# Phillips 66 Site – FAME Tanks

# WSI for Archaeological Trial Trenching Investigation Works

Phillips 66

Project reference: 60712174

February 2024

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## Quality information

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## Revision History

| Revision | Revision date | Details | Authorized | Name | Position |
|---|---|---|---|---|---|
| 1.0 | 21.02.2024 | First Issue | | | |
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# 1. Introduction

1.1 AECOM (the Archaeological Consultant) have been commissioned by Phillips 66 Limited (the 'Client') to prepare a Framework Written Scheme of Investigation (WSI) for a programme of archaeological trial trenching works to be undertaken at the Humber Refinery, within the proposed development area (the 'Site') for two proposed FAME storage tanks and associated infrastructure (the 'Proposed Development'). The work is located within the extant Phillips 66 Humber Refinery – centred at NGR TA 16881642.

1.2 Previous archaeological investigations consisted of a Desk-Based Assessment (DBA) (Finch, 2024). This concluded that the Proposed Development has the potential to impact upon currently unidentified archaeological resources dating to the prehistoric and Roman periods if any intrusive groundworks are undertaken.

1.3 The works specified in this document will be undertaken by a competent and suitably qualified Archaeological Contractor (the 'Archaeological Contractor') who should be a Registered Archaeological Organisation with the Chartered Institute for Archaeologists (CIfA). They will be employed by the Client.

1.4 This document sets out the methodology, specification, and protocols to be adhered to during the completion of the archaeological fieldwork, as well as the interim reporting and preparation of the fieldwork reports which will be completed by the Archaeological Contractor. In addition, the requirements and responsibilities of the Archaeological Contractor, the Archaeological Consultant and the Client have been set out to assist the Archaeological Contractor in the completion of the archaeological works.

1.5 The WSI has been prepared by AECOM on behalf of the Client in accordance with guidance provided by the Chartered Institute for Archaeologists (CifA), including the Standard and Guidance for archaeological field evaluation (2023). The WSI will be submitted to the Historic Environment Officer for North Lincolnshire Council (NLC) for comment and approval before works commence.

# 2. Site Description Location and Geology

2.1 The Site lies 1.5 km north of Immingham, located within the administrative boundary of North Lincolnshire Council, in the ward of Ferry and Parish of South Killingholme, centred at NGR TA 16881642.

2.2 The Site is a c1.5 hectares (ha) brownfield site located within the operational Humber Refinery. The area required for the proposed Site is currently used for open storage (Plate 1).

2.3 The Site is generally level only varying between 6.5 m AOD and 4.8 m AOD with the highest elevations in the northeast of the Site.

**Plate 1**: Proposed Site facing Northeast.

2.4 The geology and soils of the Site are described on the British Geological Survey (BGS) Geology Viewer (BGS Geology Viewer) and the Cranfield Soilscape Maps. The superficial deposit which underlies the Site is Till, Devensian deposits comprising diamicton. The Till is described by the BGS as "*unsorted and unstratified drift, generally over consolidated, deposited directly by and underneath a glacier without subsequent reworking by water from the glacier. It consists of a heterogenous mixture of clay, sand, gravel, and boulders varying widely in size and shape*." The Till is classified as a secondary (undifferentiated) aquifer which is assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

2.5 The underling bedrock geology beneath the entire Site forms part of the Burnham Chalk Formation. The BGS describes this as "*white, thinly-bedded chalk with common tabular and discontinuous flint bands; sporadic marl seams*". The Burnham chalk formation is designated as a Principal Aquifer.

2.6 Soils across the Site are described as "*slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils with a high leaching potential*".

# 3. Archaeological and Historical Background Summary

3.1 A Desk-based Assessment (DBA) has been produced for the Site (AECOM 2024); the results are summarised below.

## Palaeolithic c.700,000BC

3.2 The Palaeolithic period began around 700,000 years ago, when the earliest humans arrived in Britain. Throughout much of this era, harsh glacial conditions or 'ice ages' prevailed and the region was periodically covered by ice sheets. At other times, periglacial conditions, characterised by very cold temperatures, freeze-thaw, and permafrost would have existed for long periods.

3.3 Evidence for the Palaeolithic period in Lincolnshire is rare, but flint tools are occasionally found in glacial gravels.

3.4 There is no recorded Palaeolithic evidence within the study area for the DBA.

## Mesolithic c.10,000 – 4,000BC

3.5 The end of the last ice-age saw an increase in temperatures and the melting of glaciers across Britain. This led to rising sea-levels, and the separation of Britain from the continent. The warmer climate encouraged the migration of plants and animals into the region, and the spread of coniferous forests. From about 6,500 BC, these gave way to deciduous woodlands of oak, hazel, elm and lime as average temperatures rose to two degrees centigrade higher than they are today.

3.6 Throughout the Mesolithic, communities of semi-nomadic people hunted animals such as red deer and wild pig and collected fruit and food plants. The remains of their temporary camps have occasionally been discovered, but normally only their tools and equipment are found. Flint, stone, bone and wood would have been utilised.

3.7 There is no recorded Mesolithic evidence within the study area.

## Neolithic c.4,000 – 2,500BC

3.8 Pollen samples taken from higher peat deposits at Chapel Point, dated to the Neolithic period, seem to suggest that some farming may have been taking place in the area of the Lincolnshire Marsh at that time, presumably with some forest clearance. To the north of the study area, settlement activity is represented by some Neolithic material in a flint assemblage recovered during trial excavations for the Able UK vehicle storage facility in North Killingholme. A Neolithic polished stone axe was found north of Immingham, and two stone axes were found near Manor Farm, North Killingholme (Loughlin & Miller, 1979: 207). A flint scraper was recovered from the site of the original oil refinery development in 1966, approximately 250m south-west of the Site.

## Bronze Age (c.2,500 – 800BC)

3.9 During the Mid- to Late Bronze Age and possibly into the Iron Age, the habitat on the Lincolnshire Marsh seems to have consisted of a mixed landscape of alder carr, with areas of reeds, radio-carbon dated to 3340 ± 110 BP (Van de Noort & Davies, 1993: 21). Pollen analysis from a kettlehole at Butterbump, in the Lincolnshire Marsh, shows that woodland clearance was taking place, and was probably directly related to the growth of mixed arable farming.

3.10 Worked flints of Bronze Age date have been recovered during fieldwalking within the study area, while a Bronze Age flint knife was discovered in 1967 at the site of the Humber Oil Refinery, approximately 750m north-west of the Site.

