Tween Bridge Solar Farm

Environmental Statement
Appendix 8.5: Test Pitting Report

Planning Act 2008
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WYAS Archaeological Services

Tween Bridge
Thorne Moors
South Yorkshire

Archaeological Evaluation by Shovel Test Pitting

Report no. 4322

July 2025

Client: RWE Renewables

Tween Bridge
Thorne Moors
South Yorkshire

Archaeological Evaluation by Shovel Test Pitting

Summary

This archaeological shovel test pitting compromised the excavation of 444 shovel test pits across eleven areas to evaluate the Site's potential, particularly for lithic scatters. The methodology involved hand-excavating the topsoil and sieving all this material for finds.

Results indicated highly variable topsoil depths (0.04m to 0.30m). The dominant finds were post-medieval (18th-21st century) ceramic building material (CBM) and pottery, consistent with modern agricultural land use. Despite targeting lithic findspots, prehistoric flint recovery was minimal, suggesting either deeper archaeological layers untouched by modern cultivation or a very sparse prehistoric presence across the landscape. Overall, the project characterised the Site primarily as a post-medieval agricultural area with limited, sporadic evidence of earlier prehistoric activity.

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Services

Report Information

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County:	South Yorkshire
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1 Introduction

Archaeological Services WYAS (ASWYAS) was commissioned by RWE Renewables through the agency of Pegasus Planning Group to undertake the excavation of 444 shovel test pits across eleven areas at the proposed Tween Bridge Solar Site, South Yorkshire. The works comprise an initial phase of archaeological evaluation by shovel test pitting for the recovery of finds, in particular lithics.

The Site comprises approximately 2,414ha of land of largely flat agricultural land bounded to the west by the settlements of Thorne, Moorends and Hatfield and to the east by the settlements of Crowle and Sandtoft.

The eleven areas evaluated cover only a proportion of the full Tween Bridge Solar Site and were selected on the areas of the Site that are thought to have high potential for the presence of prehistoric lithic material within the topsoil. The work was undertaken in accordance with the National Planning Policy Framework (NPPF) and a Written Scheme of Investigation (WSI) produced by ASWYAS and approved by the South Yorkshire Archaeology Service (SYAS) (Appendix 1).

Site location, topography and land use

The Site comprises approximately 2,414ha of land, largely flat agricultural land bounded to the west by the settlements of Thorne, Moorends and Hatfield and to the east by the settlements of Crowle and Sandtoft. The landscape is divided by hedgerows, tree belts, canals, rivers and dykes, the A18 and the M180 roads which bisect the Site. The Site is also crossed east-west by the Barnsley to Barnetby railway and also by the Stainforth and Keadby Navigation (Fig. 1). The topography of the site was generally level with only slight undulation in places. The site occupies ground situated at a height between -2m below and 3m above Ordnance Datum.

Soils and geology

The bedrock geology varies across the Site and is detailed in the table below (Table 1). This comprises either Sherwood Sandstone or the Chester formation. Superficial deposits of Hemingbrough Glaciolacustrine Formation, Sutton sand formation, alluvium and peat are also recorded within the areas evaluated. The overlying soils are part of the Soil of each area are also recorded below.

A geoarchaeological desk-based assessment for the Site has been undertaken by QUEST (Green 2024). The aim of this work was to consider the geoarchaeological and palaeoenvironmental potential and heritage significance of the Site. This concluded that the geoarchaeological potential in the study area was low due either to the deep burial of prehistoric land surfaces or unfavourable landscape and palaeoenvironmental conditions for prehistoric occupation.

Table 1. Soils and geology of each area

Area	Grid Reference	Underlying geology	Soils
1	472221.4973 413750.9523	Sherwood Sandstone Group - Sandstone. Sedimentary bedrock formed between 272.3 and 237 million years ago during the Permian and Triassic periods. Hemingbrough Glaciolacustrine Formation - Clay, silty. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.	Slowly permeable seasonally wet, slightly acid but base-rich loamy and clayey soils (Soilscape 18)
2	472498.1705 412537.9873	Sherwood Sandstone Group - Sandstone. Sedimentary bedrock formed between 272.3 and 237 million years ago during the Permian and Triassic periods. Sutton Sand Formation - Sand. Sedimentary superficial deposit formed between 116 thousand years ago and the present during the Quaternary period. Hemingbrough Glaciolacustrine Formation - Clay, silty. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.	Loamy and clayey soils of coastal flats with naturally high groundwater (Soilscape 21)
3	472274.8539 412361.2427	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Sutton Sand Formation - Sand. Sedimentary superficial deposit formed between 116 thousand years ago and the present during the Quaternary period.	Loamy and clayey soils of coastal flats with naturally high groundwater (Soilscape 21)
4	472533.0444 412309.9892	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Sutton Sand Formation - Sand. Sedimentary superficial deposit formed between 116 thousand years ago and the present during the Quaternary period.	Loamy and clayey soils of coastal flats with naturally high groundwater (Soilscape 21)
5	471997.2887 411996.4886	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.	Loamy and clayey soils of coastal flats with naturally high groundwater (Soilscape 21)
6	471704.0111 411901.1734	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period.	Loamy and clayey soils of coastal flats with naturally high groundwater (Soilscape 21)

Area	Grid Reference	Underlying geology	Soils
		Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.	
7	471018.6702 410421.0788	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.	Slowly permeable seasonally wet, slightly acid but base-rich loamy and clayey soils (Soilscape 18)
8	470173.1351 410512.2782	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.	Loamy and clayey soils of coastal flats with naturally high groundwater (Soilscape 21)
9	469811.0149 410385.8492	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.	Slowly permeable seasonally wet, slightly acid but base-rich loamy and clayey soils (Soilscape 18)
10	469648.4737 409688.3737	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.	Naturally wet, very acid, sandy, and loamy soils (Soilscape 15)
11	469347.9352 409815.9699	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Peat - Peat. Sedimentary superficial deposit formed between 2.588 million years ago and the present during the Quaternary period.	Naturally wet, very acid, sandy, and loamy soils (Soilscape 15)

2 Archaeological and Historical Background

A Heritage Technical Baseline of the Site and a Study Area of the surrounding 1km (in relation to the recorded non-designated archaeological resource) was undertaken by Pegasus Group (Millward 2024), and a summary of that report is included here.

Prehistoric

Mesolithic flint scatters (MLS19442; MSY10092) and a tranchet axe (MSY12666) have been recovered from within the Site. There is a further record of Mesolithic flint tools being recovered within the wider region, including a flint adze to the east of Mauds Bridge. The presence of tools in historically marginal wet places may indicate a temporary presence in the area for exploiting the local resources, such as fish and waterfowl.

Peat deposits and a Neolithic land surface west of Medge Hall (MLS21214) and five findspots of flint tools (MLS940; MLS19543; MLS19574; MLS19451; MSY10053-MSY10055; MSY10094) are situated within the Site. Peat deposits (MLS21214) were also recorded in boreholes to the west of Medge Hall in 2009 and 2011, which are parts of the surviving peat mire of the Humberhead Peatlands. They lie above a Neolithic land surface.

A Bronze Age trackway (MSY4361) on Thorne Moors was excavated in 1972, revealing split timbers forming a trackway 3m wide. This is located c. 540m east of the Site. 'Similar and more extensive' remains were reported by a local naturalist during the excavation of a major new drain at Medge Hall in 1949. They included large trees with charred surfaces. This report was never independently verified. It is likely that the drain in question was the Swinefleet Warping Drain, which is shown under construction on the 1950 OS map and lies to the north of the Site.

It is possible that the trackway may have connected areas of higher ground at Pighill Moor (now Thorne Colliery) and Medge Hall. During October 1971, William Bunting, a local naturalist with considerable knowledge of the Moors, reported that several large trees with charred surfaces had been thrown up during the cutting of a major new drain across the Moors, through the Canals region and draining into Thorne Waste Drain, flowing south-eastwards along the eastern edge of the warplands of Tween Bridge Moors, towards Elmhirst Cottage. Bunting had reported similar, more extensive finds around Medge Hall at the southern tip of the Moors in 1949 (MLS21213). It is unclear to what extent similar remains may survive in this area due to extensive peat extraction during the 20th century.

There are three sets of cropmarks (MLS20726; MLS20727; MLS24671) located c. 150m east, 360m east-north-east and 175m southeast of the Site, respectively, that potentially date to the Iron Age. The cropmarks include enclosures and boundary ditches that relate to the agricultural occupation of the area during this period. Interpretation of two of these assets (MLS20726; MLS20727) suggests there may be a continuation of occupation into the Roman period, with one of the small square enclosures at MLS20727 potentially being a Romano-British shrine.

Aerial photographs have identified field boundaries (MSY5958) that have been putatively dated to between the prehistoric and medieval periods on the basis of their apparent morphology. The field boundaries lie c. 660m south-west of the Site.

Fieldwalking in Sandtoft recovered pottery sherds from multiple periods (MLS22784). The earliest material recovered dates to the Iron Age. This is likely to indicate an underlying potential for Iron Age and, later, activity in the Sandtoft area. The grid reference for this fieldwalking lies c. 50m south of the Site. The extent of the fieldwalking survey is unclear, but it seems likely that they included the Iron Age and Romano-British settlement at Sandtoft, which spreads into part of the Site.

There is moderate potential for surface finds dating to the Mesolithic, Neolithic and Bronze Age to be found within the Site. There is low potential for further evidence of Bronze Age forest clearance or trackways to be identified as it is likely that such remains lie at a greater depth than the works required to construct the solar farm, and the likely levels of disturbance to such remains through industrial peat extraction in the 20th century diminish the chances of their having survived.

Romano-British

A possible Romano-British ditch and enclosure are recorded on Crowle Common (MLS20927), and a possible Fortlet and settlement at Sandtoft (MLS901) and findspots (MLS17318-MLS17323; MLS19545; MLS19546; MLS19549; MLS20019; MSY10834) have been identified within the Site.

The possible fortlet and settlement at Sandtoft were identified from the presence of Roman-British pottery recovered during fieldwalking in 1975 and as a series of cropmark enclosures visible on aerial photographs. Excavations were undertaken between July and November 1975 and revealed a main enclosure which overlay an earlier system of enclosures, portions of two circular drip gullies and two hearths with Roman pottery sherds. Three 3rd to 4th-century coins were recovered and were probably associated with the main enclosure.

Sections cut into the bank of the old River Don suggest that after the river flooded and filled ditches with silt, new ditches were cut, often on similar alignments. Cropmarks to the east indicated further features similar to those excavated in 1975. Further excavations in this area in 1976 recovered Roman pottery and metalwork from ditches and gullies. A cropmark double-ditched enclosure to the east of the excavated area is also potentially of Roman date.

Extensive Romano-British activity has been identified in aerial photographs within the wider study area. The cropmarks identify field systems, enclosures, ditches, trackways and a small enclosure that may represent a shrine (MLS18378; MLS20728; MLS20729; MLS20927; MLS21010; MLS21460; MLS7249; MLS905).

There is moderate potential for Romano-British period archaeological remains to be identified within the Site. The settlement and putative fortlet at Sandtoft and the enclosures to

the west of Crowle are likely indicators of wider, as yet unrecorded activity within the Site and wider study area.

Medieval

Thorne and Hatfield are recorded in the Domesday Book when they formed part of the manor of Conisbrough, which was held by King Harold before the Conquest. After the Conquest, the manor passed to William de Warenne.

Crowle is also recorded in the Domesday Book. It was held by Alwin before the Conquest and by Geoffrey de la Guerche as tenant-in-chief after the Conquest. The manor was let by Geoffrey to the Abbot of St Germain of Selby. The Benedictine Abbey at Selby was founded by King William in 1069.

The manor of Thorne passed through the de Warrene family and other noble families to whom they were related by marriage until, following the battle of Towton in 1461, the Earl of March who held it became King Edward IV. Thereafter, the manor descended with the Crown until the manor was given to Cornelius Vermuyden by Charles I in the 17th century.

The deserted medieval village of Tudworth (MSY5737) is mentioned in the Domesday Book and is thought to have been depopulated during the 17th century. The Domesday Book records that Tudworth was held by William de Warenne and that it had been held by King Harold before the Conquest. Tudworth is recorded as having three ploughs and twenty fisheries that produced 20,000 eels a year (MSY5814). The grid references for these assets place them outside the Site, but it is noted in the HER records that the locations are uncertain, and this indicates there is potential for remains relating to the village of Tudworth to be present in the western portion of the Site that lies between High Levels Bank and Sandtoft Road.

The presence of extensive wood pasture at Crowle is noted in the Domesday Book, and the presence of woodland is also recorded by Leland in the 16th century. Access to timber and firewood on the island of Axholme was a valuable and limited resource.

Two late Anglo-Saxon pits (MLS21635) were recorded during a watching brief in Crowle Market Place. No other early medieval heritage assets are recorded within the wider study area, although a Late Saxon Torksey ware sherd and medieval pottery sherds were collected during fieldwalking in the 1970s (MLS17382).

Sandtoft is first recorded as a settlement in the 12th century. Its name translates as 'the messuage on sandy ground' and is derived from Old English, Old Norse and Old Danish (MLS1084.) The combination of languages indicates the mix of Saxon and Norse populations in this area.

Retting pits have been recorded c. 670m south and c. 30m south of the Site (MLS10558; MLS22544). Two former ponds containing late medieval and post-medieval deposits and finds were recorded during an archaeological watching brief in 2012. One of the ponds may

have been used for flax retting, although the evidence was inconclusive (MLS22599). The pond was located c. 870m east of the Site.

Post-medieval

Double Bridges Farm Moat, Thorne (MSY4142) appears to have consisted of a roughly rectangular island c. 60m by 45m north to south. The south and east sides are defined by a 15m wide ditch, holding water in the eastern half of the south arm and at the southeast corner. The northeast corner is quite apparent as a slight depression, turning to run west beneath the farm buildings (one of which is a brick barn, probably of early 18th-century date). The west side is now limited by a land drain of quite a different cross-section to the stretches of the moat proper. The farmhouse on the west side appears to be an 18th-century building. Further farm buildings lie to the north, and a sunken area in the farmyard suggests the line of the filled-in north arm of the moat. A 17th-century date for the moat has been suggested, but as the line of the moat is overlain by Moors Road, the drainage ditch and early 18th-century buildings, it seems probable that it is of an earlier date.

The Thorne tithe map of 1840 records more of the moat being extant at that time, with all of the eastern arm and half of the northern arm being open at that date. Bridges are shown crossing the southern and eastern arms of the moat. The extents of the moat lie outside the site boundary.

In the time of Henry VIII, a perambulation of Hatfield Chase recorded 180,000 acres within its bounds. The Chase was seized by Charles I when it amounted to 73,515 acres. A third of the Chase was given to Cornelius Vermuyden to drain and reclaim for arable and pasture, a third was given to the locals to compensate for the loss of rights and commons and the final third was retained by the King. Prior to 1811 there were 2,328 acres of common land divided between the townships of Hatfield, Thorne, Stainforth, Fishlake and Sykehouse. An inclosure Act was granted on 11th April 1811. The land was divided and awarded by 1817.

The impact of Vermuyden's drainage scheme and later alterations define the landscape of much of the Site and surrounding area. The various elements of the drainage system are widely recorded within the HER data (MLS19586-MLS19588; MLS19591; MLS2491; MLS9488.) Of these records, the warping drain (MLS2491), lies within the Site boundary.

Blaeu's 1662 map of Yorkshire is stylised and records the presence of the major places within the wider study area but it also indicates that the south western part of the Site lies within the area of the former Thorne Mere. The map appears to show the Site and study area as it was prior to Vermuyden's works (which had already been undertaken a number of years prior to the map's publication.) The location and general extent of Thorne Mere appears to be corroborated by LiDAR data, as a corresponding area of low ground is recorded in this general area.

There are a number of post-medieval heritage assets recorded that are located within the Site. The New Idle Drain (MLS19586) relates to the 17th-century drainage of the marshes and the line of the Old River Don (MLS9488) also relates to these activities. Sections of the

Stainforth and Keadby Canal (MLS9485) and the former Barnsley to Barnetby Railway (MLS8828) pass through the Site.

The sites of several farms have also been identified within the Site boundary. These include the Site of the 19th-century Medge Hall Farm (MLS25262); the Site of the 19th-century Lover's Ground Farmstead (MLS25265); an unnamed farmstead (MLS25555); Hains Farm (MLS25280) and Belton Grange (MLS25556), in Area 2.

The landscaped Park surrounding Hirst Priory (MLS21476) is recorded on the 1820 OS Surveyor's plan with circular and linear plantations and a carriage drive. The 1887 OS map records a different layout with a fully developed parkland with multiple plantations, a lodge, a realigned carriage drive as well as an aviary and a walled garden. The Park lies immediately adjacent to the eastern Site boundary.

The 1840 Thorne tithe map portrays much of the Site and study area and records a drained and enclosed agricultural landscape. The same landscape is recorded on the OS 1853 and 1854 sheets 266 and 257 that cover Yorkshire.

Thorne Colliery (MSY7062) was sunk from 1910 and opened fully in 1927. The colliery closed in 1956 due to flooding which had been a persistent problem. Elements of the former colliery site, such as roads and perimeter fences still survive in situ. The colliery lies c. 150m north-east of the Site boundary. Part of the former colliery has been converted into a solar farm.

The Turbaries (turf moors) covered an area of c. 6,800 acres and lay to the east of Thorne. It was bounded to the south by the Stainforth – Keadby Canal. In extent it stretched up to 4.5 miles north-south and 1.5 miles east-west. Casson notes 'Under the whole of this extensive morass, lie buried, oak, ash, fir, beech, yew, and willow trees, the remains of an immense forest, which appears to have covered at one period a large proportion of this part of the country'. Low Closes Turbary was allocated to Crowle Parish in 1803, as compensation for common land lost due to enclosure (MLS22807) and lies c. 150m south of the Site.

There are number of different elements of the former RAF Sandtoft (MLS26595; MLS26022-MLS26029; MLS26034; MLS26035; MLS11150; MLS20730, and a former bomb decoy MLS18438), recorded on the North Lincolnshire HER. The former bomb store at RAF Sandtoft (MLS26024) and the bombing decoy MLS18438 lie within part of the Site. Several of the building platforms related to the bomb store have been identified as anomalies in the geophysical survey data. The presence of the bomb store indicates the potential for unexploded ordnance to be present in the general area.

A Second World War Lancaster bomber (ND639) crashed near Windsor Lane, Crowle on 5 April 1945. All seven of the Australian crew were killed, but only five of the bodies were recovered. The North Lincolnshire HER records the putative crash site as being within the portion of the Site adjacent to Marsh Road, Crowle. However, the exact location is not certain, with a location to the west of Crook O Moor also suggested, and the presence of an

air crash site within this portion of the Site cannot be discounted at this stage (MLS25882). Previous research (undertaken to support a windfarm proposal) to locate the crash site in the Marsh Road area has not been successful.

A Halifax V bomber EB149 crashed near Crowle on 19 March 1944. Another Halifax, DK133, crashed near Crowle on 6 September 1944. The exact location of the crashes and the remains of the crew members are unrecorded.

The aircraft crash sites noted above are protected by the Protection of Military Remains Act 1986 and recovery or interference with the sites would require a licence. Reference to military archives and geophysical survey may elucidate the locations of potential remains, and this aspect of the historic environment will require sensitive consideration due to the potential for human remains of relatively recent date.

Two further military aircraft crash sites (PEG206 and PEG207) are present within the area. A Halifax (LK728) crashed adjacent to Moorends on 6 July 1944. The whole crew, composed of Free French Air Force, died in the crash having suffered severe damage during a bombing raid on Mimoyecques. All of the crew's remains were recovered. A Wellington X (MF556) crashed adjacent to Moorends on 6 July 1945. Neither of the pilots on board was injured.

A third military aircraft crash is also recorded in the vicinity of Thorne, but its exact location is not recorded. This crash occurred on 19 September 1940 and involved a Magister (T9676) training aircraft. The pilot's remains were recovered.

The geophysical survey undertaken as part of this project has included the three known aircraft crash sites within the nearby area and has not identified the presence of any visible remains of either an impact crater or metallic debris.

An undated rectangular enclosure (PEG208) is visible on the LiDAR data. The feature is not mapped on any of the historic cartographic sources consulted and measures c. 100m east-west by 80m north-south.

An undated subcircular feature (PEG212) of uncertain origin, which measures c. 26m in diameter, has been identified by the geophysical survey within the local area, to the north-east of Medge Hall. Nearby, a series of undated linear anomalies (PEG213), probable enclosure ditches, have also been recorded.

An undated, possible sub-rectangular enclosure (PEG214) was identified within the local area adjacent to the North Idle Drain.

