Oadby to Arnesby (Leicestershire) Trunk Main Renewal

Post-excavation Assessment and Updated Project Design

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Summary

Wessex Archaeology was commissioned by Coffey, on behalf of Severn Trent Water Ltd, to undertake archaeological mitigation excavation and recording in advance of the Oadby to Arnesby Trunk Main Renewal scheme, a 3-km long replacement water pipeline in Leicestershire.

Iron Age features, principally ditches, and an 18th or 19th-century brick kiln had been identified along the pipeline route by earlier magnetometer survey and evaluation trenching. These features formed the focus of the archaeological mitigation works.

Ditches containing animal bone and Iron Age pottery were revealed in two of the excavation areas, revealing a degree of enclosure and land management in the local landscape in late prehistory.

The excavation also revealed the brick kiln to be a good example of a 'Scotch' type kiln, and that it was operated for an extended period. Although the precise date of the kiln and its functional relationship with the nearby Grand Union Canal remain unclear, the handmade bricks from it appear to be of 18th- or 19th-century date; it appears likely the canal was used to transport raw materials and finished bricks. A ditch, thought to have been dug to relieve drainage around the site of the brick kiln, proved notable in that a polished Neolithic axehead was recovered from its base.

A watching brief was maintained on a further five areas. Remains identified within these comprised an alluvial feature, a boundary of probable modern date and deposits of modern rubble. The limited depth of operations in most of the watching brief areas meant that the function and character of the modern deposits were not fully clarified.

The combined finds assemblage from all stages of fieldwork is small (the total weight of all finds is just over 4 kg) and its archaeological significance and further research potential are correspondingly limited. No further analysis is recommended for any of the finds.

Environmental sampling of Iron Age ditches revealed cereal grains (including spelt wheat), cereal chaff and remains of wild plants, although numbers are low, and the material is generally in poor condition. The character of the environmental evidence adds to the impression of a settlement existing somewhere in the vicinity in the Iron Age. The environmental assessment was able to confirm that the brick kiln was coal-fired.

The fieldwork has been generally successful in meeting its broad aims. No further analysis is recommended for any of the finds or samples, and the site is primarily of local interest.

The archive resulting from the excavation is currently held at the offices of Wessex Archaeology in Sheffield. Leicestershire Museums Service has agreed in principle to accept the archive on completion of the project, under the accession code X.A95.2020. A site-specific selection strategy is presented in Appendix 3.

Acknowledgements

Wessex Archaeology would like to thank Coffey, in particular Conor Bergin, for commissioning the archaeological mitigation works on behalf of Severn Trent Water. Wessex Archaeology is also grateful for the advice of Richard Clark, Team Manager (Heritage), for Leicestershire County Council who monitored the project for the local planning authorities.

Oadby to Arnesby (Leicestershire) Trunk Main Renewal

Post-excavation Assessment and Updated Project Design

1 INTRODUCTION

1.1 Project background

1.1.1 Wessex Archaeology was commissioned by Coffey ('the client'), on behalf of Severn Trent Water Ltd, to undertake archaeological mitigation excavation and recording in advance of the Oadby to Arnesby Trunk Main Renewal scheme, a replacement pipeline between Oadby distribution service reservoir and Arnesby distribution booster station, Leicestershire. The scheme is located between NGRs 463662, 299445 and 461774, 294115 (**Fig. 1**).

1.1.2 The mitigation was preceded by preliminary archaeological works, including magnetometer survey (Archaeological Surveys Ltd 2020) and evaluation trenching (Wessex Archaeology 2021). These works identified ditches and a spread, both dating to the Iron Age, and an 18th- or 19th-century brick kiln. These features formed the focus of the archaeological mitigation excavation and recording.

1.1.3 The overall scheme is some 3 km in length, with three areas (occupying 0.27 ha) subject to archaeological mitigation excavation. A further five areas (0.54 ha) were investigated during an archaeological watching brief that also occurred as part of the fieldwork.

1.1.4 The investigations were undertaken in accordance with a written scheme of investigation (WSI), which detailed the aims, methodologies and standards to be employed, for both the fieldwork and the post-excavation work (Wessex Archaeology 2022a). Richard Clark, Team Manager (Heritage) for Leicestershire County Council, approved the WSI on behalf of the Local Planning Authorities (LPAs), prior to fieldwork commencing, and was the 'monitoring archaeologist' for the scheme. The excavation and watching brief were undertaken 31 January–25 February 2022.

1.2 Scope of the report

1.2.1 The purpose of this report is to provide the provisional results of the investigations, and the preceding evaluation, and to assess the potential of the results to address the research aims outlined in the WSI. Where appropriate, it includes recommendations for a programme of further analysis, outlining the resources needed to achieve the aims (including the revised research aims arising from this assessment), leading to dissemination of the archaeological results via publication and the curation of the archive.

1.3 Location, topography and geology

1.3.1 The scheme crosses farmland and runs south-east from the A6/Glen Rise roundabout toward the village of Kilby (**Fig. 1**).

1.3.2 Ground levels fall steadily along the course of the scheme from around 115 m OD at the north-eastern end at the A6, to 80 m OD at the crossing point of the River Sence, before rising a little (to 90 m OD) within Kilby and the land to its south.

1.3.3 The underlying geology is mapped as Mudstone of the Blue Lias and Charmouth formations, with superficial deposits of alluvium, diamicton (Oadby Member) and colluvium (British Geological Survey online viewer 2022).

2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1 Introduction

2.1.1 The archaeological and historical background has been previously assessed within a magnetometer survey report (Archaeological Surveys Ltd 2020), with a summary of the results presented below. Additional sources of information are referenced, as appropriate, with relevant entry numbers from the Leicestershire Historic Environment Record (HER) and the National Heritage List for England (NHLE) included.

2.2 Previous works related to the development

Geophysical investigations by Archaeological Surveys Ltd (2020)

2.2.1 Detailed magnetometry survey was carried out along the route. Five areas were found to contain anomalies with archaeological potential including positive linear anomalies indicating ditch-like features to the north and west of Newton Harcourt. A number of rectilinear enclosures, linear ditches and pits thought to indicate a Romano-British settlement were also detected to the west of Newton Harcourt. Three highly magnetic responses to the south of the Grand Union Canal were interpreted as brick kilns used during construction of the canal in the late 18th century (Archaeological Surveys Ltd 2020).

Archaeological watching brief on intrusive GI works by Wessex Archaeology (2020)

2.2.2 The watching brief monitored groundworks at a total of 16 locations: boreholes (BH) 1–4 and trial holes (TH) 1, 2, 5, 6, 9–14, 17 and 19. The majority of deposits recorded were topsoil, subsoil or the modern backfill of utility trenches. Glacial till was reached in TH9. No archaeological deposits or features were identified.

Archaeological evaluation trenching by Wessex Archaeology (2021)

2.2.3 A total of 64 trenches, each measuring 30 x 1.8 m, were excavated by machine along the length of the proposed scheme. Four Iron Age features were revealed across two trenches (trenches 18 and 25) and a post-medieval/modern brick kiln was revealed in trench 39. Further modern or undated features were identified during the evaluation, including pits, a land drain, a hedgerow and modern demolition rubble, as well as residual prehistoric flint flakes.

2.3 Archaeological and historical context

2.3.1 Remains previously recorded along the scheme or within its vicinity include a Bronze Age axe hammer (MLE6345) found 100 m to the west of the scheme, medieval village earthwork remains (MLE2660) to the west of Newton Harcourt, and extant ridge and furrow within pasture at the far northern end of the scheme. A WW2 ‘Starfish’ decoy site, designed to resemble the railway junction at Knighton, lay 100 m to the west of the scheme (MKE22668). The scheme corridor follows part of the Midland Railway (MLE16083) and the Grand Union Canal (MLE16300).

3 AIMS AND OBJECTIVES

3.1 Aims

3.1.1 The general aims of the investigations, as stated in the WSI (Wessex Archaeology 2022a) and in compliance with the Chartered Institute for Archaeologists' *Standard and guidance for archaeological excavation* (CIfA 2014a), were to:

- examine the archaeological resource within a given area or site within a framework of defined research objectives;
- seek a better understanding of the resource;
- compile a lasting record of the resource; and
- analyse and interpret the results of the excavation and disseminate them.

3.2 Research objectives

3.2.1 Following consideration of the archaeological potential of the site, the research objectives of the investigations were to:

- determine the date, nature and extent of the features located in trench 25;
- determine the date, extent and character of the linear feature which crossed trench 18;
- investigate the date, nature of construction and products of the brick kiln/s located in trench 39; and
- determine a better understanding of the nature of the archaeology and deposits uncovered in trenches 1, 22, 45, 47, 48, 60 and 61.

4 METHODS

4.1 Introduction

4.1.1 All works were undertaken in accordance with the detailed methods set out within the WSI (Wessex Archaeology 2022a) and in general compliance with the standards outlined in CIfA guidance (CIfA 2014a). The post-excavation assessment and reporting followed advice issued by the Association of Local Government Archaeological Officers (ALGAO 2015). The methods employed are summarised below.

4.1.2 The numbering of the areas that were subject to mitigation excavation and archaeological watching brief follows that of the evaluation trenches that they were focussed upon (**Table 1**). The only exception is Area 22, which also includes the watching brief area around trenches 60 and 61, as it was practically contiguous with that around trench 22.

Table 1 Summary of areas of investigation

Area	NGR (centre)	Height above OD (m)	Size (m^2)	Target
Mitigation				
18	463635, 297311	106.5	412	Iron Age ditch
25	463078, 296815	91.5	1480	Iron Age features and spread
39	462320, 296040	79.0	813	Post-medieval/modern brick kiln

Watching brief				
1	462959, 296810	90.0	638	Undated boundary
22	463628, 297040	97.5	3519	Modern demolition rubble
45	462400, 295600	78.0	623	Modern demolition rubble
47	462517, 295494	79.5	428	Pit or ditch terminal; modern demolition rubble
48	462445, 295493	82	200	Modern demolition rubble

4.2 Fieldwork methods

General

4.2.1 The mitigation and watching brief areas were set out using a Leica Global Navigation Satellite System (GNSS) connected to Leica's SmartNet service, in the same position as that proposed in the WSI (**Fig. 1**). The topsoil/overburden was removed in level spits using a 360º excavator equipped with a toothless bucket, under the constant supervision and instruction of the monitoring archaeologist. Within the mitigation areas, machine excavation proceeded in level spits until the archaeological horizon or the natural geology was exposed. Within the watching brief areas, machine excavation was monitored until the client's construction level was reached, at which point overburden clearance was complete. This generally involved a limited topsoil scrape, with correspondingly poorer visibility of the potential archaeological horizon within most watching brief areas.

4.2.2 Where necessary, the surfaces of archaeological deposits were cleaned by hand. A sample of archaeological features and deposits was hand-excavated, sufficient to address the aims of the excavation. A sample of natural features, such as tree-throw holes, was also investigated.

4.2.3 Spoil derived from machine stripping and hand-excavated archaeological features was visually scanned for the purposes of finds retrieval. A metal detector was also used. Artefacts were collected and bagged by context. All artefacts from excavated contexts were retained, although those from features of modern date (19th century or later) were recorded on site and not retained.

Recording

4.2.4 All archaeological features and deposits were recorded using Wessex Archaeology's *pro forma* recording system. A complete record of excavated features and deposits was made, including plans and sections drawn to appropriate scales (generally 1:20 or 1:50 for plans and 1:10 for sections) and tied to the Ordnance Survey (OS) National Grid.

4.2.5 The Leica GNSS surveyed the location of archaeological features. All survey data is recorded in OS National Grid coordinates and heights above OD (Newlyn), as defined by OSTN15 and OSGM15, with a three-dimensional accuracy of at least 50 mm.

4.2.6 A full photographic record was made using digital cameras equipped with an image sensor of not less than 16 megapixels. Digital images have been subject to managed quality control and curation processes, which has embedded appropriate metadata within the image and will ensure long term accessibility of the image set.

4.3 Finds and environmental strategies

General

4.3.1 Strategies for the recovery, processing and assessment of finds and environmental samples were in line with those detailed in the WSI (Wessex Archaeology 2022a). The treatment of artefacts and environmental remains was in general accordance with: *Guidance for the*

collection, documentation, conservation and research of archaeological materials (CIfA 2014b), *Environmental Archaeology: A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation* (English Heritage 2011) and CIfA's *Toolkit for Specialist Reporting* (Type 2: Appraisal).

Human remains

4.3.2 No human remains were encountered.

4.4 Monitoring

4.4.1 The Heritage Team Manager for Leicestershire County Council monitored the works on behalf of the LPAs. Any variations to the WSI, if required to better address the project aims, were agreed in advance with the client and the Heritage Team Manager.

5 STRATIGRAPHIC EVIDENCE

5.1 Introduction

Summary of archaeological features and deposits

5.1.1 Recorded remains chiefly comprise Iron Age ditches, an 18th- or 19th-century brick kiln, and traces of ridge and furrow cultivation. The Iron Age remains appear focused on the central part of the scheme, to the north and west of Newton Harcourt, with the brick kiln lying just south of the Grand Union Canal, towards the southern end of the scheme. Overall, relatively few remains were exposed given the length of the scheme. Context summaries are presented in **Appendix 1**.

Methods of stratigraphic assessment and quantity of data

5.1.2 All hand written and drawn records from the excavation have been collated, checked for consistency and stratigraphic relationships. Key data has been transcribed into a database, which can be updated during any further analysis. The phasing of archaeological features and deposits was undertaken using stratigraphic relationships and the spot dating from artefacts, particularly pottery.

5.2 Soil sequence and natural deposits

5.2.1 The natural geological substrate was a pale brownish yellow silty or sandy clay with occasional stone inclusions. It was generally reached at 0.3–0.5 m below ground level (BGL). The topsoil/ploughsoil was a mid to dark greyish brown silty clay.

Area 45

5.2.2 Area 45 was subject to a watching brief, with machining reaching, and extending slightly into, the level of the natural substrate. A crescent-shaped deposit of yellowish/greyish brown silty clay, up to 0.25 m thick, was visible at the base of the watching brief area along its north-western and north-eastern sides. Investigations involving two hand-excavated slots indicated that this material was alluvial in origin (**Figs 1** and **20–21**), with no finds collected, although flooding prevented the slots from being formally recorded (the investigation of this area in late February 2022 coincided with Storm Eunice).

5.3 Iron Age

Area 18

5.3.1 The terminal of a north-west to south-east aligned ditch was investigated in Area 18 (1022: >7 x 0.84 x 0.22 m; **Figs 2–3**).

