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CAPITAL STREETS PROJECT: GRASSMARKET, EDINBURGH

Data Structure Report of an Archaeological watching Brief

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PROJECT SUMMARY SHEET

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Fieldwork	SEPTEMBER 2007 – NOVEMBER 2008
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Signed off by: .....

Simon Stronach BSc(Hons) MIFA, Project Manager

Date:.....

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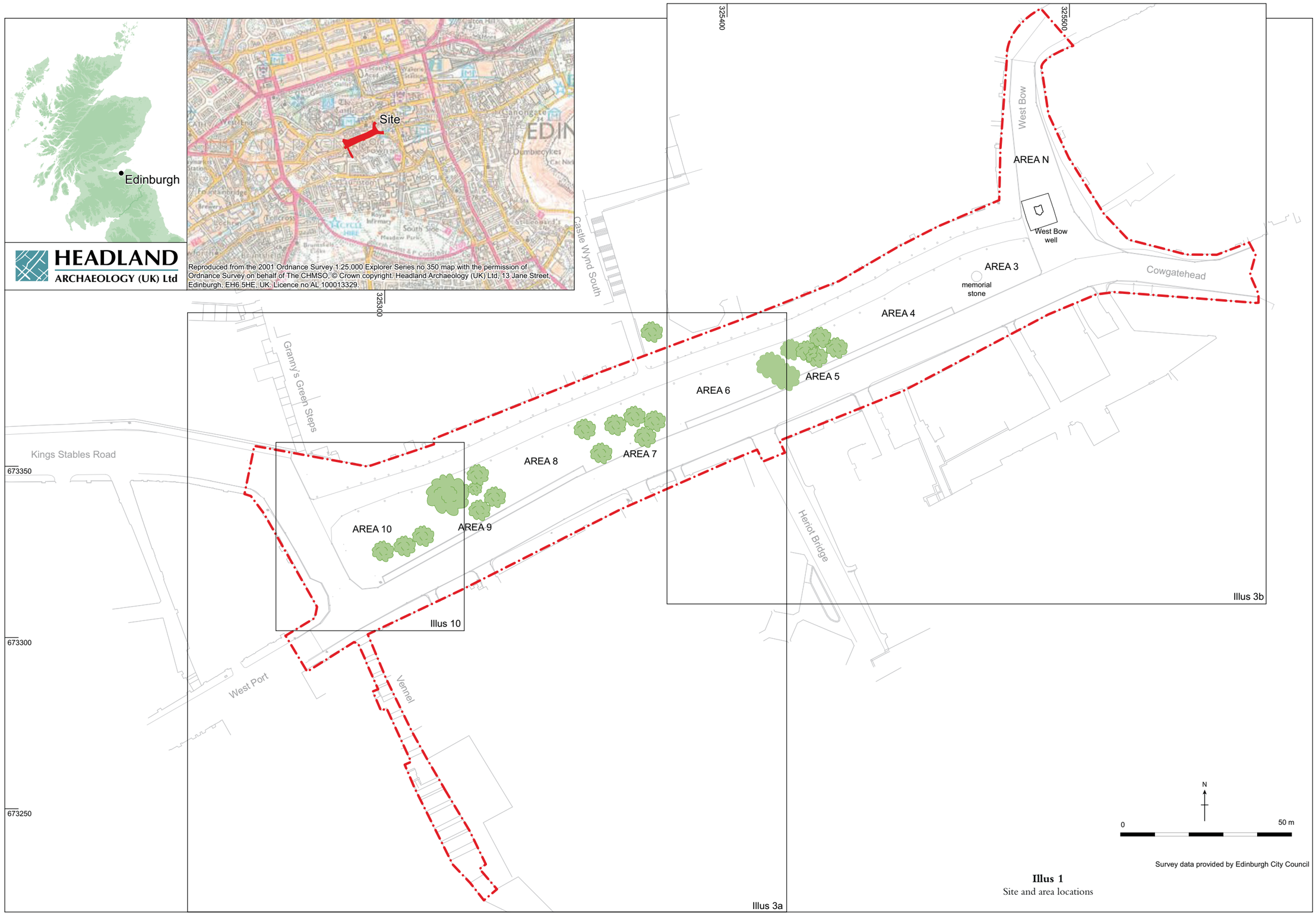
CONTENTS

Headland Archaeology was commissioned by RJ McLeod on behalf of the City of Edinburgh Council and in accordance with the requirements of the City of Edinburgh Council Archaeology Service (CECAS) to monitor a programme of works undertaken in the Grassmarket, Edinburgh, as part of the Capital Streets Project. The City of Edinburgh Council directly commissioned Headland to undertake post-excavation analysis of material found during the excavations. Works to refresh the area included environmental improvements, the introduction of new street furniture and the relaying of the ground surface and were monitored by archaeological watching brief. Areas were excavated for the introduction of recycling bins, new trees, manholes and pipe trenches as well as resurfacing.

Deposits of archaeological significance were encountered to a maximum depth of 2.3m below the modern ground surface. Key finds included:

- *prehistoric features dating to the Middle Bronze Age*
- *features and deposits dating to the Anglian occupation of Edinburgh (7th-10th century AD)*
- *an early Scottish cobbled surface and deposits (11th-12th century)*
- *medieval surfaces (13th-15th century) and the foundations of the Flodden wall*
- *an elaborate system of stone built culverts and foundations of the 19th century Corn Exchange building*
- *a bomb crater from a high explosive device dropped from a World War I German navy zeppelin was also encountered.*

The Anglian and early Scottish features are of particular interest as they expand our understanding of pre-burghal Edinburgh and indicate more extensive settlement than previously known.



Illus 1
Site and area locations

CAPITAL STREETS PROJECT: GRASSMARKET, EDINBURGH

Data Structure Report of an Archaeological watching Brief

by James McMeekin

INTRODUCTION

An archaeological watching brief to monitor a programme of works undertaken in the Grassmarket, Edinburgh, as part of the Capital Streets Project was commissioned by RJ McLeod in accordance with the requirements of the City of Edinburgh Council Archaeology Service (CECAS). The City of Edinburgh Council directly commissioned post-excavation analysis of material found during the excavations when its significance became apparent.

The development lay within the UNESCO World Heritage Site of Edinburgh's Old Town. The work involved monitoring excavations for recycling bins, manholes and pipe trenches as well as new trees and resurfacing. The development site was split into numbered areas (Illus 1). The work commenced in September 2007 and was completed in November 2008.

BACKGROUND

Natural topography

The works encompassed the Grassmarket and its approaches, specifically the east end of Kings Stables Road, Vennel, Cowgatehead and West Bow. Topographically the Grassmarket is situated in a valley to the south of High Street, and shares its orientation.

The valley occupied by the Grassmarket is mirrored to the north of the Castle Rock and High Street by the valley now containing Princes Street Gardens. The Castle Rock is a volcanic plug of hard igneous rock that protected the softer sedimentary rock to the east, beneath what was to become High Street, forming a geological craig-and-tail formation. To the north and south of Castle Rock deep valleys were carved into the softer rock during the last Ice Age by glaciers flowing from the west. The southern valley, now occupied by the Grassmarket, has since seen the accumulation of glacial till, colluvium (material washed downslope from the Castle Rock and High Street).

Prehistoric

Prehistoric activity has been identified on Castle Rock dating to the late Bronze Age or early Iron Age (Driscoll & Yeoman 1997, 220). Bronze Age finds from the Canongate to the east of the Grassmarket further testify to prehistoric activity within the modern city's boundaries (Stevenson *et al.* 1981, 37).

Anglian and early Scottish

The Grassmarket has not been identified as a likely location for the survival of Early Historic deposits, although Harris (1996, 542) suggested the name of the medieval Stok Well at the west end of the Grassmarket may have derived from an Anglian word, perhaps referring to an outlying steading or boundary marker (see below). The poem 'The Gododdin of Aneurin' makes reference to Anglian occupation of Castle Rock in the 7th century AD, which has been confirmed by excavations carried out between 1988 and 1991 (Driscoll and Yeoman, 1997, 5). A putative Early Historic fort located on Arthur's Seat has yet to find archaeological confirmation (Alexander 1997), though cultivation terraces in the area point to prehistoric occupation (Stevenson *et al* 1981). The Pictish Chronicle records that Castle Rock was held by the Angles until c.960 AD when it was abandoned to the Scots under King Indulf (Stevenson *et al.* 1981, 38).

Medieval

The Scottish Burgh Survey suggests that Grassmarket may have been formed as a thoroughfare at roughly the same time as the Cowgate, in the 13th to 14th century, making it one of the first planned expansions of the medieval town (Stevenson *et al.* 1981, 12). Recent excavations at St Patrick's Church and at 144-146 Cowgate to the east of the Grassmarket suggested activity on both these sites by at least the early 14th century, although in both cases this did not entail buildings fronting the street (Jones forthcoming; Dalland forthcoming). More specifically a historical reference to a 'Newbygging under the castle' in 1363 has been taken as suggesting development of Grassmarket around that time (Lawson & Reed 2003, 11). The locality of the Grassmarket was assigned a weekly market in 1477 by a royal charter of James III. Butter, cheese and wool were sold in the West Bow, and cattle traded outside the Westport (Stevenson *et al.*, 1981, 16-17).

On the southeast corner of the Grassmarket the Greyfriars, or Franciscan, monastery was founded in the 15th century, but was destroyed by Reformers in 1559 and its yards used as a municipal burial ground following a petition to the Queen in 1562 (Stevenson *et al.*, 1981). The 15th century church appears to have lain closer to the Grassmarket than its modern counterpart, and may have been built on the site within the burgh bestowed on the friars by James Douglas of Casillis prior to 1479 (Cowan & Easson 1976, 131).

The Grassmarket was first paved prior to 1543, as a notice for the repair of the 'calsay' (a paved area or roadway) from the Upper Bow to the West Port dates to this year. The Grassmarket may have lain outside the city walls until the construction of the Flodden Wall around 1513 but it has been suggested recently that construction of at least parts of the wall may have happened earlier as the West Port, a major entrance to the town, was documented in 1508-9 (Lawson & Reed 2003, 11). The Flodden Wall extended south along what is now Grannys Green Steps, across the west end of the Grassmarket and up the Vennel, where portions still survive.

Post-medieval

At the eastern end of the Grassmarket a Corn Market is denoted on Edgar's 1765 map, Ainslie's map of 1780 and again on one of Kirkwood's 1817 maps. The market was moved here from the old Mealmarket in 1717 (Harris 1996, 284). The structure is depicted as a covered platform in an engraving in the fourth volume of Grant's 'Old and New Edinburgh' (c.1890, 233). This engraving also shows the location of the old gallows to the west of this first Corn Market. The Grassmarket gallows went out of use in the late 18th century (see below) indicating that this engraving is a depiction of 18th rather than 19th century Edinburgh.

Buildings are shown up against the inside of the Flodden Wall to the north of the West Port on Ainslie's map of 1780, together with an enclosure identified as a sheep pen to the immediate east. One of Kirkwood's two maps dating to 1817 identifies a substantial building as a Stock Market at this location; interestingly, this structure is omitted on the other plan which may indicate near contemporary construction. Harris (1996, 284) reported that the removal of the corn market to this new structure took place in 1814. This same structure is identified on the first edition Ordnance Survey map of 1853 as the 'Old Corn Market'. This Corn Market or Exchange was referred to in the 1880s as '…an unsightly arcaded edifice, 85 feet long by 45 feet broad, with a central belfry and clock, now swept away…'(Grant, c.1890, 230).

This Corn Market did not feature on the 1877 revision of the first edition Ordnance Survey map. Both the Corn Market buildings were superseded by the construction of a new Corn Exchange on the south side of the Grassmarket, which can be seen on the first edition Ordnance Survey map of 1853. This 'New Corn Exchange' was erected in 1849 at the cost of £20,000 (Grant, c.1890, 234).

A number of wells were located in the Grassmarket including the well at the foot of West Bow, constructed in 1681 (Stevenson *et al.*, 1981, 29). The medieval Stok Well was located immediately east of the West Port, but does not survive. The name for this well may come from the Anglian *staca* (a stake or boundary mark) or *stoc* (an outlying steading) (Harris 1996, 542).

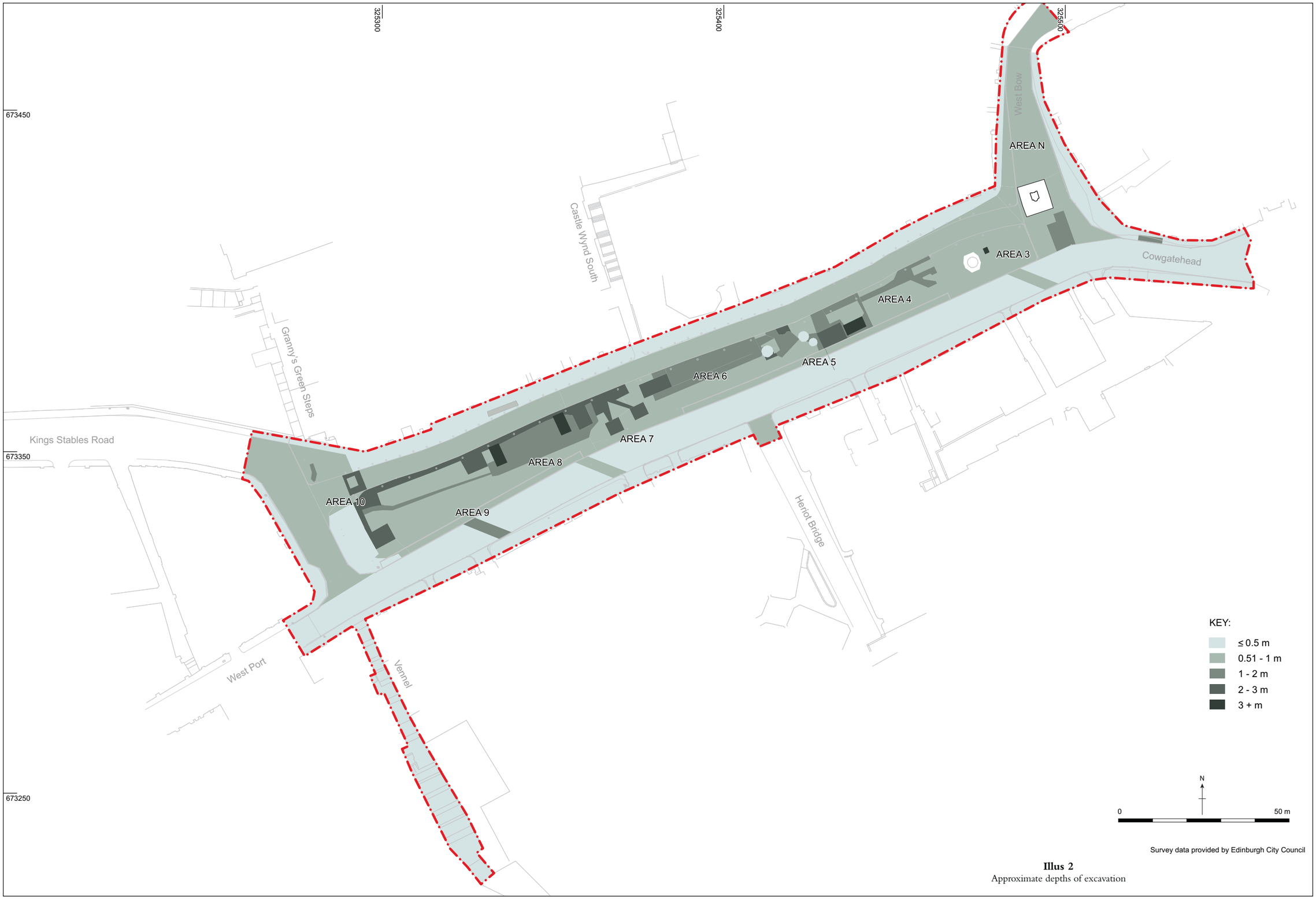
On the night of April 2nd, 1916 a bomb dropped from the German navy zeppelin L14 hit the Grassmarket outside the White Hart Inn, injuring four - one of whom later died. It is believed that the airship's target was the docks at Rosyth and the fleet moored in the Forth. It was only when L14 and its sister zeppelin L22 encountered fire from the ships that they turned inland, dropping a number of high explosive and incendiary devices on the city (Mullay 1996).

OBJECTIVES

The objectives of the watching brief were to monitor excavations and to record any archaeological remains threatened by the proposed development works, in particular any exposed parts of the Flodden Wall.

METHOD

An archaeologist was required to monitor all excavations that went below the sand make up for the modern ground surface of setts, tarmac and paving. Principal elements of ground disturbance comprised the excavation of pits for the introduction of recycling bins and manhole access together with the excavation of trenches for drains and ducts. Frequent shallower open cut trenches were excavated throughout the area,



Illus 2
Approximate depths of excavation

in association with exposing and reducing the existing ground surface to formation level for resurfacing. The approximate depth of excavation is shown on Illus 2.

Numerous machine excavators were used ranging in size from a 16 ton 'rubber duck' to mini excavators. Toothed buckets and breaker attachments were used on modern hard surfaces, whilst flat edged buckets were used to excavate soft deposits. In areas close to active services excavation was carried out using hand tools.

Where archaeological deposits and features were present, context numbers were assigned (Appendix 1). Archaeological deposits were recorded photographically using colour slide and black and white print film (Appendix 2). Section and plan drawings were made of complex deposits and features (Appendix 3), elsewhere coordinates were taken with a Total Station EDM on exposed deposits and features in order to record their location including relative heights. Small finds were allocated individual numbers and bulk finds were recorded by context. Environmental samples were taken from deposits and features (Appendix 4). A representative number of these were processed by wet sieving and organic material recovered from several key contexts was sent for radiocarbon (^{14}C) dating.

RESULTS

Archaeological deposits were encountered to a maximum depth of 2.3m below the modern ground surface. Deposits ranged in date from prehistoric to post medieval, and a number of old ground surfaces were encountered and recorded. The results of the watching brief are summarized below.

Basic stratigraphy

A basic stratigraphic sequence was consistent throughout the excavations with the glacial till (clean geological sediments derived from post-glacial erosion) occasionally sealed by a grey silty clay buried subsoil, interpreted as an old ground surface or topsoil. A layer of hillwash (colluvium) sealed these deposits. Above this layer of colluvium a sequence of cobbled surfaces and redeposited domestic waste material was encountered together with an extensive network of drainage culverts. These deposits are explained in greater detail below and illustrative sections may be found in Illus 4-7.

Natural topography

Levels relative to Ordnance Datum were taken wherever clean geological sediments (typically mid brown clay) were encountered in order to build a picture of topography prior to human occupation. Due to the nature of the excavations these levels were predominantly in the central part of the Grassmarket where areas were excavated for the introduction of recycling bins, drains and ducts, and new trees. A general slope declining from east to west was apparent in the valley base. The glacial till was noticeably higher on the north side of Area 9 than within the central part of the Grassmarket. This indicated that the base of slope from Castle Rock originally extended further south and that the northern street frontage is cut back into this slope. About halfway along the Grassmarket, towards the boundary between Areas 6 and 7, the layer of colluvium was substantially thinner (or non-existent) than further to the west and east. This may indicate a slight rise in the natural topography here, and may represent the tail end of a ridge running north-south from what is now Castle Wynd South to the Grassmarket.

Prehistoric: Bronze Age features

Two pits were exposed in section during the excavation of a narrow trench through Areas 9 and 10. The trench was located along the southern edge of the existing road on the north side of the Grassmarket. The pits were both cut into an old ground surface and sealed by a layer of colluvium. They lay approximately 1.8m below the modern ground surface. Pit [144] was a small sub-circular feature, and filled by compact, dark brown sandy silt. Pit [156], to the northeast of [144], contained frequent sub-angular stones, which spread beyond the edge of the pit.

The fills from both pits were sampled for environmental analysis. The charred plant remains found within the fill of pit [144] contained only common to abundant amounts of charcoal fragments (Appendix 6). The fill of pit [157] contained occasional fragments of uncharred wood and twigs and a common amount of hazel charcoal (Appendix 6). Charcoal recovered from pit [144] and hazel charcoal recovered from pit [157] were then sent for radiocarbon dating. The material from pit [144] was calibrated to between 2200BC and 1950BC (2 sigma, SUERC 19840). The material from pit [157] returned a calibrated date of between 1500BC and 1380BC (2 sigma, Beta-242133). The assemblages from the pit deposits suggested the features were used as cooking pits or contained fire debris from activities in the surrounding area (Appendix 6).

Anglian features

Several features were identified that related to the Anglian occupation of *Dun Eidyn*. Two pits, approximately 4.4m apart, were located within an area excavated to hold a recycling bin at the west end of Area 8. Pit [009] had a diameter of 0.75m and was approximately 0.4m deep. The fill of the pit contained an abundant amount of charred hulled barley and common charred oat. The deposit also contained occasional fragments of marine shell, burnt bone and an abundance of charcoal up to 2 cm in length (Appendix 6). Radiocarbon analysis of some hulled barley from the pit returned a calibrated date of AD 600 to AD 770 (2 sigma, SUERC-19839).

Pit [102], to the north of [009], measured 0.4m in diameter, and was a minimum of 0.25m deep although the upper part of the cut was difficult to distinguish from the naturally accumulated buried topsoil [101]. The fill of the pit contained an abundance of charred barley and occasional grains of charred oat. Fragments of charcoal, burnt and unburnt mammal bone and marine shell were also recovered (Appendix 6). The analysis of charred barley returned a date between AD 660 and AD 810 (2 sigma, Beta 242132). A fish vertebra and three small fragments of fish bone were also recovered from the fill of the pit (Appendix 6).

These features were sealed by an extensive deposit of colluvium and were cut into the glacial till (Illus 5).

Further to the east, in Area 4, another pit [162] was identified. The fill of this pit contained occasional charred cereal grain that was too poorly preserved to be identified. The fill of the pit also contained fragments of charcoal, burnt and unburnt mammal bone and marine shell (Appendix 6). Radiocarbon analysis of holly charcoal from this feature gave a slightly wider range of dates than with pits [009] and [102] with a calibrated date range of AD 690 to AD 900 and AD 920 to AD 950 (2 sigma, Beta-242134).

Approximately 1m to the south of pit [162] at the edge of the excavation for the recycling bin in Area 4 lay a linear deposit of rubble and redeposited soil [160]. This deposit was aligned roughly east-west and was 4m long. The stones were typically less than or equal to 0.20m^3 and there was no indication of any bonding material or foundation cut. The proximity of this rubble to the Anglian period pit [162] may suggest that it represents collapse from a structure lying just beyond the southern limit of excavation in this area.