Recent investigations

Recent trenching within the eastern part of the scheme (Williams *et al*. 2025) focused upon three areas located towards the eastern part of the overall scheme and in North Lincolnshire. An area to the west of Crowle revealed natural clay and truncated peat deposits, with the geophysical survey indicating industrial peat extraction rather than natural fluvial activity.

Despite targeting cropmarks, only one trench (Trench 148) contained a likely Roman features.

The second area northeast of Sandtoft features broadly matched known cropmarks, though some anticipated features were absent. While post-medieval field boundaries were present, Roman pottery suggested earlier Roman origins for some features.

The final area just to north of Sandtoft and the M180 yielded the most significant archaeological remains, aligning well with known cropmarks. The recovered Roman pottery suggests an enclosed rural settlement on a slight rise rather than a fortlet. Beyond this settlement, Area 3 was largely devoid of archaeological features.

Overall, the evaluation demonstrated that geophysical survey (magnetometry) was generally ineffective in detecting archaeological features, particularly in Area 3. This is attributed to the sandy geology and the friable, less compact nature of the aeolian/slumping fills, which lack strong magnetic signatures.

3 Aims and Objectives

The aim of the evaluation was to gather sufficient information to establish the extent, condition, character and date (as far as circumstances permit) of any lithic spreads, or other finds spreads within the area of interest. The information gained will be used to inform the Environmental Statement issued as part of the Tween Bridge Development Control Order and to aid in the development of an appropriate archaeological mitigation strategy for the scheme. Specific aims were to:

- Determine if earlier prehistoric lithics were present in the topsoil. This important class of evidence is difficult to detect in trial trenching, and any remains will be lost during the development of the Site.
- Determine if artefactual evidence for later prehistoric or later periods was present in the topsoil.
- Determine, if possible, the date of past activity within the Site from recovered artefacts and other material.

The South Yorkshire Research Framework for the Palaeolithic to Bronze Age has identified that Thorne Moor is an area of interest, posing the question ‘what is the potential for recovering Mesolithic organic material from sites such as Sutton Common or Thorne and Hatfield Moors?’. One of the main sources of information about the region's Neolithic and Bronze Age resides in its structures, which are almost entirely of a ceremonial or monumental character. This includes the very rare example of a Neolithic wooden platform, along with a trackway, in the vicinity of Hatfield Moor (Chapman and Geary 2013, 134-138) and a Late Bronze Age trackway at Thorne Moor (Buckland and Kenward 1973). Area 3, as

part of the geological background, was identified as having peat and, as such, has the potential for similar remains to be preserved.

Other research priorities should also be considered and given the wide variety of archaeological remains recorded in the wider landscape, notably of Roman date.

4 Methodology

The work involved the excavation of 444 shovel test pits, all of which measured 0.40m by 0.40m (Plates 2-12). The areas were positioned over or in close proximity to the lithic finds recorded in the South Yorkshire HER (Table 2). The shovel test pits were placed to give a broad coverage of the various findspots, (particularly higher potential for prehistoric lithics) on the basis of the Historic Environment Record (HER) and van de Noort and Ellis (1997) and as set out in the Heritage Technical Baseline (Millward 2025), geoarchaeological units and geology.

The shovel test pitting covers eleven areas (TP Areas 1 to 11).

Table 2. Area rationale

Area	No of test pits	Rationale
1	36	MSY9397 – Small flint flake Mesolithic
2	36	MSY12666 - Mesolithic Tranchet Axe, Hatfield Levels
3	48	MSY10092 - Mesolithic Flint Scatter, Thorne
4	48	MSY10092 - Mesolithic Flint Scatter, Thorne
5	56	HW16 Flint flakes
6	56	HW16 Flint flakes
7	32	HW13 – Prehistoric flint chunks
8	32	HW5 and HW10 - A flint scraper and two flint flakes and flint flakes
9	32	HW5 and HW10 - A flint scraper and two flint flakes and flint flakes
10	32	HW8, MSY10054, MSY10055 and MSY10053 - Two flint flakes Late Neolithic and Bronze Age, Possible Neolithic Flint Flake Tool, Hatfield and Possible Neolithic Flint Flake, Hatfield.
11	32	HW8, MSY10054, MSY10055 and MSY10053 - Two flint flakes Late Neolithic and Bronze Age, Possible Neolithic Flint Flake Tool, Hatfield and Possible Neolithic Flint Flake, Hatfield.

All work was undertaken in accordance with accepted professional standards and guidelines (Historic England 2008; CIfA 2023), in accordance with the ASWYAS site recording manual (ASWYAS 2020) and in compliance with the WSI (Appendix 1).

All shovel pits were set out using a Trimble VRS differential GPS accurate to +/-0.01cm. Shovel testing pits is a technique used to rapidly establish the presence of finds in each area and does little or no damage to buried archaeological remains.

The shovel test pits were excavated by hand through the topsoil to the top of the subsoil. The test pits were excavated on a 20m by 20m grid.

The topsoil was sieved for the retrieval of finds using a sieve with a mesh of 6.35mm (a ¼" garden sieve). A record was made of each test pit, and any finds were noted and retained.

If more than one flint was recovered from a single test pit, then, upon completion of that pit, additional test pits were excavated at all four cardinal points 10m from that pit. If further finds were made within any of those pits, additional test pits were excavated at the four cardinal points 5m from each of the pits containing further finds. This was only utilised once around test pit 927 (Area 9), comprising additional test pits 927N, 927E, 927S and 927W.

A full written, drawn and photographic record was made of all archaeological work undertaken. An inventory of the primary archive is presented in Appendix 2. ASWYAS currently hold the site archive in a stable and secure location.

5 Results

A total of 444 test pits were excavated across eleven areas. The topsoil of the areas varied in depth and composition. The test pits were excavated to the interface between the topsoil and subsoil.

Table 3. Summary of test pits

Area	Topsoil depth (m)	Notes	Finds
1	0.10-0.18	Dark, silty clay topsoil. Clear definition between topsoil and subsoil. Very shallow in places suggested that this area may have been previously stripped, perhaps relating to peat extraction. The area contained a wheat crop	Corroded iron object, CBM, modern glass, post-medieval pottery
2	0.10-0.30	Dark, loose, sandy topsoil overlaying a light, sandy subsoil. The majority of test pits were between 0.20 and 0.30m in depth. The area contained a bean crop.	Post-medieval pottery and CBM. Machine-damaged flint from the road surface
3	0.08-0.19	Dark, loamy, loose topsoil overlying a compact clay natural. Several shallow test pits. Topsoil was shallower on the western side. This area may have been previously stripped, perhaps relating to peat extraction. The area contained a wheat crop	Post-medieval CBM
4	0.06-0.19	Dark, loamy, loose topsoil overlying a compact clay natural. Several shallow test pits. Some areas of the topsoil were direr and compact. The area contained a wheat crop	Post-medieval CBM Flint

Area	Topsoil depth (m)	Notes	Finds
5	0.04-0.15	Dark, grey, and loose, crumbly silty loam. Area 5 was split over two fields. One had a wheat crop, and the other was a vegetable crop. Shallower test pits were located towards the south-eastern side of the area.	Post-medieval CBM, pottery, coal, bone. Plastic bead
6	0.10-0.15	Dark clayey loam, very dry topsoil. The southern part of the area had consistently shallow topsoil	Post-medieval CBM, pottery, glass
7	0.11-0.16	Thin topsoil over a dry compacted clay subsoil. The area contained a cereal crop.	-
8	0.13 to 0.17	Very dry dark grey topsoil that had recently been tilled The area did not appear to contain a crop	Post-medieval CBM
9	0.10-0.12	Very dry dark grey topsoil that had recently been tilled The area did not appear to contain a crop	Post-medieval CBM Flint - complete inner flake - prehistoric period
10	0.12-0.30	Dark greyish silt, very compact and softer toward the south. The area contained a wheat crop	Post-medieval pottery
11	0.12-0.18	Mid black, grey silty loam, very dry. Shallow areas of topsoil clear definition onto a yellowish-brown compact clay deposit.	Post-medieval CBM

6 Artefact Record

Non-flint finds by Gail Hama and Zoe Horn

A summary of all the finds recovered during the shovel test pitting is detailed in Table 4 and discussed further where relevant below. The flint has been subject to a standalone report thereafter.

Table 4. Summary of finds

Area	Test pit	Finds
1	110	Iron object?
1	111	CBM - concrete
1	114	Glass headlight - modern
1	116	Pottery white glazed – post-medieval
1	118	The base of pottery jar/bottle - post-medieval
1	123	CBM - concrete
1	133	CBM - post-medieval
1	136	CBM - post-medieval
2		Flint (2) from roadway
2	232	Rim of a white glazed vessel - post-medieval, small CBM fragment
2	236	Glass - post-medieval
3	319	CBM - post-medieval
3	335	CBM - post-medieval
4		Flint (1) from roadway

Area	Test pit	Finds
4	402	CBM, abraded fragments of brick or drain
4	423	Stone - checked as it might have been burnt flint
5	525	CBM - post-medieval
5	526	CBM - post-medieval
5	529	CBM - post-medieval
5	530	Bone
5	536	Coal
5	537	CBM - post-medieval, bone
5	542	Plastic bead - modern
5	543	CBM - post-medieval
5	546	Post-medieval pottery
5	551	CBM - post-medieval
6	602	Rim of a white glazed vessel - post-medieval
6	606	Glass - post-medieval
6	606	Large drain fragment - post-medieval
6	609	Pottery glazed with print pattern and CBM drain - post-medieval
6	610	Post-medieval pottery
6	618	Clinker
6	633	CBM/brick, three fragments - post-medieval
6	634	CBM - post-medieval
6	635	CBM part of a field drain - post-medieval
6	636	Glass, CBM, pottery - post-medieval
6	650	Pottery lid - post-medieval
6	656	CBM - post-medieval
8	810	CBM - post-medieval
8	823	CBM - post-medieval
8	826	CBM - post-medieval
9	902	CBM/brick - post-medieval
9	927	Flint on surface
9	930	CBM - post-medieval
10	1016	Post-medieval pottery
11	1101	CBM - post-medieval
11	1111	CBM - post-medieval
11	1118	CBM - post-medieval
11	1120	CBM - post-medieval
11	1123	CBM - post-medieval
11	1130	CBM - post-medieval

A plastic bead from test pit 542, Area 5, is a pale blue annular bead in opaque plastic (diameter 10mm, height 9mm). It has a central perforation with a few signs of wear on the outside in the form of chips and scratches, but generally in good condition and is dated from the modern period, probably post-1950s.

The ceramic building material (CBM) from the Site consists exclusively of post-medieval dated tile and brick, along with field drain fragments. There is no evidence of medieval or earlier ceramic building material. A notable characteristic of much of the CBM is its abraded condition.

The brick fragments found date from the 18th to 19th century. They are likely associated with former agricultural buildings. The brick fragments appear to be crudely made, similar to those found at other rural sites from the same period.

The field drain fragments, while varying in shape and form, are also heavily abraded. They date to the 19th century to early 20th century, indicating their use in a later phase of agricultural activity or land management.

The pottery is all mid/late 19th to 20th century in date. Given the small size of the assemblage, the range of wares is wide and includes examples of utilitarian wares and contemporary tableware. The pottery is likely the result of night soiling, rather than focused around a feature such as a gateway or a track.

Based on their date, it is recommended that the non-flint finds are discarded upon completion of the project.

Flint by Ann Clarke

Worked flint from test pitting was sparse; just two inner flakes and two chunks were recovered.

The only dateable flint flake has a dihedral platform, indicating it is from a multi-platform flake core dating to the Later Neolithic or Bronze Age. It is unstratified from Area 9, where previous finds of two flakes and a flint scraper have been recorded (HW5 and HW10).

The second flake is a distal fragment with no dateable characteristics surviving. It is broadly dated to the prehistoric period. It is unstratified from the road surface near Area 4. The test pits of Area 4 were located over the Site of a Mesolithic flint scatter (MSY10092).

The two chunks are struck from small flint pebbles, and it is likely they are natural flint pebbles which have shattered from mechanical damage. They were found on the road surface near. Area 2 and were probably broken during activity relating to the road construction. This area is located over the find of a tranchet axe (MSY12666).

Despite the potential for finding further lithic scatters in the area, only two flakes were recovered: one dating to the Late Neolithic/Bronze Age (Area 9) and another dating to the prehistoric period (Area 4). This could suggest that the flint is located at a lower depth and is not being disturbed by modern ploughing practices, such as minimal cultivation techniques, that reduce soil disturbance during crop planting. These methods aim to reduce the intensity and frequency of tillage operations. It is also possible that the prehistoric occupation was lightly scattered across the land.

Flint Catalogue

Area 2, unstratified - from the road next to the area

Black flint. Rolled pebble cortex. Two chunks from rolled flint pebbles. Struck faces appear quite fresh, and they are likely to be produced by mechanical damage. A chunk is a flint-knapping term for a fragment that is a larger irregular piece of stone removed as a by-product of any processing.

Length 30mm; Width 29mm; Thickness 19mm and Length 29mm; Width 32mm; Thickness 12

Area 4, unstratified – from road surface

Grey flint, light patination. The distal end of an inner flake.

Length 36mm; Width 27mm; Thickness 11mm.

Area 9, unstratified near 927

Mottled grey flint, patinated. Complete inner flake. Dihedral platform. Length 20mm; Width 26mm; Thickness 5mm.

7 Discussion and Conclusions

The archaeological shovel test pitting at Tween Bridge has provided insight into past land use. The material recovered largely reflects a post-medieval agricultural landscape, with the majority of recovered artefacts dating from the 18th to 20th centuries, consistent with former farm buildings and land management practices.

Early prehistoric activity is suggested by the recovery of a few sparse lithic finds, with one dated to the Late Neolithic/Bronze Age period. The limited quantity of these earlier finds suggests either a highly dispersed prehistoric presence or that prehistoric finds are located in deeper deposits beyond the reach of current cultivation.

The thin nature of the topsoil also suggests that the ground surface may have been eroded and truncated by agricultural practice or, as been shown in other areas of the Site, has been previously subjected to peat extraction, resulting in the removal and reinstatement of large areas of topsoil.

Although finds were limited, the evaluation did successfully meet its aims by establishing the general character and date of archaeological finds across the area, indicating a primary post-medieval agricultural landscape with hints of earlier prehistoric use.

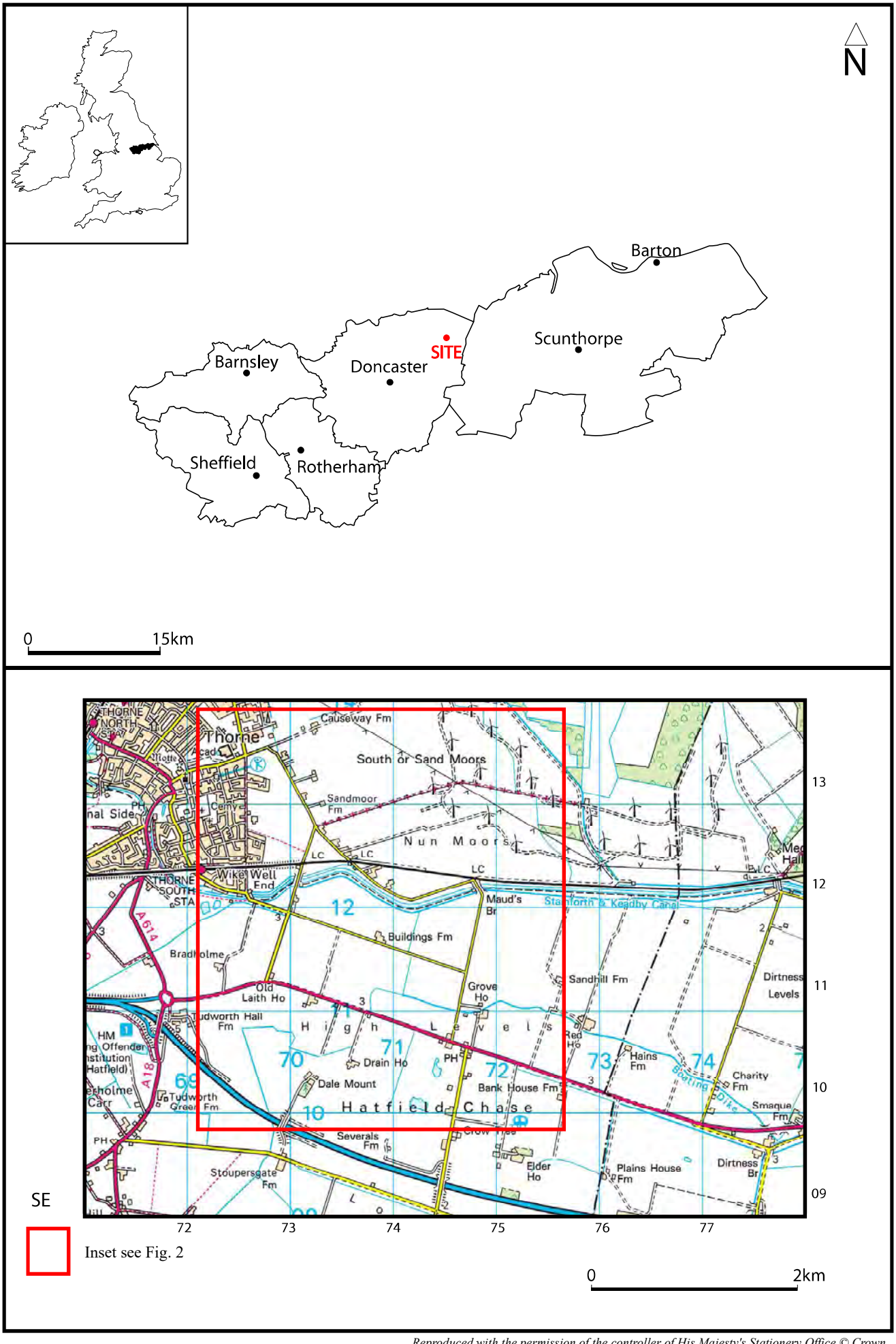

Fig. 1. Site location

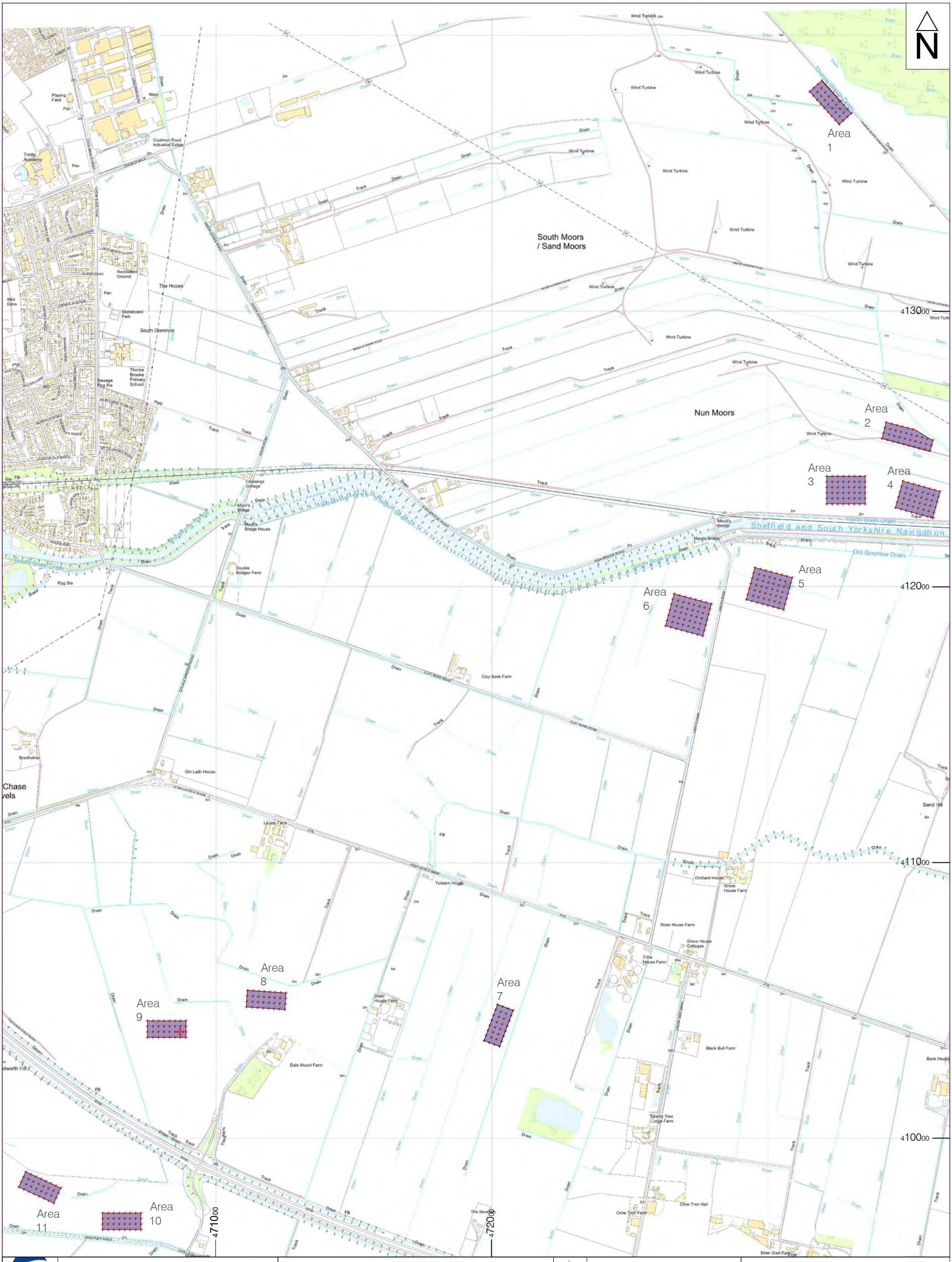

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Fig. 2.

