

Outline Archaeological Written Scheme of Investigation

HyNet Carbon Dioxide Pipeline DCO

Planning Act 2008

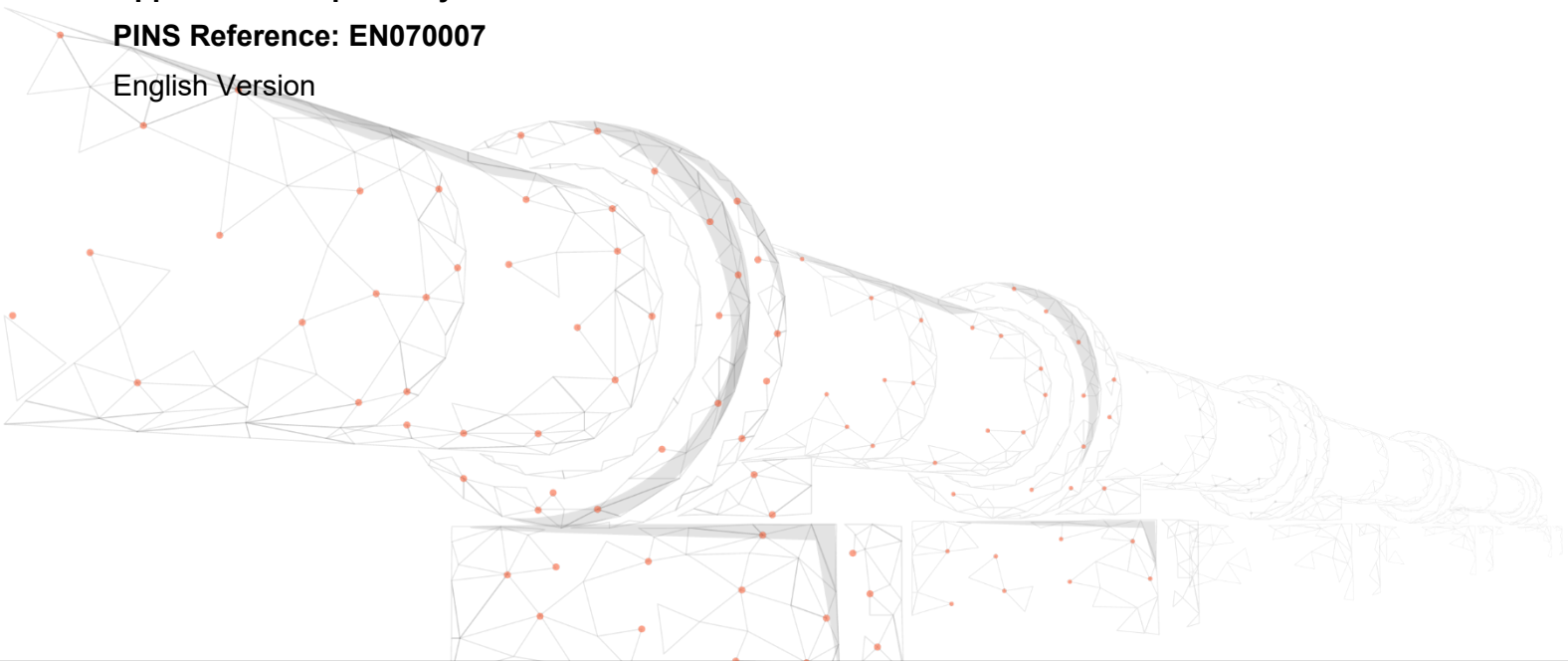
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1. INTRODUCTION

1.1. OVERVIEW

- 1.1.1. This Outline Archaeological Written Scheme of Investigation (OAWSI) has been produced for a programme of archaeological works in advance of the construction of the Development Consent Order (DCO) Proposed Development.
- 1.1.2. The Applicant intends to build and operate a new underground Carbon Dioxide (CO₂) Pipeline from Cheshire, England to Flintshire, Wales with necessary Above Ground Installations (AGIs) and Block Valve Stations (BVSs). It is classed as a Nationally Significant Infrastructure Project (NSIP) and will require a DCO under the Planning Act 2008 ('PA2008') granted by the Secretary of State for Business, Energy, and Industrial Strategy (BEIS) via the Planning Inspectorate (PINS).
- 1.1.3. The DCO Proposed Development will form part of HyNet North West ('the Project'), which is a hydrogen supply and Carbon Capture and Storage ('CCS') project. The goal of the Project is to reduce CO₂ emissions from industry, homes and transport and support economic growth in the North West of England and North Wales. The wider Project is based on the production of low carbon hydrogen from natural gas. It includes the development of a new hydrogen production plant, hydrogen distribution pipelines, hydrogen storage and the creation of CCS infrastructure. CCS prevents CO₂ entering the atmosphere by capturing it, compressing it, and transporting it for safe, permanent storage.
- 1.1.4. The DCO Proposed Development is a critical component of HyNet North West which, by facilitating the transportation of carbon, enables the rest of the Project to be low carbon. The hydrogen production and CO₂ capture and storage elements of the Project do not form part of the DCO Proposed Development and will be delivered under separate consenting processes.
- 1.1.5. The DCO Application will seek consent for the Construction, Operation and Maintenance of the following components which are part of the DCO Proposed Development, namely:
- **Ince Above Ground Installation (AGI) to Stanlow AGI Pipeline** – a section of new underground onshore pipeline (20" in diameter) to transport CO₂;
 - **Stanlow AGI to Flint AGI Pipeline** – a section of new underground onshore pipeline (36" in diameter) to transport CO₂;
 - **Flint AGI to Flint Connection Pipeline** – a section of new underground onshore pipeline (24" in diameter) to transport CO₂;
 - **Flint Connection to Point of Ayr (PoA) Terminal Pipeline** – a section of existing Connah's Quay to Point of Ayr (PoA) underground onshore pipeline

(24" in diameter) which currently transports natural gas but will be repurposed and reused to transport CO₂. The Flint Connection to PoA Terminal Pipeline is scoped out of the EIA, except for the areas adjacent to the three BVSs that are within the Newbuild Infrastructure Boundary;

- **Four AGIs** - Ince AGI, Stanlow AGI, Northop Hall AGI, and Flint AGI;
- **Six Block Valve Stations (BVSs)** - located along:
 - The new Stanlow AGI to Flint AGI Pipeline (three in total);
 - the existing Flint Connection to PoA Terminal Pipeline (three in total);
- Other above ground infrastructure, including Cathodic Protection (CP) transformer rectifier cabinets and pipeline marker posts;
- Utility Connection infrastructure, including power utilities and Fibre Optic Cable (FOC); and
- Temporary ancillary works integral to the construction of the Carbon Dioxide Pipeline, including Construction Compounds and temporary access tracks.

- 1.1.6. Further details of each element of the DCO Proposed Development are set out in **Chapter 3 – Description of the DCO Proposed Development (Volume II)** of the Environmental Statement (ES).
- 1.1.7. **Part One** of the OAWSI details the Outline Archaeological Mitigation Strategy in advance of the construction of the DCO Proposed Development.
- 1.1.8. **Part Two** of the OAWSI details the high-level methodology of the archaeological investigations.
- 1.1.9. The development authorised by the DCO must be undertaken in accordance with this OAWSI pursuant to the Requirements of the Draft DCO (**Document Reference: D.3.1**).

2. PART ONE – OUTLINE ARCHAEOLOGICAL MITIGATION STRATEGY

2.1. BACKGROUND

- 2.1.1. This OAWSI has been informed by a **Historic Environment Desk-Based Assessment (HEDBA) (Appendix 8.1, Volume III)** in support of the ES. This sets out the legislative and planning background and provides a detailed baseline and an assessment of the impacts of the DCO Proposed Development. The OAWSI has also been informed by a Stage 1 **Geophysical Survey (Appendix 8.4, Volume III)**, carried out between February and March 2022 during the ES assessment stage, and a **Geoarchaeological Deposit Model (Appendix 8.5, Volume III)**. The assessment has been undertaken in line with the National Policy Statement for Energy EN1_(Ref. 2.1).

2.2. AIMS OF THE ARCHAEOLOGICAL FIELDWORK

- 2.2.1. This document provides the process for determining the archaeological requirements associated with the DCO Proposed Development. It sets out the methodologies and process by which the programme of archaeological investigations will be delivered, including fieldwork and the required post-excavation and reporting.
- 2.2.2. The overarching principles of the mitigation are:
- To preserve or retain any significant archaeological remains that may be found *in situ*;
 - To excavate and record any significant archaeological remains that may be found (known as preservation by record).
- 2.2.3. The preferred archaeological mitigation will be preservation *in situ* of identified heritage assets. Where this is not practicable, a range of archaeological techniques can be used to make a permanent documentary record of any archaeological remains impacted by the DCO Proposed Development.
- 2.2.4. Where archaeological remains will not be directly affected by the DCO Proposed Development, such remains will be left *in situ*. The preference for the Applicant will always be to route the pipeline within the Limits of Deviation so that identified heritage assets can be left *in situ*.
- 2.2.5. The archaeological work outlined by this OAWSI relates to works within the Newbuild Infrastructure Boundary, and to works that take place prior to or during installation of the pipeline, with post-excavation analysis continuing after archaeological fieldwork has been completed.
- 2.2.6. Where archaeological work is required, a specific Written Scheme of Investigation (WSI) for each fieldwork intervention type or identified

archaeological mitigation area will be prepared in consultation with LPA Archaeological Advisors (Archaeology Planning and Advisory Service (APAS) for Cheshire West and Chester and Clwyd-Powys Archaeological Trust (CPAT)).

2.2.7. This OAWSI sets out the broad principles of the archaeological work. Where appropriate the proposed work will comprise the following targeted activities:

- Targeted archaeological trial trench evaluation on previously identified features and within those parts of the DCO Proposed Development where the design is fixed (e.g. BVS, AGI and compound locations);
- 2% trial trench evaluation following Detailed Design of the remainder of the DCO Proposed Development, focussed on the refined 32m wide working width for the construction of the Newbuild Carbon Dioxide Pipeline;
- Geoarchaeological mitigation, comprising further boreholes and/or test pitting in marshland at the north-eastern end of the DCO Proposed Development, within the River Gowy floodplain and within the River Dee floodplain (Areas 1-3) to retrieve sediments for geoarchaeological and palaeoenvironmental purposes and to investigate peat deposits;
- Recording of cross-sections of hedgerows located on parish and township boundaries (21 total);
- Preservation *in situ*;
- Archaeological excavation;
- Archaeological strip, map, and sample; and
- Proportionate and appropriate post-excavation analysis and reporting.

2.2.8. If, following the trial trenches, areas do not contain any archaeological remains, then no further archaeological work will be required.

2.3. TRIAL TRENCHING

2.3.1. Targeted archaeological trial trench evaluation will be undertaken in selected areas as requested by the LPA Archaeological Advisors, targeted on anomalies identified from the geophysical survey and features identified from analysis of aerial photographs and LiDAR. This will comprise a total of 81 trenches. These can be seen on **Figure 1 - Proposed Evaluation Trenches and Areas of Geoarchaeological Interest (Sheets 1 to 11)** and in **Table A-1 in Appendix A**.

2.3.2. The aim of the trial trenching is to identify the presence, nature, date, and significance of any archaeological remains, to inform the exact requirement for mitigation. In addition, those parts of the DCO Proposed Development where the design is fixed (e.g. BVSs, AGIs and compound locations) will also be

subject to trial trenching, with the trench array to be confirmed. This work will be undertaken once DCO Consent has been granted.

- 2.3.3. A 2% sample of the refined 32m wide working width for the construction of the Newbuild Carbon Dioxide Pipeline will be undertaken following Detailed Design. The aim of the evaluation is to identify the presence, nature, date, and significance of any archaeological remains, to inform the exact requirement for mitigation. This work will be undertaken once the Detailed Design of the DCO Proposed Development has progressed.

2.4. ARCHAEOLOGICAL MITIGATION

- 2.4.1. The results of the archaeological trial trenching, alongside the earlier phases of assessment, will be used to design the most appropriate mitigation. This section sets out the types of mitigation techniques to be used. The proposed mitigation will be proportionate to the significance of the archaeology, to ensure the significance of each site is recorded or preserved. In areas where no archaeological remains are identified, no further archaeological work will be undertaken.

ARCHAEOLOGICAL EXCAVATION

- 2.4.2. The aim of excavation is to mitigate the impact of construction of the DCO Proposed Development on known archaeological remains, by ensuring that they are fully investigated, recorded, and interpreted. More detailed aims are to preserve by record the archaeological resource that will be impacted as a result of the DCO Proposed Development; to record (where possible) the nature, depth, extent, character and date of archaeological deposits or features encountered in order to successfully fulfil the specific research aims of the DCO Proposed Development, to be set out in the site specific Written Schemes of Investigation; and to record and recover an adequate sample of the artefactual and environmental evidence present.

GEOARCHAEOLOGICAL MITIGATION

- 2.4.3. Geoarchaeological mitigation, comprising further boreholes and/or test pitting is required in marshland at the north-eastern end of the DCO Proposed Development, within the River Gowy floodplain, and within the River Dee floodplain (Areas 1 to 3 as detailed in the Geoarchaeological Deposit Model). These areas are shown on **Figure 1**. The aim of the geoarchaeological mitigation is to retrieve sediments for geoarchaeological and palaeoenvironmental purposes and to investigate peat deposits. The information will allow the depths of alluvium, peat, head, and river terrace deposits to be identified and understood. The results will be used to inform landscape evolution in correlation with previous work in the area and to identify evidence of human impact on the environment.

