Non technical summary

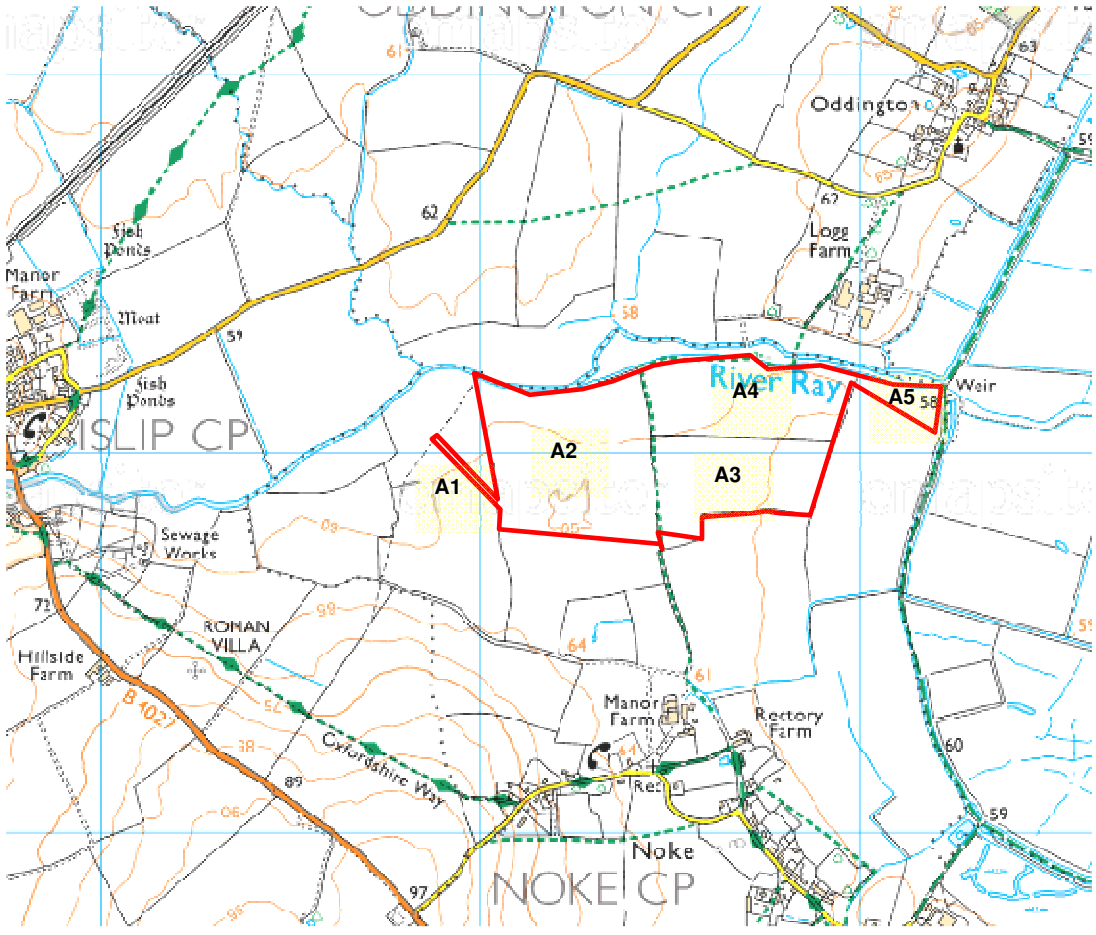
- *The survey identified potential Romano-British settlement remains in the southern part of the site, some of which correspond to cropmark ditches. An adjacent linear cropmark was also recorded. These are situated on slightly higher and hence potentially better drained ground over limestone.*

- *The results suggest that remains of former pits lie to the east of the putative settlement, with a possible kiln site in proximity to the south. Of uncertain date, feasibly these might also date to the Romano-British period.*

- *Ridge and furrow cultivation was identified across most of the site, most apparent in areas with underlying limestone.*

- *Modern features include in situ remains of recent field boundaries, buried services and land drains.*

- *The survey gathered clearly-defined geophysical evidence of two putative Bronze Age ring ditches that lie to the immediate south of the proposed development site.*



1.0 Introduction

Acting for Green Nation, Pegasus Planning Group Ltd commissioned a fluxgate gradiometer survey of land at Manor Farm, Noke, Oxfordshire (Fig. 1).

The survey forms part of a scheme of archaeological evaluation designed to inform a forthcoming application for the installation of a ground mounted solar farm and associated infrastructure, a new temporary construction access and use of an existing access for an operational access.

2.0 Location and description (Figs. 1 & 2)

The c.40ha site is situated approximately 0.5km to the north of the village of Noke, Oxfordshire (centred at NGR 454500 214000).

Currently under arable cultivation, it is bordered predominantly by open land. The River Ray lies to the immediate north.

Four separate areas were surveyed within the primary site (Areas 2 – 5). A proposed cable route was also surveyed (Area 1). This extends from the south-western part of the site north-west to terminate at an electricity pole.

