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Archaeological Observation

On behalf of:

south east water

Concerning:

13-1326 Wises Lane Mains Renewal Borden Kent

October 2019

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1 Non-Technical Summary

Border Archaeology (BA) on behalf of South East Water (SEW) undertook an Archaeological Observation (or 'watching brief') of engineering groundworks relating to the proposed 13-1326 Wises Lane Mains Renewal Scheme extending along Wises Lane and Pond Farm Road, to the N and the S of Borden, approximately 1.5km SE of Sittingbourne Kent.

Archaeological monitoring was carried out between 19th February and 31st May 2019 on two sections of the route; the section extending from the northern terminus of the route through the village of Borden (from NGR: TQ 88563 63479 to TQ 88156 62936) and a section at the southern end of the route (from NGR: TQ 87750 61949 to TQ 87827 62290) running to the northwest of the extensive Roman villa site at Sutton Baron. The northern section of the pipeline scheme passed through the Borden Conservation Area (between NGR: TQ 88156 62936 and TQ 88335 63058) as designated by Kent County Council.

The programme of works comprised directional drilling and open-cut trenching. Archaeological deposits, of postmedieval date, were only encountered in Trench 004 within the village of Borden, on Wises Lane in front of St Peter and St. Paul's Church, and in Trench 006, approximately 75m NNE from the junction of Wises Lane/The Street. They comprised a mix of demolition rubble and domestic refuse and likely constitute ground raising or levelling deposits associated with road construction. Finds included pottery, glass, animal bone, oyster shell and metal materials such as a horseshoe and a copper half-penny of King George II dated 1753.

No archaeologically significant features or deposits were uncovered during the programme of works and the findings are of local significance only.

2 Introduction

Border Archaeology (BA) was commissioned by South East Water (SEW) to undertake Archaeological Observation (AO) of engineering groundworks in respect of the proposed route of the 13-1326 Wises Lane Mains Renewal Scheme in Borden, Kent. The proposed scheme involved the installation of approximately 1.86km of water main pipeline extending N/S along Pond Farm Road and Wises Lane, through the village of Borden. The scheme runs from a connection point at the junction of Pond Farm Road and Sutton Baron Road (NGR: TQ 87750 61949) to another connection point on Cryalls Lane (NGR: TQ 88563 63479) (*fig. 1*). Two sections of the route were identified as requiring archaeological monitoring; the section extending from the northern terminus of the route through the village of Borden (from NGR: TQ 88563 63479 to TQ 88156 62936) and a section at the southern end of the route (from NGR: TQ 87750 61949 to TQ 87827 62290) running to the northwest of the extensive Roman villa site at Sutton Baron (*figs. 2 & 3*).

The table below shows the dimensions of the individual sections of open-cut trenching excavated under AO.

•	Trench 001: 85m (l) × 0.35m (w) × 1.20m (d)	• Trench 007: 190m (l) × 2.00m (w) × 1.06m (d)
•	Trench 002: 45m (l) × 0.35m (w) × 1.20m (d)	• Trench 008: 152m (l) × 1.30m (w) × 1.20m (d)
٠	Trench 003: 9m (l) × 0.40m (w) × 0.85m (d)	• Trench 009: 3.00m (l) × 0.80m (w) × 1.20m (d)
٠	Trench 004: 27m (l) × 0.40m (w) × 1.07m (d)	• Trench 010: 348m (l) × 3.10m (w) × 1:20m (d)
٠	Trench 005: 75m (l) × 0.40m (w) × 1.10m (d)	• Trench 011: 5.60m (l) × 0.80m (w) × 1.10m (d)
٠	Trench 006: 98m (l) × 0.40m (w) × 1.13m (d)	

3 Topography & Geology

Typical argillic brown earths of the HAMBLE 1 Series (571y) are recorded along Wises Lane and within the village, these being defined as deep well-drained, often stoneless fine silty soils, with some similar soils affected by groundwater and some fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging. Some shallower soils over chalk are also recorded, the underlying geology consisting of aeolian silty drift over Tertiary loam.

Typical brown calcareous earths of the Coombe 1 Series (511f) are recorded along Pond Farm Road, these being composed of well-drained calcareous fine silty soils overlying chalky drift and chalk (Soil Survey for England & Wales 1983).

The British Geological Survey (BGS 2018) records bedrock of the Thanet Formation (Sand, Silt and Clay) underlying the northern portion of the route, whilst the southern section is underlain by bedrock of the Seaford Chalk Formation.

Where present, natural substratum comprised a firm sandy clay varying between a greenish grey brown and a mid yellowish brown, observed at depths of c. 0.70m – c. 1.10m below ground level (bgl). Chalk bedrock was observed in one trench along Pond Farm Road at a depth of c. 0.77m bgl.



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4 Historical and Archaeological Background

A Rapid Appraisal previously compiled by BA (BA 2018a) provides a comprehensive survey and is summarised below:

4.1 Prehistoric activity

A Paleolithic handaxe (NGR TQ 8860 6350) and a Bronze Age copper alloy palstave axe (NGR TQ 8830 6290) recovered 40m NE of and 55m E of the route attest to prehistoric activity in the vicinity of the pipeline scheme. The Stour Basin Paleolithic Project assessed the area within which the northern section of the route passes (NGR: TQ 88563 63479 to TQ 87781 62068) as having moderate potential to encounter Palaeolithic remains.

4.2 Iron Age/ Romano-British activity

Iron Age and Romano-British occupation activity is recorded within Borden village, in the area around The Maypole Inn located *c*. 10m E of the route, together with several other Iron Age/Romano-British sites identified in the wider locality. The southern end of the pipeline runs near to an extensive Roman villa site at Sutton Baron whilst the northern section of the route runs along Wises Lane which seems to follow the alignment of the line of a Roman road running SW from Watling Street through Borden.

4.3 Medieval and Post-medieval activity

The proposed pipeline scheme passes through the historic nucleus of the medieval and post-medieval settlement of Borden (between NGR: TQ 88156 62936 and TQ 88335 63058 along Wises Lane), which is designated as a Conservation Area (CA). The CA lies within close proximity to the churchyard surrounding the 12th century Grade I Listed Church of St. Peter and St. Paul where there was potential to encounter medieval and post-medieval evidence for settlement features and possibly evidence of inhumations associated with the church, but otherwise little evidence of post-medieval activity has been recorded in the immediate vicinity of the route.

5 Aims & Objectives

The aim of the Archaeological Observation was to locate and record any archaeological finds, features or deposits within the ground works area and to confirm that no impact on the archaeological resource occurs during the course of the ground works without the implementation of this proposed programme of archaeological work.

It was proposed, wherever possible, to relate results to themes identified in the emergent South East Research Framework (SERF), as stated in the Written Scheme of Investigation (WSI) (BA 2018b, section 3). Two themes of note were identified:

Prehistoric

• Should any Palaeolithic artefacts be found, these would be categorised as direct evidence for Palaeolithic activity in the locale and such findings would contribute to the Stour Basin Palaeolithic project.

Iron Age/Romano-British

• Further pottery discoveries of this period would contribute to artefact studies, and may address questions regarding regionality.

