VikingCCS

Viking CCS Pipeline

9.52 Detailed Archaeological Mitigation Strategy

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Overview of Report

1.1 Archaeological Mitigation Strategy

1.1.1 This document presents a Detailed Archaeological Mitigation Strategy (DAMS) and Overarching Written Scheme of Investigation (OWSI) (together he Strategy') for the Viking CCS Pipeline. The Strategy has been prepared by AEC M (t on tant') on behalf of Chrysaor Production (U.K.) Limited, a Harbour Ene group c ny ('the Client'), in accordance with Draft Mitigation Register reference mber D2 Draft Construction Environmental Management Plan (CEMP) (Environm l Stat ment V e IV – Appendix 3-1: Draft CEMP (Document Reference: N070008/APP 3 [REP4-02

1.2 Project Background

1.2.1 The Viking CCS Pipeline ('the Proposed Development') compris new 24 inch (') (609 mm) diameter onshore pipeline of approximat 5 km in leng which will transport Carbon Dioxide (CO2) from the Immingham ustr ea to the Th lethorpe area on the Lincolnshire coast, where it will connec to the exis 6 '' (921 mm) meter offshore LOGGS pipeline. The Proposed Develop ent is an in gr rt of the overall Viking CCS Project, which intends to transport com ssed and nditio CO2 received at a facility at Immingham to store in depleted gas servo under th thern North Sea. The offshore elements of the Vikin S Project, in uding the nsport of CO2 through the LOGGS pipeline to the Viking as fields unde e North S a, are subject to a separate consenting process.

1.2.2 The key components of the P sed Developmen prise:

- Im gham y;
- pproximately 55. 24 '' onsh steel pipeline (including cathodic protection);

  Three Block Valve Sta s;

  Theddlethorpe Facility;

  Existing LOGGS pipeline d isolation valve to the extent of the Order Limits at Mean w Water Springs (MLW
- Pe ent access to f ties;
- Mitiga nd land ping works;
- Temporary ction compounds, laydown, parking and welfare facilities; and
- Temporary access points during construction.

1.2.3 Further details of each element of the Proposed Development are set out in Chapter 3 of the Environmental Statement (ES) (Application Document 6.2.3 ES Volume II – Chapter 3: Description of the Proposed Development) [APP-045].

1.2.4 The Proposed Development extends across the administrative areas of Lincolnshire County Council, North Lincolnshire Council, North East Lincolnshire Council, West Lindsey District Council and East Lindsey District Council (West Lindsey District Council and East Lindsey District Council are located within the Lincolnshire County Council administrative boundary).

1.2.5 For the purposes of the Strategy, the corridor for archaeological mitigation ('the Site') is defined by the DCO Site Boundary (the Order limits), which has been developed around an indicative pipeline route. The length of the indicative route within the DCO Site Boundary is approximately 55.5 km, running from Immingham to Theddlethorpe, and areas for temporary compounds. Within the DCO Site Boundary, archaeological mitigation will generally target the standard working width of the pipeline spread of 30 m; locations of above ground installations (Block valves); and temporary construction compounds and laydown, parking, and welfare areas. In specific areas the working width of the ipeline spread would be reduced to 10 m (for example, where hedgerows or tree are to ret ed, or at sensitive water crossings) or increased to up to 50 m (for exam at majo sings such as those requiring HDD or auger boring).

1.3 Structure of this Document

1.3.1 **Part One** of this document comprises the **Detailed A a gical Mitigati Str gy** (DAMS). It describes the principles to be applied when ertaking arch gical mitigation for the Proposed Development and describes strategi nd approaches for the protection of archaeological remains and for t stigation, rec ng and analysis of archaeological remains. It also contains overv of the herit baseline and a summary of the results of the programm f archaeo l evaluation veys, relevant research themes and period-based ques ns from the gi research agenda (Knight et. at., 2012). Provisional 'action areas' ('sit where a haeolo mitigation is required are identified in **Table 3-2** and shown n **Fig es 1 a 2**.

1.3.2 **Part Two** contains the **Overar ng Written Sc me of Inv tigation** (OWSI) which sets out the approach to mitigati n, utline method ements f the required approaches and mitigation techniques, requ nts for sign-off rch logical action areas ('sites') to construction and requiremen the reporting / p tion of fieldwork results. which sets out the l mitigatio asures which shall form the basis of the works to be deta in each SS the proce s for communication between the interested parties, m oring and reportin nd for com ion of the archaeological works. It also contains a scription of the reportin d archiving quirements.

1.3 **Part Three** comprises Refe es (section 9 of this document), and Appendices as follows:

Appendix A: Standards a Guidance;

- endix B: Outline Pub Archaeology and Community Engagement Strategy; and
- App dix C: Template mpletion Statement.

1.3.4 **Part Four** prises es showing the locations of the provisional action areas for archaeologic tig n and the extent of completed trial trenching.

PART ONE – DETAILED ARCHAEOLOGICAL MITIGATION STRATEGY

1.4 Introduction

1.4.1 This Strategy sets out the scope and methods for the planning and implementation of essential archaeological mitigation works associated with the construction of the Viking CCS Pipeline ('the Proposed Development').

1.4.2 The mitigation strategy described in this document will be implemented by an archaeological contractor ('the Archaeological Contractor') to be appointed on behalf of the Client. It shall be the responsibility of the Archaeological Contractor to pro e a Site Specific Written Scheme of Investigation (SSWSI) in accordance h th e ic archaeological methodologies contained in the OWSI set out in Part T of this St y in respect of each location where archaeological mitigation is required (section o document, Roles and Responsibilities).

1.4.3 The Strategy covers the whole Proposed Developme elivery period m the Pre-Construction Activities stage through to the completio Construction W s S e, including the detailed design. No archaeological mitigation quired in resp the Operation or Decommissioning stages of the Proposed Develop t (see ES paragraphs 8.810 and 8.8.11) [APP-050, AS-023].

1.4.4 Reporting and dissemination of the result f the ar ological inv ations are also considered in the Strategy (post-excav n assess nd analysis, publication and archiving), which may continue beyond he Constr ion ks stage of the Proposed Development.

Status of this Document

1.4.5 Development and implementat n of the Strateg a requir ment of the Draft Construction Environmental Manageme P n (CEMP) (ES ume – Appendix 3-1: Draft CEMP (Document Reference: N07 /APP/6.4.3.1) [027]): Draft Mitigation Register referen :

- - Develop an lement a d led archaeological mitigation strategy in consultation with th unty Archa gist (or equivalent), likely to include archaeological mitigat measures s as: surface artefact collection / test pitting / metal detection where r red in advance of archaeological excavation and recording; topographic s y of earthworks to allow reinstatement works post-onstruction; archaeolog excavation and recording in advance of construction; eted archaeological itoring during construction works; geoarchaeological in gation; and prote n of remains within working areas and preservation of arch ogical remai n situ. Mitigation will be carried out in accordance with a Written eme of estigation which will be produced in consultation with the County Archaeol (o quivalent).

1.4.6 The Strategy has en prepared following completion of several phases of archaeological evaluation and through consultation with Historic England and the local authority Archaeological Officers (collectively, 'the Viking CCS Heritage Consultees') (see section 1.3 of this document, Roles and Responsibilities). It both accords with and supersedes the Outline Archaeological Mitigation Strategy contained within the ES (ES Volume II - Chapter 8: Historic Environment. Document Reference: EN070008/APP/6.2.8 [APP-050]).

1.4.7 This document will be submitted to the Secretary of State to be certified as the "outline archaeological written scheme of investigation" under Article 44(1)(m) of the draft DCO [REP4-050]. The final DAMS will be agreed with the Viking CCS Heritage Consultees and will be submitted to the relevant planning authority for approval in accordance with requirement 10 of the draft DCO.

Purpose of the Strategy

1.4.8 The purpose of this Strategy report is to set out the scope, guiding principles and methods for the planning and implementation of essential archaeological mitigation works associated with the design and construction of the Proposed Development, following the approach to mitigation set out in the ES submitted with the DCO application (ES Volume II - Chapter 8: Historic Environment (Document Reference: EN070008/APP/6.2.8) [APP-050]). It details the archaeological mitigation proposed to reduce the effect of he Proposed Development on the archaeological resource, either by protection/preservati f archaeological remains wherever possible or, where remains cannot be preserv throug ctured programme of archaeological investigation to mitigate the loss. Th document nts the approach to consultation and approvals, project management, the post xc ion analysis and publication stages.

1.4.9 The Proposed Development passes through a landscape h archaeologi ignificance and the intention is to apply a high, practicable standar m tion and a que b ed research strategy that places the significance of the archaeolo l resource at t ntre of decision-making both at design and implementation phases.

1.4.10 The Strategy summarises the extent of previo ations and d bes the proposed mitigation works and methods that will be i lemented sed on the r s of completed archaeological surveys and evaluation as ciated with posed Development.

1.4.11 A Written Scheme of Investigation for Arc eologica aluati reed with the Viking CCS Heritage Consultees was submitted as A endix of the E (Volume IV – Appendix 8-3: WSI for Archaeological Ev on Docume Reference N070008/APP/6.4.8.3) and subsequently updated to inclu e written sche s of inve gation prepared by Wessex Archaeology for trial trench g nnex D) and m detect g (Annex E) [REP2-016 / 017]. The archaeological evaluatio tegy comprises cipal approaches, building on the previous f desk-bas esearch, aerial photograph assessment and LiDAR analy and no sive geop al survey that were undertaken to inform the DCO Ap ation:

- earthwork survey;
- metal detector survey;
- archaeological trial trenc ; and
- archaeological inves tion.

1.4.12 The pr mme of archae gical trial trenching commenced in April 2024 and is ongoing subject to access a ments. The results of the ongoing archaeological trial trenching will inform be i porated into this Strategy, where these are available prior to finalisation of t ed Strategy for approval under the DCO.

1.5 Roles and Responsibilities

Implementation of the Strategy

1.5.1 The Archaeological Contractor to be appointed on behalf of the Client will be responsible for the delivery of the archaeological mitigation programme, as set out in this Strategy. This responsibility will include all on-site and off-site works, including preparation of Site Specific Written Schemes of Investigation (SSWSI) and Method Statements (MS).

1.5.2 The Client's Project Manager and Supervisor (the Archaeological Clerk of Works: see section 4.4 of this Strategy) will be responsible for oversight of the archaeological mitigation

programme and will be the principal point of contact for advisory groups, monitors and curators. Further details are set out in Chapter 6 of this document, Communications, Monitoring, Sign-off for Completed Archaeological Works and Approvals.

Monitoring of Archaeological Work

1.5.3 The key heritage stakeholders are Historic England and the archaeological advisors to East Lindsey District Council, Lincolnshire County Council, North Lincolnshire Council and North East Lincolnshire Council (collectively known as the 'Viking CC Heritage Consultees'), who act as statutory consultees. References within this Strat gy to sult n with the Viking CCS Heritage Consultees means consultation with e archa ical advisor to the relevant local planning authority (depending on the tion of th ant archaeological works) and, where relevant, Historic England, in ac dance with the cedures set out Chapter 6 of this document, Communications, M o g, Sign-of r Completed Archaeological Works and Approvals.

1.5.4 The local planning authorities have a statutory role in relation t approval of e WSI and Method Statement, depending on the location of the rele archaeological works. Throughout the lifecycle of this project, the arch logical fieldw nd reporting will be closely monitored to ensure that it is being c o the require ndard and that it will achieve the desired aims and objecti s. The Vi CCS Herita Consultees will attend site meetings (at their discretion) eview the o s and result of the fieldwork and to inform sign-off of sites by the rel nt local a hority haeological Officer prior to construction (see Chapter 6 of this doc ent, C munica Monitoring, Sign-off for Completed Archaeological Work d Approvals)

1.6 Scope of the Strate y

1.6.1 The Strategy sets out the fra ork for archaeol mitigation for agreement with the Viking C Consultees format and content this document conforms with current goo ctice and account o dance outlined in:

Overarching Nation licy Statem for Energy (EN-1) (Department for Energy Security & Net Zero, 2 a);

National Policy Stateme r Natural Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Depart t for Energy Security & Net Zero, 2023b);

- ional Planning Policy mework (NPPF) (2023);
- Pla g Practice Gui e – Conserving and enhancing the historic environment (Minis f Housing mmunities & Local Government, 2019).
- Managem of earch Projects in the Historic Environment (Historic England, 2015a).
- Universal guidance and standards issued by the Chartered Institute for Archaeologists (CIfA): archaeological field evaluation (CIfA, 2023a and 2023b), archaeological excavation (CIfA, 2023c and 2023d), archaeological monitoring and recording (CIfA, 2023e and 2023f), the collection, documentation, conservation and research of archaeological materials (CIfA, 2020a); and the creation, compilation, transfer and deposition of archaeological archives (CIfA, 2020b);
- Historic England have also issued a variety of guidance notes for environmental archaeology, human remains, scientific dating, preservation of archaeological remains and archaeological conservation (see Appendix A).

1.6.2 References in this DAMS should be taken to refer to the current published policy, standards and guidance documents, as may be updated from time to time.

1.6.3 The Strategy and each SSWSI will be prepared in consultation with the Viking CCS Heritage Consultees and each SSWSI will be approved by the relevant local authority Archaeological Officer prior to the start of the fieldwork to which it applies.

2 Historic Environment Background and Archaeological Research Agenda

2.1 Introduction

2.1.1 The historic environment baseline for the Proposed Developm nt was informed by desk-based assessment, aerial photographic assessment and LiDA aly and geophysical survey, as reported in the ES and technical reports, a ows:

- ES Volume IV – Appendix 8-1: Historic Environm Desk Ba d essment. (Document Reference: EN070008/APP/6.4.8.1) [A 089
- Environmental Statement Volume III – Figures: Part (Document R rence: N070008/APP/6.3.2) [APP-065].
- Environmental Statement Volume IV – Appendix 8-2: Aerial iew and LiDAR. (Document Reference: EN070008/APP/6.4 8 2) [APP-090].
- Supplementary Environmental Informati Geop cal Survey R t and Assessment Update (Document Refe ce: EN070 EXAM/9.7) [R 1-043].

2.1.2 The ES divided the Proposed Developm into five tion ctions 1 to 5) from north to south that broadly reflect the landscape as thro which peline passes to ensure that the baseline descriptions ar eleva t to ea area. The ac rs including geography, geology and topography which e influenced characte f the areas are also likely to have been important factors the settlemen nd explo tion of the landscape since prehistoric times.

2.1.3 The five s along the Pr ed Development between the Immingham Facility and the M w prings (ML) near the former Theddlethorpe Gas Terminal (TGT) are follows (north uth):

Section 1 - Rosper R (Immingha o A180 road (including the Immingham Facility and the proposed Nort mpound);

Section 2 - A180 road to road (including Washingdales Lane Block Valve Station);

- ction 3 - A46 road to P Tree Lane (including the proposed Central Compound Thoroughfare Block ve Station);
- Sec 4 – Pear Tre ne to Manby Middlegate (B1200) (including Louth Road Block Station nd
- Section 5 Middlegate (B1200) to Theddlethorpe and down to Mean Low Water Spring MLWS) (Including the Theddlethorpe Facility and the proposed Southern Compound).

2.1.4 The following sections 2.2 to 2.6 of this Strategy provide a summary description of the historic environment baseline along the Proposed Development route (for a detailed description refer to ES Volume IV – Appendix 8-1: Historic Environment Desk Based Assessment (Document Reference: EN070008/APP/6.4.8.1) [APP-089]). Where relevant, HER references are included for completeness and given in their full alphanumeric form and where these are within 500m of the pipeline route a UID number has been assigned (identified by square brackets [ ]). (For a complete list of heritage assets refer to Appendix 8-1: Historic Environment Desk Based Assessment, Annex A; and their locations are shown at Annex D [APP-089]).

2.2 Section 1: Rosper Road (Immingham) to A180 Road

Topography and geology

2.2.1 In this section ground levels are generally at and below the 10m contour (contour heights are expressed above Ordnance Datum (aOD)) with slightly higher ground at the western side of the Section. Historically this coastal landscape strip mainly comprised seasonal saltmarsh grazing utilised by settlements located on the higher ground. At the start of the pipeline route the ground level is around the 5m contour and s to he 11m contour at Habrough Road (B1210).

2.2.2 Most of the Section is underlain by superficial geolo l deposits ising Glacial Till, a heterogenous mixture of clay, sand, gravel, and bou s varying wide size and shape (diamicton). Tidal Flat Deposits are also present whic m se a cons ated soft silty clay, with layers of sand, gravel and peat. Alluvium lso present a localised watercourse channels around Immingham. These ep s comprise s to m consolidated, compressible silty clay, but can contain layers lt sand, peat a asal gravel. The bedrock geology underlying this Section is Chalk the Burnham Chalk Formation. Comprising white, thinly-bedded ch common tab and discontinuous flint bands; sporadic marl seams.

Prehistoric (up to AD43) and Roma AD43-450 p ds

2.2.3 Archaeological evidence shows that t Humbe stuary been a key trade and communication route between the North ea and e Pennin , d also to the Midlands (River Trent), since prehistoric s. Significan alaeo-envi nmental and archaeological evidence preserved within w and locations udes Bro ze-age boats and fishtraps. There is also evidence of l settlement on h er drie and, while the lower wetlands provided fishing and fowling ell as summer g the surrounding settlements.

2.2.4 Resea mber wetla has suggested that at the beginning of the Holocene, the et of warme ditions le the establishment of dense vegetation cover over u ating boulder clay the same kettle-holes and poorly draining hollows would ve allowed the formatio a series of nic peaty sediments and fluctuating sea levels would have led to increas sedimentat on through the process of alluviation and the rmation of marshlands (Ru ll and Russell, 1982; Russell and Russell, 1987; Macklin et 2000). The Humber cont ed to have great importance throughout the Roman and m val periods for trade a ommunication and it is possible that on the north bank of the e ry drainage of the shes began as long ago as the second century AD.

2.2.5 Prehisto ntwork (was material and tools) of Late Mesolithic to Early Bronze Age date have been d durin estigations including surface artefact collection and excavations [001, 002, 00 0 5, 005]. There are other findspots of prehistoric flintwork (waste flakes and cores he wider area, south of Station Road (MLS19726).

2.2.6 Archaeological evaluation at the Humber Refinery, c.300 m northeast of the Site Boundary, has recorded evidence of Bronze Age activity and a late prehistoric and Roman settlement with associated evidence for salt-making and iron smelting [006]. Charcoal from a ditch was radiocarbon dated to the Early Bronze Age and sealed beneath 0.4 m of alluvial clay, was a charcoal-rich deposit (burnt stone and charcoal) that was radiocarbon dated to the Late Bronze Age. A spread of burnt material which lay over a possible buried soil was also sealed beneath the alluvium which produced a Middle Bronze Age date. The Iron Age (and early Roman occupation) appears to occupy the driest ground, towards the west of the investigated area. Many of the features coincided with geophysical anomalies (possibly

representing Iron Age enclosure ditches) and it is possible that salt making was carried out on the wetter ground to the east.

2.2.7 Although undated deposits, interpreted as the buried shoreline, were recorded east of Rosper Road during archaeological evaluations in 2004 and 2005, trenches in 2004 recorded 1m of alluvium over a peaty deposit and alluvium over deposits of mid-late Iron Age date. In 2005 alluvium which sealed an organic deposit was recorded beneath subsoil [098]. Also, a system of creeks which were detected by geophys cal survey are likely to mark a former high-water position.

2.2.8 Close to the northern end of the Site Boundary an ar eologica trench evaluation in 2016 at Rosper Road identified multiperiod activity, in ding seve Age ditches [007]. An earlier excavation either side of Rosper Road, was carried o etween 2000 to 2002 adjacent to the Conoco Refinery, suggested that r al early Ir ge settlement was located on the lower ground near to a former creek e shore of the r Humber. There then appears, on the basis of the pottery sequen to e been a hiatu th d- to late Iron Age, and the subsequent late Iron Age and mano-British s ent, representing possibly a small farmstead, developed on higher g d further north on the palaeo-shoreline, centred around a droveway ttern of encl es [009, 015]. This site has also been recorded on historic a phot phs [APS_5 ES Volume IV – Appendix 8-2: Aerial Review and LiDAR. ocument R nce: EN0700 /APP/6.4.8.2)). Further evidence for Iron Age occupatio was found st osper Road, within the Site Boundary, during trial trenching in 2010 r ed to the 160-A ad improvements, where two Iron Age ditches were recorde [010

2.2.9 Trial trench evaluation carried t in April 202 for the pr osed Humber Zero carbon capture scheme, within the no ern extent of Site Bou ary at the proposed pipeline offtake facility at Immingh has recorded nc prehistoric activity and Iron Age/Romano British occupat along the edge he former buried shoreline. The evalua rt of a pr m of works, following a geophysical survey and a geo aeological b ole survey otal of 32 trenches were excavated, which identified th areas of archaeo al activity e northwest, northeast and southeast corners of trenched area, centri n the sligh igher ground within the site. Trenching at the northwestern corner of the luation are revealed several ditches containing Romano-ritish pottery and animal bo however, the earliest evidence of activity came from a small ber of pits found beside a ssible palaeochannel which produced late Mesolithic / early N ic lithic fragments. At t northeastern corner an alignment of postholes and several sma undary or enclosu ditches were recorded. A concentration of features at the southe n corner, date ostly to the Iron Age/Romano-British period, included a large multiphas rvilinear h within a possible enclosure, and a series of small ditches possibly ass ed w a contemporary field system.

2.2.10 In the central pa he evaluation area geoarchaeological boreholes (11 drilled boreholes to a maximum depth of c.6 m below ground level) were used to identify areas of archaeological potential by characterising the probable nature and depth of sub-surface deposits (Historic England, 2022). The deposit sequence recorded included Pleistocene glacial till found between approximately -0.5 m and 3 m OD; the lower elevations traverse the evaluation site from the northeastern boundary, forming a relict coastal inlet which was found to be infilled with intertidal deposits. It is likely that this inlet was open in the Mesolithic to Neolithic periods but has been gradually infilled during the Holocene by alluvium or warp (flooding) deposits which were found across the site. Made ground of up to approximately 1.4 m in thickness was also recorded.

2.2.11 There are several cropmark features of possible Iron Age date, including west of Habrough Road where a linear feature is visible [008] and a series of three possible enclosures [012]. From the wider area a late Iron Age enclosure, which was also visible on aerial photographs, was identified by geophysical survey and trial trenching (MLS1611].

2.2.12 Late Roman dated ditches were also recorded north of Marsh Lane (c.100 m north of the Site Boundary) during trial trenching in 2012 and 2013. These are likely to represent a continuation of the small farmstead recorded on the east side of Rosper Road [013] (Glover, 2013 and 2014).

2.2.13 At East End Farm (c.130 m west of the Site Boundar rchaeol geophysical survey has detected a trackway and a complex series of tangular either side of the trackway. Additional evidence included a walled buil which could r sent a series of small Romano-British farmsteads, or a single large fa o erhaps e structure of military or ritual origin [016]. Metal detection in the same also recovere man coins and metalwork.

2.2.14 From the wider area a possible droveway and enclosure of likely man date are visible on aerial photographs next to Ulceby Road and th woodland k n as Sinks Covert (MLS8765). South of East End Farm, and c.7 f the Site Bo ry, archaeological geophysical survey detected the buried re ns of a R n enclosure theast of Glebe Farm which is also associated with Roma coins and [014].

2.2.15 A sherd of possible imitation samian pot has bee ound the Site Boundary [017].

2.2.16 Late Iron Age pottery and Rom potte y has a been fo d est of Habrough Road during archaeological excavati [005]. A large ard of Rom n coins was also discovered by a metal detectorist in the sa e area [018].

2.2.17 In the wider area there is ev e of a high-stat settlement and industrial site at Mauxhall F Stallingboroug erchange (MNL4490, MNL4763). Trial trenching at this archa g revealed stantial settlement belonging to two main phases (1st to 2 centuries and nturies) f wed by the site's abandonment (Oxford Archaeology E , 2017; Oxford Arch ogy East, 8; HAP, 2021). The presence of a stone building ppears to mark this site s different other settlements along the edge of the tidal flats and it has been sugges that it may have functioned as a possible estate centre from ich other sites were mana

E medieval (450-1066 nd medieval (1066-1500)

2.2.18 Evide of early medieval d medieval occupation tends to be concentrated within and close to historic settl nts that the pipeline route passes, however, the surrounding area also ins evi ce for activity and occupation as a result of shifting settlement patterns and sc changes. Most of the evidence is represented by former cultivation systems, and it y that some of these also continued in use until enclosure in the post-medieval period.

2.2.19 Immingham is mentioned in Domesday, the Lindsey Survey (c.1115) and the Early Yorkshire Charters (1100-15) and it formed a small cluster of settlements with place names indicating early Anglo-Saxon settlement [020]. The form of the settlement appears to have been a chain of farmsteads or hamlets laid out along a pair of parallel roads, with a denser core around the parish church. Archaeological trial trenching has recovered early medieval pottery and also pottery of 13th to 14th century and post-medieval date. Alluvial layers show that the area was also prone to flooding and that in some places, which were most vulnerable, was used for seasonal farming activities.

2.2.20 Habrough is also mentioned in various historic documents (Domesday, the Lindsey Survey (c.1115), Assize Rolls (1202), the Valuation of Norwich (1254) and Pipe Rolls (1197) [021]. Originally the parish included a large, detached section of coastal marshland, Habrough Marsh (now a part of Immingham). The village comprised of two settlement cores with dispersed occupation between them. The eastern core contains the church and at least one moated manorial site and appears to have been laid out along a single road. The western core contains post-medieval Newsham Farm (settlement appears to have formed around a small grid like system of roads without an obvious topographic fluence).

2.2.21 Settlement evidence has been identified within and surr ding Im am. The scheduled Manor Farm medieval moated site is located in Nort illingholm d was occupied into the post-medieval period [027]. A second moated site uth-east No Killingholme [679] consisting of a double island with internal ditches ha en ensively died through a series of archaeological investigations.

2.2.22 A possible area of medieval settlement is located n he of Houlton's rt m fieldname evidence, which may correspond to the small clo hown on Rus pre-enclosure map of Killingholme, on the edge of Summergates [025 e possible remains of a shrunken medieval village have been found Killingholme 8], c.270 m north of the Site Boundary, comprising a rectilinear osure, hes and ridg d furrow (visible on aerial photographs but now largely buil er, althoug ments of the e may survive). A possible medieval moated site was und durin an haeological evaluation and excavation west of Luxmore Farm (com x of ditch and p at respected Immingham Road) [031].

2.2.23 A series of linear earthwork ures (drainag systems, t ckways and enclosures) at Homestead Park, Immingham 34] (c.486 m so east of th Site Boundary) is suggestive of medieval settlement. Wa ged deposits of p ibl medieval origin were recorded during monitoring in 1994. Th is on the North Lincolnshire 2016 draft local list of histori ial interes

2.2.24 Ev ce of extensiv e and furr ultivation, of likely medieval to post-medieval date, sible on aerial pho aphs at a mber of different locations in Habrough [029] APS_47], also south of Ul Road, Sou Killingholme [026] [APS_49] and at Immingham 030] [APS_47]. Archaeolog geophysical survey has also identified ridge and furrow at uth Killingholme [022] whi s also visible as earthworks on historic aerial photographs [52, APS_53]. Addition a detailed assessment of aerial photographs has also ide d ridge and furrow earthwork features at the junction of Roxton Road and Stallin ough Road (Imm ham Parish), but outside of the Site Boundary [APS_45] (ES Volume – Appendi 8-2: Aerial Review and LiDAR. (Document Reference: EN070008/ /6.4.8 It is possible that several of the undated cropmarks visible on aerial photogr i s Section are the truncated remains of ridge and furrow cultivation.

2.2.25 Although there ar o identified salterns from within the Site Boundary, salt working was an important local industry along the coastal margins in the medieval and earlier Roman periods and is likely to have been carried out on a seasonal basis (salt extracted from salt-encrusted sand from the foreshore was treated and dumped in large mounds). Eventually as the ground along the foreshore was improved and raised to prevent seasonal flooding the coastline gradually retreated and new salterns advanced seawards.

2.2.26 There are several findspots of medieval pottery recovered during surface collection surveys [023, 032]. The pipeline route passes several designated parish churches which were constructed in the medieval period (Church of St Denys, North Killingholme [036]; Church of St Andrew, Immingham [035] and a medieval churchyard cross base [024]; and Church of St Margaret, Station Road, Habrough [033]).

Post-medieval (1500-1900) and modern (post-1900)

2.2.27 From the 17th century, coastal reclamation, drainage and enclosure had a significant impact on the rural landscape. Flood defences were built to protect the developing towns and industrial areas and warping was introduced by the Dutch in the 18th century. Later, Parliamentary enclosures produced the landscape of regular, geometric fields, mostly enclosed by dykes, with associated large brick-built isolated farmsteads and excavation of brick pits for the extraction of Pleistocene clays.

2.2.28 There are a series of historic roads of post-medieval to m dern in mingham that are recorded on the early OS maps, including Stallingbor h Road [and Mill Lane [061], and also Immingham Road, Habrough [062]. It is p ble that R Road, Immingham [059] and Habrough Road, Immingham [060] have ns tha can be ced back to the medieval period.

2.2.29 The HERs record several landscape features, includin osier bed [040 pos ble landscape park in Immingham [037] and historic hedg rows South Killingho sh [038, 068]. The Tithe map of Immingham (1841) depicts two fo r woodland plantations close to the Site Boundary, Spinrosa Holt [651] l ted beneath t 180 trunk road, and Cherry Holt [652] located east of Immingham g he tithe map o depicts a series of hedgerows that may be regarded as im rtant und e historic cr set out in the Hedgerow Regulations as forming part o field syste p ating the En losure Acts [H1-H6] (see ES Volume IV Appendix 8-1: storic Env nme BA, Annex C) [APP-089], including the parish boundary between ingham P and ugh CP [629] [H6]. Also within Section 1, the pipeline rou osses the pa h boundar between South Killingholme and Immingham CP, south of H lton's Covert ere it follo s an unmarked watercourse shown on the correspondin tit map and OS ps [628]

2.2.30 Historic OS maps also reco e presence of eatures associated with coastal navigatio sportation, i ding several lighthouses – Killingholme High Lighthouse, South ngholm]; Killingho South Low Lighthouse, South Killingholme [044], and Kil holme North Lo hthouse, th Killingholme [050].

2.2.31 ere are numerous post dieval and farms/farmsteads in this Section that are either extant or demolished (for mple, Gleb Farm [042], Church Farm, Habrough [053], uxmore Farm, Habrough R d [055], Elm Tree Farm, South Killingholme [056], Willows m, Immingham [057] an ill Farm, South Killingholme [677, 678]), and also rural d gs / houses (for exam e, Belmont Cottage [047], The Nook, South Killingholme [048] urchfield Manor, I ngham [051], Appletree Cottage, Habrough [045], Roxlyn House, rough [054] a Ivy Cottage [682]). Other assets include the site of South Killingholm town hall 0] and the site of a former blacksmiths workshop [681]. These reflect the r a ultural character and rural industries of the area prior to the development ngham Docks and the subsequent expansion of the town. A demolished post l was also located along Mill Lane, Immingham [041]. The Tithe map of Immingham depicts a possible homestead on Mill Lane [650] that is close to the Site Boundary (opposite the post mill).

2.2.32 Several chapels are recorded in this Section that were constructed to serve the local communities; at South Killingholme there is a Baptist Chapel [049], a primitive Methodist Chapel [066] and a Wesleyan Methodist Chapel [676]; the latter is shown on the west side of Town Street on the First Edition Ordnance Survey Map (1887), since destroyed. In the later 19th century village schools were built at Habrough (Immingham Road) [052] and at South Killingholme [067]. Several of the extant buildings are locally listed.

2.2.33 Immingham Dock was established by the Humber Commercial Railway and Dock Company in association with the Great Central Railway (Humber Commercial Railway and Dock Act of 1904, and subsequent amendments). Construction of Immingham Docks began in 1906 and was complete by 1912. Initially the dock exported coal from the coalfields of Derbyshire and Yorkshire via the Humber Commercial Railway (Grimsby District Light Railway was used for contractors' traffic and later for carrying passengers/dock workers) (Grace's Guide, 2020).

2.2.34 A temporary settlement or workers village was established mmingham (Humberville) comprising of a series of corrugated tin huts (known as Town dock construction workers [072]. A 20th century railway signal box [077 nd an exte complex of railway lines and sidings were integrated into Immingham do London a d N Eastern Railway - Immingham Dock Branch) [076]. The Humber Com rcia ailway constructed in 1912 linked the eastern jetty at Immingham Dock with th n Grimsby - N Holland line at Ulceby [080]. Other buildings of early 20th century d lude a demoli d mis ion room [069] and school [070], a demolished dwelling [07 n Rosper Ro uth Killingholme and a row of demolished terraced houses (Marsh R to the south of Marsh Lane, Immingham [079].

2.2.35 From the 16th and 17th centuries defensi struct were constr d to protect the coastline from attack and the threat of inv on. This im nce for defe continued into the late-19th century with a coastal artille battery an min d control centre built at Paull Point on the north bank of the estuary, fo ed in the th cen y a World War 1 acoustic mirror near Kilnsea and two forts the e uary m h.

2.2.36 During World War 1 Immingham ocks was a ba or British D class submarines. Following the end of World War 1 trade d clined (as it did ewhere ng the east coast), including demand for shipping servi d new ships. I gh Docks was subsequently used for cruise ships in the 1930s, uding vessels of rient Steam Navigation Company, White S lue Star Li World War 2 revived the dock's prospects but, together with er ports alo east coa ch as Hull, it became the target of bombing raids.

2.2.37 ng World War 2 Imm am Docks ame a naval base and the headquarters for the oyal Navy on the Humbe eries of an rcraft batteries and bombing decoys were built to protect the docks and ne military airfields from attack. Several types of World War 2 itary installations are reco d within this Section, including heavy anti-aircraft battery i lations at Immingham [0 and a searchlight emplacement at North Killingholme [082] and raft obstructions that now levelled at Immingham [078]. A possible bomb crater was a dentified on aerial otographs at South Killingholme [081]. In the wider area were former age balloo sites (MNL4651, MNL4684, MNL4675), other military buildings/in ations L4644, MNL4689) and another anti-aircraft battery (MLS17455). A War Memor e ed to the fallen of World War 1 was erected in 1925 at the junction of Humberville R and Pelham Road, Immingham [073], the fallen from World War 2 being added to it.

2.2.38 In the second half of the 20th century the docks expanded with the construction of east and west jetties and the addition of several deep-water jetties for bulk cargo. Immingham Oil Terminal jetty was also constructed at this time on the banks of the Humber west of the dock entrance (1969), and the Immingham Bulk Terminal was commissioned in 1970 for the export of coal and the import of steel. In 1985 the Immingham Gas Jetty was opened, handling liquid petroleum gas, and thereafter extensions to these facilities were added, including new terminals and roll-on/roll-off facilities during the 21st century, to improve connections to Europe and to develop port infrastructure and associated facilities and to facilitate the export of bulk goods.

2.2.39 A modern landfill site is recorded on the HER at Mill Lane, Immingham [074].

Undated Assets

2.2.40 There are several heritage assets that are undated, and which are mostly visible on aerial photographs as cropmarks. An undated possible square enclosure, that is now beneath the Immingham CHP Plant, was identified as a cropmark [088] and there are several other undated cropmark features (possible rectangular enclosures, ring ditches, pits and linear features) south of Ulceby Road [089, 090, 091, 092, 096]. A immediately next to the A180 Immingham Bypass a former road is visible as a opma PS 6] (ES Volume IV – Appendix 8-2: Aerial Review and LiDAR. (Document ference: 0008/APP/6.4.8.2)) [APP-090], and immediately west of Manby Road 173) an lly within the Site Boundary is an undated ditch also visible on historic al pho ograph PS_50].

2.2.41 Archaeological geophysical survey in South Killingh detected a s of linear anomalies at East End Farm that are undated [086] and dated linear fe we t of Rosper Road [087].

2.3 Section 2: A180 Road to A46 R d

Topography and geology

2.3.1 At the beginning of the section ground el is aroun th m contour, rising to the 17m contour at Roxton Farm. Between this int and y Ro A1173) ground levels are generally at and around the 17m contou though ey are lo the floodplain of North Beck Drain (13m). South of Rib ad the grou evels dro nto the 15m contour where the route passes Riby Gap W t of Aylesby, topograp becomes gently undulating and rises onto the 22m c to Between Ba Street 18 road) and the end of the Section the ground level r urther onto the ntour where the pipeline route approach w foothills of incolnshire Wolds west of Laceby.

2.3.2 The erlying sup ial geolog omprise mostly Glacial Till, however, Glaciofluvial D sits of glacial orig e also pre around Aylesby and between Irby Upon Humber d Laceby (sand and g l with rare y interbeds). Lacustrine Deposits are present around Irby Upon Humbe hich form small, localised pockets, commonly comprising minated clay and silt and ich may contain thin layers of organic material or sand. vium is also present along calised watercourse channels, for example alongside North B Drain (south of Green ds Farm) and between Irby Upon Humber and Laceby (trib s of Laceby Beck) solid geology is predominantly Chalk of the Burnham Chalk Forma although chalk he Welton Chalk Formation is present towards the southern end, gene comprisin hite, massive or thickly bedded chalk with common flint nodules, lacking tabu nt ba .

Prehistoric (to 3) and Roman (AD42-450)

2.3.3 There is no evidence of significant prehistoric activity along this Section of the pipeline route, although prehistoric flintwork has been found during surface artefact collection but only in small quantities or as a single findspot [100, 101, 102, 690, 723]. In the wider area to the west of the pipeline route there is evidence of Neolithic and Bronze Age burial activity. Southwest of Riby Grove Farm are the remains of a Neolithic long barrow and a Bronze Age round barrow (NHLE1018838) that are located on a spur of land overlooking several dry valleys. And prehistoric flints were recovered in Aylesby during trial trenching (MNL4760).

2.3.4 Barton Street forms the parish boundary between several settlements and has been identified as a possible late Iron Age routeway that continued in use into historic times [104].

In the wider area, Oldfleet Drain (formerly Healing Beck) is a landscape feature of possible prehistoric to modern date (MNL897).

2.3.5 A possible Iron Age settlement is recorded at Aylesby [693] consisting of two probable roundhouses, gullies, and posts in alignments suggestive of the presence of buildings. This site continued to be occupied into the Roman period, as evidenced by the remains of a large sub-rectangular 2nd century building.

2.3.6 Evidence for further possible Roman settlement has been fou d southeast of Greenlands Farm, Stallingborough [105]. The site appears to occu y an of igher ground and comprises a complex of small enclosures alongsid trackw ttery from the site included possible Iron Age and early medieval mater uggesting e may have earlier origins and was occupied into the post-Roman period e disc ve y of ments of Roman brick and tile in Stallingborough are possible indicato f mano-Bri settlement or occupation [107, 108].

2.3.7 There is also a scatter of findspots of other Roman m eria ttery and meta hat indicate a Roman presence in the area [106, 109, 110, 111, 69 is possible that several of the undated cropmarks in this Section could dat to the Roman od.

Early medieval (450-1066) and mediev (1066 00)

2.3.8 The pipeline route passes close to sever istoric sett s that have t eir origins in the early medieval and medieval periods. A sby is me one Domesday (1086) and the Lindsey Survey (c.1202) and the village probab a later S foundation (occupation focused on Barton Street) [113] Evidence of A lo-Scand vi n occupation has been recorded (pottery and other fin n the village w ch sugges occupation from at least the 10th century. Archaeological e avations reco d the fou ations of two buildings [684] within Aylesby which may b arly medieval o

2.3.9 Stallingbo mentioned Domesday, the Lindsey Survey (c.1115), the British Muse hart 130), the E opal Registers (1233) and the Valuation of Norwich (12 Along with H Immingh and a lost settlement called Lopingham, it forms a ll cluster of settleme with place n es indicating early Anglo-Saxon settlement [114]. he medieval village was inally loca on the edge of the salt marsh that has since been almost totally reclaime low hill formed an early settlement focus, and this elevated sition was used for the chu and the principal manor house of the village. Recorded as signated ‘creek’ port du the post-medieval period, archaeological investigations (ge sical survey, monito , trial trenching and excavation) have found evidence for Late n and medieval o pation.

2.3.10 Irby upon mber is me ned in Domesday, the Lindsey Survey (c.1115) and the Assize Rolls (1202) me al settlement developed on patches of high ground around a river-less valley and around a sub-rectangular road with others radiating away from it with no particular focu r dense settlement [115].

2.3.11 There is evidence of early medieval occupation at Riby. A substantial middle Saxon settlement comprising field and enclosure ditches and elements of probable post-built and sunken buildings have been investigated at Riby Crossroads (MLI52885), associated with an extensive pattern of cropmarks. At Riby Park (close to the Site Boundary) a small 7th century Anglo-Saxon cemetery was discovered in 1915 [697] and Anglo-Saxon pottery (MLI50023). Investigations southeast of Riby Church, within the Walled Garden have also recorded evidence of Roman, early medieval and medieval activity (MLI125879, MLI125880, MLI125881, MLI125882). Surviving earthworks associated with the shrunken medieval settlement of Riby [696] suggest the presence of at least two distinct settlement nuclei.

2.3.12 North of Barton House, Laceby another Anglo-Saxon inhumation cemetery was found during sand and gravel extraction in 1934 and 1936-1939 [687].

2.3.13 Surface artefact collection north of Greenlands Farm, Immingham recovered a sherd of possible Saxo-Norman pottery [112].

2.3.14 There are several smaller settlements with historic cores along this Section of the pipeline route. Roxton is mentioned in historic documents (Book of Fees, 1242 and in the 1334 tax list and it is marked on the Yarborough Estate map). Earthw k remains of the deserted medieval settlement have largely been levelled and plo ghed, ho sites, trackways and toft boundaries appear as soil and crop marks ring a r ely large area [125] [APS_44] (ES Volume IV – Appendix 8-2: Aerial Rev and LiDA ument Reference: EN070008/APP/6.4.8.2)[APP-090]. At Stallingboro part of the erted medieval settlement, together with the earthworks of a post-me a anor hous d associated formal gardens, are located next to the parish church and a scheduled m ment [128]. At nearby Little London three areas which are sepa d roads and ear rk e largely contiguous with the earthworks at Stallingborough. Fe s along the s ank of North Beck Drain may represent a series of moated en ures and fishponds. Investigations have revealed building platfo alk foundati tile and Roman, medieval to post-medieval pottery and a ran f othe terial (anima nes, oyster shell, nails and a coin of Henry IV) [126].

2.3.15 Aerial photography has recorded severa eas of me eval/ medieval ridge and furrow surrounding and extending from the h ric vill s and ments, for example, at Stallingborough [124] [APS_43, A 41] and Ayle [123] [AP _3]. Additionally, a detailed assessment of aerial photogra has also iden d ridge an urrow as earthwork features crossing into the Site Bounda at Riby Gap S_40] a at The Lindens Farm (Riby Parish) [APS_38].

2.3.16 Several m moated sites ecorded in this Section, including the scheduled Roxton Farm] and ble moat ite south of Manor Farm, Aylesby [117]. Church End Fa Keelby contai former m house which was originally moated [135]. Aerial tography has also id ed an und d possible moated site east of The Lindens (Riby arish) which is outside of Site Bound although an associated leat is within the Order imits [APS_37].

2.3.17 pipeline route passes se al designated churches and associated features that are of m val and post-medieva ate (for example, Church of St Peter and St Paul, Stal orough [178], Chur of St Bartholomew, Keelby [134], Church of St Lawrence, Aylesby 2], Church of S mund, Main Street, Riby [129] and the Church of St Margaret, High Stre aceby [13

Post-medie (15 1900) and modern (post-1900)

2.3.18 The HERs recor at the pipeline route passes several gravel and chalk extraction pits [139] [APS_35] (ES Volume IV – Appendix 8-2: Aerial Review and LiDAR. (Document Reference: EN070008/APP/6.4.8.2)), [140, 141, 142, 689] and an extant windmill tower (The Mill) at Riby Road, Stallingborough [150]. Additionally, two small ponds or mineral extraction pits are depicted close to Beach Holt Lane, Aylesby on the OS 1st edition map (Lincolnshire Series XXI.SE, 1887). One of the features appears to be within the Site Boundary [653] but the other is south of the lane [654]. The same map also depicts another pond/extraction pit [656] in the fields to the north of Aylesby, which also appears to be within the Site Boundary. Also, an OS map of 1971 (TA 10 NE, 1:10k map) shows a possible pond/extraction pit [671] within the same general area that appears to be on the edge of the Site Boundary (not visible on recent aerial images). An OS map of 1951 (Lincolnshire Series

XXI.SE) shows a large possible extraction pit [658] that appears to be partly within the Site Boundary to the west of The Crofts, Laceby.

2.3.19 A former guidepost [655] once stood at the original junction of Beach Holt Lane and Barton Street. A post-medieval field boundary which is partially within the Site Boundary is also visible as a cropmark on satellite imagery north of Wells Road (Riby Parish) [APS_39].

2.3.20 The HERs also record numerous farmsteads and dwellings, both extant and demolished, located within the historic settlements or the surrounding farm nd and which date to the post-medieval and modern periods) (for example, Roxt n Far mm ham [167], Daisy Cottage, Stallingborough [179], Manor Farm, Aylesby [ ], Churc mhouse, Riby [154], The Crofts, Laceby [145], Rookery House, Laceby 0], The C Laceby [672] and Manor House, Keelby [158]).

2.3.21 There are several post-medieval churches and religio ildings/struc within this Section of the pipeline route, including the Haagense morial and Va t Laceby Cemetery [156] and the Church of St Peter and St Paul, Chu ane, Stallingb hat was built at the end of the 18th century [178].

2.3.22 The Tithe map of Riby (1839) depicts a former t woodland, P Moor Wood [657], close to the Site Boundary (not shown on O maps) sh Hills Cov 136] is a tract of woodland that is shown on OS maps of 87-9 and corded in 18 as 'Rash Hills Cover', and as Scrub Holt in 1828. Foxh e Wood [1] a Roxton Wood [163] are also marked on OS maps of 1887-9 and are orded at ast as ack as 1824. North Beck Drain [161] (see ES Volume IV Appendix 1: Hist c Environ BA, Annex E, Plate 8) [APP-089] is marked on OS of 1887-9 he tithe m p also depicts a series of hedgerows that may be rega d as importa nder the storic criteria set out in the Hedgerow Regulations as f m g part of a field em pre ating the Enclosure [H7 – H19] (see ES Volume IV Appendix Historic Environ A, Annex C) [APP-089], including several th toric parish daries (for example, boundary between Stallingborough CP a by C iby Gap, i diately south of Riby Road [631]. The boundary is ma d by a hedger H9] shown the Stallingborough tithe map of 1844; boundary ween Riby CP and Ay y CP eas The Lindens [632]. The boundary is marked by a edgerow [H14] shown on Riby tithe p of 1839; boundary between Aylesby CP and aceby CP northeast of Ru Hills Covert [633]. The boundary is marked by a hedgerow 16] shown on the Aylesby map of 1839; and boundary between Laceby CP and Irby Humber CP south of Th rofts [634]. The boundary is marked by a hedgerow [H19] sho n the Laceby tithe m of 1840).

2.3.23 The no signated Riby P [177], which was built over the deserted medieval settlement of Riby, w id out aro the Church of St Edmund [129] which was re-built in the 19th century. The k is r ded on both the OS 1st edition maps and 2nd edition maps (1902-6). Riby Park w ically associated with Riby Grove, a now demolished country house. An avenue of tree emains of the former carriage drive.

2.3.24 The Manchester, Sheffield and Lincoln Railway – Cleethorpes to Barton railway line [138], which opened in 1848 (Cleethorpes extension added around 1863, part of a trans-Pennine route from Manchester via Sheffield), is crossed by the Site Boundary at the north end of the Section (south of the A180 road). A railway level crossing is marked along the line on OS maps of 1887-9 at Roxton [144]. Railway sidings at Immingham [143] are shown on the OS maps of 1887-9, located alongside Roxton Road, and an historic wooden railway signal box that is extant (Roxton Siding Signal Box) [166] (see ES Volume IV Appendix 8-1: Historic Environment DBA, Annex E, Plate 9) [APP-089].

2.3.25 The pipeline route passes several historic roads of post-medieval date (marked on OS maps of 1887-9), although some are also likely to have medieval origins (for example, Riby Road, Stallingborough [174], Beach Holt Lane, Aylesby [170], Caistor Road, Laceby (road is part of a turnpike trust of 1765) [168], and North's Lane, Irby upon Humber [176].

2.3.26 The HERs record modern refuse disposal sites in Aylesby [184] and Laceby [183], and three landfill sites in Aylesby [185, 186 and 187]. OS maps record several features, including a sheep wash at Stallingborough (marked on OS maps of 190 -8) [181] and a small park (Aylesby Park) [191] is also shown on OS maps of 1907-10 on t outhwest side of Aylesby, around Manor House Farm.

2.3.27 Several World War 2 military installations are located he northe of the Section (part of the defensive arrangements for Immingham Do including the avy Anti-Aircraft Battery H37 at Immingham Grange [188] (possibly ne b), and a p f designated World War 2 heavy anti-aircraft batteries at Stallingborou rade II* listed) 9], which in 1946 became a Nucleus Force Battery headquarters). er also a 1960s rg d Royal Observer Corps monitoring post at Stallingborough (al designated [19 the wider area a group of closely spaced circular or sub-circular ea orks at Healing Wells Farm, identified on aerial photographs from the ossibly repre t the site of a World War 2 searchlight battery (MNL4346).

Undated Assets

2.3.28 There are several heritage assets th are und ed wh ave been identified as cropmarks, or as a result of rchae ogical ophysica ey or archaeological assessment. It is possible that s of these cou epresent ehistoric to medieval or later occupation. Cropmarks 200 m uthwest of Ba Street re esent a small enclosure and field boundaries of possib medieval to pos dieval ate [197]. Cropmarks 340 m southwest of Manor Farm, A by, suggest the e of an enclosure [683] possibly associat Romano-Briti ottery found nearby. Also near Aylesby are further cropm and tr ys [686] 1 south of Temple Lane suggesting the presence of an un d settlement s Undated d s, pits and a possible palaeochannel have been cted by archaeolog geophysic rvey at Immingham [195] and Stallingborough 94], and a substantial bu dated ditch s recorded during archaeological trial trenching also at Stallingborough [ ]. An undated cropmark south of Gatehouse Farm, llingborough [198] was no cated during construction work for a linear pipeline scheme i 96 (although a large de t of organic sediment was recorded during archaeological inv ations close to the si

2.4 Sectio 3: A46 R ad to Pear Tree Lane

Topography d logy

2.4.1 At the start of Se n 3 the ground level is around the 50m contour, but it falls gradually to the 44m contour west of Scrub Holt Farm and then falls again onto the 28m contour as the pipeline route passes the earthwork remains of a scheduled Civil War earthwork fort (northeast of Walk Farm). Between the A18 road and Waithe Beck, west and south of Barnoldby Le Beck, the ground level varies between the 28m to 41m contour, but it drops down to the 18m contour where the pipeline route crosses the broad valley of Waithe Beck, south of Waltham Road, Brigsley (B1203 road). South of Ashby cum Fenby the ground level rises to the 40m contour as the pipeline approaches and follows the alignment of the A18 but as the route crosses Whites Road and the A16 Louth Road, south of North Thoresby, the ground levels fall to the 21m contour. Between the A16 and the end of the Section at Pear Tree Lane the ground level is between the 21m and 24m contour.

2.4.2 Superficial deposits of Glacial Till covers most of this section; however, alluvium is also present along localised watercourses, including Laceby Beck, Waithe Beck and more extensively around Old Fleet Drain on the south side of Grainsby. Lacustrine and Glaciofluvial Deposits are also present within this section and form smaller localised features (Glaciofluvial Deposits are recorded around Grainsby, and north of Ludborough there are Lacustrine Deposits). Chalk bedrock of the Burnham Chalk Formation underlies the northern end of the Section, although elsewhere it is Chalk of the Welton Chalk Formation (the Welton Formation follows the orientation of th A18 between Aylesby and Brigsley and generally comprises white, massive or thick bed cha

Prehistoric (to AD43) and Roman (AD42-450)

2.4.3 Evidence of prehistoric activity comes from findspot d cropmarks a this Section of the pipeline route. Small amounts of prehistoric flin k omprising s and waste material have been recovered at Irby Upon Humber [199] by cum Fenby [202, 724, 725, 726] and near Grainsby [208]. Neolithic flints (tw lin rapers and nu nt flakes) plus a human tooth were discovered in Hatcliffe, loca in discrete pat that possibly reflect disturbed features [206]. In the wider area prehisto worked flints have also been discovered at Holton le Clay (MLI41238)

2.4.4 There is a possible prehistoric burial mo at Walth that is visib s a subcircular cropmark on aerial photographs (MNL2); and in er area ther is a scheduled Bronze Age round barrow cemetery at ney (visib as l arthworks and cropmarks, below alluvial deposits) [NHLE1469975]

2.4.5 Topographic features such as h s and areas higher gro d may have been attractive to early settlers. A spring locat on Welbeck H west of B noldby le Beck is marked on OS maps of 1887-9 but ma a e been used in prehist c period [203] (see ES Volume IV Appendix 8-1: Historic En ment DBA, Anne e 1) [APP-089]. Similarly, Laceby Beck ma n a valuabl ource from the prehistoric period (connecting Wellbeck Sprin he sou the River hney in the north) [204] (see ES Volume IV Appendix 8- storic Environm DBA, Ann E Plate 11) [APP-089] and also Waithe Beck [205].

2.4.6 possible late prehistor Roman e sure with an opening to the east and a small enclosure at the northwe corner has been identified from aerial photographs at udborough [210]. Another sible late prehistoric farmstead with an associated field em has been identified m cropmarks (located to the west of North Thoresby) (M 7920). Iron Age pottery m a ditch at Ashby cum Fenby is possibly indicative of late Iron activity [209].

2.4.7 There is ence for mor tensive Romano-British occupation and settlement. A possible Roman vill 1] is vis as a cropmark to the west of Barnoldby le Beck. Finds recovered from the site de ide range of material such as brickwork, stone roof tile, a flint core and flakes, wor tone masonry, painted plaster, ceramic roof tile, possible tesserae, possible hypocaust tiles, animal bone, stonework with paint and a large number of grey-ware sherds. At Irby upon Humber a dark soil on the south side of Welbeck Hill has produced Roman finds (abundant animal bone, burnt material and Roman pottery) [219]. The presence of early medieval pottery at the same site suggests that occupation may have extended into later periods. Surface artefact collection, archaeological geophysical survey and archaeological excavations of a cropmark site has revealed evidence of a Romano-British settlement at Hatcliffe [220].

2.4.8 Southwest of Hatcliffe Mill another Roman settlement is suggested by possible building platforms, that are visible on aerial photographs alongside an old road [221], with abundant Roman pottery from an adjacent field. In Ashby cum Fenby a Romano-British pit or ditch

was uncovered during a watching brief in 1995 [212]. Roman material has also been found near Ashby Hill, west of Ashby cum Fenby [213], and Roman coins (together with early medieval and medieval material) have been reported by the Portable Antiquity Scheme near Ashby cum Fenby. An extensive Romano-British field system covering approximately 12 acres, that is associated with a possible vineyard, is visible on aerial photographs at North Thoresby [215]; and pottery that is associated with dark soilmarks at Grainsby may indicate the presence of kilns and a buried cultivation system [217]. The wider area also contains several findspots of Roman material, for example Roman pot y and tile has been found during investigations at Holton le Clay (MLI98910, MLI4 42, M 12

2.4.9 Cropmark features that have been detected in this S tion, but w are undated, could represent evidence for occupation in the prehistoric Roman p io ee below).

Early medieval (450-1066) and medieval (1066- 0)

2.4.10 The pipeline route passes several historic settlements ve their origin the e rly medieval and medieval periods, however, not all settlement ospered, and a number of shrunken and deserted settlements (de-populati aused by social and economic factors). Irby upon Humber (whose hi ric core lies outside of the Site boundary) [115] is mentioned in Domesday y Survey (c. 5) and the Assize Rolls (1202) and likely has early medieval gins. It d ped on patc of high ground around a river-less valley and the settle nt formed o a sub-rectangular road with others radiating away from it, but it app rs that th wa particular focus for dense settlement, instead it contained small c ers of h ses an steads, separated from each other by relatively small di ces.

2.4.11 Barnoldby le Beck also has e medieval ori s and is m ntioned in historical sources (Domesday (1086), the Li e Survey (c.1115 nd the dex to the Charters and Rolls (1202)) [228]. In the post-m al period, it was ulated and mparked. A cluster of farmstea ttages is sho round the parish church at the end of the 19th century, sugg g that i medieval p d there was a dense nucleated core with a tight grid lik attern of road ofts arran along a possible road, suggestive of planned ement, are documen around 25 outh of the church. Two large areas of parkland ere established around 18th to 19t enturies ‘Manor House’ and ‘Oakland House’ (also known as ‘Woodland and ‘The Grange’) which may have involved some re- anisation of the settleme Remains dating to the 13th and 14th centuries have been r ded during archaeologi nvestigations and there are earthworks representing the form medieval extent of set ment to the south of Main Road and Waltham Road (building platfor paddocks and tr ways).

2.4.12 Brigsley i ntioned in mesday (1086), the Lindsey Survey (c.1115), the Assize Rolls (1202) and t dex harters and Rolls in the British Museum (1202). The settlement is formed within a grid-based road system of three north-south roads and two east-west roads with the pa h church roughly central [233]. Areas of historic settlement earthworks survive, including a hollow way to the east of the church which represents an abandoned road. To the east of the hollow way is a post-medieval manorial site, around which appear to be the earthworks of medieval building platforms and house plots now covered by woodland. Archaeological investigations in Brigsley have uncovered evidence of early medieval to medieval occupation (ditches containing Ipswich ware and Northern Maxey Ware) [234].

2.4.13 Ashby cum Fenby is also mentioned in Domesday (1086), the Lindsey Survey (c.1115) and the Curia Regis Rolls (1205). Archaeological investigations have found evidence of 9th to 15th century occupation [235, 227, 225 and 232]. Aerial photographs and historic documents suggest that the settlement comprised dwellings interspersed with garths,

paddocks and crofts. From at least the 19th century the settlement spread to the south of the manor and church. The area around the medieval manor was converted into parkland and formal gardens during the post-medieval period.

2.4.14 Hawerby is an historic settlement known to have existed since the early medieval period [231]. The former settlement pattern is of house platforms and crofts arranged along a single central road, with the church and rectory to the west and a small country house with its associated farmstead to the north.

2.4.15 In the wider area the settlement of Holton le Clay, which is irst d men d in the Domesday Book, contains evidence of medieval settlement (vi e on ae hotographs). Saxon graves have been found during excavations at the ch, inclu ds dating from the mid- to late Saxon period and investigations elsewh in the village e produced late Saxon and medieval pottery and medieval and post-m v eatures (M 552).

2.4.16 The pipeline route passes close to an Anglo-Saxon ceme Welbeck Hill [224] that spreads along a gravel spur projecting from the hilltop (l cate 100m south of of the Site Boundary). The site was discovered as a result of ploug g when the late Gordon Taylor, an amateur archaeologist, discovered a pi e of femur bo a fragment of Anglo-Saxon pottery and animal bone in areas of hile field wal in 1962. The site was investigated by Mr Taylor in the follow years (b een 1962 an 79) and a total of 72 inhumation and 5 cremation burials ere record ree areas: north-south along the hill crest, east-west on the hill's weste slope and depo f cremations on the eastern slope. Finds recovered from the burials i cate a li y date f burials from the mid-5th century to the 6th century and it kely that the metery we ou of use in the late 6th or early 7th centuries. It is possib hat the cemet has not b n fully excavated.

2.4.17 It has also been claimed th o cupation on W ck Hill gan in the Bronze Age with a possible Roman signal statio arby.

2.4.18 Welbec Saxon cem y lies relatively close to other known Anglo-Saxon cem es, includ e c. 2.8k the north at Laceby [687] and another c. 4.7km, n west, at Riby Par 7].

2.4.19 here is evidence of med settlemen d cultivation across this Section with a cluster at and around the settlemen hat had their origins in the early medieval period. Southwest North Thoresby, traces o deserted medieval settlement of Autby [239] have been ified in the northwest co of Autby Park [361], including the cropmarked remains of ridg nd furrow cultivation t are within and next to the Site Boundary [APS_22] (ES Volum V – Appendix 2: Aerial Review and LiDAR. (Document Reference: EN0700 PP/6.4.8.2)) e scheduled remains of the deserted medieval village of Beesby [2 locate tside of the Site Boundary. North of Cadeby Hall (northwest of Ludborough) so of Cadeby Hall are the remains of the deserted medieval village of North Cadeby [2 An early medieval coin [699] is recorded at Irby upon Humber.

2.4.20 Waithe deserted medieval village is located alongside the A16 road (MLI41233), and the shrunken medieval settlement of Grainsby extends either side of Grainsby Lane (MLI41222).

2.4.21 There are several medieval moated sites in this Section, including east of Manor House, Irby upon Humber [254], where a square enclosure is flanked and respected by ridge and furrow. Although potentially a decorative post-medieval moat, a second moated site at Irby upon Humber may prove to be medieval. There is a moated site and other possibly associated features at Hall Farm [255], Ashby cum Fenby. At Barnoldby le Beck an L-shaped fishpond, which is marked on OS maps of 1887-9, is likely to be the remains of another

moated site [249]; and at Ludborough, the Manor Moated site [673] has several earthworks including a rectangular enclosure likely to represent the site of the former manor house.

