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1 Executive Summary

This report details the results of a programme of Archaeological Observation undertaken by Border Archaeology on behalf of Bristol Water intermittently during water mains renewal in Bristol city centre between January 2nd and January 22nd 2014.

Four carriageways in the centre of Bristol were impacted by the work, these being Queen Charlotte Street, Crow Lane, Coronation Place and Rackhay. Most of the trenching was opened above existing pipework to facilitate access onto the host main and this limited level of intrusion additionally reduced any potential for the recovery of archaeological deposits.

Although the engineering excavations largely confirmed that large areas of the archaeological record had been truncated by late 19th -to early 20th -century infrastructure works, pockets of archaeology were shown to survive.

Excavation (Trench 3) revealed seven well-preserved, though partial inhumations, all of which were associated with the former Crow Lane cemetery. The burial ground was acquired for the parish in 1548 to extend existing provision as afforded by the small churchyard attached to St Nicholas Church. The cemetery continued in use until its closure in 1854. This small burial group represented individuals at all life stages and suggests this was a mixed post-medieval (c. 1540-1900) cemetery used by all levels of the local community. The group consisted of two older adults, one male of unknown age, two juveniles (aged 9-11 and 2-4 years) and two adults of unknown age and sex. One of the adults (SK319) was particularly short for the post-medieval period; however, the other adult males were consistent with other British post-medieval skeletal assemblages.

The assemblage was examined by the Company's osteology specialist and assessment revealed a number of interesting disease processes, with all of the adults displaying pathologies. Analysis revealed evidence for childhood rickets and scurvy. Evidence of childhood malnutrition or illness was also found. Activity-related trauma was noted in four of five adult skeletons. The skeletal material clearly shows that some members of this population were involved in daily physical work and work-related accidents may have been the cause of non-specific infection caused by soft tissue trauma. Assessment revealed a mixed picture of dental health.

All of the skeletons were overlain by a cemetery soil (304), which contained pottery exhibiting a wide date range extending from the medieval period through to the 19th century, confirming that this soil had been disturbed on

numerous occasions. A poorly-preserved coin was also recovered from the cemetery soil horizon (304). A small amount of coffin furniture was recovered but only a single poorly preserved coffin survived. One adult skeleton (309) had a single shroud pin situated at the front of the skull above the brow ridge; part of a copper pin with fragments of textile attached was also found. This individual exhibited evidence of osteoarthritis in the wrist, along with an active infection in this area and extensive signs of degenerative joint disease, particularly in the upper body and vertebrae. A combination of advancing age and poor dental hygiene had probably contributed to almost complete tooth loss.

A juvenile skeleton (312) encountered at 1.32m at the base of the trenching showed a number of lesions indicative of infantile scurvy and also a subsequent respiratory or lung infection. This juvenile also had particularly poor dental health, with three carious teeth, dental crowding and one tooth already lost during life.

The pathological conditions in the disarticulated material were very similar to those present in the articulated remains, with evidence of degenerative joint disease commonly seen, along with non-specific infections and other pathological conditions, such as syphilis, that are quite typical of the post-medieval period in England, along with an unusual case of osteosarcoma (a form of bone cancer).

A deposit (328) potentially relating to the demolition of the medieval chapel of St John the Evangelist, which previously occupied the site of the cemetery until its dissolution in 1548, was found to underlie the cemetery soils; however, the pottery recovered from it consisted largely of slip-wares from either Bristol or Staffordshire, probably of 18th -century date, reflecting disturbance by grave-digging. The base of this deposit clearly lay below the maximum trench depth of 1.35m.

Trenching in Rackhay to the west of Queen Charlotte Street on the site of the second extension to the former St Nicholas Churchyard (closed for burials in 1854) failed to reveal further evidence of the disturbed human remains previously encountered during gas-main excavations in 1999

Trench 10 located in the vicinity of the medieval site of Baldwin's Cross Mill revealed no structural evidence or deposits relating to the former mill complex.

2 Introduction

This Report details the results of a programme of Archaeological Observation carried out by Border Archaeology on behalf of Bristol Water during the course of engineering ground works associated with mains rehabilitation in Queen Charlotte Street Bristol (centred upon NGR: ST58864 72797) between January 2nd and January 22nd 2014.

The route comprised a 100m section running N-S along Queen Charlotte Street between NGR: ST 58856 72780 and NGR: ST ST58864 72874 with E-W branch connections along Rackhay (30m), Coronation Place (30m) and Crow Lane (25m). Other short c. 25m sections of engineering works converged on the northern section of Bristol Bridge from Baldwin Street (NGR: ST 58973 72924) and Bridge Street (NGR: ST 58984 72943) (*fig. 1*).

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 occurred during the course of the ground works without the implementation of a programme of archaeological recording. The work was carried out in compliance with Bristol Water's *Code of Conduct*.

The work affected Queen Charlotte Street and adjoining side streets, namely, Rackhay, Coronation Place and Crow Lane. Ten trenches were opened to access and slip-line the existing main by inserting a 1225 higher performance polyethylene (HPPE) carrier pipe. Trenches varied in size from 0.6m to 36m in length and 0.75 to 1.6m in depth. A 360°excavator and toothless bucket were used for all mechanical excavation, with hand-excavation undertaken as required.

3 Brief Historical & Archaeological Background

The Crow Lane burial ground (Record No. 43M) to the E of Queen Charlotte St served the parish of St Nicholas as the first of two additional cemetery areas, the original Church Yard (Record No. 1208M) comprising a small triangular area attached to the S side of St Nicholas Church (Record No. 147M). The Crow Lane cemetery occupied the site of the Chapel of St John the Evangelist, which appears to have been acquired by the parish in 1548 following the Chapel's dissolution and continued in use until its closure in 1854. It became a children's play area but was closed in 1902 and subsequently redeveloped.



Fig. 1: Plan (supplied by Bristol Water and amended by Border Archaeology) showing trench locations and location of burials (inset)

Crow Lane occupies much of the cemetery area but the burial ground also extends beneath the Telephone House site. The widening of Crow Lane took in the northern portion of the burial ground, the road improvements being carried out in two phases. No record exists of Home Office licences being granted for the removal of human remains during the course of these works. Articulated human remains were, however, found in Crow Lane during excavations in the 1980s. A Watching Brief of telephone trenching carried out in Crow Lane in 1985 revealed part of the former burial ground, including parts of burial vaults and coffins (Bryant 1985).

This second extension burial ground was located in Rackhay on the W side of Queen Charlotte Street. The cemetery appears to have been established in the late 17th century and is shown on historic mapping (Roque, 1742) as being D-shaped, measuring 50 ft. (15.25m) N-S × 35 ft. (10.6m) (with later extensions to the W, as depicted on Plumley & Ashmead's map of 1828). Clark (1850, 66) noted that the surface of the burial ground sat several feet above the ambient ground level and that it extended over an area of some 415 square yards. He also noted that the cemetery had reached capacity, an observation confirmed in 1854, when it was closed for burials. St Nicholas's School was subsequently built on the site. Excavation for a gas main through the former cemetery area to a depth of approximately 1m in 1999 encountered disturbed human remains (Record number 958M). These remains included a cranium exhibiting a large rectangular puncture wound, suggesting death by violence.

The northerly extent of the pipeline passed close to the site of Baldwin's Cross Mill (Record No. 1019M), a medieval structure located at the junction of Queen Charlotte Street and Baldwin Street that evidently survived into the 18th century. Much of the mill complex had gone by the mid-18th century, although parts of the mill-race survived in the cellar of the replacement building and these surviving elements were observed and noted by both Barrett and Seyer towards the end of the century.

4 Geology

The entire study area is classified as unsurveyed in the Soil Survey of England and Wales (SSEW, 1983); however, a watching brief undertaken at the Theatre Royal revealed Pleistocene alluvial clays and gravels overlying Mercia mudstone of the Triassic period. Also revealed were soft yellowish-brown clays overlying organic deposits which sealed stiff dark grey clays (Longman 2009).

5 Archaeological methodology

The archaeological programme of work detailed herein was carried out in accordance with recognised sources of professional & ethical guidance, including *Standard and Guidance for an archaeological watching brief* (IfA 2008), *Standard and Guidance for archaeological excavation* (IfA 2008) and *Management of Research Projects in the Historic Environment (MoRPHE)* (EH 2006). Reference is made where relevant to English Heritage technical guidance via its online Historic Environment Local Management (HELM) resource. Border Archaeology adheres to the IfA *Code of conduct* (2013) and *Code of approved practice for the regulation of contractual arrangements in field archaeology* (2008) and work was carried out in compliance with Bristol Water's *Code of Conduct*.

All ground works were carried out under archaeological supervision by machine and, wherever possible, using a toothless bucket.

5.1 Human Remains

Human bone assemblages were treated at all times with due reverence and in accordance with established professional and ethical guidance:

The company is cognisant of the deliberations by the Ministry of Justice (2008; 2011) and also the requirements of Section 25 of the Burial Act 1857 and thus any arrangements regarding the discovery of human remains were at the discretion of HM Coroner for the Area of Avon, to whom the recent findings were reported.

All work concerning the treatment of human remains was subject to the following methodology.

Each skeleton was first completely uncovered (or as much as possible within the confines of the excavation) by tracing the bones down from the point which was first excavated in the case of articulated remains. Disarticulated remains were recovered by working outwards from the first the initial area exposed. Care was taken to collect any loose teeth or small hand and foot bones from the spoil.

Key location points for each skeleton were logged using GPS. Photographs of the exposed remains were taken and plans/sections drawn. A pro-forma skeleton sheet was completed for each articulated skeleton. Bones were lifted with due care and separate areas of the skeleton bagged individually and labelled; bags were pierced to

allow a flow of air. All remains, whether articulated or disarticulated, were subject to assessment and the full assessment report is included as an appendix to this document.

5.2 Recording

Full written, drawn and photographic records were made in accordance with Border Archaeology's *Archaeological Field Recording Manual* (BA, 2014). The written record comprised completed pro-forma context sheets & skeleton recording sheets. Hand-drawn plans & sections were produced on gridded, archive-stable polyester film at scales of 1:50 or 1:20, as appropriate. All drawings were numbered and entered in a drawing register cross-referenced to written site records.

The photographic record was made using a high-resolution (12 MPX) digital camera and comprised photographs of all excavated contexts and archaeological features and structures with appropriate scales. All photographs have been indexed and cross-referenced to the written record. Details of subject and direction of view were recorded in a photographic register, indexed by frame number.

6 Results

6.1 Trench 1

The trench measured 5.90m (E-W) × 3m (NE-SW) with a maximum depth of 1.6m.

LOCATION	CONTEXT	DESCRIPTION
NGR: ST 58861 72780 Queen Charlotte Street, extending E-W across the road.	(100)	Indurated, grey tarmac; extends trench-wide to a maximum thickness of 0.04m. Overlies (101)
	<i>INTERPRETATION:</i>	<i>Tarmac surface</i>
	(101)	Cemented, light grey concrete; encountered 0.04m below ground level; extends trench-wide, maximum thickness 0.26m. Underlies (100), overlies (102)
	<i>INTERPRETATION:</i>	<i>Concrete bedding layer for (100)</i>
	(102)	Friable, mid red grey sandy silt; very frequent gravel; (encountered 0.3m below ground level); extends trench-wide to a maximum thickness of 0.76m to the limit of excavation. Underlies (101)
	<i>INTERPRETATION:</i>	<i>Gravel hard-core</i>
(103)	Friable, dark brown silt; sparse animal bone, abundant crushed brick; truncated to E & W by	

		modern services; extends 0.81m (E-W) × 0.44m (N-S) × of 0.69m (maximum thickness) to limit of excavation; encountered 0.3m below ground level. Underlies (101)
	<i>INTERPRETATION:</i>	<i>Levelling layer</i>
<ul style="list-style-type: none"> • No significant archaeology 		



Plate 1: View to the E of Trench 1

6.2 Trench 2

Trench 2 extended 2.5m (E-W) × 0.5m (N-S) × 0.75m (maximum depth).