3.11 Bronze Age and Iron Age settlements associated with the making of salt have been documented on the Lincolnshire Marsh, especially around the area of Ingoldmells in Lincolnshire (Van de Noort & Davies,

1993: 70). The salt industry was established in scrubland that was cut by deep, estuarine creeks and it was from these creeks at high tide that the salt water was taken to be used in the salt-making process. Pottery recovered from these sites indicate that salt production in the area commenced as early as the 4th century BC, continuing through the Iron Age and into the Romano-British period (Baker, 1975).

## Iron Age (800BC – 43AD)

3.12 Evidence of Iron Age salt making has been recovered from within the study area. An excavation 650m to the north of the Site, at the site of the Immingham CHP Plant, has provided evidence in the form of salt making vessels (briquetage) (Savage & Buglass, 2001). The earliest phase of the site, dating from the early to mid-Iron Age consisted of two conjoined rectangular enclosures (VPI Immingham, 2019: 14). Within the eastern of these was evidence of salt production and structures comprising a possible roundhouse and a post-hole structure. In addition, a boundary ditch aligned west-north-west/ east-south-east was recorded at the southern end of the site. A roundhouse was located to the north, defined by two ditch features. A further roundhouse was also located in the north-western corner of the site (ibid.).

3.13 An excavation by Headland Archaeology in 2009 at the Heron Renewable Energy Plant, 500m east of the Site, discovered fired clay fragments in their trenches, identified as ceramic trays or pans, representing evidence of salt production consistent with the Immingham CHP Plant site. Late Iron Age occupation was concentrated on the driest ground towards the west of the Site, while it is possible that salt making was carried out on the wetter ground to the east (Stronach, 2010).

3.14 In 2010, three trenches were excavated by West Yorkshire Archaeological Services (WYAS) on land west of Rosper Road, as part of the A160 Improvements, approximately 450m north-east of the Site. Two late Iron Age ditches were recorded, with pottery and animal bone found in the lower fills of each ditch (WYAS, 2010). The archaeological evidence is suggestive of a pre-Roman Iron Age agricultural landscape, with livestock forming the bulk of the economy, and settlement foci that continued to be developed and exploited well into the Roman period (ibid. 53).

3.15 On the basis of the existing evidence from beyond the Site, it appears that nearby areas may have been occupied by a number of shifting farmsteads and associated agricultural enclosures during the Iron Age.

3.16 The North Lincolnshire HER indicates that Iron Age settlement in the area was likely to have been relatively extensive, with recorded sites concentrated along the marshland and its fringes, where settlements would have grown up alongside the various creeks and inlets which penetrated the Lincolnshire Marsh.

## Romano-British (43 – 410AD)

3.17 Concentrations of Roman activity in the vicinity of the Site suggest that settlement from this period likely continued from the preceding Iron Age, and was relatively intensive within this area of the Lincolnshire Marsh. Late Iron Age occupation evidence from an excavation to the east of the Site was shown to continue into the early Romano-British period, with several linear ditches found to contain pottery sherds from this period (Stronach, 2010).

3.18 A ‘ladder settlement-type’, or a linear arrangement of enclosures alongside a track, perhaps representing a series of small farmsteads, was recorded during two phases of geophysical survey at East End Farm in 2004 (Steedman, 2004), approximately 500m south-west of the Site. Sixteen 3rd and 4th century AD coins were recovered, as well as two Roman brooches identified as a Dolphin brooch of the 1st century AD. The complex structural sequence may be indicative of settlement over a protracted period.

3.19 A cropmark of a possible rectangular building and associated enclosure were visible on 1958 aerial photographs, located approximately 850m north-west of the Site, which now lies beneath the Humber Oil Refinery (AC Archaeology, 2000). The date of the cropmark is uncertain, however, Romano-British greyware pottery has been recovered from the same area.

3.20 The north-east to south-west boundary alignment of probable Roman remains identified in 2012 by geophysics at Greengate Lane, South Killingholme (Flintoft, 2012: 6), approximately 2km to the west of Site, is in keeping with the boundary alignments observed at the much better understood site of Chase Hill, another Romano-British ladder settlement, located further afield at North Killingholme.

3.21 The Iron Age site beneath the Immingham CHP plant, approximately 650m north of the Site, has already been mentioned and occupation of that settlement continued into the Roman period (Savage & Burgess, 2011). The settlement lay adjacent to the northern edge of a stream channel and the excavations provided evidence for several phases of flooding. Activity in the Roman period near to the stream was broadly limited to the cutting and re-cutting of enclosure and drainage ditches, while further north there was an area of new Romano-British enclosures, with the ditches being repeatedly re-cut and new enclosures created (Savage & Buglass, 2001). Settlement here continued at a reduced scale into the 4th century AD.

3.22 The area around the refineries at South Killingholme has seen an incredible concentration of archaeological fieldwork in recent years, resulting in the discovery of several settlement sites from this period. These discoveries suggest a significant density of Romano-British settlement, particularly on the higher ground of the Middle Marsh and its fringes, with settlements in many cases lying alongside or close to the various creeks and inlets which crossed the marshland.

## Early-Medieval (410 – 1066AD)

3.23 The present-day settlement of South Killingholme is a linear settlement extending along a north-south road that hugs the slightly elevated ridge of ground at this point. This type of settlement is often labelled a 'row' village and the location of the present-day village may date back into the early medieval period. Indeed, the place-name of Killingholme is a primary Anglo-Saxon name translating from Old English - Cylfingas' - as village of the people of 'Killing'.

3.24 Killingholme is one of four 'group name', or *ingas*, settlements north of Grimsby and these names are confidently believed to belong to an early period of Anglo-Saxon settlement in the areas in which they occur (Cameron, 1991: 164). Place-name evidence seems to suggest that early Anglo-Saxon settlement occurred on the higher and drier ground of the 'Middle Marsh', to the west of the wetter 'Outmarsh'.

3.25 There are no heritage assets of early medieval date in the 1km study area, though an 8th century coin was recovered from the upper fills of one of the former droveway ditches on the Iron Age and Romano-British settlement excavated beneath the Immingham CHP Plant (MLS19771) (Savage & Buglass, 2001).

3.26 The Humber would have been a main trading artery for bringing imported goods from the Continent into northern England, with a number of havens along its edges acting as landing areas; there is a possibility that the creeks along the coastline, directly east of the Site, may have been used for this purpose during this period.