2.4.22 Aerial photography has identified several areas of medieval/post-medieval ridge and furrow throughout this Section. At Barnoldby le Beck extensive ridge and furrow earthworks almost surround the village core and were preserved in the two landscape parks to the south of the village [251] [APS_30] (ES Volume IV – Appendix 8-2: Aerial Review and LiDAR. (Document Reference: EN070008/APP/6.4.8.2)). A detailed assessment of aerial photographs has also identified an area of ridge and furrow that is partially within a ext to the Site Boundary north of Barnoldby le Beck Park, visible as cropmarked ures [A]. Ridge and furrow is also visible at Welbeck Hill, northwest of Barnoldb Beck [24 PS_32]. At Brigsley, numerous disparate areas of ridge and furrow earthw s [252] s gge at these remains are part of more extensive cultivation systems (a phy al surve dentified linear features which might be the remains of ridge and furrow g with other fi oundaries). In and around Ashby cum Fenby there are also extensi hwork remain idge nd furrow cultivation features visible on aerial photographs om ate 1940s [250 24, APS_25, APS_27, APS_28, APS_30]. Ridge and furrow cu ion features are also recorded at Laceby [253], Hatcliffe [247], Grainsb Grange [244, 2 [APS_23], Hawerby [246] and northeast of Ludborough [242] an arbour Farm dborough Parish) where cropmarked features are visible tially with nd next to Site Boundary [APS_18].

2.4.23 The pipeline route passes several desig ed parish hurche d associated features that are of medieval date (many locate with the his c settlem re areas: Church of St Andrew, Irby upon Humber [257 d Church of Helen, Chu h Lane, Barnoldby Le Beck [266], Church of St Andrew, Be sby [268], Chu of St Hel Brigsley [259], Church of St Peter, Ashby cum Fenby 6 Church of S cholas Grainsby [262], Church of St Margaret, Barton Street, Ha cum Beesby [2 rch of St Helen, North Thoresby [264] an f St Mary, M Street, Ludborough [265].

Po edieval (1 1900) and odern (post-1900)

2.4.24 theast of Irby upon H er and be Welbeck Hill is a scheduled Civil War earthwork rt [303] [APS_33] (ES V e IV – App dix 8-2: Aerial Review and LiDAR. (Document Reference: EN070008/APP/ 8.2)). The 17th century fort comprises a rectangular earthen mpart with projecting bas s at each of its four corners, an enclosing ditch, and a c erscarp bank. It is situat n high ground close to the road from the Humber to Boston and gs Lynn (Barton Stre A18), and within easy reach of the road from Newark to the Humb a Gainsborough msby Road, A46).

2.4.25 The HER ord seve areas of extant historic woodland south of Ashby cum Fenby, including Fe Woo ast) [276] and Fenby Wood (west) [319] (recorded as Cottager's Plat in 1824, a ger's Plot in 1843) which are located next to the Site Boundary; and in the same area d Brat's Plantation [320] and The Holt [321], woodland tracts that are marked on OS maps of 1887-9.

2.4.26 A post-medieval field boundary that is partially within the Site Boundary is visible on satellite imagery between Barnoldby le Beck Park and Waithe Beck [APS_29] and another field boundary that is broadly aligned along the axis of the Site Boundary is visible also as a cropmark feature at Ashby cum Fenby [APS_26].

2.4.27 The OS maps of 1887-9 show two areas of parkland on the south side of Barnoldby le Beck with a northern boundary along Main Road and Waltham Road [282, 283] (see ES Volume IV Appendix 8-1: Historic Environment DBA, Annex E, Plate 2 and Plate 3) [APP-089]. There are also two areas of parkland at Hawerby cum Beesby, including Hawerby Park [322],

which surrounds St Margaret's Church (shown on OS maps of 1887-9), and to the south a large area of dispersed trees, occasionally in groups, indicative of a landscaped park and shown on the OS maps of 1887-9 [323] (possibly an extension of Cadeby Park which is annotated to the south, or parkland for Beesby House which lies at the centre of the landscape). The parkland is still extant in areas where scheduled medieval earthworks are extant [240]). Early 20th century OS maps (between 1906-10) also depict an area of parkland at Oaklands, Laceby [410] and southwest of North Thoresby, Autby Park is marked on OS maps of 1956 [361].

2.4.28 Other miscellaneous features that are marked on O maps a sheepwash at Barnoldby le Beck [284], a post-medieval mill rac Hatcliffe] a sluice [272], a blacksmiths workshop [273] and an unidentified site r Yard') [4] shby cum Fenby. On Brigsley Road there is also a milepost [299], one se at were cted along the turnpike road from Grimsby to Wold Newton, and a de ted post-me l well [356] which may have earlier medieval origins (located next l Farmhouse i hby um Fenby). The 1st edition OS maps (Lincolnshire Series XXX 1887) shows ble pump [659] on the south side of Thoroughfare Lane (south shby cum Fenby) that appears to be within the Site Boundary (feature l depicted as a l)

2.4.29 A gasometer [360] is marked at Oaklands, in ceby, p ibly part of a ate gasworks. At Ludborough the 1st edition OS map (Lin lnshire Se XL.SW, 1888 hows the East Lincolnshire Railway line [661] which w opened in 84 ut was closed to passenger traffic in 1961.

2.4.30 The pipeline route passes seve ravel and ch extractio pits that are marked on OS maps from the end of the 19t ntury (Irby u n Humber 89, 290, 702], Barnoldby le Beck [281], Beelsby [286] atcliffe [287, 4] and hby cum Fenby [271]). A pond/extraction pit [660], th not recorded on HE s shown on the 1st edition OS maps (Lincolnshire Series, 1 located c.115m h of the demolished Fenby Farm [315] l d on the T map of Ashby cum Fenby (1840).

2.4.31 A olished hall an rk at Gra y which covered an extensive area, are marked on OS 1st edition maps]. Grainsby ll was used by the army in World War 2 but after 945 was empty and eve ly demolis in 1973. Possible post-medieval wood banks were identified as cropmark the park [304].

2.4.32 eral demolished post-me val buildings and structures are located within this Section (m y within and surround the historic settlements), including dwellings/houses at Barn y le Beck [302, 27 Brigsley [269], Ashby cum Fenby [292, 275] and Hawerby [318]; a ormer farms/fa teads are recorded on the HERs at Barnoldby le Beck [285], Brigsley [Ashby cu enby [301, 315, 317], Beesby [316] and at Ludborough [368].

2.4.33 The pipeline es numerous extant farms, farmsteads, farm buildings, cottages, homesteads/dw and related features that date to the post-medieval and modern periods within this Section (for example, in Laceby, Scrub Holt [329]; at Irby upon Humber, Walk Farm [330]; at Barnoldby le Beck, New Farm [280]; at Brigsley, Manor House Farm [291]; at Ashby cum Fenby, Moorhouse Farm [277]; at East Ravendale, The Thatched Cottages [381]; at Grainsby, Grainsby Grange [387]; at Hawerby, Pear Tree Cottage [382]; at North Thoresby, Walnut Cottage and adjacent cottage [310]; at Beesby, Hawerby Hall [373]; at Cadeby, Cadeby Hall [314]; at Fulstow, Bonscaupe [365]; and at Ludborough, Cold Harbour [367]).

2.4.34 The Section also contains several extant and demolished chapels of post-medieval and modern date, at Irby upon Humber (Hog Pit Hill) [399]; at Brigsley, a Wesleyan Methodist Chapel [325] and also a Primitive Methodist Chapel on Waithe Lane [328].

2.4.35 There are also several historic roads of post-medieval date (marked on OS maps of 1887-9), although some are likely to have medieval origins (for example, Walk Lane, Irby upon Humber [348]; Main Road, Barnoldby le Beck [341]; Main Road, Beelsby [349]; Waltham Road, Brigsley [338]; Low Road, Hatcliffe [350]; Brigsley Road, Ashby cum Fenby [342]; Beesby Road [352]; Wold Newton [353]; and Hawerby Road [354].

2.4.36 The pipeline route crosses a number of historic civil parish boundaries, including boundary between Irby upon Humber CP and Barnoldby le Beck CP east of Welbeck Spring (boundary formed by Laceby Beck) [204]; boundary between rnoldby le Beck CP and Ashby cum Fenby CP at Waithe Beck (west of Brigsl [205]; ry between Ashby cum Fenby CP and Grainsby CP (marked as a fie boundary e OS maps) [635]; boundary between Grainsby CP and North Thoresby south of ai Grange (marked as a field boundary on the OS maps) [636]; bounda etw n North resby CP and Ludborough CP south of the former Autby House an by Park (ma d as a field boundary on the OS maps) [637]; and boundary betwe orough CP an terby CP is crossed at Pear Tree Lane [638].

2.4.37 Several hedgerows marked on tithe maps may be regarded as im tant under the historic criteria set out in the Hedgerow Regulations as part of a fiel tem pre-dating the Enclosure Acts [H20 – H30].

2.4.38 There is a World War 2 searchlight battery nd possible and post at Ashby cum Fenby visible on aerial photographs [400].

2.4.39 At Irby Upon Humber there is a grade II li d Worl War 1 war ial [414] at the Church of St Andrew, Church Lane.

2.4.40 This Section of the pipeline ro e also passes rious oth features that are of modern date, including several lan es at Irby upon ber 3, 698] and at Beelsby [394].

Undated t

2.4.41 The tion conta veral und cropmark features (enclosures and linear features) w could belong to period (p toric to modern), including at Irby upon Humber nt cropmarks indicatin possible s ctangular enclosure and trackway, [416]).

2.4 Undated, possible prehistor nclosures have been identified in Ludborough Parish within e Site Boundary (west of t 16 road) [APS_21], at Damwells Farm [APS_20], at Cold our Farm [APS_19] an outh of Station Road [675] [APS_17] (ES Volume IV – Ap dix 8-2: Aerial Review d LiDAR. (Document Reference: EN070008/APP/6.4.8.2)).

2.5 Secti 4: Pear ee Lane to Manby Middlegate (B1200)

Topography d g ogy

2.5.1 Between Pear T ane and Louth Road the ground level is gently undulating at between the 24m to 17m contour, although lower where the route crosses the floodplain of Poulton Drain and its tributaries, west of Covenham St Mary (10m) and Yarburgh Beck/Black Dike (12m), southwest of Yarburgh. From Alvingham Road the ground level drops to the 9m contour where the route crosses the Louth Canal/Navigation and River Ludd, between Alvingham and North Cockerington. Between North Cockerington and South Cockerington the ground rises slightly onto the 13m contour, before dropping again onto the 7m contour to the east of South Cockerington, and between here and the end of the section at Manby Middlegate (B1200 road) the topography is low lying and relatively flat at between the 7m and 4m contour.

2.5.2 The superficial geology in this Section mostly comprises Glacial Till. Alluvium is also present along localised watercourses, including Poulton Drain catchment area (western side of Covenham St Mary), Yarburgh Beck/Black Dike and its tributaries (south of Yarburgh) and more extensively around Louth Canal and the River Ludd, to the south of Alvingham. East of South Cockerington the pipeline route crosses Pock Hill Lane and runs along the interface of an area that comprises Glacial Till and Tidal Flats Deposits. The bedrock geology in this Section comprises Chalk of the Welton Chalk Formation, although the pipeline route crosses into the Ferriby Chalk Formation to the east of Brackenboroug

Prehistoric (to AD43) and Roman (AD42-450)

2.5.3 The Site Boundary in this Section cross the edge of ow-lying horpe Outmarsh in an area where there are few known heritage assets o ehisto ic or Ro date. Probable Bronze Age barrows have been identified as crop k at Alvingha 530] and at Keddington [706]. Possible enclosures have also been id ed at Kedding [707, 708]. The walkover survey identified three isolated lithic frag nt likely prehistor t ar Covenham [727, 728, 729]. In the wider area prehistoric flintw as been found outh Cockerington (MLI81617, MLI43242). A probable ring ditch detected during an archaeological geophysical survey at South gton (MLI11 6), and a possible Bronze Age barrow has been identified on al phot phs south of venham St Mary (MLI87809), but these assets are situated utside the S oundary.

2.5.4 A possible Iron Age ‘banjo’ enclosure is v ble as a c mark ure partially within the Site Boundary to the south of Louth Canal eddingt Parish) 12] (ES Volume IV – Appendix 8-2: Aerial Review an DAR. (Docum t Referen EN070008/APP/6.4.8.2)).

2.5.5 Find spots and features of Rom n date are abs from this ection of the pipeline route.

Early medieval (450-106 d medieval (15)

2.5.6 The histo ents of Cov m St Bartholomew, Covenham St Mary, Yarburgh, North End gham, Cockering South Cockerington, Keddington and Grimoldby were lik ounded in the medieval edieval periods, and all are documented since the dieval period. The s ments are n associated with ridge and furrow and other ettlement related feature rofts, tofts d former field boundaries and lanes), which extend beyond their histor ore areas, and which are visible on aerial photographs venham St Bartholomew LI87811), Covenham St Mary (MLI87807, MLI87808) and rgh (MLI87851)).

2.5.7 The eduled earthwork d buried remains of the deserted medieval village of Bracke ough are locat .1 km west of the Site Boundary [437].

2.5.8 The histor ttlemen North Cockerington [420] is first documented in Domesday. Medieval sett nt ains (trackway, ponds, enclosures, ridge and furrow, field boundary, boundary bank rofts) are visible as cropmarks and earthworks around the present village. Archaeological watching briefs have recorded evidence of medieval and later occupation which are likely associated with the earthworks and cropmarks. Features associated with the settlement were visible from the detailed assessment of aerial photographs, but the remains lie to the north of Red Leas Lane and outside of the Site Boundary [APS_10].

2.5.9 Between Meadow Lane and Red Leas Lane, on the south side of North Cockerington, there is a scheduled medieval moated site (rectangular enclosure surrounded by a ditch) [421].

2.5.10 South Cockerington (MLI43243) [422] is first documented in Domesday and it probably has its origins in the Anglo-Saxon period. The regular road layout is possibly the result of deliberate planning. Earthworks associated with medieval settlement (crofts and trackways)

have been identified and archaeological watching briefs have recorded evidence of medieval occupation.

2.5.11 Keddington is also first recorded in the Domesday book and is listed as being owned by the Bishop of Durham and Rainer of Brimeux. Based on the size of the settlement and the etymology of the name it is likely that the settlement originated in the early Anglo-Saxon period. A medieval earthwork moat, enclosures and ditches are recorded near the village [709], as are earthworks of ridge and furrow visible on aerial photographs [713] [APS_12].

2.5.12 In the wider area, extensive earthworks have been n ed in d a nd the village of Alvingham (MLI41254) (tofts, crofts and strip fields), s ading ou m the present village core. Other features include enclosures, linear featu a bound oundary bank and a pond.

2.5.13 Several areas of medieval/post-medieval ridge and furr ve been iden d within and surrounding the historic settlements, at Alvingham (M 6 MLI116055) 22], N rth Cockerington [423, 424, 425, 429] [APS_9] (ES Volum IV pendix 8-2: Ae ew and LiDAR. (Document Reference: EN070008/APP/6.4.8.2)), uth Cockerington [426, 427, 428] [APS_8], Keddington [435] and Grimoldb [436]. The crop ked remains of ridge and furrow are also visible on satellite imag the Site Bou ry at Grove Farm (Utterby Parish) [APS_16] and at Grange F (Bracke ough with Li Grimsby Parish) [APS_15].

2.5.14 A possible medieval water channel [433 visible o erial p graphs between the River Lud and the Louth Canal, north of Kedd ton Co r Farm, eddington and there is a former medieval/post-med windmill und alon ide Marsh Lane, South Cockerington [440].

2.5.15 There are a sparse numbe f d spots of med dat cluding a medieval cauldron or skillet found at North Cockeri [434].

2.5.16 The p sses seve designated abbeys, parish churches and associated fea s which were tructed in medieval period (many within historic settlement s, including: Churc St Andrew terby [441], Church of St Bartholomew, Village treet, Covenham St Bar omew [447 hurch of St Mary, Covenham St Mary [445], Chuch of St John the Baptis arburgh [443], Church of St Mary, Fotherby [439], Church of Adelwold, Abbey Lane, A gham [448], Church of St Mary, Abbey Lane, Alvingham [Church of St Edith, Ma treet, Brackenborough with Little Grimsby [438], Church of St garet, Keddington [45 Church of St Leonard, South Cockerington [535], Louth Abbey 0], Church of St th, Tinkle Street, Grimoldby [450] and Church of St Peter, Saltfleet t Peter [454]

Post-medi (150 900) and modern (post-1900)

2.5.17 The 1st editio maps (Lincolnshire Series XL.SW, 1888) depict a possible pond/extraction pi [662] northeast of Pear Tree Farm and within the Site Boundary. In the same general area, the Tithe map of Utterby (1839) also depicts a possible tract of former heathland fen (identified as ‘furze’) together with several rectangular features (possibly ponds/buildings and a north-south aligned trackway along the western side) [663]. In the fields between Utterby and Yarburgh the same tithe map also depicts a demolished homestead (house and garden, stackyard and buildings) [665] to the south of Utterby Beck and c.50 m west of the Site Boundary.

2.5.18 A post-medieval field boundary that is partially within the Site Boundary is visible on satellite imagery next to Brackenborough Road (parishes of Alvingham, Keddington and

Brackenborough with Little Grimsby) [APS_14] (ES Volume IV – Appendix 8-2: Aerial Review and LiDAR. (Document Reference: EN070008/APP/6.4.8.2)).

2.5.19 The pipeline route crosses the historic Louth Navigation [525] between Alvingham and North Cockerington. Construction of the canal began in 1767 and linked inland Louth with coastal Tetney. A small inland port developed at Louth and the canal remained open until the 20th century (canal closed to navigation in 1924). This Section contains several designated (listed grade II) historic canal locks of red brick and ashlar lime tone construction, including Ticklepenny Lock TF 351889 [455] and Willows Lock TF 3 92 [456] at Keddington; Alvingham lock and inverted syphon [471] and Salter F ck at am [472]. At Abbey Lane, Alvingham, there is a designated 18th centur atermill [5 longside Alvingham Mill Stream, presumably diverted from the River Lud uth Navig ion

2.5.20 There are a number of existing post-medieval Meth t apels, incl g South End Primitive Methodist Chapel, North Cockerington [483] the United M odist Free Chapel, South Cockerington [484].

2.5.21 There are several demolished farms/farmsteads of post-me al to modern date at Brackenborough [508], North Cockerington [497] South Cockerin [492, 493 494] and at Grimoldby [512, 513, 503].

2.5.22 The pipeline route also passes numero extant far ads, farm b ngs, cottages, dwellings and related features of post-m eval to mo rn (many identified as a result of the Lincolnshire Farmstead Mapping ject), inc ing at rby Pear Tree Farm (Pear Tree Lane Barn) [487]; at Covenh m S artholo w, Mill H 521]; at Covenham St Mary, (Gowt Farm) [489]; at urgh, Wes ld House 480]; at Fotherby, Allenby Almshouses [465]; at Little G sby, Little Gri by Grange 504]; at Alvingham, Grange Farmhouse [481]; at Brack bo ough, Little Gri y Hall [4]; at North Cockerington, The Old Farmhouse [477]; at Ke ton, Abbey Farm 19]; at South Cockerington, The Almshou at Grimold Eastfield Farmhouse [474]; and at Saltfleetby St Peter, Tumb wn C [524]).

2.5.23 A junction of Lout d, Red L Lane, School Lane and Mill Hill Way on the south e of North Cockeringt e OS 1st on maps (Lincolnshire Series XLVIII.SE, 1888) depicts and labels three b ngs of poss le late 19th century date that are close to the ite Boundary and that are extant: White Hart Inn and post office [666], a smithy [667] an un-named homestea welling [668]. The 1907 OS map labels a post office at the sa location next to the inn obably part of the same building as the inn).

2.5.24 A fiel osite White Hart is recorded on the Tithe map of North Cockerington (1844) as ‘Bric Close’ [669] ggesting a possible link to local rural industrial activity. The pipeline ro asses ge post-medieval mill mound [453] at North Cockerington that is next to an are ri and furrow. (The mound was originally identified as a burial mound (tumulus) on ea maps).

2.5.25 The pipeline route crosses historic civil parish boundaries in this Section, including the boundary between Utterby CP and Brackenborough with Little Grimsby CP at Ings Lane [639]; boundary between Brackenborough with Little Grimsby CP and Alvingham CP [640]; boundary between Alvingham CP and North Cockerington CP at the River Lud [641]; boundary between North Cockerington CP and South Cockerington at Louth Road [642]; boundary between South Cockerington and Grimoldby CP at Grayfleet Drain [643]; and boundary between Grimoldby CP and Manby CP at Manby Middlegate (the B1200 road) [644].

2.5.26 Several hedgerows marked on tithe maps may be regarded as important under the historic criteria set out in the Hedgerow Regulations as forming part of a field system pre-dating the Enclosure Acts [H31 – H34].

2.5.27 The pipeline crosses a demolished railway line of post-medieval to modern date (Great North Railway, Mablethorpe Branch line, marked on OS maps from 1888: Lincolnshire Sheet XLVIII.SE) northeast of Eastfield Farm, Grimoldby, which is visible as a field boundary/trackway/soilmark (Google Earth images) (part of th same line is also visible at Theddlethorpe All Saints) [608]. This Section contains tw World War 2 anti-aircraft obstructions at Grimoldby which are part of a larger ne k of s atures constructed to deter an invading landing force [526, 527]. At Cove am St Bar mew and Grimoldby there are war memorials dedicated to the fallen of W War 1 a W War 2 which are designated heritage assets (listed grade II): Covenham Bar lomew W Memorial [529] and Grimoldby War Memorial [528].

Undated Assets

2.5.28 There are several undated enclosures visible as cropmarks on ial photographs which have been found at North Cockerington (possib moated site) 31] and near South Cockerington [532, 534]. Undated linear crop also visible a imoldby [533]. An undated (possible prehistoric) rectilinear e sure is v on aerial ph graphs and lies partially within the Site Boundary, north Louth Can (gham Parish) [APS_13] (ES Volume IV – Appendix 8-2: Aeria eview a LiD (Document Reference: EN070008/APP/6.4.8.2)).

2.6 Section 5: Manby M ddlegate B1200) o Theddlethorpe and Mean Low W t r Springs

Topogra d geology

2.6.1 Gro evels thro t Section generally flat and around the 3m to 4m contour as th peline route cros he coasta and area.

2.6.2 he superficial geology c ring most is Section comprise Tidal Flat Deposits but ncludes, at the northern e small areas of Glacial Till immediately south of Manby ddlegate road (B1200). T northern end of this Section is underlain by Chalk of the n Chalk Formation and n Chalk of the Burnham Formation from east of Walk Farm, Gr arlton to the end of th Section.

Prehis c (to AD43) a Roman (AD42-450)

2.6.3 This Secti the pip e route is located on the low-lying Mablethorpe Outmarsh area where there w wn heritage assets of prehistoric or Roman date. A prehistoric flint scraper [536] w nd between Two Mile Bank and Pyewipe Farm during archaeological monitoring for the Maltby le Marsh to Manby Replacement Water Main.

2.6.4 Archaeological watching brief near Walk Farm, Great Carlton recorded evidence of a Romano-British field system and occupation remains [537] [APS_02] (ES Volume IV – Appendix 8-2: Aerial Review and LiDAR. (Document Reference: EN070008/APP/6.4.8.2)) suggesting the possible presence of a nearby settlement (ditches, gully, hearth, pit, pottery and possible industrial activity). A sherd of Roman pottery was found during archaeological monitoring at Gayton le Marsh [538].

Early medieval (450-1066) and medieval (1066-1500)

2.6.5 There is extensive evidence for medieval settlement and cultivation within this Section of the pipeline route. Northeast of Great Carlton the route passes the remains of a medieval field system and settlement at Walk Farm [548] [APS_02]. Here the remains sit on slightly higher ground above the neighbouring enclosed fen that forms the marshland parish (features visible on aerial photographs include crofts, tofts, building platforms, a moat, ridge and furrow and a linear boundary feature). An archaeologica geophysical survey (2003) identified a series of archaeological anomalies, including lin and ectilinear features (possibly representing field systems and/ enclosu and l pit-like features (represented by burning or possible domestic umping). ng a subsequent archaeological watching brief (Maltby le Marsh to M by Replac me Water Main) ridge and furrow was recorded and a sherd of medieval po N to the m val settlement a boundary earthwork is also visible on aerial photograph 6]. Within the r area there is also an undated earthwork north of Walk Farm tha d be part of th ettlem nt (MLI88283).

2.6.6 An area of historic settlement is documented at Theddlethorpe Saints [539] which is mentioned in Domesday (although there is no n between T dlethorpe All Saints and Theddlethorpe St Helens) and remains he set nt have bee ntified on aerial photographs (enclosures and a moat). P ttery from dlethorpe Al aints suggests possible early medieval/medieval occup on west of abl rpe Road [540] and near to Railway Farm [541]. A possible late Saxo medieval mstea also been recorded next to Station Road [542]. A medieval oated ite kno as 'Kele a as found in 1956 along Grove Road [547]. Between Sla arm and Wi ow on the w stern side of Theddlethorpe All Saints more remains of li y medieval se ment hav been found (cropmark and earthwork remains of tofts d trackway visib n aeri photographs next to the Great Eau) [543]. Also, north of Wil w and alongside at Eau there are more cropmarks and eart res (includ he remains of tofts) [544] [APS_06] (ES Volume IV – Appe 8-2: Aer view and L R. (Document Reference: EN070008/APP/6.4.8.2)).

2.6.7 A heddlethorpe St H there is e nce of medieval settlement and cultivation (tofts d ridge and furrow) eith de of Mabl rpe Road (A1031 road), extending as far south as Carlton House [545] [AP 5]; and also next to Dicote House (cropmark and earthwork mains of enclosures and to [546].

2.6.8 A of medieval/post-medi ridge and furrow have been identified associated with the evi e of settlement activ ncluding at Pyewipe Farm, Gayton [550] and either side of Statio ad [617] [APS_0 n the wider area, cultivation earthworks are also recorded at Theddle e All Saint ongside Highgate and east of Highgate Farm, (MLI88216). Extensive a of rid nd furrow are also present at Theddlethorpe St Helen [562] and either side of e pe Road, [549 [APS_06], 551, 552, 554, 555]. West of Mablethorpe Road there are o linear and pit-like features (recorded during archaeological monitoring) that are undated, but which could belong to this period [614, 615, 616].

2.6.9 Medieval pottery has been found at Gayton le Marsh during surface artefact collection for a linear scheme [557], and a medieval candlestick was found during drainage work on the edge of Long Eau at Dowsey Fen [558] and these could be related to the medieval settlement near Walk Farm. Several pieces of medieval pottery were also recovered during an archaeological watching brief close to the former Theddlethorpe Gas Terminal [559].

2.6.10 A probable medieval salters' route [561] follows the parish boundaries between Gayton le Marsh and Great Carlton that corresponds to an earthwork that is recorded (as Two Mile Bank) on the 1st edition OS map of 1888.

2.6.11 The pipeline route passes several designated parish churches (listed grade I and grade II*) and associated features which date to the medieval and post-medieval periods (for example, Church of All Saints, Louth Road, Theddlethorpe All Saints [565] and the 14th century Church of St Helen, Main Road, Theddlethorpe St Helen [564].

Post-medieval (1500-1900) and modern (post-1900)

2.6.12 A post-medieval field boundary that is partially within the Site Boundary is visible on satellite imagery north of Walk Farm (Great Carlton Parish) [APS_04].

2.6.13 This Section of the pipeline route contains several de ished armsteads of post-medieval to modern date, including at Saltfleetby [58 585, 586] by [598], Gayton le Marsh [602] and at Mablethorpe and Sutton [599].

2.6.14 The pipeline route passes a post-medieval pumping io [568] and erous extant farms, farmsteads, farm buildings, homesteads/dwelling d related featu that are of post-medieval to modern date (many identified as a r lt he Lincolnshir rm d Mapping Project) (for example, at Saltfleetby St Peter, Poplar m [583]; at Ma ear Trees Cottage [570]; at Great Carlton, Lordship Farm [596]; at G n le Marsh, Gayton le Marsh Grange [576]; at Theddlethorpe All Sain Farmhouse [ ]; at Theddlethorpe St Helen, Ashleigh Farm [580]; and at Mabl rpe a utton, Sand Farm [600]).

2.6.15 The pipeline route crosses several histo civil parish aries, includ ng the boundary between Manby CP and Saltfleetby CP a reen Lan sout t of Saltfleetby (marked by a field boundary) [645]; the boundary be en Sal etby CP Great Carlton CP (Long Eau watercourse, north of Walk m) [6 6]; the undary be we n Great Carlton CP and Gayton le Marsh CP at Two M Bank (east o alk Farm) 61]; the boundary between Gayton le Marsh CP and Thed ethorpe All Sai CP (Gre Eau/Old Engine Drain) [647]; the boundary between The horpe All Saints and eddlethorpe St Helen CP (Mill Road) [648]; and the boundar ween Theddleth St Helen CP and Mablethorpe and Sutton nk, east of er Theddlethorpe Gas Terminal) [649].

2.6.16 Se l hedgerows m d on tithe s may be regarded as important under the historic ria, set out in the He ow Regul s as forming part of a field system pre-dating the nclosure Acts and shown Great Carlt arish tithe map [H35] (‘Willow Row Bank’) and n Gayton le Marsh parish (9 tithe map) [H36 – H38].

2.6.17 pipeline crosses a de shed railway line of post-medieval to modern date at T lethorpe All Saints, the eat North Railway, Mablethorpe Branch line [608] (marked on O aps from 1888: Lin nshire Sheet XLIX.SE & XLIXA.SW), which is visible as a soilma

2.6.18 Military de sites h been constructed along the coastline since at least pre-Viking times (Old Sk es ich has been lost to the sea may have been a Roman walled site and part of the S Shore Fort system and placenames suggest that look-out places were sited along the co st in the Anglo-Saxon period). Medieval defensive earthworks and post-medieval coastal beacons were added in subsequent periods. From at least the mid-19th century defences were upgraded as a result of the threat of French invasion and during World War 2 these were significantly improved.

2.6.19 Although much of this military infrastructure was removed/decommissioned in the subsequent post-war years, elements are recorded on the local authority HERs and are still visible within the landscape. There are several World War 2 aircraft obstruction sites which are visible on aerial photographs, including at Theddlethorpe All Saints [612] and at Theddlethorpe St Helen [613]. Assessment of aerial photographs has also identified other sites in the same area, including between Two Mile Bank and the Great Eau (Gayton le

Marsh Parish) [APS_01] (ES Volume IV – Appendix 8-2: Aerial Review and LiDAR. (Document Reference: EN070008/APP/6.4.8.2)) where the features lie partially within the Site Boundary; and at Mablethorpe [APS_03] where the features are beneath a holiday camp. Undated buildings, which are possibly part of World War 2 defensive structures, were also identified on the beach northeast of Theddlethorpe Gas Terminal [APS_07]. These are part of a larger group of former coastal defence installations in the wider area (pillbox and gun emplacements (MLI43272); anti-aircraft pillbox (MLI125949, MLI125950); aircraft obstructions (MLI88212); and the possible site of a World War store (MLI43393)).

Undated Assets

2.6.20 The pipeline route passes other features which are visible o l photographs, but which remain undated. These include linear feature Theddlethorp l Saints, on the eastern side of the Great Eau [619] and close to the r f the villag 21]; and two enclosures at Theddlethorpe St Helen [622, 626].

2.7 Archaeological Research Agenda

2.7.1 This section outlines the proposed Archaeologi search Agen hich underpins the mitigation programme and the methodo es t e deployed the Proposed Development. The Proposed Developme presents a able opportu to examine a transect through the landscape of northe and easter in shire on a regional scale and to enhance our understanding of the d lopment this l cape, its use and re-use through time, from early prehistory to the esent .

2.7.2 The Archaeological Research enda is draw from the emes contained within the regional research framework night et al., 2) (**Table -1**). However, new research themes and period based q ns may emerge velo as a result of consultation with the Archaeological Contractor ecialists) as a res on-going evaluation surveys which are bei t along the te of the pipeline and during preparation of the post-exc on assess report. Th re, the provisional research themes and questions p sed at **Table 2-** be review refined and updated during preparation of each WSI.

Table 2-1: Provisional Arc ological Research Agenda Topics

Research question	Reference (Knight et. al., 2012)	Research objective
Palaeolithic period (c.950/85-kya to c.9500 cal BC)		
How may studies of fauna, pollen and other organic material from palaeochannels […] and other deposits refine our understanding of the evolving environment, and how may this have varied spatially?	Pleistocene environmental change: 1.5.2	1H
How can we elucidate further the archaeological potential of the submerged landscapes of Doggerland?	Gener eme 1.6.3	
Mesolithic (c.9500 to c.4000 BC)		
How were sites distributed across low-lying and upland areas, and in particular how many sites might be concealed bene alluvium, colluvium and other mas g deposits or beneath the sea?	distribution activity 2	2B, 2C, 2D, 2G, 2I
What range of structural r ins may survive on open-air sites acro the region (particularly below allu m and other masking deposits)?	Id tification site t s: 2.3.3	2B, 2C, 2G, 2I
Wh n analy f palaeoch el fills a other deposi ith poten for served pollen, ch al and r organic remains contribu studies of earliest stages of woodlan earance and ant domestication?	Environmental change & food procurement strategies: 2.6.1	2A, 2H, 2I
H an we maximise t potential of pala annels or coasta ats and other organic ich deposits sources of data on Early olocen andscapes and changes in s t strategies and diet?	Environmental change & food procurement strategies: 2.6.2	2A, 2H, 2I
Neolithic, Early to Middle Bronze Age (c.4000 to 1150 BC)		
To what extent may hunter-gatherer subsistence traditions have continued into the Neolithic?	Continuity of hunter-gatherer traditions: 3.2.1	3E, 3I
How may environmental sampling strategies assist in elucidating the transition from later Mesolithic to earlier Neolithic economies?	Continuity of hunter-gatherer traditions: 3.2.3	3E

Research question	Reference (Knight et. al., 2012)	Research objective
When was the transition from nomadic to semi-sedentary and sedentary communities and to what extent did this vary in different landscapes?	Introduction, character & development of agriculture: 3.3.1	3A, 3E, 3I
How may the region's remarkable variety of upland, lowland and coastal landscapes be surveyed in ways that would permit recognition of significant intra-regional variations in land use?	Exploitat o landsc zones: 3	D, 3E
Can we identify locations with a high potential for elucidating variations in arable, pasture and woodland cover between ecological zones (e.g., palaeochannels)?	Exploitat n of landscape zones 4 2	3D, 3E,
Can we further refine our knowledge of selective use of particular landscapes r ritual, agriculture and other activities?	Exploita of landsc e z 3.4.3	3 3F, 3G
Can we obtain a clearer und anding of temporal and spatial varia ity in the duration of settlement ac ?	S ement atterns: 3 2	3A
Late Br ron Age (c. BC to AD 43)		
H can we expand knowledg first lennium BC activity eas with a r ecord of settlement?	Site visibility, prospection & landscape exploration: 4.2.3	4C, 4I
are sites of this period mparatively ra the archaeological re d?	Late Bronze Age & Early Iron Age settlement: 4.3.1	4A, 4B, 4C, 4I
How may leated other settlements have develop in Roman period?	Late Iron Age settlements: 4.5.3	4E
Can we shed further light upon the development of field and boundary systems?	Field systems & major linear boundaries: 4.6.1	4C, 4F
What roles may wet, and other natural locations have performed and how might these have changed over time?	Ritual & structured deposition & religion: 4.7.2	4H, 4J

Research question	Reference (Knight et. al., 2012)	Research objective
Can we chart more closely the processes of woodland clearance and agricultural intensification, their impact upon alluviation and colluviation, and variations between different areas?	Agricultural landscape & landscape: 4.8.1	4C, 4F, 4J
How may diet and land-use have varied over time and between different ecological zones? Can we identify specialist pastoral zones and elucidate coastal resource exploitation strategies?	Agricu al landsc & lan pe: 4.8.2	4C, 4F, 4J
How can we add to our existing knowledge of industries and crafts in this region, particularly the extraction and smelting of iron and lead, salt production and quer manufacture?	Finds, craft, ind & exchange: 4.9.1	4C, 4G
Romano-British (AD 43 to c.410)		
How did the Conquest impa pon rural settlements and landscapes?	R al s lement p erns & la scapes: 5	5C, 5H, 5I
How di tlements re to each oth d to tow d military s and h may this have d region and er time?	Rural settlement patterns & landscapes: 5.4.3	5B, 5C, 5H, 5I
How did field and boundar stems relate earlier systems of land otment, and did these boundary ne rks develop ov me?	Rural settlement patterns & landscapes: 5.4.4	5C, 5H, 5I
What p rns can be cerned in the location o lement the landscape?	Rural settlement patterns & landscapes: 5.4.5	5H, 5I
How is the upland-lowland divide manifested in the regional agricultural economy and other aspects of the archaeological record?	Agricultural economy: 5.5.1	5E, 5H
How did integration into the Roman Empire impact upon the agrarian economy, including the introduction of new crops, herbs and fruits?	Agricultural economy: 5.5.2	5E

Research question	Reference (Knight et. al., 2012)	Research objective
Can we chart more closely the processes of agricultural intensification and expansion and the development of field systems?	Agricultural economy: 5.5.4	5C, 5E, 5H, 5I
What production techniques and exchange networks were involved in the manufacture and marketing of salt and building materials?	Artefacts: pro tion, distributi & a identif 6.4	5B, 5J
To what extent may communication routes have been influenced by Late Iron Age settlement patterns and routes of movement?	Roads erways: 5.7.3	5G 5J
Early Medieval (c. AD 410 to 1066)		
Can we identify social/political boundar (e.g., surviving linear earthworks d natural barriers) and /or estate centres	Demogr & the identifi ion social grou 6.1.7	6 6G, 6I
Can 'sub-Roman' or 'British' ce eries and cemeteries dating from the la seventh to ninth centuries be identifi	R al and beli 6.2.2	6B
What r rivers hav ayed as corri for th ment of g ds and p e, and how m hese hav ried er time?	Roads & rivers, transport routes and cultural boundaries: 6.3.3	6H, 6I, 6J
What impact may manic and candinavian immigration e had upon l settlement patterns?	Rural settlement patterns: 6.4.1	6C, 6G
Can elucidate the duction and distribu of Early Med l salt?	Industry, trade & the emergence of a monetary system: 6.6.3	6H
Medieval (106 85)		
How can we shed further light upon the origin and development of dispersed hamlets and farms in champion and pastoral areas?	Rural settlement: 7.2.2	7E, 7I
Can we clarify further the processes of settlement desertion and shrinkage, especially within zones of dispersed settlement?	Rural settlement: 7.2.4	7E, 7F

Research question	Reference (Knight et. al., 2012)	Research objective
Can we improve our knowledge and classification of moated sites in the region, and how can environmental data add to our knowledge?	Manors & manorial estates: 7.3.3	7F
What can we deduce about changes in woodland management and animal or crop husbandry (including new crops, crop rotation, field systems, etc.)?	Agrarian ndsca & food-p ucing econo 7.7.3	F, 7I
What can environmental remains teach us about diet and living conditions in rural and coastal communities?	Agrarian cape & food-pro cing economy: 7.7.4	7F
How best may we enhance study of the origins and development of early lan reclamation and drainage?	landscape ood-pr ing econom 6	7E
Post-medieval and Modern (1485 to pr nt)		
How can we improve our und anding of the early landscapes of e osure and improvement and the t relationship between arable, pastu woodland, commo te?	A cultural lan scapes & he food- oducing e omy: 8 1	8E
H did water m ement an and ainage change the la ape during s period?	Agricultural landscapes & the food-producing economy: 8.3.2	8E
an we enhance our unde nding of the ses of the rural poor?	Rural settlement patterns & building traditions: 8.4.1	8A, 8C
How c e refine our wledge of Civil War defen and sie works?	Battlefields & fortifications: 8.7.2	8J
What linear tr t features, river/canal craft and assoc ated structural remains have survived, and how does this vary regionally?	Transport infrastructure: 9.4.1	9D
What roles have different transport systems played in the development of industry, commerce, agriculture and settlement?	Transport infrastructure: 9.4.2	9D

Research question	Reference (Knight et. al., 2012)	Research objective
How has the relationship between linear transport systems developed over time (e.g., shift from canal to rail transport)?	Transport infrastructure: 9.4.3	9D
What survives of country estates, parks and gardens, how are they distributed, and how should they be classified?	Estates, parks, dens & woodl s: 9.5	9H
What was the impetus for the development of estate farming and rural agricultural industries, and what has been the landscape impact?	Agricu : 9.6	
How did Parliamentary enclosure and other agricultural improvements (e.g., water management) impact upon the rura landscape?	Agriculture: 9.6.2	9G
How are military sites distributed acros e regions?	Milita sites: 9	9H

2.7.3 Recently, several new res themes related land pe evolution on the Outmarsh have been proposed by Gree reen, 2023: Sect Directions for future research):

- A tions into, d monitoring of, the submerged and buried fragments he pre-inunda andscape crops that occur on the coastline itself appear to have suffered consi bly from e n and loss in recent times);

  Further borehole/auge d geoarchae logical surveys to add to the knowledge of landscape evolution ove me; and

  Studies that use intertida d offshore data.

2.7.4 The igation programme an also contribute to technical research development. Geoph l survey inform n has been collected across the Site and a programme of extensive l trenching also on-going: the mitigation phase offers the opportunity to further colla d as this survey information, especially where subsequent excavation evidence beco ilable.

3 Strategy for Archaeological Mitigation

3.1 Introduction

3.1.1 In accordance with National Policy Statements and National Planning Practice Guidance, the design of the pipeline route has been developed to mitigate impact upon archaeological remains. Wherever possible, the impact of the Proposed Devel ment upon archaeological resources has been minimised or avoided through design Dur he d ailed design stage and the construction stage priority will be given he pre on/conservation of archaeological remains within the Order Limits. Whe voidance ins is not possible, measures will include protection of remains within orking ar as preservation of archaeological remains that are required to be covere e mporarily, in temporary construction compounds or beneath temporary roads sections 3.4 3.5 of this document).

3.1.2 In respect of archaeological remains within the footprint of the posed Develop ent, a comprehensive programme of archaeological mitigation fieldwo nd recording will be implemented by the appointed Archaeologi ctor during Pre-construction Activities and Construction Works stages his will ude archaeo cal excavation, recording, reporting, publication, and di emination results to a wide audience, including engagement with local comm ties. The chae ical mitigation programme will address the Archaeological Researc genda e sect 3 of this document) and will be undertaken to a high pra able standar mitigatio applying a question-based research strategy. The quest led approach ill aim to ontribute to the corpus of archaeological research and u erstanding to gate the l s of archaeological remains.

3.2 Scope of Archaeol ical Mitigation

3.2.1 The aeologica gation req ments will apply (to the extent necessary, including in ry standard pra and contr easures for environmental impacts arising during relevant works) to t reas and ks required for construction of the authorised development.

3.2.2 llowing construction of th peline the ground will be reinstated and the land will be ned to its previous use. re would be no impacts on buried archaeological remains du the Operation phase commissioning activities will take place in relation to the abov und installations o as the below-ground pipeline infrastructure would be left in situ onc eration cease s such there would be no further impacts on archaeology and heritage re ors in re n to Decommissioning of the pipeline element of the authorised development ns ently, as noted above (paragraph 1.1.11), no archaeological mitigation is pr d in respect of the Operation or Decommissioning stages of the authorised development.

3.3 Phasing of Archaeological Mitigation

3.3.1 Most of the archaeological mitigation fieldwork will be undertaken by the Archaeological Contractor during the Pre-Construction Activities stage of the construction programme. The Contractor(s) appointed to undertake the construction ('the Contractor') will produce a Construction Environmental Management Plan (CEMP) (based on and incorporating the requirements of the Draft CEMP) that set out how the requirements for archaeological mitigation at each stage will be implemented.

Pre-Construction Activities

3.3.2 Construction works are provisionally planned to start in late 2026 (subject to access to land), following the appointment of a construction contractor. Pre-construction activities, including pre-commencement surveys, are planned to start in Q4 of 2025. The pre-commencement surveys will include intrusive archaeological investigations and investigations for the purposes of assessing ground conditions and remedial work in respect of any contamination or other adverse ground conditions.

3.3.3 If Site conditions prevent archaeological investigatio at pre nstruction stage, archaeological fieldwork may be required during constru works stage. It is anticipated that such circumstances will generally b mited to cale works. These works would be completed at the construction works ge.

3.3.4 Archaeological mitigation works anticipated to be com during the construction stage are discussed further in Chapter 6.

Construction Works

3.3.5 Site preparation and construction works are curre l planned to c ence in Q4 of 2025, and it is anticipated that the Proposed Develo d be operatio in late 2027 / early 2028. While broadly sequential, some ph es of th -constructio d construction stages may overlap both in space and in e.

3.3.6 Archaeological mitigation works anticipa to be c pleted ng the construction stage are discussed further in Chapter 6

3.4 Temporary Constru tion Com ounds

3.4.1 Three construction compoun e proposed, ea h will include pipe storage areas, welfare fa nd plant sto and maintenance areas, as follows:

- th Comp located so of Habrough Roundabout and the A160 covering an ea of approxima 2 15 ha of le land with access from Habrough Road;
- a Central Compound, ted south ceby and east of Barton Street (A18) covering an area of app mately 1.71 ha of arable land with access from the A18; and
- South Compound, loca at the car park on the former TGT site accessed from ethorpe Road, cove g an area of approximately 1.3 ha of brownfield land).

3.4.2 In addit emporary lay n, parking, and welfare areas will be required at certain access points alon e pipelin ute.

3.4.3 North Lincolns ncil have indicated that no archaeological mitigation is required in respect of the N Compound (land here was previously utilised as a compound during highway works and archaeological investigations were completed at that time) (see North Lincolnshire Council Local Impact Report [REP1-062]).

3.4.4 The South Compound is located in an area of existing hardstanding (car parking) construction of which is likely to have removed any archaeological deposits; no archaeological mitigation is proposed here.

3.4.5 The Central Compound and temporary laydown, parking and welfare areas are situated within agricultural land. Where required, the topsoil will be stripped and stored on-site for later respreading, and the construction compounds will be established utilising a geotextile membrane and stone surface hardstanding.

3.4.6 If archaeological remains requiring protection are identified at these locations, then surface disturbance will be minimised to ensure no impact to below-ground remains, with topsoil retained in situ and protected with a geotextile membrane and imported stone or track matting (bog mats) to allow preservation of archaeological remains in situ. However, in the event that ground disturbance is proposed where archaeological remains have been identified, then a SSWSI shall be prepared by the Archaeological Contractor in consultation with the Viking CCS Heritage Consultees and approved by the relevant local authority Archaeological Officer, which will set out the approach to asse ment and mitigation which may include parts of these areas being subject to pre ervati se ection 4.8 of this document).

3.5 Temporary Access Routes

3.5.1 A haul road or running track will be constructed along the e working width he pipeline where practicable. The haul road will be directly onto th u il but dependin g d conditions and weather conditions a geotextile membrane an one surface an bog-mats may be used in selected areas to enable traffic movements mporary access routes will be constructed and maintained as necessa ansporting m ials from the public highway to the working width (see ES Volum I – C er 3: Descrip of the Proposed Development. Document Reference: E 70008/AP 3)[APP-045] he temporary access routes would typically be 4.5 m w e and up 9 m de at passing places, which with areas for soil storage and drainage tween th ack a e fence line would give a maximum swathe of 12 m.

3.5.2 Where archaeological remains t require prot on are ide ified in the access routes or haul road, topsoil will be retaine in place and tr matting og mats) or ground protection using a suitable barrier me e with overlyin will nstalled; the preferred method of protection will depend on ground condition the nature and sensitivity of the archae s. The gro protection will be installed in accordance with a Method Stat nt to be pr d by the A eological Contractor in consultation with the Viking C Heritage Consul and appr d by the relevant local authority Archaeological icer. In the event that g nd protecti not feasible or practicable in these areas then a SSWSI shall be prepared the Archaeo ogical Contractor in consultation with the Viking CS Heritage Consultees approved by the relevant local authority Archaeological er, which will set out the proach to assessment and mitigation which may include pa f these areas being su ct to preservation.

3.6 Tren less Cros ngs

3.6.1 At several l ns th peline will cross railways, roads, other utilities and watercourses. In some instan crossing will be made using an open cut technique; however, where this method is im acticable, trenchless crossing techniques will be used which would typically require a wider than standard 30 m working width. Currently two techniques are proposed: Guided Auger Boring (working width of 45 m x 25 m) and Horizontal Directional Drilling (HDD) (working width of 40 m x 85 m on launch drill side and 20 m x 20 m on the reception side, together with a pipe stringing zone that is 10 m wide and as long as the crossing length).

3.6.2 There are currently approximately seven locations where guided auger bore crossings are required (at detailed design these may be replaced by HDD crossings):

- Hornsea Cables and gas pipeline crossing, south-west of Immingham (c. 240 m length);

- Crossing of A46 Road and Old Main Road (c. 240 m length);
- Waithe Beck, east of Keelby, (c. 384 m length);
- Greyfleet Drain, north of Grimoldby, (c. 384 m length);
- B1200 Manby Middlegate Road and drains, east of Grimoldby, (c. 240 m length);
- Long Eau, Head Dike Drain and Willow Row Bank, east of Grimoldby, (c. 384 m length); and
- A1031 Mablethorpe Road and drain, west of the fo r TGT 240 m length).

3.6.3 There are four crossings where HDD is proposed:

- Golf Course/Childrens Avenue South of P66 (c. 6 or 240 m le depending on which option is required);
- North Beck Drain near Newstead Farm (c. 544 m l gth)
- River Ludd/Louth Canal, north-east of Louth (c. 540 m lengt nd
- Old Engine Drain and Great Eau, west of T orpe (c. 384 ngth).

3.6.4 Trenchless crossings will require localis excavati for the com cement of the technique (access and exit chambers). In eas where ological remains are identified the locations of the access and exit cham rs will be bject chaeological investigation, including consideration of geoarchaeol cal pot al. The ation requirements will depend on the scale of the impa nd will be de ibed in a SWSI to be prepared by the Archaeological Contractor, in sultation with e Viking C S Heritage Consultees and approved by the relevant lo al thority Archae gical Offi .

3.7 Topsoil Stockpiles

3.7.1 Top tockpiles managed accordance with the Outline Soil Management Plan (E olume IV - App 10-1: O Soil Management Plan. Document Reference: 070008/APP/6.4.10.1) EP2-018] h will be developed by the Contractor at the detailed design phase. It is ipated that most locations the excavated soil will be stored long the margin of the work area and that the use of dumper trucks will not be required.

3.7.2 kpiles will also be used screen some working areas of the Site, such as parts of co nds, from the public d to lessen the impact on views from sensitive receptors. Stock will normally be more than 3 m high. The existing topsoil under and around the stoc s will be reta in situ.

3.7.3 Where arch ogica mains are to be buried temporarily beneath topsoil stockpiles a Method Statem be prepared by the Contractor in consultation with the Archaeological Contractor, desc g the stockpile requirements. The Method Statement will be prepared in consultation with the Viking CCS Heritage Consultees and approved by the relevant local authority Archaeological Officer. The Method Statement will be prepared with reference to the guidance on preserving archaeological remains published by Historic England (Historic England, 2016a).

3.7.4 Where topsoil is to be stockpiled as part of the archaeological mitigation works, the methods will be included in a SSWSI prepared by the Archaeological Contractor, in consultation with the Viking CCS Heritage Consultees and approved by the relevant local authority Archaeological Officer.

3.8 Ground Investigation and Other Intrusive Surveys

3.8.1 The DCO will provide powers to undertake any necessary additional geotechnical or other intrusive surveys. The requirements for any necessary archaeological investigation during geotechnical or other intrusive surveys would be set out within a SSWSI, to be prepared by the Archaeological Contractor in consultation with the Viking CCS Heritage Consultees and approved by the relevant local authority Archaeological Officer. Archaeological mitigation may take the form of targeted archaeological monitor g and recording and/or archaeological excavation and recording, where relev nt. A eol ical mitigation in respect of any works carried out for the assessment o mediatio ontaminated land, if required, will be undertaken in accordance with Hist England ce including 'Land Contamination and Archaeology' (Historic England, 2).

3.9 Archaeological Mitigation Measures

3.9.1 In accordance with the commitments identified in the Dra nstruction En ment Management Plan (Table 3: Draft Mitigation Register (Construct Phase) (ES Volume IV – Appendix 3-1: Draft CEMP. (Document Refe EN070008/A 6 4.3.1), a range of archaeological mitigation measures are p osed, ing into ac t the form and significance of the archaeological resou that wo e impacted the Proposed Development.

3.9.2 The principal techniques are listed be and T e 3-1 d bes the scope of these measures and the works stage t hich t ey are evant.

- Preservation of archaeolog al remains.
- Archaeological recordi
  - Ar l gical Excava and Recording (strip, map, sample and record).
    rchaeolog Monitoring Recording.
    Geoarchaeological/ eoenviron tal investigation.
    Trial trenching/test pits
    Archaeological topograp survey.
- etal detector survey.
- P ation and dissemi on.

Table 3- chaeologi Mitigation Measures

Recording h / Works stage	Description
Preservation of Archaeological Remains (Pre-construction Activities and Construction Works stages)	An area within the Site that has been excluded from construction activities to preserve archaeological remains, thereby preserving it for later generations. Measures for preservation may include protective fencing, track matting (bog mats) or burying/sealing remains beneath fill material to ensure that they are not disturbed (including use of a protective barrier membrane between the existing ground surface and the fill, and control measures for plant movements at construction).

Recording method / Works stage	Description
Archaeological Excavation and Recording (strip, map, sample and record) (Pre-construction Activities stage)	Strip, map, sample and record is a programme of controlled, intrusive fieldwork with defined objectives, which maps, examines, records and interprets archaeological remains within a defined action area. The records made and the objects and samples gathered during the fieldwork are ombined and studied (assessed and if appropriate analysed) an e resul s published in detail appropriate to the proje esign. y rporate simple hand excavated trenches a and excav est pits (combined with geoarchaeological s ing and r where potential has been recognised) a will be underta where significant archaeological remain e r known assessment or evaluation works ('signif chaeological r s' are those which have potential to ad he ARA). For eac ion are or group of action areas w h re the same appro SI will be prepared outlining spe excavation mea and scientific sampling strategies applic o the proposed fieldwork that forms part ogramme of ar logical mitigation. The SSWSI will p d by the Arch gical Contractor in consultati with the V CCS Heritage ultees and will be approv by the relev l authority Ar aeological Officer prior to rks commen g in rea to which the SSWSI applies. Durin investiga metal ion may also be deployed, for examp cross sed surfa wing soil stripping, during and excavation d/or over h d-excavated spoil.
Archaeological Monitoring a Recording (Pre-construction Activities Constru ges)	A programme observati investigation and recording of archaeological ins un taken in specific areas where the presence of, or m tential for, archaeological remains has been demonstrated or can be predicted, but where detailed estigation prior to the main construction programme is sible due to safety or logistical considerations, or undesirable du environmental or engineering constraints. The Cont (s)' preferred method of working will be controlled as necessa o allow archaeological recording to take place. It also provides the monitoring archaeologist, if needed, the opportunity to identify that an archaeological find has been made which will require additional resources in order to record to a proper standard. During the investigation metal detection may also be deployed.
Geoar logy/palaeoenviron tal investiga (Pre-constru Act and Construction W t)	A programme of sample recovery and assessment and/ analysis undertaken to investigate palaeoenvironmental conditions and soil sediment development that may be relevant to the research of action areas or to remains within the vicinity of action areas. Investigations may involve hand excavated trenches and hand excavated test pits or other soil sample retrieval methods (such as augering or boreholes).
Metal Detection within the ploughzone (Pre-construction Activities stage)	A non-intrusive survey technique to recover and record the location of metalwork within a specified area of the Order Limits. It would involve a scaleable strategy to assess and investigate the archaeological potential following desk-based assessment and/or the results of trial trenching or topsoil stripping.
Trial Trenching/Test Pits (Pre-construction Activities stage)	A targeted or sample-based mechanical or hand excavated trench or test pit based investigation to record the presence/absence, extent and character of archaeological remains identified through non-intrusive survey or assessment, and to inform decision making

Recording method / Works stage	Description
	on further mitigation recording that may be appropriate. Likely to be deployed in areas along the Proposed Development where access was unavailable prior to Public Examination.
Archaeological Topographic Survey (earthwork survey) (Preconstruction Activities stage)	A measured survey undertaken to record the shape and topography of the ground surface d any relevant components. It would include both a dr wn and en ord, and depending upon the level of det at is req could also include a photographic record pically, it be applied to both upstanding archaeol al remains d f s that contribute to the historic landsca chara r. Depe g upon ground conditions it may be ne o remove ve ion before the survey, this would be do der archaeologic pervision in accordance with a Meth S ent to ensure th ran s done in a controlled manner an s not impact on th s.
Publication and Dissemination (Pre-construction Activities, Construction Works and Operation stages)	Interim reports a d fieldwork updat at would be produced during the inv as a result of a ment and analysis of the result d a fina demic report(s d popular booklets would b epared at th of the fieldwork e project archive will be d for long-te s at the recipient archive storage facility

3.9.3 A total of 22 [HOLD – provisio number – to b confirmed] ovisional action areas have been identified that requi e her preservat of arch ological remains in situ or archaeological recording (rvation by rec th provisional action areas are identified in **T ble 3-2** and sh on **Figures 1 and**

3.9.4 Thes vision n areas h been identified based on desk-based assessment, ae survey review, physical s y and, where available, trial trenching results. A mary of the archaeo al potentia each provisional action area is provided in T**able 2**.

3.9.5 rial trenching is ongoing in mber of the provisional action areas: for ease of reference, trenches excavated to 1 ugust 2024 are shown on **Figure 3**. The number, location an tent of action areas for haeological mitigation in all cases is subject to confirmation follo completion of tria enching fieldwork and reporting. **New action areas for invest on may be id ied as a result of emerging results from the evaluation surveys as a resu unexpected discoveries.**

Table 3-2: Provisional Action Areas for Archaeological Mitigation

Action Area ref.	Section	Field Ref.	Location	Archaeologic otential	Action**
1	1	1, 2 [3]	South of Rosper Road	Prehistoric activity n Age / Roma ritish ccupation along the edge of a form uried shorelin action area was trial trenched as part e Humber Zero project.	TBC
2	1	11	South of Manby Road	Enclosur ly Iron Age o man date, possibly assoc d with working acti Linear and curvilinear geo ysical anom within an ar c.100m×70m towards the orth of Fie 11 ar to form at least four conjoining en sures, w a pos double-ditched track running sou h to no across th c e. Inside the eastern half of the complex i concentra n of strong dipolar magnetic anomalie onsistent w h magnetically strongly enhanced deposits; e of th e anomalies could be related to salt working. ***Tri hing scheduled.***	TBC
3	1	22, 23, 24, 25	N lebe Farm	Romano-British rectilinear enclosures with internal divisions in e north of Field 22, in Field 23 and in Field 24, with a sible double-ditched track running south to north on the ea n side of the enclosures in Field 24. Overlapping geophysical anomalies suggest more than one phase of activity associated with the complex and linear anomalies mark smaller enclosures both in and outside the larger enclosures. Trial trenching to date has investigated a number of the enclosure ditches together with pits and a possible cremation grave. ***Trial trenching scheduled.***	TBC
4	1	29	South of H ugh Road to the A180	Linear anomalies, consistent with infilled cut features such as ditches, demark a possible rectilinear enclosure, c.70m×25m,	TBC

Action Area ref.	Section	Field Ref.	Location	Archaeologica tential	Action**
				near the northern ary of Field ***Trial trenching scheduled.***	
5	2	32, 33	W & E of Roxton Road	A group of linear and c near geophysi malies towards the centre of Fiel and in the northern part of Field 33 for f agmented co xes each of two or three enclosu umed later p storic date. ***Trial trenching sche led.***	TBC
6	2	38	East of Roxton Farm	Mu le linear, c vi r and discrete geophysical anomalies fo two distin ve clu concentrated in the north and so of Fiel 8. The n cluster form a possible enclosure tem with i ernal divisions visible. The southern anomalie so form p sible enclosures but in character are more frag nted an iscrete compared to the northern focus. ***Trial g scheduled.***	TBC
7	2	45, 46	So nlands m/Keelby	Across Field 45 multiple linear, rectilinear, curvilinear and ircular geophysical anomalies form a possible Romano-ish settlement with field system and double-ditched tr way running to the west on the north to south alignment. Ano alies form visible enclosures with multiple internal divisions. The entire focus covers the area of approximately 1.8ha and continues to the south and possibly to the east and north-east beyond the survey area extent. The complex is known from previous geophysical survey and is recorded as a complex of Roman enclosures alongside a trackway (MNL2689). Trial trenching has confirmed the survival of ditches but recovered no dating evidence. ***Trial trenching scheduled.***	TBC

Action Area ref.	Section	Field Ref.	Location	Archaeologica tential	Action**
8	2	57b	North of Barton Street	A cluster of linear, near, and ci r geophysical anomalies in the ce part of Field 5 ould indicate a former enclosure ***ria nching sched***	TBC
9	3	70/70a	North of Walk Lane	In the central part of Field 70a a series of linear, curvilinear ilinear and dis e geophysical anomalies seem t at luster of pos enclosures or field divis s. Many a alies overlap each other, which could su st multi-ph e age of this area. Extensive ag ultural ac y vis imits the interpretation as cluster is cu th mult plough s. This action ea lies no and north west of the scheduled Civil War . ***Metal det ing an ial trenching scheduled.***	TBC
10	3	102, 103	South of Thoroughfare	In the southe t of Field 102 strong, positive geophysical anomalies, indicative of ditch-like features, as well as pit like nomalies form a regular pattern that continues as a more ined cluster of regular anomalies within Field 103, possibly fo g parts of a former settlement that continues to the north east beyond DCO Site Boundary. ***Trial trenching scheduled.***	TBC
11	3	109	North of Grainsby Gran	A series of linear, rectilinear, and circular geophysical anomalies in the northern part of Field 109 cover an area of approximately 2.5ha and suggest the existence of an undated settlement extending beyond the survey extent to the west and to the east. ***Trial trenching scheduled.***	TBC
12	3	115	North-west Westfield Farm	In the southeastern corner of the survey area, a set of geophysical anomalies form rectilinear structures and possibly	TBC

Action Area ref.	Section	Field Ref.	Location	Archaeologica tential	Action**
				reflect an enclosu m or a for field system. Some circular anomalies d represent pos les. ***Trial trenching s hed d***	
13	3	127/128, 129, 130	East of A16, Damwells Farm	A series of linear, curviline ectilinear and pit like geophysic malies creat egular cluster and could indicat et nt that contin across Area 128 into Area 29 and 1 Tri renching e m d ditches and pits that produced an al bone a potte ramic building material, slag, burnt flin nd a g and a f ter (including possible pieces of debitag nd two pos ble cores). A possible palaeoch el was als dentified in the trial trenches. ***Trial tren ng sch uled.***	TBC
14	3	135	South of Station Road	In the northe of Field 135 a broad cluster of linear and rectilinear geophysical anomalies suggest a former enclosure ystem. ***I trenching scheduled.***	TBC
15	5	198	East of Causeway B e Farm	In t western part of Field 198 a very regular arrangement of rectilinear, linear and circular geophysical anomalies could represent part of a potential settlement, likely extending to the west. Trial trenching revealed ditches containing pottery and charcoal, enclosure ditches containing abundant finds including animal bones, charcoal, oyster shell, Romano-British C2nd-4th greyware pottery, and flint, and an inhumation grave. All of the ditches corresponded to geophysical anomalies. ***Trial trenching scheduled.***	TBC

Action Area ref.	Section	Field Ref.	Location	Archaeologica tential	Action**
16	4	149, 150	West of Grange Farm	A strong, curviline physical an y in the northeastern part of Field 149 an veral discrete l and circular anomalies in the uth ern part of Fie ould represent former enclosu Trial trenchi revealed ditch gullies and postholes that produc one, pottery, work and ceramic building mate . Spot da indicates a L Prehistoric / Iron Age dat ***Tr trenchin ched d***	TBC
17	3	93	North of Ashby cum Fenby	Tri renchi revealed h–south aligned ditch containing Late Prehi ric pottery hich cut the eastern side of a linear feature (p sibly a cha nel or natural formed gully), both features a ed with e eastern side of a larger geophysical anomaly in as geological in nature; a curvilinear geophysical anomaly was detected in the northern part of Field 93. ***al trenching completed.***	TBC
18	3	95	North of Ashby cum by	In western corner of Field 95 a semi-annular geophysical anomaly with a circular positive anomaly in the centre could indicate parts of a possible ring-ditch with some internal structures. Trial trenching recorded two ditches, including an east-west aligned ditch (42504) that produced a large amount of Late Bronze Age pottery. ***Trial trenching completed.***	TBC
19	5	196, 197	East of e Bridge Farm	Field 196 was not available for geophysical survey. Trial trenching here located an undated ditch. In Field 197, trenching recorded undated furrows corresponding to	TBC

Action Area ref.	Section	Field Ref.	Location	Archaeologica tential	Action**
				geophysical anom nd an und ditch. Romano-British C2nd - 4th AD grey s were among e finds ***Trial trenching comp ed***	
20	4	160	East of Brackenborough Road	Field 160 was not availab r geophysical survey. Trial trenching id tified a gently ing undated gully with no finds. ***Tria enching c pleted.***	TBC
21	4	191, 192	North of Manby Middlegate	**Tri trenching** Fi 191 revealed a series of parallel fu ws that c espon eophysical anomalies interpreted as ge an rrow. In 92, trial trenching recorded an undated d h terminal d a furrow. A retouched flake and sub-para laked scr er with retouched edges both of possible N ithic da were recovered from the topsoil. ***Trial trench mpleted.***	TBC
22	2	52a	S oad	Geophysical survey identified anomalies likely relate to atural, agricultural or modern features or objects. Trial ching located an undated ditch (a large ferrous spread wa entified surrounding the ditch from geophysical survey). ***Trial trenching completed.***	TBC

Action areas requiring preservation of archaeological remains

3.9.6 There are xx action areas identified for preservation of archaeological remains and for these sites the measures to be used comprise protective fencing, track matting or cover and fill, or a combination of measures. [HOLD – to be confirmed]

Action areas requiring archaeological recording

3.9.7 Archaeological recording is required at 22 action areas [HOLD – provisional number – to be confirmed]. Excluding evaluation surveys that may need to be completed at the Pre-construction Activities stage, mitigation measures will include but are not limited to Archaeological Excavation and Recording, Targeted Arch logic l Monitoring and Recording, and geoarchaeological investigation.

