

Cottam Solar Project

Without Prejudice Archaeological Mitigation WSI

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Issue Sheet

Report Prepared for: Cottam Solar Project Ltd.

Without Prejudice Archaeological Mitigation Written Scheme of Investigation

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Cable Route Corridor: COGL22

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1 Introduction

- 1.1.1 This Written Scheme of Investigation (WSI) for archaeological mitigation has been prepared by Lanpro Services Ltd on behalf of Cottam Solar Project Limited ('the Applicant').
- 1.1.2 The WSI details the methodology for undertaking a programme of archaeological mitigation within the proposed Cottam Solar Project area ('the Scheme') as part of an application for a Development Consent Order (DCO).
- 1.1.3 The Scheme consists of four electricity generating stations each with a capacity of over 50 megawatts (MW) consisting of ground mounted solar arrays and 'Associated Development'; comprising energy storage, grid connection infrastructure and other infrastructure integral to the construction, operation and maintenance of the Scheme.
- 1.1.4 The Scheme sites ('the Sites') are described in detail in **Chapter 3** of the Environmental Statement (ES) [EN010133/APP/C6.2.3] and descriptions of the Scheme proposals are provided in **Chapter 4** of the ES ('Scheme Description') [EN010133/APP/C6.2.4].
- 1.1.5 This WSI has been informed by the results of several previous stages of archaeological desk-based assessment (**ES Appendix 13.1**; Lanpro 2022b; 2022c; 2022d; 2022e), a geophysical survey (**ES Appendix 13.2**; ASWYAS 2022a; 2022b; 2022c, together with an updated geophysical survey report to reflect post-submission changes to the Cable Route Corridor (ASWYAS 2023), a geoarchaeological desk-based assessment (**ES Appendix 13.3**; OAN 2022), aerial photographic and LiDAR interpretation (**ES Appendix 13.4**; Deegan 2022), and an extensive programme of evaluation trenching (**ES Appendix 13.6**; CFA 2022a; 2022b; 2022c). An updated evaluation trenching report has also been produced to reflect post-submission changes to the Shared Cable Route Corridor (Wessex 2023). These have been produced to support the ES and are appended to that document in the following Appendices to Chapter 13 ('Cultural Heritage') [EN010133/APP/C6.2.13]:
- **ES Appendix 13.1** Archaeological Desk-Based Assessments (DBAs)
 - **ES Appendix 13.2** Archaeological Geophysical Survey Reports
 - **ES Appendix 13.3** Geoarchaeological Desk-Based Assessment
 - **ES Appendix 13.4** Aerial Photographic and LiDAR mapping and interpretation
 - **ES Appendix 13.6** Archaeological Evaluation (Interim) Reports
- 1.1.6 This WSI also takes into account the results of consultation and engagement undertaken with the Archaeological Advisor to the relevant Local Planning Authority

and Historic England, throughout these stages of work, including regular meetings undertaken to monitor the progress of the evaluation trenching.

- 1.1.7 The proposed mitigation strategy detailed in this WSI provides for a programme of geophysical survey on an additional land area (due to changes to the Order Limits which were the subject of a Change Application during the examination of the DCO application for the Scheme [AS-042] to [AS-071]), targeted informed trenching, open-area excavation, 'strip, map and sample', and archaeological monitoring, based on the location of identified archaeological remains where there is considered to be potential for such remains to be impacted by the Scheme. It also provides for preservation *in situ* of archaeological remains where possible through the use of non-intrusive surface-mounted pre-cast concrete ground anchors, which is a standard accepted approach to removing the impact of solar mounts upon potential archaeological sub-surface remains (BRE 2013, 13), and the removal of specific areas of the Scheme from any proposed development work.

2 Site Location and Description

- 2.1.1 The Scheme is divided across four main 'Sites', Cottam 1, 2, 3a and 3b, together with the Cable Route Corridor (see Figure 1).
- 2.1.2 The Cottam 1 Site is subdivided into individual 'Parcels' (e.g. Cottam 1A).
- 2.1.3 The fields within each Site or Parcel have been given a 'Field' number (e.g. K15).
- 2.1.4 The Sites are described in brief below, with detailed descriptions provided in **Chapter 3** of the ES (Lanpro 2022a).

Cottam 1 - see Figures 7, 8 and 9

- 2.1.5 **Size:** 894ha (divided across seven Parcels – A to G)
- 2.1.6 **Use:** The entirety of the Cottam 1 Site is in agricultural use. Isolated parts of the landholding appear to be used for storing materials associated with farming.
- 2.1.7 **Features:** The topography within Cottam 1 is relatively flat, and its constituent Parcels are predominantly well screened from their immediate surroundings by tall hedges around their boundaries.
- 2.1.8 The fields are generally large and typically have dividing hedgerows. There are only isolated trees outside of the field margins. The Site's constituent Parcels are interspersed with other landholdings that accommodate farmsteads, and these benefit from existing farm access tracks and field access.
- 2.1.9 The River Till meanders in a predominantly north/south direction across the western portion of the Site. In some areas the river comprises part of the Order limits, and in others it adjoins the boundary. The banks of the river are lined with trees. A section of river, joining the River Till, in the north-eastern portion of the Site, appears

to have been canalised. Where this has taken place there are wide open riverbanks with only low-lying vegetation.

2.1.10 There are many woodland blocks adjoining and within close proximity to the eastern portion of the Site. Overhead lines cross parts of the Site.

2.1.11 **Geology:** The recorded bedrock geology across the Cottam 1 Site consists of mudstone, siltstone, limestone and sandstone of the Lias Group (BGS 2024). The recorded superficial geology (BGS 2024) for each Parcel in the Cottam 1 Site is provided in Table 2.1.1 below (see Figure 1).

Table 2.1.1: Superficial geology within Cottam 1

Parcel	Superficial Geology
A	Till - Diamicton (to E) / Alluvium - Clay, Silt and Sand (to W)
B	Till - Diamicton
C	Alluvium - Clay, Silt and Sand (to N) / Till - Diamicton (to S and E)
D	None recorded (to W) / Alluvium - Clay, Silt and Sand (to centre) / Till - Diamicton (to E)
E	None recorded
F	None recorded
G	None recorded

Cottam 2 - see Figure 4

2.1.12 **Size:** 132ha

2.1.13 **Use:** The entirety of the Cottam 2 Site is in agricultural use.

2.1.14 **Features:** The Cottam 2 Site is bounded by Corringham Beck to the north-west, and Yewthorpe Beck to the east. Corringham Beck appears to be canalised, with wide banks with only low vegetation. Yewthorpe Beck is a meandering river with established vegetation and trees lining its banks.

2.1.15 Corringham Grange Farm and a separate house are surrounded by the Site.

2.1.16 The land is relatively flat and is predominantly well screened from its immediate surroundings by tall hedges around the boundary. The fields are generally large and typically have dividing hedgerows. There are only isolated trees outside of field margins. The Site benefits from existing field accesses. Overhead lines cross parts of the Site.

2.1.17 **Geology:** The recorded bedrock geology across the Cottam 2 Site consists of interbedded mudstone and limestone of the Scunthorpe Mudstone Formation overlain by superficial deposits of diamicton (BGS 2024).

Cottam 3a and 3b – see Figures 2 and 3

- 2.1.18 **Size:** 244ha (including both Cottam 3a and 3b)
- 2.1.19 **Use:** The entirety of the Cottam 3a and 3b Sites is in agricultural use.
- 2.1.20 **Features:** The Cottam 3a Site comprises parts of the former RAF Blyton airfield. Two former runways running north-west/south-east and north-east/south-west across the Site, their locations still visible from aerial imagery.
- 2.1.21 The fields are generally large, and some have dividing hedgerows. There are only isolated trees outside of field margins. Overhead lines cross parts of the Site.
- 2.1.22 Kirton Road (B1205) runs along the south of the Site. Most of the boundary with Kirton Road benefits from reasonably well-established hedges. The remainder of the former airfield, parts of which adjoin the Site, and parts of which are surrounded by the Site are used for motorsports, storage and distribution. There is also a house next to the storage and distribution area, which adjoins the north-western part of the Site. There are two isolated houses to the south of the B1205 in proximity of the Site.
- 2.1.23 The A159 Loughton Road runs north/south along the western extent of the Site. There is reasonably well-established hedging with trees along the boundary. The village of Blyton is approximately 250m to the south-west of Parcel A of the Cottam 3 Site. There are scattered isolated dwellings to the north, all more than 500m from the Site boundary.
- 2.1.24 The Cottam 3b Site comprises medium-large agricultural fields, approximately 400 metres east of the village of Pilham. A trainline runs along the northern border of the Site.
- 2.1.25 **Geology:** The recorded bedrock geology across the Cottam 3a and 3b Sites consists of interbedded mudstone and limestone of the Scunthorpe Mudstone Formation overlain by superficial deposits of diamicton (BGS 2021).

Cable Route Corridor – see Figures 1, 3, 5, 6, 8, 9, 10 and 11

- 2.1.26 The Cable Route Corridor will accommodate the underground cables (or ‘cable circuits’) linking Cottam 2, 3a and 3b to the substation at Cottam 1 and subsequently connecting to grid connection point at the National Grid substation at Cottam Power Station. The majority of the land within the corridor is agricultural land. Other land use types that the corridor crosses include the River Trent between Marton and Coates.
- 2.1.27 Works within the Cable Route Corridor, as well as the cable circuits, include the provision of access tracks, construction laydown areas (construction compounds) and joint bays. Part of the Cable Route Corridor accommodate cable circuits associated with the Gate Burton Energy Park and West Burton Solar Project (referred to in the ES as the ‘Shared Cable Corridor’).

3 Archaeological Baseline

Introduction

- 3.1.1 The baseline information provided below is drawn from the results of the archaeological desk-based assessments, geophysical surveys, aerial photo and LiDAR interpretation, geoarchaeological assessment and evaluation trenching undertaken of the Cottam 1, 2, 3a and 3b Sites and the Cable Route Corridor (**Appendix 13.1**; Lanpro 2022b; 2022c; 2022d; 2022e; **Appendix 13.2**; ASWYAS 2022a, 2022b, 2022c; **Appendix 13.3**; OAN 2022; **Appendix 13.4**; Deegan 2022; **Appendix 13.6**; CFA 2022a; CFA 2022b; CFA 2022c), as well as reports updated post-submission of the application (ASWYAS 2023 and Wessex 2023).
- 3.1.2 These documents should be referred to separately as they provide a detailed archaeological and historical narrative for the Sites (see ES Appendices 13.1-13.6 to Chapter 13 of the ES 'Cultural Heritage' [EN010133/APP/C6.2.13]).

Cottam 1

Designated Heritage Assets

- 3.1.3 The Cottam 1 Site does not contain any designated heritage assets.
- 3.1.4 There are three Scheduled Monuments within 1km of the boundary of the Site; 'Thorpe medieval settlement' (NHLE 1016978) situated immediately adjacent to the southern edge of Parcel D, 'Coates medieval settlement and moated site' (NHLE 1016979) situated approximately 625m from the Site at its nearest point, and the 'Site of a college and Benedictine Abbey, St Mary's Church' (NHLE 1012976), situated within the historic core of the village of Stow, to the west of the Site, around 740m from the Site at its nearest point.
- 3.1.5 There are sixteen Listed Buildings within 1km of the Site, the majority of which are located within the villages of Sturton by Stow, Stow, and Willingham, to the west of the Site and are Grade II Listed. There are, however, two Grade I Listed churches within 1km of the Site; the Church of St Edith (NHLE 1146742), situated adjacent to the Coates medieval moated site, and the Church of St Mary (NHLE 1146624) in the centre of Stow, around 800m from the Site at its nearest point.
- 3.1.6 The north-western corner of the Fillingham Conservation Area falls around 950m to the north-east of the Site at its nearest point.
- 3.1.7 There are no other designated heritage assets (i.e. Registered Parks and Gardens, Registered Battlefields or World Heritage Sites) within 1km of the Site.

Non-Designated Heritage Assets

- 3.1.8 The overall Cottam 1 Site contains, either wholly or partially, 14 records held on the HER, comprising 13 'monument' records and a single 'event' record. These are recorded in the Table 3.1 below by parcel (see Figure 2).

Table 3.1.1: HER records within Cottam 1 Parcels

Parcel	HER ref.	HER Description
A	None	-
B	None	-
C	MLI51104	Site of Romano-British settlement south-west of Turpin Farm
D	MLI50540	Thorpe medieval settlement
	MLI52107	Ridge and furrow, Cammeringham
	MLI52516	Stone ford (undated)
	MLI52520	Ridge and furrow
	MLI52526	Ridge and furrow
	MLI52527	Ridge and furrow
	MLI116510	Site of a demolished 19th century outfarm
	MLI118759	Site of a demolished 19th century farmstead
E	None	-
F	MLI52438	Silver Penny of Cnut
	MLI52445	Normanby by Stow Shrunken Medieval Village
	MLI89097	Early medieval pottery scatter on land north of East Farm, Normanby by Stow
	MLI89098	Two sherds of Romano-British pottery found at East Farm, Normanby by Stow
	ELI6746	Small assemblage of early Medieval pottery found to the east of East Farm
G	None	-

Geophysical Survey

- 3.1.9 The geophysical survey of the Cottam 1 site has detected a number of magnetic anomalies associated mainly with an agricultural landscape including former field boundaries, medieval/post-medieval ridge and furrow cultivation, modern ploughing and land drains (**ES Appendix 13.2**; ASWYAS 2022a see Figures 7, 8 and 9). Possible archaeological responses have been recorded within the Site comprising linear ditches and trends, rectilinear enclosures and circular trends, indicative of late prehistoric, Roman period or medieval activity.
- 3.1.10 A series of anomalies of unknown origin were recorded in the south of Field C5 that correspond with an area in which Roman pottery and possible building stone were recovered in the 1930s (MLI51104) and cropmarks have been mapped from air photos and LiDAR. The form of the geophysical anomalies is in part potentially suggestive of desiccation cracks within the topsoil and so it was suggested that these could be of a geological nature.

- 3.1.11 A complex system of enclosures, ditches and pits have been recorded in Field C28 and almost certainly represents settlement activity of multiple phases due to the overlapping features. The complex measures at least 300m by 140m and is likely to extend into the field in the south.
- 3.1.12 A linear trend in Field C6 extends southwards from a former boundary. This is likely to be another boundary and is not shown on historical mapping. A linear trend in Field C7 may also indicate a former boundary.
- 3.1.13 Another area of likely settlement activity was recorded in Field D1, which was suggested to potentially extend into Field D2, and consists of what may be a series of enclosures with internal features including a ring ditch, with a possible trackway along the western edge.
- 3.1.14 A magnetically weak circular response has been recorded along the northern limits of Field D6, outside of the Scheme, and may represent a ring ditch. It measures approximately 15m in diameter.
- 3.1.15 Linear trends and ditches in Field D14 appear to form a series of enclosures, which possibly extend into Field D13.
- 3.1.16 A broken ditch-like response in the south-east of Field D33 may be archaeological in origin, and it is likely that the ridge and furrow in the area has cut through the response.
- 3.1.17 Archaeological and possible archaeological responses have been recorded in Fields F1 and F2 which lie within and to the east of Normanby by Stow shrunken medieval village (HER MLI52445). It is highly likely that these responses are of a medieval date and associated with the village. Parallel linear trends to the east of Field A4 suggest further responses associated with the medieval village, however, these are magnetically weak and therefore have been given a 'possible' archaeological origin. Further parallel linear trends to the east of Field A5 lie on the same alignment as the ridge and furrow but may be associated with a trackway.
- 3.1.18 Archaeological and possible archaeological responses in the south of Field F2 are associated with a pattern of anomalies likely to be associated with a possible Iron Age or Roman settlement. It is almost certain that the anomalies continue into the field to the south.
- 3.1.19 Two sides of a possible enclosure have been recorded in Field F4 extending to the northern boundary of the field.
- 3.1.20 A magnetically weak circular response of unknown origin has been recorded in the south of Field F3. It measures approximately 18m in diameter. Evaluation trenching targeted this anomaly and did not encounter any archaeological features.
- 3.1.21 A group of linear responses and enclosures can be seen in the northwest of Field G1 and cover an area of approximately 210m by 80m. The responses vary in magnetic strength and definition but can be seen above the ploughing trends.

- 3.1.22 A linear trend in Field G1 possibly relates to a former boundary, predating the available historic mapping. It may be contemporary with the ridge and furrow to the immediate east.
- 3.1.23 Within Field G4 two groups of rectilinear enclosures have been recorded. The responses appear to comprise a series of overlapping enclosures, ditches, pits and eight circular features.

Aerial Photographic and LiDAR Interpretation

- 3.1.24 A programme of aerial photographic and LiDAR mapping and interpretation was undertaken by Alison Deegan, an independent consultant, specialising in large-scale, detailed and accurate air photo mapping and LiDAR analysis for integration with the results of other archaeological remote sensing, ground and desk-based investigations. Alison Deegan is recognised nationally as a leading expert in aerial photographic and LiDAR analysis, and has worked extensively for numerous key organisations including English Heritage and Historic England.
- 3.1.25 The programme of aerial photographic and LiDAR mapping and interpretation (**ES Appendix 13.4**; Deegan 2022; see Figures 7, 8 and 9) identified a range of potential archaeological features within the Cottam 1 Site. A number of possible features of Iron Age or Roman date were mapped, as well as several features of uncertain origin, and recorded elements of medieval and post-medieval landscapes, the majority of which related to ridge and furrow ploughing, but also included earthworks relating to shrunken medieval settlements.
- 3.1.26 Several linear and rectilinear cropmarks were identified by air photo and LiDAR mapping that are likely to denote ditches belonging to Iron Age or Roman enclosures within the Cottam 1 Site. Such features were identified in the east of Field D1, directly adjacent to the scheme in a field to the west of Field D4 and in north-west of Field G1.
- 3.1.27 A series of parallel ditches were identified as cropmarks on an historical air photo within Field C5 of the Cottam 1 Site, in an area in which Roman period building material had previously been identified (MLI51104). Geophysical anomalies were also identified in this area, although it was initially unclear whether these were of an archaeological or geological origin (**ES Appendix 13.2**; ASWYAS 2022a).
- 3.1.28 Linear and rectilinear cropmarks were identified that were suggested to denote ditches belonging to Iron Age or Roman enclosures in Field D1 of the Cottam 1 Site (which although within the Order limits, will not be subject to any development) and in Field G1.
- 3.1.29 Features identified to the east of Normanby by Stow, within Field F1 of the Cottam 1 Site, are likely to be associated within the shrunken medieval village to the immediate west, and no proposed development will be undertaken within this area.

Geoarchaeological Assessment

- 3.1.30 The geoarchaeological assessment investigated and characterised the geoarchaeological potential of the Scheme (**ES Appendix 13.3**; OAN 2022).
- 3.1.31 It was assessed that river terrace deposits within the Cottam 1 Site may represent potential topographic highs or sand islands that may have been attractive to prehistoric people.
- 3.1.32 The analysis of topographic maps and LiDAR has permitted identification of potential palaeochannels, for example, near the Cottam 1 Site (palaeochannel of the River Till). Palaeochannels have the potential to contain buried archaeology, as well as to retain important palaeoenvironmental data that could be used for environmental reconstruction. Alluvial deposits have also been identified that are the results of channels or streams.

Evaluation Trenching

- 3.1.33 Areas assessed to have archaeological potential, based on consideration of all available archaeological data, were targeted with evaluation trenches in the Cottam 1 Site both to 'ground truth' the results of previous surveys and to provide samples of 'blank' areas, in which archaeological remains had not been identified by non-intrusive methods. Overall, there was a strong correlation between the results of the geophysical survey, aerial photographic and LiDAR interpretation, and the results of the evaluation.
- 3.1.34 Within Cottam 1, 254 trenches were excavated, and archaeological remains and features were recorded within 63 trenches (**ES Appendix 13.6**; CFA 2022a).

Field C5

- 3.1.35 The geophysical survey highlighted a cluster of activity to the south-western corner of Field C5 of the Cottam 1 Site. Many of the features excavated in Field C5 aligned with those identified on the geophysical survey, although there were more features recorded than the survey had suggested. These included a series of rectilinear ditches which may represent a complex settlement area. A large rectilinear double ditched enclosure, the external ditches of which were partially identified by the geophysical survey, was recorded and probably date from the mid-late Roman period based on associated pottery. Internally, the enclosure contained several features, with the earliest archaeological features being two probable ring gullies and prehistoric pottery of a probable Iron Age date.
- 3.1.36 A concentration of ditch features were identified in Trench 10, in an area in which the geophysical survey data had identified a large spread of material. This spread was shown in part to be of a geological origin, but contained a large amount of ceramic building materials (CBM), roof tile and associated pottery suggestive of the presence of a Roman period building in the area.

- 3.1.37 Other ditches excavated within Field C5 of the Cottam 1 Site included pottery dating from the Late Iron Age through to the 3rd century, with the majority dating to the 2nd-3rd century.

