cat carcasses after use in skinning derived from unrelated contexts covering a wide date range and should not be regarded as indicative of intensive activity of this character on the site.

The medieval pit features which were excavated within Area 4 do however indicate that some industrial activity was taking place, but that it was located well away from the Market Place street frontage. Ferrous slag recovered from a pit in this area suggests metal working. The large pit with a re-used mill stone as a hearth at its base indicates industrial activity and its reuse as a lined feature capable of holding water may be further evidence of metal working if it was used as a quenching pit.

The large ditch feature which follows an identical alignment close to the path of the boundary of the burgage plot as marked on the 2nd edition OS map is a very good indication that the feature may have defined the rear of the medieval burgage plots from the 12th century and that this boundary continued to be respected until the bus station was built here in the 20th century.

6.3 Post Medieval (16th-18th centuries)

The features recorded which date to this period indicate that the area continued in use with buildings occupying the two burgage plots and rubbish pits dug in their back yards. A fence line relating to the northern boundary of 10 Market Place was recorded in this period. In the 18th and 19th centuries the plots became significantly more built up with extensions and out buildings stretching far back from the Market Place street frontage.

7. Archaeological Implications

The investigations have revealed important archaeological evidence for the development of the Market Place and the area to the east of it from the 11th century to the present day. This involves a series of phases of activity which indicate intensive use of the area. The earliest feature dated to the 11th century and there was also a significant quantity of residual pottery in 13th-14th century contexts dating from the 10th-12th century. The majority of the stratigraphy related to the 12th-14th centuries and initial pottery dating did not allow the phases within this period to be more closely dated. While there appeared to have been some truncation of deposits in the area nearest to the Market Place some structural features survived to indicate building on the site from the 13th century onwards and that there were a number of phases of

development and alteration. Artefactual evidence suggests that these particular properties were primarily of a domestic nature and there was no particular concentration of evidence to suggest craft workshops. Industrial activities, possibly including metal working and lime burning, were found to be located at the easternmost extent of the long burgage plots, close to the ditch which formed a significant boundary marker. This ditch clearly marked the rear of the burgage plots, and could be the feature known as the "Archbishop's Ditch" indicating that the land to the east of the ditch was part of the ecclesiastical precinct.

The sequence dating from the 11th to the 15th centuries provides good evidence to allow some further research into the key research objectives which relate to the development of the town and market place of Ripon. Further research of the pottery assemblage which spans the 12th to 14th century in particular might allow a more closely dated sequence to be established. The new archaeological evidence of medieval properties and use of the area to the east of the market place provided by these investigations would allow the documentary evidence for the conjectured dates for the development of the town and possible re-arrangement of the market place together with the definition of the ecclesiastical precinct to be reassessed.

8. ASSESSMENT OF POTTERY

8.1 Quantification

Context	No of sherds	Date	Description
2000	56	14th-19/20th	includes medieval sherds (2), post-medieval earthen wares (23), English stonewares (11), Black wares (5), Cistercian wares (4), tin-glazed earthenwares (6), modern (6)
2003	6	15th-18th	English stonewares (2), post med earthenwares (4)
2004	29	14th-18th	medieval wares (17), German stoneware (1), slipware (1), English stoneware (1), Cistercian ware (1), Black ware (2), post med earthenware (6)
2005	9	16th-17/18th	Ryedale (2), German stoneware (1), medieval white ware (5) saltglaze (1)
2006	25	17th/18th	Black ware (2), Brown ware (10), Purple glazed ware (1), post medieval earthenware (12)
2007	9	14th	splashed gritty (2), white ware (1), copper glazed buff wares (6)
2010	3	?13/14th	3 very small medieval sherds
2018	93	10/11th; 16th-19/20th	thin grey reduced late Anglo-Saxon cooking pot rim (1); post med earthenware (21), porcelain (2), modern (8) English stoneware (19), saltglaze 92) slip and yellow are (14), Cistercian (2), Black ware (12)
2031	4	14th; 18th	copper glaze white ware (1); Black ware (1)
2032	20	13th/14th	very small sherds of buff, white and sandy ware with copper glazes
2035	4	12th	splashed wares
2037	1	13/14th	reduced green glazed
2038	4	12th	gritty (2), splashed (2)
2042	5	10th-12/13th	grey reduced Anglo- Saxon ware (1), gritty ware (1) splashed (2); copper glazed buff ware
2043	2	12th	gritty ware
2044	3	13th	gritty (1); medieval (2)
2047	4	13/14th	sandy wares
2049	78	12th-13th	range of very small sherds in buff, white, sandy, splashed wares; 1 German stoneware
2050	10	12/13th	splashed, white and reduced glazed wares
2051	18	12th-13/14th	splashed and white gritty fabrics
2052	2	12-13/14th	gritty (1), fine white (1)
2056	29	10/11th-13th/14th	gritty/splashed (13); fine sandy, white sandy (12), reduced grey Anglo-Saxon types (4)
2060	13	12-13/14th	white sandy (4) ,reduced glazed (4), Winksley-type (2), reduced, glazed gritty (1)
2066	6	10th-13/14th	reduced grey Anglo-Saxon types (2); reduced

			glazed (2); copper glazed buff jug (1), white ware (1)
2067	1	11th/12th	gritty ware
2068	13	13/14th	fine sandy ware,(4) sandy (7) and gritty (2) ware
2070	70	13/14th	53 sherds representing c. 5 jugs with strap handles in fine sandy ware ?Winksley-type; 17 other sherds from miscellaneous medieval wares
2071	3	13/14th	reduced glazed rod handles (2), white sandy ware (1)
2078	4	13th/14th	1 gritty, Winksley-type (3)
2083	7	10/11th-14th	reduced grey Anglo-Saxon type, Winksley-type (1), coarse gritty (4), splashed (1)
2085	3	14th/15th	part of lobed bowl(1) (see also 2176 for more of same vessel); drinking jug frag (1); sandy glazed ware (1)
2087	136	13/14th	3-4 jugs and 1 cooking pot represented by soft, pale reddish fabric with rouletted decoration and rod handles (draw)
2088	34	10th-12th	reduced grey Anglo-Saxon cooking pot rim and base (18) (draw); buff oxidised ware 98), white wares with patchy glaze inc skillet handle (8) (draw)
2089	1	12th	Splashed
2092	22	10th-13th	reduced Anglo-Saxon type (6), buff gritty ware (3); splashed (2), Winksley-type (3), copper glazed reduced and oxidised wares (8)
2093	18	11/12th-14th	gritty ware (2); splashed (12), fine white ware (4)
2094	1	13th	Winksley (1)
2095	4	?14th	fine reduced ware (2); splashed (2)
2097	6	11th-13th	gritty (2); reduced glazed ware (4)
2099	21	11th	gritty wares
2100	16	14th	glazed white/buff gritty wares; divided dish (draw)
2107	57	10th-13th	reduced AS type (18), gritty ware (8); reduced glazed wares (4), part of reduced white slipped pedestal based jug (draw) with green glaze (12); fine white (4), misc other medieval sherds (23)
2109	34	12th-13th	mixed fabrics (see discussion below)
2110	34	12th/13/14th	mixed fabrics
2111	13	13/14th	mixed fabrics
2117	3	13/14th	small medieval sherds
2118	6	12th-late 14th	inc Humber type; good example of cooking pot (draw)
2123	2	12/13th	Gritty
2132	9	12-14th	mixed wares, very small sherds
2134	2	13th	sandy oxidized ware
2141	3	12/13th	mixed wares, very small sherds
2142	54	12th-14th	mixed wares, very small sherds

2145	4	10^{th}-12^{th}	Anglo-Saxon type (1); splashed (3)
2146	10	14^{th}-17^{th}	Cistercian (1); yellow (1), lobed bowl (see 2085) (1) and mixed (7)
2149	6	12^{th}-14^{th}	mixed wares
2151	25	13^{th}-14^{th}	mixed wares, inc one drinking jug base
2154	1	11^{th}/12^{th}	gritty ware
2158	1	13/14^{th}?	fine reduced glazed ware
2162	4	10^{th}-14^{th}	reduced Anglo-Saxon (1), mixed (3)
2164	2	13^{th}-14^{th}	lobed bowl (see 4024, 2085, 2146); fine glazed ware (1)
2167	1	12/13^{th}	fine ware
2175	1	13/14^{th}	oxidised gritty ware
2176	12	12^{th}-16^{th}	Cistercian (1), 2 lobed bowl frags (see 4024, 2085, 2146, 2164),
2178	3	13^{th}-14^{th}	mixed wares, small sherds
2180	2	12^{th}-13^{th}	mixed wares, small sherds
2182	2	13^{th}?	reduced gritty wares
4002	31	12^{th}-14^{th}	large sherds (draw)
4005	3	12^{th}	Splashed
4007	5	14^{th}	gritty cooking pot (1); jug frags (4)
4009	1	12^{th}	gritty ware
4024	4	10^{th}; 13^{th}-14^{th}	reduced AS (1); lobed bowl (see 2085, 2146)
total	1128		

8.2 Discussion:

This is a useful assemblage of pottery as it confirms the results of earlier research on pottery assemblages from Ripon (Mainman 1997) and provides a well-recorded stratified sequence, albeit with a considerable residual element.

