

Strip, Map & Record Excavation & Archaeological Observation

On behalf of

Staffordshire County Council

Concerning

Land at Lawns Farm

Branston (Branston Locks)

Burton Upon Trent

Staffordshire

BE13 9SB



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Cover: View northwest of topsoil strip Area A

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1 Non-Technical Summary

Border Archaeology Ltd (BA) was instructed by Amey plc on behalf of Staffordshire County Council to undertake a programme of archaeological work comprising Strip, Map & Record Excavation and Archaeological Observation in respect of the development of land at Lawns Farm Branston (Branston Locks) Burton Upon Trent Staffordshire BE13 9SB (NGR: SK2173 2140 – approximate centre).

The existing ground surface was reduced by approximately 300mm to the level for the construction of access roads and a canal bridge and to divert overhead power lines below ground, for which a 300mm -wide trench was excavated to a depth of 530mm.

All soil stripping relating to ground preparation works for access road construction and cable trenching was subject to archaeological observation.

The development area was characterized by the evidence of continual agricultural land use and by infrastructure development. This infrastructure development commenced in the 1770s with the construction of the Trent and Mersey Canal (Main Line - Burton to Fradley) and continued more recently with works associated with the A38, Lichfield Road and Branston Road.

Late post medieval and modern ditches and road surfaces were observed and a single pit [1004] was encountered within Area A, west of the canal, but its form and fills were not indicative of purpose. No finds were recovered for dating purposes.

2 Introduction

Border Archaeology Ltd (BA) was instructed by Amey plc on behalf of Staffordshire County Council to undertake a programme of archaeological work comprising Strip, Map & Record Excavation and Archaeological Observation in respect of the development of land at Lawns Farm Branston (Branston Locks) Burton Upon Trent Staffordshire BE13 9SB (NGR: SK2173 2140 – approximate centre) (Planning Ref. P/2016/00474).

The groundworks were carried out to facilitate a mixed-use development and comprised ground reduction of approximately 300mm to the level for the construction of access roads and a canal bridge, together with cable trenching to a depth of 530mm and width of 300mm for the rerouting below ground of overhead power lines (*Fig 1*).

All soil stripping that formed part of the ground preparation works for access road construction and cable trenching was carried out under Archaeological Observation.

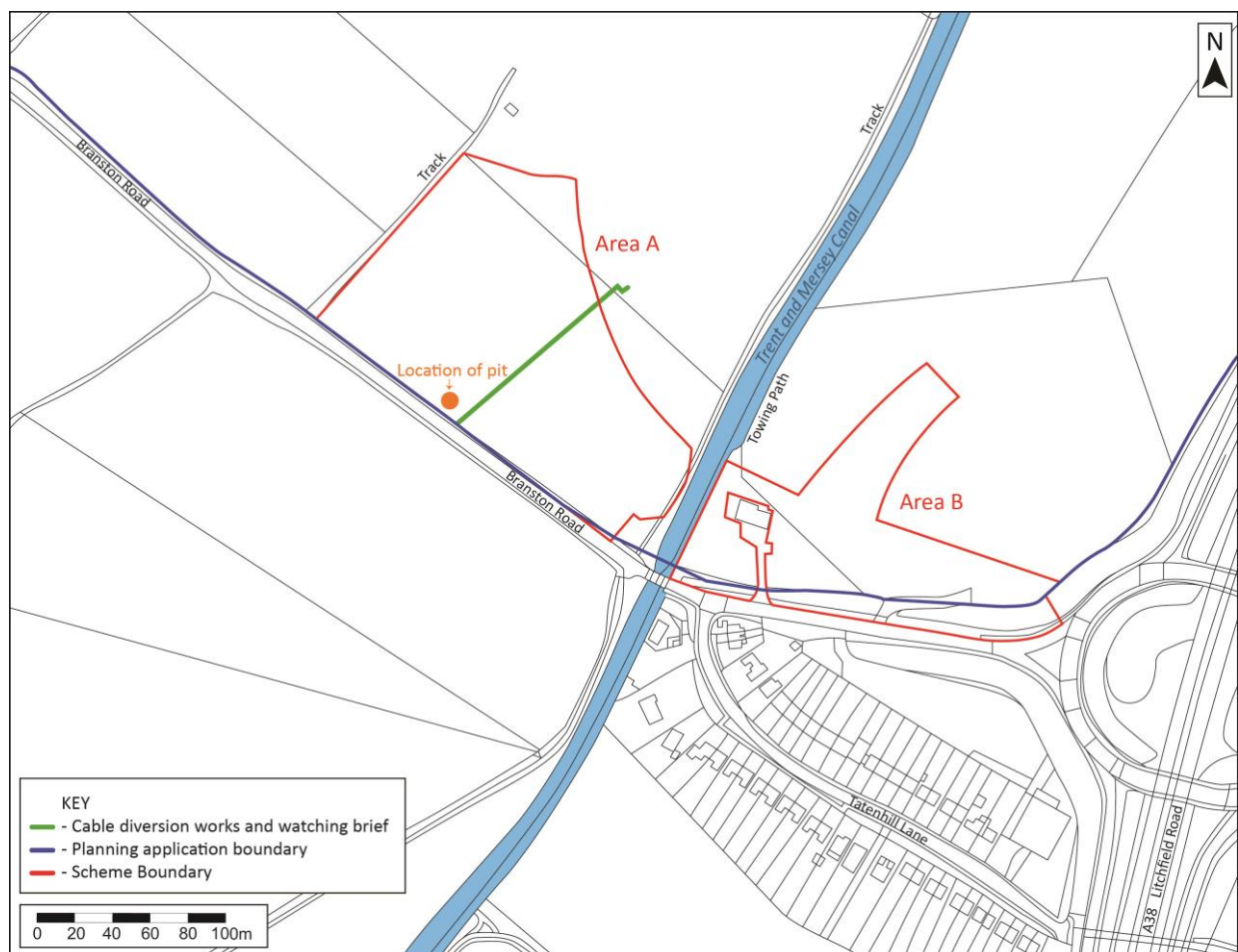


Fig. 1: Site location plan

3 Site Description

The site occupies a relatively flat area of approximately 4.26ha, adjacent to Branston Road and W of the A38 Lichfield Road, which lies at an approximate height of 47m-48m AOD. The site is bisected by Trent-Mersey Canal and was divided into two areas (A and B) for recording purposes (*Fig 1*). The cable trenching was excavated within Area A, W of the canal, prior to the main topsoil strip. Area B, E of the canal, had been occupied by a residential building and incorporated agricultural land. The area immediately around the building had been subject to heavy landscaping activity.

