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Report on Geophysical Survey at Huntstown, Co. Dublin

ARCHAEOLOGICAL
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SERVICES UNIT

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NON-TECHNICAL SUMMARY

This report details the results of a Geophysical Survey carried out at Huntstown, Co. Dublin (ITM 711800, 740999). The survey was undertaken in response to a Further Information Request, Item 14 attached to Planning reference FW23A/0111 by Fingal County Council in relation to a proposed Materials Recovery Facility along with a Food Container Cleaning Plant (Phase 1 of the Huntstown circular Economy Hub). The site lies adjacent to and south of the access to the Huntstown Power Station, west of North Road and to the northwest of Junction 5 (M50 with N2). It consists of two fields: Field 1 and Field 2. Field 1 was found to be unsuitable for survey due to rough terrain and heavy overgrowth, and only Field 2 could be surveyed. An area along the north and east edge of the field has recently been stripped as part of a separate development.

There are no Recorded Monuments and no Protected Structures located within the survey area.

Test trenching (20E0601) was previously carried out in the northern portion of Field 1. A total of seven test trenches were excavated and no features were exposed. Aerial imagery examined suggests the field was used for topsoil storage in 2008, and reinstated thereafter, but subsequently let to grow over. Furthermore, human remains were uncovered in May 2023 during monitoring (21E0185) of the trenching for redirection of the power lines (permitted under Planning Ref. No. FW21A/0144). The remains were recorded within the southeast portion of Field 2 and are currently being preserved by record. The site is located within a sensitive landscape. To the north of the site, a bivallate enclosure and pre-Famine vernacular structure were identified and since excavated (19E0635; 21E0185).

The geophysical survey was conducted by Donald Murphy, Robert Breen and Jeanne Rochford of Archaeological Consultancy Services Unit Ltd. (ACSU) under licence 23R0419 issued by the Department of Housing, Local Government and Heritage. A full detailed gradiometer survey was undertaken throughout the application area using a Bartington GRAD 601-2 dual-sensor fluxgate gradiometer cart system.

The geophysical survey successfully identified the location of buried archaeological remains. These are located within Field 2 and represent an extensive settlement complex consisting of an enclosure located on the top of the ridge (partly quarried out since the 19th century), and associated linear and curvilinear anomalies extending to the south with associated small and large cut features (that could be post-holes, pits, kilns, etc.), field systems and anomalies that could represent spreads. These appear to extend to the west and east across the slope of the hill. The presence of human remains identified during archaeological investigations suggests further human remains might be present within the eastern part of the present site.

It is recommended that the anomalies identified are targeted during an intensive test trenching programme. Features exposed shall be sufficiently sectioned in order to assess their depth and nature. This must be carried out by a licence-eligible archaeologist prior to any groundworks taking place. Once test trenching is complete, further mitigation might include preservation in situ (avoidance), excavation (preservation by record) and/or monitoring. The Department of Housing, Local Government and Heritage shall be consulted in this regard.

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1. INTRODUCTION

This report details the results of a Geophysical Survey carried out on a site at Huntstown, Co. Dublin (ITM 711800, 740999; Figures 1 – 2). The site lies adjacent to and south of the access to the Huntstown Power Station, west of North Road and to the northwest of Junction 5 (M50 with N2). It consists of two fields: Field 1 and Field 2. Field 1 was found to be unsuitable for survey due to overgrowth and the roughness of the underlying ground, and only Field 2 could be surveyed.

A full detailed gradiometer survey was undertaken throughout the application area using a Bartington GRAD 601-2 dual-sensor fluxgate gradiometer cart system. The geophysical survey was conducted by Donald Murphy, Robert Breen and Jeanne Rochford of Archaeological Consultancy Services Unit Ltd (ACSU) under licence 23R0419 issued by the Department of Housing, Local Government and Heritage.

2. ARCHAEOLOGICAL CONDITION

The geophysical survey was carried out in response to a Further Information Request, Item 14 attached to Planning reference FW23A/0111 by Fingal County Council in relation to the proposed Materials Recovery Facility along with a Food Container Cleaning Plant (Phase 1 of the Huntstown circular Economy Hub; See Figure 7).

3. METHODOLOGY

The gradiometer survey was undertaken using a Bartington GRAD 601-2 dual-sensor fluxgate gradiometer system mounted on a non-magnetic cart (see also Appendix 1). A detailed survey was conducted with a sample interval of 0.25m and a traverse interval of 0.5m for all the survey areas within the proposed development site, with variations in the magnetic field between -100nT to +107.834nT.

All work was carried out in accordance with the *IAI Code of Professional Conduct* (Institute of Archaeologists of Ireland 2006) and in accordance with the *EAC Guidelines for the use of Geophysics in Archaeology* (Schmidt et al. 2016), as well as English Heritage's *Geophysical Survey In Archaeological Field Evaluation* (David et al. 2008).

4. SURVEY OBJECTIVES

The survey aimed to establish the presence of any potentially existing but previously unknown monuments and any other archaeological features within the site to inform a future programme of archaeological test trenching and plan for development of the site.

5. SOILS, GEOLOGY & TOPOGRAPHY

The site has an elevation of c. 81-85m Ordnance Datum (O.D.). The underlying geology within the eastern portion (majority of Field 2), consists of calcareous shale, limestone conglomerate and is part of the Tober Colleen Formation. The underlying geology within the western portion (Field 1 and the southwestern extent of Field 2) consists of nodular & muddy limestone & shale and is a part of the Boston Hill Formation. The underlying geology is overlaid by a mixture of mineral deep, well and poorly drained soils and shallow, rocky, peaty/non-peaty mineral complexes (Geological Survey of Ireland).

6. ARCHAEOLOGICAL ASSESSMENT

6.1 Archaeological & Historical Background

The site is located within the county of Dublin, in the townland of Huntstown (*Baile an Huntaigh*) in the Barony and Civil Parish of Castleknock.

Huntstown townland (<https://www.logainm.ie/17230.aspx>) can be identified as early as c. AD 1550 as *Moche Huntyston* in the Calendar of Fiants of Queen Elizabeth. Fiants were warrants, grants of land, appointments to offices and other matters directed to the Irish Chancery under the Great Seal.

Prehistoric Period

The earliest known settlements in Ireland can be dated to the Mesolithic period (6000-4000BC). The most common evidence for the presence of Mesolithic activity includes scatters of worked flint and middens (mounds of domestic refuse) which consisted largely of marine mollusc shells. Middens occur most frequently along the coast and near water sources including rivers and lakes. Currently there is no evidence for Mesolithic settlement within the environs of the proposed development site.