5.3.2 A boundary continuing the south-eastward course of ditch 1022 had been investigated during the evaluation (as ditch 1803), but no corresponding feature was apparent at the mitigation stage. The geophysical survey recorded a segmented linear anomaly of probable archaeological origin at this location, which seems to broadly match the combined results of the intrusive investigations. Iron Age pottery was recovered from ditch 1803 during the evaluation, but no artefactual material was forthcoming from ditch 1022 at the mitigation stage. Nevertheless, given the orderly arrangement of the two features in plan, an Iron Age date is tentatively offered for ditch 1022 also.

5.3.3 A third feature within Area 18 was interpreted as a furrow (1024: see section 5.4.17 below).

Area 25

5.3.4 The right-angled junction of two ditches appearing to define the south-eastern corner of a plot of land of unknown extent was exposed in Area 25 (**Fig. 4**). One side of this corner was defined by ditch 1007/1009 (>9.3 x 2 x 0.08 m). The other was defined by ditch 1056 (>25 x 2 x 0.75 m; **Figs 5–6**), which showed evidence of recutting. Finds from ditch 1056 comprise Iron Age pottery and animal bone. A sherd of post-medieval pottery, presumed intrusive, was the only find from ditch 1007/1009.

5.3.5 Within the 10.5 m wide gap between the two terminals, a relatively shallow feature containing a spread of brown silty clay was exposed (1057: 11 x 4 x 0.2 m; **Fig. 7**). Excavations recovered similar finds to those from ditch 1056 (animal bone and Iron Age ceramics); to judge by their spatial separation in plan, feature 1057 and the two ditches appear to have been contemporary. It is possible that this spread represents trample at the entrance into a former field, or it may represent fill of a shallow livestock watering hole within the corner of the field.

5.3.6 Environmental samples from Area 25 contain cereal grains (including spelt wheat), cereal chaff, and remains of wild plants, although numbers are low and the material is generally in poor condition. The environmental evidence probably indicates a settlement existed nearby in the Iron Age.

5.4 Post-medieval/modern

Area 1

5.4.1 A north-west to south-east aligned modern spread was noted crossing the full width of the scheme in Area 1 (**Fig. 8**). Investigated at the evaluation stage (as 104/105: 0.4 m wide by 0.2 m deep) this material had been found to comprise brown silty clay with redeposited natural, and interpreted as the remains of a hedgerow. Its position and alignment tallies with a field boundary depicted on historic mapping from the 19th century until at least the 1940s.

5.4.2 A ditch (1003/1005: >18 x 1.2 x 0.15 m; **Fig. 9**) parallel with the spread lay 5–6 m to its east. No dating evidence was recovered. Although the alignment of the ditch appears parallel with the seemingly Iron Age boundary 1007/1009 in Area 25, 110 m to the east, it also shares the orientation as the possible hedgerow remains mentioned above. Based on their proximity and shared course, ditch 1003/1005 and the band of modern spread may have been components of the same boundary, although an earlier origin for the ditch (1003/1005) cannot be ruled out.

Area 39

5.4.3 The brick kiln first exposed in evaluation trench 39 (Wessex Archaeology 2021) was further investigated in Area 39 (1037; **Figs 10**–**15**).

5.4.4 The surface of the kiln (1044 and 1045, aligned north-north-east to south-south-west) was 9.2 m long and 4.6 m wide; just over 30 feet by 15 feet. It comprised a single course of unbonded handmade bricks each measuring 245 mm (roughly 9.5 inches) long. This length contrasts with the other bricks from the kiln, which were 230 mm (9 inches) long. It is probable that the longer bricks were imported to the site to construct the kiln, although diagonal kiss marks on these bricks and on the products of the kiln suggest continuity in manufacturing practice between them. Kiss marks are made when ceramics are in contact with each other or with items of kiln furniture during firing. All bricks from Area 39 were the standard 110–115 mm wide (roughly 4.5 inches) and 70 mm (2.75 inches) deep. The bricks in the surface were aligned across the kiln (individually aligned north-north-west to south-south-east). Sand was present between all the brick structures of the kiln, probably the remains of mortar degraded by intense heat.

5.4.5 The long sides of the kiln were each defined by a series of eight fireboxes constructed partly from imported firebricks 230 mm (9 inches) long (1049–1052; **Fig. 14**). The firebricks also had prominent kiss marks, although these were parallel with the bed of the brick in contrast to the diagonal lines seen on the red brick. The fireboxes were filled with black silty coal and clinker/cinder (1038–1043), the remains of fuel used to fire the kiln. There was no surviving evidence of grates.

5.4.6 Some of the bricks fired in the kiln were still in situ (**Fig. 11**), arranged to form rough rows ('blades'; Hammond 1977, 176) and internal flues. After removal of the in-situ fired bricks, the location of these internal flues were visible as black stains on the floor of the kiln (**Fig. 15**). A few loose bricks were also present, probably representing the products of the kiln if not from its demolition.

5.4.7 The kiln structure had been modified with diagonal buttresses reinforcing each corner. The base of three of these survived as a single course (1046–1048; 2.3 m by 1.2 m in plan). The red handmade bricks used in the construction of these buttresses were the same as those fired in the kiln, with the same dimensions and appearance, including the diagonal kiss marks. It is very probable that the buttresses were built from bricks fired in the kiln.

5.4.8 The kiln was accompanied by a north-west to south-east aligned 'V'-shaped ditch (1055; **Fig. 16**; 1.6 m wide and 0.7 m deep) that had been re-cut (1032; 0.87 m wide and 0.26 m deep). All fills of ditch 1055 contained charcoal and ceramic building material (CBM) fragments probably derived from the brick kiln. A residual Neolithic stone axehead was recovered from the interface with the natural in the base of fill 1031.

5.4.9 The perimeter of other excavated examples of Scotch kilns have been defined by ditches (e.g., Archaeology and Built Heritage 2021; Wessex Archaeology 2022b), with these, like this example, thought to have primarily operated as drains.

5.4.10 The kiln was cut through diagonally by a north-east to south-west aligned drain (1053; 0.18 m deep; not illustrated) constructed of an opportunistic mix of unbonded handmade bricks and firebricks. Some of these bricks probably derived from the kiln, but other examples were dissimilar to those seen elsewhere, lacking the prominent kiss marks. The drain may not have been contemporary with the operation of the kiln as the drain cut through fireboxes on either side of the kiln. The drain was not identified extending beyond the limits of the kiln.

Discussion

5.4.11 The brick kiln is a good example of an updraught or 'Scotch' type kiln, comparable to other examples, including those excavated archaeologically (e.g., Archaeology and Built Heritage

2021; Wessex Archaeology 2022b) and those described in literature (e.g., Hammond 1977, 171; Plumridge and Meukenkamp 1993, 167; Johnson 2020, 39; McWhirr and Smith 1994, AOC Archaeology 2009). The arrangement of fireboxes reveals the kiln to be a Scotch type updraught kiln. Earlier clamp kilns did not have permanent superstructures, while subsequent brick making technologies (including 'Newcastle' downdraught kilns) were more complex with fireboxes arranged differently (Hammond 1977, 171; Plumridge and Meukenkamp 1993, 167; Johnson 2020, 39).

5.4.12 The report on the Earl Shilton brickworks (Archaeology and Built Heritage 2021) compares four Scotch kilns in the East Midlands with dimensions of 4.5–9.92 m long and 4.9–5.8 m wide. This is consistent with the size of the Area 39 kiln (9.2 m long and around 4.6 m wide). However, sizes quoted by Hammond (1977, 171) for Scotch kilns of 6.10–15.24 m long by 3.35–3.36 m wide are longer and thinner than the Area 39 example, and an excavated example at Mickleover (Wessex Archaeology 2022b, at least 16 m by 14 m) greatly exceeds the size of the Area 39 kiln.

5.4.13 The kiln was situated 80 m from Turnover Bridge 82 of the Grand Union Canal and close to Turnover Lock 27. A former winding hole (a place to turn a canal boat around) is also nearby (Canal Plan AC Gazetteer). Brick kilns next to transport infrastructure were often short lived, built to provide brick for the immediate construction project and then demolished or abandoned (Plumridge and Meukenkamp 1993, 167; Probert 1988, 53;). This was the case at Mickleover, Derbyshire (Wessex Archaeology 2022b), where a brickworks comprising seven kilns were (with one exception) probably fired very few times, perhaps only once. In contrast, the buttresses added to the Area 39 kiln reveal that the kiln continued to be used over a period of time. It may be that multiple firings were required from the kiln (potentially one of three detected by geophysical survey; Archaeological Surveys Ltd 2020) to provide enough bricks for whatever construction project the kiln was built to supply. It may be that canal and road transport links made this brickworks economically viable over a longer period of time.

5.4.14 There is a paucity of dating information from the Area 39 kiln. Scotch kilns were common in the Midlands in the 18th and 19th centuries (McWhirr and Smith 1994, 90), but began to be superseded by downdraught Newcastle kilns following a patent in 1873 (Hammond 1977, 180). They may have continued to operate into the 20th century at Earl Shilton (Archaeology and Built Heritage 2021). The handmade bricks themselves are broadly consistent with a late-18th- or 19th-century date. The canal in this location was originally part of the Leicestershire and Northamptonshire Canal, constructed between the passing of an Act of Parliament in 1793 and a temporary pause in construction due to lack of funds in 1797 (Hadfield 1970). It is possible that the kiln was established to supply bricks for the initial construction of the canal or for repairs to the canal. Alternatively, the canal may have been used to transport raw materials and/or finished bricks, with the kiln not associated with its construction.

Areas 22, 47 and 48

5.4.15 Areas 22, 47 and 48 were subject to a watching brief on the clearance of topsoil. Within Area 48 this exposed the surface of a partially extant trackway, which comprised stone rubble in a topsoil matrix with some CBM (**Fig. 17**). The nature of the made ground recorded in the evaluation was not clarified because of the shallowness of the topsoil clearance.

5.4.16 Within Area 47 similar material, albeit with a higher concentration of modern CBM, was exposed following a limited topsoil scrape (**Fig. 18**). Again, because of the shallowness of the monitored operation, the thickness and potential origin of the modern deposit first seen in the evaluation were not clarified. No other remains were observed in either Area 47 or

48. Area 22 proved entirely blank, with no further evidence of the modern material encountered in the evaluation, again probably due to the shallow depth of operations during the watching brief (**Fig. 19**).

Ridge and furrow

5.4.17 Three furrows were recorded during the mitigation excavations: two north-east to south-west examples in Area 25 (1011 and 1018, not illustrated) and an east–west example (1024) in Area 18. Although these match the alignments of the linear geophysical anomalies interpreted as ridge and furrow at these locations, they are the only examples from the excavation of a method of cultivation evident across much of the scheme in the geophysical results.

6 FINDS EVIDENCE

6.1 Introduction

6.1.1 A small quantity of finds was recovered from the mitigation, consisting predominantly of animal bone. Datable finds (which are limited almost exclusively to pottery) are almost entirely late prehistoric, with one sherd of post-medieval pottery. This assemblage augments the small quantity found during the earlier evaluation, which has already been reported on (Wessex Archaeology 2021).

6.1.2 This report focuses on the finds from the mitigation, although reference is made to the evaluation and watching brief finds where appropriate, and they are included in some tabulations. The statement of potential and further recommendations are based on the combined assemblage.

6.1.3 All finds have been quantified by material type within each context. Overall totals by material type are given in **Table 2**, and a breakdown of the mitigation finds by context in **Table 3**.

Table 2 Finds totals by material type

	EVALUATION		WATCHING BRIEF		MITIGATION	
Material Type	**No.**	**Wt.**	**No.**	**Wt.**	**No.**	**Wt.**
Animal Bone	26	443	2	283	180	2701
Ceramic Building Material	5	65	-	-	-	-
Fired Clay	1	35	-	-	3	48
Worked Flint	4	-	-	-	-	-
Pottery	24	139	5	66	42	501
Stone	-	-	-	-	2	251

Table 3 Finds totals by context (mitigation)

Context	Description	Animal Bone	Pottery	Other Finds
1010	Ditch 1009		1/7	
1014	Slot 1013, p/o ditch 1056	77/1214	3/48	1 fired clay; 1 stone
1016	Slot 1015, p/o ditch 1056	21/224	7/48	
1017	Furrow 1018	35/366	2/21	2 fired clay
1019	Slot 1021, p/o ditch 1056	12/258	1/11	

1020	Slot 1021, p/o ditch 1056	11/177	2/76	
1027	Slot 1026, p/o ditch 1056		22/239	
1029	Spread 1057	24/462	4/51	
1031	Slot 1030, ditch 1055			1 stone
	Total	**180/2701**	**42/501**	

6.2 Pottery

6.2.1 Pottery provides almost the only dating evidence for the site. The assemblage amounts to 42 sherds (501 g), of which one sherd is post-medieval, and the remainder late prehistoric. The pottery was recovered from nine contexts, all feature fills.

6.2.2 The condition of the assemblage is fair; there are several sets of conjoining sherds, but all are on fresh or relatively fresh breaks, and in general the sherds have suffered moderate levels of surface and edge abrasion. Calcareous fabrics show leaching of inclusions, and these sherds are more heavily abraded. Mean sherd weight is 11.9 g, suggesting a certain amount of reworking.

6.2.3 The assemblage has been quantified (sherd count and weight) by ware type and correlated with the University of Leicester fabric type series (eg Marsden 1998; 2000; 2009). Details of vessel form (where known) and other diagnostic features have also been noted. Instead of Estimated Vessel Equivalents (EVEs), the Estimated Number of Vessels (ENV) has been used, counting conjoining sherds (or non-joining sherds almost certainly from the same vessel) as 1. The total ENV is 31. The level of recording accords with the 'basic record' advocated for the purpose of characterising an assemblage rapidly (Barclay et al 2016, section 2.4.5). Details of the pottery by context are given in **Table 4**.