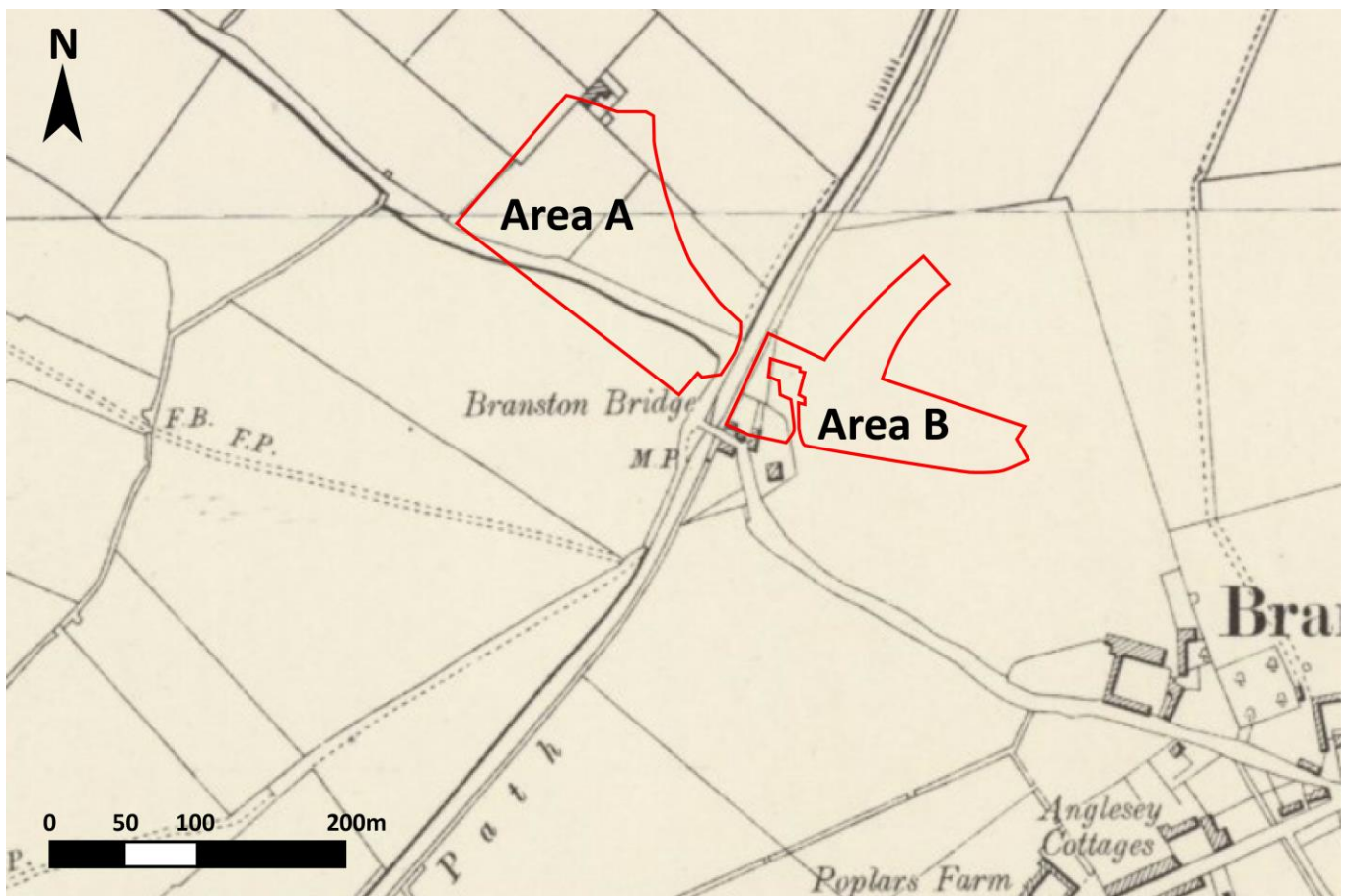


Fig. 2: Extract from Ordnance Survey 6-inch map (1902) showing original route of Branston Road within development area

3.1 Soils and Geology

The area immediately N of Branston Road is characterized by typical cambic gley soils of the WIGTON MOOR series (831c), which are composed of permeable fine and coarse loamy soils variably affected by groundwater overlying river terrace and glacio-fluvial drift (SSEW 1983).

4 Brief Historical and Archaeological Background

A previous Heritage Statement (Carter 2012) identified 34 designated heritage assets within 1km of the site, including a Grade II Listed Canal milepost situated adjacent to the scheme area but outside the area of impact.

A number of undesignated heritage assets were also noted, either within or adjacent to the development boundary, including cropmarks of possible Late Neolithic to Roman date and other undated pits, enclosures and linear features (*ibid.*, 4).

An early medieval to medieval hollow way and/or park pale alignment lies within the area of the scheme, possibly associated with the medieval Sinai Park (Mon. No. 922405), which was 'disparked' in 1769. William Molyneux in his *History of Burton on Trent* records that: "In the map of the state executed in ... 1759, the park fence is ... shown running at the base of the hills across the Lawns Fm ... along the whole of which line the old earth bank on which the fence stood may be traced' (1869, 111).

Part of this feature appears also to have been identified during a previous programme of geophysical survey (AOC 2015). The survey also recorded two additional features of possible archaeological origin located within or immediately adjacent to the scheme boundary.

Based upon consideration of archaeological features recorded within the immediate vicinity of the site, it was concluded that evidence of human activity potentially spanning the prehistoric, Roman, medieval and post-medieval periods may be encountered (Carter 2012).

5 Methodology

The work followed a Desk Based Assessment (Carter 2012) and a Written Scheme of Investigation (WSI, Staffordshire Council 2016). The programme of archaeological work was carried out in accordance with *Standard and guidance for an archaeological watching brief* (ClfA 2014), *Standard and guidance for archaeological excavation* (ClfA 2014) and *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (ClfA 2014). BA is also cognizant of project management guidance set out in *Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide* (Lee 2015).

The archaeological work took place between 20th June 2016 and 16th of August 2016.

5.1 Machine Strip

Topsoil was removed under archaeological supervision in level spits using a back-acting toothless bucket down to the first significant archaeological horizon or to the top of the natural geology, whichever was encountered first.

All excavated material was stored separate from other deposits and examined for archaeological material/finds.

5.2 Excavation

Any archaeological deposits identified as appropriate for further investigation were examined according to criteria set out in *Standard and guidance for archaeological excavation* (ClfA 2014).

5.3 Recording

A full written, graphic and photographic record was made in accordance with BA's *Archaeological Field Recording Manual* (2014) and included:

- A standard numbered context record for each stratigraphic unit encountered.
- A location plan tied into Ordnance Survey (OS) National Grid data. Contractor regulatory conditions precluded entry to trenching in order to undertake detailed recording.
- A high-resolution digital photographic record indexed and cross-referenced to written site records. Photographs contained appropriate scales and details of subject and direction of view were maintained in a photographic register and on a photograph board, indexed by frame number.
- Sections were produced on gridded, archive-stable polyester film at a scale of 1:10. All drawings were numbered and listed in a drawing register, these drawing numbers being cross-referenced to written site records.

5.4 Sampling

Any archaeological deposits identified were sampled in accordance with BA's *Palaeoenvironmental Department Manual* (BA 2015) and included:

- A sample number was assigned to each sample taken and indexed and cross-reference to the context record and other written record.
- Where possible, up to 40ℓ of material were taken from each context encountered.

