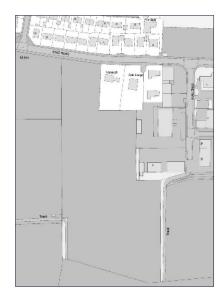
# Land to West of Nonsuch Syke Road, Wigton Cumbria

## **Green Swallow North Limited**





FEBRUARY 2022

Geophysical Survey
Report EH173/01



# Land to West of Nonsuch Syke Road, Wigton Cumbria

# Geophysical Survey Report for Green Swallow North Limited

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PREPARED BY:

Martin Railton Managing Director

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Heritage Impact Assessment
Archaeological Desk-Based Assessment
Historic Landscape Survey
Written Scheme of Investigation

Geophysical Survey
Trial Trench Evaluation
Archaeological Excavation
Archaeological Watching Briefs



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Land to West of Nonsuch, Syke Road, Wigton, Cumbria Green Swallow North Limited Geophysical Survey Report



# **Acknowledgements**

Eden Heritage thanks Stuart Woodall, Green Swallow North Limited for his assistance throughout the project. The geophysical survey fieldwork was undertaken by Martin Railton with the assistance of Kevin Mounsey. The data processing and reporting was undertaken by Martin Railton, Eden Heritage Ltd.



## **Summary**

In 2022 Eden Heritage Ltd was commissioned by Green Swallow North Limited to undertake an archaeological geophysical survey on land to the south of Syke Road, to the west of a property known as Nonsuch, at Wigton in Cumbria, (NGR: NY 2632 4724). The geophysical survey was required to provide information to support a planning application for a proposed residential development at the site.

The proposed development area was believed to have archaeological potential. Archaeological investigation has revealed Iron Age/Roman remains immediately to the west of the site, recorded as Tiffinthwaite Farm Enclosure and Cremation Cemetery (HER 19091). Aerial photographs also record other possible Roman sites to the south, including Tiffinthwaite Settlement Cropmark Complex (HER 4715).

The purpose of the geophysical survey was therefore to help determine the archaeological potential of the site. Geomagnetic survey was undertaken covering the proposed development area, which was a field of rough pasture at the time of the survey. The geophysical survey detected a number of weak linear and curvilinear features, which were interpreted as possible archaeological soil-filled features. These included a possible rectangular enclosure ditch, and two possible curvilinear ditches to the south. It was recommended that the geophysical anomalies were targeted during the subsequent trial trench evaluation of the site.



## 1 Introduction

#### 1.1 Project Circumstances

- 1.1.1 Eden Heritage Ltd was commissioned by Green Swallow North Limited (the Client) to undertake an archaeological geophysical survey on land at Syke Road, Wigton, Cumbria. The geophysical survey was undertaken as a condition of planning approval granted by Allerdale Borough Council for a proposed residential development on land to west of Nonsuch (Planning Reference FUL/2019/112).
- 1.1.2 The proposed development area comprised 2.88ha of agricultural land at Highmoor, which is located to the southeast side of Wigton (Figure 1). The proposed development area was located within a single field to the south of Syke Road, centred on National Grid Reference NY 2632 4724 (Figure 2).
- 1.1.3 The proposed development area is believed to have archaeological potential. Archaeological investigation has revealed Iron Age/Roman remains immediately to the west of the site, recorded as Tiffinthwaite Farm Enclosure and Cremation Cemetery (HER 19091). Aerial photographs record other possible Roman sites to the south, including Tiffinthwaite Settlement Cropmark Complex (HER 4715).
- 1.1.4 As a result, an archaeological evaluation of the proposed development area is required as a condition of planning consent (Condition 10), which states:
  - 'No development shall commence within the site until the applicant has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been submitted by the applicant and approved in writing by the Local Planning Authority. The written scheme of investigation will include the following components:
  - (a) An archaeological evaluation;
  - (b) An archaeological recording programme, the scope of which will be dependent upon the results of the evaluation'.
- 1.1.5 This is in line with government advice as set out in Section 16 of the National Planning Policy Framework (MHCLG 2021).
- 1.1.6 Jeremy Parsons, Historic Environment Officer at Cumbria County Council, advised that the archaeological evaluation should comprised a preliminary geophysical survey of the site, followed by an archaeological trial trench evaluation. This report presents the results of the geophysical survey. The scope of the archeological trial trench evaluation will need to be agreed with Jeremy Parsons by submitting a Written Scheme of Investigation (WSI) informed by the results of the geophysical survey, prior to the fieldwork. The WSI will also need to be submitted to the Local Planning Authority.