Table 4 All finds by context (mitigation) (ENV = Estimated Number of Vessels)

Context	Period	Ware	Fabric Code	No. sherds	Wt. (g)	ENV	Comment
1010	PMED	Redware		1	7	1	base sherd, internally glazed over white slip
1014	IA	Sandy ware	Q1	1	39	1	body sherd, scored
1014	IA	Sandy ware	Q2	2	9	1	body sherds, conjoining (fresh break); also conjoining with sherd in 1016
1016	IA	Organic tempered ware	V	1	1	1	body sherd, abraded
1016	IA	Sandy ware	Q1	1	8	1	body sherd
1016	IA	Sandy ware	Q2	3	26	1	2 conjoining (fresh break); plus one sherd joining in 1014
1016	IA	Shelly ware	S2	2	13	1	body sherds, conjoining (fresh break); incised dec (diagonal hatching in band)
1017	IA	Organic tempered ware	V	2	21	2	body sherds
1019	IA	Shelly ware	S1	1	11	1	body sherd, scored

1020	IA	Organic tempered ware	V	2	76	1	rim & part profile from shouldered bowl; vertical wiping marks ext and thumbing (forming marks) around rim
1027	IA	Sandy ware	Q2	21	235	15	body sherds, poss all same vessel, several conjoining (fresh breaks); some vertical wiping
1027	IA	Shelly ware	S1	1	4	1	body sherd, abraded
1029	IA	Rock-tempered ware	R1	1	22	1	body sherd, deeply scored
1029	IA	Sandy ware	Q2	1	9	1	body sherd
1029	IA	Sandy ware	Q1	1	14	1	body sherd
1029	IA	Shelly ware	S1	1	6	1	body sherd, heavily abraded

Iron Age

6.2.4 Forty-one sherds are dated as Iron Age. Six fabric types are represented here, falling into four groups: sandy, containing fine to medium quartz grains (fabric Q1); fabrics containing quartz and crushed igneous rock fragments in varying proportions and sizes (fabrics Q2, R1); shelly fabrics (S1, S2) and organic-tempered fabrics (V1). The rocks are likely to be granodiorites from the Mountsorrel area, which outcrop approximately 10 km to the north-west of the site.

6.2.5 There is little that is diagnostic here. Two sherds from ditch 1056 (fill 1020) join to form a part profile of a shouldered bowl (as Marsden 2009, fig. 60, 11). Two joining sherds in a sandy/shelly fabric (S2) from ditch 1056 (fill 1016) appear to have been decorated with a band of lightly incised or tooled diagonal hatching. Three sherds are scored (in fabrics Q1, R1 and S1 respectively), and a few sherds show light vertical wiping on external surfaces.

6.2.6 The evaluation yielded a further 19 sherds of similar type, including the rim from a convex or weakly shouldered vessel with a slight rim constriction and a thickened, flattened rim. Two other rim sherds, one of which is fingernail-impressed, were too small to assign to vessel form.

6.2.7 Based on the fabric types, vessel forms and the presence of scored wares, this small group (combined total of 55 sherds) can be dated to the Middle to Late Iron Age (5th or 4th century to 1st century BC). The fabric proportions (predominantly granitic rock-tempered with a small proportion of other wares) is similar to that encountered on other Iron Age sites in the Soar valley, such as Wanlip, Elms Farm, Humberstone and Hallam Fields, Birstall, and these sites also provide parallels for the vessel forms seen here (Marsden 1998; 2000; 2009).

6.2.8 The Iron Age pottery provides the dating evidence for furrow 1018 (residual in this context), ditch 1056 and spread 1057.

Post-medieval

6.2.9 One sherd of white-slipped redware came from ditch 1009, the only find from that feature. Further post-medieval sherds were recovered from both evaluation and watching brief; all were redwares, mostly black-glazed.

6.3 Fired clay

6.3.1 Three fragments of fired clay were recovered. Two of these, from furrow 1018, are burnt to vitrification and have the appearance of hearth lining, perhaps derived from metalworking. The possible metalworking connection is supported by a third fragment, from ditch 1056 (fill 1014), which preserves part of a pre-firing perforation, possibly a tuyère hole (opening through which air was blown into the hearth), although other interpretations (e.g., wattle impression) cannot be ruled out.

6.3.2 A single fragment of fired clay from the evaluation may represent the rounded corner of an object, although its precise form (possibly a loomweight?) is uncertain.

6.4 Worked stone

6.4.1 Of most interest here is a small polished stone axehead recovered as a residual find from ditch 1055, associated with the post-medieval brick kiln. The axehead was, in all probability, made at the Great Langdale axe factory in the Lake District, where similar tools were made from the local epidotised tuffs soon after 4000 BC. These Group VI axeheads have one of the widest distribution areas of those Neolithic axeheads that can be identified to source; their popularity may have been in some way connected to the mechanical properties of the rock. Records have identified a major concentration of Group VI axeheads around the Humber estuary (where they form between 60–70% of all axes from the area), extending along the River Ouse routeway to the central Midlands (Cummins 1979, fig. 8). This part of the Midlands lies within one of the areas of highest density of axeheads in general (Schauer et al. 2020, fig. 1).

6.4.2 The Oadby axehead is heavily patinated which has altered its surface appearance and the characteristic original dark green-grey colour is only visible in a small chip (recent damage) on one edge. It is also unusually small (length 82 mm, maximum width 47 mm; thickness 15 mm).

6.4.3 The second object is a slightly irregular flint spheroid from ditch 1056 (fill 1014) (diameter 77–84 mm) which shows some damage but no obvious signs of utilisation – it has not obviously, for example, been used as a hammerstone.

6.5 Animal bone

6.5.1 The assemblage is quantified in **Table 2** and the provenance of animal bones from the mitigation area is provided in **Table 3**. Once refits are considered the overall total falls to 156 fragments (**Table 5**).

6.5.2 The assemblage was rapidly scanned and assessed following current guidelines (Baker and Worley 2019). The bones are in good condition and only two show signs of canid gnawing.

Table 5 Animal bone: number of identified specimens present (or NISP)

Species	Ditch 1056	Pit 1057	Furrow 1018	Total
Cattle	19	3	2	24
Sheep/goat	5	1	4	10
Pig	1	-	-	1
Horse	5	3	1	9
Total identified	**30**	**7**	**7**	**44**
Total unidentifiable	**76**	**17**	**19**	**112**
Overall total	**106**	**24**	**26**	**156**

6.5.3 All the animal bone came from Area 25, with the largest concentration from Middle Iron Age ditch 1056. Most of the identified bones are from cattle, and comprise both cranial and post-cranial elements including two semi-complete mandibles and a complete radius. Several of the cattle bones show signs of butchery, mostly secondary reduction but also processing for marrow. Five sheep/goat bones and the canine tooth from a sow were also identified, together with several semi-complete horse post-cranial bones (scapula, pelvis, femur and second phalanx) and an upper tooth.

6.5.4 Animal bones were also recovered from Middle Iron Age pit 1057. The bones comprise a cattle scapula, metatarsal and third molar, a sheep/goat metacarpal, fragments from two horse scapulae and the distal end of a horse humerus.

6.5.5 In addition, several residual bone fragments were recovered from furrow 1018. These comprise a cattle tooth and metatarsal, four sheep/goat bones (mandible, humerus and two tibiae) and three loose teeth from a horse mandible.

6.6 Other finds

6.6.1 Other finds, all from the evaluation, comprise four waste flint flakes (broadly dated as Neolithic/Bronze Age), and four fragments of ceramic building material (one from a post-medieval field drain, the other three undiagnostic and undated although probably post-medieval).

7 ENVIRONMENTAL EVIDENCE

7.1 Introduction

7.1.1 Eleven bulk sediment samples were taken from Iron Age ditches as well as an 18th/19th century brick kiln and an associated ditch. The samples were processed for the recovery and assessment of environmental evidence.

7.1.2 The samples (**Table 6**) break down into the following phase and feature groups:

Table 6 Sample provenance summary

Phase	Feature type	No. of bulk samples	Volume (litres)
Iron Age	Ditch	4	115
Post-Medieval / Modern	Ditch	1	36
Post-Medieval / Modern	Brick kiln	6	73
Totals		*11*	*224*

7.1.3 One sample from an Iron Age ditch was previously processed and assessed during the evaluation (Wessex Archaeology 2021). The sample produced a small assemblage of wood charcoal and charred plant remains (cereal grains, wild taxa) which were consistent with an Iron Age date.

7.2 Aims and methods

7.2.1 The aim of this assessment is to determine the nature and significance of the environmental remains preserved at the site, and their potential to address project aims. This assessment has been undertaken in accordance with Historic England's guidelines (English Heritage 2011).

7.2.2 The size of the bulk sediment samples varied between 7 and 37 litres, with an average volume of approximately 20 litres. The samples were processed by standard flotation methods using a Siraf-type flotation tank; the flot retained on a 0.25 mm mesh, residues fractionated into 4 mm and 1 mm fractions. The coarse residue fractions were sorted by eye for artefactual and environmental remains.

7.2.3 The flots and fine residue fractions were examined using a Brunel BMSZ stereomicroscope at up to x40 magnification. Different potential indicators of bioturbation were noted, including the percentage of modern roots and abundance of modern seeds, burrowing blind snails (e.g., *Cecilioides acicula*), earthworm eggs, and modern insects. Plant remains were identified through comparison with modern reference material held by Wessex Archaeology. Selected charcoal fragments were identified through examination of the transverse, tangential longitudinal and radial longitudinal sections at up to x400 magnification using a Kyowa ME-LUX2 microscope. Charcoal identifications were assisted by the descriptions of Gale and Cutler (2000), Hather (2000), and Schweingruber (1990), together with modern reference material held by Wessex Archaeology. Nomenclature follows Stace (1997) for wild taxa and Zohary et al. (2012) for cereals using traditional names.

7.2.4 All remains were recorded semi-quantitatively on an abundance scale: C = <5 ('Trace'), B = 5–10 ('Rare'), A = 10–30 ('Occasional'), A* = 30–100 ('Common'), A** = 100–500 ('Abundant'), A*** = >500 ('Very abundant/Exceptional').

7.3 Results

7.3.1 The results are presented in **Appendix 2**.

Area 25

7.3.2 The samples from the various interventions through ditch 1056 are all similar in composition and contain low concentrations of charred plant remains and wood charcoal. Modern roots and modern seeds are common to abundant in the flots, alongside small quantities of highly fragmented coal and clinker/cinder.

7.3.3 The charred plant remains are generally in poor to moderate condition and primarily comprise cereal grains, cereal chaff and wild taxa. The identifiable cereal grains include spelt/emmer wheat (*Triticum spelta/dicoccum*), with diagnostic chaff (glume bases) confirming the presence of spelt wheat (*T. spelta*). Wild taxa include bromes (*Bromus* sp.), docks (*Rumex* sp.) and vetches/wild peas (*Vicia/Lathyrus* sp.). A single cotyledon fragment of a pea (*Pisum sativum*) or bean (*Vicia faba*) was recorded in ditch slot 1013.

7.3.4 The wood charcoal is generally quite fragmented, with some mineral-coating. A relatively wide range of wood species have been identified from the small assemblage, including oak (*Quercus* sp.), cherries (*Prunus* sp.), willow family (Salicaceae), field maple (*Acer campestre*) and hazel (*Corylus avellana*).

Area 39

7.3.5 Samples from the fills of the brick kiln fireboxes (1038–1043) are exceptionally rich in coal and clinker/cinder. Wood charcoal is only present in trace quantities, with evidence for oak, Scot's pine-type (*Pinus sylvestris* tp.) and heather-type (*Calluna vulgaris* tp.).

7.3.6 One sample from ditch 1055 is similarly dominated by coal and clinker/cinder.

7.4 Discussion

Area 25

7.4.1 The assemblage of charred plant remains and wood charcoal recovered from Iron Age ditch 1056 is of limited significance due to its small size and relatively poor state of preservation. Spelt wheat was the main crop cultivated in the Iron Age in central and northern England, whilst pulses (peas, beans) appear to have been a relatively minor crop in this period (Carruthers and Hunter-Dowse 2019; Hall and Huntley 2007). The low concentrations of cereal grains, cereal chaff and wild taxa reflects crop-processing debris, whilst the charcoal assemblage is indicative of domestic fuel debris from hearths. The local environment was potentially relatively open, based on the presence of light-demanding tree/shrub species such as field maple and cherries. Species in the willow family are commonly associated with areas of damp/wet ground. The results are closely comparable to the assemblage recovered during the evaluation, which contained small quantities of emmer/spelt wheat grains, wild taxa and wood charcoal (Wessex Archaeology 2021). Overall, the evidence is characteristic of background settlement 'noise' associated with a nearby Iron Age settlement.

Area 39

7.4.2 The exceptionally large quantities of coal and clinker/cinder in the samples from the brick kiln fireboxes (1038–1043) reflect fuel waste from the firing process. Ditch 1055 similarly appears to contain a dump of fuel debris from the brick kiln. These samples indicate that coal was the principal fuel used, whilst the small quantities wood could reflect kindling. Coal was widely exploited as a fuel source in the post-medieval to early modern periods (Claughton et al. 2016). Coniferous tree species such as Scot's pine were used in timber plantations around this period, and heather could have been growing in the shrub layer of a plantation (Rackham 1990).

8 STATEMENT OF POTENTIAL

8.1 Stratigraphic potential

8.1.1 The archaeological sequences exposed within the mitigation areas were relatively straightforward, in that almost all of the features were physically discrete, sealed by ploughsoil and cut into the geological substrate. With little physical superimposition of features and a scarcity of dating evidence, the overall stratigraphic sequence is as well understood as the archive permits. Further stratigraphic analysis would not greatly enhance the understanding of activity at the site. Furthermore, the environmental analysis found frequent evidence indicating Iron Age samples had been disturbed and intermixed. In light of the factors listed above, the overall stratigraphic potential of the site sequence is very limited.

8.2 Finds potential

8.2.1 The combined finds assemblage from all stages of fieldwork is small (the total weight of all finds is just over 4 kg), and its archaeological significance and further research potential are correspondingly limited. The pottery has provided dating evidence to inform site chronology, and the Iron Age ware types identified conform to the regional type series; it would be difficult to glean further information from this small collection (79 sherds). Of the rest of the assemblage, only animal bone occurred in any reasonable quantity (208 fragments), and even so this assemblage is too small for any statistically valid observations; it offers no further research potential beyond broad comparison with other Middle Iron Age assemblages in the wider region (for example, Gouldwell 1992; Charles and Powell 2000; Browning 2009).

8.2.2 Of most interest is a polished stone axehead identified as a probable Langdale product from Cumbria (Group VI axeheads). It was a residual find, but nonetheless adds to the fairly substantial dataset of stone axes from the Midlands, and the findspot is certainly not out of place in the distribution of Group VI axeheads.

8.2.3 No further analysis is recommended for any of the finds.

8.3 Environmental potential

8.3.1 There is limited potential to undertake further analysis of the charred plant remains and wood charcoal from Iron Age ditch 1056 in Area 25, as well as the Iron Age ditch sampled during the evaluation. Whilst the assemblage is small, it has local significance, and the dataset will be useful for comparative studies on contemporary sites in the region. The samples have been recorded to a sufficient level of detail in this assessment.

8.3.2 There is no potential for further analysis to be undertaken on the samples from the brick kiln fireboxes (1038-1043) and ditch 1055 in Area 39. Additional work would not add to the information outlined in this assessment.