6 Results

6.1 Area A

Area A encompassed the developed land W of the Trent and Mersey Canal. The subsoil (1002) was seen to seal a series of ditches dating to the 18th century or later (*Plate 1*) and heavy plough-scarring cut through to the natural geology (1003). Of note was a single pit [1004] (*Plate 2; Figs. 3 and 4*) containing organic peat-like deposits (1005) and (1007), separated by a weathering deposits (1006) and sealed by (1008), (1009) and (1010).

Upon removal of the topsoil (1001) and subsoil (1002), the majority of the area revealed only plough-scarring, which cut the natural (1003) to a depth of up 0.10m in places. Two parallel ditches of broadly similar form and approximately 1.4m (width) × 1.2m (depth) were seen to run approximately 70m NE, oblique to the present-day

road, but on a similar alignment to the medieval 'hollow way' feature previously identified (Carter 2012, AOC 2015) (*Plate 1; Fig 2*). However, each contained deeply stratified late 19th -and 20th -century waste and ceramic drain pipe along its length, which included shotgun casings, glass bottles, bone china and a number of telegraph insulators stamped 'Buller Ltd', which appeared typical of those used in the 1930s and 1940s (Teleramics 2016). They were not given context numbers. These ditches ran either side of an area of gravels, the width of which suggested a former road flanked by drainage ditches.

Three further NW/SE -aligned gullies were identified within this area [numbers?], which varied in width along their length from 1.5–0.5m. The northernmost linear features eventually converged and were seen within the cable trench. The pottery evidence recovered from these features gave a late 19th/early 20th -century date for all these features and they were not given context numbers.

Of note was a single pit [1004] located close to Branston Road (*Fig. 1*) and measuring 2.72m × 2.50m × 0.94m (*Figs. 3 and 4*), which was truncated on its southern edge during excavation of the rerouted cable trench. The sides were irregular, being steeper of the N and NE edges, which also showed evidence of bioturbation, whilst the base was regular and concave. The feature contained multiple fills: the primary fill (1005) was composed of lenses of a peaty material in a matrix of light orange-grey silty sand. Then a small weathering deposit (1006) formed on the SW edge. The tertiary fill (1007) was formed almost entirely of a sandy peaty material with stone lenses on the NE edge. Fill (1007) was sealed by a weathering deposit (1008) on the NE edge and what appeared to be backfill (1009), similar in composition to the natural (1003), which may be interpreted as material arising from the original pit excavation. The uppermost fill (1010) appeared to have formed as a result of natural sedimentation.

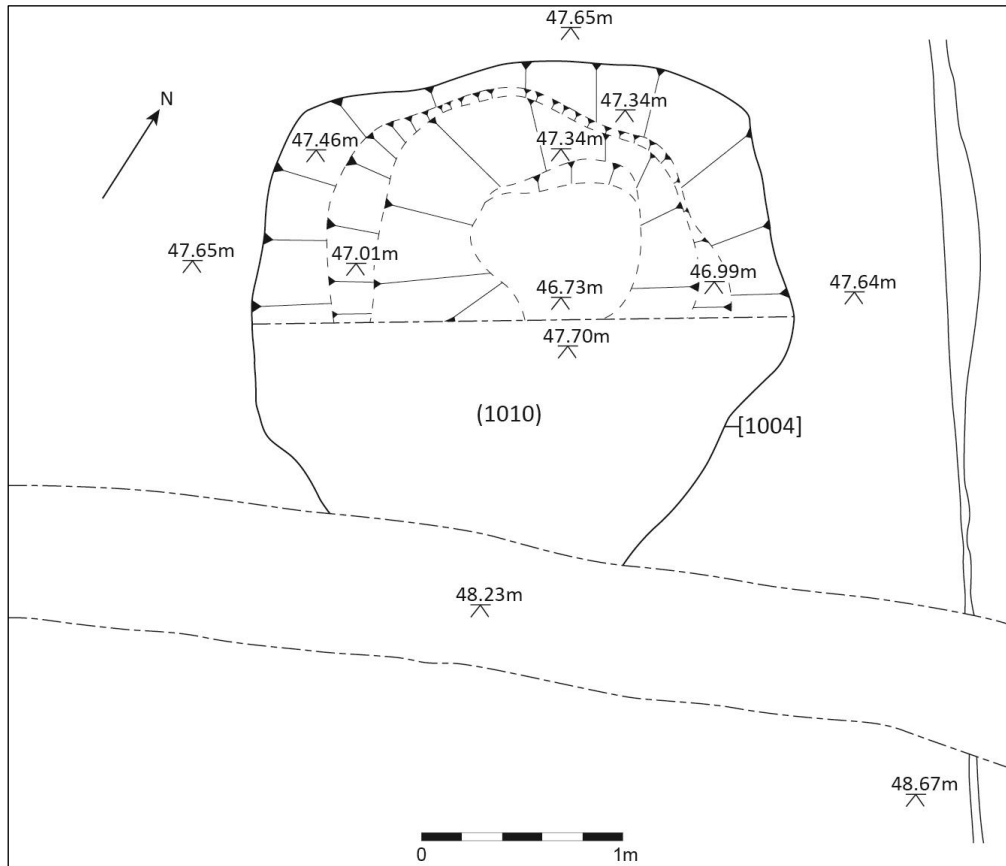


Fig. 3: Plan of pit [1004]

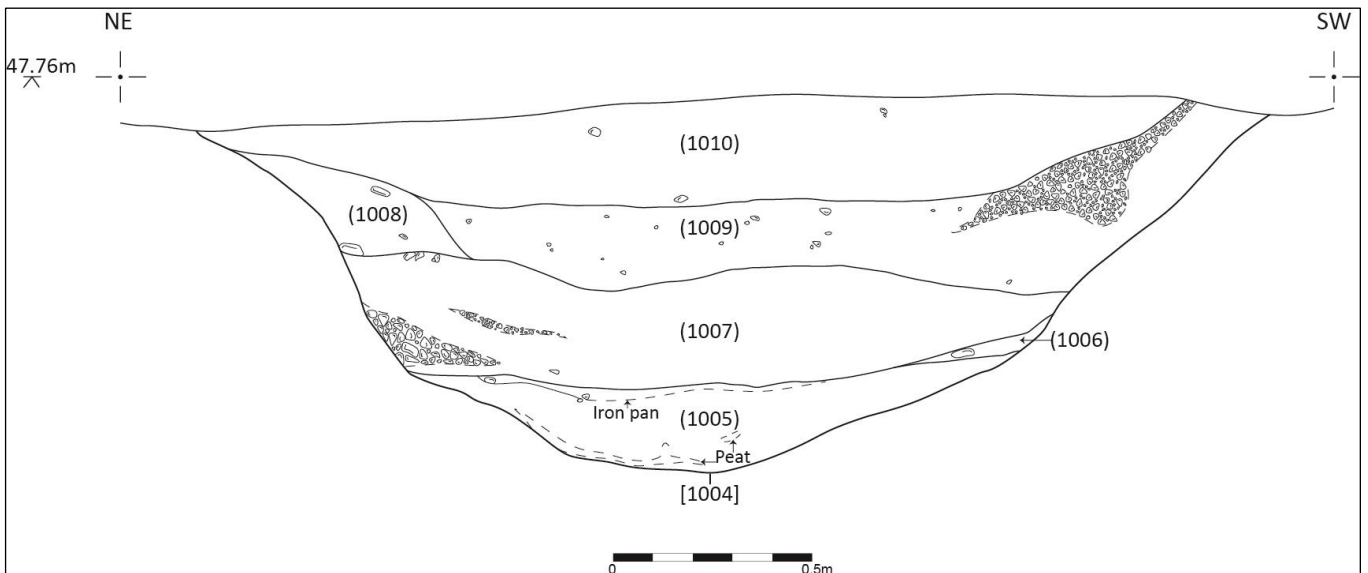


Fig. 4: NW-facing section of pit [1004]