In the Neolithic period (4000-2500BC) with the introduction of farming, communities became more settled and less nomadic. Their economy was focused on cereal cultivation and rearing livestock. People changed from being food collectors, scavengers, hunters and fishers to cultivating land, growing crops and managing, breeding and controlling stock. This required forest clearance and working poorer soils. Pottery was also being produced and is found in significant quantities on archaeological sites. Field boundaries were built and territorial markers were also constructed to allow future prospectors to see that the land is taken. Megalithic tombs acted as both a territorial marker and as a ritual monument within the community. There are four types of tombs, court cairn, portal, passage and wedge. The court, portal and passage style tombs belong solely to the Neolithic period, while the wedge tomb transitions from the Neolithic to the Bronze Age. Only five prehistoric sites are recorded within the study area, the most significant being the Neolithic enclosure in the townland of Kilshane (DU014-093), located c. 1.5km north of the proposed development site. The large segmented ditched enclosure contained large amounts of cattle bone in its deposits and had no evidence of an internal or external bank (Moore 2005).

The Bronze Age (c. 2400-800BC) is marked by the use of bronze – the first metal in Ireland. Changes in society were visible, especially in burial practices. The megalithic tombs were replaced by individual burials, with cremated or inhumated bones

in cists, often with pottery as grave goods. Burials are often found on high ground and frequently megalithic structures were reused in Bronze Age burial practices. Different forms of burial were seen. Barrows were also being constructed during this period, as well as ceremonial monuments such as henges. Fulachta fiadh are Bronze Age cooking sites characterized by a crescent-shaped mound of burnt stone. Groups of these monuments are often found in damp areas where the trough used for cooking would naturally fill with water. Stones were heated on a fire and then thrown into the trough until the water was hot enough to cook with (although alternative uses such as bathing have also been suggested for these monuments). After use, the stones were removed from the trough and placed around its edge until the characteristic crescent-mound was formed.

A Ring-ditch (DU014-100) seen as a cropmark, lies c. 1.1km from the site. This Funerary monument, that dated from the Bronze Age right through to the Iron Age, is not visible above ground. It is visible as a cropmark, circular in shape with a diameter of c. 45m.

Two burnt mounds or fulachta fiadh sites are located c. 1.3km west of the proposed development site in the townland of Grange (DU014-050). Discovered during the monitoring of the excavation of the Northeast gas pipeline, they consisted of charcoal rich soil with heat fractured stone (Conway 2000).

Medieval period

The Early Medieval period (AD 400–1169) saw tribal kingdoms, known as túath, of which there were c. 150 in the country. They comprised of inhabitants living in defended homesteads known as ringforts or raths, many of which are still traceable in the fields around Coldwinters and Huntstown today. The number of ditches and banks surrounding a rath is thought to be a testament to the status of the occupiers (Edwards 1996). During this period, the proposed development site was situated in the Tuath of Tuirbe, later known as Fine Gall, a territory controlled by the dynasty of the Ui Chormaic kings (MacCotter 2008). There are a number of possible Ringforts in the townland of Newtown (DU014-00602, DU014-007 and DU014-053), an enclosure in Coldwinters (DU014-016—), an enclosure in Dubber (DU014-017—) and an enclosure in Cappogue (DU014-029—). An excavation (99E0220) in Kilshane townland revealed a large cemetery (DU014-048--) indicative of a large-scale settlement within the area.

The Late Medieval period (1100-1600) in Ireland saw the invasion of the Normans, which began in 1169, when Diarmait MacMorrough, the deposed King of Leinster, sought help from Henry II. Henry II permitted some of his subjects to go and help, an advance party of Anglo-Normans arrived in Ireland from South Wales, with followers from France and Flanders. A year later a stronger party arrived under Richard de Clare (Strongbow), Earl of Pembroke. The Anglo-Normans colonized Ireland at an alarming rate. Ireland was designated a lordship and Henry II, assigned the lordship to his youngest son John and from there the outlines of a royal administration were developed (Ryan, 1994).

Henry II made Hugh de Lacy palatinate of the lands of Meath in 1172, which probably included Castleknock (O'Drisceoil 2020). De Lacy then granted Hugh Tyrell the lands of Castleknock on behalf of the king (ibid). Anglo-Norman settlement in Ireland was characterised initially by the development of motte and bailey castles. Motte and bailey castles were established

along strategic locations overlooking rivers or important routeways (ibid). Mottes consist of a mound of earth, generally circular in plan, with a flat summit where a wooden tower / building (known as a bretésche), was located (O'Sullivan & Downey 2007).

Mottes were often built around natural topographical features, such as rock outcrops, low narrow ridges or eskers. The technique used to construct mottes has been described as ring-and-fill (O'Keeffe 2007). The circumference of the mound was first marked out at ground level with two revetting walls or earthen banks. Within these rings, the motte was built up carefully with alternative layers of soil, turf and deposits such as sand and gravel. Another technique was to pile up soil and other material around a small mound or a pre-existing prehistoric mound (ibid)

There are two motte and bailey castles within the environs of the proposed development; Newtown (DU014-013) situated c. 0.9km northwest and Dunsoghly (DU014-005.003) c. 1.7km northwest of the site. The Motte in Newtown was recorded as a circular platform (100m east to west; 70m north to south), prior to its removal in 1952. An earthwork depicted on the first edition O.S. map in Ballycoolen townland is listed as a moated site (DU014-025), however, an archaeological investigation discovered it was a natural feature (Mount 2012).

Dunsoghly castle (DU0145-005001), situated c. 2km north of the proposed development, is a well-preserved tower house built in the 15th century by Sir Rowland Plunkett. The Plunkett family lived in the castle for 500 years and were known among the great catholic families of the Pale (Tutty 1972). The site of Cappoge Castle (DU014-027-) lies c. 1.7km to the southwest. Cappoge castle, built by The Woodcocke family, was depicted in a drawing in 1776 by Gabriel Beranger as a three-storey structure. It was demolished sometime prior to 1860 (Ó'Drisceoil 2020).

Post-Medieval Period

Huntstown house is located c.1.4km northwest of the proposed development site. The earliest documented evidence linking a person to Huntstown House was in 1766 when a merchant by the name of Hoxes Cotes was mentioned with an estate map. (ibid). On the Rocque map of 1760 the map shows the house is made up of several buildings with a main entrance to the south. A lane links Huntstown House with Kilshane house.