Field C12

- 3.1.38 No archaeological features were recorded in the evaluation trenches in Field C12 of the Cottam 1 Site. Possible features were highlighted on the aerial interpretation (**ES Appendix 13.4**; Deegan 2022) but not on the geophysical survey, and excavations confirmed the accuracy of the geophysical survey.

Fields D14 and D16

- 3.1.39 A collection of linear features identified by geophysical survey in the north-west corner of Parcel 1b of the Cottam 1 Site were confirmed by the presence of archaeological features in six evaluation trenches. Additionally, smaller features were recorded within the bounds of these linear features suggesting small scale domestic or agricultural activity. Pottery recovered from this area was mostly spot-dated to the 2nd and 3rd centuries.

Fields F1-F7 and G1-G4

- 3.1.40 The geophysical survey identified a rectilinear feature, interpreted as a possible settlement, in the north-western corner of Field G1 of the Cottam 1 Site. This was confirmed by trenching, with pottery recovered spot-dated to between the 2nd to the 4th centuries. A large, possible former pond feature was identified in Trench 3 which contained possible evidence for waterlogging towards its base although was fairly sterile in terms of artefactual remains in comparison to the other features in this area.
- 3.1.41 A second area of activity was identified in the central area of Field G4 of the Cottam 1 Site, which appeared to be a large and complex series of rectilinear and curvilinear ditches. This was confirmed by trenching, with the majority of pottery recovered dating from the 2nd to the 4th centuries, although some possible late Iron Age and some Saxon pottery was also recovered.
- 3.1.42 To the east of this area, with a clear break in recorded archaeology in the trenches excavated in between, was a further area of complex activity consisting of rectilinear enclosure features with associated curvilinear features outside of and within it, confirmed by archaeological trenching. Human burials were found in three of the trenches, with pottery from one trench dating to the Saxon period.

Cottam 2

Designated Heritage Assets

- 3.1.43 The Cottam 2 Site does not contain any designated heritage assets.

- 3.1.44 There is one Scheduled Monument situated within 1km of the Cottam 2 Site, the site of the 'Deserted medieval village of Dunstall' (NHLE 1004996), approximately 730m to the Site's north-east.
- 3.1.45 There are five Listed Buildings within 1km of the Cottam 2 Site, all situated to its south-west. The Grade I Listed medieval Church of St Lawrence (NHLE 1064162) and its associated Grade II Listed lychgate (NHLE 1165563) are located within the northern end of Corringham, around 600m to the west of the Cottam 2 Site, while a Grade II Listed 19th century tower mill is located on Corringham's north-western side (NHLE 1064163). To the north-east of Corringham, the Grade II Listed 'Old Hall', a house with 14th century origins (NHLE 1165535), is located about 400m to the west of the Site. The Grade II Corringham Windmill is situated to the east of Corringham, to the north of the A631, around 630m to the south of the Site.
- 3.1.46 There are no other designated heritage assets (i.e. Conservation Areas, Registered Parks and Gardens, Registered Battlefields or World Heritage Sites) within 1km of the Cottam 2 Site.

Non-Designated Heritage Assets

- 3.1.47 The Cottam 2 Site contains, either wholly or partly, two records held on the HER, consisting of 'monument' records relating to the presence of former ridge and furrow to the south-east of Corringham Grange Farm (MLI54038) and at the southern end of the Site (MLI98190).
- 3.1.48 The HER contains a further 38 'monument' records for within 1km of the Cottam 2 Site boundary, including a number of designated heritage assets also recorded on the NHLE, and ten 'event' records relating to previous archaeological investigations.

Geophysical Survey

- 3.1.49 The geophysical survey of the Cottam 2 Site detected a number of magnetic anomalies associated with an agricultural landscape including former field boundaries, medieval/post-medieval ridge and furrow cultivation, modern ploughing and land drains (**ES Appendix 13.2**; ASWYAS 2022b; see Figure 4). Archaeological and possible archaeological responses were recorded within the Site, comprising possible linear ditches and trends, possible rectilinear enclosures and sub-circular trends, perhaps indicative of settlement activity.
- 3.1.50 Trends of an unknown origin due to their weak increases in magnetic value were identified in the south-west of Field H2 of the Cottam 2 Site. Although their rectilinear pattern may be suggestive of an archaeological origin, and agricultural origin cannot be dismissed.
- 3.1.51 Rectilinear anomalies composed of good increases in magnetic value and a clear patterning were identified in Field H5 of the Cottam 2 Site. Anomalies and trends adjacent to the possible enclosures with weak increases in magnetic value and a poor patterning have been interpreted as possible archaeology, but it is also possible that they are agricultural in origin. However, tentative anomalies in Fields

H2 and H5 appear on a similar alignment and if the anomalies in Field H2 are of an archaeological origin it is possible that they represent contemporaneous enclosures with those mapped in H5.

- 3.1.52 Two sub-circular trends in Field H6 are magnetically weak but may have an archaeological origin. The southern circular trend measures approximately 16m in diameter and the northern one 11m in diameter. The responses are isolated and therefore the interpretation is tentative.
- 3.1.53 A curvilinear anomaly composed of weak increases in magnetic value and incomplete patterning was identified in the west of Field H3 that is of an unknown origin.
- 3.1.54 Ditches and linear trends of both a definite and possible archaeological origin have been recorded in the east of Field H8 and are likely to be associated with settlement activity. The possible archaeological anomalies are of a weaker magnetic strength, hence the tentative interpretation.
- 3.1.55 A curvilinear anomaly was identified in the north of Field H10 that was interpreted as being of an unknown origin. Evaluation trenches targeted this anomaly and did not encounter any archaeological features.

Aerial Photographic and LiDAR Interpretation

- 3.1.56 The programme of aerial photographic and LiDAR mapping and interpretation (**ES Appendix 13.4**; Deegan 2022; see Figure 4) identified a limited range of potential archaeological features within Cottam 2.
- 3.1.57 In Field H10 faint cropmarks suggested a group of curvilinear enclosures, but it was not certain that these features are of archaeological origin, and subsequent evaluation trenching showed these to be of a natural or agricultural origin (see para. 3.1.64, below).
- 3.1.58 Across much of the Cottam 2 site the air photos and LiDAR interpretation of the imagery has identified plough headlands, earthworks, soilmarks and cropmarks on the historical air photos, but many can also be detected as very low and spread earthworks on the LiDAR imagery. There are several locations where plough headlands appear to be cut by later ridge and furrow, usually indicated by slight deviations in the overlying plough ridges. All of the ridge and furrow that survived as earthworks in the 1940s has now been levelled.

Geoarchaeological Assessment

- 3.1.59 The geoarchaeological assessment identified thin river terrace deposits close to the northern boundary of the Cottam 2 Site, which could represent potential topographic highs or sand islands that may have been attractive to prehistoric people (**ES Appendix 13.3**; OAN 2022).

- 3.1.60 The analysis of topographic maps and LiDAR identified potential palaeochannels at the Cottam 2 Site, adjacent to the confluence of the Corringham/Yawthorpe Becks and the River Eau. Deposits of alluvium were also identified within the Cottam 2 Site.

Evaluation Trenching

- 3.1.61 Areas assessed to have archaeological potential, based on consideration of all available archaeological data, were targeted with evaluation trenches in the Cottam 2 Sites both to 'ground truth' the results of previous surveys and to provide samples of 'blank' areas, in which archaeological remains had not been identified by non-intrusive methods.
- 3.1.62 Within the Cottam 2 Site, 95 trenches were excavated, and archaeological remains and features were recorded within 31 trenches (**ES Appendix 13.6**; CFA 2022b).
- 3.1.63 The geophysical survey identified a possible rectilinear enclosure on the eastern edge of Field H8 of the Cottam 2 Site (see Figure 4), which was confirmed in five trenches. These features probably represent small-scale settlement or agricultural activity, and pottery retrieved from these was dated from the Iron Age through to the 3rd century AD.
- 3.1.64 On the north-western side of Field H5 of the Cottam 2 Site possible archaeological features identified by geophysical survey were shown to be present in five trenches. The retrieved pottery again suggested a date from the late Iron Age through to the Roman period, although the enclosures in this part of the site were more well defined than those in Field H8 to the north-east. A sparser collection of features was excavated towards the southern end of Field H5 in an area of geophysical anomalies interpreted as being geological in origin. No pottery was retrieved from these trenches, and these features could not be assigned a date or function.
- 3.1.65 Trenches were also targeted on potential archaeological features identified as part of the air photo and LiDAR assessment (**ES Appendix 13.4**; Deegan 2022; see Figure 4) and geophysical anomalies within Field H10 of the Cottam 2 Site, but no features corresponding to these were identified, and it was suggested that these anomalies may be of a geological or agricultural origin. An intersecting ditch was identified on a different alignment, but no finds or other evidence was present.
- 3.1.66 The CFA interim evaluation report concluded that *'the expected areas of activity highlighted by the geophysical survey were generally confirmed through the evaluation trenching.'* (**ES Appendix 13.6**; CFA 2022b, 49).

Cottam 3a

Designated Heritage Assets

- 3.1.67 The Cottam 3a Site does not contain any designated heritage assets.
- 3.1.68 There is one Scheduled Monument situated wholly within 1km of the Cottam 3a Sites; the cross in St Martin's Churchyard (NHLE 1018291), Blyton, situated approximately 950m to its south-west.

- 3.1.69 There are five Listed Buildings within 1km of the Cottam 3a Site, including the Grade I Listed Church of St Martin in Blyton (NHLE 1064159) approximately 950m to the south-west of the Site. All other Listed Buildings within 1km of the Site are Grade II Listed.
- 3.1.70 There are no other designated heritage assets (i.e. Conservation Areas, Registered Parks and Gardens, Registered Battlefields or World Heritage Sites) within 1km of the Cottam 3a Site.

Non-Designated Heritage Assets

- 3.1.71 The Cottam 3a Site contains four records held on the HER, consisting of three 'monument' records and one 'event' record relating to previous archaeological investigations. An area of former ridge and furrow is recorded adjacent to Blyton Grange (MLI54075). A former 19th century farmstead named 'Blyton Field' (MLI117386) is recorded on the 1885-1886 Ordnance Survey map as located in the centre of Field K7, however this was destroyed during the construction of RAF Blyton airbase in the mid-20th century. The centre of the Site is covered by the former area of the runways of RAF Blyton (MLI54074). The only recorded archaeological investigation within the Site relates to a walkover survey along its eastern side that identified a number of Second World War features, all of which appear to fall outside of the study site (MLI7084).
- 3.1.72 The HER contains a further 45 HER 'monument' records within the 1km of the Cottam 3a Site boundary including a number of designated heritage assets also recorded on the NHLE, and 12 'event' records relating to previous archaeological investigations.

Geophysical Survey

- 3.1.73 The geophysical survey of the Cottam 3a Site detected magnetic anomalies associated mainly with an agricultural landscape, including former field boundaries, medieval/post-medieval ridge and furrow cultivation, modern ploughing and land drains (**ES Appendix 13.2**; ASWYAS 2022c; see Figure 2). Archaeological and possible archaeological responses have been recorded in the east of the Cottam 3a Site which comprise linear ditches and trends of possible settlement activity.
- 3.1.74 A single curvilinear anomaly of unknown origin has been recorded in the north-west of the Cottam 3a Site, in Field K1. This measures c.11m in diameter and may indicate a ring ditch.
- 3.1.75 Clusters of linear responses in the east of K6 and south-west of Field K7 were interpreted as having a possible archaeological origin; it is possible they relate to the remains of a field system or part of an enclosure.
- 3.1.76 Two concentrations of rectilinear and linear anomalies were recorded in the north of Field K14 that are likely to be associated with settlement activity. Both clusters are on the same alignment, the easternmost is on the same orientation as ridge and

furrow, which may in part explain why it is composed of anomalies that are of a weaker magnetic strength.

- 3.1.77 A group of ditches and trends were recorded in the east of Field K18. These anomalies lie approximately 250m to the south-west of a Roman settlement (MLI54147), which was recorded outside of the Order limits during a watching brief (ELI6987) in 1997 at Abbey Farm. It is likely that these responses are also Roman in date and relate to settlement activity.
- 3.1.78 A well-defined concentration of magnetic anomalies, likely to be indicative of ditches, enclosures and pits of an archaeological origin, were recorded in the south-east of Field K18. This archaeological activity covers an area of approximately 110m by 75m, is on a north-east to south-west alignment and was considered likely to be Roman in date given the date of known archaeological activity to the immediate north.
- 3.1.79 Features relating to the former airbase of RAF Blyton can clearly be seen in the geophysical survey data, showing former runways, turning circles and associated service pipes.

Aerial Photographic and LiDAR Interpretation

- 3.1.80 The programme of aerial photographic and LiDAR mapping and interpretation (**ES Appendix 13.4**; Deegan 2022; see Figure 2) identified a limited range of potential archaeological features within the Cottam 3a Site, primarily relating to now levelled ridge and furrow.
- 3.1.81 The remains of airfield infrastructure related to RAF Blyton were identified across the Cottam 3a Site, and beyond the survey area. Most of these features have now been removed and the land has been returned to cultivation. Some small sections of hard standing and concrete surfaces do survive but these lay outside of the Scheme.
- 3.1.82 Two military camps were identified to the west of the former airfield. The larger of the two camps, occupying part of Field K2, was probably the airfield's technical site with offices, workshops and at least one aircraft hangar. The other was smaller and probably provided domestic accommodation in Field K1. All structures relating to the former camps have been removed. Two further hangars stood on the eastern side of the airfield, just outside the Order limits; their concrete bases appear to survive but the hangars themselves have been removed.

Geoarchaeological Assessment

- 3.1.83 The geoarchaeological assessment (**ES Appendix 13.3**; OAN 2022), did not identify any palaeochannels or areas of river terraces that may have been attractive to past settlement within the Cottam 3a Site.

Evaluation Trenching

- 3.1.84 Areas assessed to have archaeological potential, based on consideration of all available archaeological data, were targeted with evaluation trenches in the Cottam 3a Site both to 'ground truth' the results of previous surveys and to provide samples of 'blank' areas, in which archaeological remains had not been identified by non-intrusive methods.
- 3.1.85 Within the Cottam 3a Site, 67 trenches were excavated, and archaeological remains and features were recorded within 25 trenches (**ES Appendix 13.6**; CFA 2022c). A complex series of intercutting features were identified in Field K14 of Cottam 3a, and these were confirmed by trenching to represent possible settlement dating from the Iron Age to Roman periods. To the east of these, further trenches confirmed the presence of other possible late Iron Age and Roman period features, also previously identified by the geophysical survey. On the eastern edge of Field K18 of Cottam 3a, a further series of geophysical anomalies were again shown to represent settlement of a late Iron Age to Roman period date. Most areas suggested as being devoid of archaeology by the geophysical survey within Cottam 3a proved to be the case, and although some trenches did contain possible archaeological features once excavated no pottery was retrieved from these. Some pottery was recovered from trenches in Field K18 but this was not associated with any features.
- 3.1.86 The CFA interim evaluation report concluded that *'the expected areas of activity highlighted by the geophysical survey were generally confirmed through the evaluation trenching.'* (**ES Appendix 13.6**; CFA 2022c, 67) within the Cottam 3a Site.

Cottam 3b

Designated Heritage Assets

- 3.1.87 The Cottam 3b Site does not contain any designated heritage assets.
- 3.1.88 There are two Scheduled Monuments situated wholly within 1km of the Cottam 3b Site; the northern end of the Gilby medieval settlement and cultivation remains (NHLE 1016795) 975m to the south-west, and the very western corner of the 'Deserted medieval village of Dunstall' (NHLE 1004996), just under 1km to the south-east of the Cottam 3b Site.
- 3.1.89 There are five Listed Buildings within 1km of the Cottam 3b Site, including the Grade II* Listed Church of All Saints (NHLE 1317137) at Pilham c.575m to the south-east. All other Listed Buildings within 1km of the Site are Grade II Listed and situated within the village of Pilham, with the exception of the Old Railway Station (NHLE 1359454) which lies to the north of Pilham.
- 3.1.90 There are no other designated heritage assets (i.e. Conservation Areas, Registered Parks and Gardens, Registered Battlefields or World Heritage Sites) within 1km of the Cottam 3b Site.

Non-Designated Heritage Assets

- 3.1.91 There are no records held on the HER within the Cottam 3b Site.
- 3.1.92 The HER contains a further 24 ‘monument’ records within the 1km of the Cottam 3b Site including a number of designated heritage assets also recorded on the NHLE, and two ‘event’ records relating to previous archaeological investigations.

Geophysical Survey

- 3.1.93 The geophysical survey of the Cottam 3b Site detected magnetic anomalies associated mainly with an agricultural landscape, including former field boundaries, medieval/post-medieval ridge and furrow cultivation, modern ploughing and land drains (**ES Appendix 13.2**; ASWYAS 2022c see Figure 3).
- 3.1.94 Archaeological and possible archaeological responses have been recorded in the centre of the Cottam 3b Site which comprise linear ditches and trends of possible settlement activity. Along the western edge of Field J3, ditches and trends have been recorded that extend into the eastern edge of Field J2. The anomalies lie on a similar alignment to the ridge and furrow cultivation but consist of stronger increases in magnetic strength and appear to show possible enclosures of field systems that cover an area of approximately 122m by 32m. Linear trends appear to extend from the north-west to the west but are weaker in magnetic strength. To the south-east of these are a group of anomalies of possible archaeological origin. Again, these follow the alignment of the ridge and furrow cultivation in this area, which might in part explain their weak magnetic strength.

Aerial Photographic and LiDAR Interpretation

- 3.1.95 The programme of aerial photographic and LiDAR mapping and interpretation (**ES Appendix 13.4**; Deegan 2022; see Figure 3) identified a limited range of potential archaeological features within the Cottam 3b Site, primarily relating to now levelled ridge and furrow.

Geoarchaeological Assessment

- 3.1.96 The geoarchaeological assessment (**ES Appendix 13.3**; OAN 2022), did not identify any palaeochannels or areas of river terraces that may have been attractive to past settlement within the Cottam 3b Site.

Evaluation Trenching

- 3.1.97 Areas assessed to have archaeological potential, based on consideration of all available archaeological data, were targeted with evaluation trenches within the Cottam 3b Site, both to ‘ground truth’ the results of previous surveys and to provide samples of ‘blank’ areas, in which archaeological remains had not been identified by non-intrusive methods.
- 3.1.98 Within Cottam 3b Site, 34 trenches were excavated, and archaeological remains and features were recorded within 11 trenches (**ES Appendix 13.6**; CFA 2022c). A large

rectilinear feature, possibly a settlement or field system, was identified on the geophysical survey situated across Fields J2 and J3, and its presence was confirmed within three trenches, with prehistoric pottery recovered from one of these. Further anomalies identified by the geophysical survey to the south-east of these features were confirmed to be archaeological, with 2nd and 3rd century Romano-British pottery recovered from features within four evaluation trenches.

- 3.1.99 The CFA interim evaluation report concluded that *'the expected areas of activity highlighted by the geophysical survey were generally confirmed through the evaluation trenching.'* (ES Appendix 13.6; CFA 2022c, 67) within the Cottam 3b Site.

Cable Route Corridor

Designated Heritage Assets

- 3.1.100 The Cable Route Corridor study site does not contain any designated heritage assets.
- 3.1.101 There is one Scheduled Monument within the 250m of the Cable Route Corridor boundary; 'Fleet Plantation moated site' (NHLE 1008594) situated c. 95m to the south of Cottam Power Station.
- 3.1.102 There are six Listed Buildings within 250m of the Cable Route Corridor boundary, one of which is Grade I listed and comprises the Church of St Margaret of Antioch in Marton (NHLE 1359484). The remaining are all Grade II listed, three of which are situated in Marton; Berfoston Cottage (NHLE 1064060), Cross (NHLE 1146582), Wapping Lane Farmhouse and attached Outbuilding (NHLE 1146611). Two are located at Cottam church of Holy Trinity (NHLE 1212380) and Font half a metre east of the south porch at Church of Holy Trinity (NHLE 1370089).
- 3.1.103 There are no other designated heritage assets (i.e. Registered Parks and Gardens, Registered Battlefields or World Heritage Sites) within 250m of the Cable Route Corridor boundary.

Non-Designated Heritage Assets

- 3.1.104 The Cable Route Corridor contains wholly or partially 14 records held on the HER, comprising 10 'monument' records and four 'event' records. These are recorded in Table 3.1.2 below;

Table 3.1.2: HER records within the Cable Route Corridor

HER Ref.	HER Description
MNT4983	Cropmarks at south Leverton
MNT15983	Iron Age / Roman settlement at Cottam
MLI50575	Till Bridge Lane Roman Road

MLI25067	The Winter Camp of the Viking Great Army at Torksey
MLI52488	Post-medieval flood defences
MLI52489	Roman cropmarks at Marton
MLI52492	Medieval ridge and furrow at Marton
MLI54108	Undated cropmarks
ELI2197	Blyborough to Cottam pipeline
ELI13007	An Auger Survey by the Viking Torksey Project in 2011
MLI50575	Till Bridge Lane Roman Road
MLI52445	Normanby by Stow shrunken medieval village
ELI2197	Blyborough to Cottam pipeline
ELI5075	Watching Brief on the Caenby Corner to Gainsborough Gas Pipeline

3.1.105 The HER contains a further 79 ‘monument’ records for within 250m of the Cable Route Corridor boundary, including the designated heritage assets also recorded on the NHLE. There are 20 ‘event’ records relating to previous archaeological investigations within this search area.