Plate 1: Parallel ditches dating to the 20th century on the same alignment of the original medieval hollow way



Plate 2: NW facing section of pit [1004]

Item	Context No.	Type	Interpretation	Discussion	Finds					Dating	Comments
					Small Find	Pot	Bone	Misc.	Sample No.		
1	(1001)	Layer	Topsoil	Dark brownish-grey clayey sandy silt soil; maximum depth 0.40m, site wide. Overlying (1002).	-	✓	✓	✓	-	Modern	Finds noted but not retained
2	(1002)	Layer	Subsoil	Mid greyish-brown silty clayey sand; maximum depth 0.15m. Underlying (1001).	-	✓	-	✓	-	Modern	Finds noted but not retained
3	(1003)	Layer	Natural geology	Light yellowish-orange sands & gravels over light bluish-grey clay; moderate iron panning. Underlying (1002) and cut by [1004]	-	-	-	-	-	N/A	-
4	[1004]	Cut	Cut of pit, truncated by modern service trench on S edge.	Sub rounded in plan; 2.72m × 2.50m × 0.97m; sides irregular, steeper on N & NE edges (which also showed evidence for bioturbation), base regular & concave. Cuts (1002), filled by (1005), (1006), (1007), (1008), (1009), (1010).	-	-	-	-	-	Unknown	-
5	(1005)	Fill	Basal fill of [1004]	Light orange-grey silty sand & sandy peat lenses; frequent small well-mixed stones; 1.16m (width) × 0.21m (depth). Fills [1004], underlying (1006).	-	-	-	-	<004>	Unknown	-
6	(1006)	Fill	Fill of [1004]. Possible redeposited natural.	Light grey silty stony sand; 0.15m (width) × 0.04m (depth). Fills [1004], overlying (1005), underlying (1007).	-	-	-	-	-	Unknown	Possible weathering deposit forming on SW edge.
7	(1007)	Fill	Fill of [1004]	Dark greyish-black sandy peat; stone/ sand lenses on NE edge, iron pan lens at base; occasional small mixed stones throughout; 1.79m (width) × 0.31m (depth). Fills [1004], overlying (1006), underlying (1008).	-	-	-	-	<003>	Unknown	-
8	(1008)	Fill	Fill of [1004]. Possible	Light orange-grey sand & stone; 0.30m (depth) × 0.20m (width). Fills [1004], underlying (1009), overlying (1007).	-	-	-	-	<005>	Unknown	Possible weathering deposit on the NE edge.

			redeposited natural								
9	(1009)	Fill	Fill of [1004]	Light grey silty sand; very frequent well-mixed stones throughout; 1.93m (width) × 0.34m (depth). Fills [1004], underlying (1010), overlying (1008).	-	-	-	-	<002>	Unknown	Possibly deliberate backfill of original up-cast material arising from excavation of pit.
10	(1010)	Fill	Uppermost fill of [1004]	Dark greyish-brown clayey silt sand; occasional mixed stones; 2.50m (width) × 0.26m (depth). Fills [1004], underlying (1002), overlying (1009).	-	-	-	-	<001>	Unknown	-

Table 1: Summary of Contexts Area A

6.2 Area B

The area around the former residential building and immediately E of the canal had been heavily impacted by landscaping activity. A large amount of industrial waste (2005) appears to have been brought onto the site for ground make-up and consolidation purposes, which, in places, sealed the original topsoil horizon (2001); in areas of previous excavation relating to a septic tank and associated structures, this waste material sealed the natural geology (2004).

A substantial but intermittent spread of waste (2003) revealed to the E of the canal comprised a mixed deposit containing material of 18th -century date and later, which incorporated large deposits of charcoal, coal, burnt waste and spreads of waste gypsum, together with miscellaneous finds, including glass bottles and broken panes, sherds of stoneware and bone china and clay-pipe stem. This material extended for a distance of up to 30m E from the canal and appeared to have been impacted by the landscaping activity in the immediate area.

No deposits, features or finds of archaeological significance were revealed in the northern extent of the area. The remnants of N/S -aligned ridge-and-furrow cultivation features were present, the furrows containing ceramics and iron objects of 19th -century date or later.



Plate 3: Showing in part the extent of 18th century waste spread, note a large deposit of waste gypsum in the foreground. Viewed WNW.

Item	Context No.	Type	Interpretation	Discussion	Finds					Dating	Comments
					Small Find	Pot	Bone	Misc.	Sample No.		
1	(2001)	Layer	Topsoil	Dark greyish-brown clayey silty sand; occasional mixed stones & C19/C20 waste (towards S of area and canal); maximum 0.33m depth, site wide. Overlying (2002)	-	✓	✓	✓	-	Modern	Heavy disturbance towards S & canal due to landscaping (see 2005)
2	(2002)	Layer	Subsoil	Light brownish-grey silty clayey sand; frequent small mixed stones; maximum 0.15m depth. Underlying (2001)	-	-	-	-	-	Modern	-
3	(2003)	Spread	Post C18 domestic & industrial waste	Light brownish-orange (with darker concentrations) waste; frequent charcoal, coal, burnt waste, moderate waste gypsum, glass bottles & broken panes, occasional stoneware, bone china & clay-pipe stem; extended along E side of canal.	-	✓	✓	✓	-	C18 & later	Finds noted but not retained.
4	(2004)	Layer	Natural geology	Light yellowish-orange sands & gravels over light bluish-grey clay; moderate iron panning.	-	-	-	-	-	Holocene	-
5	(2005)	Layer	Landscaping material composed of demolition waste	Very light orange grey; concrete and limestone rubble, with CBM, plastic, glass etc.; maximum 0.33m depth.	-	✓	✓	✓	-	Modern	Finds noted but not retained.

Table 2: Summary of Contexts Area B

7 Discussion

7.1 Area A and Cable Trench.

Area A encompassed the developed land W of the Trent and Mersey Canal.

The pit [1004] was eventually backfilled with highly organic material but these fills provided little or no indication of original function. Moreover, no finds were recovered for dating purposes. The archaeological interpretation of depositional processes active within pit [1004] was supported by the palaeoenvironmental assessment results, which were indicative of periodic waterlogging giving rise to peaty deposits and suggested sporadic and ineffective backfilling (*Appendix 1*).