6 Methodology

The programme of archaeological work was carried out in accordance with *Standard and Guidance for an* archaeological watching brief (CIfA 2014b) and *Standard and Guidance for the collection, documentation,* conservation and research of archaeological materials (CIfA 2014c). BA adheres to the CIfA Code of conduct (2014a) and is cognisant of Kent County Council's 'Specification for an archaeological watching brief for linear utility scheme' (Kent County Council Heritage Conservation Group 2016).

The Chartered Institute for Archaeologists (CIfA) states (2014b, 4) that the purpose of a watching brief (Archaeological Observation) is:

- To allow, within the resources available, the preservation by record of archaeological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development or other potentially disruptive works.
- To provide an opportunity, if needed, for the watching archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological find has been made for which the resources allocated to the watching brief itself are not sufficient to support treatment to a satisfactory and proper standard.

6.1 Open-cut trenching and directional drilling

Open-cut trenching and directional drilling was employed throughout the scheme. Tarmac was broken out using a hydraulic breaker. Trenches and trial pits were then excavated using a mechanical excavator and toothless grading bucket under archaeological supervision. Deposit thickness is the maximum recorded within each trench together with the maximum depth attained for engineering purposes.

6.2 Recording

This programme of works was recorded under the site code WLBK19.

An OASIS online record has been initiated and the OASIS number assigned is: borderar1-336230.

Full written, graphic and photographic records were made in accordance with BA's *Archaeological Field Recording Manual* (2017).

A pro-forma context recording sheet was compiled for each stratigraphic unit encountered. In the absence of archaeological deposits and/or features, the written record comprised a pro-forma trench recording sheet and an illustrated representative section for each excavated trench/trial hole.

The drawn record was produced on gridded, archive-stable polyester film at an appropriate scale. Representative measured sections were prepared, as appropriate, showing the sequence and depths of deposits, where practicable and strictly within established safety parameters. All drawings were numbered and listed in a drawing register; these drawing numbers being cross-referenced to written site records.

The photographic record was made using a high-resolution digital camera, comprising photographs of archaeological features and appropriate groups of features and structures. An appropriate scale was included in each photograph and all records were indexed and cross-referenced to written site records. Details concerning subject and direction of view were maintained in a photographic register, indexed by frame number.

7 Results

Trial pits excavated for directional drilling and connection points were measured and recorded and their locations are shown on *Fig. 2*. The trench results described below center on the open-cut sections of trenching though those trial pits excavated in the vicinity of the open-cut trenching and sharing the same stratigraphic sequence have been incorporated with the trench results. The average engineering depth required for the open-cut trenching and trial pits was between 0.85m and 1.20m bgl.

7.1 Trench 001

Trench 001 represented an open-cut linear trench that ran in an E direction for a length of 85m from the School Lane/Pond Farm Road junction by the village of Borden. It measured 0.35m in width and reached a depth of 1.20m. Two rectangular trial pits, TP 1 and TP 2, measuring 3.30m (I) \times 2.0m (w) and 1.77m (I) \times 0.77m (w) respectively, were positioned to the W of Trench 001 at the junction with School Lane whilst TP 3 and TP 4 were located adjoining the W extent of Trench 001.

Natural substratum (001002), a deposit of mid yellowish-brown sandy clay represented the basal deposits observed within the trench and trial pits and was observed to a depth of 0.13-0.35m. Overlying was made ground (001004), a moderately compacted dark greyish-brown silty clay deposit with occasional small stones and CBM up to 0.60m (max) in depth which had (001003), a similar deposit, lying above that constituted a levelling spread, and was observed up to 0.48m (max) thick. Lying directly above this was the tarmac road surface, up to 0.07m thick. No archaeological features or deposits were encountered.



Plate 1: North-facing representative section of Trench 001 (1m scale)



Plate 2: Trench 001 shown in plan running in an E direction (2m scale)

7.2 Trench 002

Trench 002 was the continuation of Trench 001 which followed the natural curve in the road, running in a NNE direction for 45m to the triangular junction where Pond Farm Road meets The Street and Wises Lane. The trench was 0.35m wide and had a maximum depth of 1.20m. As in Trench 001, made ground was observed overlying natural substratum (002002), also characterised by a mid-yellowish-brown sandy clay, up to 0.12m visible at the base of the trench. Overlying was deposit (002007), a dark greyish-brown silty clay with large flint inclusions, up to 0.70m thick, which appeared to represent a consolidation/levelling layer. Above this was (002006), a compact white yellowish-brown flint and chalk deposit, up to 0.10m thick, which may relate to previous surfaces of the road but could equally represent an earlier sub-surface consolidation layer below an earlier surface since removed. (002005), a layer of hardcore comprising large flints in a dark greyish-brown silty clay matrix with a thickness of 0.10m may have formed a sub-surface consolidation layer along with (002004) a 0.03m thick deposit of crushed CBM, above which a former road surface, since removed, may have lain. Associated with the modern tarmac road surface (002001) was (002003), a firm dark greyish-brown silty clay deposit with frequent flint/CBM forming a levelling/consolidation layer for the current road surface.

No archaeological features or deposits were observed.



Plate 3: Trench 002 shown in plan running in an NNE direction (2m scale)



Plate 4: ESE-facing section of Trench 002 (1m scale)

7.3 Trench 003

Trench 003 was positioned at a right angle to Trench 002, running for 9m in a SE direction from Pond Farm Road through the junction and onto the carriageway known as 'The Street'. Trench 003 only encountered made ground associated with the construction of the carriageway and deposits associated with backfilling events for utility services which were observed throughout. A description of these deposits can be found in Appendix 1, Section 11.3.



Plate 5: SE terminus of Trench 003 showing utilities at the base of the trench (1m scale)



Plate 6: SW-facing section of Trench 003 showing modern made ground (1m scale)

7.4 Trench 004

Trench 004 was the continuation of Trench 002 from the junction of Pond Farm Road with The Street and Wises Lane which ran NNE along Wises Lane for 27m from the front of the churchyard. As with Trenches 001 and 002 natural substratum (004002) was represented by a firm, mid-yellowish-brown sandy clay, only visible for a depth of 0.07m, which formed the basal deposit in this trench. Overlying was (004005), a mid greyish-brown silty clay deposit, 0.46m thick, with occasional small stones and very occasional small fragments of CBM. Above this, recorded between 0.36m and 0.63m bgl, was (004004) a dark greyish-brown silty clay deposit with inclusions of glass, CBM, animal bone, pottery, shells of oyster and periwinkle, and some metal finds. The artefactual assemblage dated between the 17th – 18th century and included a copper halfpenny of George II dated to 1753. Deposit (004003) overlying (004004) comprised a firm dark greyish brown silty clay sub-surface levelling spread with frequent flint and CBM inclusions which underlay the modern tarmac road surface (004001).

Though (004004) contained material of archaeological interest, it likely represents a deposition of dumped occupational refuse which was reused as a levelling/consolidation layer associated with the road make-up.