Geophysical Survey

3.1.106 The geophysical survey of the Cable Route Corridor was divided between the parts of the route dedicated to just the Scheme (ASWYAS 2023; hereafter referred to as the Cable Route Corridor), and the section that is proposed to accommodate cable circuits associated with the Gate Burton Energy Park and West Burton Solar Project, which will form separate consent applications (referred to in the ES as the ‘Shared Cable Corridor’; Wessex Archaeology 2022a).

3.1.107 The geophysical survey of the Cottam Cable Route Corridor detected magnetic anomalies associated mainly with an agricultural landscape including former field boundaries, medieval/post-medieval ridge and furrow cultivation, modern ploughing and land drains (see Figures 3, 5, 6, 7, 8, 9, 10 and 11). An unnamed post-medieval farmstead first recorded on the 1838 Stow Tithe Map to the east of Fleets Lane, between Cottam 1 Parcels D and E, appears as an area of magnetic disturbance. Anomalies composed of weak increases in magnetic value and poor patterning were identified in Fields between Parcels C and D of the Cottam 1 Site and to the south of the Cottam 3b Site. Their origin is unknown, and it is not possible to ascertain if they denote buried archaeological deposits or are of a modern, agricultural or geological origin.

3.1.108 The survey of the Shared Cable Corridor (Wessex Archaeology 2022a) identified anomalies suggestive of a series of Romano-British enclosures, possibly

incorporating multiple phases of activity. An anomaly interpreted as a possible long barrow is located to the west of the River Trent in Field 125. Evidence of Iron Age and/or Roman field systems and possible settlement has been identified in Fields 132 and 146. Magnetic anomalies associated with fragmentary remains of further ditches, possible enclosures and pits have been identified throughout the site. However, their lack of coherence or isolated nature meant it was not possible to identify any characteristics that would suggest a specific chronology and may range in date from prehistoric to post-medieval (Fields 131, 133 and 136). Several circular anomalies located in the north-east of the Shared Cable Corridor, adjacent to the eastern bank of the river Trent, have been identified as possible ditches and embankments, interpreted as perhaps representing roundhouses or small round barrows (Fields 115 and 116). Whilst these features are topographically expressed in LiDAR data, their interpretation is less than certain from the geophysical results alone, as they equally could equally relate to natural variation in superficial geological deposits close to the river. Indications of former agricultural activity and 19th-century enclosure of land were recorded throughout the site in the form of former field boundaries and areas of ridge and furrow. Other 19th-century activity such as demolished buildings at Rectory Farm, and features associated with Marton Pumping Station were also noted.

Aerial Photographic and LiDAR Interpretation

- 3.1.109 The programme of aerial photographic and LiDAR mapping and interpretation (**ES Appendix 13.4**; Deegan 2022; see Figures 3, 5, 6, 7, 8, 9, 10 and 11) has recorded a number of rectilinear cropmarks within the Cable Route Corridor that are likely to be indicative of prehistoric or Roman activity and field systems in fields directly to the west of the Cottam Power Station.
- 3.1.110 A cropmark was identified within the Cable Route Corridor, located to the east of Heaton's Wood in Field T44, and was considered to be of a potentially prehistoric or Roman date, and a linear cropmark of unknown origin was identified to the south of Green Lane in Field T81.
- 3.1.111 Numerous rectilinear cropmarks probably associated with the shrunken medieval village to the east of Normanby by Stow have also been recorded, as well as buried vestiges of the former airfield are visible as cropmarks and earthworks.

Evaluation Trenching

- 3.1.112 Due to the concentration of potential archaeological features identified within the Shared Cable Route Corridor section of the Cable Route Corridor, and the greater level of potential impact upon these remains from the three separately proposed schemes that will utilise this corridor, a programme of evaluation trenching was undertaken across this area (Wessex Archaeology 2022b).
- 3.1.113 Within the Shared Cable Route Corridor, 154 trenches were excavated and recorded, with archaeological features and deposits identified in 27 of these, comprising ditches, gullies, pits, furrows and a waterhole. Deposits of alluvium, deliberate dumping and

levelling, and peat were also recorded, along with natural features and areas of bioturbation. Concentrations of features were recorded in Fields 131–132 and 136–137 (numbering as defined in the Wessex Archaeology report Figures 1 to 14; see **ES Appendix 13.6**), with a second group of features investigated in Field 146. In both areas, ditches and gullies were the dominant feature type, although in Fields 131–132 and 136 two possible ring ditches/gullies, pits, a possible waterhole and other archaeological deposits were investigated. In the north-east corner of Field 146 a complex of rectilinear enclosures and ditches were identified.

- 3.1.114 The features largely accord with the results of the earlier geophysical surveys, as well as aerial photograph and LiDAR mapping, and together suggest Iron Age or Romano-British activity concentrated on slightly higher ground to the west of the River Trent.
- 3.1.115 Elsewhere, ditches that probably relate to former post-medieval field boundaries, ridge and furrow cultivation, a pond and possible palaeochannels were recorded. Features of uncertain archaeological origin were identified in Fields 102 and 125. In both cases the features accorded well with aerial photograph and LiDAR mapping, although it is unclear if these features are archaeological or geological.
- 3.1.116 In response to changes to the Shared Cable Route Corridor Order Limits (resulting from a Change Application during the examination of the DCO application for the Scheme [AS-042] to [AS-071]), and as requested by consultees, a programme of evaluation trenching was undertaken in order to confirm the presence / absence of identified potential archaeological remains in fields directly to the south of the Cottam Power Station during the examination phase of the DCO application. Five trenches were excavated in the field to the north of Fleet Plantation Moated Site Scheduled Monument (NHLE 1008594) with largely negative results; the only feature recorded being an undated ditch of negligible significance (Wessex 2023).

4 Research Aims and Objectives

Aims

- 4.1.1 The overall aim will be to mitigate against the loss of any archaeological remains that may be impacted upon by the Scheme. Where possible, there will be a preference to conserve buried archaeological deposits through mitigation by design which will preserve them in situ (either through use of concrete ground anchors or removal of areas from the Scheme). Where this is not achievable, mitigation by record will be undertaken in the form of archaeological excavation and/or archaeological monitoring.

Objectives

- 4.1.2 The aims will be realised through the achievement of the following objectives:

- To establish the spatial extent, date, character, condition and significance of the archaeological activity in the proposed archaeological mitigation areas.
- To recover information relating to the nature and function of past human activity represented by the surviving archaeological remains.
- To identify areas where the conservation of archaeological features can be achieved by preservation in situ.
- Where preservation of archaeological features in situ cannot be achieved, to excavate and record identified archaeological features and deposits to a level appropriate to their extent and significance.
- To assess the potential for survival of environmental evidence.
- To interpret the nature of human activity within the Scheme and to place identified archaeological remains in their local, regional and national context as appropriate.
- Assess the site formation processes and the effects that these may have had on the survival and integrity of the archaeological features and deposits.
- Undertake sufficient post-excavation assessment to confidently interpret identified archaeological features.
- Undertake sufficient post-excavation analysis of artefacts and environmental samples to interpret their significance.
- Report and publish the results of the excavation and post-excavation analysis and place them within their local, regional and national context.
- Compile and deposit a site archive at a suitable repository, and provide information for the Lincolnshire and Nottinghamshire HERs and The Collection (Lincolnshire's archaeological repository) to ensure the long-term survival of the excavated data.

Regional Research Agenda

- 4.1.3 The programme of archaeological mitigation will be carried out with the aim of addressing the general research parameters and objectives defined in the regional archaeological research framework, *An Updated Research Agenda and Strategy for the Historic Environment of the East Midlands* (Knight *et al.* 2012) and the *East Midlands Historic Environment Research Framework* online resource (Research Frameworks 2024).
- 4.1.4 Given the size of the Scheme it is possible that evidence may be identified that can inform the objectives of the research agenda across a wide range of strategic objectives and periods.

4.1.5 Based on the extensive evidence identified by the assessments, surveys and evaluation trenching undertaken to inform the ES, it is considered that, at present, the archaeological mitigation has the potential to inform the strategic objectives outlined in the table below. These objectives will be reviewed and updated as the archaeological mitigation works proceed.

Table 4.1.1: Relevant Regional Research Agenda strategic objectives

Strategic Objective	Research Agenda	Project Potential
6.3 Neolithic and Early to Middle Bronze Age		
3D: Assess the regional air photographic and lidar resource:	3.3, 3.4, 3.6, 3.7, 3.8	Extensive air photo and LiDAR assessment has been undertaken of the Scheme (ES Appendix 13.4 ; Deegan 2022). Ground truthing of the features identified, through excavation, could help understand the origin, character and date of such features.
3H: Recover and analyse human remains	3.1, 3.2, 3.3, 3.7, 3.8	There may be potential for Neolithic and Bronze Age burials within identified ring ditches or in areas where concentrations of archaeological remains have been identified through earlier stages of work.
3I: Investigate the development and intensification of agriculture	3.2, 3.3, 3.4, 3.5	Evidence from excavation and paleoenvironmental assessment may have potential to provide evidence of animal domestication and cultivation.
6.4 Late Bronze Age and Iron Age		
4C: Characterise the LBA-EIA settlement resource and investigate intra-regional variability	4.2, 4.3, 4.6, 4.8, 4.9, 4.10	Evidence from excavation and monitoring may contribute to the characterisation of LBA-EIA settlement. Its regional variability could be investigated at the post-excavation analysis stage.
4E: Assess the evidence for the evolution of settlement hierarchies	4.4, 4.5, 4.9, 4.10	Evidence from excavation and monitoring could contribute to the understanding of settlement hierarchies.
4F: Investigate intra-regional variations in development of fields and linear boundaries	4.2, 4.6, 4.7, 4.8, 4.10	The results of the geophysical survey and aerial interpretation have provided evidence for possible prehistoric field systems. Ground truthing of features, through excavation, could help in understanding the origin, character and date of such features. Regional variability could be investigated at the post-excavation analysis stage.
4G: Study the production, distribution, and use of artefacts	4.9, 4.10	Post-excavation analysis of excavated finds.
6.5. Romano-British		
5C: Promote systematic application of scientific dating techniques	5.1, 5.2, 5.4, 5.5, 5.8	Scientific dating will be undertaken at post-excavation analysis stage, following recommendations in the assessment reports of excavations/monitoring
5D: Support scientific analysis of human remains	5.5, 5.8	Analysis of human remains, including radiocarbon and isotopic analysis will be undertaken as required during the post-excavation analysis stage.

5H: Investigate landscape context of rural settlements	5.4, 5.5	The combination of the results of non-intrusive survey with those from excavation/monitoring could help develop further the understanding of the Roman agrarian landscape.
5I: Support research and publication of landscape synthesis	5.1, 5.2, 5.4, 5.6, 5.7, 5.8	The combination of the results of non-intrusive survey with those from excavation/monitoring could inform understanding of the Roman period Trent valley landscape.
6.6 Early Medieval		
6A: Elucidate the chronology and demography of Roman to Anglo-Saxon transition period	6.1, 6.2, 6.4	Evidence from excavation and monitoring could contribute to the understanding of the transition between the Roman and Anglo-Saxon periods.
6B: Assess the landscape settings of Anglo-Saxon burial sites	6.1, 6.2, 6.4	The combination of the results of non-intrusive survey with those from excavation/monitoring may inform understanding of the landscape setting of Anglo-Saxon burial sites.
6.7 High Medieval		
7E: Investigate the morphology of rural settlements	7.2	Evidence from excavation and monitoring could help characterise medieval rural settlement.
7I: Investigate the development of the open-field system and medieval woodland management	7.2, 7.3, 7.7	The combination of the results of non-intrusive survey with those from excavation/monitoring could inform understanding of the development of the open-field system.
6.8 Post-Medieval		
8E: Identify agricultural improvements of the sixteenth to eighteenth centuries	8.3, 8.4	The combination of the results of non-intrusive survey with those from excavation/monitoring could inform understanding of post-medieval agricultural improvements.

SHAPE Research Programmes

- 4.1.6 The programme of archaeological mitigation will also take account of the national research programmes outlined in English Heritage's Strategic Framework for Historic Environment Activities and Programmes in English Heritage (SHAPE) first published in 2008 (English Heritage 2008b).

5 Standards and Guidance

- 5.1.1 All archaeological works will be undertaken to fully meet the requirements of all nationally recognised guidance for such work, including standards laid down by the former English Heritage (now Historic England) and the Chartered Institute for Archaeologists (CIfA).

- 5.1.2 The programme of archaeological mitigation and post-excavation work will be managed in line with the standards laid down in the Historic England guideline publication *Management of Research Projects in the Historic Environment (MoRPHE): Project Managers Guide* (2015a) and the *MoRPHE Project Planning Note 3: Archaeological Excavation (PPN3)* (English Heritage 2008a), as well as to meet the requirements of the National Planning Policy Framework (NPPF; Chapter 16: 'Conserving and enhancing the historic environment'; revised 2023).
- 5.1.3 All excavation will be undertaken using recording standards detailed in the *Archaeological Field Manual* (MOLAS 1994).
- 5.1.4 Guidance of particular relevance to the programme of works are:
- *Standard and guidance for archaeological geophysical survey* (CIfA 2020a)
 - *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (CIfA 2020b)
 - *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (CIfA 2020c)
 - *Chartered Institute for Archaeologists Code of Conduct* (CIfA 2022)
 - *Standard for field evaluation* (CIfA 2023a)
 - *Universal guidance for field evaluation* (CIfA 2023b)
 - *Standard for archaeological monitoring and recording* (CIfA 2023c)
 - *Universal guidance for archaeological monitoring and recording* (CIfA 2023d)
 - *Standard for archaeological excavation* (CIfA 2023e)
 - *Universal guidance for archaeological excavation* (CIfA 2023f)
 - *Archaeological Handbook* (Lincolnshire County Council 2019)
 - *Management of Research Projects in the Historic Environment: PPN3: Archaeological Excavation* (English Heritage 2008a)

6 Scope of Mitigation Fieldwork

Overview

- 6.1.1 The programme of archaeological mitigation will comprise five main elements;
- Geophysical Survey
 - Informative Trial Trenching
 - Open-area Excavation
 - Strip, Map and Sample Excavation

- Archaeological Monitoring
- Preservation *in situ*

- 6.1.2 The form of mitigation has been determined based on an assessment of the potential for archaeological remains to survive within specific areas of the Scheme based on all archaeological information obtained during previous stages of archaeological investigation, together with the assessed potential character and significance of any such remains, and the potential impact that the Scheme could have on these.
- 6.1.3 The detailed methodology for undertaking the various elements of the archaeological mitigation fieldwork is provide in Section 7 of this WSI.
- 6.1.4 The mitigation works will be followed by a programme of post-excavation assessment, analysis, reporting, publication and dissemination (see Sections 8 and 9).
- 6.1.5 Archaeological mitigation strategies for specific areas are outlined in Table 6.1.1 below and the areas are marked on plan in Figures 1 to 11.

Table 6.1.1: Archaeological Mitigation Strategies

Site/Parcel	Field Nos.	ES Gazetteer Ref.	Mitigation Area Ref.	Archaeological Potential	Mitigation Type	Area (HA)
Main Solar Sites:						
Cottam 1c	C5	AR28	C1c/01	IA/RB settlement	In situ preservation (concrete anchors)	3.05
Cottam 1c	C7	AR26	C1c/02	IA/RB settlement	Informative trenching followed by excavation or concrete anchors as required	1.05
Cottam 1c	C6	AR25	C1c/03	Possible IA/RB and unknown features	Informative trenching followed by excavation or concrete anchors as required	0.820
Cottam 1c	C28	AR31	C1c/04	IA/RB settlement	In situ preservation (no solar development)	6.64
Cottam 1d	D13	AR07	C1d/01	Possible IA/RB and unknown features	Informative trenching followed by excavation or concrete anchors as required	0.901
Cottam 1d	D14	AR07	C1d/02	Possible IA/RB features	In situ preservation (concrete anchors)	1.248

Site/Parcel	Field Nos.	ES Gazetteer Ref.	Mitigation Area Ref.	Archaeological Potential	Mitigation Type	Area (HA)
Cottam 1d	D14	AR01	C1d/03	Possible medieval/post-medieval features	In situ preservation (concrete anchors)	0.619
Cottam 1d	D33	AR12	C1d/04	Possible IA/RB features	Informative trenching followed by excavation or concrete anchors as required	0.757
Cottam 1e	D2	AR11	C1e/01	IA/RB settlement	Informative trenching followed by excavation or concrete anchors as required	0.411
Cottam 1f	F1, F2, F7	AR15 AR16 AR18	C1f/01	Possible IA/RB and medieval period features	In situ preservation (no solar development)	27.968
Cottam 1g	G1	AR22	C1g/01	IA/RB settlement / possible industrial activity	In situ preservation (concrete anchors)	1.582
Cottam 1g	G4	AR23	C1g/02	IA/RB settlement and field systems	In situ preservation (concrete anchors)	8.201
Cottam 1g	G4	AR24	C1g/03	Burial ground of possible Anglo Saxon date including enclosure ditch and possible field systems	Open Area Excavation	4.679
Cottam 2	H6	AR43	C2/01	Possible IA/RB feature	Informative trial trenching followed by excavation or concrete anchors as required	0.557
Cottam 2	H6	AR42	C2/02	Possible IA/RB features	Informative trial trenching followed by excavation or concrete anchors as required	0.222
Cottam 2	H3	AR41	C2/03	IA/RB period settlement and field systems	Informative trial trenching followed by excavation or concrete anchors as required	1.706
Cottam 2	H8	AR38	C2/04	Possible IA/RB features	Informative trial trenching followed by excavation or concrete anchors as required	1.046
Cottam 2	H5	AR37	C2/05	IA/RB settlement and field systems	In situ preservation (concrete anchors)	7.459
Cottam 2	H2	AR35	C2/06	Possible IA/RB features	Informative trial trenching followed by excavation or concrete anchors as required	1.04

Site/Parcel	Field Nos.	ES Gazetteer Ref.	Mitigation Area Ref.	Archaeological Potential	Mitigation Type	Area (HA)
Cottam 3a	K14	AR55	C3a/01	IA/RB settlement and field systems	In situ preservation (concrete anchors)	1.865
Cottam 3a	K14	AR56	C3a/02	IA/RB settlement and field systems	In situ preservation (concrete anchors)	1.036
Cottam 3a	K1	AR50	C3a/03	Unknown circular feature	Informative trial trenching followed by excavation or concrete anchors as required	0.055
Cottam 3a	K9	AR52	C3a/04	Possible IA/RB features	Informative trial trenching followed by excavation or concrete anchors as required	1.453
Cottam 3a	K18	AR54	C3a/05	IA/RB settlement and field systems	In situ preservation (concrete anchors)	2.85
Cottam 3a	K18	AR53	C3a/06	IA/RB settlement and field systems	In situ preservation (no solar development)	2.541
Cottam 3a	K7	AR48	C3a/07	Possible IA/RB features	Informative trial trenching followed by excavation or concrete anchors as required	1.571
Cottam 3b	J2	AR47	C3b/01	Possible IA/RB features	Informative trial trenching followed by excavation or concrete anchors as required	0.473
Cottam 3b	J2	AR46	C3b/02	Possible IA/RB features	Informative trial trenching followed by excavation or concrete anchors as required	1.744
Cottam 3b	J3	AR45, AR46	C3b/03	IA/RB features	In situ preservation (concrete anchors)	0.489
Cottam 3b	J4	AR45	C3b/04	Possible IA/RB features	Informative trial trenching followed by excavation or concrete anchors as required	0.19
Battery Storage Sites (Cottam 1 Site):						
Cottam 1g	G1	AR22	CBatt/01	IA/RB features	Strip, Map and Sample	2.579
Cottam 1g	G1	AR22	CBatt/02	Low archaeological potential	Archaeological Monitoring	1.998

Site/Parcel	Field Nos.	ES Gazetteer Ref.	Mitigation Area Ref.	Archaeological Potential	Mitigation Type	Area (HA)
Cottam 1g	G1	AR22a	CBatt/03	Low archaeological potential	Strip, Map and Sample	7.072
Cottam 1g	G2, G3	N/A	CBatt/04	Low archaeological potential	Archaeological Monitoring	4.067
Cable Route Corridor:						
Cable Route Corridor		N/A	Full length of route excluding CRC/13 and where crossing existing roads	Low archaeological potential	Archaeological Monitoring followed by targeted Strip, Map and Sample as required	-
Cable Route Corridor		AR44/ AR33/ AR32/ AR59/ AR62/ AR63/ AR12/ AR67/ AR68/ AR69/ AR70/ AR71 AR74	CRC/01 /02 /03 /05 /06 /07 /11 /12 /14 /15	Possible IA/RB features	Strip, Map and Sample within areas of construction disturbance	-
Cable Route Corridor		N/A	CRC/04	Ridge and Furrow earthworks	Re-instatement of earthworks following construction	
Cable Route Corridor		AR64	CRC/08	Post-medieval flood defences	Re-instatement of earthworks following construction	
Cable Route Corridor		AR65	CRC/09 /10	Vicinity of Torksey Viking camp	Strip, Map and Sample within areas of construction disturbance	
Cable Route Corridor (Shared Cable Corridor)		AR71	CRC/13	IA/RB settlement and field systems	In situ preservation (directional drilling) or Strip, Map and Sample if required	21.20
Abnormal Load Access Route		N/A	Cala/01	Unknown	Geophysical Survey Followed by archaeological monitoring (low potential for archaeological remains to be identified) or strip, map and sample (moderate potential for archaeological remains identified).	3.70
Access Routes		N/A	Full length of all access routes not following existing tracks	Low archaeological potential	Archaeological Monitoring followed by targeted Strip, Map and Sample as required	-

Site/Parcel	Field Nos.	ES Gazetteer Ref.	Mitigation Area Ref.	Archaeological Potential	Mitigation Type	Area (HA)
Other Infrastructure:						
Substations			-	Low archaeological potential	Archaeological Monitoring	-
Water Tanks			-	Low archaeological potential	Archaeological Monitoring	-
Construction Compounds			-	Low archaeological potential	Archaeological Monitoring	-
Construction lay-down areas			-	Low archaeological potential	Archaeological Monitoring	-
Directional drilling access pits			-	Low archaeological potential	Archaeological Monitoring	-
Low voltage cable runs			-	Low archaeological potential	Archaeological Monitoring	-

7 Fieldwork Methodology

Personnel

- 7.1.1 The archaeological mitigation works, and post-excavation assessment and analysis of the results, will be undertaken by suitably qualified and experienced professional archaeological contractors, that will adhere to the ClfA Code of Conduct and all appropriate standards and guidance.
- 7.1.2 Details of the CVs of the appointed contractor's key personnel and specialists will be provided to the Archaeological Advisor to the relevant Local Planning Authority in advance of the commencement of fieldwork, following appointment of the archaeological contractor. The appointed archaeological contractor's Project Manager for the project must be able to demonstrate competence and experience of managing archaeological projects of a similar size, nature and complexity.