The earliest group comprises the reduced grey wares which have been approximately dated to the 10^{th} and 11^{th} century on typological grounds. Similar material was encountered at the Deanery Gardens and at Low St Agnesgate (ibid, 130). The forms seem to be exclusively small cooking vessels. This is a useful early group but as it appears that this material is residual, precise dating is not possible. It may be that the type continues in use into the later 11^{th} century.

Next in the typological ceramic sequence there is a proliferation of new pottery types. These include a range of unglazed gritty wares and sherds with splashed glazes. These are likely, based on comporanda and typological developments, to start in the mid 12^{th} century and probably have had a currency of about a century or a century and a half. These include types characterised elsewhere as gritty ware, glazed gritty ware, reduced glazed ware, oxidized glazed wares, reduced gritty wares and splashed wares) (Mainman 130-136). There is a few sherds which are probably products of the nearby Winksley kilns (Le Patourel 1970) where production is believed to have begun in the mid 13^{th} century and continued into the 14^{th} century. Lobed bowls, drinking jugs and jugs with rod handles all indicate that the assemblage continues into the 14^{th} century.

There is, however, little pottery datable to the 15th century onwards. A few contexts contain Humber wares Cistercian wares, Ryedale wares, purple-glazed wares and later post-medieval types including earthenwares, English stonewares, Black wares, brown wares and salt-glazed wares but not in great quantities.

8.3 Summary:

The value of this assemblage can be summarised under four points:

1. The late Anglo-Saxon group is of considerable interest as it augments the scant evidence from previous sites in Ripon. Further study of this group would allow a 'type' or 'types' to be characterised (form, fabric, technology etc) which has value beyond this site in future research on Ripon's early pre- Conquest history.

2. The heterogeneous mix of sherds which span the 12th to 14th century would merit further attention in order to disentangle this complex ceramic period. The apparent proliferation of potteries suggested by assemblages of this date (Mainman ibid, 140) and confirmed both here and by earlier work on the pottery from this site (Cumberpatch, 1999, 9.3.2) is of interest; it suggests a vibrant consumer centre in Ripon. Until sufficient material of this period in Ripon has been studied it will be very difficult to refine the dating of wares within these two centuries or chart the rise and decline of individual production sites.

3. Amongst this collection are some reconstructable forms and profiles which widen the range of forms and types known. These include skillets, lobed bowls, jugs with rod and strap handles and cooking pots. There is the potential to characterise the forms of a number of these heterogeneous wares.

4. Previous work done on pottery from Ripon was from 'old' excavations (Low St Agnesgate 1974 and Deanery Gardens 1977-8) which had been archived. An opportunity to test the findings from there using well-recorded modern data is badly needed before further progress can be made on understanding the role and development of pottery in the Ripon area.

9. ASSESSMENT OF SMALL FINDS

9.1 Iron

58 small finds were made of iron. Of these, the vast majority are nails. Among the exceptions are sfs15 and 116 (both context 2118) which are large strips with wood remains attached, and which possibly represent the remains of hinge straps from doors or large pieces of wooden furniture such as chests. Some investigative conservation may aid more certain identification. The ?hinge pivot (sf61, context 2049) may also be from a door. Sf 25 (context 2066) may be a buckle pin, and sf74 (context 4002) may comprise fragments of a circular buckle. The key sf68 (context 2149) has a bow typical of the 14th - 15th centuries. A horseshoe fragment (sf55, context 2093) and horseshoe nail (sf56, context 2066) both appear to date from the late 13th – 14th centuries. Other objects include a ring (sf30, context 2047), a large ?fitting (sf54, context 2164), a hook (sf59, context 2111) and a ?split pin (sf70, context 2118), none of which are datable.

9.2 Copper alloy

Only six copper alloy objects were recovered. None were readily identifiable or datable, but sf9, context 2007 appeared to be a possible belt fitting. Sf10, context 2056, is a strip with a decorative cut-out, perhaps part of a mount, while sf11, context 2068 appears tubular. The remaining objects (sfs12-14) represent sheet offcuts or fragments.

9.3 Lead alloy

Sf6 (context 2004) was the only lead alloy find and was unidentifiable.

9.4 Fired clay

All eight fired clay finds are fragments of post-medieval tobacco pipes.

9.5 Glass

Large amounts of post-medieval vessel and window glass were recovered (sfs1-3, 75-109). Sfs75-98 all derived from context 2118, and largely comprised bottle fragments, including a complete 19th/20th century bottle stamped with the York Glass Co. motif (sf97), and fragments of huge bottles (sfs98-99), both possibly 19th century druggist storage bottles.

9.6 Stone

The only stone object (sf5, context 2092) is a hone which is undatable.

9.7 Bone

Apart from offcuts of bone (sf7, context 2017; sf8, context 200), a turned and socketed object of unknown identification was also found (sf4, context 2004).

9.8 Antler

Sf 26 from context 2151 is a notched offcut; antler is generally thought to date primarily from Anglian/Anglo-Saxon – Viking periods.

9.9 Slag

Sfs43, 51-2, 64, 118-122 were found in the following contexts: 2087, 2092, 2099, 2138, 2142, 2176, 4002, 4007.

9.10 The nature of the assemblage

This assemblage has an overwhelmingly domestic character, but is also unfortunately, of limited aid in providing dating. A few iron objects, notably the key and horseshoe are clearly medieval, and the antler offcut is likely to be earlier; apart from these few, the only datable pieces are the post-medieval tobacco pipes and glass fragments.

10. CONSERVATION ASSESSMENT REPORT

10.1 Objectives

This report aims to meet the requirements of MAP2, Phase 3, Assessment of Potential for Analysis, (English Heritage, 1991). The work carried out has involved an X-radiographic investigation of selected finds, assessment of their condition, stability and suitability of their packaging for safe long-term storage. This report includes an evaluation of the potential of each group of material for further investigative conservation, taking into account the finds research objectives of the project. There is also a statement outlining the conservation programme and resource requirements. There are recommendations for long term stabilisation, packaging and analytical or specialist support where required.

10.2 Procedures

All the ironwork and a selection of the copper alloy objects were X-rayed using standard Y.A.T. procedures and equipment. The plates were laid out in number order as much as possible and the X-ray number written on each bag/box. Each image on the X-ray was labelled with its number. The plates were packaged in acid-free archival envelopes. All categories of material were examined under a binocular microscope at X20 magnification as well as viewing the X-rays were they existed. The material identifications were checked and observations made about their condition and stability. Any technological information deduced from the X-rays and/or microscope examination was recorded. Remedial conservation treatments were carried out where appropriate in order to stabilise the material for long term storage. Conservation treatment details were recorded on Y.A.T. Conservation Record sheets and a note of this is on the bag where applicable.