Action areas requiring archaeological evalua n

3.9.8 There are also xx action areas where archaeologic va tion surv could not be completed prior to Examination, and which require detaile d /or confirmat ssessment to inform the Site mitigation requirements. [HOLD – to b med]

Identification of additional action areas

3.9.9 In the event that new action areas are identif a result of erging results from evaluation surveys, these will be identifi n a WSI(s) to b repared by the Archaeological Contractor in consultation th the Vik CCS Heritag onsultees and approved by the relevant local authority haeologica Of

3.10 Public Archaeology and Comm nity E g gement

3.10.1 As provided for by the Dra CEMP [REP 27] Table , draft Mitigation Register (Construction Phase) ref. D6 s certified by DCO) t Archaeological Contractor's specialist will develop a pro me of communi ment and outreach based on the Outline Publi Archaeology a Community Engag ment (PACE) strategy provided at Appen ument.

3.10.2 Th m of the PACE gramme be to raise awareness of the significance of the dscape that the Pro d Develop nt crosses and to encourage the enjoyment, nteraction and engageme ith the arch ological process and discoveries arising from he mitigation works along t ipeline route corridor.

3.10.3 objectives of the PACE p ramme will be:

- agement and apprec on: Encouraging engagement with and appreciation of the la ape;
- Advan knowled bout archaeology along the pipeline route corridor: Advancing public un tan and stimulating public interest in the archaeology of the route corridor;
- Public understanding of developer-led archaeology: Making the archaeological process more understandable to the public, particularly in relation to a major infrastructure project;
- Accessible learning: Creating accessible learning opportunities for people to be involved in actively discovering more about archaeology;
- Disseminating fieldwork information: Disseminating information about results from archaeology fieldwork along the pipeline route to schools, the local community, local societies and groups with a keen interest in history and archaeology, and the academic community; and

- Sharing research: Showcasing the research impact of development-led archaeological fieldwork and how it can inform our understanding of the past with local, national and international audiences.

3.10.4 The PACE programme may include talks and outreach events organised and staffed by the Archaeological Contractor and will be developed in close consultation with the Viking CCS Heritage Consultees and other potential consultees that may include representatives of museums, community networks, civic forums and local archaeology and history groups.

3.10.5 The developed PACE strategy, programme and resourcing will be presented as a Method Statement to be approved by the Contractor and Client and is uired to be in place at the beginning of the Pre-construction Activities stage (s secti 5 gramme, below). Accordingly, the scoping and consultation stage for th ACE stra will be completed in advance of commencement of the Pre-construction vities sta

3.11 Reinstatement of Earthwork Featur

3.11.1 In accordance with Table 3 of the Draft Mitigation eg (Reference N 7) upstanding earthworks, including ridge and furrow earthwo that are imp d by construction activities will be reinstated on completion of construc works, once all plant, materials and temporary works/structures ar d. The eart rk features will be reinstated by the Contractor under the sup sion of Archaeologi Contractor when the land that has been disturbed as a nsequence he Proposed evelopment is restored back to its original (pre-develop nt) conditi Th ntractor and Archaeological Contractor shall refer to the results fro archaeo gical to aphic survey (earthwork survey) for guidance regarding e loc tion, fo and sc the earthworks to be reinstated.

3.11.2 The Archaeological Contra tor hall prepare a thod Sta ment in consultation with the Contractor and the Viking Heritage Cons describes the procedure and methods for th reinstatement arthworks, prior to e start of construction activities. The Archa ctor shall ensure that these are in line with Historic England gui e (Historic E d, 2016b; toric England, 2008a) and are based on a thorough u rstanding of the h e values e assets, and the impact that the procedure and ethods may have on e values (s://historicengland.org.uk/advice/planning/the-econstruction-of-heritage-a ts/historic-englands-approach/#Section1Text).

PART TWO – OVERARCHING WRITTEN SCHEME OF INVESTIGATION

4 Approaches to Archaeological Mitigation

4.1 Contents of the Overarching Written Scheme of Investigation (OWSI)

4.1.1 This OWSI sets out (section 4 of this document) the controlling documents (SSWSI and Method Statements) that will define the scope of archaeological mitigation works to be undertaken in each action area, and the archaeological research agenda that will frame the purpose of the archaeological mitigation works. It also out requirements for establishment by the appointed Archaeological Contrac of an a ogical project team and the retention by the Client of an Archaeological k of Work d procedures in the event of unexpected discoveries and interruptions a elays.

4.1.2 The scope and purpose of the proposed archaeolog gation tech es and their intended applications to preserve significant remains in or by record a utlined to provide an overarching methodology with which the SW to be develo b he Archaeological Contractor, must conform.

4.1.3 The programming of the archaeological mitigatio rks before an uring construction of the pipeline is considered in section 5 of this nd a strateg r communications and arrangements for monitoring of archae gical wor proposed in tion 6.

4.1.4 Finally, requirements for reporting, pub ation and ss ation of the results of the archaeological mitigation works are set in sectio of thi ument, and requirements for archive preparation and deposi on in ction 8

4.2 Site Specific Writte Scheme of Inve tigation (SSWSI) and Method State nts

Site S n Schem of Investigation (SSWSI)

4.2.1 Ea SSWSI will s ut in de specific mitigation measures for the Proposed D elopment, informed he Strateg xisting and emerging results from fieldwork and evious assessment work inform the gn of the mitigation works to be set out in each SSWSI. The SSWSIs will be pared by the Archaeological Contractor in consultation with Viking CCS Heritage Co ltees and will be approved by the relevant local authority eologist, prior to works mencing in the area to which it applies.

4.2.2 The cification for the ar eological works set out in each SSWSI, together with the require thod statemen be prepared by the Archaeological Contractor, will be written in accord with the tegy and the current Standard and Guidance issued by CIfA, including th A Co f Conduct (CIfA, 2022), and will adhere to all current and relevant best practice, s and guidance, as updated from time to time (see Appendix A).

4.2.3 Each SSWSI will et out the timing and order of the investigative works and will include details of how the archaeological programme will interact with other construction activities, and the parties undertaking them, during Pre-construction Activities or Construction Works. Each SSWSI will include a programme for the archaeological work that will be referenced against key milestones/events in the overall design and construction programme.

Method Statements

4.2.4 During both Pre-construction Activities and Construction Works, procedures will be adopted in the CEMP to ensure that sites of archaeological interest are protected. The Archaeological Clerk of Works and / or the Archaeological Contractor will give Tool Box Talks to inform all site personnel of the archaeological and historic environment constraints pertaining to the

Site, the protection measures that are required and their obligations under the DAMS and CEMP and generally, to ensure that these measures are put in place and complied with.

4.2.5 In areas where archaeological remains are to be retained (e.g. protected by temporary perimeter fencing, track matting or beneath fill materials) or where archaeological earthworks are to be reinstated, the Archaeological Contractor will prepare a Method Statement(s) at the start of the relevant construction stage in order to describe specific measures to be applied to the action area and following the requirements of the CEMP. The Method Statements will be prepared in consultation with the Viking CCS Heritage Consultees and approved by the relevant local authority Archa ological Officer.

Amendments and Updates to SSWSI and Metho State nt

4.2.6 Any amendments or updates required post-approval n SSWSI thod Statement (for example, in accordance with section 4.5 Unexpe Finds o as sult of iterative development of the site strategy as outlined in s n , below) be made in consultation with the Viking CCS Heritage Consultees a pproved by th levant local authority Archaeological Officer.

4.3 Archaeological Research Agenda

4.3.1 Relevant CIfA Standards and Guidance (for p fA, 2023d) s t the requirement that a project design shall address c ly define esearch qu ns within the archaeological works programme. The re arch theme a eriod-based questions set out in the Archaeological Research Agenda ee sectio 2.3 o DAMS, above) provide a framework and context for the incorpora of the ults of igation programme and will be developed through each WSI to inclu detailed re earch questions relevant to each action area.

4.3.2 The Archaeological Rese genda provide framew k for focusing archaeological recording work which will e that informa ected during the course of the propose intervention valid for meaningful archaeological research through deve ent of d d research stions. Throughout the design, implementation and re of the Archae al Resea Agenda, a question-led approach will be adopted decision-making ba on the sign nce of the archaeological remains.

4.4 Archaeological Pr ect Team

4.4.1 archaeological mitigatio works will be delivered by the Archaeological Contractor un e leadership of an ex ienced project manager. The Archaeological Contractor will have p e responsibility fo elivery of the full programme of archaeological mitigation as set out e Strategy uding all on and off-site works, technical and non-technical publication dissem on, and preparation and deposition of the archaeological project archive with t ci t archive storage facility.

4.4.2 The Archaeologi Contractor will include as part of their project team named key specialists who will either be site-based or have a regular site presence, or who will be on-call at short notice. These will include (without limitation) the following roles:

- Project manager
- Environmental archaeology supervisor
- Finds co-ordinator/processing specialist
- Lithics specialist with relevant period expertise
- Ceramics specialist with relevant period expertise

- Geoarchaeologist
- Archaeological surveyor
- Digital data co-ordinator/manager
- Human remains specialist
- Animal bone specialist
- Scientific dating specialist
- Conservation specialist
- Metal detectorist co-ordinator
- Public Archaeology and Community Engagemen pecialist

4.4.3 The names and qualifications of the individuals fulfillin es oles will rovided to the Viking CCS Heritage Consultees for information and com following app ment of the Archaeological Contractor and shall be identified in eac SI. The posthol sh e in place at the start of the mitigation programme and any chang o the named p ders will be notified to the Viking CCS Heritage Consultees, for inform n and comment.

4.4.4 The specialists will be fully integrated into the gical Contra s project team and will actively input to the design of strategie r each WSI, the Pub rchaeology and Community Engagement elements, and o advise t out the fiel work and post-excavation assessment and analysis wo Regular c mu ion between the specialists and the fieldwork project manager and f staff sh be ens through off-site planning meetings, site visits and progres eetings.

4.4.5 Archaeological staff (part of Archaeologic Contractor site team) supervising the investigative works as des ib in the Strate hall be ghly experienced in directing machine stripping/hand strip of archaeologi with relevant experience in and knowledge archaeologic aracter of the area in general. The staff member(s) shall be fam ults of the essment work and evaluation surveys that have been com ted.

4.5 Archaeological C rk of W ks

4.5.1 s noted above (section 1.3 the DAMS) an Archaeological Clerk of Works (ACoW) will part of the Client's Site m to, inter alia, monitor archaeological works and facilitate ac and monitoring arran ments with key stakeholders.

4.6 Unexp cted Fin

4.6.1 If unexpecte ds s, artefacts, environmental remains or ecofacts, monuments or features) are m ing the Pre-construction Activities or Construction Works stages, a site consultation eting(s) will be convened between the Archaeological Contractor and the Viking CCS Heritage Consultees to consider the significance of the find. Depending on the outcome of the consultation meeting, an addendum to the SSWSI or a new SSWSI will be prepared by the Archaeological Contractor in consultation with the Viking CCS Heritage Consultees and approved by the relevant local authority Archaeological Officer.

4.6.2 Prior to the start of the Pre-Construction Activities or Construction Works, procedures will be adopted in the CEMP to ensure that action areas are protected (as provided for by the Draft CEMP [REP4-027] Table 3, draft Mitigation Register (Construction Phase) ref. D2 and D5, as certified by the DCO). This will involve temporary fencing and clear notices on site fences. Tool Box Talks will be provided by the ACoW and / or the Archaeological Contractor to inform all site personnel of the archaeological and historic environment constraints on

Site, the protection measures that are required and their obligations under the DAMS and CEMP and generally to ensure that these are put in place and complied with. The Tool Box Talks will identify sensitive action areas that must not be disturbed until investigation is completed and the site signed-off to construction, or where long-term protection is required.

4.6.3 The procedure for dealing properly with any unexpected finds during the construction process will be set out in each approved SSWSI and recorded in the CEMP.

4.7 Interruptions and Delays

4.7.1 Archaeological remains and the information that they contain o nvey will be treated in an ethical manner, in accordance with current CIfA standa (CIfA, 2

4.7.2 The mitigation works will likely extend over different asons of t r and from time to time it may be necessary to temporarily suspend arc ologic l work o tivities within an action area, in order to preserve archaeological remains o event pote damage until conditions improve (for example, as a consequence of des of heavy persistent rain or prolonged wet weather); or to comply with envir me guidelines for ng of material such as topsoil as contained within the Contractor il Managemen n; or to comply with animal disease control; or for health & safety reas

4.7.3 Day-to-day decisions regarding working con hin an actio ea will fall to the Archaeological Contractor, in consultation h the AC Where extre onditions arise requiring an immediate decision as to wh her work s e suspended for a prolonged (more than 24 hours) period, the Archae gical Cont tor w ise directly with the ACoW and the Contractor (as relevant). The AC will be ormed w ction areas are affected and the reason(s) and likely dura of the interru on and de y, and whether any remedial actions are necessary or are ned (e.g. use protective helters or covers to protect exposed archaeological remain during episode f wet we her, frost etc.). The ACoW will notify the Viking CCS He Consultees re i e circumstances of prolonged interruptions d delays, and nfirm when the s p nded site work has resumed.

4.8 Ite tive Site ategy

4.8.1 here required, an ite e site str y for excavation, artefact recovery and for environmental sampling w agreed wi the Archaeological Contractor and the Viking CS Heritage Consultees (section 6.1 Communications Strategy, below). As detailed ections 4.10 and 5.4 of th document (below), it is anticipated that processing of finds a vironmental samples, initial assessment of sampled material, will be carried out conc nt with the archaeo cal excavations.

4.8.2 The Str y will (where quired) be responsive to the works taking place on site. For example, i ction a or site is not answering the expected research questions due to a lack of info io en the extent and scope of works should be reviewed. Similarly, where action ar sites are producing more environmental evidence than expected a more intensive sampling strategy could be applied than that previously agreed. Unexpected finds (see section Unexpected Finds4.6 above) will also be considered. Iterative development of the site strategy will only be undertaken in consultation with the Viking CCS Heritage Consultees at meetings or onsite discussions and changes to the approach detailed in the relevant SSWSI will be approved by the relevant local authority Archaeological Officer. Such changes and approvals will be recorded in weekly progress reports (see section 6.2 of this document): where such changes in approach are considered to be substantive in consultation with the Viking CCS Heritage Consultees the Archaeological Contractor will prepare an addendum to update the relevant existing SSWSI or Method Statement as described in section 4.1 of this document (above).

4.9 Preservation of Archaeological Remains – Protection Measures

Protective Fencing

4.9.1 In order to demarcate action areas that require preservation of archaeological remains and to avoid unintentional damage during construction, temporary fencing will be installed as part of Pre-Construction Activities. The temporary fencing will be installed by the construction contractor under the supervision of the Archaeological Contractor. The location and type of temporary fencing and the procedure and m hods for its installation, maintenance and removal will be set out for each ction a r preservation of archaeological remains in a Method Statement (it m be helpf the Archaeological Contractor to combine various sites into a single M od State n Notices prohibiting works will be attached to the fencing.

4.9.2 Action areas where intrusive archaeological investigation e planned will be fenced during Pre-Construction Activities, as required by the o mme for those men of work, in accordance with the procedure and requirements out d above.

4.9.3 Existing fencing or boundary forms, where present may be used rotect an action area and the condition and effectiveness of such r boundary s will need to be checked by the construction contractor to c rm that fit for purpos

4.9.4 The ACoW will be responsible for regularl monitoring t ition of the temporary fencing at sites for preservation of archaeolog l remain he truction contractor will be responsible for the maintenance of the porary ncing un r construction work in that area is complete or until th d of the Co ruction W ks stage, at which time the removal of the temporary fenc around sites preservat n of archaeological remains will be supervised by the A ha ological Contra

Track Matting and Protec Beneath Fill M l

4.9.5 Track g ts) will no ly be the preferred approach to ground protection for acc routes in are ere archa gical remains are to be retained in place to ensure t buried archaeologi emains vu able to damage are protected from the effects of ant and vehicle movem and comp ion (light 4WD vehicles or light duty trucks or normal farm equipment may t require ground protection). Alternatively, ground protection ing a suitable barrier mem ne with overlying fill on top of the existing topsoil may be opriate; this is the pref d approach to ground protection where archaeological re s are to be retained lace in temporary construction compounds and laydown, parki nd welfare areas.

4.9.6 The sele of the opti m approach for each relevant location will take into account the sensitivity chaeo cal remains likely to be present, based on the results of the archaeologica l on. Access routes and temporary construction compounds that have been set up in s cleared of archaeology in advance and signed-off as part of the programme of archaeological mitigation work, or where the results of archaeological evaluation indicate no archaeological remains are likely to be present, will not require protection.

4.9.7 The construction contractor will describe in a Method Statement the site-specific protective measures, including the extent of the area to be protected (for track matting or fill); and additionally the depth and type of fill and the methodologies for filling areas without disturbing or impacting sensitive archaeological remains (protection beneath fill material). The Method Statement will be developed in line with the principles of Historic England's 'Preserving Archaeological Remains' guidance (Historic England, 2016a) in consultation

with the Viking CCS Heritage Consultees and approved by the relevant local authority Archaeological Officer.

4.9.8 Protection measures will be installed by the construction contractor under the supervision of the Archaeological Contractor. The ACoW will be responsible for regularly monitoring their condition. The construction contractor will be responsible for the maintenance of protection measures until either construction work in that area is complete, or at the end of construction, at which time the removal of the measures will be monitored by the Archaeological Contractor.

4.9.9 Until or unless adequate protection is provided to avoid ruttin or the compaction of soft ground vehicles will be restricted or prohibited from trav sing s w re archaeological remains are to be retained in place.

4.9.10 The ACoW and /or Archaeological Contractor will Tool Bo Ta o inform all Site personnel of the archaeological and historic environm on aints on the protection measures that are required, and their obligations under th MS and CEM d generally, to ensure that these are put in place and complied with. F g completion o stru on at that location, or at the end of Construction Works, the prot n will be remo the construction contractor, leaving the archaeological remains in th riginal condition.

4.10 Archaeological Excavation nd R ording – trip, Map, Sample and Record

General Approach

4.10.1 Archaeological Excavation and ording (AER ill be the ain method to be deployed where the archaeological eval on results sup t targeting f defined action areas, such as activity foci, or where th a essed significa of the a haeological remains requires a more detailed excavation gy to be determ i ance. The general approach for AER will foll w a strip, map mple and record p cess as part of Pre-Construction Activiti elow.

4.10.2 Ac areas that req nvestigati will be those that are identified in Table 3-2 of the MS (above), but ma o include w areas that arise as a result of ongoing trial enching, detailed design e Propose evelopment and Unexpected Finds.

4.10 ction areas designated for R will be stripped with mechanical plant as set out in the vant SSWSI. The seq cing of stripping, location of soil storage areas and ar ements for backfilling ether with other relevant logistical considerations, will be set o a Method Stateme see section 4.1 of this document, above).

4.10.4 In action as where m ine stripping is required (following completion of any metal detecting, e requi under the Strategy), topsoil, subsoil and other overburden will be removed by Ar ological Contractor to the correct archaeological horizon under archaeological s ision. The relevant horizon will be informed by the evaluation results, the Archaeological Research Agenda (see section 2.3, above), and the aims and objectives described in the relevant SSWSI.

4.10.5 In accordance with the research aims and objectives outlined in the Archaeological Research Agenda and further developed through the identification of site specific aims and objectives within the SSWSI, in consultation with relevant specialists the action area will then be subject to hand excavation of key features designed to recover artefactual and scientific dating evidence. All specialist samples will be accurately located in three dimensions and subject to further hand excavation designed to recover artefactual and scientific dating evidence. At the same time selected feature complexes will be subject to further hand excavation designed to resolve stratigraphic relationships.

4.10.6 The AER works will also include sampling of archaeological remains for palaeoenvironmental and palaeoeconomic indicators (for example, charred plant remains, molluscs, pollen, etc.), in accordance with the relevant SSWSI and the ARA. Artefact and palaeoenvironmental assessments will be carried out during the course of the fieldwork; selected key features/structures will be subject to more detailed excavation and sample recovery to address the evolving research objectives of the archaeological programme.

4.10.7 The proportion of features excavated will be determined by the significance of the remains and the requirements of the research objectives set out in the SSWSI. This iterative process is intended to allow the approach to excavation sampling to e both flexible and closely targeted to address specific questions, rather than being tied to -det rmined excavation strategy.

4.10.8 The research objectives and excavation strategy be kept eview during the investigation of each action area. In order to facilitate app ach, re t data, artefact and environmental sample processing will be underta hilst the fie rk proceeds (including artefact spot-dating and preliminary assessme environmental ples). The preliminary assessment of materials, including aun remains, ec nd palaeoenvironmental proxies recovered from samples, underta whilst the inve gation is underway, will support the outlined iterative approach to sampli

4.10.9 Decisions on further investigation at a given w made once icient information becomes available.

4.10.10 Palaeoenvironmental sampling and envi mental se enc ave the potential to recover information about past human environm al intera ns, hu ctivities and evidence of environmental change. Waterlog d dep sits or quences h waterlogged deposits are present within a sequenc l receive pa ular attent n. Such deposits may also preserve organic artefacts and xtiles which a ot ordina preserved in dry conditions. In the event that waterlogg posits are iden d the onservation specialist and the Environmental Archaeology S visor will be con or advice in the first instance (see section 6) and the H ric England Scientific Advisor will also be contacted.

4.10.11 Ge haeological i igations (s ection 4.11, below) will focus on areas of particular i est such as the Lin shire Outm h and pipeline trenchless crossings (see section 6, above) and as identi hrough pr us and current archaeological evaluations, the ARA, and will be specifically signed to address particular research questions. The Viking CS Heritage Consultees a he Historic England Scientific Advisor will be contacted by rchaeological Contracto d consulted with regard to an appropriate sampling strategy an comment on site re val methods. The sampling methodologies and specific resea questions for ge chaeological investigations will be clearly outlined in the SSWSI

Machine E vatio

4.10.12 AER will be car t at the action area(s) identified in the SSWSI. Each action area will be positioned us g electronic survey-grade equipment. The initial excavation will be undertaken using a 360° mechanical excavator or other similar back-acting excavator fitted with a toothless bucket, used in such a manner as to expose cleanly the archaeological surface. The Archaeological Contractor shall ensure that plant and plant operators have the capability to achieve a consistently high standard of work. The SSWSI and accompanying Method Statement will include proposals for the stockpiling, handling and replacement of topsoil with reference to the construction contractor's Soil Management Plan, Materials Management Plan, Drainage Strategy and Emergency Response Plan (Draft CEMP, Table 2: ES Volume IV – Appendix 3-1: Draft CEMP. (Document Reference: EN070008/APP/6.4.3.1)[REP4-027]).

4.10.13 Machine excavation will proceed under the direct supervision of the Archaeological Contractor in level spits, until either the top of the first archaeological horizon or undisturbed natural deposits are encountered (the decision to employ spits will be set out in the SSWSI). Particular attention will be paid to achieving a clean and well-defined horizon with the machine. Under no circumstances will the machine be used to cut arbitrary trenches down to natural deposits. The mechanical excavator will not be permitted to traverse any stripped areas.

4.10.14 The surface achieved through machine excavation will be inspected for archaeological remains and will be selectively cleaned by hand in order to id ntify or define the extent of archaeological remains present (particularly important where s ment races are present, since most evidence of domestic structures will take th m of s les and small post-holes, the successful identification of which is critical) e types of ns that may require hand cleaning will be identified in the SSWSI.

4.10.15 The extent of the area for AER will be clearly demarcat protective f ng to ensure that persons or vehicles cannot inadvertently traverse area of inves ion whilst archaeological works are in progress (type of fencing t be will be detaile MS and in the SSWSI). Dump trucks and other plant will not be per d to track over pped areas until archaeological investigations at that location complete and the archaeological action area is signed-off for co All fencing/ ds associated with the archaeological works area will be regul inspec by the ACoW d maintained by the construction contractor until the archa ogical work at area have een completed, inspected and approved (see section 4.8 bove).

4.10.16 Topsoil will be subject to a rapid metal de or sca ior to st to identify and recover metal objects within the topsoil rchaeologica metal artefa s (except those that cannot be X-rayed, such as lead arte ts) will be sub t to X-ray hich will be used to rapidly scan material for retention or isposal (with rence t he recipient archive storage facility's policies for retenti artefacts and election toolkit). The Finds co-ordinator/p ing specialis d the Conservation specialist will be consulted. The archa and arch ogical features will also be subject to a rapid metal det r scan to iden ose artef from uncleaned surfaces, and on cleaned surfaces t elp identify areas f reful exca on. Hand-excavated spoil will also be scanned. his will be undertaken by appropriat ualified or experienced metal detectorist. The SSWSI will set out how met etecting will be used as part of the artefact recovery strategy thin the AER area. Provisio ill also be made for 3D location recording of artefacts within res, but also within unst ed deposits where significant quantities are identified. The Ar ological Contractor sh consider the use of metal detecting at the end of each day in ord assist in site sec .

Hand Ex ation

4.10.17 Hand excav m be employed using hand tools instead of mechanical plant in circumstances sensitive/fragile archaeological remains are predicted to survive based on the resu ts of trial trenching. These circumstances may include, for example, in situ lithic or other finds assemblages where use of mechanical equipment could result in damage to the fabric or distortion of spatial distributions, or where the scale of the investigations required is significantly smaller or greater control is required (for example, buried ground surfaces).

4.10.18 Hand excavation will be used to establish the presence/absence of remains/artefact distributions, the extent and condition of the remains or concentrations of artefacts, and to inform additional mitigation requirements. It may be necessary to limit the depth of the investigation so as not to compromise the integrity of a high value potential resource, such as a buried ground surface. Hand excavation will be conducted with due regard to the

potential survival of cultural material at the interface with the topsoil and the potential survival of microtopographic features, as identified in the SSWSI. It may also be necessary to excavate deposits using spits of pre-determined thickness to allow cross-site comparisons with work undertaken in other action areas or during trial trench evaluation. The proposed use of spits will also be set out in the SSWSI.

Artefact Recovery Strategy

4.10.19 The routine collection of artefacts will be carried out during normal site works, however, other techniques may be deployed as identified in the SSWSI, to recover datasets relevant to the investigation and site specific or wider research objectiv

4.10.20 The Archaeological Contractor will consult with their cialists the preparation of each SSWSI regarding the artefact recovery strate Any chan equired during the course of an investigation will be developed as t of the tera process at site consultation meeting(s) between the Archaeological ra , the Vik CCS Heritage Consultees and the Historic England Scientific Advisor.

4.10.21 The artefact recovery strategy may include, for exampl

- In situ artefact scatters (for example lithic material or materi sociated with salt-making or iron smelting: these may come fro face hollows ied land surfaces, buried shorelines, soils buried beneath e wor r within or be th buried sediments such as colluvial or alluvial posits whi ight be pres long the Humber wetlands, the Lincolnshire O marsh or in v lleys such as the River Ludd/Louth Canal or alongside drain uch as G yfleet n Long Eau, Old engine Drain and Great Eau).
- Bulk sampling for finds (me sizes will dep d on the m erial to be recovered, for example, small faunal rem s and ecofact onsidera n will be given in the SSWSI as to how the recovery m ltiple materials be m mised through a single sieving programme).
- M ing a discr ating metal detector in accordance with a scalable tegy (see se 4 13, belo Each SSWSI will set out how metal detection will be used as part of t tefact rec y strategy and will describe the artefact collection and retentio licy with re nce to the recipient archive storage facility.

4.10 All retained artefacts shall b llected, stored and processed in accordance with standard thodologies and national elines (see Appendix A) and in line with the requirements o recipient archive stora acility.

4.10.23 Reta artefacts will be nitored by the project Conservation specialist to minimise further ioration.

4.10.24 Finds may corde ee dimensionally depending upon their significance and the value of understand l distributions. Bulk finds (including material collected by bulk wet-sieving) will be c ted and recorded by context. Finds may also be recorded according to a pre-determined grid or by spit. The volume of features or specific deposits excavated will be recorded to allow assessment of the density of artefactual material recovered.

4.10.25 The initial care of finds including first-aid and preventive conservation will be in line with current conservation guidelines and standards (including Historic England, 2008b; Historic England, 2010; Historic England, 2018a; and Watkinson & Neal, 2001). A conservation assessment will be undertaken in accordance with Historic England guidance (English Heritage, 2008b), it shall make recommendations for investigative and remedial conservation and shall identify work required to meet the requirements of the recipient archive storage facility. The project Conservation specialist will inform the site team about

the potential range of materials, likely condition, 'first aid' and preventive conservation treatment measures required.

4.10.26 Metal finds will be X-rayed as part of the post-excavation process in accordance with Historic England published guidelines (Historic England, 2006) to assist in the identification and interpretation of the finds which will contribute to the understanding of an action area (it may also be required to meet the requirements of the recipient archive storage facility). Material will be selected for X-ray by the project Conservation specialist and Finds co-ordinator/processing specialist. Material will not be selected for X-ray where it will not produce informative X-rays e.g. lead alloys, heavily leaded co per alloy, very dense/thick material and obviously modern material (Historic England 200

Excavation Sampling Strategy

4.10.27 Archaeological features, layers or deposits identified excavation wi hand excavated in an archaeologically controlled and stratigraphic ma r i rder to m the aims and objectives of the investigation as set out in the rel SSWSI. Ma e assisted excavation of large deposits will only be permitted at retion of the A W a in consultation with the Viking CCS Heritage Consultees.

4.10.28 Sufficient deposits/features will be investigated through hand exca n in each action area in order to record the horizontal and vertical co of the stratig ic sequence to the level of underlying sterile geological strata. E avation also target th ter-relationships between features and major feature ersections nderstand a d record their relationships.

4.10.29 The excavation sampling strategy will b ctated the sign e of the remains, their stratigraphic complexity and th rtefactual an palaeoenv nmental content (including absence of artefactual conten The Archaeo cal Contra tor, in consultation with the Viking CCS Heritage Con lte s, will describ their S WSI an appropriate sampling strategy as determined by sults of the ar al evaluation and key research questions f proval by the vant local authority Archaeological Officer, prior to works comm g tion area.

4.10.30 Th trategy will be under re during the investigation. Site data, artefact and ironmental sample p ssing will ndertaken whilst the investigation proceeds on ite (including artefact spo ing and pre minary assessment of environmental samples). nitially, the minimum sam sizes (see below) will be implemented on site by the haeological Contractor i ccordance with the approved SSWSI. Changes to the s gy will be developed an iterative process at site consultation meeting(s) (see sec 4 7, above).

4.10.31 The fol g minimum sa ling requirements will be used as a standard, these may be varied wit he iterati xcavation sampling strategy to suit the research value of the remains. The WSI identify the initial minimum sample for excavation.

Linear features

4.10.32 Sufficient sections through linear features will be targeted in key locations to address research questions. It may be necessary to increase percentage excavation to address research questions where a higher volume sample would achieve this. Segments will be hand excavated along the length of the feature to understand its depositional sequence and character. Each segment will be not less than 1m long and will be regularly spaced along its length. Segments will be located away from intersections with other features, although key intersections will also be targeted to provide an understanding of the deposit sequence and the relationship between different feature types/classes. All ditch ends will be investigated.

4.10.33 A minimum of 20% of each linear feature will be excavated (increasing to 40% for enclosure ditches and 100% for smaller curvilinear features).

Discrete features

4.10.34 Pits, post-holes and other isolated features (including natural features that have been shown to contain archaeological remains) will be completely (100%) excavated (unless otherwise agreed in consultation with the Viking CCS Heritage Consultees).

Buried ground surfaces, floor surfaces, hearths

4.10.35 Buried ground surfaces, floor surfaces and hearths have the p ntial to contain important remains, including finds distributions, ecofacts and pala nviro nt emains. It may be possible to recognise individual turves or deposi epresenti umped material: if laminated sequences are identified e.g. turves, the p ct Geoar a gist will attend site with the Environmental archaeology supervisor to d a s mpling s gy, which may include recovery of monoliths. Grid sampling and bulk s g may be ad d depending upon the significance of the remains and the research qu ns identified in h SSWSI. Hearths and areas of in situ burning will be completely xca d (in plan or b nt) and sampled for palaeoenvironmental remains and to recover m ial suitable for entific dating, such as archaeomagnetic dating, to address key research s

Animal bone groups or other structured d sits

4.10.36 If structured deposits or animal bone roups are ified during excavation, the Archaeological Contractor will follow storic En nd dance 'Animal bones and Archaeology: Recovery to archive' (Histo Englan 019a) ill consult with the Viking CCS Heritage Consultees and th Histo c Engl d Scientif A isor in determining the sample size to be excavated.

Structures

4.10.37 Each structure including ston uctures, will be in ated/sampled to define the extent, form, st omplexity depth of the component features and its associated dep Intersec between ponents will be investigated to determine their re nship(s). Particu are will be en to ensure that areas of in situ burning are not estigated prior to the ideration ientific dating. Careful hand cleaning may be equired at the level of d tion to est lish the full extent of the structure and any ssociated or related contem rary features, in order to understand its complexity, state of servation, significance an contribute to answering research questions set out in the S SI.

4.10.38 The e vation of wells or s ar deep structures will only proceed following a safe working practice required by onal health & safety guidance and as recorded in the Risk Assessme Method ement to be prepared by the Archaeological Contractor. Preliminary h au ng of potential deep deposits may be able to identify their depth and inform an exc n strategy, which may include machine excavation or stepped excavation.

Burials

4.10.39 In the event of the discovery of human remains the Archaeological Contractor will notify the ACoW and the Principal Contractor immediately, and the ACoW will notify the Police and the Viking CCS Heritage Consultees, in accordance with Part 4 clause 21 of the Order and removal will proceed in accordance with a licence from the Ministry of Justice and under the appropriate Environmental Health regulations and the Burial Act 1857.

4.10.40 All human remains will be treated with dignity and respect. Remains will be covered and protected and left in situ in the first instance, in accordance with current good practice and

the human remains specialist will visit the action area to provide specialist advice and to ensure that the work is being conducted in accordance with the procedures set out in the SSWSI.

4.10.41 The SSWSI will describe a strategy for the investigation, treatment, recovery and assessment/analysis of human remains (neonate/young infants, inhumations, cremations, disarticulated/charnel remains).

4.10.42 The excavation of human remains will be undertaken in accordance with national guidelines (Historic England, 2018b; APABE, 2017; Historic England, 2013; and McKinley and Roberts, 1993), under the guidance of the Human Remains specialist. If attered cremated remains are present, for example in subsoil or colluvium, it may b nece y t use a combination of methodologies and techniques (including sample ving) to i y the source of the deposit. The excavation of mortuary-related re ns may pended pending consultation with the Viking CCS Heritage Consultee

4.10.43 In general, excavation of human remains will not extend b d the limits of action area; however, it may be followed under the baulk (excavation so that it may fted its entirety, provided this will not result in disturbance of further als or extend b the Order Limits. In situations where preservation of archaeological ins is desirable then a preservation strategy will be agreed on a case b basis in con ation with the Viking CCS Heritage Consultees.

Recording

4.10.44 Once open, the extent of the action area will be ac ately rded using metric survey-grade equipment (or its equivalent) and f d in rel n to any g survey markers. The data will be overlaid onto the Or nce Survey n onal grid (ing digital map data).

4.10.45 Following cleaning, the archa ogical remain ill be ma ed (electronic survey-grade equipment) and planned t a e the selection reas features for investigation and to compare the position of th ntified archaeolo mains with any available previous geophys hotographi al trench data, as applicable.

4.10.46 A fu tten, drawn hotograp ecord will be made of the archaeological remains, in a dance with the haeologic Contractor's recording system and standard chaeological methodolo (Appendix

4.1 Hand-drawn plans and secti of features will be produced. The minimum acceptable scale l be 1:50 or 1:20 for pla and 1:10 for sections. Human burials and other special d sits, such as animal bon roups will normally be drawn at a scale of 1:10 or 1:5. All pla d sections will be a rately located against the site grid using electronic survey equipm and will include ot heights relative to Ordnance Datum in metres and will be expresse a minimum wo decimal places. The Archaeological Contractor will include in their SSW state t that describes their recording system and the accuracy of their site mapping.

4.10.48 Site photography will be used to record all archaeological remains that are under investigation. In addition, photographs will be taken to assist in interpretation and publication, and to give an overview of the site, the progress of the investigations and site activities. Overhead (drone) photography will also be used to record progress, relationships between structures and to put the investigations within a wider landscape context. Particular attention will be paid to obtaining photographs suitable for displays, exhibitions and other publicity material. It is anticipated that industry minimum and good practice standard for digital photography will apply (see Appendix A).

Environmental Sampling Strategy

4.10.49 The Archaeological Contractor will include in the SSWSI a strategy for environmental sampling, based upon the results of previous assessment work and the potential of an action area(s) to address key research questions. The strategy will be informed through consultation with all relevant key specialists, including the Environmental archaeology supervisor who will oversee the work during fieldwork to ensure the smooth running of this aspect of the investigations.

4.10.50 The Environmental archaeology supervisor will be present at site visits and meetings with the Viking CCS Heritage Consultees and Historic England as n ssary and shall also take charge of the routine processing of samples and the pervi o utine sampling in connection with the investigations.

4.10.51 Environmental sampling will be carried out in accor ce with c rren tional guidelines including Environmental Archaeology: A Guide to the T ry d Practic Methods, from Sampling and Recovery to Post-Excavation (Historic nd, 2011), G rchaeology, Using earth sciences to understand the archaeologica (Historic Engl 20), Deposit modelling and archaeology: guidance for mappin uried deposits oric England, 2020); and the current CIfA Standard and guid e for the collection, documentation, conservation and research of ar logical mater CIfA, 2020a). Other relevant guidance is contained within Appen A.

4.10.52 The arrangements for processing and tial asses of all samp s shall enable emerging results to be feed back to the fi team and o th mpling strategy. Processing will be supervised by the Archaeolo al Cont tor's F co-ordinator/processing specialist.

4.10.53 Finds, ecofacts and biological facts from sam e residues hould be recorded to sample fraction.

4.10.54 The aims of the environment ategy will be to the ARA. Site based studies that could ai igations may lude the following (this list is not exhaustive and other studi ay be re):

edological (includ icromorph gy) study of soils (or other suitable deposits) deeply buried beneat within collu m would provide information relating to the status of the soil at the of burial and should be able to detect and characterise aspects of previous land and provide information on erosion and on the ontribution of colluvium wind-borne material to the soil.

- n and diatom/phyto analysis.
- Det wet sieving/fl ion of buried ground surfaces and other selected contexts and fe s for the overy of charcoal/wood, plant macrofossils, small animal bones, m cs eoptera, small artefacts etc. The retrieval of a reliable sample can be achieve e routine sampling of a set proportion of each selected context/depos excavated. Sampling should be systematic and extensive.

4.10.55 The results from the investigations should be assessed in relation to discoveries from the wider landscape where this is relevant to an understanding of an action area(s).

4.10.56 If significant archaeological remains/geoarchaeological deposits are encountered during the investigations (for example organic rich remains or deeply stratified sediments), the Environmental archaeology supervisor and Geoarchaeologist will be contacted for advice and to devise an appropriate strategy for excavation and sampling. The Viking CCS Heritage Consultees and the Historic England Scientific Advisor will be contacted by the Archaeological Contractor and consulted with regard to an appropriate sampling strategy and to comment on site retrieval methods.

4.10.57 All samples taken will come from suitably cleaned surfaces and will be collected with clean tools and placed in clean containers, in consultation with the relevant project specialists. They will be recorded and labelled in accordance with national guidelines and the requirements of the recipient archive storage facility, and a register of all samples will be kept. Once the samples have been obtained, the Environmental archaeology supervisor and the Finds co-ordinator will ensure that they are placed in safe storage under suitable conditions to prevent deterioration prior to them being sent to the appropriate project specialist for examination.

4.10.58 Environmental assessment to be carried out at the post-exca tion reporting stages may include consideration of scientific methodologies alongside ditio al recording. The Archaeological Contractor will consult with the Viking C Heritag sultees and Historic England for further advice prior to analysis being u taken; th W will approve the proposals for scientific study to be carried out at the t-excavat on r ting stages.

4.10.59 Samples for radiocarbon dating will be identified from l sampled f nvironmental analyses (see Strategy for Scientific Dating below).

Strategy for Scientific Dating

4.10.60 The Archaeological Contractor will include in the SSWSI a strate or scientific dating to ensure that a comprehensive scientific d ogramme is mbined with the archaeological evidence to address the A haeolog Research A da at the post-excavation reporting stages. The strateg will be inf through con ultation with all relevant key specialists, including the p ect Scien da specialist and the Historic England Scientific Advisor.

4.10.61 The Scientific dating specialist w so provide a ce and gu ance throughout the project, including preparation of the stra gy, field invest ions and a he post-excavation reporting stages, to ensure the smo h nning of this a ct of th work, in consultation with the Historic England Scientific A r.

4.10.62 The Sci specialist take charge of the routine processing of samples.

4.10.63 Alth h scientific will be u taken at the post-excavation stage, it may also be p tised during fieldw o inform ion making and develop the strategies used on e.

4.1 Samples for radiocarbon da will be identified from materials sampled for environmental alyses (see Environmenta haeology: A Guide to the Theory and Practice of Methods, f Sampling and Recovery Post-Excavation (Historic England, 2011), Geoarchaeology, Usi arth sciences to und tand the archaeological record (Historic England, 2015b), and A l Bones and Arch logy – Recovery to archive (Historic England, 2019a) or from recovere efacts (refe Artefact Recovery Strategy, above). The requirements for the recovery, p ssing retention of these materials may be affected by the proposed dating progra g. packaging typologically diagnostic refitting groups of ceramic sherds so that th otential for absorbed lipid analysis and dating is not compromised).

4.10.65 Scientific dating may also be utilised to provide spot dates to inform the excavation strategy, contribute to understanding of stratigraphic sequences, or to provide precision/resolution for statistical modelling.

4.10.66 Scientific dating techniques may include the following:

- Radiocarbon (14C) dating which can be used to date any carbon-based organic materials, such as wood, bone, plant remains;
- Luminescence dating (optically stimulated luminescence or OSL) which may be suitable for lynchets and linear ditches;

- Archaeomagnetic dating for highly fired structures such as kilns or ovens and burnt soil;
- A range of other absolute techniques, such as amino acid racemization, tephrachronology (dating volcanic ash from deposits);
- If preserved wood is present, for example, in waterlogged deposits then dendrochronology may be able to provide precise and accurate dates.

4.10.67 Scientific dating will be undertaken on the recovered samples in accordance with an explicit sampling strategy that incorporates chronological modellin to address the research questions set out in the Archaeological Research Agenda a he S WSI (Bayliss and Marshall, 2022). Multiple laboratories/techniques will employ ensure that robust chronologies are produced. Different strands of ev ce will b bined using formal statistical modelling to produce quantitative estima for chron log hat address the project objectives. Reporting will follow Historic Englan uid nes (ibid)

Treasure

4.10.68 Artefacts that fall within the scope of the Treasure Act (1996) a he Treasure D tion (Amendment) Order 2023 will be immediately reported to the oW and the Principal Contractor. The ACoW will contact H.M. Co and will ens that the Treasure regulations are enforced and that all parti re k nformed. Th ncolnshire Finds Liaison Officer for the Portable Antiquities heme and iking CCS H ge Consultees will also be notified immediately. A list o nds that ha b collected that fall under the Treasure Act and related legislation will ncluded the fie rk report.

4.11 Targeted Archaeolo cal Moni ring and Recording

General approach

4.11.1 The following general appr will apply for d Archaeological Monitoring and Recordi during Pre-C truction Activities and Construction Works.

4.11.2 Tar d archaeolog monitoring be undertaken in areas where prior archaeological e uation indicates th proach is ropriate, and/or in areas where archaeological estigation and recordi advance onstruction are not feasible due to safety or ogistical considerations, o desirable due to environmental or engineering constraints. e construction contractor's ferred method of working would be controlled as necessary he supervising archaeol t to allow archaeological recording to take place to the re d standard (as provid or by the Draft CEMP [REP4-027] Table 3, draft Mitigation Regi Construction Pha ef. D3, as certified by the DCO).

4.11.3 In the ev f human re ns being found during the course of archaeological monitoring of construc works ks should stop, the local coroner, Project Manager and County Archaeologist e alent) should be notified immediately. The local area around the remains should b mmediately isolated and protected by the construction contractor. Work in this area should not recommence without the prior acceptance of the Project Manager and a Ministry of Justice (exhumation) licence being in place prior to their removal (as provided for by the Draft CEMP [REP4-027] Table 3, draft Mitigation Register (Construction Phase) ref. D4, as certified by the DCO).

4.11.4 If archaeological finds are discovered during archaeological monitoring of construction works, the Applicant's Project Manager will be informed, and appropriate steps undertaken, in consultation with the County Archaeologist (or equivalent), to excavate and record the finds prior to construction works continuing (as provided for by the Draft CEMP [REP4-027] Table 3, draft Mitigation Register (Construction Phase) ref. D5, as certified by the DCO).

Generic Methodology

4.11.5 Action areas that require TAMR during construction activities and investigation will be those that are identified in Table 3-2 of the DAMS (above), but may also include new areas that arise as a result of emerging results, detailed design and Unexpected Finds (see section 4.5 of this document).

4.11.6 Action areas designated for TAMR will be stripped by the construction contractor with mechanical plant as set out in the SSWSI. The construction contractor's preferred method of working will be subject to archaeological supervision and control. Topsoil, subsoil or other overburden that does not contain datasets relevant to the res rch objectives (as set out for each action area) will be stripped by a mechanical ex ator f w a toothless bucket to the correct archaeological horizon, under the upervision the Archaeological Contractor. The relevant horizon will be inform by the v tion results, the Archaeological Research Agenda and the research s an objectiv dentified in the SSWSI. The sequencing of stripping together with oth ant logistic nsiderations will be set out in a Method Statement to be prepared by t chaeological C actor

4.11.7 Following stripping, if archaeological remains are identified will be surve ing electronic survey-grade equipment to create a detailed digita e-excavation plan. In accordance with the Archaeological Research A and the aim d objectives that will be identified in each SSWSI, a strategy ba on t lan will be im mented for hand excavation of key features to recover artef ual and sc ic dating evid e. At the same time selected feature complexes will be ubject to f h and excavation designed to resolve stratigraphic relationships.

4.11.8 The proportion of features excav d will e dete ned by th sig ificance of the remains, the Archaeological Research A da and the r arch aims nd objectives set out in the SSWSI. The ACoW in consul on with the c truction c ntractor and the Viking CCS Heritage Consultees, will d r ine the scope rk a imetable for the completion of the investigation at each actio ea and access p ers for plant (once the parameters have be d, access lant will be controlled pro-actively by the Archaeological Cont or). Plant ehicles w d not be permitted to track over areas that contain re ns until archaeo al investig ns are complete, or until the ACoW has given mission.

4.1 The Archaeological Contrac may need to deploy additional resources in order to record e remains to a proper stan d. The construction contractor will allow sufficient time for nvestigation of the archa ogical remains

4.11.10 Mo tion of the works sp cation may be required during the investigations to enable detaile cording to take ace, and to allow adequate time within the construction programm the event mportant discoveries. In this situation a revised SSWSI will be prepared by Arch ogical Contractor in consultation with the Viking CCS Heritage Consultees, p ks commencing in the area to which the SSWSI applies.

Unexpected Fin s

4.11.11 In the event of Unexpected Finds requiring further investigation (that is, a significant find that was not predicted as a result of the evaluation), the provisions set out at section 4.5 of this document will apply. The area will be fenced off, cleaned archaeologically, and recording works completed, in line with a revised SSWSI prepared by the Archaeological Contractor in consultation with the Viking CCS Heritage Consultees and approved by the relevant local authority Archaeological Officer.

4.12 Geoarchaeological and Palaeoenvironmental Investigations

General Approach

4.12.1 Geoarchaeological investigation is a programme of sample recovery and analysis undertaken to investigate the formation of the palaeoenvironmental conditions and soil sediment development that may be relevant to the research of archaeological remains recovered within an action area or within its vicinity. While geoarchaeological investigations were included as a methodology in the WSI for evaluation urveys (ES Volume IV – Appendix 8-3: WSI for Archaeological Eva tion oc ment Reference: EN070008/APP/6.4.8.3) [REP2-016/017] and sub quently a d in tandem with geotechnical investigations, the following general a ach and n methodology are included here for completeness.

4.12.2 Geoarchaeological methods used will be employed as of the overal mitigation strategy where high potential for remains requires such n proach. The ap ach ay involve hand excavated holes (trial trenches/test pits) or mech ally excavated and /or other geotechnical soil sample retrieval methods (such as aug r borehole) and will be undertaken at specific locations identified within SWSI.

4.12.3 The project Geoarchaeologist will be on site ring all g rchaeologic vestigations and will also be available during AER and TA R and at th rting phase provide advice and guidance to the rest of the fiel ork team and ensure that the scientific sampling/recovery is being carried out in cordanc ith the rements and procedures set out in the SSWSI.

Generic Methodology

4.12.4 Geoarchaeological invest i s during Pre struct Activities and Construction Works will be carried o accordance he Archaeological Contractor's geoarch tegy, which be devised with clear overarching research questions by th oject Ge eologist (all other relevant project specialists) in consultation wi he Viking CCS H ge Consu and the Historic England Scientific Advisor, prior he start of the mitigati ogramme Geoarchaeologist will oversee the work during ieldwork and liaise with ot pecialists w o may be involved to develop fully the strategy or environmental researc nd ensure the smooth running of this aspect of the stigations.

4.12.5 Ac areas that require ge chaeological investigation will be those that are identified throu previous and c nt archaeological evaluations and geoarchaeological investig s as of partic interest, or as a result of unexpected discoveries.

4.12.6 Geoarchae cal in gations (trenches, test pits, auger or boreholes) of specified types/size but ugh to provide a safe working environment for investigative works will be excavated he location(s) identified in the SSWSI, which shall also cross-reference to the environmental sampling strategy.

4.12.7 Geoarchaeological investigations may be excavated in level spits to undisturbed natural deposits. Larger interventions may be stepped to ensure stability and safety. Natural deposits will be exposed to a sufficient depth in order to prove their geological origin. Particular attention will be paid to ensure that areas of alluvium, colluvium, river gravels and sand deposits, where they are encountered, are sufficiently tested to ensure that buried peat horizons and palaeoenvironmentally rich palaeochannels are located where/if present. Augering may be used to investigate buried deposits. If significant archaeological remains are encountered during the investigations, the Geoarchaeologist will devise an appropriate

strategy for excavation and sampling. The Archaeological Contractor will inform the ACoW immediately, who will then notify the construction contractor.

4.12.8 Sections will be cleaned by hand in order to fully reveal the full stratigraphic sequence and to prepare sections for environmental sampling, such as soil columns. The full geo-archaeological sequence will be investigated to identify and understand the formation processes to address the Archaeological Research Agenda and the site-specific research objectives developed in the SSWSI.

4.12.9 Palaeoenvironmental sequences will be sampled for the broad range of evidence that they may contain including micro-morphology, charred plant remain plant macrofossils, pollen, wood, invertebrates and molluscs. Particular samples wi also b ec d at identifying key components for scientific dating.

4.12.10 If column samples are taken, their location will be curately s rve using electronic surveying equipment and their location drawn on the a mp ying sec drawing.

Auger/Boreholes

4.12.11 Throughout the mitigation programme augering may be re ed to establis far deposits extend below the surface, the character of buried dep and to confirm that a deposit does not seal other archaeological de s Hand/pow ugers (e.g. window sample or other shallow borehole equipm) m be used to /describe deposit sequences and to collect samples, where is the mo uitable meth ogy to address clear research questions. Augering ma be undert e s part of archaeological or geoarchaeology investigations, where will be e ploye der the guidance of the Environmental archaeology specialist a /or the eoarcha t. The requirement for hand or power augering will be out in the SS SI and M hod Statement prepared by the Archaeological Contractor, onsultation w he Viking CS Heritage Consultees and approved by the relevant lo al thority Archae gical Offi r.

Recording

4.12.12 The lo t of each g rchaeological investigation will be accurately recorded usi etric survey equipme nd fixed in relation to existing survey markers. The d will be overlaid on Ordnanc rvey national grid (using digital map data).

4.12 rior to the drafting of eac SWSI, the G archaeologist will review the geology and soil descriptions and the resu of previous ground investigations and archaeological luation. The Geoarchaeo st will also prepare a site-specific deposit model if in their o n it would result in a be understanding of the sequence and to inform the decision-ma process (Carey et al 018).

4.12.14 A full w n, drawn and otographic record will be made of each geoarchaeological investigat ction are en where no archaeological deposits are identified. Cores may be recorded pro a logs. Hand drawn sections (and plans where relevant) of the deposit sequen be produced at an appropriate scale (normally 1:20 for plans and 1:10 for sections). All p ns and sections will include spot heights relative to Ordnance Datum in metres, correct to two decimal places.

4.12.15 Photographs will be taken during the course of the geoarchaeology investigations to record site activities, the deposit sequence and sample locations.

4.12.16 The same methodologies for archaeological excavation and recording will apply (artefact recovery, human remains, treasure etc) to geoarchaeology investigations.

4.13 Trial Trenching/Test Pitting

General Approach

4.13.1 During Pre-Construction Activities, trial trenching will be carried out in areas along the Proposed Development where evaluation surveys were not completed due to access issues, or where only a limited amount of survey work was undertaken. The purpose of the additional trial trenching will be to determine the presence/absence, extent, character, condition and significance of the remains in order to inform the detailed mitigation requirements at these locations should it be required.

4.13.2 The approach to be employed will follow the approved WSI fo h logical Evaluation (ES Volume IV – Appendix 8-3: WSI for Archaeologi Evaluatio ocument Reference: EN070008/APP/6.4.8.3) [REP2-016/017]), but shall into acc n cific provisions of the Strategy in respect of archaeological excavation d re rding, w e relevant (see section 4.9 of this document).

4.14 Metal Detecting

General Approach

4.14.1 While metal detecting was included as a meth og he WSI for e ation surveys (ES Volume IV – Appendix 8-3: WSI for Ar eological luation (Doc nt Reference: EN070008/APP/6.4.8.3) [REP2-016/017 the follow g eral approach and generic methodology are included here for comp eness.

4.14.2 Metal detecting, the identification nd re rding urface a ed metal artefacts, will be undertaken to recover meta k that is with the ploug one, either from the topsoil prior to excavation, or from a haeological ho ons durin machine stripping. It will be carried out in accordance h scalable stra to en e a targeted approach to the survey. Metal detecting may ompleted prior ommencement of other forms of intrusive gical mitiga or as part of excavation within an action area. (Metal dete may al deployed art of the normal excavation procedure to enhance ar ct recovery duri nd excav of archaeological remains, and over spoil heaps ssess the level of re y).

Generic Methodology

4.14.3 tal detecting will be deplo where there is a requirement to assess the archaeological p tial of an action area a r where the assessed significance of an identified spread of a cts requires a more ailed investigation. A single action area for metal detecting as par he archaeologic valuation was identified north of Barnoldby le Beck surveys to asses presence/a nce of archaeological remains that could be associated with a scheduled War f ortheast of Walk Farm [303] and evidence of Anglo-Saxon burial activity at We [223, 224] (ES Volume IV – Appendix 8-3: WSI for Archaeological Evaluation (Doc nt Reference: EN070008/APP/6.4.8.3) [REP2-016/017]).

4.14.4 The scaleable (2-stage) strategy for metal detecting within the ploughzone will comprise an initial non-intensive survey to determine the character and extent of the metalwork comprising two baselines orthogonal to each other survey and transects at 10m spacing (recommendations from the Battlefields Trust; see Marsh, 2023: p.12).

4.14.5 Depending upon the results of the initial non-intensive survey, finds distributions that are considered to be significant (as determined by the Archaeological Contractor in consultation with the Viking CCS Heritage Consultees) will be further investigated by intensive survey, achieved by reducing the spacing between the survey transects to 2m spacing over the identified hot spots.

4.14.6 The scope and location of the metal detecting survey will be described in a SSWSI to be prepared by the Archaeological Contractor in consultation with the Viking CCS Heritage Consultees and approved by the relevant local authority Archaeological Officer.

4.14.7 Metal detecting will only be undertaken by experienced metal detectorists who shall be aware of the Code of Practice for Responsible Metal Detecting in England and Wales (https://finds.org.uk/getinvolved/guides/codeofpractice). Modern metal detection equipment shall be used, and the survey will be undertaken in 'all metal mode' (sensitivity settings to be used shall be guided by experienced detectorists familiar with the detection equipment).

4.14.8 The Archaeological Contractor shall appoint a Metal Detectoris o-ordinator, who will have the necessary archaeological experience and expertis to en th best results from metal detector operators in the field and the effici reporting he results. The co-ordinator shall be responsible for maintaining a regi of metal t users involved in the survey(s), providing appropriate site access and ensu ng goo ctice in survey and recording methodology. The co-ordinator wi ensure appropriate arrangements are made for the identification, conserva nd security of finds and ultimately their incorporation into the overall project find dat e.

4.14.9 External metal detectorists engaged by the Archaeological Cont r must agree to abide by the relevant Policies, Methods/Guidelines Agreements the Archaeological Contractor prior to deployment to site. In th ci stances the al detectorist co-ordinator shall ensure that the work is regu ed by form written agree ts between the Archaeological Contractor and the nomin ed detecto ts nsure that all work is carried out in accordance with a set of principle greed at t outs the project and detailed in the SSWSI. The Metal Detectorist co-ord or sha so ensu all detectorists are fully briefed to ensure that they adh o the princip set out in heir written agreement and have completed all health and ety inductions d training cessary to work on the site.

4.14.10 The Archaeological Contr r hall confirm in SSW how finds distributions will be recorded (located, recovered bagged) and th isposal policy for modern objects such as ink waste, m rn agricultural debris.

4.14.11 Ad nally, the Arc ogical Con tor shall also describe how night-hawking activities w e deterred and wh r mitigatio easures are appropriate to counter the threat of cit metal detecting activ

4.1 Prior to the start of initial non ensive metal detection survey the Archaeological Contractor ll assess the soil chemist f the ploughzone to confirm the potential for the survival of m artefacts (especially fe s artefacts).