The parallel ditches (*Plate 1*) in Area A followed the alignment of the original W/E route of the road, as seen on the 1902 6-inch map (*Fig. 2*) and were interpreted as the remains of this road.

The form of the NW/SE 19th/20th C linear features and their alignment with respect to Branston Road, suggest they represent former field boundaries or interim drainage ditches, indicative of continual agricultural land-use.

8 Conclusion

The groundworks area was characterized by evidence of continual agricultural land use and by infrastructure development commencing in the 1770s with the construction of the Trent and Mersey Canal (Main Line - Burton to Fradley) and continuing more recently with works associated with the A38 Lichfield Road and Branston Road.

The potential medieval 'hollow way' feature (Carter 2012, Taylor 2016), which appeared to be aligned on the original route-way shown on the 1884 Ordnance Survey 6-inch map, was potentially located, but was seen to contain vast quantities of securely stratified 19th and 20th-century materials. This suggests that whilst the roadway may have originally dated to the early medieval period, the ditches and any potential road surface no longer survive from this period.

The pit [1004] contained no finds, and its form and fills were not indicative of purpose. It is likely that with the quantity of the post medieval development activity seen in the area, that this is contemporary with the development. Palaeoenvironmental assessment of the fills was indicative of slow accumulation and periodic waterlogging giving rise to peaty deposits. Occasional fragments of charcoal were identified to alder/birch/hazel (*Appendix 2*).

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11 Appendix 1: Palaeoenvironmental Report: Concerning flotation analysis and archaeobotanical identification

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Border Archaeology Ltd

11.1 Summary

This Report has been prepared by the Palaeoenvironmental Department at Border Archaeology Ltd (BA) to facilitate and elucidate the palaeoeconomic interpretations of one pit revealed as the only feature of archaeological significance during archaeological observation and strip, map and record archaeological excavation at Branston Locks Lawns Farm Branston Burton Upon Trent (BA1638LFB).

The land under investigation comprised that at Lawns Farm on the northern side of Branston Road, which was bisected by the Trent and Mersey canal. Groundworks were in advance of development of the land to the north and were required for the construction of access roads, cable diversion and upgrading of the canal bridge and road network that connected directly onto the heavily trafficked A38.

In accordance with the Written Scheme of Investigation (WSI) (Taylor 2016), 40ℓ or 100% of the dry deposits were sampled. Although the WSI required only 20ℓ of wet deposits to be sampled, 40ℓ or 100% of the waterlogged deposits were sampled because the Historic England guidelines referencing 20ℓ refer only to specialist sampling and best practice dictates equal and, ideally, increased sampling of deposits of higher palaeoenvironmental potential (Campbell, Moffett & Straker 2011).

All five samples derived from the one pit feature [1004]: two fills were able to be sampled with 40ℓ, one returned 30ℓ and two further fills offered up to 10ℓ. This resulted in five samples comprising 130ℓ of material being received by the Palaeoenvironmental Department and processed through flotation, with the resultant archaeological and archaeobotanical material sorted and identified.

As the five samples originated from one pit feature, all results remain in isolation and give no suggestion as to past activity patterns on the site. However, the palaeoenvironmental evidence from the sequence of fills confirms the archaeological interpretation as to depositional processes active within pit [1004], with periodic waterlogging giving rise to peaty deposits and suggesting that attempts to backfill the pit were sporadic and ineffective.

11.2 Introduction

This report details the results derived from five samples, constituting a total of 130ℓ of soil, retrieved from five of the six fills from pit [1004], the only feature of archaeological significance.

The pit measured approximately 2.5m diameter and 1m depth. The six fills of pit [1004] formed a sequence of weathering deposits, accumulation of peaty material during lengthy inundation and waterlogging periods, episodes of deliberate backfilling and some dry sedimentation. No artefactual material was recovered for dating, either archaeologically or as a result of the palaeoenvironmental sampling.

The samples were processed by means of flotation and any potential archaeobotanical remains from both the floating element and the heavier residue were sorted and visually identified. Charcoal and wood was the most numerous and was submitted for anthracological analysis to John Carrott of Palaeoecology Research Services (*Appendix 2*).

The five samples, taken in 10ℓ sample buckets, derived from five of the six fills of pit [1004], from which between 10ℓ and 40ℓ were taken dependent on the size of the original deposit. Fills (1005) and (1008) yielded up to 10ℓ as they formed the basal and a small weathering deposit, respectively. The uppermost fill (1010) was archaeologically interpreted as a much later sedimentation and 30ℓ derived from this fill. Fills (1007) and (1009) were capable of being sampled by 40ℓ and (1007), being a slowly accumulated peaty material, was the most palaeoenvironmentally significant, with (1009), as a probable backfill, being much less so.

The surrounding geology of loamy soils overlying river-terrace gravels and glacio-fluvial drift produces a variable and fluctuating water table that is liable to destroy archaeobotanical material. However, the waterlogging apparent in pit [1004] facilitated preservation of all materials and means interpretation of a wholly natural depositional process can be relied upon, whereas any other features in the area may be subject to significant bias due to differential preservation (SSEW 1983).

Anthracological analysis was conducted by John Carrott, Palaeoecology Research Services (PRS), and has been integrated into this report and appended.

11.3 Methodology

11.3.1 Objectives of analysis

The purpose of the palaeoenvironmental sampling strategy implemented during Archaeological Observation is the retrieval of non-specific palaeoenvironmental remains and the further characterisation of features that cannot be fully investigated due to the confines of the working schedule. Where Archaeological Observation is synonymous with excavation, the purpose of the palaeoenvironmental sampling strategy becomes that of non-specific palaeoenvironmental recovery, coupled with specific palaeoenvironmental recovery, as dictated by the regional research frameworks and the site palaeoenvironmental potential.

11.3.2 Sampling methodology

Sampling methodology followed the company's *Palaeoenvironmental Department Manual* (BA 2015) for environmental sampling and processing. Samples were collected on-site in sample buckets and identified by context and sample number. Following receipt into the Palaeoenvironmental Department, they were assigned bucket numbers for tracking purposes. The samples were not subject to sub-sampling and their entirety was processed by means of flotation.

Flotation was undertaken in Siraf-style tanks with a 1mm retent mesh and 250µm flot sieve. No re-floating was required for these samples. Retents were initially scanned by magnet to retrieve any archaeometallurgical debris and a sieve bank was used to facilitate visual sorting with the smaller fractions sorted by means of magnifying lamp and/or illuminated stereo zoom microscopy ($\geq \times 10$). The flots were sorted entirely by means of illuminated stereo zoom microscopy ($\geq \times 10$). The results of this analysis are reported with the flot and retent data recombined; this is due to limited to no variance in the species being reported.

11.3.3 Personnel

Flotation and primary analysis was undertaken by Robin Putland BSc MSc, Carolina Sanchez-Ignacio BSc, Janice McLeish MA, Adam Griffiths BA and Mark Sargent BA within BAL's Palaeoenvironmental Department. This work was further assisted by BAL's field staff as part of a programme of Continuing Professional Development (CPD). Further analysis and identification was undertaken by Robin Putland BSc MSc and Amy Bunce BSc MA.