10.3 Quantification

A total of 122 finds was assessed and approximately 8 duplicated X-rays produced. The number of objects in each material category is listed below:

Iron	54
Slag	9
Copper alloy	7
Lead alloy	1
Stone	1
Fired clay/tobacco pipe	7
Glass	39
Bone	3
Antler	1

10.4 Condition

10.4.1 Iron

As an assemblage the condition of the ironwork is mixed. There is a high degree of mineralisation, with a number of instances of central cracks and corroded laminations. Material with severely mineralised structures appears within contexts 2032, 2093, 2052, 2066, 2107, 2111, 2118, 2146, 2149, 4002, 4009. It would therefore seem that the site conditions within these contexts do not favour the survival of iron. The majority of the finds appear to be iron nails and nail shanks. Amongst the other artefacts that are recommended for further investigative conservation work are two possible 'U' shaped hinge straps (Sf 15 and 116), a key (Sf 68) and a buckle fragment (Sf 74). Two finds (Sf 68 and 74) appear to display surface plating, and should be analysed by XRF. Overall the surfaces of the assemblage are obscured

by a crust composed of orange and yellow iron corrosion, small stones and soil from the burial environment. Wood debris, which is stained orange, is evident within the crusts of some of the finds. Charcoal fragment inclusions are also evident which may indicate burning at some stage on the site. The slag material is in a good condition and is stable. It is recommended that approximately 5% of the slag should undergo metallographic analysis. The majority of the material appears to be iron slag. Despite the poor condition of the ironwork, the iron objects and the slag are stable and ready for long-term storage under controlled conditions below 15%RH.

10.4.2 Copper alloy and Lead

The copper alloy material and one lead find is generally in a good condition. Most of the corrosion products are relatively stable mineral forms. However Sf 9, which is identified as a copper alloy strap end fragment, displays a light green powdery copper corrosion product. This may be bronze disease and will require chemical stabilisation if it is to survive long-term storage. I also recommend that Sf 11 should be investigated further for traces of mineral preserved organics. Store the material dry (<35% RH).

10.4.3 Stone

There was one hone stone, Sf 5 (2092) within the stone category. The find arrived within the lab dry and appears stable.

10.4.4 Fired Clay/Tobacco pipe

The material within the fired clay category are all fragments of tobacco pipe and are predominantly stem fragments. All the material was dry on arrival within the lab and although covered in soil from the burial environment appeared stable.

10.4.5 Glass

The majority of the glass assemblage consists of bottle or vessel glass fragments. However Sf numbers 106, 107, 108 and 109 (2000) appear to be fragments of window glass. Generally the surfaces are corroded and are prone to delamination and surface flaking. The majority of the material arrived within the lab dry and was covered in soil. Many of the dry finds had loose surface flakes within the storage bags. Four finds (Sf 1, 2, 3 and 24) were wet-packed. Soil was removed from the wet finds with soft brushes and distilled water. Sf numbers 1, 2 and 3 required consolidation and underwent a water replacement treatment before being treated with a consolidating polymer (Paraloid B72 in acetone). Sf 24 was air-dried under observation. The material from context 2118 has white calcareous deposits throughout surfaces. The material is stable and ready for long-term storage.

10.4.6 Bone and Antler

The material within this category is in a good condition. Since there is little deterioration it would appear that the site conditions favour the preservation of bone and antler. The finds arrived within the lab dry and many had been previously cleaned. No further conservation input is required and the material is ready for long-term storage.

10.5 Packaging

The metalwork was suitably packed, in pierced polythene bags, with 'jiffy' foam (polythene) inserts. However in many cases the foam did not fit the bags particularly well and could be

improved. The bagged metalwork finds were housed within airtight Stewart boxes, with 100g packs of silica gel. No RH indicator strips were provided although these were inserted at the time of assessment. Dry organic material was placed in Stewart boxes and an archival cardboard box. Many of the bone finds were packed in pierced polythene bags without jiffy foam inserts, these were inserted at the time of the assessment.

10.6 Observations/Research Potential

The finds and their X-rays were viewed (together with the finds researchers in order to determine the potential for further research and investigative conservation in the light of the microscope examination and X-radiographic results. Evidence of possible decorated surfaces was recorded. Observations and suggestions made for further study are listed below:

10.6.1 Iron

FIND	CONTEXT	MATERIAL	ASSESSMENT
SF00015	2118	IRON	Possible 'U' shaped hinge strap fragments x2. Appears to be unpierced. Mineralised in structure, particularly to areas of the surface which are severely disrupted by corrosion. The two fragments fit together at the point. There is a large amount of wood, which is stained orange, running in a horizontal direction across the point. The find is similar in form to Sf 116 which is from the same context. The surface is obscured by a bulky uneven crust composed of orange/brown iron hydroxide corrosion, localised areas of yellow powdery corrosion (possible iron sulphide), soil from the burial and small stones. It is recommended that the cross-section is investigated.
SF00016	2000	IRON	Iron nail with flat head. Substantial metal core however the structure is mineralised at the shank tip. The surface is covered in an even corrosion crust that contains white calcareous. Localised spots of orange iron corrosion are evident suggesting post excavation activity.
SF00017	2007	IRON	Iron nails with flat heads x2. Substantial metal core. The surface is covered in an even corrosion crust that is thinly cracked at points.
SF00018	2011	IRON	Iron nail shank which is square in cross section, substantial metal core although the tip is severely mineralised. Surface obscured by yellow/brown crust.
SF00019	2011	IRON	Large iron nail with round head. Substantial metal core however the structure is extensively fractured and has received loss. The surface is covered in a bulky, uneven and cracked corrosion crust that contains yellow iron corrosion inclusions.
SF00020	2018	IRON	Iron nail with flat head. Substantial metal core however the structure is extensively fractured and has received loss. The surface is covered in a bulky, uneven and cracked corrosion crust that contains yellow iron corrosion inclusions.
SF00021	2038	IRON	Iron nail with flat head. Substantial metal core. The surface is covered in a compact and even corrosion crust.
SF00022	2056	IRON	Nails with flat heads x2. Substantial metal core. The surfaces are covered with a compact and even corrosion crust.
SF00023	2118	IRON	x3 iron nails with flat heads and x1 nail shank. Generally mineralised in structure. Surfaces are obscured by a corrosion crust. The crust of one nail contains orange stained wood debris.
SF00025	2066	IRON	Possible buckle pin. Bent at the tip. Substantial metal core although where the pin is bent there is an area of severe mineralisation. The surface is coated in a thin corrosion crust.
SF00027	2078	IRON	Nail with blunt head. Substantial metal core. Slightly bent shank. Surface covered in an even corrosion crust.
SF00028	2047	IRON	Iron nails x2. Severely mineralised in structure. The surfaces are covered in a bulky, uneven and cracked corrosion crust that

			contains yellow iron corrosion inclusions.
SF00029	2047	IRON	Iron lump. Substantial metal core. Surface obscured by a soil and corrosion crust.
SF00030	2047	IRON	Ring or tube element. Mineralised structure. Surface obscured by a crust composed of soil and corrosion products. Charcoal and white calcareous inclusions are evident within the crust.
SF00031	2047	IRON	Iron nail, severely mineralised in structure. Surface obscured by a crust composed of soil and corrosion products. White calcareous inclusions are evident within the crust.
SF00032	2049	IRON	Possible nail shank fragment. Mineralised structure. Surface obscured by corrosion/soil crust.
SF00033	2056	IRON	Possible rod fragment that is square in cross-section. Substantial metal core. Surface obscured by an even corrosion/soil crust.
SF00034	2004	IRON	Possible rod fragment that is square in cross-section. Substantial metal core. Surface obscured by an even corrosion/soil crust.
SF00035	2149	IRON	Large iron nail with flat head. Mineralised structure. Surface obscured by an even corrosion/soil crust that contains white calcareous inclusions.
SF00036	2138	IRON	Iron nail with blunt head. mineralised structure particularly at the shank tip. Surface obscured by a corrosion/soil crust.
SF00037	2100	IRON	Iron nails x2 with flat heads. Mineralised structure particularly at the shank. Surface obscured by a corrosion/soil crust.
SF00038	2117	IRON	Iron nail shank. Mineralised structure. Surface obscured by an uneven and cracked corrosion/soil crust.
SF00039	2149	IRON	Iron nail with flat head x1, nail shank x1. Mineralised structure. The surfaces are disrupted by iron corrosion pits and obscured by a crust of soil/corrosion.
SF00040	2018	IRON	x2 nail shanks and x2 iron nails with flat heads. Severely mineralised in structure. Bulky crust contains charcoal and yellow iron corrosion inclusions.
SF00041	2088	IRON	Mineralised fragments x2. Uncertain identity. Arrived within the lab slightly damp within an un-pierced bag. Surfaces are obscured by a crust composed of soil and orange iron corrosion products.
SF00042	2164	IRON	x2 nail fragments. Severely mineralised in structure. Crust contains charcoal inclusions.
SF00044	2087	IRON	Nail. The surface contains a deposit of wood which is stained orange from iron corrosion products.
SF00045	2100	IRON	Large nail shank. Substantial metal core although the surface is disrupted by iron corrosion.
SF00046	2000	IRON	Thin iron spike. Substantial metal core although the surface has been disrupted by iron corrosion blisters.
SF00047	2056	IRON	x2 nail shanks. One displays a substantial metal core but is severely mineralised at the tip. The other is severely mineralised. Surfaces are disrupted by iron corrosion.
SF00048	2032	IRON	x2 iron nails with flat heads, x1 nail shank. The nails show substantial metal cores on the x-ray image although the surfaces are disrupted by localised iron corrosion. The nail shank fragment is severely mineralised.
SF00049	2032	IRON	Nail shank that is curved in form and severely mineralised.
SF00050	2032	IRON	Possible nail head. Severely mineralised in form.
SF00053	2149	IRON	Iron nail with flat head and a curved shank x1 plus a fragment of iron corrosion x1. Substantial metal core although the surface of the nail is disrupted by iron corrosion.
SF00054	2164	IRON	Large strap fitting. Substantial metal core. The surface is disrupted and obscured by an iron corrosion crust. There is an area of loss to one edge.
SF00055	2093	IRON	Horseshoe branch fragment. Possible wavy outer edges. Severely mineralised structure. The x-ray image shows 1.5 nail holes. The surface is obscured by a soil/corrosion crust.
SF00056	2066	IRON	Horseshoe nail. Severely mineralised tip at the shank. Fractured