4.14.13 All r ered metal object ill be quickly assessed and identified by an appropriate special inform the stra y and will be conserved in accordance with the Archaeological Contracto nds poli objects may also require x-ray to confirm their identification (Historic Eng 20 The artefacts shall be included on the project finds database.

4.14.14 Results from me etecting shall be presented in a specialist technical report(s) prepared by the Archaeological Contractor (see section 7, below). The aim of assessment/ analysis will be to maximise the potential of the record to understand the archaeological resource overall as part of the Strategy and to understand spatial distribution of the artefacts within the ploughzone generally and in relation to other influencing factors (including land use and agricultural practice, taphonomic processes, topography, geology and relationship to other archaeological and natural features, etc.).

4.14.15 Interim statements will also be produced by the Archaeological Contractor immediately upon completion of a stage of fieldwork to inform the metal detecting strategy (briefly summarising the findings and containing recommendations for extending a survey or to advance to intensive metal-detecting).

4.15 Archaeological Topographic Survey (Earthwork Survey)

General Approach

4.15.1 Archaeological topographic survey (earthwork survey) was included as a methodology in the WSI for evaluation surveys (ES Volume IV – Appendix 8-3: WSI for Archaeological Evaluation (Document Reference: EN070008/APP/6.4.8.3) [REP2-016/017]. As part of Pre-Construction Activities, archaeological topographic survey will be carried out in areas along the Proposed Development where evaluation surveys were not completed due to access issues, or where only a limited amount of survey work was und rtaken. The purpose of the archaeological topographic survey will be to record earthw featu s that cannot be avoided, and which will be impacted by the Proposed elopme

4.15.2 The scope and location of any additional archaeologi opograph s y, where required, will be described in each SSWSI that will be prepare y the rchaeol l Contractor in consultation with the Viking CCS Heritage Consultees, proved by elevant local authority Archaeological Officer. The approach to b mployed for aeological topographic survey will be identical to that set out for ea hwo urvey in the app SI for Archaeological Evaluation (ES Volume IV – Appendix 8 WSI for Archa ogical Evaluation (Document Reference: EN070008/APP/6 4.8.3) [REP2 6/017]).

4.16 Strategy for Digital Data

4.16.1 The Archaeological Contractor will pres ve and m e a sible to future generations digital material produced during the cou of the p ct, reg ss of the media on which the information is stored. Example of dig al mate that will g erated include complex datasets from the fieldwork, po xcavation re ting stage which will be curated into a digital archive (e.g. topograph survey, trench aluation tigation investigations, GIS, CAD and relational databa hotography, illu tions cialist studies).

4.16.2 The project Di ital data co-ord r will be responsi or the creation of the digital archive and wi ta collecti onforms to the requirements of the digital archive. The Digi ata co-ordin will be ava le throughout the life cycle of the project to provide a e to other memb f the team the format, structure and content of the digital chive, and at the end o project th ill ensure that the digital archive is transferred to the digital repository.

4.16.3 isting and new digital data be safeguarded and deposited in a digital archive, such as t rchaeology Data Servic hat conforms to current national standards and guidelines on data will be structu preserved and accessed (including CIfA, 2020b; Brown, 2011; oric England, 20 and ADS, 2011) and Historic England guidance on Digital Archiving Work Digital nk Archive: A guide to managing digital data generated from archaeolog nvesti ns' (Historic England, 2019b).

4.16.4 The Archaeolog ntractor will arrange for the digital archive to be stored in a suitable facility or collectio repository where it can be properly accessed, curated and maintained. The Archaeological Contractor will consult with the Viking CCS Heritage Consultees and the ACoW if the digital archive will be held in a location separate to the written/drawn records that comprise the traditional project archive.

4.16.5 The Archaeological Contractor will ensure thorough documentation of the digital datasets, including details on how it was collected, what standards were used to describe them and how they are being managed. Some data may be confidential and a means of separating this data from non-confidential data will be developed for reports, analytical datasets, and for displaying site locations on maps. It is important that this process is documented and deposited as part of the digital archive.

4.16.6 Interim/temporary versions of final digital files will not generally be preserved except where data or text is subsequently discarded or lost before it is finalised. Data held safely on paper records will be digitised where there is specific value in doing so, and/or to provide a digital security copy or online access to the data. Paper originals will be retained within the traditional project archive.

4.16.7 Irrespective of whether the paper and digital archive is stored in separate places, the overall integrity of the complete archive will be ensured by the cross-referencing between the physical collections and digital records.

4.16.8 As a minimum the digital archive will contain an index to the haeological interventions, finds and the written/drawn archive, and will provide cess dig records of data, material documentation, interpretation and analyses

4.16.9 The Archaeological Contractor shall plan for the gital arch ve he start of the investigations and throughout the project lifecycle, in a da with the haeology Data Service/Digital Antiquity Guides to Good Practice (ADS, .

Digital Data Management Plan

The Archaeological Contractor shall prepare a Digital Data M gement Plan (DDMP) based on the above considerations, with referen the Digital Cu n Centre's Checklist for a Data Management Plan (DCC, 2013) se g o posals for th eation, collection, processing and preservation of digital data ts.

5 Programme

5.1 Introduction

5.1.1 Archaeological mitigation will commence as part of the Pre-construction Activities stage and will be scheduled to be completed before the start of the Construction Works stage, except specific works that will necessarily only take place at the Construction Works stage.

5.1.2 The Public Archaeology and Community Engagement Progr mme will be implemented throughout the Pre-construction and Construction Works stage

5.2 Archaeological Investigation Dur g Pre- struction Activities

5.2.1 The mitigation programme is dependent upon land acces quirements, pr ling ground conditions and related utility diversions. Archaeological k ll be generally p ram d as follows at Phase 1:

- Archaeological Topographic Survey (earthwork urvey) where s not possible to complete this before the start of Examina ction 4.14 o document);
- Metal Detection within the ploughzone ee section of this docu nt);
- Archaeological evaluation trial trenc g, where i as n ssible to complete this before submission of the Strategy (s section 2 of th ument);
- Small-scale investigation o ric landsca eatures a other small-scale action areas;
- Geoarchaeology inves ns (see section of t document). Existing models from evaluation and new collected during ork will be used to model deposit se t of the on iterative process, during the Pre-construction ities stage;

  Archaeological exca n and rec g (strip, map, sample and record) will be undertaken during the constructio ctivities stage (prior to construction) at archaeological action ar requiring preservation by record (see section 4.9 of this document);
- mporary, protective fen g will be installed around identified action areas to prevent ge (see section 4 8 this document); and
- Add l action are hat require preservation of archaeological remains will be identifi d mea s implemented (see section 4.8 of this document).

5.2.2 Archaeologica compounds, including on-site archaeological processing and other post-excavation lities will be established during the course of the Pre-construction Activities stage.

5.3 Archaeological Investigation During Construction Works

5.3.1 Regular monitoring visits will be undertaken by the ACoW during the Construction Works stage to ensure that archaeological action areas protected during the Pre-construction Activities stage will not be impacted during construction. This will include action areas to be protected by temporary track matting or beneath fill, such as temporary access routes and construction compound areas (see section 4.8 of this document).

5.3.2 Archaeological mitigation will be designed and implemented during the Construction Works stage, in compound areas where it is unfeasible to achieve a no-dig solution (for example, where the sensitivity of archaeological remains likely to be present, based on the results of the archaeological evaluation, indicates that the use of fill would not be appropriate), following archaeological evaluation as part of Pre-construction Activities. This mitigation may take the form of preservation of archaeological remains, archaeological excavation and recording or targeted archaeological monitoring and recording and would be set out by the Archaeological Contractor in a SSWSI, in consultation with the Viking CCS Heritage Consultees, and approved by the relevant local authority Archaeological Officer.

5.4 Artefact Assessment and Geoarch eolog ssessment

5.4.1 Assessment of material gathered from meta etection, e haeological and palaeoenvironmental assessment will be undert con urrently th the on-site archaeological works (Pre-construction Activities and C ction Work ges) as part of an integrated, iterative strategy to ensure adherence haeological g practice in decision making during the fieldwork.

5.4.2 This will include rapid spot-dating of archaeological remains d assessment of their artefactual and palaeoenvironmental potential, s t archaeologic atures and deposits can be suitably targeted during the archaeol al s This will a nsure that these studies do not cause a delay for the post- avation a sment, analy nd publication phases. Immediately after completion of f dwork the c ng of the remaining finds and environmental assemblages will be com ted.

5.4.3 Regular reviews of the datasets wi be u ertake uring the eological works so that resources can be targeted app ately for the st-excavat n assessment, analysis and publication of the finds and en onmental asse ages.

6 Communications and Monitoring of Archaeological Works

6.1 Communications Strategy

Reporting lines

6.1.1 The Archaeological Contractor will report to the construction c ntractor for the purposes of programming and co-ordination to ensure effective delivery o arch eological works in accordance with the DAMS and the Draft CEMP.

6.1.2 The archaeological work will be overseen on behalf he Client ACoW who will be based on Site as the Client's representative.

6.1.3 The Archaeological Contractor will only accept instructio m the constru n contractor and ACoW.

Monitoring

6.1.4 The ACoW will liaise with the Archaeological Cont tor and the c uction contractor to monitor progress and compliance with the re of the DAM ach MS and each SSWSI. This will include (but is not limited

- Monitoring of all aspects of archaeol cal fieldwo a h AW and CW stages.
- Monitoring of the effectiveness of pr tive m ures fo istoric environment (temporary fencing, track m g and fill are
- Provide Tool Box talks to in m Site person of herita environmental constraints on Site.

6.1.5 The ACoW will act as coordin in respect of acc and monitoring arrangements with the Vik ge Consult and/or individual local authority Archaeological Officers and Historic E d Scientif dvisor. This will include oversight of engagement b een the Archae cal Cont r and their specialists, and between the chaeological Contracto d the Histo England Scientific Advisor, to ensure the timely provision of on-site advice e fieldwork eam.

6.1.6 e archaeological mitigation rks will be subject to ongoing monitoring by the ACoW, who s have unrestricted acces the action areas, site records or any other information as may required. The work be inspected to ensure that it is being carried out to the requir andard and that ll achieve the desired aims and objectives.

6.1.7 Site meet will be he s necessary throughout the archaeological programme to allow implementa f the haeological mitigation works to be monitored to ensure adherence to each approv SI and Method Statement, to enable effective decision making where required, and to s port timely sign-off of completed archaeological works. The Viking CCS Heritage Consultees and the relevant local authority Archaeological Officer will be invited to attend Site meetings in accordance with their roles.

6.1.8 The Viking CCS Heritage Consultees, local authority Archaeological Officers and the Historic England Scientific Advisor will be afforded access to the sites through regular Site meetings (see below); specific visits to access site records and any other information will be arranged as necessary and required by these Consultees through the ACoW.

Progress and consultation meetings

6.1.9 During the fieldwork regular meetings will be held to review progress and emerging results, review site strategies and to sign-off action areas to construction. Attendees will normally include, but are not limited to the following:

- Archaeological Clerk of Works.
- Representative(s) from the construction contractor's project management team and sub-contractors.
- Archaeological Contractor's Project Manager, environmen archaeology supervisor and other key members of the Archaeological Cont or's t s h as the PACE specialist.
- The Viking CCS Heritage Consultees and local a ority Archaeol l Officer(s).
- Historic England Scientific Advisor.

6.1.10 It is anticipated that progress and consultation meetings l held regularly (kly at such longer interval as may be agreed) during fieldwork; the hedule for futu /or additional meetings will be confirmed at each meeting. This will ure that programming details and updates are communicated rapi d efficiently d will ensure that appropriate resources are available and can dep d where they required prior to the start of advance works such as temp ary utility d ions and st ures, or during construction itself. Regular communicatio via email a t hone) will also be maintained between the project team (Archaeologi Contract cons on contractor and ACoW) throughout the archaeological mitigation ogram to ensu smooth running of the archaeological works.

6.1.11 The progress and consultation meetings will re w implem ntation of the DAMS and the suitability and effectivenes f e sampling str ies a pted on the basis of specialist advice.

6.1.12 The A Archaeolo l Contractor will give Tool Box Talks, to inform all Site per nel of histori ironment traints on Site, the protection measures that are ired and their oblig s under DAMS and CEMP and generally to ensure that ese are put in place an mplied with provided for by the Draft CEMP [REP4-027] Table 3, draft Mitigation Re er (Construction Phase) ref. D8, as certified by the DCO). e Tool Box Talks will ide sensitive action areas that must not be disturbed until tigation is completed an gned-off to construction, or where protection is required.

6.1.13 Mon ng of the public ar eology and community engagement programme will be includ the weekly prog s meetings.

6.2 Progres Rep ting During Fieldwork

Weekly Progre Reports

6.2.1 The Archaeological Contractor will prepare weekly illustrated progress reports which will be sent to the ACoW during Phases 1 to 3. The ACoW will circulate progress reports to the Viking CCS Heritage Consultees and Historic England for information. The progress reports will include, as a minimum:

- General progress and current programme;
- Programme lookahead;
- Contractor issues/performance;
- Access/action area constraints;

- Health, Safety & Environment;
- AOB.

6.3 Monitoring of Post-Excavation Work

6.3.1 Following the completion of the fieldwork, the Archaeological Contractor will provide a programme of work and schedule for the completion of the Post-Excavation Assessment Report (PEAR; see Chapter 7, below) and will send it to the ACoW for approval.

6.3.2 Regular meetings will be held throughout the post-excavatio works to monitor progress and guide the assessment process on the basis of speci st ad Th chedule for these meetings will be determined by the ACoW prior he comm ement of the post-excavation programme, in consultation with the Vik CCS Her g onsultees and the Historic England Scientific Advisor.

6.3.3 These meetings will normally be attended by the followin required:

- Archaeological Clerk of Works.
- Archaeological Contractor's Project Manager.
- Archaeological Contractor's relevant speci required).
- The Viking CCS Heritage Consultees
- Historic England Scientific Advisor.

Post-Excavation Progress Reports

6.3.4 The Archaeological Contractor submit regul post-excav tion progress reports to the AcoW (minimum of one every x weeks). The oW will ci ulate progress reports to the Viking CCS Heritage Cons e and the Histori gland entific Advisor, for information. The progress reports will inc as a minimum:

- G and curren gramme.
- ork completed.

  Issues/delays and pro ed measur rectify or mitigate these.

  Updated schedule of wo

  AOB.

6.4 Sig ff of Archa logical Work

6.4.1 The ACoW l inform th ntractor upon completion of fieldwork at each action area where investigation ve b undertaken or where protection measures can be removed.

6.4.2 Action areas th e been completed (approved by the ACoW in consultation with the relevant local authority Archaeological Officer) will be subject to a formal signing-off procedure. The Archaeological Contractor will submit a completion statement to the ACoW and the construction contractor. The ACoW will submit the accepted completion statement to the relevant local authority Archaeological Officer(s) for confirmation that the relevant works have been completed in compliance with the relevant SSWSI.

6.4.3 A template Completion Statement is provided at Appendix C of this document.

7 Reporting, Publication and Dissemination

7.1 Outline Methodology for Reporting of Archaeological Investigations

7.1.1 Following the completion of the fieldwork, the processing of all finds and samples will be completed. Each category of find or environmental/industrial material will be examined by a suitably qualified specialist so that the results can be inclu ed in the Post-Excavation Assessment Report (PEAR) to be produced at the end of the i tigati ns.

Interim Statements

7.1.2 Interim Statements will be prepared and submitted the ACoW wi a set time frame following completion of fieldwork at an action area or g p o tion are at are related. The purpose of each Interim Statement is to provide a account of th sults of the fieldwork. The time frame for the production of Interim ents will be d d by he ACoW prior to the commencement of the post-excavation ssment for th ant action area or group of action areas. The Interim Statements wil ude:

- A brief summary of the results;
- A draft or sketch plan of each action a (s);
- A quantification of the primary archiv ncluding fi s a amples;
- Identify any issues that have arisen ng the urse of dwork to ensure that there is integration across th roposed Dev pment be een action areas and work stages; and
- A programme of work hedule for the pletio the PEAR.

Post-Exca tion Assessm Report (PEAR) nd Archaeological Research Desig)

7.1.3 Th Archaeological C actor will et the set time frames in order that the post-avation assessment, alysis an ublication phases can be programmed and esourced properly, and so the comple on date for all construction and post-excavation works can be met.

7.1.4 ults from several action a may be combined and treated as one site for the purposes of ost-excavation (asses ent and analysis) stages. The results from earlier evaluation surve will also be ass ed/reviewed by the Archaeological Contractor where it contribu to an unders ding of a site and addresses the Archaeological Research Agenda a ims and ectives of each SSWSI. Following the completion of the post-excavation a sm the original project objectives will be reviewed to determine the scope of any an and publication.

7.1.5 The preparation of the project archive, post-excavation assessment and subsequent analysis and publication phases will be undertaken in accordance with the relevant SSWSI and Historic England guidelines (Historic England, 2015a), and other relevant archaeological standards and national guidelines (see Appendix A of this document). The different phases of reporting will be completed within a set time frame following completion of fieldwork, as agreed between the Archaeological Contractor and the ACoW in consultation with the Viking CCS Heritage Consultees.

7.1.6 The format of the report is dependent upon the results of the investigations, but the PEAR will contain the following:

- A non-technical summary;
- Site location;
- Brief archaeological, historical and project background;
- Methodology;
- Aims and objectives;
- Results – factual data statements (stratigraphic, artefactual, environmental, initial scientific dating results);
- Statements of potential (stratigraphic, artefactual, e ronm l);
- Statements regarding immediate and long-term age and c ;
- Review of original aims and objectives;
- Statement of the significance of the results in their lo egional and n al context according to the regional research framework (Knig e 2012);
- Archaeological Research Design (ARD) that sets out how th rchaeological Research Agenda and the research aims and bjectives of the WSI can be addressed at the analysis stage, and deta sals for publ n and dissemination;
- Post-excavation analysis method sta ments;
- Recommendations for analysis, repo g and p lication ding a synopsis of the proposed contents);
- Proposed resources and p gramming (tas t linked to ey personnel, time required, cost and key research e ons that the ta will answ or facilitate and programme cascade chart);
- Ge iled plans wing the location of the action areas/site accurately tioned on a base with co-ordinates and a plan of the identified chaeological rem (to a kno cognisable scale);

  Detailed plans and se s/profiles, osit models etc., to support the narrative;

  Detailed stratigraphic m for each area excavated and how the areas interlink;

  Photographs and illustrat s;
- graphy;
- A cr eferenced in to the project archive and summary of contexts; and
- Append cont g specialist reports. (Specialist technical reports relating to the scope of w he evaluation surveys will be reported in accordance with the requirements t out in the WSI for evaluation surveys, Section 7.3 (Earthwork Survey), Section 7.4 (Metal Detector Survey), Section 7.5 (Trial Trenching), Section 7.6 (Geoarchaeology) REP2-016 / 017].)

7.1.7 The PEAR and ARD will be submitted to the ACoW for review and comment. The Archaeological Contractor will address any comments that the ACoW may have. The ACoW will issue the revised draft report to the Viking CCS Heritage Consultees and Historic England for comment. In finalising the report, the Archaeological Contractor will take account of their comments.

7.2 Publication and Dissemination

7.2.1 The scope of the analysis and publication report will be dependent upon the assessment and future discussions to be held with the Client, the Viking CCS Heritage Consultees and Historic England.

7.2.2 The analysis stage will be undertaken in accordance with the ARD and will lead to the compilation of a research archive and the production of integrated report texts and illustrations for publication.

7.2.3 It is envisaged that interim reporting related to the evaluation s veys and mitigation will be published on the Archaeology Data Service.

7.2.4 Fieldwork updates will be published annually in fieldw k roundups ppropriate local and period journals. Fieldwork data would be fed into h releva lo uthority Historic Environment Record.

7.2.5 It is anticipated that academic publications could take form of either ulti-period monograph, a series of thematic or chronological m og s, and /or top th -, period-, or object-specific articles in appropriate journals. Popu ooklets for chi and adults may be produced by the Archaeological Contractor in tande th formal assessment and analytical reporting.

7.2.6 The final scope and publication outlet/f mat for p ar and aca ic publications associated with the Proposed Developm have not y decided, but it is anticipated that these would be print publications a accessibl onlin open-access publications. Digital publication, dissemination and le onli archivi the Archaeology Data Service archive would be prepa rranged by t Archaeolo ca Contractor.

8 Archive Preparation and Deposition

8.1 Archive Security and Storage

8.1.1 The finds and records generated by the fieldwork will be removed from the Site at the end of each working day and will be kept secure throughout he project (digital records will be saved and stored in accordance with the Digital Data Management Plan) (CIfA, 2020b; and Appendix A). The Archaeological Contractor will be responsible for the care of the project archive and should ensure that adequate resources are in p e prior to the start of the fieldwork, including for the long-term storage. Arrangem ts sh be ade for the proper cataloguing and storage of the archive during the proj life-cycle ay be appropriate to liaise with an archive specialist).

8.1.2 The Archaeological Contractor will liaise with the Vik CC Heritage sultees at the initial project set-up to identify any specific requirements licies of the r ient archive storage facilities (for example, the discard policy for r finds), and fo herin to those requirements: the relevant repositories are identif ed in tion 8.4 of this ent (below). The Archaeological Contractor shall adhere to current onal standards for the creation, compilation, transfer and curation of archive (Bro 2011; CIfA, 2020b; Historic England 2019b) and will inform the A o policies adop

8.1.3 On request, the Archaeological Contr or will pr the ACoW with copies of communications with the recipient a hive stora f y and, ultimately, written confirmation of the deposition of the arch The Cli and A will deal with the transfer of ownership and copyright issu Any harges vied by e cipient archive storage facility for the long-term storag he archive w be met by e project.

8.1.4 Viable pollen assemblages ha re recovered w be depos d in the European Pollen Database (raw pollen coun tp://www.europ ll atabase.net/index.php). Archaeobot i al data should onsidered for inc n into the ArboDat recording and databa UK ArboD er group is administered by Historic England: see http istoricengla g uk/resea methods/archaeology/archaeobotany/).

8.1.5 h SSWSI will require all specia data be supplied in data format (tables, csv etc): ll specialist data should b corporated the Digital Archive in raw and processed data format (tables, csv etc).

8.1.6 cialist data and reports clearly state the research potential of the collections, hig hting these for the acc oning repository, as this will ensure that the potential of the colle s can be promoted esearchers following deposition.

8.2 Conso ation the Archive

8.2.1 The site recor fieldwork interventions, notebooks/diaries, context records, feature records, structur cords, site geometry (drawings), photographs and films, finds records and associated datafiles) and recovered assemblages and the results of surveys will constitute the primary site archive. This is the key archive of the fieldwork project and the raw data upon which all subsequent assessment and analysis and future interpretation will be based. The archive will therefore not be altered or compromised. It will remain the original record of the fieldwork. The archive will be quantified, ordered, indexed and made internally consistent in line with current good practice. All finds and coarse-sieved and flotation samples will have been processed and stored under appropriate conditions.

8.2.2 The archive from the mitigation work may be combined with the archive from the archaeological evaluation surveys to form a single consolidated project archive. The deposition of the complete archive will form the final stage of the project.

8.3 Digital Archive

8.3.1 The requirements for the management and preservation of the digital records created during the project are outlined in the Strategy for Digital Data at Chapter 4.14 above.

8.3.2 Digital data and digital finds information will be archived to national standards (Appendix A) and will be transferred at the end of the project onto to a suitable facility or collections repository where it can be properly accessed, curated and maintained (such as Archaeology Data Service (University of York), or other cloud-based service).

8.4 Deposition of the Archive

8.4.1 The Archaeological Contractor, in liaison with the AC , shall ens ll written records of the archaeological investigations undertaken are pleted a s itted in a timely manner (as provided for by the Draft CEMP [REP4-0 Tab 3, draft ation Register (Construction Phase) ref. D6, as certified by the DCO).

8.4.2 A copy of any analysis, reporting or publication requir as t of the Mitiga Str gy shall be deposited with the relevant local authority repositor s part of the sed Development archives within 1 year of completion of the Propos Development, or such other period as may be agreed in writing by th t planning a rity. Archive should be deposited with an appropriate museum a llows

- Lincolnshire County Council Heritage ervice (for relating to s tes within the jurisdictions of West Lindsey and Ea Lindsey D ict C cils);
- North Lincolnshire Museums (f r arc e relat to sites he jurisdiction of North Lincolnshire Council) d
- North East Lincolnshire Co ncil (for archive ating to s within the jurisdiction of North East Lincolnshire cil).

PART THREE – REFERENCES AND APPENDICES

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Appendix B Outline Public Archaeology and Community Engagement Strategy

Introduction

This Outline Public Archaeology and Community Engagement (PACE) Strategy sets out an overarching strategy for outreach and engagement associa d with the authorised development, as provided for by the Draft CEMP [REP4 27] T 3 ft Mitigation Register (Construction Phase) ref. D6 (as certified by DCO).

The Outline Viking CCS PACE Strategy includes pot al site-ba ed ities, initiatives to be undertaken while site work is ongoing, and activ to undertak hroughout the post-excavation phase.

The initiatives aim to maximise the potential influence a d le g opportunitie g from the archaeological works, providing information to the wide ariety of audien es, ranging from members of the public living in the vi i ity of the auth ed development to visitors to the area.

It is acknowledged that the type of events d activities ned often att t the same group of people, generally including thos who would qu local museums and heritage attractions. Efforts should be m to reac hose w ould not usually engage with archaeology or community h tage the wi area, to e a lasting legacy to the archaeological and other herita orks underta n as part o he authorised development.

The off-site phase of the Vik CS PACE Strat us on making information available i permanent f ts, such as exhibitions, printed and pdf format booklets and w Lectures d be provided to groups with a specific interest in the arc ology of the a uring this p e, though it is noted that this form of outreach is selecting and not e ially effect n reaching significant audiences: resources are tter focused on more ge al informati rovision.

he Archaeological Contrac will prepare a scheme-specific Viking CCS PACE Strategy, iling the targeted audien and the activities to be undertaken. This will include a pr mme of activities throu out the project lifecycle.

Aims Objectives

Key resea bjective ve been identified for the mitigation phase of the Viking CCS Scheme, to e th esearch is focused on the principal questions that the Scheme has the potenti ntribute to or answer. The evidence from these sites also has wider implications for th archaeology of the East of England region.

The aim of the Viking CCS PACE Strategy will be to raise awareness of the significance of the archaeological landscape, to provide a lasting legacy of the archaeological works, and to encourage the enjoyment, interaction and engagement with the archaeological process and discoveries arising from the mitigation works undertaken along the Scheme.

The objectives of the Viking CCS PACE programme will be:

- Engagement and appreciation: Encouraging engagement with and appreciation of the archaeological landscape.

- Knowledge about archaeology within and in the vicinity of the Scheme: Advancing public understanding and stimulating interest and public curiosity about archaeology within the Scheme.
- Public understanding of developer-led archaeology: Making the archaeological process more understandable for the public, particularly in relation to a major Solar Farm Scheme, explaining why the sites selected for investigation have been chosen while others have not.
- Accessible learning: Creating accessible learning opportunities for people to be involved in actively discovering more about their past
- Disseminating fieldwork information: Disseminatin ormatio ut the archaeology within the Scheme to schools, the local commun ocal soci nd groups with a keen interest in history and archaeology, and the demic comm via a variety of platforms.
- Sharing research: Showcasing the research impact lopment-led a eological fieldwork and how it can inform our understanding o the with local and audiences, including academic interest.
- Inclusive participation: Encouraging engag with those tha y not normally engage with archaeology or local history

Target Audience

A successful PACE Strategy must consi both wh he aud e is and the activities they want to partake in. The Viking CCS CE St egy shou ilored to meet the needs of the identified audienc provide en ing activit to add enjoyment. Outreach has traditionally bee cused on a si ar range o ctivities, such as public talks and site tours, but co de ation should be en to o r activities to widen the audience.

The P E Strategy kely to focus predominantly on those communities dire mpacted by uthorised elopment, or in its immediate vicinity, specifically th people living and king within djacent to the authorised development, and ose passing through it v cal historic es. The academic community at relevant universities may also be tar d through activities such as presentations at conferences, ong with the promotion of e ts or exhibits that may engage with or encourage those do not normally engage those targeted by these sorts of events. This will in e the impact of the ou ach and the overall project legacy.

Audien could comprise

- Local c unities rticularly those in villages close to the Scheme, including, but not limite lm gham, Stallingborough, lrby upon Humber, Ashby cum Fenby, Ludborough Grimoldby
- Primary and secondary school pupils and teachers.
- Local history groups, both within the Scheme area and the wider area, including history groups in other villages in the wider area.
- Members of local archaeology, history and civic societies.
- Council for British Archaeology (CBA) Young Archaeology Clubs, CBA regional groups.
- Higher education students, including archaeology students.
- Academic archaeologists and members of subject and period specialist societies.

- Relevant elected members.
- Interest-focused and period-focused archaeological research groups.
- Visitors to the area and people travelling through the landscape.

Other relevant groups will also be considered where appropriate.

Activities

A range of outreach and public archaeology activities should be proposed. These need to be tailored to the wants and needs of the differing audiences to aximise benefit.

Activities should be split across the different phases of a aeolog k, including excavation and post-excavation. It is not anticipated th rial trench uation would form a suitable phase for public engagement unless specifica designed e e a target audience. Later phases of work will provide different typ f a ity, altho there will be some overlap (such as talks to local groups).

At all stages the research questions of the DAMS should e c dered, to ensu e knowledge gained from the archaeological mitigation programme disseminated to e public.

The following list of suggested activities may all tak ce, and oth tivity types may be more appropriate:

- A series of presentations to local group nd comm ities, during excavation and post-excavation.
- Site tours during excavations
- Community excavation or th fieldwork even ubject t uitable sites, access and health and safety).
- Liaiso chools, incl g educational events, talks and finds handling, con ng to par in STEM ience, technology, engineering, and mathematics) ts as well as the ision of te ng materials.

roject website including rmation su s dig diaries, key finds, videoblogs from site, post-excavation analysis e

ovision of information via ial media platforms.

- R ing a new audience. vities and displays focused around popular non-heritage eve This strategy minim s the requirement for marketing, as it would make use of existing nts that hav ir own promotional scheme in place. For example, a stall at local food ival cou troduce participants to the weird and wonderful world of Roman foods - with m boards, finds from the sites, and food preparation exhibits. Tailored to loc
- Attendance at local history, archaeology or other heritage events.
- Pop-up displays of artefacts and information at community hubs or museums.
- Permanent information panels at suitable locations. This could include displayed QR codes which refer to a website or virtual reproduction.
- Production of a popular publications, on the Scheme as a whole, or covering thematic topics. A booklet for children could be considered.
- Mapping of features from historic maps.

- Contribution to academic and professional conferences (such as CIfA) and publication of papers.
- Artefact handling sessions.

Volunteer involvement in off-site post-excavation, such as finds cleaning, processing and recording, subject to regulations regarding the use of volunteers on development-led archaeological projects.

Media Strategy

Press releases to local, regional and national media outlets, an lated social media activity, to promote the Viking CCS PACE activities and t form e ogress of the archaeological mitigation programme will be managed the Client nsultation with the ACoW, the Archaeological Contractor and the Viking C S Heritag Co ees.

Appendix C Template Completion Statement

Site Name:	
Site Code:	
Historic Environment Investigation Type:	
Archaeological Contractor:	
Fieldwork Director:	
Site Area:	
Dates of fieldwork:	

Summary of Results

	Name	Signature	Date
Author:			
Checked:			
Approved:			

PART FOUR – FIGURES

10 Figures

Figure 1: Provisional Archaeological Action Areas

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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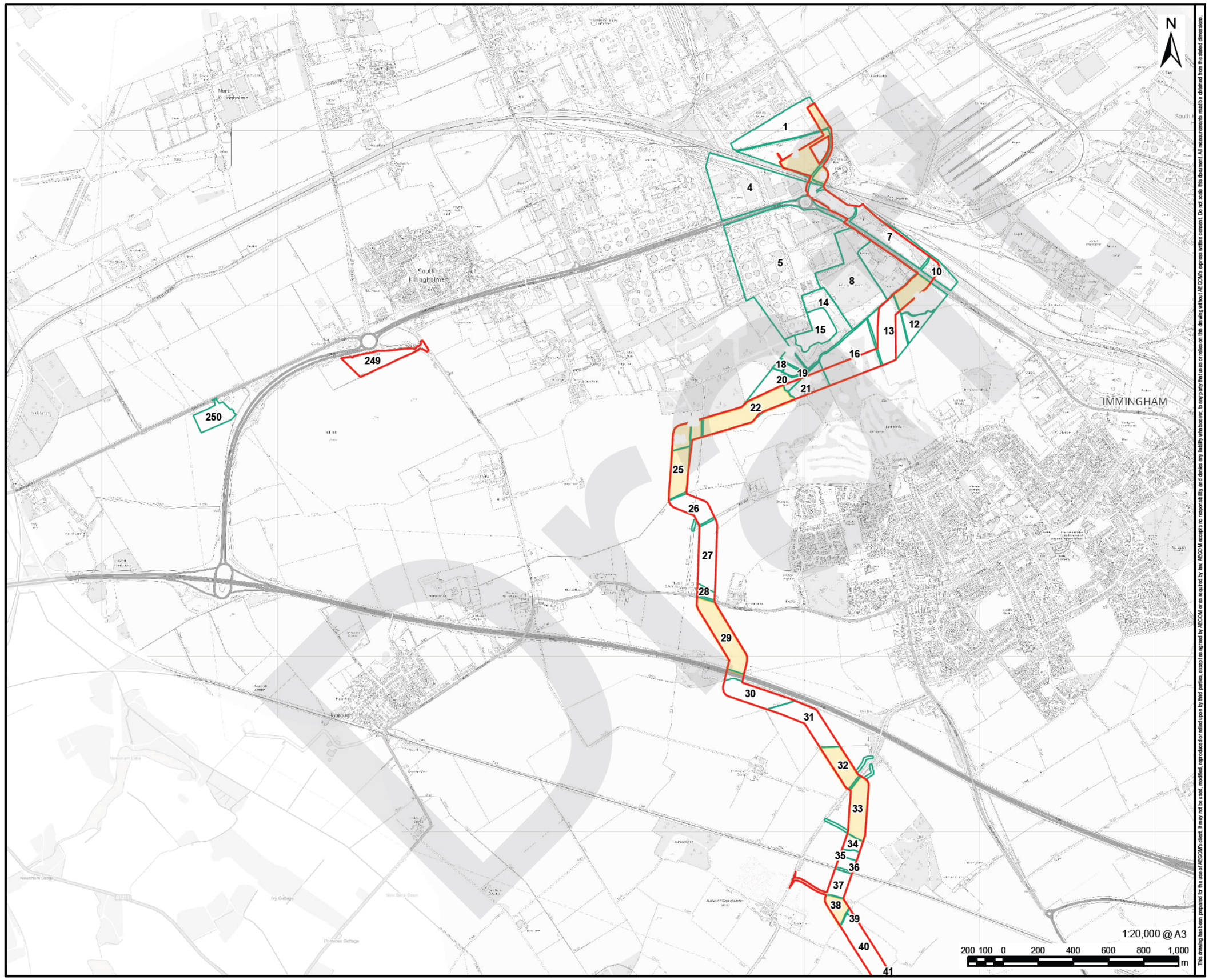

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Survey Field Boundary - Numbered
- Provisional Archaeological Action Area

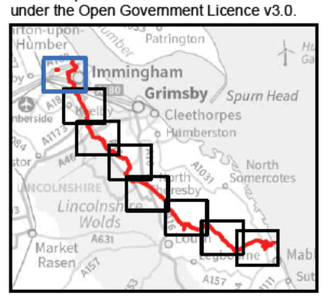

FIGURE TITLE

Figure 1 (1 of 8)
Provisional Archaeological Action Areas

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668965 / VCCS_240808_AMS_1

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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VikingCCS

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Survey Field Boundary - Numbered
- Provisional Archaeological Action Area

NOTES:

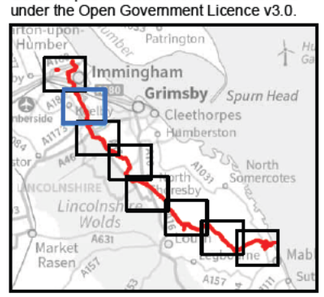

FIGURE TITLE

Figure 1 (2 of 8)
Provisional Archaeological Action Areas

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PROJECT NUMBER / REFERENCE

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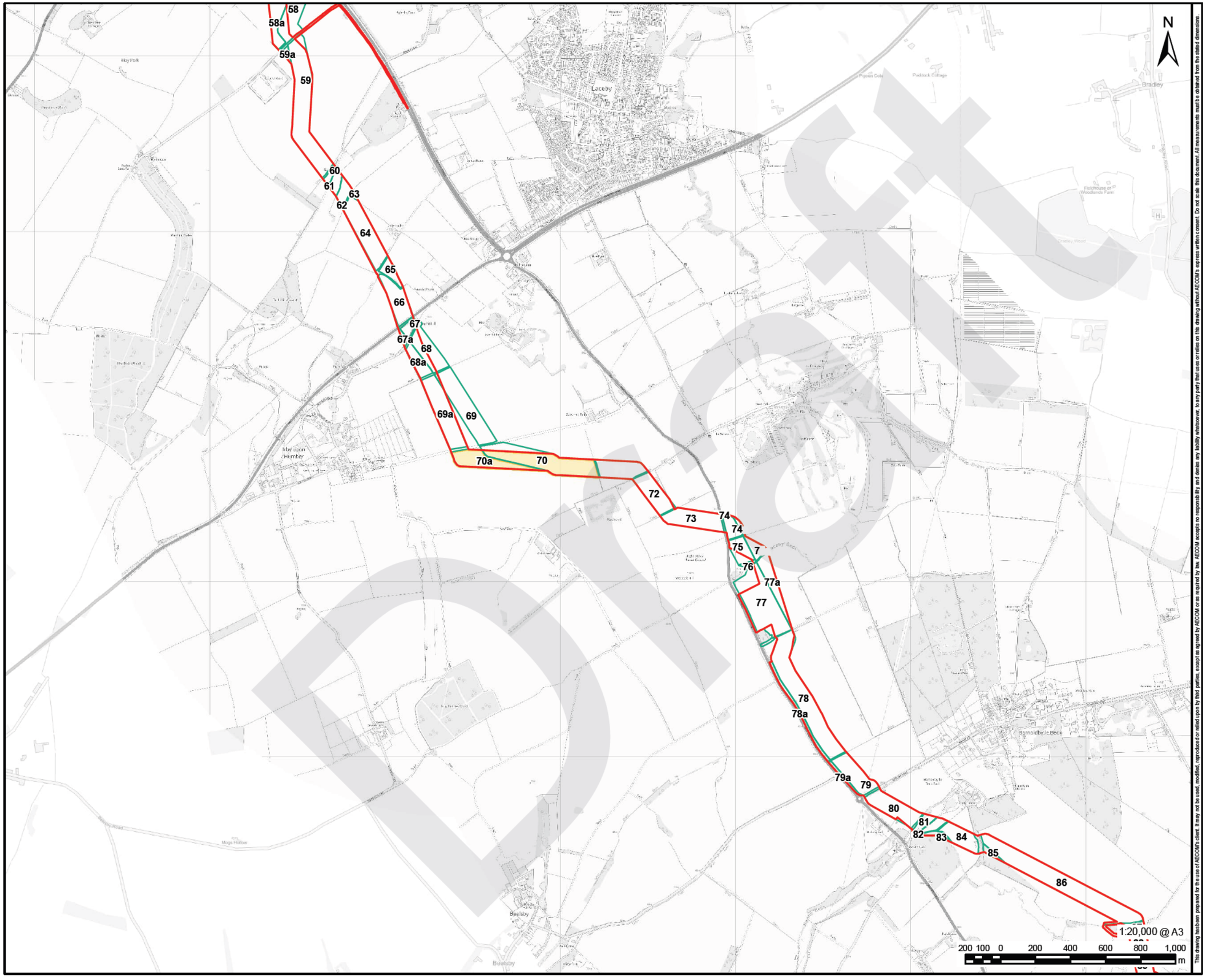

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Survey Field Boundary - Numbered
- Provisional Archaeological Action Area

NOTES:

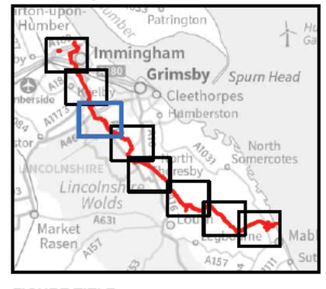

FIGURE TITLE

Figure 1 (3 of 8)
Provisional Archaeological Action Areas

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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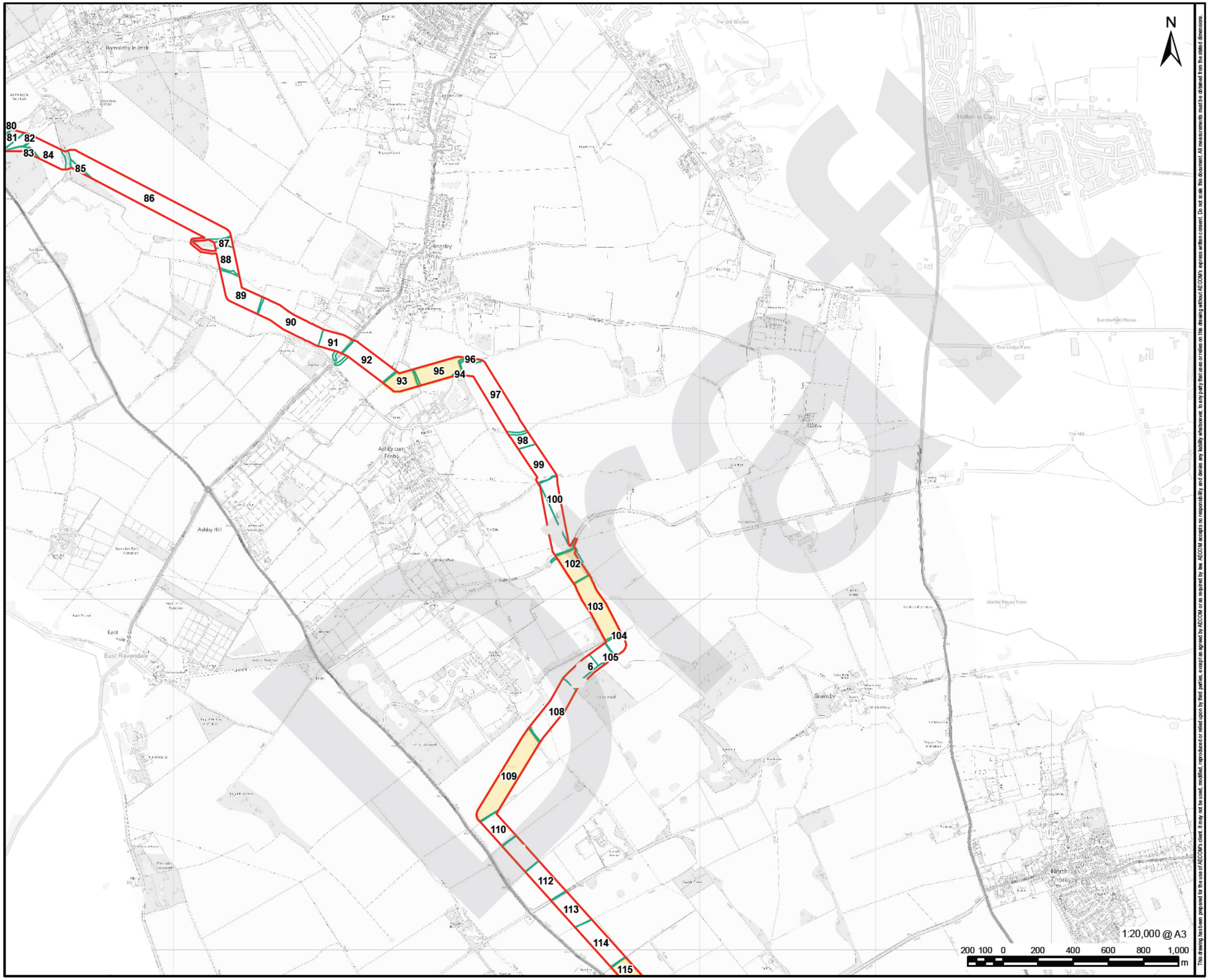

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Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Survey Field Boundary - Numbered
- Provisional Archaeological Action Area

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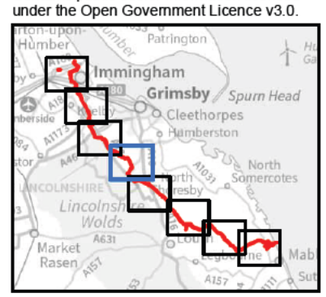

FIGURE TITLE

Figure 1 (4 of 8)
Provisional Archaeological Action Areas

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Survey Field Boundary - Numbered
- Provisional Archaeological Action Area

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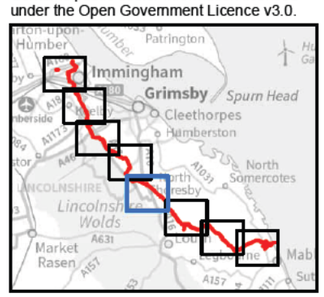

FIGURE TITLE

Figure 1 (5 of 8)
Provisional Archaeological Action Areas

ISSUE PURPOSE

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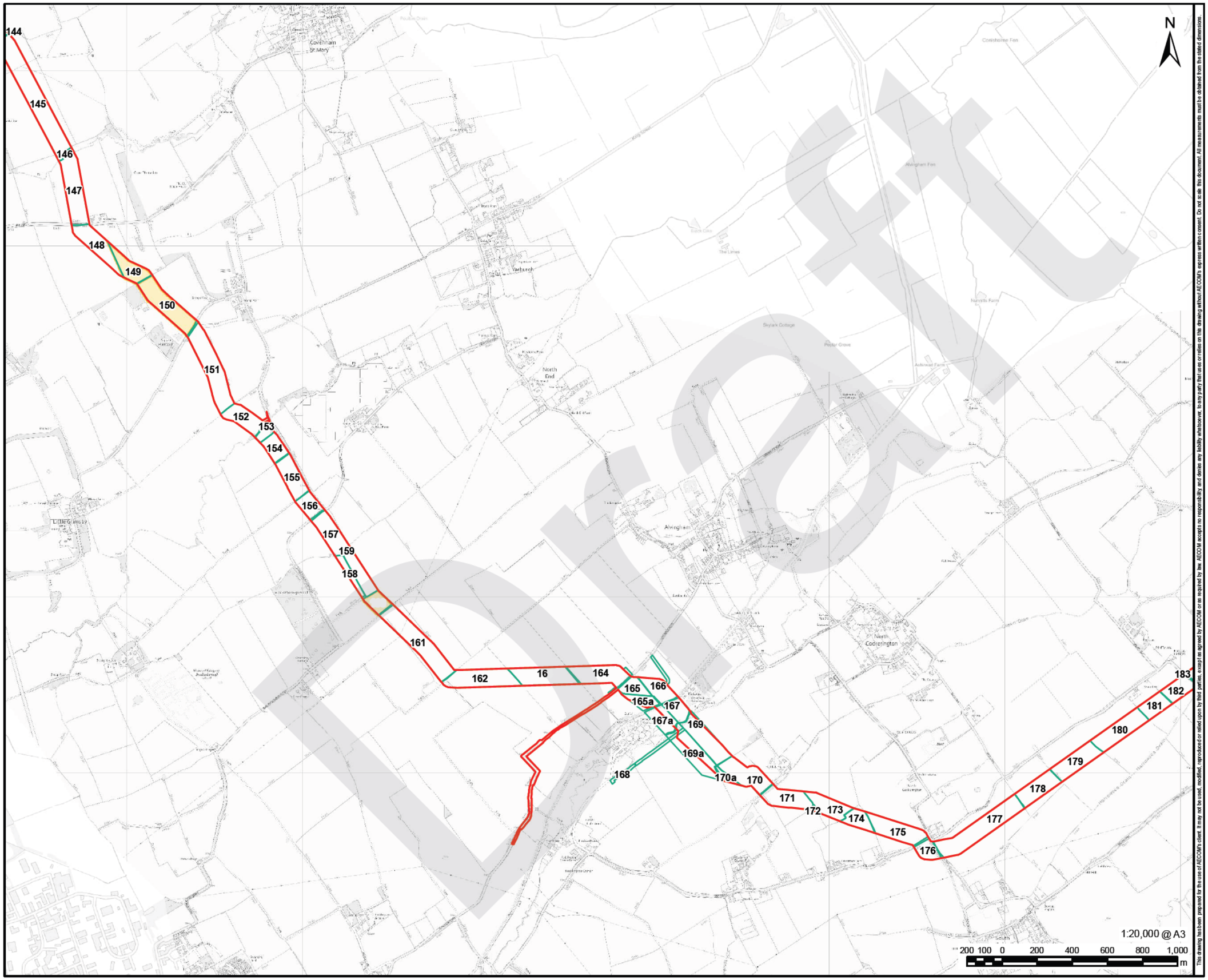

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Survey Field Boundary - Numbered
- Provisional Archaeological Action Area

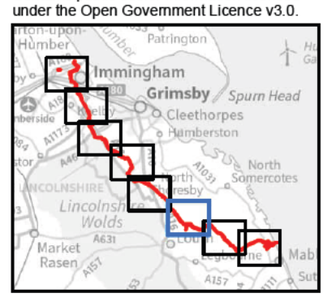

FIGURE TITLE

Figure 1 (6 of 8)
Provisional Archaeological Action Areas

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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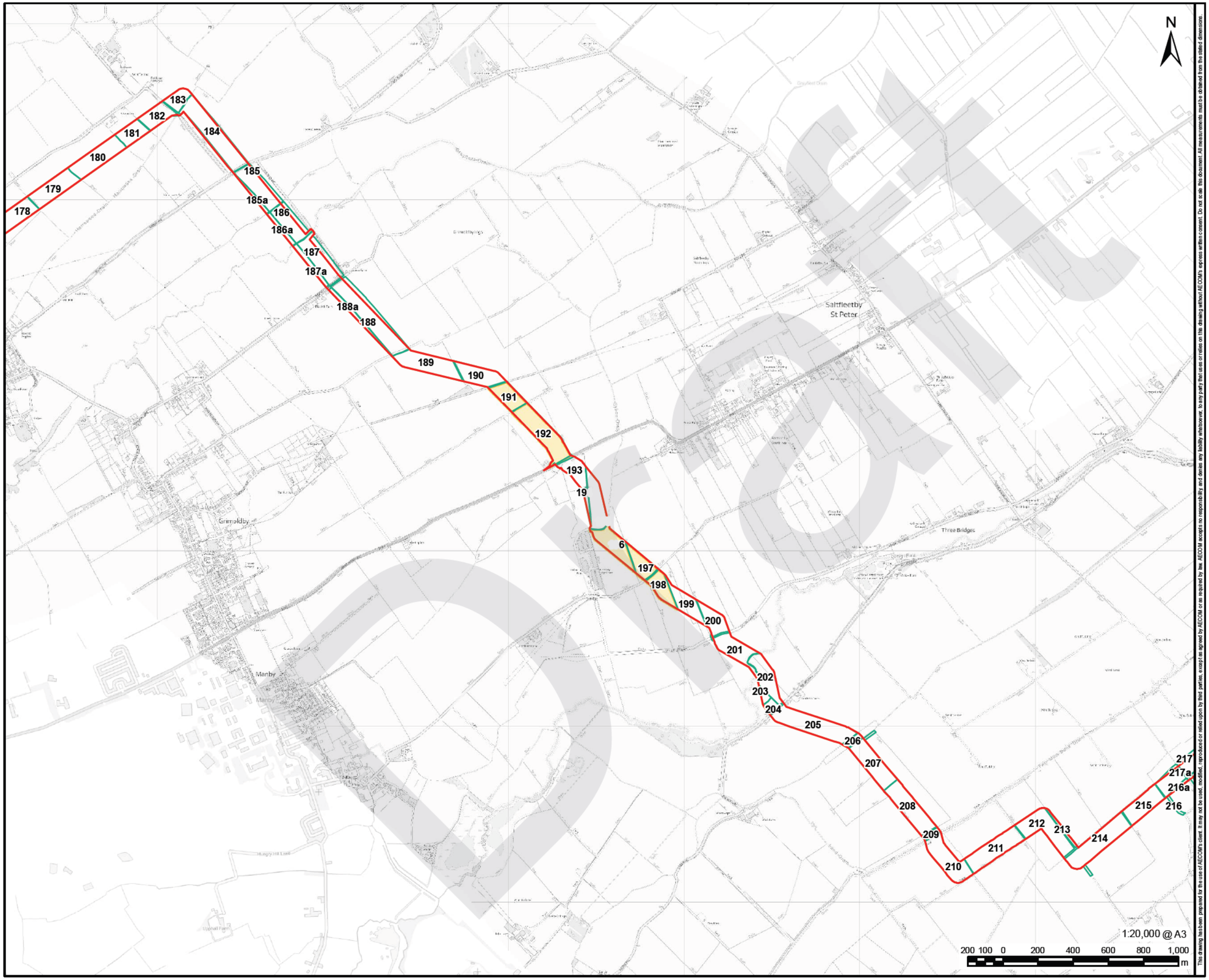

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Survey Field Boundary - Numbered
- Provisional Archaeological Action Area

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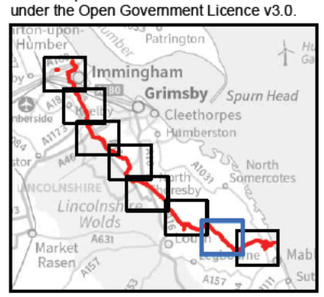

FIGURE TITLE

Figure 1 (7 of 8)
Provisional Archaeological Action Areas

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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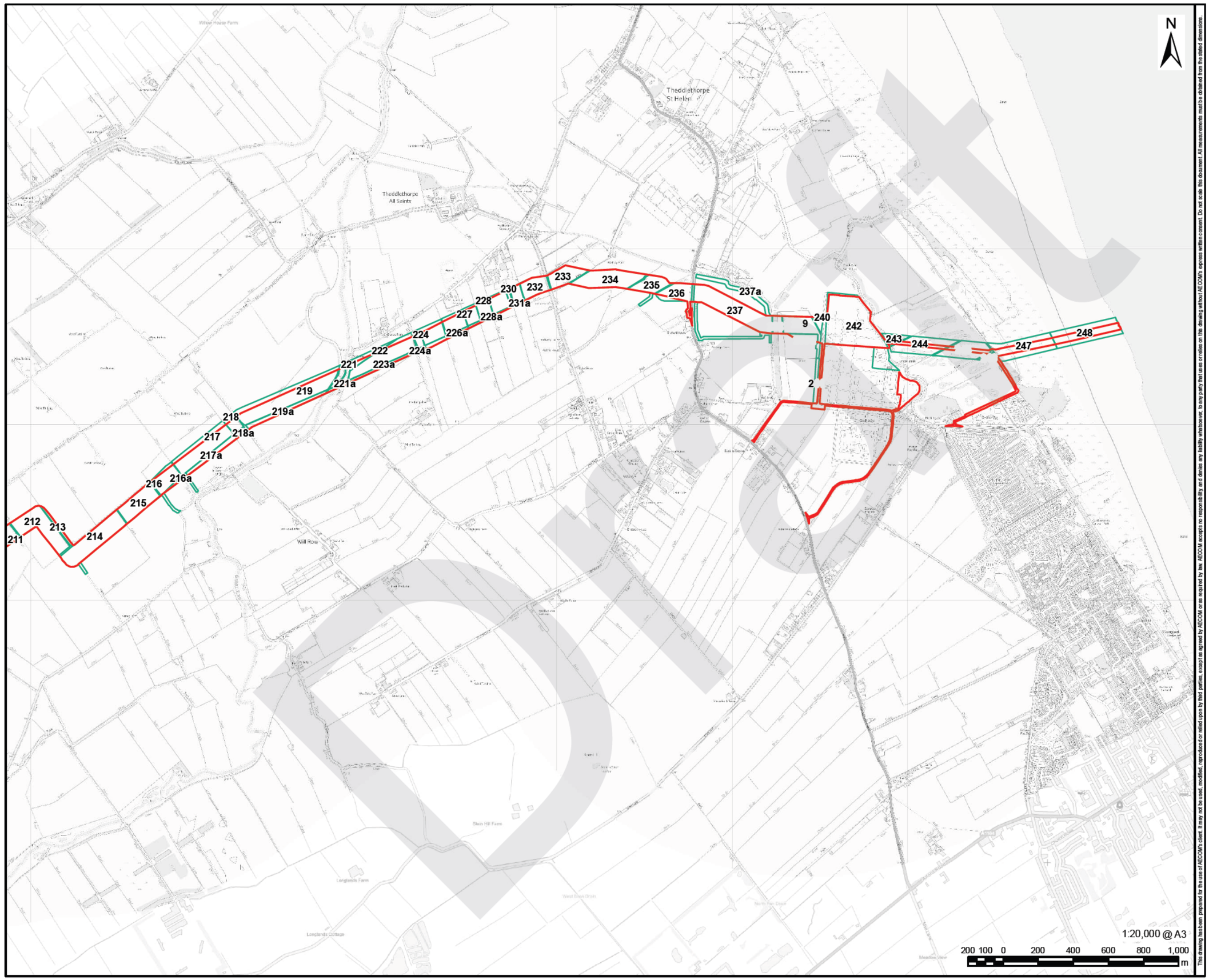

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Survey Field Boundary - Numbered

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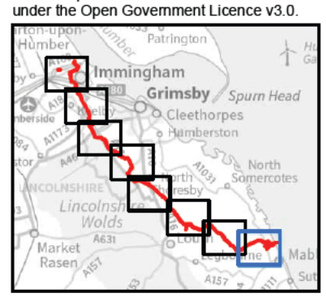

FIGURE TITLE

Figure 1 (8 of 8)
Provisional Archaeological Action Areas

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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Figure 2: Provisional Archaeological Action Areas – Detailed

VikingCCS

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

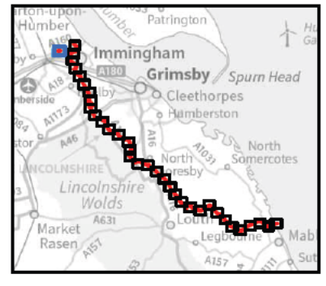

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Figure 2 (1 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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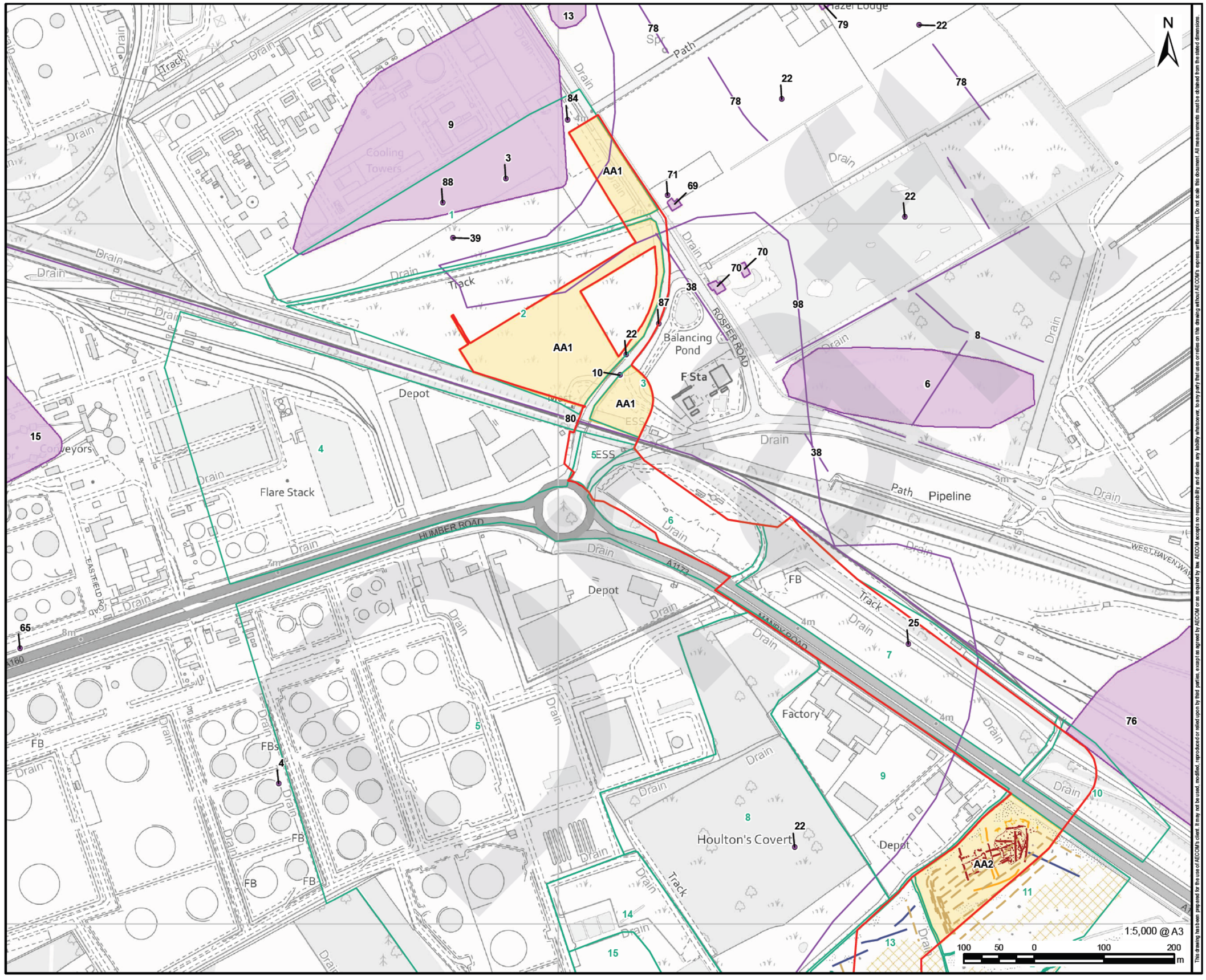