# 2 Methodology

#### 2.1 Standards

2.1.1 The geophysical survey fieldwork and reporting was undertaken following Historic England guidelines (English Heritage 2008) and in accordance with the standard and guidance of the Chartered Institute for Archaeologists (CIFA 2020).

#### 2.2 Geophysical Survey

- 2.2.1 Technique Selection: geomagnetic survey was selected as the most appropriate technique, given the non-igneous geology (sandstone), and the expected presence of archaeological features at depths of no more than 1.5m. Magnetic survey over sandstone can produce variable results, but previous surveys have shown magnetic susceptibility exists, which can produce moderate anomaly strengths. This response will also depend on local variations in drainage and overlying soils.
- 2.2.2 This technique involves the use of hand-held gradiometers, which measure variations in the vertical component of the earth's magnetic field. These variations can be due to the presence of sub-surface archaeological features.
- 2.2.3 *Field Methods:* the geophysical survey area measured 2.88ha in total. A 30m grid was established in this area and tied-in to known Ordnance Survey points using a Trimble M3 Total Station (Figure 2).
- 2.2.4 Geomagnetic measurements were determined using a Bartington Grad601-2 dual gradiometer system, with twin sensors set 1m apart. It was expected that significant archaeological features at a depth of up to 1.5m would be detected using this arrangement. The survey was undertaken using a zig-zag traverse scheme, with data being logged in 30m grid units. A sample interval of 0.25m was used, with a traverse interval of 1m, providing 3600 sample measurements per grid unit, with measurements being recorded at the centre of each grid cell. The data were downloaded on site into a laptop computer for processing and storage.
- 2.2.5 Data Processing: geophysical survey data were processed using Terra Surveyor software, which was used to produce 'grey-scale' images of the raw data. Positive magnetic anomalies are displayed as dark grey, and negative magnetic anomalies are displayed as light grey. A palette bar shows the relationship between the grey shades and geomagnetic values in nT.
- 2.2.6 Raw data were processed in order to attempt to further define and highlight the archaeological features detected. The following basic data processing functions were used:
  - Despike: to locate and suppress random iron spikes in the gradiometer data (despike was performed on all survey grids using a window of 3x3 and threshold of 1.0);



- Destripe: to reduce the effect of striping in the gradiometer data, sometimes caused by misalignment of the twin sensors (zero mean traverse was performed on all survey grids using a threshold of 1 standard deviation);
- Clip: to clip data to specified maximum and minimum values, in order to limit large noise spikes in the geophysical data (data were clipped from -3nT to 3nT);
- Interpolate: to match the resolution of the sample intervals in the x and y directions.
- 2.2.7 *Interpretation:* five types of geophysical anomaly were detected in the gradiometer data:
  - *positive magnetic*: regions of anomalously high or positive magnetic data, associated with the presence of high magnetic susceptibility soil-filled features, such as pits or ditches;
  - negative magnetic: regions of anomalously low or negative magnetic data, which may be associated with features of low magnetic susceptibility, such as stone-built features, geological features, land-drains or sub-surface voids;
  - *dipolar magnetic*: regions of paired positive and negative magnetic anomalies, which typically reflect ferrous or fired materials, including fired/ferrous debris in the topsoil, or fired structures, such as kilns or hearths;
  - *bipolar magnetic*: linear anomalies with alternating positive and negative magnetic field strengths, which typically reflect the presence of modern service pipes or drains;
  - *magnetic disturbance*: areas of high amplitude magnetic disturbance or interference, which may be associated with the presence of modern structures, such as services, fences or buildings.
- 2.2.8 Presentation: the grey-scale images were combined with site survey data and Ordnance Survey data to produce the geophysical survey figures. A geophysical survey interpretation diagram shows the location and extent of dipolar, bipolar, positive and negative geophysical anomalies, and areas of magnetic disturbance. An archaeological interpretation diagram is also provided, which is based on the interpretation of the geophysical survey results in light of the historical context of the site.

#### 2.3 Project Archive

- 2.3.1 The data archive for the geophysical survey has been created in accordance with the recommendations of the Archaeology Data Service (ADS 2013) and is held at the company offices. A PDF version of the final report will be deposited with the Cumbria Historic Environment Record in Kendal within 3 months of completion of the project, once approved by the client.
- 2.3.2 The project is also registered with the **O**nline **A**cces**S** to the **I**ndex of archaeological investigation**S** (OASIS Project). The OASIS reference for this project is: wardella2- 504724.