Project Initialisation

- 7.1.3 The Archaeological Advisor to the relevant Local Planning Authority will be informed at least one week in advance of the commencement of any fieldwork, or stages of fieldwork, within the Scheme.
- 7.1.4 Prior to the commencement of archaeological fieldwork, the appointed archaeological contractor will familiarise themselves with all existing documentation and reports relating to previous stages of archaeological investigation within the site, and any other relevant documents as necessary.

- 7.1.5 The appointed archaeological contractor will be provided with all available information relating to health and safety on the site, including any mapped utilities and any other constraints that may affect the mitigation works.
- 7.1.6 All works will be archived under the accession number obtained from The Collection (LCNCC:2022.68.). Works undertaken in the Shared Cable Corridor will be archived under the accession number LCNCC:2022.103. Table 7.1.1 below details individual site codes for each of the sites. The appointed archaeological contractors will complete all archive deposition forms as required.

Table 7.1.1: Archive accession numbers and site codes

Site	Accession Number	Site Code
Cottam 1	LCNCC : 2022.68	COIR22
Cottam 2	LCNCC : 2022.68	COCO22
Cottam 3a	LCNCC : 2022.68	COBL22
Cottam 3b	LCNCC : 2022.68	COPI22
Cable Route Corridor	LCNCC : 2022.68	COGL22
Shared Cable Corridor	LCNCC:2022.103	GBE22

- 7.1.7 Before fieldwork commences, an OASIS online record will be initiated, and key fields completed on Details, Location and Creator forms.

Preservation *in situ*

- 7.1.8 Where possible, areas of potentially extensive or significant archaeological remains will be preserved *in situ*.
- 7.1.9 Three areas containing probable extensive remains identified by non-intrusive survey within the Scheme will be excluded from any development (C3a/06, C1c/04 and C1f/01; see Figures 2, 7 and 9). The management of these excluded areas is detailed in Table 3.2 of Construction Environmental Management Plan ([EN010133/EX3/C7.1_C] / [REP3-012]).
- 7.1.10 Eleven further areas have been identified within the Cottam 1, 2, 3a and 3b Sites through non-intrusive investigations, and **confirmed by evaluation trenching** (CFA 2022a; CFA 2022b; CFA 2022c and Wessex 2023), as containing archaeological features. Although impacts on any such remains from the solar mounts would be limited, the potential for any impact will be mitigated through the use of non-intrusive surface-mounted pre-cast concrete ground anchors, which is a standard accepted approach to removing the impact of solar mounts upon potential archaeological sub-surface remains (BRE 2013, 13).
- 7.1.11 Sub-surface directional drilling will be employed beneath mitigation area CRC/08 of the Cable Route Corridor (see Figure 11), in which an extensive concentration of

archaeological features has been identified by geophysical survey and aerial photographic analysis, and confirmed by targeted archaeological evaluation trenching. The depth of the directional drilling will be informed by the depth of archaeological remains identified within the evaluation trenches, in order to avoid any impacts on potential buried archaeological deposits.

Geophysical Survey

- 7.1.12 A change to the Order Limits during the examination phase of the DCO application was required to facilitate abnormal load access (Cala/01) at Stone Pit Lane, Willingham by Stow, which was the subject of a Change Application ([AS-042] to [AS-071]) – see Change 5.
- 7.1.13 While there are no known heritage assets within the area associated with the change to the Order Limits at this location, enclosure ditches and field systems of Romano-British date were identified by geophysical survey in 2021 (ES Appendix 13.2 part 2, Figure 11 and part 6, Figure 125) and were confirmed by excavation in 2022 (ES Appendix 13.6 p.43-55, p.119-20; Fig. 2.3 & Figs 3.17-3.18). Consequently, there is a possibility that archaeological remains associated with this Romano-British settlement activity could continue into the field to the north and therefore be impacted by groundworks.
- 7.1.14 Further evaluation by means of geophysical survey pre-construction could help to microsite the abnormal load access route to avoid any concentration of archaeological remains and/or inform an appropriate mitigation strategy. Geophysical survey should cover the area defined by Cala/01, which totals c. 3.70ha. If limited potential archaeological remains are identified by the geophysical survey, a programme of archaeological monitoring would be considered sufficient mitigation during the construction phase in any areas of impact. If potentially extensive archaeological features are identified by the geophysical survey, a programme of ‘strip, map and sample’ would be required prior to the commencement of construction groundworks in any areas where ground disturbance is proposed. If archaeological evaluation in the form of geophysical survey is not able to be completed, ‘strip, map and sample’ should be undertaken in any areas proposed for ground disturbance in advance of the Scheme’s construction phase.
- 7.1.15 A specific archaeological geophysical survey method statement detailing the methodology (including instrumentation and software), the survey programme and staffing will be produced by the appointed archaeological contractor in line with the scope of works identified in this WSI and agreed with the Archaeological Advisor to the relevant Local Planning Authority prior to further survey works being undertaken.

Data Collection

- 7.1.16 The geophysical survey will comprise a magnetic survey technique within Cala/01. Magnetic surveys are generally considered to be the most cost-effective and successful technique for identifying a wide range of different archaeological features. Recent geophysical surveys undertaken for the Scheme Sites have successfully detected potential human activity which appears to date from a range of different time periods, and have been successfully 'ground-truthed' through targeted archaeological evaluation trenching. It is therefore considered that there is a high potential that the natural soils and types of archaeological features within the Cable Route Corridor are conducive to a magnetic survey technique.
- 7.1.17 All survey work will be completed to appropriate standards, as outlined by professional guidelines (CIfA 2020a, CIfA 2023b; Schmidt et al. 2015). All survey works will be completed by appropriately experienced operators working in line with the CIfA Code of Conduct (2022).
- 7.1.18 The magnetometer survey will be undertaken using an appropriate magnetometer system (either cart-based or handheld) with a resolution no coarser than 1m by 0.25m. All data should be located using Real Time Kinematic (RTK) differential GPS equipment with a positional accuracy of ± 0.1 m.
- 7.1.19 The geophysical survey should cover all accessible land within the additional areas of the Cable Route Corridor; where areas are not considered suitable for survey this should be justified in the final report.
- 7.1.20 Data will be regularly downloaded and transferred to a desk-top computer for processing, visualisation, interpretation and archiving. Data plots should be made available to the Applicant's archaeological contractors on a weekly basis, or as areas are completed.
- 7.1.21 Before and after photos will be taken of each area surveyed. The contractor will ensure that all materials brought onto the site are removed at the end of survey, and that no damage has been caused to the site.

Data Processing and Interpretation

- 7.1.22 Data processing and interpretation will be undertaken by a competent geophysicist who is well versed in the characterisation of magnetic anomalies.
- 7.1.23 Instruments will be correctly set up prior to data collection to minimise the level of post survey processing. In particular, instruments will be correctly calibrated for the duration of the survey to ensure minimal destripping or zero-mean traverse is required.

Repeatability

- 7.1.24 Data will be checked on site daily to identify any issues. Where issues are identified, the data will be recollected.

- 7.1.25 A daily control grid of 30x30m (handheld collection) or block of traverses of an area no less than 900m² (cart-based survey) will be repeated over the same area at the start and end of the survey to demonstrate the consistency and reliability of the geophysical survey data. The same processes, if required, will be applied to the repeat data. Plots of the data will be presented in an appendix of the final report.
- 7.1.26 If multiple contractors are used, a control area will be established that all contractors survey to demonstrate data integrity between different operators.
- 7.1.27 Attention will be paid to data presentation and the interpretation of data sets, to minimise inconsistencies between reports produced by different contractors.

Archiving and data management

- 7.1.28 The Collection accession number for archiving is: LCNCC : 2022.68.
- 7.1.29 The appointed archaeological contractor will contact the Collection in advance of commencing any fieldwork to determine the preparation, and deposition of the archive and finds, and agree any additional accession numbers (i.e. site codes) for all archaeological works.
- 7.1.30 Digital records of the geophysical survey will be appropriately packaged for long-term storage in accordance with national guidelines (ClfA 2020a; Schmidt et al. 2015). The digital archive will be produced using industry standard file formats, with a clear file structure that allows these to be easily shared with all stakeholders.
- 7.1.31 Georeferenced greyscale plots of the data and interpretation layers will be made available as either shapefiles or in dwg format.
- 7.1.32 Digital copies of reports will be deposited on OASIS and submitted to the Lincolnshire Historic Environment Officer within three months of the completion of the project.
- 7.1.33 If requested, the archive will be deposited online with the Archaeology Data Service (ADS).

Mechanical Excavation

- 7.1.34 Topsoil or overburden across the mitigation excavation areas (see Table 6.1.1 above) will be stripped using 360° tracked excavators fitted with a toothless, flat bladed, grading bucket, down to the first significant archaeological horizon or natural sub-soil.
- 7.1.35 All mechanical excavation will be undertaken under direct archaeological supervision, by a suitably experienced and qualified archaeologist, with one archaeologist responsible for monitoring each excavator.
- 7.1.36 All areas of excavation will be scanned with a Cable Avoidance Tool (CAT) prior to ground works commencing. Necessary measures will be taken to avoid disturbing any services.

- 7.1.37 Mechanical excavators will work backwards from the starting point of the excavation to avoid tracking over stripped areas.
- 7.1.38 Mechanical excavators and other plant will not track or drive over an area that has been stripped until an archaeologist has confirmed that no archaeological remains are present, or that any features have been fully archaeologically recorded.
- 7.1.39 The stripped surface will be kept clean and free of loose spoil until fully archaeologically investigated and recorded.
- 7.1.40 If required, areas of archaeological remains will be fenced-off to prevent accidental damage.
- 7.1.41 Spoil from mechanical excavation will be scanned by eye and by metal detector to aid the recovery of finds.
- 7.1.42 Topsoil and subsoil will be stored separately. Excavated topsoil will be redeposited at a location to be determined in agreement with the principal contractor and the Applicants. All spoil will be stored and managed safely in line with the standards of the *Construction Code of Practice for Sustainable Use of Soils on Construction Sites* (DEFRA 2009).
- 7.1.43 Should the excavation of the trenches reach the limit of safe working depth without natural geology being encountered, a machine dug sondage will be excavated in order to establish the depth of natural geology, provided this will have no detrimental effects upon archaeological deposits. Where depth of excavation is required to be greater than 1m, suitable stepping will be employed.
- 7.1.44 At least one end of each trench or excavation area will be ramped to provide safe access and egress for staff and to enable any wildlife that may accidentally fall into the trenches to escape.

Informative Trial Trenching

- 7.1.45 Several sites identified by non-intrusive investigations of unknown archaeological potential have been identified within the Scheme that would benefit from targeted informative trial trenching to determine their character. The number of targeted informative trial trenches would total 33, the locations of which are shown on Figures 2, 3, 4, 7 and 8. Trenches will be machine excavated and will typically be between 2m by 30m or 2m by 50m in dimension.
- 7.1.46 In response to the recommendation by Lincolnshire County Council Historic Environment Team, archaeological advisors to West Lindsey in Lincolnshire and Bassetlaw in Nottinghamshire, for trenching across all areas of the Scheme, a further 902 untargeted trenches measuring 50m by 2m will be machine excavated (avoiding buffer zones as a result of utilities and ecological features) (see Figures 2 to 11). Although these proposed trenches are untargeted—i.e. are not targeting features considered to have an archaeological interest based on the results of the non-intrusive evaluation—they have been positioned with consideration to

anomalies identified by geophysical survey, features identified by LiDAR and aerial photo mapping, and topographical changes.

- 7.1.47 The total sample of trenching for the Scheme would total 1.09%. This is considered to be in line with the sample undertaken for the nearby Gate Burton Scheme, which Lincolnshire County Council Historic Environment Team considered to be a sufficient sample of trenching.
- 7.1.48 If trenching is undertaken as part of archaeological assessment works for other schemes within areas of the Scheme, this will negate the need for informative trenching within these areas. In which case, information acquired from such trenching undertaken for other schemes will be used to inform any required mitigation in line with that proposed within this WSI.
- 7.1.49 Once the detailed design of the Scheme has been finalised, in any areas where ground disturbance is not proposed, for example those areas that are being used for landscaping and ecological mitigation and enhancement, such as wild flower planting, trenching would no longer be required as there would be no potential for impact to buried archaeological remains. Trenches in these locations would not be excavated. Landscaping and ecological mitigation that will cause ground disturbance, such as wildlife ponds, scrapes and tree planting, would be subject to a programme of informative trenching.
- 7.1.50 The results of the informative trenching would be used to inform the need for any further targeted archaeological mitigation (Open-Area Excavation, 'Strip, Map and Sample' or in situ preservation) dependant on the nature of archaeological remains identified and in line with the mitigation options detailed in this document.
- 7.1.51 Following excavation and recording of any archaeological remains, and with the agreement of the Archaeological Advisor to the relevant Local Planning Authority, the evaluation trenches will be backfilled with the previously excavated spoil.
- 7.1.52 Where archaeological remains are encountered, the preference will be to preserve these in situ where possible using non-intrusive surface-mounted pre-cast concrete ground anchors. If remains of a high significance are identified during the informative trial trenching, targeted open-area excavation may be required to preserve such remains by record (see below).

Open-Area Excavation

- 7.1.53 Targeted Open-Area excavation will be undertaken on areas within the Scheme in which the presence of potentially significant archaeological remains has been identified through previous stages of non-intrusive archaeological investigation (e.g. geophysical survey, aerial photographic and LiDAR analysis) and confirmed by evaluation trenching, but where impact cannot be avoided from an engineering perspective and therefore preservation *in situ* would not be possible.
- 7.1.54 Immediately following mechanical excavation, any exposed archaeological features will be surveyed using survey-grade (centimetre accurate) GPS equipment, and/or a

total station as required, to produce a pre-excavation plan of initially identified potential archaeological features.

7.1.55 All survey data will be accurately tied into the Ordnance Survey National Grid and Ordnance Datum Newlyn levels using survey-grade (centimetre accurate) GPS equipment and/or total stations.

7.1.56 All archaeological features and deposits revealed will be excavated by hand in an archaeologically controlled and stratigraphic manner, in order to establish their extent, form, date, function and relationship to other features.

7.1.57 The following excavation strategy is identified as a guide, however, this will be re-examined in liaison with the Archaeological Advisor to the relevant Local Planning Authority following completion of the pre-excavation plan to confirm that this represents the most appropriate policy following top soil removal:

- 100% excavation of all stake-holes
- 100% excavation of all funerary features
- 100% excavation of all post-holes and pits with a diameter of less than 0.4m
- 50% excavation of pits between 0.4m and 1.5m in diameter
- 25% excavation of pits with a diameter of over 1.5m. This will include a complete section across the pit to recover its full profile
- 20% excavation of all linear features, up to 5m in length; for features greater than this, a 10% sample will be excavated. For field boundaries over 5m in length, of a post-medieval date, sections will be excavated to confirm their date, but a full 10% sample will not be required.
- Deposits at junctions, intersections and interruptions in linear features will be excavated over a sufficient length to determine the stratigraphic relationships between the different components.
- It is anticipated that for discrete features such as ring ditches, post holes and pits, the remaining fills will be rapidly removed to maximise recovery of artefactual and other evidence.
- Built structures, such as walls, will be examined to a degree whereby their extent, form, date, function and relationship to other features and deposits can be established
- Any *in situ* building remains will be fully recorded for the extent that they are exposed. Brick and stone samples will be taken if potentially diagnostic of date or function.

7.1.58 All archaeological features and deposits revealed will be cleaned and excavated by hand in an archaeologically controlled and stratigraphic manner, in order to establish their extent, form, date, function and relationship to other features. All

features will be investigated to understand the full stratigraphic sequence down to naturally occurring deposits.

- 7.1.59 Any excavation, by machine or by hand, will be undertaken with a view to avoiding damage to any archaeological features or deposits which appear to be demonstrably worthy of preservation *in situ*. No machine excavation of archaeological deposits or features will be undertaken without agreement from the Archaeological Advisor to the relevant Local Planning Authority.
- 7.1.60 There will be sufficient excavation to give clear evidence for the period, depth and nature of any archaeological deposit. The depth and nature of colluvial or other masking deposits will be established across the site.
- 7.1.61 Apart from where not otherwise needed due to engineering requirements, and with the agreement of the Archaeological Advisor to the relevant Local Planning Authority, it is assumed that archaeological excavation areas will be backfilled on completion.

Strip, Map and Sample Excavation

- 7.1.62 Similar to Open-Area excavation, 'Strip, Map and Sample' excavation will be employed where archaeological evaluation has identified potential archaeological remains but, based on current evidence, these do not appear to be extensive or potentially significant enough to warrant Open-Area excavation.
- 7.1.63 Following machine topsoil excavation, a pre-excavation plan of identified potential archaeological features will be produced. This plan will be used to agree an excavation sampling strategy with the Archaeological Advisor to the relevant Local Planning Authority, in order to decide which features require hand excavation and the 'sample' of how much of these features should be excavated.
- 7.1.64 An indicative sampling strategy is provided below, but if archaeological remains are identified of either a lesser or greater extent / significance than anticipated, this may be subject to a change in scope following liaison with the Archaeological Advisor to the relevant Local Planning Authority.
- 100% excavation of all stake-holes
 - 100% excavation of all structural, funerary or ritual features
 - 100% excavation of all post-holes and pits with a diameter of less than 0.4m
 - 50% excavation of pits between 0.4m and 1.5m in diameter
 - 25% excavation of pits with a diameter of over 1.5m. This will include a complete section across the pit to recover its full profile
 - 10% excavation of all linear features, up to 5m in length
 - Reduced percentage excavation of longer linear features, to be agreed with the Archaeological Advisor to the relevant Local Planning Authority

- 7.1.65 All archaeological features and deposits revealed will be cleaned and excavated by hand in an archaeologically controlled and stratigraphic manner, in order to establish their extent, form, date, function and relationship to other features. All features will be investigated to understand the full stratigraphic sequence down to naturally occurring deposits.
- 7.1.66 Any excavation, by machine or by hand, will be undertaken with a view to avoiding damage to any archaeological features or deposits which appear to be demonstrably worthy of preservation in situ. No machine excavation of archaeological deposits or features will be undertaken without agreement from the Archaeological Advisor to the relevant Local Planning Authority.
- 7.1.67 There will be sufficient excavation to give clear evidence for the period, depth and nature of any archaeological deposit. The depth and nature of colluvial or other masking deposits will be established across the site.
- 7.1.68 During the Strip, Map and Sample excavation, where it has been established that areas of the site under investigation do not contain archaeological remains, these areas will be signed-off to allow for construction groundworks to proceed, following agreement with the Archaeological Advisor to the relevant Local Planning Authority.