RECORDING OF IMPORTANT BOUNDARIES

- 2.4.4. There are 21 hedgerows within the DCO Proposed Development which were deemed to be important. These hedgerows were located along parish or township boundaries or extended from a scheduled monument. These will be recorded in cross-section to ensure there is a record of these historic boundaries. These can be seen on **Figure 1** and in **Table A.2** in **Appendix A**.

ARCHAEOLOGICAL STRIP, MAP AND SAMPLE

- 2.4.5. The aim of the strip, map and sample is to identify archaeological features which may survive, but which are located in areas where there is lower archaeological potential which does not warrant archaeological excavation. The aim is to mitigate the impact of construction of the DCO Proposed Development, by ensuring that any archaeological features are fully investigated, recorded, and interpreted.

PRESERVATION *IN SITU*

- 2.4.6. Where archaeological sites will not be affected by the DCO Proposed Development, the principle will be followed that there is no need to excavate them. Alternatively, where possible and justified (such as the discovery of nationally important remains), avoidance of archaeology through a minor variation (within the Limits of Deviation), use of non-open cut techniques, or protection of subsoil within the working area (e.g. trackway panels, topsoil retention, or other suitable technique), will be considered.
- 2.4.7. Preservation of archaeological remains will be undertaken where possible. The aim of preservation is to allow them to survive for future generations.

POST-EXCAVATION ANALYSIS

- 2.4.8. Post-excavation analysis and reporting, along with the creation of the archaeological project archive, is a requirement of all archaeological projects. This ensures there is a record of the archaeology which has been investigated as part of the DCO Proposed Development. The results will also be published, as appropriate, in line with EN-1 para 5.8.20 (**Ref. 2.1**).

3. PART TWO – WRITTEN SCHEME OF INVESTIGATION

3.1. ARCHAEOLOGICAL STRATEGY

INTRODUCTION

- 3.1.1. This section of the OAWSI details the high-level methodologies that will be undertaken for the required archaeological fieldwork. Each fieldwork intervention type, and each identified mitigation area will be subject to a specific Written Scheme of Investigation (WSI) to be produced by the Archaeological Contractor and approved by the LPA Archaeological Advisor(s).

ROLES, RESPONSIBILITIES AND DEFINITIONS

- 3.1.2. The following terminology is used throughout this document:
- The Applicant – Liverpool Bay CCS Limited. The Applicant' is the developer, not the current landowner;
 - The Construction Contractor for the DCO Proposed Development who, under CDM Regulations 2015 is in control of the site and responsible for all Health and Safety and site security;
 - Archaeological Contractor (as appointed by the Construction Contractor or the Applicant). Responsible for carrying out the fieldwork, post-excavation reporting, deposition of the archive and dissemination
 - The LPA Archaeological Advisor(s) provide the development control and planning advice to the LPA(s) and has the final decision on the scope of work and signs off the archaeological fieldwork when it is complete, in consultation with the consultant.
 - The Archaeological Consultant is responsible for managing the scope and for monitoring and assuring the work on behalf of the Applicant. The team will liaise directly with the LPA Archaeological Advisor(s).
- 3.1.3. The 'archaeological project archive' comprises all resources created and accumulated during the lifespan of an archaeological project. This includes paper and digital records such as context sheets, photographs, drawings, survey data, reports, artefacts and ecofacts. The aim of the archive is to ensure long term preservation of the resource which will allow for further research or reinterpretation of the original findings. The archive will be ordered and accessible.
- 3.1.4. The 'archaeological project archive repository' is the organisation, for example the county or local museum, responsible for the long-term curation of the DCO Proposed Development archive, including the field notes, plans, photographs, and archived finds. The archaeological fieldwork subcontractor will establish the DCO Proposed Development archive repository prior to starting the work and

will be assigned a unique DCO Proposed Development reference number ('site code').

- 3.1.5. The 'Updated Project Design' (UPD) is a plan of analytical methods required to conclude analysis following a review and revision of the original project aims and objectives. It sets out strategies that will be used for further analysis which will further inform on the character and significance of the site in response to regional or national research agendas. The UPD also outlines a retention policy which enables the value of the archive to be quantified and to determine space and conditions for storage and future use.

REGIONAL RESEARCH PRIORITIES

- 3.1.6. All archaeological work will be undertaken in line with research questions, to ensure that fieldwork is focussed on addressing the key research priorities of the region.
- 3.1.7. The North West England Regional Research Framework (**Ref. 3.1**) assesses the current state of archaeological knowledge in the North West, including Cheshire West and Chester, while the Research Framework for the Archaeology of Wales (**Ref. 3.2**) assesses the current state of archaeological knowledge in Wales, including Flintshire. Both frameworks have compiled a series of research aims and priorities both for specific periods and for wider cross-period themes.
- 3.1.8. The Frameworks comprise an assessment and a research agenda for each archaeological period from the Palaeolithic to the post-medieval / modern periods. Despite the period specific nature of the research questions a number of common research themes were identified.
- **Environmental sampling** – an increased amount of environmental sampling was thought to be valuable for a greater understanding of past landscapes and how the landscape evolved.
 - **Settlement pattern** – The importance of landscape and environmental context in appreciation of settlement patterns was highlighted. This was particularly apposite for the Roman period, for which the settlement pattern is poorly understood.
 - **Landscape change** – The relationship between field systems and settlement, boundaries, land rights and the changing balance between clearance, pasture and arable is a recognised theme from the Neolithic to the medieval periods. The human impact on the 'wild' environment of plants and animals is also considered to be important.
 - **Industry and long-distance contacts** – The development of new industries has been influenced by geography and geology. Long distance links can be investigated via migration routes and trading links. Links across the Irish Sea are also important within the region.

- 3.1.9. As these themes are fairly broad, the following specific research areas of each framework have been identified in response to the potential of the Newbuild Infrastructure Boundary, as identified in **Appendix 8.1 – HEDBA (Volume III)**.

North-West England Regional Research Framework (Ref. 3.1)

- GS38: How did land-use and management change through time?
- GS39: How did people exploit coastal and marine resources and did this change through time?
- GS40: what evidence is therefore the impact of industrialisation health, diet, and natural resources?
- GS45: How can the study of excavated artefact assemblages inform our understanding of trade exchange?
- GS46: How can archaeological investigations inform our understanding of the development of transport and infrastructure?

Research Framework for the Archaeology of Wales (Ref. 3.2)

- Establish a chronological framework for Mesolithic human activity in Wales and understand its environmental context.
- What can palaeoenvironmental evidence reveal about Neolithic settlement practices, particularly on sites where there is little or no material culture?
- Undertake Landscape-wide studies for Roman period fieldscapes and investigate evidence for transhumance during the Roman occupation as a priority.
- Identify and confirm potential early medieval sites, particularly secular settlements.
- Further work is required to develop a better understanding of the Dyke systems in Wales

- 3.1.10. These broad research areas will be revised and refined in consultation with the LPA Archaeological Advisor(s) as the work proceeds and more information on the nature and significance of any archaeological remains is revealed. It should be noted that it may not be possible to answer every research question, as it will depend on the type of archaeological evidence recovered.

SPECIFIC WRITTEN SCHEME OF INVESTIGATION

- 3.1.11. Each fieldwork intervention type, and each identified mitigation area will be subject to a specific Written Scheme of Investigation (WSI) to be produced by the Archaeological Contractor and approved by the LPA Archaeological Advisor(s).
- 3.1.12. The WSIs will include the following sections as a minimum (see **Ref. 3.3** and **3.4** for further information):

- A statement on the technical, research and ethical competences of the DCO Proposed Development team, including relevant professional accreditation.
- Site location (including map) and descriptions.
- The relevant event number and accession number. These will be shown on all records, finds and samples.
- Context of the site.
- Geological and topographical background.
- Archaeological and historical background.
- General and specific research aims of the site, with reference to Regional Research Frameworks, as well as earlier Stages of work.
- Methods.
- Collection and disposal strategy for artefacts, ecofacts, and all paper, graphic and digital materials.
- Arrangements for immediate conservation of artefacts.
- Post-fieldwork assessment and analysis of project data.
- Report preparation (including details of the section headings).
- Publication and dissemination proposals, as required.
- Copyright.
- Details of finds storage. The Archaeological Contractor shall include details of how the finds will be packaged for storage.
- Data Management Plan for digital archiving.
- Methods for preparation of the physical archive, including accession numbers.
- Timetable.
- Staffing. Details on the expertise of the DCO Proposed Development team is also required. The project manager will be a named Member of the Chartered Institute for Archaeologists (MCIfA) who is adequately qualified to manage the required archaeological work or who can demonstrate an equivalent level of competence. The composition and experience of the project team will be described.
- A statement on compliance with relevant professional ethical and technical standards (including data standards).
- Health and Safety considerations, including details of relevant insurance.
- Environmental protection considerations.

3.2. STAGE 1 – EVALUATION

TRIAL TRENCH EVALUATION

Specific Considerations

- 3.2.1. The objective of trial trench evaluation as defined by the ClfA is to ‘*determine and report on, as far as is reasonably possible, the nature of the archaeological resource within a specified area using appropriate methods and practices*’ (Ref. 3.5). The results of the evaluation will inform an appropriate mitigation strategy for any archaeological remains, if required.
- 3.2.2. This is further explained as ‘*a limited programme of non-intrusive and/or intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts, and their research potential, within a specified area or site.... If such archaeological remains are present field evaluation defines their character, extent, quality, and preservation, and enables an assessment of their worth in a local, regional, national, or international context as appropriate.*’
- 3.2.3. The aim of the archaeological evaluation is to identify any archaeological remains in the areas identified and agreed with the LPA Archaeological Advisor(s).
- 3.2.4. All trenches will be opened initially by a mechanical excavator equipped with a toothless grading bucket, under supervision of the Archaeological Contractor. The Archaeological Contractor will identify remains of archaeological significance and ensure that these are subject to proportionate investigation and recording.
- 3.2.5. Following initial exposure of archaeological horizons, investigation by the Archaeological Contractor will be by hand, including cleaning, examination, sampling, and recording (see below) in the appropriate manner. Archaeological hand dug investigation and recording will proceed only until significant archaeological levels have been reached and will be sufficient to allow the nature, extent, survival, and significance of archaeological remains to be identified.
- 3.2.6. It may be appropriate to resort to supervised machine excavation, a technique that is only appropriate for the removal of homogeneous and ‘low-grade’ layers where it can reasonably be argued that more detailed attention would not produce information of value, and where their removal may give a ‘window’ onto underlying levels.
- 3.2.7. The levels at which all sampling excavation and/or mechanised excavation will cease will be determined by consultations between the Archaeological Consultant, the Archaeological Contractor, and the LPA Archaeological Advisor(s). This will typically entail a site visit. Where the evaluation has

revealed no significant archaeological remains digital photographs may be sufficient.

- 3.2.8. In the unlikely event that remains of very high significance warranting preservation *in situ* are identified, the Archaeological Contractor will inform the Archaeological Consultant immediately, who will then consult with the LPA Archaeological Advisor(s). Appropriate measures will be taken to protect such remains from any damage or deterioration. This might involve for instance protective boxing, wrapping deposits or features in a geo-textile such as terram, sealing with sand or other suitable soft materials, or other means as deemed suitable/appropriate in consultation with the LPA Archaeological Advisor(s) and relevant specialists, where required.
- 3.2.9. Topsoil and subsoil will be stored separately adjacent to each trench to enable backfilling.

3.3. STAGE 2 – ARCHAEOLOGICAL MITIGATION

EXCAVATION AND STRIP, MAP AND SAMPLE MITIGATION

- 3.3.1. An archaeological excavation, which includes the approach of Strip, Map and Sample (SMS), is defined by the ClfA as *"a programme of controlled, intrusive fieldwork with defined research objectives which examines, records, and interprets archaeological deposits, features, and structures and, as appropriate, retrieves artefacts, ecofacts and other remains within a specified area or site on land, inter-tidal zone or underwater. The records made and objects gathered during fieldwork are studied and the results of that study published in detail appropriate to the project design"* (**Ref. 3.3**).
- 3.3.2. Excavation of specific mitigation areas, or SMS of areas of lower archaeological potential, entails rapid excavation, recording and sampling during the preliminary topsoil strip at the start of the Construction Stage. The topsoil strip is monitored by the Archaeological Contractor, to make sure that the strip is carried down to the topmost level of archaeology and a plan of pre-excavation features produced. From the pre-excavation plan and a site visit, the initial site strategy meeting (Assessment stage) will be held between the Archaeological Consultant, the Archaeological Contractor, and the LPA Archaeological Advisor(s) to determine the level of feature sampling required. Any liaison between the Archaeological Contractor and LPA Archaeological Advisor(s) will be supervised by Archaeological Consultant.