## 3 Background

#### 3.1 Location and Geological Context

- 3.1.1 Wigton is a market town in the Allerdale borough of Cumbria, situated at the centre of the Solway Plain, between the Caldbeck Fells and the Solway coast. The town occupies an area of land between the A595 and A596, approximately 15km southwest of Carlisle (Figure 1). The proposed development area is approximately 1.25km southeast of Wigton at Highmoor to the south of Skye Road (Figure 2).
- 3.1.2 The solid geology of the site comprises sandstone, known as St Bees Sandstone Member. This sedimentary bedrock formed approximately 247to 252 million years ago in the Triassic Period. This is overlain by glacial Till, formed up to 2 million years ago in the Quaternary Period (BGS 2022).
- 3.1.3 Land within the proposed development area occupies a slight south-facing slope. Elevations within the site range between 57m above Ordnance Datum (aOD) in the north and 50m aOD in the south.

#### 3.2 Archaeological and Historic Background

- 3.2.1 There have been a number of prehistoric finds recorded in the Historic Environment Record (HER) as having been recovered in the vicinity of the proposed development area, including a number of lithics from Wiza Beck (HER13508), which is a watercourse located to the southwest of the site. Significantly, a palisaded enclosure of possible Late Iron Age date has been revealed to the west of the site at Tiffenthwaite Farm (HER 19091). Tiffinthwaite Settlement Cropmark Complex (HER 4715) has also been identified from aerial photographs to the south, which may also be prehistoric.
- 3.2.2 The site of Old Carlisle (*Olerica*) fort and civil settlement lies *c*.700m to the southwest of the proposed development area. The monument includes the remains of a Roman fort, and its surrounding civilian settlement (or *vicus*) and an associated road (List Entry 1007249). The partial excavation of the *vicus* has indicated that it was first built in the 2nd century AD, and subsequently rebuilt in the late 3rd century, but there was no indication for occupation of the vicus after AD367 (Historic England 2022).
- 3.2.3 The A595 road, which runs 650m to the south of the site, is known to follow the route of a former Roman road, running between Papcastle and Carlisle, via the fort at Old Carlisle (Margary 75).
- 3.2.4 There have been a significant number of finds of Roman material to the south of Wigton because of this intensive Roman activity. These include four silver Roman coins which are recorded as being recovered from within the southern portion of the proposed development area (HER 19472-19475).
- 3.2.5 Archaeological investigation has also revealed a Roman cremation cemetery at Tiffenthwaite Farm to the west of the proposed development area (HER 19091). Six Roman cremation pits have been identified at the site in total, one of which was cut into a ditch fill (Grahame 1999 and Giecco 2000).



- 3.2.6 Wigton is first mentioned in documentary sources in 1163 bur appears to have earlier medieval origins. It was granted to Odard de Logis by the lord of Allerdale in the 12th century, from whom it descended to John de Wigton. The medieval trading centre is believed to have been at the entrance to the church at Corn Market. A market charter was granted in 1262 (Winchester 2017, 320).
- 3.2.7 In the 1680s Thomas Denton described the town as having established a thriving market, specializing in the linen trade, with a large number of liner weavers established in the neighboring villages (Winchester 2017, 321). The post-medieval market was located in Market Place, situated at the junction of major routes into the town. The linen industry at Wigton continued to grow in the 18th century but was in decline by 1900 when the principal industry in the town was tanning (Ibid).
- 3.2.8 The First Edition Ordnance Survey map of 1865 depicts the settlement at Wigton as being focused on the junction of King Street, West Street and High Street. The land to the south of Wigton was predominantly rural at this time, and the proposed development area is shown as an undeveloped agricultural field to the south of Syke Road (Figure 3a). To the north of Syke Road was Highmoor House (built 1810), set within formal gardens, orchards and parkland. Buildings are also depicted at High Tiffinthwaite and Low Tiffinthwaite to the west and south of the proposed development area.
- 3.2.9 Highmoor Mansion was built to the north of the site in 1885 by Edwin and Henry Banks. The grounds appear to have been extended to the north of Syke Road to create Highmoor Park by the time of the 1900 Ordnance Survey map. In 1909 the estate was sold, and the mansion was converted into flats in 1934-35 (Landed Families 2022). From the 1930s the grounds were developed for housing, however, the proposed development area remained agricultural land (Figure 3b and Figure 3c).
- 3.2.10 Historic mapping suggests that land south of Syke Road remained undeveloped agricultural land up until the late 20th century (Figure 3d). Since then, land to the west of the site has been developed for housing (The Hawthorns) and to the east several commercial developments have taken place including the construction of Syke Business Park. The proposed development area has remained undeveloped up to the present, but the northeast corner of the field was built upon, including the construction of two properties named Oak Lodge and Nonsuch (Figure 4).
- 3.2.11 Modern satellite imagery shows the presence of post-medieval and/or modern agricultural activity at the site, including a pattern of probable plough furrows within the proposed development area, aligned east to west, and a network of land drains in the field to the west (Figure 4).