			within the core.
SF00057	2052	IRON	x2 nail shanks. Severely mineralised structure.
SF00058	2083	IRON	Iron nail with flat head. Rectangular shaped shank. The surface is severely disrupted by localised iron corrosion blisters, and obscured by a crust of corrosion and soil.
SF00059	2111	IRON	Hook fragment. Severely mineralised in structure. The surface is obscured by a crust of soil and orange iron corrosion.
SF00060	2146	IRON	x1 iron nail with flat head plus x2 nail shanks. All are severely mineralised in structure. The corrosion/soil crust contains pale calcareous like inclusions.
SF00061	2049	IRON	Hinge pivet. Substantial metal core. The surface is obscured by a crust of soil and corrosion products.
SF00063	4009	IRON	x6 iron nails with flat heads and x 4 shank fragments. All the cores are severely mineralised and in some cases are fractured. The surfaces are obscured by a bulky crust composed of iron corrosion products, soil and chips of pottery.
SF00065	2107	IRON	Possible iron nail fragment. Severely mineralised structure, particularly at the shank area. Surface is obscured by a crust of soil and corrosion products.
SF00066	2110	IRON	Large iron nail with slightly domed head. Substantial metal core although the shank tip is severely mineralised and the surface is disrupted by localised iron corrosion.
SF00068	2149	IRON	A Key, severely mineralised in structure, particularly at the bow and the bit. The surface is partially obscured by a cracked corrosion crust. Areas of the crust and original surface have been lost on one side of the stem and bit area. The x-ray image appears to show evidence of surface plating throughout the interior of the bow, at decorative grooves along the stem and also throughout the bit. Further localised cleaning of the bow, stem and bit is recommended followed by XRF analysis of possible surface plating. ? MAYBE
SF00069	4002	IRON	x3 iron nails with flat heads, x3 possible nail shank fragments plus x2 unidentified fragments, x1 piece of slag. In total 9 fragments. All are severely mineralised and the surfaces are obscured by soil/corrosion crusts that are cracked and fragile in places. Sf 74 (buckle element) was removed from this group and given a separate Sf NO. The two unidentified fragments may possibly belong to the buckle Sf 74.
SF00070	2118	IRON	x1 iron nail with a slightly domed head together with a possible split pin or link fragment. Both are severely mineralised and the x-ray image displays fractures within the core. The surfaces are obscured by an uneven corrosion crust that contains yellow iron corrosion inclusions.
SF00071	2118	IRON	Sheet fragment that is severely mineralised. The surface is covered in a crust composed of soil, orange and yellow corrosion products, white calcareous products and charcoal inclusions.
SF00072	2118	IRON	Sheet fragment that is severely mineralised. The surface is covered in a crust composed of soil, orange and yellow corrosion products, white calcareous products and charcoal inclusions.
SF00073	2118	IRON	Sheet fragment that is severely mineralised. The surface is covered in a crust composed of soil, orange and yellow corrosion products, white calcareous products, organic debris and charcoal inclusions.
SF00074	4002	IRON	Buckle fragments x2. One fragment is composed of a frame and pin element the other is a fragment of the frame. Severely mineralised in structure also the surfaces appear rough and uneven. From the x-ray image it appears that part of the frame and pin may display surface plating. It is recommended that the find be investigated further for evidence of surface finishes. If plating is evident the metal coating should be analysed by XRF.

SF00116	2118	IRON	Possible 'U' shaped hinge strap fragments x2 which are either joined or connected by corrosion products plus x1 point which is curled over at one end and is attached to one of the strap fragments. The hinge fragments appear to be un-pierced. Mineralised in structure, particularly to areas of the surface which are severely disrupted by corrosion. There is a large amount of wood, which is stained orange, running in a horizontal direction across the point areas. The find is similar in form to Sf 15 which is from the same context. The surface is obscured by a bulky, fractured and uneven crust composed of orange/brown iron hydroxide corrosion, localised areas of yellow powdery corrosion (possible iron sulphide), soil from the burial and small stones. It is recommended that a cross-section and particularly the joint of the two hinge plates is investigated.
SF00117	2151	IRON	Complete iron nail with flat head. Severely mineralised in structure. The core is fractured and the surface is disrupted by iron corrosion blisters.

10.6.2 Slag

FIND	CONTEXT	MATERIAL	ASSESSMENT
SF00043	2087	SLAG	Slag x1
SF00051	2092	SLAG	Slag fragment x1
SF00052	2138	SLAG	Slag x1
SF00064	2109	SLAG	Slag x1. Surface is obscured by a crust of orange iron corrosion and soil.
SF00067	2110	SLAG	Slag x1. Surface is covered in a crust composed of soil with charcoal inclusions.
SF00118	2099	SLAG	Slag x3. Vitreous structure. Possible copper inclusions.
SF00120	4002	SLAG	Slag x1. Surface obscured by soil from the burial
SF00121	4007	SLAG	x6 large pieces of slag. Surfaces are partially obscured by soil.
SF00122	2176	SLAG	Slag fragments x2. Surfaces are partially obscured by soil from the burial which contains charcoal like inclusions.

10.6.3 Copper alloy

FIND	CONTEXT	MATERIAL	ASSESSMENT
SF00009	2007	COPPER ALLOY	Possible strap end fixing. Composed of a double sheet that is riveted together at a terminal/knob. The open aperture ends display two rivet holes. The structure is mineralised and soil from the burial is evident within interstices. The surface is covered in a mixture of copper alloy corrosion products composed of dark green, powdery light green, brown/black and blue/green minerals. The light green powdery corrosion appears to be unstable and should be chemically stabilised if to survive long term storage.
SF00010	2056	COPPER ALLOY	Possible strap end fixing fragment x1 and a possible rivet/rod x1. One end of the possible strap fragment displays remnants of two possible rivet holes. From the x-ray image the rivet/rod fragment may be plated. The structures are mineralised and soil from the burial is evident throughout the surfaces. The surfaces are covered in a mixture of copper alloy corrosion products composed of dark green, powdery light green, brown/black and blue/green minerals.
SF00011	2068	COPPER ALLOY	Tube fragments x2. Possible strap end fixing. The structure is mineralised and soil from the burial is evident within interstices. The surface is covered in a mixture of copper alloy corrosion products composed of red, dark green, powdery light green, brown/black and blue/green minerals. The form should be investigated further.
SF00012	2151	COPPER ALLOY	x3 plate/sheet fragments. Severely mineralised in structure. The surfaces are covered in a mixture of copper alloy corrosion products composed of dark green, powdery light green, brown/black and blue/green minerals.

SF00013	2149	COPPER ALLOY	Off cut strip. Substantial metal core. The surface is covered in a mixture of copper alloy corrosion products composed of dark green and powdery light green minerals.
SF00014	2118	COPPER ALLOY	Strip fragment. Substantial metal core. The surface is covered in a mixture of copper alloy corrosion products composed of dark green, powdery light green and brown/black minerals.
SF00119	2142	COPPER ALLOY	Copper alloy metal working waste. The surface covered in a thin green copper corrosion product. A small area of the corroded surface is abraded to reveal a spot of shiny pink coloured copper metal beneath. The surface is uneven and partially obscured by soil from the burial.