## Medieval (1066 – 1540)

3.27 Lincolnshire, as with the rest of England, experienced a period of expansion and relative prosperity during the 12th and 13th centuries. With a growth in population there was increased demand for land. Rural trade and industry was increasingly successful and this in turn encouraged the growth of villages and towns.

3.28 The end of the 13th century, however, was to see a reversal of this process, brought about by a combination of factors. Overcrowding, land shortage and climatic deterioration all contributed to a weakening of rural industry which in turn undermined the success of the townships. Foreign wars added to the pressure during the 14th century and the arrival of the Black Death in 1349 significantly reduced the population.

3.29 The 15th century saw a decline in the arable sector of the agrarian economy as a whole. A smaller population meant a lower demand and farmers no longer needed to cultivate marginal lands. Many villages shrank and some became depopulated. A large-scale conversion to sheep farming led to extensive enclosure of previously open field systems.

3.30 The early origin of the local village place-names (see above) confirms that the area under study had been settled by the late 11th century. The medieval village settlements such as Killingholme (North and South) and Immingham lay on the slightly higher and better-drained Middle Marsh with their accompanying common cultivated field strips (e.g. East Field and West Field).

3.31 An area of ridge-and-furrow representing cultivated open fields has been recorded just outside the study area, to the west of the Site. Here, very few areas now survive as earthworks, most having been ploughed

out in the 19th and 20th centuries and most only are visible on post-war aerial photographs, dated 1946-1975 (Deegan, 2009).

3.32 Additionally, there have been a small number of isolated find-spots of medieval material on the edge or outside of the study area. While an archaeological evaluation on land west of Rosper Road, approximately 900m north of the Site, revealed a shallow ditch containing a single sherd of 13th -15th century 'Toynton Ware' pottery (Murphy, 2006)

## Post-Medieval (1540 – Current)

3.33 Enclosure in the 17th to 19th centuries saw the open fields and common lands of various settlements around the study area enclosed and allocated to a number of private landholders, with farmhouses established within the new field systems.

3.34 The commissioning of the Humber Refinery in 1969, and subsequent expansions in the 1970s, marked the advent of a massive phase of industrialization in the study area, transforming the surrounding area of former marshland and low-grade farmland.

# Relevant Previous Archaeological Interventions

3.35 There have been no previous archaeological investigations at the Site.

3.36 Recent archaeological investigations have been undertaken in 2022 by AOC Archaeology on land adjacent to VPI Immingham, at North Killingholme, west of Rosper Road, approximately 500m north of the Site. Thirty-two trenches were excavated at the site. Three areas of occupational activity were encountered which were concentrated in the northwest, northeast and southeast corners of the site, centred on the higher ground. The central area of the site was characterised by a flooding deposit sequence associated with a possible coastal inlet, which was aligned west to east across the site. The north-western corner of the site featured a number of ditches containing some Romano-British pottery and animal bone. There were also a small number of pits beside a possible paleochannel; these were potentially prehistoric in date, indicated by the recovery of late Mesolithic/ early Neolithic lithic fragments.

3.37 The northeast corner of the site featured an alignment of postholes, one of which contained a surviving timber post, and several small ditches which were possible small boundary or enclosure ditches. The southeast corner featured dense Iron Age/ Romano British activity including a large multiphase curvilinear ditch within a possible enclosure, as well as small ditches associated with field systems. The finds assemblage was small, with deposition of finds largely concentrated in the southeast corner, and many features remained undated. The finds assemblage included late Mesolithic/ early Neolithic scrapers and blades as well as industrial waste in the form of slag.

3.38 The location of archaeological activity within the site indicates that this activity probably represents the continuation of settlement activity and features identified in adjacent areas. This was identified during archaeological works completed in the early 2000s as part of the construction of VPI Immingham and improvement works on Rosper Road (see below).

3.39 Archaeological investigations were also undertaken on the site of the VPI Immingham and Improvement works, at North Killingholme, west of Rosper Road, approximately 700m north of the Site (Savage & Buglass, 2001; Noel, 1999), between 1999 and 2000. The geophysical survey, evaluation and subsequent open-area excavation revealed the extensive survival of modest settlements dating to both the Iron Age and Romano-British periods.

3.40 Additional archaeological investigations include two phases of geophysical survey conducted in 2004. These were carried out by Geoquest associates at East End Farm, approximately 500m to the south-west, in advance of a tree planting scheme (Steedman, 2004). The survey detected a complex series of rectangular ditches conjoined to either side of a trackway, morphologically similar to a 'ladder settlement type'. A metal detecting survey, carried out at the same location in 2005, discovered a series of 3rd and 4th century AD coins and two Roman brooches (Staves, 2005).

# 4. Aims and Objectives

4.1 The aim of the archaeological trial trench evaluation is to provide further information on the archaeological resource within the Site to support a planning application.

4.2 Specific objectives of the investigation are:

- to assess the extent, date, character and state of preservation of any archaeological remains within the Site;
- to assess the potential that the Site has to address research questions presented in the East of England Regional Research Framework (https://researchframeworks.org/eoe/ ).
- to further assess the effect that later activity has had on the state of preservation of any archaeological resource within the Site; and
- to inform the scope of any archaeological mitigation that may be required.

4.3 The fieldwork will be carried out in accordance with the Chartered Institute for Archaeologists (CIfA) Standards and Guidance for Archaeological Field Evaluation (2023) and Code of Conduct (2022).

# 5. Scope of Work

5.1 The archaeological investigation will comprise trial trench evaluation. Five trenches measuring 30m x 2m and one trench measuring 20m x 2m, located within the positions shown on Figure 2, have been agreed through consultation with the Historic Environment Officer for NLC via email (19/02/2024). The locations positions will be finalised by the archaeological contractor based on up-to-date utilities searches being undertaken.

5.2 The Archaeological Contractor will undertake a preliminary hazard assessment of the fieldwork area prior to the commencement of the fieldwork. The Archaeological Contractor will notify the Client and Consultant of any areas unsuitable for trial trenching due to hazards or ground conditions.

5.3 The Archaeological Contractor will produce a method statement detailing the methods for the archaeological investigation and CVs of the site manager, site supervisor and proposed post-excavation specialists for submission to and approval by the Historic Environment Officer for NLC.

## Site Mobilisation

5.4 The Archaeological Contractor will be responsible for establishing and decommissioning their own temporary site welfare facilities as necessary (compound, welfare facilities etc). If temporary site welfare facilities are proposed on Site their location, access routes, ground protection measures and security arrangements will be agreed prior to the start of the evaluation, in consultation with the Client.