Archaeological Monitoring

- 7.1.69 Archaeological monitoring will be undertaken on specific areas of groundworks (e.g. the cable route, access roads where these require intrusive groundworks) and where topsoil stripping is required as part of the construction process (e.g. battery storage areas, sub-stations, water tanks, construction compounds, directional drilling access pits etc.).
- 7.1.70 All topsoil or overburden stripping across these areas will be undertaken using 360° tracked excavators fitted with toothless, flat bladed, grading buckets, down to the first significant archaeological horizon or natural sub-soil. All machine stripping will be undertaken in line with the methodology in paragraphs 7.1.34 to 7.1.44 of this WSI.
- 7.1.71 A suitably qualified and experienced archaeologist will monitor groundworks in the specified areas and record any features in line with the recording methodology for excavation detailed above. The archaeological monitoring of construction groundworks will include the following:
- archaeological inspection of overburden / topsoil removal
 - inspection of subsoil for archaeological features
 - excavation, recording and environmental sampling of features necessary to determine their date and character
- 7.1.72 The principal contractor, or any other groundworks contractors operating on site, will allow sufficient time for any archaeological features to be excavated, sampled and recorded to meet the requirements of this WSI.

- 7.1.73 Every effort will be made to implement the archaeological watching brief without affecting the construction timetable, however, some limited suspension of groundworks in specific areas of the Scheme under investigation may be required in order to record and sample any archaeological evidence uncovered (in line with the 'Strip, Map and Sample' methodology provided in this WSI). The length of stoppage time will be determined by the nature of archaeological features or deposits identified.
- 7.1.74 Where it can be demonstrated that survival conditions are such that archaeological potential is negligible, the Archaeological Advisor to the relevant Local Planning Authority will be informed and, as agreed, the archaeological monitoring suspended in specific areas.
- 7.1.75 The results of the archaeological monitoring will be fully integrated with results of the excavation stage and the overall post-excavation assessment and analysis.

Hand Excavation and Recording

- 7.1.76 All archaeological features and deposits revealed will be excavated by hand in an archaeologically controlled and stratigraphic manner, in order to establish their extent, form, date, function and relationship to other features.
- 7.1.77 All features will be investigated to understand the full stratigraphic sequence down to naturally occurring deposits. Where depth of excavation is required to be greater than safe working depth, suitable stepping will be employed.
- 7.1.78 Metal detector searches will take place at all stages of the mitigation fieldwork, over archaeological features and excavated spoil. Any metal finds will be located using survey-grade GPS and metal detectors will be set not to discriminate against iron. Metal detecting will also be conducted over the surface of all exposed features before the end of each working day as a countermeasure to 'nighthawking'.
- 7.1.79 The stripped surface will be kept clean and free of loose spoil until fully archaeologically investigated and recorded. Wherever possible, spoil arising during hand-cleaning and hand-excavation will be piled beyond the limits of excavation.
- 7.1.80 A full written, drawn and photographic record will be made of all features revealed during the course of the archaeological mitigation works.
- 7.1.81 All archaeological features or deposits encountered will be described fully on pro-forma individual context recording sheets, using standard methods of the archaeological contractor appointed.
- 7.1.82 Plans will be completed at a scale of 1:20 with a site plan at 1:100 (as appropriate), with section drawings at a scale of 1:10. All plans will be tied in with the Ordnance Survey National Grid with levels given to above OD using cm accurate survey grade GPS equipment.
- 7.1.83 A photographic record, utilising high resolution digital photography of a minimum of 12 megapixels and in RAW format, will be maintained during the course of the fieldwork and recorded in a photographic register. This will include:

- the site prior to commencement of fieldwork
- the site during work, showing specific stages of fieldwork
- the layout of archaeological features within the site
- individual features and, where appropriate, their sections
- groups of features where their relationship is important

7.1.84 All photography will follow industry best practice (Historic England 2015b). Images will be converted to uncompressed baseline v.6 TIFF for archiving. All images will have accompanying metadata specifying; photo ID, capture device, converting software, colour space, bit depth, resolution, date of capture, photographer, caption, and any alterations made to the image.

Finds Recovery

7.1.85 All identified finds will be collected and retained, and bagged and labelled according to their context. Finds of significant interest will be given a 'special finds' number, and information on their location in three dimensions will be entered on a separate pro-forma sheet.

7.1.86 No finds will be discarded without assessment by an appropriate finds specialist, and/or the approval of the Archaeological Advisor to the relevant Local Planning Authority.

7.1.87 It is anticipated that unstratified 20th and 21st century material will be noted, spot dated as required, and discarded.

7.1.88 All finds and samples will be treated in a proper manner during the excavation stage. Finds will be exposed, lifted, bagged, conserved and stored in accordance with the guidelines set out in United Kingdom *Institute for Conservation's Conservation Guidelines No. 2 and the ClfA guidelines Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (2020d).

7.1.89 The provisions of the Treasure Act 1996 (as amended), and the Treasure (Designation) Order 2002 will be followed with regard to any finds that might fall within its purview. All finds of gold and silver, and associated objects, will be reported to the coroner according to the procedures under the Treasure Act 1996 (and the Act's amendment of 2003 to include prehistoric objects such as Bronze Age metalworking hoards and other non-precious metal items), after discussion with the Applicant, the landowner, the Archaeological Advisor to the relevant Local Planning Authority and the Finds Liaison Officer.

Palaeoenvironmental Sampling

7.1.90 Soil samples will be taken from all suitable features or deposits for palaeoenvironmental sampling. This will comprise the removal of a bulk sample from every securely sealed and hand-excavated context, excepting those with excessive levels of residuality or those with minimal 'soil' content (such as building rubble).

- 7.1.91 Bulk samples will comprise representative 40 litre samples, or more if appropriate. Where a context does not yield 40 litres of material, smaller samples will be taken (generally the maximum amount of material that it is practicable to collect). Bulk samples will be used to recover a sub-sample of charred macroplant material, faunal remains and artefacts. Suitable deposits will also be sampled for industrial residues.
- 7.1.92 If buried soils or other deposits are encountered, column samples may be taken for micromorphological and pollen analysis. Environmental material will be stored in controlled environments and specialists will be consulted during the course of the work as necessary.
- 7.1.93 If required a qualified and experienced palaeoenvironmental specialist will undertake site visits to discuss the sampling strategy and, if necessary, assist in any required fieldwork, and the appropriate advice of the Historic England Regional Science Advisor will be sought.
- 7.1.94 All environmental work will be undertaken in accordance with English Heritage guidelines *Environmental Archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation* (2011).

Human Remains

- 7.1.95 The Ministry of Justice and the Archaeological Advisor to the relevant Local Planning Authority will be informed if human remains are found. The contractor will comply with all statutory consents and licences under the Disused Burial Grounds (Amendment) Act 1981 or other Burial Acts regarding the exhumation and interment of human remains.
- 7.1.96 If human remains are encountered, they will be cleaned with minimal disturbance, prior to recording and removal, following receipt of the required Ministry of Justice licence. Investigation and excavation of human remains will be undertaken by, or under supervision of, suitably experienced specialist staff and in accordance with former *Institute of Field Archaeologists (IFA) guidelines Excavation and Post-excavation Treatment of Cremated and Inhumed Human Remains* (McKinley and Roberts 1993) and *Guidelines to the standards for recording human remains* (Brickley and McKinley 2004). Assessment of excavated human remains will be undertaken in line with current English Heritage guidelines *Human Bones from archaeological sites: Guidelines for the production of assessment documents and analytical reports* (English Heritage 2004) and *Guidance for Best Practice for Treatment of Human Remains Excavated from Christian Burial Grounds in England* (Church of England/Historic England 2017).
- 7.1.97 The archaeological contractor will comply with all reasonable requests of interested parties as to the method of removal, re-interment or disposal of the remains or associated items. Every effort will be made, at all times, not to cause offence to any interested parties.
- 7.1.98 If required a qualified and experienced osteoarchaeologist will undertake site visits to discuss the recording and assist in the removal of any human skeletal remains.

Strategy Review

- 7.1.99 The strategy for the archaeological fieldwork will be held under continuous review.
- 7.1.100 If archaeological remains are identified of either a lesser or greater extent / significant than anticipated, this may be subject to change in scope following liaison with the Archaeological Advisor to the relevant Local Planning Authority.
- 7.1.101 Where areas of the Scheme or parts of individual sites have been shown to contain no archaeological remains following stages of archaeologically monitored top-soil stripping, or where specific areas of the Scheme have been fully archaeologically excavated, agreement will be sought with the Archaeological Advisor to the relevant Local Planning Authority to allow for construction groundworks to proceed in these specific areas.
- 7.1.102 Should the strategy be considered unsuitable at any time by the appointed archaeological contractor, an alternative strategy will be proposed for agreement with the Archaeological Advisor to the relevant Local Planning Authority.

Unexpectedly Significant or Complex Discoveries

- 7.1.103 Should unexpectedly extensive, complex or significant remains be uncovered that warrant, in the professional judgment of the archaeologists on site, more detailed recording or extensive excavation than is appropriate in the terms of this WSI, the scope of the WSI will be reviewed.

8 Post-Excavation Assessment

- 8.1.1 Upon completion of the archaeological fieldwork, the finds, soil samples and stratigraphic information will be assessed for their potential and significance for further analysis.
- 8.1.2 An assessment report on the fieldwork will be produced within an agreed timetable following the completion of the fieldwork, which will inform the production of an Updated Project Design (UPD) detailing the methodology for the analysis and publication stage if necessary (see Section 9).

Finds Processing

- 8.1.3 All finds will be treated in a proper manner during the post-excavation stage and to standards agreed in advance with The Collection. Finds will be cleaned, conserved, marked, bagged and stored in accordance with the guidelines set out in United Kingdom Institute for Conservation's *Conservation Guidelines No. 2* (1990), the ClfA guidelines *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (2020e) and the former English Heritage's *Investigative Conservation* (2008c).
- 8.1.4 In accordance with the procedures outlined in English Heritage's MoRPHE PPN3 (2008a), significant iron objects, a selection of non-ferrous artefacts (including all

coins), and a sample of any industrial debris relating to metallurgy will be X-radiographed before assessment.

- 8.1.5 All material will be packed and stored in optimum conditions, as described in *First Aid for Finds* (Watkinson and Neal 1998). Waterlogged organic materials will be dealt with in line with the English Heritage guidance documents, *Waterlogged Organic Artefacts. Guidelines on their Recovery, Analysis and Conservation* (2012a) and *Waterlogged Wood. Guidelines on the recording, sampling, conservation and curation of waterlogged wood* (2010).
- 8.1.6 The finds assessment will be reported in the overall post-excavation assessment report and include proposals for full analysis to be incorporated into the UPD.
- 8.1.7 Finds for dating will be submitted to specialists promptly, so as to ensure that results are available to aid development of the UPD for the analysis stage.
- 8.1.8 For ceramic assemblages, recording will be carried out in a manner compatible with existing typological series in local pottery reference collections. Reporting on ceramic artefacts and pottery should follow the guidance given in *A Standard for Pottery Studies in Archaeology* (Barclay *et al.* 2016) and endorsed by the Prehistoric Ceramics Research Group, the Study Group for Roman Pottery, and the Medieval Pottery Research Group.

Environmental Sample Processing

- 8.1.9 The processing of all palaeoenvironmental samples will be undertaken in line with the requirements of the English Heritage publications *Archaeological Science at PPG16 Interventions: Best Practice Guidance for Curators and Commissioning Archaeologists* (2006) and *Environmental Archaeology: A guide to the theory and practice of methods from sampling and recovery to post-excavation* (2011).
- 8.1.10 The samples will be processed, and ecofacts collected and assessed with regard to the potential for detailed analysis of pollen, charred plant macrofossils, land molluscs, faunal remains (including small mammals and fish) and soil micromorphology. Samples suitable for radiocarbon, or other dating methods, will also be identified. The environmental assessment will be reported within the overall post-excavation assessment report and include proposals for full analysis to be incorporated into the UPD. Unprocessed sub-samples will be stored in conditions specified by the appropriate specialists.
- 8.1.11 Samples for dating will be submitted to specialists promptly, so as to ensure that results are available to aid development of the UPD for the analysis stage.

Human Remains Processing

- 8.1.12 Human remains will be processed following national standards and guidance, including English Heritage (2004), Brickley and McKinley (2004) and the Advisory Panel on the Archaeology of Burials in England (Church of England/Historic England 2017). Processing will be undertaken by experienced specialists trained in the identification of human remains and who are familiar with delicate areas of the

skeleton that need careful preservation, important areas required for an individual identification (e.g. age and sex) as well as potentially pathologically altered bones.

8.1.13 Where specialist processing may be required, for example where samples may be required for ancient DNA analysis, specialist advice will be sought to minimise potential contamination. The human remains will be placed in breathable bags and labelled and boxed protected by polyethylene 3mm foam sheeting and in line with any specific archive requirements.

8.1.14 Cremation burials will be processed by removing the fill of the vessel in 5 to 10mm spits with recording of the distribution and density of the bone per spit following guidance by Brickley and McKinley (2004). The fill will be wet sieved over a 1mm mesh with retrieval of burnt bone, pyre debris such as charcoal and botanical remains, and the remains air-dried and hand-sorted.

Conservation

8.1.15 If required at the assessment stage or earlier, conservation will be undertaken by approved conservators in line with the *First Aid for Finds* guidelines (Watkinson and Neal 1998) and the guidance document produced by the former English Heritage, *Investigative Conservation* (English Heritage 2008c). Material considered vulnerable will be selected for stabilisation after specialist recording. Where intervention is necessary, consideration must be given to possible investigative procedures (e.g. glass composition studies, residues in or on pottery, and mineral-preserved organic material).

Assessment Report

8.1.16 The results of the fieldwork and post-excavation assessment stage will be presented in an integrated assessment report to allow an informed decision to be made on the future analysis and publication of the project.

8.1.17 As a minimum the assessment report shall contain the following information:

- A title page, with the name of the project, the name of the author(s) of the report, the title of the report and date of the report
- A non-technical summary of the scope, methodology and results of the work
- Introduction which includes site code/project number, planning reference number and dates when the fieldwork took place, grid reference
- Description of the aims, methodology and extent of fieldwork completed
- Factual assessments of stratigraphic, artefactual and environmental evidence

- Factual assessment of stratigraphic evidence to include interpretation, covering phasing of the site sequence and integrating spot-dating of ceramics or other material
- Factual assessment of the artefactual evidence, where applicable including inspection of X-radiographs of all iron objects, a selection of non-ferrous artefacts (including coins) and a sample of any industrial debris relating to metallurgy
- Factual assessment of the environmental evidence
- An assessment of the archaeological potential of the stratigraphic, artefactual and environmental records
- Proposals for the selection of samples or sub-samples for further analysis and reporting
- Identification of interim and long-term conservation and storage requirements.
- Updated Project Design (UPD) detailing proposed programme for analysis and publication
- Proposed format for analysis reporting and publication of the results
- Conclusions
- Details of archive location and destination (with The Collection accession number(s)), together with a catalogue of what is contained in that archive
- Copy of the OASIS entry form and any entry updates
- Appendices, illustrations and figures, as appropriate
- References and bibliography of all sources used

8.1.18 Copies of the draft assessment report will be provided in both MS Word and PDF formats and submitted to the Archaeological Advisor to the relevant Local Planning Authority for comment.

8.1.19 All survey data will be provided in PDF/A format at a suitable scale, together with AutoCAD DWG files or Esri Shapefiles, as required.

8.1.20 A digital copy of the final assessment report will be provided to in PDF/A format to:

- The Applicants
- Lincolnshire HER
- Nottinghamshire HER
- Archaeological Advisor to the relevant Local Planning Authority for dissemination to the Local Planning Authority
- Historic England Regional Science Advisor

- 8.1.21 Digital copies of the final assessment report will also be submitted to OASIS and ADS to allow the results to be accessible on-line to the wider archaeological community and general public.
- 8.1.22 The assessment report will be used to inform the scope of UPD detailing the methodology for further analysis and dating of artefacts, soil samples and stratigraphic information. This will include a selection strategy in order to establish what records and finds will be retained as part of the final archaeological archive, in line with ClfA guidance (ClfA 2020b).

9 Post-Excavation Analysis

- 9.1.1 The scope of work for the analysis stage will be detailed in the UPD and a detailed publication quality report produced following the results of the analysis as required.
- 9.1.2 The analysis stage will also draw on the results of all previous archaeological investigations within and adjacent to the Scheme, to produce a coherent and comprehensive record of the archaeological resource.
- 9.1.3 The following is provided as a guide to the potential content of the analysis report, but this will be reviewed within the UPD as necessary. As a minimum, the analysis report shall contain the following information:
- A title page, with the name of the project, the name of the author(s) of the report, the title of the report and date of the report
 - A non-technical summary of the scope, methodology and results of the work
 - Introduction which includes site code/project number, planning reference number, dates when the fieldwork took place, grid reference
 - A description of, and a background to, the works and its aims and objectives
 - A description of the site location and the archaeological and historical context for the area
 - An account of the methods and results of the fieldwork, describing both structural data and associated finds and/or environmental data recovered
 - The results and interpretation of specialist analysis of stratigraphic records, artefacts, environmental and scientific samples, as necessary and based upon the requirements identified at the assessment stage and detailed in the UPD
 - An analysis of the archaeological significance of the deposits identified, in relation to other sites in the region.
 - Details of archive selection strategy

- Conclusions
- Details of archive location and destination (with accession number for The Collection) together with a catalogue of what is contained in that archive
- Appendices and figures, as appropriate, including a copy of the updated project design; and References and bibliography of all sources used

9.1.4 Digital copies of the report will be provided in draft form in MS Word and PDF format to the Applicant and the Archaeological Advisor to the relevant Local Planning Authority. Two iterations of the draft analysis report based on consultee and Applicants comments will be allowed for.

9.1.5 The appointed archaeological contractor shall rectify any defects and make any amendments as identified by Lanpro, the Applicants and the Archaeological Advisor to the relevant Local Planning Authority and shall subsequently submit the final report within an agreed programme, following receipt of any comments.

9.1.6 Final copies of the analysis report (in PDF/A format) will be produced, and submitted to the following, together with all other digital information in industry standard formats as required:

- Lincolnshire HER
- Nottinghamshire HER
- Archaeological Advisor to the relevant Local Planning Authority to distribute to the Local Planning Authority
- Historic England Regional Science Advisor
- The Collection

9.1.7 Digital copies of the final analysis report and the digital archive will be submitted to OASIS and ADS to allow the results of the work to be accessible on-line to the wider archaeological community and general public.

9.1.8 The preparation of a publication report for an appropriate journal (or in another agreed form) will be required if the Archaeological Advisor to the relevant Local Planning Authority considers the results significant enough to warrant dissemination to a wider audience.

9.1.9 Provision will be made for publicising the results of the work locally, e.g. by presenting a paper at Lincolnshire and/or Nottinghamshire Archaeology Days, talking to local societies etc.

10 Decommissioning

10.1.1 In line with Paragraph 13.7.47 of ES Chapter 13 [APP-048], a Decommissioning Environmental Management Plan will be agreed with the Archaeological Advisor to

the relevant Local Planning Authority prior to decommissioning, which will be sufficient to safeguard any archaeological remains during the decommissioning phase.

11 Archiving and Data Management

Archive Content

- 11.1.1 The Collection Accession Number is: LCNCC : 2022.68.
- 11.1.2 The following site codes have been issued for each Site:
- Cottam 1: COIR22
 - Cottam 2: COCO22
 - Cottam 3a: COBL22
 - Cottam 3b: COPIW22
 - Cable Route Corridor: COGL22
- 11.1.3 The appointed archaeological contractor will contact The Collection in advance of commencing any fieldwork to determine the preparation, and deposition of the archive and finds, and agree any additional accession numbers for all archaeological works.
- 11.1.4 The archive will be prepared in accordance with the ClfA guidelines detailed in *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (ClfA 2020b) and *The Collection's Archaeological Archives Deposition Guidelines* (2016) which forms Chapter 17 of the *Lincolnshire Council Archaeological Handbook* (2019).
- 11.1.5 The preparation of the archive will also be informed by the *Guidelines for the preparation of Excavation Archives for long-term storage* (United Kingdom Institute for Conservation, 1990), *Standards in the museum care of archaeological collections* (Museums and Galleries Commission 1994), and in accordance with The Collection's deposition guidelines. Provision will be made for the stable storage of paper records and their long-term storage.
- 11.1.6 The landowner will be encouraged to transfer ownership of the finds to The Collection. The archive will be presented to The Collection within six months of completion of all post-excavation analysis, unless alternative arrangements have been agreed.
- 11.1.7 Adequate resources will be provided during fieldwork to ensure that all records are checked and internally consistent. Archive consolidation will be undertaken immediately following the conclusion of fieldwork and will include the following work:

- the site record will be checked, cross-referenced and indexed as necessary;
- all retained finds will be cleaned, conserved, marked and packaged in accordance with the requirements of The Collection;
- all retained finds will be assessed and recorded using pro forma recording sheets, by suitably qualified and experienced staff. Initial artefact dating will be integrated within the site matrix; and
- all retained environmental samples will be processed by suitably experienced and qualified staff.