8.3.3 No further work is required on the samples. It is recommended that the results outlined in this assessment report are adapted for inclusion in any publication of the fieldwork results.

9 UPDATED PROJECT DESIGN

9.1 Reappraisal of the project aims and objectives

9.1.1 The fieldwork has been generally successful in meeting its broad aims (see section 3 above). In terms of the project research objectives, the contribution of the results of the mitigation fieldwork to fulfilling them is tabulated below in **Table 7**.

Table 7 Contribution to research objectives

Research objective	Conclusion
Determine the date, nature and extent of the features located in trench 25;	The features located in trench 25 were further investigated in Area 25, where the south-eastern corner of an Iron Age ditched field was exposed, with an associated area of trample.
Determine the date, extent and character of the linear feature which crossed trench 18;	Area 18 was centred on trench 18 and was found to contain two undated ditch terminals. Although no continuation of the linear feature from the evaluation was noted in the mitigation, the combined evidence suggests this part of the site, like Area 25, contains evidence of Iron Age enclosure.
Investigate the date, nature of construction and products of the brick kiln/s located in trench 39; and	The details of the construction of the brick kiln in trench 39/Area 39 have been recorded and reveal it to be a good example of a 'Scotch' type kiln. There was a lack of dating evidence from the feature, although Scotch kilns were common in the Midlands in the 18th and 19th centuries. This example probably had some functional relationship with the nearby canal. It has not, however, been possible to determine whether it was built to supply bricks for canal construction/repair works, or whether the kiln was merely sited close to the canal to expedite import of raw materials and export of the finished bricks.
Determine a better understanding of the nature of the archaeology and deposits uncovered in trenches 1, 22, 45, 47, 48, 60 and 61.	Area 1: A ditch and area of disturbance recorded during the mitigation appear to match the position and orientation of a modern field boundary, although no dating evidence was recovered.

	Area 22: No further evidence of the modern material encountered in the evaluation (trenches 22, 60 and 61) was revealed, probably because of the shallow depth of operations during the watching brief.
	Area 45: The anomaly in this area seemed shallow and alluvial in origin.
	Area 47: Stone rubble in a topsoil matrix with CBM concentrations was recorded.
	Area 48: A partially extant trackway, comprising stone rubble in a topsoil matrix with CBM was recorded.

9.1.2 From the foregoing it is clear that the nature and extent of the Iron Age boundary features has now been established within the excavated areas. The research aim regarding the nature of construction of the brick kiln has been successfully resolved, although there was insufficient evidence to clarify its date. The aim of clarifying precisely what the bricks were used to build proved too ambitious for the scope of the fieldwork. There was only modest success in clarifying the nature of the (chiefly modern) remains within the watching brief areas, largely because the shallowness of the monitored operations precluded further insights.

9.2 Radiocarbon dating

9.2.1 No radiocarbon dating of any of the deposits is recommended. Whilst the chronology of the sampled Iron Age features could in theory be refined by this technique, the evidence of bioturbation noted within the samples and, conversely, the likelihood of material within ditches being residual, means that the successful dating of the use-period of the features themselves is unlikely.

9.3 Updated project aims and recommendations

9.3.1 In light of the nature of the exposed remains, which largely conformed to the expectations set by the results of the evaluation, no updating of the project aims is required. No further analysis is recommended for any of the finds or samples, and the site is primarily of local interest. It is recommended that publication takes the form of a note, perhaps with photographs of the brick kiln and the stone axe, to be offered for inclusion within the annual 'Archaeology in Leicestershire and Rutland' round-up section in a forthcoming edition of the *Transactions of the Leicestershire Archaeological and Historical Society*. This will be prepared by Wessex Archaeology.

10 STORAGE AND CURATION

10.1 Museum

10.1.1 The archive resulting from the excavation is currently held at the offices of Wessex Archaeology in Sheffield. Leicestershire Museums Service has agreed in principle to accept the archive on completion of the project, under the accession code X.A95.2020. Deposition of any finds with the museum will only be carried out with the full written agreement of the landowner to transfer title of all finds to the museum.

10.2 Preparation of the archive

Physical archive

10.2.1 The physical archive, which includes paper records, graphics, artefacts and ecofacts, will be prepared following the standard conditions for the acceptance of excavated

archaeological material by Leicestershire Museums Service, and in general following nationally recommended guidelines (SMA 1995; CIfA 2014c; Brown 2011).

10.2.2 All archive elements will be marked with the site/accession code, and a full index will be prepared. The composition of the physical archive from all stages of the project is summarised in the **Table 8** below:

Table 8 Composition of physical archive from all project stages

		PROJECT STAGE		
		238180 (WB on GI works)	238182 (eval. & Kilby WB)	238183 (mitigation & WB)
COMPONENT	Archive boxes (artefacts and ecofacts, ordered by material type)	0	1	1
	Files of paper records and A3/A4 graphics	1	1	1

Digital archive

10.2.3 The digital archive generated by the project, which comprises born-digital data (eg site records, survey data, databases and spreadsheets, photographs and reports), will be deposited with a Trusted Digital Repository, in this instance the Archaeology Data Service (ADS), to ensure its long-term curation. Digital data will be prepared following ADS guidelines (ADS 2013 and online guidance) and accompanied by metadata. Full details of the collection, processing and documentation of digital data are given in the project Digital Management Plan (available on request).

10.3 Selection strategy

10.3.1 It is widely accepted that not all the records and materials (artefacts and ecofacts) collected or created during the course of an archaeological project require preservation in perpetuity. These records and materials will be subject to selection in order to establish what will be retained for long-term curation, with the aim of ensuring that all elements selected to be retained are appropriate to establish the significance of the project and support future research, outreach, engagement, display and learning activities, ie the retained archive should fulfil the requirements of both future researchers and the receiving Museum.

10.3.2 The selection strategy, which details the project-specific selection process, is underpinned by national guidelines on selection and retention (Brown 2011, section 4) and generic selection policies (SMA 1993; Wessex Archaeology's internal selection policy: available on request) and follows CIfA's *Toolkit for Selecting Archaeological Archives*. It should be agreed by all stakeholders (Wessex Archaeology's internal specialists, external specialists, local authority, museum) and fully documented in the project archive.

10.3.3 Detailed selection proposals for the complete project archive (combining watching brief, evaluation and excavation fieldwork carried out under Wessex Archaeology project stages 238180, 238182 and 238183), comprising finds, environmental material and site records (analogue and digital), are made in the site-specific selection strategy (**Appendix 3**). The proposals are summarised below.

Finds

- *Animal Bone (208 fragments):* small assemblage of Middle Iron Age date with few identifiable elements and no further research potential. Retain none.

- *Ceramic Building Material (4 frags):* negligible quantity, either post-medieval or undated. No archaeological significance and no further research potential. Retain none.
- *Fired clay (4 frags):* negligible quantity; one possible Iron Age object; three possible hearth lining. Very limited archaeological significance; little or no further research potential, but retain all.
- *Pottery (71 sherds):* very small assemblage conforming to regional type series, but adds to regional ceramic dataset. Retain all.
- *Stone (2 objects):* one object apparently unworked; do not retain. Second object is a Neolithic polished stone axe; object of intrinsic interest; retain.
- *Worked flint (4 pieces):* negligible quantity, undatable waste flakes; very limited archaeological significance and no further research potential. Retain none.

Palaeoenvironmental material

10.3.4 The flots from Area 25 and evaluation trench 25 should be retained within the site archive since they have some potential beyond the current project and the assemblage is locally significant. The flots from Area 39 have no further research potential and should be discarded.

10.3.5 The residues were discarded after sorting.

Documentary records

10.3.6 Paper records comprise site registers, with some context sheets (other *pro forma* site records are digital), drawings and reports (written scheme of investigation, client report). All will be retained and deposited with the project archive.

Digital data

10.3.7 The digital data comprise site records (tablet-recorded on site) in spreadsheet format; finds records in spreadsheet format; survey data; photographs; reports. All will be deposited, although site photographs will be subject to selection to eliminate poor quality and duplicated images, and any others not considered directly relevant to the archaeology of the site.

10.4 Security copy

10.4.1 In line with current best practice (e.g., Brown 2011), on completion of the project a security copy of the written records will be prepared, in the form of a digital PDF/A file. PDF/A is an ISO-standardised version of the Portable Document Format (PDF) designed for the digital preservation of electronic documents through omission of features ill-suited to long-term archiving.

10.5 OASIS

10.5.1 An OASIS (online access to the index of archaeological investigations) record (http://oasis.ac.uk) has been initiated (wessexar1-505045), with key fields completed (**Appendix 4**). A .pdf version of the final report will be submitted following approval on behalf of the LPA by the Team Manager (Heritage), for Leicestershire County Council. Subject to any contractual requirements on confidentiality, copies of the OASIS record will be integrated into the relevant local and national records and published through the Archaeology Data Service (ADS) ArchSearch catalogue.

11 COPYRIGHT

11.1 Archive and report copyright

11.1.1 The full copyright of the written/illustrative/digital archive relating to the project will be retained by Wessex Archaeology under the *Copyright, Designs and Patents Act 1988* with all rights reserved. The client will be licenced to use each report for the purposes that it was produced in relation to the project as described in the specification. The museum, however, will be granted an exclusive licence for the use of the archive for educational purposes, including academic research, providing that such use conforms to the *Copyright and Related Rights Regulations 2003*.

11.1.2 Information relating to the project will be deposited with the Historic Environment Record (HER) where it can be freely copied without reference to Wessex Archaeology for the purposes of archaeological research or development control within the planning process.

11.2 Third party data copyright

11.2.1 This document and the project archive may contain material that is non-Wessex Archaeology copyright (e.g., Ordnance Survey, British Geological Survey, Crown Copyright), or the intellectual property of third parties, which Wessex Archaeology are able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferable by Wessex Archaeology. Users remain bound by the conditions of *the Copyright, Designs and Patents Act 1988* with regard to multiple copying and electronic dissemination of such material

REFERENCES

ADS 2013. *Caring for Digital Data in Archaeology: a guide to good practice*. Archaeology Data Service and Digital Antiquity Guides to Good Practice.

ALGAO 2015. *Advice Note for Post-Excavation Assessment.* Association of Local Government Archaeological Officers.

AOC Archaeology 2009. *Calke Abbey Limeyards and Brickyards, Ticknall, Derbyshire – Survey Report*. Unpubl rep.

Archaeological Surveys Ltd 2020. *Oadby to Arnesby Scheme, Leicestershire. Magnetometer Survey Report for Severn Trent*. Unpubl rep J804.

Archaeology and Built Heritage 2021. *Archaeological Area Excavation on the Site of a Former Brick Works Between Breach Lane & Station Road, Earl Shilton, Leicestershire, LE9 7GT*. Unpubl rep R-0123.

Baker, P. and Worley, F., 2019. *Animal Bones and Archaeology: recovery to archive*. Historic England Handbooks for Archaeology.

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

British Geological Survey *Geology of Britain Viewer* http://mapapps.bgs.ac.uk/geologyofbritain/home.html (accessed March 2022).

Brown, D. H. 2011. *Archaeological Archives: a guide to best practice in creation, compilation, transfer and curation* (revised edition). Archaeological Archives Forum.

Browning, J., 2009, 'The animal bone', 111– 13 in Speed, G. *An excavation of an Iron Age settlement at Hallam Fields, Birstall, Leicestershire*, unpubl Univ Leicester Archaeol Services Rep 2009-080 (accessed online: http://archaeologydataservice.ac.uk/archiveDS/archiveDownload?t=arch-416-1/dissemination/pdf/universi1-61162_1.pdf, April 2022).

Canal Plan AC Gazetteer https://canalplan.uk/gazetteer/ (accessed March 2022).

Carruthers, W. and Hunter Dowse K. L. 2019. *A Review of Macroscopic Plant Remains from the Midland Counties*. Historic England Research Report Series 47/2019.

Charles, B. and Powell, A., 2000. 'Animal bone', 197–207, in Charles, B. A., Parkinson, A. and Foreman, S., 'A Bronze Age ditch and Iron Age settlement at Elms Farm, Humberstone, Leicestershire', *Transactions of the Leicestershire Archaeology and History Society* 74, 113–222.

CIfA 2014a. *Standard and Guidance for Archaeological Excavation* (revised edition October 2020). Reading, Chartered Institute for Archaeologists.

CIfA 2014b. *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials* (revised edition October 2020). Reading, Chartered Institute for Archaeologists.

CIfA 2014c. *Standard and Guidance for the Creation, Compilation, Transfer and Deposition of Archaeological Archives* (revised edition June 2020). Reading, Chartered Institute for Archaeologists.

CIfA *Toolkit for Selecting Archaeological Archives* https://www.archaeologists.net/selection-toolkit (accessed June 2022).

CIfA *Toolkit for Specialist Reporting* https://www.archaeologists.net/reporting-toolkit (accessed June 2022).

Claughton, P., Gill, M., Jackson, P., Newman, P., Russell, A., Shaw, M., Thomas, I., Timberlake, S., Williams, D. and Willies, L., 2016. *The Archaeology of Mining and Quarrying in England: a research framework for the archaeology of the extractive industries in England*. Matlock Bath, National Association of Mining History Organisations.

Cummins, W. A., 1979. 'Neolithic stone axes: distribution and trade in England and Wales', 5–12, in Clough, T. H. and Cummins, W.A. (eds), *Stone axe studies: archaeological, petrological, experimental, and ethnographic*. London, Council for British Archaeology Res. Rep. 23.

English Heritage 2011. *Environmental Archaeology: a guide to theory and practice of methods, from sampling and recovery to post-excavation*. Swindon, Centre for Archaeology Guidelines.

Gale, R. and Cutler, D. 2000. *Plants in Archaeology: identification manual of vegetative plant materials used in Europe and the southern Mediterranean to c. 1500*. Otley: Westbury and Royal Botanic Gardens, Kew.

Gouldwell, A. J., 1992. 'The animal bone', 58–69, in Clay, P., 'An Iron Age farmstead at Grove Farm, Enderby, Leicestershire', *Transactions of the Leicestershire Archaeology and History Society* 66, 1–82.

Hadfield, C. 1970. *The Canals of the East Midlands*. Newton Abbott, David and Charles.

Hall, A.R. and Huntley, J.P. 2007 *A Review of the Evidence for Macrofossil Plant Remains from Archaeological Deposits in Northern England*. English Heritage Research Report Series 87-2007.

Hammond, D. P. 1977. 'Brick Kilns: An Illustrated Survey', *Industrial Archaeology Review* 2, 171–92.