5.5 The Archaeological Contractor shall keep a photographic record at each location where temporary welfare facilities are proposed, both prior to installation and after decommissioning.

# 6. Site Constraints

6.1 The Site (the Humber refinery) is an Upper Tier Control of Major Accident Hazards (COMAH) Site and thus subject to a specific set of safety regulations (COMAH regulations 2015). The safety specific requirements of work in this environment will be communicated to the Archaeological Contractor during the scoping, inductions and briefings given to them. The Archaeological Contractor will adhere to all the requirements of the Client and the Site's operating and health and safety procedures at all times. Site specific information and constraints will be provided by the Client and will be incorporated into the Archaeological Contractor's Risk Assessment and Method Statement (RAMS). It may be appropriate to

operate a permit system for all work to ensure control measures have been considered and implemented in relation to site constraints.

6.2 The Archaeological Contractor will obtain an updated utilities search (PAS128 D). The Archaeological Contractor will supplement this updated search with observations from the initial site inspection (PAS128 C) prior to mobilisation to Site and will review and adjust intrusive works accordingly.

6.3 Prior to intrusive works the Archaeological Contractor will undertake a PAS128 B survey.

6.4 Great Crested Newts may be present and may introduce seasonal constraints on work. Further details will be provided following ecological surveys.

# 7. Methodology

## General Requirements

7.1 All archaeological works will be carried out in accordance with this WSI and any further instructions from the Client. This WSI takes account of the guidance provided by the CifA Code of Conduct (CifA, 2022), the Standard and Guidance for Archaeological Evaluation (CifA, 2023), and other current and relevant good practice and standards and guidance (refer to Appendix A).

7.2 All works outlined within this WSI, and detailed in the Archaeological Method Statement, will conform to the Historic England procedural document Management of Research Projects in the Historic Environment (MoRPHE) (Historic England, 2015). The Archaeological Contractor shall also apply any other relevant standards and guidance and good practice.

7.3 The Archaeological Contractor will undertake the works according to this WSI and any subsequent written variations. No variation from or changes to the WSI will occur except by prior agreement with the Archaeological Consultant and in consultation with the Historic Environment Officer for North Lincolnshire Council.

## Machine Excavation

7.4 The Consultant will agree access for plant, and the location of temporary parking and welfare facilities with the Client.

7.5 The Archaeological Contractor shall be responsible for identifying any buried or overhead services. The supervisor will also ensure that everyone involved in the works knows about safe digging practices and emergency procedures. The Archaeological Contractor's Project Manager for the works will enforce these procedures and ensure that all staff are inducted regarding the Site health and safety plan and risk assessment prior to commencing works on site. Any services that are disturbed during excavation shall be immediately notified to the utility company owner(s), and restored by the Archaeological Contractor, at their own cost, to the utility company's requirements and specifications.

7.6 The trenches should be positioned to an accuracy of ± 100mm using survey-grade GPS (Historic England 2015) or equivalent metric-survey equipment. The Consultant will provide the Archaeological Contractor with the trench locations (Ordnance Survey grid co-ordinates of the trench corners or a digital drawing of the trench locations on an Ordnance Survey basemap).

7.7 The extent of the trial trenches will be clearly demarcated to ensure that persons or plant cannot inadvertently traverse across the area of investigation whilst archaeological works are in progress. Pedestrian barrier fencing will be erected around each trench (including adjacent spoil heaps) by the Archaeological Contractor. The fencing will be regularly inspected and maintained by the Archaeological Contractor until works in the area have been completed, inspected and approved by the Consultant.

7.8 The trial trenches will be opened under direct archaeological supervision using an appropriate mechanical excavator fitted with a toothless ditching bucket.

7.9 The excavation of all trenches will be carried out in such a manner that avoids undue damage to the development area. The sides of each trench will, as far as possible, be even and vertical with no significant undercutting.

7.10 The excavation will proceed under direct archaeological supervision, in level spits, until either the top of the first archaeological horizon or undisturbed natural deposits are encountered. Archaeological trial trenches that exceed a safe working limit will be stepped or battered (site specific, but generally in excess of 600mm in depth) to ensure the stability of the sides of the trenches. Should the trench uncover unstable ground (for example, loosely backfilled cellar backfill material), the full width and depth of material will not be excavated; a sondage will be inserted through the material, by machine, to establish the depth of the made ground. Particular attention should be paid to achieving a clean and well-defined horizon with the machine. Under no circumstances should the machine be used to cut arbitrary trenches down to natural deposits. All trenches are to be the stated dimensions at their base. The surface achieved through machine excavation will be inspected for archaeological remains. The mechanical excavator will not traverse any stripped areas.

7.11 The machined surface will be cleaned by hand, where required, to enable the definition of archaeological remains. Following cleaning, all archaeological deposits and remains will be planned to enable the selection of features and deposits for sample excavation.

7.12 The Archaeological Contractor will be responsible for ensuring a safe and appropriate mode of entry into and out of each trench.

7.13 The Archaeological Contractor will ensure that petrol or diesel-powered equipment such as generators, compressors or pumps are not sited on, or near to, the edge of an excavation unless fumes can be ducted away, or the area can be ventilated.

7.14 A competent person must inspect trenches:

- at the start of each working day prior to work commencing, and during the working day, as appropriate;
- after any event likely to have affected the strength, stability or integrity of the trenches; and
- after any accidental fall of earth or other material.

7.15 The Archaeological Contractor will leave the site tidy and in a workmanlike condition and remove all materials brought onto the site.

7.16 Excavated material will be retained on site and stockpiled within the confines of the trench fencing, at a safe distance from each trench edge and will be prevented from entering any drainage system or water course. The Archaeological Contractor must ensure that the edges of the trenches are protected against falling materials and collapsing sides. This must be done in accordance with HSE recommendations. Toe boards will be provided where necessary.

## Hand Excavation

7.17 Any archaeological deposits / features will be hand excavated in an archaeologically controlled and stratigraphic manner in order to meet the aims and objectives of the trial trench evaluation. The complete stratigraphic sequence, down to naturally occurring deposits will be investigated and the work will investigate and record all inter-relationships between features /deposits. Areas without archaeological features will be recorded as sterile. The stratigraphy of all trenches will be recorded, even where no archaeological deposits have been identified.