LOCATION	CONTEXT	DESCRIPTION
NGR: ST 58828 72779 W end of Rackhay; trench overlying existing water mains.	(200)	Indurated, grey tarmac; extended trench-wide to a maximum thickness of 0.05m. Overlies (201)
	<i>INTERPRETATION:</i>	<i>Tarmac surface</i>
	(201)	Cemented, grey concrete; encountered 0.05m below ground level; extends trench-wide to a maximum thickness of 0.10m. Underlies (200), overlies (202)
	<i>INTERPRETATION:</i>	<i>Cement bedding layer for (200)</i>
	(202)	Compact, mid grey red sand; very frequent gravel; encountered 0.15m below ground level; extends trench-wide to a maximum thickness of 0.6m to limit of excavation. Underlies (201)
<i>INTERPRETATION:</i>	<i>Gravel hard-core</i>	
<ul style="list-style-type: none"> No significant archaeology 		

6.3 Trench 3

The trench extended 36m (E-W) × 0.7m (N-S) × 1.35m (maximum depth).

LOCATION	CONTEXT	DESCRIPTION
NGR: ST 58887 72799 – ST 58861 72788 Extended E-W along Crow Lane to junction with Queen Charlotte Street, where it realigned N-S	(300)	Indurated, grey tarmac; extends trench-wide to 0.10m (maximum thickness). Overlies (301)
	<i>INTERPRETATION:</i>	<i>Tarmac surface</i>
	(301)	Cemented, grey concrete; encountered 0.1m below ground level; extended trench-wide to 0.13m (average thickness). Underlies (300), overlies (302).
	<i>INTERPRETATION:</i>	<i>Concrete bedding layer for (300)</i>
	(302)	Compact, mid grey red sand; abundant gravel; encountered 0.23m below ground level; extends trench-wide to 0.21m (average thickness). Underlies (301), overlies (303)
	<i>INTERPRETATION:</i>	<i>Gravel hard-core</i>
	(303)	Friable, light brown grey clayey silt; frequent crushed brick & sub-angular stones; encountered 0.44m below ground level; extends 1m (NE-SW) × 0.7m (NW-SE) × 0.46m (maximum thickness). Underlies (302), overlies (304)
<i>INTERPRETATION:</i>	<i>Made-ground deposit</i>	
(304)	Firm, dark reddish clayey silt; moderate sub-angular stones, occasional charcoal flecks, moderate disarticulated human remains; single	

		poorly-preserved coin (SF 003) encountered 0.90m below ground level; extends 2.6m (NE-SW) × 0.76m (NW-SE) × 0.23m (maximum thickness). Underlies (303), overlies (308)
	<i>INTERPRETATION:</i>	<i>Cemetery soil horizon</i>
(305)		Inhumation; supine; aligned E-W; only partial recovery possible; right humerus truncated by modern service; skeleton extends into baulk to E; encountered 0.91m below ground level. Associated with (306), overlies [307], underlies (308).
	<i>INTERPRETATION:</i>	<i>Adult inhumation</i>
(306)		Coffin; wood; preservation very poor; pitch-lined; coffin nails and a coffin handle recovered. Overlies [307], associated with (305)
	<i>INTERPRETATION:</i>	<i>Wooden coffin</i>
[307]		Cut; form in plan unknown; aligned E-W. Cuts (310), filled by (306)
	<i>INTERPRETATION:</i>	<i>Grave cut - not visible</i>
(308)		Firm, mid grey brown clayey silt; moderate sub-angular stones; very diffuse horizon with (304). Overlies (307), underlies (304)
	<i>INTERPRETATION:</i>	<i>Grave backfill</i>
(309)		Inhumation; supine; aligned E-W; encountered 0.93m below ground level; continued into baulk to the E. Overlies [311], underlies (310)
	<i>INTERPRETATION:</i>	<i>Adult inhumation</i>
(310)		Firm, mid grey brown clayey silt; moderate sub-angular stones; associated with shroud pin (SF 001) and button (SF 002); very diffuse horizon with cemetery soil horizon. Cut by [307], overlies (309).
	<i>INTERPRETATION:</i>	<i>Grave backfill</i>
[311]		Cut; form in plan unknown; aligned E-W.. Cuts (313), filled by (309).
	<i>INTERPRETATION:</i>	<i>Grave cut – not visible</i>
(312)		Inhumation; supine; aligned E-W; continued into baulk to E; encountered 1.32m below ground level. Overlies [314], underlies (313).
	<i>INTERPRETATION:</i>	<i>Juvenile inhumation</i>
(313)		Firm, mid grey brown clayey silt; moderate sub-angular stones; very diffuse horizon with (304). Cut by [311], overlies (312).
	<i>INTERPRETATION:</i>	<i>Grave backfill</i>
[314]		Cut; form in plan unknown; aligned E-W. Filled by (312), cuts (328)
	<i>INTERPRETATION:</i>	<i>Grave cut – not visible</i>
(315)		Masonry; aligned SW-NE; rough-hewn stone construction; cement bonding;; extends 2.2m (SW-NE) × 0.42m (NW-SE).Underlies (301).
	<i>INTERPRETATION:</i>	<i>Wall - no scaled drawing possible as located</i>

		<i>beneath unstable paving blocks.</i>
(316)		Inhumation; supine; aligned E-W; continues into baulk to W; encountered 0.79m below ground level. Overlies [317], underlies (318)
	INTERPRETATION:	<i>Adult inhumation</i>
[317]		Cut; form in plan unknown; aligned E-W. Cuts [320], filled by (316)
	INTERPRETATION:	<i>Grave cut – not visible</i>
(318)		Firm, mid grey brown clayey silt; moderate sub-angular stones; very diffuse horizon with (304). Underlies (304), overlies (316)
	INTERPRETATION:	<i>Grave fill</i>
(319)		Inhumation; supine; aligned E-W; continues into baulk to W; encountered 0.82m below ground level. Fill of [321], underlies (320)
	INTERPRETATION:	<i>Inhumation</i>
(320)		Firm, mid grey brown clayey silt; moderate sub-angular stones; very diffuse horizon with (304). Cut by [317], overlies (319)
	INTERPRETATION:	<i>Grave fill</i>
[321]		Cut; form in plan unknown; aligned E-W. Cuts (323), filled by (319)
	INTERPRETATION:	<i>Grave cut – not visible</i>
(322)		Inhumation; supine; aligned E-W; continues into baulk to W; encountered 0.99m below ground level. Fills [324], underlies (323)
	INTERPRETATION:	<i>Inhumation</i>
(323)		Firm, mid grey brown clayey silt; moderate sub-angular stones; very diffuse horizon with (304). Cut by [321], overlies (322)
	INTERPRETATION:	<i>Grave fill</i>
[324]		Cut; form in plan unknown; aligned E-W. Cuts [328], filled by (322)
	INTERPRETATION:	<i>Grave cut – not visible</i>
(325)		Inhumation; attitude unknown; alignment unknown. Overlies [326], underlies (327)
	INTERPRETATION:	<i>Inhumation – possible infant burial heavily disturbed and truncated by service trench excavation</i>
[326]		Cut; form in plan unknown; aligned E-W. Cuts [328], filled by (325)
	INTERPRETATION:	<i>Grave cut – not visible</i>
(327)		Firm, mid grey brown clayey silt; moderate small sub-angular stones; very diffuse horizon with (304). Overlies (325), underlies (304)
	INTERPRETATION:	<i>Grave backfill</i>
(328)		Firm, light red brown sandy clay; occasional chalk flecks, moderate sub-angular stones, occasional oyster shell; encountered 0.72m below ground level; extended 1.39m (E-W) × 0.76m (N-S). Cut by [314], [326] and [324]

	<i>INTERPRETATION:</i>	<i>Possible demolition layer relating to St. John's Chapel</i>
(329)		Compact, mid red brown gravel; encountered 0.15m below ground level. Underlies (300), overlies (301)
	<i>INTERPRETATION:</i>	<i>Gravel hard-core</i>
<ul style="list-style-type: none"> • Seven partial inhumations were recovered from the E end of the trench together with a large quantity of disarticulated human remains/charnel • A poorly-preserved coin was recovered from the cemetery soil horizon (304) • A SW-NE aligned wall was excavated at the W end of Crow Lane and appears to relate to a former property along the E extent of Back Street 		



Plate 2: View to the E of wall (315)



Plate 3: View to the S of skeleton (305)



Plate 4: View to the N of skeleton (305)



Plate 5: View to the W of skeleton (309)



Plate 6: View to the W of skeleton (312)



Plate 7: View to the W of skeleton (316) and charnel in Trench 3



Plate 8: View to the S of skeleton (319)



Plate 9: View to the W of skeleton (322)



Plate 10: View to the W of skeleton (325)

6.4 Trench 4

The trench measured 2m (N-W) × 0.6m (E-W) × 0.77m (maximum depth).

LOCATON	CONTEXT	DESCRIPTION
NGR: ST 58847 72810 Coronation Place - located over existing services.	(400)	Masonry; cemented cobbles; extends trench-wide to 0.12m (maximum thickness). Overlies (401)
	<i>INTERPRETATION:</i>	<i>Cobbled surface</i>
	(401)	Friable, light yellow brown sandy silt; abundant gravel; encountered 0.12m below ground level; extended trench-wide to 0.65m (maximum thickness) to limit of excavation. Underlies (400)
	<i>INTERPRETATION:</i>	<i>Modern made-ground deposit</i>
<ul style="list-style-type: none"> • No significant archaeology 		



Plate 11: View to the N of Trench 4

6.5 Trench 5

The trench measured 3m (N-S) × 2m (E-W) with a maximum depth of 0.81m

LOCATION	CONTEXT	DESCRIPTION
NGR: ST 58829 72808 Located on Queen Charlotte Street, N of junction with Coronation Place	(500)	Indurated, grey tarmac; extends trench-wide to 0.10m (maximum thickness). Overlies (501)
	<i>INTERPRETATION:</i>	<i>Tarmac surface</i>
	(501)	Cemented, light grey concrete; encountered 0.1m below ground level; extends trench-wide to 0.12m (maximum thickness); encountered 0.10m below ground level. Underlies (500), overlies (502)
	<i>INTERPRETATION:</i>	<i>Concrete bedding layer for (500)</i>
	(502)	Friable, mid yellow brown sandy silt; moderate gravels; encountered 0.22m below ground level; extended trench-wide to 0.59m (average thickness) to limit of excavation. Underlies (501)
	<i>INTERPRETATION:</i>	<i>Modern made-ground deposit</i>
<ul style="list-style-type: none"> • No significant archaeology 		



Plate 12: View to the N of Trench 5

6.6 Trench 6

The trench measured 1.5m (E-W) × 0.80m (N-S) × 0.90m (maximum depth).

LOCATION	CONTEXT	DESCRIPTION
NGR: ST 58829 72808 Coronation Place – W end	(600)	Masonry; cemented cobbles; extended trench-wide to 0.17m (maximum thickness). Overlies (601)
	<i>INTERPRETATION:</i>	<i>Cobbled surface</i>
	(601)	Indurated, grey cement; encountered 0.17m below ground level; extended trench-wide to 0.11m (maximum thickness). Underlies (600), overlies (602)
	<i>INTERPRETATION:</i>	<i>Cement bedding layer for (600)</i>
	(602)	Friable, light yellow brown sand; very frequent gravels; encountered 0.28m below ground level; extended trench-wide to 0.60m (maximum thickness) to limit of excavation. Underlies (601)
<ul style="list-style-type: none"> • No significant archaeology 		



Plate 13: View to the N of Trench 6

6.7 Trench 7

The trench measured 2.5m (N-S) × 1.4m (E-W) × 1m (maximum depth).