A shallow, linear feature [431] oriented roughly east-west was exposed in a drainage track in Area 4 approximately 5.8m to the north east of [162]. The deposit filling this linear feature contained both burnt and unburnt material, charred hulled barley and charcoal. Radiocarbon analysis of the charred grain returned a calibrated date of AD 590 to AD 670 (2 sigma, SUERC-19986). A cattle carpal bone was also recovered from the fill of this feature. The bone was covered in metal splatter which may indicate the presence of metalworking in the area (Appendix 6). This linear feature may represent a shallow gully or beam slot.

Early Scottish deposits

Further to the east in Area 4 a mid to dark brown highly organic deposit [543] up to 0.4m thick and containing wood fragments and organic matter was exposed in Area 4. This deposit was sealed by a layer of cobbles [539], most likely part of a medieval ground surface. The organic layer lay over soft mid grey silty clay [545], containing frequent boulders, fragments of animal bone and wood. This deposit [545] was very similar in appearance and composition to the naturally derived buried subsoil, which was compact grey clay, and may have been redeposited subsoil mixed with waste material. Radiocarbon analysis of thistle fruits from deposit [545] returned a calibrated date of AD1010 to 1160 (2 sigma, SUERC-22072). Animal bone recovered from this deposit included a cattle mandible from an individual aged 40-50 months at the time of its death (Appendix 6). The mandible also showed evidence of cut marks indicating that the animal had most likely been slaughtered.

Layer [545] sealed a layer of cobbles [551] comprising sub-rounded and slightly sub-angular stones pressed into the buried subsoil to form a compact, slightly uneven surface. At the western end of this surface a shallow, uneven cut [553] was exposed containing substantial boulders [552] (Illus 6). This may represent the northwest-southeast foundation cut for a wall. The cut truncated the buried subsoil and in some places the underlying glacial till but was seldom more than 0.1m to 0.15m deep. This foundation trench continued beyond the limit of excavation to the north and south. The area of cobbling exposed measured approximately 1m north-south by 2m east-west. This surface continued beyond the limit of excavation to the south and east.

The exceptional preservation of organic material in deposits [543] and [545] allowed the analysis of insect remains with a view to furnishing information on the nature of land use and human activity in the immediate area during the 11th-12th centuries. The fauna identified within the sample from deposit [545], which sealed the cobbled surface [551], are associated with dung and accumulations of 'foul, rotting organic material' (Appendix 6). Scarabaeidae (dung beetles) accounted for nearly 40% of the entire assemblage.

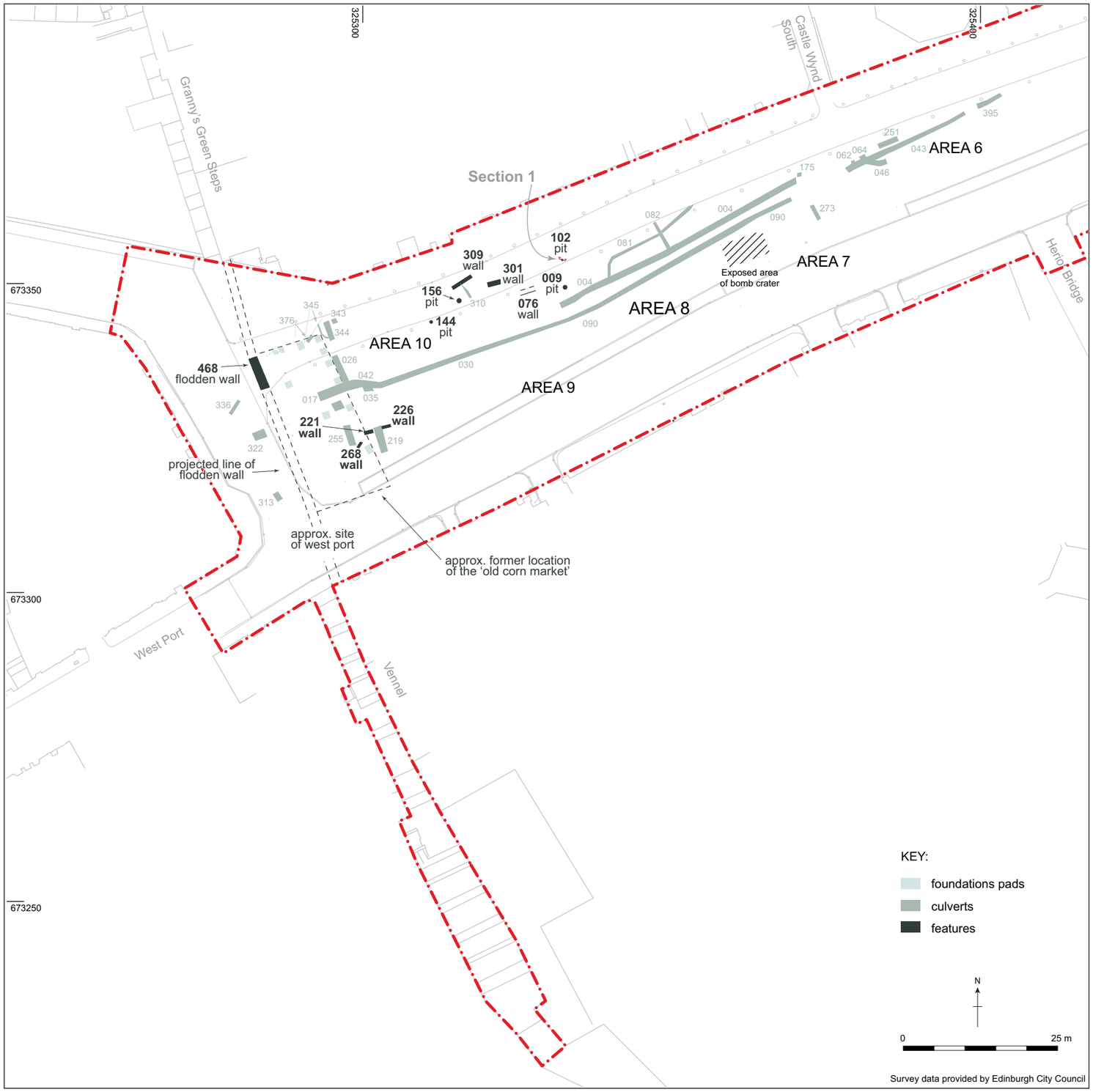
A similar trend was observed in the sample from deposit [543] which lay over [545], with the majority of species from this sample associated with accumulations of dung and decomposing organic material. Large numbers of Scarabaeidae (dung beetles) indicate large quantities of fresh dung, and several other beetle species found are strongly associated with the dung of cattle and horses (Appendix 6). Smaller groups of species were associated with human habitation and the wider, natural environment.

The fauna identified within these samples indicate an area being used by livestock (Appendix 6) Together with the cobbled surface [551] and possible wall base [552] this is suggestive of a cattle pen or stable.

Colluvium

The prehistoric and Anglian features were sealed by a layer of colluvium. This deposit was formed from material washed downslope from around Castle Rock and the upper High Street. The early Scottish cobbling lay at the same stratigraphic level as the earlier features but was sealed by a later medieval surface rather than colluvium, which presumably had been truncated here. The accumulation of colluvium must reflect increased erosion upslope around the present day Esplanade and Castlehill. This erosion could have been caused by such activities as the clearance of vegetation, increased cultivation and the disruption of natural drainage systems. Fragments of White Gritty pottery dating to the 12th-14th century were recovered from deposit [88] in Area 7 and represent the earliest material recovered from the colluvium.

The compact, homogenous slightly sandy silt colluvium provided an anaerobic environment that led to the survival of small bone fragments, marine shell and charcoal (Appendix 6). Fragments of medieval white gritty pottery, a flat copper alloy ring buckle and two late medieval/early post-medieval iron horsehoes were also recovered from the colluvium (Appendix 5). These colluvial deposits were up to 0.8m deep in Area 8 and the western end of the Grassmarket (Illus 5). In some areas the colluvium was truncated by the laying of medieval cobbled surfaces, which largely marks the end of the accumulation of deposits in the Grassmarket. The relatively scarce artefacts recovered from the accumulation, suggest this happened in the later medieval period as documents suggest.



Illus 3a
Archaeological features in west of site

Medieval deposits and structures

Cobbled Surfaces

A series of cobbled surfaces were found throughout the Grassmarket, with associated occupational deposits overlying each (Illus 7). The deepest of these was most likely to relate to the medieval paving of the area, known to have taken place prior to 1543 (see background). Fragments of white gritty pottery (13th-15th century) were recovered from deposits directly overlying the earliest cobbles.

The cobbled surface lay at 62.2m OD at the west end of Area 10 and rose to the east, lying at 71.51m OD at the lower end of West Bow. The modern ground surface rises from 64.43m OD to 72.40m OD over the same distance. There was therefore a rise of 9.31m in the original cobbled surface over a distance of approximately 220m, compared to a rise of 7.97m in the modern ground surface over the same distance. This indicates a slightly steeper incline from west to east in the medieval period.

Due to the keyhole nature of the excavations it was not possible to determine whether the medieval cobbling formed a continuous surface throughout the Grassmarket. Furthermore, the majority of deep excavations (over 1m) were carried out within the central part of the Grassmarket making it difficult to ascertain the extent of the medieval market (Illus 2).

Excavations carried out on the north side of Areas 9 and 10 did not expose a surface that was likely to correspond to medieval cobbling and encountered glacial till at a significantly higher level than in the central corridor of the Grassmarket. It seems probable that the modern building frontage is cut back into the base of the slope leading down from Castlehill.

In Area 4 a compact layer of animal bone and stone [154] was encountered. This surface appeared to have been a localized variation from the typical cobbling and may indicate that butchery was taking place in the vicinity.

To the north of [154] in Area 4 the earliest cobbles appeared to have been repaired. The original surface [341] showed signs of wear with patches missing in the surface. The repairs [312] were exposed over [341] and separated only by a thin sandy silt deposit [342] up to 0.1m thick.

At West Bow only a single cobbled surface was encountered. This lay at 0.9m below the modern ground surface just to the west of the West Bow Well. This surface was exposed running up West Bow between 0.7m and 0.9m below the modern ground surface and was largely intact, except where it had been truncated by modern activity. This compact, slightly uneven surface was made up of sub-angular stones typically less than or equal to 0.15m^3. An exception to this was at the eastern edge of excavation and to the east of wall [188] adjacent to the modern pavement edge. Here a 2m by 1.4m patch of the surface comprised larger boulders up to 0.6m long, 0.4m wide and 0.2m high. This variation may represent an area that had to deal with intense wear on the inside corner of West Bow towards the base of the slope, or may be related to the old street frontage. A similar deposit of boulders was encountered at the Canongate during the excavations for the new Scottish Parliament and was interpreted as a post-medieval kerb (Stronach *et al* 2008).

Few finds were recovered from the deposits directly over the cobbles in West Bow however the documentary evidence indicates that this area was subject to street repairs along with the Grassmarket in 1543 (see Background). As such it seems highly probable that these cobbles are the remains of the original medieval surface with subsequent repairs. If this is the case then the gradient between the Grassmarket and West Bow would have been very steep. A deposit of anaerobic dark brown sandy silt [520] 0.4m thick, washed downslope before settling at the foot of West Bow/Cowgatehead, was sealed by a series of clay leveling deposits (collectively 0.75m thick). These clay deposits may have helped reduce the gradient.

The Flodden Wall

The heavily truncated remains of a substantial wall [468] running approximately north-south were encountered at the west end of the Grassmarket in Area 10. The exposed remains measured 4m long, 1.8m wide and 0.4m high. The wall was constructed from

large, roughly faced sub-angular stones, with little obvious sign of deliberate coursing and bonded with a friable lime mortar. The stones were a hard igneous rock, possibly diorite. The structure was truncated by a number of modern services. The structure continued below the limit of excavation and presumably extends to at least 1.8m below the modern ground surface, to the depth of the medieval cobbled surface in Area 10. The location and nature of this wall confirmed that it was a preserved section of the Flodden Wall.

Other structures

To the southwest of the Flodden Wall a further wall [268] was exposed in a trench in Area 10. Constructed from sandstone boulders the wall ran northeast-southwest across the line of the trench. The exposed structure measured 0.6m long, 0.7m wide and 0.3m high. The wall was largely a drystone construction, but occasional clean mid-brown clay bonding material was noted. Voids between and beneath the stones indicated that the structure may have continued down beyond the limit of excavation.

A considerable amount of loose rubble lay over the structure suggesting that it had been at least partially demolished. The wall lay 1.56m below the modern ground surface and appeared to be abutted by the adjacent cobbled surface [248], although the constraints of a narrow trench and sheet piling made it difficult to confirm this. This surface represented the earliest cobbling preserved in the area and lay over the glacial till and beneath 1.8m of deposits.

The remains of a possible wall [347] were identified in a narrow trench in Area 4. The structure was of drystone construction and comprised a linear north-south arrangement of sub-angular boulders, typically 0.3m^3. The exposed structure measured 0.7m long, 0.4m wide and 0.3m high. Only a single course of stones was exposed. The structure lay partially below a cobbled surface [348] and most likely represented part of a simple medieval structure or boundary wall.

The heavily truncated remains of an east-west running section of wall [188] were exposed in Area N (W) in West Bow. The structure was made of roughly squared and coursed stones, bonded together with a clean, mid brown clay. The exposed remains of the structure measured 2m long, 0.65m wide and 0.95m high. Beneath these upper courses lay two more rough courses of smaller stones with yet smaller sub-angular stones wedged in between. The structure lay in a foundation trench [195] cut into the glacial till, and was abutted by a cobbled surface [192]. The two rougher, lower courses represented the foundations for the wall and lay below the level of the contemporary ground surface.

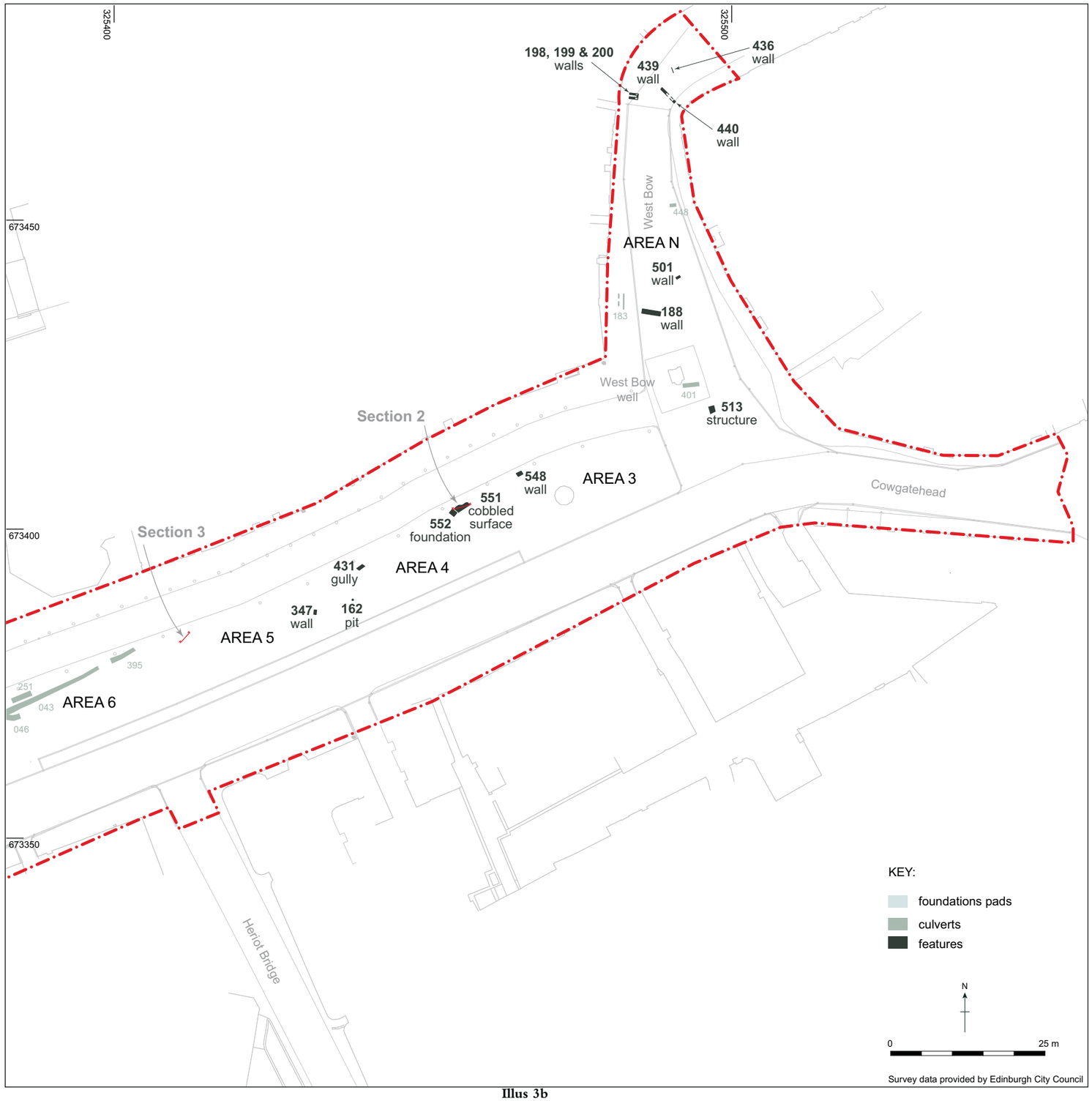
The structure was truncated to the west, south and east by modern activity. To the southeast and roughly perpendicular to wall [188] further clay bonded walls were exposed by the excavation of a trench during service renewal works (Savine 2006). Due to the heavily truncated nature of the remains it is not possible to infer whether these walls were part of the same structure. The walls are likely to indicate the position of the medieval street frontage prior to the expansion of West Bow.

Post medieval deposits and structures

Cobbled surfaces

A number of cobbled surfaces were exposed lying between the medieval surfaces and the modern surface. Lying over these cobbled surfaces were deposits of black brown sandy loam with frequent oyster shell, charcoal fragments, animal bone and degraded sandstone fragments. These deposits represent the deliberate dumping of domestic and industrial waste material to raise and flatten the level of the ground surface prior to a new cobbled surface being laid. These later cobbles were also frequently set into imported clays which may have aided in creating a more solid and longer lasting surface.

An extensive cobbled surface [314] to the west of the line of the Flodden Wall approximately 0.7m below the modern ground surface testifies to the continued expansion of the Grassmarket (Illus 9). The overlying deposit, [326], contained fragments of post medieval pottery and clay pipe dating to the 17th and 18th century (Appendix 5).



Illus 3b
Archaeological features in east of site

Illus 4
West facing photographic section showing culverts [004], [090] and general stratigraphy

This surface most likely corresponded to the cobbled surface [356/371] in Area 10. Pottery sherds dating to the 17th/18th century were recovered from the deposit [357] directly overlying this surface. This surface was encountered again to the southeast in Area 10.

This 17th/18th century cobbled surface was frequently encountered during excavations and typically lay 0.6-0.8m below the modern ground surface. In open cut trenches for drains and ducts in Area 5 this surface appeared to have been repaired in a number of places. The surface was exposed again on the south side of Area 4.

A stepped area within the cobbled surface was identified in Area 4. The lower level of this surface continued further to the south and beneath the higher level cobbles, suggesting the incorporation of part of the earlier cobbled surface into a new ground surface.

Patches of cobbles relating to a late post-medieval ground surface, most likely dating to the 19th century, were exposed in Area 10. Elsewhere this cobbled surface may have been truncated prior to the laying of a 20th century ground surface. Areas of the, then, existing cobbled surface in good repair may have been incorporated into the 19th century ground surface, as in West Bow. A cobbled surface [27] was exposed in Area 10, 0.3-0.4m below the modern ground surface and lay on a slight camber sloping down to the south. This surface was noticeably more regular and even than the earlier cobbled surfaces exposed in this area. Further patches of this surface were identified in the northwest corner of the Grassmarket and again in Area 9.

The remains of cast iron lamp post bases were identified in a trench excavated for a recycling bin in Area 4 and to the north of Area 8. The truncated remains of lamp post base [165] were set into a substantial concrete foundation in excess of 0.5m³ in Area 4. The remains of a possible structure in the southern section of the same trench in Area 4 were exposed just below the modern kerb stones. This structure [168] comprised a linear arrangement of boulders running approximately east-west. No bonding material was identified on the stones although ferrous patches and staining were visible. The immediate area was badly truncated by modern activity. This feature may represent the wall of a late post medieval structure.

Drainage system

A system of drains was encountered throughout the Grassmarket and West Bow. These culverts were constructed from roughly squared and coursed sandstone blocks and bonded together with lime mortar. Flat lintel and base slabs up to 0.15m thick were bonded to the upper- and lowermost courses respectively. Substantial foundation trenches were cut through surrounding deposits with a thin bedding of sand sometimes introduced before the construction of the culverts and the eventual backfilling of the excavated material over the structures.

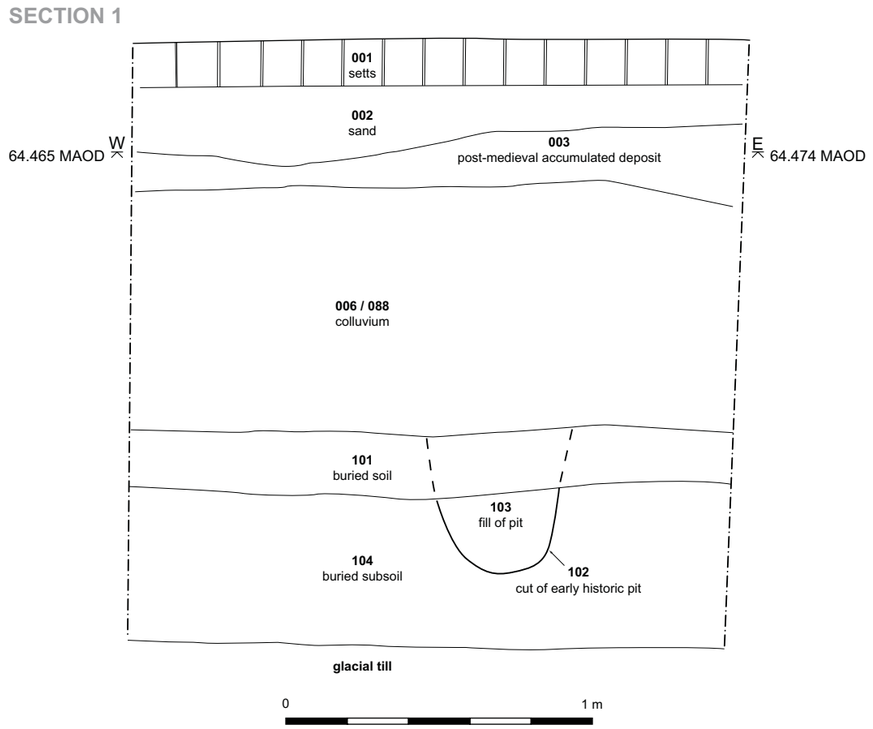
The drainage system followed the natural topography, with culverts running across West Bow before joining to drain downslope and separating again at the natural watershed at the foot of West Bow. The truncated remains of a culvert [448] running approximately east-west was identified about halfway up West Bow. A structure originally identified as a wall running approximately north-south during previous works (Savine 2006) almost certainly represents the heavily damaged remains of another section of this drainage network. Only a single fragment of the system draining away from the Grassmarket towards Cowgatehead was exposed. This section of culvert [401] ran down to the east for 2.3m from just below the West Bow Well and was very heavily truncated by the cut for a modern service.