7.18 The following sampling strategies will be utilised as a minimum:

- All features will be investigated – discrete features will be half-sectioned in the first instance; linear features will be sampled a minimum of 20% along their length (each sample section to be not less than 1m), or a minimum of a 1m sample section, if the feature is less than 5m long. Deposits at junctions or interruptions in linear features will be sufficiently excavated for the relationship between components to be established;
- Structures will be sampled sufficiently to define their form, extent, character, date, stratigraphic complexity and its associated deposits to achieve the objectives of the investigation; and
- Where possible / feasible, no archaeological deposits should be entirely removed, unless this is unavoidable. Excavation must be undertaken with a view to avoiding damage to any features or deposits which appear to be worthy of preservation *in situ*.

## Recording

7.19 The perimeter of each trench and all archaeological remains within the trenches will be recorded in plan using metric survey-grade equipment (or its equivalent) (Historic England, 2015) and overlain onto the Ordnance Survey national grid using digital map data.

7.20 A full written, drawn and photographic record will be made even where no archaeological features are identified. Hand drawn plans and sections of features will be produced at an appropriate scale (normally 1:20 for plans and 1:10 for sections). At least one long section of each trench will be drawn at not less than 1:50, but only after the features / deposits within the trench have been excavated. All plans and sections will include spot heights relative to Ordnance Datum in metres, correct to two decimal places.

7.21 Colour transparency and monochrome negative photographs will be taken at a minimum format of 35mm. Digital photography will be used to supplement the archive at a minimum of 10 megapixels resolution. In addition to records of archaeological features, a number of general site photographs will also be taken prior to, during and after the works have been completed. Particular attention should be paid to obtaining shots suitable for displays, exhibitions and other publicity.

## Backfilling

7.22 The trial trenches will not be reinstated without the prior approval of the Consultant and the Historic Environment Officer for NLC, although in exceptional circumstances backfilling will be permitted on health and safety grounds. The trenches will only be backfilled by machine when conditions are appropriate and with direct archaeological supervision. Arisings will be returned strictly in the correct sequence. If specific requirements for reinstatement are required these will be stipulated by the Client.

7.23 Where drains are encountered during the archaeological works these will be left in situ and retained on a suitable raised earth baulk. At the end of the investigation they will be carefully covered with soil arisings from the excavations and consolidated using hand tools to avoid damage during the backfilling process.

## Artefact Recovery

7.24 All artefacts are to be retained for processing and analysis except for 20th century material, which may be noted and discarded. All ‘significant finds’ will be recorded three dimensionally. If artefact scatters are encountered these should be recorded three dimensionally. Bulk finds will be collected by context. Finds will be stored in appropriate controlled conditions. If necessary, a conservator will visit the site to undertake ‘first aid’ conservation treatment or provide specialist advice.

7.25 All hand excavated spoil will be scanned for ferrous and non-ferrous metal artefacts using a metal detector capable of making this discrimination, operated by an experienced metal detector user employed by the Archaeological Contractor. Modern artefacts are to be noted but not retained (19th century material and earlier are to be retained).

7.26 All artefacts that are retained will be collected, stabilized, conserved, stored and processed in accordance with standard methodologies and national guidelines (refer to Appendix A). The Method Statement will provide an indicative artefact collection policy.

7.27 Artefacts will be stored in appropriate materials and conditions and monitored to minimise further deterioration.

## Environmental Sampling

7.28 Sampling will be carried out in consultation with the Consultant, and the Historic England Regional Science Advisor, as appropriate (e.g. dendrochronology, soil micromorphology, monolith samples, C14, etc.). Samples taken during the evaluation will be processed if securely correlated with features.

7.29 All sampling for environmental and biological material will take place in accordance with the recommendations contained in the papers Environmental Archaeology and Archaeological Evaluations, Association for Environmental Archaeology (1995) and Environmental Archaeology: A Guide to the Theory and Practice of Methods from Sampling and Recovery to Post -Excavation 2nd Edition (English Heritage 2011).

7.30 The sampling programme shall assess the potential for palaeoenvironmental remains across the site in support of the aims of the evaluation. Samples shall be taken as routine from securely stratified deposits irrespective of their apparent 'organic' content as judged in the field or the presence of datable material. Samples shall be processed and assessed by appropriately qualified specialist staff.

7.31 The sampling regime may include samples of the four types of deposit sample described below:

- Bulk-sieved Sample (BS). Sample size will depend upon the context/feature size, but should be up to 40-60 litres in size (if the context size allows). They are taken for the recovery of charcoal, burnt seeds, bone and artefacts. The samples will be processed (flotation) with 1mm and 500micron sieves on a rack to collect the carbonised washover.
- The retents and flots will then be dried, sorted and assessed to advise the potential for further analysis.
- General Biological Sample (GBA): These are only taken if a deposit is waterlogged. A 10 litre sample size will be used (if the context size allows). These samples will be processed in the laboratory, to recover macrofossils and microscopic remains such as pollen and insects.
- Column monolith: Kubiena tin samples may be taken for soils and pollen analysis and to determine soil accumulation processes.
- Spot samples: these samples are taken as required. they may be contexts or material not suited to sieving, such as caches of seeds, pieces of eggshell or any specific finds of organic material. They may also be specialist samples (e.g. charcoal for radiocarbon dating).

7.32 Samples will be taken for scientific dating where necessary for the development of the site phasing/dating or to place the main historical processes that have affected landscape development within an absolute chronological framework. Material removed from site will be stored in appropriate controlled environments.

7.33 If industrial activity of any scale is detected, industrial samples and process residues will also be collected. Separate samples (c. 10ml) will be collected for micro-slags (hammerscale and spherical droplets).

## Human Remains

7.34 Should human remains be discovered during the course of the excavations the remains will be covered and protected and left in situ in the first instance, in accordance with current good practice. The removal of human remains will only take place in accordance with a licence from the Ministry of Justice and under the appropriate Environmental Health regulations and the Burial Act 1857. In the event of the discovery of human remains the Archaeological Contractor will notify the Consultant immediately, who will contact the Historic Environment Officer for NLC to establish whether it is necessary to contact the office of H.M. Coroner.

## Treasure

7.35 Any artefacts which are recovered that fall within the scope of the Treasure Act 1996 and Treasure (Designation) Order 2002 will be reported to the Consultant and H.M. Coroner immediately. The Archaeological Contractor will ensure that the Treasure regulations are enforced and that all the relevant parties are kept informed. In addition, the Archaeological Contractor shall maintain a list of finds that have been collected that fall under the Treasure Act and related legislation and this list shall be included in the fieldwork report.

7.36 Artefacts that are classified as 'treasure' will be removed to a safe place. Where removal cannot be effected on the same working day as the discovery, suitable security measures must be taken by the Archaeological Contractor to protect the finds from damage or unauthorised removal.