Methodology: Preliminary topsoil removal

- 3.3.3. Machine stripping of any areas requiring archaeological mitigation will be carried out by the Construction Contractor using a 360° tracked excavator fitted with an appropriate toothless ditching bucket, under archaeological direction by the Archaeological Contractor. Undifferentiated topsoil overburden of recent

origin will be removed to the upper-most level of any identified archaeological features, or the natural geology, whichever is encountered first.

- 3.3.4. Care will be taken for the machining not to have an impact any archaeological remains buried at shallow depths. No machinery (or vehicles) will cross stripped areas until they have been given the 'all-clear' by the Archaeological Contractor, especially in wet weather conditions, as rutting and compaction by plant and vehicles may have an impact on archaeological remains. All earthmoving and other vehicles will avoid travelling on the freshly stripped subsoil and areas of archaeological investigation. Care will be taken not to damage archaeological deposits through excessive use of mechanical excavation, and the use of terram may be considered.
- 3.3.5. The topsoil will be stored separately to subsoil and if required the removed topsoil will be stored separately under suitable conditions. All spoil heaps will be metal detected by an experienced operative during the topsoil strip, and in accordance with Health and Safety procedures, for the purpose of retrieving any metal artefacts missed during the monitoring and hand excavation of archaeological features (see Section 3.4 below).
- 3.3.6. Care will be taken to ensure that there are no below ground services or utilities within the excavation. However, this will be the responsibility of the Construction Contractor.
- 3.3.7. A digital pre-excavation site-plan of any archaeological features will be prepared at an appropriate scale. All archaeological features will be surveyed and located to an accuracy of 0.1m or greater using a Total Station Theodolite (TST) or Real Time Kinematic (RTK) Global Navigation Satellite System (GNSS).
- 3.3.8. The Archaeological Contractor will undertake monitoring of the machine stripping, hand-cleaning, and planning in close succession (on the same or consecutive days) to ensure the pre-excavation site plan captures all archaeological features. If vulnerable features are revealed (such as graves and/or cremations) special consideration shall be taken, and materials such as terram may be used to protect remains until recording and/or removal can take place.
- 3.3.9. Areas containing particularly significant archaeological remains will be protected and not left open to the weather or exposed to vandalism overnight. All reasonable measures will be taken to protect or preserve features *in situ* overnight and to store any archaeological materials (such as artefacts and records), both on and off site. Artefacts of particular significance may have to be taken offsite and stored at a secure location.

RECORDING OF TOWNSHIP AND PARISH BOUNDARIES

- 3.3.10. There are 21 hedgerows within the DCO Proposed Development which were deemed to be important. These can be seen on **Figure 1** and detailed in **Table**

A.2 in Appendix A. These hedgerows were located along parish or township boundaries or extended from a scheduled monument. Other hedgerows were noted within the DCO Proposed Development, which were not identified as township or parish boundaries but were potentially part of pre-Inclosure estates.

- 3.3.11. Boundaries will be recorded by the Archaeological Contractor, and will include a description, digital photographs and measured profiles with the alignment, extent and location plotted onto an OS map base. A 360° machine fitted with a toothless ditching bucket will be deployed to cut a section through historic boundaries to enable a section to be recorded by drawing and photograph. If boundaries are sufficiently substantial a 360° machine will be deployed to remove overburden so as to recover buried soils for appropriate analysis.
- 3.3.12. Historic hedgerows will be cut at ground level during initial stages of site clearance. Each location will then be assessed for archaeological features. Should archaeological features be discovered a record will be made of these following the methodology described above.

GEOARCHAEOLOGICAL MITIGATION

- 3.3.13. Further boreholes, or test pitting in shallower areas, is required in marshland at the north-eastern end of the DCO Proposed Development, within the River Gowy floodplain, and within the River Dee floodplain (Areas 1 to 3 as detailed in **Appendix 8.5 - Geoarchaeological Deposit Model (Volume III)** and illustrated on **Figure 1**), to retrieve sediments for geoarchaeological and palaeoenvironmental purposes. The boreholes will fill gaps in the initial deposit model and ultimately improve the understanding of the evolution of the floodplains in relation to their potential archaeological significance.
- 3.3.14. In Area 1, there is a risk that the intertidal sediment sequences preserved below the ground will be disturbed and/or destroyed; therefore, it is considered that this area will undergo intrusive investigation for the identification and recording of any archaeological remains that may be sealed beneath or within these deposits.
- 3.3.15. Boreholes targeting peat deposits will employ a coring technique that minimises compaction during drilling. This may employ the use of a hand-held Russian-type auger, where peat deposits are close to the surface and if suitable, or a hydraulic rig where deposits are too deep to be accessed using a hand-held auger. It will be beneficial to use a rig that seals cores for offsite analysis. Both borehole and trench stratigraphy will be integrated to allow the current deposit models to be updated as part of any forthcoming evaluation works. All cores will be examined by an experienced geoarchaeologist.
- 3.3.16. The data will be used to inform landscape evolution in correlation with previous work in the adjacent area and to identify evidence of human impact on the

environment. This information could feed into updated models regarding sea-level changes in the late glacial-Holocene period.

- 3.3.17. Waterlogged peat deposits considered to have high archaeological and palaeoenvironmental potential will be assessed according to Historic England guidelines (**Ref. 3.7**) *Preserving archaeological remains, Appendix 3: Water environment assessment techniques* and possibly subject to a Tier 1 study. This aims to address whether any deposits in which significant waterlogged remains are located, are hydraulically connected to the wider groundwater system and to determine if these remains are likely to be located under the water table or have been so in the past.

PRESERVATION *IN SITU* MITIGATION

- 3.3.18. Any strategy proposed for mitigation by preservation *in situ* will agreed with LPA Archaeological Advisor(s), and will refer to existing guidance (**Ref. 3.6** and **3.7**). Strategies for preservation *in situ* will consider direct impacts such as disturbance from plant operations, and indirect impacts such as changes to the hydrology and soil chemistry of a site (**Ref. 3.7**). Where sites are to be preserved *in situ*, mitigation will be either achieved by removing significant areas from the scope of Construction works, or by an engineered solution, as outlined in Chapter 4 of *Mitigation of Construction Impact on Archaeological Remains* (**Ref. 3.7**).

3.4. SAMPLING STRATEGY

- 3.4.1. In order to obtain sufficient information on the likely nature, date, extent, survival and significance of any potential archaeological features and deposits identified, these will be sample excavated by hand. The sampling strategy is the same regardless of the stage of archaeological work (evaluation and mitigation).
- 3.4.2. The following sampling strategy will be carried out in line with **Table 3.1**.

Table 3.1 - Sampling Strategy

Feature Type	Minimum percentage of each example
Stake-hole, post-hole	100%
Discrete cut feature (less than 2m² plan area)	100%
Linear feature	Excavation by hand of 1 metre to 2-metre-wide sections through linear cut datable and ancient features, and linear features manifestly rich in ancient palaeoenvironmental remains, at 10-metre intervals or up to a total of 25% of the length of the linear cut feature (whichever is the greater) with sampling of termini of linear features.
	Excavation by hand of sections across all junctions or intersections of cut features
Deposits relating to funerary activity (e.g., burials, cremation deposits)	100%
Ditches of small mortuary enclosures of less than 25m² enclosed area	100%, with a sliding scale of reduced sampling of larger enclosures
Deposits relating to domestic/industrial activity (postholes, hearths, floor surfaces/floor makeup deposits)	100%

- 3.4.4. Throughout the duration of the archaeological fieldwork, the Archaeological Contractor will provide the Archaeological Consultant with a weekly progress report. The Archaeological Consultant will pass this onto the LPA Archaeological Advisor(s) with a weekly progress report as described in paragraphs 3.4.1 to 3.4.2.

ENVIRONMENTAL SAMPLING

- 3.4.5. Where palaeoenvironmental potential has been identified a sampling strategy will be agreed with the LPA Archaeological Advisor(s). As a guide, bulk samples, 20L (litres) for wet and 40L–60L for dry contexts of will be taken from appropriate contexts for the recovery and assessment of palaeoenvironmental data. Provision will be made for column and other appropriate samples to be taken. Sampling methods will follow Historic England (HE) guidelines (**Ref. 3.8** and **3.9**).
- 3.4.6. Where necessary, a supplementary strategy for sampling of environmental deposits may be developed by the consultant in accordance with HE (**Ref. 3.9**), Cadw, and ClfA (**Ref. 3.3**) guidelines. Advice will be sought from the LPA

Archaeological Advisor(s) as well as Cadw and the Historic England Regional Archaeological Science Advisor, as appropriate. Subsequent off-site work and analysis of the processed samples and remains will be undertaken by archaeological specialists.

ARCHAEOLOGICAL RECORDING

- 3.4.7. Standard archaeological recording methods comprise a written record (both description and interpretation with annotated sketches where appropriate), scaled drawings both in plan and in section, photographic record, and retrieval and annotation of archaeological finds and samples.
- 3.4.8. Written records will be produced using *pro forma* context record sheets and by the single context planning method. Each discrete archaeological layer, fill, cut, etc., that is sampled will be individually numbered and described in terms of soil composition, stratigraphic position, dimensions, artefact content, samples, with professional interpretation as to the likely nature and date of the feature. The context system will be able to be cross-referenced to all records and will be compatible with digitisation.
- 3.4.9. A record of the full sequence of all archaeological remains as revealed during the SMS will be made. Plans and sections of features will be drawn at an appropriate scale of 1:10 or 1:20, with sections drawn at 1:10 and tied to the Ordnance Survey National Grid. All plans and sections will include the Ordnance Datum (OD) height of strata and all principal features.
- 3.4.10. A full photographic record will be made using Digital Single Lens Reflex (SLR) cameras equipped with an image sensor of not less than 10 megapixels in high resolution TIFF (uncompressed) format. This will record both the detail and the general context of the principal features and the site as a whole. Digital images will be subject to managed quality control and curation processes which will embed appropriate metadata within the image and ensure long term accessibility of the image set. Registers will be kept of all photographs, levels, plans, sections, finds and samples taken in the field.

ARCHAEOLOGICAL FINDS

- 3.4.11. All recovery, retention, and treatment of finds and samples will be carried out mindful of the overall purpose of the exercise, i.e. to evaluate for further decision making, as expressed in ClfA (**Ref. 3.10**) para 3.2.12. and 3.3.8. To this end, all artefactual and ecofactual material will be reviewed on site for its capability to inform the SMS report.
- 3.4.12. Identified archaeological finds and artefacts will be carefully recovered by hand and bagged or boxed according to the type of artefact (i.e., pottery, ceramic building material/CBM, bone, worked flint, metal) archaeological context from which they came, with a label indicating the site code, find type and context reference number). Particularly notable artefacts will be recorded as a

‘registered’ find and recorded three dimensionally with Ordnance Datum levels. This will include in-situ prehistoric worked flint.

- 3.4.13. Initial conservation and storage will be in a proper manner and to standards set out follow First Aid for Finds (**Ref. 3.11**) and the ClfA 'Standard and Guidance for the collection, documentation, conservation and research of archaeological materials' (**Ref. 3.10**). If necessary, an appropriately qualified and experienced archaeological conservator will be appointed to advise and assist in the lifting of fragile finds of significance and or value and to arrange for the X-raying and investigative conservation of objects as may be necessary.
- 3.4.14. Certain classes of bulk material, i.e. post-medieval pottery and building material may be discarded if there is a considerable quantity (more than a single standard archive box of c. 0.016m²), after recording with a representative sample.
- 3.4.15. All pottery, bone and worked flint will be washed and then marked in accordance with the archaeological project archive repository guidelines. Most building material and burnt flint (not including significant diagnostic material) will be identified, counted, weighed, and discarded. Samples will be retained as appropriate. The finds identification and specialist work will be undertaken by the relevant finds specialists agreed with the LPA Archaeological Advisor(s) to assess the date range of the assemblage with particular reference to pottery use relevant county or region-specific type series for identification and dating, where available. This evidence will be used to characterise the site, and to establish the potential for all categories of finds, should further archaeological work be necessary. Records of artefact assemblages will clearly state how they were recovered, sub-sampled and processed. Consideration will be given for donation of appropriate artefacts to type series reference collections.

FINDS AND OWNERSHIP

- 3.4.16. All finds relating to the archaeological record of the site will be collected with reference to context and location. All archaeological finds from excavated contexts will be retained, although those from features of 19th century or later may be recorded on- site and not retained. Any finds requiring conservation or specific storage conditions will be dealt with immediately in line with First Aid for Finds (**Ref. 3.11**).
- 3.4.17. Whereas ownership of any finds on the site lies with the landowner, it will be necessary that the landowner gives necessary legal approvals, licences, and permissions to donate the finds to an appropriate local museum, to enable that body to carry out its obligations to curate the finds after discovery, in perpetuity, as part of the archaeological archive from this site.

- 3.4.18. These approvals, licences and permissions shall be either confirmed in the Agreement and Contract regulating the archaeological works and/or confirmed by the completion of the relevant Deed of Transfer form.
- 3.4.19. In such case, the Applicant (or their agent) will make arrangements for the signing of the Deed of Transfer Form by the Applicant or, if the landowner is different to the Applicant, by the landowner.
- 3.4.20. Notwithstanding the above, subsequent arrangements may be made if required between the landowner and/or the Applicant and an appropriate local museum for the conservation, display, provision of access to or loan of selected finds in or near their original location.