10.6.4 Lead Alloy

FIND	CONTEXT	MATERIAL	ASSESSMENT
SF00006	2004	LEAD ALLOY	Unidentified object. Oval in form, thick in section, the edges are concave and give the appearance of a plug. There are also three deep recesses on one surface which may indicate that the find is a 'tool' support. The surface is covered in a fine layer of soil from the burial. The original surface is retained by corrosion products that are coloured white and dark grey. The corrosion products are of varying thickness. There is a yellow coloured mineral within one of the deep recessed points.

10.6.5 Stone

FIND	CONTEXT	MATERIAL	ASSESSMENT
SF00005	2092	STONE	Hone, possibly schist stone. Displays a round perforation near the tapered end which is evidence of having been suspended and possibly carried on a belt. The widest end is uneven in structure and contains soil within interstices. Received dry and stable. A fine compact grain structure. The surfaces are worn and smooth.

10.6.6 Fired Clay/Tobacco pipe

FIND	CONTEXT	MATERIAL	ASSESSMENT
SF00062	2000	FIRED CLAY	Assessment Tobacco pipe stem fragments x2. The longest fragment is oxidised throughout the external surface and is coloured red/brown. Soil within cores.
SF00110	2000	FIRED CLAY	Assessment Tobacco pipe stem fragments x14 and x2 fragments of bowl which include spur sections. All the finds vary in thickness and length. Many display oxidised surfaces and cores. Received dry and are stable. Soil within cores and throughout some surfaces.
SF00111	2003	FIRED CLAY	Assessment Tobacco pipe stem fragments x8 and one complete bowl fragment. The stem fragments vary in length and thickness. Many display concretions throughout surfaces and soil within the cores. One of the thicker stem fragments appears to have a carbon based inclusion within the core. The bowl fragment is oxidised a pink/orange colour. The finds were received dry and are stable.
SF00112	2004	FIRED CLAY	Assessment Tobacco pipe stem fragments x6. Received dry and stable. All the fragments vary in length and thickness. Soil is evident within the cores.
SF00113	2005	FIRED CLAY	Assessment Tobacco pipe stem fragments x3. Quite thick in section. Soil within cores and throughout surfaces. Received dry and stable.
SF00114	2006	FIRED CLAY	Assessment Tobacco pipe stem fragments x9 plus one complete bowl fragment that is quite elongated. The stem fragments vary in length and thickness. Two display charred areas to exterior surfaces. Surfaces are dirty and display soil from the burial. The bowl fragment is chipped around the edge. Received dry and

			stable.
SF00115	2018	FIRED CLAY	Assessment Tobacco pipe stem fragments x22 plus a fragment of bowl. The stem fragments vary in length and thickness. One thin stem displays a brown vitreous coating throughout the external surface. Approximately 50% of the bowl fragment is present. The material was received dry and dirty with soil from the burial throughout the surfaces and interior cores.

10.6.7 Glass

FIND	CONTEXT	MATERIAL	ASSESSMENT
SF00001	2004	GLASS	Conservation assessment Window glass fragment. Iridescent surface layers of hydrated silica which are prone to flaking. Clear central core which is green in colour. Received wet and covered in soil. Washed with distilled water. Required consolidation and underwent a water replacement treatment before consolidating with Paraloid B72.
SF00002	2018	GLASS	Conservation assessment Bottle glass fragment. Iridescent surface layers that are prone to flaking. Areas of surface loss evident. Clear core which is green in colour. Underwent water replacement treatment followed by consolidation with Paraloid B72.
SF00003	2000	GLASS	Conservation assessment x2 bottle glass fragments. Iridescent surface layers which are prone to flaking. Clear core that is green in colour. Received wet and covered in soil. Washed with distilled water followed by water replacement and consolidation with Paraloid B72.
SF00024	2018	GLASS	Conservation assessment Vessel glass fragments x2. Iridescent surface layers that are prone to flaking and are stained. Received wet and covered in soil. Washed and air dried. Now dry but the surfaces are flaking.
SF00075	2118	GLASS	Conservation assessment Bottle glass fragment. Received dry. Corroded surface layers prone to loss. Clear central core that is green in colour. Dry soil throughout surface. Surface loss.
SF00076	2118	GLASS	Conservation assessment Bottle glass fragment. Corroded surface layers are fractured and have received loss. Clear, green core. Surface is covered in soil and white calcareous deposits. Received dry.
SF00077	2118	GLASS	Conservation assessment Bottle glass fragment. Received dry but clean. Iridescent surface layers are prone to flaking. Clear central core is green in colour.
SF00078	2118	GLASS	Conservation assessment Bottle glass fragment. Surface covered in soil and white calcareous products. Iridescent surface layers are evident. Received dry.
SF00079	2118	GLASS	Conservation assessment Bottle glass fragment. Received dry. Corroded and opaque surface layers have received loss. The core is pitted and dark green in colour. The surface is covered in soil with localised areas of white calcareous inclusions.
SF00080	2118	GLASS	Conservation assessment Bottle glass fragment. Chipped edges, iridescent surface layers. Received dry and covered in dirt. Dark green/brown colouration.
SF00081	2118	GLASS	Conservation assessment Bottle glass fragment. Iridescent surface layers which are prone to flaking. Received dry and covered in soil. Green colouration.
SF00082	2118	GLASS	Conservation assessment Bottle glass fragment. Received dry and covered in soil. Corroded, scratched and pitted surface layers are prone to flaking. White calcareous deposits are scattered throughout the surface.
SF00083	2118	GLASS	Conservation assessment Bottle glass fragment. Received dry. Small amount of soil is evident throughout the surface. Thin

			iridescent hydrated silica surface layers are prone to flaking. A bubble indentation is visible at one surface.
SF00084	2118	GLASS	Conservation assessment Bottle glass fragment. Received dry and covered in soil. Soil deposits exhibit orange iron staining and contain calcareous inclusions. Iridescent surface layers are visible.
SF00085	2118	GLASS	Conservation assessment Green bottle glass fragment. Good condition, clear structure with little decay to surface. Soil from the burial is scattered throughout the surface. Received dry.
SF00086	2118	GLASS	Conservation assessment Bottle glass fragment. Received dry. Thin iridescent surface layers are prone to flaking. Soil is scattered throughout the surface. Clear central core which is green in colour.
SF00087	2118	GLASS	Conservation assessment Bottle glass fragment. Thin iridescent surface layers which are obscured by a thin layer of soil from the burial environment. Received dry.
SF00088	2118	GLASS	Conservation assessment Bottle glass fragment. Received dry. Iridescent, brittle surface layers are prone to flaking and loss is evident. The core is pitted and green in colour. The surface is partially obscured by soil from the burial.
SF00089	2118	GLASS	Conservation assessment Bottle glass fragment. Appears late in date. Good condition, very little decay. Received dry. Soil from the burial contains white calcareous inclusions.
SF00090	2118	GLASS	Conservation assessment Vessel glass fragment. Thin iridescent surface layers. Dry and stable.
SF00091	2118	GLASS	Conservation assessment Bottle glass fragment. Worn surface which shows pitting. Iridescent hydrated silica surface layers are a mottled orange brown colour. A charred/black deposit is located on a corner of the convex.
SF00092	2118	GLASS	Conservation assessment Vessel glass fragment. Received dry. Surface obscured by soil from the burial. Thin iridescent surface layers are prone to flaking. Clear green core.
SF00093	2118	GLASS	Conservation assessment Bottle glass fragment. Thin iridescent surface layers. Soil deposits are evident. Clear central core which is green in colour.
SF00094	2118	GLASS	Conservation assessment Bottle glass fragment. Received dry. Thin iridescent surface layers are delaminating and flaking. Areas of loss reveal a clear but pitted core. Green colouration. The surface is covered in soil which contains calcareous inclusions.
SF00095	2118	GLASS	Conservation assessment Vessel glass fragment. Clear, transparent structure, a slight green colouration to the core, with slight iridescent surface layers. Received dry and dirty.
SF00096	2118	GLASS	Conservation assessment Window glass fragment. Appears modern. Very good condition with little decay. Slight iridescent surface layers. Received dry and dirty.
SF00097	2118	GLASS	Conservation assessment Complete bottle. Clear, transparent structure. Slight iridescent surface layers. Localised black/brown discolouration scale within interior. Small chip to the rim. Localised deposits of soil from the burial are scattered throughout the surfaces. Received dry. 'Y G Co' impression on base.
SF00098	2118	GLASS	Conservation assessment Massive bottle glass fragment, which is also thick in section. Very good condition with no surface iridescence. The neck displays a trail decoration. The surface is covered with soil and white calcareous deposits. Received dry.
SF00099	2006	GLASS	Conservation assessment Brown bottle base fragment. Stable condition. Worn, scratched and slightly pitted surface but no iridescent hydrated silica evident. Interior is discoloured and crizzled in structure. Received dry and covered with soil which