## Finds Processing

7.37 Initial processing of finds (and if appropriate other samples) will be carried out concurrently with the fieldwork. The processing of finds will be finished shortly after completion of the investigations. The finds will be retained (according to the collection policy), washed, marked, bagged and logged on a MS Access or GIS database (or equivalent), together with their locations (if applicable) according to the National Grid (eastings, northings) and Ordnance Datum (height), accurate to 2 decimal places.

7.38 The finds assemblage will be treated, labelled and stored in accordance with the appropriate Historic England guidance documents and the Institute of Conservation guidelines (refer to Appendix A). At all times the Archaeological Contractor shall ensure that the processing of the assemblage is in accordance with the requirements of the recipient repository.

7.39 If appropriate, each category of find or each material type will be examined by a suitably qualified archaeologist or specialist and the results incorporated into the report.

### Specialist Assessment

7.40 The Archaeological Contractor will include the list of staff they will use for specialist assessment in their RAMS, to be submitted for approval prior to the commencement of fieldwork on site.

7.41 The stratigraphic information, artefacts, soils samples and residues will be assessed for their potential and significance for further analysis and study. The material will be quantified (counted and weighed). Specialists will undertake a rapid scan of all excavated material. An assessment will be made of each artefact type.

7.42 Materials considered vulnerable should be selected for stabilisation after specialist recording. Where intervention is necessary, consideration will be given to possible investigative procedures (e.g. glass composition studies, residues on pottery, and mineral preserved organic material). Allowance will be made for preliminary conservation and stabilisation of all objects and a written assessment of long-term conservation and storage needs produced. Once assessed, all material will be packed and stored in optimum conditions, in accordance with Watkinson and Neal (1998), CIfA (2020b) and Museums and Galleries (1992).

7.43 All finds will be cleaned, marked and labelled as appropriate prior to assessment. For ceramic assemblages any recognised local pottery reference collections and relevant fabric codes will be used.

# 8. Completion of Fieldwork

8.1 The Archaeological Contractor shall prepare and submit a Completion Statement to the Consultant within one working day of completing the fieldwork.

8.2 The fieldwork areas will be left in a tidy and workman-like condition and the Archaeological Contractor will ensure that all materials brought onto site are removed.

8.3 An OASIS entry shall be completed at the end of the fieldwork, irrespective of whether a formal report is required. The Archaeological Contractor will complete the online form at http://ads.ahds.ac.uk/project/oasis/ within one month following completion of the fieldwork. Archaeological Contractors are advised to contact OASIS (oasis@ads.ahds.ac.uk) for technical advice.

# 9. Monitoring Arrangements

9.1 To ensure that archaeological work is conducted in accordance with the agreed WSI, fieldwork and post-fieldwork reporting may be monitored by the Consultant and the Historic Environment Officer for NLC. A minimum of one week notice will be given to the Historic Environment Officer for NLC of the commencement of the trial trench evaluation.

9.2 The monitors are not liable in any way for the failings of the Archaeological Contractor and such monitoring is not intended to take the place of proper self-regulation.

9.3 Verbal progress reports will be provided to the Consultant upon request and weekly written progress reports will be provided to the Consultant if requested. In addition, progress meetings between the Consultant, the Historic Environment Officer for NLC and the Archaeological Contractor may be held on site during the course of the works.

9.4 The Archaeological Contractor will only accept instruction from the Consultant.

# 10. Report Requirements

10.1 Within four weeks of completion of the field work for the archaeological trial trenching a post fieldwork assessment report will be produced to include the following:

- A non-technical summary;
- Introduction including the Archaeological Contractor's site code and project number, planning reference number (if available), HER casework number (if appropriate), site grid reference, and dates when fieldwork took place;
- An account of the methodology and detailed results of the fieldwork, phased and spot-dated by ceramics where appropriate, describing structural data, archaeological features, associated finds and environmental data. This account will include a discussion and assessment of the deposits identified, in relation to other sites in the region, and a conclusion;
- A selection of photographs and drawings, including a detailed plan of the site accurately identifying the areas monitored, trench locations, selected feature drawings, selected artefacts, and phased plan features where appropriate;
- Specialist artefact and environmental reports for each major find category which will include as a minimum:
    - Identification;
    - Quantification by context;
    - Statement of significance and potential;
    - Recommendations for analysis and illustration; and
    - Recommendations for retention and discard.
- Details of archive location and destination (with accession number, where known), together with context list and a catalogue of the archive;
- A copy of the key OASIS form details; and
- Copy of the WSI.

10.2 The report will specifically comment on the results of the archaeological works and will highlight relevant information on the spatial extent, character, depth, preservation, date and detail of the archaeological resource, where appropriate and necessary.

10.3 Environmental assessment is to include identification of the remains, quantification by context, discussion / interpretation, if warranted, and a description of the processing methodology. Radiocarbon results must be presented in full (laboratory sample number, conventional radiocarbon age, calibration programme). Copies of the laboratory-issued dating certificates must be included as an appendix to the report.

10.4 The Archaeological Contractor will ensure that the report contains at the front a quality assurance sheet that is appropriately signed-off to confirm that the report has gone through an in-house technical review process before it is presented for external comment.

10.5 An electronic copy of the draft report and drawings/figures will be submitted to the Consultant for comment. Allowance will be made by the Archaeological Contractor to supply up to six bound hard copies, one unbound master-copy and a digital version of the report and illustrations, within one week of the receipt of comments on the draft report from the Consultant. The digital report shall comprise a complete version of the report in PDF format and separate digital text (in Microsoft Word format) and CAD mapping (in AutoCAD format) and any other illustrations or plates as appropriate (in JPEG or TIFF format).

10.6 Submission of the final report to the Consultant should take place within four weeks of fieldwork completion. Interim results should be provided by email within one week.

# 11. Archive Preparation and Deposition

11.1 Archaeological material recovered from fieldwork is irreplaceable and data recorded in the course of archaeological investigations should be copied and additionally held securely in a separate location in line with current good practice (refer to Appendix A).

11.2 The Archaeological Contractor should compile a Data Management Plan in line with CIfA guidelines (2020b) and include it in their Method Statement.

11.3 The site records and assemblages (list of fieldwork interventions, notebooks / diaries, context records, feature records, structure records, site geometry (drawings), photographs and films, finds records and associated data files) 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.