11.4 Description of results

11.4.1 Description and implications of materials recovered

Detailed below are the general implications of the discovery of certain materials within the palaeoenvironmental samples. Details by context are given below. Of significance to the material from Branston Locks is the absence of any artefactual or faunal material.

Shell

Terrestrial shell comprised that from snails that may have been present in the area during deposition of the fills. Identification of the species represented by the snails highlights any environmental niches preferred by certain species. However, only rare occurrences of indeterminable molluscan remains were recovered from the samples and thus nothing further can be concluded.

Charcoal and wood

Charcoal is ubiquitous in palaeoenvironmental samples, as it is used in domestic, funerary and industrial settings, or may be present as a result of accidental firings. Identification of the wood species making up the charcoal

assemblage can add valuable data regarding wood selection for varying purposes. While often relied upon for dating, in particular C14 dating, charcoal is not the best material to use, being subject to the 'Old Wood problem', reflecting the fact that charcoal is known to be frequently redeposited and reused. In addition, wood grows over many years and it is not possible to know precisely from where within the tree a charcoal fragment has derived.

The charcoal was submitted for anthracological identification to John Carrott of PRS and the identifications suggest a mix of soft and hard woods that largely remained indeterminate and therefore inconclusive (*Appendix 2*).

Wood was preserved in (1005) and (1007), the basal and peaty fills, respectively, through the anaerobic preservation of waterlogging. Although dried, the fragments were also submitted for anthracological identification to John Carrott of PRS but the identifications were again largely indeterminate.

Charred archaeobotanical material

Charred archaeobotanical material is generally the most illustrative palaeoeconomic remnant. While often the sole reason for its preservation, charring is also accepted as being almost solely anthropogenic and material can thus be used to directly reconstruct past agricultural economy and diet. Archaeobotanical material from Branston Locks solely comprised *Galium palustre*, which may have been preserved due to the waterlogged conditions and cannot thus be directly tied to human plant-use. Marsh bedstraw inhabits damp environments so it is conceivable that the seeds may have been incorporated through natural overgrowth of the feature with this plant

Description of palaeoenvironmental remains by contexts

Detailed below are the palaeoenvironmental remains of archaeological significance and whether archaeological conclusions or affirmations could be derived from such. Contexts notable for the absence of palaeoenvironmental remains are also detailed. In all cases, an assessment of the localised palaeoenvironmental reconstruction is attempted. Results for all contexts can be observed in the table below.

(1005)

The basal fill of pit [1004] was a wet and potentially waterlogged fill. Although the sediment appeared to be formed of weathered material, it included lenses of peaty material. As a small context with only a proportion of organic origin, limited recovery of palaeoenvironmental material might be anticipated and, aside from indeterminate charcoal and wood, no other material was recovered.

(1007)

The peaty main fill of pit [1004] had iron-panning at the base and had formed during a period of waterlogging. This was reflected in the palaeoenvironmental evidence that showed charcoal and wood, occasionally identifiable as potentially of Alder, Birch or Hazel, all common British species, and *Galium palustre*, which may have been present as the overgrowth during the deposition of the organic material that formed the peaty deposit.

(1008)

The redeposited natural fill of pit [1004] was likely a weathering deposit above the peaty material (1007) and the occurrence of Marsh Bedstraw *Galium palustre* in this smaller sample strongly suggests it was the native species at the time of deposition and weathering.

(1009)

The similarity of fill (1009) to the natural suggested a deliberate backfilling event over this consistently waterlogged pit. The majority of charcoal inclusions were indeterminate, with an occurrence of Alder, Birch or Hazel as an outlier. Terrestrial molluscs were indeterminate, suggesting a palaeoenvironmental profile entirely consistent with the archaeological interpretation of deliberate backfill.

(1010)

The consolidated silting upper fill of pit [1004] was a sedimentation fill that accumulated over some time and included indeterminate charcoal and indeterminate terrestrial molluscs.

11.5 Table of Results

The following table details the results of both the archaeobotanical material and the archaeological finds. The flot and retent data has been recombined due to the lack of variation between the material represented.

Context no.			(1005)	(1007)				(1008)	(1009)				(1010)		
Sample no.			004	003	003	003	003	005	002	002	002	002	001	001	001
Sample part			1/1	1/4	2/4	3/4	4/4	1/1	1/4	2/4	3/4	4/4	1/3	2/3	3/3
Bucket no.			E.6684	E.6680	E.6681	E.6682	E.6683	E.6685	E.6676	E.6677	E.6678	E.6679	E.6673	E.6674	E.6675
Sample vol. (mℓ)			1200	1500	1200	1100	900	1400	1900	1300	2100	1900	800	2100	700
% sample analysed			100	100	100	100	100	100	100	100	100	100	100	100	100
Waterlogged?			No	No	No	No	No	No	No	No	No	No	No	No	No
Refloated?			No	No	No	No	No	No	No	No	No	No	No	No	No
Latin name	Common name	Plant part													
Carbonised wild taxa															
<i>Gallum Palustre</i>	Marsh-Bedstraw	seed		+		++	+	+++							
Charcoal															
<i>Alnus/Betula/Corylus</i> (cf)	Alder/Birch/Hazel	fragments				++					+				
Indeterminate - ring porous	Indeterminate	fragments		+											
Indeterminate - diffuse porous	Indeterminate	roundwood		+	+								+		+
Indeterminate - diffuse porous	Indeterminate	fragments	+	+	+		+	+					+	+	+
Indeterminate	Indeterminate	fragments	++	++++	++++	++++	+++	+	++	+	++	++	++	++++	++
Wood															
Indeterminate - ring porous	Indeterminate	fragments	+												
Indeterminate	Indeterminate	fragments	+	+	+										
Molluscan															
Terrestrial	Indeterminate	-							+		+				+

Table 1: Table of archaeobotanical and non-archaeobotanical remains
Abundance key: + = rare; ++ = occasional; +++ = common; ++++ = abundant

11.6 Conclusions and recommendations

An intention of the non-specific palaeoenvironmental sampling at Branston Locks was to further characterise the only archaeologically significant feature discovered during the works. However, the analysis has only been able to confirm the archaeological interpretations of the depositional processes within pit [1004].

Due to the lack of other archaeology, no site-wide conclusions can be drawn and the palaeoenvironmental analysis is unable to assist in the dating of the feature, except to confirm the likelihood that it remained open over a considerable period. No further discussion on the function of pit [1004] can be attempted, although it is likely that its use was restricted to the time immediately following its creation.

Due to the nature of the archaeological works from which this assemblage derives, no further work is recommended.

Retention of the materials recovered as an incorporation of the site archive for museum deposition is recommended.

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12 Appendix 2: Charcoal Assessment

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12.1 Summary

Small quantities of remains, principally charcoal, sorted from the retents from the processing of five sediment samples recovered from a sequence of fills within pit [1004] encountered during archaeological work at Lawns Farm Branston Burton upon Trent Staffordshire were assessed.