Plate 7: ESE-facing section of Trench 004 (1m scale)

7.5 Trench 005

Trench 005 was a continuation of Trench 004 running for 75m NE of the churchyard on Wises Lane, starting at the gravel road leading to Borden hall and terminating in front of the house known as "Frogs Hall". Water connection points were established running from Trench 005 into the houses located along the carriageway here. Modern made ground was observed up to a depth of 0.43m bgl with basal deposit (005003), a greenish grey-brown sandy clay with occasional small stones representing the natural substratum. This was darker than the natural sandy clay observed elsewhere along the route and may represent weathered natural.

No archaeological deposits or features were encountered.



Plate 8: S- facing section of Trench 005 (1m scale)

7.6 Trench 006

Trench 006 followed NE along Wises Lane for a total of 98m. Open-cut trenching constituted the first three meters and last 19m of the trench along with 17 trial pits, orientated WSW to ENE, excavated along the route to facilitate utility directional drilling.

In the open-cut sections of trenching modern made ground was seen directly below the current tarmac road surface overlying natural substratum. However, in the SW extent of the trench, the 3m section excavated by "Frogs Hall" house, made ground, recorded as deposits (006003) and (006004), was observed to a depth of 0.40m bgl, and overlay deposit (006005), a mid greyish brown silty clay, up to 0.45m thick. Within this deposit, (006005), were frequent inclusions of CBM rubble, a few sherds of pottery, derived from 18th century dated domestic utensils, and some fragments of animal bone were recovered. The mixed nature of (006005), demolition rubble with domestic waste, suggests that this material may have derived from a variety of sources and was used for levelling/ground raising, though it cannot be determined if it derived locally or was sourced and imported from elsewhere. Below (006005) was (006006), a greenish grey brown sandy clay with occasional small stones, up to 0.55m thick, which overlay (006002), a mid yellowish brown sandy clay, only visible at the base of the trench, 0.04m thick. Both

(006006) and (006002) are considered to represent the natural substratum, though (006006) may have been subject to weathering.

The stratigraphic sequence within the trial pits recorded made ground overlying either a weathered natural sandy clay deposit or a cleaner, lighter coloured natural which was not subjected to weathering, similar to that observed in Trenches 001, 002 and 004.





Plate 9: Working shot showing Trench 006 looking NE along Wises Lane

7.7 Trench 007

Trench 007 was 190m long, 2.00m wide, and up to 1.06m deep, and comprised a 31m-long section of open-cut trenching, continuing in a NNE direction from Trench 006, with 9 directional drill pits excavated along the remaining segment. Trench 007 was situated in the low banked hollow-way of Wises Lane, outside the village boundaries. There was a noticeable fall in height along the course of Trench 007 from 51.784m AOD at the SW extent to 42.362m AOD at the NE end. Made ground, associated with the carriageway, was observed overlying weathered natural substratum. A description of these deposits can be found in Appendix 1, Section 11.7.



Plate 10: Open-cut segment of Trench 007, NNE view (2m scale)



Plate 11: NNW-facing section of Trench 007 (1m scale)

7.8 Trench 008

Trench 008 was 152m long, 1.30m wide (max.) and 1.20m deep (max.) with 9 directional drill pits interspersed along this section of the route. The trial pits commenced approximately 20m NNE from the end of Trench 007, while the final trial pit, and longest at 10m long, was excavated at the Wises Lane/Cryalls Lane junction in front of Wises Business Center. All trial pits showed a similar depositional sequence of modern made ground up to 0.57m bgl overlying weathered natural, an orange brown, silty clay, measuring 0.65m thick.



Plate 12: NNE-facing section of Trench 008 (1m scale)



Plate 13: Working shot of Trench 008 in SSW direction

7.9 Trench 009

Trench 009 demarks the northernmost end of the pipeline works on Wises Lane/Cryalls Lane. This comprised two directional drill pits along a 29m long section of the route. The first of these was located about 15m NNE from the last trial pit situated along Trench 008. As in Trench 008, modern made ground was encountered up to 0.50m bgl overlying weathered natural which measured up to 0.80m thick.



Plate 14: NE-facing section of Trench 009 (1m scale)



Plate 15: Plan shot of Trench 009, SW view (1m scale)

7.10 Trench 010

Trench section 010 commenced at the Sutton Baron Road/Pond Farm Road junction and extended 348m in an E direction along Pond Farm Road terminating at the house knowns as "The Oast" (*fig. 3*). The maximum depth of the trial pits along this section of the route was 1.20m and the maximum width was 1.20m. Only three of the trial pits, TP 18, TP 19, and TP 20- those next to the Sutton Baron Road/Pond Farm Road junction were excavated under archaeological supervision; the other 17 trial pits were excavated and backfilled without the archaeologist in attendance. Modern made ground, (010001) and (010002), was observed to a depth of c. 0.80m bgl overlying (010003), a white greyish brown chalk with a thickness of 0.40m.



Plate 16: SW-facing section of TP20, Trench 010 (1m scale)



Plate 17: Trial Pits 18 and 19, looking NE (1m scale)

7.11 Trench 011

Trench 011 was located at the junction of School Lane/Pond Farm Road approximately 1m N of Trench 001. Trench 011 was 5.60m long, 0.80m wide, and 1.10m deep. Made ground was observed in the upper part of the trench with the tarmac road surface (011001), 0.07m thick overlying (011002), a dark greyish brown silty clay levelling spread with frequent flint/CBM inclusions, up to 0.28m thick. Below this was a substantial layer, up to 0.77m thick, of weathered natural (011003).



Plate 18: Trench 011, looking N (1m scale)



Plate 19: W-facing section of Trench 011 (1m scale)

8 Significance of the Results and Conclusion

Deposits of archaeological interest were encountered in two locations within the village of Borden; in Trench 004 in front of St. Peter and St. Paul Church within the Conservation Area (CA) and to the NE in Trench 006 located just outside the designated area by "Frogs Hall" house on Wises Lane. The mixed nature of these deposits, containing both demolition rubble and occupation waste, suggests that this material may have derived from a variety of sources, and was used for levelling/ground raising; though it cannot be determined if it derived locally or was sourced and imported from elsewhere. Finds from these deposits included pottery, clay tobacco pipe, glass, oyster shells, animal bone and some metal finds, including a coin of George II, were of $17^{th}/18^{th}$ century date, and are characteristic of assemblages of post-medieval date. Wises Lane follows the same alignment as that shown on modern maps and was first depicted on the 1797 Ordnance Survey Surveyor's Drawing of Sittingbourne and district, and is likely to be a long-established route (BA 2018a, 10). Both the cartographic evidence, and the coin of George II stamped 1753 suggest that deposits (004004) and (006005) were laid down sometime around the mid to late-18th century at the earliest.

There was no archaeological evidence encountered in the vicinity of St. Peter and St. Paul Church which suggested that the existing churchyard boundaries were larger during medieval times. However, it was noted that the section of Wises Lane which follows the existing churchyard boundary had been raised as there was evidence in Trench 002 for two deposits which may represent former road surfaces, although these could equally represent earlier sub-surface consolidation layers associated with a former surface since removed.