Hather, J.G 2000 *The Identification of Northern European Woods: a guide for archaeologists and conservators*. London, Archetype.

Johnson, D. 2021. *Brickmaking: History and Heritage*. Stroud, Amberley.

Marsden, P., 1998. 'The prehistoric pottery', 45–62, in Beamish, M. 'A Middle Iron Age site at Wanlip, Leicestershire', *Transactions of the Leicestershire Archaeology and History Society* 72, 1–91.

Marsden, P., 2000. 'The prehistoric pottery', 170–86, in Charles, B.A., Parkinson, A. and Foreman S., 'A Bronze Age ditch and Iron Age settlement at Elms Farm, Humberstone, Leicestershire', *Transactions of the Leicestershire Archaeology and History Society* 74, 113–222.

Marsden, P., 2009. 'The Iron Age pottery', 65–79, in Speed, G., *An excavation of an Iron Age settlement at Hallam Fields, Birstall, Leicestershire*, unpubl Univ Leicester Archaeol Services Rep 2009-080 (accessed online: http://archaeologydataservice.ac.uk/archiveDS/archiveDownload?t=arch-416-1/dissemination/pdf/universi1-61162_1.pdf, April 2022).

McWhirr, A. and Smith, D., 1994. 'A Brickworks in Ashwell Road, Oakham', *Transactions of the Leicestershire Archaeological and Historical Society* 68, 87–93.

Plumridge, A. and Meukenkamp, W. 1993. *Brickwork: Architecture and Design*. London, Studio Vista.

Probert, S. 1988. 'Excavations at the Minninglow brickworks, Roystone Grange: 1981–86', *Derbyshire Archaeological Journal* 108, 48–53.

Rackham, O. 1990. *Trees and Woodland in the British Landscape* (2020 edition). London, Weidenfeld and Nicolson.

Schauer, P., Bevan, A., Shennan, S, Edinborough, K., Kerig, T. and Parker Pearson, M., 2020. 'British Neolithic axehead distributions and their implications', *Journal of Archaeological Method and Theory* 7, 836–59.

Schweingruber, F.H. 1990. *Microscopic Wood Anatomy* (3rd edition). Birmensdorf, Swiss Federal Institute for Forest, Snow and Landscape Research.

SMA 1993. *Selection, Retention and Dispersal of Archaeological Collections*. Society of Museum Archaeologists.

SMA 1995. *Towards an Accessible Archaeological Archive*. Society of Museum Archaeologists.

Stace, C. 1997. *New Flora of the British Isles* (2nd edition). Cambridge, Cambridge University Press.

Wessex Archaeology 2020. *Oadby to Arnesby Trunk Main Renewal, Leicestershire: Archaeological Watching Brief on GI Works*. Unpubl rep 238180.02.

Wessex Archaeology 2021. *Oadby to Arnesby Trunk Main Renewal Leicestershire: Archaeological Evaluation Report*. Unpubl rep 238182.03.

Wessex Archaeology 2022a. *Oadby to Arnesby Trunk Main Renewal, Leicestershire. Written Scheme of Investigation for Archaeological Works*. Unpubl rep 238183.01.

Wessex Archaeology 2022b. *Onslow Road, Mickleover, Derbyshire: Archaeological Excavation*. Unpubl rep 242871.01.

Zohary, D., Hopf, M., and Weiss, E. 2012. *Domestication of plants in the Old World: the origin and spread of cultivated plants in West Asia, Europe, and the Nile Valley* (4th edition). Oxford, Oxford University Press.

APPENDICES

Appendix 1: Context summary

Context Number	Type	Category	Fill of/Filled With
1001	**Layer**	**Topsoil**	**n/a**
Dark brown silty clay with infrequent angular natural chert			
1002	**Layer**	**Natural**	**n/a**
Brownish yellow sandy clay with occasional angular, natural chert pieces			
1003	**Cut**	**Ditch**	**1004**
Linear ditch aligned N-S with moderate, concave sides and a concave base. Length: >20.00 m. Width: 0.78 m. Depth: 0.14 m.			
1004	**Fill**	**Deliberate backfill**	**1003**
Dark grey silty clay with occasional angular chert pieces			
1005	**Cut**	**Ditch**	**1006**
Linear ditch aligned N-S with moderate, concave sides and a concave base. Depth: 0.13 m.			
1006	**Fill**	**Deliberate backfill**	**1005**
Dark grey silty clay with occasional angular chert pieces			
1007	**Cut**	**Ditch**	**1008**
Linear ditch aligned NW–SE with shallow, concave sides and an irregular/undulating base. Length: 1.00 m. Width: 2.00 m. Depth: 0.09 m.			
1008	**Fill**	**Ditch**	**1007**
Dark greyish brown clayey silt with rare small pebbles present, not in clusters. Small pieces of unworked flint			
1009	**Cut**	**Ditch**	**1010**
Linear ditch aligned N-S with irregular, concave sides and an irregular/undulating base. Length: >1.00 m. Width: 1.90 m. Depth: 0.14 m.			
1010	**Fill**	**Secondary fill**	**1009**
Mid dark greyish brown clay with unworked flints, chalk			
1011	**Cut**	**Furrow**	**1012**
Linear furrow aligned NE-SW with shallow, irregular sides and an irregular/undulating base. Length: >10.00 m. Depth: 0.57 m.			
1012	**Fill**	**Secondary fill**	**1011**
Brownish yellow silty clay			
1013	**Cut**	**Ditch**	**1014**
Linear ditch aligned NE-SW with moderate, concave sides and a concave base. Length: >10.00 m. Width: 1.52 m. Depth: 0.57 m.			
1014	**Fill**	**Secondary fill**	**1013**
Mid greyish brown with yellow hue silty clay with occasional surrounded stones, charcoal flecks, small rootlets			
1015	**Cut**	**Ditch**	**1016**
Linear ditch aligned NE-SW with moderate, irregular sides and an irregular/undulating base. Length: >10.00 m. Width: 2.40 m. Depth: 0.57 m.			
1016	**Fill**	**Secondary fill**	**1015**
Mid greyish brown with yellowish hue silty clay with moderate surrounded stones, charcoal flecks, small rootlets			
1017	**Fill**	**Primary fill**	**1018**
Mid greyish yellow silty clay with sparse cherts and chalks			
1018	**Cut**	**Furrow**	**1017**
Linear furrow aligned NE- SW with shallow, concave sides and a concave base. Length: >3.00 m. Width: 2.50 m. Depth: 0.83 m.			
1019	**Fill**	**Fill**	**1021**
Mid greyish brown with uncommon unworked cherts/flints, chalk			
1020	**Fill**	**Fill**	**1021**
Light reddish brown silty clay with occasional rounded stone. 30mm- 60mm, <5%			
1021	**Cut**	**Ditch**	**1019, 1020**
Linear ditch aligned NE-SW with moderate, concave sides. Length: >2.00 m. Width: >1.63 m. Depth: 0.83 m.			

Context Number	Type	Category	Fill of/Filled With
1022	**Cut**	**Ditch terminal**	**1023**
Linear ditch terminal aligned E-W with moderate, concave sides and an u-shaped base. Length: >7.00 m. Width: 0.84 m. Depth: 0.28 m.			
1023	**Fill**	**Secondary fill**	**1022**
Dark brown silty clay			
1024	**Cut**	**Furrow**	**1025**
Linear furrow aligned E-W with shallow, concave sides and an irregular/undulating base. Length: >5.00 m. Width: 1.80 m. Depth: 0.03 m.			
1025	**Fill**	**Secondary fill**	**1024**
Dark brown silty clay			
1026	**Cut**	**Ditch**	**1027**
Linear ditch aligned NE-SW with moderate, straight sides and a concave base. Length: >10.00 m. Width: 2.02 m. Depth: 0.62 m.			
1027	**Fill**	**Secondary fill**	**1026**
Dark greyish brown with yellow hue silty clay with occasional surrounded and subangular stones			
1028	**Cut**	**Pit**	**1029**
Sub-oval pit with moderate, concave sides and a flat base. Length: >5.00 m. Width: 3.00 m. Depth: 0.20 m.			
1029	**Fill**	**Secondary fill**	**1028**
Dark greyish brown silty clay with moderate surrounded and subangular stones			
1030	**Cut**	**Ditch**	**1031**
Linear ditch aligned south-east to north-west with moderate, straight sides and a flat base. Length: >2.00 m. Width: 1.60 m. Depth: 0.70 m.			
1031	**Fill**	**Ditch recut by [1032]**	**1030**
Dark blackish brown clayey silt with rare small pebbles and flint nodules			
1032	**Cut**	**Ditch recut**	**1033**
Linear ditch recut with shallow, concave sides and a concave base. Length: >2.00 m. Width: 0.87 m. Depth: 0.26 m.			
1033	**Fill**	**Ditch**	**1032**
Dark greyish brown clayey silt with rare small pebbles and flint nodules present			
1034	**Cut**	**Ditch**	**1035, 1036**
Linear ditch aligned E-W with moderate, convex sides and a ‘u’-shaped base. Length: >17.00 m. Width: 1.90 m. Depth: 0.70 m.			
1035	**Fill**	**Secondary fill**	**1034**
Dark brownish grey sandy clay silt with gravel/coarse gravel (30-50 mm)-sparse (1-2 %)-subrounded-poorly sorted			
1036	**Fill**	**Primary fill**	**1034**
Light yellowish brown silty clay with gravel (20-30 mm)-occasional (4-5 %)-subrounded-poorly sorted			
1037	**Masonry**	**Brick kiln.**	**n/a**
Sub-rectangular brick kiln. aligned N-S with straight sides and a flat base. Constructed from brick- handmade and unfrogged. and bonded with dry stone or sand. Maximum height: 0.15 m.			
1038	**Fill**	**Flue fill**	**n/a**
Black silt with 90% ash and charcoal from burning			
1039	**Fill**	**Flue Fill**	**n/a**
Black silt with 90% ash and charcoal			
1040	**Fill**	**Flue Fill**	**n/a**
Black silt with 90% ash and charcoal			
1041	**Fill**	**Flue fill**	**n/a**
Black silt with 90% ash and charcoal			
1042	**Fill**	**Flue fill**	**n/a**
Black silt with 90% ash and charcoal			
1043	**Fill**	**Flue Fill**	**n/a**
Black silt with 90% ash and charcoal			
1044	**Masonry**	**Floor Surface**	**n/a**
Sub-rectangular floor surface with straight sides and a flat base. Constructed from brick-handmade and unfrogged and bonded with none visible. Maximum height: 0.07 m.			

Context Number	Type	Category	Fill of/Filled With
1045	**Masonry**	**Floor Surface**	**1049, 1051, 1053**
Sub-rectangular floor surface with straight sides and a flat base. Constructed from brick-handmade and unfrogged. and bonded with none visible. Maximum height: 0.07 m.			
1046	**Masonry**	**Brick pad.**	**n/a**
Sub-square brick pad. with straight sides and a flat base. Constructed from brick-handmade and unfrogged. and bonded with sand. Maximum height: 0.70 m.			
1047	**Masonry**	**Brick pad.**	**n/a**
Rectangular brick pad. with straight sides and a flat base. Constructed from brick-handmade and unfrogged and bonded with sand. Maximum height: 0.07 m.			
1048	**Masonry**	**Brick pad.**	**n/a**
Rectangular brick pad. with straight sides and a flat base. Constructed from brick-handmade and unfrogged and bonded with sand. Maximum height: 0.07 m.			
1049	**Masonry**	**Flues.**	**n/a**
Sub-rectangular flues. aligned N-S with straight sides and a flat base. Constructed from brick-handmade and unfrogged. and bonded with sand. Maximum height: 0.10 m.			
1050	**Masonry**	**Flues**	**n/a**
Sub-rectangular flues with straight sides and a flat base. Constructed from brick-handmade and unfrogged and bonded with sand. Maximum height: 0.09 m.			
1051	**Masonry**	**Flues.**	**n/a**
Flues. Constructed from brick-handmade and unfrogged and bonded with sand. Maximum height: 0.10 m.			
1052	**Masonry**	**Unknown interpretation**	**n/a**
Sub-rectangular unidentified feature aligned N-S with straight sides and a flat base. Constructed from brick-handmade and unfrogged and bonded with sand. Maximum height: 0.07 m.			
1053	**Masonry**	**Drain**	**n/a**
Linear drain aligned NE-SW with straight sides and a flat base. Constructed from brick-handmade and unfrogged and bonded with none. Maximum height: 0.18 m.			
1054	**Masonry**	**Land drain**	**n/a**
Linear land drain aligned NE-SW with straight sides and a flat base. Constructed from firebrick-handmade and unfrogged and bonded with none. Maximum height: 0.19 m.			
1055	**Group**	**Ditch**	**n/a**
Ditch running E-W across the southern end of site. Fill contains a significant amount of brick rubble but a neolithic axehead was also recovered from [1030]. Following sign off land drain 1054 was uncovered which can be observed to be either cutting 1055 or running into it. This demonstrates that the ditch and drain are contemporary and the axehead appears to be residual. Group components: 1030, 1032, 1034			
1056	**Group**	**Ditch**	**n/a**
NE to SW aligned field boundary ditch. Extends for 25 m from SW corner of Area 25. Good correspondence with a geophysical anomaly. Dug in eval as 2506. Appears to form, along with perpendicular ditch 1007=1009, the SE corner of a plot of land. Pottery suggests Iron Age date. Group components: 1013, 1015, 1021, 1026, 2506			
1057	**Group**	**Spread**	**n/a**
Group 1057 is a large spread of grey brown silt clay situated in the gap between ditches Grp 1056 and 1007=1009. It may either be an area of trample/hoof-fall in an entranceway into the field defined by the ditches, or a watering hole in a gap in the field boundary. Relatively finds-rich, and appears Iron Age. Two of the deposit numbers (2509 and 2510) assigned to this in the evaluation are layers, with no cut recorded, although cuts were allocated for the other constituent deposits of this group. Group components: 1028, 2503			