11.1.8 The archive will consist of paper records and digital data, as well as finds and samples as selected. Not all material collected or created during the course of the works will require preservation in perpetuity, and the final contents of the archive will be subject to selection prior to the accession of the archive to The Collection, in line with a selection strategy agreed with the Applicant.

11.1.9 The selected contents of the archive will be appropriate to establish the significance of the results of the project and support future research, outreach, engagement, display and learning activities. Selection will be focused on selecting what is to be retained to support these future needs. Methods for disposing of de-selected material will be agreed with the landowner and other relevant stakeholders.

11.1.10 A copy of the digital archive will be submitted to the Archaeological Advisor to the relevant Local Planning Authority on completion of all work, for integration into the Lincolnshire and Nottinghamshire HERs.

11.1.11 An OASIS form will be completed for the project and an electronic copy of the final report and the digital archive deposited with the ADS.

Data Management

11.1.12 A Data Management Plan will be created and managed by the appointed archaeological contractor on commencement of the Scheme, which will outline the strategy for the sharing and preservation of the project's digital data.

11.1.13 The Data Management Plan will be produced in line with ClfA standards (2020b) and guidance produced by the ADS (2014), and will include:

- Details of data that will be generated during the work
- Type of file formats to be used (e.g. .doc, .pdf, .dwg, .shp, etc.)
- Methods of data collection or capture (e.g. GPS/Total Station/digitising from hard copies)
- File naming conventions (e.g. ADS naming conventions)
- Metadata, standards and quality assurance measures
- Plans for sharing data

- Ethical and legal issues or restrictions on data sharing (e.g client confidentiality etc.)
- Copyright and intellectual property rights of data
- Data storage and back-up measures
- Data management roles and responsibilities
- Costing or resources needed (ADS archiving costs etc.)

- 11.1.14 The digital archive will be produced using industry standard file formats, with a clear file structure that allows these to be easily shared with all stakeholders, and allows the data to continue to be preserved and shared with the public through, for example, the HERs.
- 11.1.15 The data comprising the digital archive will comply with the English Heritage (now Historic England) guidance on historic environment data standards, *MIDAS Heritage; the UK Historic Environment Data Standard* (English Heritage 2012b).
- 11.1.16 It is anticipated that the repositories to which the digital archive are submitted (i.e. HER/local museum/archive) will have in-house Data Management Plans to allow for the long-term preservation of the digital archive data, including plans for data back-up and migration to new digital formats as these emerge.

12 Public Outreach and Engagement

- 12.1.1 It is recognised that community engagement both fosters public understanding and support for the historic environment and adds value to archaeological work.
- 12.1.2 A programme of public outreach and engagement will be developed during the archaeological mitigation and post-excavation stages of the project, depending on the character and form of any archaeological remains encountered, in liaison with the Archaeological Advisor to the relevant Local Planning Authority, Historic England and/or any other interested community groups.
- 12.1.3 The programme of public outreach and engagement could include, for example, provision of talks and presentations, guided walks, arranging conferences, exhibitions, open days and living history events, providing school project work and learning resources, offering work experience and volunteering opportunities, and supporting community archaeology projects.

13 Staffing

- 13.1.1 All archaeological fieldwork and post-excavation works will be undertaken by a suitably qualified and experienced professional archaeological contractor, that will adhere to the Cifa Code of Conduct and all appropriate standards and guidance.

- 13.1.2 Details of the CVs of key personnel and specialists will be provided to the Archaeological Advisor to the relevant Local Planning Authority in advance of the commencement of fieldwork, following appointment of the archaeological contractor. The appointed archaeological contractor's Project Manager for the project must be able to demonstrate competence and experience of managing archaeological projects of a similar size, nature and complexity.
- 13.1.3 Assessment and analysis of finds, environmental samples and human remains will be undertaken by suitably qualified and experienced specialists.

14 Project Timetable

- 14.1.1 A timetable for the programme of archaeological mitigation fieldwork and post-excavation assessment reporting will be agreed between the appointed archaeological contractor and the Applicant, and the Archaeological Advisor to the relevant Local Planning Authority will be informed of this timetable, following the development consent order being made but prior to the commencement of fieldwork.
- 14.1.2 The Archaeological Advisor to the relevant Local Planning Authority will be informed of the proposed start date for the project as soon as practicable, and at least one week before commencement of fieldwork.
- 14.1.3 The appointed archaeological contractor will provide at least weekly progress reports on the progress of fieldwork via email to Lanpro, and regular site meetings will be held between the archaeological contractor, Lanpro, the principal contractor, the Applicant and the Archaeological Advisor to the relevant Local Planning Authority.
- 14.1.4 A draft assessment report will be provided to the Applicant and the Archaeological Advisor to the relevant Local Planning Authority within an agreed timeframe following completion of fieldwork, with a final version to be submitted to the Applicant and the Archaeological Advisor to the relevant Local Planning Authority following receipt of any comments within the agreed timeframe.
- 14.1.5 A draft analysis report will be submitted to Archaeological Advisor to the relevant Local Planning Authority within a programme agreed in the UPD, informed by the results of the post-excavation assessment. This will be followed by a final report following any comments, and the publication of the results of the report in a suitable format.

15 Monitoring

- 15.1.1 The Archaeological Advisor to the relevant Local Planning Authority will monitor the implementation of the archaeological mitigation works and evaluate the scope and progress of the work against the methodology detailed in the WSI.

16 Communication

- 16.1.1 The appointed archaeological contractor will provide at least weekly updates to Lanpro via email and/or telephone. Any issues that arise on site or during the post-excavation stages should first be addressed by the archaeological contractor directly to Lanpro, who will then liaise with the Applicant, Archaeological Advisor to the relevant Local Planning Authority and any other stakeholders in order to resolve the matter.
- 16.1.2 In the event of issues arising regarding the implementation of this WSI, or the scope or methodology of the excavation, these will be resolved in the first instance by contacting Lanpro who will liaise with the Applicant and Archaeological Advisor to the relevant Local Planning Authority to determine a solution. Should the issue not be resolved remotely a meeting will be held between key stakeholders to facilitate discussion of the issues and identification of a suitable strategy for progress to be agreed by all parties.

17 Copyright and Publicity

- 17.1.1 Copyright of the documentation prepared by the appointed archaeological contractor and specialist sub-contractors should be the subject of additional licences in favour of the Applicant, the Lincolnshire and Nottinghamshire HERs and the Archaeological Advisor to the relevant Local Planning Authority to use such documentation for their commercial, statutory or educational functions, and to provide copies to third parties as required.
- 17.1.2 Under the *Environmental Information Regulations* (EIR 2004), information may need to be disclosed, except where an exception under these Regulations applies.
- 17.1.3 It is recognised that the Scheme may identify remains which are of interest to the public and these may be publicised through appropriate media. Any publicity for the Scheme proposed by the archaeological contractor should be approved by the Applicant. The appointed contractor will not issue any information on the work through media, internet or social media without prior agreement of the Applicant.
- 17.1.4 Care will be taken to ensure that any publicity does not compromise the security of archaeological remains that may have been identified or recovered.

18 Insurance

- 18.1.1 The appointed archaeological contractor will hold Employers Liability Insurance, Public Liability Insurance and Professional Indemnity Insurance to at least the following amounts;
- Public Liability £10,000,000
 - Employer's Liability £5,000,000
 - Professional indemnity (for any single claim) £10,000,000

19 Health and Safety

- 19.1.1 The management of all health and safety, and welfare provision, on site during the excavation phase will be the responsibility of the principal contractor. All works will be undertaken by the principal contractor in compliance with the Health and Safety at Work Act (1974) and all applicable regulations and Codes of Practice.
- 19.1.2 All archaeological staff will undertake their operations in accordance with safe working practices and will be Construction Skills Certification Scheme CSCS certified. At least one First Aider will be present on site at all times.
- 19.1.3 A site-specific risk assessment and method statement (RAMS) will be produced by the appointed archaeological contractor, prior to the commencement of work on site.
- 19.1.4 Personal Protective Equipment (PPE) will be provided to all staff by the archaeological contractor, including hi-visibility coats/vests, hard hats, safety boots and gloves, as well as safety glasses if required.
- 19.1.5 All staff will receive a health and safety induction prior to starting work on site to be provided by the principal contractor and/or the appointed archaeological contractor.
- 19.1.6 Regular audits of health and safety practices will be carried out during the course of the project by the archaeological contractor in consultation with the site workforce.
- 19.1.7 Toolbox talks on health and safety issues will be conducted at minimum weekly intervals and/or after changes in working practices or identification of new threats/risks. The risk assessment will be updated and control measures will be implemented as required in response to specific hazards.
- 19.1.8 Safe working will take priority over the desire to record archaeological features or remains, and where it is considered that recording is dangerous, any such features will be recorded by photography at a safe distance.
- 19.1.9 All areas of excavation will be scanned with a Cable Avoidance Tool (CAT) prior to ground works commencing. Necessary measures will be taken to avoid disturbing any services.
- 19.1.10 Plant operators will be required to produce evidence of qualification within an industry accepted registration scheme. Sub-Contractors health and safety performance will be kept under review and action taken if necessary.
- 19.1.11 All spoil will be stored and managed safely in line with the standards of the *Construction Code of Practice for Sustainable Use of Soils on Construction Sites* (DEFRA 2009).

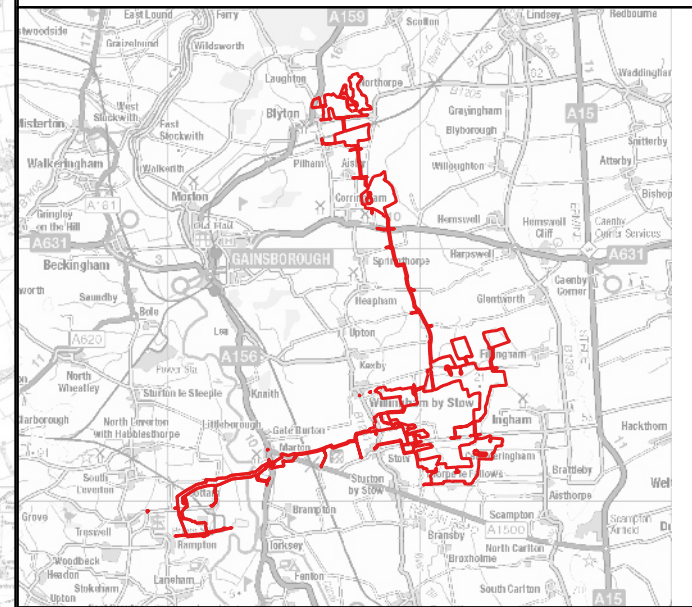
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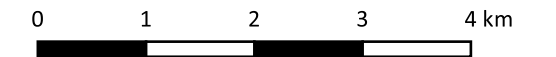
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Figures

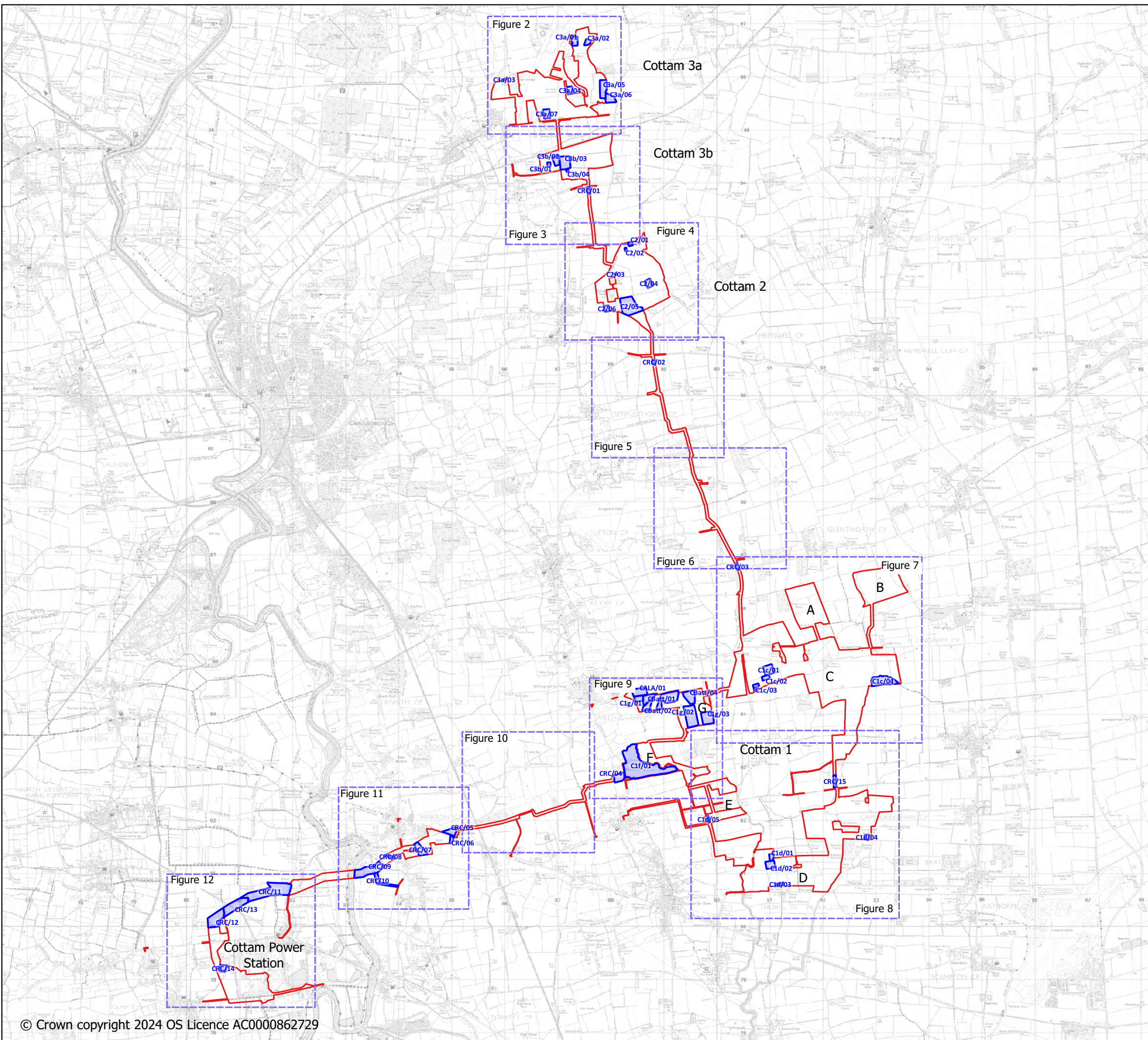


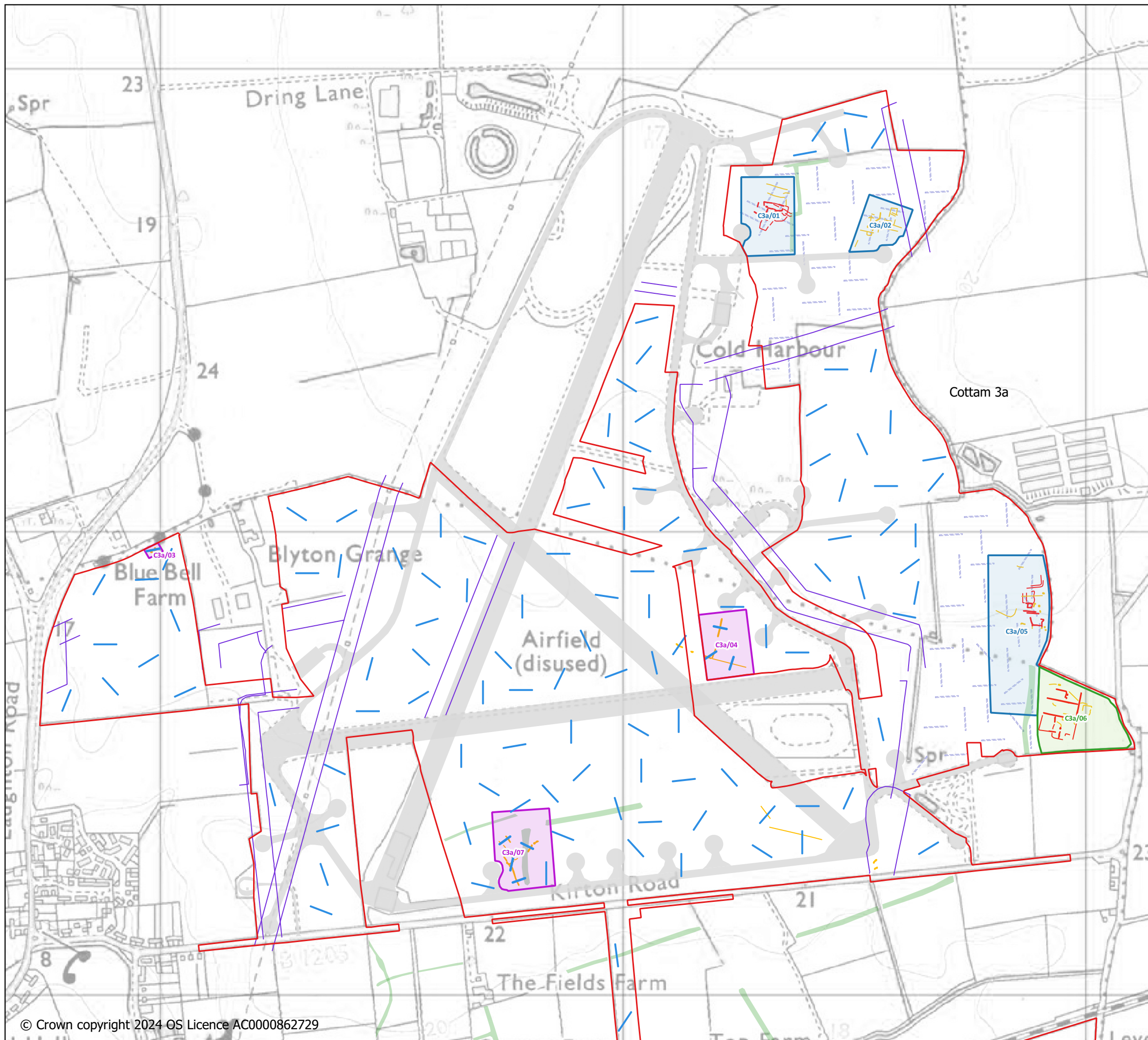
- Cottam Solar Site boundary
- Cottam 1 Site 'Parcel'
- Archaeological Mitigation Area



Date: 27/02/24 Version: 3.0 Ref: 2892/WSI-WP/F1

Figure 1. General location of archaeological mitigation areas





- Cottam Solar Site boundary
- Ground Anchors
- In situ preservation - no development
- Informative trench area
- Informative trench location
- Utility buffer zone
- Location of 2022 evaluation trench

AP and LiDAR Survey Features:

- Bank (post-medieval)
- Ditch
- Post-medieval / WWII features
- WWII structure

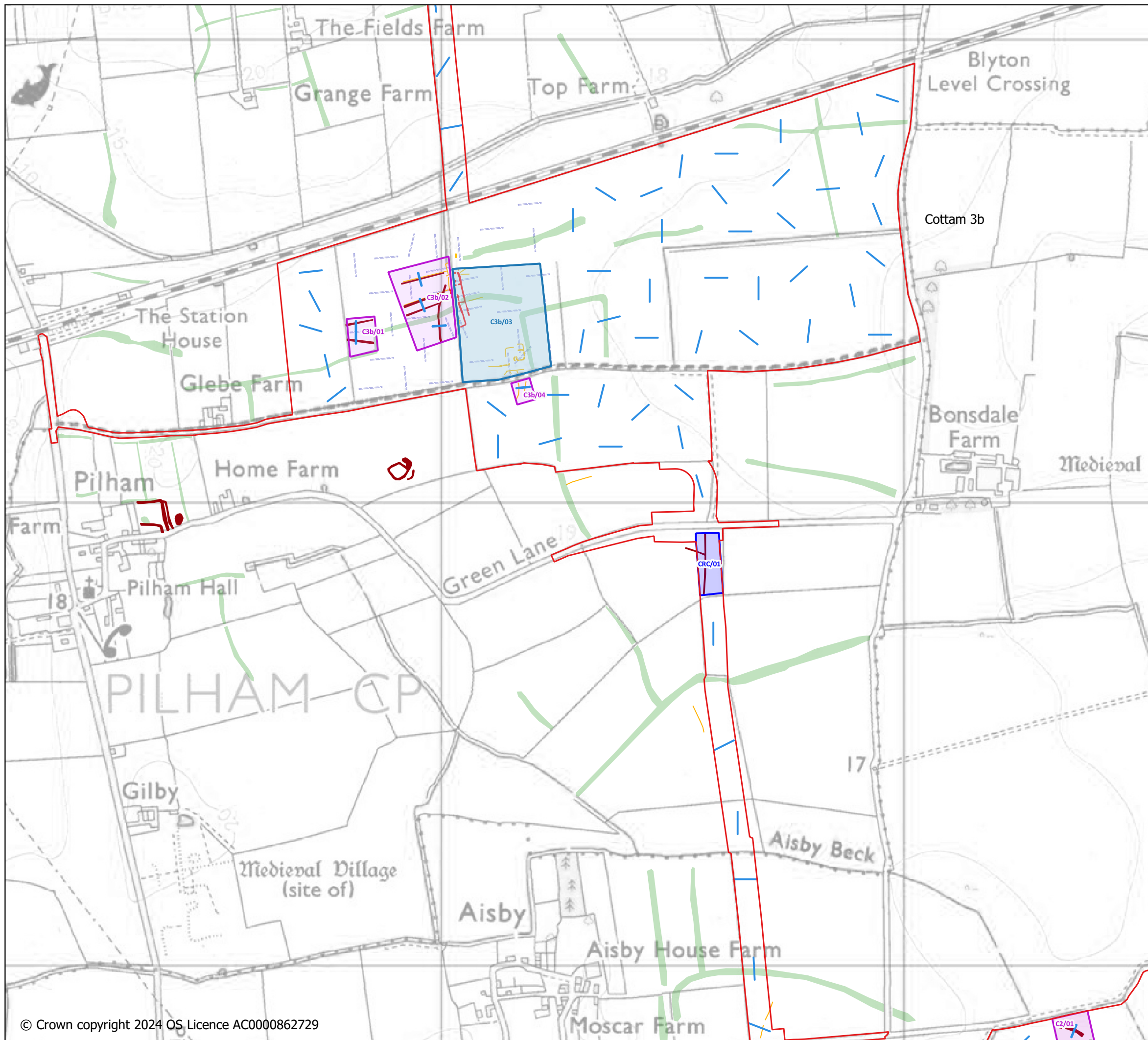
Geophysical Survey Features:









- Archaeological anomaly
- Possible archaeological anomaly







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Figure 2. Archaeological mitigation areas within Cottam 3a and cable route





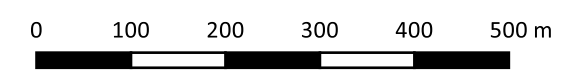
-  Cottam Solar Site boundary
-  Cable Route Corridor - mitigation area
-  Ground Anchors
-  In situ preservation - no development
-  Informative trench area
-  Informative trench location
-  Utility buffer zone
-  Location of 2022 evaluation trench

AP and LiDAR Survey Features:

-  Bank (post-medieval)
-  Ditch
-  Post-medieval / WWII features
-  WWII structure

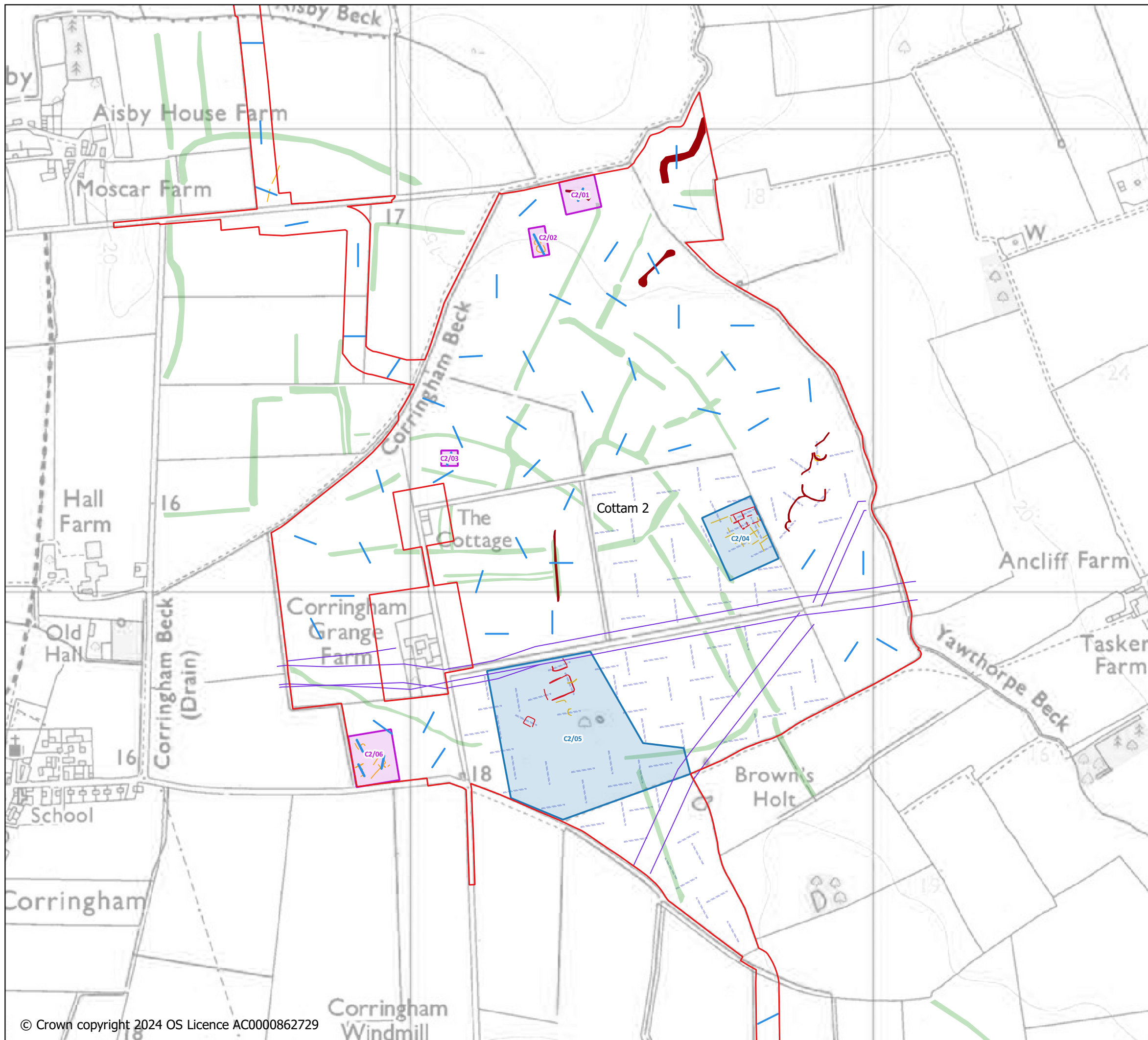
Geophysical Survey Features:

-  Archaeological anomaly
-  Possible archaeological anomaly



Date: 27/02/24 Version: 3.0 Ref: 2892/WSI-WP/F3

Figure 3. Archaeological mitigation areas within Cottam 3b and cable route



- Cottam Solar Site boundary
- Ground Anchors
- Informative trench area
- Informative trench location
- Utility buffer zone
- Location of 2022 evaluation trench

AP and LiDAR Survey Features:

- Bank (post-medieval)
- Ditch

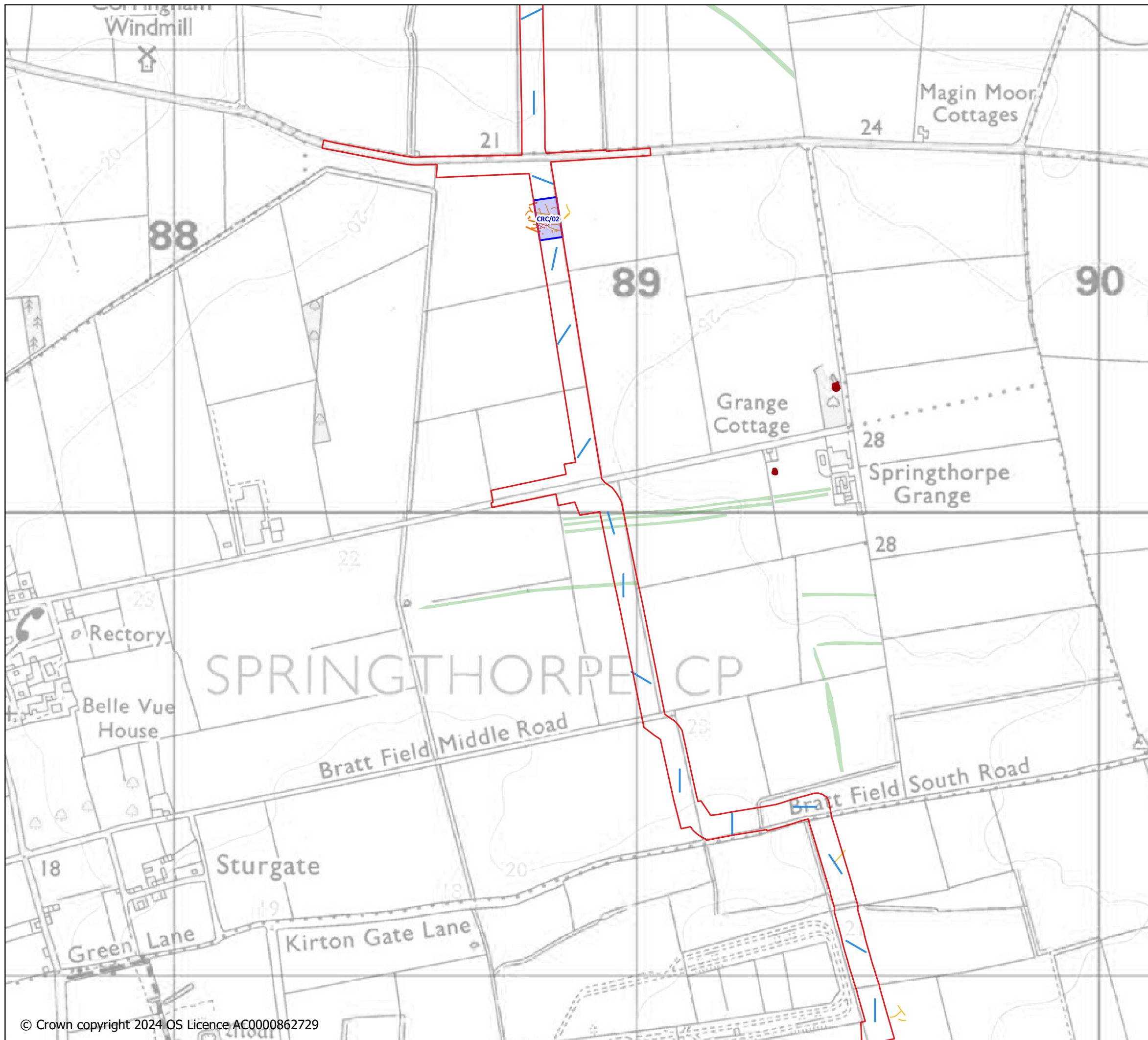
Geophysical Survey Features:






- Archaeological anomaly
- Possible archaeological anomaly





Date: 27/02/24 Version: 3.0 Ref: 2892/WSI-WP/F4

Figure 4. Archaeological mitigation areas within Cottam 2 and cable route





-  Cottam Solar Site boundary
-  Cable Route Corridor - mitigation area
-  Ground Anchors
-  Informative trench area
-  Informative trench location

AP and LiDAR Survey Features:

-  Bank (post-medieval)
-  Ditch

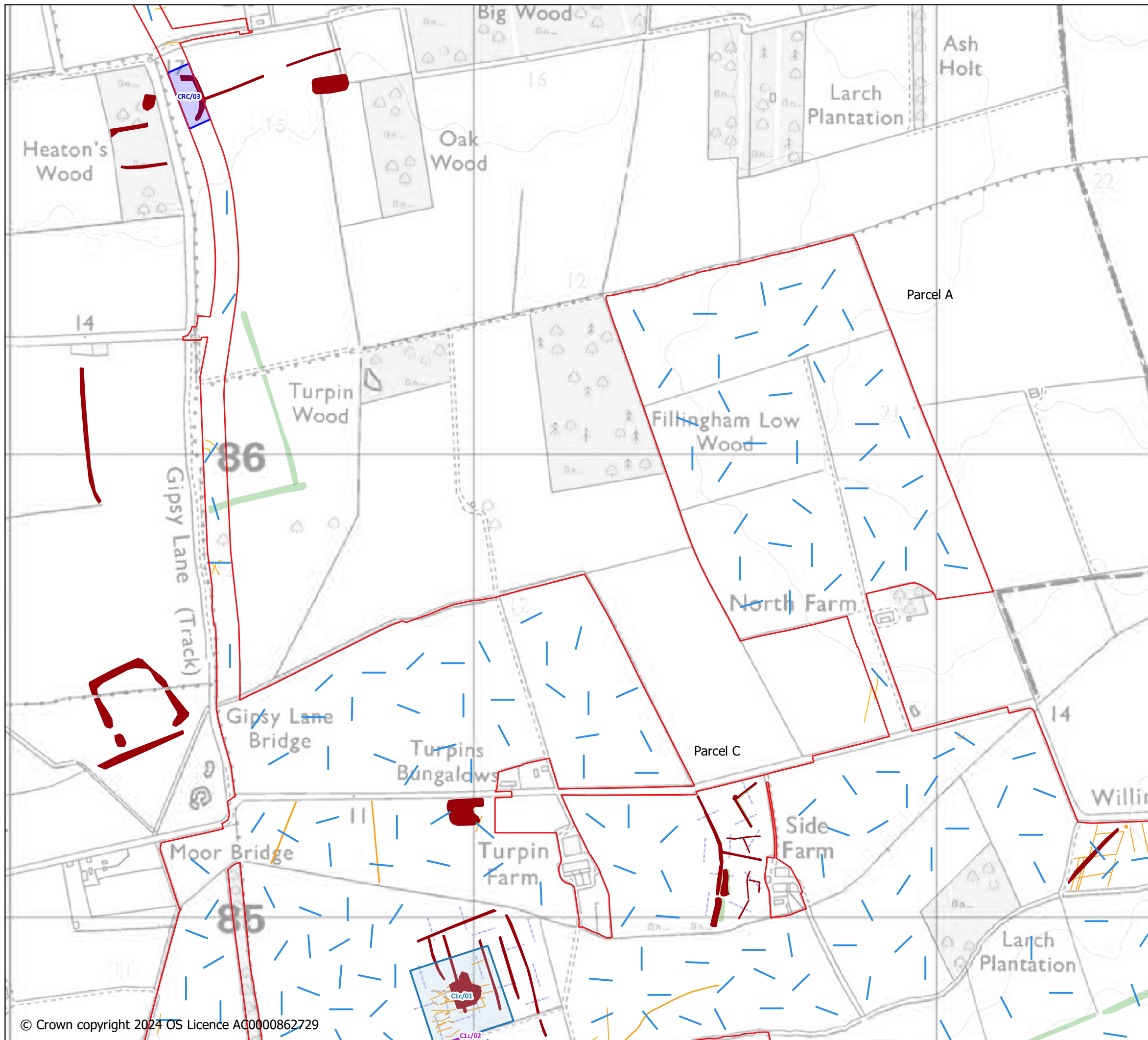
Geophysical Survey Features:









-  Archaeological anomaly
-  Possible archaeological anomaly



Date: 27/02/24 Version: 3.0 Ref: 2892/WSI-WP/F5

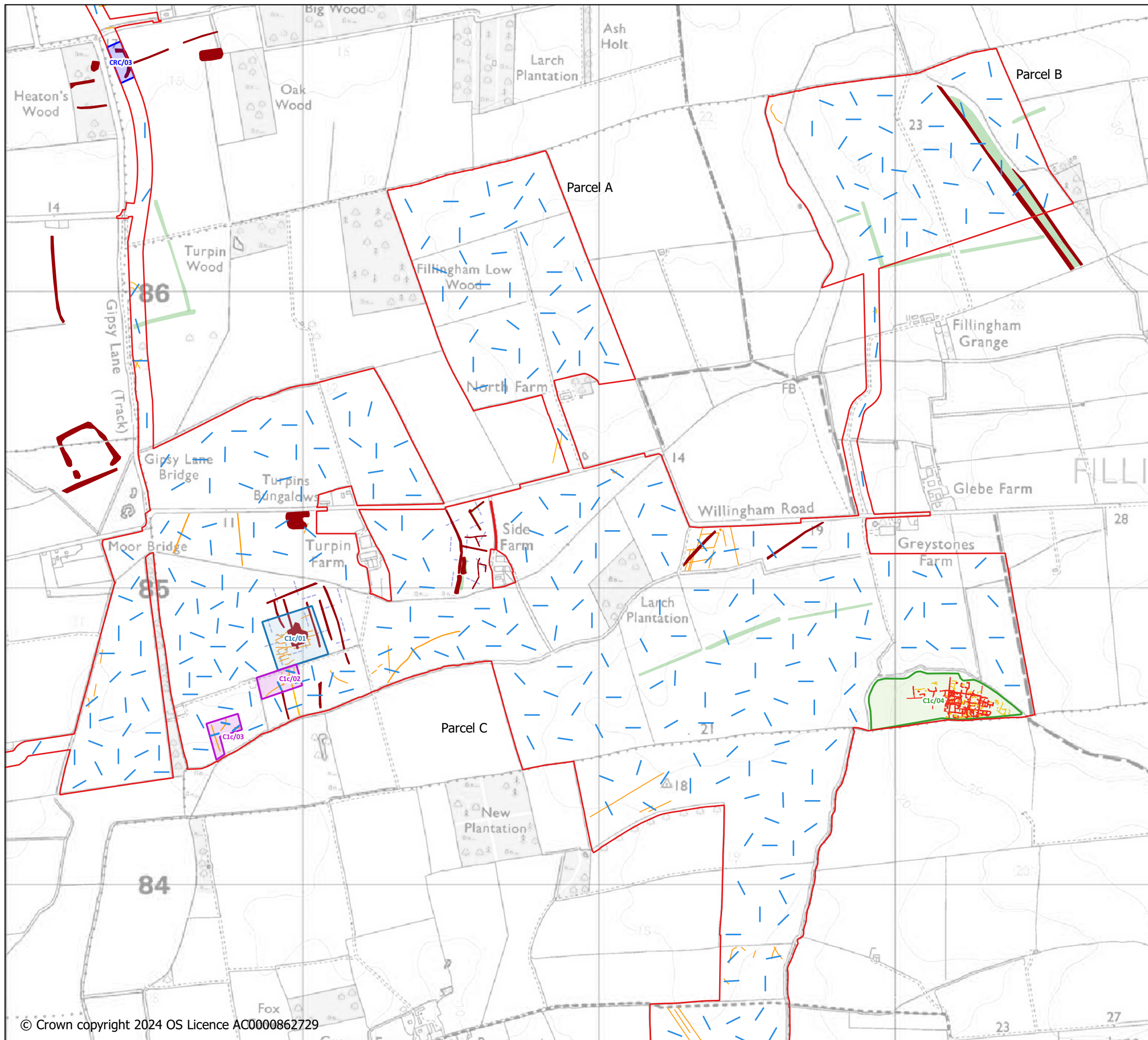
Figure 5. Archaeological mitigation areas within Cottam cable route












-  Cottam Solar Site boundary
-  Ground Anchors
-  Cable Route Corridor - mitigation area
-  Informative trench location
-  Location of 2022 evaluation trench
- AP and LiDAR Survey Features:
 -  Bank (post-medieval)
 -  Ditch
- Geophysical Survey Features:
 -  Possible archaeological anomaly



Date: 27/02/24 Version: 3.0 Ref: 2892/WSI-WP/F6

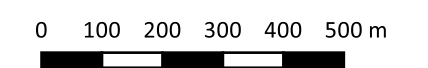
Figure 6. Archaeological mitigation areas within Cottam 1 and cable route



-  Cottam Solar Site boundary
-  Cable Route Corridor - mitigation area
-  Ground Anchors
-  In situ preservation - no development
-  Informative trench area
-  Informative trench location
-  Location of 2022 evaluation trench