No archaeological features were encountered throughout the programme of AO and the artefacts recovered are of local significance only.

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10 Bibliography

Border Archaeology, 2017, Archaeological Field Recording Manual.

Border Archaeology, 2018a, Rapid Appraisal for South East Water concerning 13-1326 Wises Lane Mains Renewal, Borden, Kent, BA1873WLBK/RA

Border Archaeology, 2018b, Written Scheme of Investigation for South East Water concerning 13-1326 Wises Lane Mains Renewal, Borden, Kent, BA1873WLBK/WS

CIfA, 2014a, Code of conduct.

CIfA, 2014b, Standard and guidance for an archaeological watching brief.

CIFA, 2014c, Standard and guidance for the collection, documentation, conservation and research of archaeological materials.

CIFA, 2014d, Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives.

Kent County Council, 2016, *Specification for an archaeological watching brief for linear utility scheme*, Heritage Conservation Group.

SSEW, 1983, Soil Map of England and Wales Scale 1: 250,000, Harpenden.



11 Appendix 1: Context Tables

11.1 Trench 001

Context	Slot	Туре	F/B	F/O	Description	Interpretation	Finds	Sample No.	Provisional Date
(001001)	-	Deposit	-	-	Hard, dark greyish brown, no inclusions, overlies (001003), Th: 0.07m (max).	Tarmac	-	-	Modern
(001002)	-	Deposit	-	-	Firm, mid yellowish brown, sandy clay (40/60), occasional small stones, underlies (001004), Th: 0.13-0.35m (max).	Natural	-	-	Glacial
(001003)	-	Deposit	-	-	Firm, dark greyish brown, silty clay (40/60), frequent flint/CBM, overlies (001004) and underlies (001001), Th: 0.48m	Levelling Spread	-	-	Post- Medieval/Modern
(001004)	-	Deposit	-	-	Moderate, dark greyish brown, silty clay (40/60), occasional small stones, very occasional bits of CBM, overlies (001002) and underlies (001003), Th: 0.60m.	Levelling/ground raising	-	-	Post- Medieval/Modern

11.2 Trench 002

Context	Slot	Туре	F/B	F/O	Description	Interpretation	Finds	Sample No.	Provisional Date
(002001)	-	Deposit	-	-	Hard, dark greyish brown, no inclusions, overlies (002003), Th: 0.07m (max).	Tarmac	-	-	Modern

						-			
(002002)	-	Deposit	-	-	Firm, mid yellowish brown, sandy clay (40/60),	Natural	-	-	Glacial
					occasional small stones, underlies (002007),				
					Th: 0.12m (max).				
(002003)	-	Deposit	-	-	Firm, dark greyish brown, silty clay (40/60),	Levelling Spread	-	-	Post-Medieval/Modern
					frequent flint/CBM, overlies (002004) and				
					underlies (002001), Th: 0.07m.				
(002004)	-	Deposit	-	-	Hard, mid orangish brown, layer of	Possible former	-	-	Post-Medieval/Modern
					crushed/rubble CBM, overlies (002005) and	surface			
					underlies (002003), Th: 0.03m.	/Consolidation			
						layer			
(002005)	-	Deposit	-	-	Hard, large flints in dark greyish brown silty	Hardcore	-	-	Post-Medieval/Modern
					clay, overlies (002006) and underlies (002004),				
					Th: 0.10m.				
(002006)	-	Deposit	-	-	Hard, white yellowish brown, mostly flint and	Possible former	-	-	Post-Medieval/Modern
					chalk, overlies (002007) and underlies	surface			
					(002005), Th: 0.10m.	/Consolidation			
						layer			
(002007)	-	Deposit	-	-	Hard, dark greyish brown, lumps of flint in a	Consolidation	-	-	Post-Medieval/Modern
					silty clay fill, overlies (002002) and underlies	layer			
					(002006), Th: 0.70m.				

11.3 Trench 003

Context	Slot	Туре	F/B	F/O	Description	Interpretation	Finds	Sample No.	Provisional Date
(003001)	-	Deposit	-	-	Hard, dark greyish brown, no inclusions, overlies (003002), Th: 0.12m (max).	Tarmac	-	-	Modern



(003002)	-	Deposit	-	-	Firm, dark greyish brown, silty clay (40/60),	Sub-surface for	-	-	Modern
					frequent flint/CBM, overlies (003003) and	road surface			
					underlies (003001), Th: 0.47m.				
(003003)	-	Deposit	-	-	Soft, white greyish brown, chalk, occasional	Redeposited	-	-	Modern
					CBM, overlies (003004) and underlies	material, backfill			
					(003002), Th: 0.36m (max).	for utility			
(003004)	-	Deposit	-	-	Loose, mid yellowish red sandy silt, no	Backfill	-	-	Modern
					inclusions, underlies (003003), Th: not				
					obtainable.				

11.4 Trench 004

Context	Slot	Туре	F/B	F/O	Description	Interpretation	Finds	Sample No.	Provisional Date
(004001)	-	Deposit	-	-	Hard, dark greyish brown, no inclusions, overlies (004003), Th: 0.07m (max).	Tarmac	-	-	Modern
(004002)	-	Deposit	-	-	Firm, mid yellowish brown, sandy clay (40/60), occasional small stones, underlies (004005), Th: 0.07m.	Natural	-	-	Glacial
(004003)	-	Deposit	-	-	Firm, dark greyish brown, silty clay (40/60), frequent flint/CBM, overlies (004004) and underlies (004001), Th: 0.29m.	Levelling Spread/Backfill	-	-	Post-Medieval/Modern
(004004)	-	Deposit			Moderate, dark greyish brown, silty clay (40/60), occasional small stones, CBM, metal, glass, bone, overlies (004005) and underlies (004003), Th: 0.27m.	Post-medieval dump used for ground raising/levelling.	Glass, Animal Bone, Metal, CTP, Oyster Shell	-	Post-Medieval.
(004005)	-	Deposit	-	-	Moderate, mid greyish brown, silty clay (40/60), occasional small stones, very	Redeposited natural	-	-	Post-Medieval/Modern



		occasional bits of CBM, overlies (004002) and		
		underlies (004004), Th: 0.46m.		