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

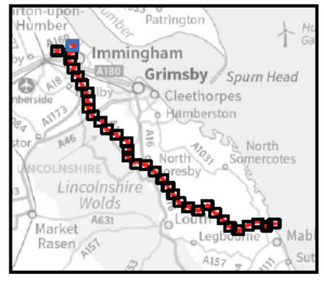

FIGURE TITLE

Figure 2 (2 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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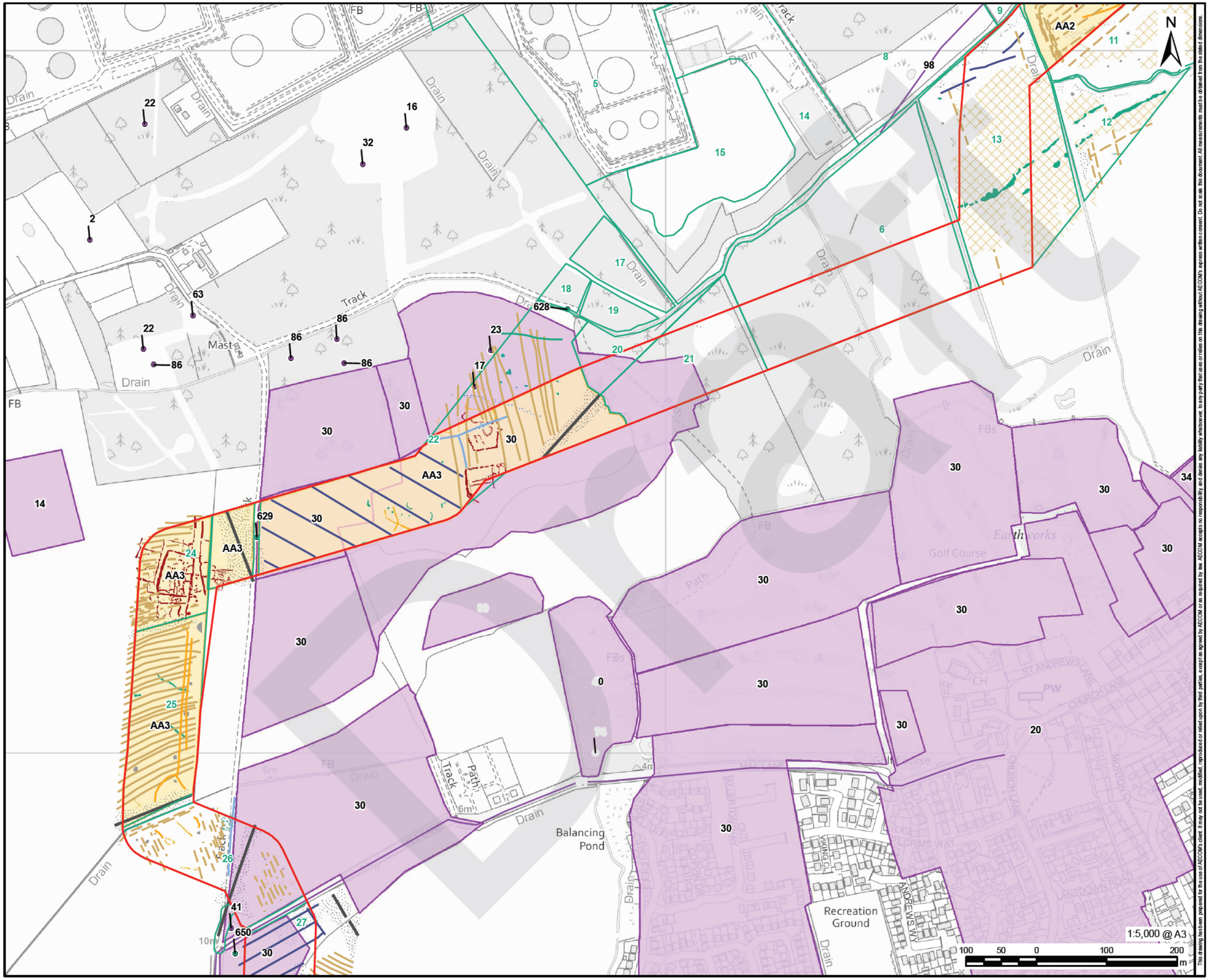

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

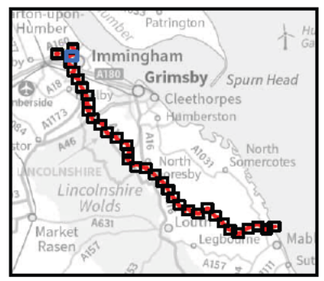

FIGURE TITLE

Figure 2 (3 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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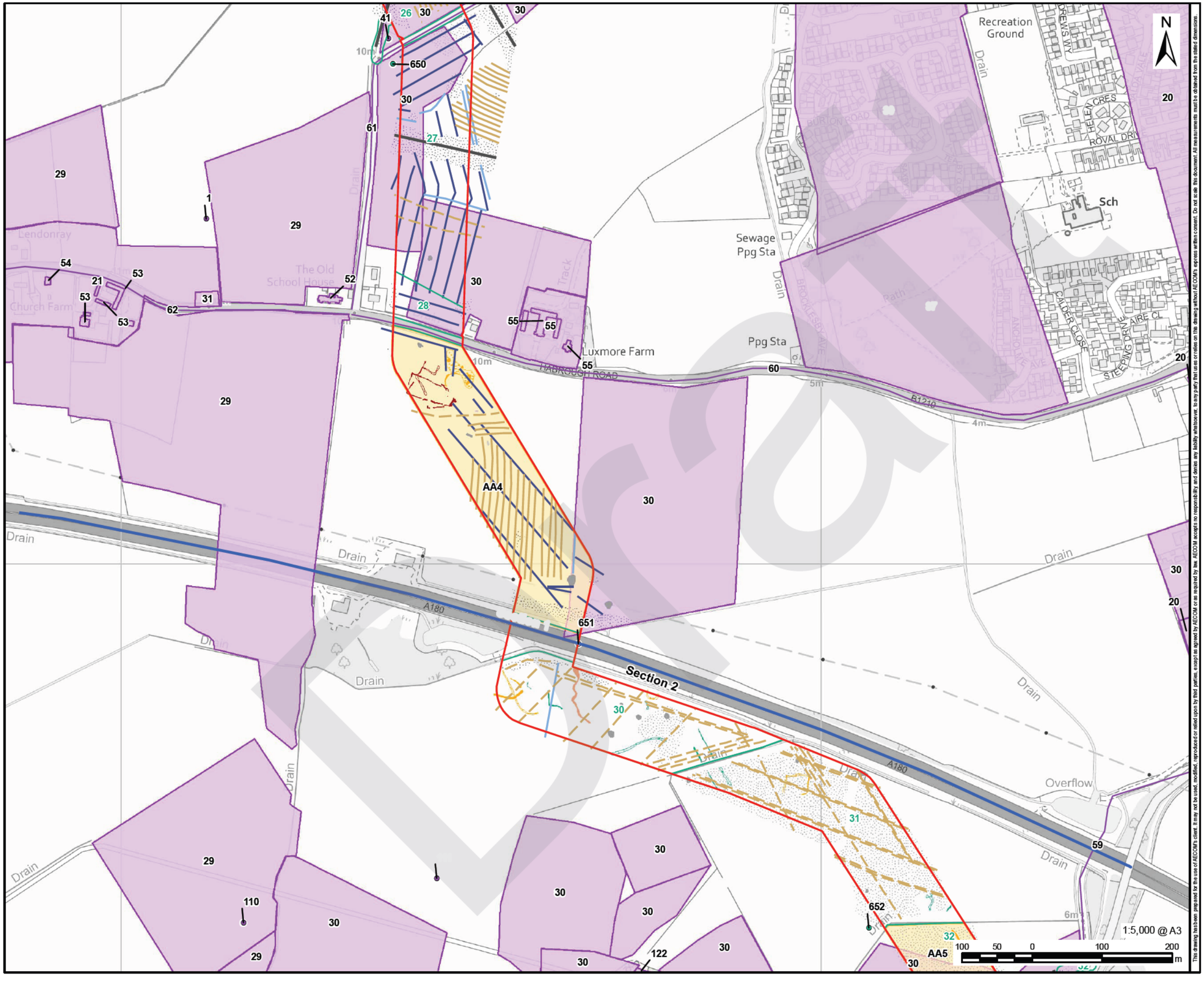


VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Route Section Break
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

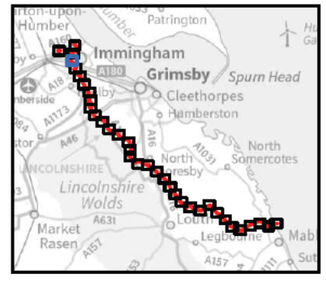


FIGURE TITLE

Figure 2 (4 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

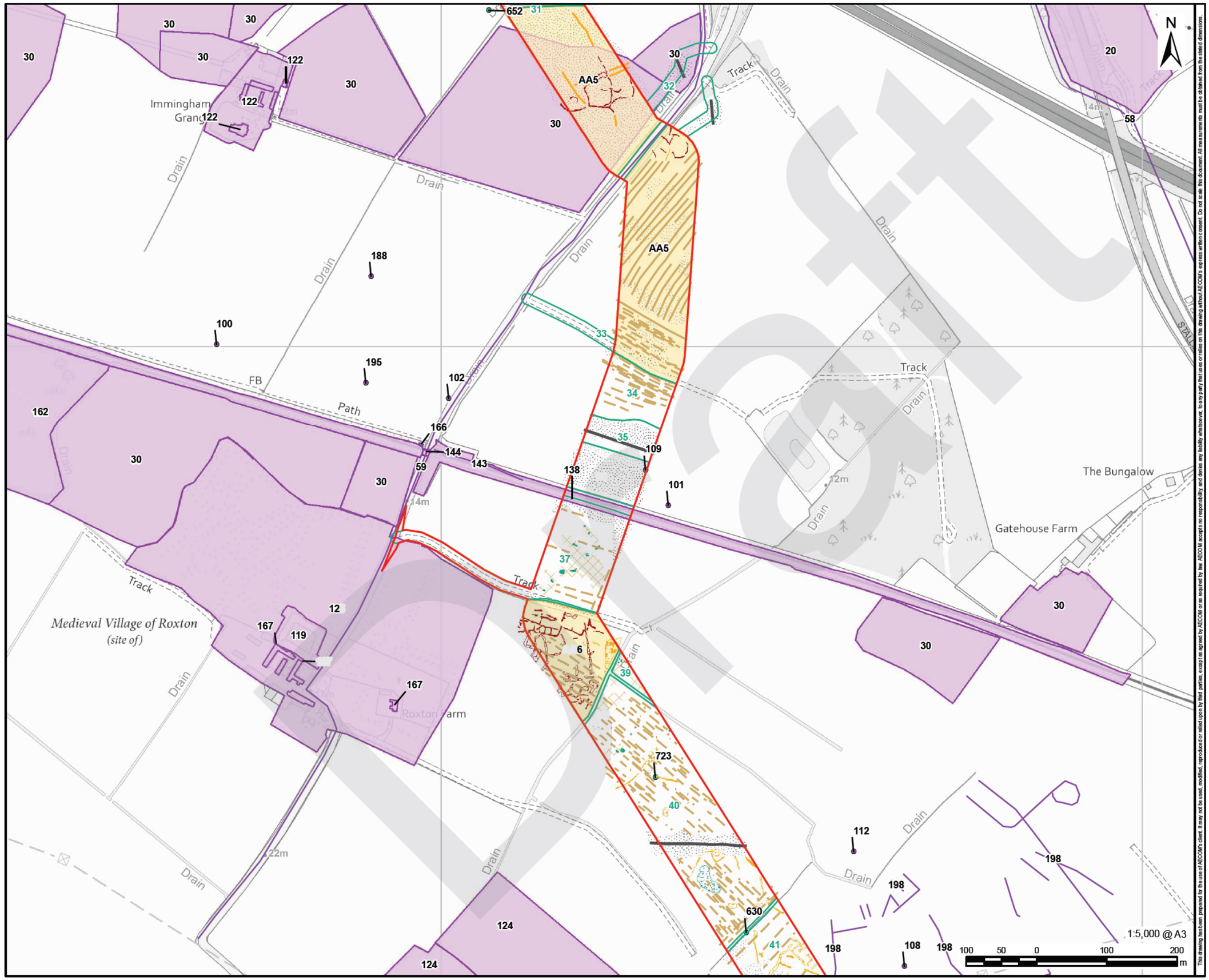
ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

Filename: \\eu.aecomnet.com\EMEAUK1UKNCL2\Jobs\60668955 V_Net_Zero_Project\900_CAD_GIS\920_GIS\02_Maps\Arch Mitigation Strategy\VCCS_AMS_2_Provisional_Archaeological_Action_Areas_Detailed_v2_240808.mxd



VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

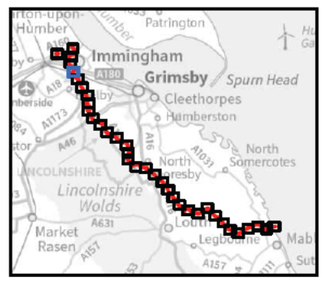


FIGURE TITLE

Figure 2 (5 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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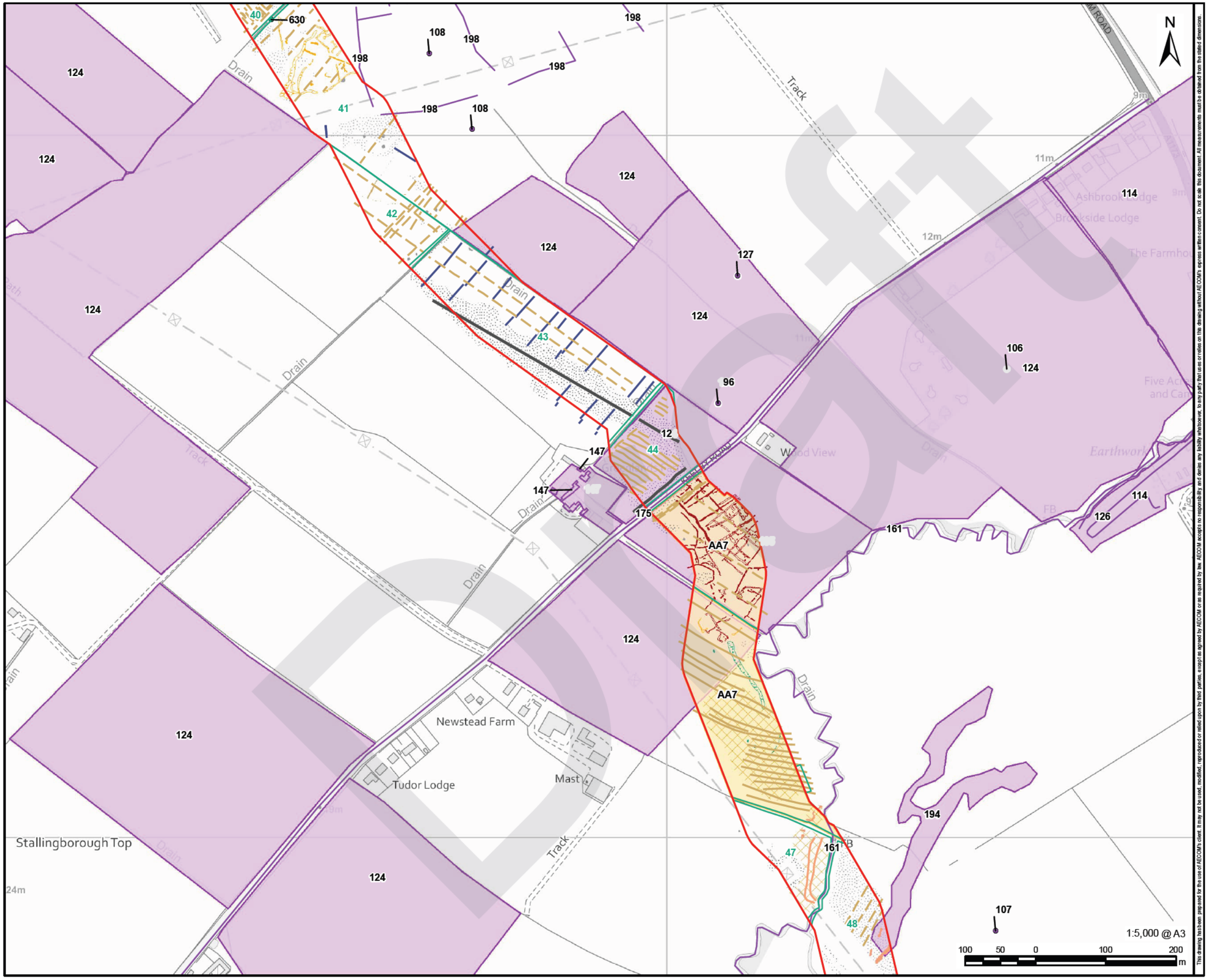

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

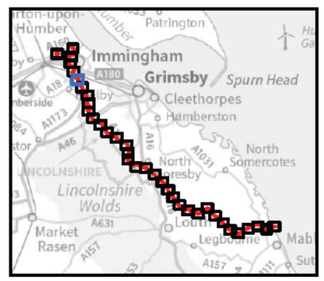

FIGURE TITLE

Figure 2 (6 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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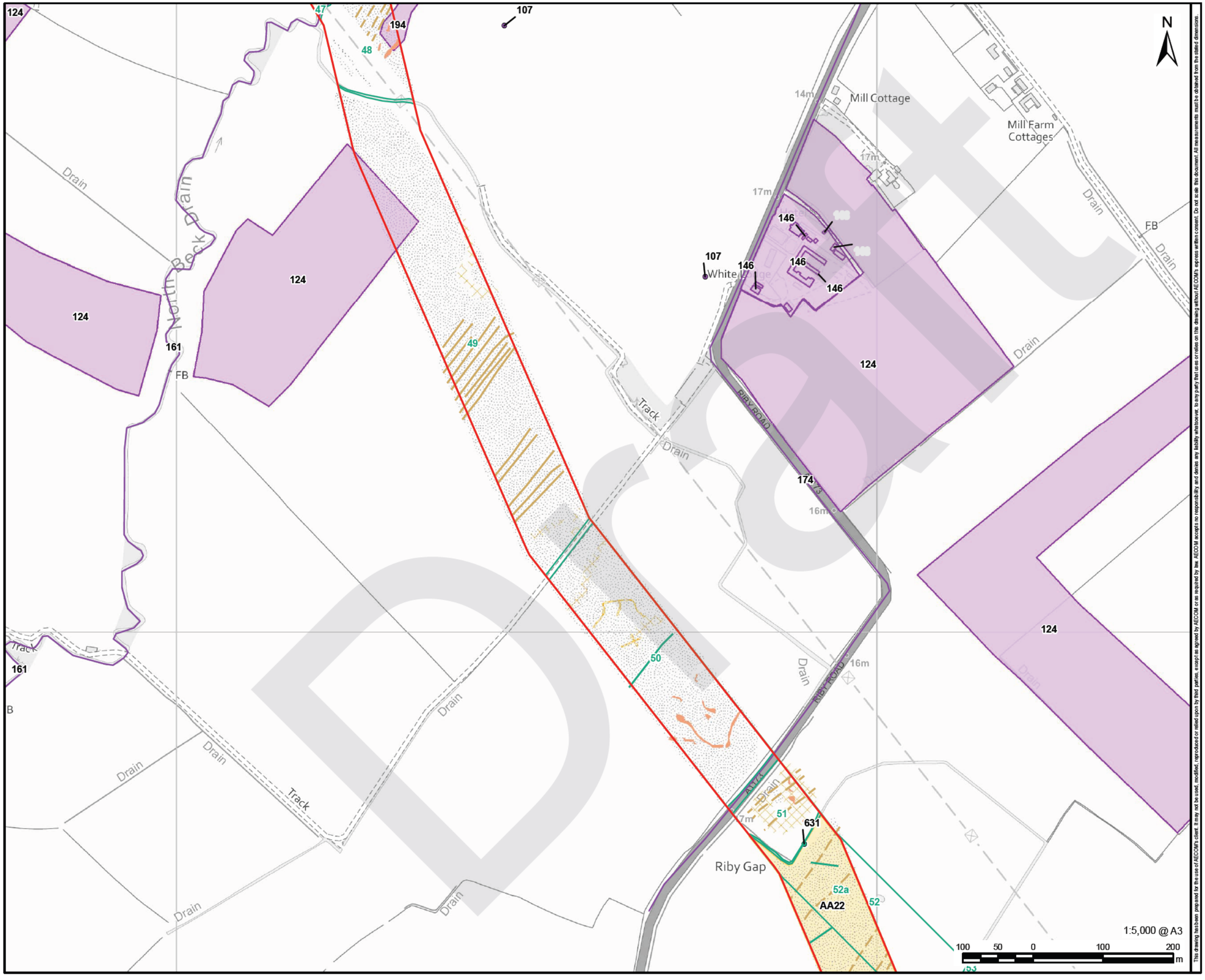

VikingCCS

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

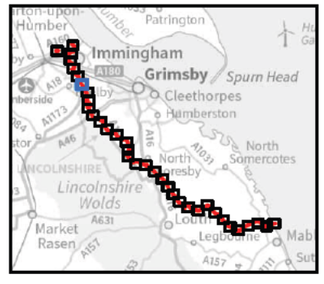

FIGURE TITLE

Figure 2 (7 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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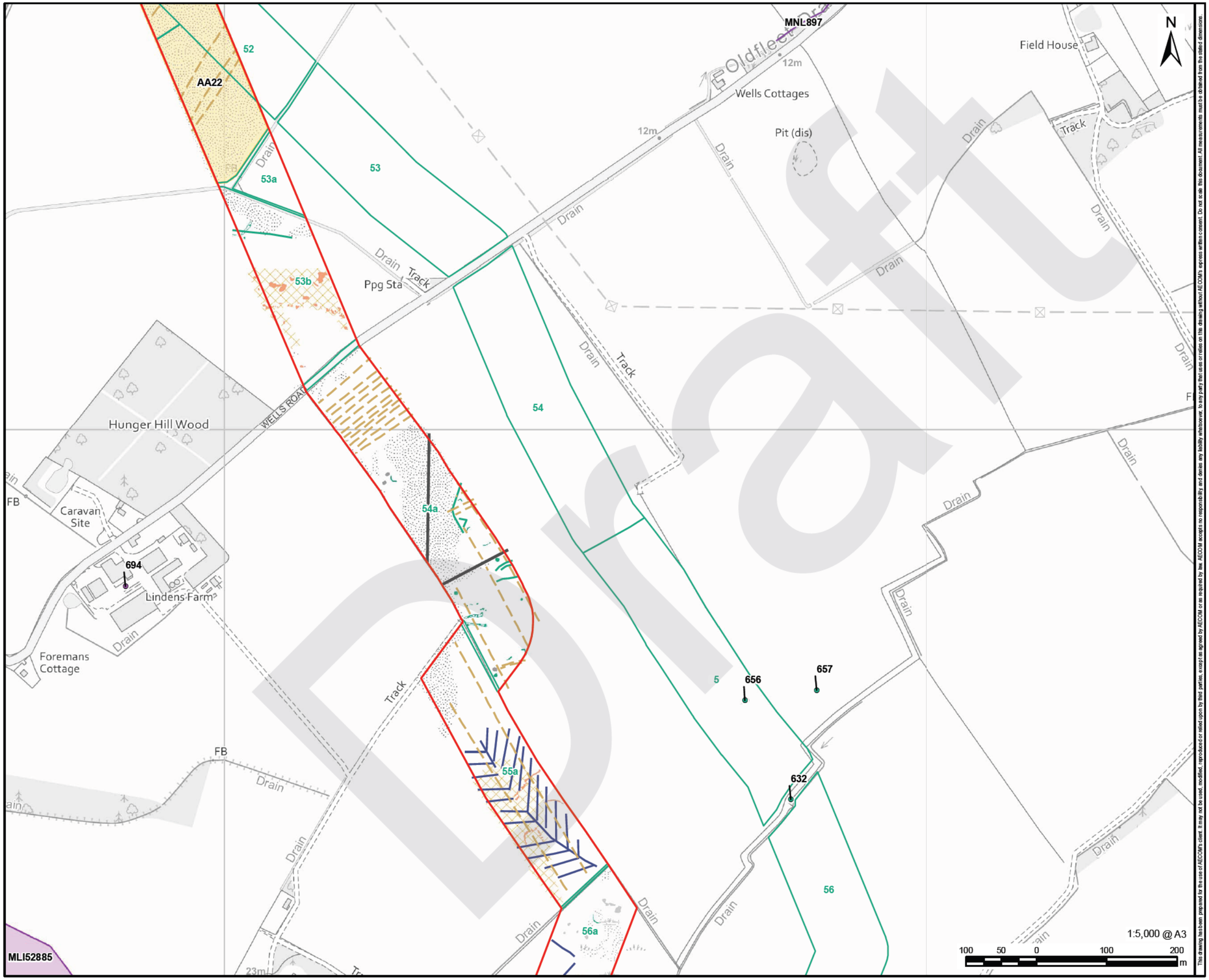

VikingCCS

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

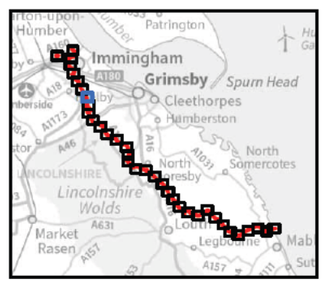

FIGURE TITLE

Figure 2 (8 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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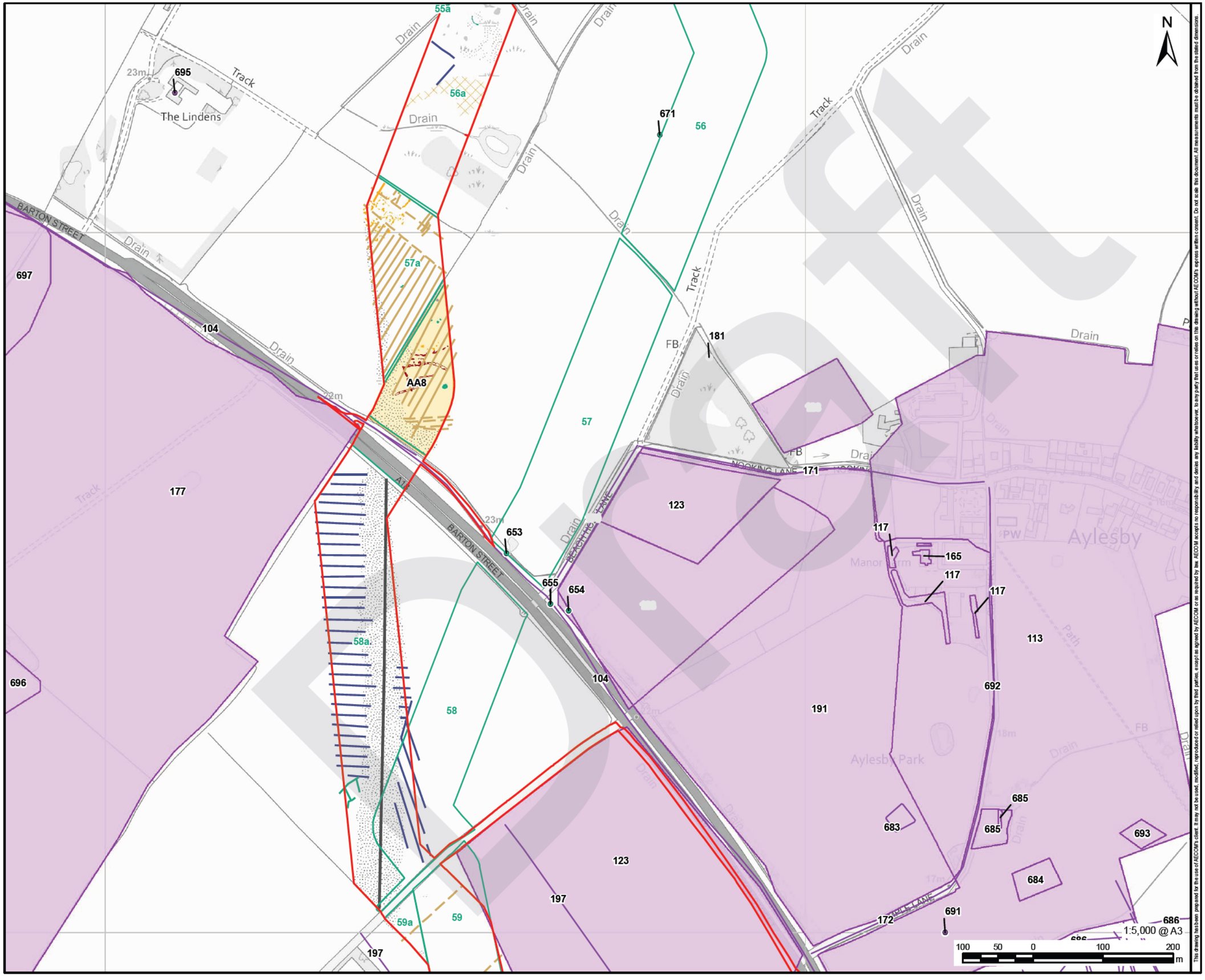

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

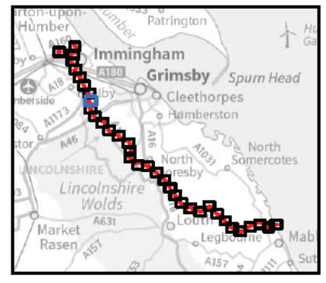

FIGURE TITLE

Figure 2 (9 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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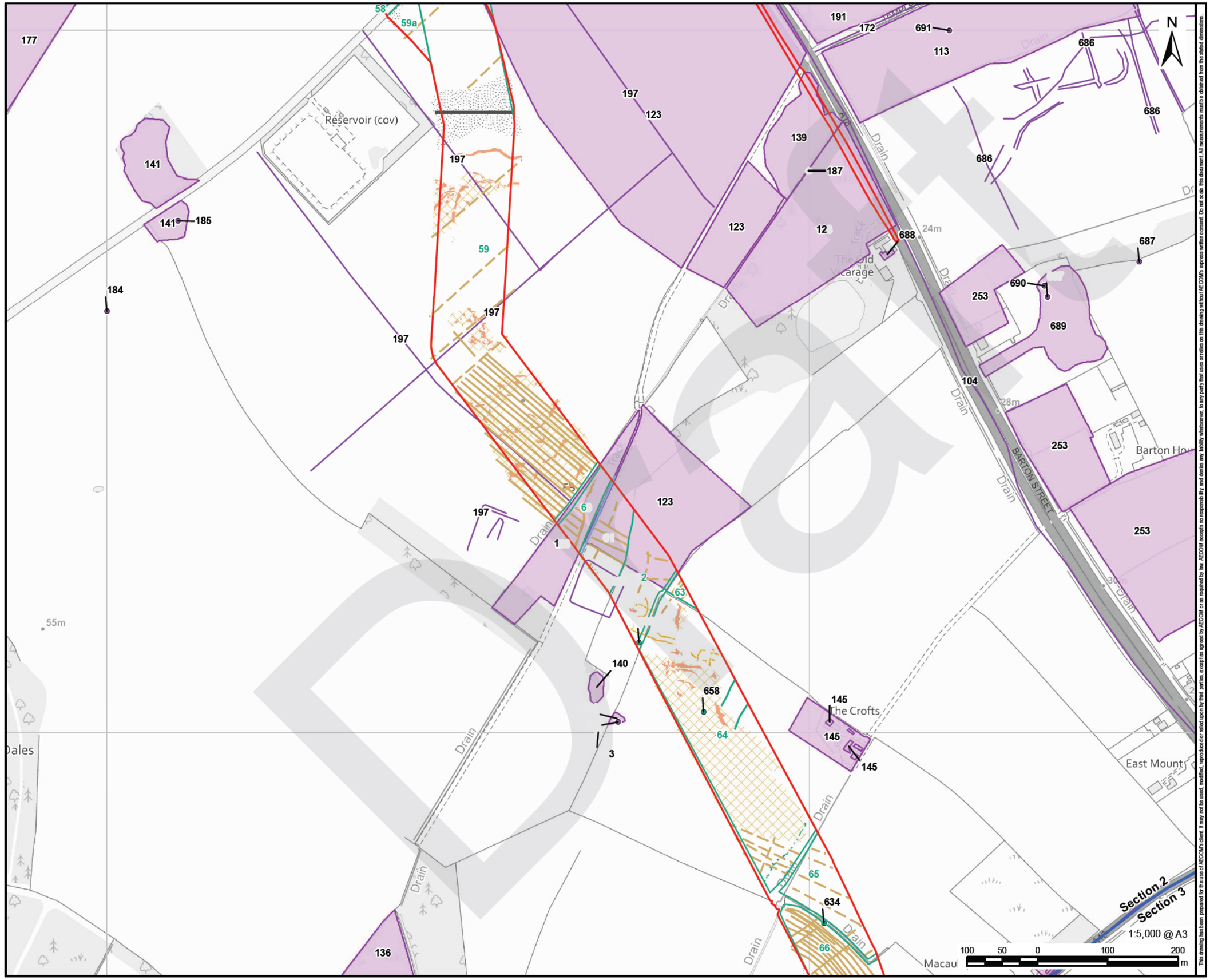

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Route Section Break
- Geophysical Survey Area - AOC Field Numbers
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

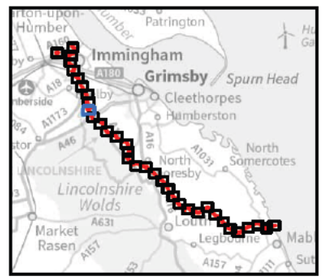

FIGURE TITLE

Figure 2 (10 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

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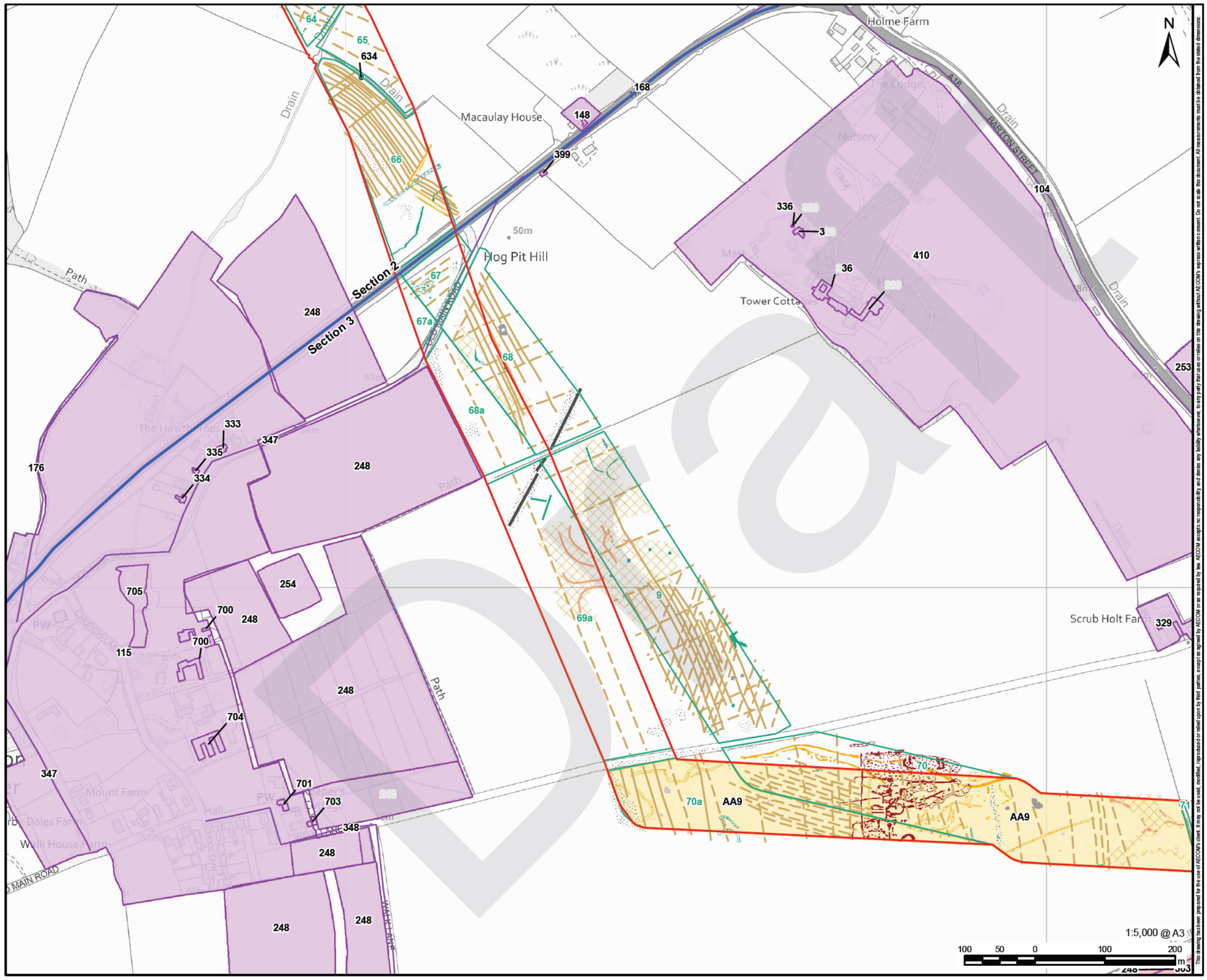

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Route Section Break
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset
- Scheduled Monument

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

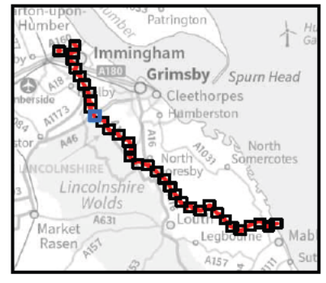

FIGURE TITLE

Figure 2 (11 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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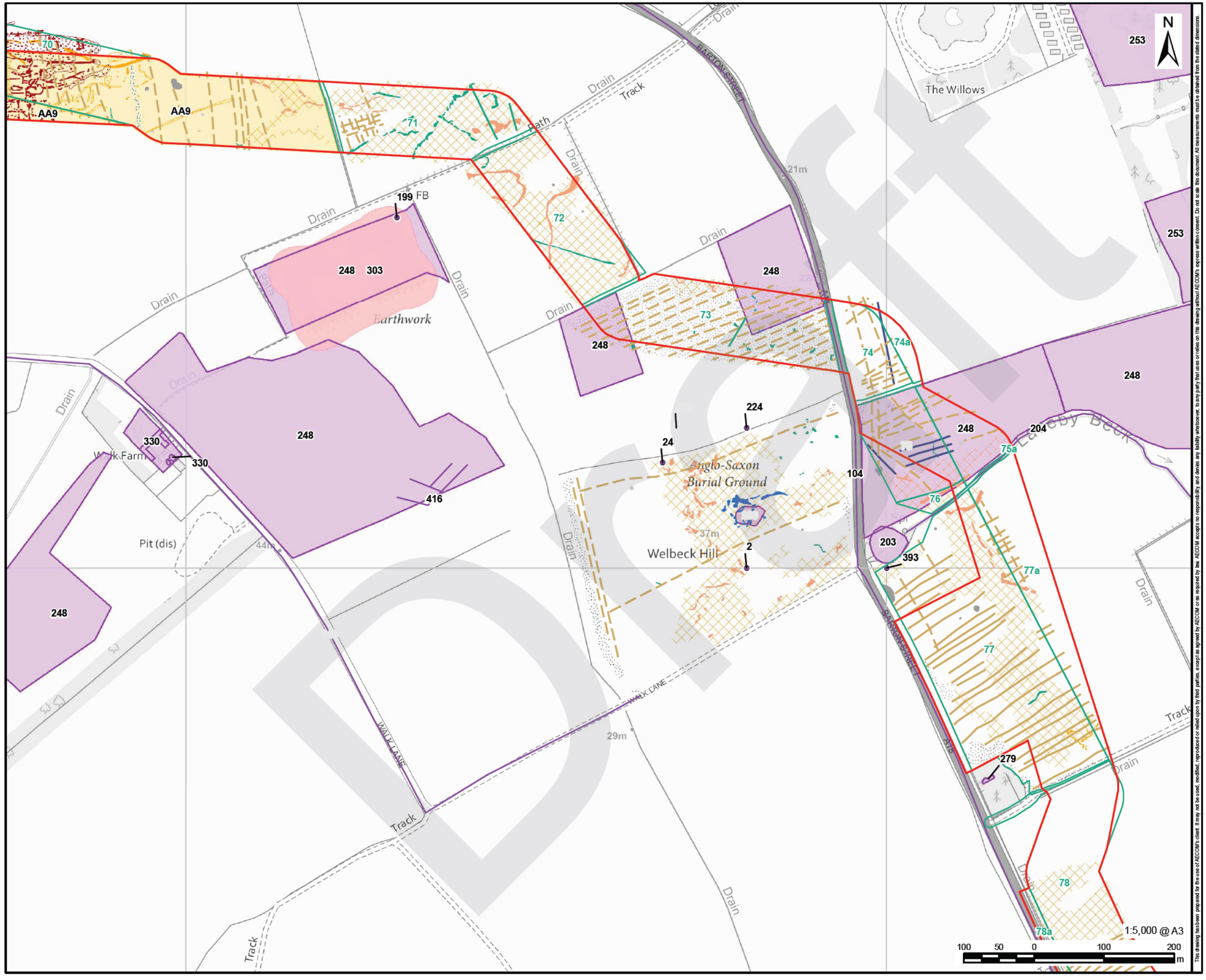

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Scheduled Monument

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

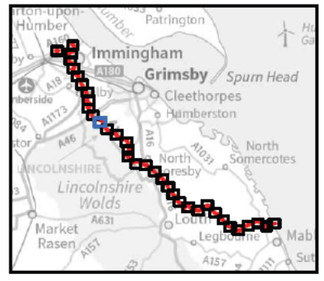

FIGURE TITLE

Figure 2 (12 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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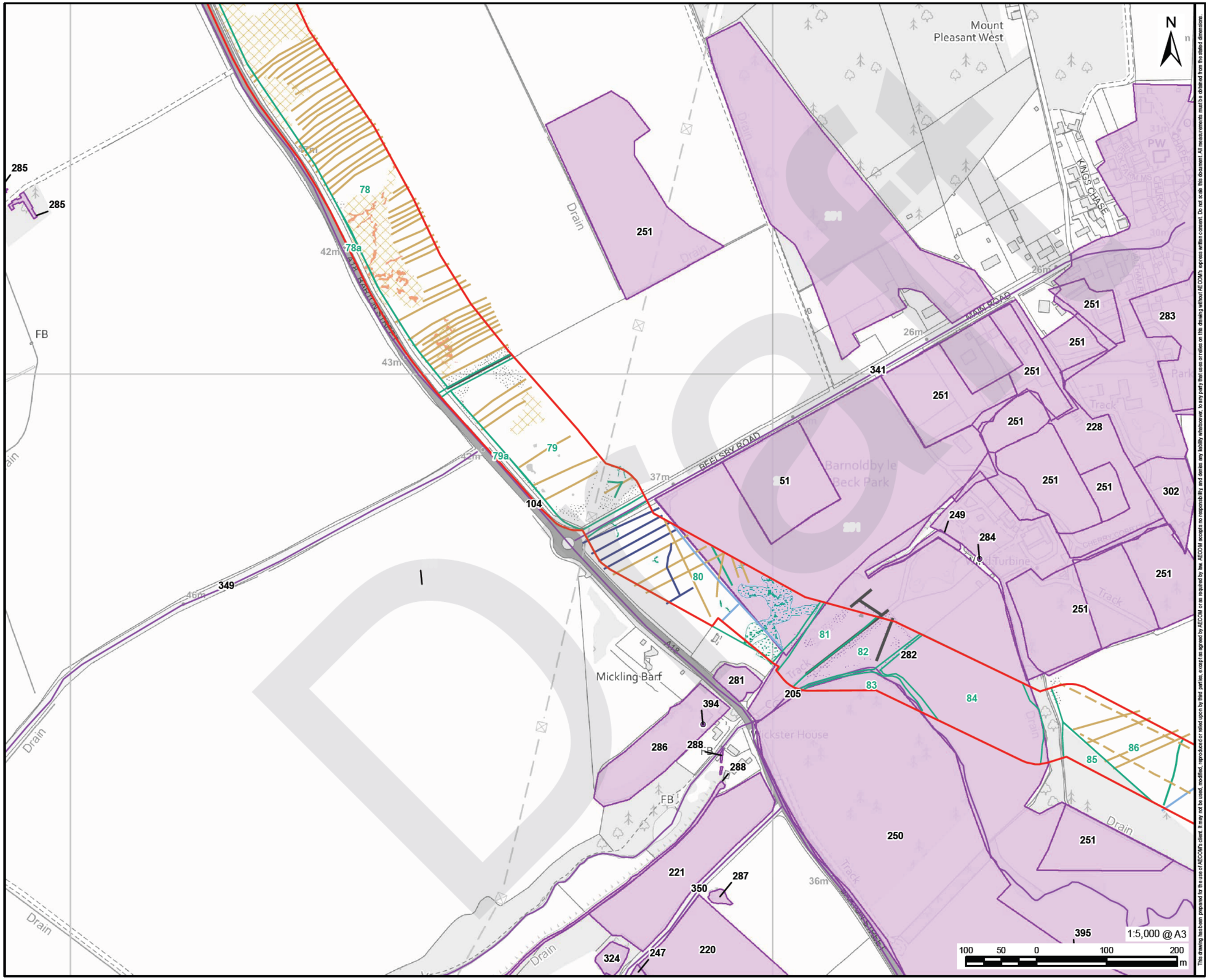

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

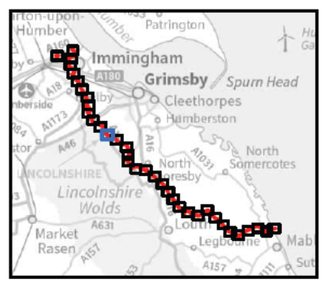

FIGURE TITLE

Figure 2 (13 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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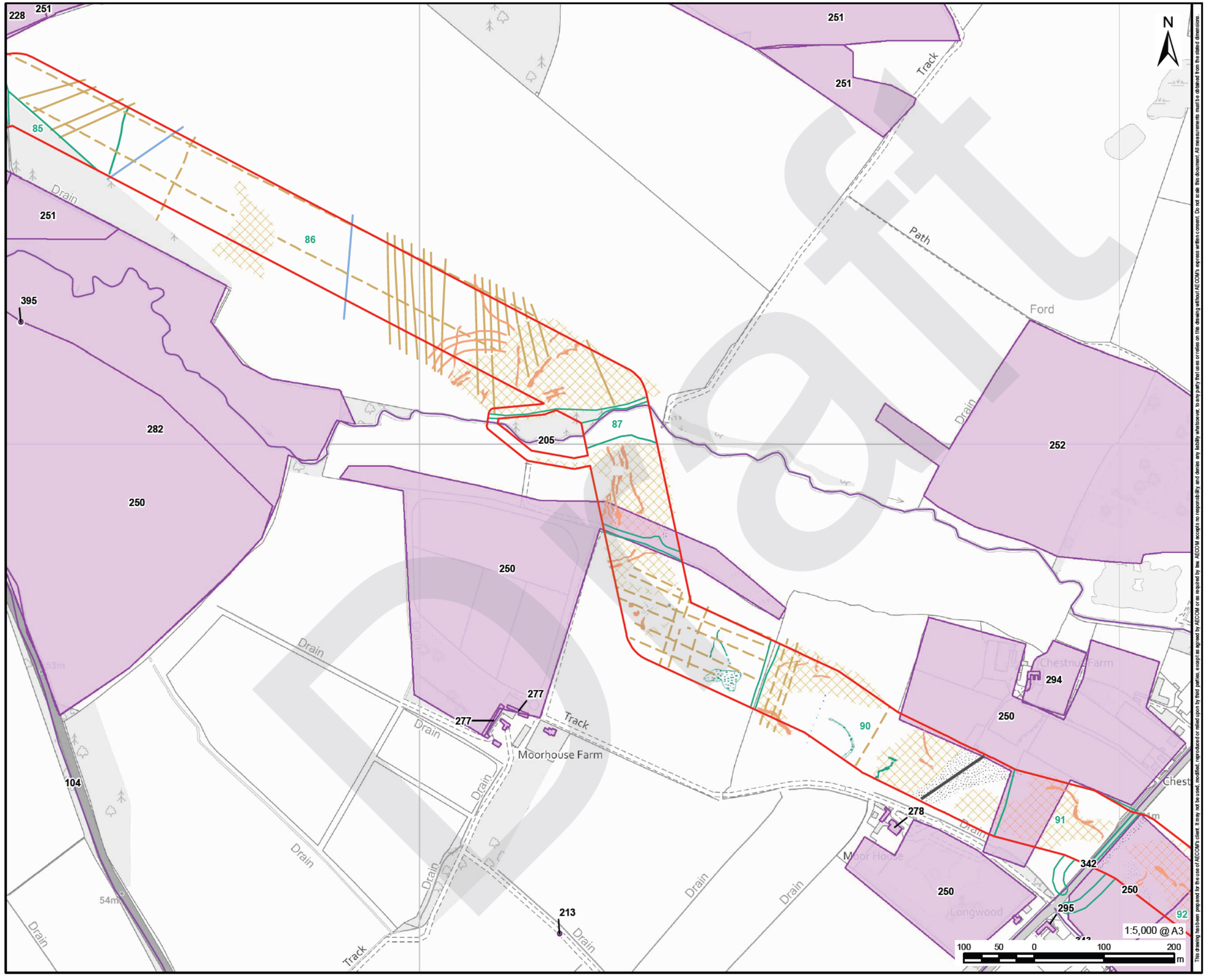

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area

NOTES:
* HER - Historic Environment Records

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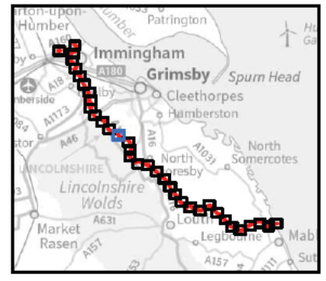

FIGURE TITLE

Figure 2 (14 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

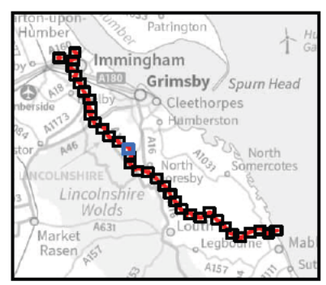

FIGURE TITLE

Figure 2 (15 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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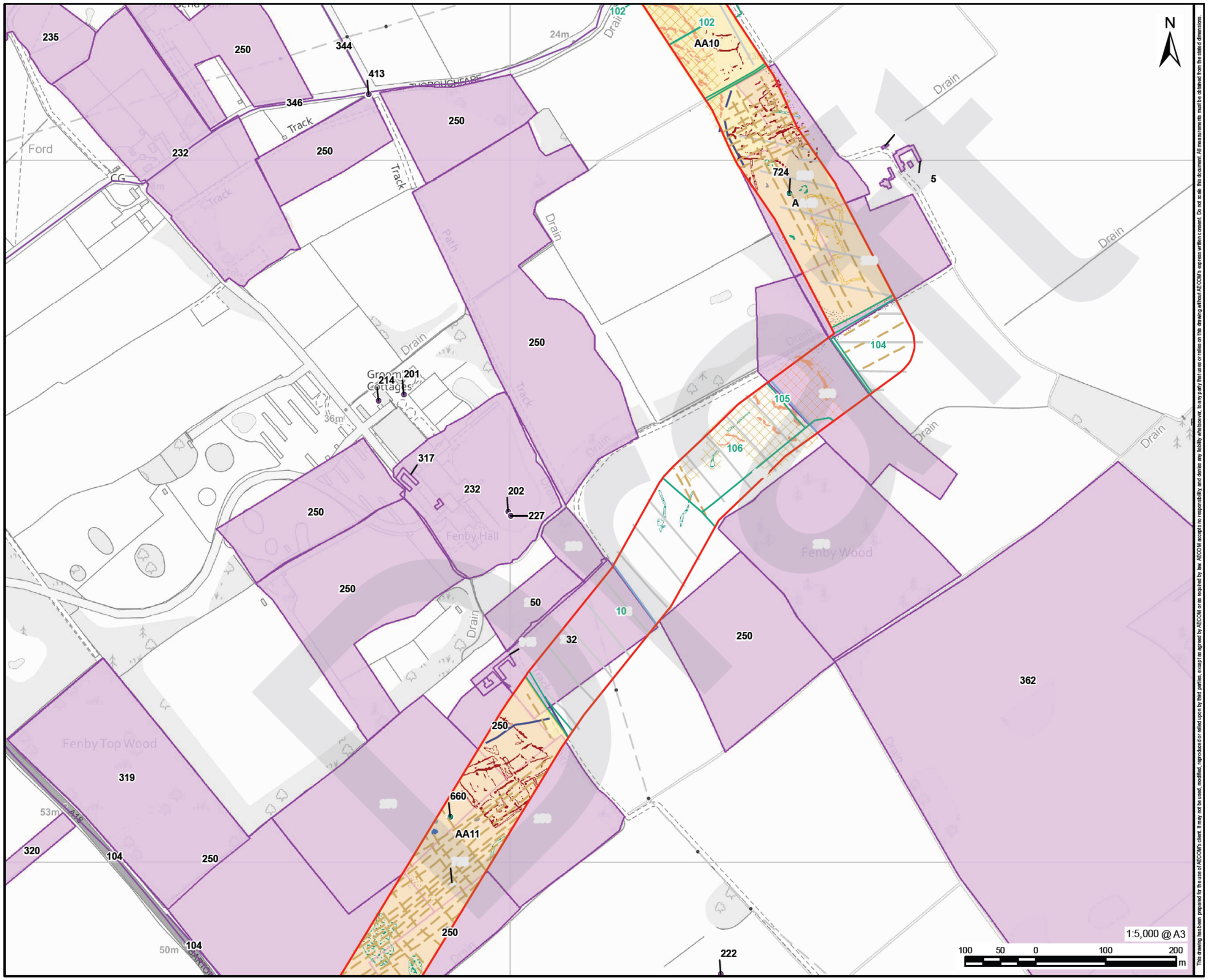

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

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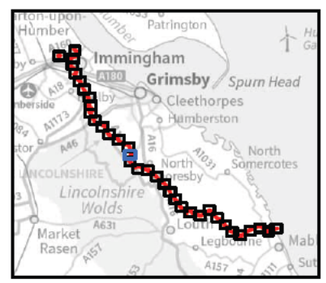

FIGURE TITLE

Figure 2 (16 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

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VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

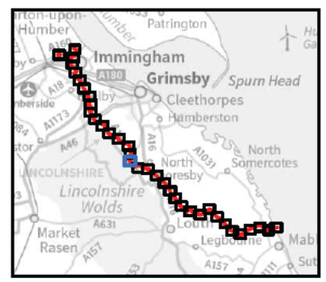


FIGURE TITLE

Figure 2 (17 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

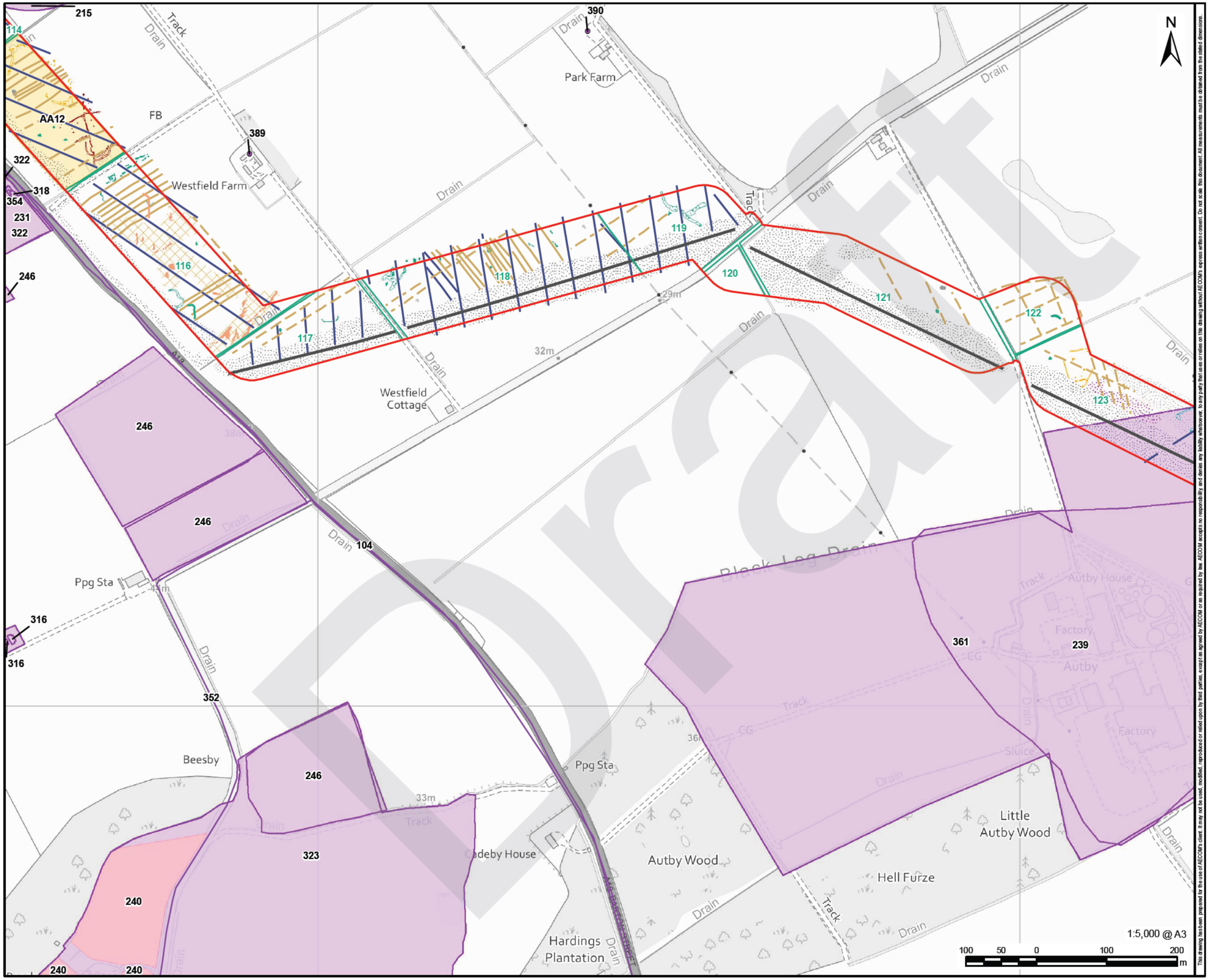
ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

Filename: \\eu.aecomnet.com\EMEA\UK\CL2\Jobs\60068955 V_Net_Zero_Project\600_CAD_GIS\02_GIS\02_MapsArch Mitigation Strategy\VCCS_AMS_2_Provisional_Archaeological_Action_Areas_Detailed_v2_240808.mxd



VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Scheduled Monument

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

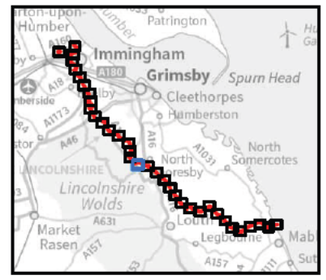


FIGURE TITLE

Figure 2 (18 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

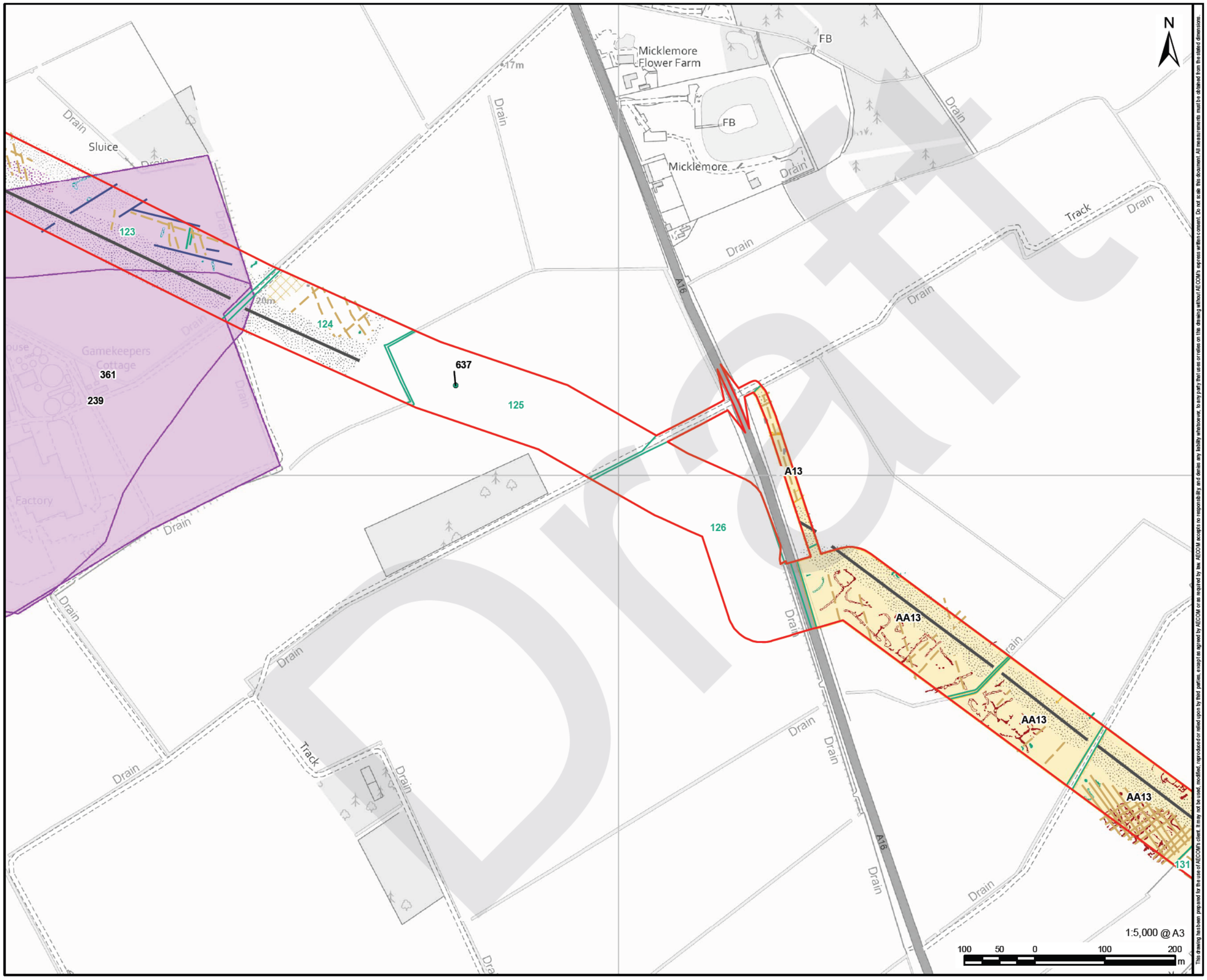
ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