Several quarries and gravel pits are recorded within the environs of the site, including the sand pit within the proposed development site, which probably dates from the post-medieval period. There was an increase in building and the construction of laneways in this period requiring a source for stone and gravel.

6.2 Previous Archaeological Investigations

In 2020, Kilkenny Archaeology test trenched the northern extent of the western field (Field 1). This was carried out under licence 20E0601 (Ó'Drisceoil, 2021). Seven test trenches were excavated. No archaeological deposits, features, structures or objects were identified in any of the trenches. It recommended a structured programme of archaeological monitoring to be carried out.

Furthermore, human remains were uncovered in May 2023 during monitoring (21E0185; Hickey, 2023) of the trenching for the redirection of the power lines along the north and east side of field 2 (permitted under Planning Ref. No. FW21A/0144). The remains were recorded within the southeastern portion of Field 2; and are currently being preserved by record. No archaeological features were identified along the north or north east ends of the site during the monitoring. Furthermore, the site is located within a sensitive landscape. To the north of the site, a bivallate enclosure and pre-Famine vernacular structure were identified and since excavated (19E0635; Bailey, 2019; 21E0185; Hickey, 2023).

Listed below (Table 1) are the details of these previous archaeological investigations. The information is derived from the *Summary Accounts of Archaeological Excavations in Ireland* (www.excavations.ie).

Table 1: Previous archaeological investigations in the environs of the site

Excavation.ie reference	Licence No.	Site Type	Investigation Type
2017:872- Coldwinters, Dublin	17E0436	Ring-ditch	Test trenching
2021:238 – Coldwinters, Dublin	17E0436	Ring-ditch	Archaeological excavation
2005:409-Coldwinters/Newtown, Dublin	05E0236	Prehistoric/medieval	Archaeological testing
2006:568 -Balseskin, Dublin	05E0063	No archaeological significance	Archaeological testing
2008:384-Dublin Airport Logistics Park, Coldwinters, Dublin	05E0236	Nothing of archaeological significance	Archaeological testing
2017:424-Coldwinters, Dublin	17E0285	Enclosure; Cremation	Archaeological monitoring and excavation
2010:283 – Merryfalls, Dublin	10E0459	Enclosure	Archaeological testing
2018:820- Huntstown, Dublin	18E0561	No archaeology found	Archaeological monitoring
2021:266:Huntstown and Johnstown, Old Ashbourne Road, Dublin	21E0185	Bivallate enclosure and vernacular structure	Archaeological excavation

In Coldwinters, to the northeast of the proposed development site, an excavation (17E0436) on a known crop mark (DU014-015) confirmed the presence of a circular slot-trench measuring 10m in diameter with an average depth of between 0.27-0.3m. A fragment of a blue glass bead was recovered from within the trench. This feature likely represented a circular slot-trench associated with a possible dwelling/round house. A cereal-drying kiln was exposed 37.32m to the east of the circular slot-trench. Both features were highly truncated by agricultural activity in the past. No further archaeological features or

deposits of an archaeological nature were recorded on site. Samples were retrieved and processed, with a charcoal sample from the cereal-drying kiln returning a date of Cal 1050-1270AD. Up until this time, it was presumed the ring-ditch was prehistoric (Gallagher 2022).

An Enclosure site – DU014-016 –is located within the townland of Coldwinters. The existence of this possible monument was originally noted as a cropmark on an aerial photograph (CUCAP, BDQ 66) dating to 1971. No evidence of the monument was uncovered during the testing (17E0285). A further review of the Aerial Photograph (CUCAP, BDQ 66) on which the monument was originally identified indicated that the cropmark enclosure feature was bounded to the north and east by field boundaries, both of which were removed when the land was used as a golf course. The remains of a previously unrecorded deposit of burnt/cremated human bone were uncovered and subsequently excavated (Byrne 2017).

South of the proposed development site, test excavation (licence number 10E0459) confirmed the presence of an enclosure found in a geophysical survey. The enclosure ditch was heavily truncated and measured 1.1m wide by 0.45m deep. The profile of the ditch was U-shaped and it had two fills. The upper fill was a mottled brown/grey silty clay with occasional small stones and frequent inclusions of charcoal. Few features were recorded in the interior of the enclosure and this further suggests that the site had been partially ploughed out (O'Donovan 2010).

Across the road to the northwest of the site, test trenching (21E0185, Hickey, 2023) revealed two individual sites recorded as Archaeological Areas 1–2. Of these, one of the sites corresponded with known geophysical anomalies and had been previously tested (19E0635, Bayley 2019). Area 1 was a bivallate enclosure, which proved to be more substantial than initially suspected; the other area (Area 2) was a pre-Famine vernacular structure (Hickey 2023). In May 2023, as part of a separate development, a wayleave for power lines was excavated along the north and east sides of the present development site. Disarticulated human remains were inadvertently disturbed by the groundworks, at the edge of the eastern field. There was a minimum of two individuals represented in the skeletal remains (Mullins 2023).

6.3 Recorded Monuments

The site does not contain any Recorded Monuments listed within the Record of Monuments and Places (RMP) or Sites and Monuments Record (SMR). The following (Table 2) is a list of monuments located within the site and the immediate environs (Figure 2). These descriptions are derived from the National Monuments Service Archaeological Survey Database (<http://maps.archaeology.ie/historicenvironment/>).