LOCATION	CONTEXT	DESCRIPTION
NGR: ST 58859 72819 Queen Charlotte Street - S of car-park entrance	(700)	Cemented, grey paving slabs; trench-wide to 0.05m (maximum thickness). Overlies (701)
	<i>INTERPRETATION:</i>	<i>Paving slab surface</i>
	(701)	Friable, light yellow sand; encountered 0.05m below ground level; trench-wide to 0.07m (maximum thickness). Underlies (700), overlies (702).
	<i>INTERPRETATION:</i>	<i>Sand bedding layer for (700)</i>
	(702)	Indurated, grey concrete; encountered 0.12m below ground level; trench-wide to 0.10m (maximum thickness). Underlies (701), overlies (702)
	<i>INTERPRETATION:</i>	<i>Concrete bedding layer for (701)</i>
	(703)	Friable, dark grey brown silt; moderate gravels; encountered 0.22m below ground level; trench-wide to 0.72m (maximum thickness) to limit of excavation. Underlies (702)
	<i>INTERPRETATION:</i>	<i>Made ground deposit</i>
<ul style="list-style-type: none"> • No significant archaeology 		



Plate 14: View to the S of Trench 7

6.8 Trench 8

The trench measured 0.7m (N-S) × 1.6m (E-W) × 0.84m (maximum depth).

LOCATION	CONTEXT	DESCRIPTION
NGR: 58859 72868 Queen Charlotte Street – N end, 2m S of Trench 10	(800)	Cemented, grey paving slabs; extended trench wide to 0.06m (maximum thickness). Overlies (801)
	<i>INTERPRETATION:</i>	<i>Concrete paving slabs</i>
	(801)	Friable, light yellow brown sand; encountered 0.06m below ground level; extended trench-wide to 0.08m (maximum thickness). Underlies (800), overlies (802)
	<i>INTERPRETATION:</i>	<i>Sand bedding layer for (800)</i>
	(802)	Friable, mid grey clayey silt; moderate sub-angular stones; encountered 0.14m below ground level; trench-wide to 0.70m (maximum thickness). Underlies (801)
	<i>INTERPRETATION:</i>	<i>Modern made-ground deposit</i>
<ul style="list-style-type: none"> • No significant archaeology 		



Plate 15: View to the W of Trench 8

6.9 Trench 9

The trench measured 1.8m (E-W) × 1.3m (N-S) × 0.82 (maximum depth).

LOCATION	CONTEXT	DESCRIPTION
NGR: ST 58862 72849 Queen Charlotte Street, N of the car park entrance	(900)	Cemented, grey paving slabs; trench-wide to 0.06m (maximum thickness). Overlies (901)
	<i>INTERPRETATION:</i>	<i>Paved surface</i>
	(901)	Friable; light yellow brown sand; encountered 0.06m below ground level; trench-wide to 0.08m (maximum thickness). Underlies (900), overlies (902)
	<i>INTERPRETATION:</i>	<i>Sand bedding layer for (900)</i>
	(902)	Friable, mid grey brown clayey silt; moderate sub-angular stones; encountered 0.14m below ground level; trench-wide to 0.68m (maximum thickness) to the limit of excavation. Underlies (901)
<i>INTERPRETATION:</i>	<i>Made-ground deposit</i>	
<ul style="list-style-type: none"> • No significant archaeology 		



Plate 16: View to the S of Trench 9

6.10 Trench 10

The trench measured 2.5m (NW-SE) × 2.5m (SW-NE) × 0.95m (maximum depth)

LOCATION	CONTEXT	DESCRIPTION
NGR: ST 58857 72881 Queen Charlotte Street - junction with Baldwin Street, 2m N of Trench 8	(1000)	Indurated, grey tarmac; trench-wide to 0.15m (maximum thickness). Overlies (1001)
	<i>INTERPRETATION:</i>	<i>Tarmac surface</i>
	(1001)	Indurated, light grey cement; encountered 0.15m below ground level; trench-wide to 0.35m (maximum thickness). Underlies (1000), overlies (1002)
	<i>INTERPRETATION:</i>	<i>Cement bedding layer for (1000)</i>
	(1002)	Friable, mid orangey brown sand; very frequent gravels; encountered 0.50m below ground level; trench-wide to 0.45m (maximum thickness) to limit of excavation. Underlies (1001)
	<i>INTERPRETATION:</i>	<i>Made-ground deposit</i>

- No significant archaeology



Plate 17: View to the NW of Trench 10

7 Discussion of results

The engineering ground works affected Queen Charlotte Street, Rackhay, Coronation Place and Crow Lane, the latter being the only area to reveal surviving archaeology.

Each trench revealed a sequence of general disturbance arising from late 19th -to early 20th -century infrastructure works and subsequent service installation and carriageway maintenance. Most of the trenching was opened above existing pipework and was sufficient to facilitate access onto the host main; this limited level of intrusion thus further reduced any potential for the recovery of archaeological deposits.

The burial remains revealed in Trench 3 in Crow Lane represent the only significant archaeological features and/or deposits identified during the course of the ground works; the remainder of the trenches reflected modern disturbance.

Two trenches were opened in Rackay, these being located within the historic boundary of the second extension to St Nicholas' Churchyard, which served the parish until 1854 and which previously revealed evidence of human remains some 1.0m below ground level during gas service trenching excavations in 1999. Trench 2 was opened at the W end of Rackhay, adjacent to the rear entrance of the Theatre Royal. The trench attained a maximum depth of 0.75m and revealed only modern made-ground deposits. However, in view of limited depth attained, the possibility of archaeological deposits surviving beneath the trench base cannot be ruled out.

Trench 1 at the W extent of Rackhay extended E-W across Queen Charlotte Street, reaching a maximum depth of 1.6m. Although much of the trenching was off the line of the existing main, a high level of disturbance was encountered due to the presence of modern services running across it on varying alignments and at differing depths. The levelling layer (103) identified in Trench 1 potentially related to post-medieval activity but it had been truncated on either side by modern service trenches and may thus have been heavily disturbed or re-deposited during infrastructure activity.

At 36m, Trench 3 was the longest of the trenches. The excavation ran E-W along Crow Lane turning S into Queen Charlotte Street and attained a depth of 1.35m. At the W edge of the trench on Crow Lane, as it approached the junction with Queen Charlotte Street, a SW-NE aligned wall (315) was revealed in the southern section of the trench. Constructed of rough-hewn masonry with cement bonding, the wall extended 2.2m (SW-NE) × 0.42m

(NW-SE) and appears to have been a foundation structure relating to a property formerly situated at the eastern extent of Back Street (modern Queen Charlotte Street), as shown on Ashmead's map of 1828. It is possible the wall was associated with a jettied gable-fronted three-storey post-medieval dwelling (Record No. 327M) located on the E side of Back Street, on the N corner of Crow Lane.

At the E end of Trench 3, on Crow Lane, a little to the E of the entrance to Waverley House, a very well-preserved skeletal assemblage was recovered from previously undisturbed burial deposits. Seven articulated skeletons were revealed, all of which were incomplete. The burials were associated with the former Crow Lane cemetery, the first extension to the existing churchyard attached to St Nicholas Church, which occupied the site of the medieval chapel of St John the Evangelist. The site was acquired for the parish following the chapel's dissolution in 1548; the cemetery was closed for interment in 1854 and the area subsequently developed.

This small skeletal assemblage representing individuals at all life stages suggests a mixed post-medieval cemetery used by the all levels of the local community. The group consisted of two older adults, one male of unknown age, two juveniles who were aged 9-11 and 2-4 years and two adults of unknown age and sex. In terms of stature, one of the adults (SK319) was particularly short for the post-medieval period; however, the stature of the other adult males was consistent with other British post-medieval skeletal assemblages.

The assemblage revealed a number of interesting disease processes, with all of the adults displaying pathologies. Analysis revealed evidence for childhood rickets and scurvy. Childhood stress in the form of hypoplastic lines representing times of childhood malnutrition or illness was also found. Activity-related trauma was noted in four out of five adult skeletons. The skeletal material clearly shows that some members of this population were involved in daily physical work and work-related accidents may have been the cause of non-specific infection caused by soft-tissue trauma. Assessment revealed a mixed picture of dental health.

The burial deposits extended 2.6m (E-W) × 0.76 (N-S) to a maximum trench depth of 1.35m. To the E and W of the trench, the cemetery soil horizon (304) was truncated by modern service trench cuts. The excavation did not encounter natural geology at any point and it is thus possible that further burial deposits may remain *in-situ* beneath the level of engineering impact.

All of the skeletons were overlain by a cemetery soil (304), which contained pottery exhibiting a wide date range extending from the medieval period through to the 19th century, confirming that this soil horizon had been

subject to repeated disturbance. A heavily corroded coin was also recovered from the cemetery soil horizon (304) (*Plate 18*). The extremely diffuse horizon between (304) and the grave backfill deposits (308, 310, 313, 327, 318, 320 & 323) obscured all evidence of grave cuts. However, a cut was assigned to each burial, whilst all disarticulated human bone was assigned to (304), as it was not possible to distinguish whether any of this material related specifically to a grave backfill deposit.



Plate 18: Heavily corroded coin recovered from cemetery soil horizon (304)

Skeletons (305), (309) and (312) were overlying suggesting that they had either been placed within a single burial shaft or that the original shaft had been respected on each occasion when new graves were cut. The same is also true for skeletons (316), (319) and (322). Only skeleton (325), a heavily disturbed juvenile inhumation, did not directly over- or underlie another burial. All burials were aligned E-W but only partial recovery was possible due to engineering constraints, the maximum trench width being 0.76m (E-W).

A moderate quantity of coffin furniture was recovered from the cemetery soil (304) but only a single poorly preserved coffin (306) survived. This contained skeleton (305), the skull and right humerus of which had been truncated to the S by a service trench. The skeleton exhibited evidence of Degenerative Joint Disease (DJD) affecting the temporo-mandibular joint, shoulder, wrist, ribs and the vertebrae. Four intervertebral disc lesions known as 'Schmorl's Nodes' were noted in this individual's spine; these are considered to be the bony

manifestation of a slipped disc. This individual had excellent dentition, with little wear, no caries and very small amounts of plaque.

Underlying (305) was (309), an adult skeleton with a single shroud pin situated at the front of the skull above the brow ridge (*Plate 19*); part of a copper pin with fragments of textile attached to it was also recovered (*Plate 20*). This individual exhibited evidence of osteoarthritis in the wrist, along with an active infection in this area. Extensive signs of DJD were present, particularly in the upper body and vertebrae. Very defined muscle attachments were noted along with a probable lung infection due to the presence of infective lesions on the ribs and a well-healed fractured rib. Some non-specific infection was also present on the left femur. This individual was of a similar age to (305); however, a combination of advancing age and poor dental hygiene had probably contributed to almost complete tooth-loss, except for two mandibular first premolars.



Plate 19: Shroud pin associated with skeleton (309)

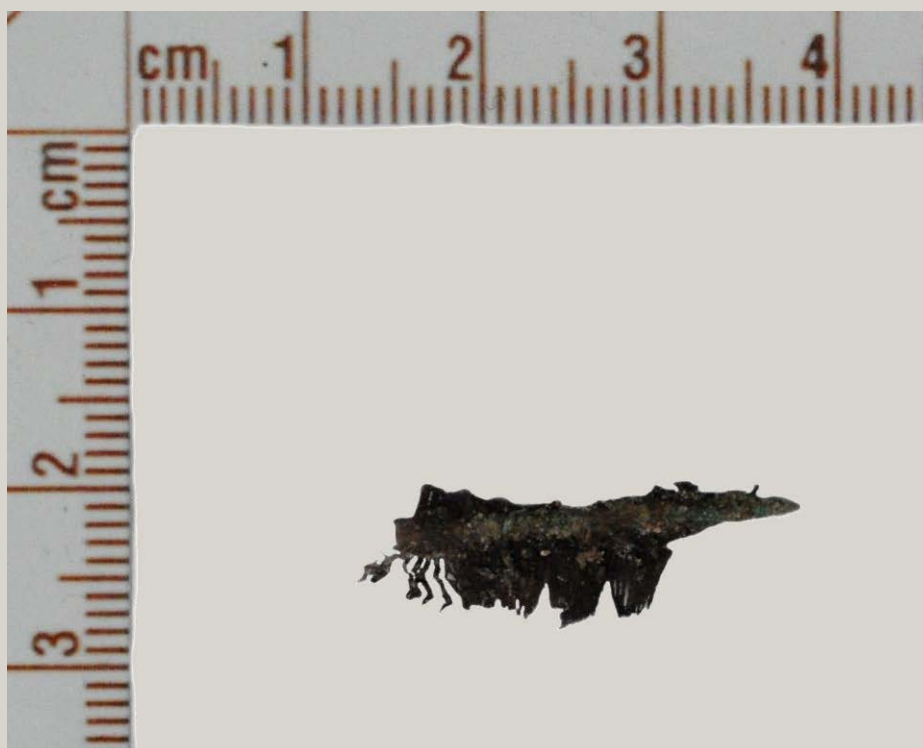


Plate 20: Part of a copper pin with textile fragments attached

Underlying (309) was a juvenile skeleton (312), encountered at 1.32m. This skeleton was recovered at the limit of excavation and showed a number of lesions indicative of infantile scurvy and also a subsequent respiratory or lung infection. This juvenile also had particularly unhealthy teeth, with three carious teeth, dental crowding and one tooth already lost during life.