Shovel test pit locations

SHOVEL TEST PIT

TEST PIT LOCATIONS

0 500m

1:12,500 @ A3

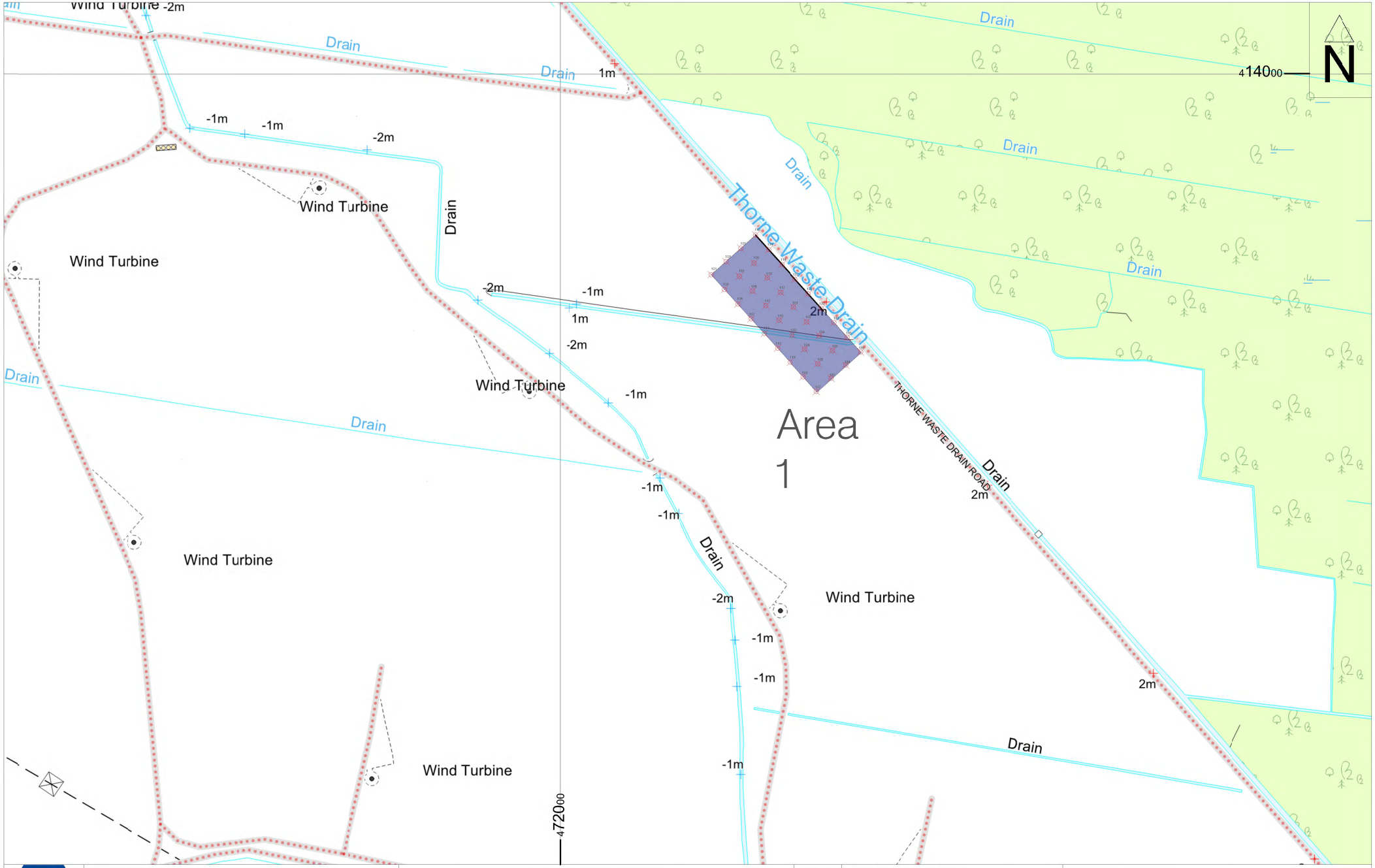

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Fig. 3.

Area 1

SHOVEL TEST PIT

TEST PIT LOCATIONS

0 200m

1:5000 @ A4

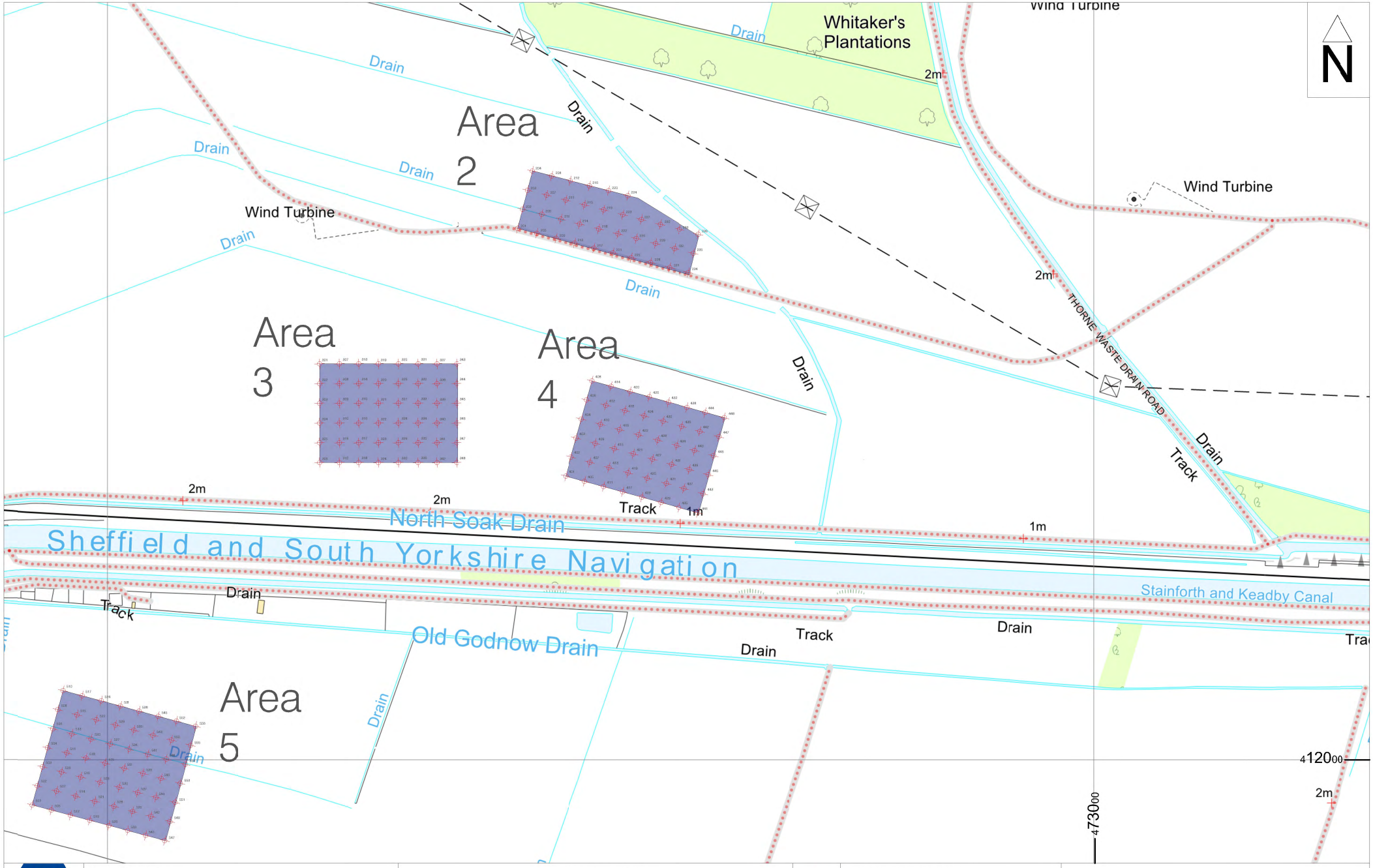

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Fig. 4.

Areas 2, 3 and 4

SHOVEL TEST PIT

TEST PIT LOCATIONS

0 200m

1:5000 @ A4

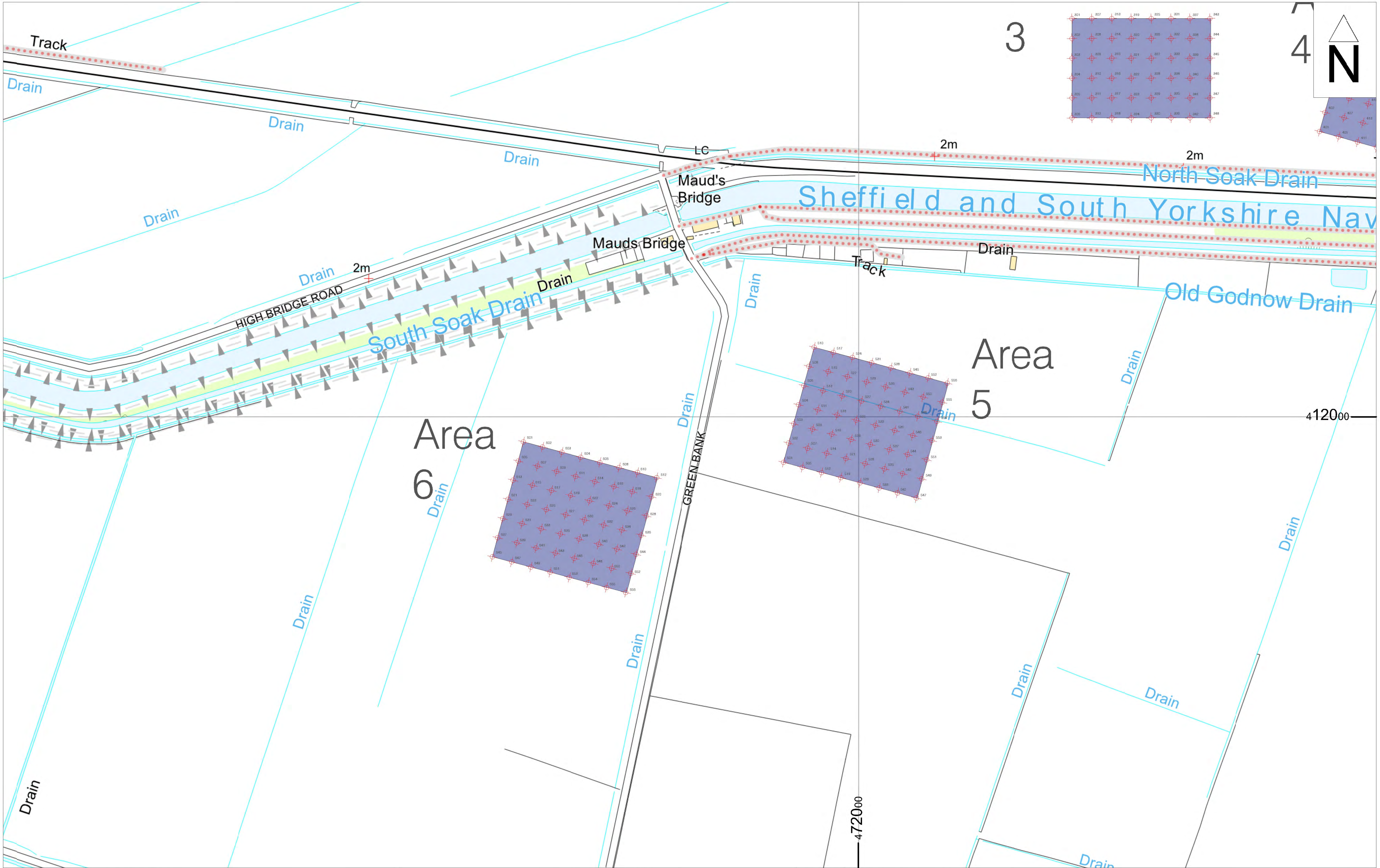

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Fig. 5.

Areas 5 and 6

SHOVEL TEST PIT

TEST PIT LOCATIONS

0 200m

1:5000 @ A4

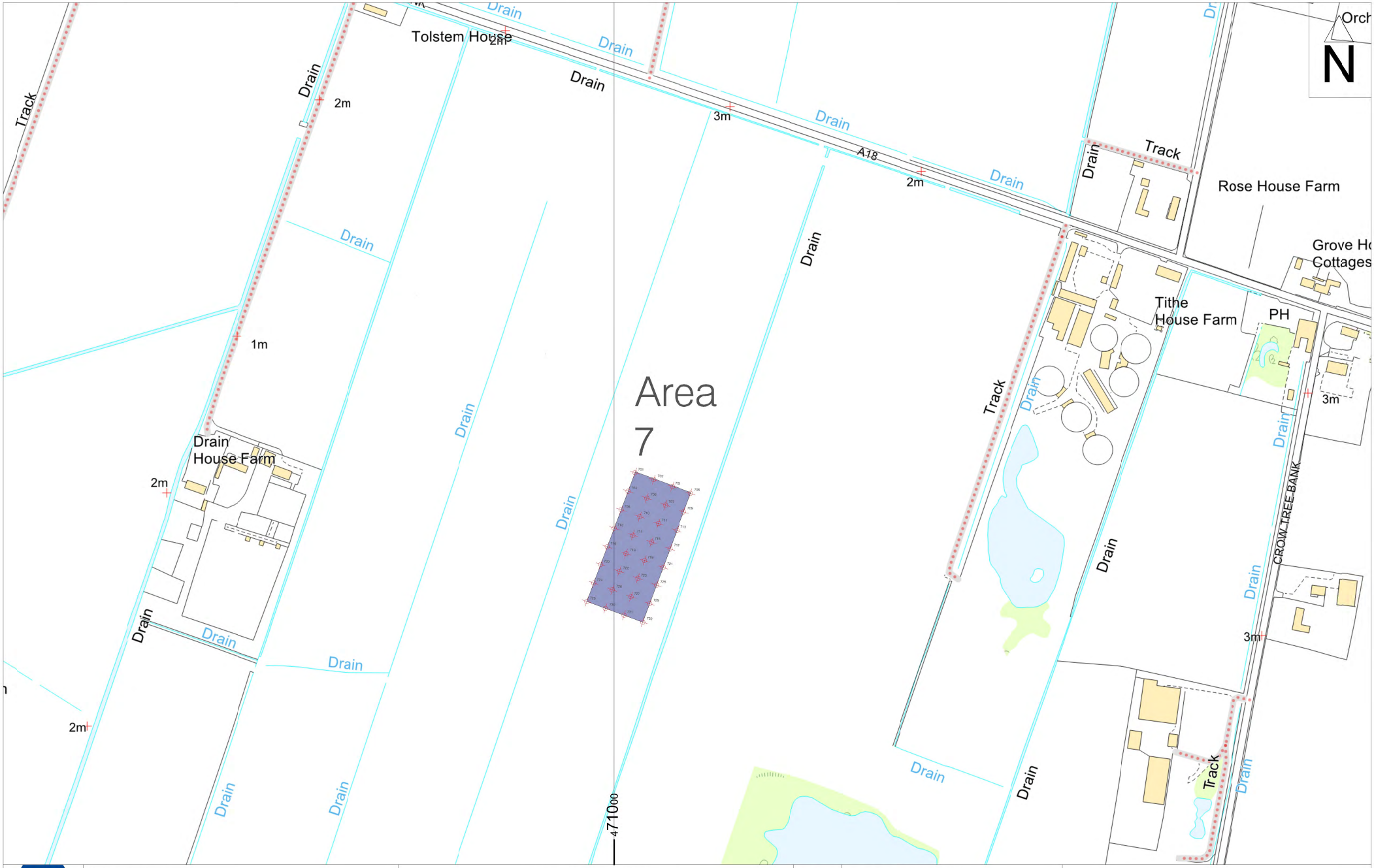

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Fig. 6.

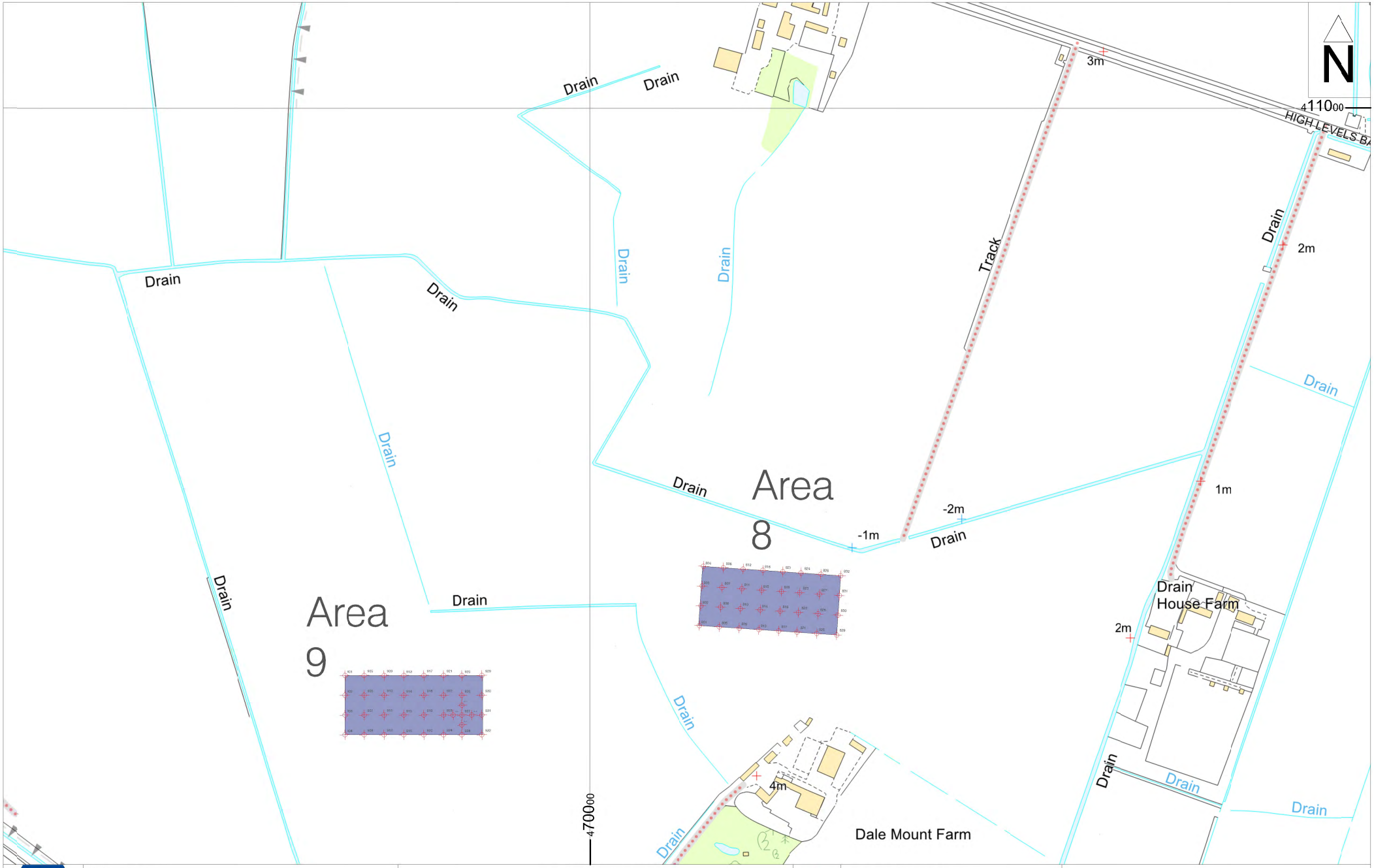
Area 7

SHOVEL TEST PIT

TEST PIT LOCATIONS

0 200m

1:5000 @ A4



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Project No. XS22

Fig. 7.