Table 2: Recorded Monuments in the environs of the site

DU014-122001	Enclosure
This monument was subject to geophysical survey (Licence no. 09R195) and test excavation (Licence no. 10E0462) as part of the proposed Metro West development. A sub-rectangular enclosure 35m by 25m was identified and confirmed through test excavation. Two postholes were located either side of the ditch (0.55m wide and 0.25m deep) suggesting the possibility of a palisade. Two corn-drying kilns (DU014-122002-; DU014-122003-) are situated at the S	

of the enclosure (O'Donovan 2010, 18).	
DU014-122002	Kiln –corn-drying
This monument was subject to geophysical survey (Licence no. 09R195) and test excavation (Licence no. 10E0462) as part of the proposed Metro West development. A comma shaped corn drying-drying kiln and the probable flue of a second corn-drying kiln were located to the S of an enclosure (DU014-122001). The former (2.1m wide and 0.51m deep) (O'Donovan 2010).	
DU014-102	Enclosure
A large circular enclosure visible as a crop mark on an aerial photograph (SMR file; pers. comm. T. Condit). Relatively low-lying field north of M50 and west of N2. No visible remains	
DU014-124	Enclosure
<p>Located in large arable field close to the field's northern boundary, c. 148m north-east of a large crop mark enclosure (DU014-102-_, cropmarks indicate the presence of a subsurface ditch. The cropmarks are visible on Google Earth imagery 24 June 2018.</p> <p>The enclosure is subcircular in plan (diam. C. 32.3m N-S by c. 24.5m E-W). there is no evidence for an entrance gap through the ditch. A linear cropmark, a subsurface ditch, can be seen adjoining the enclosure along its southern perimeter.</p>	
DU014-132	Ring-ditch
Located in large arable field close to the field's N boundary, c. 320m NE of a large cropmark enclosure (DU014-102---), cropmarks indicate the presence of an arrangement of four ring-ditches. The ring-ditches are visible on Google Earth imagery	
DU014-133	Ring-ditch
Located in large arable field close to the field's N boundary, c. 295m NE of a large cropmark enclosure (DU014-102---), cropmarks indicate the presence of an arrangement of four ring-ditches. The ring-ditches are visible on Google Earth imagery	
DU014-047	Inn
The OS 6-inch map shows the Old Red Lion. It is mentioned in the Finglas, County Dublin, Vestry Books for the year 1675 (1916, 33). Site within overgrown uneven pasture beside road. No visible remains.	
DU014-138	Earthworks
In tillage field. Circular-shaped cropmark (diam. c. 45m) with possible outer enclosing ditches visible on Apple Maps orthoimage and Google Earth orthoimages. See attached orthoimage taken from Apple Maps and Google Earth orthoimage	

6.4 Protected Structures and National Inventory of Architectural Heritage

There are no protected structures listed in the *Fingal Development Plan 2023-2029*, located within the site of the proposed development nor within the environs of the site. Neither are there any structures recorded in the National Inventory of Architectural Heritage (NIAH).

6.5 Finds listed within the Topographical Files of the National Museum of Ireland

The Topographical Files of the National Museum of Ireland were also consulted to assess the area's archaeological potential. These files list all archaeological artefacts in the care of or known to the museum. Such a record can provide evidence for human settlement or activity in the absence of physical remains or documentary references. No such finds were recorded for the townland of Huntstown.

6.6 Cartographical evidence

A review of available historic mapping for the area was carried out to include the Ordnance Survey of Ireland, including the 6-inch (1836) and 25-inch (surveyed 1906 – published 1909). Potential archaeological or cultural heritage features are marked on such maps and provide a useful resource in identifying sites, particularly if they no longer have any above-ground remains.

The site is located within two large fields on the 1836 map with a strip of trees north of the eastern field. An east to west aligned road runs from the west up as far as the strip of trees to the east. A small laneway runs from the end of the road into the eastern field and stops at a sand pit, roughly one third of the length of the field. There are no structures within the two fields. On the third edition map the laneway down to the sand quarry has gone, suggesting the quarry was abandoned. The rest of the fields remain the same.

6.7 Aerial photography

In addition to examining the various editions of the OS maps, aerial photographs from the Geological Survey of Ireland, dating from between 1995 and 2013 and the google aerial imagery dating between 2002 and 2022 were consulted.

The 1995 black and white aerial image shows a roughly cut road meandering from the west and edging to the south and east of the site. The east to west road that stopped at the trees to the north now continues through the trees and meets a northwest to southeast aligned road to the east. A much larger national road is seen to the south and southeast. In the field immediately southeast, the sub-station has been constructed. In the 1999 image the south and east road that edged the site is back under grass. The road to the north of the site breaks in two with vegetation in the centre before merging with

the road to the east. In 2005, a new development was being constructed in a narrow strip of land to the northwest, south of the road. A road runs south of the new development site and cuts along the northwestern corner of the proposed development site. The quarry is visible by the overgrown vegetation.

Google Pro Earth images were also studied. In 2003 the power lines with ESB poles are clearly visible in both fields together with a number of pylons in the eastern field and four pylons outside the southeastern edge of the site. In 2008, the ground is freshly dug up to and around the pylons east of the overgrown sand quarry.

7. METHOD OF DATA INTERPRETATION

The gradiometer survey was conducted with a Bartington GRAD 601-2 dual-sensor fluxgate gradiometer system. A detailed survey was conducted with a sample interval of 0.25m and a traverse interval of 0.5m for all the survey areas. This allows the detection of potential archaeological responses. Data was collected using a GPS-based non-magnetic cart system with four mounted sensors.

The Bartington GRAD 601-2 instrument is a specifically designed gradiometer for use in archaeological prospection. Extremely sensitive, these instruments can detect variations in soil magnetism to 0.01nT, affording diverse applications throughout various archaeological, soil morphological and geological conditions. The survey is geo-referenced with a Trimble R10 unit accurate to within 1cm. The results were interpreted by examining the raw data as greyscale images, X.Y. trace, relief and data plots. Archived raw data is presented in Figure 5, and an interpretation is illustrated in Figure 6.

8. SURVEY RESULTS

The geophysical survey was conducted by Donald Murphy, Robert Breen and Jeanne Rochford of Archaeological Consultancy Services Unit Ltd (ACSU) under licence 23R0419 (Figures 5-7).

The geophysical survey successfully identified the location of buried archaeological remains. These are located within Field 2 and appear to represent an extensive settlement complex consisting of the following:

- The partial remains of an oval enclosure slightly offset to the south and surrounding the pre-existing quarry. The enclosure consists of a curving negative anomaly commencing at the south-western edge of the quarry and continuing southeast, east and then curving back to the north along the east side into an area of magnetic interference. A portion of the north-eastern edge of the enclosure appears to return westwards immediately east of the quarry. Overall the Enclosure measures 80m NW-SE by 65m NE-SW. The existing 19th century quarry has impacted the north-west portion of the enclosure and a significant part of the interior. The southern extent of the enclosure appears to have a gap where it opens into a possible field or annex at the south-west corner.
- A series of linear and curvilinear anomalies that extend southwards from the enclosure and east-west across the gentle south-facing slope of the ridge. These have associated small and larger negative features that could

represent pits or kilns. The north-south and east-west aligned linear anomalies probably represent field systems or other rectangular enclosures associated with the main enclosure on the summit of the ridge. The anomalies appear to extend eastwards towards the site where human remains consisting of two individuals were recently identified. There is therefore a possibility that further human burials might be present within the site. The complex to the south of the enclosure measures 125m east-west by 65m north-south approximately.