### 3.3 Previous Archaeological Work

- 3.3.1 No known previous archaeological interventions have taken place within the site boundary. However, there have been several archaeological interventions undertaken in the immediate area.
- 3.3.2 An archaeological evaluation was undertaken on land north of Tiffinthwaite Farm, approximately 150m to the west of the proposed development area in 1999 in advance of a proposed housing



development (now the site of The Hawthorns). The evaluation revealed a shallow ditch containing a Roman cremation burial, which was placed in a vessel of Huntcliff-type ware (Grahame 1999). In 2000 an associated archaeological watching brief revealed a Late Iron Age palisaded enclosure at the site, along with five additional Roman cremation pits and a possible inhumation (Giecco 2000).

- 3.3.3 In 2005 an archaeological evaluation was conducted at the site of the Syke Business Park, located approximately 150m to the east of the proposed development area, to the south of Syke Road. Only field drains and a post-hole of modern date were identified (Jones 2005).
- 3.3.4 In 2008 an archaeological desk-based assessment and trial trench evaluation was undertaken prior to the re-location of Hopes' Auction Mart to its present site on Syke Road, located approximately 300m to the east of the proposed development area. Twenty-three evaluation trenches were excavated at the site, however only the foundations of demolished buildings and field drains were revealed, which were likely associated with a 19th century farmstead (AOC 2008).
- 3.3.5 This archaeological work suggests that prehistoric and Roman period remains are focused on land located to the north of the Roman fort and *vicus* at Old Carlisle, which could include the present site.



# 4 Geophysical Survey

#### 4.1 Introduction

- 4.1.1 The geophysical survey was undertaken on 16th February 2022. The field to the south of Syke Road comprised rough pasture at the time of the survey, which had recently been cleared of vegetation. The ground was waterlogged, and several deeply rutted vehicle tracks were present across the area.
- 4.1.2 The survey area was bounded by field boundaries consisting of hedges, ditches and some post and wire fences. Modern fences separated the field from the gardens or Nonsuch and Oak Lodge, and the buildings within Syke Park to the east. These fences produced strong magnetic disturbance around the periphery of the survey area. A gravel storage area was also present to the east, which likely explains a concentration of strong dipolar geophysical anomalies on the east side of the area.
- 4.1.3 Small discrete dipolar magnetic anomalies were detected across the whole of the study area (Figure 5 and Figure 6). These are almost certainly caused by fired/ferrous litter in the topsoil, which is typical for modern agricultural land. These anomalies are indicated on the geophysical interpretation drawing (Figure 7), but not referred to again in the subsequent interpretation (Figure 8).

#### 4.2 Geomagnetic Survey

- 4.2.1 Several weak linear positive magnetic anomalies were detected across the survey area, which were possibly due to the vehicle tracks/wheel ruts which were noted to be present across the survey area. Two similar parallel linear positive magnetic anomalies were detected on the west side of the survey area, aligned north to south which may be further wheel ruts or may define a track through the field.
- 4.2.2 Two very strong linear bipolar magnetic anomalies were detected crossing the centre of the survey area, aligned northeast to southwest and east to west. These were almost certainly associated with modern services and appear to relate to Nonsuch/Oak Lodge and the modern buildings within Syke Park. A weak linear negative magnetic anomaly was also detected to the south, aligned northeast to southwest, which may be a land drain or the location of another service pipe.
- 4.2.3 A weak linear positive magnetic anomaly was detected immediately to the southwest of Nonsuch on the north side of the survey area. This was aligned approximately east to west, but appeared to turn northwards at the west end (Figure 8, 1). Several weak discrete positive magnetic anomalies were also detected to the north. It is possible that this anomaly represents a soil-filled enclosure ditch.
- 4.2.4 Further weak linear positive magnetic anomalies were located crossing the south side of the survey area, which could relate to soil-filled features, but this was uncertain (Figure 8, 2). Two curvilinear positive magnetic anomalies were detected at the southeast corner of the survey area, which may also represent soil-filled features, but could also relate to the adjacent field boundaries (Figure 8,3).