			contains calcareous inclusions.
SF00 100	2006	GLASS	Conservation assessment Small vessel glass fragment. Thin iridescent surface layers. Clear core.
SF00 101	2006	GLASS	Conservation assessment Bottle glass fragment. Opaque iridescent surface layers which are prone to flaking. Clear central core which is green in colour. Surface covered in soil. Received dry.
SF00 102	2006	GLASS	Conservation assessment Neck and rim fragment from a bottle. Received dry. Iridescent surface layers are prone to flaking. Clear core although chips to the edge appear opaque and a light brown colour. The rim has a deep lip to the outside edge and the neck displays ridges to the outer surface.
SF00 103	2000	GLASS	Conservation assessment Neck and rim fragment of a bottle. Received dry and dirty. Iridescent surface layers are prone to flaking. The rim of the fragment displays a thin lip. The outer surface of the neck displays indented lines. Clear central core.
SF00 104	2000	GLASS	Conservation assessment Bottle fragment. Iridescent surface layers are prone to flaking. Clear central core. Soil is evident throughout surfaces. Received dry and dirty.
SF00 105	2000	GLASS	Conservation assessment Bottle fragment, possibly from a neck area. One edge is curled. Thin iridescent surface layers are prone to flaking. Received dry and covered in soil.
SF00 106	2000	GLASS	Conservation assessment Possible window glass fragment. Thin iridescent, pitted and scratched surface layers. Received dry.
SF00 107	2000	GLASS	Conservation assessment Possible window glass fragment. Thin iridescent hydrated silica surface layers which are prone to flaking. Received dry and covered in soil.
SF00 108	2000	GLASS	Conservation assessment Window glass fragment of late date. Good condition, clear structure. Received dirty and dry.
SF00 109	2000	GLASS	Conservation assessment Window glass fragment of late date. Good condition, clear structure. Received dry and dirty.

10.6.8 Bone

FIND	CONTEXT	MATERIAL	ASSESSMENT
SF00004	2004	BONE	Possible thread reel. Appears to be hollow throughout the length. It is slightly tapered at one end and the widest end forms a rilled terminal. The tapered point is fractured with areas of loss and displays a perforation which may possibly be a rivet hole. Compact and cancellous tissue is evident. The core and interstices are covered in soil. Received dry and appears stable.
SF00007	2018	BONE	Assessment Worked bone with saw marks at the transversal section and random cut marks at the external compact surface. Received dry and clean. Compact and cancellous tissue evident. Stable.
SF00008	2000	BONE	Assessment x4 fragments of rib bone, one of which is a split rib section, plus one other limb bone fragment. Three of the rib bone fragments show cut marks to one face but also display fractured ends. The limb bone fragment has also been worked at one end. Cancellous and compact tissues are evident. Some of the finds display flaking compact tissues. All the finds were received dry and clean. The split rib section is warped and fractured.

10.6.9 Antler

FIND	CONTEXT	MATERIAL	ASSESSMENT
SF00026	2151	;ANTLER;	Assessment Worked antler tine fragment. Received dry. The structure is very pale and mineralised. Black spots are scattered throughout the surfaces and soil is evident within interstices. There is a vertical cut into each of the transversal faces. Compact and cancellous tissue evident. Brittle in structure but stable.

10.7 Further Investigative Conservation

The investigative work on the ironwork will involve selective, partial removal of corrosion crusts for the purposes of research. Investigative work on the copper alloys may involve either partial or total removal of corrosion crusts, and chemical stabilisation with BTA if necessary.

10.8 Analysis and specialist support

XRF analysis is required for two objects, along with specialist studies by a metals expert of approximately 5% of the slag material, to provide information about the materials and processes employed in metalworking industries on the site.

10.9 Packaging

The finds have been packaged appropriately for long-term storage. 'Jiffy', (polythene) foam inserts have been added to the bags to provide additional support and protect against mechanical damage during transit. RH indicator strips have been placed at the front of each box and can be viewed through the plastic.

11. ENVIRONMENTAL ASSESSMENT

11.1 Summary

A series of sediment samples and four boxes of hand-collected bone from deposits revealed by excavations at The Arcade, Ripon, North Yorkshire, were submitted for an evaluation of their bioarchaeological potential.

Very few useful assemblages of plant remains were recovered from the deposits and these were, generally, of limited interpretative value. However, a proper analysis should be made of material from Context 2085, provided dating is secure and reasonably tightly defined, and of any associated deposits which may have similar concentrations of charred cereal remains. The recovered invertebrate remains (including the hand-collected shell) were of no interpretative value.

The vertebrate remains recovered from these deposits show some potential for providing useful zooarchaeological and archaeological information for the reconstruction of aspects of human activity. Initial examinations show that the remains mainly represent household refuse, with a small component of butchery, possible evidence for the rearing of pigs, and some indications of possible small-scale craft activities skinning/fur preparation and antler working.

The remaining sediment samples from well dated contexts should be sieved to recover small bone (particularly fish bone) and an archive of this and the hand-collected material, including biometrical data, prepared.

11.2 Introduction

An archaeological excavation was carried out by York Archaeological Trust at the site of The Arcade, Ripon, North Yorkshire (NGR: SE 3131 7127), in June and July 2000.

A series of sediment samples ('GBA'/'BS' *sensu* Dobney *et al.* 1992), and four boxes (each of approximately 20 litres) of hand-collected bone, were recovered from the deposits. The deposits ranged in date from 10th century through to modern but most were more tightly constrained to between the 12th and 14th centuries (mostly medieval).

All of the material was submitted to the EAU for an evaluation of its bioarchaeological potential.

11.3 Methods

11.3.1 Sediment samples

The sediment samples were inspected in the laboratory. Eight of the samples were selected for investigation and their lithologies were recorded, using a standard *pro forma*, prior to processing, following the procedures of Kenward *et al.* (1980; 1986), for recovery of plant and invertebrate macrofossils. The washovers and residues were examined for plant remains. The washovers were also examined for invertebrate remains, and the residues were examined for other biological and artefactual remains.

Two of the sediment samples (Context 2070, Sample 9 and Context 2149, Sample 31) were examined for the eggs of intestinal parasitic nematodes and other microfossils using the 'squash' technique of Dainton (1992).

Table 1 shows a list of the submitted samples and notes on their treatment.

11.3.2 Hand-collected shell

Only two contexts (one of which, Context 2000, was a 'cleaning' layer containing pottery fragments of 14th century to modern date) gave hand-collected shell. These were examined and very brief notes made.

11.3.3 Vertebrate remains

Data for the vertebrate remains were recorded electronically directly into a series of tables using a purpose-built input system and *Paradox* software. For each context (or sample) containing more than ten fragments, subjective records were made of the state of preservation, colour of the fragments, and the appearance of broken surfaces ('angularity'). Additionally, semi-quantitative information was recorded concerning fragment size, dog gnawing, burning, butchery and fresh breakage.

Where possible, fragments were identified to species or species group, using the reference collection at the EAU. Fragments not identifiable to species ('B' bones) were grouped into one 'unidentified' category.

Total numbers of fragments by species were recorded, together with the numbers of 'A' bones, i.e. mandibular teeth and mandibles (for age at death analysis), measurable fragments, and the number of unfused and juvenile fragments (Dobney *et al.* forthcoming). In addition to counts of fragments, total weights were recorded for all identified and unidentified categories.

Only material from deposits with spot dates was recorded in detail, although bones from all deposits were scanned and brief notes were made regarding these assemblages.

11.4 Results

11.4.1 Sediment samples

The results are presented in context number order. Archaeological information, provided by the excavator, is presented in square brackets.