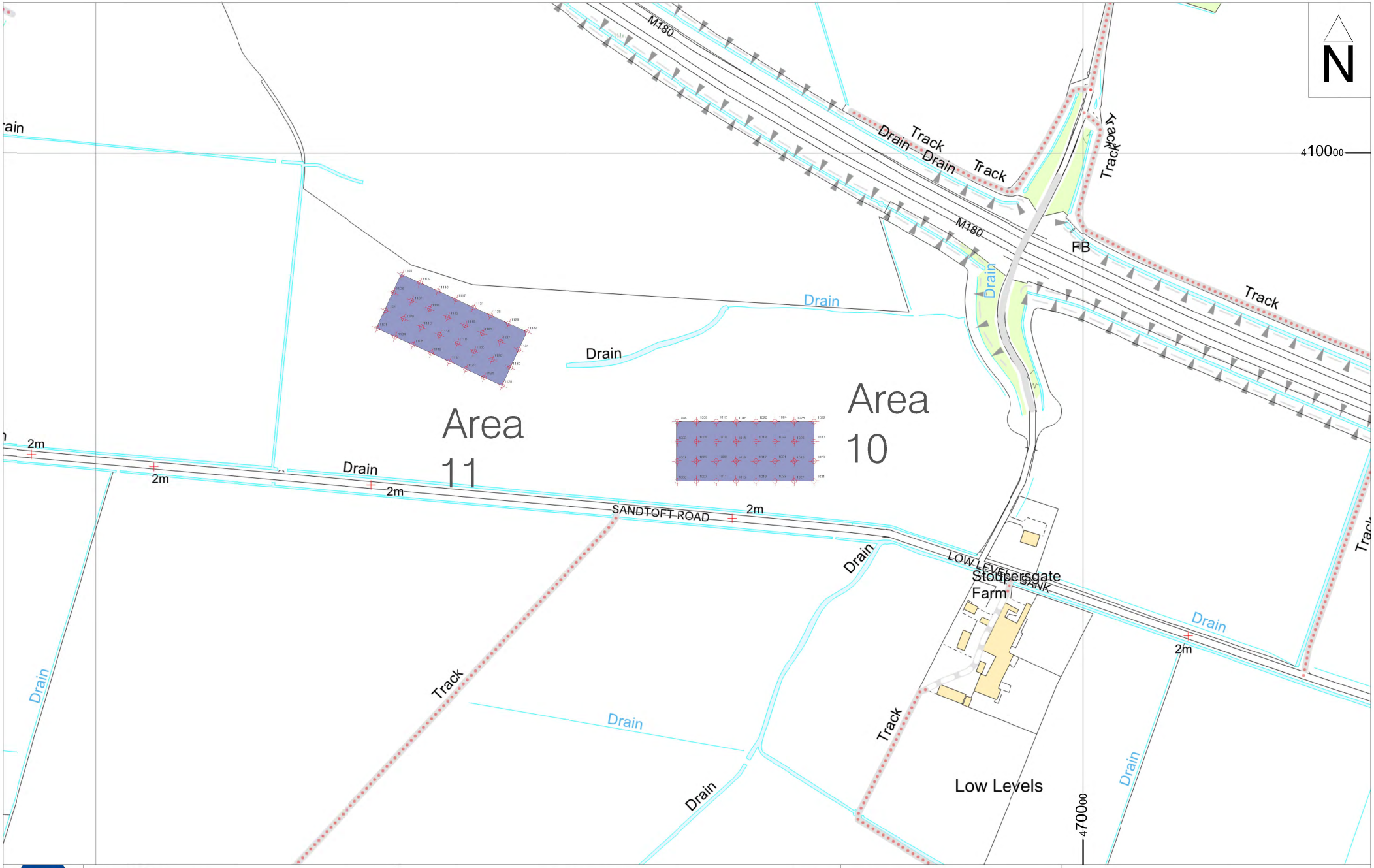
Areas 8 and 9

SHOVEL TEST PIT

TEST PIT LOCATIONS

0 200m

1:5000 @ A4



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Project No. XS22

Fig. 8.

Areas 10 and 11

SHOVEL TEST PIT

TEST PIT LOCATIONS

0 200m

1:5000 @ A4

Plate 1. General working shot of Area 2

Plate 2. Area 1 test pit 103

Plate 3. Area 2 test pit 231

Plate 4. Area 3 test pit 310

Plate 5. Area 4 test pit 444

Plate 6. Area 5 test pit 526

Plate 7. Area 6 test pit 647

Plate 8. Area 7 test pit 710

Plate 9. Area 8 test pit 828

Plate 10. Area 9 test pit 927W

Plate 11. Area 10 test pit 1030

Plate 12. Area 11 test pit 1128

Appendix 1:Written Scheme of Investigation

Tween Bridge
Thorne Moors
South Yorkshire

Written Scheme of Investigation for an Archaeological Evaluation by Shovel Test Pitting

Prepared by: Archaeological Services WYAS
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On behalf of: Pegasus Group and RWE Renewables

Document Issue Record

Ver	Author(s)	Reviewer	Approver	Date
1.0	DW	JM	JR	May 25
2.0	DW	JM/SYAS	JR	June 25

June 2025

Written Scheme of Investigation for an Archaeological Evaluation by Shovel Test Pitting, Thorne Moors, South Yorkshire

1. Background

Site location

This Written Scheme of Investigation (WSI) has been prepared by Archaeological Services WYAS (ASWYAS) for Pegasus Group for an initial phase of archaeological evaluation by shovel test pitting for the recovery of finds and lithics. The Site comprises approximately 1,863ha of land of largely flat agricultural land bounded to the west by the settlements of Thorne, Moorends and Hatfield and to the east by the settlements of Crowle and Sandtoft.

Context of the project

This Written Scheme of Investigation (WSI) has been prepared by Archaeological Services WYAS (ASWYAS) for Pegasus Group and RWE Renewables for an archaeological evaluation by shovel test pitting on part of the site around known finds locations and is designed to inform the submission of an Environmental Statement. This WSI only pertains to sites with the South Yorkshire part of the application area.

It follows a meeting with Andy Lines at SYAS regarding his requirements regarding archaeological investigations. The works are designed to focus on the areas of the site that are thought to have high potential for the presence of prehistoric lithic material within the topsoil and to assess the potential for prehistoric activity indicated by flint scatters

Timetable and review points

The on-site works are scheduled for June 2025 and are expected to take up to three weeks. SYAS are invited to review the site during the onsite works while the shovel pits are being excavated.

An assessment report will be completed within 3 weeks of site work concluding (based on specialist availability).

Monitoring arrangement

Access to the site will be arranged through Pegasus Group and the land agents working for RWE Renewables.

The project will be monitored by the SYAS to whom notification will be sent before the start of the work.

If appropriate, the advice of the Regional Advisor for Archaeological Science (Yorkshire and the Humber Region) at Historic England will be called upon.

2. Site Information

Site description

The Site comprises approximately a 1,863ha of land. largely flat agricultural land bounded to the west by the settlements of Thorne, Moorends and Hatfield and to the east by the settlements of Crowle and Sandtoft.

The areas selected for test pitting have been chose based upon the location of know find spots that appear to have higher potential for prehistoric lithics on the basis of the HER and van de Noort and Ellis and as set out in the the Heritage Technical Baseline (Millward 2025)

The shovel test pitting covers seven areas (TPAreas 1 to 11). The landscape is divided by hedgerows, tree belts, canals, rivers and dykes, the A18 and the M180 roads which bisect the Site. The Site is also crossed east-west by the Barnsley to Barnetby railway and also by the Stainforth and Keadby Navigation.

Geology and topography

Area	Grid Reference	Underlying geology	Soils
1	472221.4973 413750.9523	Sherwood Sandstone Group - Sandstone. Sedimentary bedrock formed between 272.3 and 237 million years ago during the Permian and Triassic periods. Hemingbrough Glaciolacustrine Formation - Clay, silty. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils (Soilscape 18)
2	472498.1705 412537.9873	Sherwood Sandstone Group - Sandstone. Sedimentary bedrock formed between 272.3 and 237 million years ago during the Permian and Triassic periods. Sutton Sand Formation - Sand. Sedimentary superficial deposit formed between 116 thousand years ago and the present during the Quaternary period. Hemingbrough Glaciolacustrine Formation - Clay, silty. Sedimentary superficial deposit formed between 116	Loamy and clayey soils of coastal flats with naturally high groundwater (Soilscape 21)

		and 11.8 thousand years ago during the Quaternary period.	
3	472274.8539 412361.2427	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Sutton Sand Formation - Sand. Sedimentary superficial deposit formed between 116 thousand years ago and the present during the Quaternary period.	Loamy and clayey soils of coastal flats with naturally high groundwater (Soilscape 21)
4	472533.0444 412309.9892	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Sutton Sand Formation - Sand. Sedimentary superficial deposit formed between 116 thousand years ago and the present during the Quaternary period.	Loamy and clayey soils of coastal flats with naturally high groundwater (Soilscape 21)
5	471997.2887 411996.4886	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.	Loamy and clayey soils of coastal flats with naturally high groundwater (Soilscape 21)
6	471704.0111 411901.1734	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.	Loamy and clayey soils of coastal flats with naturally high groundwater (Soilscape 21)
7	471018.6702 410421.0788	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period.	Slowly permeable seasonally wet slightly acid but base-rich loamy

		Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.	and clayey soils (Soilscape 18)
8	470173.1351 410512.2782	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.	Loamy and clayey soils of coastal flats with naturally high groundwater (Soilscape 21)
9	469811.0149 410385.8492	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils (Soilscape 18)
10	469648.4737 409688.3737	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Alluvium - Clay, silt, sand and gravel. Sedimentary superficial deposit formed between 11.8 thousand years ago and the present during the Quaternary period.	Naturally wet very acid sandy and loamy soils (Soilscape 15)
11	469347.9352 409815.9699	Chester Formation - Sandstone, pebbly (gravelly). Sedimentary bedrock formed between 250 and 247.1 million years ago during the Triassic period. Peat - Peat. Sedimentary superficial deposit formed between 2.588 million years ago and the present during the Quaternary period.	Naturally wet very acid sandy and loamy soils (Soilscape 15)

The underlying bedrock comprises either the Sherwood Sandstone or the Chester Formation with superficial deposits of Hemingbrough glacial lake deposit, Sutton Sand formations, Breighton sand formation and alluvial deposits. (BGS 2024).

A geoarchaeological desk-based assessment for the site has been undertaken by Quaternary Scientific (Green 2024). The aim of the work was to consider the geoarchaeological and palaeoenvironmental potential and heritage significance of the site. This concluded that the geoarchaeological potential in the study area was low due either to deep burial of prehistoric land surfaces or unfavourable landscape and palaeoenvironmental conditions for prehistoric occupation. The most significant landscape characteristic, especially in the fluvial landscape is present in Areas 1 and 3 and was identified as having a wide variety of near surface ground conditions due to the diversity of alluvial depositional environments and the resultant variety of sediment associations.

Historical summary

A Heritage Technical Baseline of the Site and a Study Area of the surrounding 1km (in relation to the recorded non-designated archaeological resource) was undertaken by Pegasus Group (Millward 2024) and summary of that report is included here.

Prehistoric

Mesolithic flint scatters (MLS19442; MSY10092) and a tranchet axe (MSY12666) have been recovered from within the Site. There is a further record of Mesolithic flint tools being recovered within the wider region, including a flint adze to the east of Mauds Bridge. The presence of tools in historically marginal wet places may indicate a temporary presence in the area for exploiting the local resources, such as fish and waterfowl.

Peat deposits and a Neolithic land surface west of Medge Hall (MLS21214) and five findspots of flint tools (MLS940; MLS19543; MLS19574; MLS19451; MSY10053-MSY10055; MSY10094) are situated within the Site. Peat deposits (MLS21214) were also recorded in boreholes to the west of Medge Hall in 2009 and 2011 which are parts of the surviving peat mire of the Humberhead Peatlands. They lie above a Neolithic land surface.

A Bronze Age trackway (MSY4361) on Thorne Moors was excavated in 1972, revealing split timbers forming a trackway 3m wide. This is located *c*. 540m east of the Site. 'Similar and more extensive' remains were reported by a local naturalist during the excavation of a major new drain at Medge Hall in 1949. They included large trees with charred surfaces. This report was never independently verified. It is likely that the drain in question was the Swinefleet Warping Drain which is shown under construction on the 1950 OS map and lies to the north of the Site.

It is possible that the trackway may have connected areas of higher ground at Pighill Moor (now Thorne Colliery) and Medge Hall. During October 1971, William Bunting, a local naturalist with considerable knowledge of the Moors, reported that several large trees with charred surfaces had been thrown up during the cutting of a major new drain across the Moors, through the Canals region and draining into Thorne Waste Drain, flowing south-eastwards along the eastern edge of the warplands of Tween Bridge Moors, towards Elmhirst Cottage. Bunting had reported similar, more extensive finds around Medge Hall, at the southern tip of the Moors in 1949 (MLS21213). It is unclear to what extent similar remains may survive in this area due to extensive peat extraction during the 20th century.

There are three sets of cropmarks (MLS20726; MLS20727; MLS24671) located *c*. 150m east, 360m east-north-east and 175m south-east of the Site respectively that potentially date to the Iron Age. The cropmarks include enclosures and boundary ditches that relate to the agricultural occupation of the area during this period. Interpretation of two of these assets (MLS20726; MLS20727) suggests there may be continuation of occupation into the Roman period with one of the small square enclosures at MLS20727 potentially being a Romano-British shrine.

Aerial photographs have identified field boundaries (MSY5958) that have been putatively dated to between the prehistoric and medieval periods on the basis of their apparent morphology. The field boundaries lie *c*. 660m south-west of the Site.

Fieldwalking in Sandtoft recovered pottery sherds from multiple periods (MLS22784). The earliest material recovered dated to the Iron Age. This is likely to indicate an underlying potential for Iron Age, and later, activity in the Sandtoft area. The grid reference for this fieldwalking lies *c*. 50m south of the Site. The extents of the fieldwalking survey are unclear but it seems likely that they included the Iron Age and Romano-British settlement at Sandtoft which spreads into part of the Site.

There is moderate potential for surface finds dating to the Mesolithic, Neolithic and Bronze Age to be found within the Site. There is low potential for further evidence of Bronze Age forest clearance or trackways to be identified as it is likely that such remains lie at a greater depth than the works required to construct the solar farm, and the likely levels of disturbance to such remains through industrial peat extraction in the 20th century diminish the chances of their having survived.

Romano-British

A possible Romano-British ditch and enclosure are recorded on Crowle Common (MLS20927) and a possible Fortlet and settlement at Sandtoft (MLS901) and findspots (MLS17318-MLS17323; MLS19545; MLS19546; MLS19549; MLS20019; MSY10834) have been identified within the Site.

The possible fortlet and settlement at Sandtoft were identified from the presence of Roman-British pottery recovered during fieldwalking in 1975, and as a series of cropmark enclosures visible on aerial photographs. Excavations were undertaken between July and November 1975 and revealed a main enclosure which overlay an earlier system of enclosures, portions of two circular drip gullies and two hearths with Roman pottery sherds. Three 3rd to 4th-century coins were recovered and were probably associated with the main enclosure.

Sections cut into the bank of the old River Don suggest that after the river flooded and filled ditches with silt, new ditches were cut, often on similar alignments. Cropmarks to the east indicated further features similar to those excavated in 1975. Further excavations in this area in 1976 recovered Roman pottery and metalwork from ditches and gullies. A cropmark double ditched enclosure to the east of the excavated area is also potentially of Roman date.

Extensive Romano-British activity has been identified on aerial photographs within the wider study area. The cropmarks identify field systems, enclosures, ditches, trackways and a small enclosure that may represent a shrine (MLS18378; MLS20728; MLS20729; MLS20927; MLS21010; MLS21460; MLS7249; MLS905).

There is moderate potential for Romano-British period archaeological remains to be identified within the Site. The settlement, and putative fortlet at Sandtoft and the enclosures to the west of Crowle are likely indicators of wider, as yet unrecorded activity within the Site and wider study area.

Medieval

Thorne and Hatfield are recorded in Domesday Book, when they formed part of the manor of Conisbrough which was held by King Harold before the conquest. After the conquest the manor passed to William de Warenne.

Crowle is also recorded in the Domesday Book. It was held by Alwin before the conquest and by Geoffrey de la Guerche as tenant-in-chief after the conquest. The manor was let by Geoffrey to the Abbot of St Germain of Selby. The Benedictine Abbey at Selby was founded by King William in 1069.

The manor of Thorne passed through the de Warrene family and other noble families to whom they were related by marriage until, following the battle of Towton in 1461, the Earl of March who held it became King Edward IV. Thereafter the manor descended with the Crown until the manor was given to Cornelius Vermuyden by Charles I in the 17th century.

The deserted medieval village of Tudworth (MSY5737) is mentioned in Domesday Book and is thought to have been depopulated during the 17th century. The Domesday Book records that Tudworth was held by William de Warenne and that it had been held by King Harold before the Conquest.

Tudworth is recorded as having three ploughs and twenty fisheries, that produced 20,000 eels a year (MSY5814). The grid references for these assets places them outside the Site, but it is noted in the HER records that the locations are uncertain and this indicates there is potential for remains relating to the village of Tudworth to be present in the western portion of the Site that lies between High Levels Bank and Sandtoft Road.

The presence of extensive wood pasture at Crowle is noted in the Domesday Book and the presence of woodland is also recorded by Leland in the 16th century. Access to timber and firewood on the island of Axholme was a valuable, and limited, resource.

Two late Anglo-Saxon pits (MLS21635) were recorded during a watching brief in Crowle Market Place. No other early medieval heritage assets are recorded within the wider study area although a Late Saxon Torksey ware sherd, and medieval pottery sherds were collected during fieldwalking in the 1970s (MLS17382).

Sandtoft is first recorded as a settlement in the 12th century. Its name translates as 'the messuage on sandy ground' and is derived from Old English, Old Norse and Old Danish (MLS1084.) The combination of languages indicates the mix of Saxon and Norse populations in this area.

Retting pits have been recorded *c*. 670m south and *c*. 30m south of the Site (MLS10558; MLS22544). Two former ponds containing late medieval and post-medieval deposits and finds, were recorded during an archaeological watching brief in 2012. One of the ponds may have been used for flax retting, although the evidence was inconclusive (MLS22599). The pond was located *c*. 870m east of the Site.

Post-medieval

Double Bridges Farm Moat, Thorne (MSY4142) appears to have consisted of a roughly rectangular island *c.* 60m by 45m north to south. The south and east sides are defined by a 15m wide ditch, holding water in the eastern half of the south arm and at the south-east corner. The north-east corner is quite apparent as a slight depression, turning to run west beneath the farm buildings (one of which is a brick barn, probably of early 18th-century date). The west side is now limited by a land drain, of quite different cross section to the stretches of the moat proper. The farmhouse on the west side appears to be an 18th-century building. Further farm buildings lie to the north, and a sunken area in the farmyard suggests the line of the filled in north arm of the moat. A 17th-century date for the moat has been suggested but as the line of the moat is overlain by Moors Road, the drainage ditch and early 18th-century buildings, it seems probable that it is of an earlier date.

The Thorne tithe map of 1840 records more of the moat being extant at that time with all of the eastern arm and half of the northern arm being open at that

date. Bridges are shown crossing the southern and eastern arms of the moat. The extents of the moat lie outside the site boundary.

In the time of Henry VIII, a perambulation of Hatfield Chase recorded 180,000 acres within its bounds. The Chase was seized by Charles I, when it amounted to 73,515 acres. A third of the Chase was given to Cornelius Vermuyden to drain and reclaim for arable and pasture, a third was given to the locals to compensate for the loss of rights and commons and the final third was retained by the King. Prior to 1811 there were 2,328 acres of common land divided between the townships of Hatfield, Thorne, Stainforth, Fishlake and Sykehouse. An inclosure Act was granted on 11th April 1811. The land was divided and awarded by 1817.

The impact of Vermuyden's drainage scheme and later alterations define the landscape of much of the site and surrounding area. The various elements of the drainage system are widely recorded within the HER data (MLS19586-MLS19588; MLS19591; MLS2491; MLS9488.) Of these records, the warping drain (MLS2491), lies within the Site boundary.

Blaeu's 1662 map of Yorkshire is stylised and records the presence of the major places within the wider study area but it also indicates that the south western part of the Site lies within the area of the former Thorne Mere. The map appears to show the Site and study area as it was prior to Vermuyden's works (which had already been undertaken a number of years prior to the map's publication.) The location and general extent of Thorne Mere appears to be corroborated by LiDAR data, as a corresponding area of low ground is recorded in this general area.