Filename: \\eu.aecomnet.com\EMEA\UK\NCL2\Jobs\60668955 V_Net_Zero_Project\600_CAD_GIS\20_GIS\02_Maps\Arch Mitigation Strategy\VCCS_AMS_2_Provisional_Archaeological_Action_Areas_Detailed_v2_240808.mxd



VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

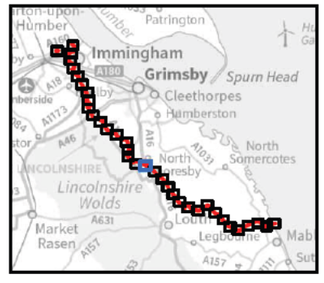


FIGURE TITLE

Figure 2 (19 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

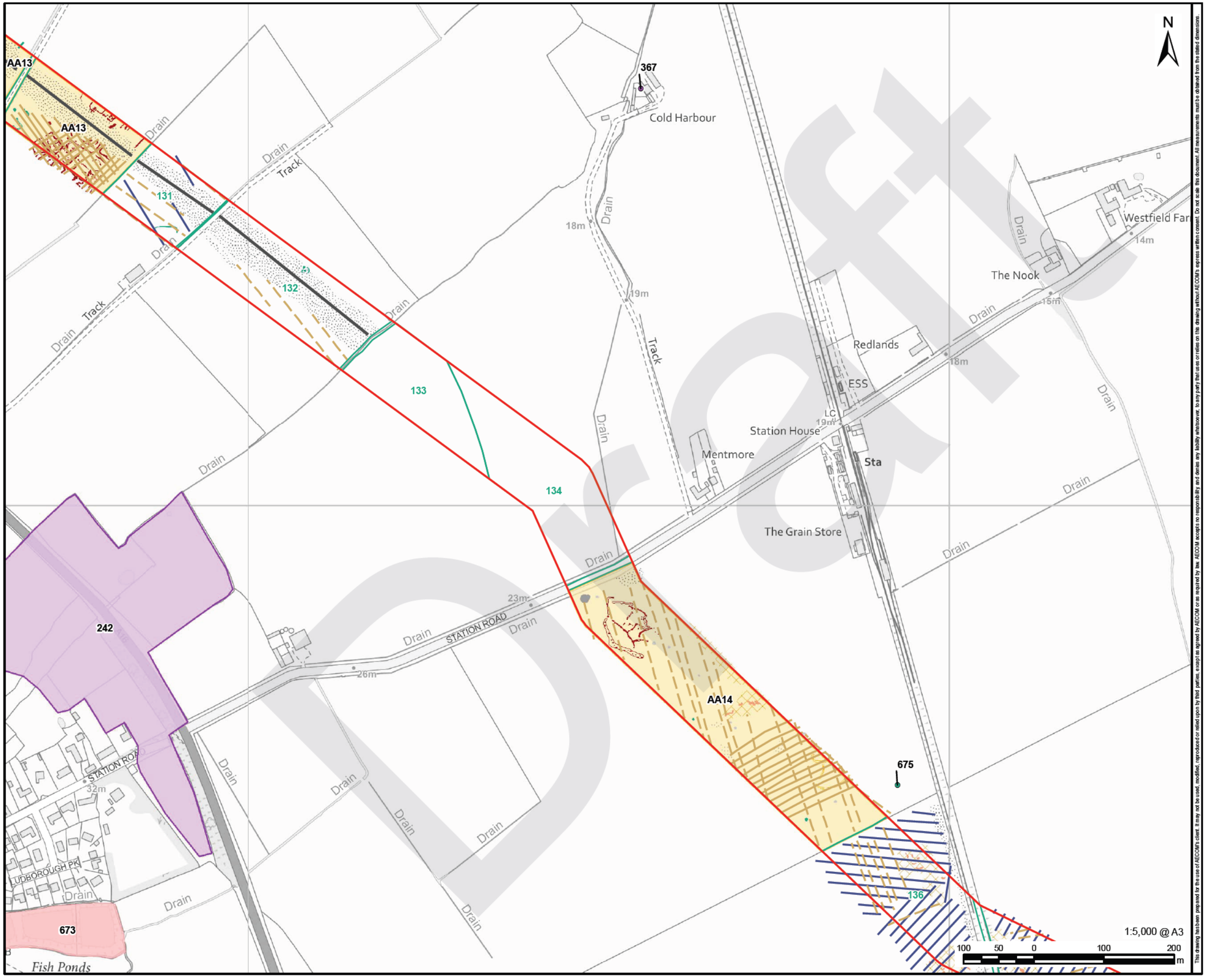
ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

Filename: \\eu.aecom.net.com\EMEA\UK\NCL2\Jobs\60668955 V_Net_Zero_Project\900_CAD_GIS\920_GIS\02_Maps\Arch Mitigation Strategy\VCCS_AMS_2_Provisional_Archaeological_Action_Areas_Detailed_v2_240808.mxd



1:5,000 @ A3

100 50 0 100 200 m

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset
- Scheduled Monument

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

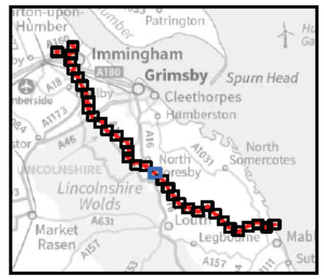


FIGURE TITLE

Figure 2 (20 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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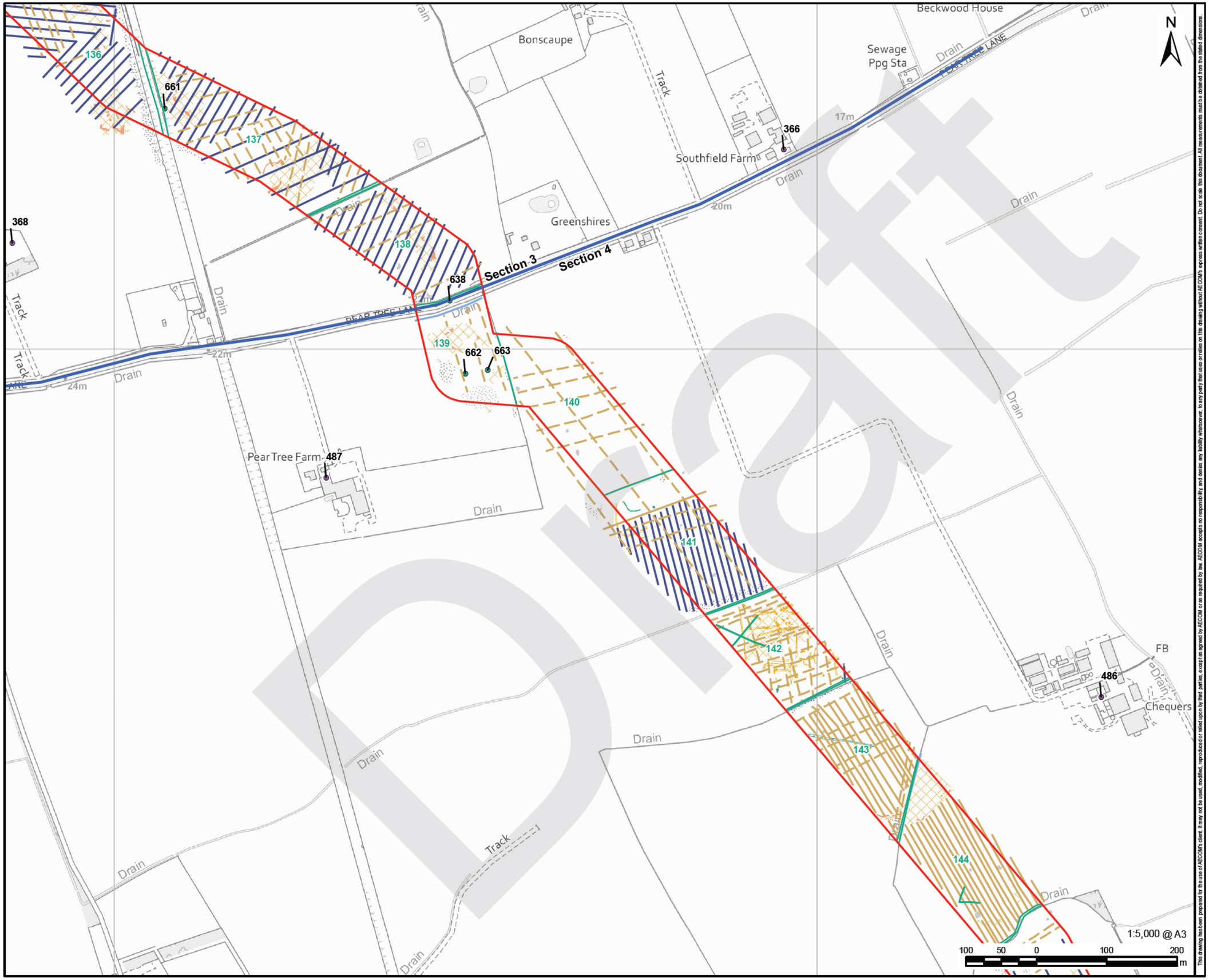

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Route Section Break
- Geophysical Survey Area - AOC Field Numbers
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

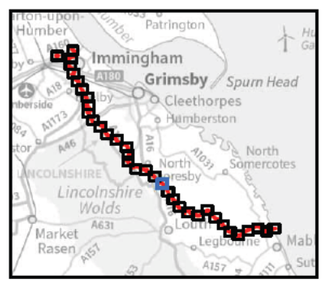

FIGURE TITLE

Figure 2 (21 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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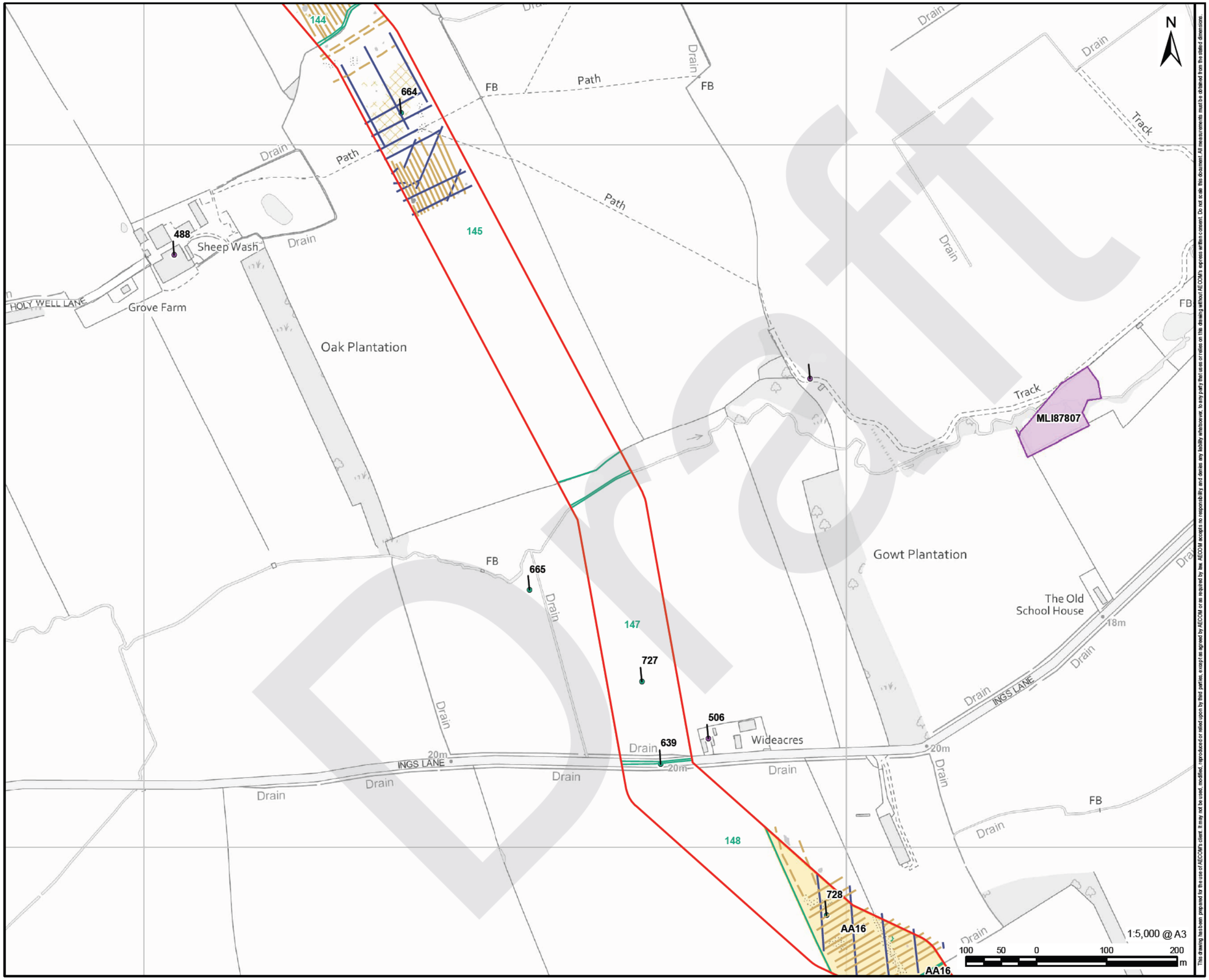

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

Lincolnshire CC HER
North Lincolnshire Council HER
North East Lincolnshire Council HER

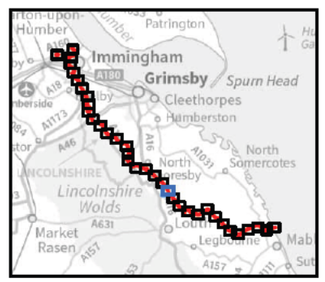

FIGURE TITLE

Figure 2 (22 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

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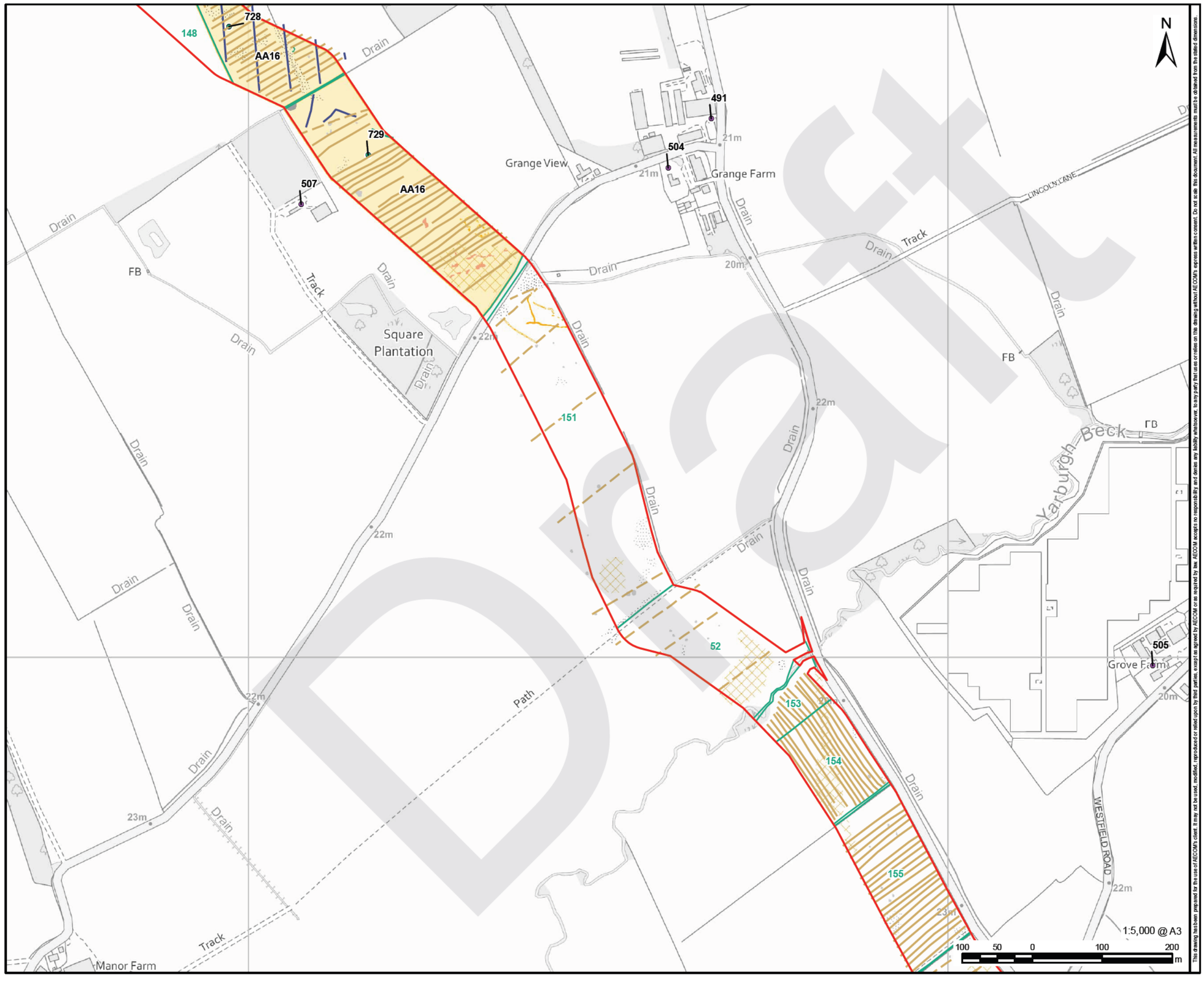
Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08



VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

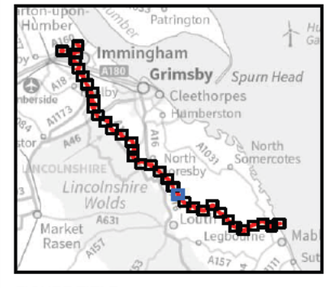


FIGURE TITLE

Figure 2 (23 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

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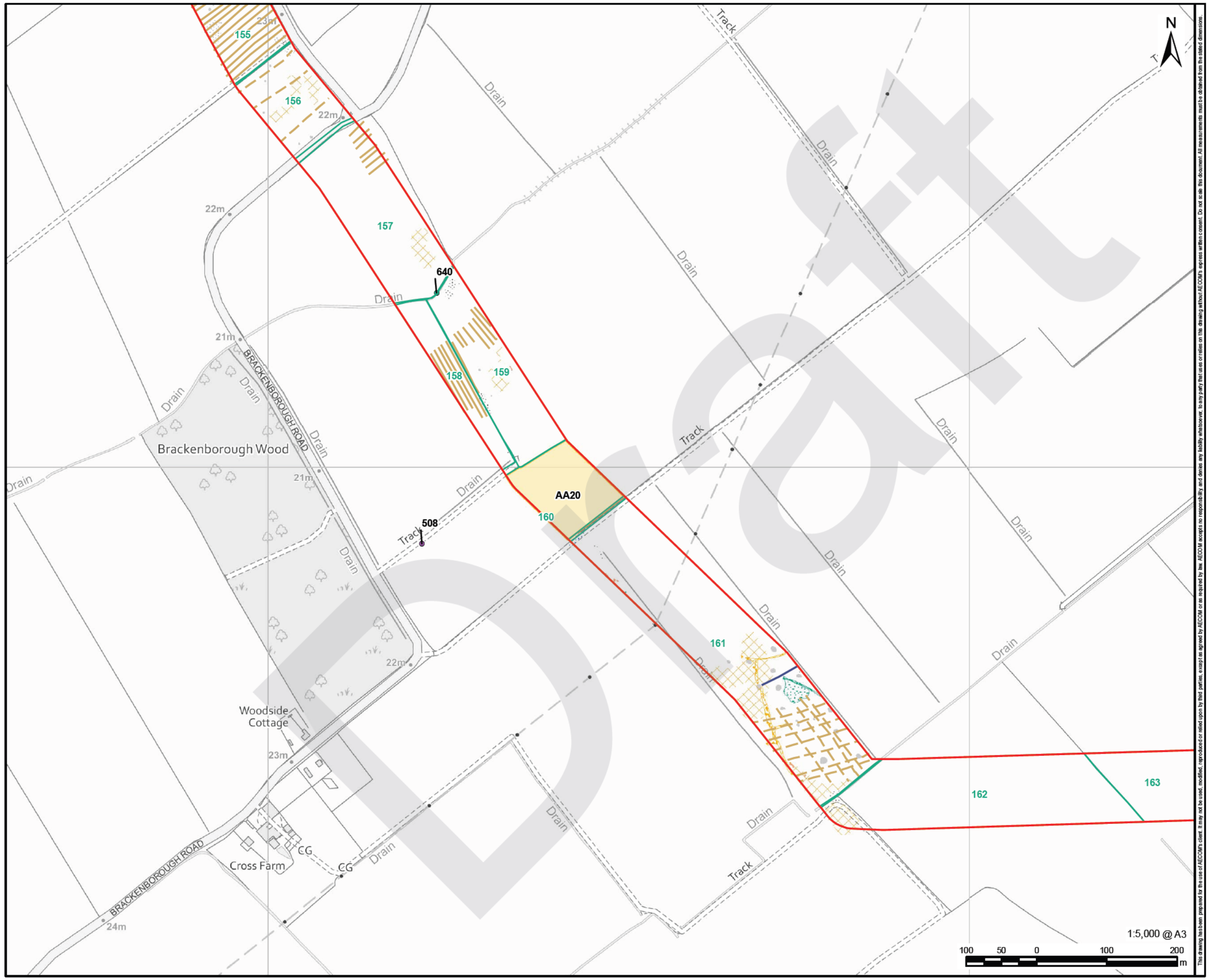

1:5,000 @ A3

100 50 0 100 200 m

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

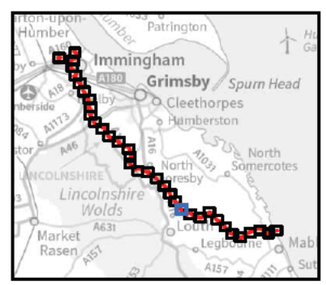

FIGURE TITLE

Figure 2 (24 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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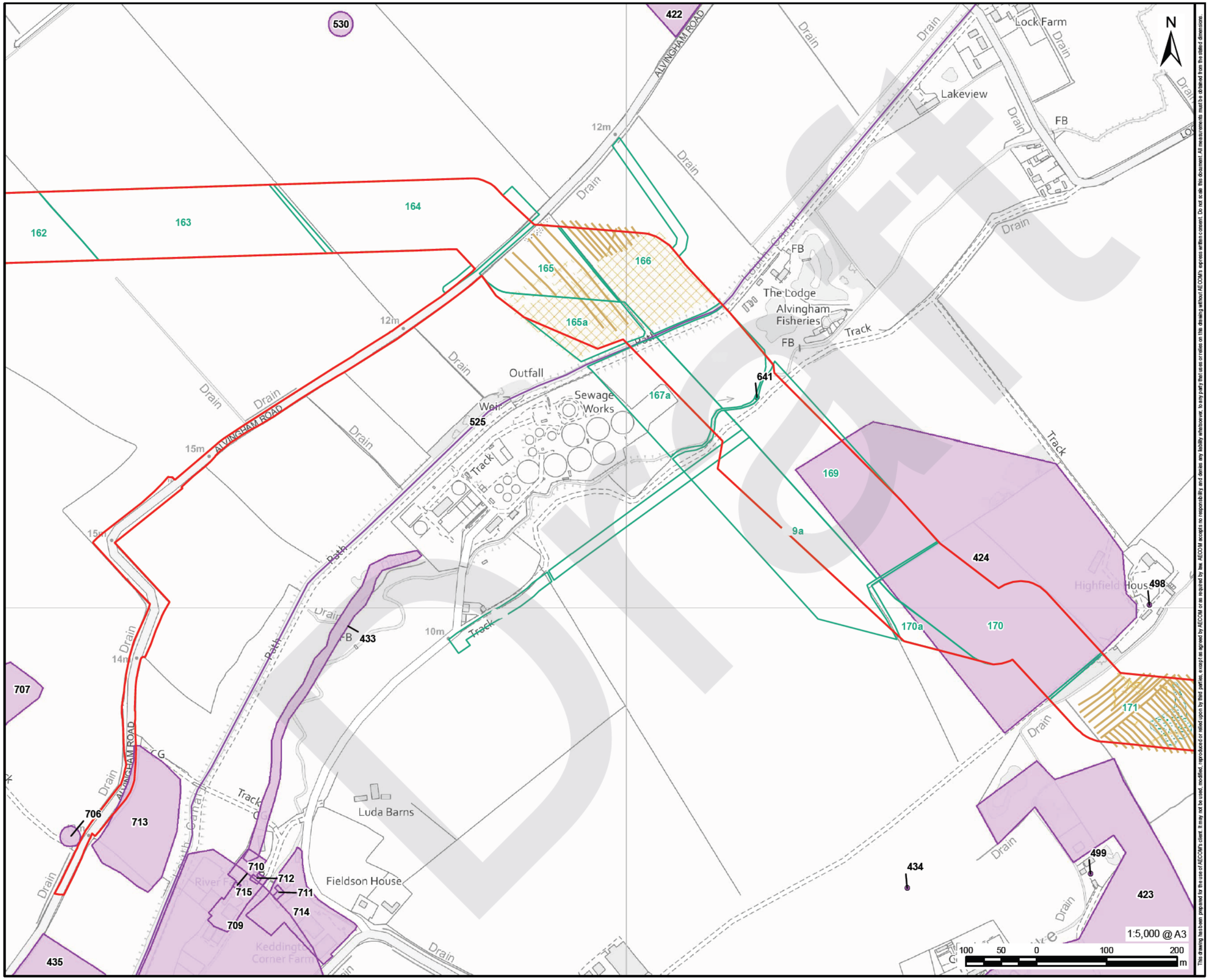

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

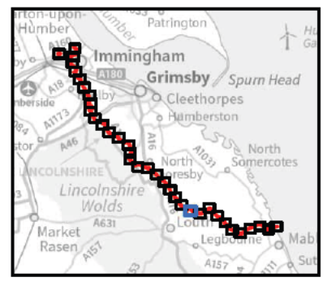

FIGURE TITLE

Figure 2 (25 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset
- Scheduled Monument

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

Lincolnshire CC HER
North Lincolnshire Council HER
North East Lincolnshire Council HER

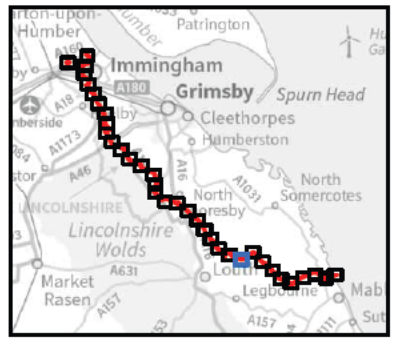

FIGURE TITLE

Figure 2 (26 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

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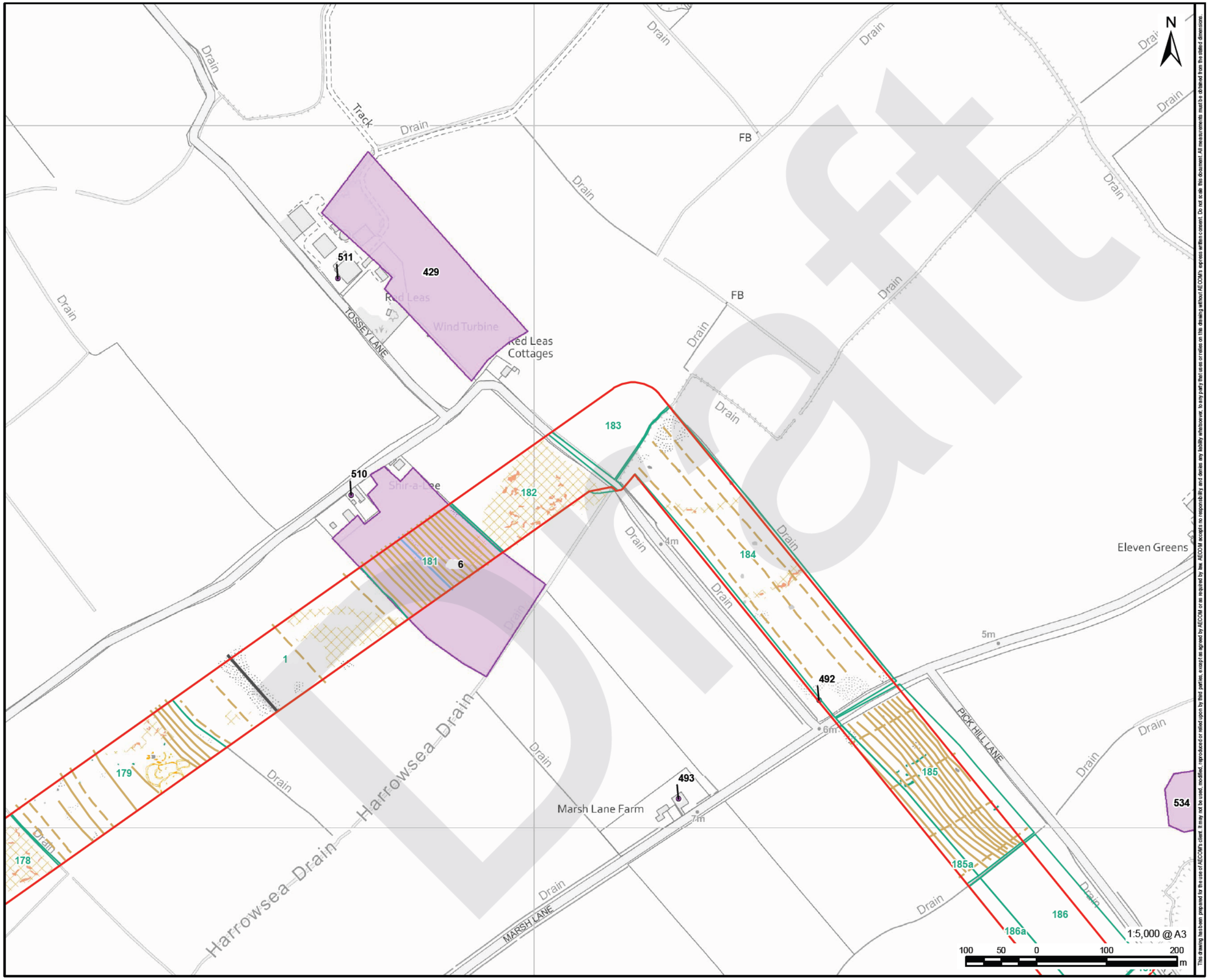
Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08



VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

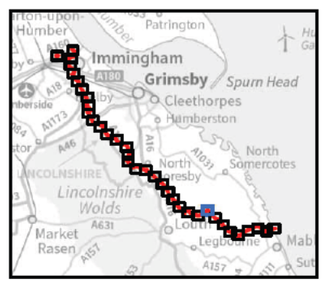


FIGURE TITLE

Figure 2 (27 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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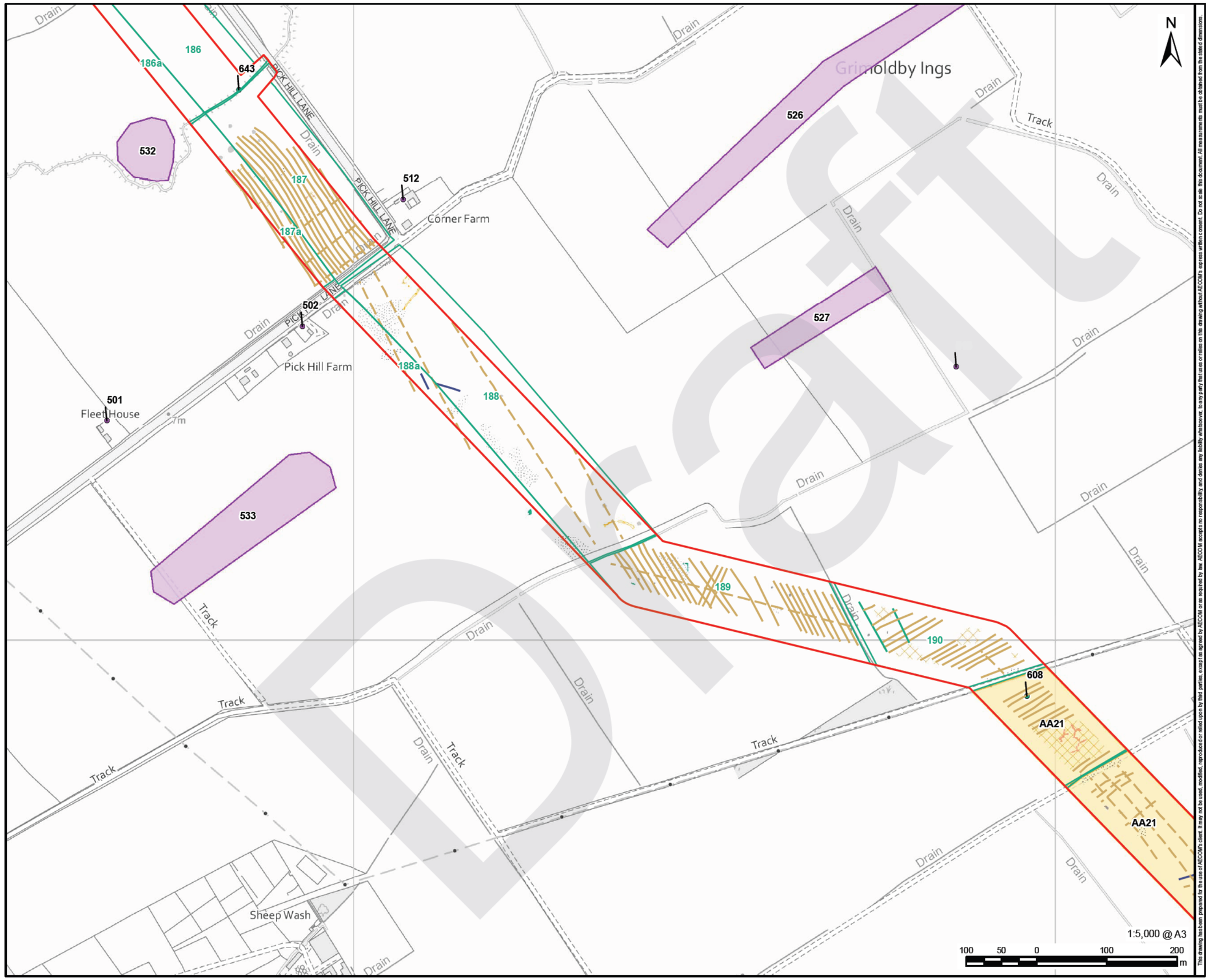

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

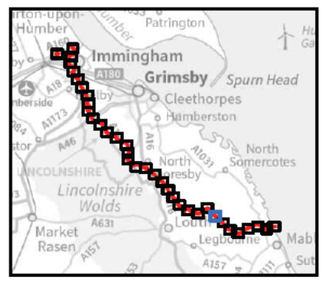

FIGURE TITLE

Figure 2 (28 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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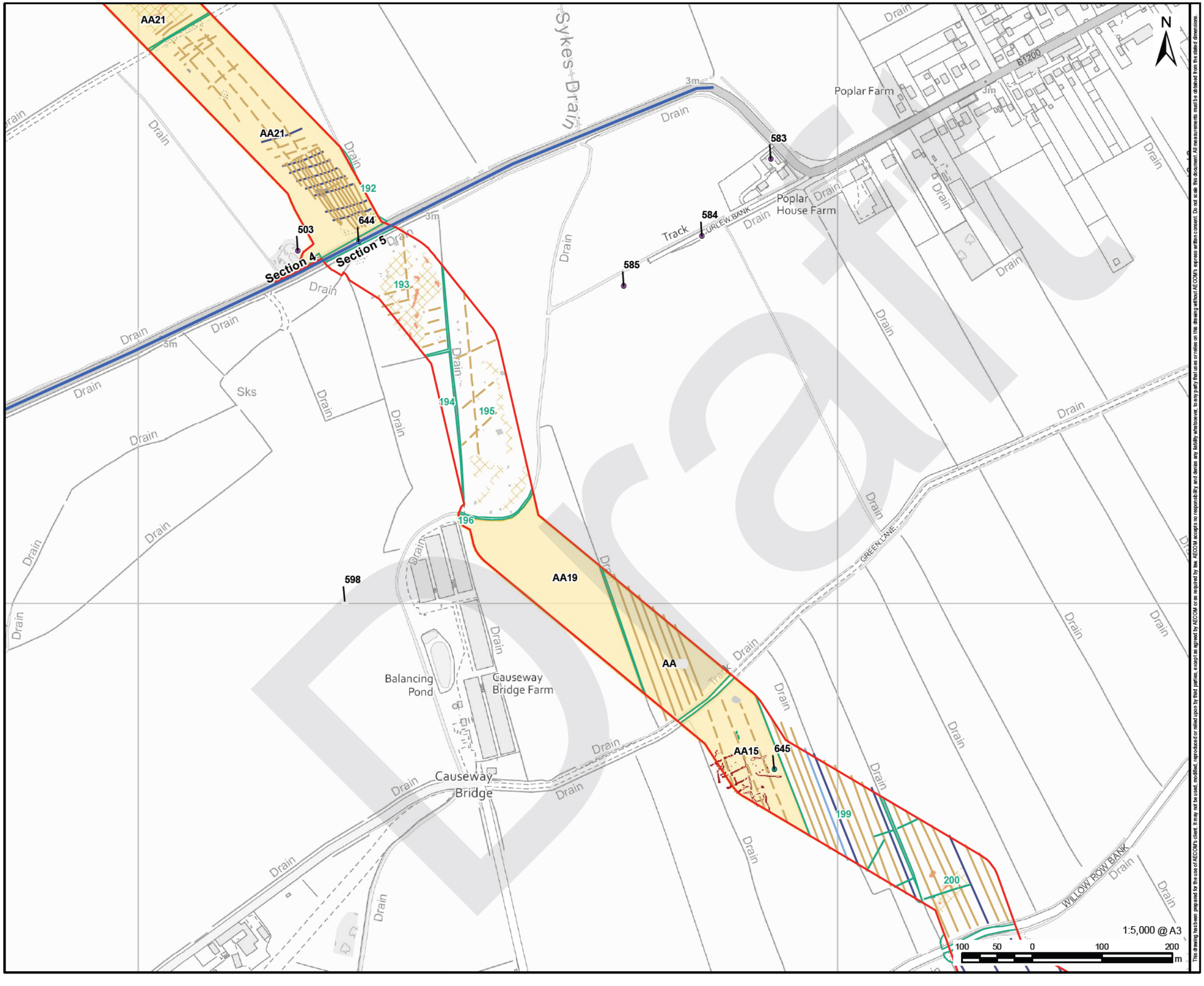

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Route Section Break
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

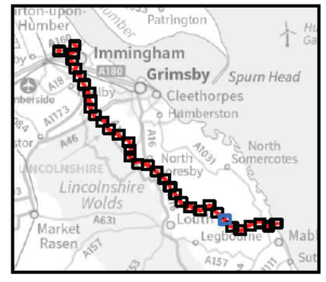

FIGURE TITLE

Figure 2 (29 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

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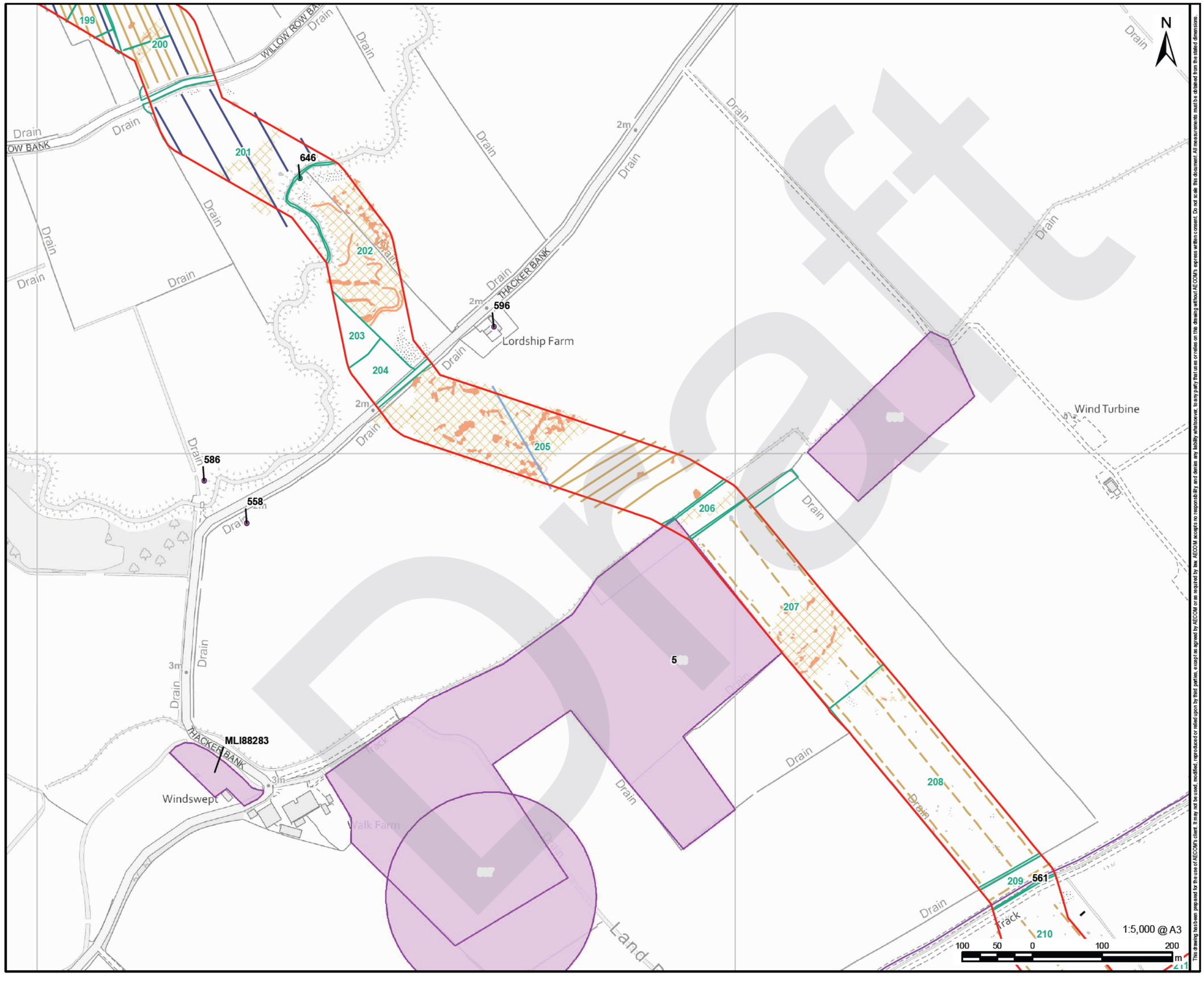

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

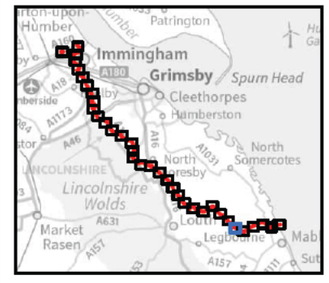

FIGURE TITLE

Figure 2 (30 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

Revision: 2 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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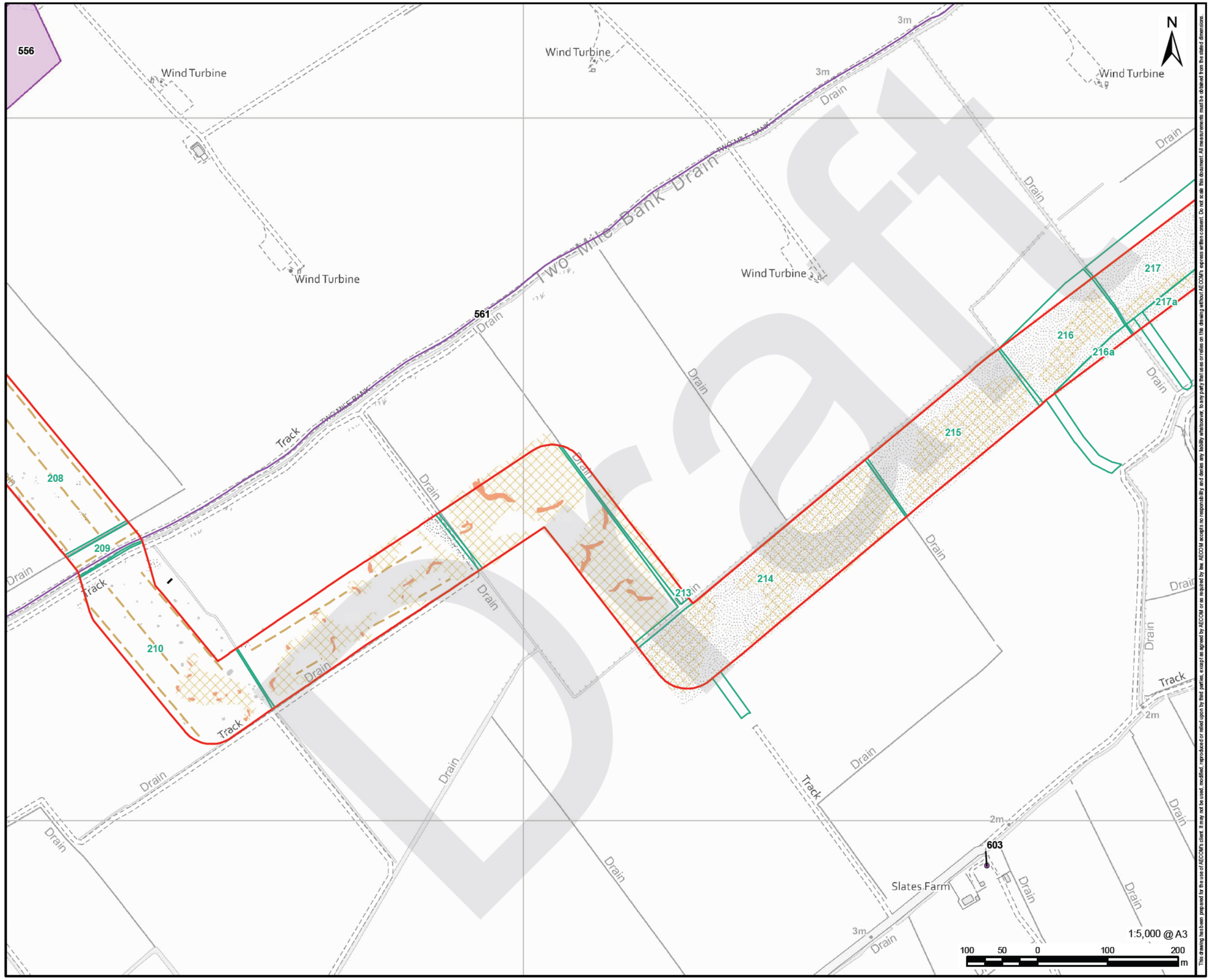

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

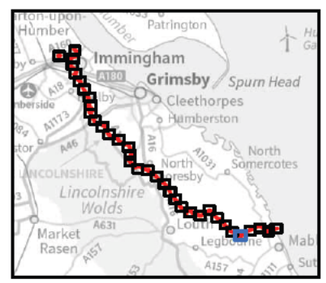

FIGURE TITLE

Figure 2 (31 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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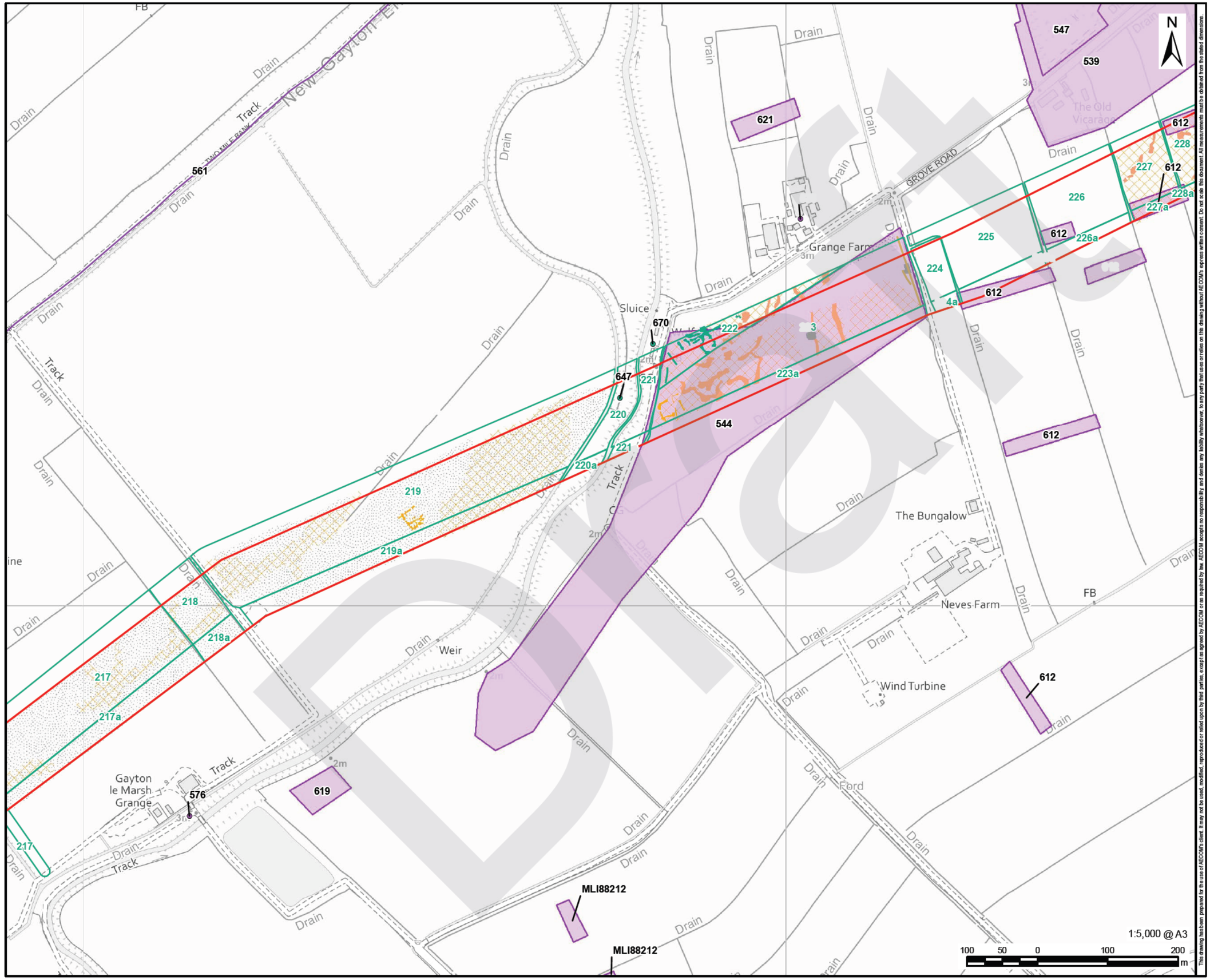

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

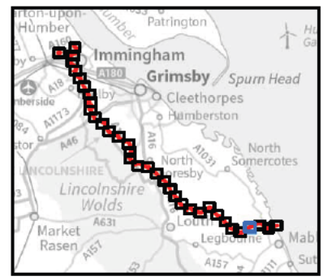

FIGURE TITLE

Figure 2 (32 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

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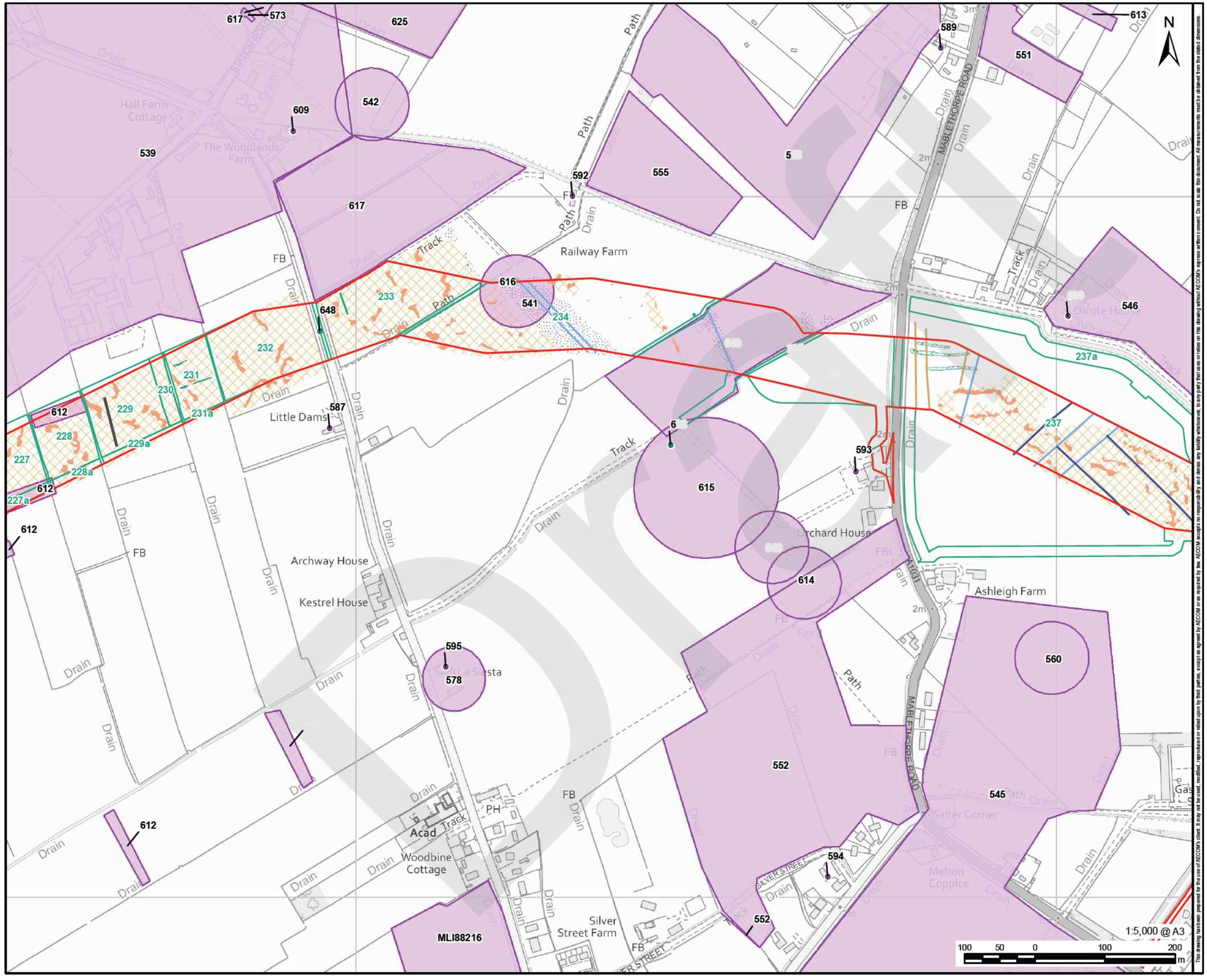

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

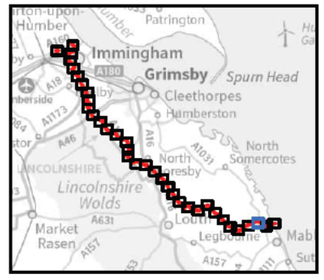

FIGURE TITLE

Figure 2 (33 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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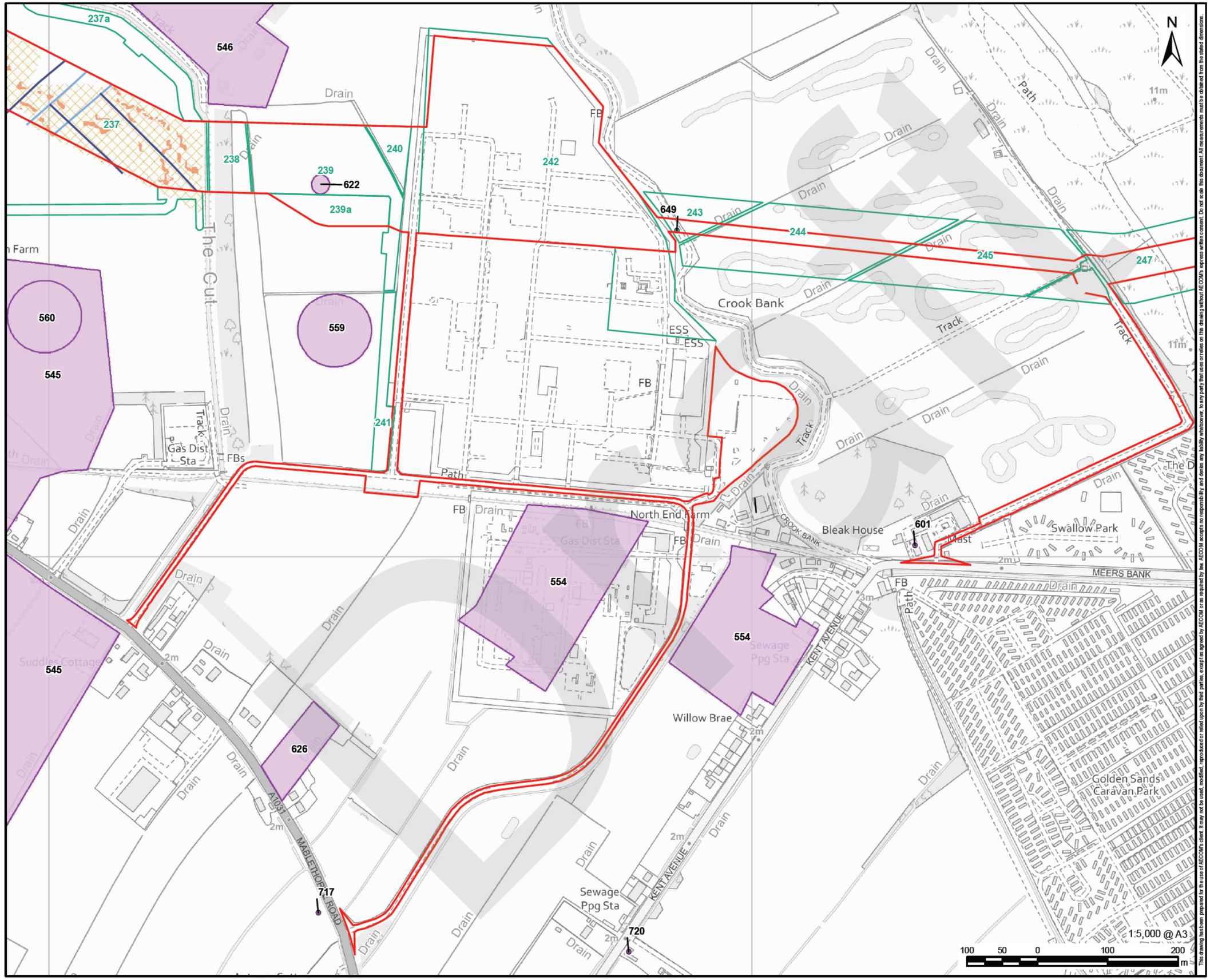

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

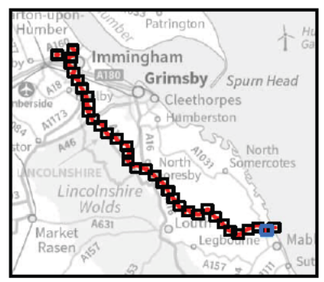

FIGURE TITLE

Figure 2 (34 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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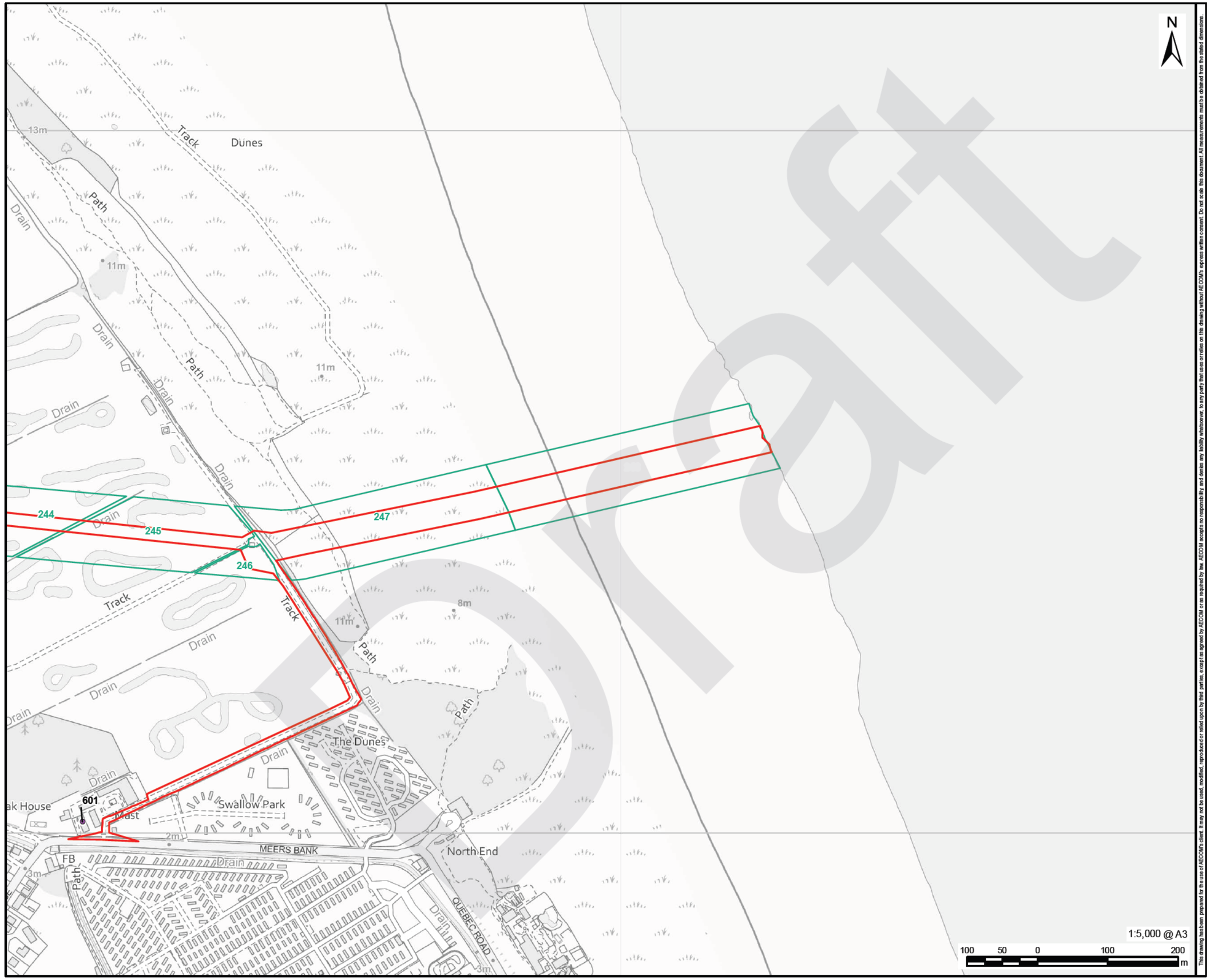

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area

NOTES:
* HER - Historic Environment Records

Geophysical Survey Interpretation Legend is shown on a separate sheet.