9. CONCLUSIONS & RECOMMENDATIONS

The geophysical survey at Huntstown, Co. Dublin, was carried out to assess the site's archaeological potential. The site consisted of two fields; Field 1 and 2. Field 1 was found to be unsuitable for survey due to overgrowth and its uneven nature, the northern portion of that field was subject to test trenching previously (20E0601; Ó'Drisceoil, 2021) with no features identified. Field 2 was surveyed.

The geophysical survey successfully identified the location of buried archaeological remains. These are located within Field 2 and represent an extensive settlement complex consisting of an enclosure, linear and curvilinear anomalies with associated small and large cut features (that could be pits, kilns, etc.), field systems and anomalies that could represent spreads. These appear to extend to the west and east across the slope of the ridge. The presence of human remains identified during adjacent archaeological investigations to the east suggests further human remains might be present within the site.

It is recommended that anomalies identified are targeted during an intensive test trenching programme. Features exposed shall be sufficiently sectioned in order to assess their depth, nature and significance. This must be carried out by a licence-eligible archaeologist prior to any groundworks commencing. Once test trenching is complete, further mitigation might include preservation in situ (avoidance), excavation (preservation by record) and/or monitoring. The Department of Housing, Local Government and Heritage shall be consulted in this regard.

10. REFERENCES

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Extract from the First edition Ordnance Survey (OS) 6-inch map, 1836.

Extract from the Third edition Ordnance Survey (OS) 25-inch map, 1906

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Topographical files of the National Museum of Ireland.

Appendix 1 - Summary Technical Information & Glossary of Terms

Fluxgate Gradiometer Survey is a non-intrusive method of archaeological prospection that is most often used in Irish Archaeology. This method allows for rapidly mapping archaeological objects, structures, deposits and other features, including geological anomalies, that survive beneath the ground. It allows the most rapid ground coverage and records a variety of anomalies caused by human activity and changes in the natural subsoil. The results are presented as a greyscale map of anomalies detected that are interpreted by an experienced archaeologist.

Surveys are undertaken using GPS-based lightweight Bartington Grad 601-2 mounted on the Bartington Cart system. Ground cover must be 0.30m or less. The instrument used is operated by an experienced, skilled geophysical survey technician. The data is collected by hand-wheeling the cart over the survey area in evenly spaced parallel transects. The equipment was specifically designed for archaeological prospection. It includes highly stable sensors, minimising requirements for excess data processing. The instrument has a vertical 0.5 m sensor separation permitting finite resolution of buried archaeological features. Surveys can be undertaken in a scan or detailed (zig-zag traverse) modes for reconnaissance or high-density mapping. The fluxgate enables reliable flexibility during fieldwork. Regular realignment of the instruments and zero drift correction ensure constant high data quality. These extremely sensitive instruments can detect variations in soil magnetism to 0.1nT, affording diverse applications throughout a variety of archaeological, soil morphological and geological conditions.

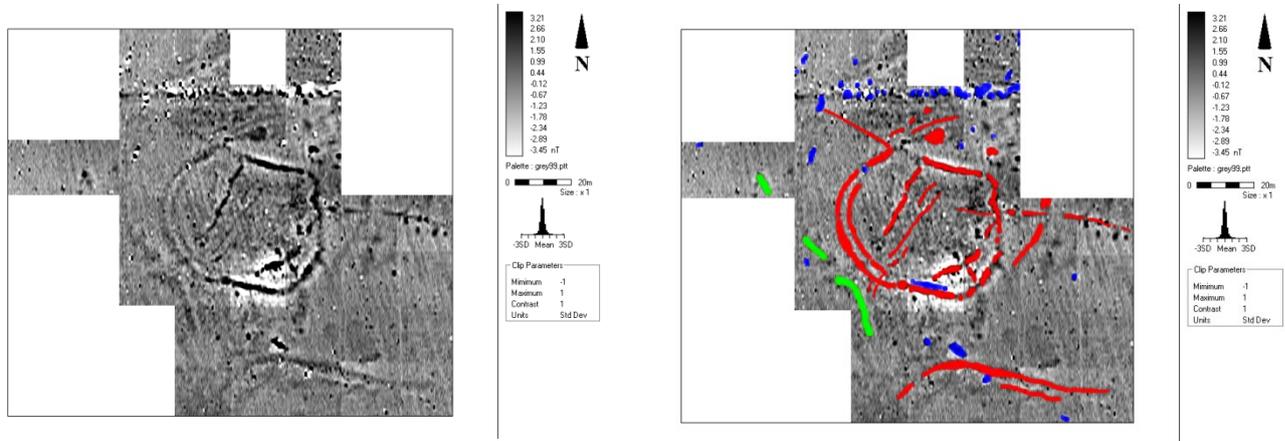
The instrument can be employed in both commercial and research-based investigations allowing for the completion of projects within short timescales. Regular grid sample densities from standard 1600 readings to 12800 readings per 20m by 20m grid are permitted. A constant high quality of data is assured by experienced field staff operating in accordance with *EAC Guidelines for the use of Geophysics in Archaeology* (Schmidt et al. 2015) and English Heritage's *Geophysical Survey In Archaeological Field Evaluation* (David et al. 2008).



Bartington Grad 601-2 mounted on Bartington Cart.

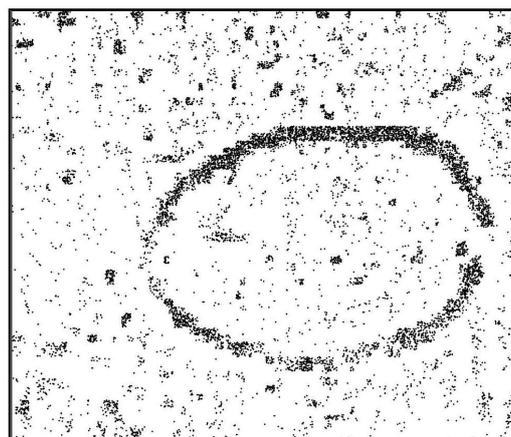
Data Display Format

Greyscale: The greyscale format assigns a cell to each datum according to its location on the grid. The display of each data point is conducted at very fine increments, allowing the full range of values to be displayed within the given data set. This display method also enables the identification of discrete responses that may be at the limits of instrument detection.