There are a number of post-medieval heritage assets recorded that are located within the Site. The New Idle Drain (MLS19586) relates to the 17th-century drainage of the marshes and the line of the Old River Don (MLS9488) also relates to these activities. Sections of the Stainforth and Keadby Canal (MLS9485) and the former Barnsley to Barnetby Railway (MLS8828) pass through the Site.

The sites of several farms have also been identified within the Site boundary. These include the site of the 19th-century Medge Hall Farm (MLS25262); the site of the 19th-century Lover's Ground Farmstead (MLS25265); an unnamed farmstead (MLS25555); Hains Farm (MLS25280) and Belton Grange (MLS25556), in Area 2.

The landscaped Park surrounding Hirst Priory (MLS21476) is recorded on the 1820 OS Surveyor's plan with circular and linear plantations and a carriage drive. The 1887 OS map records a different layout with a fully developed parkland with multiple plantations, a lodge, a realigned carriage drive as well as an aviary and a walled garden. The Park lies immediately adjacent to the eastern Site boundary.

The 1840 Thorne tithe map portrays much of the Site and study area and records a drained and enclosed agricultural landscape. The same landscape is recorded on the OS 1853 and 1854 sheets 266 and 257 that cover Yorkshire.

Thorne Colliery (MSY7062) was sunk from 1910 and opened fully in 1927. The colliery closed in 1956 due to flooding which had been a persistent problem. Elements of the former colliery site, such as roads and perimeter fences still survive in situ. The colliery lies *c*. 150m north-east of the Site boundary. Part of the former colliery has been converted into a solar farm.

The Turbaries (turf moors) covered an area of *c*. 6,800 acres and lay to the east of Thorne. It was bounded to the south by the Stainforth – Keadby Canal. In extent it stretched up to 4.5 miles north-south and 1.5 miles east-west. Casson notes 'Under the whole of this extensive morass, lie buried, oak, ash, fir, beech, yew, and willow trees, the remains of an immense forest, which appears to have covered at one period a large proportion of this part of the country'. Low Closes Turbary was allocated to Crowle Parish in 1803, as compensation for common land lost due to enclosure (MLS22807) and lies *c*. 150m south of the Site.

There are number of different elements of the former RAF Sandtoft (MLS26595; MLS26022-MLS26029; MLS26034; MLS26035; MLS11150; MLS20730, and a former bomb decoy MLS18438), recorded on the North Lincolnshire HER. The former bomb store at RAF Sandtoft (MLS26024) and the bombing decoy MLS18438 lie within part of the Site. Several of the building platforms related to the bomb store have been identified as anomalies in the geophysical survey data. The presence of the bomb store indicates the potential for unexploded ordnance to be present in the general area.

A Second World War Lancaster bomber (ND639) crashed near Windsor Lane, Crowle on 5 April 1945. All seven of the Australian crew were killed, but only five of the bodies were recovered. The North Lincolnshire HER records the putative crash site as being within the portion of the Site adjacent to Marsh Road, Crowle. However, the exact location is not certain, with a location to the west of Crook O Moor also suggested, and the presence of an air crash site within this portion of the Site cannot be discounted at this stage (MLS25882). Previous research (undertaken to support a windfarm proposal) to locate the crash site in the Marsh Road area has not been successful.

A Halifax V bomber EB149 crashed near Crowle on 19 March 1944. Another Halifax, DK133, crashed near Crowle on 6 September 1944. The exact location of the crashes and the remains of the crew members are unrecorded.

The aircraft crash sites noted above are protected by the Protection of Military Remains Act 1986 and recovery or interference with the sites would require a licence. Reference to military archives and geophysical survey may elucidate the locations of potential remains, and this aspect of the historic environment

will require sensitive consideration due to the potential for human remains of relatively recent date.

Two further military aircraft crash sites (PEG206 and PEG207) are present within the area. A Halifax (LK728) crashed adjacent to Moorends on 6 July 1944. The whole crew, composed of Free French Air Force, died in the crash having suffered severe damage during a bombing raid on Mimoyecques. All of the crew's remains were recovered. A Wellington X (MF556) crashed adjacent to Moorends on 6 July 1945. Neither of the pilots on board was injured.

A third military aircraft crash is also recorded in the vicinity of Thorne, but its exact location is not recorded. This crash occurred on 19 September 1940 and involved a Magister (T9676) training aircraft. The pilot's remains were recovered.

The geophysical survey undertaken as part of this project has included the three known aircraft crash sites within the nearby area and has not identified the presence of any visible remains of either an impact crater or metallic debris.

An undated rectangular enclosure (PEG208) is visible on the LiDAR data. The feature is not mapped on any of the historic cartographic sources consulted and measures *c*. 100m east-west by 80m north-south.

An undated subcircular feature (PEG212) of uncertain origin, which measures *c*. 26m in diameter, has been identified by the geophysical survey within the local area, to the north-east of Medge Hall. Nearby, a series of undated linear anomalies (PEG213), probable enclosure ditches, have also been recorded.

An undated, possible sub-rectangular enclosure (PEG214) was identified within the local area adjacent to the North Idle Drain.

3. Project Details

Standards and Guidance

The archaeological work will comply with the relevant standard of the Chartered Institute for Archaeologists (2023 and 2020a-b), Historic England's best practice documents (1991, 2006, 2008), the "Regional statement of good practice for archaeology in the development process, Yorkshire, the Humber & the north east" and SYAS' Archaeological Evaluation Standards and Guidance (Appendix 1).

Aims and objectives

The aim of the evaluation is to gather sufficient information to establish the extent, condition, character and date (as far as circumstances permit) of any lithic spreads, archaeological features and deposits within the area of interest. The information gained will be used to inform the Environmental Statement issued as part of the Tween Bridge Development Control Order and to aid in

the development of an appropriate archaeological mitigation strategy for the scheme. Specific aims are:

- Determine if earlier prehistoric lithics are present in the topsoil. This important class of evidence is difficult to detect in trial trenching and any remains will be lost during development of the site.

- Determine if artefactual evidence for later Prehistoric or later periods is present in the topsoil.

- Determine, if possible, the date of past activity within the site from recovered artefacts and other material

The South Yorkshire Research Framework for the Palaeolithic and to Bronze Age has identified that Thorne Moor is an area of interest with What is the potential for recovering Mesolithic organic material from sites such as Sutton Common or Thorne and Hatfield Moors? One of the main source of information about the region's Neolithic and Bronze Age resides in its structures, which are almost entirely of a ceremonial or monumental character. This includes the very rare example of a Neolithic wooden platform, along with trackway, in the vicinity of Hatfield Moor (Chapman and Geary 2013: 134-138), and a Late Bronze Age trackway at Thorne Moor (Buckland and Kenward 1973). Area 3 has been identified as having peat as part of the geological background and as such has the potential for remains to be associated with this.

Other research priorities should also be considered and given the wide variety of archaeological remains recorded in the wider landscape these objectives from the Iron Age and Roman periods should be considered during the fieldwork.

Fieldwork rationale

The following rationale indicates where the areas have been placed over or in close proximity to the lithic finds recorded on the South Yorkshire HER. The shovel test pits have been placed to give a broad coverage of the various findspots, geoarchaeological units/ geology

Area	**No of test pits**	**Rationale**
1	36	MSY9397 – Small flint flake Mesolithic
2	36	MSY12666 - Mesolithic Tranchet Axe, Hatfield Levels
3	48	MSY10092 - Mesolithic Flint Scatter, Thorne
4	48	MSY10092 - Mesolithic Flint Scatter, Thorne

5	56	HW16 Flint flakes
6	56	HW16 Flint flakes
7	32	HW13 – Prehistoric flint chunks
8	32	HW5 and HW10 - A flint scraper and two flint flakes Snd flint flakes
9	32	HW5 and HW10 - A flint scraper and two flint flakes Snd flint flakes
10	32	HW8, MSY10054, MSY10055 and MSY10053 - Two flint flakes Late Neolithic and Bronze Age, Possible Neolithic Flint Flake Tool, Hatfield and Possible Neolithic Flint Flake, Hatfield.
11	32	HW8, MSY10054, MSY10055 and MSY10053 - Two flint flakes Late Neolithic and Bronze Age, Possible Neolithic Flint Flake Tool, Hatfield and Possible Neolithic Flint Flake, Hatfield.

Outputs and dissemination

The fieldwork results will be detailed in an illustrated report, to be provided to the Council Archaeologist. Copies of the report will be issued to the South Yorkshire HER and uploaded to the Archaeology Data Service's OASIS portal.

A final archive report (should recommendations be made in the assessment report) may also be required.

Should the results necessitate it, publication in a regional journal, or a talk of a local society may be warranted. Given the small site area, and the use of heavy plant, volunteer opportunities will not be possible on this project.

Future Phases of Works

If the evaluation works identify significant archaeological remains within a part of the site, a further phase of archaeological investigation may be required as mitigation.

Any further phase of works will be agreed with the Council Archaeologist and documented in a supplementary WSI to be submitted to the Local Planning Authority.

4. Fieldwork Methodology

Protecting areas of preservation in situ

No in situ preservation of remains is expected.

Excavation bespoke methodology

The fieldwork methodology will comply with SYAS' standards (Appendix 1). The location of any environmental constraints, such as root protection zones along hedgerows and around retained trees, will be provided to the fieldwork contractor to ensure that archaeological works do not adversely affect the ecological resource.

Shovel Testing

Shovel testing pits is a technique to rapidly establish the presence of finds in each area and does little damage to buried archaeological remains.

The shovel test pits are to be excavated through the only the topsoil to the top of the subsoil by hand. Each test pit should measure 0.4m x 0.4m. The test pits will be and excavated on a 20m by 20m grid. Approximately 440 test pits will be excavated.

The topsoil is to be sieved for the retrieval of finds a using a sieve with a mesh of 6.35mm (a ¼" garden sieve). A record should be made of each test pit and any finds noted and retained.

The location of concentrations should be accurately recorded and. If more than one find is recovered from a single test pit then, upon completion of that pit, additional test pits will be excavated at all four cardinal points 10m from that pit. If further finds are made within any of those pits, additional test pits will be excavated at the four cardinal points 5m from each of the pits containing further finds.

All artefacts are to be retained for processing and analysis. Finds will be stored in secure, appropriate conditions following the guidelines in First Aid for Finds (3rd edition)

Specific sampling strategies to note:

It is not proposed that soil samples for environmental purpose will be taken. It is not expected that any of the finds will be within seal stratigraphic units. The excavations will be limited to the topsoil only.

5. Post-excavation Assessment, Analysis and Reporting

The reporting methodology will follow SYAS' standards (Appendix 1).

6. Public Engagement, Dissemination and Publication

The anticipated time on site will be short, with the shovel pitting only in each area for a few days before moving onto the next. As such volunteer opportunities will not be possible. Given the specific aim for this project – To establish the location, extent, date, character, condition, significance and quality of any archaeological remains within the development site with an unknown potential, volunteer opportunities in relation to the finds are also likely to be limited.

As a minimum, the results of the project will be made available through an online OASIS entry (including PDFs of all reports produced) and the deposition of the site archive with the local museum (Doncaster Museum).

7. Archive

The archiving methodology will follow SYAS' standards (Appendix 1).

Archive deposition

The physical archive will be deposited with Doncaster Museum, following their requirements.

Archive selection strategy

The archive selection strategy is provided in Appendix 2.

8. Staffing

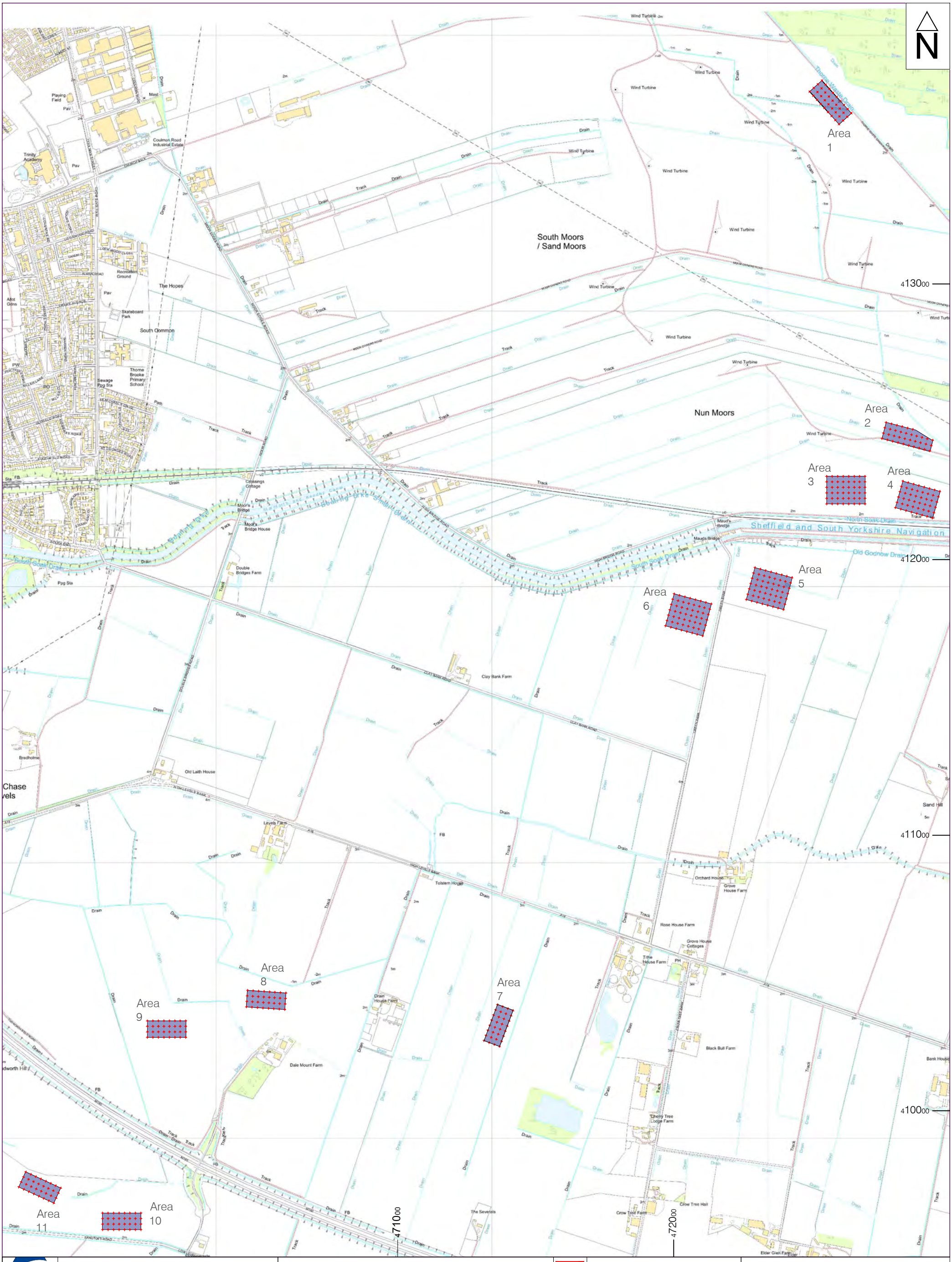
Key project personnel:

Project Management:	David Williams BA MCIfA
Project Supervisors:	Haydn Evans and Maria Rose

Post-excavation specialists:

Roman pottery	Ruth Leary
Medieval/post-medieval pottery:	Dr Chris Cumberpatch
Ceramic building material	Kevin Haywood

Environmental:	Dr Diane Alldritt
Flint and Lithics	Ann Clarke
Animal bone:	Dr Jane Richardson
Human bone:	Malin Holst MA
Metalwork:	Gail Hama
Artefact conservation:	Scarlett Crow
Clay tobacco pipes	Zoe Horn



Archaeological Services W Y A S,
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Tel: 0113 535 3007 Email: archaeology@wyjs.org.uk www.aswyas.com

Project No. XS22

Fig. 1.

Shovel Test Pit Locations

SITE BOUNDARY

TEST PIT LOCATIONS

0 500m

1:12,500 @ A3

Appendix 1: SYAS Archaeological Evaluation Standards and Guidance

Archaeological Field Evaluation

Standards & Guidance

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1 Requirement for Archaeological Field Evaluation

1.1 An archaeological field evaluation is undertaken where there is reason to believe that archaeological remains may exist on the site, or where the significance of known remains is inadequately understood, such that the implications of a planning or other proposal cannot be adequately assessed.

1.2 SYAS should be consulted in advance of any field evaluation to agree a methodology.

1.3 Note: All references are correct at time of publication, and it is the responsibility of the undertaking body to review the guidance and ensure that they refer to the most current.

Professional Standards

1.4 Archaeological work should be carried out using appropriate expertise and the archaeologists undertaking the work should be adequately qualified. It is good practice to use professionally accredited experts such as a CIfA Registered Organisation[1]. SYAS also maintain an open list of archaeological contractors who operate in the region.[2]

1.5 All archaeological work needs to comply with:

1. the Regional Statement of Good Practice for Archaeology in the Development Process;[3]
2. the Chartered Institute for Archaeologist's (CIfA) standards and guidance;[4]
3. Historic England's guidance on managing archaeological projects (MoRPHE)[5]
4. Historic England's best practice guidance relevant to the project.[6]

Written Scheme of Investigation

1.6 The undertaking body may be required to provide a Written Scheme of Investigation (WSI) to set out a proposed scheme of archaeological investigation in sufficient detail to demonstrate the works will be appropriate and proportionate to the known/potential remains and the anticipated level of impact.

1.7 The requirement and contents of a WSI on any given site should be confirmed with SYAS.

1.8 The WSI should be formed in reference to relevant standards, and as a minimum contain:

1. Site location (including map);
2. Context of the project (including planning background and consultations);
3. Project timetable/ work stages;
4. Strategy for seeking preservation in-situ of identified features of importance;
5. Monitoring arrangements;
6. Description of the site identifying its geology, topography, condition etc.;
7. Brief summary of the archaeological and historical background of the site and its environs;
8. Detail implications (of 6 & 7 above) for archaeological and palaeo-environmental potential (of both buried and standing remains);

[1] A register of Registered Organisations is available online: https://www.archaeologists.net/lookingforanarchaeologist
[2] Available online: https://www.sheffield.gov.uk/home/planning-development/south-yorkshire-archaeology-service
[3] SYAS 2018
[4] CIfA 2020a
[5] Historic England 2015a
[6] Available online: https://historicengland.org.uk/advice/find/a-z-publications/

9. Aims and objectives with reference to the South Yorkshire Historic Environment Research Framework and other period specific or thematic research frameworks/strategies, as applicable;
10. A table listing the rationale behind the location of each trench and their dimensions (including a plan that shows their location within the site);
11. Summary of the specific outputs of the project (e.g. report, archives etc);
12. Methodology for site investigation, sampling, assessment, analysis and reporting;
13. Strategy for the deposition of the project archive (including a selection strategy and data management plan produced in accordance with CIfA guidance);
14. Strategy for publication and dissemination of the results;
15. Details of the competent person/persons or organisation undertaking the works.

1.9 Appropriate specialists, including the Historic England Science Advisor, should be consulted in formulating sampling strategies and methodologies specific to the site and project objectives. This should include an outline sediment sampling strategy based on deposit modelling, suspected archaeology, and previous nearby discoveries. Provision should be allowed to revise this strategy during the fieldwork, as appropriate, to account for initial results and unexpected discoveries.

1.10 A template Written Scheme of Investigation covering intrusive archaeological investigations is available[7], providing additional guidance and allowing any deviations from these standards to be identified and justified.

Selection Strategy & Data Management Plan

1.11 A proposed archive selection strategy must be included with the WSI, detailing the project-specific selection process, agreed by all stakeholders, for all records and materials arising from the work in creating the Archaeological Archive.

1.12 Where digital data is anticipated as an output of the project, the selection strategy must include a data management plan, setting out the methodology for data management from acquisition to deposition.

1.13 This should be produced in accordance with CIfA guidance.[8]

Monitoring

1.14 SYAS will be responsible for monitoring the contractor's work. The contractor must give a minimum of one week's notice of the commencement of fieldwork in order that arrangements for monitoring can be made.

1.15 Minor changes to an agreed WSI must be submitted to SYAS for written approval. Major changes will require the preparation of an updated WSI for submission to the approving body (SYAS or planning authority as appropriate).

[7] See guidance for archaeological projects, available online: https://www.sheffield.gov.uk/syas
[8] Available online: https://www.archaeologists.net/selection-toolkit & https://www.archaeologists.net/digdigital

2 Aims

2.1 The purpose of field evaluation is to gain information about the archaeological resource within a given area or site (including its presence or absence, character, extent, date, integrity, state of preservation and quality), in order to make an assessment of its merit in the appropriate context, leading to one or more of the following:

1. the formulation of a strategy to ensure the recording, preservation, or management of the resource.
2. the formulation of a strategy to mitigate a threat to the archaeological resource.
3. the formulation of a proposal for further archaeological investigation within a programme of research.