Much of the material submitted was indeed charcoal but and other remains included a single possible charred grain fragment, a few 'seeds' (charred and uncharred), uncharred wood (and other 'woody' material that was perhaps root) and occasional invertebrate remains.

*Although charcoal was present within the submitted material from each sample of the fills of the pit, identifiable fragments were few and there were only very occasional pieces of roundwood, none of which retained bark or exhibited the waney edge and so the number of years of wood growth represented could not be determined. Occasional fragments provisionally identified as far as alder/birch/hazel (cf. *Alnus/Betula/Corylus*) were recorded from two of the fills but other charcoal fragments examined could only be partially identified (though often even this was only tentative) as far as being of diffuse-porous or ring-porous species.*

The remains reported here cannot be discussed in isolation from the rest of the assemblages recovered from the individual samples/deposits concerned.

12.2 Introduction

The only significant archaeological feature encountered at Lawns Farm Branston Burton upon Trent Staffordshire was a single pit ([1004]) which was subsequently excavated but from which no dating evidence was recovered.

Small quantities of material, principally charcoal, recovered from the retents from processing of five bulk sediment samples ('flotation samples' *sensu* Historic England 2011) from the sequence of fills within the single pit were submitted to Palaeoecology Research Services Ltd for examination supplementary to the general recording of the samples.

12.3 Methods

The sampling and processing undertaken followed the BA's *Paleoenvironmental Department Manual* (BA 2015) which has been developed to comply with the corresponding Historic England guidelines (Campbell, Moffett & Starker 2011). Sediment samples were collected in 10 litres buckets with multiple buckets collected where deposit size allowed (samples from individual contexts amongst those considered here ranged from 10 to 40 litres in total volume). The samples were processed in their entirety following the Siraf method of 'flotation' (Williams 1973) in purpose-built 'Siraf-style' tanks with a 1mm retent mesh and 250µm flot sieve.

The material submitted was recovered from sample retents and sent for further investigation, primarily charcoal identification, which is supplementary to the reporting of the main results from the sediment samples. The abundance of components was recorded either as actual counts or via a four-point semi-quantitative scale as: '+' – rare (or 1-3 items); '++' – occasional (or 4-20 items); '+++ – common (or 21-50 items); '++++' – abundant (or more than 50 items) (*Table 1*).

Charcoal/wood identification was attempted for a selection of larger fragments (over 4mm). The fragments were broken to give clean cross-sectional surfaces and the anatomical structures were initially examined using a low-power binocular microscope (x7 to x45) and subsequently (where necessary) at higher magnifications (x60 to x600). Identification was attempted with reference to published works, principally Hather 2000 and Schoch *et al.* 2004. Occasional other plant macrofossils were present but no other identifications were possible.

Occasional beetle and other invertebrate remains were recorded but none could be identified more closely than to order or class level.

During recording, consideration was given to the suitability of the remains for submission for radiocarbon dating by standard radiometric technique or accelerator mass spectrometry (AMS).

12.4 Results

Context details, provided by the excavator, are given in Table 1 and details of the remains submitted are presented in Table 2 and summarised in the following text.

Although charcoal was present within the submitted material from each sample of the fills of pit [1004] (and each individual sample part where multiples were collected), identifiable fragments were few and there were only very occasional pieces of roundwood none of which retained bark or exhibited the waney edge and so the number of years of wood growth represented could not be determined. Occasional fragments provisionally identified as far as alder/birch/hazel (cf. *Alnus/Betula/Corylus*) were recorded from 'peaty' deposit (1007) and deliberate backfill (1009). Other charcoal fragments examined could only be partially identified (though often even this was only tentative) as far as being of diffuse-porous or ring-porous species (see Table 2). Some of the charcoal fragments, from (1007), (1009) and the uppermost fill (1010), exhibited a vitrified appearance which, in the past, has been taken to indicate high temperature burning but recent experimental work (McParland *et al.* 2010) suggests a more moderate formation temperature of 310-530° centigrade.

Other charred plant macrofossils were restricted to a single possible charred grain fragment from (1010) and three indeterminate charred 'seed' fragments from (1007) (parts 2 and 3 of 4).

Uncharred wood fragments (including some which were ring-porous) were present in the material from the wet basal fill (1005) but no roundwood was represented and there was also 'woody' material from (1007) but here all of the material was wholly indeterminate and may in fact be woody root. Other uncharred plant macrofossil remains were restricted to a single indeterminate 'seed' fragment from (1007).

Three of the fills, (1007), (1009) and (1010), gave small numbers of remains tentatively identified as earthworm egg capsules (which may well be intrusive) but a few other invertebrate remains were noted from (1005) and (1007) also contained a single mite (*Acarina* sp.). The remains from (1005) comprised three beetle sclerites (or sclerite fragments) all of which were very poorly preserved, although one could be identified as an element of a beetle leg (non-diagnostic), and not identifiable more closely, together with a single ostracod (*Ostracoda* sp.) valve – the presence of the last perhaps indicating aquatic deposition and that some of the remains present within this fill may be preserved by anoxic waterlogging (this should be more readily determined from the remains within the corresponding sample ‘flots’ which were not submitted for consideration here, however).

No vertebrate remains or artefactual material was present.

12.5 Discussion

The remains reported here cannot be discussed in isolation from the rest of the assemblages recovered from the individual samples/deposits concerned. It is possible to make some comment on the material’s suitability for submission for radiocarbon dating of the deposits, however.

Although the small amounts of charcoal (and, from (1005), also wood) recovered could, in most if not all cases, provide sufficient material for radiocarbon dating to be attempted via AMS, this is not recommended as none of the fragments could be identified to a single species and the age of wood growth represented was always indeterminate. Dates returned from charcoal/wood of unknown species and age of growth could be earlier (by an unknown amount but perhaps several hundreds of years) than that of the charring event (the ‘old wood problem’).

The charred grain fragment from (1010) and charred ‘seed’ fragments from (1007) *might* provide sufficient suitable material from AMS dating; although here the reliability of extending any dates returned to the deposits as a whole would be questionable if the small quantity of material reported here represents the entirety of the charred assemblages recovered.

12.6 Recommendations

No further study of the biological remains reported here is warranted.

12.7 Retention and disposal

All of the reported material should be retained as part of the physical archive for the site, for the present at least.

12.8 Archive

All of the material reported here, along with corresponding paper and electronic records, is currently stored by Palaeoecology Research Services Ltd pending return to Border Archaeology Ltd for consolidation prior to ultimate submission to the receiving museum on completion of all phases of the works.