#### 4.3 Discussion

- 4.3.1 The geophysical survey has detected evidence for a possible track, which may be modern in origin, as it appears to follow the west side of the field, joining an existing trackway to the south. Modern services have also been detected crossing the site, associated with the adjacent properties.
- 4.3.2 The geophysical survey has detected several possible soil-filled features which are concentrated on the higher ground on the north side of the field and the lower ground to the south (the central portion of the survey area was sloping ground which has more limited archaeological potential).
- 4.3.3 A possible soil-filled ditch was detected on the north side of the survey area (1), which could potentially define the south side of a rectilinear enclosure. However, this feature also appears to align with the modern boundaries to the northeast surrounding the dwelling known as Nonsuch.
- 4.3.4 A number of other possible soil-filled features have also been detected on the south side of the survey area, the nature of which is uncertain. These include a possible soil-filled ditch (2) and two curvilinear features (3), which appear to extend into the field boundary to the east, and the field boundary ditch to the south. The possible date and nature of these features is therefore uncertain.
- 4.3.5 Overall, the anomaly strengths were relatively weak, making interpretation of these features difficult. The ground was also noted to be very waterlogged and rutted in this part of the survey area.



## 5 Conclusions

#### 5.1 Survey Conclusions

- 5.1.1 Geomagnetic survey has been conducted on land to the south of Syke Road, Wigton, to provide information in relation to a proposed residential development. The proposed development area is believed to have archaeological potential due to the close proximity of Iron Age/Roman activity, including Tiffinthwaite Farm Enclosure and Cremation Cemetery (HER 19091) to the west of the site.
- 5.1.2 The geophysical survey has detected evidence for modern activity in the form of a possible track, land drains and services, and magnetic disturbance relating to the adjacent buildings at Syke Park.
- 5.1.3 A number of weak linear and curvilinear features have also been detected which are interpreted as possible archaeological soil-filled features, but their nature is uncertain, due to the weak anomaly strengths. These include a possible rectangular enclosure ditch, and two possible curvilinear ditches.

#### 5.2 Research Potential

- 5.2.1 Overall, the results of the geophysical survey suggest that potential archaeological activity is concentrated on the higher ground on the north side of the site, and the lower ground to the south. The sloping central part of the survey area is believed to have low archaeological potential.
- 5.2.2 It has already been determined that an evaluation of the site is required as a planning condition in accordance with a written scheme of investigation, which is to be submitted and approved by the Local Planning Authority. It is recommended that a targeted trial trench evaluation is undertaken, with linear trenches located to sample the geophysical anomalies detected by the survey, and to test apparently blank areas of the site. The scope of this work will need to be agreed in advance with Jeremy Parsons, Historic Environment Officer at Cumbria County Council.



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# **APPENDIX 1: Figures**

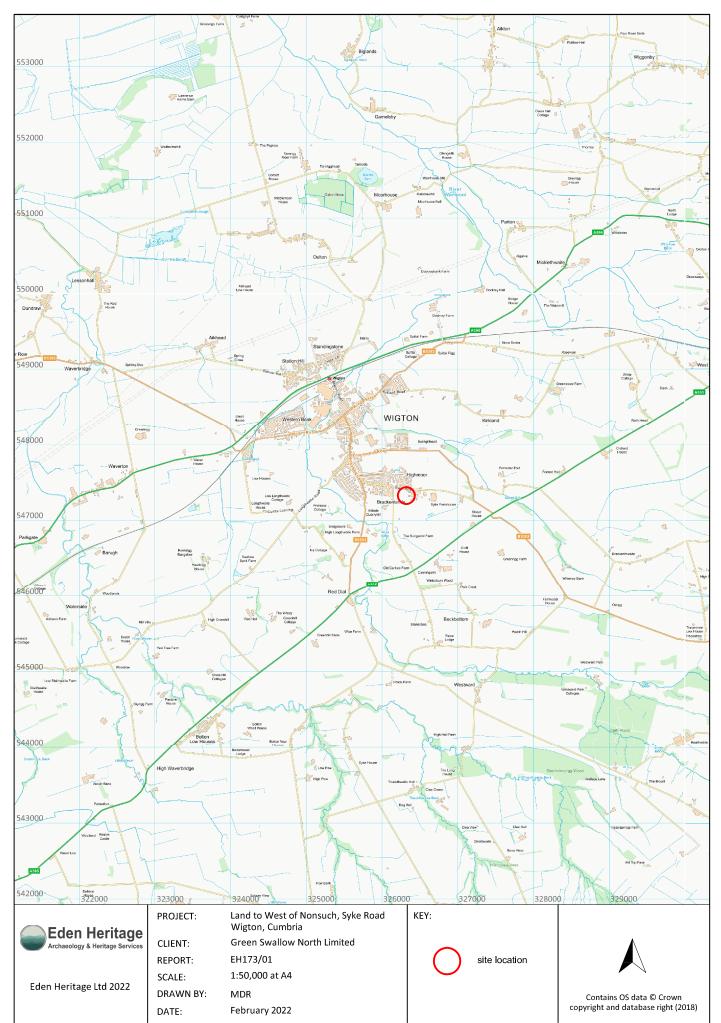


Figure 1: Site Location.