TREASURE

- 3.4.21. All finds of gold and silver, or other objects definable as ‘treasure’ under the Treasure Act 1996, will be removed to a safe place and reported to the local Coroner according to the procedures of the Treasure Act 1996 and the Treasure (Designation) Order 2002 (**Ref. 3.12** and **3.13**). Where removal cannot be effected on the same working day as the discovery suitable security measures will be taken to protect the finds from theft. The Archaeological Consultant, the Applicant and the LPA Archaeological Advisor(s) will be notified immediately on discovery of any material covered, or potentially covered, by the Treasure Act 1996 (as amended by The Coroners and Justice Act 2009; **Ref. 3.14**). All information required by the Treasure Act (i.e. finder, location, material, date, associated items etc.) will be reported to the coroner within 14 days along with the relevant Finds Liaison Officer.

HUMAN REMAINS

- 3.4.22. If human remains are discovered during the course of the fieldwork the remains shall provisionally, in accordance with current best practice, be covered and protected and left *in situ*. The removal of human remains will only take place in accordance with the procedure set out in article 22 of the **Development Consent Order (Document reference D3.1)**, with a Ministry of Justice licence, and under the appropriate Environmental Health regulations and the Burial Act 1857 (**Ref. 3.15**). In the event of the discovery of human remains the Archaeological Contractor will contact H.M. Coroner.
- 3.4.23. The Archaeological Consultant will consult with the LPA Archaeological Advisor(s) if human remains are found, and, if required, Historic England, Cadw and other stakeholders for input to the exhumation and sampling strategy.
- 3.4.24. Human remains, once recognised, will be metal detected immediately to determine whether any metallic grave goods are present. If possible grave goods and other obvious artefact shall be recorded and lifted on the day of discovery to avoid the risk of vandalism and theft.

- 3.4.25. Where appropriate, the Construction Contractor shall ensure that adequate site security is provided. As a minimum, this will require a 24-hour comprehensive security regime until sensitive remains have been recorded and lifted.
- 3.4.26. If human remains are uncovered, which require excavation, they will be excavated with due reverence and in accordance with recognised professional guidelines (**Ref. 3.16** and **3.17**) and in accordance with the appropriate Environmental Health regulations. The site will be adequately screened from public view. Once excavated, human remains must not be exposed to public view. If human remains are not to be removed their physical security will be ensured, by backfilling as soon as possible after recording.

UNFORESEEN SIGNIFICANT REMAINS OF NATIONAL IMPORTANCE

- 3.4.27. On the discovery of unforeseen nationally or internationally significant archaeological remains a site meeting will be called immediately with the Archaeological Consultant, LPA Archaeological Advisor(s), the Applicant, the Archaeological Contractor and, where appropriate, the Historic England or Cadw Inspectors of Ancient Monuments, where a forward strategy for preservation *in situ* or full archaeological excavation will be discussed and agreed. If required, the WSI will be updated, and funding negotiations will be commenced to achieve the agreed strategy.
- 3.4.28. Where appropriate, the Construction Contractor shall ensure that adequate site security is provided.

INTERIM STORAGE AND PROCESSING FACILITIES

- 3.4.29. Prior to final deposition of the archive, the storage and processing facilities shall be the responsibility of the archaeological fieldwork subcontractor.
- 3.4.30. All samples will be taken to address a specific question. The purpose of the sample, and the question it has been taken to address will be recorded on the archaeological fieldwork subcontractor sample record sheet.

PROGRESS REPORTS

- 3.4.31. Weekly written progress reports will be provided by the Archaeological Contractor and submitted to the Archaeological Consultant during each stage of fieldwork, to be issued via e-mail each Friday, and to be received no later than 14.30 hrs. This will include details of each area where archaeological work has taken place in the previous week, along with details of any archaeological features located, highlighting significant finds and discoveries and progress against the programme.
- 3.4.32. In addition, the Construction Contractor and Archaeological Contractor will inform the Archaeological Consultant on the progress of the fieldwork verbally upon request. The Archaeological Consultant will e-mail the weekly reports to the relevant LPA Archaeological Advisor(s).

- 3.4.33. It is anticipated that regular progress meetings will be held on site with the LPA Archaeological Advisor(s) during the course of the fieldwork. These meetings will be arranged by the Archaeological Consultant; monitoring meetings will also be held during the post-excavation Stage of the DCO Proposed Development if appropriate. A programme of monitoring visits/meetings will be agreed prior to the commencement of fieldwork.

3.5. REPORTING, DISSEMINATION & ARCHIVING

POST-EXCAVATION ASSESSMENT OF RECORDS, ARTEFACTS, AND ENVIRONMENTAL EVIDENCE

- 3.5.1. Post-excavation assessment of the archaeology will comprise consideration and appropriate research of any buried features. For SMS environmental samples, the processing technique will depend on the deposit type and likely potential. Processing will aim to retrieve ecofacts such as plant macrofossil, animal bone, mollusc or ostracod remains. Environmental samples will be assessed by appropriate specialists for presence or absence of these remains and the quantity and significance of assemblages considered for further work.

POST-EXCAVATION REPORTING

Introduction

- 3.5.2. The nature of the post-excavation reporting and the way in which it is disseminated (e.g. grey literature report, journal article or monograph) will depend on the significance of what was discovered during the fieldwork.
- 3.5.3. Following, and where possible during, the fieldwork, the findings will be assessed by the Archaeological Consultant in consultation with the LPA Archaeological Advisor(s), against the stated research aims and objectives as set out in this WSI. This will determine the extent to which the aims have been met and may lead to the identification of any new research questions. It will also enable a decision regarding the next step, which is likely to comprise one of the following:
- Post-Excavation Assessment (PXA) and Updated Project Design: The site archive and material finds are clearly significant but require further consideration as to further analyses and what form of publication and dissemination will be most appropriate.
 - Straight to publication: The significance of the site archive is already reasonably well understood, and the most appropriate level of analysis and publication can be agreed with the LPA Archaeological Advisor(s) and other stakeholders. No further assessment is required to determine this. As a minimum a comprehensive written summary of the findings of the post-excavation analyses carried out, and their findings, and general summary of

the archaeology of the site will be needed for the LPA Archaeological Advisor's use towards condition discharge

- Post-Excavation Statement: The results of the fieldwork are not particularly significant. A grey literature report for deposition within the HER and Archaeological Data Service is considered an appropriate level of dissemination.

Post-Excavation Assessment (PXA) and Updated (Archaeological) Project Design

3.5.4. The Post-Excavation Assessment (PXA) has three principal aims:

- Provide an audit of all archaeological evidence recovered during the fieldwork.
- Provide a statement of significance of the quantity and perceived quality of the data as contained within the site archive and its potential to contribute to archaeological knowledge, in particular the stated research aims, and objectives as set out in this WSI. It might identify additional research questions.
- Define scope, resource requirements and programme for the completion of analyses through to publication (including editing stages) and display (where appropriate). This will consider costs, specialist staff, a retention/discard strategy along with storage and curation requirements. The strategy will be proportionate to the significance of the findings.

3.5.5. A Post-Excavation Assessment report will follow the project structure set out in Historic England's Management of Research Projects in the Historic Environment (MoRPHE, **Ref. 3.18**) and normally contain the following information:

- Sections included to cover specific geoarchaeological interest including geoarchaeological records, borehole cores and scientific dating;
- Introduction (in English and Welsh);
- Scope of the archaeological project (e.g. sites involved);
- Circumstances and dates of fieldwork and previous work;
- Comments on the organisation of the report;
- Original research aims;
- Summary of the documented history of the site(s);
- Interim statement on the results of fieldwork;
- Summary of the site archive and work carried out for assessment;
- Site records: quantity and work done on records during post-excavation assessment;

- Finds: factual summary of material and records, quantity, range, variety, preservation, work done during post-excavation assessment;
- Environmental material from SMS: factual summary of plant remains, human and animal bone, shell, and each type of sample (e.g. bulk organic, dendrochronological, monolith), quantity, range, variety, preservation, work carried out on the material during post-excavation assessment;
- Environmental material from Quaternary sections (raised beach): factual summary of remains recovered (e.g. clast lithology, ostracods, pollen) variety, preservation and work carried out on the material during post-excavation assessment;
- Documentary records: list of relevant sources discovered, quantity, variety, intensity of study of sources during post-excavation assessment;
- Potential of the data;
- A discursive appraisal of the extent to which the site archive might enable the data to meet the research aims of the archaeological project. Different classes of data will be discussed in an integrated fashion, sub-divided according to the research aims of the archaeological project;
- A statement of the potential of the data in developing new research aims, to contribute to other projects and to advance methodologies;
- A summary of the potential of the data in terms of local, regional, national, and international importance; and
- Additional information will include supporting illustrations at appropriate scales; sufficient supporting data, tabulated or in appendices, and/or details of the contents of the archaeological project archive, to permit the interrogation of the stated conclusions; and index, references, and disclaimers.

3.5.6. An Updated (Archaeological) Project Design will also be produced, as a separate section within the PXA or stand-alone document. This will set out the updated research objectives for further analysis and this may include amendments or additions to the original research aims.

3.5.7. In addition to the PXA, an interim report giving an overall view of the archaeological project and its results in non-technical language may be prepared and issued to the Applicant and other relevant parties on or before completion of the PXA.

3.5.8. The Archaeological Consultant will review and technically assure all documents before they are issued. The reports will form part of the archaeological project archive.

Straight to publication

- 3.5.9. In some cases, the significance of the information and material finds is apparent and does not require further work as outlined in the PXA stage above to determine which level of analysis and publication will be most appropriate. The Archaeological Consultant will need to agree this approach with the LPA Archaeological Advisor(s).

Post-Excavation statement

- 3.5.10. As set out under the 2015 guidance of the Association of Local Government Archaeological Officers (**Ref. 3.19**), where archaeological evidence is uncomplicated and limited in scale and significance, a 'Post-Excavation Statement' will be prepared which will present the results of the fieldwork in a fully illustrated grey literature report. It will include tabulated data to support a summary site narrative and relevant site plan(s). There may be a requirement to obtain absolute dates or other evidence either to support or expand upon the site narrative.

PUBLICATION AND DISSEMINATION

- 3.5.11. Where potential for further archaeological work has been identified and detailed proposals for this set out in the PXA, further analysis and research may be required, leading to publication in either a dedicated site-based monograph, or in a regional, national, or period-based archaeological journal within five years (subject to availability in selected journal) of the completion of fieldwork on site. Agreement shall be sought with the Applicant to allow a contingency sum to cover the estimated cost of such further analysis and publication should such work be recommended in the PXA report.
- 3.5.12. Consideration will be given by the Archaeological Consultant, in consultation the LPA Archaeological Advisor(s) as to whether it will be appropriate to publish the results of the DCO Proposed Development through a range of outlets, from conventional archaeological publications to, for example, site viewing platforms, interpretation panels and lectures, open days and school visits, radio and television programmes, videos and popular publications and social media or blogs. If, following the PXA, a formal letterpress or online journal publication report is agreed not to be warranted, consideration will be given to the availability of the digital report to ensure that the results of the DCO Proposed Development are widely available for future researchers and for the general public.
- 3.5.13. A short summary of the results of the work will be submitted to the local HER using the appropriate OASIS archaeological report form, and for publication in a local archaeological journal and/or other period-based archaeological journals. The OASIS form and a copy of the full report must also be submitted to the HER.

ARCHAEOLOGICAL PROJECT ARCHIVE

- 3.5.14. The archaeological project archive will contain all the data collected during the fieldwork, including records and finds, and all reports. Cheshire West Museums will designate a unique site code for the archaeological works in England, while CPAT will designate a unique site code for the archaeological works in Wales. These codes will be used as the site identifier for all records produced.
- 3.5.15. The Archaeological Contractor will ensure that the archive is quantified, ordered, indexed and internally consistent, and adequate resources will be provided to ensure that all records are checked. Archive consolidation will be undertaken immediately following the conclusion of fieldwork. The archive will then be transferred to an appropriate receiving organisation.
- 3.5.16. For works undertaken in England, the receiving organisation will be Cheshire West Museums.
- 3.5.17. The paper and digital archive produced during works in Wales will be deposited with the National Monuments Record, Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW), including a copy of the final report, upon completion of the archaeological works.
- 3.5.18. The digital archive will also be lodged with the Archaeological Data Service (ADS). Both the physical and digital archive will be available for public consultation in an archaeological project archive repository compatible with other archaeological archives in the county, and adhering to guidelines and standards set out in the following:
- RCAHMW Guidelines for Digital Archives (2015, **Ref. 3.20**)
 - Archaeological Archive Forum (**Ref. 3.21**), Archaeological Archives: a guide to best practice in creation, compilation transfer and curation;
 - Chartered Institute for Archaeologists (**Ref. 3.10**), Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives;
 - Museums and Galleries Commission (**Ref. 3.22**) Standards in the Museum Care of Archaeological Collections;
 - Society of Museum Archaeologists (**Ref. 3.23**) Towards an Accessible Archive. The Transfer of Archaeological Archives to Museums: Guidelines for Use in England, Northern Ireland, Scotland, and Wales;
 - United Kingdom Institute for Conservation (**Ref. 3.24**) Guidelines for the preparation of excavation archives for long term storage;
 - Welsh Museums Federation (**Ref. 3.25**) *National Standard and Guidance or Collecting and Depositing Archaeological Archives in Wales 2019*
- 3.5.19. Copyright of the written archive will be vested in the archaeological project archive repositories, which will be clearly identified in the evaluation report.