In the other potential grave shaft, the upper skeleton was (316) overlying skeleton (319) with skeleton (322) beneath. In each case, only partial recovery of the lower limbs was possible, as all three inhumations extended into the baulk to the W. It was not possible to determine whether these were coffin or shroud burials.

The pathological conditions in the disarticulated material were very similar to those present in the articulated material; DJD was commonly seen in the material, along with non-specific infections and other pathological conditions, such as syphilis, that are quite typical of the post-medieval period in England, along with a unusual case of osteosarcoma.

Underlying cemetery soil horizon (304) was (328), a firm, light red brown sandy clay containing moderate sub-angular stones and occasional charcoal flecks and oyster shell. Potentially, this deposit related to the demolition of the former chapel of St John the Evangelist; however, the pottery recovered from it consisted largely of slip-wares from either Bristol or Staffordshire, probably of 18th-century date, reflecting some degree of disturbance. Trench excavation ceased at the required engineering depth of 1.35m; however, the base of deposit (328) clearly lay below this level.

Trench 10 located in the vicinity of the medieval site of Baldwin's Cross Mill (Record No. 1019M) revealed no structural evidence or deposits relating to the former mill complex.

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9 Appendices

9.1 Appendix 1: Human Bone Assessment

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9.1.1 Aims and Objectives

The aim of the skeletal analysis was to establish the age, sex and stature of the skeletal material recovered from Queen Charlotte Street and also to determine whether any evidence for pathological conditions, such as disease or trauma, was present. Disarticulated human skeletal material was also analysed to determine a minimum number of individuals (MNI) and to identify any pathological conditions. The skeletal material was assessed according to the standards laid out in the guidelines recommended by the British Association of Biological Anthropologists and Osteologists (BABAO) in conjunction with the IfA Guidelines to the Standards for Recording Human Remains.

9.1.2 Population Demography

Seven articulated individuals were recovered from the excavations. Skull and pelvis morphology were used to determine the sex of adult individuals studied. These were determined using the standard osteological techniques (Buikstra & Ubelaker 1994). If the skull or pelvis was not present or incomplete, then sexually dimorphic measurements of the long bones were used. Of the seven skeletons, two could not be sexed due to missing elements. Another two juvenile skeletons could not be sexed because there are no standard methods for the sexing of juvenile skeletal material (Brickley & McKinley 2004). Of the three that could be sexed, all were adult males.



Fig. 1.1: Ossified thyroid cartilage of SK309.

Adult age was established using the visual assessment of the auricular surface and pubic symphysis of the pelvis. Where these were not present, sternal rib-aging and epiphyseal fusion were used. It was determined that two of the males were over 45 years of age at death. Both of these individuals also had ossified thyroid cartilage present (fig. 1.1), which is indicative of an older adult.

Age could not be determined for the other adult male and for the other two unsexed adult individuals. The juvenile skeletal material was aged using a combination of dental development, epiphyseal fusion and long bone measurement (Scheuer & Black 2000). The two juvenile skeletons were aged 9-11 years of age at death and 2-4 years at death. Age and sex data for all articulated individuals has been included in Table 1.1.

Table 1.1: Demographic Data for all articulated skeletons

SK No.	Preservation	Completeness	Age	Sex	Stature
SK 305	Moderate	60-65%	45+	Male	174.9cm
SK 309	Very Good	50%	45+	Male	167.7cm
SK 312	Excellent	50%	9-11	?	N/A
SK 316	Very Good	35-40%	Adult?	Male?	168.7cm
SK 319	Excellent	30%	Adult?	?	161.5cm
SK 322	Very good	20%	Adult?	?	172.4cm
SK 325	Good	5-10%	2-4	?	N/A

Stature was established for all adult individuals using the standard long-bone measurements and equations (Trotter & Gleser 1953; 1977) and stature estimations are included in Table 1.1. SK319 was very short; however, this individual suffered from rickets as a child, which is likely to have shortened his stature due to extreme bowing of the limbs. This will be discussed further in section 9.1.4.5. When stature is calculated from all five skeletons, the average is 169.04cm; however, when SK319 is excluded from the average, then a more representative average of 170.9cm is obtained, which fits well in with the average stature of about 171cm for men in the post-medieval period (Roberts & Cox 2003).

Due to the small numbers in this assemblage, it was difficult to determine a representative demographic profile for this site. However, this is clearly a mixed cemetery as both adults and juveniles are present; both of the adults that could be aged were mature males (45+) and the two juveniles were aged 9-11 and 2-4 years of age. One of the males (SK319) was quite short but this was likely due to childhood rickets; the rest of the adult males were close to the average for this period.

9.1.3 Skeletal Preservation and Completeness

Skeletal preservation was generally very good to excellent. Bone surface preservation was mostly excellent but there was some occasional mild exfoliation of the surface and cortical bone, in particular, of the vertebrae and ribs. None of the skeletons analysed was complete due to truncation; however, there was very little overall fragmentation and post-mortem breakage of skeletal material. What is of note is that a number of bones were encased in tar (*fig. 1.2*) that had percolated through the deposits from the carriageway surface.



Fig. 1.2: Rib encased in tar

9.1.4 Skeletal Pathology and Disease

Paleopathology is the study of past health and disease in archaeological populations and is useful as an indicator of health status and other aspects of past lives such as occupation and activity. Many chronic disease processes can manifest in the bones along with incidents of trauma and muscle trauma due to activity. Due to the overall good preservation of the skeletal remains, there were a number of pathologies observed. In this report, pathologies will be categorised according to their disease category.

9.1.4.1 Activity Markers

Schmorl's Nodes were observed in SK309. These intervertebral disc lesions are thought to be the bony manifestation of a slipped disc. Schmorl's Nodes manifest as depressions in the bodies of the vertebrae and were found in four vertebrae of SK309 and are probably the result of physical activity or trauma, although their exact aetiology is unknown (Roberts & Manchester 2005). SK305 was a particularly robust individual with very strong muscle attachments, especially in the upper arms; SK316 also displayed particularly defined muscle attachments of the legs.

9.1.4.2 Joint Disease

Joint disease was commonly recorded in this small assemblage. SK305, SK309, SK316 and SK319 all presented with Degenerative Joint Disease (DJD). DJD is identified by bone formation usually in the form of osteophytic lipping and porosity due to bone resorption on or near the joints. This is recognised to result largely from daily wear and tear (Rogers 2001) but can be exacerbated by a number of factors, including age, activity level and weight. Both older adults (SK305, SK309) had significant degenerative changes. SK305 had a degree of DJD in all of his vertebrae, shoulder joints and particularly in the left wrist. Osteoarthritis was also noted in his left wrist; this was diagnosed through eburnation on the surface of the carpal bones. SK309 displayed DJD of the left temporomandibular joint, all vertebrae, hip joints, scapula, ulna, radius and ribs. Considering the advancing age of these individuals, this amount of DJD is unsurprising. Two un-aged adults (SK316, SK319) also displayed mild DJD of the legs. This was limited to the right ankle joint in SK316 and to the proximal tibio-fibular articulation in SK319.

Possible osteochondritis desiccans was noted on the distal joint surface of the left tibia of SK322. This joint disease is common in adolescents and is caused when a small piece of the joint fractures off and becomes necrotic (Roberts & Manchester 2005). In this individual the defect was healed.



Fig. 1.3: Eburnation on arthritic scaphoid (SK305) on top of photo compared to healthy scaphoid on bottom.

9.1.4.3 Congenital Anomalies

Congenital defects are those that are present at birth; these often cannot be attributed to a cause and may even remain asymptomatic through life (Connell & Miles 2010). A transitional cervical vertebra was noted in SK305; this vertebra displayed features consistent with cervical and thoracic vertebrae and even had a rudimentary rib. It is highly likely that this anomaly remained symptomless through life but such anomalies are thought to be associated with degeneration of the spine. No other congenital defects were noted in this assemblage.

Fig: 1.4: Transitional cervical vertebra of SK305.

9.1.4.4 Trauma

Only one case of trauma was recorded in the articulated skeletal material. This was a rib fracture that was associated with SK305. This rib fracture was well healed at the time of death but a healed cloaca was present which indicates that the fracture would have been infected, perhaps when the fracture occurred. In modern populations, rib fractures are usually caused by falling or interpersonal violence (Boston *et al* 2008).

9.1.4.5 Metabolic Disease

Metabolic diseases are those diseases that cause imbalances in bone formation and remodelling of the skeleton and are usually instigated by a malnourishing or imbalanced diet. Rickets is a disease of childhood caused by lack of exposure to sunlight or lack of dietary Vitamin D. Healed rickets was noted in SK319. This disease is manifested as a bowing and deformation of the long bones when walking commences. Rickets was known as the 'English Disease' during the post-medieval period because of the industrialisation of Britain (Fildes 1986). Industrialisation led to crowded, dark and smoky conditions and children were often expected to work in factories during daylight hours. In Bristol, this is not so much the case, as it was not an industrial city, but it is possible that SK319 grew up elsewhere.

A case of infantile scurvy was also noted in this small assemblage. Scurvy is caused by a lack of Vitamin C in the diet and is not unexpected owing to Britain's long winters, when fresh fruit and vegetables would have been scarce. Scurvy is characterised by haemorrhaging of blood and lesions of the oral cavity. SK312 displayed many lesions that are characteristic of scurvy, including periosteal lesions of the humerus, mandible and vertebrae (Geber *et al* 2012; Ortner *et al* 1997). This individual also presented with ante-mortem tooth-loss, which is often associated with scurvy. Evidence of haemorrhaging on the mandible (*fig. 1.6*) may have resulted from trauma caused by chewing. Tooth-loss in life can also be seen in this image.



Fig. 1.5: Showing bowing of the tibiae from childhood rickets

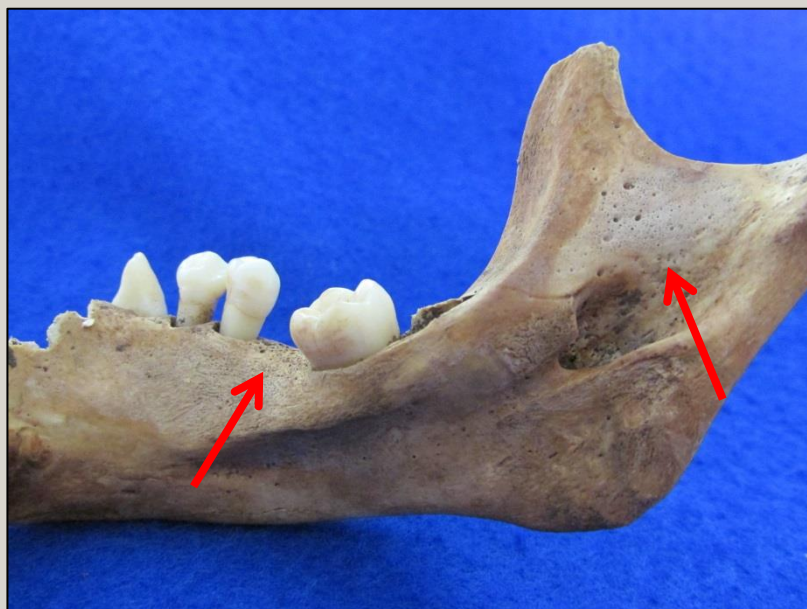


Fig. 1.6: Evidence of scurvy in the mandible in juvenile SK312

9.1.4.6 Infectious Disease

Six out of seven articulated skeletons in this small assemblage presented with non-specific periostitis. Most commonly, this periostitis was noted on the lower limbs and SK305, SK319, SK316 & SK322 were all affected. Periostitis is a non-specific infection and therefore cannot be attributed to any specific cause; it may have been caused by trauma, varicose veins, ulcers or an unknown infectious process. Periostitis was also present on the visceral surface of the right and left ribs of SK305. This is probably indicative of a chronic lung infection or disease process, such as emphysema, pneumonia or possibly tuberculosis (Santos & Roberts 2001). SK312 also presented with visceral rib lesions, which, again, are probably due to a lung disease or infection. This individual also suffered from scurvy which lowers the immune defences (Thomas & Holt 1978) and which would have made SK312 more susceptible to an infection of this kind.