Appendix 2: Environmental data

Area	Phase	Feature Type	Feature	Context	Group	Sample Code	Sample vol. (l)	Flot vol. (ml)	Bioturbation proxies	Grain	Chaff	Cereal Notes	Charred Other	Charred Other Notes	Charcoal >2mm (ml)	Charcoal	Other
25	Iron Age	Ditch	1013	1014	1056	238183_1001	33	60	75%, A	A	C	*Triticum spelta/dicoccum* grain, T. *spelta* glume base	C	*Vicia faba/Pisum sativum*, rhizomes/tubers	20	*Quercus* sp., *Acer campestre*, *Prunus* sp.	Fragmented coal and clinker/cinder C
25	Iron Age	Ditch	1015	1016	1056	238183_1002	18	20	90%, A	C	C	*Triticum spelta/dicoccum* grain, *T. spelta* glume base, Triticeae grain frags	C	*Bromus* sp., monocot. stems	-	Highly fragmented	Fragmented coal and clinker/cinder C
25	Iron Age	Ditch	1021	1019	1056	238183_1003	37	50	50%, B	B	C	*Triticum spelta/dicoccum* grain + glume bases, Triticeae grain frags, Triticeae culm node	B	*Bromus* sp., *Rumex* sp., Poaceae (small-seeded), *Vicia/Lathyrus* sp.	10	Mainly *Quercus* sp. (mature), Salicaceae	Fragmented coal and clinker/cinder C
25	Iron Age	Ditch	1021	1020	1056	238183_1004	27	20	50%, B	C	-	*Triticum* sp.	-	-	1	*Quercus* sp., *Corylus avellana*, *Prunus* sp.	Fragmented coal and clinker/cinder C
39	18th/ 19th C	Ditch	1030	1031	1055	238183_1005	36	600	1%	-	-	-	-	-	-	-	Coal A*** (dominant), clinker/cinder A***

Area	Phase	Feature Type	Feature	Context	Group	Sample Code	Sample vol. (l)	Flot vol. (ml)	Bioturbation proxies	Grain	Chaff	Cereal Notes	Charred Other	Charred Other Notes	Charcoal >2mm (ml)	Charcoal	Other
39	18th/ 19th C	Brick kiln	-	1038	-	238183 _1006	15	5000	-	-	-	-	-	-	<1	Tiny scraps, *Quercus* sp. and twig/bud	Coal A*** (dominant), clinker/cinder A***
39	18th/ 19th C	Brick kiln	-	1039	-	238183 _1007	15	5000	-	-	-	-	-	-	5	*Pinus sylvestris* tp., *Calluna vulgaris* tp. stems	Coal A*** (dominant), clinker/cinder A***
39	18th/ 19th C	Brick kiln	-	1040	-	238183 _1008	8.5	2000	-	-	-	-	-	-	-	-	Coal A***, clinker/cinder A***
39	18th/ 19th C	Brick kiln	-	1041	-	238183 _1009	19	4500	-	-	-	-	-	-	-	-	Coal A*** (dominant), clinker/cinder A***
39	18th/ 19th C	Brick kiln	-	1042	-	238183 _1010	7	3500	-	-	-	-	-	-	-	-	Coal A*** (dominant), clinker/cinder A***
39	18th/ 19th C	Brick kiln	-	1043	-	238183 _1011	8.5	2000	-	-	-	-	-	-	-	-	Coal A*** (dominant), clinker/cinder A***

Scale of abundance: C = <5, B = 5–10, A = 10–30, A* = 30–100, A** = 100–500, A*** = >500; Bioturbation proxies: Roots (%), Uncharred seeds (abundance)

Appendix 3: Selection strategy

238180–3
Oadby Reservoir to Arnesby Pumping Station
version 1, April 2022

Selection Strategy

Project Information

Project Management		
Project Manager	John Winfer	
Archaeological Archive Manager	Lorraine Mepham	
Organisation	Wessex Archaeology (WA)	
Stakeholders		**Date Contacted**
Collecting Institution(s)	Leicestershire County Council (LCC) Museums Archaeology Data Service	27/10/20
Project Lead / Project Assurance	Lead: Patrick Daniel Assurance: John Winfer	N/A
Landowner / Developer	Severn Trent Water	
Other (external)	Historic & Natural Environment Team (HNET), LCC (team manager: Richard Clark)	
Other (internal)	WA Finds Manager (Rachael Seager Smith) WA Environmental Manager (Sander Aerts) WA Geomatics & BIM Manager (Tori Wilkinson) WA internal finds & environmental specialists (see WSI)	N/A; briefed as part of standard project process
Resources		
Resources required	WA Finds and Environmental specialists; WA archives team	

Context

This overarching selection strategy document is based on the CIfA Archives Selection Toolkit (2019) and relates to all stages of archaeological project work (evaluation, mitigation) being undertaken by Wessex Archaeology as defined in the WSIs. This Selection Strategy has been compiled at the assessment stage following fieldwork as project initiation pre-dated the adoption of the CIfA Selection Toolkit.

Relevant standards, policies and guidelines consulted include:
General

- *Selection, Retention and Dispersal of Archaeological Collections* (Society of Museum Archaeologists, 1993)
- *Archaeological archives: a guide to best practice in creation, compilation, transfer and curation* (AAF, revised edition 2011, section 4)
- *The Transfer of Archaeological Archives to Leicestershire County Council Museum Collections* (latest version 2022)

Relevant research agendas

- East Midlands Heritage: An updated research agenda and strategy for the historic environment of the East Midlands, https://archaeologydataservice.ac.uk/researchframeworks/eastmidlands/wiki/ResearchFramework

Finds

- *Standard Guidance for the collection, documentation, conservation & research of archaeological materials* (CIFA, 2014)
- *A Standard for Pottery Studies in Archaeology* (Prehistoric Ceramics Research Group, Study Group for Roman Pottery, Medieval Pottery Research Group 2016)

Environmental

- *Environmental Archaeology: A Guide to the Theory, Practice of Methods, from Sampling and Recovery to Post-excavation* (English Heritage 2011)
- *Geoarchaeology: Using Earth Sciences to Understand the Archaeological Record* (Historic England 2015)
- *Guidelines for the Curation of Waterlogged Macroscopic Plant and Invertebrate Remains* (English Heritage 2008)
- *Waterlogged Wood: Guidelines on the Recording, Sampling, Conservation and Curation of Waterlogged Wood* (English Heritage 2010)
- *Waterlogged Organic Artefacts: Guidelines on their Recovery, Analysis and Conservation* (Historic England 2018)

Research objectives of the project
Following consideration of the archaeological potential of the site, the research objectives of the excavation are to:

- determine the date, nature and extent of the features located in trench 25;
- determine the date, extent and character of the linear feature which crossed trench 18;
- investigate the date, nature of construction and products of the brick kiln/s located in trench 39; and
- determine a better understanding of the nature of the archaeology and deposits uncovered in trenches 1, 22, 45, 47, 48, 60 and 61.

REVIEW POINTS

Consultation with all Stakeholders regarding project-specific selection decisions will be undertaken at a maximum of two project review points:

1. End of data gathering (assessment stage)
2. Archive compilation

1 – Digital Data

Stakeholders

WA Project Manager; WA Archives Manager; WA Geomatics & BIM Manager; LCC HNET; ADS

Selection

Location of Data Management Plan (DMP)

This document is designed to link to the project Data Management Plan (DMP), which can be supplied on request.

To promote long-term future reuse deposition file formats will be of archival standard, open source and accessible in nature following national guidance from ADS 2013, CIfA 2014c and the requirements of the digital repository.

Any sensitive data to be handled according to Wessex Archaeology data policy to ensure it is stored and transferred securely. The identity of individuals will be protected in line with GDPR. If required, data will be anonymised and redacted. Selection and retention of sensitive data for archival purposes will occur in consultation with the client and relevant stakeholders. Confidential data will not be selected for archiving and will be handled as per contractual obligation.

Document type	Selection Strategy	Review Points
Site records	Most records will be completed digitally on site (with the exception of registers). All will be selected for deposition.	3
Reports	To include WSIs, Interim reports, post-excavation assessment reports, publication reports. Final versions only will be selected for deposition.	2, 3
Specialist reports	Specialist reports will generally be incorporated in other documents with only minimal editing (reformatting, etc), and will be selected only if the original differs significantly from the incorporated version.	2, 3
Photographic media (site recording)	Substandard and duplicate images will be eliminated; pre-excavation images may not be selected where duplicated by post-excavation shots; working shots will be very rigorously selected to include only good quality images with potential for reuse and those integral to	2, 3

	understanding features, their inter-relationships and location on site; site condition and reinstatement photos will not be selected.	
Photographic media (objects)	Images of individual or groups of objects, to include those of significance selected for publication and reporting. Substandard and duplicate images will be eliminated; all others will be selected.	3
Survey data	Site survey data will be used to generate CAD/GIS files for use in post-excavation activities. Shapefiles of both the original tidied survey data, and the final phased drawings will be selected.	2, 3
Databases and spreadsheets	Context, finds and environmental data in linked databases. Final versions will be selected. Any specialist data submitted separately will also be selected.	2, 3
Administrative records	Includes invoices, receipts, timesheets, financial information, email correspondence. None will be selected, with the exception of any correspondence relating directly to the archaeology.	3

De-Selected Digital Data

De-selected data will be stored on WA secured servers on offsite storage locations. The WA IT department has a backup strategy and policies that involves daily, weekly and monthly and annual backups of data as stated in the DMP. This strategy is non-migratory, and original files will be held at WA under their unique project identifier, as long as they remain useful and usable in their final version format. This data may also be used for teaching or reference collections by the museum, or by WA unless otherwise required by contractual or copyright obligations.

Amendments

Date	Amendment	Rationale	Stakeholders

2 – Documents

Stakeholders

WA Project Manager; WA Archives Manager; LCC Museum Collections; LCC HNET

Selection

A security copy of all paper/drawn records is a requirement of CIfA guidelines. This will be prepared on

completion of the project, in the form of a digital PDF/A file. If the security copy is not required for deposition by Stakeholders, it will be retained on backed-up servers belonging to Wessex Archaeology.

Note that some information may be redacted to comply with GDPR legislation (personal data).

Document type	Selection Strategy	Review Points
Site records	Selected records only will be completed in hard copy on site (registers, some graphics). All will be selected for deposition.	3
Reports	Hard copies of all reports (SSWSIs, Interim reports, post-excavation assessment reports, publication reports). All will be selected for deposition, with the exception of earlier versions of reports which have been clearly superseded.	2, 3
Specialist reports & data	Specialist reports will generally be incorporated in other documents with no significant editing. Supporting data is more likely to be included in the digital archive, but if supplied in hard copy and not incorporated elsewhere, this will be selected.	2, 3
Photographic media	X-radiographic plates: all will be selected.	3
Secondary sources	Hard copies of secondary sources will not be selected.	3
Working notes	Rough working notes, annotated plans, preliminary versions of matrices etc, will not be selected.	3
Administrative records	Invoices, receipts, timesheets, financial information, hard copy correspondence. None will be selected, with the exception of any hard copy correspondence relating directly to the archaeology.	3

De-Selected Documents

De-selected sensitive analogue data will be destroyed (shredded) subject to final checking by the WA Archives team with the remainder recycled. Possible exceptions include records retained for business purposes, including promotional material, teaching and internal WA library copies of reports.

Amendments

Date	Amendment	Rationale	Stakeholders

3 – Materials

Material type	Artefacts (bulk and registered finds)	Section 3.	3.1

Stakeholders

WA Archives Manager; WA Finds Manager; WA internal specialists; LCC Museum Collections; LCC HNET; landowner

Selection

Proposals have been made by WA internal specialists based on observations made during assessment; they may be modified (although probably not significantly) at Review Point 3.

Find Type	Selection Strategy	Review Points
Animal bone (208 frags)	Small assemblage of Middle Iron Age date with few identifiable elements and no further research potential. Retain none.	2, 3
Ceramic building material (5 frags)	Negligible quantity, either post-medieval or undated. No archaeological significance and no further research potential. Retain none.	2, 3
Fired clay (4 frags)	Negligible quantity; one possible Iron Age object; three possible hearth lining. Very limited archaeological significance; little or no further research potential, but retain all.	2, 3
Pottery (71 sherds)	Very small assemblage conforming to regional type series, but adds to regional ceramic dataset. Retain all.	2, 3
Stone (2 objects)	One object apparently unworked; do not retain. Second object is a Neolithc polished stone axe; object of intrinsic interest; retain.	2, 3
Worked flint (3 pieces)	Negligible quantity, undatable waste flakes; very limited archaeological significance and no further research potential. Retain none.	2, 3

De-Selected Material

Consideration will be given to the suitability for use for handling or teaching collections by the museum or Wessex Archaeology, or whether they are of particular interest to the local community. De-selected material will either be returned to the landowner or disposed of. All will be adequately recorded to the appropriate level before de-selection.

Amendments

Date	Amendment	Rationale	Stakeholders

3 – Materials

Material type	Palaeoenvironmental material	**Section 3.**	3.2

Stakeholders

WA Archives Manager; Wessex Archaeology Environmental Manager; WA internal specialists; Project Manager; LCC Museum Collections; LCC HNET

Selection

All environmental sampling has been undertaken Wessex Archaeology's in-house guidance, which adheres to the principles outlined in Historic England's guidance (English Heritage 2011 and Historic England 2015a) and as stated in the relevant WSIs (Wessex Archaeology 2022a). All environmental samples collected and suitable to address project aims and research objectives, as deemed by Wessex Archaeology's Environmental team, have been processed and assessed.

Environmental material type	**Selection strategy**
Unsorted residues	Residues were discarded after sorting
Assessed flots and extracted materials.	Retain all from Area 25, samples 238183_1001-1004 and Trench 25 (Evaluation), sample 238182_2501

DE-SELECTED MATERIAL

De-selected material and finds from samples will be responsibly disposed of after processing and post-ex recording.

AMENDMENTS

Amendments to the selection strategy for environmental material will be agreed with Stakeholders prior to implementation and recorded in the project archive.

Appendix 4: OASIS record

OASIS ID (UID): wessexar1-505045

Project Name: Excavation at Oadby to Arnesby replacement water main

Activity type: Excavation, Watching Brief

Project Identifier(s): 238183

Planning Id: [no data]

Reason for Investigation: Heritage management

Organisation Responsible for work: Wessex Archaeology

Project Dates: 31-Jan-2022 - 25-Feb-2022

HER: Leicestershire HER

HER Identifiers: [no data]

Project Methodology: Excavation of three archaeological mitigation areas (identifed as being of archaeological interest following geophysical survey and evalauation trenching) and monitoring of topsoil removal at five watching brief areas at various locations along the easement of the Oadby to Arnesby replacement water main.