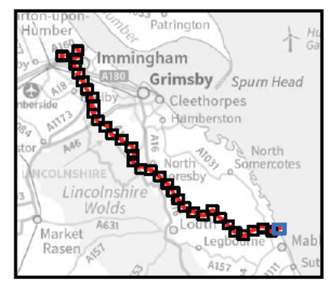

FIGURE TITLE

Figure 2 (35 of 35)
Provisional Archaeological Action Areas - Detailed

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_2

- DCO Site Boundary
- Route Section Break
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- HER Monument - Point
- HER Monument - Line
- HER Monument - Area
- Additional Non-Designated Asset
- Scheduled Monument

Geophysical Survey Interpretation (AOC)

- Linear Trend (Drainage)
- Linear Trend (Historic Feature)
- Linear Trend (Geology/Natural)
- Linear Trend (Agricultural, Plou
- Linear Trend (Possible Archa)
- Linear Trend (Probable Arc gy)
- Linear Trend (Agricultural, R nd Furrow)
- Linear Trend (Ferrous/Iron Sp
- Linear Trend (Service)
- Linear Trend (Unclear Origin)
- Linear Trend (Magnetic Disturb
- Anomaly (Probable Archaeology)
- Spread (Probable Archaeology)
- Anomaly (Possible)
- Spread (Possib
- Anomaly (M c Disturbanc
- Spread (etic Disturbance)
- Anoma ricultural)
- Sprea cultural)
- Anoma ology/Natu
- Spread (eology/Na
- Anomaly (Ferrous/I pike)
- Spread (Ferrous/Ir ke)
- Spread (Burned Ar
- Anomaly (Unclear Or
- Spread (Unclear Origin)
- omaly (Historic Feature)
- d (Historic Feature)
- Custom Use)

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

FIGURE TITLE

Figure 2
Provisional Archaeological Action Areas - Geopysical Survey Interpretation Legend

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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Figure 3: Completed Trench Locations to 01 August 2024

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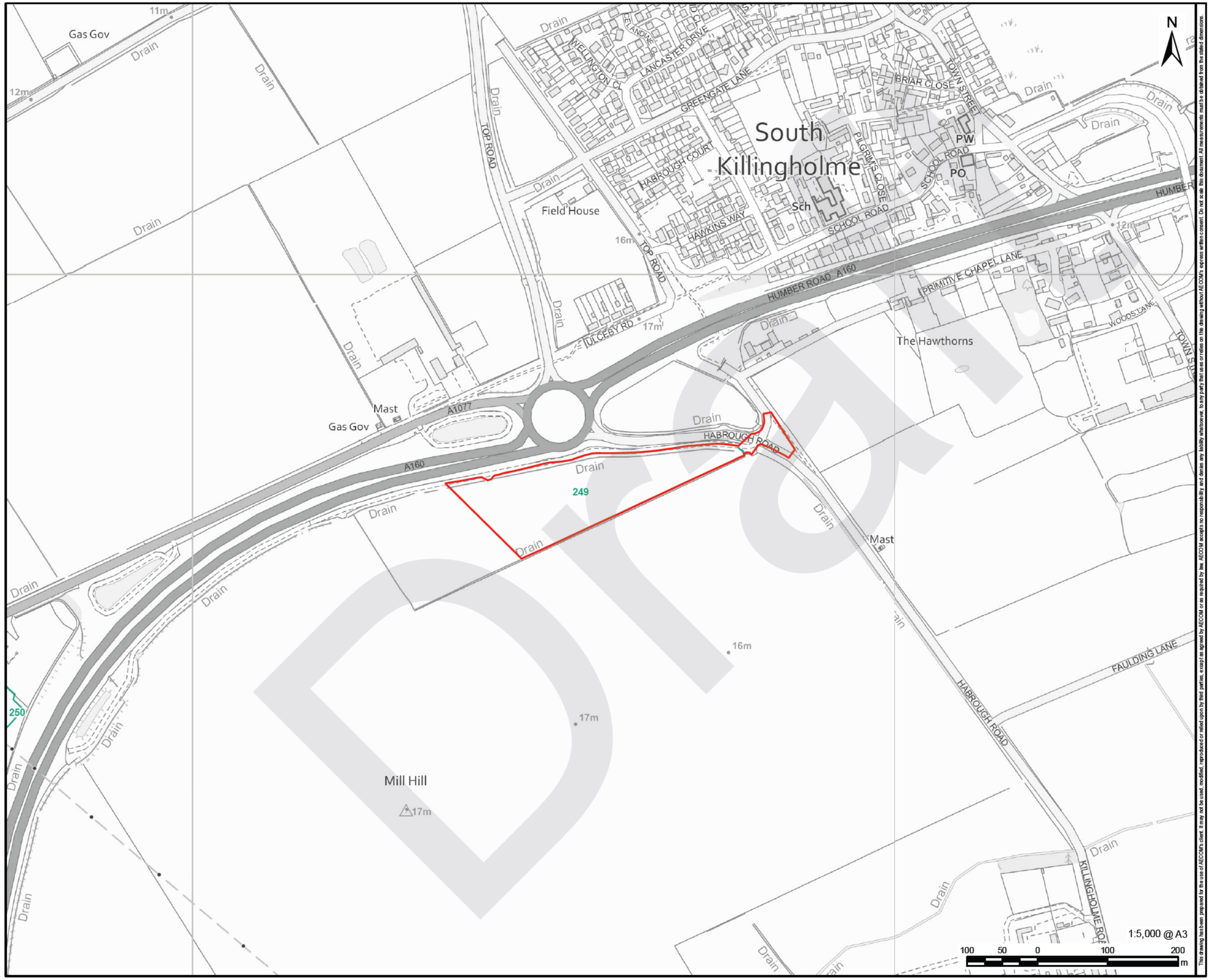

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers

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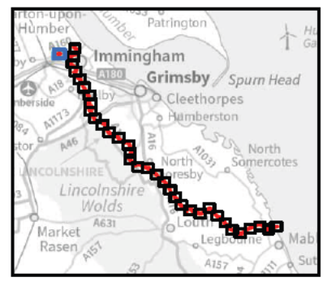

FIGURE TITLE

Figure 3 (1 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_3

Revision: 1 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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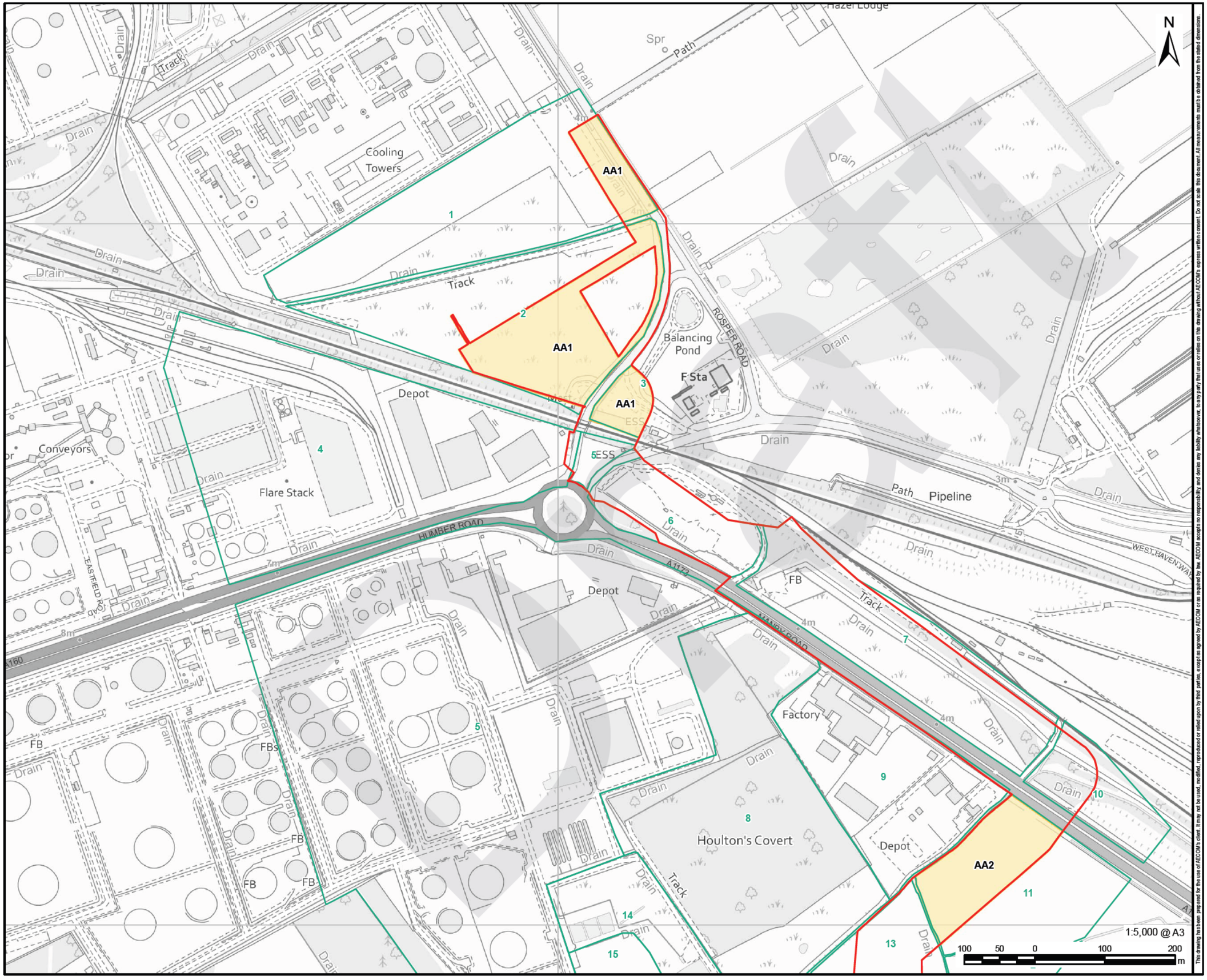

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area

NOTES:

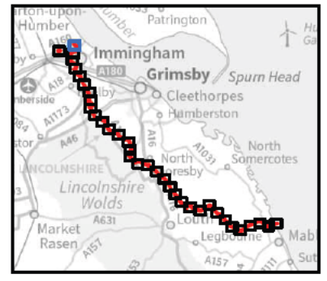

FIGURE TITLE

Figure 3 (2 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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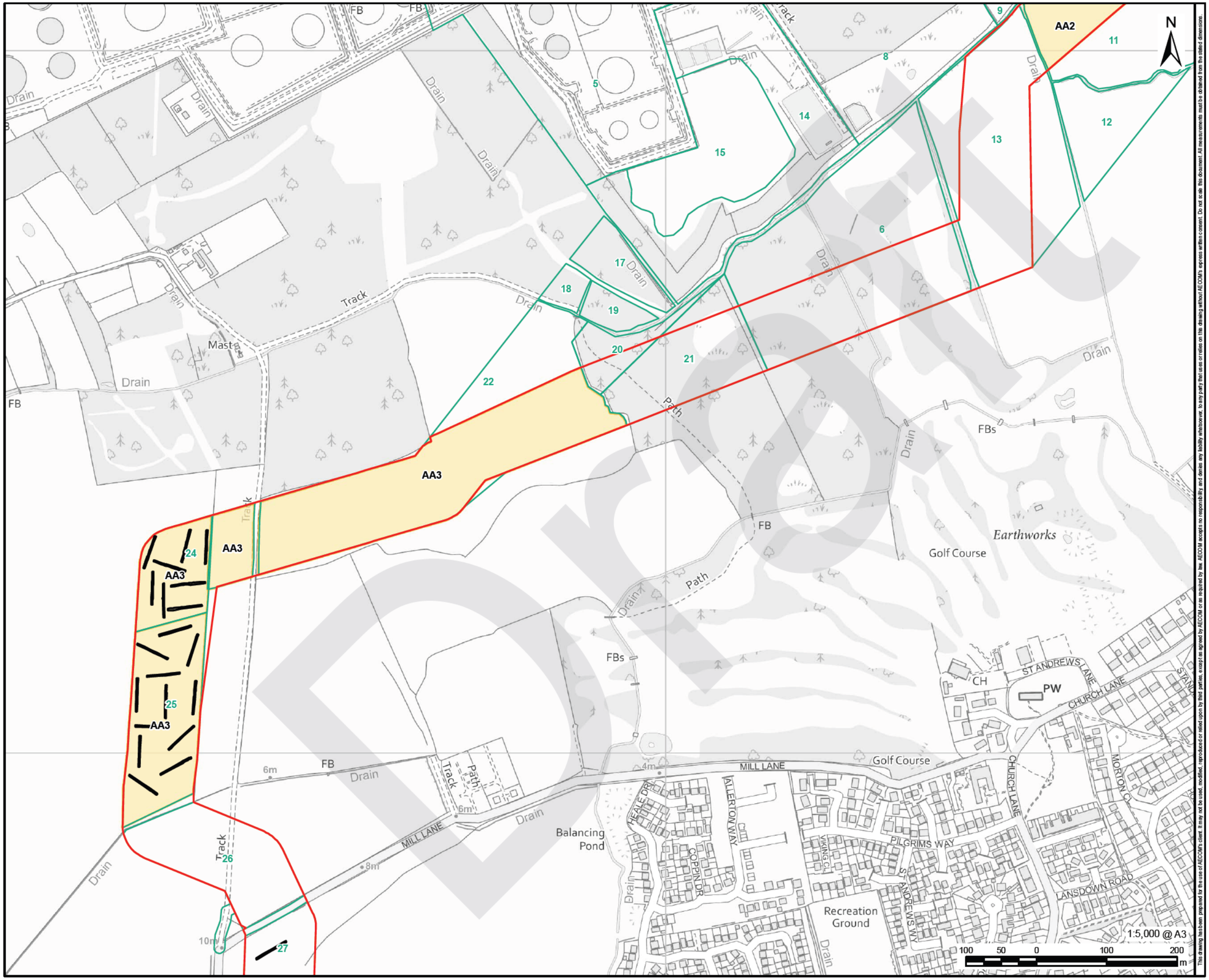

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- Completed Trench Location

NOTES:

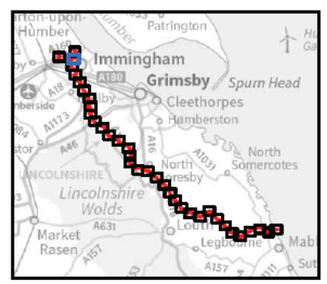

FIGURE TITLE

Figure 3 (3 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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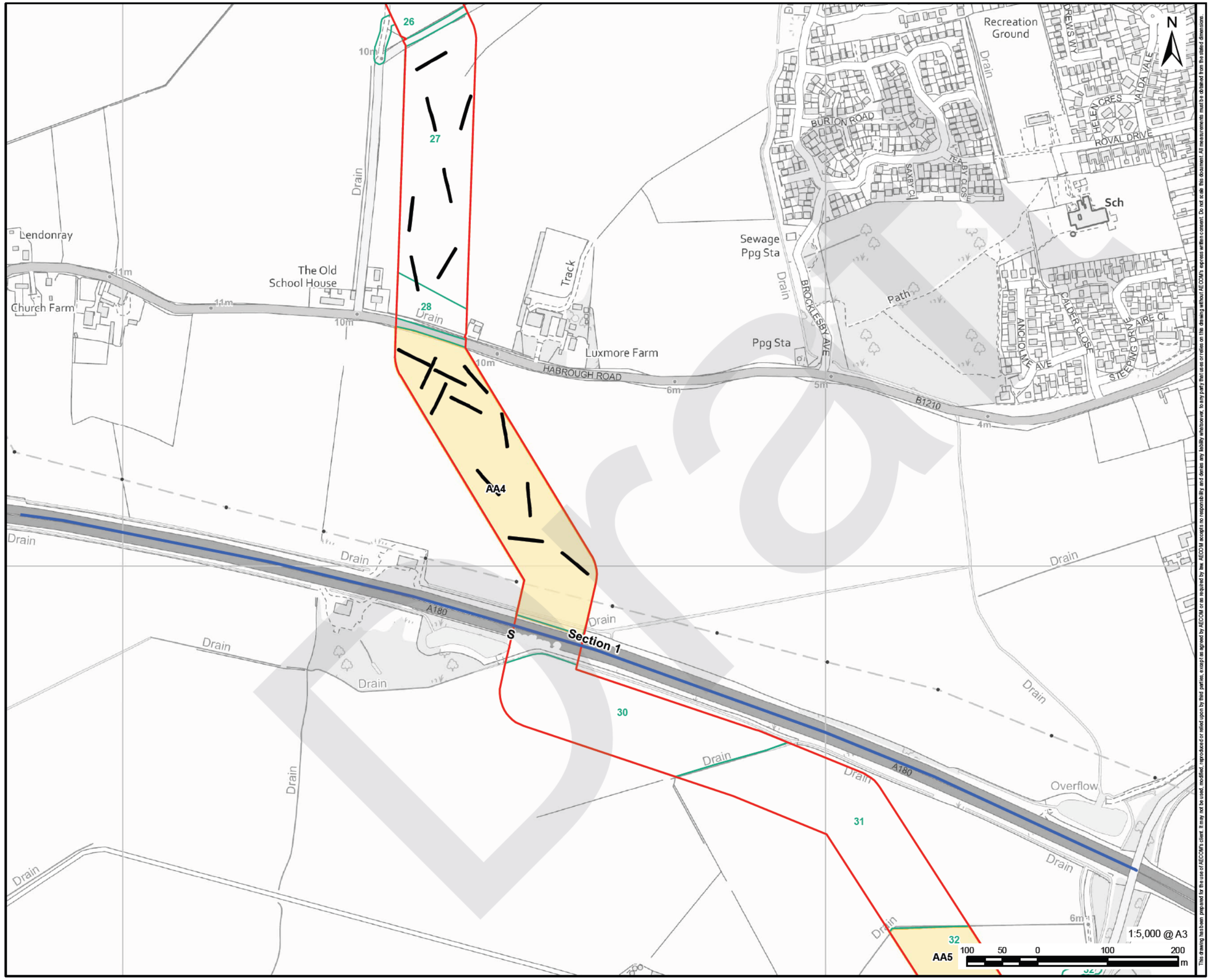

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Route Section Break
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- Completed Trench Location

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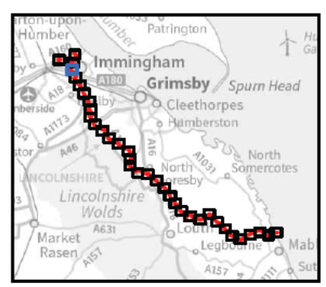

FIGURE TITLE

Figure 3 (4 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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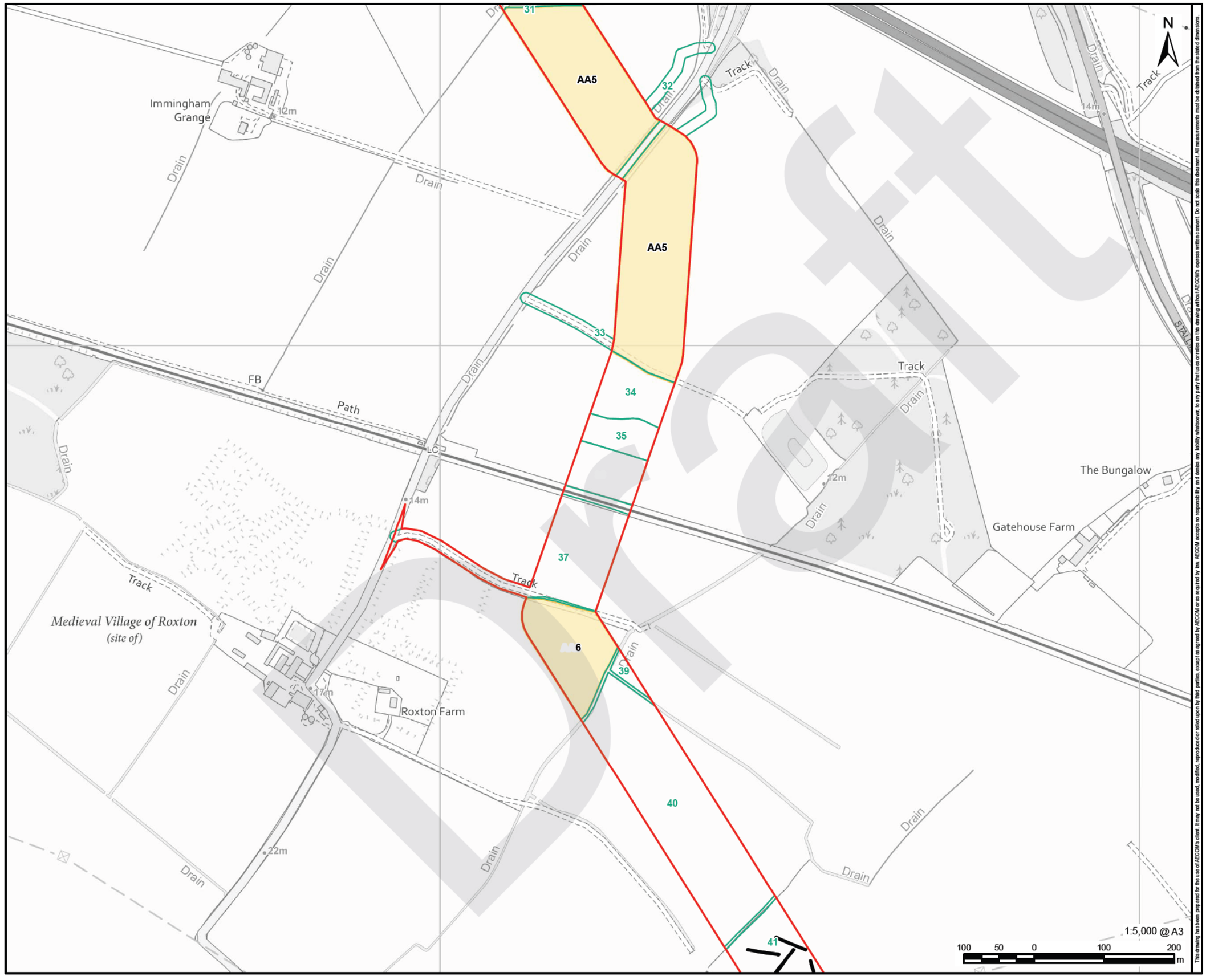


VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- Completed Trench Location

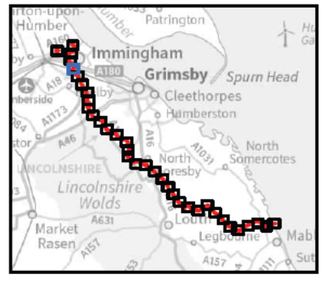


FIGURE TITLE

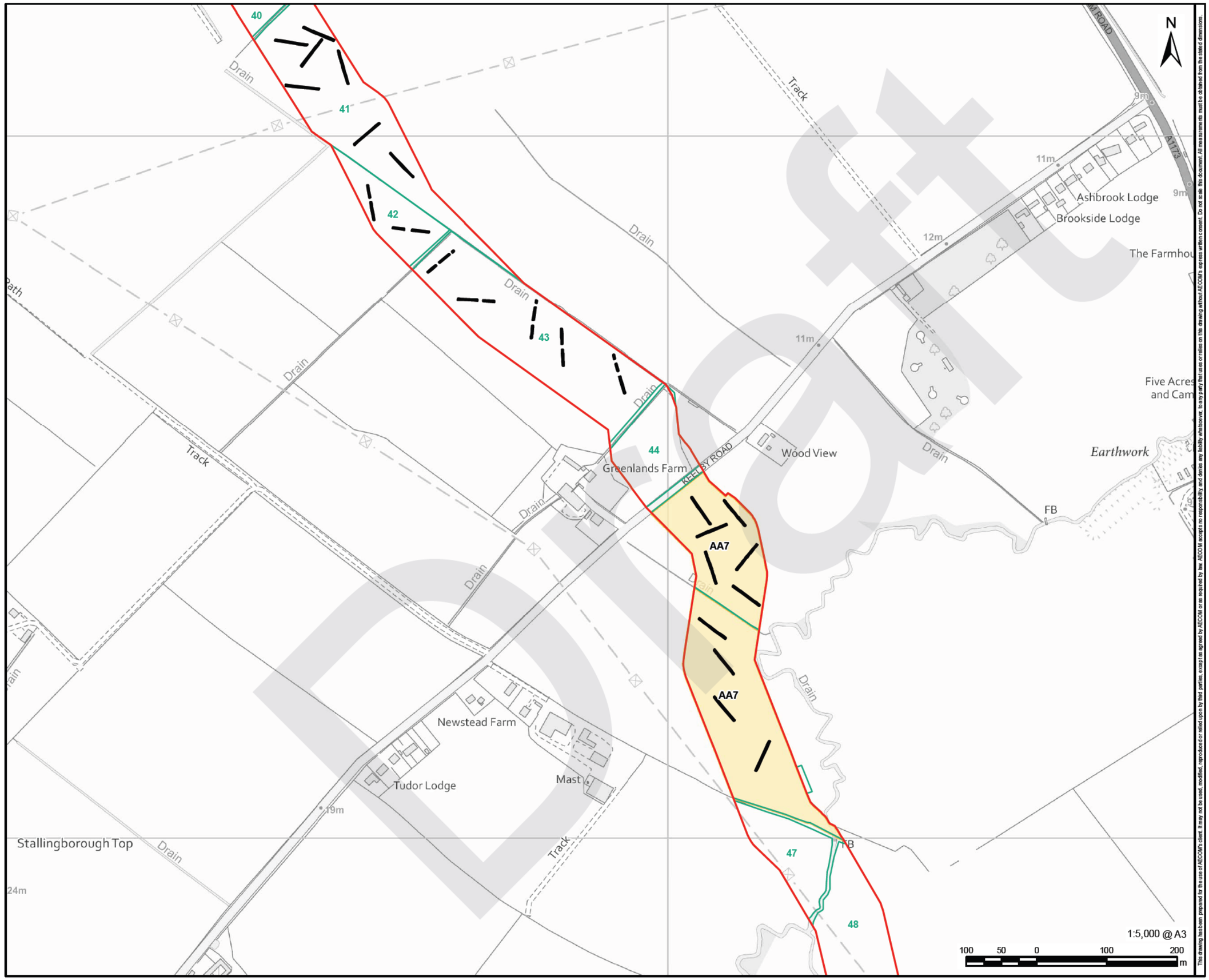
Figure 3 (5 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

60668955 / VCCS_240808_AMS_3



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VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

🟥	DCO Site Boundary
🟩	Geophysical Survey Area - AOC Field Numbers
🟨	Provisional Archaeological Action Area
⬛	Completed Trench Location

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FIGURE TITLE

Figure 3 (6 of 35)
Completed Trench Locations

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ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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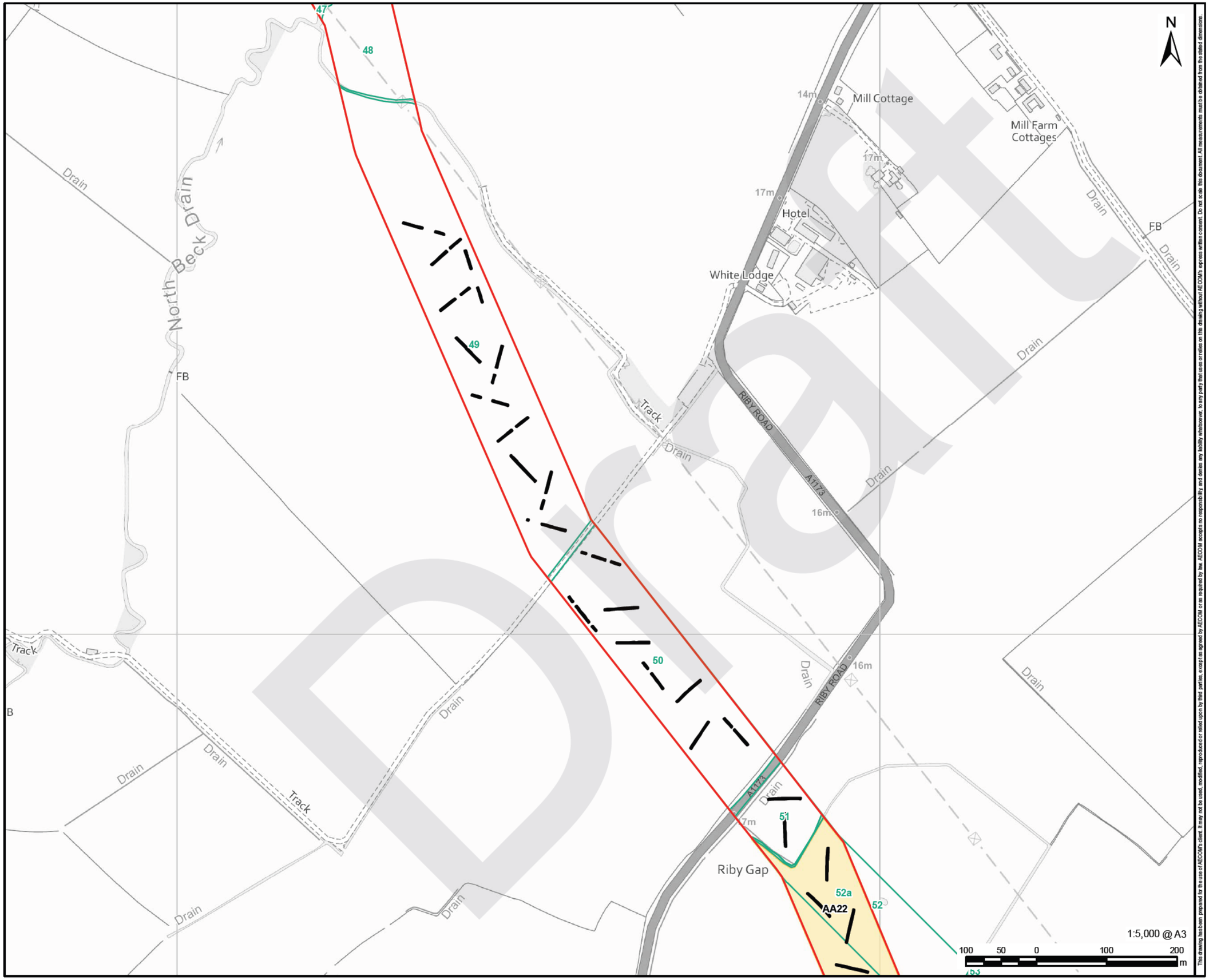

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- Completed Trench Location

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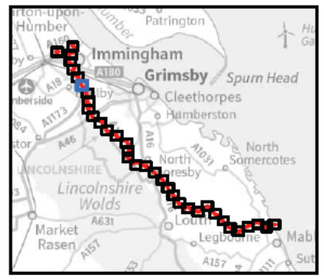

FIGURE TITLE

Figure 3 (7 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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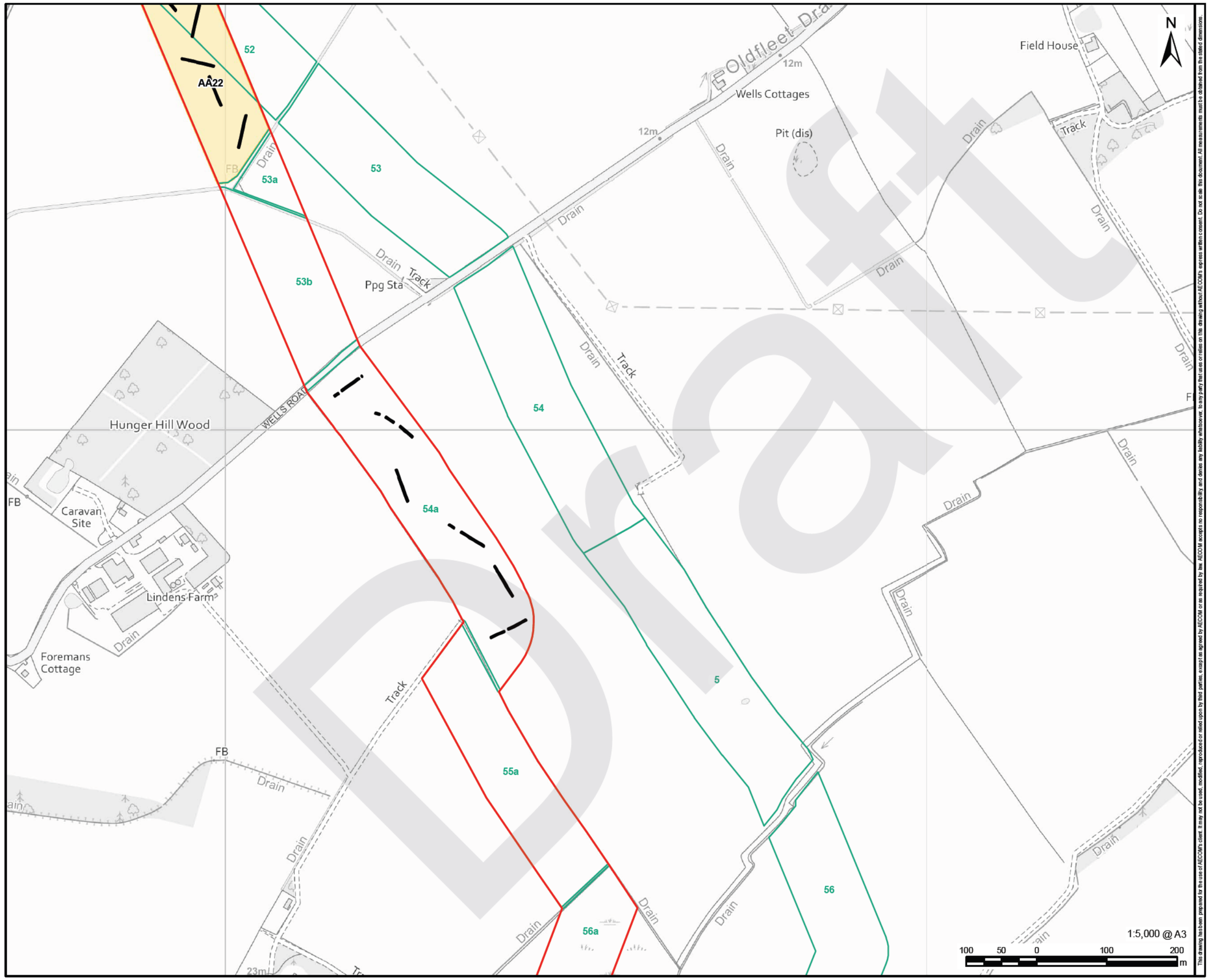

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- Completed Trench Location

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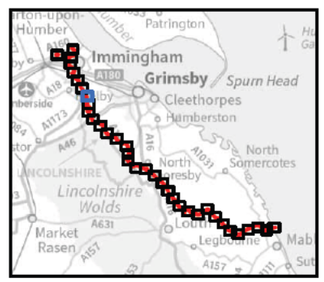

FIGURE TITLE

Figure 3 (8 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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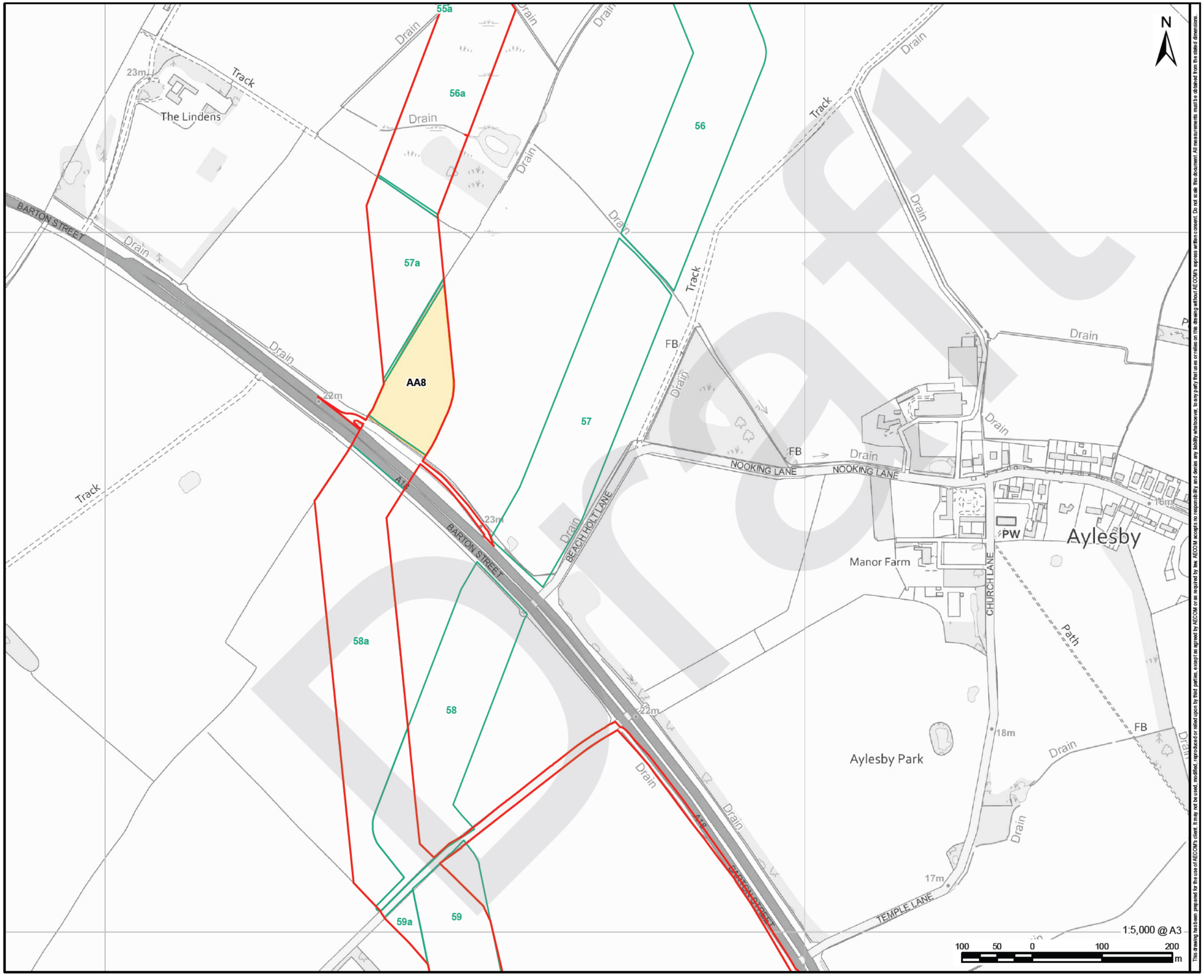

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area

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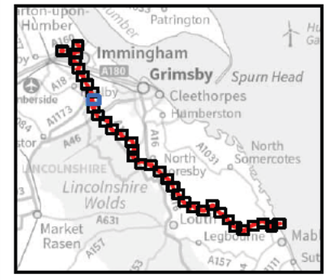

FIGURE TITLE

Figure 3 (9 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Route Section Break
- Geophysical Survey Area - AOC Field Numbers

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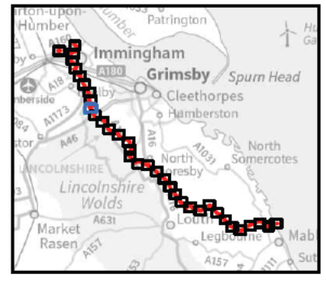

FIGURE TITLE

Figure 3 (10 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

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VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Route Section Break
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area

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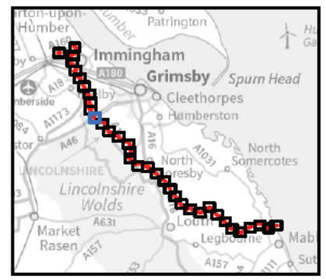

FIGURE TITLE

Figure 3 (11 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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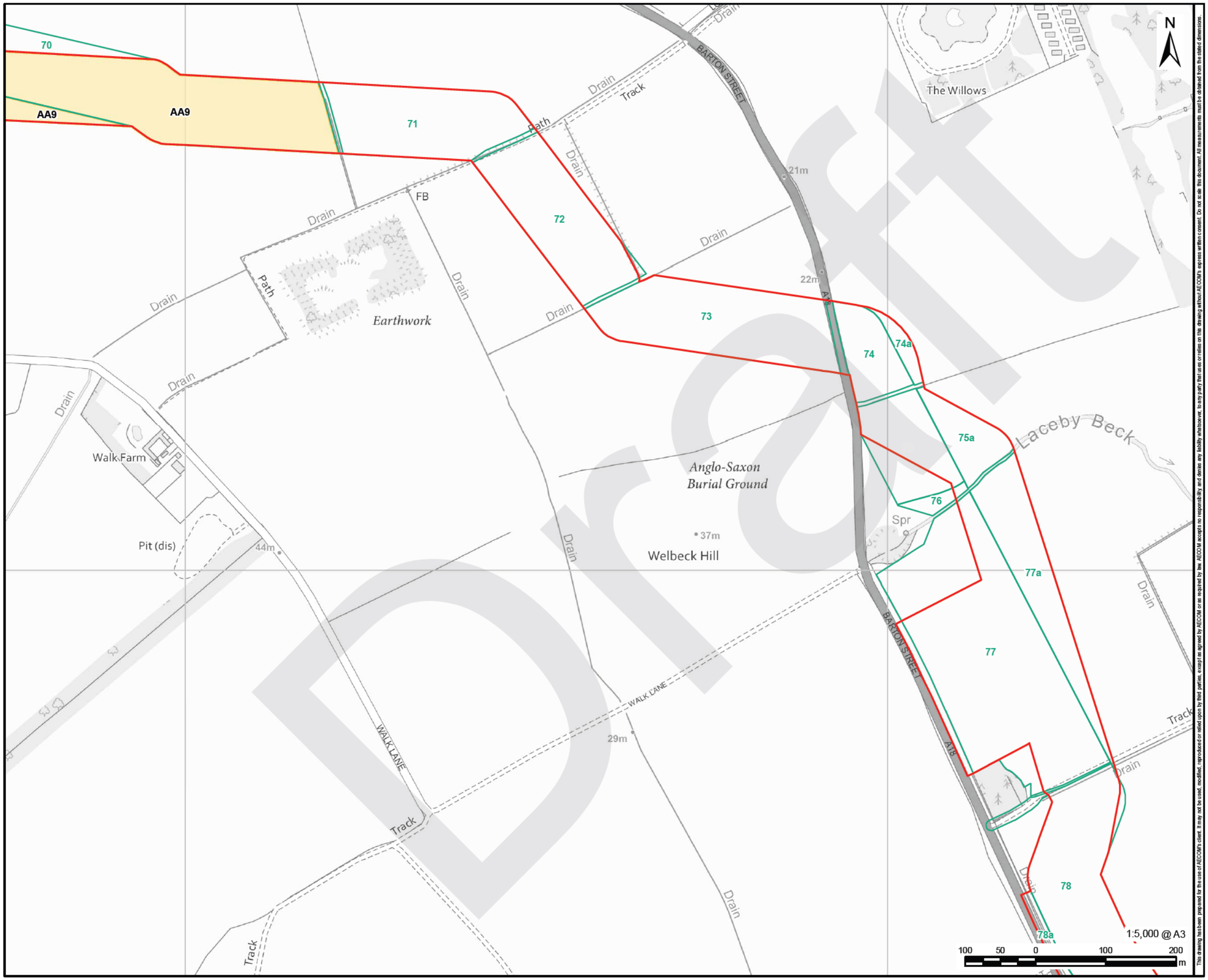

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area

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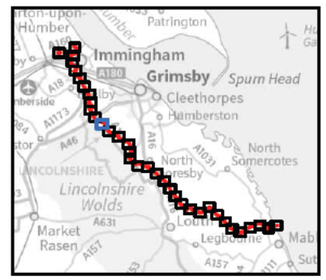

FIGURE TITLE

Figure 3 (12 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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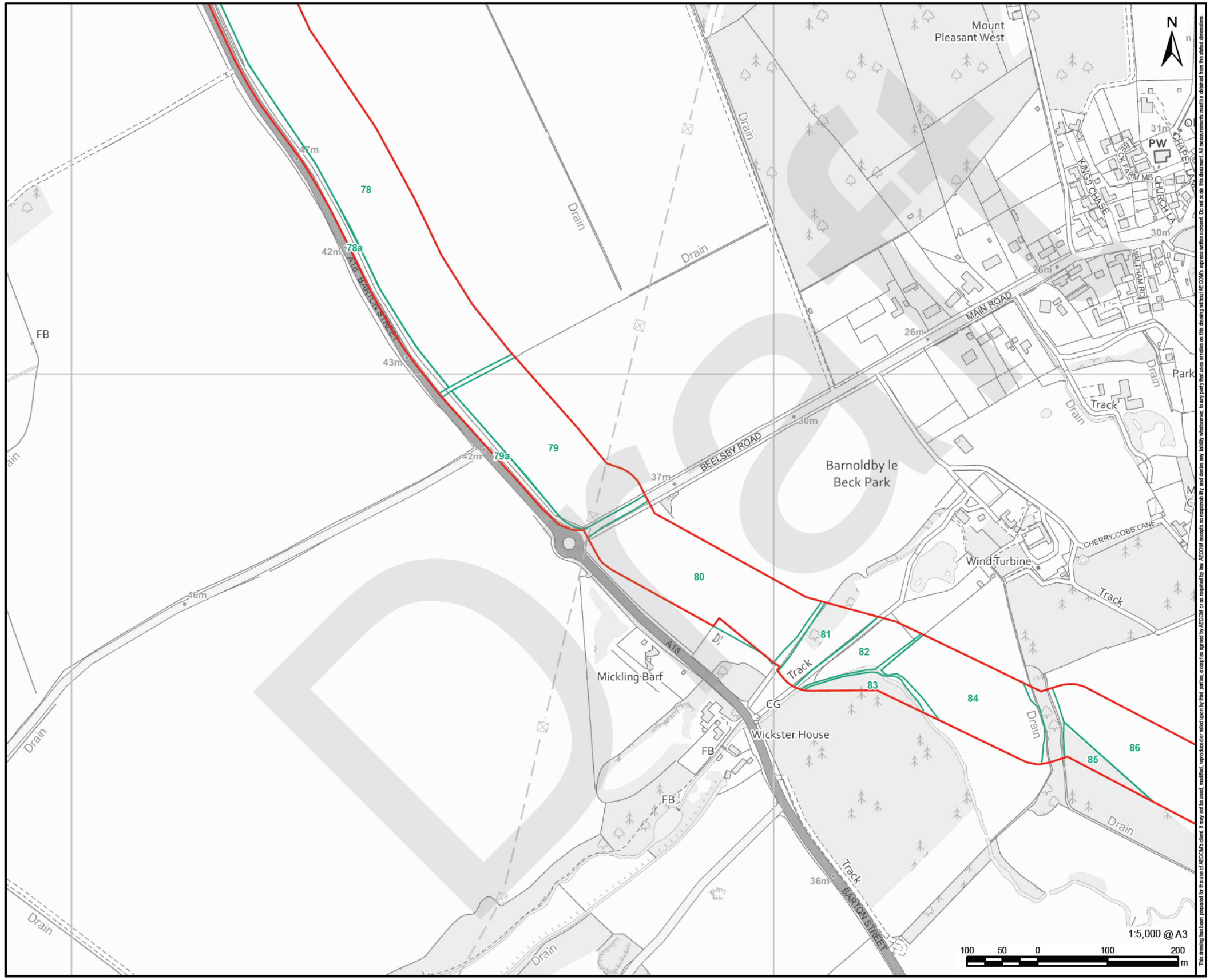

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers

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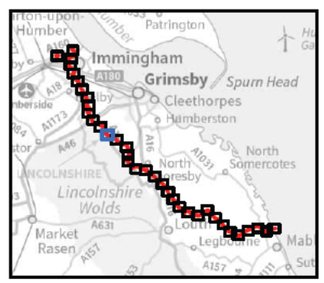

FIGURE TITLE

Figure 3 (13 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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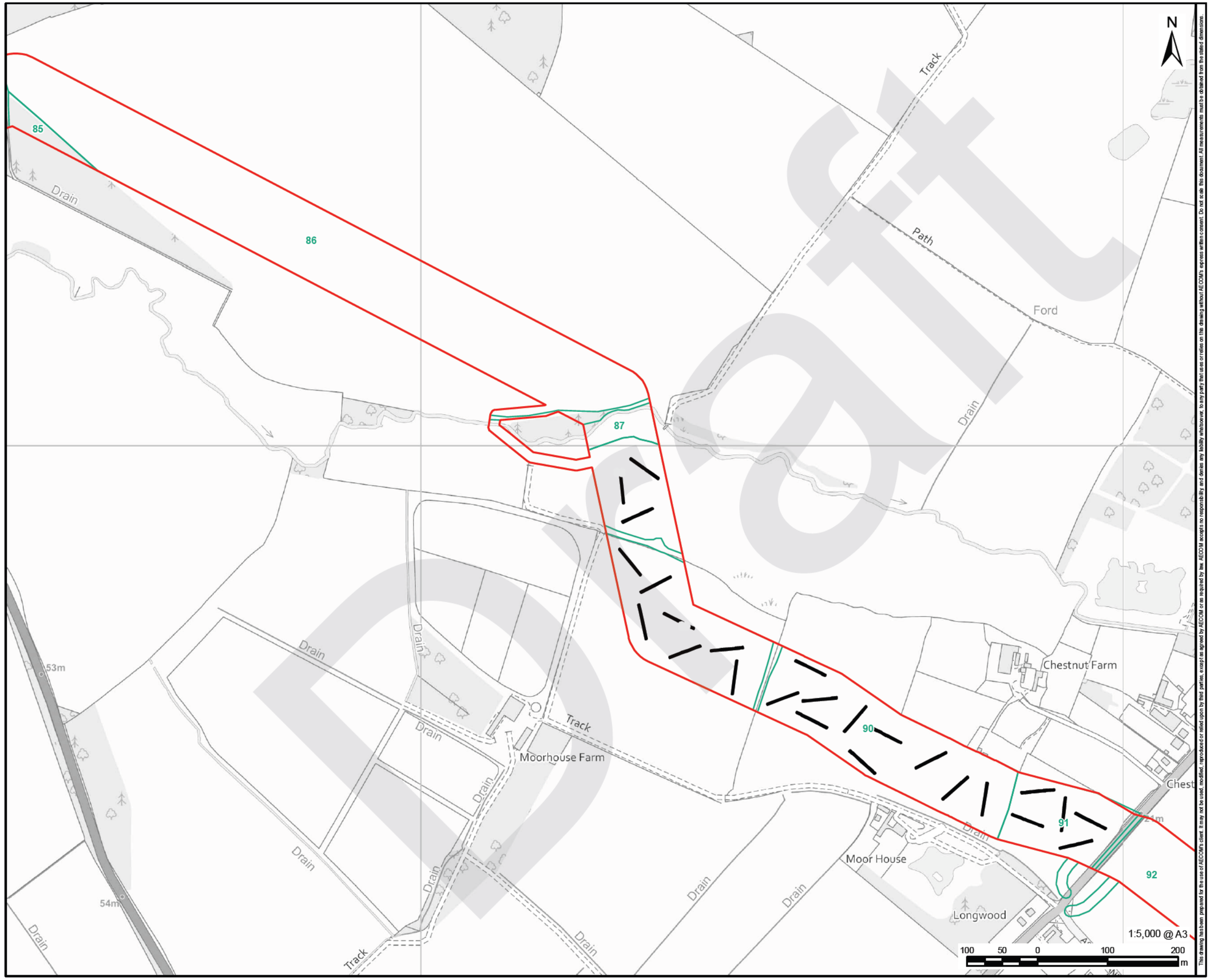

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Completed Trench Location

NOTES:

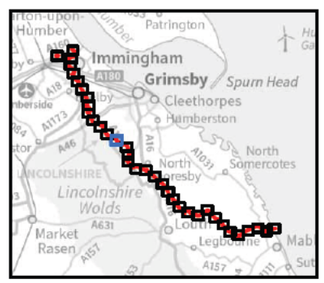

FIGURE TITLE

Figure 3 (14 of 35)
Completed Trench Locations

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ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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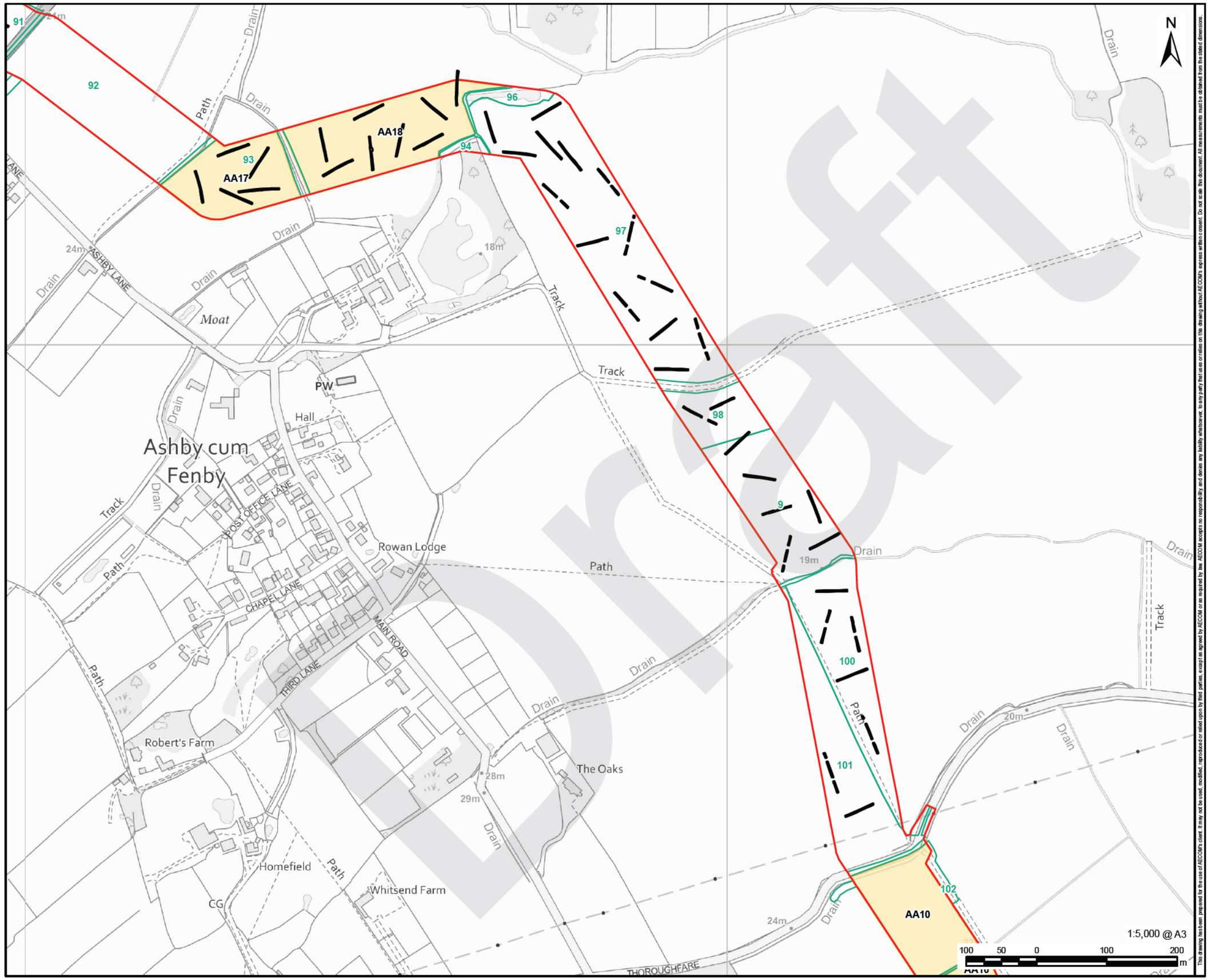

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- Completed Trench Location

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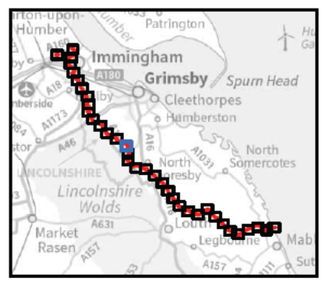

FIGURE TITLE

Figure 3 (15 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

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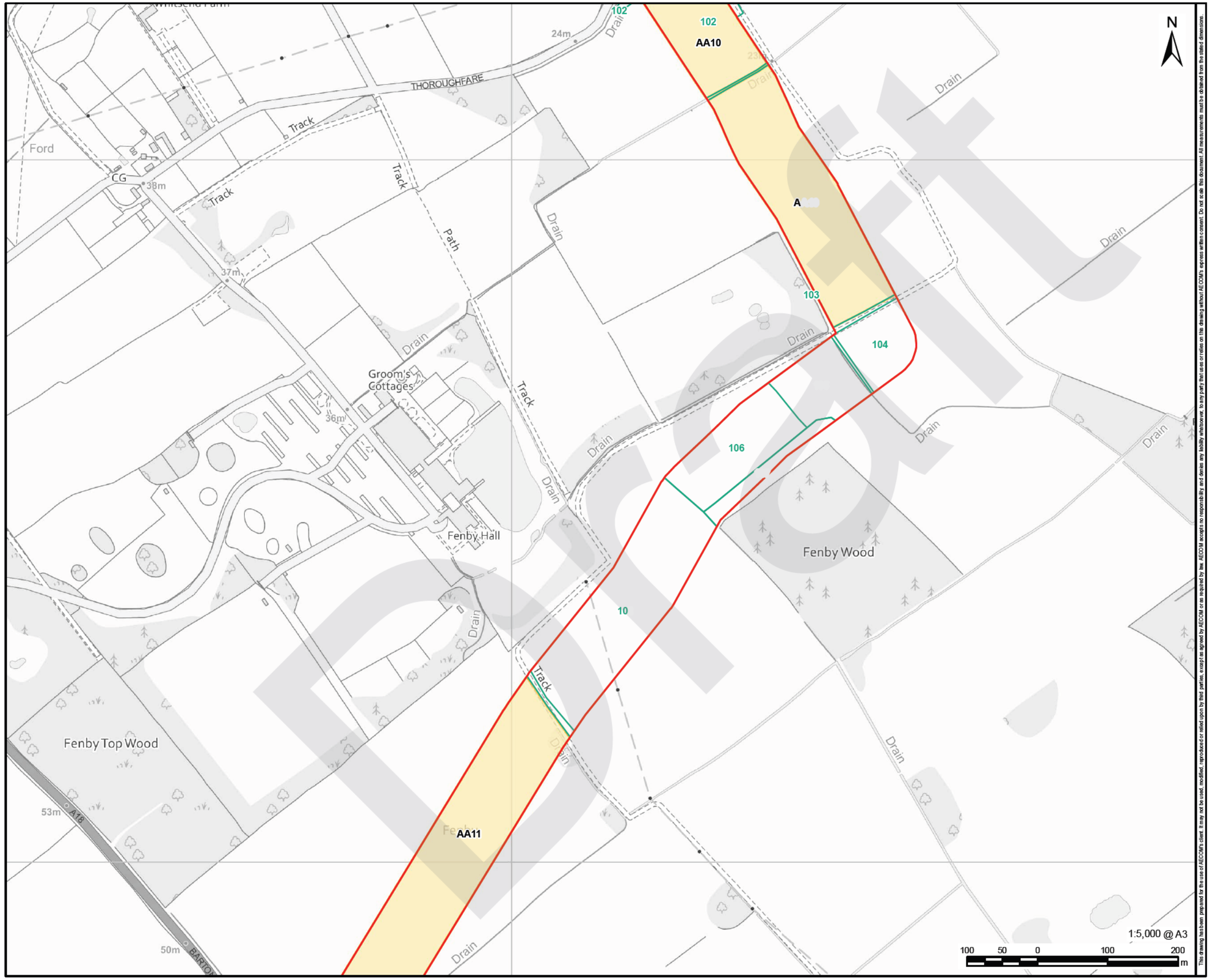

VikingCCS

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area

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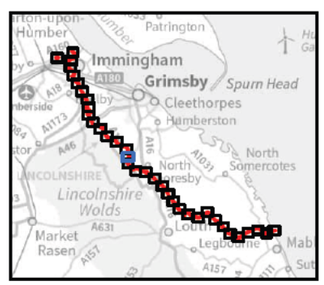