Two major arterial culverts running in parallel approximately east northeast-west southwest were encountered on numerous occasions (see Illus 4). The southern of the two culverts appeared to have been constructed first with the more northerly following soon after. It is possible that these culverts ran in tandem to deal with the drainage issues of such a low lying and busy area. These drains were substantial features; the northerly culvert [004] measured 1.3m wide by 0.85m high and was encountered in a number of excavations in Areas 6, 7 and 8. The internal space of culvert [004] was 0.6m². The parallel culvert [090] lay 1.3m to the south in the pit excavated for a recycling bin at the west end of Area 8 and was only marginally smaller.

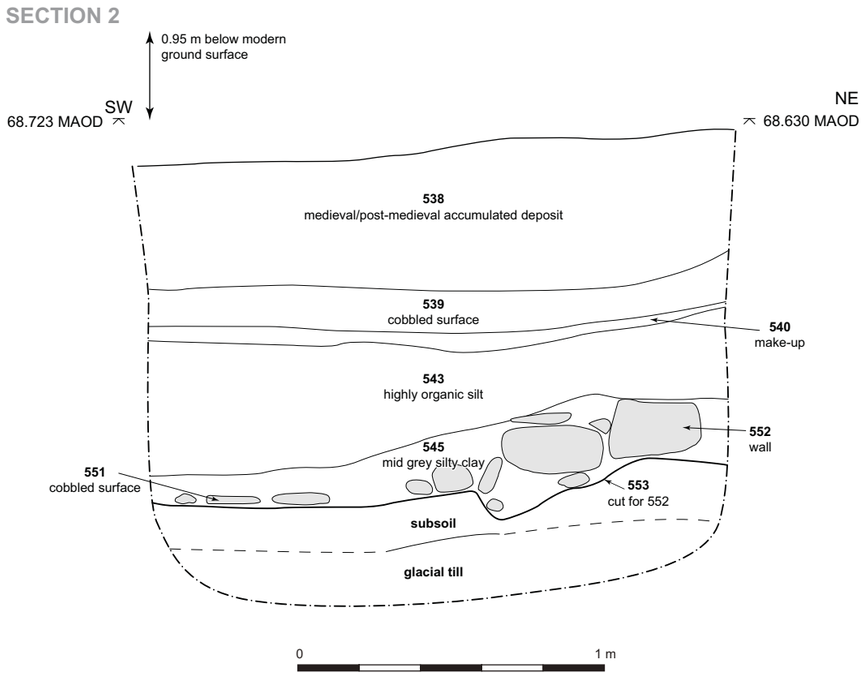
A series of smaller culverts fed into these arterial drains from the north. The limited extent of excavations on the south side of the Grassmarket meant it was not possible to determine whether similar smaller drains from the south fed into the central culverts or whether a separate system ran down the southern side. Culverts running approximately north by northeast-south by southwest were encountered on the south side of the Grassmarket during excavations in Areas 7 and 10, as well as the remains of a culvert in an open cut trench across the road to the south of Area 7. These culverts were heavily truncated by modern activity or badly disturbed by tree roots. Four culverts on the south side of the Grassmarket were recorded during an archaeological watching brief carried out by CFA Archaeology Ltd (Hill 2007). Three of these culverts ran north-south and one east-west, suggesting that the substantial drainage system ran right across the Grassmarket. It seems probable that any drainage would have had to follow the natural topography and drain down towards Kings Stables Road.

Sumps constructed to encourage the free flowing of the drainage system were encountered in Area 10 and Area N (W) in West Bow. The sump in Area 10 comprised a substantial sandstone block located within the southern arterial culvert (here [030]) and bonded into the main structure with lime mortar. The water and any material it contained would be forced down into a lower area beneath this block before the water could continue to flow through the rest of the culvert. The heavier material which might otherwise have caused blockages would be trapped in this hollow. The sump [037] in Area 10 was over 1.25m deep and was not bottomed as further excavation became impossible within the confines of the trench. The sump in Area N (W) was of similar construction but was very badly damaged by modern activity.

All the culverts encountered were inactive. A number of the culverts had material accumulated in their bases. The finds recovered from these deposits were typically dated to the late 18th or 19th century (Appendix 5). One culvert [376] in the northwest quarter of Area 10 may represent an early part of the drainage system as it lay beneath the foundations for the Corn Exchange building, indicating that it was no longer in use towards the end of the 18th century.



Illus 5
Drawn and photographic section showing pit[102] and overlying deposits



Illus 6
Section showing structure 552 and overlying deposits

A patch of cobbles [346] most likely representing the 19th century ground surface abutted a north-south running culvert [344] on the north side of Area 10. This indicates that the lintel stones of a number of the culverts may have been level with the contemporary ground surface.

Further to the east, in Area 6, a section of the southern arterial drain (here [43]) was rebuilt following the introduction of a north-south running 15" cast iron pipe (most likely a Victorian water pipe).

Former place of public execution

No structures likely to relate to the former gallows were exposed during the monitoring. The stone marking the Covenanters memorial was left *in situ* and the area around it was excavated to a depth of approximately 0.6m. A patch of cobbles [512] was exposed 1.8m to the south of the Covenanters memorial stone at 69.57m OD. A test pit was excavated in Area 3 to the north west of the memorial stone, adjacent to the 20th century public toilet block. The upper 1.7m of deposits comprised backfill from the excavation for the introduction of the toilet block, before a 0.6m thick homogenous layer of colluvium overlying the naturally derived buried subsoil was encountered. Any structural remains or deposits relating to the former execution site are either preserved beneath the existing monument, beyond the limit of excavations carried out during the watching brief, or have not survived.

Corn Exchange – East end

A sub-square structure [513] of roughly squared and coursed sandstone blocks bonded together with copious amounts of lime mortar was exposed just to the south of the West Bow Well. This structure measured 1.3m long by 1.1m wide and its three courses rose to a height of 0.48m. The cut for a modern duct trench truncated the west side of the structure. A narrow, steep sided foundation cut was exposed on the north, east and south sides and the ground to the immediate west of the modern ducts appeared undisturbed. This structure may represent the remains of the foundations for the Corn Market indicated on Edgar's 1765 map (see above). No other structural remains were found in the immediate vicinity.

Corn Exchange – West end

Three rows of sandstone foundation pads were exposed running north by northwest-south by southeast across the west end of the Grassmarket in Area 10 (Illus 10). These pads were typically either a single massive sandstone block, approximately 1m long, 1m wide and 0.5m high, or comprised two smaller roughly equal sized blocks bonded together with lime mortar.

The pads represented the foundations for the arcaded or colonnaded Corn Exchange built in 1814. The pads would have supported the square columns and lay at, or near to the contemporary ground surface. The pad foundations at the corners of the building were more substantial, with a 1.8m deep foundation pile [270] of roughly squared and coursed boulders bonded together with lime mortar under the southeast corner. At the northeast corner a massive stone pad measuring 2m long, 1.7 wide and 0.5m high composed of sandstone boulders bonded together with lime mortar served as another major weight bearing foundation.

No upstanding remains of the Corn Exchange building were identified. This is hardly surprising as the area was leveled and returned to a cobbled ground surface following its demolition. The truncated remains of cobbled surfaces likely to relate to the Corn Exchange were identified near to a foundation pad [366].

A patch of mortar [370] lay over culvert [376]. The construction of the Corn Exchange building appears to have resulted in the truncation of the culvert. Little appears to have been done to consolidate the void within the culvert, despite the fact that the new multi storey structure lay directly over it. A rubble deposit [382] adjacent to the foundation pad [366] might represent an attempt to consolidate patches of the ground beneath the structure, although this appeared to have been the exception rather than the rule. This may be an indication of the relatively poor construction of this Corn Exchange building and might go some way to explaining why it only appears to have functioned for around 35 years before being replaced by a new structure on the south side of the Grassmarket in 1849.

West Bow structural remains

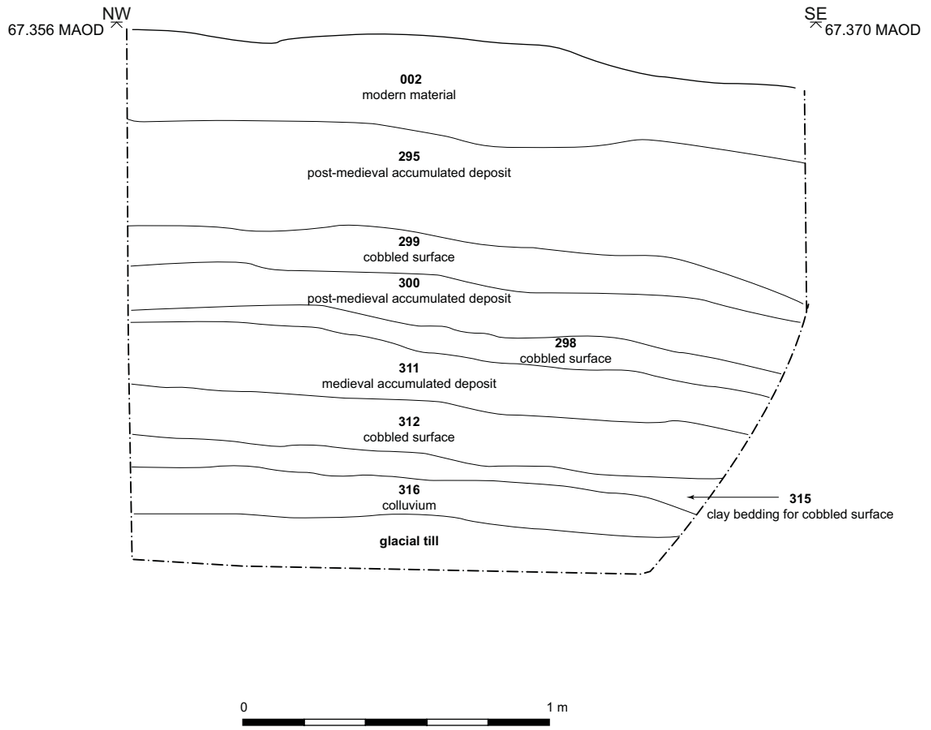
The truncated remains of three walls [198, 199, 200] most likely belonging to the same structure were exposed at the top of West Bow as the street bends sharply to the east to become lower Victoria Street. Walls [198] and [200] ran approximately east-west, and wall [199] north-south. The total exposed structure measured 1m long, 1.6m wide and 0.3m high but appeared to continue below the limit of excavation and under the paving to the west southwest. The walls were of squared and coursed sandstone blocks intermixed with concrete and bonded together with lime mortar. A deposit of lime ash and coal [201] was identified between the walls. The use of 'black ash' mortars in urban and industrial areas was common in Victorian times. This deposit may represent industrial waste material within a cellar, or may represent material relating to the demolition of a building. The West Bow was a centre of industry for whitesmiths, workers of metals such as tin and pewter (Stevenson *et al.* 1981, 12). The exposed structural remains must represent only a small area of any original building. The location may indicate that the street was originally narrower, although if this structure is part of a cellar it may have projected beyond the building frontage and beneath the roadway.

Further wall remains were identified in West Bow although all were heavily truncated by modern activity. These walls ran across the line of the modern street and were constructed from sandstone blocks bonded together with lime mortar. The walls most likely represent the old street frontage prior to the construction of Victoria Street in 1835-1840 (Stevenson *et al.* 1981, 12).

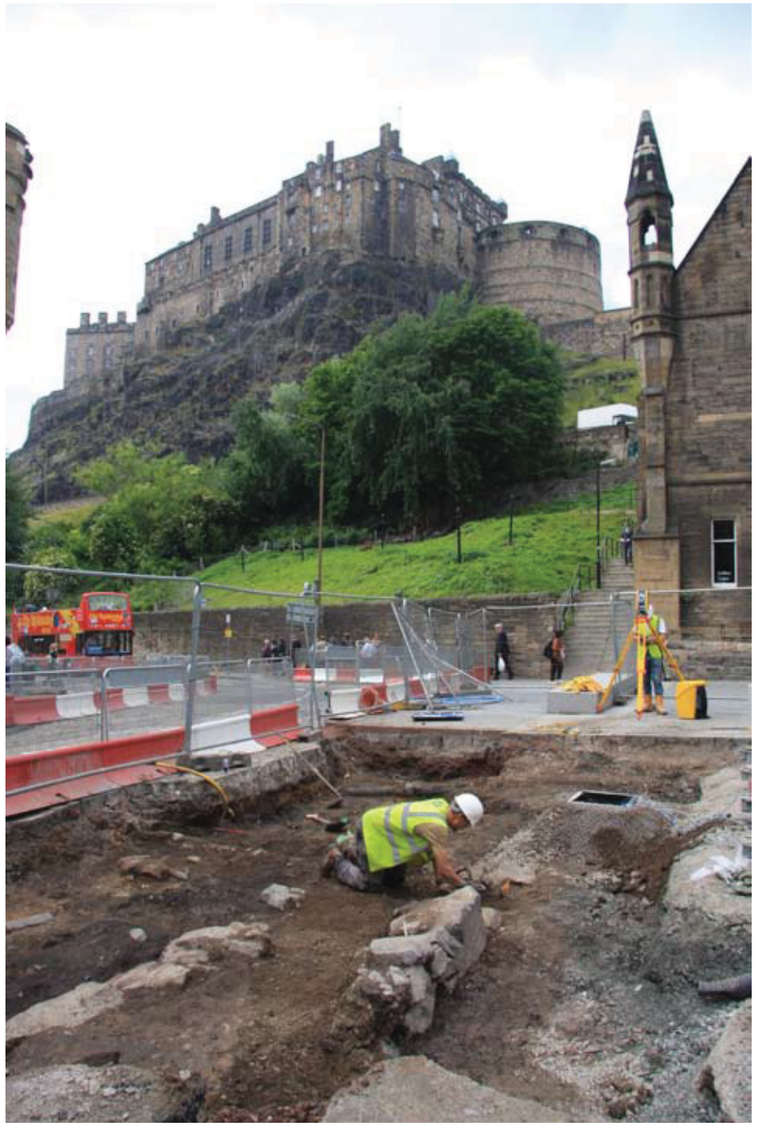
Other structural remains

Two walls were identified running approximately east-west in Area 9. Wall [76] and wall [301] were constructed from large sub angular and sub rounded boulders and had no identifiable bonding material. Both walls lay above a homogenous deposit of colluvium; no foundation cut was visible for either. Wall [301] ran parallel to, and slightly to the northwest of [76]; the walls were separated by a distance of approximately 3m. Wall [301] had a rough face on its north side. To what extent the stones to the south of this face represented the *in situ* rubble core of the wall as opposed to collapse is uncertain as the remains were heavily truncated, with only a single course of a 2.55m section of wall intact.

The southern side of wall [76] was exposed during the excavation of a pit for a manhole ring; the northern side was exposed several months later during the excavation of a trench for drainage pipes. Two rough courses of boulders were identified with the largest stones forming the lowest course. Walls [76] and [301] are likely to have belonged to the same structure based on their location and method of construction. The heavily truncated nature of the structure may point to the robbing of the stone for use in construction elsewhere. No old ground surfaces were exposed in the immediate vicinity, nor were any dateable finds recovered from the surrounding deposits.



Illus 7
Section through series of cobbled surfaces



Illus 8
Exposed section of Flodden Wall [468]

Approximately 2.6m to the northwest of [301] a roughly northeast-southwest aligned linear deposit of large boulders and smaller sub angular stones bonded together with a clean mid brown clay was exposed. This wall [309] was sealed between layers of colluvium. Over the upper deposit of colluvium a cobbled surface was exposed at 63.77m OD. The lintel stones of a culvert [310] were exposed to the southwest at 63.66m OD. If this culvert lay at surface level and was contemporary with the nearby cobbled surface [306] then the wall may tentatively pre date the local system of culverts. Should more structural remains be found in this area it may help to identify changes in the line of the street frontage since the medieval period.

A short section of north-south wall [548] was exposed in a narrow trench in Area 3. The exposed structure measured 0.36m north-south by 1.21m east-west and the single visible course rose to 0.28m high. The structure was abutted to the east by a cobbled surface [550]. Not enough of the structure was exposed to indicate its function. No structures were identified in this location on historic maps.

A deposit of unbonded sub-angular stones [562] was unearthed in the southern section of a pit excavated to house a Pilomat unit. This deposit lay within a dark brown silty sand deposit which was sealed above and below by cobbled surfaces. The higher cobbled surface [559] lay at 69.05m OD and the lower at 68.59m OD. The stone deposit may be indicative of a structure lying to the south and beyond the limit of excavation at the east end of Area 4.

20th century: First World War bomb crater

The excavation of two tree pits at the west end of Area 7 exposed redeposited material that most likely represented the backfilling and leveling of a substantial crater. In the most westerly pit two distinct deposits were identified. The lower deposit comprised very compact dark brown silty sand [567] up to 1.13m thick. Over this lay a similar compact deposit [568] which appears to represent a deliberate leveling deposit of considerable depth at 1.15m thick. To the immediate east of this a second excavation exposed a mixed deposit similar to [567] up to 1.65m thick. No obvious edge to the crater was visible in either of the excavations.

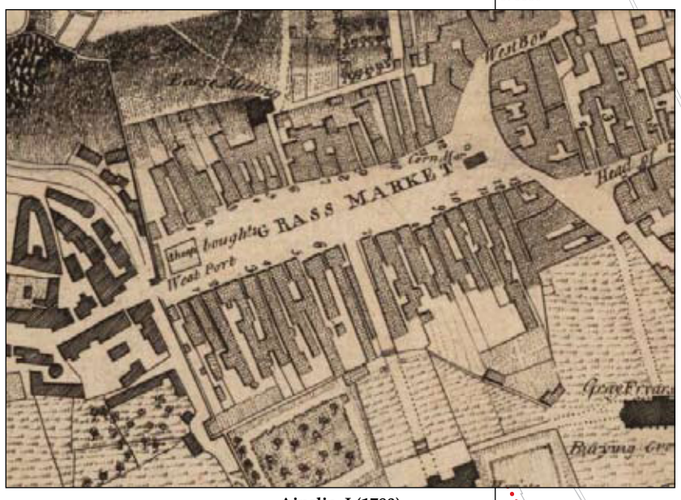
DISCUSSION

The discovery of Bronze Age pits in the Grassmarket indicates the use of this low lying area in prehistoric times. The deposit found in and around pit [156] was reminiscent of the material associated with burnt mounds – typically heat fractured sub-angular stones and charcoal rich deposits. Burnt mounds are thought to have formed at locations where stones were placed in a fire and subsequently used to heat water. Burnt mounds in Britain, Ireland and Scandinavia have frequently produced samples dating to the period 2500-500 BC (Ó Néill 2005). The valley floor now occupied by the Grassmarket may have been poorly drained in the Bronze Age providing a boggy or wet area common to the location of many burnt mound sites. The limited excavations meant it was not possible to determine the extent of this activity. Radiocarbon analysis indicated a minimum gap of 450 years between the two prehistoric pits [144] and [156] indicating that they were by no means contemporary. Pit [145] may represent a refuse pit for fire debris or a cooking pit (Appendix 6). The limited extent of deep excavation (>2m depth) in and around Areas 9 and 10 means that there is likely to be further evidence of prehistoric activity preserved beneath the extensive deposit of colluvium found in these low lying areas.

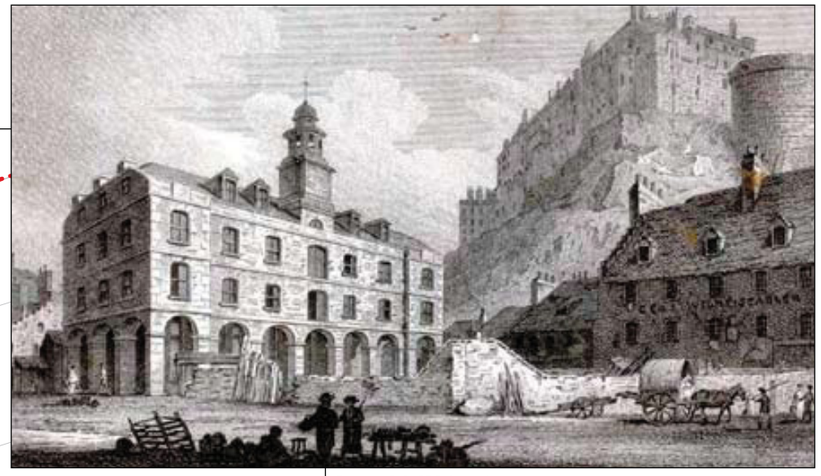
Two distinct groups of Anglian features were encountered: one towards the western end of Area 8 and another in Area 4. The dates returned from radiocarbon analysis of organic material within these features were found to be broadly contemporary. The concentration of cereal grains, charcoal, occasional marine shell and metallic waste within the features (Appendix 6) points to the deposition of domestic waste and is indicative of an Anglian settlement in this location, and the possible beam slot may be taken as slight evidence for timber buildings. The metal splatter on the cattle bone in the fill of this possible beam slot suggests that metalworking may have taken place nearby (Appendix 6). The presence of fish bones within the fill of pit [102], several miles from the sea, may indicate trade with settlements on the coast. Though the evidence is limited, these factors point to a site with more diverse activity than might be expected from a simple homestead. The lack of any artefacts associated with these remains, such as combs or pottery, may suggest that the site was an area of low status habitation in comparison to that on Castle Rock, although finds from this period were also scarce on the Rock itself (Driscoll & Yeoman 1997, 43-45).

At the same stratigraphic level as the Anglian features was a cobbled surface sealed by accumulations of animal dung and waste that could be dated to the 11th-12th centuries. This date indicates activity in the area when it lay under early Scottish control. The accumulated waste, nearly 1m deep, presumably represents the final usage of the surface and we can assume that earlier accumulations of dung must have been cleared away for its use to have remained viable. Analysis of the beetle remains associated with this material indicated the presence of large numbers of livestock. The assemblage included species specifically associated with cattle dung, as well as smaller quantities of species associated with cultivated fields, open meadows and human habitation, and is suggestive of livestock being brought in, held and fed in this location, adjacent to a settlement. A cattle mandible recovered from the accumulated material belonged to an individual aged 40-50 months at the time of its death, an age commensurate with an animal slaughtered to produce prime beef (Appendix 6). Cut marks on the mandible are a further indication of the animal being slaughtered.