Early medieval enclosure greyscale

Dot Density Plot: Each datum is assigned a cell in which the intensity or number of dots displayed is proportional to the magnitude of the individual response. The visibility or presentation of responses within a given survey area is governed by numeric parameters specific to both soil morphological and archaeological conditions observed on site. Typically, the range of weak to strong responses is manifested by a low to a high level of dot density. The format is useful for displaying gradiometer and resistance data, particularly for identifying low-level responses.



Dot Density plot of an oval-shaped enclosure



Project Huntstown, Co. Dublin

Date September 2023

Drawing No. 2395_C1001

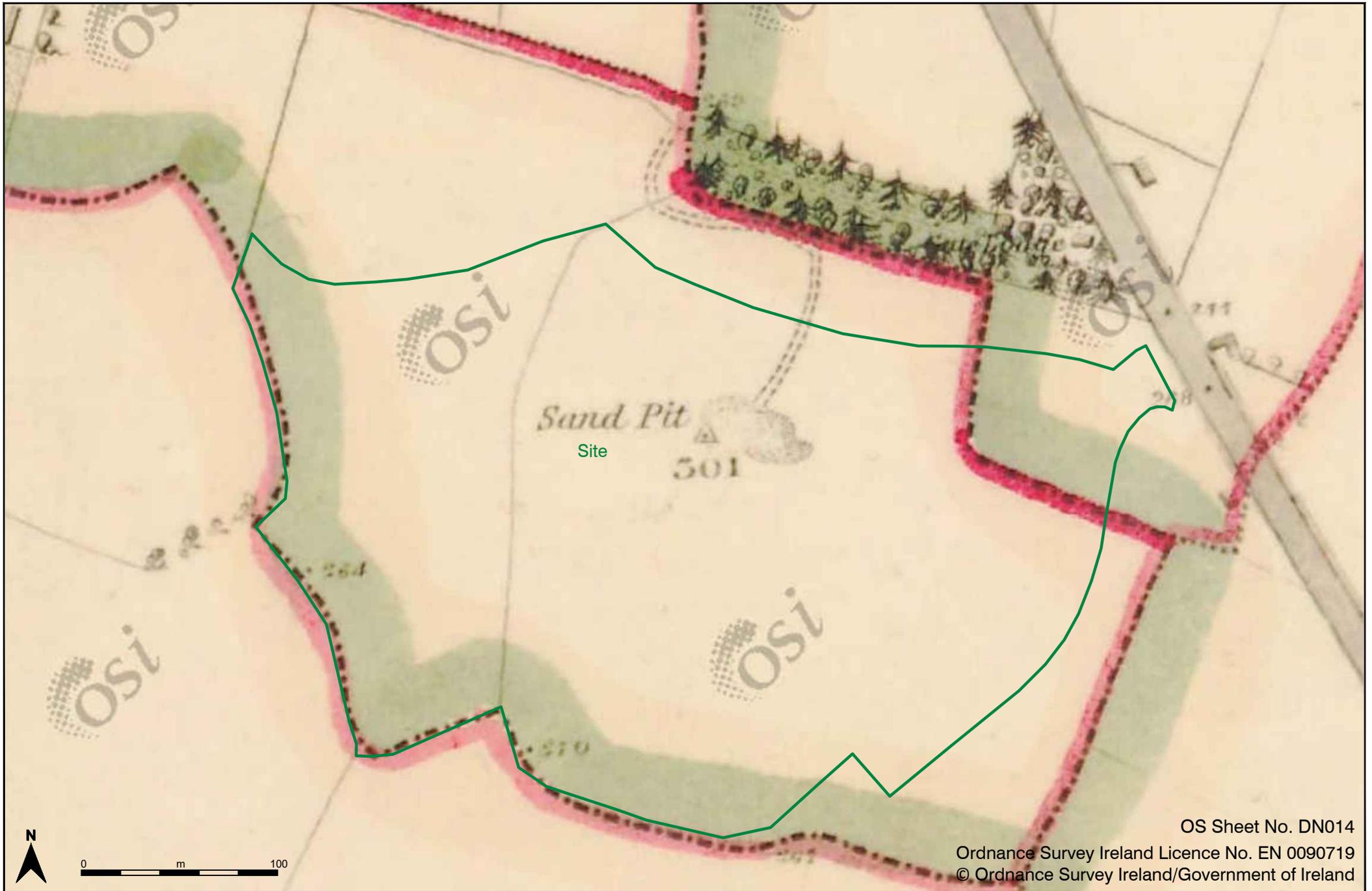
Figure 1 Location of site

Scale 1:100,000 @ A4





Project Huntstown, Co. Dublin	Date September 2023	Drawing No. 2395_1002	
Figure 2 Location of site, previous archaeological investigations and nearby Sites and Monuments Record sites		Scale 1:6,000 @ A4	



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Project Huntstown, Co. Dublin