Fig. 1.7: Periostitis on a rib of SK312.

9.1.4.7 Dental Disease

Three individuals had alveolar bone and teeth present. SK309, in particular, was almost completely edentulous except for two mandibular first premolars. This extreme ante-mortem tooth-loss is probably age-related. The two teeth left *in-situ* were both badly affected by periodontal disease, gum recession, enamel hypoplasia and large quantities of calculus. Calculus is a mineralised plaque deposited on the enamel or cement of the teeth (Arensburg 1996) and is thought to be associated with a protein-rich diet. SK305 did not have any maxillary teeth or bone preserved; however, all mandibular teeth and alveolar bone were present. These teeth were in exceptionally good condition, presenting with very little wear and only very small amounts of calculus and moderate periodontal disease. Calculus deposits often lead to periodontal disease, an inflammation of the gums that frequently spreads to the bone where bone and teeth are lost. There is a very strong correlation between

advancing age and periodontal disease (Boston *et al* 2008) and it is thus not surprising to observe it in these two older individuals.

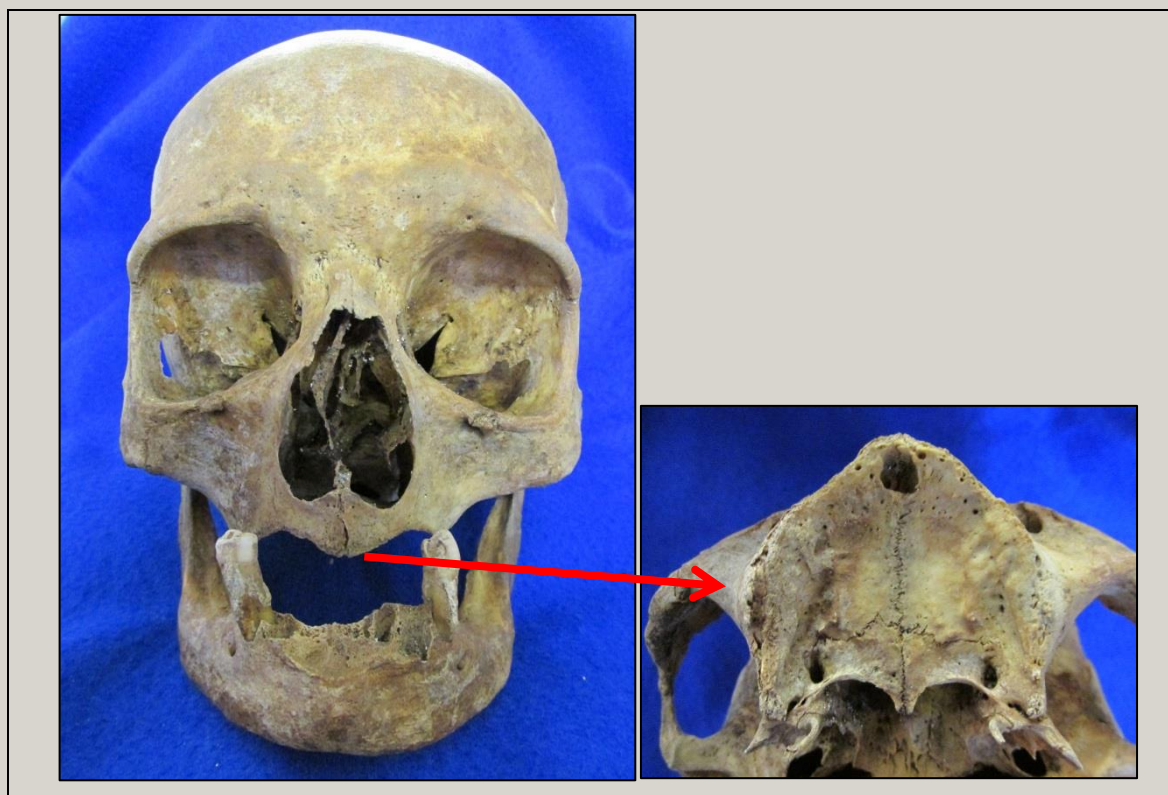


Fig. 1.8: Skull of SK309, showing teeth lost during life

SK312 had both mandibular and maxillary teeth present; however, these were generally in an unhealthy condition for an individual of such a young age. Some of the permanent teeth were just erupting and no deciduous teeth were recovered. This individual had three carious permanent teeth and one tooth lost ante-mortem. The mandible was also affected by dental crowding and the right mandibular canine had been rotated 45 degrees. All of the teeth present were also affected by enamel hypoplasia, which is indicative of childhood stress, probably resulting from illness or malnutrition during tooth development, which occurs in the first six or seven years of life (Goodman & Rose 1990). This juvenile also presented with a possible gum infection possibly due to scurvy.

9.1.5 Disarticulated Material

A very large amount of disarticulated skeletal material was recovered. Right femurs were used to calculate an MNI; a minimum of eight right femurs were analysed representing eight adult individuals. Additionally, there were three sub-adults represented in the disarticulated material, one aged 8-12 years, the other 12-14 years and the last was 4.5-5 years of age. This represents an MNI of 11 individuals. Of the adult individuals, two possible females were identified, along with one possible male; the remainder were unsexed.

A significant amount of pathologies were discovered in the disarticulated material. A possible case of syphilis was found: two ulnae and fibulae were swollen and displayed a mixture of dense new bone with osteolytic lesions, which is likely to have been a case of tertiary venereal syphilis. However, there was no associated cranial evidence for this disease so it is difficult to say for certain, as this material was not associated with an articulated skeleton. Two well-healed fractured ribs were also found (*fig. 1.9*). As previously discussed, the most likely causes of rib-fractures are falls or interpersonal violence.



Fig. 1.9: Two well-healed rib fractures from disarticulated bone.

A number of bones were also found with non-specific periosteal infections; these lesions cannot be attributed to a cause. DJD was also a common occurrence in the disarticulated material. A small amount of dental material was also present in disarticulated material; tooth-loss during life was noted, along with calculus and some evidence of hypoplasia. The most impressive pathology noted in the disarticulated material was a rare case of osteosarcoma in a femur (*fig. 1.10*). Osteosarcoma is a primary malignant neoplasm or cancer of the bone. Osteosarcomas are characterised by a 'sunburst' of growth of bone cells and usually occur in young people under the age of 30 (Roberts & Manchester 2005, 257). This osteosarcoma measured about 7cm long and 3.5cm wide

and seems to have caused a pathological fracture of the femoral head, which is not present. Osteosarcomas are painful, highly malignant and would have almost certainly caused this individual's premature death.



Fig. 1.10: Osteosarcoma of femur from disarticulated skeletal material

Due to the excellent condition of the disarticulated material, a number of pathological conditions were noted and these were generally very similar to those present in the articulated material.

9.1.6 Discussion and Conclusion

The skeletal assemblage from Queen Charlotte Street was found to be in an excellent state of preservation; however, the articulated skeletons were all incomplete. The skeletal evidence suggests that the Crow Lane cemetery was mixed, with individuals of all life stages represented, indicative of use by the all levels of the local community. Osteological analysis of the seven articulated skeletons has established that this cemetery group consisted of two older adults, one male of unknown age, two juveniles aged 9-11 and 2-4 years and two adults of unknown age and sex. One of the adults (SK319) was particularly short for the post-medieval period; however, in terms of stature, the other adult males were in line with other British post-medieval skeletal assemblages.

The pathological analysis of this small group showed a number of interesting disease processes. The juvenile SK312 showed a number of lesions indicative of infantile scurvy and also a subsequent respiratory or lung infection. All of the adults displayed pathologies. In particular SK309 exhibited a suite of lesions: osteoarthritis was present in this individual's wrist, along with an active infection in this area. Significant amounts of DJD were

also noted throughout this individual's body, particularly in the upper body and vertebrae. This individual was also extremely well-muscled with clearly muscle attachments and a likely lung infection due to the presence of infective lesions on the ribs, along with a well-healed fractured rib. Some non-specific infection was also present on the left femur of this individual. SK305 exhibited DJD of the temporo-mandibular joint, shoulder, wrist, ribs and the vertebrae. Four Schmorl's Nodes were also present in this individual's spine. The other skeletons all presented with evidence for non-specific infections, mild DJD and activity-related markers.

The skeletal assemblage provides us with an insight into the life of the post-medieval community of Bristol. Even in this small assemblage, there is evidence for childhood rickets and scurvy. Childhood stress in the form of hypoplastic lines representing times of childhood malnutrition or illness was also found. Activity-related trauma was noted in four out of five adult skeletons; clearly some members of this population were involved in daily physical work, which is revealed in the skeletal material; work-related accidents may also have been the cause of non-specific infection caused by soft-tissue trauma. In terms of dental health, one juvenile and two adults had surviving teeth. The juvenile (SK312) had particularly unhealthy teeth, with three carious teeth, dental crowding and one tooth already lost during life. SK309 was almost edentulous, which is most likely due to a combination of advancing age and poor dental hygiene. In comparison, SK305 was of a similar age but had excellent dentition, with little wear, no caries and very small amounts of plaque. A mixed picture of dental health was therefore established. The pathological conditions in the disarticulated material were very similar to those present in the articulated material. DJD was commonly seen in the material, along with non-specific infections and other pathological conditions, such as syphilis, that are quite typical of the post-medieval period in England, along with a unusual case of osteosarcoma.

9.1.7 References

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9.2 Human bone assessment

9.2.1 Appendix A: Catalogue of Articulated Material

QCS13 SK305																																																																																																																																																																																															
Age: 45-50+																																																																																																																																																																																															
Sex: Male																																																																																																																																																																																															
Stature: 174.9cm																																																																																																																																																																																															
Preservation: Moderately good preservation with a small amount of fragmentation and some bone surface exfoliation especially in the area of the ribs and vertebrae.																																																																																																																																																																																															
Completeness: 60-65%																																																																																																																																																																																															
<p>Pathology: The left wrist was affected very badly by arthritic changes. In particular, the left scaphoid (carpal) was very deformed and extremely eburnated. The left wrist joints of the radius and ulna were also very badly affected with quite severe lipping, porosity and also active periostitis which may indicate a soft tissue inflammation or infection. Degenerative joint disease was also noted on the glenoid surfaces of both scapulae and the proximal clavicle. This individual was extremely well-muscled and displayed very strong and defined muscle attachments. One well-healed left rib fracture which may have been infected in the past as it showed a cloaca, which is indicative of bone infection, in this case probably due to trauma. Periostitis was noted on a number of right ribs which may be due to a lung infection. Healed periostitis was also noted all over the left femoral shaft. This individual was extremely well muscled; of particular note were muscle attachments of the deltoid and biceps on the upper arm and the masseter attachment on the mandible was very marked. All of the vertebrae were affected by degenerative joint disease to a degree; all were affected by porosity and moderate amounts of lipping. Cervical vertebra 7 was noted to be transitional in nature which is a congenital defect.</p>																																																																																																																																																																																															
<p>Dental Pathology: Teeth are in excellent condition for an older individual; very little tooth wear and no caries were observed. Very small deposits of calculus were noted and all of the teeth were affected by mild periodontal disease which was probably age-related.</p>																																																																																																																																																																																															
<table border="1"> <tr> <td colspan="8">Dental Chart</td> <td colspan="8"></td> </tr> <tr> <td colspan="8">UR</td> <td colspan="8">UL</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>\</td><td>\</td><td>\</td><td>\</td><td>\</td><td>\</td><td>\</td><td>\</td> <td>\</td><td>\</td><td>\</td><td>\</td><td>\</td><td>\</td><td>\</td><td>\</td> </tr> <tr> <td>8</td><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td> </tr> <tr> <td>D</td><td>D</td><td>D</td><td>D</td><td>D</td><td>D</td><td>D</td><td>D</td> <td>D</td><td>D</td><td>D</td><td>D</td><td>D</td><td>D</td><td>D</td><td>D</td> </tr> <tr> <td>P</td><td>P</td><td>P</td><td>P</td><td>P</td><td>P</td><td>P</td><td>P</td> <td>P</td><td>P</td><td>P</td><td>P</td><td>P</td><td>P</td><td>P</td><td>P</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td colspan="8">LR</td> <td colspan="8">LL</td> </tr> </table>																Dental Chart																UR								UL																																																								\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	\	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P																	LR								LL							
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<p>x- ante mortem tooth loss, C- congenitally absent, P-periodontal disease, D-calculus, H- enamel hypoplasia, \ - tooth lost post mortem , U- unerupted, A-tooth present with no alveolar bone, E-erupting, R- caries</p>																																																																																																																																																																																															