Illus 9
Exposed cobbling to West of Flooden Wall

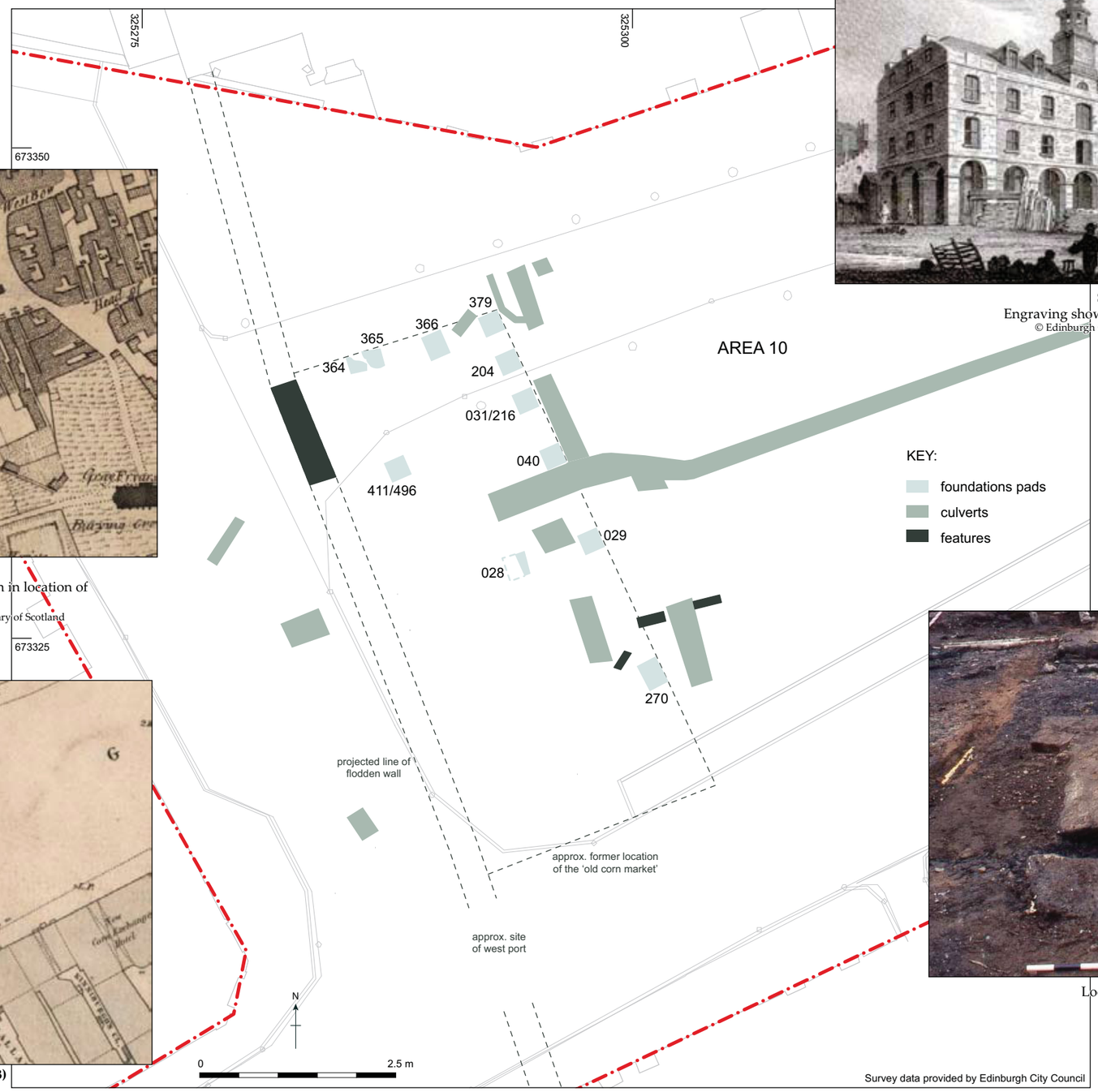


Ainslie, J (1780)
Corn Market at east end of Grassmarket & sheep pen in location of 1814 Corn Exchange
Reproduced by permission of the Trustees of the National Library of Scotland



Storer, J & HS (1818)
Engraving showing the colonnaded Corn Exchange

Ordnance Survey 1st edition map (1853)
Showing 'Old Corn Market'
Reproduced by permission of the Trustees of the National Library of Scotland



Looking west, foundation pads 379 & 366

Illus 10
Plan of the Corn Exchange showing foundation pads

The corralling of livestock, especially cattle, at a marketplace presents a tempting interpretation of the data.

The lack of any pottery in these deposits provides support for dating the cobbling to either the 11th or early 12th century. The later surfaces that overlie both the colluvium and the early deposits noted here appear to date to the later medieval period. There does not appear to be continuous use of the Grassmarket as a marketplace from this early period through to post-medieval times.

The keyhole nature of the excavations meant that these features were excavated in isolation. Only a very small percentage of the excavations reached the glacial till, the depth necessary to expose these earliest phases. It was not possible to determine the full nature or scale of the Anglian and early Scottish settlements and the discovery of these features in this very limited sample reflects the enormous potential for the survival of further contemporary features throughout the Grassmarket.

Much of the medieval cobbled surface survived, and whilst areas appeared to have been repaired or incorporated into later ground surfaces, largely 'new' cobbled surfaces appeared to have been introduced on at least two separate occasions – sometime in the 17th century and again in the 19th century.

The continued existence of the Grassmarket as a focal point within the city and as a gateway for those entering Edinburgh from the west is testified to by the long-standing weekly market. The succession of Corn Exchange buildings, the last of these constructed at no small expense (£20,000 - the equivalent of £1,170,600 in modern value, but with substantially more purchasing power), further indicates the importance of the area. That these buildings were used for high profile social events suggests a central role in contemporary society, rather than just as a location of barter and trade.

The increasing role of the Grassmarket in post-medieval Edinburgh was reflected in the archaeological findings. Increased activity following the initial medieval paving of the Grassmarket was in turn followed by expansion and redevelopment from the 17th century onwards. The use of the Grassmarket for public executions and as the location for the construction of the Corn Exchange buildings testifies to its importance in the everyday life of Edinburgh.

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APPENDIX 1 CONTEXT REGISTER

Context No.	Area	Description	Length (m)	Width (m)	Depth (m)	Levels (OD)
1	8 (TP6)	Modern ground surface	–	–	–	–
2	8 (TP6)	Modern made up ground	–	–	–	–
3	8 (TP6)	Post medieval? deposit	–	–	0.25	–
4	8 (TP6)	Culvert running E-W, friable mortar, lime bonded	1.7	1	0.85	–
5	8 (TP6)	Rubble layer beneath [4]	–	–	0.06	–
6	8 (TP6)	Dark brown clay silt deposit	–	–	1.55	–
7	8 (TP6)	Upper fill of pit [9]	0.75	–	0.25	–
8	8 (TP6)	Lower fill of pit [9]	0.5	–	0.2	–
9	8 (TP6)	Cut of pit	0.65	–	0.44	63.15
10	8 (TP6)	Fill of cut [11], redeposited post medieval material	–	2.2	1.25	–
11	8 (TP6)	Cut of foundation trench for [4]	–	–	1.3	–
12	8 (TP6)	Orange brown clay lens at the top of [3]	–	0.75	0.1	–
13	8 (TP6)	Fill of culvert [4], less than 0.01m thick	–	–	0.01	–
14	8 (TP6)	Lower fill of [11], same as [111]	–	–	0.05	–
15	10	Post medieval deposit	6	3	0.2	–
16	10	Cobbled surface	3.5	1	0.15	–
17	10	Culvert running E-W, curving at E end	6	0.7	0.9	–
18	10	Mid brown clay	4	1.5	–	–
19	10	Orange brown sand	4.5	3	0.2	–
20	10	Same as [15], N side of culvert [17]	2.5	2	0.2	–
21	10	Same as [16], N side of culvert [17]	2	1.1	0.1	–
22	10	Same as [19], N side of culvert [17]	2.5	2	0.2	–
23	10	Redeposited material, demolition	6	0.7	0.7	–
24	10	Post medieval deposit	6	0.7	0.1	–
25	10	Later structure on top of S side of culvert [17]	3	0.45	0.1	–
26	10	Culvert, joins N side of [17]	6	1.1	0.8	–
27	10	Cobbled surface to E of [17]	105	1.5	0.25	–
28	10	Poss. Foundation stone for structure	0.3	0.75	0.4	–
29	10	Poss. Foundation stone for structure	0.8	1.05	0.2	–
30	10	Culvert running E-W	10	1.4	1	–
31	10	Poss. Foundation stone for structure (same as [216])	1.2	1.1	–	63.41
32	10	Wall blocking off [17]	0.66	0.3	0.74	–
33	10	Brick wall blocking off [30]	0.66	0.25	0.66	–
34	10	Brick wall in [35]	1.15	–	0.64	–
35	10	Culvert running N-S?	–	1.15	0.64	–
36	10	Rubble fill within [30]	1.4	0.9	0.6	–
37	10	Stone blocking in [30]	0.9	0.3	0.9	–
38	10	Fill between [33] and [37]	2.85	0.64	0.75	–
39	10	Bottom fill of [30] sump	–	0.6	–	–
40	10	Mortar slab/foundation for Corn Exchange	1.23	0.96	–	–
41	10	Fill of culvert [26]	5	0.6	0.22	–
42	10	Culvert connecting [17] with [30] and [35]	–	1.4	0.7	–
43	6	Culvert running E-W	6.1	0.8	0.5	65.97-66.07
44	6	Fill of cut [45]	6.1	0.9	–	–
45	6	Cut for culvert [43]	6.1	0.9	–	–
46	6	Culvert connecting to [43]	1.8	0.8	0.4	66.32
47	6	Fill of cut [46]	1.05	0.08	–	–
48	6	Cut for culvert [46]	1.05	1	–	–
49	6	Relaid, disturbed area of culvert (part of [43])	1.3	1	–	66.29
50	6	Old ground surface to S of [46]	1.05	0.75	–	65.89
51	6	Deposit within [49]	–	–	0.1	–
52	6	Fill of culvert [43]	–	–	0.05	–
53	6	Fill of culvert [46]	–	–	0.01	–
54	6	Mid brown silty sand	–	–	0.55	–
55	6	Modern cut for services	4	–	1	–
56	6	Fill of [55]	4	–	1	–
57	6	Old ground surface (prob same as [50])	2.2	1.3	–	65.51
58	6	Mid brown silty sand over [57]	–	–	0.1	–
59	6	Orange brown sand below [54], over [58]	–	–	0.1	–
60	6	Mid brown sandy silt, same as [54]	–	–	0.2	–
61	6	Sand, same as [61]	–	–	0.1	–
62	6	Narrow culvert running N-S	0.7	0.33 (internal)	0.4 (internal)	–
63	6	Mid brown sandy silt, same as [58]	–	–	0.25	–
64	6	Culvert runs N adjacent to disturbed area [49]	–	0.5	0.5	–
65	6	Deposit beneath [49]	–	–	0.5	–
66	6	Cast iron water pipe running N-S	5	0.38	0.38	–
67	4	Dark brown sandy loam, very frequent animal bone	–	–	0.65	–
68	4	Dark brown slightly sandy silt	2.4	0.9	0.5	–
69	4	Black silt, frequent organic material	2.4	–	0.18	–
70	4	Compact grey brown sandy silt	2.4	–	0.2	–
71	4	Cobbled surface, irregular sub angular stone	2.4	0.9	–	68.09-68.2

Context No.	Area	Description	Length (m)	Width (m)	Depth (m)	Levels (OD)
72	4	Concrete duct and iron cable	2.3	0.26	0.26	–
73	4	Clean' soft mid brown silt	2.4	0.3	–	–
74	4	Fill of [75]	2.3	0.8	0.6	–
75	4	Cut for duct [72]	2.3	0.8	0.6	–
76	9	Wall running E-W in tree pit	2.1	–	0.75	–
77	9	Compact mid brown sandy loam	–	–	0.71	–
78	9	Soft grey brown sand	–	–	0.3	–
79	9	Layer of sub angular stone levelling/ backfill	–	–	0.65	–
80	8	Cobbled surface	4	2	0.1	64.1
81	8	Culvert	10.8	0.65 (internal)	0.4 (internal)	64.06
82	8	Culvert	4.6	0.6	0.24	64.39
83		VOID	–	–	–	–
84	8	Culvert	75.5	–	–	–
85	8	Fill of culvert [81]	–	0.55	0.2	–
86	10	Clayish silt fill of culvert [33]	–	–	0.1	–
87	8	Midden' layer, same as [3]	–	–	0.4	–
88	8	Thick brown colluvial deposit, same as [6]	–	–	0.55	–
89	8	Post medieval backfill over culvert [90]	–	1.1	0.3	–
90	8	Culvert running E-W, parallel to [4]	–	1.1	–	–
91	8	Cut for [90]	–	1.1	–	–
92	8	Post medieval deposit	–	–	0.35	–
93	8	Cut for [95] (modern)	–	–	–	–
94	8	Fill of cut [93] (modern)	–	–	–	–
95	8	Water? pipe truncates [90] (modern)	–	–	–	–
96	8	Fill of culvert [82]	–	–	0.24	–
97	8	Fill of culvert [81]	–	–	0.1	–
98	8	Fill of culvert [90]	–	–	0.05	–
99	8	Cobbled surface truncated by [91] and [93]	–	–	0.15	63.95
100	8	Dark brown sandy loam	–	–	0.2	–
101	8	Old ground surface/buried soil	–	–	0.21	–
102	8	Cut of pit	0.4	–	0.25	–
103	8	Fill of pit [102]	0.4	–	0.25	–
104	8	Brown black sandy silt	–	–	0.48	–
105	8	Buried soil, same as [101]	–	–	0.31	63.53
106	8	Sandy loam deposit	–	–	0.45	–
107	8	Silty deposit	–	0.75	0.12	–
108	8	Post medieval deposit	–	1.05	0.3	–
109	8	Cobbled surface	–	0.6	0.1	64.43
110	8	Build up/accumulation over [109]	–	0.55	0.08	–
111	8	Lower fill of [11], same as [14]	–	0.43	0.08	–
112	8	Lower fill of [91]	–	–	0.16	–
113	8	Orange brown sandy loam	–	1.2	0.08	–
114	8	Modern make up, possibly from late C19th ground surface	–	1.2	0.05	–
115	8	Modern make up, possibly from late C19th ground surface	–	1.15	0.05	–
116	8	Modern make up, possibly from late C19th ground surface	–	1	0.1	–
117	10	Cut for water pipe truncating [49]	–	0.5	0.5	–
118	10	Fill of culvert [119]	–	0.52	0.15	–
119	10	Culvert [119], same as [26]	–	1	0.6	–
120	10	Upper fill of cut [122] for [119]	–	0.4	0.65	–
121	10	Lower fill of cut [122] for [119]	–	1.1	0.05	–
122	10	Cut of foundation trench for culvert [119]	–	1.5	0.7	–
123	10	Mixed deposit similar to [120] and [127]	–	–	0.3	–
124	10	Compact mid brown clay seals [127]	–	–	0.07	–
125	10	Clean, compact dark brown sandy silt, build up?	–	–	0.2	–
126	10	Clay, same as [124]	–	–	0.13	–
127	10	Post medieval deposit	–	–	0.8	–
128	10	Compact clay over [130]	–	–	0.15	–
129	10	Mid brown sandy silt, diffuse interfaces	–	–	0.1	–
130	10	Mid brown silt, colluvium. Same as [6]	–	–	0.16	–
131	7	Cut for culvert [4], same as [11]	–	1.5	–	–
132	7	Fill of [131], same as [10]	2.5	1.5	–	–
133	7	Mid yellow brown clay deposit, 'midden'	2.8	2.5	–	–
134	9	Modern cut for services	2	0.5	–	–
135	9	Fill of [134]	2	0.5	–	–
136	9	Pale, fine sand	–	–	0.1	–
137	9	Post medieval deposit	1.15	0.31	–	–
138	9	Brick wall	–	–	–	–
139	9	Backfill in culvert	1.15	0.45	0.5	–
140	9	Brick wall	0.45	0.4	0.1	–
141	9	Brick wall	0.44	0.39	0.1	–
142	10	Compact dark brown sandy silt under [124]	3	0.5	0.2	–
143	10	Cobbled surface	3	0.5	0.15	–
144	10	Cut of pit	0.6	–	0.17	62.15
145	10	Fill of pit [144]	0.6	–	0.17	–

Context No.	Area	Description	Length (m)	Width (m)	Depth (m)	Levels (OD)
146	RecBin3	Concrete deposit	1.1	–	0.12	–
147	RecBin3	Disturbed deposit, fills [148]	–	–	0.25	–
148	RecBin3	Modern cut filled by disturbed material/ backfill, truncates [149-151]	–	–	–	–
149	RecBin3	Mid brown clay silt deposit	–	–	0.16	–
150	RecBin3	Charcoal rich sand	–	–	0.05	–
151	RecBin3	Sand deposit	–	–	0.07	–
152	RecBin3	Post medieval deposit	–	–	0.25	–
153	RecBin3	Dark brown silt deposit	–	–	0.08	–
154	RecBin3	Compact deposit of stone and animal bone	–	–	0.15	–
155	RecBin3	Soft dark brown sandy silt deposit, probably colluvium	–	5	0.5	–
156	10	Cut of pit	0.9	0.9	0.55	62.38
157	10	Fill of pit [162]	0.9	0.9	0.55	–
158	–	VOID	–	–	–	–
159	10	Dark stony deposit	2.3	–	0.85	–
160	RecBin3	Disturbed topsoil with rubble deposit	4	–	0.35	–
161	RecBin3	Original topsoil	–	–	0.25	–
162	RecBin3	Cut of pit	0.37	–	0.17	–
163	RecBin3	Fill of pit [162]	0.37	–	0.17	–
164	10	Light grey brown sand	–	–	0.1	–
165	RecBin3	Cast iron base for C19th lamp post with concrete base	1	1	0.7	–
166	RecBin3	Fill of [167]	1	1	0.5	–
167	RecBin3	Cut for lamp post base [165]	1	1	1	–
168	RecBin3	Line of stones running E-W	2.15		0.4	–
169	8	Cobbled surface (same as lower, earlier cobbles)	0.8	0.5	0.1	–
170	8	Post medieval deposit on S side of Area 8, same as Midden dep2	7	0.5	0.2	–
171	8	Cobbled surface, same as [169]	1	0.5	0.15	–
172	7	Brick structure truncated by modern cable	–	0.5	0.5	–
173	7	Culvert turning ESE-WNW, continuation of [90]?	3	0.75	–	65.31
174	7	Culvert, continuation of [4]	–	1	0.7	–
175	7	Culvert running diagonally across [174]	–	0.8	–	–
176	7	Partially exposed culvert	–	0.8	–	–
177	2A	Wall	0.9	0.25	0.45	–
178	2A	Large squared block of stone, probably from [177] but not *in situ*	0.9	0.3	0.25	–
179	2A	Stone and concrete street structure/ surface	0.25	0.45	0.2	–
180	2A	Redeposited post medieval material. Trample.	–	–	0.05	–
181	2A	Concrete and sand mix. Make up.	–	–	0.1	–
182	2A	Cobbled surface (prob C19th)	0.69	0.66	–	–
183	N	N-S running culvert, including sump	2.4	0.65	–	72.05-72.35
184	N	Cobbled surface at S end of Area N	2.2	1.3	–	–
185	N	Brown black sandy loam trample over [184]	2	1	0.02	–
186	N	Red brown silty clay, disturbed?	–	–	0.1	–
187	N	Mottled grey brown sandy loam make up	–	–	0.1	–
188	N	E-W clay bonded wall	2	0.65	0.95	72.06
189	N	Black brown sandy loam, similar to 'midden' layers	–	–	0.1	–
190	N	Thin layer of red brown silty clay	–	–	0.1	–
191	N	Black brown sandy loam, build up over [192]	–	–	0.15	–
192	N	Cobbled surface	3	1.5	0.1	71.51
193	N	Mid brown clay silt deposit	–	–	0.18	–
194	N	Fill of cut [195]	0.5	0.5	0.45	–
195	N	Cut for wall [188]	0.5	0.5	0.45	–
196	N	Cobbled surface	0.5	0.3	0.1	–
197	N	Buried soil	10	2.5	–	–
198	N	ENE-WSW lime bonded wall. Same structure as [199], [200]	1	1.6	0.3	–
199	N	Lime bonded wall at right angle to [198], [200]	1	0.3	0.15	–
200	N	Lime bonded wall parallel to [198]	0.9	0.3	0.3	–
201	N	Deposit of lime ash and coal	0.8	0.4	0.1	–
202	N	Redeposited natural clay	–	–	0.5	–
203	10	Dark brown loamy sand backfill	–	–	0.35	–
204	10	Foundation pad for Corn Exchange	1.3	1	0.25	63.13
205	10	Post medieval build up over cobbles	–	–	0.85	–
206	9	Cobbled surface, probably C19th	2	2	–	–
207	9	Thin layer of mid brown loamy sand over [206]	–	–	0.02	–
208	9	Mid brown loamy sand	–	–	0.25	–
209	10	Post medieval deposit	–	–	0.25	–
210	10	Mid dark brown sandy loam	–	–	0.1	–
211	10	Cobbled surface	–	–	0.1	–
212	10	Dark brown slightly sandy loam	–	–	0.05	–
213	10	Cobbled surface	1	2	–	–