Physical and digital site archives will be deposited within 6 months of issuing the final report.

- Ref. 2.1** Department of Energy and Climate Change (2011) *National Policy Statement for Energy EN1* Available at <https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure>
- Ref. 3.1** North West Regional Research Framework. Available at researchframeworks.org Accessed 24/08/2022
- Ref. 3.2** ClfA Wales (2017) *A Research Framework for the Archaeology of Wales* Available at <https://www.archaeoleg.org.uk/intro.html> Accessed 19/08/2021
- Ref. 3.3** Chartered Institute for Archaeologists (CIFA) (2020a) *Standard and Guidance for Archaeological Excavation*
- Ref. 3.4** CIFA (2020b) *Standard and Guidance for Archaeological Watching Brief*
- Ref. 3.5** CIFA (2020c) *Standard and Guidance for Archaeological Evaluation*
- Ref. 3.6** Welsh Government/Llywodraeth Cymru (2017) *Planning Policy Wales Technical Advice Note 24: The Historic Environment (TAN24): Planning Policy Wales Note 24 May 2017* (gov.wales)
- Ref. 3.7** Historic England (2016) *Preserving Archaeological Remains: Decision-taking for Sites under Development*
- Ref. 3.8** Historic England (2015a) *Archaeological Guidance Paper 3: Standards and Practices in Archaeological Fieldwork*
- Ref. 3.9** Historic England (2015b) *Environmental Archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation*
- Ref. 3.10** ClfA (2020d) *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials*
- Ref. 3.11** Watkinson, D.E. and Neal, V. (1998) *First Aid for Finds: Practical Guide for Archaeologists* RESCUE/United Kingdom Institute for Conservation
- Ref. 3.12** The Stationary Office (1996) *Treasure Act* <https://www.legislation.gov.uk/ukpga/1996/24/contents> Accessed 19/08/2021
- Ref. 3.13** The Stationary Office (2002) *Treasure (Designation) Order 2002* <https://www.legislation.gov.uk/uksi/2002/2666/contents/made> Accessed 19/08/2021
- Ref. 3.14** The Stationary Office (2009) *Coroners and Justice Act 2009* <https://www.legislation.gov.uk/ukpga/2009/25/contents> Accessed 05/09/2022
- Ref. 3.15** The Stationary Office (1857) *Burial Act 1857* <https://www.legislation.gov.uk/ukpga/Vict/20-21/81/contents> Accessed 19/08/2021
- Ref. 3.16** Historic England (2018) *The Role of the Human Osteologist in an Archaeological Fieldwork Project*

Ref. 3.17 ClfA (2017) *Updated guidelines to the standards for recording human remains*

Ref. 3.18 Historic England (2015c) *Management of Research Projects in the Historic Environment: MoRPHE Project Manager's Handbook*

Ref. 3.19 ALGEO (2015) *Advice Note for Post-Excavation Assessment*
https://www.algao.org.uk/sites/default/files/documents/ALGEO_England_PXA_Advice_Note.pdf Accessed 24/08/2022

Ref. 3.20 Royal Commission on the Ancient and Historical Monuments of Wales (2015) *RCAHMW Guidelines for Digital Archives*

Ref. 3.21 Archaeological Archive Forum (2011) *Archaeological Archives: a guide to best practice in creation, compilation transfer and curation*

Ref. 3.22 Museums and Galleries Commission (1992) *Standards in the Museum Care of Archaeological Collections*

Ref. 3.23 Society of Museum Archaeologists (1995) *Towards an Accessible Archive. The Transfer of Archaeological Archives to Museums: Guidelines for Use in England, Northern Ireland, Scotland, and Wales*

Ref. 3.24 United Kingdom Institute of Conservation (1990) *Guidelines for the preparation of excavation archives for long term storage*

Ref. 3.25 Welsh Museums Federation (2019) *National Standard and Guidance for Collecting and Depositing Archaeological Archives in Wales 2019*

APPENDIX A

Table A.1 summarises the size and justifications of the prospective targeted evaluation trench locations shown on **Figure 1**. The trench sizes are indicative only at this stage.

Table A.1 – Prospective Targeted Evaluation Trenches

Trench ID	Proposed size	Description
1	30m x 2m	Sited to investigate the proposed Ince AGI location.
2	50m x 2m	Sited to investigate the proposed Ince AGI location.
3	50m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
4	50m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
5	30m x 2m	Sited to investigate a potential pit alignment identified during the geophysical survey.
6	30m x 2m	Sited to investigate a potential pit alignment identified during the geophysical survey.
7	40m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
8	40m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
9	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
10	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
11	25m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
12	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
13	20m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
14	50m x 2m	Sited to investigate an anomaly identified during the geophysical survey.

Trench ID	Proposed size	Description
15	30m x 2m	Sited to investigate the proposed Rock Bank BVS location.
16	40m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
17	50m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
18	20m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
19	20m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
20	25m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
21	15m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
22	20m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
23	25m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
24	25m x 2m	Sited to investigate the proposed Mollington BVS location.
25	35m x 2m	Sited to investigate the proposed Mollington BVS location.
26	25m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
27	35m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
28	35m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
29	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
30	50m x 2m	Sited to investigate an anomaly identified during the geophysical survey.

Trench ID	Proposed size	Description
31	20m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
32	15m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
33	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
34	50m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
35	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
36	50m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
37	50m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
38	15m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
39	20m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
40	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
41	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
42	50m x 2m	Sited to investigate the proposed Aston Hill BVS location.
43	30m x 2m	Sited to investigate the proposed Aston Hill BVS location.
44	20m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
45	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
46	15m x 2m	Sited to investigate an anomaly identified during the geophysical survey.

Trench ID	Proposed size	Description
47	20m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
48	15m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
49	50m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
50	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
51	40m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
52	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
53	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
54	40m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
55	20m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
56	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
57	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
58	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
59	20m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
60	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
61	50m x 2m	Sited to investigate the proposed Northop Hall AGI location.
62	40m x 2m	Sited to investigate an anomaly identified during the geophysical survey.

Trench ID	Proposed size	Description
63	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
64	50m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
65	50m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
66	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
67	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
68	50m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
69	50m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
70	40m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
71	30m x 2m	Sited to investigate the proposed Construction Compound for the proposed Flint AGI location.
72	30m x 2m	Sited to investigate the proposed Construction Compound for the proposed Flint AGI location.
73	50m x 2m	Sited to investigate the proposed Flint AGI location.
74	50m x 2m	Sited to investigate the proposed Flint AGI location.
75	30m x 2m	Sited to investigate an anomaly identified during the geophysical survey.
76	30m x 2m	Sited to investigate the proposed Construction Compound for the proposed Cornist Lane BVS location.
77	50m x 2m	Sited to investigate the proposed Cornist Lane BVS location.
78	50m x 2m	Sited to investigate the proposed Pentre Halkyn BVS location.

Trench ID	Proposed size	Description
79	30m x 2m	Sited to investigate the proposed Construction Compound for the proposed Pentre Halkyn BVS location.
80	50m x 2m	Sited to investigate the proposed Babell BVS location.
81	30m x 2m	Sited to investigate the proposed Construction Compound for the proposed Babell BVS location.

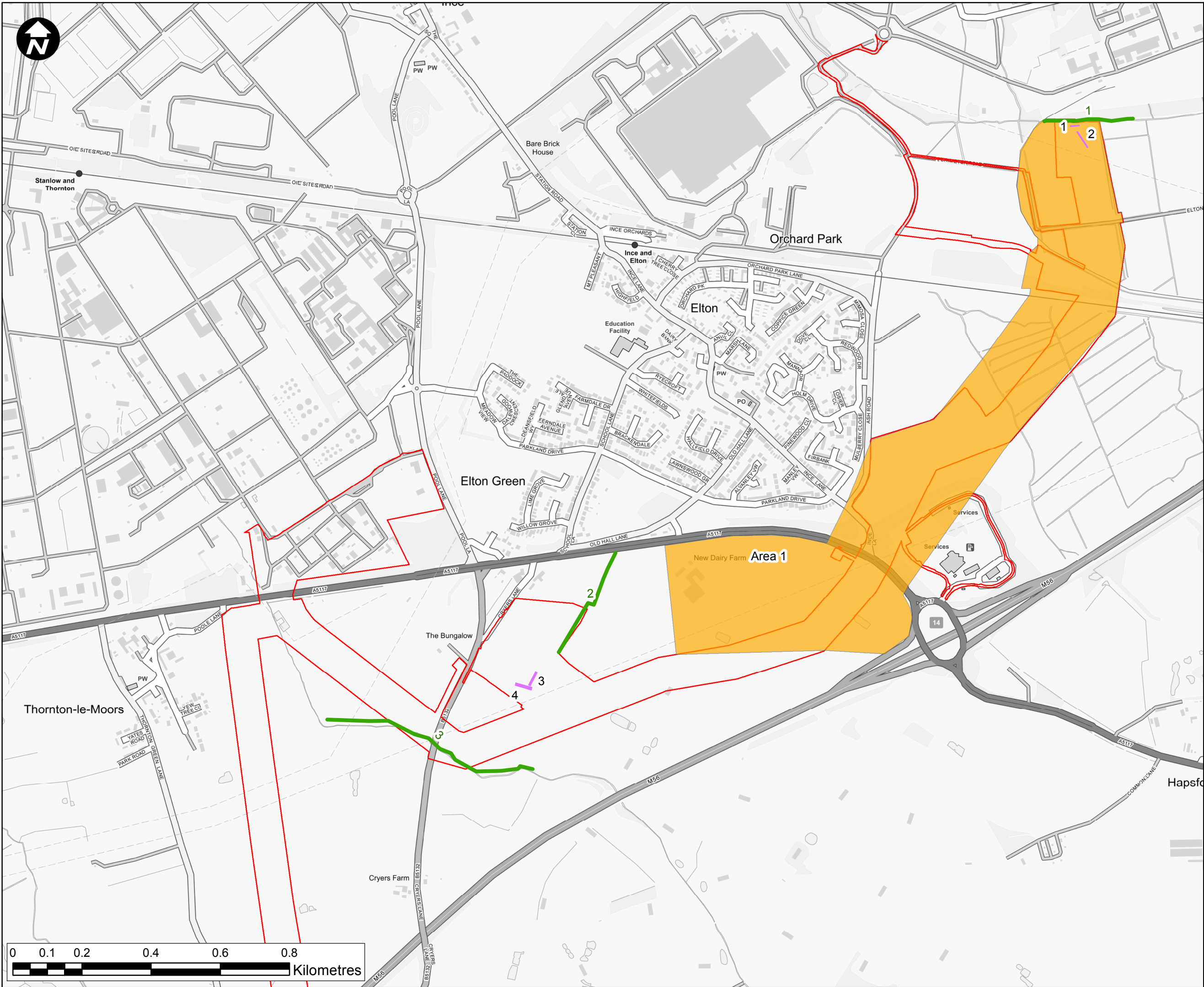
Table A.2 represents a gazetteer of potential ‘important’ historic hedgerows within the Newbuild Infrastructure Boundary. The gazetteer should be read in conjunction with **Figure 1**.