11.4 The Site archive should be quantified, ordered, indexed and made internally consistent, and in line with current good practice (refer to Appendix A). All finds and coarse-sieved, and flotation samples will have been processed and stored under appropriate conditions. The archive will also contain a site matrix, a summary of key findings and descriptions of artefactual and environmental assemblages. Arrangements should be made for the proper cataloguing and storage of the archive during the project life-cycle (it may be appropriate to liaise with an archive specialist). The content of an outline structure for a fieldwork archive is presented in MoRPHE, PPN3 Appendix 1, Product P1 and Product P3 (MoRPHE 2015).

11.5 The Archaeological Contractor will, prior to the preparation of the Archaeological Contractor's Method Statement, liaise with the recipient museum to obtain agreement in principle to accept the physical, documentary, digital and photographic archive for long-term storage. The Archaeological Contractor will be responsible for identifying any specific requirements, archiving costs or policies of the museum in respect of the archive, and for adhering to those requirements.

11.6 The archaeological works will have their own unique accession number, which will be obtained by the Archaeological Contractor from the recipient museum in advance of the preparation of the Archaeological Contractor's Method Statement, to ensure that the project is recorded in accordance with the requirements of the local authority. The unique accession number will be recorded in the Archaeological Contractor's Method Statement.

11.7 The archive of finds and records generated during the fieldwork will be removed from the Site at the end of each day and kept secure at all stages of the project until it is deposited with the recipient museum. The archive will be produced to current national standards (refer to Appendix A).

11.8 The deposition of the archive forms the final stage of this project. The Archaeological Contractor shall provide the Archaeological Consultant with copies of communication with the recipient museum and written confirmation of the deposition of the archive.

# 12. Health, Safety and Environment (SHE)

12.1 The Site (the Humber refinery) is an Upper Tier Control of Major Accident Hazards (COMAH) Site and thus subject to a specific set of safety regulations (COMAH regulations 2015). The safety specific requirements of work in this environment will be communicated to the Archaeological Contractor during the scoping, inductions and briefings given to them.

12.2 The works will be carried out under The Construction (Design & Management) (CDM) Regulations (Health and Safety Executive 2015).

12.3 All relevant preconstruction and health and safety information will be provided to the Archaeological Contractor by the Client prior to works commencing on Site.

12.4 The Archaeological Contractor will provide the Client with details of their public and professional indemnity insurance cover. This will be provided (at the latest) 3 weeks prior to the start of works on site.

12.5 Project staff are required to follow health and safety procedures and a risk assessment should be carried out by the Archaeological Contractor and submitted to the Client for approval prior to commencing work, to ensure the safety of workers on site.

12.6 The Archaeological Contractor will have their own Health and Safety policies compiled using national guidelines, which conform to all relevant Health and Safety legislation and good practice. A copy of the Archaeological Contractor's Health and Safety policy will be submitted along with their tender to the Client prior to work commencing on Site.

## Risk Assessment and Method Statement

12.7 The Archaeological Contractor will prepare a Risk Assessment and Method Statement (RAMS) that will be submitted to the Client for approval, 20 working days prior to commencing the work. The RAMS may be issued back to the Archaeological Contractor with comments requesting amendments to be made to the document, before it is reissued, reviewed and approved. The Archaeological Contractor will not start work until the RAMS has been approved by the Client.

12.8 If amendments are required to the RAMS during the works, the Client and any other interested party must be provided with the revised document at the earliest opportunity.

12.9 The contents required of all RAMS are as follows:

a. Scope of Works
b. Project Specific Hazards / Risks / Environmental Factors
c. Reference Documents
d. Subcontracted and third-party workers
e. Areas of Work (access and egress)
f. Resources
g. Plant and Equipment
h. Materials
i. Mandatory PPE (Including a H2S monitor)
j. Task Specific PPE
k. Methodology of Works
l. Environmental Protection
m. HSE Hold Points

n. Attachments

o. Risk Assessment

p. Environmental Risk Assessment

q. Amendments Record

12.10 Briefing to those individuals involved in the work tasks will be delivered by the respective Archaeological Contractor's Site Manager or Supervisor and client/site representative (who is responsible for all the works prior to works commencing). Site staff are to ask questions on anything that is unclear or requires repeating. At the end of each shift, any feedback will be provided to the work supervisor / Site Manager on the RAMS performance via the Task Hazard Assessment procedure with a view to this being incorporated into future revisions of the documents as necessary.

12.11 All site personnel will familiarise themselves with the following (ensured by the archaeological contractors site manager):

- Site emergency and evacuation procedures.
- The site's health and safety coordinator.
- The first aider.
- Site fire safety procedure.
- Emergency muster points.
- The location of the nearest hospital (with an Accident and Emergency Department) and doctor's surgery.

12.12 All equipment that is used in the course of the fieldwork must be 'fit for purpose' and be maintained in a sound working condition that complies with all relevant Health and Safety regulations and recommendations. A review of any equipment will be undertaken prior to being brought on to site by the client.

12.13 The Archaeological Contractor will liaise with the Client and any other contractors to ensure that the archaeological work is undertaken in an organised, coordinated, safe and professional manner.

12.14 All parties will have full regard for the safety of all personnel on site, including measures to ensure the safety of all.

## Mandatory Training

12.15 Mandatory training requirements for all site staff are:

- Construction Skills Certification Scheme (CSCS) card (or equivalent United Kingdom based scheme), appropriate to the role they are undertaking.
- Manual Handling Course – as mandated by the Archaeological Contractor.

12.16 Archaeological Contractor Site Supervisors are to hold the following mandatory training:

- Site Supervisors Safety Training Scheme (SSSTS) or equivalent.
- Construction Skills Certification Scheme (CSCS) card (Black Card).
- Manual Handling – as mandated by the Archaeological Contractor.
- First Aid at Work (3-day course).

## On-Site Training

12.17 Toolbox Talks will be undertaken weekly, on relevant subjects and delivered by the Archaeological Contractor's Site Manager or Supervisor to all personnel on site. The briefing will be held within the site welfare facility and following the talk the opportunity to raise health and safety concerns, improvement suggestions, good practices, etc., will be opened up to all present.

12.18 Daily Site Briefings (delivered by the Archaeological Contractor's Site Manager or Supervisor) also provide a media for employees to discuss Health and Safety issues and for training to be delivered as part of the delivery of key tasks. These are undertaken prior to any works being undertaken on site each day. The proposed works for the day are discussed and all controls / work procedures reinforced to ensure that all members of the site team understand their role. At the end of these briefings the workforce can then discuss the proposed work methods and other issues.