Project Results: Iron Age features, principally ditches, and an 18th or 19th-century brick kiln had been identified along the pipeline route by earlier magnetometer survey and evaluation trenching. These features formed the focus of the archaeological mitigation works. Ditches containing animal bone and Iron Age pottery were revealed in two of the excavation areas, revealing a degree of enclosure and land management in the local landscape in late prehistory. The excavation also revealed the brick kiln to be a good example of a ‘Scotch’ type kiln, and that it was operated for an extended period. Although the precise date of the kiln and its functional relationship with the nearby Grand Union Canal remain unclear, the handmade bricks from it appear to be of 18th-century or 19th-century date; it appears likely the canal was used to transport raw materials and finished bricks. A ditch, thought to have been dug to relieve drainage around the site of the brick kiln, proved notable in that a polished Neolithic axehead was recovered from its base. A watching brief was maintained on a further five areas. Results from these comprised an alluvial feature, a boundary of probable modern date and deposits of modern rubble. The limited depth of operations

in most of the watching brief areas meant that the function and character of the modern deposits were not fully clarified. The combined finds assemblage from all stages of fieldwork is small (the total weight of all finds is just over 4 kg) and its archaeological significance and further research potential are correspondingly limited. No further analysis is recommended for any of the finds. Environmental sampling of Iron Age ditches revealed cereal grains (including spelt wheat), cereal chaff, and remains of wild plants, although numbers are low, and the material is generally in poor condition. The character of the environmental evidence adds to the impression of a settlement existing somewhere in the vicinity in the Iron Age. The environmental assessment was able to confirm that the brick kiln would have been coal-fired. The fieldwork has been generally successful in meeting its broad aims. No further analysis is recommended for any of the finds or samples, and the site is primarily of local interest. The archive resulting from the excavation is currently held at the offices of Wessex Archaeology in Sheffield. Leicestershire Museums Service has agreed in principle to accept the archive on completion of the project, under the accession code X.A95.2020.

Keywords:

Subject/Period: Brick Kiln: POST MEDIEVAL

FISH Thesaurus of Monument Types

Subject/Period: Ditch: IRON AGE

FISH Thesaurus of Monument Types

Archive:

Physical Archive - to be deposited with Leicestershire County Council Museums;

Reports in OASIS:

Tuck, A. and Daniel, P., (2022). *Oadby to Arnesby (Leicestershire) Trunk Main Renewal: Post-excavation Assessment and Updated Project Design*. Sheffield: Wessex Archaeology. 238183.3.

LEICESTERSHIRE

Site

463000

462000

297000

296000

462400

295600

Area 18

see Fig. 2

Area 22

Newton Harcourt

Glen

Area 1

see Fig. 8

Area 25

see Fig. 4

Tythorn Hill

River Sence

Grand Union Canal

Area 39

see Fig. 10

Area 45

see inset

Brackland Farm

Kilby

Area 46

Area 47

Street

Wistow

T45

4506

0 500 m

0 20 m

Mitigation Area
Watching Brief Area
Previous Evaluation Trench
Archaeology
Approximate Location of Geological Feature
Excavated Slot
Pipeline Route
STW Working Area
Access Road

Geophysical Survey Results
Possible Archaeology

Coordinate system: OSGB36

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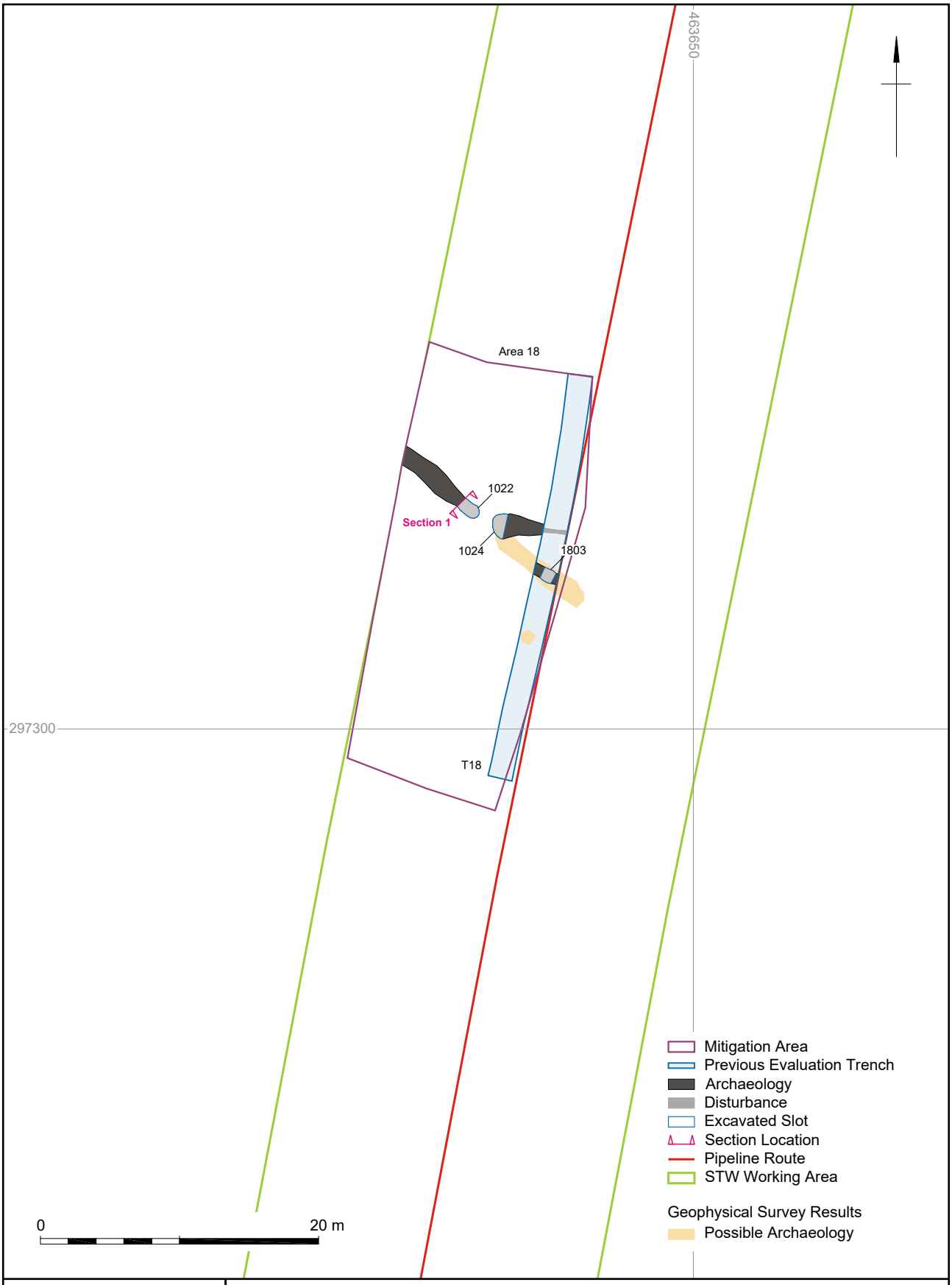
Scale:	1:8,000 and 1:400 at A3	Initials (studio):	AW
Path:	S:\PROJECTS\238183\Graphics_Office\Rep figs\PXA\2022_04_09		

Scheme location and location of mitigation and watching brief areas

Figure 1



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Area 18

Figure 2

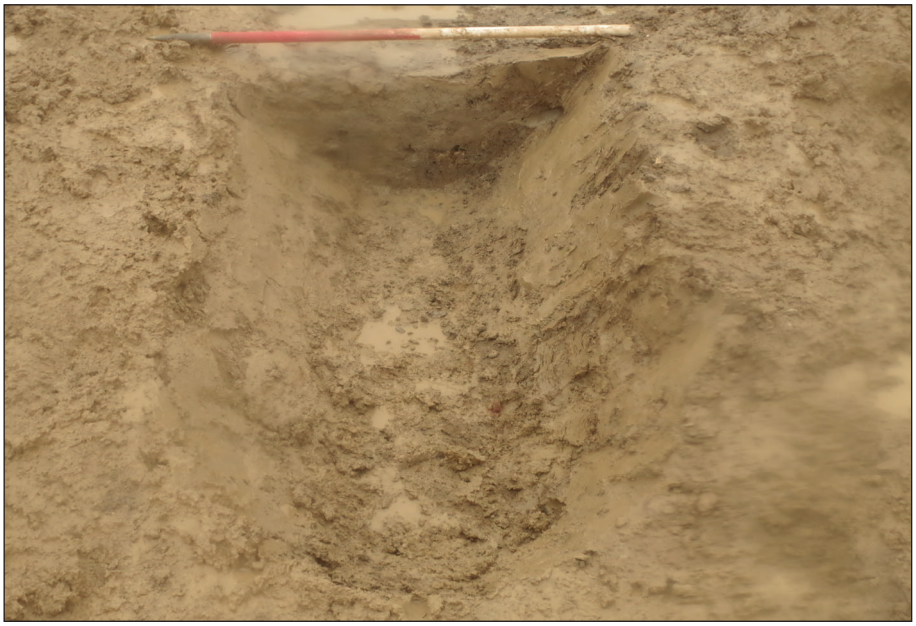

Figure 3: Ditch terminal 1022, south-east facing section (1 m scale)

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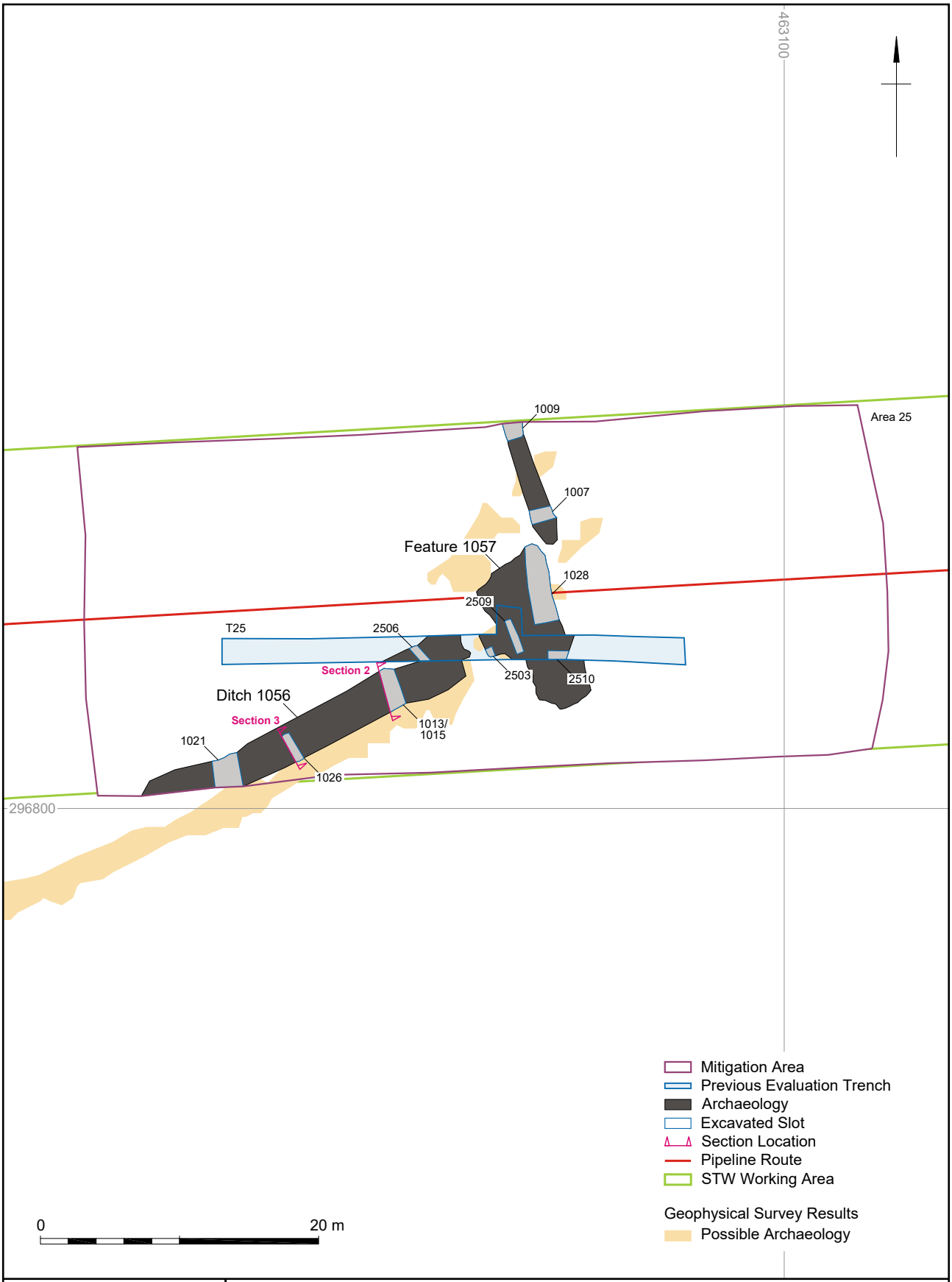

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Figure 5: Ditch 1056, slot 1026, north-east facing section (1 m scale)

Figure 6: Ditch 1056, view from south-west (1 m scale)

Date:	19/04/2022	Revision Number:	0
Scale:	Not to scale	Illustrator:	AW
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Figure 7: Feature 1057, view from south (1 m scale)

