA1411 7370	Prehistoric cropmark, rectilinear enclosure
23	NYM7618	TA1484 7312	Prehistoric cropmark, rectangular enclosure
24	NYM7619	TA1487 7312	Prehistoric cropmark, ditched enclosure
25	NYM7617	TA1470 7295	Prehistoric cropmark, ditched enclosure



Site No.	SMR No.	NGR	Description
26	NYM7615	TA1463 7292	Prehistoric cropmark, ring ditch/hut circle
27	NYM7614	TA1462 7290	Prehistoric cropmark, ditched enclosure
28	NYM7616	TA1460 7288	Prehistoric cropmark, ditched enclosure
29	NYM7613	TA1445 7285	LIA cropmark, trackway
30	NYM7621	TA1555 7340	IA cropmark, square barrow
31	NYM7620	TA1516 7318	Prehistoric cropmark, ditched enclosure
32	NYM7626	TA1413 7380	LIA cropmark, dyke and trackway
33	NYM7390	TA1500 7447	RB – med cropmark and earthwork enclosure and bank
34	NYM7587	TA15 74	Prehistoric landscape
35	HUM6759	TA1550 7250	Undated cropmark enclosures
36	HUM6755	TA1400 7270	Undated cropmark rectilinear settlement
37	HUM4068	TA1454 7252	?RB settlement cropmark
38	HUM4061	TA1412 7249	Undated cropmark linear (same as Site No. 16)

Table 1: Records held at the County Sites and Monuments Record, held by North Yorkshire County Council Environmental Services and Humber Archaeological Partnership

### 7.3 Aerial photographs

Aerial photographs held by the National Monuments Record at Swindon were consulted, which resulted in the examination of two oblique and two vertical photographs that depict the site.

- RAF/541/546; frame no. 4220; taken 1<sup>st</sup> June 1950 (fig. 4). This vertical image shows relatively little has changed to the field layout since the photograph was taken. The most notable being the removal of a field boundary immediately to the west of the application site. No cropmarks of note can be seen on the image.
- OS/80135; frame no. 015; taken 4<sup>th</sup> September 1980 (fig. 5). The field boundary to the west of the site was still in existence when the photograph, proving the boundary was removed within the last 23 years.

### 7.4 Site visit

A Brett visited the site on 19<sup>th</sup> September, 2003. A well-maintained hawthorn hedge, beyond which lies New Road, abuts the square-shaped site along its eastern edge. To the north, west and south lies an open agricultural field. The field is relatively flat; in the northern half of the field the ground slopes down gradually to the north and north-west. The silty ploughsoil contains a moderate density of rounded pebbles, and some naturally derived flint pieces. At the time of the site visit a freshly sown cereal crop was observed across the whole field. A former pit, possibly for chalk extraction is depicted on existing maps, approximately 150m to the south of the site. This was visible as a slight depression in the field.

## 8.0 GEOPHYSICAL SURVEY

### 8.1 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.

Data from the surveys was analysed using Geoplot v.3.0 (Geoscan 2000). 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 gradiometer survey data has been processed using zero mean functions to correct the unevenness of the plots in order to give a smoother graphical appearance. The data 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	Geoplot (v.3.0)
Weather conditions	Sunny
Area Surveyed	1.5ha
Date of survey	28 <sup>th</sup> August 2003
Survey personnel	Peter Masters and Peter Heykoop
National Grid Reference	TA 1489 7344

*Table 1: Summary of survey parameters*

## **8.2 Results**

The survey recorded a range of magnetic variation, much of which may be indicative of variations within the glacial till and/or glacial reticulations of underlying chalk deposits: the potential for naturally derived magnetic inconsistencies within this combination of geological types is high. In this situation, it can be difficult to differentiate between natural and archaeological features.

Many of the anomalies detected appear as diffuse and ill-defined linear and curvilinear features or as a dense scatter of discrete pit-like entities. Clearest examples of these have been highlighted in yellow (stronger, ferrous/ceramic-like anomalies circled in pink). Some of the linear anomalies may reflect cultivation scars (orange).

The morphological and spatial characteristics of anomalies recorded along the eastern edge of the survey are more believable as components of small enclosures and an attached larger field system (shown in red). These appear to continue beyond the survey into Speeton Field, which lies to the east of New Road. There is no existing evidence of significant remains within or immediately adjacent to the site, although an array of cropmarks, which lie approximately 400-800m to the south, southeast and southwest of the survey area, include probable prehistoric enclosures, ditches and a square barrow.

A potentially interesting zone of magnetic variation was recorded in the southwest part of the site, extending beyond the survey zone (circled in red). The relatively wide range of magnetic variation is a likely indication of human intervention, although the nature of this is uncertain. It is possible that the activity reflects an area of burning or buried rubble. The latter interpretation is enhanced by evidence of quarrying in the vicinity (for example, a disused quarry pit lies to the south of the site). The magnetic characteristics of the anomaly could signify a rubble backfill.

## **9.0 General considerations**

In the light of information that has been assembled in this report, it is possible to present a generalised historical context for the proposed development site. Consideration will then be given to any impacts that may have taken place in recent times, which could have affected the quality and survival of the archaeological resource, if present.

The proposed development site lies amid an area rich in prehistoric activity. This is mainly of a settlement nature; with evidence of extensive remains of later prehistoric and Romano-British date both to the north and south of the application area.

The geophysical survey has identified a number of linear anomalies along the eastern edge of the survey that may reflect former enclosures that pre-date New Road. If this is the case, they may well be associated with known later prehistoric and Romano-British settlement to the south and south-east of the site. A large anomaly at the south-

west edge of the geophysical survey may be associated with the backfill of former quarrying, although this is not certain.

## 10.0 Conclusions

It is concluded that the archaeological potential of the site is **low – moderate**. There is no direct evidence of any prehistoric, Romano-British, Anglo-Saxon or medieval activity on the site itself, although such activity from the first two periods has been detected at numerous locations nearby. Enclosure-like anomalies at the eastern edge of the site are likely to be of human origin, and are possibly part of an extensive system of settlement remains of Iron Age and Romano-British date.

## 11.0 Mitigation

In the opinion of the authors, the primary objective of any subsequent phase of work, should this be deemed necessary by the curating body, must be to establish whether or not the enclosure-like geophysical anomalies are associated with the known landscape of later prehistoric to Romano-British settlement that typifies the area, and establish the nature and significance of other selected magnetic anomalies identified by geophysical survey. A programme of limited trial trenching may be appropriate. Any such investigation should not be exhaustive.

Any further evaluation at the site must be based on the recommendations of the planning authority. The trenching should provide information to assist in mitigating for the location of the development in order to minimise disturbance to the archaeological resource and preserve the remains *in-situ* wherever feasible. Should this not be possible, some form of archaeological excavation may be required to preserve the archaeology by record.

## 12.0 Acknowledgements

Sincere thanks are expressed to the commissioning body Roc Oil (UK) Ltd, and especially to Jonathon Foster for his assistance through the project. Thanks are also expressed to the staff at the North Yorkshire Sites and Monuments Record and the SMR at Humber Archaeological Partnership.

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