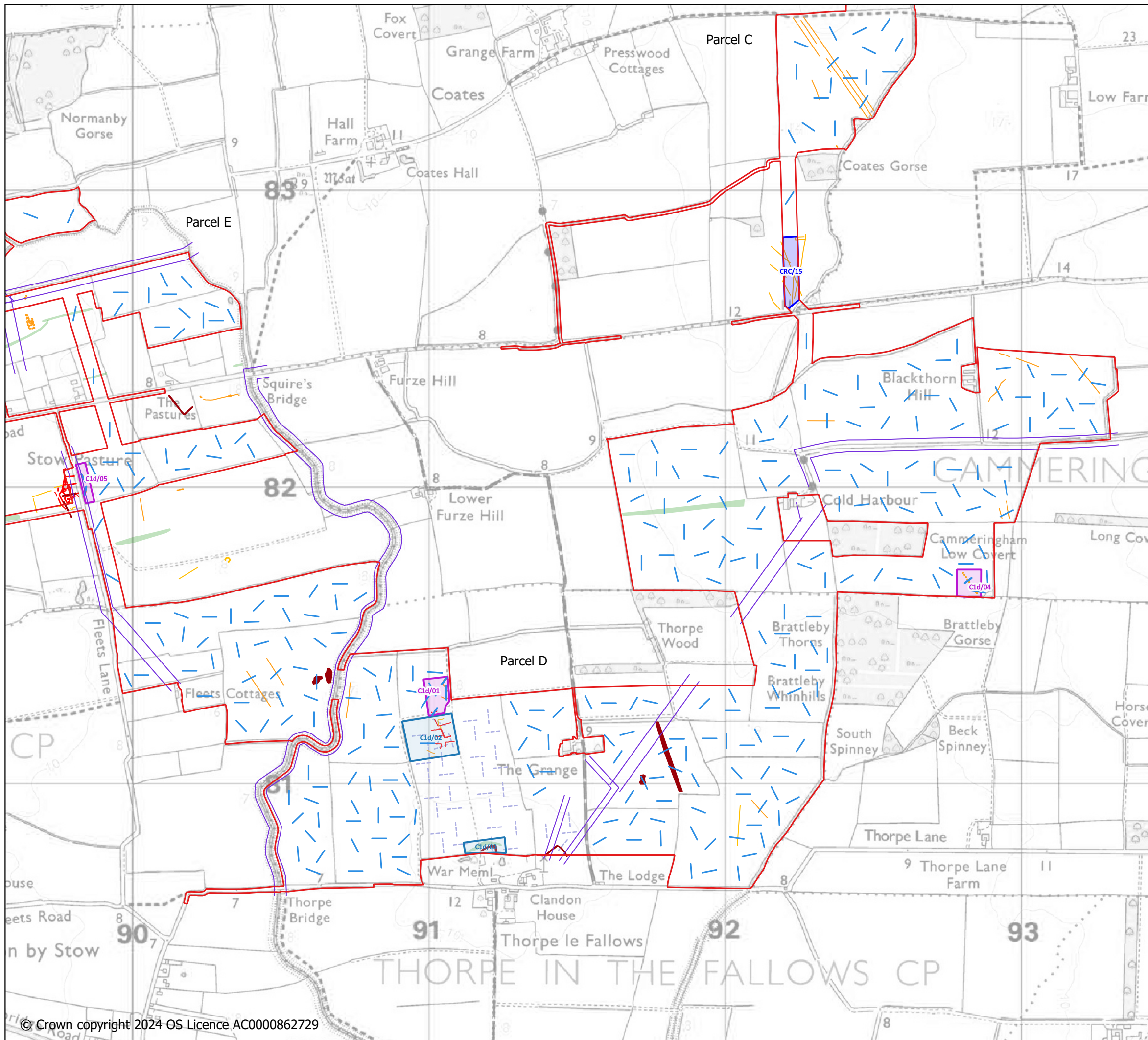
- AP and LiDAR Survey Features:
-  Bank (post-medieval)
-  Ditch

- Geophysical Survey Features:
-  Archaeological anomaly
-  Possible archaeological anomaly

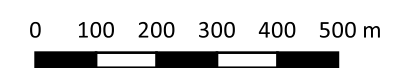


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Figure 7. Archaeological mitigation areas within Cottam 1

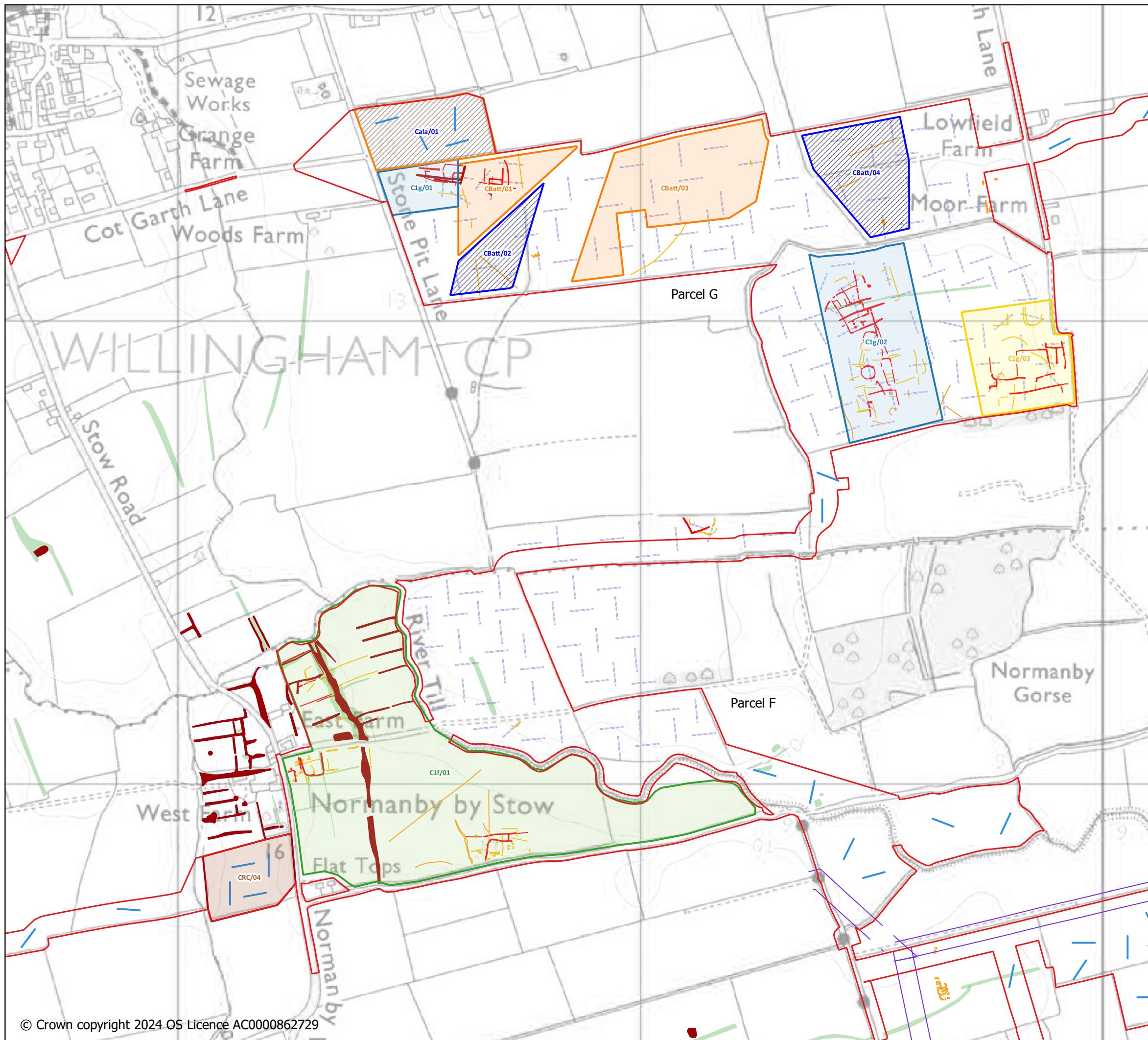


- Cottam Solar Site boundary
 - Cable Route Corridor - mitigation area
 - Ground Anchors
 - In situ preservation - no development
 - Informative trench area
 - Informative trench location
 - Utility buffer zone
 - Location of 2022 evaluation trench
- AP and LiDAR Survey Features:
- Bank (post-medieval)
 - Ditch
- Geophysical Survey Features:
- Archaeological anomaly
 - Possible archaeological anomaly

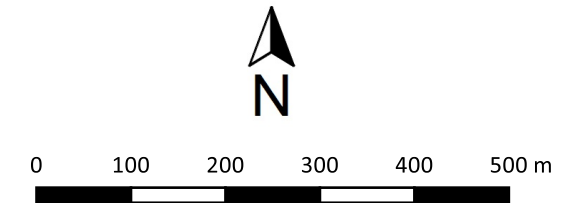


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Figure 8. Archaeological mitigation areas within Cottam 1

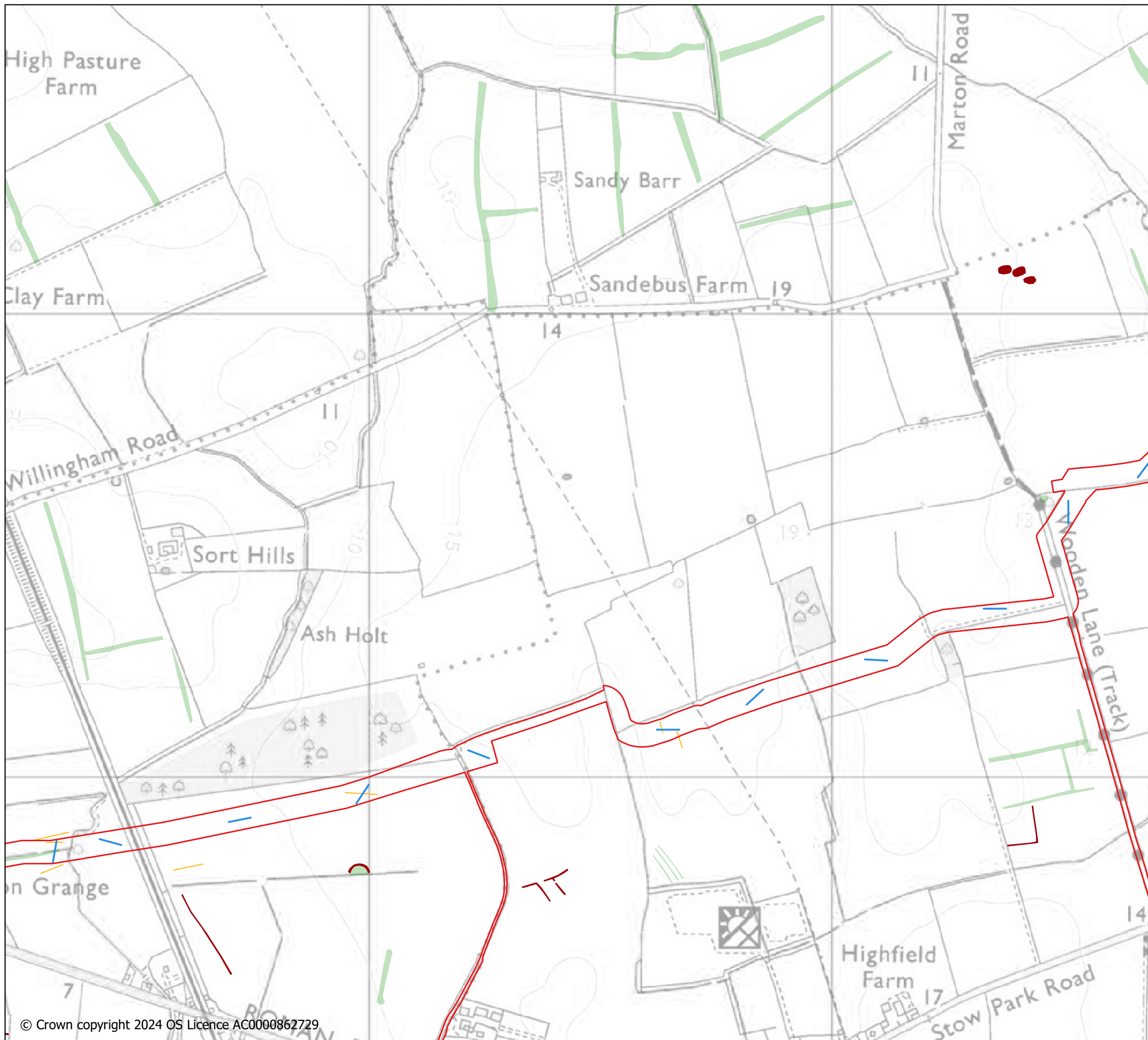


- Cottam Solar Site boundary
- Cable Route Corridor - mitigation area
- Geophysical survey
- Ground Anchors
- Strip, map and sample excavation
- Open Area Excavation
- Archaeological Monitoring
- In situ preservation - no solar panels (archaeological monitoring along cable route)
- Earthwork Reinstatement
- Informative trench location
- Utility buffer zone
- Location of 2022 evaluation trench
- AP and LiDAR Survey Features:
- Bank (post-medieval)
- Ditch
- Geophysical Survey Features:
- Archaeological anomaly
- Possible archaeological anomaly

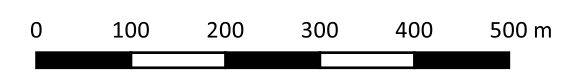


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Figure 9. Archaeological mitigation areas within Cottam 1, Parcels F and G

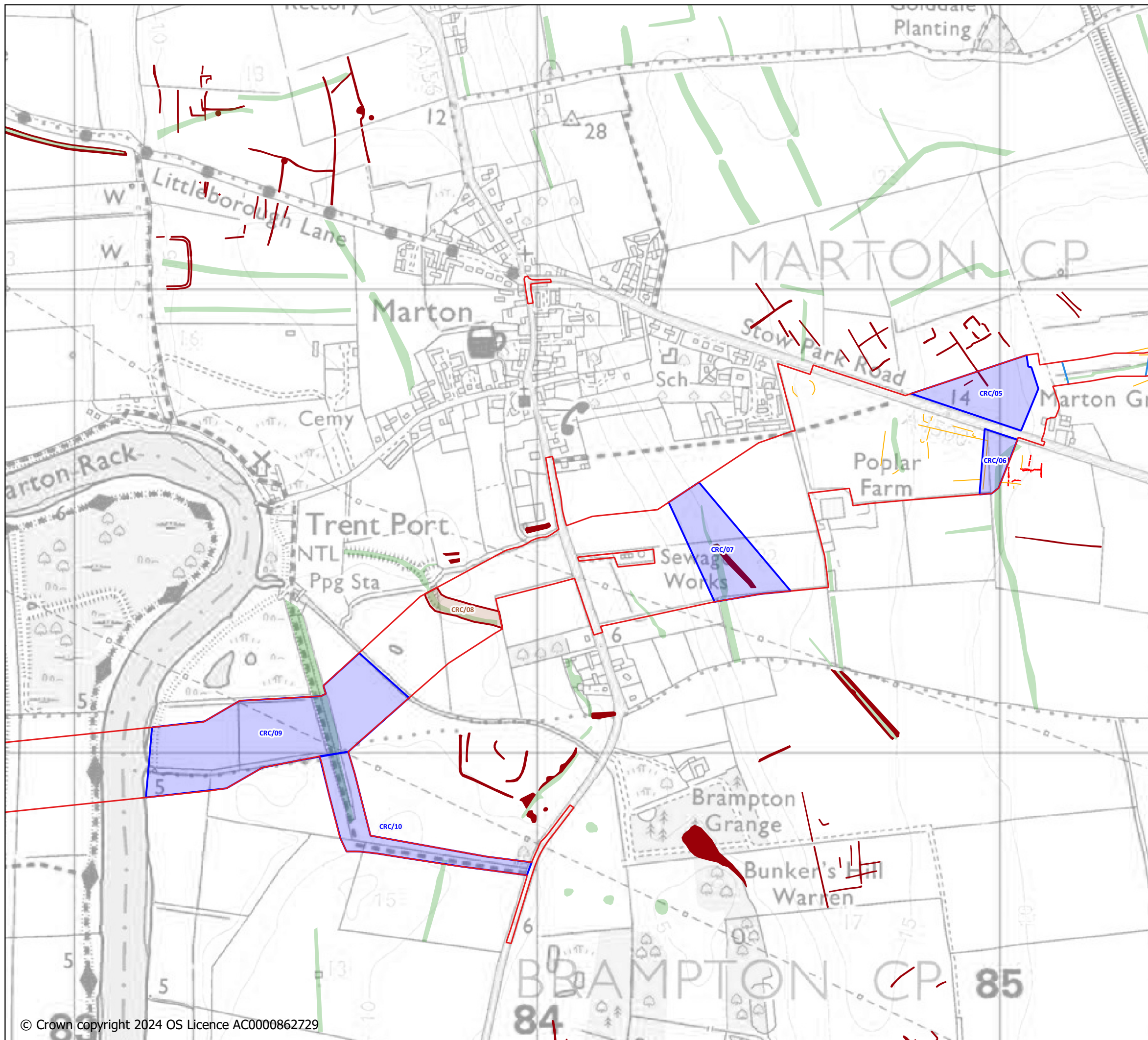


- Cottam Solar Site boundary
- Informative trench location
- AP and LiDAR Survey Features:
- Bank (post-medieval)
- Ditch
- Geophysical Survey Features:
- Archaeological anomaly
- Possible archaeological anomaly



Date: 27/02/24 Version: 3.0 Ref: 2892/WSI-WP/F10

Figure 10. Archaeological mitigation areas within Cottam cable route



- Cottam Solar Site boundary
- Earthwork Reinstatement
- Cable Route Corridor - mitigation area
- Informative trench location

AP and LiDAR Survey Features:

- Bank (post-medieval)
- Ditch

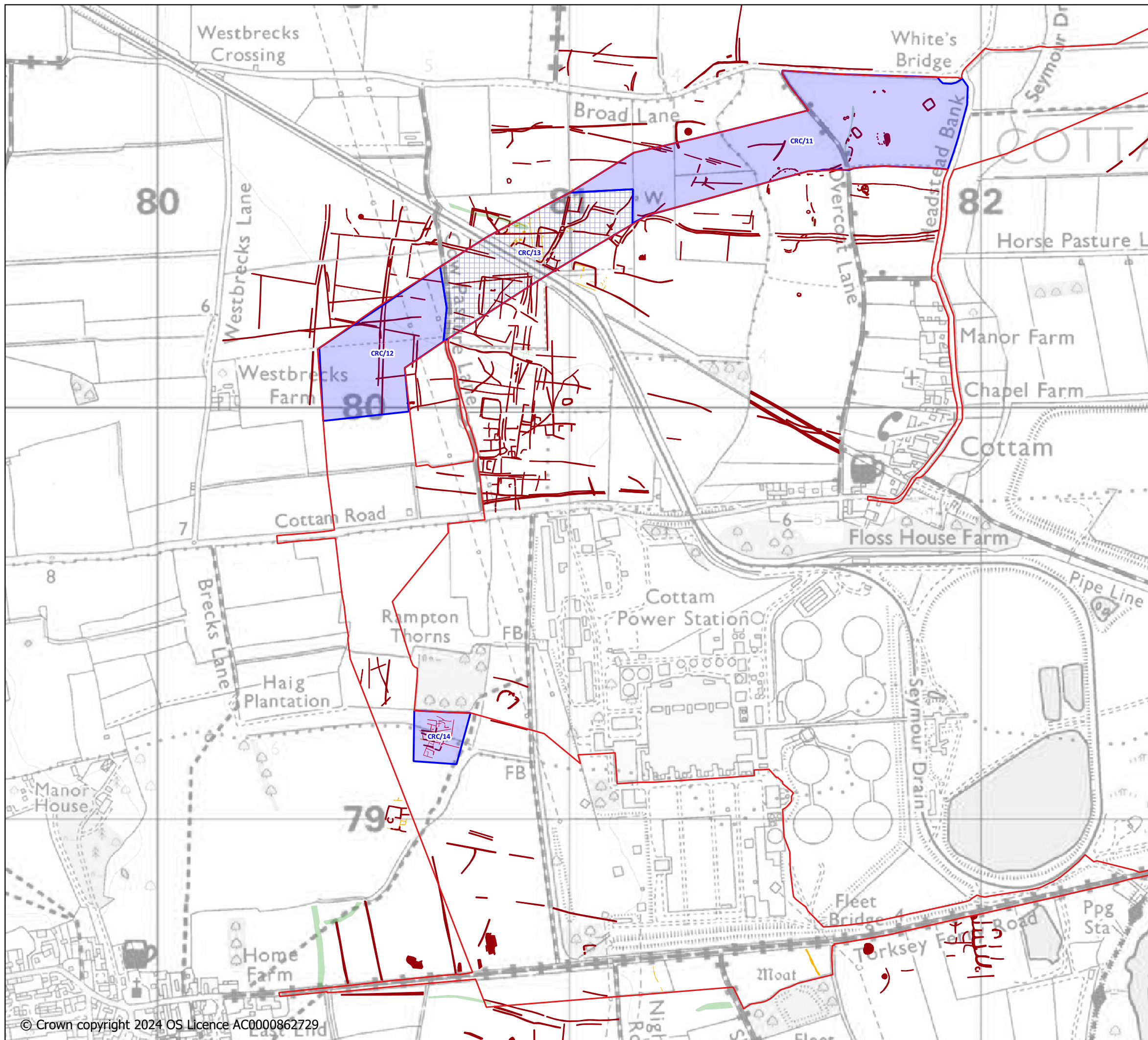
Geophysical Survey Features:




- Archaeological anomaly
- Possible archaeological anomaly





Date: 27/02/24 Version: 3.0 Ref: 2892/WSI-WP/F11

Figure 11. Cable route mitigation areas CRC/05 /06 /07 /08 /09 and /10





-  Cottam Solar Site boundary
-  Cable Route Corridor - mitigation area
-  Directional Drilling or Strip, Map and Sample

AP and LiDAR Survey Features:

-  Bank (post-medieval)
-  Ditch

Geophysical Survey Features:

-  Archaeological anomaly
-  Possible archaeological anomaly



Date: 27/02/24 Version: 3.0 Ref: 2892/WSI-WP/F12

Figure 12. Cable route mitigation areas CRC/11 /12 /13 and /14