11.5 Trench 005

Context	Slot	Туре	F/B	F/O	Description	Interpretation	Finds	Sample No.	Provisional Date
(005001)	-	Deposit	-	-	Hard, dark greyish brown, no inclusions, overlies (005002), Th: 0.07m (max).	Tarmac	-	-	Modern
(005002)	-	Deposit	-	-	Firm, mid greyish brown, silty clay (40/60), frequent flint/CBM, overlies (005003) and underlies (005001), Th: 0.45m.	Levelling Spread	-	-	Modern
(005003)	-	Deposit	-	-	Firm, greenish grey brown, sandy clay (30/70), very occasional small stones, underlies (005002), Th: 0.61m.	Natural	-	-	Glacial

11.6 Trench 006

Context	Slot	Туре	F/B	F/O	Description	Interpretation	Finds	Sample No.	Provisional Date
(006001)	-	Deposit	-	-	Hard, dark greyish brown, no inclusions, overlies (006003), Th: 0.07m (max).	Tarmac	-	-	Modern
(006002)	-	Deposit	-	-	Firm, mid yellowish brown, sandy clay (40/60), occasional small stones, underlies (006006), Th: 0.04m.	Natural	-	-	Glacial

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(006003)	-	Deposit	-	-	Firm, dark greyish brown, silty clay (40/60), frequent flint/CBM, overlies (006004) and	Levelling Spread/Backfill	-	-	Modern
					underlies (006001), Th: 0.18m.				
(006004)	-	Deposit	-	-	Soft, white greyish brown, chalk, occasional	Levelling	-	-	Modern
					CBM, overlies (006005) and underlies	Spread/Backfill			
					(006003), Th: 0.15m (max).				
(006005)	-	Deposit	-	-	Moderate, mid greyish brown, silty clay	Post-medieval	Pottery, FE	-	Post-Medieval
					(40/60), occasional small stones, CBM, metal,	dump layer used			
					glass, bone, overlies (006006) and underlies	for ground			
					(006004), Th: 0.45m.	raising/levelling.			
(006006)	-	Deposit	-	-	Firm, greenish grey brown, sandy clay (30/70),	Natural	-	-	Glacial
					very occasional small stones, overlies (006002)				
					underlies (006005), Th: 0.55m.				

11.7 Trench 007

Context	Slot	Туре	F/B	F/O	Description	Interpretation	Finds	Sample No.	Provisional Date
(007001)	-	Deposit	-	-	Hard, dark greyish brown, no inclusions,	Tarmac	-	-	Modern
					overlies (007002), Th: 0.07m (max).				
(007002)	-	Deposit	-	-	Hard, light greyish brown, concrete, very	Concrete	-	-	Modern
					occasional CBM, overlies (007003) and				
					underlies (007001), Th: 0.27m (max).				
(007003)	-	Deposit	-	-	Firm, dark greyish brown, silty clay (40/60),	Levelling Spread/	-	-	Post-Medieval/Modern
					occasional flint/CBM, overlies (007004) and	Consolidation			
					underlies (007002), Th: 0.06m.				
(007004)	-	Deposit	-	-	Moderate, dark yellow grey, silty sand (30/70),	Weathered	-	-	Glacial
					occasional small stones, underlies (007003),	Natural			
					Th: 0.75m.				



11.8 Trench 008

Context	Slot	Туре	F/B	F/O	Description	Interpretation	Finds	Sample No.	Provisional Date
(008001)	-	Deposit	-	-	Hard, dark greyish brown, no inclusions, overlies (008002), Th: 0.07m (max).	Tarmac	-	-	Modern
(008002)	-	Deposit	-	-	Firm, dark greyish brown, silty clay (40/60), frequent flint/CBM, overlies (008003) and underlies (008001), Th: 0.50m.	Levelling Spread/Backfill	-	-	Post-Medieval/Modern
(008003)	-	Deposit	-	-	Moderate, dark orange brown, silty clay (40/60), occasional small stones, underlies (008002), Th: 0.65m.	Weathered Natural	-	-	Glacial

11.9 Trench 009

Context	Slot	Туре	F/B	F/O	Description	Interpretation	Finds	Sample No.	Provisional Date
(009001)	-	Deposit	-	-	Hard, dark greyish brown, no inclusions, overlies (009002), Th: 0.10m (max).	Tarmac	-	-	Modern
(009002)	-	Deposit	-	-	Firm, dark greyish brown, silty clay (40/60), frequent flint/CBM, overlies (009003) and underlies (009001), Th: 0.30m.	Levelling Spread/Backfill	-	-	Post-Medieval/Modern
(009003)	-	Deposit	-	-	Soft mid orange brown sandy silt (40/60), occasional small stones, underlies (009002), Th: 0.80m.	Weathered Natural	-	-	Glacial



11.10 Trench 010

Context	Slot	Туре	F/B	F/O	Description	Interpretation	Finds	Sample No.	Provisional Date
(010001)	-	Deposit	-	-	Hard, dark greyish brown, no inclusions, overlies (010002), Th: 0.07m (max).	Tarmac	-	-	Modern
(010002)	-	Deposit	-	-	Firm, dark greyish brown, silty clay (40/60), occasional flint/CBM, overlies (010003) and underlies (010001), Th: 0.7m.	Levelling Spread/Backfill	-	-	Post-Medieval/Modern
(010003)	-	Deposit	-	-	Hard, white greyish brown, occasional small stones, underlies (010002), Th: 0.40m.	Natural	-	-	Glacial

11.11 Trench 011

Context	Slot	Туре	F/B	F/O	Description	Interpretation	Finds	Sample No.	Provisional Date
(011001)	-	Deposit	-	-	Hard, dark greyish brown, no inclusions, overlies (011002), Th: 0.07m (max).	Tarmac	-	-	Modern
(011002)	-	Deposit	-	-	Firm, dark greyish brown, silty clay (40/60), frequent flint/CBM, overlies (011003) and underlies (011001), Th: 0.28m.	Levelling Spread/Backfill	-	-	Post-Medieval/Modern
(011003)	-	Deposit	-	-	Moderate, dark greyish brown, silty clay (40/60), occasional small stones, underlies (011002), Th: 0.77m.	Weathered natural	-	-	Glacial

12 Appendix 2: Finds Report

Chris Faine MSc AClfA Border Archaeology

12.1 Finds Catalogue

Copper alloy

(004004) Copper halfpenny of George II. Obverse: Old laurate & cuirassed bust left. GEORGIVS.II.REX. Reverse: BRITANNIA seated left. 1753 AD.

(040004) Sample <004001>. 8 copper alloy globular headed pins. Weight: 0.2g. Post-Medieval/Modern. Possible shroud pins given the proximity of the graveyard.

Fe

(004004). Iron horseshoe. Weight: 270g. In poor condition with no nail holes or fuller visible. Extremely wide web. Late Post-Medieval (1600-1700 AD). In addition, a further 60 iron fragments were recovered from environmental sample <004001>, context (004004) consisting largely of nail shaft fragments of intermediate date.

(006005) contained an unidentified iron object.

Animal Bone

Thirteen fragments of bone were recovered with a total weight of 108g. Only 1 identifiable fragment was recovered from context (006005) in the form a cattle tibia distal epiphysis. Three fragments of large mammal thoracic vertebra were also recovered from the same context. (004004) contained no identifiable material. Nine hundred and ninety-two fragments were recovered from sample <004001>, also from (004004). A single partial pig tibia and cattle skull fragment were recovered from the sample.

Glass

(004004). 2 fragments of iridescent green bottle glass. Weight 37g. Portion of shoulder and neck. Late Post-Medieval.

A further 89 fragments were recovered from environmental sample <004001> with a weight of 8.5g. This included 2 fragments of clear vessel glass also of Late Post-Medieval date.

Clay tobacco pipe

Sixty-four fragments of clay pipe were recovered from context (004004), all from sample <004001> with a total weight of 26.4g. No bowl fragments were recovered, with bore diameter of surviving stems suggesting a late 17th/18th century date.