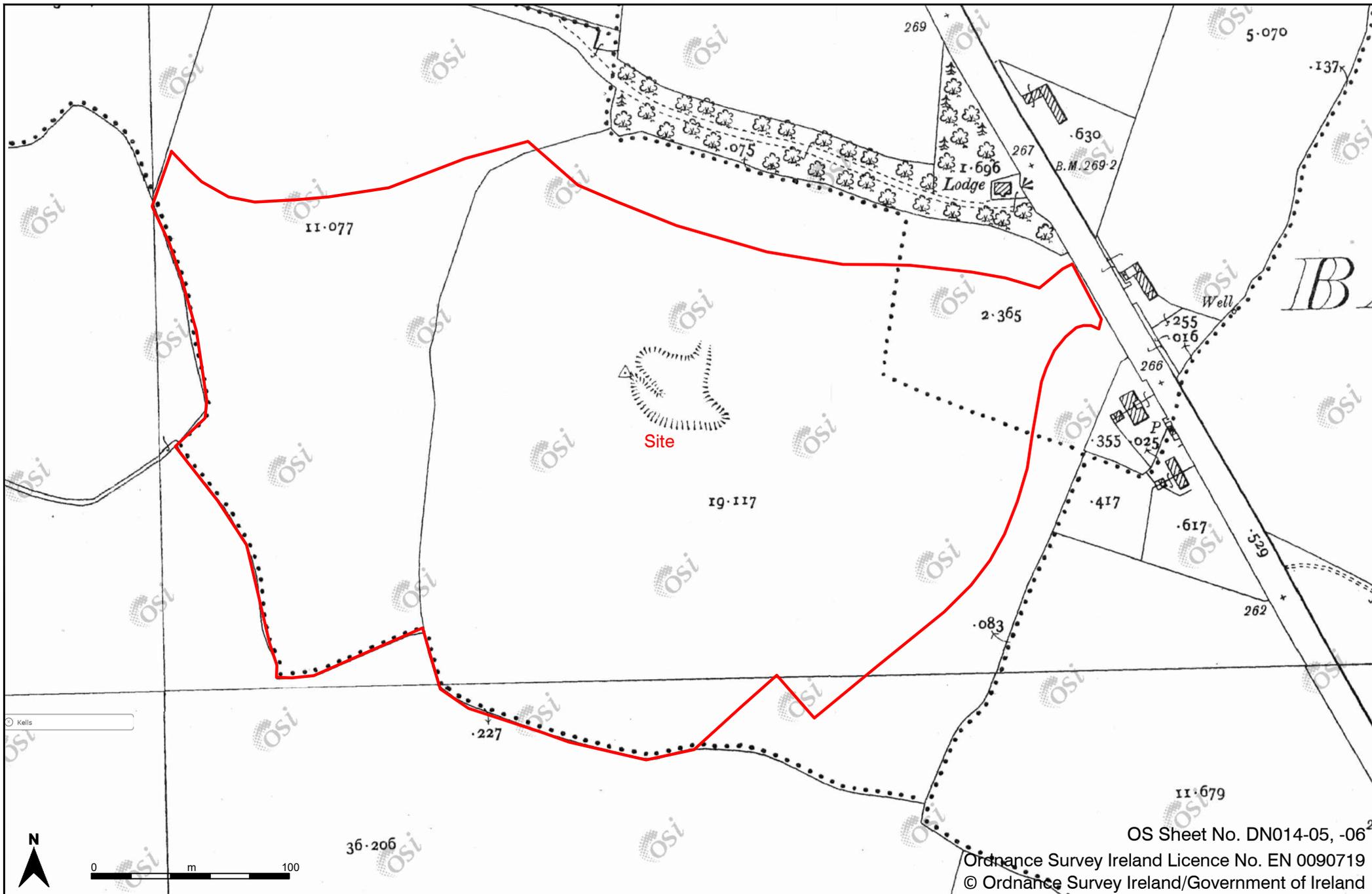
Date September 2023

Drawing No. 2395_C1003

Figure 3 Extract from 1st edition Ordnance Survey (OS) 6-inch map (surveyed 1836 - published 1843), showing location of site

Scale 1:2,500 @ A4





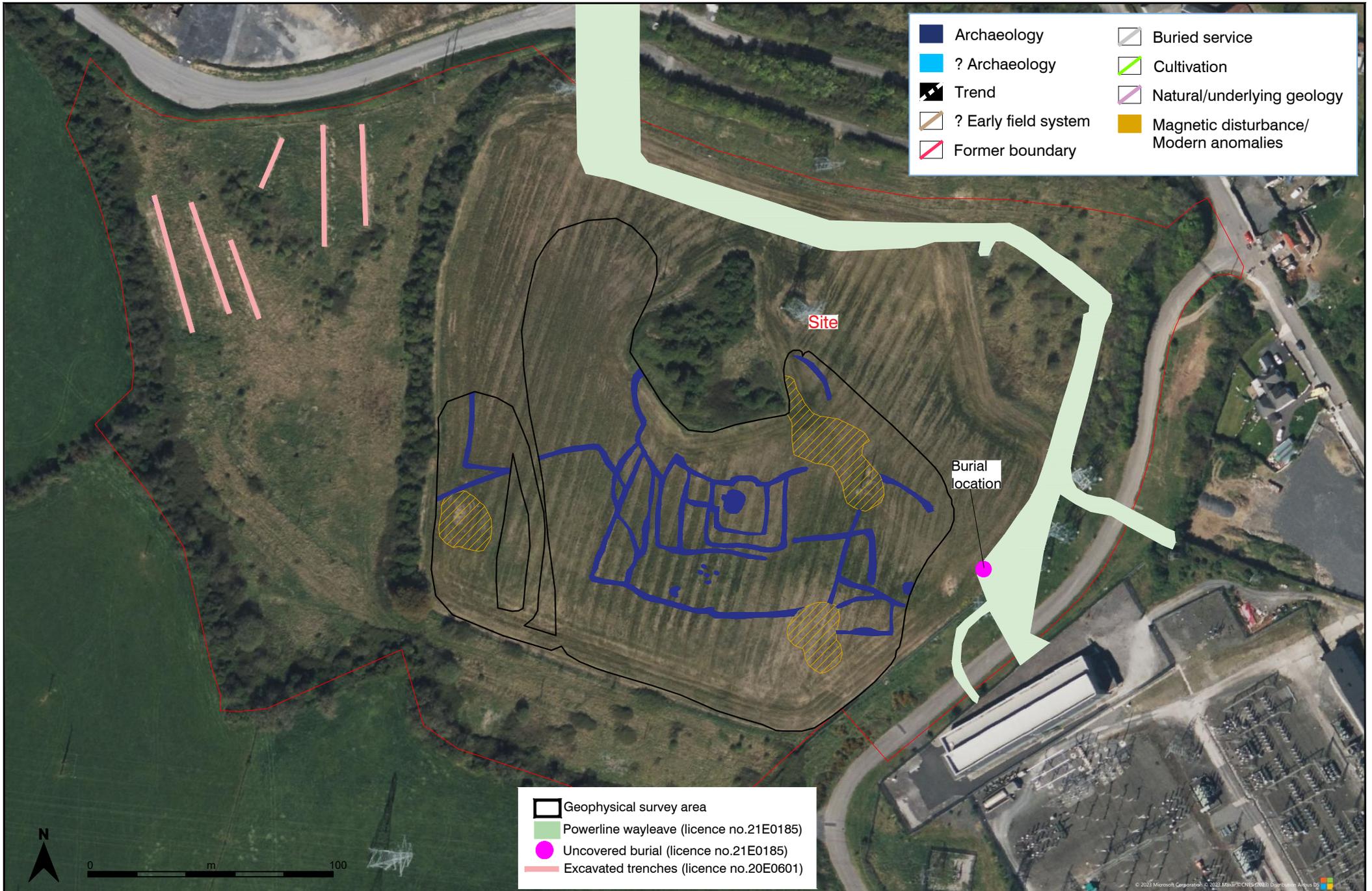
OS Sheet No. DN014-05, -06²

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Project Huntstown, Co. Dublin	Date September 2023	Drawing No. 2395_C1004	
Figure 4 Extract from 3rd edition Ordnance Survey (OS) 25-inch map (surveyed 1906 - published 1909), showing location of site	Scale 1:2,500 @ A4		