Context No.	Area	Description	Length (m)	Width (m)	Depth (m)	Levels (OD)
214	10	Red brown slightly loamy clay	–	–	0.15	–
215	9	E-W drystone wall, continuation of [76]	1.1	–	0.45	–
216	10	Foundation pad for Corn Exchange	1.4	1.35	0.15	63.41
217	5	Cobbled surface	–	–	0.1	–
218	5	Post medieval build up over cobbles [217]	–	–	0.35	–
219	10	N-S running culvert, in tree pit	4.5	1.5	1.3	–
220	10	Rubble deposit	–	0.5	0.4	–
221	10	E-W wall truncated by [219]	1.4	0.5	0.2	–
222	10	Approximately N-S wall, return of [221]	1.65	0.25	0.3	–
223	10	Cobbled surface	1.3	0.2	0.1	–
224	10	Cobbled surface	1.6	0.5	0.1	–
225	10	Cobbled surface	3.6	1.2	0.1	–
226	10	E-W wall base, truncated by [219]	1.2	0.4	0.2	–
227	10	Bricks and limestone blocks cutting off inside of [219]	–	0.9	0.9	–
228	10	Fill of [229]	4.2	2.2	1.25	–
229	10	Cut for culvert [219]	4.2	2.2	1.25	–
230	10	Make up beneath cobbles [225]	–	1.1	0.18	–
231	10	Dark brown loamy sand deposit	1.5	1.1	1.2	–
232	10	Colluvium	1	–	0.25	–
233	10	Fill of [219]	–	0.85	0.25	–
234	10	Post medieval deposit beneath wall [221]	–	0.4	0.6	–
235	10	Make up beneath cobbles [225], same as [230]	–	1.2	0.3	–
236	10	Mid brown loamy sand deposit	1.2	–	0.5	–
237	10	Red brown clay levelling deposit	–	1.8	0.4	–
238	10	Post medieval deposit	–	3.15	0.3	–
239	10	Colluvium, same as [232]	–	3	0.2	–
240	5	Build up over cobbles [241]	3	3	0.45	–
241	5	Cobbled surface in tree pit	3	1.5	0.15	–
242	5	Colluvium	–	–	0.35	–
243	7	Post medieval deposit in test pit 3	2.5	1.5	0.55	–
244	6	Post medieval deposit over cobbles [245]	–	–	0.4	–
245	6	Cobbled surface	0.5	0.5	–	–
246	3	Post medieval deposit outside No.76 'The Last Drop Inn'	5	2.5	–	–
247	10	All post medieval deposits in drain track	–	–	0.8	–
248	10	Cobbled surface	–	–	0.1	–
249	10	Colluvium	–	–	0.3	–
250	6	Culvert, E-W	–	0.8	0.4	–
251	6	Culvert, parallel to [250]	–	0.8	0.5	–
252	6	Culvert, same as [250]	–	0.8	0.4	–
253	6	Culvert, same as [250]	–	0.8	0.4	–
254	6	Fill of culvert [253]	–	–	0.2	–
255	10	N-S culvert	3	–	0.8	–
256	7	E-W culvert	2.2	1.1	0.84	65.21
257	7	Fill of [258]	1.3	1	0.8	–
258	7	Cut for culvert [256]	1.3	1	0.8	–
259	7	Post medieval deposit	–	0.6	0.35	–
260	7	Red brown loamy sand	–	0.6	0.05	–
261	7	Post medieval deposit	–	0.6	0.3	–
262	7	Clean compact mid brown sandy loam	–	0.6	0.05	–
263	Apex City Hotel	Brick and limestone structure outside Apex City Hotel carpark	0.7	0.4	–	–
264	7	Build up over cobbles [265]	–	–	0.35	–
265	7	Cobbles.	–	–	0.15	64.63-64.66
266	7	Build up over cobbles [267]	–	0.6	0.3	–
267	7	Cobbles, same as [265]	–	–	0.15	–
268	10	Clay bonded wall. Part of gatehouse/ entrance to Flodden Wall?	0.6	0.7	0.3	–
269	7	Naturally deposited soil	3	–	0.25	–
270	10	Foundation pad for Corn Exchange	1	1	1.8	64.1
271	10	Cobbled surface	0.5	0.5	–	–
272	7	Thin layer of colluvium?	–	–	0.2	–
273	7	N-S culvert	3	–	0.5	64.87
274	7	Fill of [275]	3	1.5	0.65	64.45-64.59
275	7	Cut for culvert [273]	3	1.5	0.65	–
276	7	Post medieval deposit	–	1.5	0.35	–
277	7	Red brown sand	–	1.5	0.05	–
278	7	Build up over cobbles [279]	–	1.5	0.4	–
279	7	Cobbled surface	2.6	1.5	0.15	–
280	7	Fill of [273]	–	–	0.2	–
281	4	Dark brown silty sand levelling deposit (opposite Thomson's Court)	–	–	0.45	–
282	4	Build up over cobbles [283] (opposite Thomson's Court)	–	–	0.25	–
283	4	Cobbled surface (opposite Thomson's Court)	–	–	1.25	–
284	4	Dark brown sandy silt levelling deposit (opposite No.70-72 Festival Stores)	–	–	0.1	–
285	4	Yellow sand levelling deposit (opposite No.70-72 Festival Stores)	–	–	0.24	–

Context No.	Area	Description	Length (m)	Width (m)	Depth (m)	Levels (OD)
286	4	Compact dark grey brown sandy clay deposit (opposite No.70-72 Festival Stores)	–	–	0.4	–
287	4	Cobbled surface (opposite No.70-72 Festival Stores)	–	–	0.4	67.66-67.75
288	4	Compact light brown sandy clay	–	–	0.2	–
289	4	Compact light grey sandy clay	–	–	0.25	–
290	7	E-W culvert	0.8	0.6	–	65.75-65.81
291	7	Same as [290] but further to W	1.2	0.8	–	65.33-65.39
292	7	E-W culvert	0.6	0.6	–	64.95
293	7	Cobbled surface	1	0.6	0.1	64.05
294	Made in Italy'	Lamp post base outside 'Made in Italy' restaurant	0.5	0.5	–	–
295	5	Post medieval deposit	–	–	0.3	–
296	9	Modern cut outside 'Beehive Inn'	–	–	–	–
297	9	Grey brown clay silt. Buried soil	–	–	0.35	63.89
298	5	Cobbled surface	–	0.5	0.15	66.67
299	5	Cobbled surface	–	–	0.1	66.81-66.90
300	5	Dark grey silty sand below [299]	–	–	0.05	–
301	9	Drystone wall opposite 'Beehive Inn'	2.55	0.7	0.3	63.8
302	9	Colluvium	5	1.6	–	–
303	9	Dark brown sandy loam	2.5	0.7	0.1	–
304	5	Clay and stone surface abutting [298]	–	–	0.15	–
305	9	Black brown post medieval deposit	–	–	0.15	–
306	9	Cobbled surface	–	–	0.1	63.72-63.77
307	9	Grey brown build up	–	–	0.15	–
308	9	Orange brown clay silt	–	–	0.1	–
309	9	Clay bonded wall	3.2	0.8	–	63.6
310	9	N-S culvert	1.4	0.4	–	63.66
311	5	Dark brown silt over [312]	–	–	0.1	–
312	5	Cobbled surface	2.15	1.85	–	–
313	W.End/KSR	N-S culvert	1.2	1	1.2	63.3
314	W.End/KSR	Cobbled surface	6.25	3.25	–	62.41-63.21
315	5	Deposit below [312]	–	–	0.1	–
316	5	Brown clay overlying natural	–	–	0.14	–
317	9	Lower colluvium under [309]	4	2	–	–
318	9	Continuation of [309] to S	1.7	0.7	–	–
319	5	Clay and stone surface	–	–	0.1	–
320	9	Fill of [321]	5	0.6	–	–
321	9	Cut for culvert [310]	5	0.6	–	–
322	W.End/KSR	E-W culvert	2	1.6	–	–
323	W.End/KSR	Fill of [324]	2.1	1.6	–	–
324	W.End/KSR	Cut for culvert [322]	2.1	1.6	–	–
325	W.End/KSR	Blockage in [322]	–	0.65	0.5	–
326	W.End/KSR	Post medieval deposit	6.25	3.25	0.5	–
327	W.End/KSR	VOID	–	–	–	–
328	W.End/KSR	Circular cut with vertical sides	–	–	–	–
329	W.End/KSR	Fill of [328]	–	–	–	–
330	W.End/KSR	Backfill over culvert	–	–	–	–
331	W.End/KSR	Yellow grey compact clay over [326]	–	–	–	–
332	4,5	Cobbled surface	–	–	0.12	–
333	W.End/KSR	Post medieval midden deposit	2	2	0.2	–
334	–	VOID	–	–	–	–
335	W.End/KSR	Cobbles under [333]	1.6	1.6	–	62.48-62.58
336	W.End/KSR	NE-SW running culvert	2.5	0.7	0.7	62.52
337	W.End/KSR	Fill of [338]	2.5	–	–	–
338	W.End/KSR	Cut for [336]	2.5	–	–	–
339	W.End/KSR	Fill inside culvert [336]	–	–	0.3	–
340	W.End/KSR	Cobbles to N of [336]	0.5	0.5	–	–
341	4	Cobbles below [312]	2	0.6	0.12	68.33-68.53
342	4	Brown organic deposit over [341]	2	0.6	0.1	–
343	10	E-W culvert	1	0.8	–	–
344	10	N-S culvert	2.4	0.8	–	–
345	10	Brick and sandstone drain	1.5	0.6	0.4	63.44
346	10	Cobbles, probably C19th	0.6	0.6	–	63.56
347	4	Possible wall	0.7	0.4	–	67.43
348	4	Cobbled surface	–	–	0.1	67.3
349	4	Moderately firm sandy clay	–	–	0.55	–
350	4	dark brown gravelly clayey sand	–	–	0.05	–
351	4	Clean light brown sand	–	–	0.07	–
352	4	Mid greyish brown silty clay	–	–	0.25	–
353	10	Fill of drain [345]	–	–	0.4	–
354	10	Compact dark brown sandy loam under [355]	0.7	0.4	–	63.15
355	10	Imported levelling clay under cobbles [356]	1.3	0.9	–	63.16
356	10	Cobbled surface	2.8	1.2	–	63.17
357	10	Black brown sandy loam, build up over cobbles [356]	–	–	0.05	–
358	10	Cobbles/Flags	1.5	0.9	–	63.15
359	10	Demolition from Corn Exchange?	3	0.6	–	63.16

Context No.	Area	Description	Length (m)	Width (m)	Depth (m)	Levels (OD)
360	10	Black brown sandy loam, build up over cobbles [358]	–	–	0.1	–
361	10	Small patch of cobbles, internal surface for Corn Exchange?	1	0.4	–	63.38
362	10	Mixed deposit, mostly black brown loamy sand, over cobbles [363]	–	–	0.1	–
363	10	Cobbled surface	0.4	0.4	–	63.13
364	10	Foundation pad for Corn Exchange	0.94	0.6	0.25	63.22
365	10	Same as [364] but no longer *in situ*	1	0.6	–	63.01
366	10	Foundation pad for Corn Exchange	1.3	1	0.25+	63.39
367	10	Black brown sandy loam, build up over cobbles [368]	–	–	0.05	–
368	10	Cobbles/Flags, same as [358]	3	1	–	63.2-63.23
369	10	Levelling deposit under [368]	–	–	0.1	–
370	10	Mortared remains, may relate to foundations for Corn Exchange	2.3	0.9	–	63.13
371	10	Cobbled surface, same as [356]	0.8	0.7	–	63.17
372	10	Clay levelling deposit under [371], same as [355]	2.2	2.2	–	63.08
373	10	Compact dark brown sandy loam under [372], same as [354], [380]	1	0.8	–	63.13
374	10	Cut for culvert [376]	3	1.2	–	–
375	10	Fill of [374]	3	1.2	–	–
376	10	NNE-SSW running culvert	1.4	0.6	–	63.1
377	10	Cut for foundation pad [379]	2.2	2.3	–	–
378	10	Fill of [377]	2.2	2.3	–	–
379	10	Massive foundation pad for Corn Exchange	2	1.4	–	63.19
380	10	Compact dark brown sandy loam, same as [354], [373]	2	1	–	63.15
381	10	Mid brown loamy sand under [369]	–	–	0.1	–
382	10	Rubble deposit	1.5	1	0.25	–
383	10	Grey black silt, fill of culvert [376]	–	0.5	0.25	–
384	W.End/KSR	Modern backfill	–	–	–	–
385	W.End/KSR	Post medieval deposit	–	–	–	–
386	W.End/KSR	Modern deposit	–	–	–	–
387	W.End/KSR	Fill of culvert [322]	–	–	0.1	–
388	5	Mortar and clay deposit	–	–	–	–
389	Cowgatehead	Moderately compact dark brown sandy loam	2	1.5	0.35	–
390	5	Cobbled surface	3	0.6	–	67.33-67.54
391	5	Cobbles, same as [390], resurfacing of [393]?	2	–	–	67.73
392	5	Thin layer of build up between cobbled surfaces [391] and [393]	2	0.6	0.05	67.73
393	5	Cobbled surface	2	0.6	–	–
394	10	Post medieval deposit under [380]	–	–	0.25	–
395	6	NE-SW running culvert	1.1	0.85	0.85	66.83
396	10	Colluvium	2.5	1	0.42	–
397	10	Buried soil	2.3	1	0.2	–
398	4	Cobbled surface	7.7	2.7	–	68.38-68.69
399	4	Post medieval deposit, over cobbles [398]	–	–	0.04	–
400	4	Post medieval deposit, under cobbles [398]	4	2	–	–
401	3	W-E running culvert to S of Bow Well. Running away from Grassmarket	2.3	0.8	–	70.84-70.92
402	3	Cobbled surface	0.92	0.4	0.05	70.91
403	3	Made ground, same as [002]	–	–	0.41	–
404	3	Disturbed and heavily truncated post medieval deposit	–	–	0.19	–
405	10	Colluvium	3.8	1.5	–	–
406	10	Colluvium	3.8	1	–	–
407	10	Cobbled surface	1.5	0.6	0.05	–
408	10	Imported clay levelling material under cobbles [407]	–	–	0.1	–
409	10	Post medieval deposit	7.2	0.8	1.2	–
410	3	Compacted post medieval deposit	–	–	0.45	–
411	10	Foundation pad for Corn Exchange	0.55	–	0.07	–
412	10	Compact yellow brown silty sand	–	–	0.2	–
413	10	Brownish black silt with frequent large stones	–	–	0.2	–
414	10	Clay levelling deposit	–	–	0.1	–
415	10	Post medieval build up	–	–	0.35	–
416	10	Loose lime mortar around [411]	–	–	0.02	–
417	5	Culvert, may already be recorded. Check coordinates on drawing	2.65	0.6	–	–
418	5	Cobbled surface. Same as [298] or [299]	2.6	0.6	–	–
419	5	Post medieval deposit/build up. Same as [295]	2.6	0.6	0.3	–
420	4	Post medieval deposit	7.6	4.9	0.2	–
421	4	Levelling material/possible surface	1.5	1.8	0.2	–
422	4	Cobbled surface	4.3	0.5	0.12	67.39
423	3	Post medieval deposit over cobbles [424]. Possbily the same as [410]	–	–	0.35	–
424	3	Cobbled surface, heavily truncated	3	1.4	–	70.07-70.23
425	4	Colluvium	–	–	0.35	–

Context No.	Area	Description	Length (m)	Width (m)	Depth (m)	Levels (OD)
426	4	Buried soil	10	0.7	0.35	–
427	Bow Well	Post medieval build up over cobbles [428]	9.5	1.9	0.2	–
428	3/Bow Well	Cobbled surface. Same as [424]	9.5	1.9	–	69.73
429	4	Early cobbled surface, over colluvium [425]	–	–	0.15	68.82
430	4	Build up/waste material over cobbles [429]	–	–	0.3	–
431	4	Cut of gully/shallow linear feature	0.6	0.48	0.1	67.31
432	4	VOID	–	–	–	–
433	4	Post medieval occupation/build up over cobbles [434]	–	–	0.3	–
434	4	Cobbled surface	–	–	–	69.4
435	4	Fill of gully [431]	0.22	0.12	0.12	–
436	N/West Bow	Wall. May correspond to walls found by EOT04 works	1	0.3	0.3	76.38
437	N/West Bow	Modern deposit, same as [002]	–	–	–	–
438	West Bow	Modern deposit, same as [002]	3.6	3.2	0.3	–
439	West Bow	Wall. May correspond to walls found by EOT04 works	1.1	0.2	–	75.66
440	West Bow	Wall. Continuation of [439]	0.35	0.2	–	–
441	4	Post medieval build up	–	–	0.16	–
442	West Bow	E-W wall	0.5	0.25	0.9	–
443	West Bow	Moderately compact black sandy silt	3.15	0.5	0.1	–
444	West Bow	VOID	–	–	–	–
445	West Bow	Cobbled surface, same as [451]	3	0.5	–	74.14-74.34
446	West Bow	Same as [445]	–	–	–	–
447	West Bow	Modern manhole	0.97	0.8	–	–
448	West Bow	E-W culvert	1.2	0.5	–	–
449	West Bow	Cut for culvert [448]	0.65	0.5	–	–
450	West Bow	Cobbles. Resurfacing of [451]?	1.2	0.5	–	73.38
451	West Bow	Cobbled surface, same as [445]	7	1.2	–	72.9-73.34
452	West Bow	Build up/waste material over cobbles [450]	–	–	0.1	–
453	West Bow	Fill of cut [449]	–	–	–	–
454	West Bow	Localized modern deposit. Same as [437]	1	0.7	0.15	–
455	4	Refuse layer?	–	–	0.28	–
456	West Bow	Build up over cobbles [481]. Heavily disturbed by modern activity	–	–	0.5	–
457	10	Paving/OGS for inside Corn Exchange	1.65	0.35	–	–
458	10	Deposit of mortar over [457]	1.65	0.35	–	–
459	10	Possibel remains of heavily truncated culvert	–	–	–	–
460	10	Midden' like material	–	–	–	–
461	4	Grey brown silty sand	–	–	0.35	–
462	4	Loose grey black sandy clay	–	–	0.12	–
463	4	Dark grey clay	–	–	0.03	–
464	4	Loose, waterlogged black sandy silt	–	–	0.09	–
465	4	Compact dark grey clay	–	–	0.19	–
466	West Bow	Cobbles.Same as [451]	3	0.2	–	72.91
467	West Bow	E-W/W-E culvert	1.1	0.4	–	–
468	10	Flodden Wall	6.9	1.6	0.44	63.22-63.10
469	10	Compact light grey brown sandy clay	3	1.2	–	–
470	10	Loose dark grey brown silty sand	3.5	1.3	0.18	63.01
471	10	Light grey brown sandy clay	2.7	0.4	–	–
472	10	Drain	0.9	0.88	–	62.9
473	10	Culvert	4.4	0.7	–	62.94
474	10	Cut for culvert [473]	4.4	0.7	–	–
475	10	Fill of [474]	4.4	0.7	–	–
476	10	Same as [470]	3.5	0.3	–	–
477	10	Same as [470]	–	–	–	62.77
478	10	Same as [470]	0.4	0.3	–	–
479	10	Fill of drain [472]	6	0.6	–	–
480	West Bow	Cobbled surface. Possible continuation of [451]	–	–	–	72.88-73.11
481	West Bow	Cobbled surface. Same as [450]	–	–	–	72.9
482	West Bow	E-W clay bonded wall	0.9	0.4	0.45	74.1-74.52
483	West Bow	Disturbed and heavily truncated post medieval deposit	–	–	–	–
484	West end/KSR	Disturbed and very mixed mid brown loamy sand, occasional clay	–	–	0.3	–
485	West end/KSR	Cobbled surface	1.3	0.8	–	62.67
486	West end/KSR	Cobbled surface, same as [485]	3	2	–	62.70-62.84
487	West end/KSR	Build up over cobbles [487]	–	–	0.05	–
488	West end/KSR	Dark brown loamy sand under [486]	3	2	–	–
489	West end/KSR	Post medieval deposit, surrounded by modern and disturbed material	3	2	0.1	–
490	10	Black clayey silt	0.4	0.8	–	63.07
491	10	Sandy silt deposit	0.6	0.3	–	–
492	10	Cobbled surface	0.4	0.8	–	–
493	10	Imported levelling clay under cobbles [492], same as [414]	0.8	1	–	62.99
494	10	Same as [490]	0.95	0.32	–	–
495	10	Same as [490]	0.62	0.7	–	63.07
496	10	Foundation pad for Corn Exchange	0.62	0.7	–	63.13

Context No.	Area	Description	Length (m)	Width (m)	Depth (m)	Levels (OD)
497	3	Occupational deposit	10+	5+	–	–
498	3	Cobbles	3.5	1.5	–	69.42-69.48
499	6	Occupational deposit	19.5	5	–	–
500	6	Culvert	1.2	0.9	0.6	–
501	N	Continuation of E-W wall	0.78	0.27	0.2	72.33-72.38
502	N	Post medieval deposit over [501]	5+	5	–	71.53-71.86
503	N	Cobbled surface	6.5	1.44	–	71.69-71.92
504	N	Cobbled surface, same as [503]	1.9	1	–	71.74
505	5	N-S culvert	–	–	–	–
506	4	Cobbled surface	6	2	–	68.40-68.71
507	4	Levelling deposit over [506]	–	–	0.15	–
508	4	Sandstone pad	0.85	0.65	0.18	–
509	3	Modern public toilet block	10	6	–	–
510	3	Colluvium	–	–	0.6	–
511	3	Mid grey clay silt deposit	1.1	0.8	0.15	–
512	3	Cobbled surface	0.65	0.5	–	69.57
513	N	Mortared sandstone pad	1.3	1.1	0.08	–
514	N	Dark grey organic silty deposit	–	–	0.25	–
515	N	Grey clay levelling deposit	–	–	0.05	–
516	N	Cut for pad [513]	1.58	1.14	0.48	–
517	N	Fill of [516]	1.58	1.14	0.48	–
518	N	Compact clay levelling deposit	10	–	0.15	–
519	N	Compact clay levelling deposit	6.5	–	0.1	–
520	N	Fine silty washed down deposit	1	1	–	–
521	3	Firm clay sand	–	–	0.1	–
522	3	Firm silty sand	–	–	0.11	–
523	3	Mortar mixed with stones, rough surface	–	–	0.18	–
524	3	Sand bedding for surface	–	–	0.11	–
525	3	Clayey silt with charcoal, oyster shell	–	–	0.6	–
526	3	Dark brown sandy silt under Covenanters Memorial Stone	1.7	0.65	0.4	–
527	S of 9	Cobbled surface	0.8	0.4	0.15	63.67-63.68
528	S of 9	E-W sandstone culvert, very badly truncated	1	–	–	–
529	S of 9	Dark brown silty sand deposit	–	–	0.15	65.53
530	S of 9	Cobbles	4	0.8	–	63.38
531	S of 8/7	Dark brown sandy loam deposit in duct track	12	0.65	0.05	–
532	3	Cobbled surface	1.5	0.7	0.1	69.39
533	3	Grey levelling clay under [532]	1.5	0.7	0.1	–
534	3	Dark brown silty sand occupation layer	1.5	0.7	0.35	–
535	3	Colluvium	1.5	0.7	0.6	–
536	3	Dark brown sandy silt occupation layer	5	3.5	0.3	–
537	3	Dark brown colluvium - same as [520]?	5	3.5	–	–
538	4	Dark brown sandy silt	2	0.5	0.35	–
539	4	Cobbles	4	0.7	0.1	68.58-68.61
540	4	Make up beneath cobbles [539]	–	0.7	0.15	–
541	4	Old subsoil	–	0.7	0.1	–
542	4	Cobbles (same as [539])	–	–	0.1	–
543	4	Mid brown organic peat deposit	–	–	0.4	–
544	4	Dark brown peat deposit	1.35	0.18	0.18	–
545	4	Mid grey silty clay - redeposited subsoil?	–	–	0.2	–
546	4	Layer of stone/rubble	1.4	0.45	–	–
547	4	Possible cut	0.7	–	0.15	–
548	3	Remains of wall/foundations	0.36	1.21	0.28	69.59
549	3	Deposit overlying [548]	–	0.36	0.2	–
550	3	Cobbled surface E of [548]	–	0.3	–	69.46
551	4	Cobbled surface, possibly inside structure	4	1	0.15	–
552	4	Boulders within [553]	1	–	–	–
553	4	Shallow cut containing [552]	1	–	–	–
554	4	Cobbled surface with step	3	0.7	–	68.72-69.05
555	4	Clean dark brown silty sand	–	–	0.4	–
556	4	Mid brown silty sand	–	–	0.22	–
557	4	Cobbles	1	0.7	0.15	68.65
558	4	Cobbles	1.5	1	0.15	68.87
559	4	Cobbles	1.3	1	0.1	69.05
560	4	Dark brown silty sand deposit	1.3	1	0.6	–
561	4	Cobbles	1.3	1	0.1	68.59
562	4	Possible structural collapse/layer of boulders	1.3	–	0.3	–
563	4	dark brown silty sand deposit	1.3	1	0.1	–
564	4	Deposit of boulders	–	–	0.15	68.5
565	Foot of W.Bow	Dark brown silty sand	–	–	0.2	–
566	7	Cobbled surface	4	3.6	–	63.92
567	7	Compact dark brown silty sand	4	3	1.15	–
568	7	Compact levelling deposit over [567]	4	3	1.13	–
569	7	Possible cobbled surface	4	3.6	0.1	65.05
570	7	Mid brown silty sand	4	3.6	0.25	–
571	7	Cobbled surface	4	3.6	–	64.6