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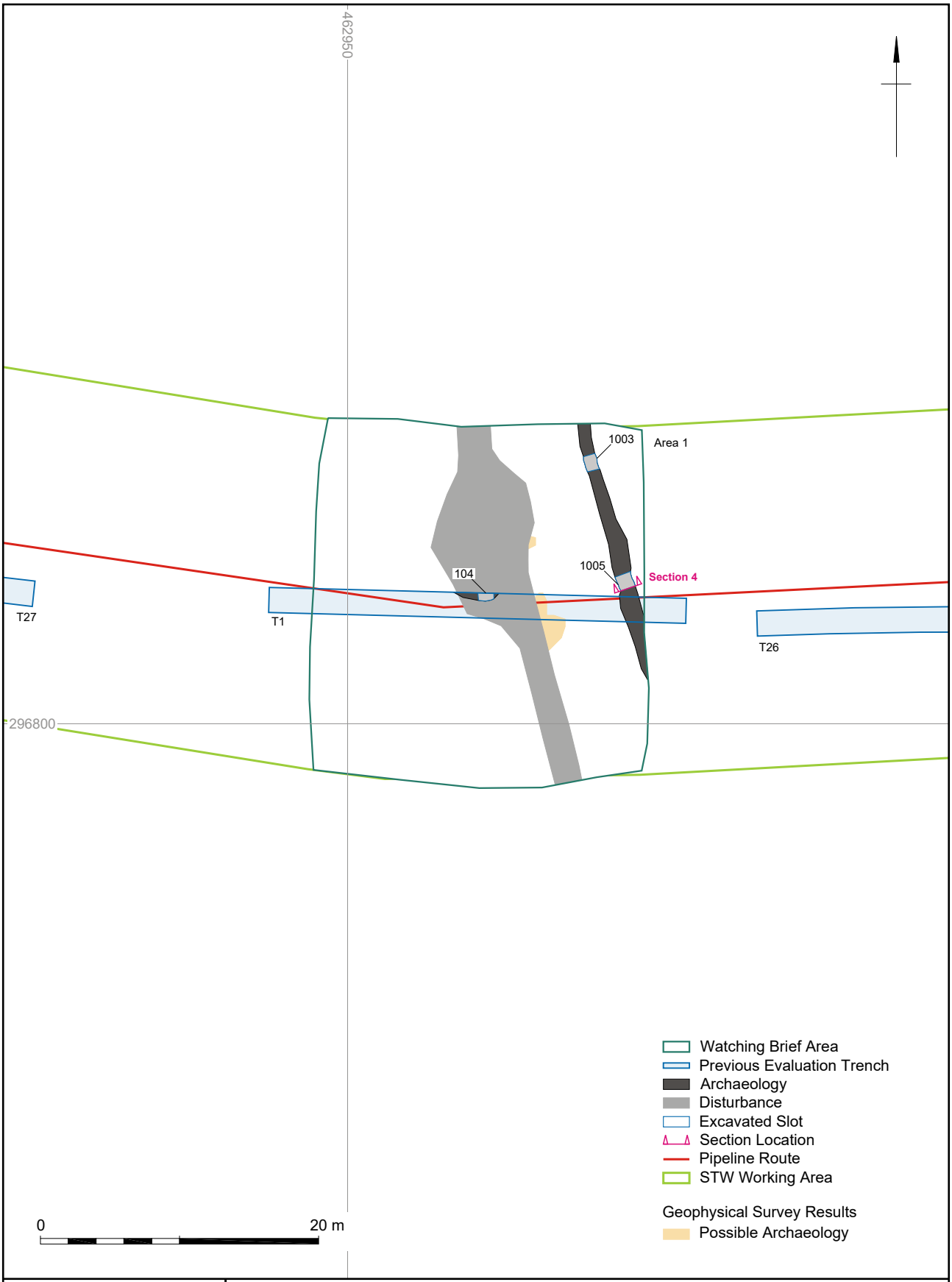

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Area 1

Figure 8

Figure 9: Ditch 1003, view from north (1 m scale)

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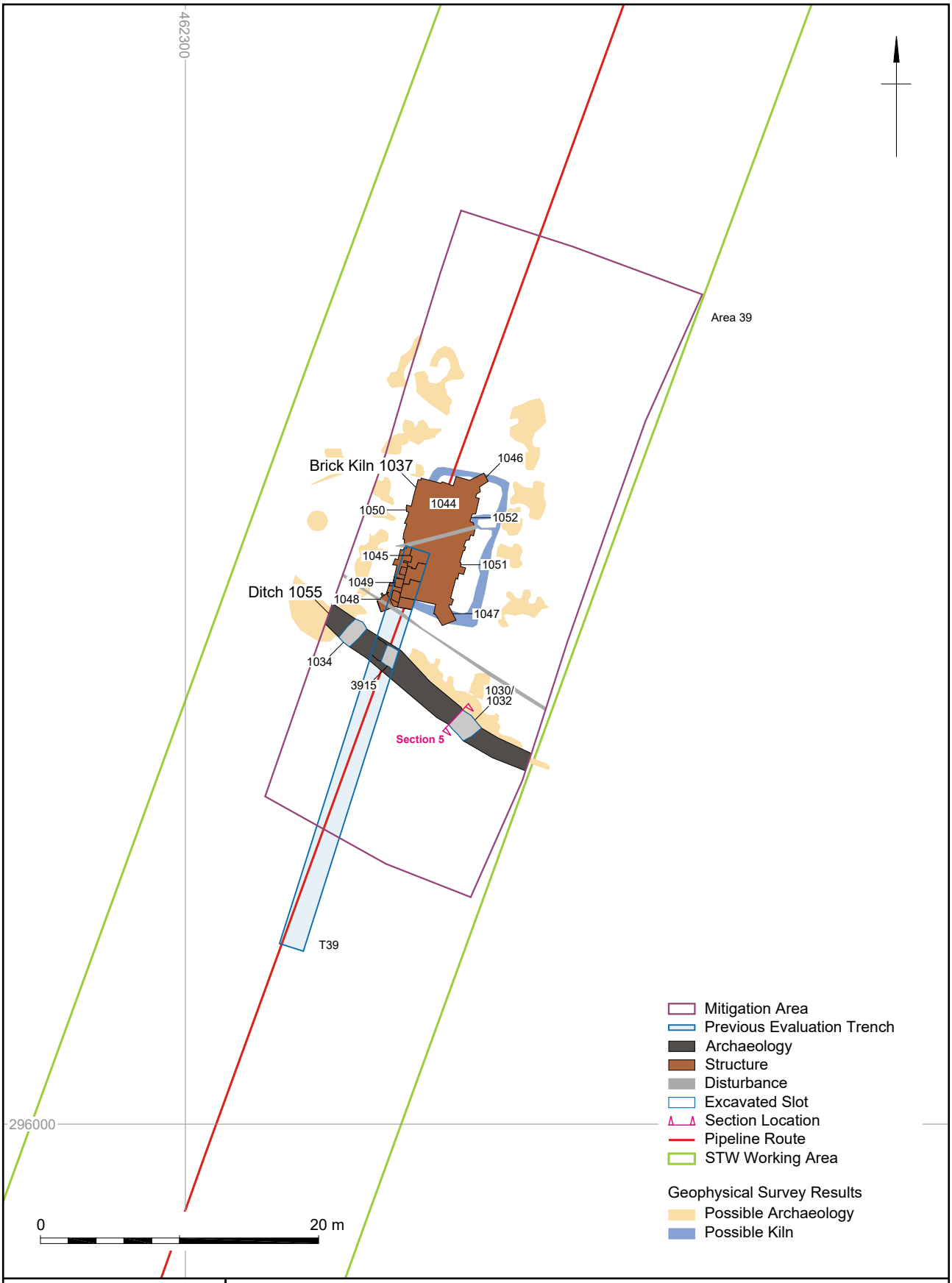

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Figure 11: Working shot of kiln 1037, view from south-south-west (2 x 1 m scale)

Figure 12: Northern part of kiln 1037, view from east-south-east (2 x 1 m scale)

Date:	19/04/2022	Revision Number:	0
Scale:	Not to scale	Illustrator:	AW
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Figure 13: Southern part of kiln 1037, view from east-south-east (2 x 1 m scale)

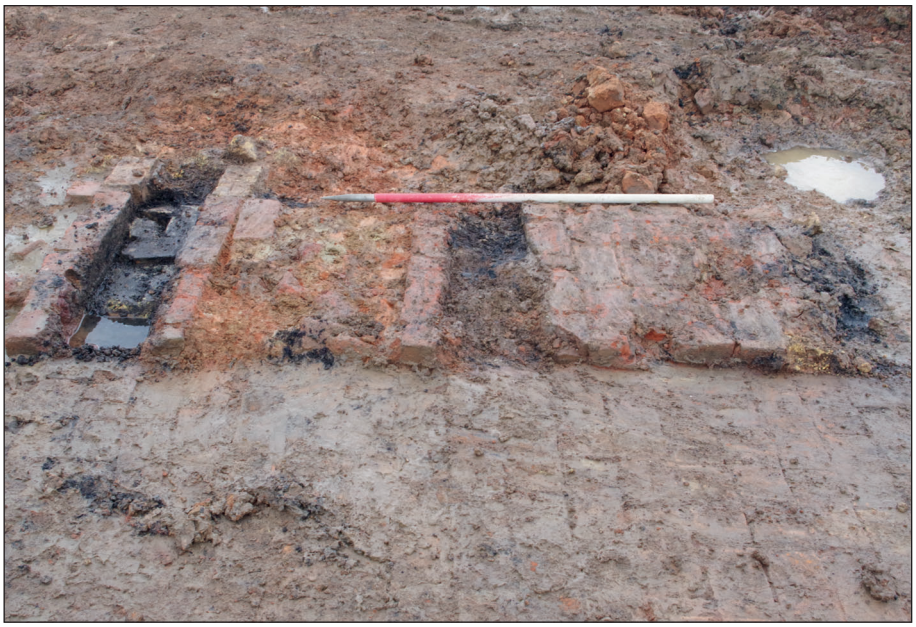

Figure 14: Detail of kiln 1037 fireboxes, view from east-south-east (1 m scale)

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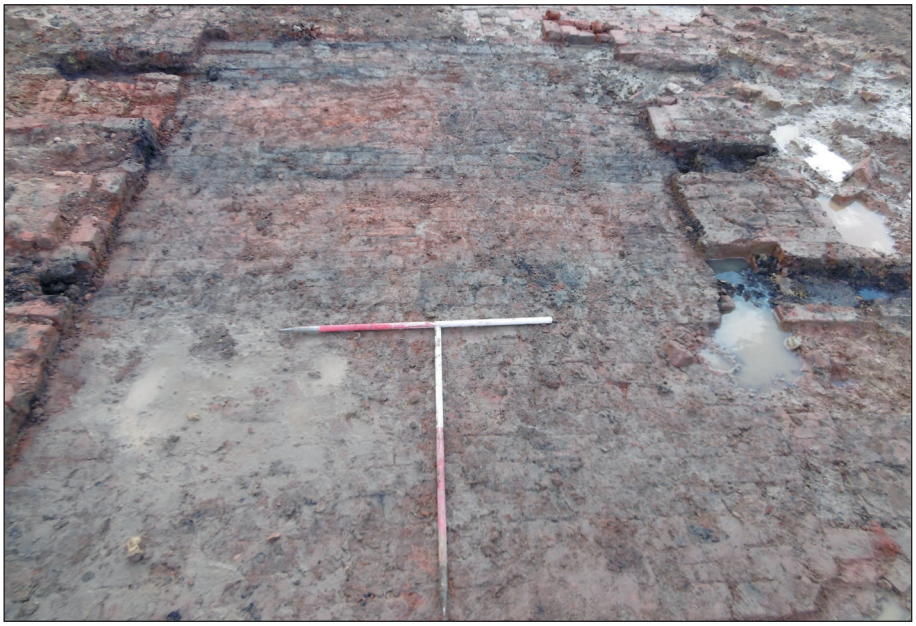

Figure 15: Detail of kiln 1037 showing coal stains from flues, view from north-north-east (2 x 1 m scale)

Figure 16: Ditch 1055, slot 1034, north-west facing section (1 m scale)

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Figure 17: Area 48, view from west

Figure 18: Area 47, view from south

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Figure 19: Area 22, view from south

Figure 20: Area 45, sondage through alluvium, view from east (1 m scale)

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Figure 21: Area 45, sondage through alluvium (1 m scale)

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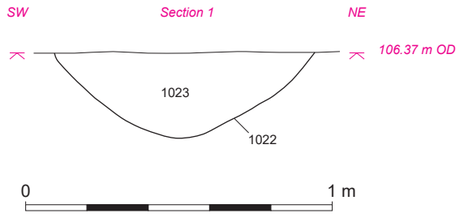

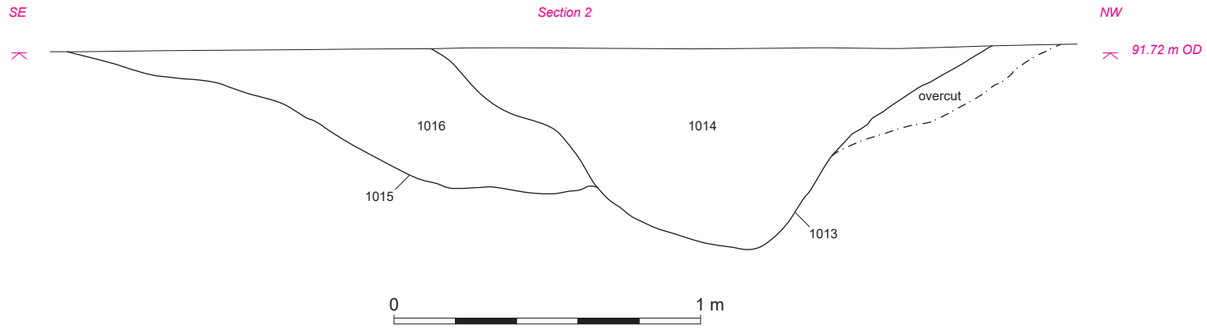

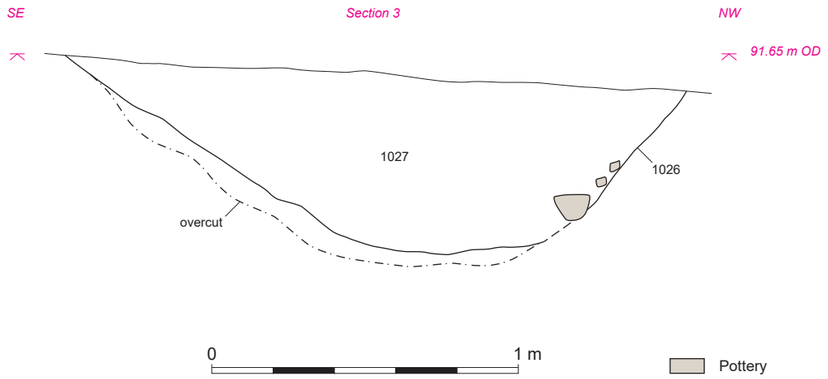

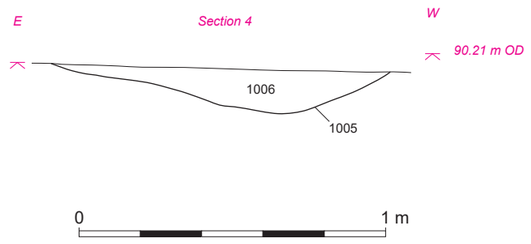

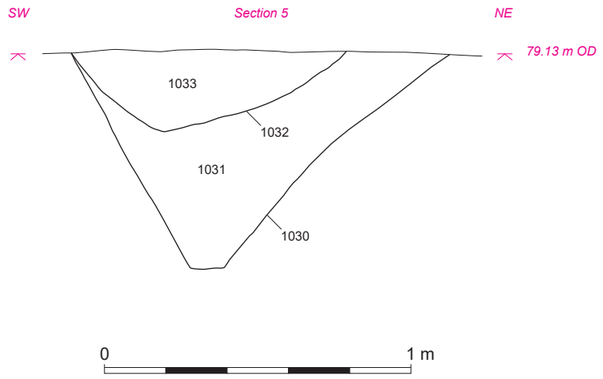

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Sections

Figure 22

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