2.2 The work will be undertaken in reference to general aims and specific objectives formulated with reference to the South Yorkshire Historic Environment Research Framework[9] and other period specific or thematic research frameworks/strategies, as applicable.

2.3 The level of detail included should be proportionate to the importance of any heritage assets affected, and no more than is sufficient to understand the potential impact of the proposal on archaeological significance.

[9] Available online: https://researchframeworks.org/syrf/

3 Scope

3.1 The field evaluation should investigate the whole of the proposal area, including those areas affected by temporary works such as construction compounds.

3.2 The evaluation strategy chosen will represent the best means for evaluating the site, establishing the importance and significance of any remains present, and will be selected to cause the minimum impact to archaeological remains present, operating with due regard to health and safety regulations.

3.3 The most common forms of field evaluation employed in the region include:

1. Geoarchaeological investigations and deposit modelling;
2. Geophysical survey;
3. Evaluation trenching;
4. Shovel/test pitting.

3.4 Field evaluation is often an iterative process, and a combination of strategies may be required dependent on the site and project objectives. For example, after a geophysical survey, trial trenching is usually required.

3.5 Field evaluation should be undertaken at a stage when it can inform the design of appropriate mitigation measures, i.e., before the finalisation of any detailed designs and in advance of a planning application being made.

3.6 The Historic England Science Advisor can be consulted in respect to advice on appropriate approaches to fieldwork, sampling strategies and any archaeological science components.

Recommended Contingencies

3.7 Contingencies should be budgeted for and identified in the WSI, including, where relevant:

Geoarchaeological Investigations and Deposit Modelling

1. Further field survey, up to 10% of the total original boreholes and/or test pits;
2. Specialist analysis and scientific dating

Archaeological Geophysical Survey

1. Additional survey with a complementary technique, up to 10% of the original survey area.

Archaeological Evaluation Excavation

1. Additional trenching or trial pitting, up to 5% of the original sample area;
2. Additional specialist sampling and scientific dating;
3. Conservation of artefacts;
4. For the preparation and submission of a report including the results of post-excavation analysis, in the event that further archaeological fieldwork and follow-on reporting is not required;
5. Publication of results.

4 Geoarchaeological Investigations & Deposit Modelling

4.1 Geoarchaeological investigations and deposit modelling will be undertaken in accordance with standards and guidance published by Historic England.[10]

4.2 Deposit modelling is best deployed early in the planning process as it can be beneficial in identifying areas of archaeological interest/sensitivity; improving cost estimation through determining the depth and range of deposits anticipated at the site; and developing mitigation strategies.

4.3 Deposit models can be applied in any landscape where sediments accumulate, either through natural or anthropogenic processes, including sites of:

1. natural Quaternary (superficial) sediments;
2. deep urban stratigraphy;
3. other deep anthropogenic deposits, e.g. mining waste.

4.4 It is appropriate for the model to be constructed by a geoarchaeologist for large sites or those with complex, deep or significant deposits. On deeply stratified urban sites, they should work in partnership with an experienced urban archaeologist.

4.5 Deposit modelling is an iterative process and should be enhanced as additional data is collected during subsequent project stages.

Desk-Based Deposit Modelling

4.6 Geotechnical borehole logs for a site and its environs should be obtained from existing sources, with readily accessible information including:

1. British Geological Survey geotechnical data (via Geoindex);
2. Previous planning applications for the site and land around it which may include geotechnical surveys (via local authority planning portals);
3. Archaeological reports and archived data for the site and land around it held by the Historic Environment Record and the Archaeological Data Service;
4. Quaternary Research Association's regional field guides;
5. Relevant published literature.

4.7 Data should be collected beyond the site boundary to reduce discrepancies in the model and contextualise the site.

4.8 All data should be reviewed, cleaned, and standardised prior to creating the deposit model. The quality of the data, and its spatial distribution, should be assessed to determine whether a model can be constructed or whether additional field survey (see below) is needed before modelling can take place.

4.9 The South Yorkshire Historic Environment Research Framework and other relevant period-specific and thematic research frameworks and strategies should be consulted in developing research questions for the deposit model.

[10] Historic England 2011, 2015e & 2020

Field Survey

4.10 Where gaps exist or questions remain unanswered in any desk-based model, targeted geoarchaeological boreholes and/or test pits and/or deep geophysical survey should be undertaken as an early stage of evaluation.

1. enhance coverage of existing surveys and target areas of uncertainty
2. enable inspection by a geoarchaeologist to enhance interpretation
3. enable recovery of finds and samples, enhancing dating

4.11 The method of survey will be dependent on the aims of the survey, estimated depth of the sedimentary sequence, the likely sediment characteristics, and the nature of any sampling required. In developing the survey methodology, advice should be sought from appropriate specialists such as a geoarchaeologist and the Historic England Science Advisor.

4.12 Borehole should be drilled to the top of the bedrock (i.e., the full Quaternary sequence). Cores can be recorded on or off site, although all samples of potential further research interest should be retained for later project stages and stored in appropriate conditions.

4.13 Boreholes are also required to ground truth the results of deeply penetrating geophysical surveys, and to aid in its interpretation.

4.14 Where geotechnical site investigations are planned ahead of development, it is encouraged that they are designed in consultation with a geoarchaeologist in order to determine whether the surveys can be integrated, and/or whether they can be monitored by a geoarchaeologist.

Data Processing

4.15 Depositional sequences from investigations within and around the site should be reviewed, and interpreted based on physical characteristics, and laterally equivalent deposits linked to identify stratigraphic layers across the site.

4.16 The surfaces of deposits derived from geophysical survey should be corroborated by ground truth boreholes.

4.17 The method used to prepare the deposit model will be based on the aims of the project, the desired graphical outputs, data distribution and quality, and the size and complexity of the site and depositional sequence. For small or simple sites, a 2D diagram can be produced by hand or computer software. For complex sites, or where more sophisticated graphical outputs are warranted, such as 3D models, specialist software will be required. In either case, the key aim of any deposit modelling exercise is to generate outputs that are clear and informative for all end-users. Guidance from SYAS or Historic England's Science Advisor should be sought on the most appropriate outputs for any given site.

Report

4.18 A report will be produced, containing:

1. Non-technical summary;
2. Site location and description of geology and topographic setting;
3. Aims and objectives of the deposit modelling exercise;
4. Justification and rationale for the survey methodology;
5. Data sources, distribution, and assessment of quality;
6. Methods used to build the model;
7. Chronological control;

8. Statement of reliability of the model and the confidence that can be placed in it;
9. Interpretation of the site-wide deposit sequence and supporting illustrations;
10. Recommendations for how the model should be used and archived;
11. Recommendations for further archaeological work, to be determined in consultation with SYAS;
12. Relevant illustrations which should, as a basic minimum, include appropriate annotations and explanations, be clearly related to base mapping, and might include:
    (a) site location plan;
    (b) distribution of data points;
    (c) location of transects (schematic cross-sections);
    (d) one or more transects, selected, and prepared to address the model objectives
    (e) key surface plot (eg top of bedrock or pre-Holocene surface);
    (f) isopach maps showing extrapolated thicknesses of key units;
    (g) zones of different archaeological potential (character maps).
13. Index to and location of digital archive
14. References
15. Acknowledgements identifying those involved in the project, including SYAS

Dissemination & Archive

4.19 The final report and results of the survey should be disseminated in accordance with the standards and guidelines set out in Section 7 below.

4.20 A project archive should be maintained and prepared in accordance with the standards and guidelines set out in Section 8 below.

5 Standards for Geophysical Survey

5.1 Archaeological geophysical survey will be undertaken in accordance with standards and guidance published by European Archaeological Council (EAC) and CIfA.[11]

5.2 The choice of geophysical technique should be formulated in consideration of a deposit model derived from a bespoke borehole survey/ test pitting, or from the desk-based analysis of the topographic and geological context of the site, its past and present land use, and the anticipated form of archaeological remains present. The Geophysical Survey Database[12], in combination with the British Geological Survey Soil Parent Material Model[13], should be consulted to determine effectiveness of specifical techniques on local geology.

5.3 Where magnetometry is the chosen technique, a cart mounted system is preferred over a handheld system where terrain allows.

5.4 The survey area should be determined in consideration of the aims of the project, and in consultation with SYAS. Where magnetometry is the chosen technique 100% of the suitable area will be surveyed.

5.5 Where there is insufficient information to determine the effectiveness of a given technique (including where depth or type of sediment may prevent identification of features) then it may be necessary to trial several strategies.

5.6 The geophysical survey report should record the rationale for the survey area, choice of geophysical technique/s employed, and review the success of the methodology.

Survey

5.7 The surveyed areas will be accurately tied into the National Grid to enable the surveyed area to be independently relocated by a third party.

5.8 For most sites, where a phased investigation is not proposed, the survey should be of sufficient resolution to enable the delineation of individual archaeological features. An appropriate resolution for most investigations is:

1. For magnetometry, a survey resolution of 0.5m x 0.25m;[14]
2. For earth resistance, a survey resolution of 0.5m x 0.5m.[15]

5.9 Wherever possible, traverses should be oriented perpendicular to any known linear archaeological features (such as those identified from aerial photos) or else to the direction of recent ploughing.

Data Processing

5.10 An unaltered copy of the raw data will be retained. A minimal amount of visual processing may be applied to a copy of the data, such as destaggering, in accordance with best practice guidance. [16]

[11] EAC 2016 & CIfA 2020b
[12] Available online: https://archaeologydataservice.ac.uk/archives/view/ehgsdb_eh_2011/
[13] Available online: https://www.bgs.ac.uk/datasets/soil-parent-material-model/
[14] EAC 2016, 64
[15] EAC 2016, 72
[16] EAC 2016

Report

5.11 A report will be produced, containing:

1. Non-technical summary
2. Introductory statements
3. Aims and purpose of the evaluation
4. Methodology
5. Survey conditions
6. Results
7. Discussion of results
8. Conclusion
9. Plans/plots, including:
   (a) a survey location plan demonstrating relationships to other mapped features and indicating the position of individual data grids (minimum scale 1:2500);
   (b) a greyscale plot of minimally enhanced survey data (minimum scale 1:1000);
   (c) a greyscale plot of improved survey data (minimum scale 1:1000);
   (d) a greyscale plot of processed survey data (minimum scale 1:1000);
   (e) a X-Y trace plot of improved magnetic data (for large sites a sample of the data might be plotted instead); and
   (f) an interpretative plan and plans of results superimposed over first edition Ordnance Survey mapping and aerial imagery (minimum scale 1:1000).
10. Index to and location of digital archive
11. References
12. Acknowledgements identifying those involved in the project, including SYAS

Dissemination & Archive

5.12 The final report and results of the survey should be disseminated in accordance with the standards and guidelines set out in Section 7 below.

5.13 A project archive should be maintained and prepared in accordance with the standards and guidelines set out in Section 8 below.

6 Standards for Archaeological Evaluation Excavation

6.1 Archaeological excavation will be undertaken in accordance with CIfA standards and guidance.[17]

6.2 Detailed procedures for excavation and recording will be undertaken in accordance with professional best practice, such as that established in Historic England's *Excavation Recording Manual*.[18]

6.3 All records, finds and samples generated during the programme of works should be safely stored as part of a Working Project Archive (see Section 7).

Evaluation Strategy

6.4 The form of evaluation should reflect the expected nature of the archaeological evidence, and it may be necessary to deploy several strategies. For example, trial trenching for large linear features, shovel testing for flint scatters.

6.5 For trial trenching, the location and amount of trenching required will be dependent upon the nature of the site and the amount and quality of data from any previous investigations:

1. Where non-intrusive investigations have been carried out, an appropriate level of trenching will be targeted to test anomalies, apparently blank areas, and any areas un-surveyed.
2. Where no such work has been carried out, a minimum 5% sample of the site will be tested.[19]

6.6 Where there is potential for spreads of finds or deposits within the topsoil or subsoil, a programme of shovel/test pitting will be required. A suggested approach would comprise:

1. Shovel pits are to be set out across a 10m survey grid;
2. Pits are to measure 0.25m x 0.25m and hand excavated to a depth of 30-50cm;
3. Spoil is to be sieved and finds recorded by pit.

6.7 The rationale for the chosen strategy will be set out in the written scheme of investigation.

Groundworks

Staking Out

6.8 Archaeological trenches/pits will be staked out using a real-time kinematic global navigation satellite system (RTK GNSS), or other suitably accurate survey method of equivalent accuracy, in accordance with the agreed locations set out in the WSI.

6.9 Minor adjustments may be undertaken to avoid previously unknown obstacles such as vegetation or services, or to enable machine manoeuvring. Trenches or trial pits located to target specific features should not be moved without prior agreement of SYAS.

[17] CIfA 2020c

[18] Available from Historic England's website: https://historicengland.org.uk/content/docs/research/historic-england-archaeological-recording-manual-2018/

[19] Research suggests this is the optimal minimum percentage to guarantee confidence in identifying archaeological remains across all periods (Hey & Lacy 2001, 55).

Machine Excavation

6.10 All machine excavation should be undertaken by adequately qualified and experienced operators, under the supervision and direction of an archaeologist, and cease at the first archaeological horizon or when the natural geology is exposed.

6.11 Breaking ground, whether topsoil or hardstanding, should be undertaken with care, mindful of the potential presence of archaeological deposits.

6.12 Machine excavation will be undertaken by backactor excavator, using a toothless bucket of appropriate width, to reduce ground levels in level spits of no more than 0.20m. Excavated areas should not be smoothed with the back of the bucket. Under no circumstances will the machine be used to cut arbitrary trenches down to natural deposits.

6.13 Toothed buckets are only to be used in exceptional circumstances, and where express permission has been given by the archaeologist.

6.14 Care should be taken when excavating onto suspected occupation sites, or entranceways, in order that subtle features or deposits are not machined off. After the depth of the archaeological horizon has been establish, it may be appropriate to initially machine to just above it to enable hand excavation to establish potential before further machine stripping.

Spoil

6.15 Spoil should be scanned for metal artefacts using a metal detector capable of discriminating between metals, and operated by an experienced user, to enhance recovery of artefacts.

Deep Excavations

6.16 Where necessary to execute the objectives of the project, trenches or trial pits may need to be stepped or shored to reach their final depth. The potential for deep excavation should be identified from geotechnical data, where available, at the outset of the project and appropriate measures included in the WSI.

6.17 The base of the excavation will reflect the size specified for the trench/pit.

Removal of Bulk Deposits and Obstructions

6.18 With the prior agreement of SYAS, bulk deposits of limited archaeological interest may be machine excavated in spits (such as homogenous deposits of made ground or demolition material).

6.19 Large obstructions, such as boulders or engineering structures, will be left in-situ where it is safe to do so. Removal of such structures by machine will be undertaken where they are assessed to cover archaeological deposits, and only where a strategy has been agreed with SYAS on how disturbance of surrounding deposits or structures will be avoided.

Removal of Contaminated Deposits

6.20 The risk of contamination should be established prior to work commencing, and appropriate measures implemented to reduce or avoid risks in accordance with Historic England best practice guidance.[20]

[20] Historic England 2017a

6.21 As soon as contaminated deposits are identified, excavation should immediately cease, and guidance be sought from the appropriate specialist/agency to establish risks and design a forward strategy for safe excavation.

6.22 Where hand excavation is not possible, machine excavation should be undertaken under the direction of an archaeologist. An appropriate strategy for recording will be agreed on a case-by-case basis with SYAS.

Investigation of Archaeological Features

6.23 Archaeological deposits will be cleaned and excavated by hand, using appropriate tools, according to accepted principles of stratigraphic excavation. The stratigraphy of the area is to be recorded, even when no archaeological deposits have been identified.

6.24 All features will be investigated sufficient to determine its nature, extent, and significance:

1. discrete features will be half-sectioned in the first instance;
2. 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;
3. the deposits at junctions or interruptions in linear features will be sufficiently excavated for the relationship between components to be established. All termini will be investigated.

6.25 No archaeological deposit will be entirely removed unless this is necessary to meet the aims of the project.

Weathering-out, Drying and Wetting

6.26 Depending on the conditions of the site and geology, particularly on Sherwood/Bunter Sandstone sands and gravels, it may be necessary to allow a minimum of one week following stripping to improve visibility of archaeological deposits.

6.27 In dry conditions or on clayey soils it may be necessary to spray the site to show up changes in the composition of soils and identify features.

6.28 Waterlogged and organic-rich deposits should be kept covered and damp to reduce degradation once exposed.

Features of Unexpected Importance

6.29 Should features of unexpected importance or complexity be identified that would warrant special measures to record or protect them, then the supervising archaeologist should notify SYAS at the earliest opportunity to discuss an appropriate strategy for their management.

Recording

6.30 A standard single context recording system will be used to keep a documentary record of all archaeological remains that are encountered. The individual contexts will be cross-referenced as appropriate to associated features that are exposed.

6.31 Stratigraphy will be recorded in all areas of monitoring, even where no archaeological deposits have been identified, and a Harris Matrix diagram compiled.

6.32 All records will be checked for consistency and stratigraphic relationships.

Drawn Record

6.33 A range of survey methods may be applied depending on the nature of the archaeology encountered, including survey by hand, by total station, real-time kinematic global navigation satellite system (RTK GNSS), or photogrammetry. All measured survey will be undertaken in accordance with relevant guidelines.[21]

6.34 Hand-drawn and digital surveys will be annotated in the field to produce interpretative drawings with relevant context numbers and boundaries between features.

6.35 A drawing register will be maintained, recording the scale, location, date, subject, levels, and surveyor.

6.36 The extent of the excavated areas and archaeological features will be recorded in plan at an appropriate scale (1:500, 1:1250 or at most 1:2500), including the position of section lines, and tied into the National Grid.

6.37 All archaeological features will be drawn in plan and section at an appropriate scale (no less detailed than 1:50 for plans and 1:20 for sections) with Ordnance Datum heights on each drawing. At least one representative long section of each trench or trial pit will be drawn. Detailed plans will be made of key features and section, or elevation drawings provided of cut features and upstanding structures as appropriate.

Photography

6.38 Photographic recording (film or digital) will be required showing the site in context, all excavated trenches and individual archaeological features, and including shots of work in progress.

6.39 Film photography will be undertaken using panchromatic black and white film no faster than ISO400, supplemented with colour slide film.

6.40 Digital photography will be undertaken in accordance with standards set by Historic England and the recipient archive.[22] All digital photography will be undertaken using a high-quality camera recommended to have no less than an APS-C or DX size sensor of 10 megapixels and to be capable of generating images in TIF (v6) or unprocessed RAW format.

6.41 A tripod will be used to allow stable longer exposures in low light conditions.

6.42 Metric scales of appropriate size will be discreetly placed in photographs to preserve a sense scale. Where colour is an important factor, colour control patches will be used.

6.43 A register recording the details of each image will be maintained, including subject, location, date, and photographer.

Finds and Samples

6.44 Provisions should be made for relevant specialists to visit the site where required.

6.45 The Historic England Science Advisor can be consulted for advice on appropriate approaches to sampling and other archaeological science components.

[21] Including Andrews *et al* 2015 and Historic England 2017b.
[22] Historic England 2015c. and Archaeological Data Service 2009

Artefact Recovery

6.46 All stratified archaeological finds will be collected, except for modern (mid-20th century or later) finds from topsoil and subsoil contexts unless it is determined that they are of archaeological interest. All artefacts will be bagged and labelled by context.

6.47 Removal, packaging, and labelling of finds will be undertaken in accordance with 'First Aid for Finds'[23] and specific Historic England guidance as required.

Environmental/Sediment Sampling and Scientific Dating

6.48 All sampling must be undertaken to a bespoke strategy to be set out in the project WSI. It is to be produced in consultation with specialist advice, and in accordance with best practice guidance (including specific guidance on industrial residues, geoarchaeology, animal remains and dating, where appropriate).[24]

6.49 The classes of material to be sampled, and the methodology for collection and assessment, will be dependent on:

1. The nature of past environments, landscape processes and activities;
2. The types of material to be recovered to address the objectives of the project;
3. The types of material likely to survive given anticipated ground conditions

6.50 The sampling strategy should also identify a process for determining when scientific dating will be considered, and the most likely forms appropriate to the site (such as radiocarbon dating, luminescence dating, archaeomagnetic dating, or dendrochronology).

6.51 Provision should also be made in the WSI for the sampling strategy to be refined at suitable stages during the fieldwork programme, utilising appropriate specialists where necessary including the Historic England Regional Science Advisor.