Context 2070 [backfill of a ?cess pit lined with pieces of micaceous sandstone 'roof' tiles. Dated 13th/14th century]
Sample 9/T (2 kg sieved to 300 microns with washover and microfossil 'squash')

Just moist, light to mid grey-brown, soft (working just plastic and slightly sticky; very sticky when wet), slightly clay sandy silt. Stones (2-6 mm and 20-60 mm) and traces of charcoal were present in the sample.

The moderate-sized residue of about 250 cm^3 consisted of gravel (to 50 mm) and sand. There was also a moderate-sized washover of about 40 cm^3 of sand with some charcoal (to 10 mm), with some very small fish bones and very decayed beetles; some possible evidence for very decayed faecal material is in the form of mineral-replaced fig (*Ficus carica* L.) seeds and tentatively identified raspberry (*Rubus idaeus* L.) seeds. The few other plant remains were of no interpretative significance.

Approximately 40 very tiny bone fragments were recovered from this sample. A number of small fish vertebrae (including herring) and a pig phalanx were identified.

The microfossil 'squash' was approximately half organic detritus and half inorganic material with some ?phytolith fragments and several live ?soil nematodes. No eggs of intestinal parasitic nematodes were seen.

Context 2078 [backfill of cobble lined cess pit (stratigraphically below context 2066). Dated 13th/14th century]
Sample 15/T (3 kg sieved to 300 microns with washover)

Moist, reddish grey, soft (working plastic and somewhat thixatropic), silty clay sand. Stones (2-20 mm) and traces of charcoal were present in the sample.

There was a moderate-sized residue of about 300 cm^3 of sand and gravel with a little bone, and a small washover of about 30 cm^3 of sand and fine charcoal. The only biological remains were some fruiting bodies of a fungus, *Rosellinia* cf. *mammiformis* (Pers.) Ces. & De Not., which grows on twigs but is of no interpretative value in isolation.

Context 2085 [backfill. Dated 14th/15th century]
Sample 22/T (2 kg sieved to 300 microns with washover)

Moist, black (but rubs dark brown), soft (working thixatropic and somewhat plastic), very humic, ?charcoal-rich silt. Fragments of large mammal bone, charred twigs, ?mortar/lime, ?ash, and ?burnt soil were present in the sample.

The small residue of about 25 cm^3 consisted of sand, gravel, an iron object (or perhaps an iron-rich concretion) and a little burnt and unburnt bone. The small washover of about 250 cm^3 was very distinctive, however, in being dominated by charcoal (to 20 mm) with quite well-preserved charred grains of bread wheat (*Triticum 'aestivo-compactum'*) and much fine 'silicified' ash. Amongst these were rachis and rachilla fragments of free-threshing wheat and many awns, as well as traces of chaff from barley (*Hordeum*) and rye (*Secale cereale* L). There were virtually no charred weed seeds (except perhaps the moderate numbers of small *Vicia*) and only a very few uncharred seeds, one of which, greater celandine (*Chelidonium majus* L.) is a species typically found at the foot of a wall. The mechanism whereby the abundant cereal chaff became 'silicified' is not certainly know, though it is discussed by Robinson and Straker (1990); perhaps this ash is most likely to represent material burnt in a bonfire.

Twenty-four fragments of bone were recovered from this sample, which included a single eel (*Anguilla anguilla* (L.) vertebra, and a number of unidentified bird fragments. A few of the bones had been burnt.

Context 2089 [backfill of slot cut 2086. Dated 12th century]
Sample 25/T (2 kg sieved to 300 microns with washover)

Just moist, light to mid olive-brown to mid red-brown, crumbly (working more or less plastic), slightly sandy, clay silt/silty clay. Stones (20-60 mm) and charcoal were present in the sample.

The residue of about 150 cm^3 was of gravel with some sand with a large washover of about 200 cm^3 of charcoal and more sand. Amongst the charcoal, there were two fragments (to 40 mm) of oak (*Quercus*) roundwood with very close annual rings indicating slow growth.

Context 2118 [backfill of interleaving layers within post hole 2121, removed as one context. Dated 12th to late 14th century]
Sample 28/T (2 kg sieved to 300 microns with washover)

Moist, mid olive-grey-brown, soft to crumbly (working slightly plastic and thixatropic, silty clay sand. Charcoal and ?ash were abundant, and fragments of large mammal bone (some of which were burnt) were present, in the sample.

There was a moderate-sized residue of about 225 cm^3 of burnt bone (to 40 mm) and sand with some gravel and cinders; very large washover of about 500 cm^3 was largely cinders (to 30 mm),with some coal and charcoal (both to 20 mm), the latter including some material of oak.

Of the 22 bone fragments recovered from a quick sort of the residue, only one fragment was unburnt. The rest were white in colour and calcined.

Context 2138 [levelling/floor or possible sub-floor. Dated No pottery spot date available]
Sample 30/T (3 kg sieved to 300 microns with washover)

Just moist, light to mid reddish grey-brown (with grey flecks and areas of 'rusty' red around root traces and cracks), stiff and brittle (working crumbly, then plastic when wet), sandy clay silt. Stones (2-20 mm), charcoal, and traces ('stains') of very decayed wood were present in the sample.

The moderate-sized residue of about 300cm^3 comprised gravel with some sand. There was a small washover of about 50 cm^3 of coal, charcoal, very small bones and sand with modern rootlets and a few uncharred seeds, and modest numbers of very decayed beetles and some mites. The seeds were not interpretatively significant; all were typical of urban occupation deposits with very poor preservation.

A small bone assemblage including the remains of small mammals and several small fish vertebrae was recovered.

Context 2149 [backfill of pit/post hole. No pottery spot date available]
Sample 31/T (2 kg sieved to 300 microns with washover and microfossil 'squash')

Just moist, mid grey-brown (locally somewhat reddish brown and light grey with patches of yellow-orange, ?very decayed organic material in 'veins'), crumbly (working more or less plastic and sticky when wet), sandy silty clay. Stones (2-20 mm) and charcoal were present in the sample.

The moderate-sized residue of about 200 cm^3 was mostly gravel with some sand. There was a rather large washover of about 120 cm^3 of sand and charcoal, amongst which were modest numbers of poorly preserved uncharred fig (*Ficus carica* L.) and blackberry (*Rubus fruticosus* agg.). The few other plant remains were not of much significance, but there was quite a lot of fine fish and other bone which, together with the fruit seeds suggests a component of extremely decayed faecal material.

A moderate-sized assemblage of bone was recovered from this sample. Many of the the fragments were very small and most were unidentifiable. Some fragments appeared to be damaged by acid etching but most were fairly well-preserved. Fish remains were identified, including eel (*Anguilla anguilla* (L.)), ?thornback ray (cf. *Raja clavata* L.) and smelt (*Osmerus eperlanus* (L.)). Juvenile bird vertebrae, possibly representing chicken, were noted, along with a number of bird phalanges. Turdidae, passerine and corvid fragments were also identified.

The microfossil 'squash' was mostly organic detritus with some inorganic material and a few fungal hyphae. Two (possibly three) eggs of intestinal parasitic nematodes were seen-one (possibly two) *Ascaris* (maw worm) egg and one *Trichuris* (whipworm) egg. The *Trichuris* egg had lost both polar plugs and appeared rather distorted (probably not measurable). The presence of these eggs confirms the presence of faecal material, but their low numbers indicate that this probably formed only a minor component of the deposit.

Context 4002 [backfill of large feature lined with limestone and clay. Dated 12th to 14th century]
Sample 20/T (3 kg sieved to 300 microns with washover)

Just moist, light to mid grey-brown (locally more brown and more grey), crumbly (working plastic when wet), slightly sandy silty clay with patches of ?lime. Stones (6-20 mm) and coal were present in the sample.

The small to moderate-sized residue of about 200 cm^3 was of sand, gravel (mainly very worn Magnesian limestone) and coal, with a little bone and a tooth. The moderately large washover of about 70 cm^3 consisted of sand and coal with modern woody roots and traces of uncharred seeds of toad-rush (*Juncus bufonius* L.) and elderberry (*Sambucus nigra* L.), as well as of charcoal (including oak, to 10 mm). The remains were of no interpretative significance.