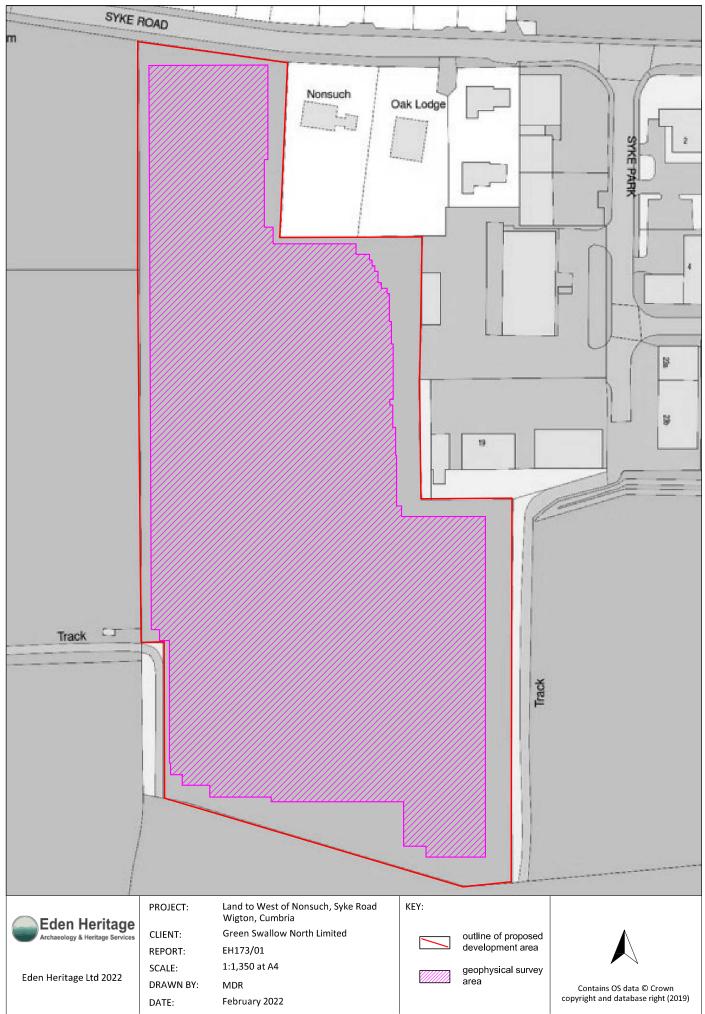


Figure 2: Location of the geophysical survey area.