APPENDIX 2 PHOTO REGISTER

Film No.	Shot No.	Direction	Description
1	1	–	ID Shot
1	2	W	TP5 (poor light)
1	3	S	Culvert [4] in TP6 (poor light), Area 8
1	4	S	Culvert [4] in TP6 (poor light), Area 8
1	5	S	TP6 down to natural, Area 8
1	6	W	TP7 by supposed line of Flodden Wall
1	7	N	S facing section of TP6, Area 8
1	8	N	S facing section of TP6, Area 8
1	9	S	N facing section of TP6 showing culvert [4]
1	10	S	N facing section of TP6 showing culvert [4]
1	11	E	Culvert [4] in TP6, Area 8
1	12	E	Culvert [4] in TP6, Area 8
1	13	S	Culvert [4] in TP6, Area 8
1	14	E	Cut of trench [11] for culvert [4] in TP6
1	15	W	Culvert [4] in TP6, Area 8
1	16	S	Culvert [4] in TP6, Area 8
1	17	E	Culvert [4] in TP6, Area 8
1	18	E	Working shot in culvert [4], TP6
1	19	E	Culvert [4] opened up
1	20	W	Culvert [4] opened up
1	21	E	Working shot in culvert [4], TP6
1	22	E	TP6 down to natural, Area 8
1	23	E	TP6 down to natural, Area 8
1	24	W	E facing section through culvert [17], Area 10
1	25	NW	Overview of [17] and surrounding cobbles [16] and [21]
1	26	E	[26] in culvert [17]
1	27	NE	Close up of [26]
1	28	E	Foundation stones [29]
1	29	W	Foundation stone [28]
1	30	E	Cobbles [27] without scale
1	31	E	Cobbles [27]
1	32	NW	Cobbles [16]
1	33	NW	Cobbles [21]
1	34	E	Shot of TP7A
1	35	SW	Shot of TP7A
1	36	W	General shot of Area 10
1	37	W	General shot of Area 10

Film No.	Shot No.	Direction	Description
2	1	–	ID Shot
2	2	E	Slot in TP7A before widening
2	3	E	Slot in TP7A showing natural clay
2	4	NW	Stone slab [31] and part of culvert [26]
2	5	N	Culvert [26] and stone slab [31]
2	6	SE	Continuation of [17] and parts of [30]
2	7	E	Looking along [30]
2	8	SE	Detail of [32]
2	9	S	Overview of [32]
2	10	SE	Overview of [32]
2	11	E	Brick wall [33]
2	12	S	Brick wall [34]
2	13	E	Wall [37], culvert [30]
2	14	E	Overview of [17], [30], [35] and [37]
2	15	WNW	Along [17]
2	16	S	Detail of mortar slab [40]
2	17	NE	Overview of [26] and [40]
2	18	N	Section through [26]
2	19	?	Culvert [26] with cover stones removed
2	20	N	[42] between features [17], [30] and [35]. [26] showing
2	21	N	Join between [30] and [42]
2	22	N	Looking across Area 10
2	23	NE	Looking across Area 10
2	24	NW	Looking across Area 10
2	25	E	Section of edge of excavation with ground surface [50]
2	26	SW	Old ground Surface [57] in 1st pit for Rec Bin 2
2	27	W	Culvert [43] with rebuilt section [49]
2	28	N	Culvert [43] with rebuilt section [49]
2	29	E	Culverts [43] and [46] in 1st pit for Rec Bin 2
2	30	W	Culvert [62]
2	31	S	N facing section of 1st pit for Rec Bin 2]
2	32	W	View into culvert [43]
2	33	E	View into rebuilt section of culvert [49]
2	34	?	Area 10
2	35	?	Area 10
2	36	N	Area 6
3	1	–	ID Shot

Film No.	Shot No.	Direction	Description
3	2	–	ID Shot
3	3	E	Cobbled surface [71] in Area 6
3	4	W	Cobbled surface [71] in Area 6
3	5	N	Section through [1], [2], [68-71] in Area 6
3	6	N	Concrete duct [72] in Area 6
3	7	E	E-W running culvert in Area 10
3	8	W	E facing 'silt trap' [37] in Area 10
3	9	W	E facing 'silt trap' [37] in Area 10, without T-scale
3	10	E	Silt trap' in Area 10
3	11	N	Section in edge of excavation, Area 8
3	12	W	Looking W along [4]
3	13	N	Section through [1], [2], [87] and [88], Area 8
3	14	W	Working shot, Area 8
3	15	SE	[84] obliquely, Area 8
3	16	NW	Culvert [82] without scale
3	17	NW	Culvert [82]
3	18	W	Looking along culvert [81]
3	19	N	Culvert [83]
3	20	E	W facing section of culvert [4]
3	21	NE	Culvert [81]
3	22	NE	Cobbled surface [80]
3	23	N	Wall [76] in Area 9
3	24	E	Dumped material/levelling in tree pit in Area 9
3	25	SE	Intersection of culverts [81], [82] and [83]
3	26	NW	Intersection of culverts [81], [82] and [83]
3	27	E	Culvert [90] and disturbed ground, Area 8
3	28	S	N facing section through culvert [81]
3	29	S	N facing section through culvert [82]
3	30	E	W facing section showing culverts [4] and [90]
3	31	E	W facing section showing culverts [4] and [90]
3	32	N	S facing section in Area 8
3	33	E	W facing section in Area 8
3	34	S	Detail of S inside face of culvert [90]
3	35	S	Detail of S inside face of culvert [90]
4	1	–	ID Shot
4	2	E	W facing section in Area 8

Film No.	Shot No.	Direction	Description
4	3	E	Working shot of S side of Area 8
4	4	E	Working shot of S side of Area 8
4	5	W	Working shot of S side of Area 8
4	6	E	Working shot of S side of Area 8
4	7	W	Pit for manhole in Area 10
4	8	N	Pit for manhole in Area 10
4	9	E	Culvert in tree pit Area 7
4	10	NE	General shot of tree pit in Area 7
4	11	E	Looking along culvert
4	12	NE	General shot of Area 9
4	13	E	Modern cut [134]
4	14	E	Looking along culvert
4	15	SE	Backfill [139] and brick wall [138] in culvert
4	16	W	Brick wall [140] in culvert
4	17	E	Brick wall [141] in culvert
4	18	E	Looking along culvert
4	19	S	Recessed stones in S wall of culvert
4	20	S	Brick wall [138] in culvert
4	21	E	Pit for manhole and duct trench in Area 10
4	22	E	Extension to duct trench in Area 10
4	23	W	Cobbles [143] in trench in Area 10
4	24	S	N facing section of TP at west end
4	25	N	Pre ex of pit [156] in duct trench, Area 10
4	26	N	S facing section of E-W duct trench showing pit [156]
4	27	NW	S facing section of E-W duct trench showing pit [156]
4	28	NE	S facing section of E-W duct trench showing pit [156]
4	29	S	Rubble deposit [160] in pit for Rec Bin 3
4	30	E	Pit [162] in W facing section of pit for Rec Bin 3
4	31	NW	Culvert in pit for Rec Bin 2, Area 8
4	32	NW	Reused dressed stone in culvert
4	33	E	Along culvert
5	1	–	ID Shot
5	2	N	Pit for Rec Bin 2, Area 8
5	3	NE	Pit for Rec Bin 2, Area 8
5	4	W	Wall in tree pit, Area 9
5	5	S	Wall in tree pit, Area 9
5	6	N	Trench in Area 9, post ex
5	7	E	Trench in Area 9, post ex
5	8	E	Trench in Area 9, post ex
5	9	E	Widened pit for Rec Bin 2, Area 8
5	10	W	Widened pit for Rec Bin 2, Area 8 (N.B. 5:10-11 same on prints, no slides)
5	11	E	Widened pit for Rec Bin 2, Area 8 (N.B. 5:10-11 same on prints, no slides)
5	12	W	Culvert in pit for Rec Bin 2, Area 8
5	13	E	Pit for Rec Bin 2, Area 8, final extent
5	14	S	Pit for Rec Bin 2, Area 8, final extent
5	15	S	Lamp post base [165] in pit for Rec Bin 3
5	16	SE	Extension to pit for Rec Bin 3
5	17	W	Extension to duct trench through Area 10
5	18	N	Extension to duct trench through Area 10
5	19	E	Section of extension to pit for Rec Bin 3
5	20	N	Lamp post base [165] in pit for Rec Bin 3
5	21	E	Final extent of pit for Rec Bin 3
5	22	S	Stones [168]
5	23	E	Branch for ducts in Area 8 (v.poor light)
5	24	E	Branch for ducts in Area 8 (v.poor light)
5	25	S	Branch for ducts in Area 8 (v.poor light)
5	26	S	Cobbled surface [169] in Area 8
5	27	SW	Branch for ducts in Area 8 showing [170]
5	28	SE	Branch for ducts in Area 8 showing [170]
5	29	E	Culvert four
5	30	SE	Extension to duct trench through area 8
6	1	–	ID SHOT
6	2	S	Continuation of culvert [04]
6	3	E	Duct trench in area 7 with [172]
6	4	E	Close-up [172]
6	5	NE	Culvert [172] in very poor light
6	6	SE	Culvert [176]
6	7	W	General shot area 2A
6	8	S	[177] and [178] area 2A
6	9	S	[177] and [178] area 2A
6	10	S	Possible wall of Corn Exchange [177] area 2A
6	11	S	Possible wall of Corn Exchange [177] area 2A
6	12	SE	[179] - [182] area 2A (cobbles [182])
6	13	S	[179] - [182] area 2A (cobbles [182])
6	14	S	[179] - [182] area 2A (cobbles [182])
6	15	W	Culvert [183]
6	16	N	Culvert [183]
6	17	N	Sump in culvert [183]
6	18	S	Sump in culvert [183]
6	19	ESE	Cobbled surface [184] in area N
6	20	ESE	Cobbled surface [184] in area N
6	21	NE	Area N
6	22	N	Wall [188]
6	23	N	West end of wall [188]
6	24	NE	Intact secction of [188]
6	25	N	Rubble at east end of [188]
6	26	S	Wall [188}
6	27	N	West side of area N
6	28	ESE	Wall [188]
6	29	S	Sondage through wall [188] and cobbles [192]
6	30	W	Along [188] with blocked up entrance dating to 1616 in background
6	31	W	Easst-facing section of [188]
6	32	N	Cobbles [192] extending up slope
6	33	N	Cobbles [192] extending up slope
6	34	E	Cobbles [192] and west-facing section of L.O.E.
6	35	NE	General shot of [192]
6	36	E	Culvert [174] in duct trench
7	1	–	ID SHOT
7	2	N	Working shot of area N
7	3	E	Cobbles [196] - note redeposited soil and gas main
7	4	N	[198] [201] in area N
7	5	W	[198] [201] in area N (poor light)
7	6	W	[198] [201] in area N
7	7	N	[199] extending below L.O.E.
7	8	S	Area N - post-ex
7	12	N	Removing culvert in area 10
7	13	W	Foundation pad in area 10
7	14	E	[204]
7	15	N	Trench in area 10 showing foundations
7	16	E	Cobbles [206] in area 9

Film No.	Shot No.	Direction	Description
7	17	E	[208] below cobbles at L.O.E.
7	18	NW	Trench in area 10, working shot
7	19	W	Cobbled surface [211]
7	20	W	Trench in area 10, working shot
7	21	W	Area to south of toilet block, area 9, disturbed by E-W cables
7	22	N	Section at L.O.E., area 10, showing [209] and [210]
7	23	NE	Re-opened tree pit in area 9
7	24	N	Wall [215] in area 9
7	25	N	Wall [215] in area 9, taken with flash
7	26	W	Area 10 working shot
7	27	N	Final extent new tree pit area 9
7	28	E	Final extent new tree pit area 9
7	29	S	Stone pad [216] (=[31]) in area 10
7	30	NE	Working shot of area 10 showing location of [216]
7	31	E	Remaining part of culvert [4] in area 7 tree pit
7	32	E	West-facing section of tree pit in area 7showing [4]
7	33	S	North-facing section of tree pit in area 7showing side of [90]
7	34	NE	General shot of tree pit in Area 7
8	1	–	ID SHOT
8	2	N	Post-ex test pit 1, south-facing section with scale for depth
8	3	N	Post-ex test pit 1, south-facing section without scale for depth
8	4	N	Culverts in test pit 1
8	5	SW	Working shot test pit 1
8	6	W	West side of test pit 1 showing cobbles [223] and [224] and walls [221] and [222]
8	7	W	Details of [222] and [224]
8	8	N	Details of [221] and [223]
8	9	N	Wall [226]
8	10	E	Cobbles [225]
8	11	N	Overview of tree pit showing cobbles [223], [224], [225], culvert [219], walls [221], [222] and [226]
8	12	S	View of blockage [227] in culvert [219]
8	13	S	View of blockage [227] in culvert [219]
8	14	N	Details of cobbles [241]
8	15	N	South-facing section of tree pit in area 10
8	16	N	South-facing section of tree pit in area 10
8	17	N	Detail of cobbles [241]
8	18	SW	Section through tree pit in area 5
8	19	N	More cobbles [241]
8	20	E	South facing section of test pit 3 in area 7
8	21	NE	Tree on the move!
8	22	E	Working shot of area 6
8	23	E	Cobbles [245] in area 6
8	24	E	Culvert [252] in drain branch area 6
8	25	S	Culvert [253] in area 6
8	26	E	Culvert [253] in area 6
8	27	W	Working shot: drain track in area 10 (poor light)
8	28	S	Working shot of [255] in area 10
8	29	S	Culvert [255]
8	30	E	Cobbles over culvert [255]
8	31	W	East-facing section of T.P. 3, Area 7
8	32	W	Brick and limestone structure [263]
8	33	W	Cobbles [265] and wall [256]
8	34	W	East-facing section T.P. 3 in area 7
8	35	E	Cobbles [265] and wall [256]
8	36	S	Wall [256]
9	1	–	ID SHOT
9	2	N	Cobbles [267], TP4, Area 7
9	3	E	Cobbles [267], TP4, Area 7
9	4	NW	Wall [256] and cobbles [248], Area 10
9	5	S	Wall [256] general shot
9	6	S	Wall [256] general shot
9	7	S	VOID
9	8	S	Wall [268], north facing section
9	9	W	Wall [256] facing west
9	10	SW	General shot of removal of wall of culvert [256]
9	11	SE	Section through east end of culvert [256]
9	12	SE	Section through east end of culvert [256]
9	13	SE	Section through east end of culvert [256]
9	14	S	General shot of culvert [256]
9	15	S	Foundation pile [270], Area 10
9	16	S	Foundation pile [270], Area 10
9	17	W	Foundation pile [270], Area 10
9	18	W	Foundation pile [270], Area 10
9	19	S	Foundation pile [270], Area 10
9	20	N	[270] Area 10
9	21	W	West-facing section of T.P. 3, Area 7
9	22	E	East-facing section of T.P. 4, Area 7
9	23	S	Section (N-facing) through T.P. 4, Area 7
9	24	E	S-facing section T.P. 3, Area 7
9	25	–	VOID
9	26	S	N-facing section T.P. 3, Area 7
9	27	SW	Cobbles in SW corner of T.P. 4
9	28	W	East-facing section of T.P. 4, Area 7
9	29	S	North-facing section of T.P. 4, Area 7
9	30	N	South-facing section of T.P. 1
9	31	SE	Shot of cobbles and culvert [273] in T.P. 1
9	32	E	General shot of culvert in T.P. 1
9	33	N	General shot of root disturbance to culvert in T.P. 1
9	34	S	North-facing section through culvert [273] in T.P. 1
10	1	–	ID SHOT
10	2	N	South-facing section of T.P. 1
10	3	S	North-facing section of T.P. 1
10	4	E	West-facing wide shot of T.P. 1 before stepping
10	5	N	Section across culvert
10	6	NW	Working shot, Castle Wynd South
10	7	SW	Working shot, along north side of pavement
10	8	E	Working shot, outside Gilmour's Road
10	9	E	Working shot, Area 6
10	10	S	Working shot, Area 4
10	11	E	Working shot, Area 4
10	12	E	Working shot, Area 6
10	13	E	Working shot, pre-ex, Tree pit at east end
10	14	N	General shot of culvert (opposite Thompson's Court)
10	15	W	General shot of culvert (opposite Thompson's Court)
10	16	N	South-facing section of culvert following removal of capstone
10	17	N	South-facing section of culvert following removal of capstone
10	18	N	South-facing section of culvert following removal of capstone
10	19	W	Cobbled surface [283]
10	20	E	Section and cobbled surface [283]

Film No.	Shot No.	Direction	Description
10	21	E	General shot of cobbled surface in tree pit
10	22	N	General shot of cobbled surface in tree pit
10	23	N	South-facing section of tree pit
10	24	S	Shot of cable track excavation
10	29	N	Cobbled surface and drainage pipe in track
10	30	N	South-facing section through drainage track
10	31	E	Drainage track, general working shot
11	1	–	ID SHOT
11	2	W	Culvert [290]
11	3	E	Culvert [290]
11	4	NW	Working shot of track in Area 7
11	5	NW	Continuation of culvert in TP3 (already recorded)
11	6	NW	Working shot of rubber duck
11	7	W	Lifted setts of road outside Castle Wynd South
11	8	N	Culvert [291]
11	9	E	Culvert [291]
11	10	W	Inside culvert [291]
11	11	W	Inside culvert [291]
11	12	SSE	Working shot of Area 7
11	13	E	Working shot of Area 7
11	14	W	Culvert [292] in manhole pit in Area 7
11	15	N	lamp post base [294]
11	16	NNE	Section through post medieval material [295], Area 5
11	17	E	Working shot of Area 7
11	18	W	Working shot of Area 7
11	19	N	N-S culvert in Area 8
11	20	SW	Working shot of area outside 'Mamma's'
11	21	SW	As #20 with post med deposit to fore, colluvium to rear
11	22	W	Working shot of area to N of Area 8
11	23	NNW	Section through trench outside 'Beehive Inn'
11	24	NNW	AS #23, note colluvium under ground surface
11	25	SW	Cobbled surface [298], Area 5
11	26	NNW	Area outside 'Mamma's' to N of Area 8
11	27	NE	Cobbles in drain cut outside 'Pompeii'
11	28	SW	Cobbles in drain cut outside 'Pompeii'

Film No.	Shot No.	Direction	Description
11	29	SE	Cobbles [299] to NE of drain
11	30	SE	Deposit [300] under [299] and over [298]
11	31	SE	Cobbles [298] under [300]
11	32	W	Wall [301]
11	33	S	Wall [301]
11	34	N	Wall [301]
11	35	SW	Working shot of area to N of Area 9
11	36	SW	Working shot of area to N of Area 10
12	1	–	ID SHOT
12	2	SE	Cobbles [298] in manhole pit, Area 5
12	3	E	Cobbles [298] and [304]
12	4	SE	Intersection at [298] and [304]
12	5	Above	Intersection at [298] and [304]
12	6	W	Cobbles [306]
12	7	W	Cobbles [306]
12	8	W	Cobbles [306]
12	9	E	Culvert [310]
12	10	N	Culvert [313]
12	11	NW	Cobbles [314]
12	12	SE	Cobbles [312]
12	13	NE	Cobbles [312]
12	14	SE	NW facing section through manhole pit in Area 5
12	15	NW	SE facing section through manhole pit in Area 5
12	16	NE	Cobbles [298] in duct track NE of manhole
12	17	NE	Cobbles [312] NE of manhole
12	18	S	Working shot
12	19	S	Possible clay surface
12	20	S	Wall [309]
12	21	W	Wall [309]
12	22	N	Wall [309]
12	23	NE	Cobbles [298] in duct track - disturbed
12	24	NE	Cobbles [312]in duct track
12	25	N	Possible wall [318] - rubble core
12	26	NE	Clay and stone deposit [319]
12	27	N	Continuation of culvert [310]
12	28	SE	Cobbles [312] next to tree ring in Area 5
12	29	W	Culvert [322]
13	1	–	ID SHOT

Film No.	Shot No.	Direction	Description
13	2	W	Culvert [322]
13	3	E	Culvert [322] and blockage [325]
13	4	NE	Area 21 record shot
13	5	S	Working shot at Westport/Kings Stables
13	6	E	Working shot of [306]
13	7	W	Continuation of [306]
13	8	NW	Working shot of Vennel steps
13	9	W	Maximum depth of track in Vennel
13	10	NW	Working shot next to Westport
13	11	N	Working shot of cobbles [306]
13	12	NW	Cobbles [306], continuation outside 'Dancebase'
13	13	W	Working shot of [314] at W end of Grassmarket
13	14	W	Mid ex shot of [314] at W end of Grassmarket
13	15	E	Mid ex shot of [314] at W end of Grassmarket
13	16	NE	Shot of gully port
13	17	E	Shot of [314] showing dip in surface
13	18	E	Shot of [327]
13	19	N	Shot of section showing [328]
13	20	N	Section showing culvert cut through [314] at W end
13	21	W	Culvert at W end of Grassmarket
13	22	NE	Cobbles [312] in duct track Area 5
13	23	S	Culverts, drain and cobbles Area 10
13	24	E	Culverts, drain and cobbles Area 10
13	25	NW	Culverts, drain and cobbles Area 10
13	26	SW	Cobbles [332] in track Area 4/5
13	27	NE	Cobbles [312] in track Area 4/5
13	28	SW	Cobbles [332] in track Area 4/5
13	29	NE	Cobbles [312] in track Area 4/5
13	30	W	Midden [333] adjacent to Westport
13	31	N	Midden [333], Flodden Wall in background
13	32	NE	Cobbles [335] and culvert [336] at W end
13	33	NE	Cobbles [335] and culvert [336] at W end
13	34	W	Cobbles [332] Area 4
13	35	W	Cobbles [312] below [332]
13	36	E	Cobbles [341] below [312]
14	1	–	ID SHOT