11.4.2 Hand-collected shell

Two contexts yielded very small amounts of shell, all of which was oyster (*Ostrea edulis* L.). Context 2000 (a 'cleaning' layer) gave two large, well-preserved right valves and Context 2176 gave two fused, rather poorly preserved (very soft and pitted) valves (both ?left valves).

11.4.3 Hand-collected vertebrate remains

The entire assemblage (recovered mainly from deposits of medieval date) amounted to 1290 fragments (representing 66 contexts). Details of the range of species and number of fragments for hand-collected material from the deposits (31) dated by pottery (Table 2) to the medieval period can be found in Table 3. This table excludes the 68 fragments representing a part skeleton of a pig from Context 2149. Vertebrate material from the scanned deposits is included in the results below.

Preservation of the vertebrate remains was rather variable, although most fragments were recorded as 'good' or 'fair'. A small component that was rather battered in appearance was apparent within the material from many of the deposits, whilst a small number of the fragments exhibited rounded edges or were very eroded. In general, the assemblage was moderately fragmented although, material from several deposits showed extensive fresh breakage, as opposed to damage caused in antiquity. Little indication of dog gnawing of the bones was evident.

The major domestic species were identified, including the remains of cattle, caprovids and pigs. A preliminary examination of the range of skeletal elements for cattle and caprovids showed a predominance of meat-bearing bones indicating domestic or kitchen refuse. Some butchery waste, however, was indicated by the presence of cranial, maxilla and mandible fragments, isolated teeth, and distal limb elements. Pig remains included the part skeleton of a juvenile individual from Context 2149, whilst several other deposits (Contexts 2070, 2085, 2101 and 4009) also contained elements representing very young, possibly neonatal, individuals. Goat horncores (Contexts 2068, 2075 and 2088) and ?goat metapodials and phalanges (Contexts 2097, 2099 and 4010) were also identified. Birds were represented by fowl and goose, with a possible pheasant (cf. *Phasianus colchicus* L.) humerus noted from Context 2107. This deposit also produced 27 cat fragments, of which 24 were metapodials representing at least 6 individuals. Other medieval pit and post-pit fills also yielded cat bones. Some of the remains of individual cats included, or were exclusively represented by, metapodials (Contexts 2070, 2092, 2099, 2109, 2110 and 2146), whilst others (Contexts 2074, 2093 and 4009) appeared to be part skeletons, with the major limb bones and pelves present. Although no knife marks were observed on any of the cat bones, it seems likely that some of

these groups (e.g. the metapodials from Context 2107) represent the waste from the preparation of furs or skins.

Antler fragments representing red deer (*Cervus elaphus* L.), fallow deer (*Dama dama* L.) and roe deer (*Capreolus capreolus* (L.)) were recovered from Contexts 2087, 2107 and 2142, whilst a single calcaneum was identified as red deer from Context 2095. The absence of meat-bearing elements suggests that these fragments may be related to craft activities rather than representing food waste. Other wild species present included hare, *Lepus* sp., (Context 2074) and a tibia shaft fragment tentatively identified as rabbit (cf. *Oryctolagus cuniculus* (L.)) from Context 4010.

The deposits also produced small numbers of fish bones, most of which were Gadidae, those identified to species being cod (*Gadus morhua* L.).

The recorded and scanned assemblage included 101 measurable fragments and 10 mandibles with teeth *in situ* of use for providing biometrical and age-at-death data.

11.5 Discussion and statement of potential

Preservation of plant remains other than by charring was rare and the uncharred material usually not well-preserved. Except for charcoal, charred plant remains were limited to a few charred cereals except in the case of the abundant wheat grains in the sample from Context 2085, which were accompanied by quantities of charred and 'silicified' chaff an extremely unusual deposit (for other instances of silicified material, see Robinson and Straker 1990). The few invertebrate remains recovered from the samples were very poorly preserved and of no interpretative value.

The very few hand-collected shell remains (all oyster valves) were of no interpretative value.

The vertebrate remains recovered from these deposits show some potential for providing useful zooarchaeological and archaeological information for the reconstruction of aspects of human activity. Variability of angularity and colour was observed within material from many deposits, possibly implying the presence of some redeposited or residual bone in varying amounts. It also suggests that a number of sources are responsible for the accumulations of debris. Initial examinations show that the remains of cattle and caprovids mainly represent household refuse, with a small component of butchery waste also present. Some of the pig remains are probably derived from domestic waste, whilst the bones from the neonatal/juvenile individuals possibly provide evidence for the rearing of pigs in the vicinity.

The concentrations of cat metapodials seem to represent waste associated with the processing of animal skins, although no direct evidence from skinning marks was observed. Cat bones with skinning marks are fairly common from medieval sites (Johnstone *et al* 1997; Gidney 2000) and documentary evidence confirms the use of cat fur in the medieval period for trimmings and linings or as a cheap alternative to more expensive furs such as ermine (Veale 1966). Other craft activities, such as antler working, may have been undertaken but probably only on a small scale.

The potential of the deposits for preserving bone is highlighted by the recovery of a small fish assemblage from the processed subsamples. Processing of larger samples would probably

provide a useful and interpretable assemblage.

11.6 Recommendations

Since the samples examined were selected on the basis that they consisted of deposits likely to yield useful assemblages of plant and/or animal remains, the paucity of such assemblages suggests that further work on these classes of remains is not warranted. However, a proper analysis should be made of material from Context 2085, provided dating is secure and reasonably tightly defined, and of any associated deposits which may have similar concentrations of charred cereal remains.

Although this assemblage is fairly small, it is recommended that a basic archive, including biometrical data, should be produced of all well dated material. The remaining sediment samples from well dated contexts should be sieved to recover small bone (particularly fish bone) and this material included in the archive. This would allow for the data to be used in conjunction with information from other sites of medieval date in Ripon. Increasing the available data sets will provide a wider understanding of the activities being undertaken in the city during this period.

11.7 Retention and disposal

All of the current material should be retained for the present.

Archive

All material is currently stored in the Environmental Archaeology Unit, University of York, along with paper and electronic records pertaining to the work described here.

Acknowledgements

The authors are grateful to Rhona Finlayson and David Brinklow of York Archaeological Trust for providing the material and the archaeological information, and to English Heritage for allowing AH to contribute to this report.

Table 1. List of examined sediment samples from excavations at The Arcade, Ripon, North Yorkshire, with notes on their treatment.

Context	Sample	Notes
2070	9	2 kg sieved to 300 microns with washover and microfossil 'squash'
2078	15	3 kg sieved to 300 microns with washover
2085	22	2 kg sieved to 300 microns with washover
2089	25	2 kg sieved to 300 microns with washover
2118	28	2 kg sieved to 300 microns with washover
2138	30	3 kg sieved to 300 microns with washover
2149	31	2 kg sieved to 300 microns with washover and microfossil 'squash'
4002	20	3 kg sieved to 300 microns with washover

Table 2. List of contexts (with spot dates) from which the bone was recorded in detail.

Context	**Spot date**
2007	14th century
2032	13/14th century
2044	13th century
2047	13/14th century
2049	12/13th century
2050	12/13th century
2052	12-13/14th century
2056	10/11-14th century
2066	10-13/14th century
2068	13/14th century
2070	13/14th century
2078	13/14th century
2083	10/11-14th century
2085	14/15th century
2087	13/14th century
2088	10-12th century
2092	10-13th century
2093	11/12-14th century
2099	11th century
2100	14th century
2107	10-13th century
2109	12/13th century
2110	12/13/14th century
2111	13/14th century
2118	12-14th century
2132	12-14th century
2142	12-14th century
4002	12-14th century
4009	12th century
4010	12th century
4024	10th century; 13-14th century

Table 3. Vertebrate remains from deposits spot dated by pottery to the medieval period.

Species		**Number of fragments**
cf. *Oryctolagus cuniculus (L.)*	?rabbit	1
Canis f. domestic	dog	1
Felis f. domestic	cat	86
Equus f. domestic	horse	7
Sus f. domestic	pig	45
Cervid	deer	2
Cervus elaphus L.	red deer	1
Dama dama (L.)	fallow deer	1
Capreolus capreolus (L.)	roe deer	1
Bos f. domestic	cattle	60
Caprovid	sheep/goat	86
Anser sp.	goose	4
cf. *Phasianus colchicus* L.	?pheasant	1
Gallus f. domestic	chicken	5
Fish		13
Sub-total		*314*
Unidentified		511
Sub-total		*511*
Total		**825**

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