Table A.2 – Gazetteer of Potential ‘Important’ Historic Hedgerows

ID	Description of Potential 'Important' Hedgerow
1	Hedgerow on the boundary between the Elton township of Thornton-le-Moors Parish and Ince Parish
2	Hedgerow along the western edge and extending to the south of the Elton moated site scheduled monument
3	Hedgerow on the boundary between the Elton township and Thornton township of Thornton-le-Moors Parish
4	Hedgerow on the boundary between the Thornton township of Thornton-le-Moors Parish and Wimbolds Trafford township
5	Hedgerow on the boundary between the Wervin township and Picton township of St Oswalds Parish
6	Hedgerow on the boundary between the Wervin township and Picton township of St Oswalds Parish
7	Hedgerow on the boundary between the Wervin township and Caughall township of St Oswalds Parish
8	Hedgerow on the boundary between the Caughall township of St Oswalds Parish and Chorlton township of Backford Parish
9	Hedgerow on the boundary between the Caughall township of St Oswalds Parish and Chorlton township of Backford Parish
10	Hedgerow on the boundary between the Caughall township of St Oswalds Parish and Chorlton township of Backford Parish
11	Hedgerow on the boundary between the Backford township and Chorlton township of Backford Parish
12	Hedgerow on the boundary between the Backford township and Lea township of Backford Parish
13	Hedgerow on the boundary between the Lea township of Backford Parish and Great Mollington township
14	Hedgerow on the boundary between the Lea township of Backford Parish and Great Mollington township
15	Hedgerow on the boundary between the Great Mollington township and Little Saughall township

ID	Description of Potential 'Important' Hedgerow
16	Hedgerow on the boundary between the Great Saughall township and Little Saughall township
17	Hedgerow on the boundary between the Great Saughall township and Little Saughall township
18	Hedgerow on the boundary between the Great Saughall township and Sealand township of Hawarden Parish
19	Hedgerow on the boundary between the townships of Hawarden Parish
20	Hedgerow on the boundary between the townships of Hawarden Parish
21	Hedgerow on the boundary between Hawarden Parish and Flint Parish

FIGURES



- Key:
- Proposed evaluation trench
 - Geoarchaeological area of interest
 - Potential important hedgerow
 - Newbuild Infrastructure Boundary

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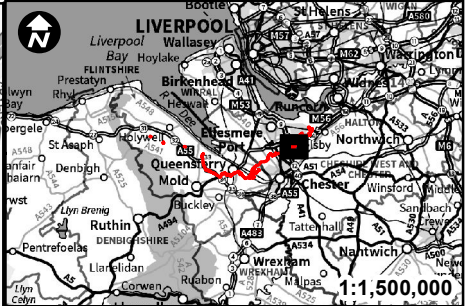
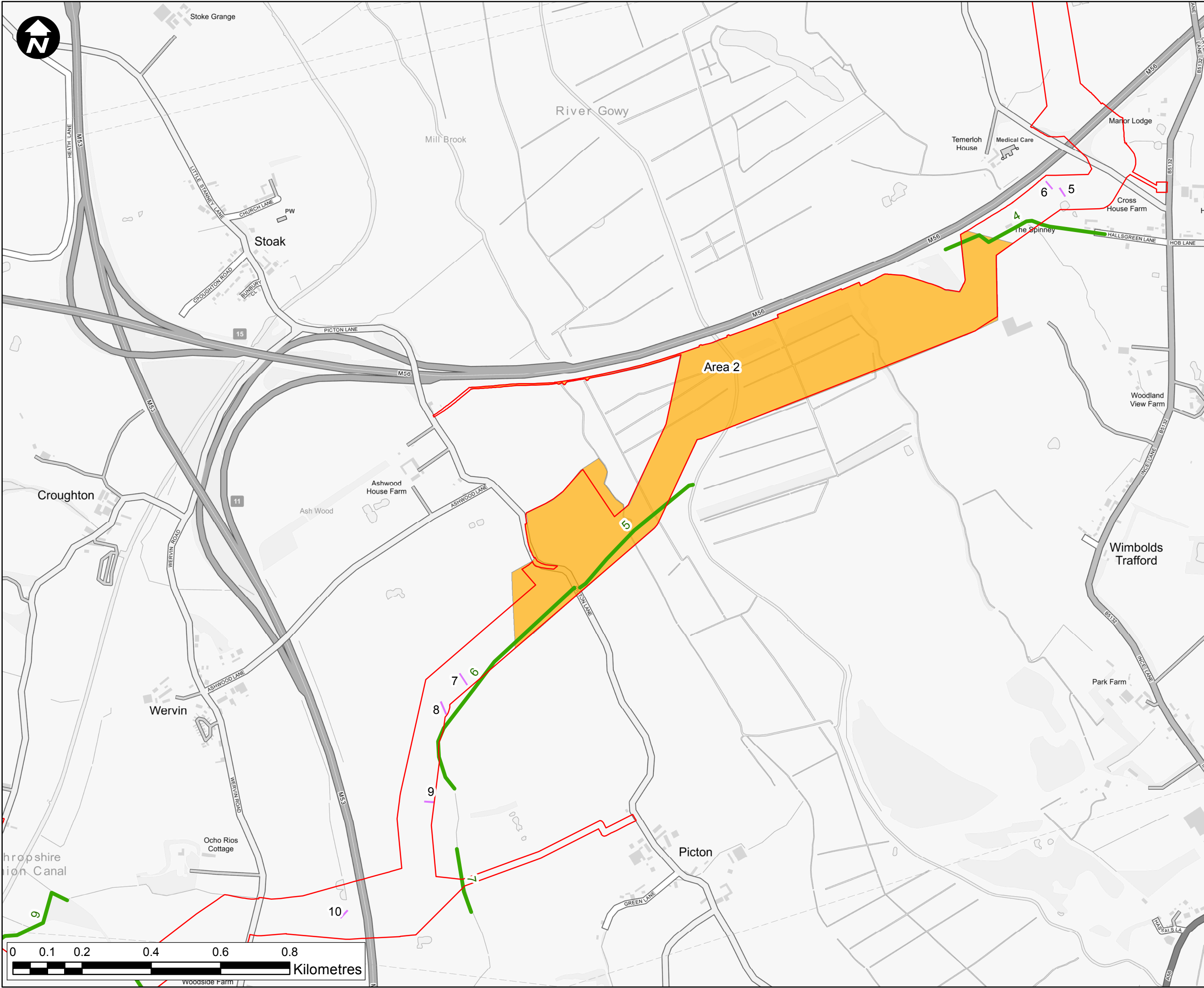
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D.6.5.2.1 - Sheet 1



- Key:**
- Proposed evaluation trench
 - Geoarchaeological area of interest
 - Potential designated hedgerow
 - Newbuild Infrastructure Boundary

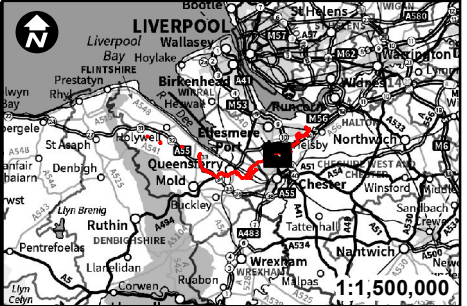
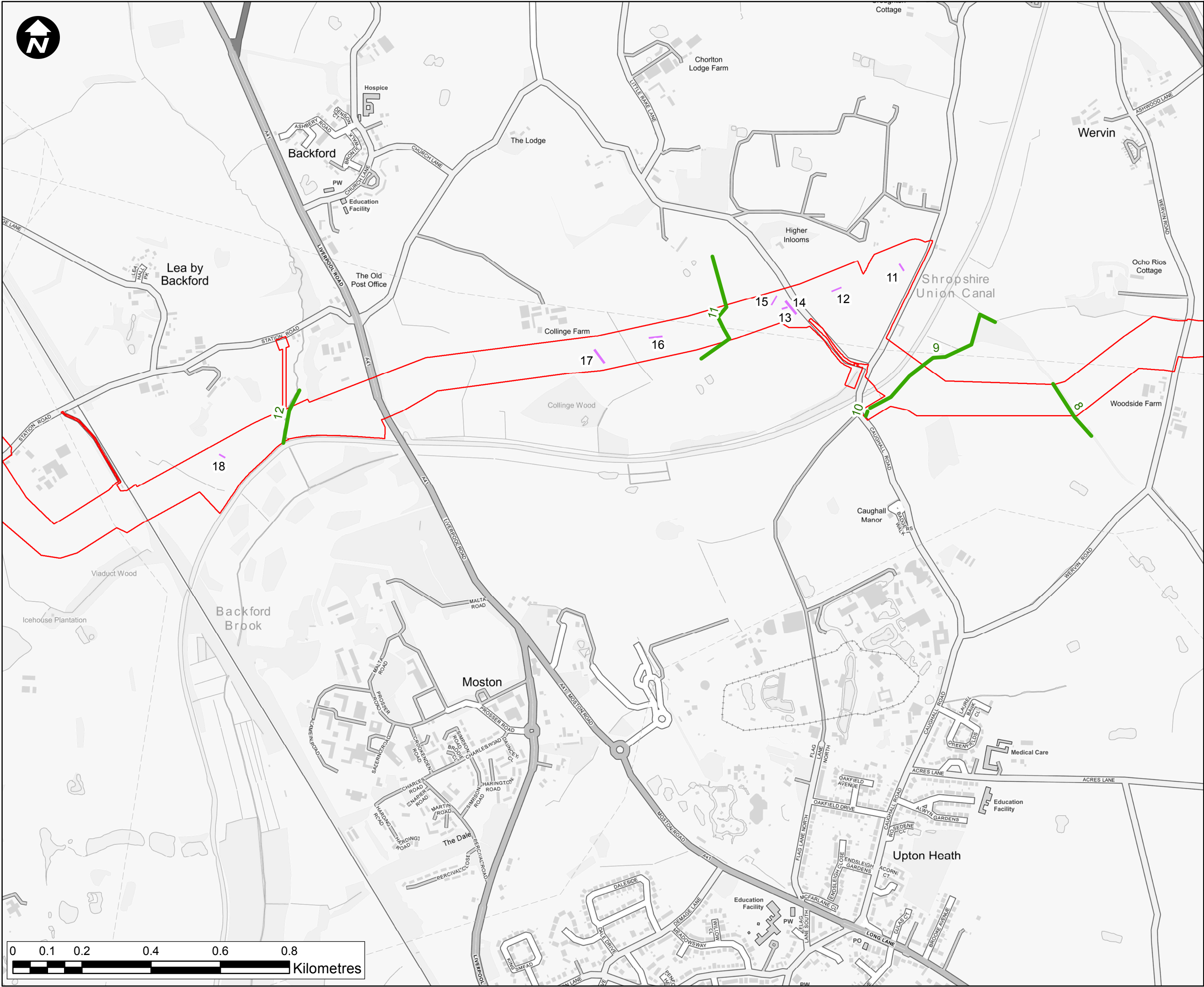
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HyNet North West Pipeline

DRAWING TITLE
Figure 1: Proposed evaluation trenches and areas of geoarchaeological interest

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- Key:
- Proposed evaluation trench
 - Geoarchaeological area of interest
 - Potential designated hedgerow
 - Newbuild Infrastructure Boundary

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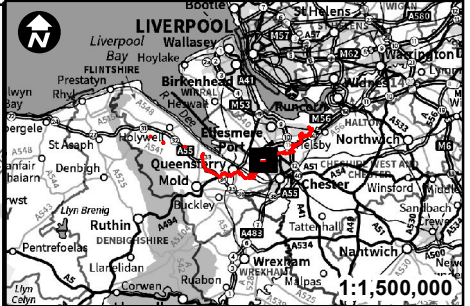
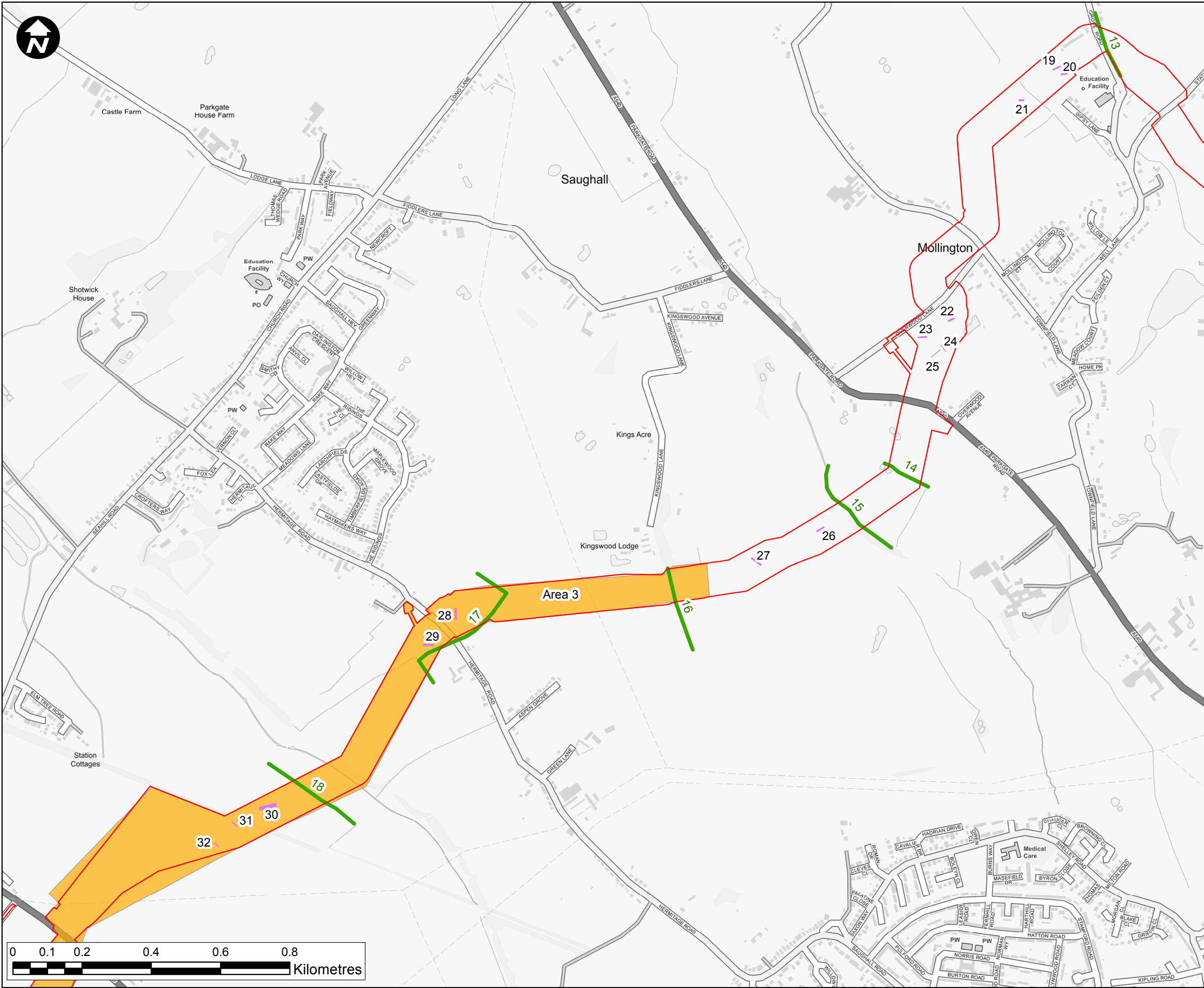
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D.6.5.2.1 - Sheet 3