QCS SK309															
Age: 45+															
Sex: Male															
Stature: 167.7cm															
Preservation: Very good preservation with little to no fragmentation															
Completeness: 50%															
Pathology: Degenerative joint disease of the left temporo-mandibular joint. Degenerative joint disease is present on all vertebrae, hip joints, scapula, ulna, radius and ribs. Four Schmorl's Nodes were present, two on the thoracic vertebrae and two on lumbar vertebrae. Extremely strong muscle attachments were noted throughout the skeleton but particularly on the arms, which is indicative of large amounts of physical activity.															
Dental Pathology: Almost all of the teeth were lost ante-mortem, except for both first mandibular premolars. Both of these teeth were affected by severe periodontal disease and quite large deposits of both lingual and buccal sub-gingival calculus. Hypoplastic lines were also visible on both teeth present. There is also a very large chip out of the lower left first premolar.															
Dental Chart															
UR												UL			
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	2	x	x	x	x	x	x	2	x	x	x	x
				D							D				
				P							P				
				H							H				
LR												LL			
x- ante mortem tooth loss, C- congenitally absent, P-periodontal disease, D-calculus, H- enamel hypoplasia, \ - tooth lost post-mortem , U- unerupted, A-tooth present with no alveolar bone, E-erupting, R- caries															

QCS 13 SK312															
Age: 9-11 years of age															
Sex: (?)															
Stature: Stature could not be calculated															
Preservation: Excellent bone surface preservation with little to no fragmentation															
Completeness: 50%															
Pathology: Both the left and rib ribs show extensive periosteal bone growth on the visceral surface and a small amount of new bone on the external surface of the ribs. This individual is also likely to have suffered from scurvy due to porous and new bone lesions noted on the mandible, vertebrae and humerus and dental pathologies present.															
Dental Pathology: Dental eruption is consistent with a juvenile aged between 9 and 11 years of age. Little wear was observed on the teeth; however, three carious permanent teeth were present. The first molar in the right mandible has been lost ante-mortem and is healed and resorbed. The mandibular right canine has been rotated perhaps as a result of dental crowding. All of the teeth display mild to moderate hypoplastic lesions. Periodontal disease was also noted; this was probably caused by scurvy.															

Dental Chart															
UR								UL							
								R	R						
						H		H	H						
\	\	\	\	\	\	A	\	A	A	\	\	\	\	\	\
U	7	6	5	4	E	\	\	\	\	3	4	5	x	7	U
	H	H	H	H	H					H	H	H		H	
	P	P	P	P	P					P	P	P		P	
														R	
LR								LL							

x- ante mortem tooth loss, C- congenitally absent, P-periodontal disease, D-calculus, H- enamel hypoplasia, \ - tooth lost post mortem , U- unerupted tooth, A-tooth present with no alveolar bone, E-erupting, R- caries

QCS13 SK316
Age: Adult
Sex: Male?
Stature: 168.7cm
Preservation: Very good preservation with no fragmentation
Completeness: 35-40%
Pathology: Healing periostitis on both left and right femoral shafts, tibiae and fibulae. Very defined muscle attachments were noted on the legs. Also some degenerative joint disease was noted in the right ankle.
Dental Pathology: No teeth or alveolar bone was present.

QCS13 SK319
Age: Adult
Sex: (?)
Stature: 161.5cm
Preservation: Excellent surface preservation with no fragmentation.
Completeness: 30%
Pathology: Degenerative joint disease of the joint surface for the proximal tibia-fibular joint on the left and right tibia. Healed periostitis was present on the left and right fibula, tibia and femora. Healed rickets was also present with noticeable bowing of both the femora and tibiae.
Dental Pathology: No teeth or alveolar bone present

QCS13 SK322
Age: Adult
Sex: (?)
Stature: 172.4cm
Preservation: Very good surface preservation with no fragmentation.
Completeness: 20%
Pathology: Healed periostitis was present all over the shaft of both the tibiae and fibulae. A small defect was also present on the distal joint surface of the left tibia which may be indicative of osteochondritis dessicans.

Dental Pathology: No teeth or alveolar bone present

QCS13 SK325

Age: 2-4 years of age

Sex: (?)

Stature: Could not be calculated

Preservation: Bone surface preservation is good but with a lot of fragmentation

Completeness: 5-10%

Pathology: No pathology was noted.

Dental Pathology: No teeth or alveolar bone present

9.2.2 Appendix B: Catalogue of Disarticulated Material

	Context No	Bone	Side	Completeness	Age	Sex	Other
1	304	Tibia	Right	90%	Adult	?	Periostitis
2	304	Proximal Finger Phalanx	?	100%	Adult	?	-
3	304	Clavicle	Left	100%	Adult, 25+	?	-
4	304	Tibia	?	40%	Adult	?	Healed periostitis
5	304	Lumbar Vertebra	-	30%	Adult	?	DJD of the superior articular joint- porosity and lipping
6	304	Femur	Right	90%	Adult	Female?	Healed periostitis all over shaft
7	304	Femur	Right	70%	Adult	Male?	Periostitis all over shaft- healed
8	304	Femur	Right	60%	Adult	?	Healed periostitis
9	304	Tibia	?	10%	Adult?	?	Plaque of discoloured periosteal? Bone over surface. Healing
10	304	Frontal	Right	40%	Adult?	?	-
11	304	Talus	?	15%	Adult?	?	-
12	304	Incisor-Central Mandibular	Left?	100%	Adult	?	Moderately worn with small deposits of plaque on buccal and lingual surfaces
13	304	Parietal	?	5%	Adult?	?	-
14	304	Radius and Ulna (Matching)	Right	100% for both	Adult	?	Strong muscle attachments and slight DJD in distal ulnar joint- porosity and lipping
15	304	Femur-proximal	Right	10%	Adult	?	-
16	304	Rib 2-10	Left	30%	Adult	?	-
17	304	Cervical	-	60%	Adult	?	-

	Context No	Bone	Side	Completeness	Age	Sex	Other
		Vertebra 2-7					
18	304	Ilium	?	10%	Adult	?	-
19	304	Femur mid-shaft	?	40%	Adult	?	Healed periostitis on shaft
20	304	Tibia mid-shaft	?	40%	Adult?	?	Healed striated periostitis on mid-shaft
21	304	Humerus distal and mid-shaft	Left	70%	Adult	?	Extremely well developed muscle attachments, esp. deltoid and biceps.
22	304	Zygomatic	Right	100%	Adult	?	Abnormally porous on anterior surface
23	304	Ilium, Os Coxa	?	10%	Adult	?	-
24	304	Lumbar Vertebra 1?	-	40%	Annular ring just fusing	?	-
25	304	Metatarsal 1	Right	100%	Adult	?	-
26	304	Metacarpal 1	-	100%	Adult	?	-
27	304	Mandible	Left	10%	Adult?	?	No teeth in-situ
28	304	Scapula	?	10%	?	?	-
29	304	Iliac Crest	?	10%	Subadult-crest unfused.	?	-
30	304	Lumbar Vertebra No?	-	30%	Adult	?	-
31	304	Sacrum	-	10%	Adult	?	-
32	304	Sternum	-	20%	Adult	?	-
33	304	Femur mid-shaft	-	5%	Adult?	?	-
34	304	1 × lateral mandibular incisor	?	100%	Adult	?	Calculus present on lingual and buccal surfaces.
35	304	1 × premolar	?	100%	Juvenile	?	Calculus on lingual surface and one large hypoplastic defect
36	304	1 × lateral mandibular incisor	Right?	100%	Adult	?	Calculus on both lingual and buccal surfaces

	Context No	Bone	Side	Completeness	Age	Sex	Other
37	304	Tibia mid-shaft	?	10%	Adult	?	-
38	304	Femur mid-shaft	?	10%	Adult	?	-
39	304	Lumbar Vertebra	-	20%	Adult	?	-
40	304	Rib	Right	20%	Adult	?	-
41	304	Rib	-	25%	Adult?	?	-
42	304	Cervical Vertebra	-	15%	?	?	-
43	304	Phalanx	-	100%	Adult	?	-
44	304	Femur mid-shaft	?	5%	Adult?	?	-
45	304	Vertebra	?	5%	Adult	?	-
46	304	Scapula	?	10%	Adult	?	-
47	304	Femur proximal	?	<5%	Adult	?	-
48	304	Cranium-Parietal	?	<5%	?	?	-
49	304	7 × rib frags	?	20%	?	?	-
50	304	3 × hand phalanxes	?	100%	Adult	?	-
51	304	Humerus	Right	70%	Adult	?	-
52	304	Patella	Left	100%	Adult	?	-
53	304	Femur	Left?	60%	Adult	Female?	-
54	304	Femur- Distal	?	<10%	Adult	?	-
55	304	Femoral Head	?	<10%	Adult	Female?	42mm diameter
56	304	Ischium	Right?	15%	Adult	?	-
57	304	Humerus-Proximal	Right	25%	Adult	?	-
58	304	Tibia-midshaft	?	40%	Adult	?	Healed periostitis on shaft.
59	304	Lumbar Vertebra	-	70%	Adult	?	-
60	304	Os Coxa-Ischium and Acetabulum	-	<10%	Adult	?	-
61	304	Lumbar Vertebra	-	100%	Adult	Female?	Lipping of the intervertebral joints and porosity- DJD
62	304	Talus	Left	100%	Adult	?	-
63	304	Lumbar Vertebra	-	90%	Adult	?	-
64	304	Rib 2-11	Left	50%	Subadult	?	Proximal Joint Surface is

	Context No	Bone	Side	Completeness	Age	Sex	Other
							unfused *
65	304	Ulna-Proximal	Right	60%	Adult	?	-
66	304	Humerus	Left	30%	Adult	?	-
67	304	Clavicle	Right	80%	Adult	?	Porosity and lipping of proximal joint surface- DJD
68	304	Mandible	Midline	10%	Adult	Female?	Some copper staining* and no teeth present
69	304	Cervical Vertebra- 6/7	-	100%	Adult	?	-
70	304	Femur	?	<5%	Adult	?	-
71	304	Os Coxa- Auricular surface and illium	?	<5%	25-45 Adult	?	Auricular surface looks young- 25-45
72	304	Humerus- mid-shaft	?	20%	?	?	-
73	304	Tibia- Distal	?	<5%	Adult	?	-
74	304	Scapula	?	10%	Adult	?	-
75	304	Fibula- mid-shaft	?	30%	Adult	?	Piece of coffin nail adhering to surface and healed periostitis
76	304	Sacrum	-	10%	Adult	?	-
77	304	Patella	Right	100%	Adult	?	Vastus Notch
78	304	Distal Humerus	Right	10%	Adult	?	-
79	304	Mandible	Left	15%	Adult	Male?	Very strong attachment for masseter
80	304	Sacrum	-	10%	Adult	?	-
81	304	Cranium- Parietal	?	<5%	Adult?	?	-
82	304	Cranium- Parietal	?	10%	Adult	?	Porosity on the external surface.
83	304	Calcaneus	?	25%	Adult	?	-
84	304	Os Coxa- Illium	?	<5%	Adult?	?	-
85	304	Scapula	?	15%	Subadult	?	Glenoid unfused; however, fragment is small in size.