Context	Context information
(1005)	Basal fill of pit [1004] – wet
(1007)	Peaty deposit within pit [1004]
(1008)	Fill of pit [1004] – weathering deposit
(1009)	Fill of pit [1004] – deliberate backfill
(1010)	Uppermost fill of pit [1004]

Table 1. Contexts for samples for charcoal analysis

Table 2. Lawns Farm, Branston, Burton upon Trent, Staffordshire (site code: BLB16): Details of the material submitted in context number order. Each sample part represents 10 litres of processed sediment. Key: '?eecs' – possible earthworm egg capsules. Semi-quantitative abundance scale: '+' – rare (or 1-3 items); '++' – occasional (or 4-20 items); '+++ – common (or 21-50 items); '++++' – abundant (more than 50 items); figures = counts of items/fragments; figures in parentheses record maximum linear dimensions in millimetres

Context	Sample	Sample part	weight /g	volume /ml	total items	charred grain	charcoal	wood	charred 'seeds'	uncharred 'seeds'	ostracod	mite	beetle sclerites	?eecs	Notes
1005	004	1/1	0.2	~2	++ ~20	-	7 (6)	++ (17)	-	-	1	-	3 (2)	-	<p>Charcoal: all rectilinear fragments – largest ?diffuse-porous, the two other fragments over 4 mm both crumbled (indeterminate).</p> <p>Wood: two largest both ring-porous but cell structures distorted (possibly some mineral replacement); no roundwood.</p> <p>Ostracod: a single valve.</p> <p>Beetle sclerites: possibly modern but could be preserved 'ancient' remains – indeterminate, poorly preserved and/or non-diagnostic sclerites (e.g. 1x leg element).</p>
1007	003	1/4	0.8	~3	++++ ~70	-	+++ (12)	+ (6)	-	-	-	1	-	8	<p>Charcoal: mostly rectilinear but largest fragment diffuse-porous roundwood (no waney edge evident). Five other fragments over 4 mm – 1x diffuse-porous, 1x ring-porous, 3x crumbled (indeterminate). Also 3x fragments of ?charred root/rhizome (to 4 mm; diameter to 1 mm; <0.1 g).</p> <p>Wood: 1x (perhaps 2x) fragment(s); indeterminate and no roundwood.</p> <p>Other: 1x piece of coal (to 5 mm; <0.1 g) and 1x undisaggregated sediment lump (to 10 mm).</p>
		2/4	1.5	~8	++++ ~90	-	++++ (14)	+ (15)	2	1	-	-	-	8	<p>Charcoal: 3x fragments over 4 mm – largest fragment diffuse-porous roundwood (no</p>

Context	Sample	Sample part	weight /g	volume /ml	total items	charred grain	charcoal	wood	charred 'seeds'	uncharred 'seeds'	ostracod	mite	beetle sclerites	?eecs	Notes
															<p>waney edge evident), 1x ?diffuse-porous and 1x crumbled (indeterminate).</p> <p>Wood: possibly some mineral replacement and some fragments perhaps part-charred; cell structures unusual and may be 'woody' root rather than wood; no roundwood.</p> <p>Charred 'seeds': 2x indeterminate fragments.</p> <p>Uncharred 'seeds': 1x indeterminate fragment.</p> <p>Other: occasional (+) rootlet fragments.</p>
		3/4	2.5	~10	++++ ~75	-	++++ (16)	-	1	-	-	-	-	4	<p>Charcoal: 5x fragments over 4 mm – all diffuse-porous, ?alder/birch/hazel (cf. <i>Alnus/Betula?Corylus</i>); no roundwood.</p> <p>Charred 'seeds': 1x indeterminate fragments.</p> <p>Other: occasional (+) rootlet fragments and 1x undisaggregated sediment lump (to 9 mm).</p>
		4/4	12.2	~10	+++ ~40	-	+++ (17)	-	-	-	-	-	-	2	<p>Charcoal: 5x fragments over 4 mm – 3x diffuse-porous, 1x vitrified (indeterminate), 1x cell structures unclear/distorted (indeterminate); no roundwood.</p> <p>Other: 1x undisaggregated sediment lump (to 12 mm).</p>
1008	005	1/1	<0.1	<1	1	-	1 (4)	-	-	-	-	-	-	-	Charcoal: 1x ?diffuse-porous; not roundwood.
1009	002	1/4	<0.1	<1	7	-	7 (6)	-	-	-	-	-	-	-	Charcoal: 2x thin 'slivers' over 4 mm – 1x crumbled and 1x cross-sections too small

Context	Sample	Sample part	weight /g	volume /ml	total items	charred grain	charcoal	wood	charred 'seeds'	uncharred 'seeds'	ostracod	mite	beetle sclerites	?eecs	Notes
															for identification (indeterminate); no roundwood.
		2/4	<0.1	<1	13	-	13 (6)	-	-	-	-	-	-	-	Charcoal: 2x thin 'slivers' over 4 mm – both with cross-sections too small for identification (indeterminate), 1x also vitrified; no roundwood.
		3/4	~0.1	~1	+++ ~22	-	++ (8)	-	-	-	-	-	-	1	Charcoal: 4x fragments over 4 mm – 1x diffuse-porous, ?alder/birch/hazel (vitrified), 1x vitrified (indeterminate), 2x crumbled (indeterminate); no roundwood. Other: 1x small stone (?quartz; to 2 mm).
		4/4	<0.1	<1	5	-	5 (5)	-	-	-	-	-	-	-	Charcoal: all rectilinear fragments. Only 1x thin 'sliver' over 4 mm (in one dimension) which crumbled (indeterminate).
1010	001	1/3	~0.1	~1	10	1 (3)	9 (10)	-	-	-	-	-	-	-	Charred grain: 1x possible charred grain fragment – very poorly preserved, surfaces almost entirely missing. Charcoal: 1x possible roundwood fragment (to 4 mm; diameter to 1 mm) – vitrified and very heavily mineral impregnated; perhaps charred root/rhizome rather than wood. All other fragments rectilinear with 2x over 4 mm – largest also very heavily mineral impregnated, ?diffuse-porous, other fragment diffuse-porous.
		2/3	<0.1	<1	+++ ~50	-	+++ (5)	-	-	-	-	-	-	2	Charcoal: 2x fragments over 4 mm – 1x ?diffuse-porous (crumbled), 1x diffuse-porous but strongly vitrified and very heavily mineral impregnated; no roundwood. Other: 1x small stone (to 3 mm), occasional (+) 'crumbs' of undisaggregated sediment (to 2 mm)

Context	Sample	Sample part	weight /g	volume /ml	total items	charred grain	charcoal	wood	charred 'seeds'	uncharred 'seeds'	ostracod	mite	beetle sclerites	?eecs	Notes	
		3/3	0.3	~1	12	-	12 (11)	-	-	-	-	-	-	-	-	Charcoal: 5x ?roundwood fragments (to 11 mm; diameter to 2.5 mm) – three examined, all vitirified and mineral impregnated, with no waney edge evident and too poorly preserved for annual rings to be seen (indeterminate and not even definitively roundwood). Remainder all rectilinear (to 7 mm) – 2x fragments over 4 mm both vitrified but identifiable as diffuse-porous.

Table 2. Lawns Farm, Branston, Burton upon Trent, Staffordshire (site code: BLB16): Details of the material submitted in context number order. Each sample part represents 10 litres of processed sediment. Key: '?eecs' – possible earthworm egg capsules. Semi-quantitative abundance scale: '+' – rare (or 1-3 items); '++' – occasional (or 4-20 items); '+++ – common (or 21-50 items); '++++' – abundant (more than 50 items); figures = counts of items/fragments; figures in parentheses record maximum linear dimensions in millimetres.

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