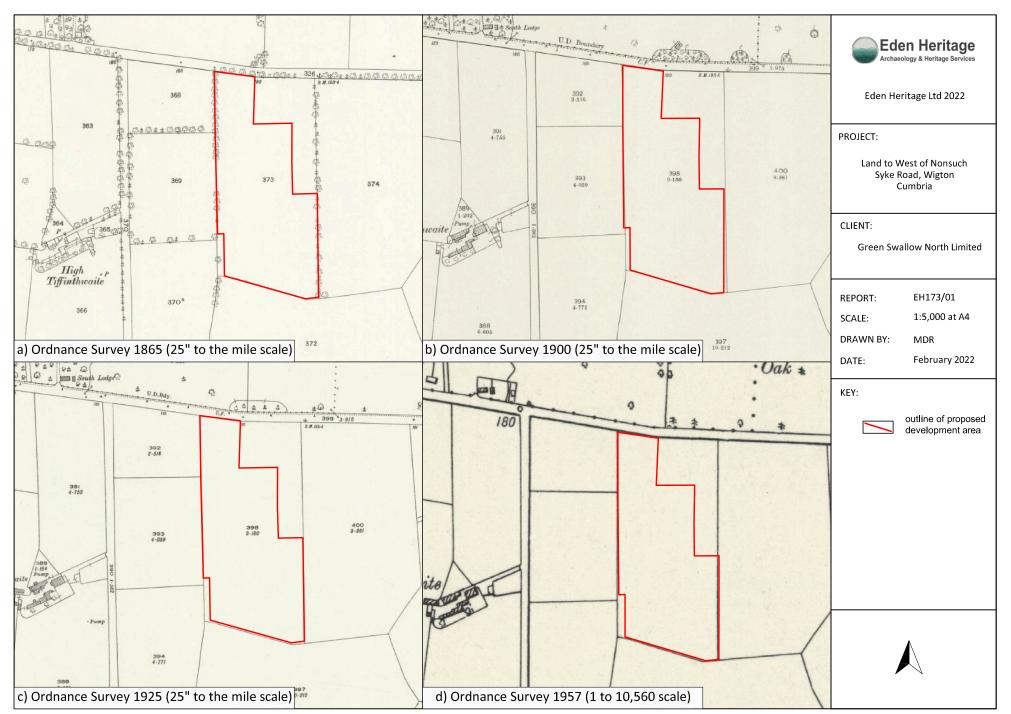


Figure 3: Extracts from historic Ordnance Survey maps (1865-1957).



Figure 4: Extract from modern stellite imagery (2015).

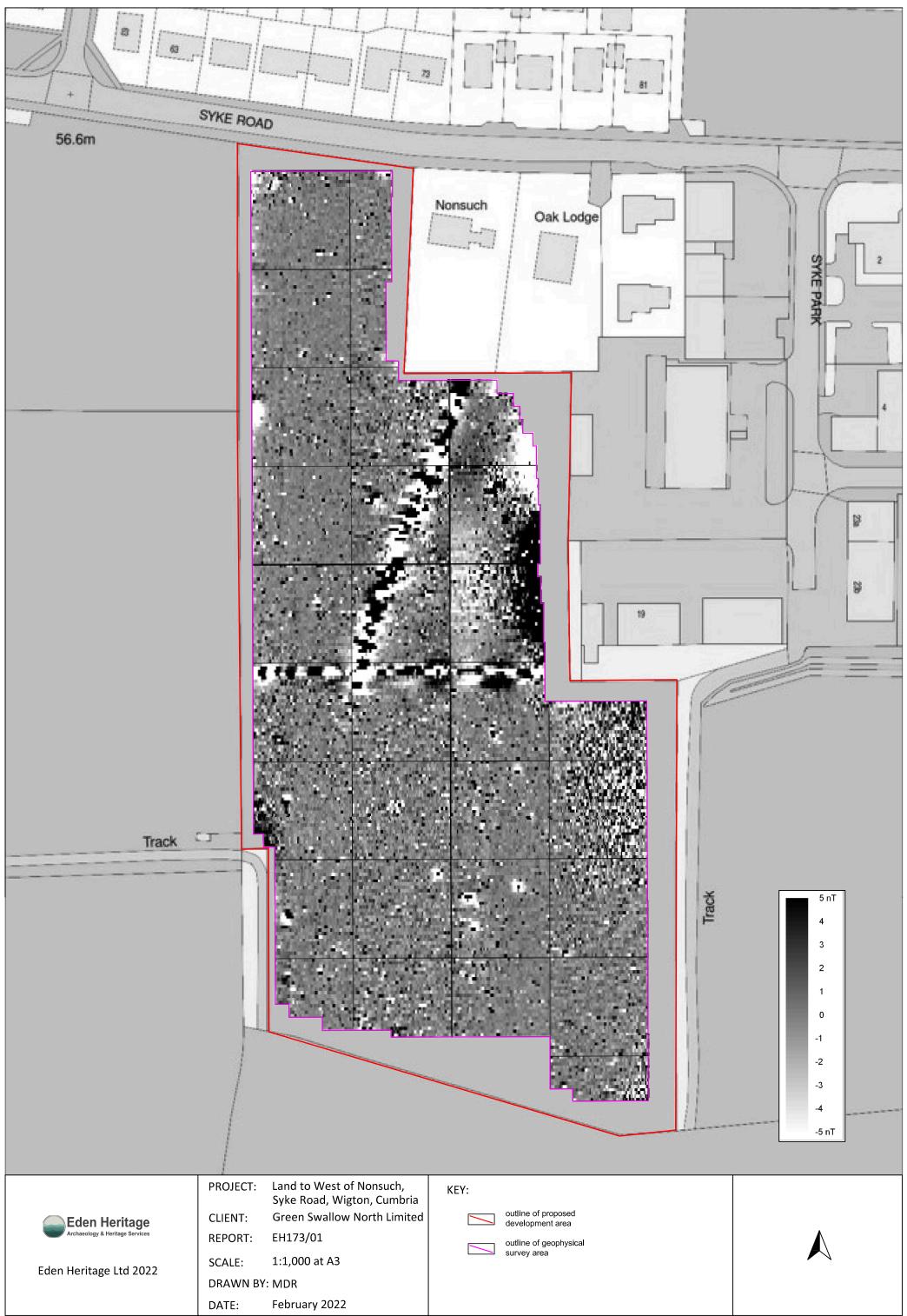


Figure 5: Geophysical survey (minimally-processed data) showing survey grid.