3.0 Geology and topography

For the most part, the solid geology in the northern region comprises mudstone (Kellaways Clay Member) - sedimentary bedrock formed during the Jurassic Period in a local environment previously dominated by shallow seas (BGS, 2021).

Limestone (Cornbrash Formation) is recorded in the southern and north-eastern regions. This was deposited in the Jurassic Period in a local environment previously dominated by shallow carbonate seas.

No superficial deposits are recorded, other than a narrow band of alluvium along the northern edge of the site, which is associated with The River Ray.

The site is generally level and lies at a height of approximately 60 AOD, with slighter higher ground at c.65m AOD in the mid-southern region.

4.0 Archaeological Context

Extract from the conclusions of an Archaeology and Built Heritage Assessment prepared by Pegasus Planning Group (Sutherland, 2021):

A moderate amount of earlier prehistoric heritage is recorded in the vicinity of the site, including two possible ring ditches, visible as cropmarks >12m south of the site. Given the recorded heritage in the vicinity, and some undated cropmarks within the site, the site is considered to have moderate potential for archaeological remains from the prehistoric period. The posited line of a Roman road is recorded as running through the east of the site, having been identified through cropmarks. Cropmarks are certainly visible within the southern part of the site, however it remains uncertain as to whether this represents the line of a former road or another linear feature e.g. ditch/enclosure. Additional cropmarks visible to the east may be associated and/or related to drainage. A possible Romano-British pottery working site is recorded immediately to the south of the site, however this appears to have been mislocated.*

On the basis of the possible Roman road, and recorded heritage in the vicinity, the site is considered to have moderate potential for Romano-British and/or Iron Age archaeological remains.

*NB: whilst these lie just outside the red line development area, the survey was extended in order to gather geophysical evidence of these remains.

5.0 Methodology

5.1 The survey methodology is based on relevant heritage industry guidance and best practice advice, including the *EAC Guidelines for the use of Geophysics in Archaeology* (Schmidt et al. 2016), and the '*Standard and Guidance for Archaeological Geophysical Survey'* (Chartered Institute for Archaeologists, 2014).

A Written Scheme for Investigation was submitted to Pegasus Planning Group in advance of the commencement of fieldwork (Bunn, 2021).

5.2 Fluxgate Gradiometry is a non-intrusive scientific prospecting tool that is used to determine the presence/absence of some classes of sub-surface archaeological features (e.g. pits, ditches, kilns, and occasionally stone walls).

The use of magnetic surveys to locate sub-surface ceramic materials and areas of burning, as well as magnetically weaker features, is well established, particularly on large green field sites. The detection of anomalies requires the use of highly sensitive instruments; in this instance the Bartington 601 Dual Fluxgate Gradiometer. This is accurately calibrated to the mean magnetic value of each survey area. Two sensors mounted vertically and separated by 1m measure slight, localised distortions of the earth's magnetic field, which are recorded via a data logger.

This technique only records magnetic variation in relation to natural background levels, established by careful selection of magnetically 'quiet' zones where instrument sensors are calibrated to 0nT. As such, the magnetic response of archaeological remains will vary according to geology/pedology, with a possibility that buried features could remain undetected should their magnetic susceptibility closely match that of the surrounding soils. Additionally, some remains may be buried beyond the effective 1m - 2m range of the instrumentation; for example beneath alluvium. Back-filled shallow pits or ditches might also exhibit minimal variation.

5.3 The fieldwork was undertaken on and between the 7th & 17th of June 2021. The zigzag traverse methodology was employed, with readings taken at 0.25m intervals along 1.0m wide traverses.

The survey grid was established by Global Positioning Satellite using a Leica GS015 RTX, to an accuracy of +/- 0.1m.

The data were processed by using *Terrasurveyor V3*.

The raw data sets are presented as greyscale images on Figs. 4 & 8 (data clipped to +/- 40nT).

Trace plot images are presented on Figs. 7 & 11 (data clipped to +/-40nT).

A 'Despike' function was applied to reduce the effect of extreme readings induced by metal objects, and 'Destripe' to eliminate striping introduced by zigzag traversing. The data were clipped to +/-2.5nT on the greyscale images of the processed data (Figs. 2, 5 & 8).

Anomalies in excess of +/-10nT are highlighted pink and blue on the interpretive figures (Figs. 3, 6 & 10). These are characterised magnetically as dipolar 'iron spikes', often displaying strong positive and/or negative responses, which reflect ferrous-rich objects. Examples include those forming/deposited along current or former boundaries (e.g. wire fencing), services and random scatters of horseshoes, ploughshares etc across open areas. Fired (ferro-enhanced) material, such as brick/tile fragments (often where the latter are introduced during manuring or land drain construction) usually induce a similar though predominately weaker response, closer to c+/-5nT (highlighted in pink/blue on the interpretive image). Collectively, concentrations of such anomalies typically indicate probable rubble spreads, such as backfilled ponds/ditches and demolished buildings. On a cautionary note, fired clay associated with early activity has the same magnetic characteristics as modern brick/tile