# 13. Resources and Timetable

13.1 All archaeological personnel involved in the project will be suitably qualified and experienced professionals. The Archaeological Contractor will provide the Client and/or their representative with staff CVs of the Project Manager, Site Supervisor and any proposed specialists that might be involved in the post-excavation work. Site assistants CVs will not be required, but all site assistants will have an appropriate understanding of excavation procedures.

13.2 All staff will be fully briefed and aware of the work required under this specification and will understand the objectives of the investigation and methodologies to be employed.

13.3 The Archaeological Contractor, on behalf of the Client (Phillips 66), will notify the Historic Environment Officer for NLC of the start date prior to the commencement of the works.

# 14. Confidentiality and Publicity

14.1 All communication regarding this project is to be directed through the Client. The Archaeological Contractor will refer all inquiries to the Client without making any unauthorised statements or comments. The Archaeological Contractor will not disseminate information or images associated with the project for publicity or information purposes without the prior written consent of the Client.

14.2 Publicity regarding the work will be managed by the Client. No publicity regarding the works will be disclosed without prior agreement from the Client (Phillips 66).

# 15. Copyright

15.1 The Archaeological Contractor shall assign copyright in all reports, documentation and images produced as part of this project to the Client. The Archaeological Contractor shall retain the right to be identified as the author or originator of the material. This applies to all aspects of the project. It is the responsibility of the Archaeological Contractor to obtain such rights from sub-contracted specialists.

15.2 The results of the work shall be submitted to the Client and the North Lincolnshire Council HER and will ultimately be made available for public access following the Clients (Phillips 66) approval.

# 16. Access Arrangements

16.1 Access to the Site is restricted to authorised personnel only.

16.2 Access to the Site and instruction for access/ egress to each area will be arranged by Client and communicated to the Archaeological Contractor.

16.3 The Client will provide the Archaeological Contractor with the details for access and any known constraints prior to the start of fieldwork.

# 17. General Provisions

17.1 The Archaeological Contractor shall make the minimum of disturbance during the fieldwork and will avoid any unnecessary damage. Access for temporary parking and the location of site welfare shall be agreed with the Client prior to commencement of the archaeological evaluation works.

17.2 The Archaeological Contractor will undertake the works in accordance with this evaluation strategy and any subsequent Written Scheme of Investigation. No variation from, or changes to, the specification will occur except by prior agreement with the Consultant and the Historic Environment Officer for NLC.

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# Appendix B Figures


Revision: 0 Drawn: ER Checked: LC Approved: NF Date: 2024-02-14

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**LEGEND**

- Site Boundary
- Site Location

**NOTES**



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**FIGURE TITLE**

Site Location Plan

**FIGURE NUMBER**

Figure 1

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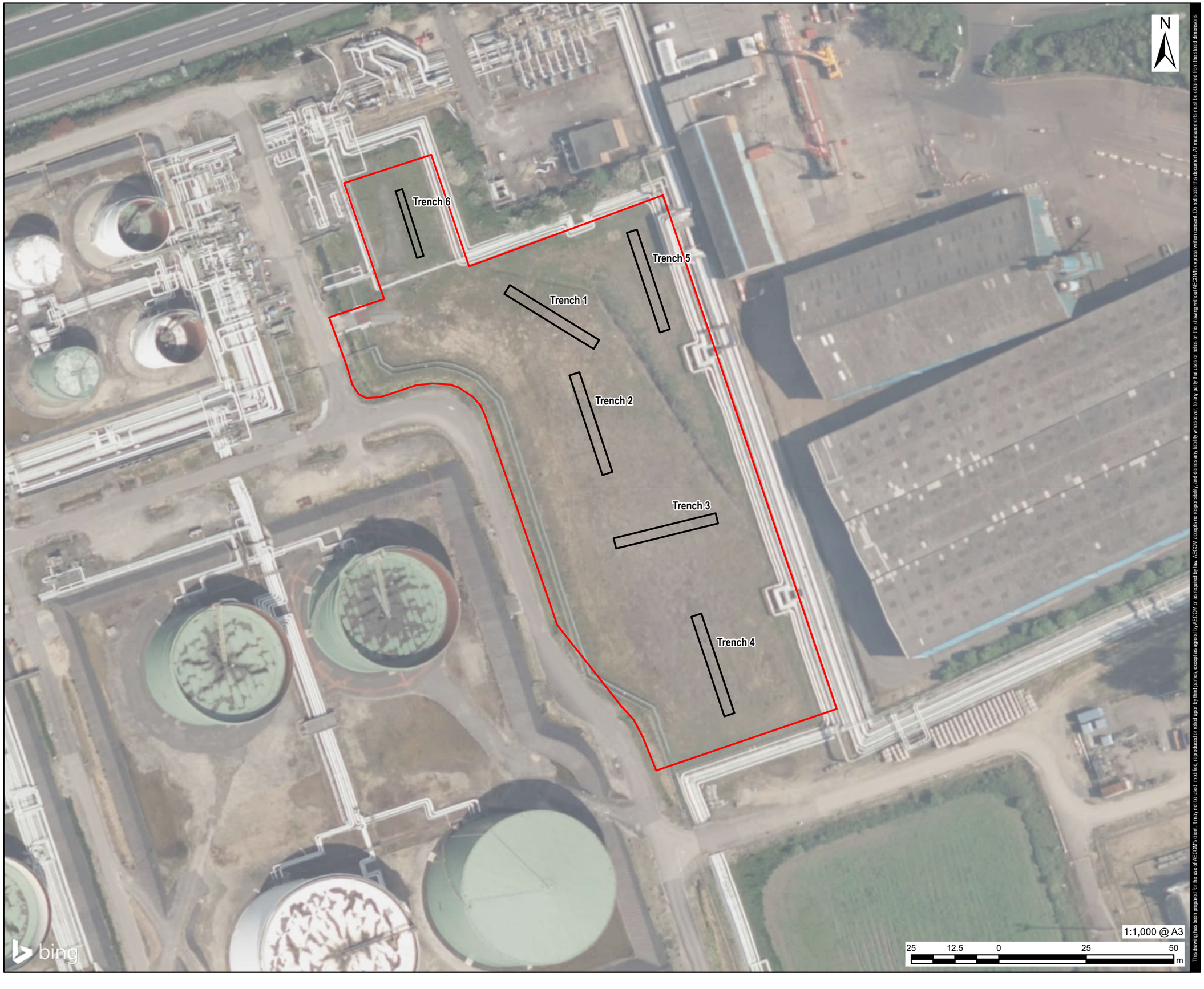




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Figure 2

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