	Context No	Bone	Side	Completeness	Age	Sex	Other
86	304	Ulna-Proximal Joint Only	?	<5%	Adult?	?	-
87	304	Rib 2-11-sternal end	?	10%	Older Adult 45+	?	Older adult owing to sternal end appearance 54-64? Phase 7
88	304	3 x finger Phalanxes	?	100%	?	?	-
89	304	Metacarpal 3	Left	90%	Adult	?	-
90	304	Femur	?	<5%	Adult	?	-
91	304	Os Coxa-Acetabulum	-	<5%	Adult	?	-
92	304	Os Coxa-Pubis	Right	100%	Older Adult 40+	?	Older adult owing to the appearance of the pubic symphysis.
93	304	Metatarsal 5	Right	90%	Adult?	?	-
94	304	Femur- Distal joint	?	<5%	Adult?	?	-
95	304	Scapula	?	<5%	Adult	?	-
96	304	Rib 1	?	20%	Adult	?	-
97	304	Femur	?	<5%	Adult	?	-
98	304	Os Coxa-Illium	?	<5%	Adult?	?	-
99	304	Thoracic Vertebra	?	10%	Adult	?	-
100	304	9 x Rib	?	<5%	Adult	?	-
101	304	Os Coxa-Illium	?	<5%	Adult	?	-
102	304	Frontal	Right	100%	Adult	Female?	Slight healed cribra orbitalia of the right orbit.
103	304	Fibula-midshaft	?	35%	Adult	Male?	-
104	304	Ulna proximal and midshaft	Right	60%	Adult	?	Very well-muscled- Male?
105	304	Femur- head	Right	10%	Adult	Male?	-
106	304	Ulna-Proximal	Right	20%	Adult	?	Well-muscled, strong attachments
107	304	Os Coxa-	Right	100%	Adult 40+	Female	Age from auricular surface
108	304	Sacrum	-	15%	Adult	?	-

	Context No	Bone	Side	Completeness	Age	Sex	Other
109	304	Cranium- Parietal	?	10%	Adult	?	-
110	304	Os Coxa- Acetabulum	?	10%	Adult	?	-
111	304	Calcaneus	Left	30%	Adult	?	-
112	304	Sacrum	-	40%	Adult	?	-
113	304	Femur- Head	?	<5%	Adult	Male?	Very large
114	304	Humerus – mid-shaft	?	10%	Adult	?	-
115	304	Metacarpal 3	Right	100%	Adult	?	-
116	304	Femur- distal joint	?	<5%	Adult	?	-
117	304	Metatarsal 1-	Right	80%	Adult	Male?	Very large- Male?
118	304	Femur- Distal Joint	?	<5%	Adult	Male?	-
119	304	Os Coxa- Acetabulum and Ischium	Left	20%	Adult	?	-
120	304	Zygomatic	Left	100%	Adult	?	-
121	304	Talus	Right	100%	Adult	?	-
122	304	Lumbar Vertebrae	-	80%	Adult	?	-
123	304	Femur- Distal Joint	?	<5%	Adult	?	-
124	304	Humerus	Left	<5%	Adult	?	-
125	304	Femur –head	?	<5%	Adult	Male?	Large so maybe male?
126	304	Foot- Navicular	Right	100%	Adult	?	-
127	304	Rib 2-11	?	10%	Older Adult	?	Older due to appearance of sternal rib- 45+
128	304	Humerus- Distal Joint	Left	<5%	Adult	?	-
129	304	Femur- Head	?	<5%	Adult?	?	Iron nail on femoral head
130	304	Sacrum- Distal	-	10%	Adult	?	-
131	304	Os Coxa- Ilium	?	<5%	Adult	?	-
132	304	Cranium- Parietal	?	<5%	Adult?	?	Copper staining visible near temporal line
133	304	Lumbar Vertebra	-	15%	Adult	?	-
134	304	Fibula	?	20%	Adult	?	-
135	304	Femur	?	10%	Adult	?	-
136	304	Rib × 12	?	10%	Adult	?	-

	Context No	Bone	Side	Completeness	Age	Sex	Other
137	304	Rib × 1	Right	60%	Adult	?	Copper staining near vertebral end.
138	304	Metacarpal 1	?	50%	Adult	?	-
139	304	Cranium	?	<5%	Adult	?	-
140	304	Ulna proximal joint	?	<5%	Adult	?	-
141	304	Scapula	?	<5%	Adult	?	-
142	304	Cervical Vertebra 2-7	?	<5%	Adult	?	-
143	304	Femur- mid-shaft	?	50%	Adult	?	-
144	304	Os Coxa – Acetabulum and Ischium	Right	60%	Young Adult 18-20	?	Young Adult, partially fused ischial tuberosity
145	304	Radius	Right	70%	Adult	?	-
146	304	Talus	Left	100%	Adult	?	-
147	304	Tibia	?	10%	Adult	?	Copper staining on mid-shaft and some striated healed periostitis
148	304	Os Coxa-Illium	?	10%	Adult	?	-
149	304	Thoracic Vertebra	-	90%	Adult	?	Schmorl's Nodes on both surfaces.
150	304	Femoral Head- unfused	?	100% of the head present	Sub-adult 8-10 years of age	?	Unfused and about the right development for 8-10 years old
151	304	Cranium- Parietal	-	10%	Adult	?	-
152	304	Os Coxa- Acetabulum	?	<5%	Adult	?	-
153	304	Tibia	?	<5%	Adult	?	-
154	304	Lumbar Vertebra	?	60%	Adult	?	Some lipping and DJD of intervertebral joints
155	304	Fibula	?	20%	Adult	?	-
156	304	Lumber? Vertebra	-	15%	Adult	?	-
157	304	Cranium- Parietal	?	5%	Adult	?	-
158	304	Cranium-	?	<5%	Adult	?	-

	Context No	Bone	Side	Completeness	Age	Sex	Other
		Parietal					
159	304	Thoracic Vertebra-neural arch	-	10%	Adult	?	-
160	304	Rib 2-11	?	15%	Adult-Older 40+	?	Sternal end is degenerated.
161	304	2 x rib frags	?	<5%	?	?	-
162	304	Rib 12	Left	80%	Older Adult	?	DJD of the vertebral joint surface
163	304	Scapula	?	20%	Adult	?	-
164	304	Clavicle	Left	100%	Adult	?	-
165	304	Thoracic Vertebra	-	10%	Adult	?	-
166	304	Scapula	?	<5%	Adult	?	-
167	304	9 x Rib 2-11	Left	10-15%	Adult	?	-
168	304	Thoracic Vertebra	-	15%	Adult	?	-
169	304	Thoracic Vertebra	-	100%	Adult	?	Some ossification of the posterior ligament
170	304	Femur-Proximal	Right	30%	Adult	Female?	43mm diameter
171	304	Femur-Distal	?	10%	Adult	?	Quite large-Male?
172	304	Humerus	Right	70%	Adult	?	-
173	304	Cranium-Parietal	-	60%	Adult	?	*6 matching pieces
174	304	Cranium-Parietal and Frontal	-	40%	Adult	?	*8 matching pieces
175	304	Femur Distal but not joint surface	-	25%	Adult	?	-
176	304	Lumbar Vertebra 5?	-	100%	Adult	?	-
177	304	Lumbar Vertebra 1?	-	90%	Adult	?	-
178	304	Metatarsal 1	Left	100%	Adult	?	-
179	304	Humerus-Mid-shaft	?	30%	Adult	?	Strong deltoid muscle attachment
180	304	Thoracic Vertebra	-	100%	Adult	?	Schmorl's Node on both joint surfaces
181	304	Talus	Right	90%	Adult	?	-
182	304	Humerus-	Left	10%	Adult	?	-

	Context No	Bone	Side	Completeness	Age	Sex	Other
		Distal but not joint surface					
183	304	Ulna	Right	80%	Adult	?	*coffin nail adhering to prox. joint surface and v. strong muscle attachments
184	304	Femur- mid-shaft	?	10%	Adult	?	-
185	304	Mandible	left	30%	Adult	Female?	AMTL of LLM2 and LLM3, M3 is recent
186	304	Radius	Right	70%	Adult	-	-
187	304	Thoracic Vertebra 1	-	80%	Adult	-	-
188	304	Ulna Proximal	Right	20%	Adult	Male?	Very large in size with extreme muscle attachments
189	304	Ulna- Proximal	Left	15%	Adult	Female?	Very small and gracile
190	304	Metacarpal 2	Right	100%	Adult	?	-
192	304	Zygomatic	Left	100%	Adult	?	-
193	304	Ulna – Distal 1/3	Right	35%	Adult	?	
194	304	Metacarpal 3	Right	100%	Adult	?	-
195	304	Zygomatic	Right	100%	Adult	?	*does not match earlier zygomatic
196	304	Fibula- Distal Joint	Right	10%	Adult	?	-
197	304	Radius- mid-shaft	Left	70%	Adult	?	-
198	304	Scapula	?	10%	Adult	?	-
199	304	Thoracic Vertebra- neural arch	-	5%	Adult	?	-
200	304	Ulna prox. but not joint	Right	25%	Adult	?	-
201	304	Fibula- mid-shaft	?	10%			*does not match #203 due to size difference
202	304	Hand Phalanx- Intermediate	?	100%	Adult	?	-

	Context No	Bone	Side	Completeness	Age	Sex	Other
203	304	Fibula- mid-shaft	?	20%	Adult		See note for #201
204	304	8 × rib frags	?	20%	Adult	-	*belongs to MNI of 2 due to size differences
205	304	Fibula- mid-shaft	?	15%	Adult	-	-
206	304	Femur	Left	100%	Adult	Female?	41.87mm femoral head diameter , also healed striated periostitis on shaft and some lipping and porosity of distal joint surface- DJD
207	304	Femur, all except distal joint	Left	90%	Adult	Male?	51.12 femoral head diameter
208	304	Femur mid-shaft	?	30%	Adult	Male?	Very large
209	304	Femur mid-shaft	?	40%	Adult	?	Healed periostitis of the shaft
210	304	Femur mid-shaft	?	30%	Adult	?	*may match #209, has coffin nail adhering to surface and healed periostitis
211	304	Femur- distal joint surface	Left	15%	Adult	Female?	69.28mm distal femoral joint
212	304	Femur mid-shaft	?	40%	Adult	?	-
213	304	Humerus, mid-shaft	?	40%	Adult	Female?	Very small in size and gracile, some healed periostitis on shaft and evidence of coffin nail adhering to bone at mid-shaft
214	304	Os-Coxa- acetabulum and auricular surface	Right	20%	Adult- Young 20-30	Male?	Auricular surface is young

	Context No	Bone	Side	Completeness	Age	Sex	Other
215	304	Metacarpal 2	Left	100%	Adult	?	-
216	304	Rib 2-11	Right	25%	Adult	?	-
217	304	Metatarsal 2	Left	50%	Adult	?	*healed periostitis on shaft, probably indicative of soft tissue trauma.
218	304	Parietal	?	<5%	Adult	?	Large piece of coffin nail adhering to surface
219	304	Tibia	?	40%	Adult	?	Healed striated periostitis on the shaft.
220	304	Femur- Head	Right	10%	Adult-Young		*fusion line is still visible, 49.53mm diameter
221	304	Humerus, distal 1/3	Left	35%	Adult	?	Very strong muscle attachments
222	304	Tibia mid-shaft	?	20%	Adult	?	Healed periostitis on mid-shaft.
223	304	Ulna, Proximal	Left	40%	Adult	?	Some lipping and porosity of proximal joint-DJD.
224	304	Calcaneus	Left	100%	Adult	?	-
225	304	Calcaneus	Left	20%	Adult	?	-
226	304	Thoracic Vertebra	-	80%	Adult	?	-
227	304	Os Coxa-Acetabulum and ischium	?	10%	Adult	?	Significant lipping on acetabulum and copper staining in this area
228	304	Humerus mid-shaft	?	40%	Adult	?	Extremely well-muscled.
229	304	Thoracic Vertebra	-	80%	Adult	?	DJD of the rib joints, significant lipping
230	304	Foot Navicular	Right	80%	Adult	?	-
231	304	Humerus	?	30%	Adult	?	-