Human Remains

6.52 Should any inhumation or cremation burials be encountered, their extent, number and state of preservation will be established and SYAS will be notified to discuss an appropriate strategy for their management. Remains should not be removed or chased beyond the existing limits of excavation prior to agreement with SYAS.

6.53 Where it is deemed necessary, a licence for removal will be requested from the Ministry of Justice, and SYAS notified, and no development should take place until burials are removed or alternate arrangements made.

6.54 The treatment of human remains will be in accordance with the requirements of Civil Law and all relevant best practice guidance.[25] The remains will be recorded in-situ before lifting in accordance with best practice guidance.[26]

Treasure

6.55 Artefacts defined as treasure under the Treasure Act 1996 (as supplemented by the Treasure (Designation) Order 2002) will be treated in accordance with the Treasure Act 1996 Code of Practice.[27] All finds of treasure must be reported to the local coroner within

[23] Watkinson and Neal 1998
[24] Historic England 2011, 2015d, 2018b, 2019 and 2022.
[25] APABE 2017
[26] Brickley, et al., 2004 and 2017 & Historic England 2018c
[27] DCMS 2008

14 days of discovery. In the first instance, it is recommended that details of the find are provided to the local Portable Antiquities Scheme Finds Liaison Officer to confirm that it constitutes treasure; they will be able to apply for a Treasure Reference Number and declare the find to the coroner on your behalf. SYAS should also be notified.

6.56 A short Treasure Report will be compiled for submission to the coroner.[28]

6.57 Where recovery of treasure cannot be undertaken on the same working day as the discovery, suitable security measures will be taken to protect the finds from theft.

Post-Excavation

6.58 All finds are to be treated in accordance with current best practice guidance. Finds are to be cleaned and marked, according to accepted principles and in line with appropriate period/material guidelines.

6.59 For all categories of material recovered, including finds, palaeo-environmental, industrial and other specialist samples, an assessment by an appropriately experienced specialist will be undertaken in accordance with best practice guidance.[29]

6.60 Basic stratigraphic information will be supplied to the project specialists.

6.61 All sediment samples collected in accordance with the project sampling strategy should be processed, sorted, and assessed (excluding samples form obviously mixed deposits, etc.).

6.62 Scientific dating of suitable material should be undertaken during the evaluation phase where it would assist with meeting the aims of the project.

6.63 Advice from appropriate specialists should be sought on the storage and conservation of unstable artefactual remains (e.g. metallic, wood or leather).

6.64 Ferrous objects, and a selection of non-ferrous objects (including all coins), will be x-radiographed in accordance with Historic England guidance.[30]

6.65 The specialists will provide assessment reports describing the material, proposing selection for the permanent archive, and identifying recommendations for further detailed analysis and illustration in consideration of the project research objectives and any unanticipated research potential.

6.66 For ceramic assemblages, recording shall be carried out in a manner compatible with existing typological series in local pottery reference collections, e.g. the South Yorkshire / North Derbyshire Medieval Ceramics Reference Collection.[31]

6.67 The guidelines for handling Post Roman Ceramics produced by the Medieval Pottery Research Group are also to be followed, for relevant material: MPRG, 2001 "Minimum Standards for the Processing, Recording, Analysis and Publication of Post-Roman Ceramics" Medieval Pottery Res Group Occ Paper 2.

[28] A template treasure report can be requested from the Finds Liaison Officer
[29] Watkinson and Neal 1998, Historic England 2011 & Barclay *et al.* 2016)
[30] Historic England 2006
[31] Available online: http://archaeologydataservice.ac.uk/archives/view/ceramics_eh_2003/

Reporting

6.68 As a minimum, an evaluation report to post-excavation assessment level will be produced. This will provide sufficient objective data to describe and document the results and an assessment of their importance including the research potential of the project archive.

6.69 Where, in consultation with SYAS, further investigation and specialist analysis is necessary to achieve the aims of the project, and this will not form part of a follow-on mitigation phase, then an updated written scheme of investigation (sometimes referred to as an updated project design) will be produced. This update will describe the additional work required and how it will be undertaken.

Evaluation Report

6.70 An evaluation report shall contain:

1. An introduction including background information (with planning application details, where appropriate);
2. The original research aims and objectives and rationale for selected area of investigation;
3. An archaeological and historical baseline;
4. A description of results;
5. A report of all find and sample categories to assessment level, by appropriate specialists, including their research potential;
6. The results of any scientific dating;
7. A discussion of the results including a phased interpretation of the site;
8. A summary of the results in their local, regional, and national context, and the extent to which the work has addressed the project aims and objectives;
9. An assessment of the effectiveness of the evaluation strategy, including earlier stages of work (including geophysical survey);
10. Recommendations for any further investigation, specialist analysis or conservation, recording and/or preservation of in situ archaeological remains, to be determined in consultation with SYAS;
11. Supporting illustrations, including as a minimum:
    (a) A detailed location map;
    (b) A detailed site plan showing all trenches or trial pits, as excavated;
    (c) Plans for all trenches where archaeological features were identified;
    (d) Detailed plans of archaeological features;
    (e) Detailed sections of archaeological features;
    (f) An overall (phased) site plan showing all archaeological features recorded;
    (g) Selection of photographs of work in progress;
    (h) Select artefact illustrations and/or photographs.
    (i) Supporting tables of data, including as a minimum:
12. A detailed context index;
13. An archive index;
14. Acknowledgements identifying those involved in the project, including SYAS.

Updated Written Scheme of Investigation

6.71 An updated written scheme of investigation shall contain:

1. Any changes to the aims and objectives of the project;
2. Schemes of further investigation, conservation or specialist analysis;
3. The requirement and content of the final analysis report;

4. Any changes to the archive arrangements, including details of proposed specialist conservation.
5. Any updates to the Selection Strategy and Data Management Plan.

Dissemination and Archive

6.72 The reports and results of the evaluation should be disseminated in accordance with the standards and guidelines set out in Section 7.

6.73 A project archive must be maintained, prepared, and deposited in a publicly accessible repository in accordance with the standards and guidelines set out in Section 8.

7 Standards for Public Engagement, Dissemination & Publication

Public Engagement & Outreach

7.1 Archaeological work is undertaken for public benefit and SYAS encourage opportunities for public engagement to be integrated from the outset.

7.2 As a minimum on all trenching/test pitting evaluation, the WSI will set out the steps taken towards establishing an engagement and outreach strategy. Where no measures are proposed, then the reason why must be clearly stated.

7.3 Measures to be considered include:

1. Illustrated notices displayed during fieldwork around the site (with the client's agreement), explaining what work is in progress and why, to keep members of the public informed (minimum of A3 size, with font at a minimum size of 16 point);
2. Social media or newspaper updates;
3. Site tours and public talks (e.g. by presenting a paper at South Yorkshire Archaeology Day and talking to local societies);
4. Digital interpretation;
5. Popular publications;
6. Permanent public information board; and
7. Any other opportunities that might be relevant for a given site.

7.4 A bespoke strategy shall be produced for each site.

Dissemination of Results

7.5 Digital and physical copies of the report must be supplied to SYAS for incorporation into the South Yorkshire Historic Environment Record. Copies of select digital data must also be provided, including geophysical results (GeoTIFFs and shapefiles of interpretative plots) and trench/pit locations (shapefiles of extents and features).

7.6 Printed copies of reports will be included with the physical archive to the recipient museum.

7.7 Copies of the report, or details on where it can be accessed, should be provided to all external specialists involved in the project and, where relevant, the archaeologist responsible for any previous geophysical surveys at the site. This is to assist in the design and implementation of future projects.

7.8 The archaeological contractor should initiate or update an online OASIS form[32] at commencement of the project. Details of the results and archive are to be added, along with a copy of all formal reports, upon completion of the project.

Formal Publication

7.9 A summary report of an appropriate length, accompanied by illustrations (at 300dpi resolution), must be prepared and submitted in digital format, for publication in *Archaeology in South Yorkshire* or an equivalent SYAS publication.

7.10 Where results warrant it, and following discussion with SYAS, formal publication in the form of a journal article or monograph should be produced

[32] Via the OASIS online portal hosted by the Archaeological Data Service http://ads.ahds.ac.uk/project/oasis/

Furthering Research

7.11 Provision must be made for updating the South Yorkshire Historic Environment Research Framework where the results of a fieldwork project contribute towards agenda topics. This is to be achieved by adding 'comments' to relevant research questions briefly summarising the results and providing a bibliographic reference to the relevant report[33]..

[33] The research framework is accessible online: https://researchframeworks.org/syrf/ - new users must register for a new account to add comments.

8 Standards for Archaeological Archives

General

8.1 In accordance with regional policy,[34] the archaeological contractor must notify the relevant museum at project initiation, mid-point review and completion stages to discuss archaeological archiving requirements. The relevant form (Project Initiation Form/ Mid-point Review Form/ Completion Form) will be filled out and sent to the museum with a copy provided to SYAS. Template forms are available for download from the SYAS website.[35]

8.2 Details of archiving arrangements should be confirmed with the client and landowner at the outset, and a budget allowed for to cover the museum's expected deposition charge.

Working Project Archive

8.3 All material (whether digital or physical) recovered or generated through the duration of the field evaluation project will be appropriately and securely stored in a working project archive. This will be undertaken in accordance with the selection strategy and digital data management plan set out at the commencement of the project (see paragraphs 1.11-1.13).

Physical Records

8.4 Any physical documents or drawings will be indexed, collated, and stored in a secure location when not in use.

8.5 Film photography will be processed at regular intervals throughout the duration of a project.

8.6 Digital security copies will be made of physical records at regular intervals, to be stored and backed up in a secure location. Documents and drawings will be scanned at an appropriate resolution (no less than 300dpi for documents and drawings, 600dpi for photographic prints, and 4000dpi for negatives or slides) and to an appropriate format (e.g. a lossless format, such as TIF, for scale drawings), and scans checked for quality.[36] Standards adhered to should be included in the Data Management Plan. If digitised data is to form part of the final digital archive it should be treated as set out for Born Digital Records below.

Born Digital Records

8.7 All digital records will be treated in accordance with a project data management plan.[37]

8.8 Digital records will be routinely downloaded, stored, and backed up in a secure location.

8.9 All digital records will be consistently labelled, files logically structured, and embedded with appropriate metadata (or have their metadata stored in an accompanying spreadsheet).[38]

[34] Turnpenny 2012
[35] See guidance for archaeological projects, available online: https://www.sheffield.gov.uk/syas
[36] For further guidance see: Digitisation at The National Archives
[37] CIfA guidance available online: https://www.archaeologists.net/digdigital
[38] Archaeological Data Service 2009

Final Archaeological Archive

Selection Strategy

8.10 On the completion of fieldwork, the relevant specialists and recipient museum will be consulted to update the selection strategy set out in the WSI in accordance with best practice guidance.[39]

8.11 This should consider all documents, finds, samples, and digital files generated during the project, including illustrations.

8.12 The aim of this process is to produce a project archive that allows a full re-examination and interpretation of all the results of the project whilst avoiding replication, repetition, or the retention of materials not considered germane to future analysis.

Archive Deposition

8.13 The final archive will then be assembled in accordance with Archaeological Archives Forum, CIfA, and museum guidelines.[40]

8.14 Agreement in principle for full transfer of title of finds to the recipient museum needs to be obtained at the outset. Confirmation of transfer of title from the landowner and confirmation of assignment of copyright, along with a full archive inventory, will be submitted with a project completion form[41] to the recipient museum. SYAS will be provided with a copy of the completion form, including the assigned accession number.

8.15 The recipient archive will be licensed to use the deposited material, in perpetuity, without restrictions; this licence will allow the archive to reproduce material, including for use by third parties, with the copyright owner suitably acknowledged.

8.16 It is preferred practice for generated material to be archived in its original medium (i.e. physical or digital). Digitising of physical records will only be considered where it retains the same level of accessibility and information as the original medium.

8.17 The physical archive will be deposited with the appropriate museum. A copy of the archive receipt will be provided to SYAS.

8.18 The digital archive will be deposited with a Trusted Digital Repository (CoreTrustSeal certified). For archaeological archives this is presently limited to the Archaeology Data Service (ADS) at the University of York. A link to the final digital archive will be provided to SYAS.

[39] AAF 2011, SMA 2020 & CIfA toolkit for selection archaeology: https://www.archaeologists.net/selection-toolkit
[40] AAF 2011, CIfA 2020e & Turnpenny 2012
[41] Utilising the proforma agreement available online: https://www.sheffield.gov.uk/home/planning-development/south-yorkshire-archaeology-service/guidance-for-archaeological-projects

9 References

Advisory Panel on the Archaeology of Burials in England (APABE) 2017. *Guidance for Best Practice for the Treatment of Human Remains Excavated from Christian Burial Grounds in England.*

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

Archaeological Data Service (ADS), 2009. *Archaeology Data Service Guide to Good Practice* [online]. Available: https://guides.archaeologydataservice.ac.uk/g2gpwiki/

Andrews, D., Bedford, J. & Bryan, P. 2015. *Metric Survey Specifications for Cultural Heritage (3rd edn).* Historic England.

Barclay, A., Booth, P., Brown, D.H., Evans, J., Knight, K. and Wood, I. 2016. *A Standard for Pottery Studies in Archaeology*. Prehistoric Ceramics Research Group, Study Group for Roman Pottery and Medieval Pottery Research Group.

Brickley, M. & McKinley, J. (eds.) 2004. *Guidelines to the Standards for Recording Human Remains.* Institute of Field Archaeologists Paper no. 7. CIfA.

Brickley, M. & Mitchell, P.D., 2017. *Updated Guidelines to the Standards for Recording Human Remains.* CIfA.

Chartered Institute for Archaeologists (CIfA) 2021. *Code of Conduct: professional ethics in archaeology.*

Chartered Institute for Archaeologists (CIfA) 2020a. *Standard and guidance for archaeological field evaluation.*

Chartered Institute for Archaeologists (CIfA) 2020b. *Standard and guidance for archaeological geophysical survey.*

Chartered Institute for Archaeologists (CIfA). 2020c. *Standard and Guidance for the archaeological Excavation.*

Chartered Institute for Archaeologists (CIfA). 2020d. *Standard and guidance for the archaeological investigation and recording of standing buildings or structures.*

Chartered Institute for Archaeologists (CIfA). 2020e. *Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives*.

Chartered Institute for Archaeologists (CIfA). n.d. *Dig Digital* [online]. Available: https://www.archaeologists.net/digdigital

Chartered Institute for Archaeologists (CIfA). n.d. *Toolkit for Selecting Archaeology* [online]. Available: https://www.archaeologists.net/selection-toolkit.

Department for Levelling Up, Housing & Communities (DLUHC) 2021. *National Planning Policy Framework*

Department for Digital, Culture, Media & Sport (DCMS) 2008. *Treasure Act 1996 Code of Practice (2nd Revision) England and Wales.*

European Archaeology Council 2016. *EAC Guidelines for the use of Geophysics in Archaeology: Questions to Ask and Points to Consider.* EAC Guidelines 2.

Hey, G. & Lacy, M. 2001. *Evaluation of Archaeological Decision-Making Processes and Sampling Strategies.*

Historic England. 2006. *Guidelines on the X-radiography of Archaeological Metalwork*.

Historic England, 2011. *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation (second edition).*

Historic England, 2012. *The Geophysical Survey Database.*

Historic England 2015a. *Management of Research Projects in the Historic Environment: The MoRPHE Project Manger's Guide.*

Historic England 2015b. *Managing Significance in Decision-Taking in the Historic Environment: Historic Environment Good Practice Advice in Planning 2.*

Historic England 2015c. *Digital Image Capture and File Storage: Guidelines for Best Practice.*

Historic England. 2015d. *Archaeometallurgy: Guidelines for Best Practice*.

Historic England. 2015e. *Geoarchaeology: Using Earth Sciences to Understand the Archaeological Record*.

Historic England 2016a. *Understanding Historic Buildings: a guide to good recording practice.*

Historic England 2016b: *Drawing for Understanding: Creating Interpretative Drawings of Historic Buildings.*

Historic England. 2017a. *Land Contamination and Archaeology: Good Practice Guidance*.

Historic England 2017b. *Photogrammetric Application for Cultural Heritage: Guidance for Good Practice.*

Historic England 2018a. *3D Laser Scanning for Heritage: Advice and Guidance on the use of Laser Scanning in Archaeology and Architecture.*

Historic England. 2018b. *Science for Historic Industries: Guidelines for the Investigation of 17th- to 19th-century Industries*.

Historic England. 2018c. *The Role of the Human Osteologist in an Archaeological Fieldwork Project*.

Historic England. 2019. *Animal Bones and Archaeology: Recovery to Archive*.

Historic England. 2020. *Deposit Modelling and Archaeology: Guidance for Mapping Buried Deposits*.

Historic England. 2022. *Radiocarbon Dating and Chronological Modelling: Guidelines and Best Practice*

Society for Museum Archaeology 2020. *Standards and Guidance in the Care of Archaeological Collections.*

South Yorkshire Archaeology Service (SYAS), 2018. *Yorkshire, The Humber & The North East: A Regional Statement of Good Practice for Archaeology in the Development Process*.

Turnpenny, M. 2012. *Renaissance Yorkshire: Archaeological archive deposition policy for museums in Yorkshire and the Humber*. MLA Renaissance Yorkshire.

Watkinson, D. and Neal, V. (eds). 1998. *First Aid for Finds.* United Kingdom Institute for Conservation of Historic & Artistic Works, Archaeology Section.

Appendix 2: Selection Strategy

Appendix 2
Tween Bridge XO30 TWB24
14/05/2025
Selection Strategy

Project Information

Project Management

Project Manager	David Williams
Archaeological Archive Manager	Zoe Horn
Organisation	Archaeological Services WYAS

Stakeholders		**Date Contacted**
Collecting Institution(s)	Doncaster Museum	11/09/2024
Project Lead / Project Assurance	David Williams	ongoing
Landowner / Developer	Not Known	ongoing
Other	Jonathan Millward, Principal Heritage Consultant, Pegasus Group Peter Robinson Doncaster Museum Andy Lines Archaeologist with SYAS	Ongoing

Resources

Resources required Describe the resources required to implement this Selection Strategy, particularly if unusual resources are required.	

Context

Describe below the context of this Selection Strategy. You should refer to:

- The aims and objectives of the project;
- Local Authority guidance (including the brief);
- Research Frameworks;

- The repository collection development policy and/or deposition policy;
- Material-specific guidance documents.

Note: This section may be copied from your Project Design/WSI to ensure all Stakeholders receive this context information.

Objectives

Aims and objectives

The aim of the evaluation is to gather sufficient information to establish the extent, condition, character and date (as far as circumstances permit) of any lithic spreads, archaeological features and deposits within the area of interest. The information gained will allow the Planning Authority to make a reasonable and informed decision on the planning application as to whether archaeological deposits should be preserved in-situ, or more appropriately, be recorded prior to destruction (whether this be via a summary record from a salvage excavation or watching brief, or a detailed record from full open area excavation). Specific aims are:

- Determine if earlier prehistoric lithics are present in the topsoil. This important class of evidence is difficult to detect in trial trenching and any remains will be lost during development of the site.
- Determine if evidence for later Prehistoric or later periods is present as indicated in the geophysical survey
- Determine the character & nature of Prehistoric or later activity within the site and evaluate the potential of any features present
- Determine, if possible, the date of past activity within the site from recovered artefacts and other material

The South Yorkshire Research Framework for the Palaeolithic and to Bronze Age has identified that Thorne Moor is an area of interest with What is the potential for recovering Mesolithic organic material from sites such as Sutton Common or Thorne and Hatfield Moors? One of the main source of information about the region's Neolithic and Bronze Age resides in its structures, which are almost entirely of a ceremonial or monumental character. This includes the very rare example of a Neolithic wooden platform, along with trackway, in the vicinity of Hatfield Moor (Chapman and Geary 2013: 134-138), and a Late Bronze Age trackway at Thorne Moor (Buckland and Kenward 1973). Area 3 has been identified as having peat as part of the geological background and as such has the potential for remains to be associated with this.

Other research priorities should also be considered and given the wide variety of archaeological remains recorded in the wider landscape these objectives from the Iron Age and Roman periods should be considered during the fieldwork.

Archive Preparation & Deposition

The archive of records generated during the fieldwork will be kept secure at all stages of the project. All records will be quantified, ordered, indexed and will be internally consistent. The digital archive will be produced to current national standards and guidelines and in accordance with the recommendations of the WSI.

No discard of archaeological archive should take place without prior approval of the museum curator. Selection proposals must be supported by statements from suitable and relevant material type specialists.

1 – Digital Data

Stakeholders

Name the individual(s) responsible for the Digital Data Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Collections Curator).