Figure 6: Geophysical survey (processed data).



Figure 7: Geophysical interpretation.

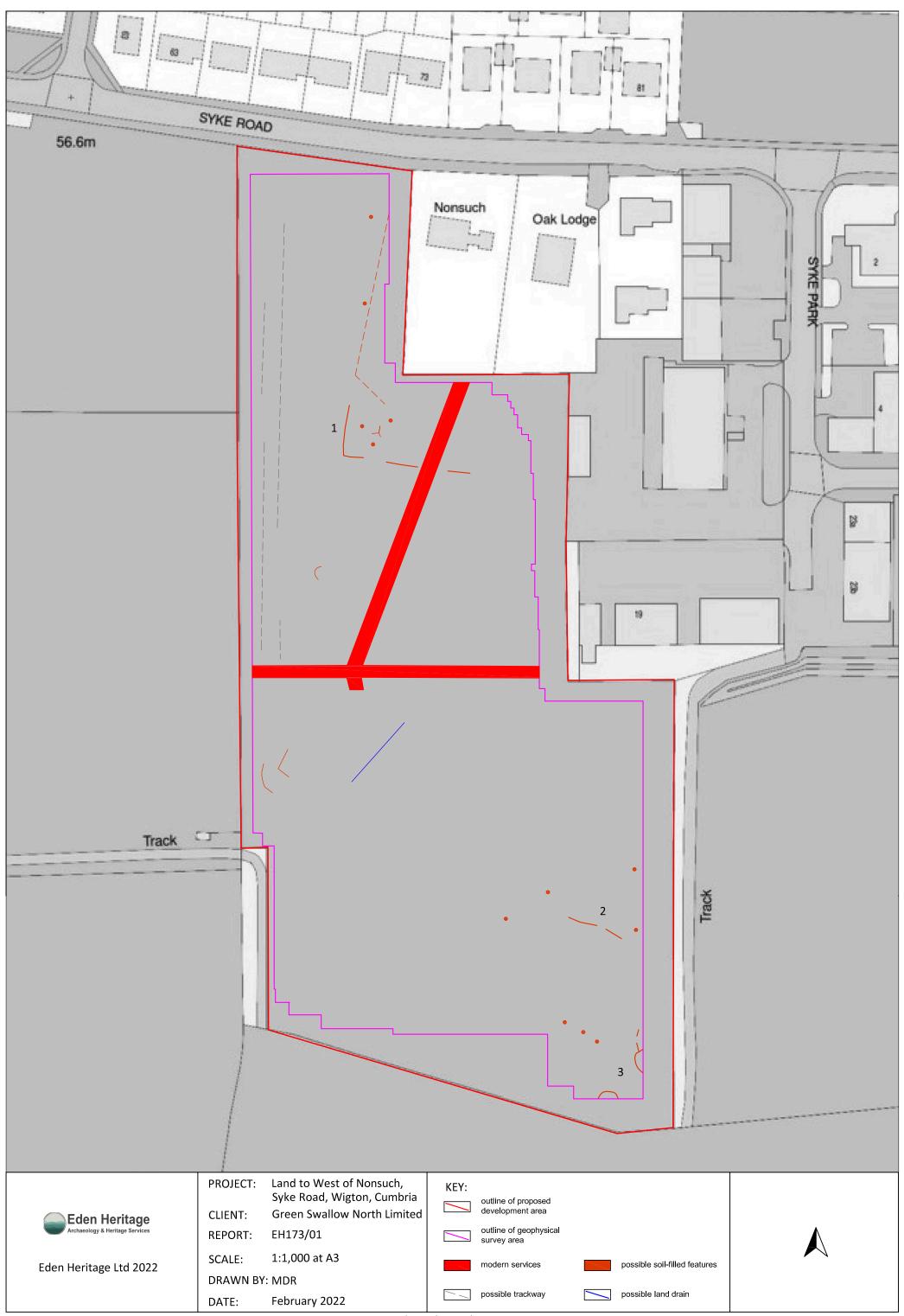


Figure 8: Archaeological interpretation.

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