FIGURE TITLE

Figure 3 (16 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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AA11

110

111

113

114

AA12

Fenby

Drain

BARTON STREET

50m

A18

Track

49m

GRAINSBY LANE

36m

41m

Grainsby Grange

35m

33m

Hawerby Hall Farm

Hawerby

The Holt

Reservoir (cov)

Hawerby Park

CG

44m

Rose Lea

41m

FB

Hawerby Lodge

Westfield Farm

N

1:5,000 @ A3

100 50 0 100 200 m

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- Completed Trench Location

NOTES:

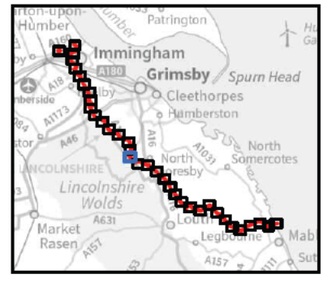

FIGURE TITLE

Figure 3 (17 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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114
AA12
116
117
118
119
120
121
122
123
Track
Drain
FB
Westfield Farm
Park Farm
29m
32m
38m
A18
Westfield Cottage
Ppg Sta
44m
Beesby
33m
Cadeby House
Autby Wood
A18 BARTON STREET
Hardings Plantation
Black Leg Drain
Autby House
Factory
Autby
CG
36m
Sluice
Little Autby Wood
Hell Furze
N
1:5,000 @ A3
100 50 0 100 200 m

VikingCCS

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- Completed Trench Location

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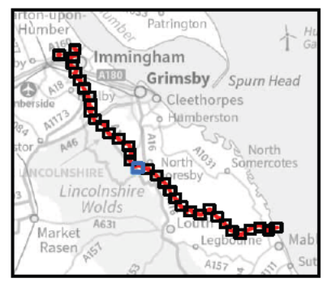

FIGURE TITLE

Figure 3 (18 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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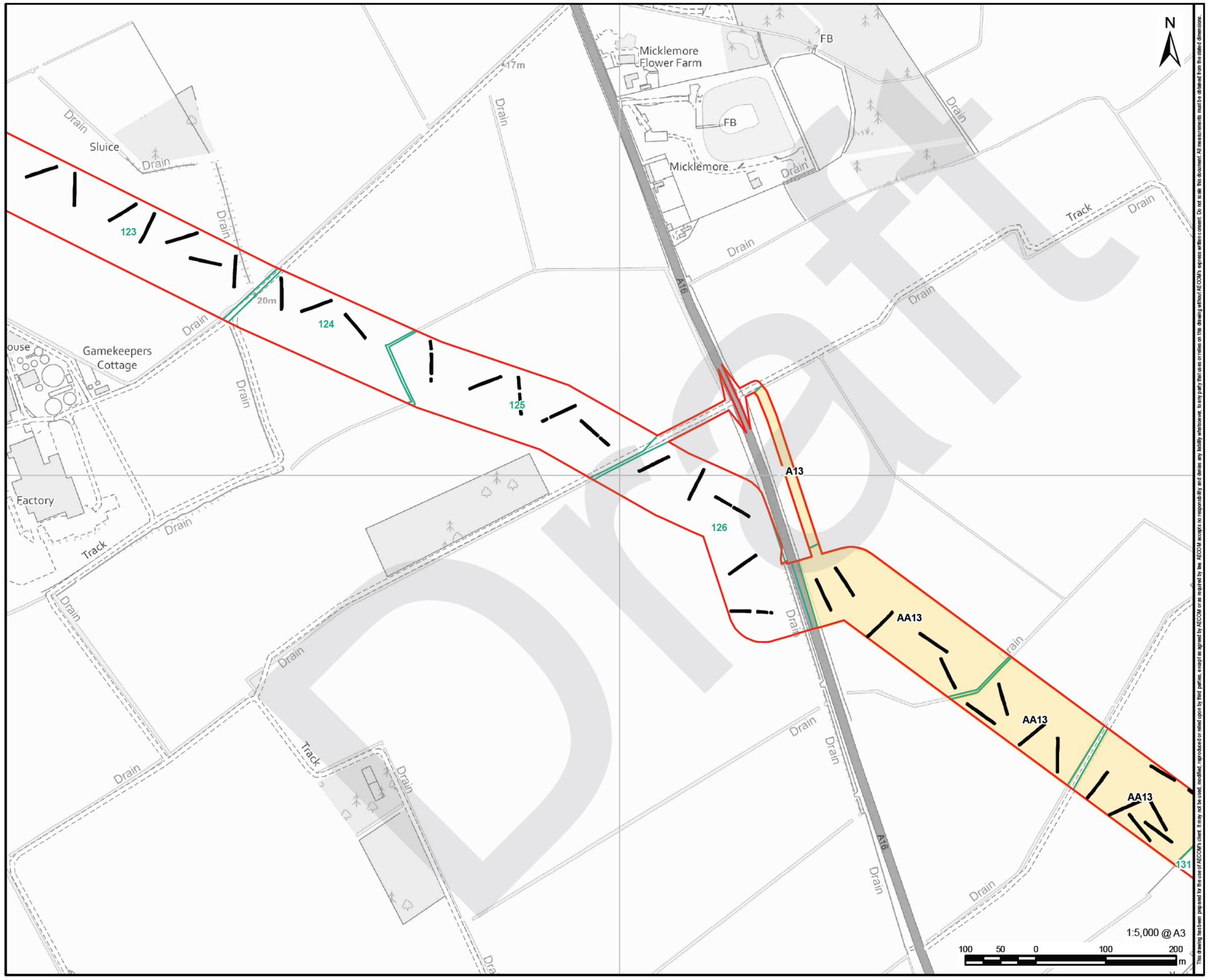

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VikingCCS

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PROJECT

Viking CCS Pipeline

LEGEND

🟥	DCO Site Boundary
🟩	Geophysical Survey Area - AOC Field Numbers
🟨	Provisional Archaeological Action Area
⬛	Completed Trench Location

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FIGURE TITLE

Figure 3 (19 of 35)
Completed Trench Locations

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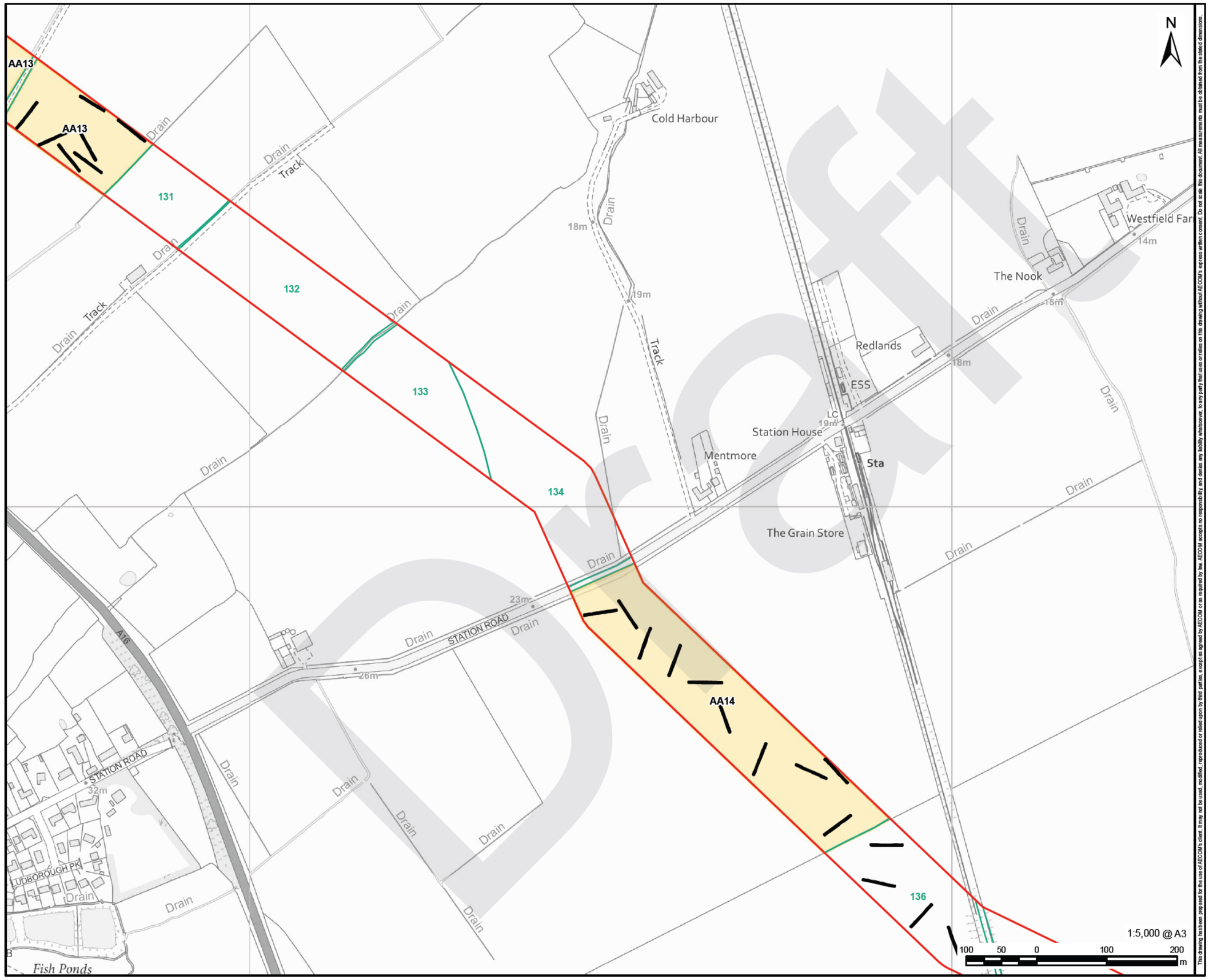

VikingCCS

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- Completed Trench Location

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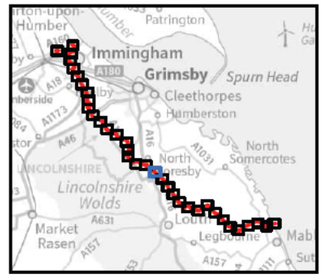

FIGURE TITLE

Figure 3 (20 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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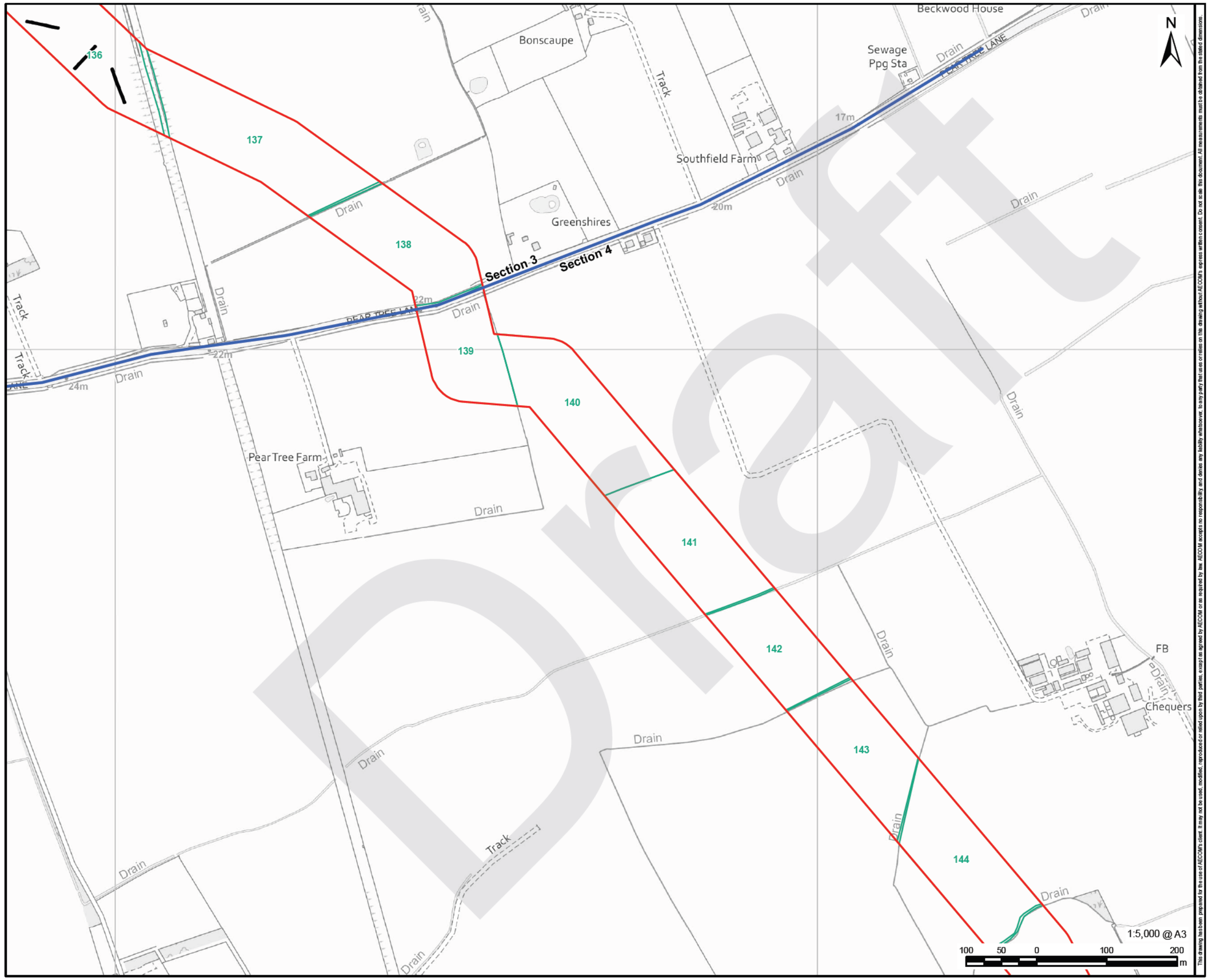

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Route Section Break
- Geophysical Survey Area - AOC Field Numbers
- Completed Trench Location

NOTES:

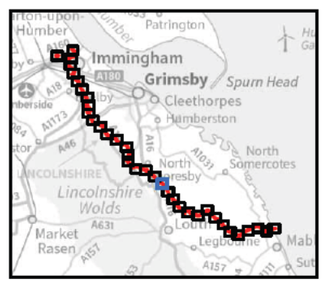

FIGURE TITLE

Figure 3 (21 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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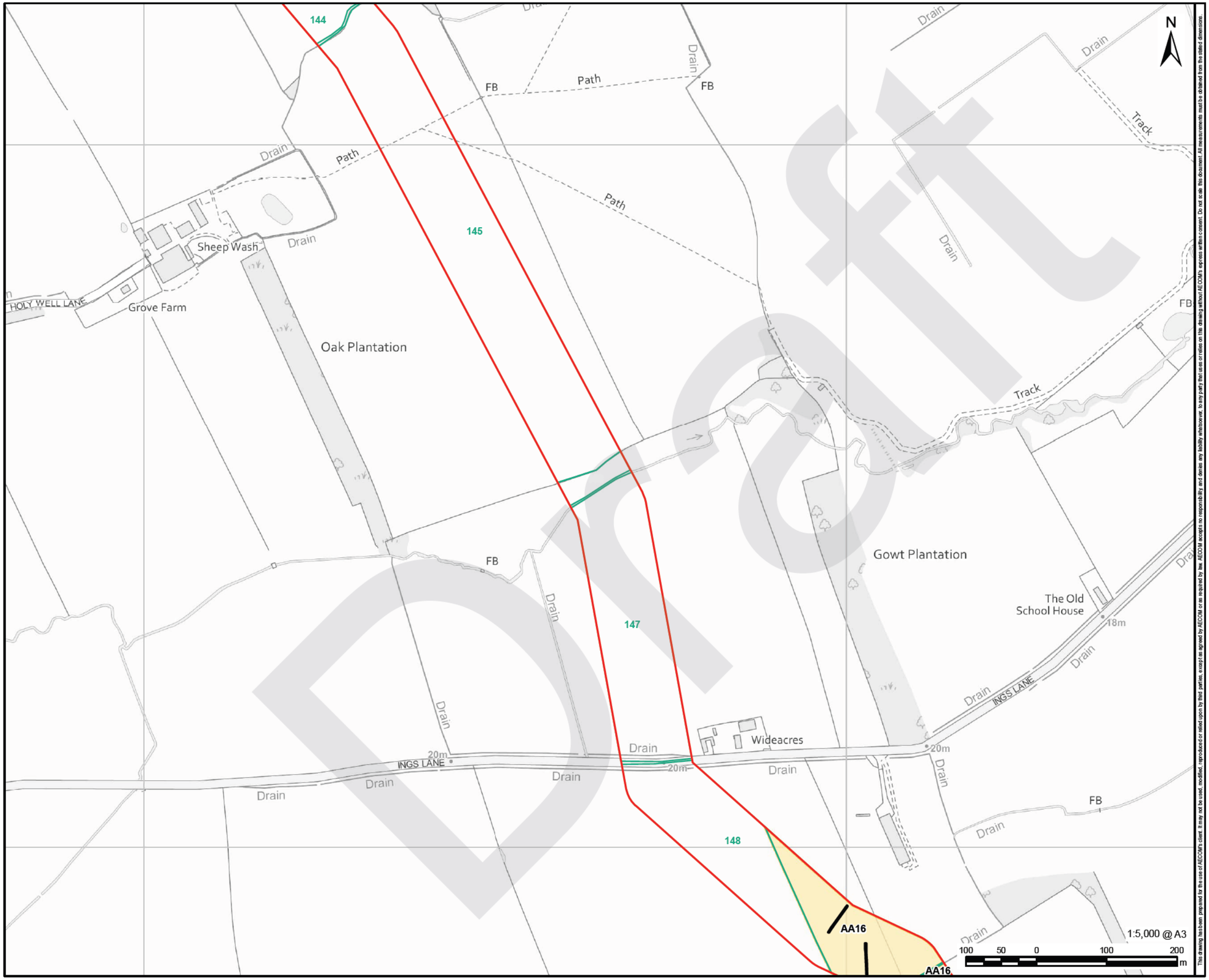

VikingCCS

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- Completed Trench Location

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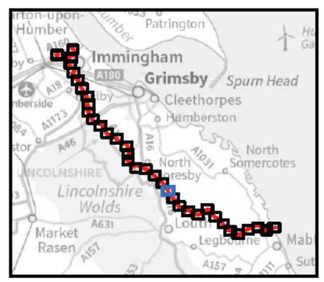

FIGURE TITLE

Figure 3 (22 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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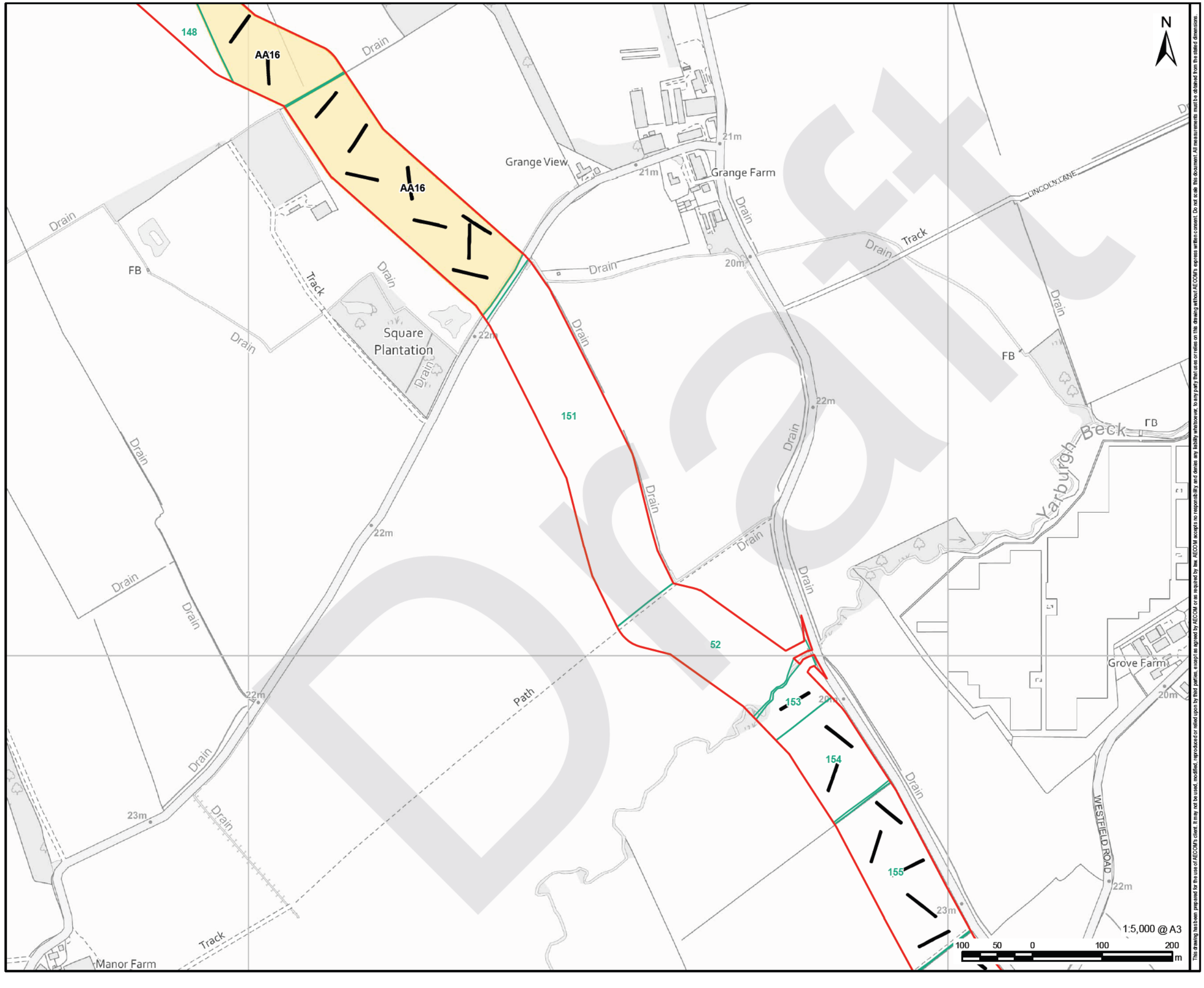

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VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

🟥 DCO Site Boundary
🟩 Geophysical Survey Area - AOC Field Numbers
🟨 Provisional Archaeological Action Area
⬛ Completed Trench Location

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FIGURE TITLE

Figure 3 (23 of 35)
Completed Trench Locations

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PROJECT NUMBER / REFERENCE

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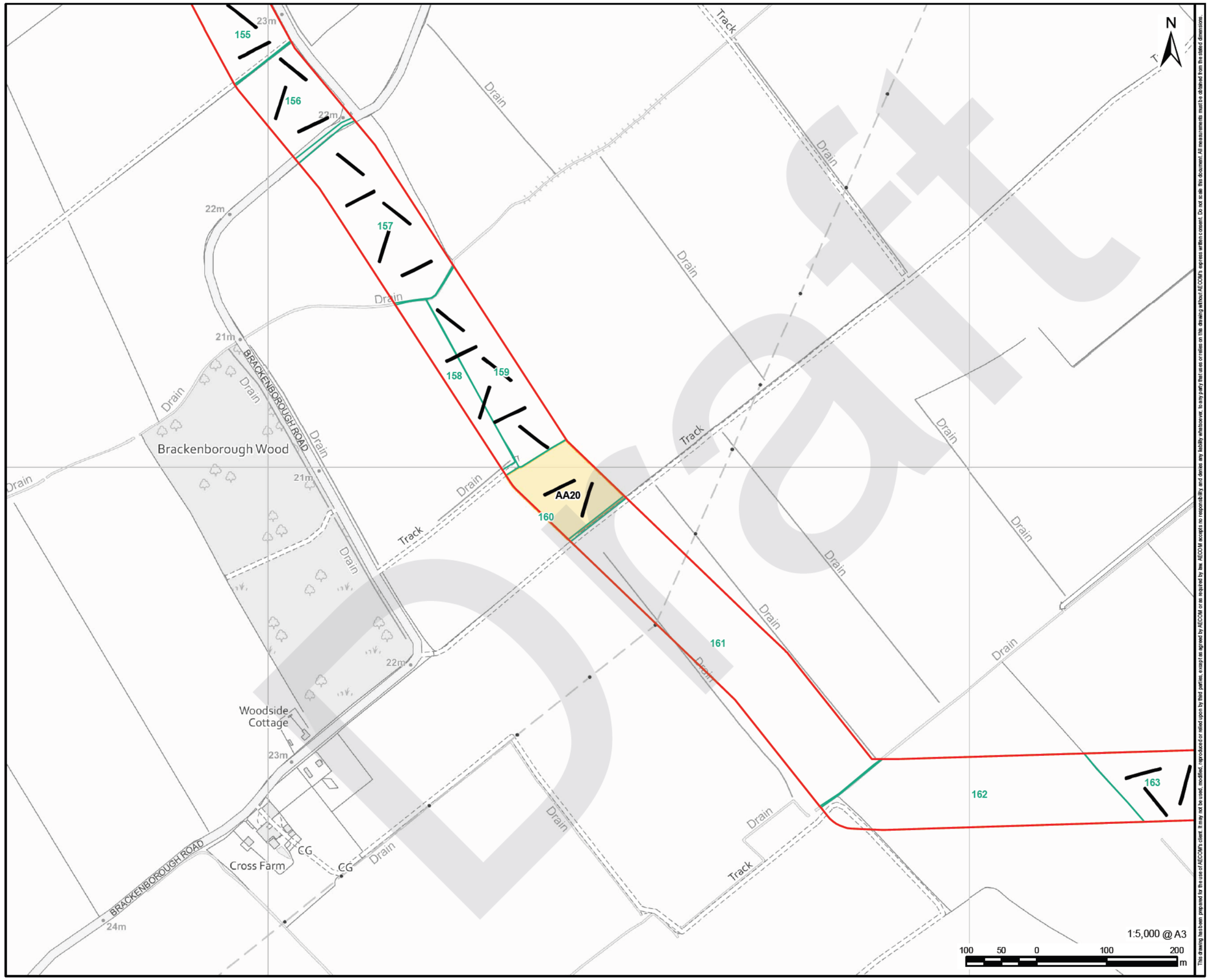

VikingCCS

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- Completed Trench Location

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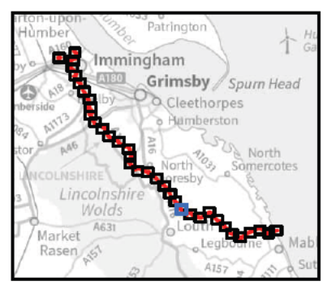

FIGURE TITLE

Figure 3 (24 of 35)
Completed Trench Locations

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PROJECT NUMBER / REFERENCE

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Completed Trench Location

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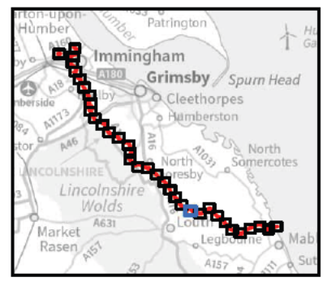

FIGURE TITLE

Figure 3 (25 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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1:5,000 @ A3

100 50 0 100 200 m

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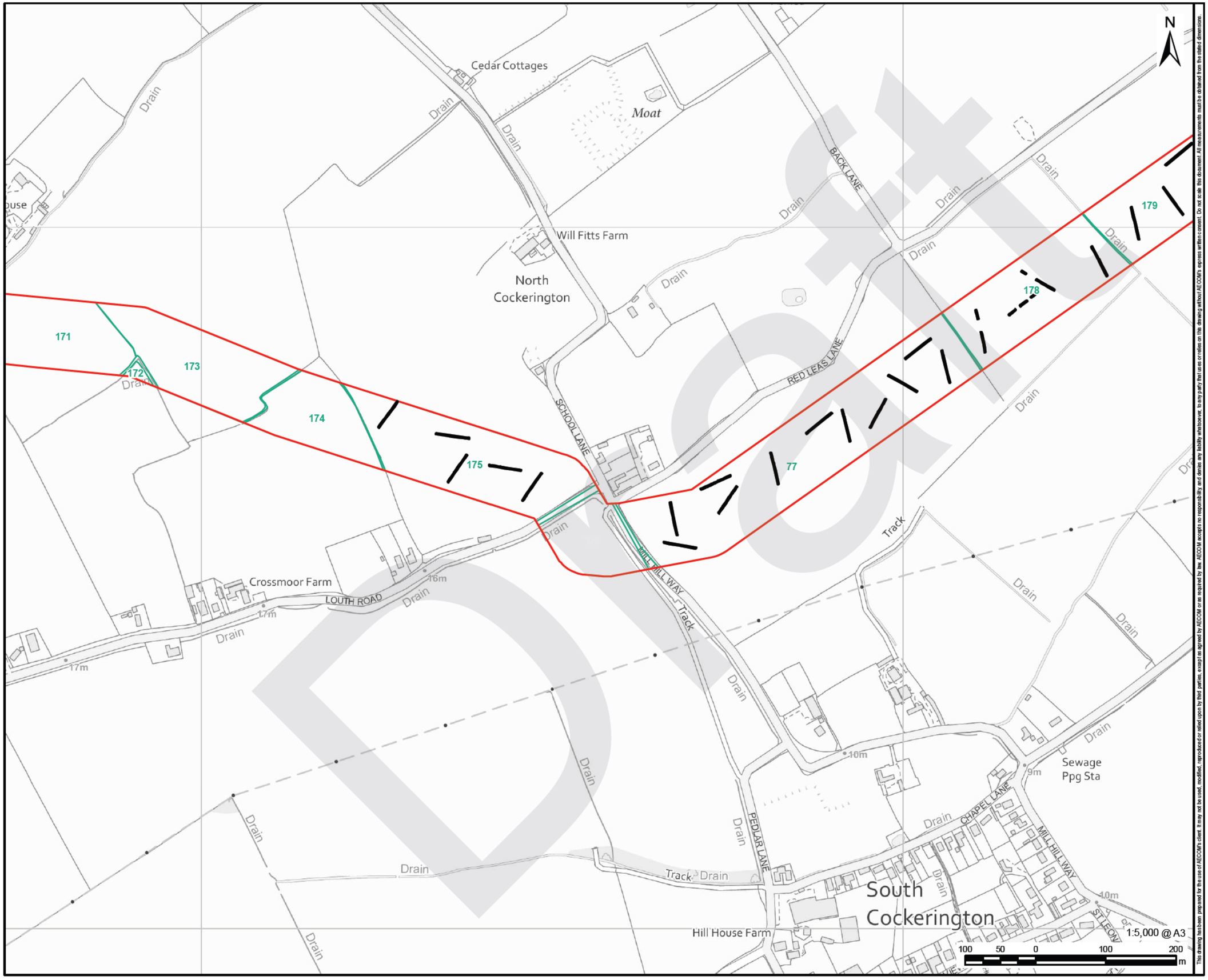

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Completed Trench Location

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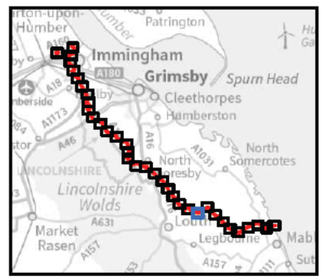

FIGURE TITLE

Figure 3 (26 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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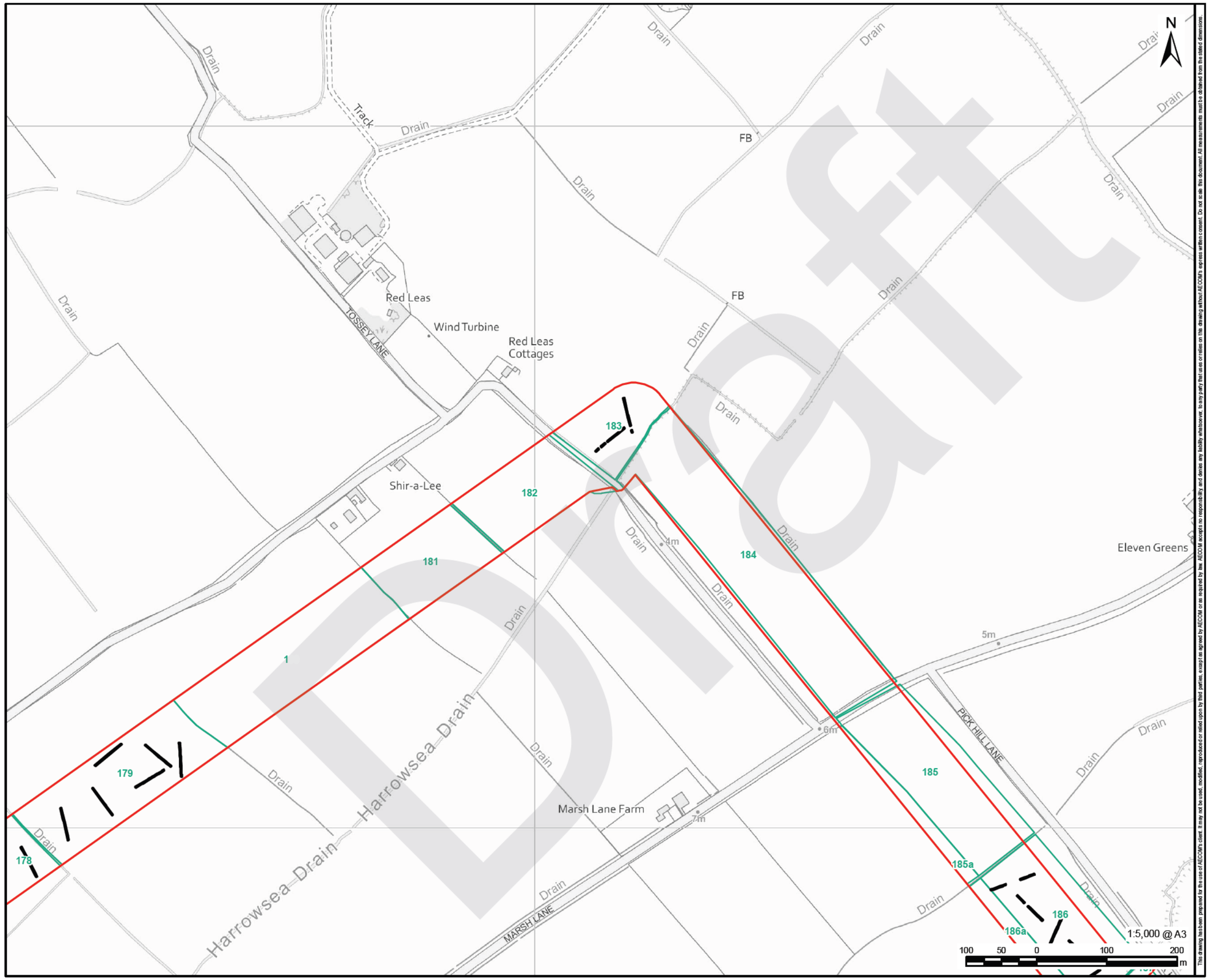

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Completed Trench Location

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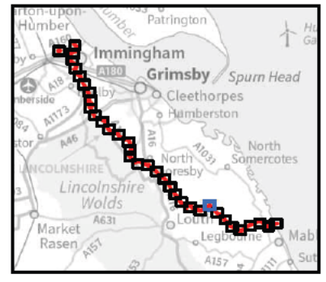

FIGURE TITLE

Figure 3 (27 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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Revision: 1 Drawn: LC Checked: CM Approved: MW Date: 2024-08-08

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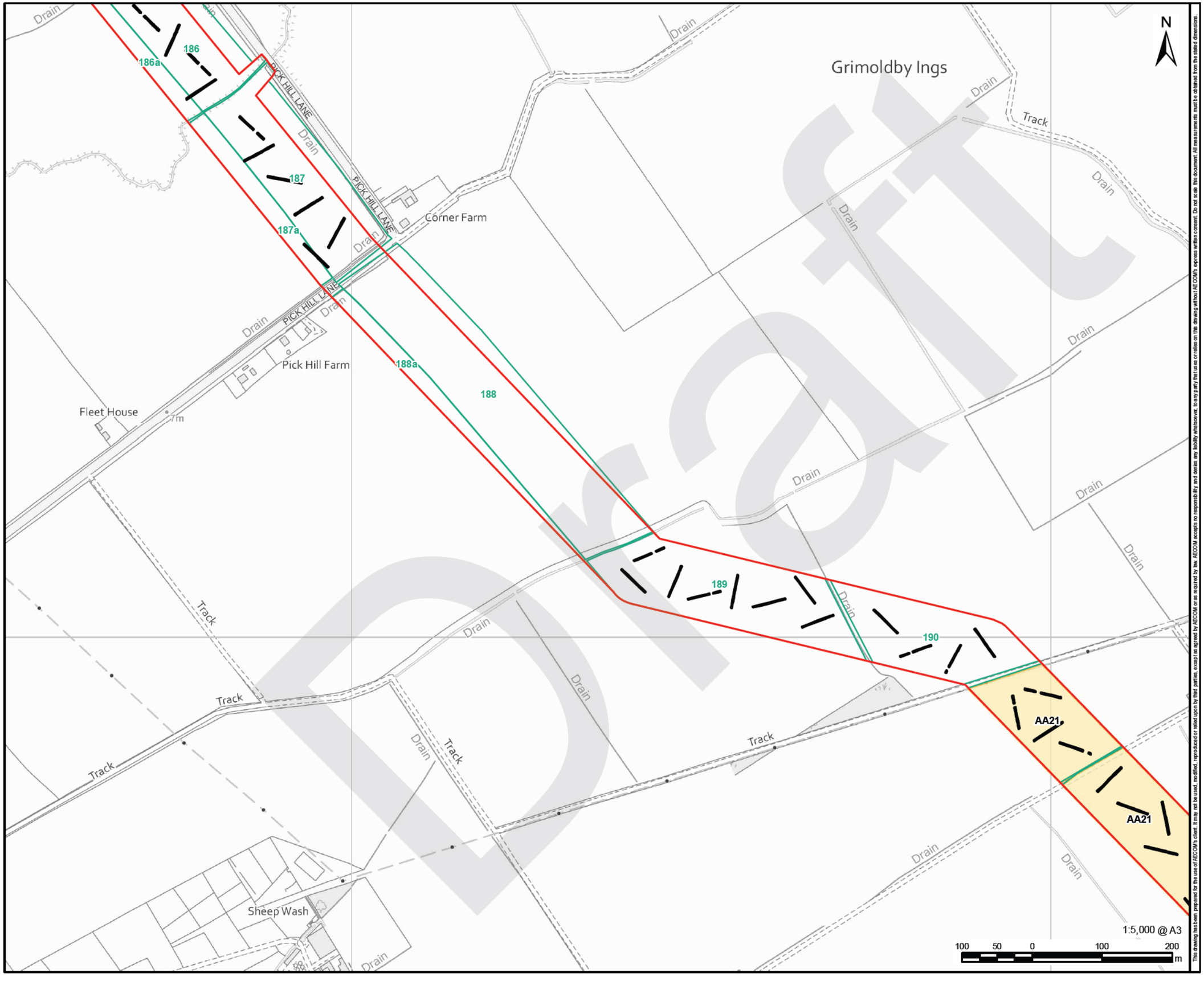

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- Completed Trench Location

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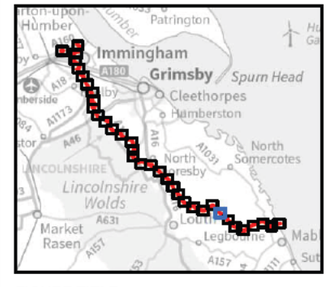

FIGURE TITLE

Figure 3 (28 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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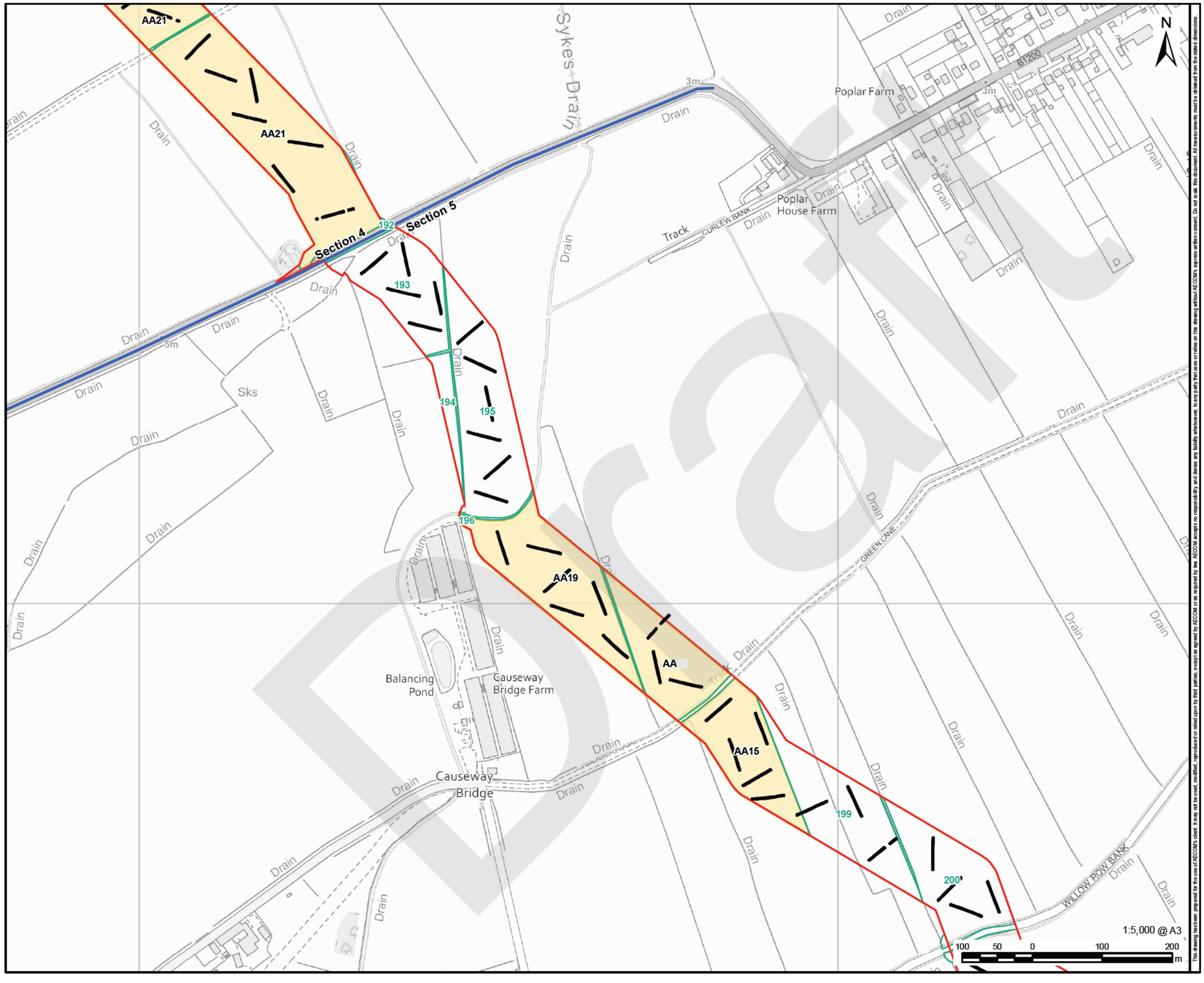

VikingCCS

AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Route Section Break
- Geophysical Survey Area - AOC Field Numbers
- Provisional Archaeological Action Area
- Completed Trench Location

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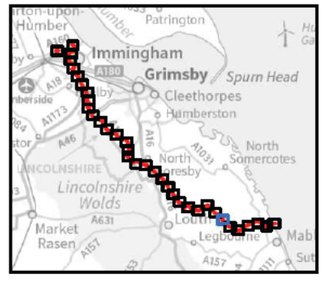

FIGURE TITLE

Figure 3 (29 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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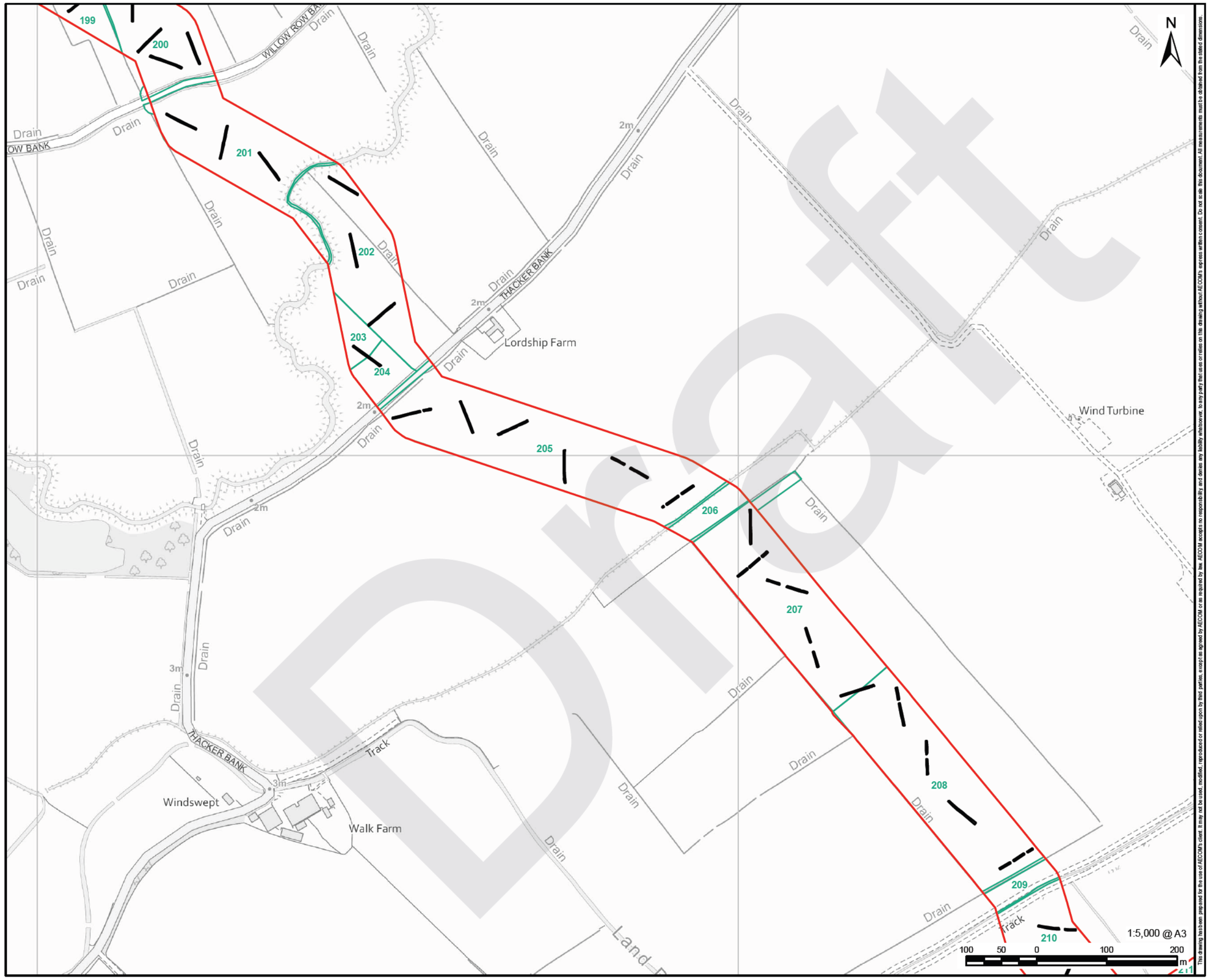

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Completed Trench Location

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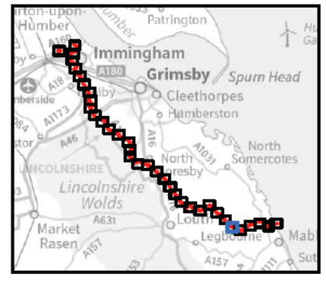

FIGURE TITLE

Figure 3 (30 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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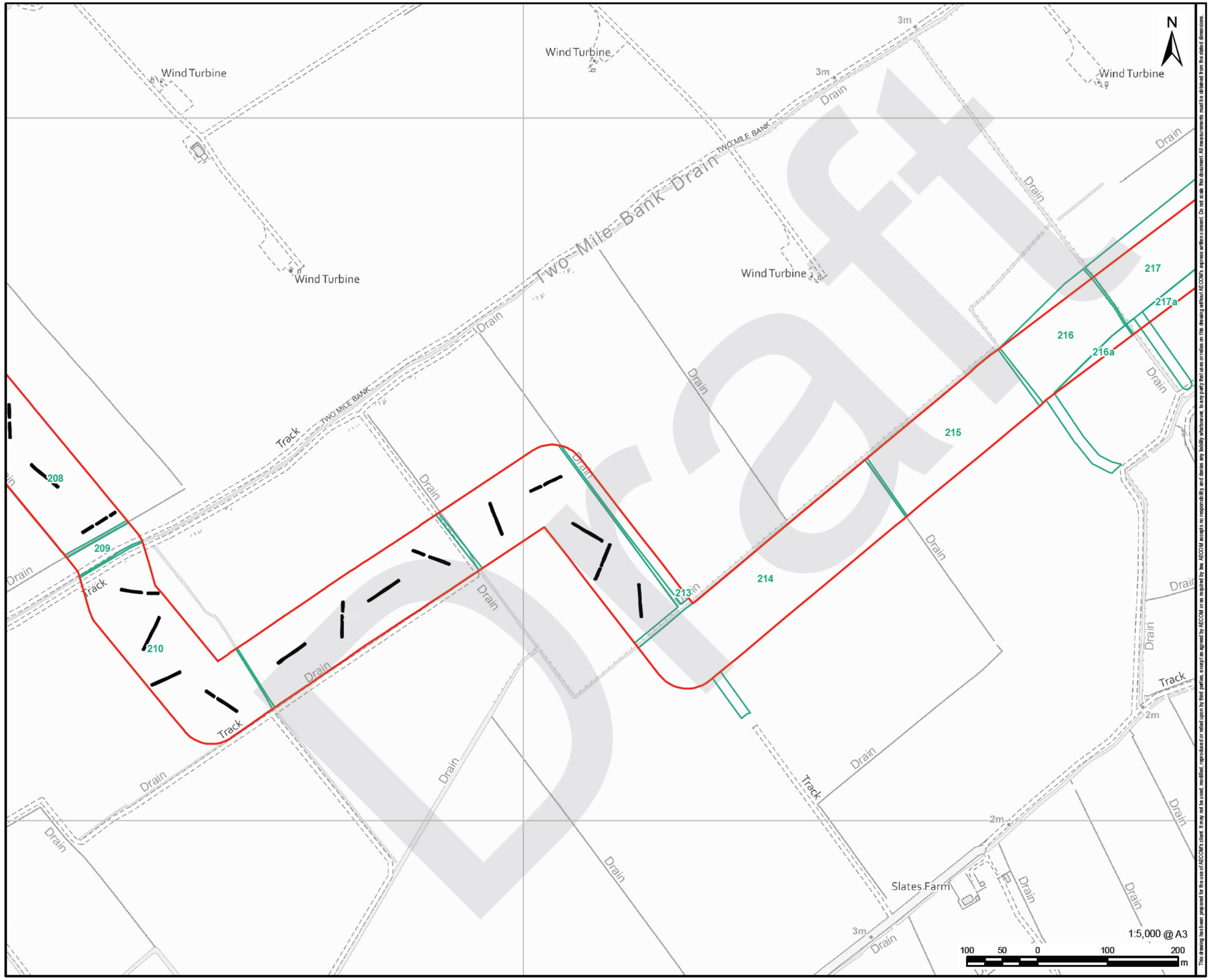

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers
- Completed Trench Location

NOTES:

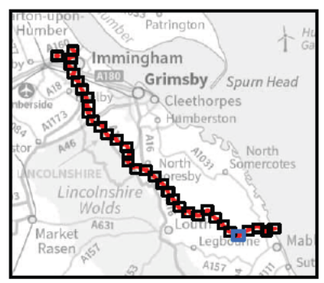

FIGURE TITLE

Figure 3 (31 of 35)
Completed Trench Locations

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ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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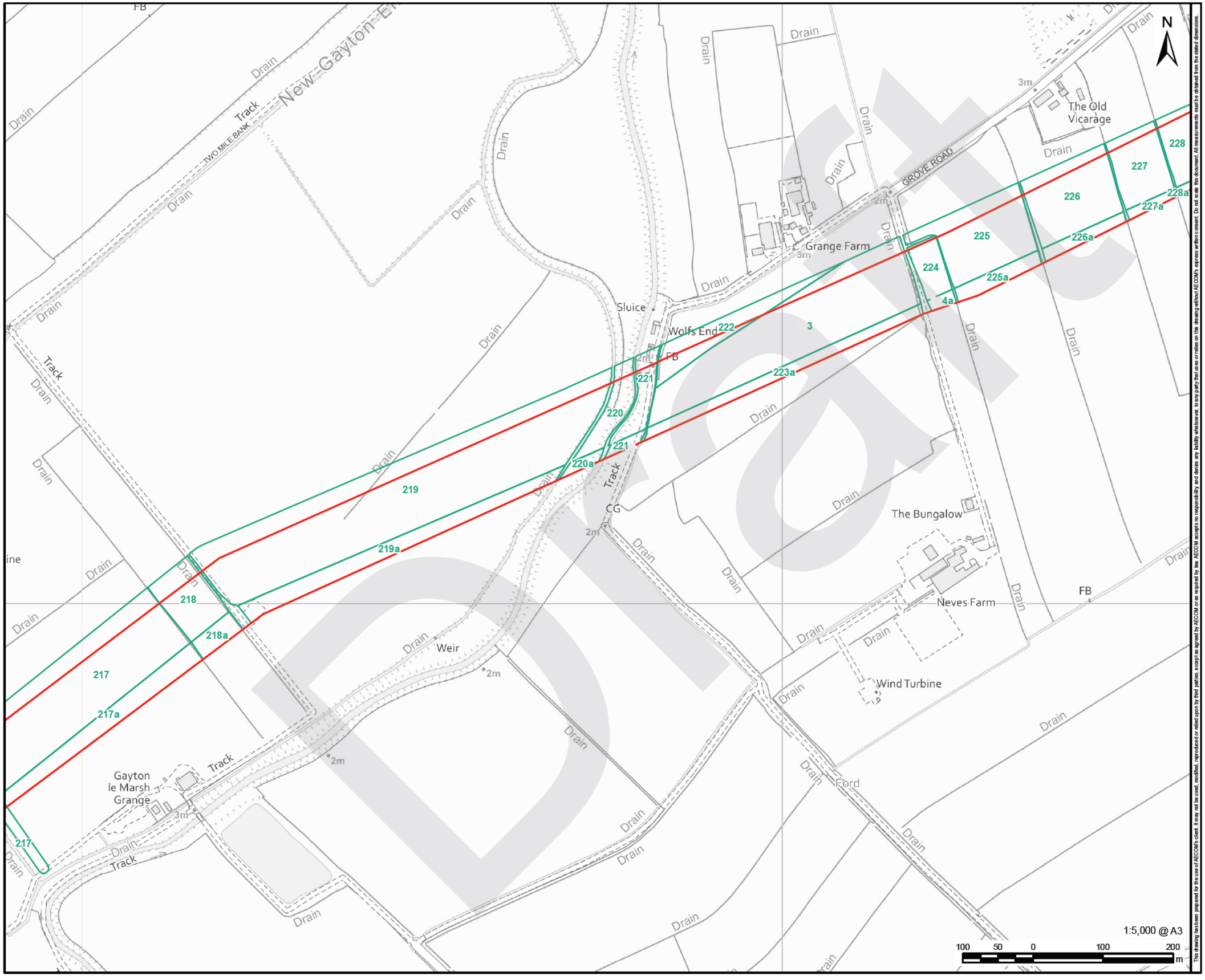

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LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers

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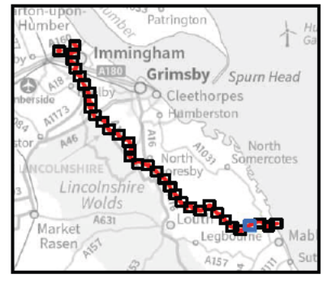

FIGURE TITLE

Figure 3 (32 of 35)
Completed Trench Locations

ISSUE PURPOSE

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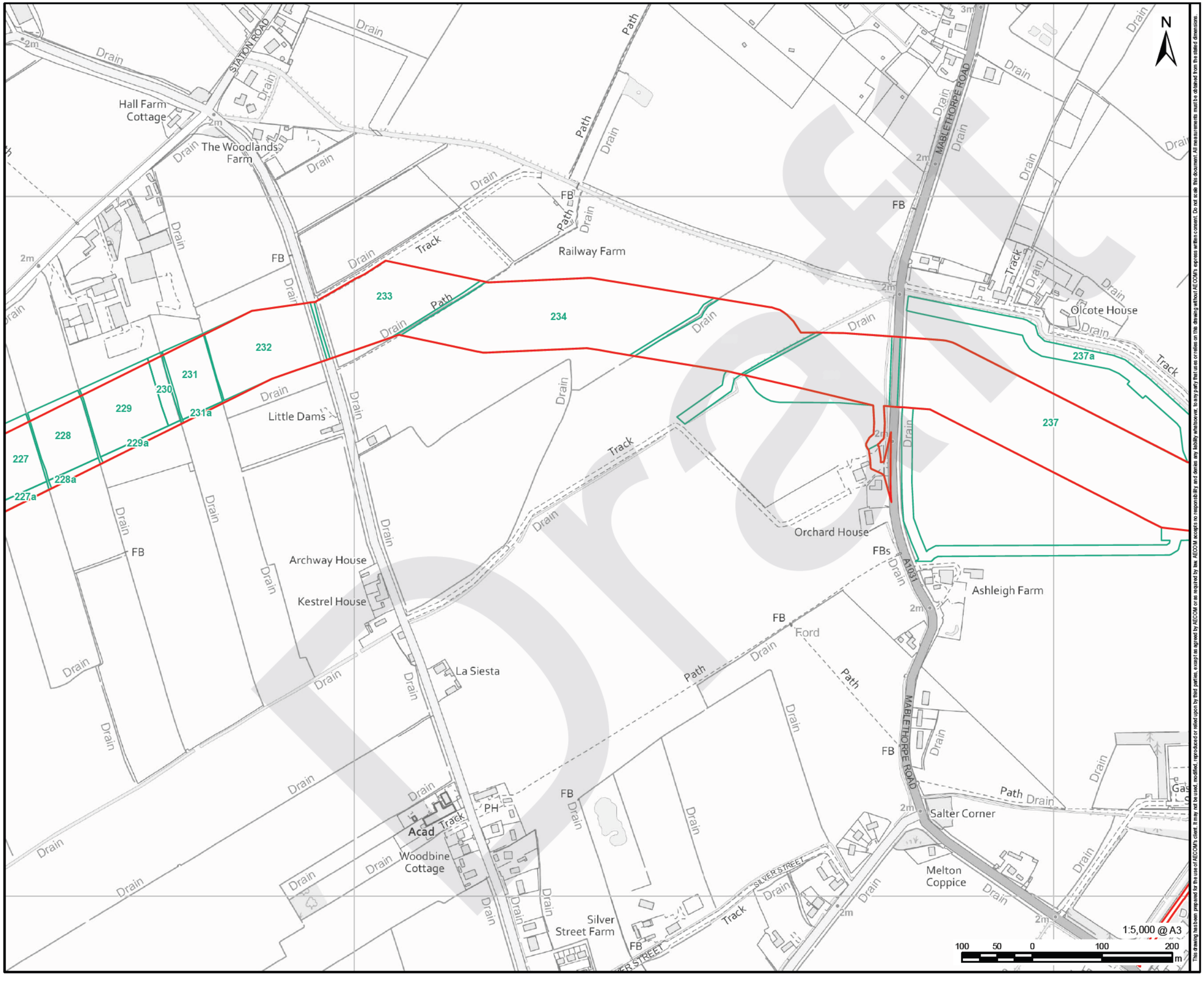

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers

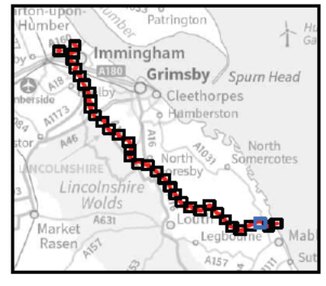

FIGURE TITLE

Figure 3 (33 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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AECOM

PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers

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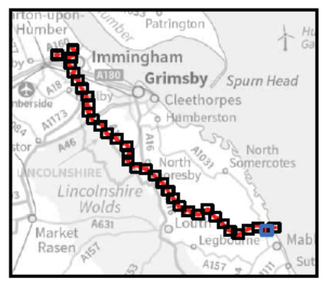

FIGURE TITLE

Figure 3 (34 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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1:5,000 @ A3

100 50 0 100 200 m

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N

13m
Track
Dunes
Path
Drain
11m
Drain
Path
11m
Drain
Drain
Drain
244
245
246
247
Track
Track
Drain
11m
8m
Path
Drain
Drain
Path
Drain
The Dunes
Drain
Drain
ak House
Mast
Swallow Park
2m
MEERS BANK
FB
3m
Path
Drain
North End
QUEBEC ROAD
Drain
3m

1:5,000 @ A3

100 50 0 100 200 m

VikingCCS

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PROJECT

Viking CCS Pipeline

LEGEND

- DCO Site Boundary
- Geophysical Survey Area - AOC Field Numbers

NOTES:

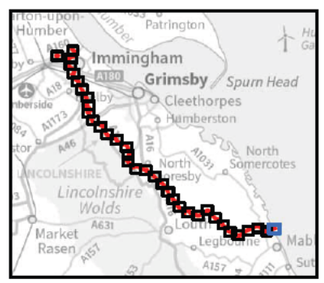

FIGURE TITLE

Figure 3 (35 of 35)
Completed Trench Locations

ISSUE PURPOSE

ARCHAEOLOGICAL MITIGATION STRATEGY

PROJECT NUMBER / REFERENCE

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