13 Appendix 3: Oyster Report

Ryan Patterson MSc PCifA

A pair of oyster shell fragments, representing two different individuals, was recovered from context (004004). While the two specimens are too fragmentary for accurate size and age estimations, they display multiple traces of infestation. Both specimens display minute boreholes perforating the exterior of the shell, left behind by predatory marine gastropods, and evidence of burrows on the exterior, left behind by *Polydora ciliata*, a burrowing worm. Neither of these fully penetrates the shell in either specimen, indicating they were not responsible for their death.

No evidence of human cultivation or extraction manifests on these specimens, though their inland appearance indicates they were transported by humans. Many prolific fisheries were established in Kent in the medieval period, including several on The Swale (Goodsall, 1966). One of these fisheries serves as a likely origin for these oyster specimens.

14 Appendix 4: Pottery and CBM Report

K.H. Crooks BA Border Archaeology

Two sherds of pottery and a single fragment of ceramic building material (CBM) were recovered during archaeological observation of water mains renewal work at Wises Lane, Borden in Kent.

All material was of post-medieval date with the pottery dating to the very end of the 17th or the 18th centuries.

14.1 The pottery

Both sherds of pottery were recovered from Trench 006 [context (006005)]. The sherd of Staffordshire or Bristol type slipware (22g) is from a dish and has a combed slip. The comparatively wide spacing of the lines of slip on the sherd may suggest a date in the middle to later part of the 18th century with designs often becoming simpler as the century progressed. As is usually the case with flat-ware vessels of this type the underside of the vessel is unglazed. A number of centres produced slipware through the later 17th and 18th centuries.

The sherd of a tin glazed ware jar is of similar date with the turquoise glaze possibly suggesting a date at the beginning of the 18th century. This type of pottery was produced at a number of centres, including London.

14.2 The ceramic building material

A small fragment (11g) of rooftile or brick was recovered from context (004004) (Trench 004). It was of mixed red and yellow clay and had lime mortar on two surfaces. It may have been of local manufacture. Bricks were manufactured on a large scale at Sittingbourne from the 19th century onwards.

14.3 Conclusions and recommendations

The pottery is of 18th century date and of types that would have been used by many households; it is likely to derive from occupation in the area.

It is recommended that the ceramic material from the site should be retained as part of the site archive until the completion of the site work. It can then be assessed in light of subsequent discoveries.

14.4 Reading

Cooper, R. G., 1968, English Slipware Dishes, 1650-1850, Alec Tiranti, London



15 Appendix 5: Palaeoenvironmental Report

Emily Dutton BA MSc and Amy Bunce BSc MA ACIfA Border Archaeology

15.1 Non-technical summary

This report has been prepared by the Palaeoenvironmental Department at Border Archaeology Ltd (BA) to facilitate and elucidate the palaeoenvironmental, palaeoeconomic and palaeodietary interpretations of a deposit discovered during Archaeological Observation of water mains renewal upon the instruction of South East Water (SEW) at Borden, Kent.

One sample comprising 40^e was processed by flotation, having originated from a finds rich deposit identified as post medieval in date and located near the Grade I church of St Peter & St Paul and The Maypole Inn in the historic centre of Borden.

The sample, despite being rich in artefactual finds from the post-medieval period, produced limited environmental material.

15.2 Introduction

This report details the results derived from one sample, constituting a total of 40^e of soil, retrieved from a deposit identified as post medieval in date, based upon the discovery of a George II coin (*terminus post quem* 1753).

In accordance with the WSI (BA, 2018), at least 40ℓ or 100% of the deposits were sampled, this resulted in one sample comprising 40ℓ of material being received by the Palaeoenvironmental Department with the resultant archaeological and archaeobotanical material sorted and identified.

The sample was processed by means of flotation and any potential archaeobotanical remains from both the floating element and the heavier residue/retent were sorted and visually identified. The nature and interpretative significance of the recovered remains is detailed in Section 15.4.1 below.

The sample was taken in multiples of 10ℓ sample buckets and derived from a one deposit, the results are presented by context in Section 15.4.2 below.

15.2.1 Site Description

The mains renewal route covered 1.86 km NE/SW through Borden village. It followed Wises Lane and Pond Farm Road although much of the route was addressed by Directional Drilling with the route through the village Open Cut.

Trench 004, from where the sample derived, lay at the juncture of Wises Lane and The Street on the E of Borden and close to the church of St Peter & St Paul and The Maypole Inn. Earlier works at The Maypole Inn had revealed evidence of Iron Age, Romano-British and post-medieval features (SEAS, 1995).

15.2.2 Soils and Geology

At the location of Trench 004, the surrounding geology was of fine silty or loamy soils that would not be expected to exert strong taphonomic biases (SSEW, 1983).

15.3 Methodology

15.3.1 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 non-archaeological works. Information garnered should inform on the features revealed whose destruction was necessitated by works but monitored by the archaeologist.

15.3.2 Sampling methodology

Sampling methodology followed the Palaeoenvironmental Department Manual (BA, 2017) for environmental sampling and processing and with reference to Historic England guidance (Campbell, et al., 2011). On site, the samples were collected in sample buckets and identified by context and sample number. Following receipt into the Palaeoenvironmental Department, they were assigned bucket numbers for tracking purpose. The samples were not subject to sub-sampling and their entirety was processed by means of flotation.

Flotation was undertaken in Siraf-style tanks (Williams, 1973) with a 500 μ m retent mesh and 250 μ m flot sieve. No refloating 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 (\leq ×10). The flots were sorted entirely by means of illuminated stereo zoom microscopy (\leq ×10). The results of this analysis are reported with the flot and retent data recombined due to limited to no variance in the species being reported.

15.3.3 Personnel

Flotation and primary analysis were undertaken by staff within BA's Palaeoenvironmental Department managed by Robin Putland BSc MSc. The department consists of a minimum of ten members of staff, predominantly with post-graduate palaeoenvironmental qualifications. This work was further assisted by BA's field staff as part of a programme of Continuing Professional Development (CPD). Analysis and identification were only undertaken by the palaeoenvironmental department under the guidance of Robin Putland BSc MSc and Amy Bunce BSc MA ACI*f*A.

External and internal specialists were consulted for all archaeological finds and faunal material recovered from palaeoenvironmental samples. Archaeological, archaeometallurgical and archaeozoological assemblages from the palaeoenvironmental material were recombined with the full site assemblages to ensure unbiased and broader specialist reporting on those materials.

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15.4 Methodology

15.4.1 Description and implications of materials recovered

Detailed below are the general implications of the discovery of certain materials within the palaeoenvironmental samples. Section 15.4.2 details such information by context. Of particular note is the presence of artefactual material but limited occurrence of environmental material.

Finds

Archaeological finds within palaeoenvironmental samples are fairly common and help confirm that the sampling of the material was not biased in any manner.

In this case, ceramic/pottery, CBM (Ceramic Building Material), CTP (Clay Tobacco Pipe) stem, copper alloy shroud pins, iron fragments, glass, worked stone and coal/coke were present.