Film No.	Shot No.	Direction	Description
14	2	N	Cobbles [332] Area 4
14	3	SE	Vennel: post ex shot of lower stairs
14	4	NW	Working shot of area by Westport
14	5	E	Wall [347] Area 4
14	6	N	[347] from above
14	7	S	[347] from above
14	8	NW	[343]-[346] N of Area 10
14	9	E	[343]-[346] N of Area 10
14	10	S	N facing section containing [347], Area 4
14	11	N	S facing profile through culvert [345]
14	12	E	W facing profile through culvert [345]
14	13	SE	Working shot of area by Westport
14	14	NW	[354] and [355] with foundation pad to rear
14	15	W	Cobbles [356] and [358]
14	16	NW	General shot of cobbles and foundation pads
14	17	W	General shot of cobbles and foundation pads
14	18	SW	Culvert [376]
14	19	SE	Cobbles [368] and foundation pad
14	20	N	Mortared remains [370]
14	21	NW	Sondage through [369]
14	22	W	Linear arrangement of stones [384]
14	23	S	[369] and rubble foundation
14	24	W	Culvert [376]
14	25	S	Working shot of the Vennel
14	26	W	Working shot of Cowgate/Grassmarket roundabout
14	27	W	Working shot of Cowgatehead opposite the Fossil Shop
14	28	N	Working shot of West Bow by No.98
14	29	WNW	Working shot of Westport/Kings Stables
14	30	E	Foundation pads of Corn Exchange prior to backfilling
14	31	N	Excavation at Cowgate/Grassmarket roundabout
14	32	N	Working shot outside Castle Wynd
14	33	E	Working shot E end of Grassmarket by police box
14	34	W	Area excavated on corner of Kings Stables Road
14	35	E	Working shot S side Areas 4 and 5
14	36	N	General shot of cobbles, deposits and pads Area 10
15	1	–	ID SHOT
15	2	W	Working shot opposite 'Grassmarket Hotel'
15	3	E	Area 5 S side working shot
15	4	E	Excavation of kerb outside 'Salar Deli'
15	5	E	Area 5 S side working shot
15	6	W	Working shot opposite 'Grassmarket Hotel'
15	7	NE	Excavation of new kerb and gully port outside 'Salar'
15	8	NNW	Duct track connecting extant duct tracks in Area 5
15	9	W	Working shot of area to N of Covenanters Memorial
15	10	S	N facing section of pit for gully pot at Cowgatehead
15	11	E	Working shot at Cowgatehead
15	12	N	Re excavated area c.2m² in Area 5
15	13	SSE	Duct track at W end of Area 5
15	14	W	As #9, final extent
15	15	SE	Track in Area 5 connecting to existing track
15	16	NNE	Re excavated pit for gully pot in Area 10
15	17	NE	Cobbles [390] Area 5
15	18	SW	Possible kerb for cobbles [390]
15	19	SE	Cobbles [391] area 5
15	20	W	E facing section showing foundation pad [379] Area 10
15	21	W	E facing section through drain track
15	22	SE	Drain tracks around [379], Area 10
15	23	N	Detail shot of cobbles [398] in Area 4
15	24	N	Locational shot of cobbles [398] in Area 4
15	25	N	Continuation of cobbles [398] Area 4
15	26	W	Drain track to N of Area 10
15	27	S	Drain track to N of Area 10, showing section
15	28	E	Area 3 N of Bow Well
15	29	S	Area 3 E of Bow Well
15	30	W	View of culvert [401] S of Bow Well
15	31	W	Culvert [401] Area 3
15	32	E	Culvert [401] and cobbles [402]
15	33	N	Locational shot of [401]
15	34	S	Cobbled surface [407] N of Area 10
15	35	S	View of drain track N of Area 10
15	36	N	Post ex shot to E of Bow Well
16	1	–	ID SHOT
16	2	S	General shot of area outside 'The Lot'
16	3	S	Extension of pipe trench Area 5
16	4	E	Area to W of Bow Well - general mid ex shot
16	5	W	Area N of Area 10 showing 2 stone pads
16	6	W	Section below stone pad
16	7	W	Section to N of [411]
16	8	E	Culvert [417] in Area 5
16	9	W	Area of cobbles [418]
16	10	SE	Truncated stone pad covered in concrete and plastic
16	11	N	N-S trench in Area 5 containing [420] and [421]
16	12	W	Area W of Bow Well
16	13	E	Pipe trench in Area 4 showing 2 layers of cobbling
16	14	E	Cobbled area [424] W of Bow Well
16	15	E	Pipe trench Area 4 showing [424] and [425]
16	16	E	Pipe trench area 4 at maximum depth of 1.6m
16	17	W	Cobbled area [424] W of Bow Well
16	18	S	Section of pipe trench Area 4
16	19	E	Cobbled surface [428]
16	20	W	Cobbled surface [428]
16	21	SE	Detail shot of leather find
16	22	SE	Locational shot of leather find
16	23	S	[431] gully feature
16	24	E	shot of stone pad of Corn Exchange
16	25	S	shot of stone pad of Corn Exchange
16	26	S	Mid ex shot of gully [431]
16	27	S	Post ex shot of gully [431]
16	28	N	Post ex shot of gully [431]
16	29	S	Maximum extent of excavation of SW Corn Exchange pad
16	30	E	Stone wall/culvert [436] in West Bow
16	31	S	Ground lowering in Area 4
16	32	N	Section of pipe trench Area 4
16	33	N	Overall shot of West Bow mid ex

Film No.	Shot No.	Direction	Description
16	34	S	Overall shot of West Bow mid ex
16	35	S	Shot of possible wall fragments [439]
16	36	E	Shot of possible wall fragments [440]
17	1	–	ID SHOT
17	2	N	Excavations around Bow Well monument
17	3	S	Excavations around Bow Well monument
17	4	S	[442] fragment of stone wall/steps in West Bow
17	5	E	General shot of pipe trench Area 4 after backfilling
17	6	N	S facing section of deposits in pipe trench area 4
17	7	S	[447] modern brick manhole in West Bow
17	8	S	[444] truncated cobbles in West Bow
17	9	E	Extension south of pipe trench Area 4
17	10	W	Cobbles [450] overlying cobbles [451] in West Bow
17	11	S	Culvert [448] in West Bow, cobbles [450] and [451]
17	12	W	Culvert [448]
17	13	S	Stratigraphy at S limit of pipe trench extension Area 4
17	14	S	Flooding from burst water pipe in West Bow
17	15	–	VOID
17	16	–	VOID
17	17	NE	Paving [457] in SW corner Area 10
17	18	S	Culvert [467]
17	19	NE	Shot of Flodden Wall [468]
17	20	SW	Shot of Flodden Wall [468]
17	21	SW	Shot of NE facing elevation [468]
17	22	SE	Detail shot of [468]
17	23	S	Shot along [468] Flodden Wall showing Vennel
17	24	S	General shot of area around [468]
17	25	S	Shot of drain/culvert [472]
17	26	W	Section showing modern deposits by [468]
17	27	S	General shot at limit of excavation in West Bow
17	28	S	Wall [482] in West Bow
17	29	S	Elevation of [482]
17	30	NW	Working shot of W end of Grassmarket
17	31	NW	Cobbles [485] and [486]
17	32	SE	Cobbles [486] continued
17	33	NW	Post ex shot of excavation at W end of Grassmarket
18	1	–	ID SHOT
18	2	NW	Continuation of area at W end of Grassmarket
18	3	W	E facing section showiing road make up over natural at Kings Stables Road
18	4	N	Area 6 working shot
18	5	W	Cobbles [498]
18	6	W	Working shot Area 3
18	7	S	Culvert [500]
18	8	S	Inside of culvert [500]
18	9	NW	Locational shot of wall [501]
18	10	NW	Wall [501]
18	11	SE	Cobbled surface [503]
18	12	SE	Larger flags/boulders at S end of [503]
18	13	SW	Areas 4 an 3 at formation level
18	14	E	Areas 6 an 5 at formation level
18	15	SE	Looking down West Bow, foreground at formation level
18	16	NW	View of culvert [505]
18	17	N	View of culvert [505]
18	18	W	Demolition of walls around Covenanters Memorial
18	19	W	Cobbles [506]
18	20	N	NW area of Area 4
18	21	W	Duct track through [497], N side Area 4
18	22	E	Lifting of slabs around Covenanters Memorial
18	23	E	Duct track through [507], S side Area 4
18	24	SW	View of stone pad
18	25	SE	Continued excavation at the foot of West Bow
18	26	E	Excavation in front of Festival Stores to formation
18	27	S	N facing section in Area 4 (outside Festival Stores) at depth of 0.8m
18	28	S	N facing section in Area 4 (outside Festival Stores) at depth of 1m
18	29	S	Concrete stairs/toilet block in Area 3
18	30	S	Concrete stairs/toilet block in Area 3
18	31	NE	Working shot of excavation of toilet block
18	32	NE	Working shot of excavation of toilet block
18	33	E	Final excavation at N side Area 4, limit of excavation
18	34	N	Working shot at the foot of Nether Bow
18	35	N	Locational shot of test pit in Area 3
18	36	NE	Working shot of Area 3
19	–	–	N.B. There is no film # 19
20	1	–	ID SHOT
20	2	E	Bell mouth shaped excavation at formation level outside Hunters Close
20	3	NW	Cobbles [512] to S of Covenanters Memorial
20	4	NW	E end Grassmarket
20	5	NW	Structure [513]
20	6	NW	Structure [513]
20	7	NW	Structure [513] fully exposed
20	8	NW	Base of [513]
20	9	NW	Locational shot of [513]
20	10	NW	Foot of West Bow at depth of 1.2m below modern ground surface
20	11	W	E facing section at West Bow showing [001]-[515]
20	12	W	E facing section at West Bow showing [515]-[520]
20	13	W	E facing section at West Bow showing [514]-[520]
20	14	E	Re-excavated track on S side Area 4
20	15	W	E facing section of test pit prior to sheet piling
20	16	W	[511] at base of test pit
20	17	S	Section of excavation to W of public toilet block
20	18	S	Section of excavation to W of public toilet block
20	19	E	[526] under Covenanters Memorial
20	20	SE	[527] cobbled surface
20	21	NE	SW facing section through track to S of Area 9
20	22	SE	SW facing section through track to S of Area 9
20	23	NW	Duct track across road to S of Areas 7 and 8 (N side)
20	24	SE	Duct track across road to S of Areas 7 and 8 (S side)
20	25	W	Cobbles [532]
20	26	W	Pit for road feature
20	27	N	Pit for road feature (locational shot)

Film No.	Shot No.	Direction	Description
20	28	E	Working shot of duct track
20	29	E	Working shot of duct track
20	30	S	Working shot of E end Area 3
20	31	N	Post-ex shot of E end Area 3
20	32	E	Cobbles [539]
20	33	E	Possible structure in excavation for manhole
20	34	W	Possible structure in excavation for manhole
20	35	S	Possible structure in excavation for manhole
21	1	–	ID SHOT
21	2	W	Possible linear feature
21	3	E	Top of organic layer [543] (poor light)
21	4	E	Top of organic layer [543] (poor light)
21	5	W	Working shot of stone layer - collapse?
21	6	S	N facing section over collapsed structure
21	7	S	N facing section over collapsed structure, close up
21	8	E	Collapsed structure
21	9	E	Collapsed structure
21	10	S	Collapsed structure
21	11	–	Wall [548] from above
21	12	–	Wall [548] and cobbles [550] from above
21	13	E	Probable surface and cut in Area 4
21	14	–	Working shot of probable surface in Area 4
21	15	E	Stone surface [551]
21	16	SE	Cobbles [554]
21	17	SE	Close up of step within [554]
21	18	SE	Drain track in Area 4
21	19	S	Cobbles [557]
21	20	N	S facing section of Covenanters Memorial
21	21	SW	Excavation for pilomat unit
21	22	W	Cobbles [559]
21	23	N	Cobbles [559], locational shot
21	24	SE	Track crossing S road
21	25	W	Cobbles [561]
21	26	S	Possible structure [562]/collapse
21	27	S	2nd pilomat excavation
21	28	NE	Working shot at foot of West Bow
21	29	NW	Working shot at foot of West Bow
21	30	E	Final pilomat excavation
21	31	SW	Working shot Area 7
21	32	S	Working shot Area 7
21	33	N	Post ex of excavation for Xmas tree socket in Area 7
21	34	N	Post ex of excavation for Xmas tree socket in Area 3

APPENDIX 3 DRAWING REGISTER

Drawing No.	Section	Plan	Description
1	1:10	–	S facing section through TP6, Area 8
2	–	1:20	Plan of culvert [4], TP6, Area 8
3	1:20	–	W facing section through TP6, showing culvert [4]
4	1:10	–	E facing section through culvert [4], TP6
5	1:10	–	W facing section showing [23] and [24]
6	–	1:50	Plan of Area 10
7	–	1:50	Plan of Area 10, continued
8	1:10	–	S facing section through culvert [26]
9	1:10	–	S facing section of mouth of culvert [26]
10	–	1:50	Plan of original pit for Rec Bin 2 in Area 6
11	1:10	–	E facing section through culvert [43]
12	1:10	–	W facing section through disturbed area [49]
13	1:10	–	S facing section in N edge of excavation
14	–	–	VOID. =19
15	–	1:50	Plan of Area 8
16	–	1:20	Culvert [90], Area 8
17	1:10	–	S facing section through tree pit in Area 9
18	1:10	–	N facing section of [82], Area 8
19	1:10	–	E facing section of culvert [4]
20	1:10	–	N facing section of culvert [81]
21	1:10	–	E facing section through culvert [30]
22	1:20	–	Sketch of slope towards 'silt trap' in culvert [30]
23	–	1:20	Location of [86] in culvert [30]
24	–	1:20	Plan of culvert [30]
25	1:10	–	S facing section, Area 8
26	1:10	–	W facing section, Area 8
27	–	1:20	VOID. =16
28	1:10	–	S facing section in initial pit for Rec Bin 3
29	–	1:20	plan of tree pit, Area 7
30	–	1:50	Plan of Area 9
31	1:10	–	Section through culvert [90]
32	1:20	–	S facing section, Area 10
33	1:10	–	S facing section in pit for manhole, Area 10
34	–	1:50	Plan of pit for Rec Bin 2, culverts [4] and [90]
35	1:20	–	N facing section in pit for Rec Bin 3
36	1:10	–	N facing section showing pit [144]
37	1:10	–	S facing section showing pit [156]
38	–	1:50	Structure [172] and culvert [173], Area 7
39	–	1:20	Culvert [183] in Area N
40	–	1:20	Wall [188]
41	1:10	–	Section through wall [188]
42	–	1:20	Plan of structure [198] - [200] in Area N
43	–	1:20	Plan of tree pit, Area 10
44	1:10	–	N facing section of tree pit in SW of Area 10
45	1:10	–	S facing section of tree pit in SW of Area 10
46	–	1:20	Plan of foundation pads in Area 10
47	1:10	–	E facing section of TP3 in Area 7 showing [256]
48	–	1:20	Plan of TP3 in Area 7 showing [256] truncating cobbles
49	–	1:20	Plan of wall [268] in Area 10
50	–	1:20	Plan of foundation pile [270] in Area 10
51	1:10	–	E facing elevation of [270]
52	–	1:20	Plan of TP1 in Area 7 showing [273]
53	1:20	–	S facing section of TP1 showing [273]
54	–	1:20	Plan of culvert [395]
55	1:10	–	Section through culvert [395]
56	1:10	–	Section through TP
57	1:10	–	SSE facing section through trench outside Beehive Inn
58	–	1:20	Plan of drystone wall [301]
59	1:20	–	NW facing section through manhole pit, Area 5
60	1:20	–	SE facing section through manhole pit, Area 5
61	–	1:20	Plan of culvert [313]
62	1:10	–	S facing section through culvert [313]
63	–	1:20	Plan of wall [309]
64	–	1:20	Plan of culvert [322]
65	1:10	–	W facing section through culvert [322]

Drawing No.	Section	Plan	Description
66	–	1:20	Plan of culvert [336] and cobbles [335]
67	–	–	Sketch section of area at W end/Kings Stables Road
68	1:10	–	SW facing section through culvert [336]
69	–	1:20	Culverts and drain [343], [344], [345]
70	1:10	–	SE facing section through drain [345]
71	–	1:20	Plan of wall [347] in Area 4
72	1:10	–	N facing section in Area 4
73	–	1:20	Plan of foundation pads to north of Area 10
74	–	1:20	#73 continued…
75	–	1:20	Plan of culvert [401] to SE of Bow Well
76	–	1:20	Plan of culvert in Area 5
77	1:20	–	N facing section of pipe trench in Area 4
78	1:20	–	E facing section of pipe trench branch, Area 4
79	–	1:20	Plan of stone slab relating to Corn Exchange
80	–	1:20	Pre ex plan of location of leather find within [425]
81	1:20	–	NE facing section of pipe trench in Area 4
82	–	1:20	Post ex plan of leather find within [425]
83	–	1:20	Plan of West Bow (4 sheets)
84	–	1:20	Plan of OGS by Corn Exchange
85	1:10	–	NW facing section of deposits in #84
86	–	1:20	Plan of Flodden Wall, Area 10 (2 sheets)
87	1:10	–	Measured sketch elevation of [468]
88	–	1:10	Plan of wall [482] at 1:10
89	–	1:20	Plan of culvert [500]
90	1:10	–	Section of culvert [500]
91	–	1:20	Plan of culvert [525]
92	–	1:20	Plan of [515]
93	1:10	–	NW facing section of excavation for manhole
94	–	1:20	Plan of excavation for manhole
95	–	1:20	Plan of wall [548]
96	–	1:10	Plan of structural collapse [546]
97	–	1:10	Plan of surface [551] and possible wall [552]
98	1:10	–	NW facing section of trench in Area 4
99	–	1:10	Plan of extended trench in Area 4 showing [551]

APPENDIX 4 SAMPLE REGISTER

Sample No.	Context No.	Description
1	6	Dark brown clay silt deposit
2	7	Upper fill fo pit [9]
3	13	Fill of culvert
4	6	Dark brown clay silt deposit
5	24	Redeposited post med material in [17]
6	39	Bottom fill of 'silt trap' in [30]
7	41	Fill of [26]
8	51	Fill of rebuilt culvert [49]
9	67	Dark brown sandy loam
10	68	Dark brown slightly sandy silt
11	69	Black silt with frequent organics
12	70	Compact grey brown sandy silt
13	39	Bottom fill of 'silt trap' in [30]
14	88	Colluvium
15	–	VOID
16	85	Fill of [81]
17	96	Fill of culvert [82]
18	97	Upper fill of [81]
19	88	Colluvium
20	88	Colluvium
21	103	Fill of pit [102]
22	101	OGS/Buried soil
23	104	Brown black sandy silt
24	6	Dark brown clay silt
25	105	Buried soil
26	106	Sandy loam deposit
27	107	Silty deposit
28	110	Built up/accumulated deposit
29	10	Fill of cut [11]
30	108	Midden' deposit
31	130	Colluvium, Area 10
32	118	Fill of [119]
33	127	Midden' deposit
34	128	Compact clay over [130]
35	126	Clay, same as [124]
36	129	Mid brown sandy silt
37	132	Fill of culvert cut
38	133	Midden' deposit
39	135	Dark brown fill of [134]
40	136	Light fine sand
41	124	Clay silt, Area 10
42	127	Midden', Area 10
43	13	Colluvium, Area 10
44	142	Build up over cobbles [142], Area 10
45	145	Fill of pit [144], Area 10
46	149	Clay silt deposit, pit for Rec Bin 3
47	153	Dark brown silt, pit for Rec Bin 3
48	152	Midden', pit for Rec Bin 3
49	154	Stone and animal bone deposit, pit for Rec Bin 3
50	157	Fill of pit [156]
51	157	Fill of pit [156]
52	160	Rubble and disturbed topsoil, pit for Rec Bin 3
53	163	Fill of pit [162], pit for Rec Bin 3
54	159	Black stony silt, Area 10
55	164	Light brown sand, Area 10
56	155	Dark brown silt deposit, pit for Rec Bin 3
57	185	Compact black brown sandy loam over cobbles
58	–	VOID
59	191	Material over cobbles
60	205	Deposit beneath foundations [204]
61	233	Dark brown silty sand fill of culvert [219]
62	240	Build up over cobbles [241]
63	242	Light brown loamy sand under [241]
64	254	Fill of culvert [253]
65	205	Post medieval deposit, Area 10
66	300	Dark grey organic deposit beneath [299]
67	303	Dark brown sandy loam
68	311	Dark brown organic silt
69	326	Black mixed deposit, sandy clayey silt
70	435	Fill of gully [431]
71	468	Piece of stone from Flodden Wall. (Granite?)
72	511	Old subsoil, grey silty clay
73	543	Organic mid brown deposit
74	544	Organic deposit
75	545	Redeposited subsoil
76	544	Organic deposit
77	544	Organic deposit
78	Kubiena 1	Contexts [545]-[544]

Sample No.	Context No.	Description
79	Kubiena 2	Contexts [544]-[543]
80	Kubiena 3	Contexts [543]-[540]
81	543	Organic deposit
82	545	Grey silty clay

APPENDIX 5 FINDS

5.1 Finds Summary

Julie Franklin
with contributions by Clare Thomas

The finds assemblage provides evidence for the use of the area. Some finds point towards trade and commerce in the marketplace (imported pottery, a coin), some towards taverns and alehouses (glass and stoneware bottles), some towards the general volume of traffic and people in the area (lost shoes, buttons, pins and horseshoes). They cover a wide span of time from possibly as early as the 11th century to recent times. A complete list of all the finds is given. The finds are all stored appropriately in five numbered boxes.

Pottery

(911 sherds)
The pottery spans the whole period from medieval through to modern times. The earliest pottery was of 12th or 13th century date. The lack of earlier pottery does not imply lack of earlier occupation, as there was no pottery industry in south-east Scotland in the early historic period. From the late 16th century imported pottery begins to appear, including German stonewares and slipwares, Anglo-Dutch tin-glazed earthenware and Seville coarsewares. The latter, being from a large amphora or 'olive jar' [359] is unusual outside of quayside areas in Scotland and reflects the use of the area as a marketplace. The modern pottery is the largest group, making up 75% of the pottery assemblage. It includes a wide variety of wares, from the mundane to the expensive. Notable pieces include a near complete moulded green glazed bowl [404] and the stopper from a stoneware hot water bottle [475].