- Key:
- Proposed evaluation trench
 - Geoarchaeological area of interest
 - Potential designated hedgerow
 - Newbuild Infrastructure Boundary

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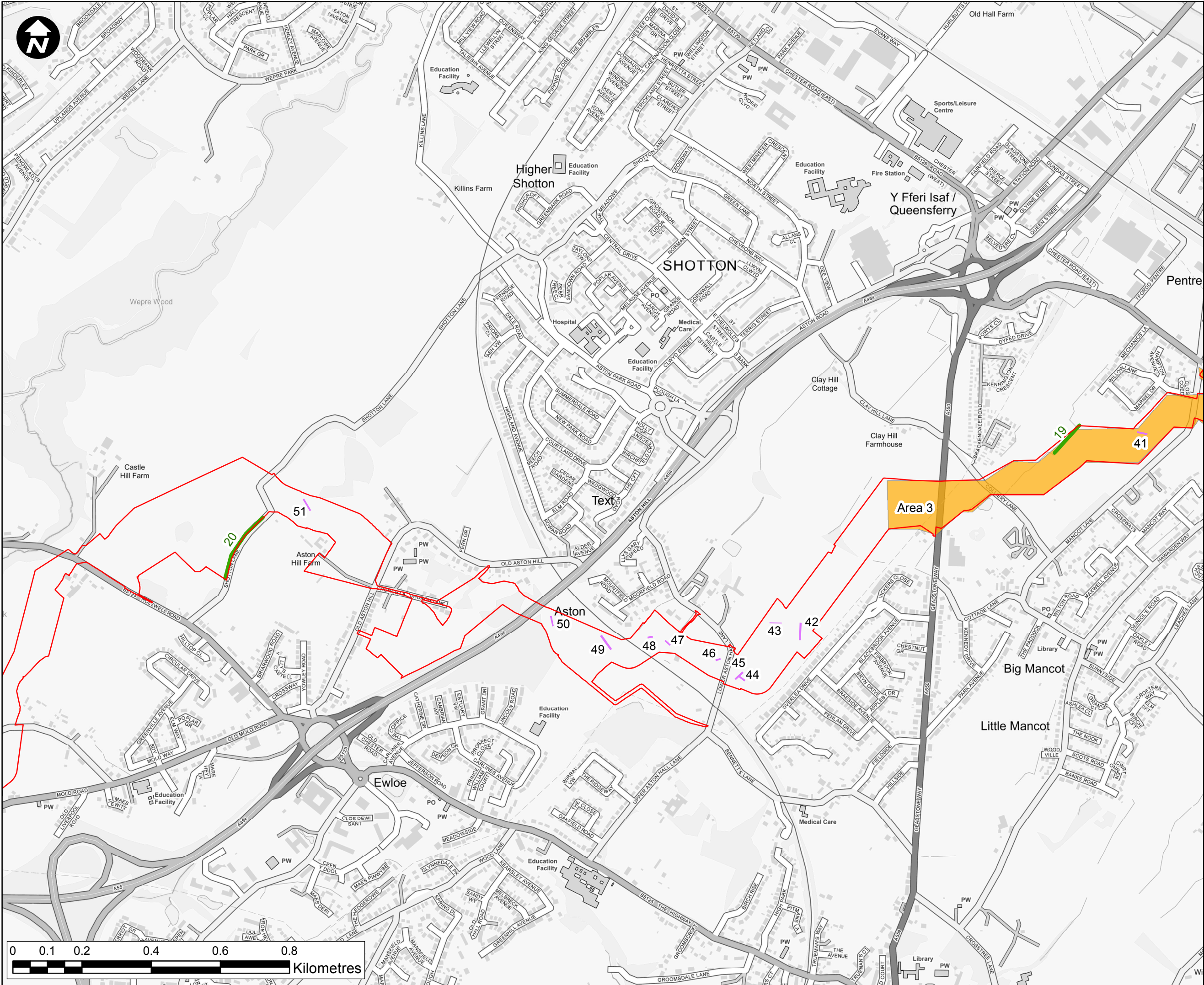
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DRAWING TITLE
Figure 1: Proposed evaluation trenches and areas of geoarchaeological interest

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- Key:
- Proposed evaluation trenches
 - Geoarchaeological area of interest
 - Potential designated hedgerow
 - Newbuild Infrastructure Boundary

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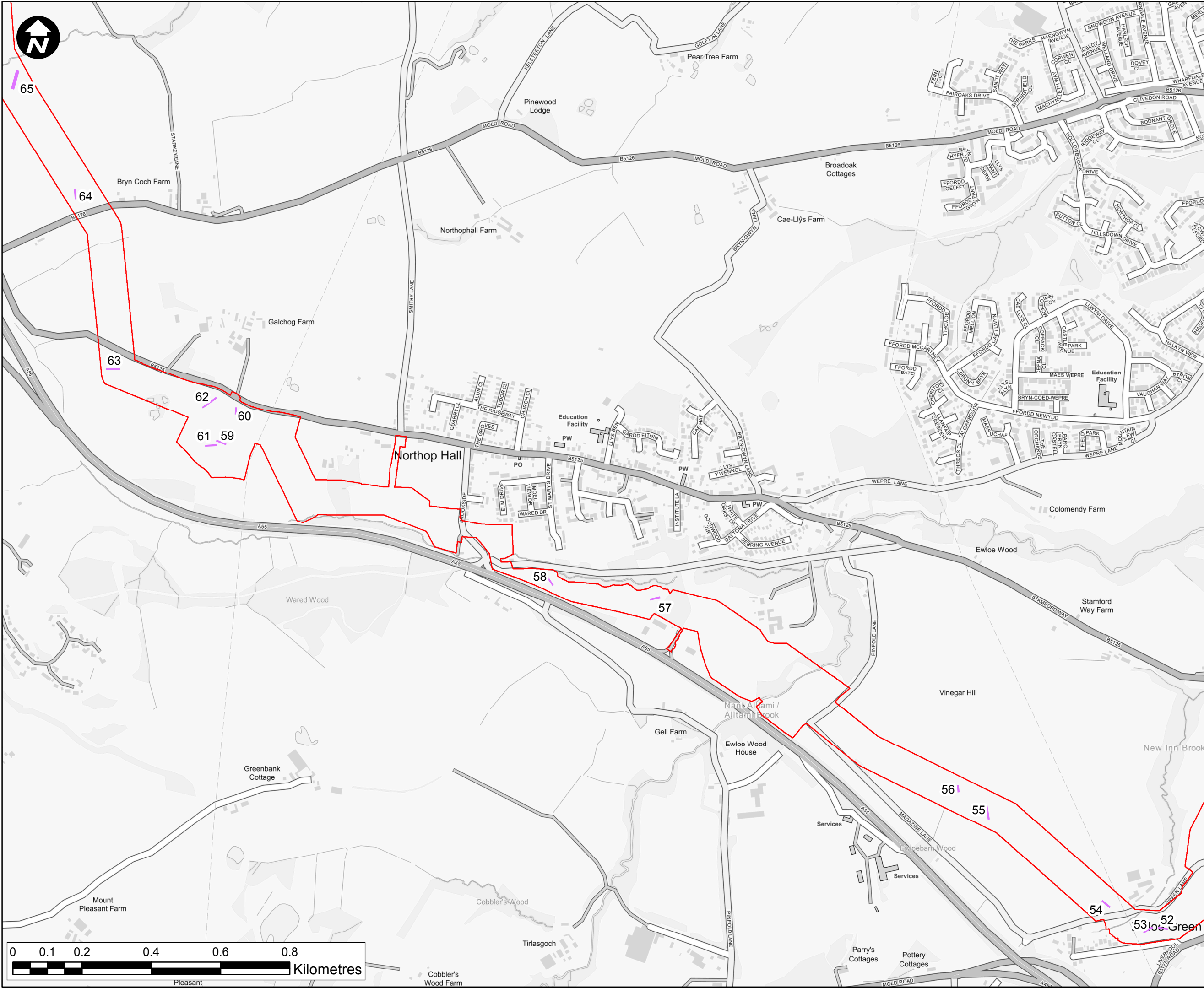
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Figure 1 - Proposed evaluation trenches and areas of geoarchaeological interest

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- Key:**
- Proposed evaluation trench
 - Georarchaeological area of interest
 - Potential designated hedgerow
 - Newbuild Infrastructure Boundary

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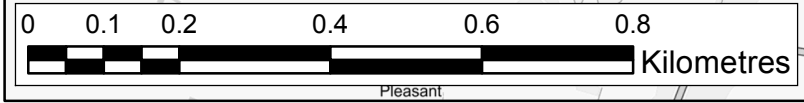
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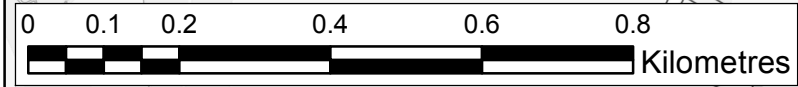
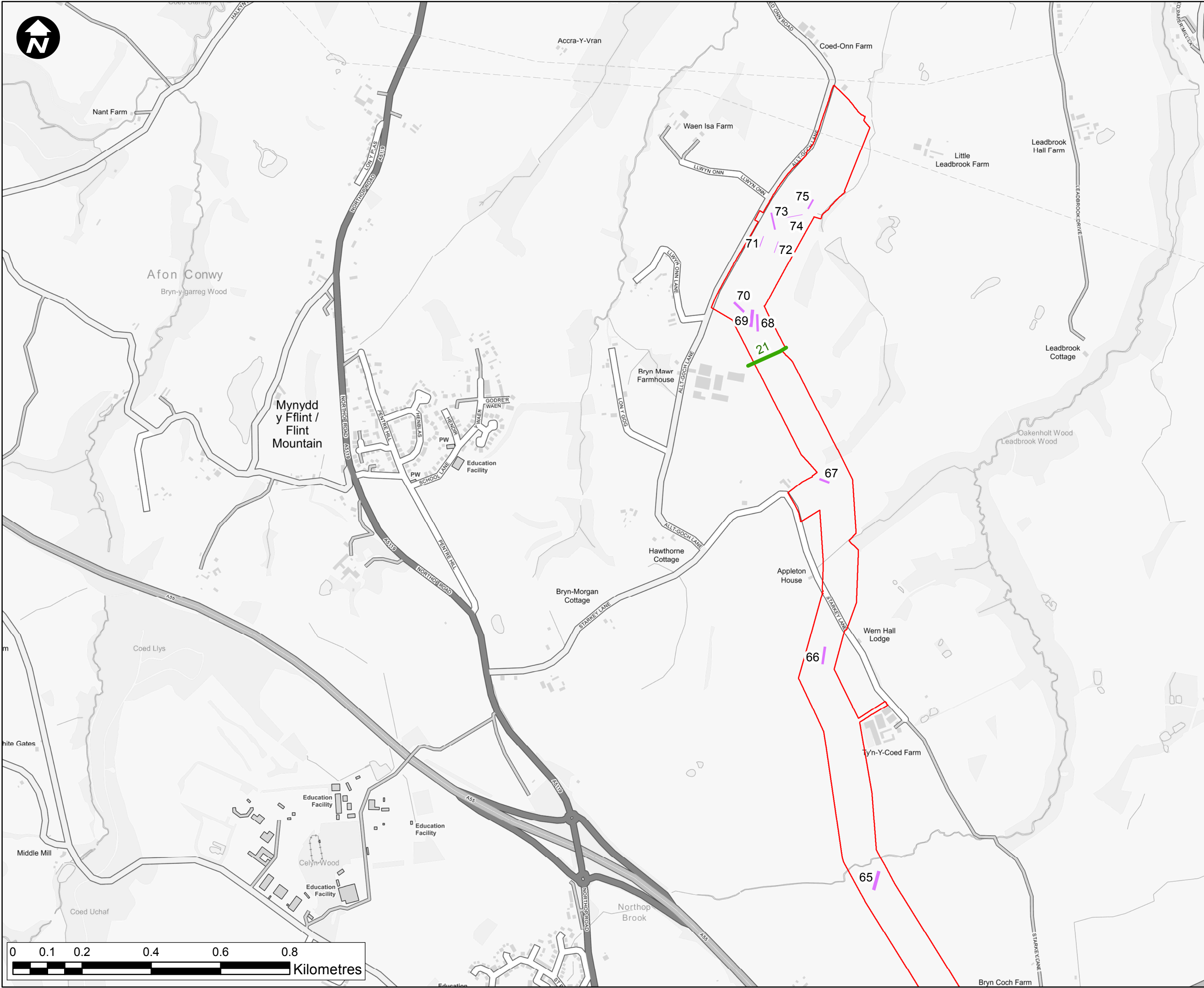
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D.6.5.2.1 - Sheet 7





- Key:**
- Proposed evaluation trench
 - Geoarchaeological area of interest
 - Potential designated hedgerow
 - Newbuild Infrastructure Boundary