Bone

Both burnt and unburnt bone may be present within palaeoenvironmental samples with taphonomic conditions occasionally proportionately affecting their preservation. Burnt bone is reasonably conclusively of anthropogenic origin, deriving from domestic activities as well as some industrial and funerial practices. Unburnt bone may additionally have become incorporated due to animal death in the vicinity of the context while it was forming and therefore cannot always be used as an indicator of human activity. Incidences of the inadvertent inclusion of unburnt bone from decomposed individuals, especially of small mammals and reptiles, can highlight specific ecological niches. However, it is by no means the case that all unburnt bone derives from such cases and unburnt bone from large mammals is a good indicator of nearby settlement and potential butchery.

Unburnt mammal bone was abundant in the sample, while burnt mammal bone and unburnt small animal bone was also present.

Shell

Terrestrial shell comprises that from snails that may have been present in the area during deposition of the fills. Identification of the species represented highlights any ecological niches preferred by certain species in the environments they inhabited.

Archaeomalacological identification is undertaken in-house by Ryan Paterson BSc MSc and Robin Putland BSc MSc, additionally utilising reference texts (Cameron, 2008) (Evans, 1972) (Kerney & Cameron, 1979) (Welter-Schultes, 2012). Environmental interpretations were based upon a combined autecological and synecological approach as advised by Davies (Davies, 2008), using ecological groups for terrestrial and freshwater species as designated by Evans (Evans, 1972) and Sparks (Sparks, 1961) respectively. The ecological preferences of each species were inferred by reference to Kerney and Cameron (Kerney & Cameron, 1979) and the molluscs were identified on the basis of apical and other diagnostic fragments according to nomenclature by Welter-Schultes (Welter-Schultes, 2012).

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Interpretations of palaeoenvironments using mollusca are limited by taphonomic uncertainty, due to the effects of gravity, bioturbation and re-deposition by hydrological processes affecting the distribution of shells within sediments, processes which are understood only superficially (Lowe & Walker, 1997). Additionally, only well-preserved shells are suitable for identification; therefore, the recovered fauna may not be representative of the true fauna. Limitations of autecology and synecology, relating to uniformitarianist assumptions, the poorly understood factors influencing the distribution of a particular species, the broad ranges of environments inhabited by many molluscan species (Davies, 2008), unknown associations between past molluscan fauna (Bush, 1988) and the lack of applicable modern analogues for past environments limits the extent with which palaeoenvironments can be reconstructed using this method.

The shell recovered was fragmentary Ostreidae (Oyster) and Littorinidae (Periwinkle). Both are marine shells and would have been imported into the settlement as a foodstuff.

Charcoal

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 as to wood selection for the varying purposes.

While often relied upon for dating, in particular C¹⁴, charcoal is not the best material to use. Charcoal is subject to the 'Old Wood problem', whereby wood is known to be frequently reused and charcoal redeposited. In addition, wood grows over many years and it is not possible to know precisely where within the tree a charcoal fragment has derived.

Anthracological analysis is undertaken in-house by Amy Bunce BSc MA ACIfA additionally utilising reference keys (Hather, 2000) (Schweingruber, 1990) (Schweingruber, 1990). Anthracological analysis was generally undertaken at ×100 magnification although higher magnifications to ×400 were used where necessary. Lighting was by incident lighting with transmitted lighting where necessary. Charcoal was transversally sectioned with tangential or radial sectioning undertaken where required. Any waterlogged or otherwise preserved wood present would be presented in a separate Wood Identification and Technology report.

Growth ring curvature and diameter size was classified by reference to Ludemann-Nelle (L-N) templates (Ludemann, 2002) (Nelle, 2002) whereby classes I, II, III, IV & V represented diameters <20mm, 20-30mm, 30-50mm, 50-100mm and >100mm respectively. Growth ring curvature was additionally classified by reference to Marguerie-Hunot (M-H) test cards (Marguerie & Hunot, 2007) whereby weak, moderate and strong curvature were categorised 1, 2 and 3 respectively.

Charcoal was very infrequent and, consequently, not assessed further.

Slag

Archaeometallurgical debris may be present in the form of unspecific slag fragments, diagnostic slag fragments, vitrified structures and, more commonly for environmental samples, as hammerscale of the spheroidical or flake variety. Slag may be retrieved from both the flot and retent; this apparent contradiction, in that slag would

normally be too heavy to float, is due to vesicles containing air in the spheroidical hammerscale and the smaller fragments of slag. Droplets of slag become spheroidical if they cool while travelling through the air after having been propelled during iron working.

Slag and other archaeometallurgical materials such as flake and spheroidical hammerscale were abundant in the sample, this is not unexpected for an urban location.

Charred archaeobotanical material

Charred archaeobotanical material is generally the most illustrative palaeoeconomic remnant. Charring is generally accepted to be almost solely of anthropogenic origin and the material can therefore be used to directly reconstruct the past agricultural or consumer economy and diet. Caution must be taken by the intrinsic bias a charred assemblage presents over the uncharred plant remains of palaeoeconomic utility. However, such variance is built into the study of charred plant remains.

Archaeobotanical identification is undertaken in-house utilising reference texts that include the most valid to the British assemblages (Anderburg, 1994) (Berggren, 1969) (Berggren, 1981) (Groningen Institute of Archaeology, 2006-present) (Jacomet, 2006) (Martin & Barkley, 2000) (Renfrew, 1973) (Schoch, et al., 1988) with classification following Stace (Stace, 2010).

The only identifiable charred archaeobotanical remains recovered from the sample were two charred Brassicaceae (Mustard family) seeds, one charred *Capsella bursa-pastoris* (Shepherd's purse) seed and one fragment of a charred indeterminate cereal grain. The limited occurrence means little can be concluded.

15.4.2 Description of palaeoenvironmental remains by selected context

Detailed below are the palaeoenvironmental remains from each context. Results for all contexts can be observed in the tables in Section 15.5 below.

(004004)

(004004) was a dark grey brown silty clay deposit in Trench 004. It underlay a packed flint deposit (004003) and was somewhat sealed by (004003). Deposit (004004) was dated as post-medieval by a King George II coin.

The oyster fragments and smaller quantity of periwinkle were the most significant inclusion as they would have been imported to the settlement as a cheap, easy and popular foodstuff. The proximity to The Maypole Inn may account for the abundance of oyster. The quantities of unburnt mammal bone may also be due to waste from the public house.

The presence of shroud pins is likely the result of proximity to the graveyard of St Peter & St Paul. The presence of CTP stems may be expected due to the junction of roads, presence of the public house and presence of the church.

The environmental materials were of limited significance due to low abundance and the nature of (004004) as a deposit as opposed to the fill of a feature.

15.5 Table of results

The following table details the abundance results from both the archaeobotanical material and the archaeological finds. Weight and quantity records have been recorded but are not presented here due to the variation between materials.

Abundance key: + = rare; ++ = occasional; +++ = common; ++++ = abundant.