	Context No	Bone	Side	Completeness	Age	Sex	Other
232	304	Metatarsal 3	Left	100%	Adult	?	-
233	304	Metacarpal 1	?	<5%	Adult	?	-
234	304	Scapula	?	10%	Adult	?	-
235	304	Talus	Right	100%	Adult	?	-
236	304	Cervical Vertebra 1	-	100%	Adult	?	-
237	304	Sternal Manubrium	-	100%	Adult	?	
238	304	Ulna- proximal	Right	10%	Adult	?	-
239	304	Metacarpal 3	Left	100%	Adult	?	-
240	304	Metatarsal 5	Left	100%	Adult	?	Some coffin nail adhering to proximal joint
241	304	Ulna- Distal Joint	?	10%	Adult	?	-
242	304	Femur- Head	?	5%	Adult	?	Fusion line still visible so probably younger individual, 49.85mm
243	304	Thoracic Vertebra- Body	-	80%	Adult	?	-
244	304	Fibula	Left	10%	Adult	?	-
245	304	Femur- Head	Right	10%	Adult	?	45.97mm femoral head diameter
246	304	Metatarsal 4	Left	100%	Adult	?	
247	304	Metacarpal 1	Left	100%	Adult	?	Very small, so possibly female.
248	304	Lumbar Vertebra	-	80%	Adult	?	-
249	304	Humerus	?	40%	Adult	?	-
250	304	Cervical Vertebra	-	60%	Adult	Female?	Very small, possibly female and there is evidence of lipping and porosity- DJD.
251	304	Distal Phalanx 1	?	100%	?	?	-
252	304	Thoracic Vertebra	-	80%	Adult	?	-
253	304	Metatarsal 4	Right	90%	Adult	?	-
	304	Metacarpal 2	Left	100%	Adult	?	-

	Context No	Bone	Side	Completeness	Age	Sex	Other
254	304	Cuneiform 2	?	100%	Adult	?	-
255	304	Humerus	?	15%	Adult	?	-
256	304	Thoracic Vertebra	?	<5%	Adult	?	-
257	304	Femur	?	<5%	Adult	?	-
258	304	Scapula	?	10%	Adult	?	-
259	304	Femur	?	<5%	Adult	?	-
260	304	Mandible	midline	5%	Adult	?	Incisor lost AMTL
261	304	Humerus mid-shaft	?	10%	Adult	?	-
262	304	Cervical Vertebra 1	-	5%	Adult	?	Small, maybe female.
263	304	Cervical Vertebra 2-7	-	25%	Adult	?	-
264	304	Thoracic Vertebra	-	10%	Adult	?	-
265	304	Scapula	?	<5%	Adult	?	-
266	304	Fibula	?	<5%	Adult	?	-
267	304	Sacrum	?	<5%	Adult	?	-
268	304	Os Coxa-Pubis	?	<5%	Adult	?	-
269	304	Femur	?	<5%	Adult	?	-
270	304	Scapula	?	10%	Adult	?	-
271	304	Cranium-frontal, occipital, parietal	?	10%	Adult	?	*not same individual as #272
272	304	Cranium-frontal and parietal	?	5%	Adult	?	See above note for# 271
273	304	Lumbar Vertebra	?	<5%	Adult	?	-
274	304	Sacrum	?	<5%	Adult	?	-
275	304	Thoracic Vertebra	?	2%	Adult	?	-
276	304	Hyoid	-	35%	Adult	?	Unfused hyoid body so individual less than 30?
277	304	Ossified thyroid cartilage	-		Older Adult	?	Older individual 45+
278	304	Thoracic Vertebra	-	<5%	Adult	?	-
279	304	17 x rib fragments	?	10%	Adult	?	-
280	304	Metatarsal 5	Right	100%	Adult	Female?	Very small and

	Context No	Bone	Side	Completeness	Age	Sex	Other
							gracile.
281	304	3 × sternal rib ends	?	<5%	Older Adult	?	Older Individual 45+
282	304	Scaphoid	Right	100%	Adult	?	-
283	304	Metacarpal 1	?	10%	Adult	?	-
284	304	8 × foot Phalanxes	?	100%	Adult	?	2 MNI for size and appearance
285	304	8 × proximal hand Phalanxes	?	100%	Adult	?	5 MNI for size etc.
286	304	3 × thumb proximal phalanxes	?	100%	Adult	?	MNI of 2 and DJD observed on one of these, eburnation, lipping and porosity
287	304	1 × distal thumb Phalanx	?	100%	Adult	?	-
288	304	1 × metatarsal 5	Right	100%	Adult	?	*see below
289	304	1 × metatarsal 5	Left	100%	Adult	?	*does not match #288
290	304	1 × metacarpal 4	Right	100%	Adult	?	-
291	304	1 × Metacarpal 1	Right	100%	Adult	?	-
292	304	1 × Metacarpal 3	Right	100%	Adult	?	-
293	304	3 × deciduous teeth	-	100%	5-6 years of age	?	-
294	304	4 × permanent teeth	-	100%	Adult	?	-
295	304	Tibia	Left	100%	Adult	?	Healed periostitis on shaft, does not match # 296
296	304	Tibia	Right	100%	Adult	?	Healed periostitis on shaft
297	304	Humerus-Prox 1/3	Right	35%	Adult	?	-
298	304	Humerus prox. 1/3	Right	40%	Adult	?	Very well developed muscle

	Context No	Bone	Side	Completeness	Age	Sex	Other
							attachments
299	304	Ulna 2/3 including prox. end	Left	70%	Adult	?	*coffin nail on prox. end of ulna
300	304	Fibula - intact	Left	100%	Adult	?	-
301	304	Femur mid-shaft	?				Healed periostitis
302	304	Tibia, mid-shaft	?	40%	Adult	?	Healed periostitis on shaft and coffin nail adhering to mid-shaft
303	304	Tibia, mid-shaft	?	30%	Adult	?	-
304	304	Humerus	Right	100%	Adult	?	-
305	304	Radius	Right	90%	Juvenile	?	11-12 years of age
306	304	Scapula	Left	30%	Juvenile	?	12 years of age* see #305
307	304	Lumbar Vertebra	-	100%	Juvenile	?	11-12 years of age.
308	304	8 × thoracic vertebra frags	-	10%	Juvenile	?	11-12 years
309	304	6 × rib frags	-	10%	Juvenile	?	Sub-adult ages between 8 and 12
310	304	4 × finger phalanges	-	100%	Juvenile	?	8-12 years of age
311	304	Fibula - distal	?	20%	Juvenile	?	10-12 years of age
312	304	Ulna	Left	40%	Juvenile	?	10-12 years
313	304	Maxilla	?	<5%	Juvenile	?	Unsure of age as fragmented
314	304	Ulna	?	20%	Juvenile	?	-
315	304	Radius	?	30%	Juvenile	?	-
316	304	Clavicle	Left	100%	Juvenile	?	10-12 years of age.
317	304	Clavicle	Right	60%	Juvenile	?	*does not match #316 and is probably a bit older 12-14?
318	304	Premolar Deciduous	Left?	100%	Juvenile	?	
319	304	Capitate-carpal	Right	100%	Adult	?	-
320	304	Humerus	Right	100% ex epiphyses	Juvenile	?	177mm so aged between

	Context No	Bone	Side	Completeness	Age	Sex	Other
							4.5 to 5 years.
321	304	6 × Thoracic Vertebra	-	80%	Adult	?	*matching vertebrae
322	304	9 × rib fragments	-	10%	Adult	?	-
323	304	Humerus-head	Left	100%	Adult	?	-
324	304	4 × cervical vertebrae	-	10%	Adult	?	-
325	304	Mandible	Midline and right	70%	Adult	?	6 teeth present and AMTL loss
326	304	Talus	Right	40%	Adult	?	Found with SK316
327	304	Femur	Right?	40%	Adult	?	Osteosarcoma
328	304	Fibula	?	50%	Adult	?	Osteitis-syphilis?
328	304	Ulna- Prox and midline	Right	70%	Adult	?	Osteitis-syphilis?
329	304	Fibula mid-shaft	?	20%	Adult	?	Osteitis-syphilis?
330	304	Ulna mid-shaft	?	30%	?	?	Osteitis-syphilis?
330	304	2 × rib fragments	?	40%	Adult?	?	Both are fractured and healed

9.1 Pottery Assessment

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Border Archaeology*

9.1.1 Summary

A total of 54 sherds of pottery weighing 644.3g were recovered from two contexts (304 and 328). The majority of this (46 sherds weighing 576.2g) was from context (304).

The pottery was mainly of post-medieval date, with the most frequent material being slip-wares from either Bristol or Staffordshire, probably of 18th -century date. The earliest pottery recovered was a sherd of a 13th to 14th century decorated jug from context (304), which was probably made in Boarstall on the Oxfordshire/Buckinghamshire border. Sherds of Transfer Printed Ware and undecorated white ware from the same deposit were the latest to be found on the site.

9.1.2 Method

The pottery was washed and examined by eye or under magnification (×10) sorted into fabric type and weighed. The results were entered on an Excel spreadsheet.

9.1.3 The pottery

9.1.3.1 Medieval pottery

A single sherd of a jug in Brill/Boarstall ware (13th to 14th century) was recovered from context (304). It was highly decorated with applied clay strips, typical of the Boarstall industry, beneath an olive green glaze. Also possibly of later medieval or early post-medieval date were two sherds of Donyatt ware, probably both of jugs, one of which had painted slip decoration.

9.1.3.2 Post- medieval pottery

Malvernian wares were brought into Bristol in quantity during the later medieval and early post-medieval periods, with the industry collapsing in the 17th century, when Malvern Chase was enclosed. The sherds of this fabric were of the later, paler type and almost certainly date to the end of the industry.

The 17 sherds of Staffordshire or Bristol slipware most probably date to the 18th century. With the exception of a single sherd in a red fabric, most were white with a dark brown slip under a clear glaze. On two sherds the slip was combed or feathered, while a sherd of a cup or tankard was decorated with dark brown spots. The dishes or

chargers had a trailed slip. The sherd in a red fabric, probably a local product, was decorated with spots and stripes.

Also of 18th -century date were three sherds of North Devon gravel tempered ware from context (304). From the same context, were two sherds of Frechen stoneware (late 16th to 17th century and probably from a 'Bartmann' jug) and a single sherd of Westerwald stoneware (18th century) with a cobalt glaze, possibly from a tankard. Three sherds of tin glazed ware, two with blue painted decoration and one completely plain, were also found in (304) and were most probably of 18th -century date. However, the Transfer Printed Wares date to the late 18th or 19th century or later. Pearlwares were also recovered from context (304).

A sherd from context (328) was probably a later product of the Saintonge industry, which continued until the 17th century. It was a smooth, quartz-free white ware, decorated with a face motif beneath a green glaze, and may have been from a chafing dish. No modern Transfer Printed or white wares were recovered from this context.

9.1.4 Discussion

Pottery from the two contexts probably indicates normal domestic occupation and dumping. The wide date range (with (304), in particular, containing pottery dating from the medieval period through to the 19th century) suggests that this context had been disturbed, most probably on numerous occasions. No products of the local medieval kilns (Ham Green or Redcliffe) were recovered. Frechen and Westerwald stonewares were imported into the country in large numbers and the sherd of Saintonge ware is not surprising given Bristol's position as a port. Context (328) contained pottery dating to between the 17th and 18th centuries and suggests less disturbance to the context.

9.1.5 Catalogue

Total	Fabric	slipware	TGL	Malv	TPW	WEST	Frechen	Brill	PEARL	Saint	WHIT	CRW	Dony	FKW	NDGT
54	Number of sherds	17	3	2	3	1	2	1	3	1	3	12	2	1	3
644.3	Weight g	170.4	23.8	6.8	30.8	10.3	20.1	6.9	46	3.2	28	186.8	36.2	5.8	69.2

9.1.5.1 Context (328)

Total	Fabric	slipware	Malv	Saint
8	Number of sherds	5	2	1
68.1	Weight g	58.1	6.8	3.2

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