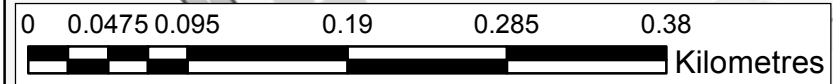
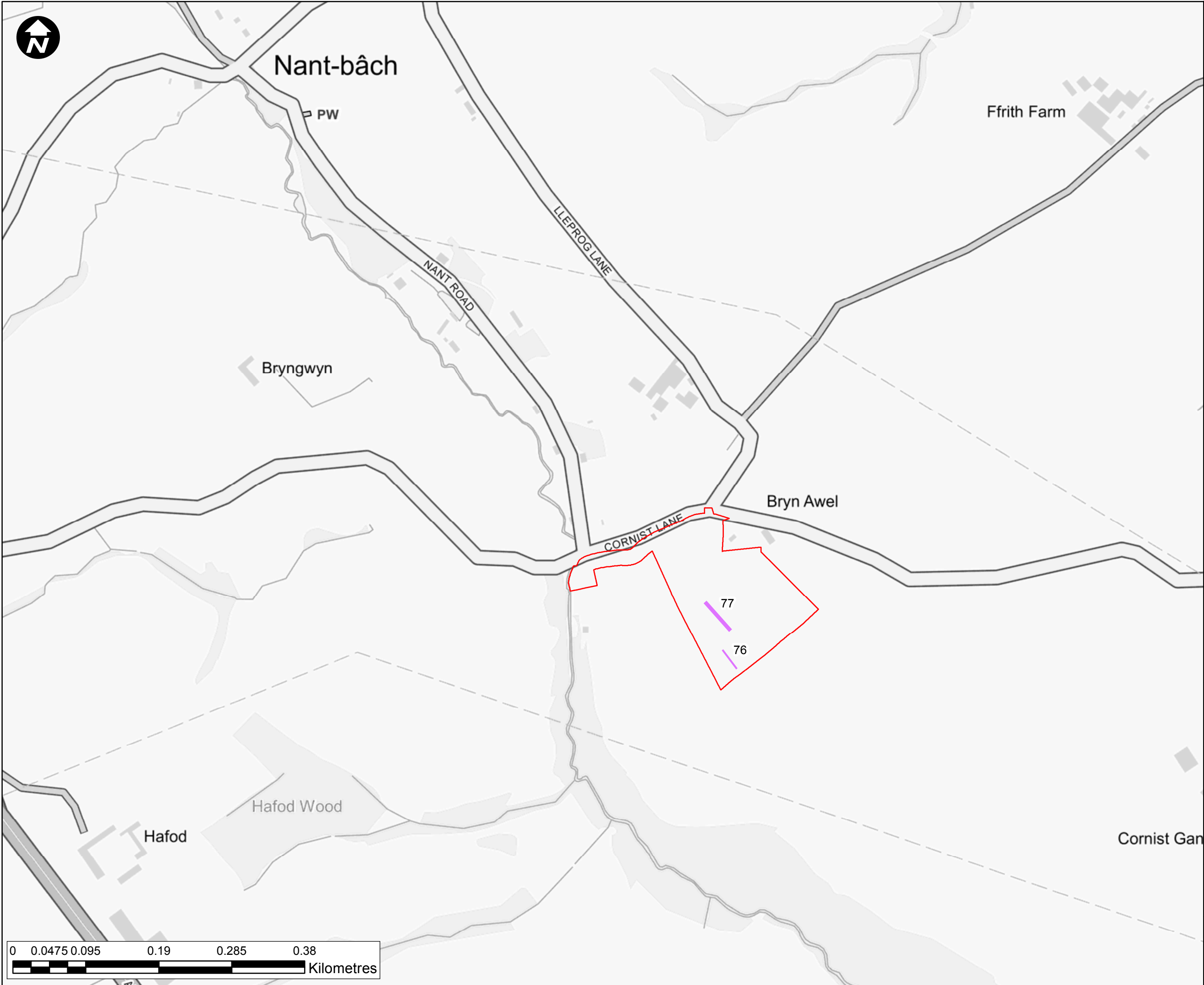
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Figure 1 - Proposed evaluation trenches and areas of geoarchaeological interest

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- Key:
- Proposed evaluation trench
 - Geoarchaeological area of interest
 - Potential designated hedgerow
 - Newbuild Infrastructure Boundary

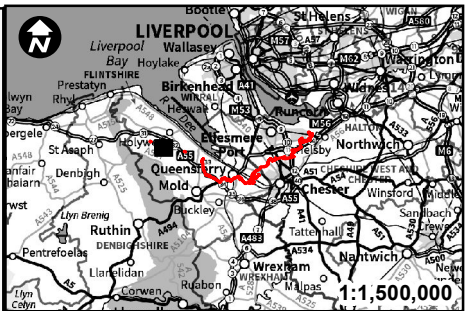
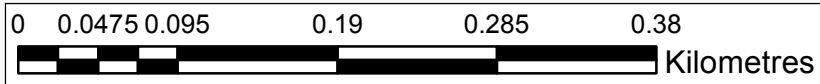
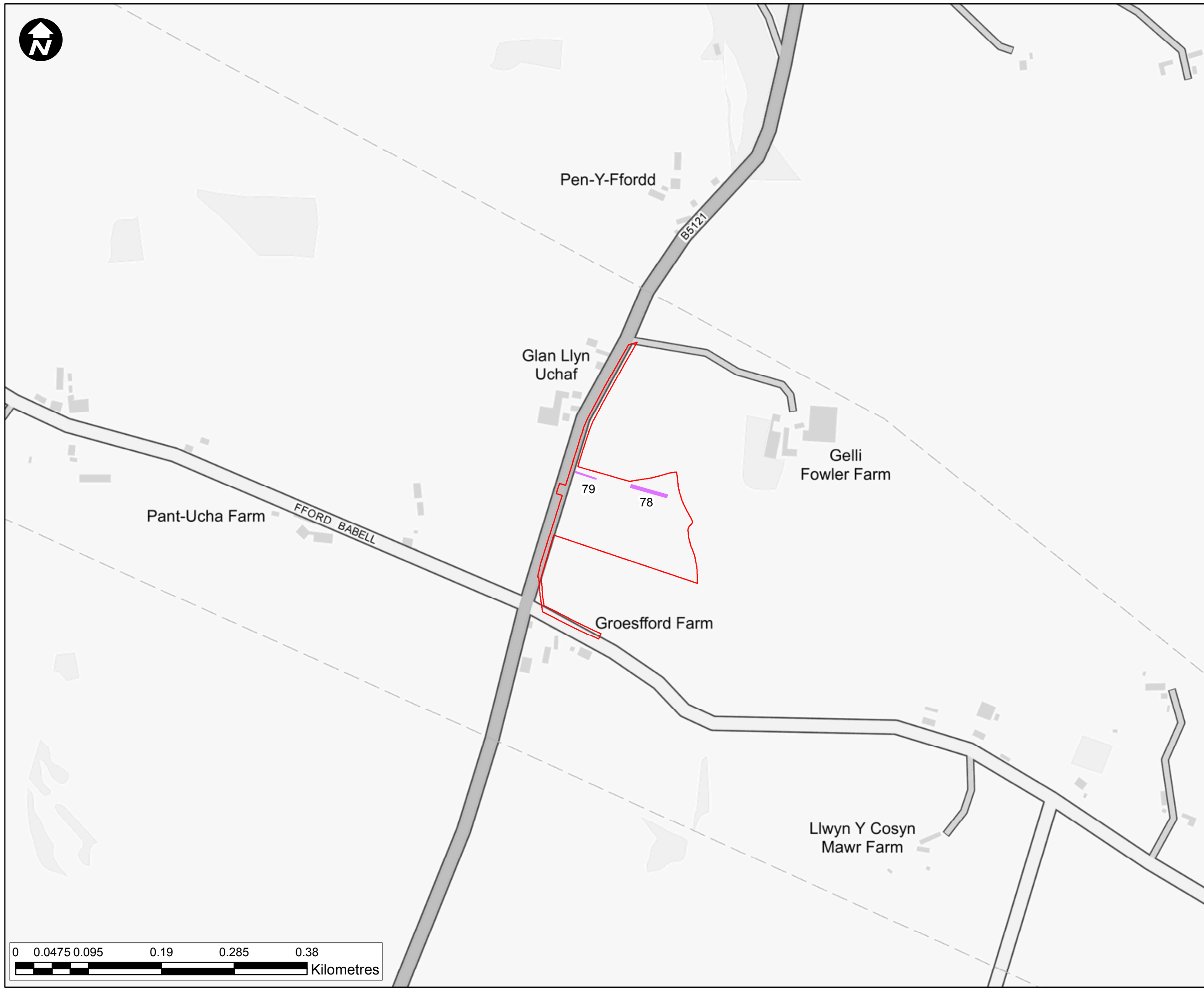
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Figure 1 - Proposed evaluation trenches and areas of geoarchaeological interest

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- Key:**
- Proposed evaluation trench
 - Geoarchaeological area of interest
 - Potential designated hedgerow
 - Newbuild Infrastructure Boundary

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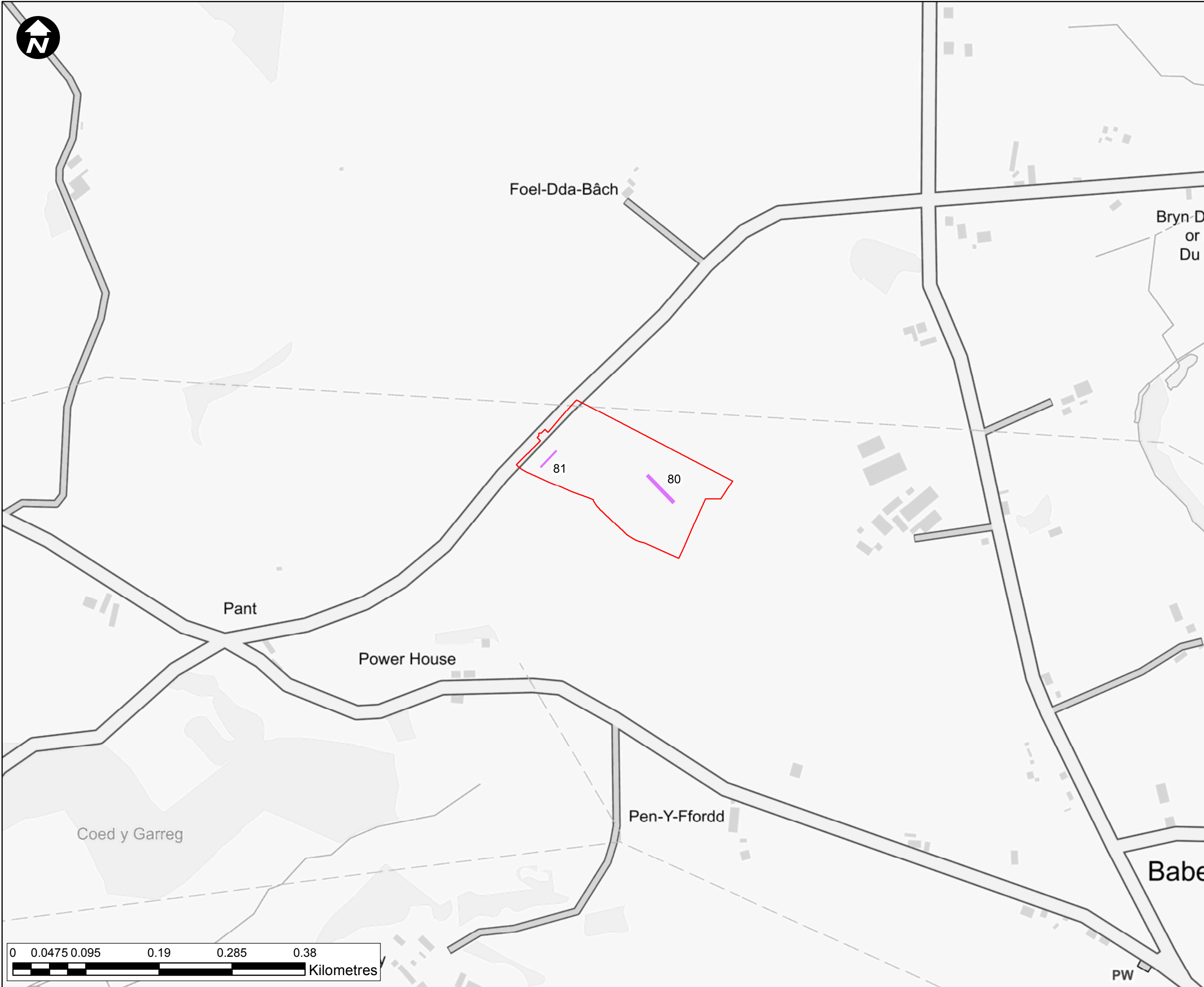
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Figure 1 - Proposed evaluation trenches and areas of geoarchaeological interest

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- Key:
- Proposed evaluation trench
 - Geoarchaeological area of interest
 - Potential designated hedgerow
 - Newbuild Infrastructure Boundary

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Figure 1 - Proposed evaluation trenches and areas of geoarchaeological interest

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