	004004						
	Sample no. Sample part						
		Sample part	1/4	2/4	3/4	4/4	
		Bucketno.	21738	21736	21737	21738	
	S	ample vol. (mℓ)	1300	3700	4950	1000	
		Waterlogged?	No	No	No	No	
		Refloated?	No	No	No	No	
Latin name	Common name	Plant part					
Carbonised cereal							
Cereal indet.	Indeterminate	caryopsis			+		
Carbonised wild taxa							
Brassicaceae	Mustard	seed		+	+		
Capsella bursa-pastoris	Shepherd's purse	seed		+			
Indeterminate	Indeterminate	seed		+			
Charcoal							
Indeterminate <2mm	Indeterminate	fragments	+	+	+	+	
Indeterminate 2-4mm	Indeterminate	fragments	+	+	+	+	
Indeterminate >4mm	Indeterminate	fragments		+	+	+	
Archaeometallurgical							
Sphe roidical scale	-	-	+	+++	++	+	
Flake hammerscale	-	-	++	++++	+++	++	
Slag	-	-	++++	++++	+++++	++++	
Artefactual							
Ceramic/pottery	-	-	+++++		+		
CBM	-	-		++++	++++	+++	
СТР	-	stem	+	+	+++	+	
Cualloy	-	shroud pin		+	+		
Fe	-	-	++	+++++	++	+	
Glass	-	-	+	++	++	+	
Worked stone	-	-	++	+	+	+	
Coal/coke	-	-		+	++	+	
Faunal							
Mammal (unburnt)	Indeterminate	-	+++	++++	+++	++++	
Small a nimal (unburnt)	Indeterminate	-	+	+	+++		
Mammal (burnt)	Indeterminate	-	+	+		+	
Molluscan: Marine							
Littorinidae	Periwinkle (family)	-				+	
(cf) Ostreida e	Oyster (family)	-	++	+	+	+	



ΔΔ

15.6 Conclusions and recommendations

The sampling was broadly successful in expanding the interpretation of the post-medieval deposit although this was largely due to the artefactual material as opposed to the environmental material. The previous works at The Maypole Inn yielded a similar assemblage (SEAS, 1995).

15.6.1 Recommendations

Due to the nature of the environmental materials recovered and full analysis undertaken, no further work is recommended.

Retention of the materials detailed above as an incorporation of the site archive for deposition with the museum is recommended.

15.7 Copyright

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15.8 Bibliography

Anderburg, A.-L., 1994. Atlas of seeds and small fruits of Northwest European plant species: Resedaceae - Umbelliferae (part 4). Stockholm: Swedish Museum of Natural History.

BA, 2017. Palaeoenvironmental Manual. V2 ed. Milton Keynes: Border Archaeology Ltd.

BA, 2018. Written Scheme of Investigation on behalf of South East Water concerning Wises Lane Mains Renewal, Borden, Kent. Leominster: Border Archaeology Ltd.

Berggren, G., 1969. *Atlas of seeds and small fruits of Northwest European plant species: Cyperaceae (part 2).* Stockholm: Swedish Museum of Natural History.

Berggren, G., 1981. Atlas of seeds and small fruits of Northwest European plant species: Salicaceae - Cruciferae (part 3). Stockholm: Swedish Museum of Natural History.

Bush, M., 1988. The use of multivariate analysis and modern analogue sites as an aid to the interpretation of data from fossil mollusc assemblages. *Journal of Biogeography*, Volume 15, pp. 849-861.

Cameron, R., 2008. Land Snails in the British Isles. Shrewsbury: FSC Publications occasional publication 79.

Campbell, G., Moffett, L. & Straker, V., 2011. *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation.* 2nd ed. Swindon: English Heritage Publishing. Davies, P., 2008. *Snails: Archaeology and Landscape Change.* Oxford: Oxbow Books.

Evans, J., 1972. Land Snails in Archaeology. London: Seminar Press.

Groningen Institute of Archaeology, 2006-present. *Digital Seed Atlas of the Netherlands.* https://dzn.eldoc.ub.rug.nl: online.

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

Jacomet, S., 2006. *Identification of Cereal Remains from Archaeological Sites*. 2nd ed. Basel: Institute for Prehistory and Archaeological Science.

Kerney, M. & Cameron, R., 1979. A Field Guide to the Land Snails of Britain and North-west Europe. London: Collins.

Lowe, J. & Walker, M., 1997. *Reconstructing Quaternary Environments*. 2 ed. Essex: Addison Wesley Longman Ltd.

Ludemann, T., 2002. Anthracology and forest sites - the contribution of charcoal analysis to our knowledge of natural forest vegetation in south-west Germany. In: S. Thiebault, ed. *Charcoal Analysis: Methodological Approaches, Palaeoecological Results and Wood Uses. Proceedings of the Second International Meeting of Anthracology, Paris, September 2000.* Oxford: BAR International Series 1063, Archaeopress, pp. 209-217.

Marguerie, D. & Hunot, J., 2007. Charcoal analysis and dendrology: data from archaeological sites in north-western France. *Journal of Archaeological Science*, 34(9), pp. 1417-1433.

Martin, A. & Barkley, W., 2000. Seed Identification Manual. New Jersey: Blackburn Press.

Nelle, O., 2002. Charcoal burning remains and forest stand structure - Examples from the Black Forest (south-west Germany) and the Bavarian Forest (south-east Germany). In: S. Thiebault, ed. *Charcoal Analysis: Methodological Approaches, Palaeoecological Results and Wood Uses. Proceedings of the Second International Meeting of Anthracology, Paris, September 2000.* Oxford: BAR International Series 1063, Archaeopress, pp. 201-207.

Renfrew, J., 1973. *Palaeoethnobotany: the Prehistoric Food Plants of the Near-East and Europe.* London: Methuen & Co. Ltd.

Schoch, W., Pawlik, B. & Schweingruber, F., 1988. *Botanical Macro-Remains; an atlas for the determination of frequently encountered and ecologically important plant seeds*. Berne & Stuttgart: Haupt.

Schweingruber, F., 1990. Anatomy of European Woods: an atlas for the identification of European trees, shrubs and dwarf shrubs. Bern & Stuttgart: Paul Haupt Publishers.

Schweingruber, F., 1990. *Microscopic Wood Anatomy: structural variability of stems and twigs in recent and subfossil woods from Central Europe.* 3rd ed. Birmensdorf: Swiss Federal Institute for Snow and Landscape Research.

SEAS, 1995. An Archaeological Assessment of Land adjacent to The Maypole Public House, Wises Lane, Borden, Kent. s.l.:South Eastern Archaeological Services.

Sparks, B., 1961. The ecological interpretation of Quaternary non-marine Mollusca. *Proceedings of the Linnean Society of London*, 172(1), pp. 71-80.

SSEW, 1983. Soil Survey of England and Wales. 3rd ed. Cranfield: National Soil Resources Institute.

Stace, C., 2010. New Flora of the British Isles. 3rd ed. Cambridge: Cambridge University Press.

Welter-Schultes, F., 2012. European non-marine molluscs, a guide for species identification. Gottingen: Planet Poster Editions.

Williams, D., 1973. Flotation at Siraf. Antiquity, 47(188), pp. 288-292.

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