Archaeological Archive Manager – Zoe Horn
Project Manager – David Williams
Collections Curator – Peter Robinson Doncaster Museum
ADS

Selection

Location of Data Management Plan (DMP)

Selection of digital data elements should be considered in your project's DMP. For the purpose of the Selection Strategy, you can either copy the selection section of your DMP below, or attach it as an appendix to this document. Please indicate here if the DMP is attached.

ASWYAS – Leeds City Council IT Servers

The selection strategy in your DMP should:

1.1 Define what digital data will be selected for inclusion in the archaeological archive, how this will be done, and why. Do not forget to consider that specialists may have digital data that should be included in the archaeological archive.
1.2 Identify the selection review points during the project (i.e. project planning, data gathering, analysis and reporting and archive compilation).
1.3 Reference all relevant standards, policies or guidelines (e.g. digital repository deposition requirements) and specialist advice sought.
1.4 Identify any selection decisions that differ from standard guidelines and explain why.

Selection of digital data: Digital data will be selected for inclusion in the preserved archive by the Project Manager and Archaeological Archive Manager as detailed in the attached DMP.
The digital data selected for inclusion in the preserved archive will include:
Digital Photographs and GPS survey data produced during the fieldwork will be reviewed at the analysis stage and included in the digital archive.

The archive will meet all of the digital repository (ADS) deposition requirements.

It is not currently anticipated that decisions will be made that differ from the standards and guidance cited above.

De-Selected Digital Data

The procedure for dealing with De-selected digital data and what specialist advice informed this process should be recorded in your DMP. Please copy this information here or attach your DMP as an appendix to this document.

Digital Data created by specialists will form part of the 'paper archive' reducing the amount of digital data. Emails and correspondence pertinent to the project will also be converted to paper archive.

Amendments

Detail any amendments to the above selection strategy here.

Date	Amendment	Rationale	Stakeholders

2 – Documents

Stakeholders

Name the individual(s) responsible for the Documents Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Repository Representative).

Archaeological Archive Manager – Zoe Horn
Project Manager – David Williams
Collections Curator - Peter Robinson Doncaster Museum

Selection

Describe your Selection Strategy for the Documents elements of the archaeological archive. To do this you must:

1 Define which documents will be selected for inclusion in the archaeological archive, how this will be done, and why. Do not forget to consider that specialists may have documents that should be included in the archaeological archive.Identify the selection review points during the project (e.g. project planning, data gathering, analysis and reporting and archive compilation).
1.2 Reference all relevant standards, policies or guidelines (e.g. digital repository deposition requirements) and specialist advice sought.
1.3 Identify any selection decisions that differ from standard guidelines and explain why.

All documents created during the fieldwork and report production will be included in the archive.
The archive is likely to contain the following:

Written Scheme of Investigation
RAMS
Digital photo register sheets

Photo ID sheets
Test pit records
Specialists analysis reports
A copy of the report

Documents are reviewed at the archive compilation stage.
The procedures and requirements, will be followed for the deposition of the physical archaeological archives with the Guidelines for deposition of Archaeological Archive with Doncaster Museum.

De-Selected Documents

Describe the procedure for dealing with De-selected material and what specialist advice has informed this procedure.

The de-selected data will be destroyed (shredded) subject to final checking by the Project Archives Officer. Possible exceptions include images, records retained for business purposes including promotional material, teaching and duplicated material.
No specialist advice is sought.

Amendments

Detail any amendments to the above selection strategy here.

Date	Amendment	Rationale	Stakeholders

3 – Materials

Note: This step should be completed for each material component of the archaeological archive. Copy this table for the various materials as required, providing the 'Material Type' and a section identifier (eg. '3.1') for each.

Material type	Bulk Finds	**Section 3.**	

Stakeholders

Name the individual(s) responsible for the Materials Selection decisions (i.e. Archaeological Archive Manager, Project Manager, Repository Representative).

Archaeological Archive Manager – Zoe Horn
Project Manager – David Williams
Collections Curator – Peter Robinson Doncaster Musuem
Prehistoric pottery - Dr Chris Cumberpatch
Roman pottery - Ruth Leary
Medieval pottery - Dr Chris Cumberpatch
Ceramic building material - Dr Kevin Hayward
Flint specialist – Ann Clarke
Environmental - Dr Diane Alldritt
Faunal analyst - Dr Jane Richardson
Human bone - Malin Holst MA
Metalwork - Gail Drinkall
Artefact conservation - Ian Panter

Selection

Describe your Selection Strategy for each material type and or object type. To do this you must:

2.1 State the Selection Strategy you are applying to each category of material, how this will be done, and why.
2.2 Identify the selection review points during the project (e.g. project planning, data gathering, analysis and reporting and archive compilation).
2.3 Reference all relevant standards, policies or guidelines (e.g. thematic, period, and regional, Research Frameworks, repository deposition policies) and specialist advice sought.
2.4 Identify any selection decisions that differ from standard guidelines and explain why.

The Materials Selection Template may be useful in structuring this section.

No bulk finds have been noted as likely to be present in such quantity as to necessitate the implementation of a selection strategy during the excavation.
The overall responsibility for bulk finds selection decisions are the Project Manager and the representative of the collecting Museum. The project finds specialists are also responsible for shaping selection decisions regarding those categories of material.
All bulk finds recovered shall be included in the working archive, subject to continuous assessment by the in house finds team, although this decision is unlikely to change.
Standards and guidance: Recording will follow standard technological and typological classifications'. Assessment will follow English Heritage's MoRPHE Project Planning Note 3: Archaeological Excavation (English Heritage 2015) and the CIfA's Standard and Guidance for the collection, documentation, conservation and research of archaeological materials (CifA 2020)

Uncollected Material

If you are practising selection in the field, describe the process that will be applied. To do this you must:

- Detail how you will characterise, quantify and record all uncollected material on site.
- Explain how you will dispose of, or re-distribute, uncollected material.

No material will be discarded without processing and recording.

De-Selected Material

Describe what you will do with the de-selected material. All processed material should have been adequately recorded before de-selection.

De-selected material will be retained by the specialists or by ASWYAS (for inclusion in their handling and teaching collections), or discarded, as agreed by the landowner, specialists, collections curator and planning archaeologist. De-selected specimens will be retained by the specialists, or discarded, as agreed by the landowner, specialists, collections curator and planning archaeologist.

Amendments

Detail any amendments to the above selection strategy here.

Date	Amendment	Rationale	Stakeholders

Materials Selection Template

This table may be inserted into Section 3 of the main Selection Strategy Template to help present differing selection strategies for different material types

Find Type	Selection Strategy	Stakeholders	Review Points

Appendix 3: Data Management Plan

WYAS Archaeological Services

Appendix 1

Digital Data Management Plan

Tween Bridge, Archaeological Evaluation

XS22 TWE25

Project Details

Site Name:	Tween Bridge
Client:	Pegasus Group
Address:	5th Floor, 1 Newhall Street, Birmingham, B3 3NH
Project Type:	Archaeological Evaluation by Trial Trenching
Location:	Tween Bridge, Thorne Moors
County:	South Yorkshire
Grid Reference:	SE753127, SE770104, SE737090
Project Number:	XO30
Site Code:	TWB24
Planning Application No.:	TBC
NLM Site Code.:	CWEC
Project Management:	David Williams // David.williams@aswyas.com //0113 535 3007
Fieldwork supervisor:	Stephanie Blues BSc
Archive officer:	Zoe Horn // zoe.horn@aswyas.com // 0113 535 3007

WYAS Archaeological Services

Appendix 1

Digital Data Management Plan

Tween Bridge, Archaeological Evaluation

XS22 TWE25

Data Collection

Data Standards / Methods

Standard methods of data collection will be applied throughout the project, working to best practice guidance where applicable / available. In general, data acquisition standards are defined against ADS Guides to Good Practice.

Methods of collection are specified within the Written Scheme of Investigation and will meet the requirements set out in the relevant CIfA Standards and guidance, and the ASWYAS recording manual.

Where appropriate, project contributors external to ASWYAS will be required to include data standards, collection methodology and metadata with individual reports and data.

The table below provides a summary of the data types, formats and estimated archive volume for data collected/created as part of this project. As the project progresses, more detail regarding files will be added to this DMP.

Type	Format	Estimated volume (Data Archive)
Text / documents	Word (.Docx) PDF (.pdf/a)	8 objects (size <100MB) (Written Scheme of Investigation / Digital Data Management Plan / Assessment Report / Final Report / Individual Specialist Reports x 4)
Spreadsheets	Excel (.xls)	Finds inventory x1 <1MB
Images	Lossy graphics file (.jpg) Intended deposition format - uncompressed (.tiff)	Archive shots x250 (average size 4mb) Archive shots x 250 (average size 20mb)
Graphics	AutoCAD (.dwg) Illustrator (.ai)	Site plan x1 av size <10MB
GIS	xml based format (jobxml; .jxl, plus associated files)	Overall .jxl file <10MB

Data storage / file naming

WYAS Archaeological Services

Appendix 1

Digital Data Management Plan

Tween Bridge, Archaeological Evaluation

XS22 TWE25

- The working project archive will be stored in a project specific folder or data specific folder on the Leeds City Council (LCC) server. The server is backed up daily to maintain an up-to-date security copy of all organisation-wide data.
- Project folders are named following established organisational procedures.
- Data collected will be downloaded and raw data will be stored in the appropriate folder.
- File naming conventions following established organisational procedures and include version control management.

Quality assurance

- Instruments used in the collection of data are calibrated prior to use and checked to ensure they are in full working order.
- All site records and data collected will be reviewed during project delivery to ensure data is accurate and secure.
- Data collection and management are reviewed regularly as part of the organisational Quality Policy. This includes an annual review of internal project folders to ensure our organisational data management standards are being met.

Documentation and Metadata

Data collected will include standard formats which maximise opportunities for use and reuse in the future.

Data documentation will meet the requirements of the WSI, Museum Deposition Guidelines and Digital Repository Guidelines.

A Collection Level Metadata Summary (to include project details and a summary of the data included in the archive) will be included in all standard archaeological projects and will be completed as the project is delivered. A working copy will be kept on the organisational server in the Project Folder. The Collection Level Metadata Summary brings together the overarching project details and includes a register of data types and number of objects included in the archive, along with all other archive components.

WYAS Archaeological Services

Appendix 1

Digital Data Management Plan

Tween Bridge, Archaeological Evaluation

XS22 TWE25

Metadata tables for each data type will be populated as the project progresses and will use the standard format for each data type as recommended by ADS, who are the intended repository for the digital data archive.

An archive catalogue documenting both physical and digital archive products will be maintained as part of the report.

Ethics and Legal Compliance

The data collected as part of this project is not expected to include the collection of any data that will require anonymisation (such as personal addresses). Any data that is collected will conform to the West Yorkshire Joint Services Data Protection Policy (version 1.1, 2019) and current GDPR legislation.

Copyright for all data collected by the project team belongs to ASWYAS and formal permission to include data from external specialists and contractors is secured on the engagement of the specialist or contractor.

Where formal permissions and/or license agreements are linked to data sharing, they will be included in the project documentation folders and will accompany the archaeological project archive.

Storage and Backup

Organisational IT is managed by Leeds City Council (LCC), who are also responsible for the management and verification of our daily back-ups and who support access to security copies as needed.

Sufficient data storage space is available via the LCC server, which includes two-factor authentication and permissions-based access. The server is accessible by staff on and offsite through a VPN and secure log-in.

Off-site access to the project files on the organisation's server is provided to support back-up of raw data while fieldwork is ongoing. Where internet access for data back-up is not possible, the raw data will be backed up to a separate media device (such as laptop and portable external hard drive).

WYAS Archaeological Services

Appendix 1

Digital Data Management Plan

Tween Bridge, Archaeological Evaluation

XS22 TWE25

Project files will be shared with external specialists and contractors directly via LCC's secure file sharing platforms.

Data will be shared over LCC's secure file sharing platforms.

Selection and Preservation

The Selection Strategy and DMP will be reviewed and updated as part of the Post-excavation Assessment and Updated Project Design and following full analysis. Updated documentation will be included in all reporting stages.

Prior to deposition, the Selection Strategy and DMP will be updated and finalised in agreement with all project stakeholders (including the Local Planning Archaeologist, Client, Museum, ADS).

Selection will be informed by the WSI/Updated Project Design, defined against the research aims, regional and national research frameworks, specialist advice and the significance of the project results.

The project will be published as an online technical report (accessible via OASIS), with full access to research data, which raises awareness to the findings of the archaeological excavation and link to the digital archive.

The project results may provide new research data which can be included in the Historic Environment Record and will contribute to the knowledge of the archaeological remains in the area.

The data archive will be ordered, with files named and structured in a logical manner, and accompanied by relevant documentation and metadata, as outlined above.

Digital data created by ASWYAS will be deposited with the ADS which is the only repository in England with the CoreTrustSeal accreditation that will accept digital archives deriving from archaeological and historic environment fieldwork.

WYAS Archaeological Services

Appendix 1

Digital Data Management Plan

Tween Bridge, Archaeological Evaluation

XS22 TWE25

Data Sharing

A summary of the project will been included on the OASIS Index of Archaeological Investigation and the museum and digital archive repository and will be updated as the project progresses.

The investigations are likely to result in a number of documents: Written Scheme of Investigation, Post-excavation Assessment, Updated Project Design and Final Report.

The final report is expected to be completed within 12 months of the completion of fieldwork.

As the project progresses reports will be attached to the project OASIS record.

A final version of the project report will be supplied to the Historic Environment Record via OASIS, and any data which they request can also be provided directly.

The location (s) of the final Archaeological Archive will be added to OASIS when appropriate.

The ADS will disseminate the digital elements of the Archaeological Archive online under a creative commons licence and the dataset will receive a unique identifier (DOI).

Data specific requirements, ethical issues or embargos which are linked to particular data formats will be documented within the relevant metadata tables accompanying the project archive.

Responsibilities and Resources

The Project Manager will be responsible for implementing the DMP, and ensuring it is reviewed and revised at each stage of the project.

Data capture, metadata production and data quality are the responsibility of the Project Team, assured by the Project Manager.

Storage and backup of data in the field is the responsibility of the Field Team.

Once data is incorporated into the organisations project server, storage and backup is managed by LCC.

WYAS Archaeological Services

Appendix 1

Digital Data Management Plan

Tween Bridge, Archaeological Evaluation

XS22 TWE25

Data archiving is undertaken by the project team under the guidance of the Archives Officer, who is responsible for the transfer of the Archaeological Project Archive to the agreed repository.

Details of the core Project Team can be found in the Written Scheme of Investigation.

The project manager has overall responsibility for data capture, metadata production, data quality and correct storage and data sharing.

The security and backup of data is the responsibility of LCC.

Bibliography

British Geological Survey, 2025, http://mapapps.bgs.ac.uk/geologyofbritain/home.html (viewed May 2025)

Buckland, P. and Kenward, H. 1973. Thorne Moors: the Palaeoecological Implications of a Late Bronze Age site. *Nature* 241: 405-406.

Chapman, H. and Gearey, B. 2013. *Modelling Archaeology and Palaeoenvironments in Wetlands. The Hidden Landscape Archaeology of Hatfield and Thorne Moors, Eastern England.* Oxford: Oxbow.

CIfA, 2023, *Standard and Guidance for Archaeological Evaluation*

CIfA, 2014a, *Standard and Guidance for Collection, Documentation, Conservation and Research of Archaeological Materials*

CIfA, 2014b, *Standard and Guidance for Creation, Compilation and Deposition of Archaeological Archives*

Green, C., 2024, Tween Bridge Solar Farm, Geoarchaeological and Paleoenvironmental desk-based assessment report, quest Quaternary Scientific, unpubl. Reprot No. 083/23

Historic England, 1991, *Management of Archaeological Projects*

Historic England, 2006, *Management of Research Projects in the Historic Environment. The MoRPHE Project Managers' Guide*

Historic England, 2008, *Management of Research Projects in the Historic Environment. Archaeological Excavation (PPN3)*

Knight, D., Vyner, B., Allen, C., 2012, *An Updated Research Agenda and Strategy for the Historic Environment of the East Midland*

Millward, J., 2024, Heritage Technical Baseline, Tween Bridge, Thorne Moors (Pegasus Group report ref. P21-3484)

Museums and Galleries Commission, 1994, *Standards in the Museum Care of Archaeological Collections*

Soilscapes, 2024, Soilscapes soil types viewer - Cranfield Environment Centre. Cranfield University (landis.org.uk) (viewed July 2024)

UKIC, 1990, *Guidelines for the* P*reparation of Excavation Archives for Long-term Storage*, United Kingdom Institute for Conservation

Nepshaw Lane South, Morley, Leeds LS27 7JQ

Appendix 2: Inventory of primary archive

Phase	File/Box No	Description	Quantity
Evaluation	File no.1	Area sheets	11
		Test pit record registers	10
		Photo register sheets	14

Finds Summary

Phase		Finds Type	Quantity
Evaluation	Box 1	Pottery	7
		CBM	32
		Bone	1
		Plastic bead	1
		Flint	4
		Iron object	1
		Glass	3
		Bone	1
		Coal	1
		Clinker	1

Appendix 3: OASIS summary

OASIS Summary for archaeol11-535037

OASIS ID (UID)	archaeol11-535037
Project Name	Tween Bridge Thorne Moors South Yorkshire Archaeological Evaluation by Shovel Test Pitting
Sitename	Tween Bridge
Sitecode	TWE25
Project Identifier(s)	TWE25
Activity type	Test Pit
Planning Id	
Reason For Investigation	Planning requirement
Organisation Responsible for work	Archaeological Services WYAS
Project Dates	08-Jun-2025 - 27-Jun-2025
Location	Tween Bridge NGR : SE 72221 13751 LL : 53.61533640646203, -0.909741590830761 12 Fig : 472221,413751
Administrative Areas	Country : England County/Local Authority : Doncaster Local Authority District : Doncaster Parish : Thorne
Project Methodology	The work involved the excavation of 444 shovel test pits, all of which measured 0.40m by 0.4m. The areas were positioned over or in close proximity to the lithic finds recorded on the South Yorkshire HER (Table 2). The shovel test pits were placed to give a broad coverage of the various findspots, geoarchaeological units/ geology
Project Results	The archaeological shovel test pitting at Tween Bridge has provided an insight into the past land use and archaeological potential. The material recovered largely indicates the predominant post-medieval agricultural landscape, with the majority of recovered artifacts dating from the 18th to 21st centuries, consistent with former farm buildings and land management practices. Early prehistoric activity is suggested by the recovery of a few sparse lithic finds, with one dated to the Late Neolithic/Bronze Age. However, the limited quantity of these earlier finds suggests either a highly dispersed prehistoric presence or that deeper deposits, beyond the reach of current cultivation, may exist.
Keywords	Flint Scatter - EARLY PREHISTORIC - FISH Thesaurus of Monument Types
Funder	Private or public corporation RWE
HER	South Yorkshire Archaeology Service - noRev - LITE
Person Responsible for work	David Williams
HER Identifiers	
Archives	

Report generated on: 03 Jul 2025, 14:31

Bibliography

ASWYAS, 2020, Archaeological Recording Manual (unpubl.)

British Geological Survey, 2025, http://mapapps.bgs.ac.uk/geologyofbritain/home.html (viewed July 2025)

Buckland, P. and Kenward, H. 1973. Thorne Moors: the Palaeoecological Implications of a Late Bronze Age site. *Nature* 241, 405-406

Chapman, H. and Gearey, B. 2013. *Modelling Archaeology and Palaeoenvironments in Wetlands. The Hidden Landscape Archaeology of Hatfield and Thorne Moors, Eastern England*

Chartered Institute for Archaeologists, 2023, *Universal Guidance for Archaeological Evaluation*, https://www.archaeologists.net/codes/cifa

Green, C., 2024, Tween Bridge Solar Farm, Geoarchaeological and Paleoenvironmental desk-based assessment report, quest Quaternary Scientific, unpubl. Report No. 083/23

Historic England, 2008, *Management of Research Projects in the Historic Environment. Archaeological Excavation (PPN3)*

Millward, J., 2024, Heritage Technical Baseline, Tween Bridge, Thorne Moors (Pegasus Group report ref. P21-3484)

Soilscapes, 2024, Soilscapes soil types viewer - Cranfield Environment Centre. Cranfield University (landis.org.uk) (viewed July 2024)

Van de Noort, R. and Ellis, S., eds., 1997, Wetland Heritage of the Humberhead Levels

Williams, D, Blues, S, and Cobbold, T, 2025, Tween Bridge Thorne Moors, North Lincolnshire, Archaeological Evaluation by Trial Trenching, Assessment Report, ASWYAS Report No. 4247