Project Huntstown, Co. Dublin	Date September 2023	Drawing No. 2395_C1005	
Figure 5 Aerial view of site and geophysical survey results (greyscale image), showing extent of wayleave excavated under licence no. 21E0185 and location of uncovered burial		Scale 1:2,000 @ A4	



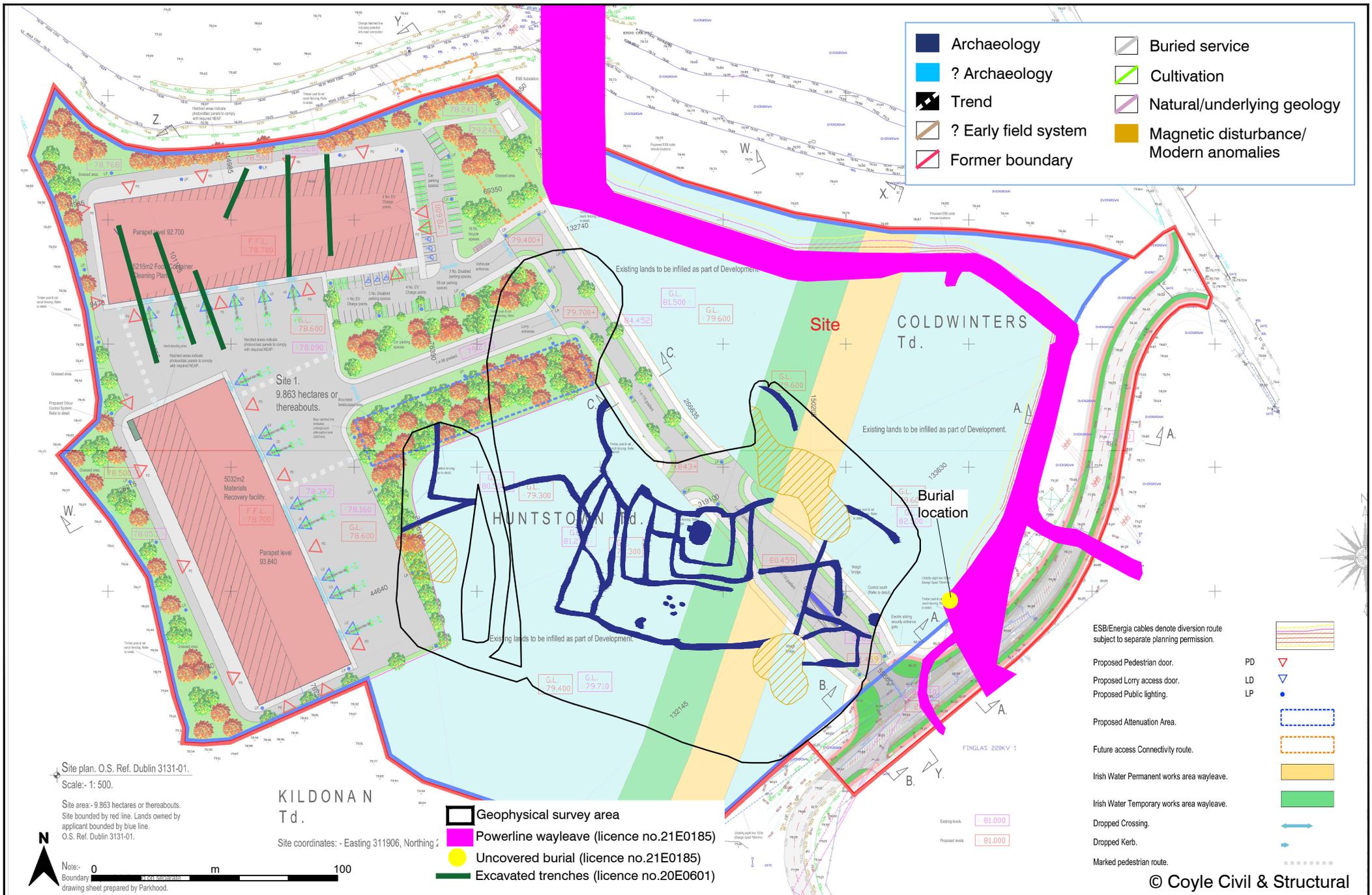
Project Huntstown, Co. Dublin

Date September 2023

Drawing No. 2395_C1006

Figure 6 Aerial view of site and geophysical survey interpretation, showing extent of wayleave excavated under licence no. 21E0185 and location of uncovered burial

Scale 1:2,000 @ A4



- Archaeology
- ? Archaeology
- Trend
- ? Early field system
- Former boundary
- Buried service
- Cultivation
- Natural/underlying geology
- Magnetic disturbance/Modern anomalies

- ESB/Energia cables denote diversion route subject to separate planning permission.
- Proposed Pedestrian door. PD
- Proposed Lorry access door. LD
- Proposed Public lighting. LP
- Proposed Attenuation Area.
- Future access Connectivity route.
- Irish Water Permanent works area wayleave.
- Irish Water Temporary works area wayleave.
- Dropped Crossing.
- Dropped Kerb.
- Marked pedestrian route.

- Geophysical survey area
- Powerline wayleave (licence no.21E0185)
- Uncovered burial (licence no.21E0185)
- Excavated trenches (licence no.20E0601)

Site plan. O.S. Ref. Dublin 3131-01.
Scale: 1: 500.

Site area - 9.863 hectares or thereabouts.
Site bounded by red line. Lands owned by applicant bounded by blue line.
O.S. Ref. Dublin 3131-01.

KILDONAN Td.
Site coordinates: - Easting 311906, Northing 311906



Project Huntstown, Co. Dublin	Date August 2023	Drawing No. 2395_C1007	
Figure 7 Detail of site development and geophysical survey interpretation, showing extent of wayleave excavated under licence no. 21E0185 and location of uncovered burial	Scale 1:2,000 @ A4		

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