Glass

(632 sherds)
The glass all appears to belong to the post-medieval and modern periods. The oldest sherds are from early 18th century wine bottles. Wine bottle are the most common type, but also present are fragments of medicine bottle, fine vessel glass and window sherds. The glass sherd count is unrepresentative of the amount of glass found due to large number of tiny fragments found in sample retents.

Other glass finds include several beads of various shapes and colours and a button. All are from modern contexts. There are also a number of fragments of glass waste, suggesting glass working in the area.

Metalwork

(50 finds)
The most striking part of the metalwork assemblage is the number of horseshoes. Three complete or near complete examples, of medieval or early post-medieval date (contexts [142], [242], [429]). There are also a number of items of dress accessories lost from human clothing, such as a buckle [088], wire pins and lace tags. Given the volume of traffic in the area, it is perhaps surprising there were not more lost coins. The only example found was an old penny, possibly Victorian [052]. Other notable finds include a possible hand pick [187] and fragments of a possible wool or heckle comb (used in the preparation of wool or flax for spinning). Several metal finds are as yet unidentified, awaiting the results of conservation work.

There is also some evidence for ironworking in the vicinity, probably reflecting smithing. These are typically small fragments picked up from sample retents, no area of *in situ* metalworking was identified during the excavation.

Clay Pipes

(169 sherds)
The clay pipes span the mid 17th to late 19th centuries. A number are marked for Edinburgh and possible Glasgow makers. Particularly unusual are a group of early 18th century pipes [333], a period when pipe smoking was beginning to fall out of fashion. All the pipes are marked, including two for an unknown maker 'DW'.

Stone, Bone & Ceramic Finds

(29 finds)
The majority of these finds are modern ceramic marbles and bone buttons. A more unusual find is a small bone ferrule or lace end, decoratively turned with rivet holes at the free end. It is also from a modern context [024] but its function is as yet uncertain.

Organic Finds

Julie Franklin & Clare Thomas

(15 finds)
The organic finds include the oldest finds from the site. Some off-cuts of leather were associated with a radiocarbon date of AD1010-1160 [545]. Other leather finds were possibly slightly later. The most diagnostic of these was part of the upper, of what appears to be an ankle-boot of one-piece design, with vamp and quarters made out of one piece of leather [425]. It is medieval in date, probably AD 1100 - 1400. There was also the sole from a child's shoe from a context of medieval date [520]. Some fragments of coarse woven textile [466] were found sealed beneath a post-medieval cobbled surface. Wooden finds include part of a button [326] and a stopper from a barrel or jar [456].

Building Materials

(20 finds)
These include fragments of mortar, brick and some pan tile sherds, including very large pieces from the base of a culvert [081]. A large dressed stone was found with a deep hollow cut into the surface [002]. A piece of medieval Flemish type floor tile is indicative of an ecclesiastical structure in the vicinity in the 15th century, but was unfortunately unstratified.

5.2 Finds List

Julie Franklin & Julie Lochrie

Medieval & Early Post-medieval finds

052	residual pot sherd
088	medieval pot sherds (13th/14th) & buckle (L.med/Early P.med)
185	pot sherd
142	L.med/Early P.med horseshoe
242	L.med/Early P.med horseshoe
TP6 Backfill	Early P.med pot sherd

Culvert Fills

Fill	Culvert	Finds Notes
013	4	No finds
041	26	19thC
052	43	m.19th, coin post-dates 1860, nothing older than L.18thC
053	46	No finds
085	81	19thC

086	33	No finds
096	82	No finds
097	81	No finds
098	90	No finds
118	119	No finds
139	Backfill of 9	No finds
024?	'Post-med Deposit'	Possibly e.19th, clay pipe post dates 1827, with some 18thC finds
081	'Pan tiles from Culvert'	Post-med to Mod, no older than 17th

Culvert fills 052 (fill of 43), 024, 081
C 333 – pretty tightly dated, all laid down together? – c.1700

5.3 Grassmarket Leather Fragments Report

Pieta Greaves (AOC Project No 21184)

Shoe sent to AOC conservation by Julie Franklin of the Headland Archaeology for conservation assessment and subsequent conservation treatment.

Condition summary

Leather shoe fragments arrived waterlogged and misshapen from the burial environment. The surface of the leather has darkened due to the water and iron salts absorbing into the leather from the burial environment.

Conservation summary

Shoe was firstly cleaned with soft brushes, wooden tools and deionised water to remove soils from the burial environment.

The shoe was then immersed in a 5% diNa EDTA solution to remove any iron staining and iron salts from the leather. Following a rinse to remove any excess diNa EDTA the shoe was then immersed in a 10% solution of Glycerol. The purpose of the Glycerol is to support the leather cell structure as the water is removed during the freeze drying process. The shoe fragments was then reshaped as best possible and placed into the freezer overnight to allow the remaining water to freeze. Finally the shoe was then placed into the freeze dryer were it was weighed over a period of 3 days, to ensure all the water had been removed.

Handling and storage requirements

Leather from archaeological sites, once it has been conserved, should be kept cool (below 10oC if possible) and at a steady Relative Humidity (RH): the recommended RH is 50%; if it is much higher, mould growth is likely to occur (spores do not seem to be destroyed by freeze drying) which is harmful to both the leather and to anyone handling it. At an RH below this, the leather will become too dry, and will probably shrink and distort irrevocably.

Wear gloves when handling; place only on a padded surface to avoid damage, and return to its storage box without delay.

Health and safety considerations

After handling archaeological material, wash hands immediately; do not allow food, drink or food preparation areas to become contaminated with soil or other debris

Materials used

diNa EDTA - Disodium salt of ethylene Di amine Tetra-acetic acid
DiNa(HOOCCH2)2NCH2CH2N(CH2COOH)2
Glycerol- glycerine; propan-1,2,3-ol.

Before Conservation

Illus A5.3.1
SF 107 Context 520

After Conservation

Illus A5.3.3
SF 107 Context 520

Illus A5.3.2
SF 106 Context 425

Illus A5.3.4
SF 106 Context 425

5.4 Finds Catalogue

Phase	Area	Context	SF No	Sample No	Material	Qty	Weight (g)	Object	Description	Spot Date	Period	Conservation	Illustration	Box No
–	–	U/S	–	–	Fe/MWD	–	1	Fragment	Small frag. 'See Drg 09'	–	–	–	–	1
–	Area 10	U/S	–	–	Stone	1	–	Cylinder	Marble cylinder, tapering. Wider end broken.	–	–	–	–	2
–	–	U/S	–	–	Glass	1	–	Bead	Black (dark colour?) large globular bead with central perforation	–	?	–	–	2
–	Dep over N cobbles	U/S	–	–	Glass	1	–	Bottle	Sherd of green bottle base. (has question mark after project code on bag)	18th/19th	Mod	–	–	2
–	–	U/S	–	–	Glass	3	–	Bottle	Two sherds and a frag from a vessel, poss bottle	18th/19th	Mod	–	–	2
–	–	U/S	–	–	Ceramic	2	–	Marbles	–	19th/20th	Mod	–	–	2
–	Western area	U/S	–	–	Clay Pipe	1	–	Stem	Wide bore	17th/e.18th	PM	–	–	2
–	–	U/S	–	–	Glass	2	–	Waste	Glass waste??	–	Mod	–	–	2
–	5	U/S	–	–	CBM	1	–	Floor Tile	Flemish type, yellow glaze, corner sherd, thickness 25 mm	15th	medi	–	–	3
–	Service trench	U/S	–	–	Pottery	2	–	Local	PMR base; LWW sherd	15th/16th	medi	–	–	4
–	–	U/S	–	–	Pottery	1	–	Local	WG, olive glazed	13th/15th	medi	–	–	4
–	West end of Grassmarket	U/S	–	–	Pottery	3	–	Import	RhenSW, joining sherds making up complete plain base of grey salt glazed jug	16th?	Mod	–	–	4
–	TP6 Backfill	U/S	–	–	Pottery	1	–	Import?	Weser slipware fragment? Yellow glazed whiteware, green and orange decoration	1590/1620	PM	–	I	4
–	5	U/S	–	–	Pottery	1	–	Local	Greyware – gritty, dark grey, olive glaze. From 'deposits over cobbles 241'	14th/16th	medi/P.med	–	–	4
–	Area next to West Port	U/S	–	–	Pottery	1	–	Local	PMR, complete base from small thick walled vessel, ext glaze, very abraded	15th/16th	PM	–	I	4
–	Deposit under 369	U/S	–	–	Pottery	2	–	Local	PMO jar rim & base	16th	PM	–	–	4
–	W end outside Bar Alba	U/S	–	–	Pottery	2	–	Local	PMR/PMO, jar rim & jug sherd	16th-17th/ e.18th	PM	–	–	4
–	Western area	U/S	–	–	Pottery	4	–	Local	Jar sherds, pirlie pig base	16th-17th/ e.18th	PM	–	–	4
–	Service Trench	U/S	–	–	Pottery	1	–	Modern	Whiteware, blue trans printed, willo?, marked 'Methven'	19th/20th	Mod	–	–	5
–	–	U/S	–	–	Pottery	1	–	Modern	Whiteware	19th/20th	Mod	–	–	5
–	Dep over N cobbles	U/S	–	–	Pottery	4	–	Modern	Creamware, redwares	L.18th/e.19th	Mod	–	–	5
–	–	U/S	–	–	Pottery	5	–	Modern	SLRE, Pearlware, willow, ? creamware bird's head finial	L.18th/e.19th	Mod	–	–	5
–	Outside West Port	002	–	–	Glass	1	–	Bottle	Large base sherd, mallet?	18th	PM/Mod	–	–	2
–	–	002	–	–	Pottery	1	–	Modern	Redware, mottled slip lined	18th	Mod	–	–	5
–	–	002	–	–	Arch Frag	1	–	–	Large stone with squared edges and circular hollowed area	–	–	–	–	S
–	–	015	–	–	Glass	1	–	Bottle	Sherd green glass	18th/19th	Mod	–	–	2
–	–	015	–	–	Clay Pipe	1	–	Bowl	Bowl with moulded decoration, spur	19th	Mod	–	–	2
–	–	015	–	–	Pottery	16	–	Modern	Creamware, mocha ware, redwares, blue trans printed	L.18th/e.19th	Mod	–	–	5
–	–	023	–	–	Glass	18	–	Bottle / Vessel	Green wine bottle sherds, mould made & fragments. 2 red bottle sherds, different vessels?	e.19th	Mod	–	–	2
–	–	023	–	–	Glass	1	–	Marble	Blue with white swirls	–	Mod	–	–	2
–	–	023	–	–	Pottery	8	–	Modern	Pearlware, stoneware, redwares, blue trans print	e.19th?	Mod	–	–	5
–	–	024	–	05	Cu	1	–	Frags	–	–	–	–	–	1
–	–	024	–	05	Cu	1	–	Object	Flat (slightly rounded) disc	–	–	–	–	1
–	–	024	–	05	Cu	1	–	Object	Ring frag?	–	–	–	–	1

Phase	Area	Context	SF No	Sample No	Material	Qty	Weight (g)	Object	Description	Spot Date	Period	Conservation	Illustration	Box No
–	–	024	–	05	Fe	1	–	Wire	Fragments	–	–	–	–	1
–	–	024	–	05	Cu	6	–	Wire pins	Fragments	–	–	–	–	1
–	–	024	–	–	Glass	1	–	Bead	Translucent large globular bead with small central perforation	–	?	–	–	2
–	–	024	–	05	Glass	4	–	Beads	Three blue transparent beads of different shapes, one with faceted cuts, one small round black bead	–	Mod?	–	–	2
–	–	024	–	–	Glass	9	–	Bottle	Green wine bottle sherds, including mallet neck Clear bottle sherds	c.1720-70	Mod	–	–	2
–	–	024	–	05	Glass	99	–	Bottle / Vessel	Various green & clear fragments	L.18th/ e.19th?	Mod	–	–	2
–	–	024	–	–	Clay Pipe	8	–	Bowls & Stems	Bowl, large spurred. 7 stems, one stamped "……URNS CUTTY/….. UNCAN LEIT……" (several poss makers 1817-65)	19th	Mod	–	–	2
–	–	024	–	05	Clay Pipe	28	–	Bowls & Stems	Bowls and stems, two "TW" bowls (Thomas White 1827-70)	19th	Mod	–	–	2
–	–	024	–	05	Bone Obj	2	–	Buttons	Fragments	–	–	–	–	2
–	–	024	–	05	MWD	–	98	Fe Slag	Small frags	–	–	–	–	2
–	–	024	–	05	Bone Obj	1	–	Ferrule	Small tube with turned decoration at end and two rivet holes at free end. Worn on one side	–	–	–	–	2
–	–	024	–	05	MWD	–	16	Mag Res	–	–	–	–	–	–
–	–	024	–	05	Ceramic	1	–	Marbles	–	19th/20th	Mod	–	–	2
–	–	024	–	05	MWD	–	3	Prill	–	–	–	–	–	2
–	–	024	–	05	Glass	–	76	Waste	–	–	Mod	–	–	2
–	–	024	–	05	Glass	130	–	Window	Fragments	–	Mod	–	–	2
–	–	024	–	–	Glass	5	–	Window	Clear sherds	–	Mod	–	–	2
–	–	024	–	05	Mortar	–	107	–	–	–	–	–	–	3
–	–	024	–	05	CBM	–	27	Brick	Fragments	18th/20th	Mod	–	–	3
–	–	024	–	05	Pottery	132	–	Modern	Pearlware, shell edged, willow, blue trans print, redwares, rockingham, gilded porcelain, stoneware, yellow ware, spongeware. Many small fragments	e/m.19th	Mod	–	–	5
–	–	024	–	–	Pottery	57	–	Modern	Pearlware, blue trans print, willow, redwares, blue banded, hand printed (green & red), porcelain, spongeware	e/m.19th	Mod	–	–	5
–	–	039	–	06	Cu	1	–	Cap	Small cap with some frags	–	–	–	–	1
–	–	039	–	–	Coal	–	5	–	Small lump and frags of coal	–	–	–	–	2
–	–	039	–	06	Textile	1	–	–	Woven fibres	–	–	–	–	2
–	–	039	–	06	Glass?	2	–	Beads	Small round beads, one black, one turquoise bead	–	?	–	–	2
–	–	039	–	06	Glass	75	–	Bottle / Vessel	Various green & clear fragments	–	Mod	–	–	2
–	–	039	–	06	Clay Pipe	51	–	Bowls & Stems	Bows and stems, several "TW" bowls, one bowl has moulded decoration of a thistle & harp. Odd mottled brown discolouration.	19th	Mod	–	–	2
–	–	039	–	06	MWD	–	54	Fe Slag	Small frags	–	–	–	–	2
–	–	039	–	06	Lithics	1	–	Flint	Chip	–	–	–	–	2
–	–	039	–	06	Stone	1	–	Fossil	Covered in white residue probably from the mortar	–	–	–	–	2
–	–	039	–	06	MWD	–	4	Mag Res	–	–	–	–	–	2
–	–	039	–	06	MWD	–	3	Prill	–	–	–	–	–	2
–	–	039	–	–	Clay Pipe	1	–	Stem	Stem, narrow bore	19th	Mod	–	–	2
–	–	039	–	06	Glass	–	14	Waste	–	–	Mod	–	–	2

Phase	Area	Context	SF No	Sample No	Material	Qty	Weight (g)	Object	Description	Spot Date	Period	Conservation	Illustration	Box No
–	–	039	–	06	Glass	200	–	Window	–	–	Mod	–	–	2
–	–	039	–	06	Mortar	–	95	–	–	–	–	–	–	3
–	–	039	–	06	CBM	–	30	Brick	Fragments	18th/20th	Mod	–	–	3
–	–	039	–	–	Pottery	22	–	Modern	Blue trans print, willow, porcelain, spongeware, odd small shallow dish	19th	Mod	–	–	5
–	–	039	–	06	Pottery	252	–	Modern	Blue & green trans print, willow, porcelain, spongeware, rockingham teapot lid, redwares, yellow ware	19th	Mod	–	–	5
–	–	041	–	07	Cu	1	–	Fragment	–	–	–	–	–	1
–	–	041	–	07	Glass	23	–	Bottle / Vessel Window	Various green & clear fragments	–	Mod	–	–	2
–	–	041	–	07	Clay Pipe	3	–	Bowl & Stem	Fragments, one with part of stamped mark	19th	Mod	–	–	2
–	–	041	–	07	MWD	–	10	Fe Slag	Small frags	–	–	–	–	2
–	–	041	–	07	MWD	–	3	Mag Res	–	–	–	–	–	2
–	–	041	–	–	Ceramic	8	–	Marbles	–	19th/20th	Mod	–	–	2
–	–	041	–	07	Ceramic	4	–	Marbles	–	19th/20th	Mod	–	–	2
–	–	041	–	07	Glass	–	2	Waste	fragments	–	Mod	–	–	2
–	–	041	–	07	Mortar	–	36	–	–	–	–	–	–	3
–	–	041	–	07	Pottery	10	–	Modern	Whiteware, rockingham, stoneware	19th	Mod	–	–	5
–	–	047	–	–	Cu	1	–	Lace Tag?	Small shaft-like frag, crusty	–	–	–	–	1
–	–	(above 050)	–	–	Pottery	1	–	Modern	Stoneware - body sherd, brown glaze. “&Co” stamped onto body	–	Mod	–	–	5
–	–	052	–	–	Metal?	3	–	Blue Fragments	3 small conj fragments with internal bright blue colouring	–	–	–	–	1
–	–	052	–	–	Fe	1	–	Lump	Lump of iron ?object & slag with glass (L.18th bottle neck), bone and pottery (brown glazed redware) attached, similar to iron from context 052 & 065	L.18th?	Mod	–	–	1
–	B	052	–	–	Cu	1	–	Button?	Lump, possible hollow button fragment with wire loop?	–	Mod?	?C Rec	–	1
–	–	052	–	–	Cu	1	–	Coin	Halfpenny. Vict? Diam 27mm	1860/1970	Mod	?C Rec	–	1
–	B	052	–	–	Fe	1	–	Ring	Iron ring with glass and ?bone attached, similar to iron from context 65	–	–	XR Rec	–	1
–	–	052	–	–	Glass	17	–	Bottle	Green wine bottle, hand made sherds, one piece of bottle neck sherd has been subject to very high temperatures	L.18th/ e.19th?	Mod	–	–	2
–	B	052	–	–	Clay Pipe	7	–	Bowls & Stems	5 stems, narrow bores, and 2 spurred bowls, one stem and bowl with moulded decoration. Odd mottled brown discolouration.	19th	Mod	–	–	2
–	–	052	–	–	Bone Obj	1	–	Button	4 holes	–	–	–	–	2
–	B	052	–	–	Ceramic	1	–	Marble	–	19th/20th	Mod	–	–	2
–	–	052	–	–	Glass	1	–	Button	Blue button, with missing ?wire loop at back	19th?	Mod	?C Rec	–	2
–	–	052	–	–	Glass	2	–	Vessel	Foot and rim from stemmed glass, tazza?	–	Mod	?C Rec	–	2
–	–	052	–	–	Glass	8	–	Window	Clear sherds	–	Mod	?C Rec	–	2
–	B	052	–	–	Pottery	1	–	Local	Redware, sandy, patchy glaze	14th/16th	medi	–	–	4
–	B	052	–	–	Pottery	45	–	Modern	Shell edged, hand painted porcelain, redwares, banded, blue, green & red trans printed, willow, spongeware	18th-m.19th	Mod	–	–	5
–	–	057	–	–	Pottery	1	–	Modern	Shell edged?	L.18th/19th?	Mod	–	–	5
–	–	065	–	–	Cu	1	–	Stud	Furniture stud? Domed head, square shaft.	–	PM/ Mod	?C Rec	–	1
–	–	065	–	–	Fe	1	–	Lump	Lump of Fe objects & ?slag with glass and stone attached	–	–	XR Rec	–	1

Phase	Area	Context	SF No	Sample No	Material	Qty	Weight (g)	Object	Description	Spot Date	Period	Conservation	Illustration	Box No
–	–	065	–	–	Metal	1	–	Fragment	Fragment of sheet metal	–	–	–	–	2
–	–	065	–	–	Glass	1	–	Vessel	Sherd of clear glass	–	Mod	–	–	2
–	–	065	–	–	Glass	1	–	Window	Sherd of window glass	–	Mod	–	–	2
–	–	065	–	–	Pottery	13	–	Modern	Mostly same banded vessel, brown staining	L.18th/19th	Mod	–	–	5
–	–	081	–	–	CBM	–	–	Pan Tile	Near complete large tile. From Base of Culvert	17th/20th	PM-Mod	–	–	3
–	–	081	–	–	CBM	–	–	Pan Tile	Near complete large tile. From Base of Culvert	17th/20th	PM-Mod	–	–	3
–	–	085	–	–	Bone Obj	1	–	Button	4 holes	–	–	–	–	2
–	–	085	–	–	Ceramic	4	–	Marbles	–	19th/20th	Mod	–	–	2
–	–	088	–	14	Fe	1	–	Nail?	–	–	–	–	–	1
–	–	088	–	14	MWD	–	2	Prill	–	–	–	–	–	2
–	–	088	–	14	Pottery	2	–	Local	White gritty, small CP sherds	12th/14th	medi	–	–	4
–	8	088	1	–	Cu	1	–	Buckle	Flat copper alloy ring buckle, possibly tin plated, with central bar (possibly broken at one end) and remains of iron pin.	14th/18th	medi/PM	C Rec	X	SCS
–	–	091	–	–	Fe	1	–	Hinge?	Strip with one long edge rolled Rod & pintle hinge? Very corroded with adhering stones, in two conjoining pieces	–	–	XR Rec	–	1
–	–	091	–	–	Pottery	4	–	Modern	Redware, spongeware	19th	Mod	–	–	5
–	8	094	–	–	Fe	1	–	Nail	–	–	–	–	–	1
–	–	094	–	–	Coal	–	11	–	Small lump of coal	–	–	–	–	2
–	8	094	–	–	Glass	1	–	Bottle	Green bottle sherd	–	Mod	–	–	2
–	–	094	–	–	Pottery	14	–	Modern	Blue hand painted, blue trans print, willow, banded, redware,	e.19th	Mod	–	–	5
–	–	106	–	26	MWD	–	23	Fe Slag	Small frags	–	–	–	–	2
–	–	106	–	26	MWD	–	3	Prill	–	–	–	–	–	2
–	–	107	–	27	MWD	–	2	Prill	–	–	–	–	–	2
–	–	108	–	30	MWD	–	25	Fe Slag	Small frags	–	–	–	–	2
–	–	110	–	28	Cu	1	–	Fragment	–	–	–	–	–	1
–	–	110	–	28	Glass	7	–	Frags	–	–	Mod	–	–	2
–	–	110	–	28	MWD	–	2	Prill	–	–	–	–	–	2
–	–	110	–	28	Mortar	–	4	–	–	–	–	–	–	3
–	–	142	2	–	Fe	1	–	Horseshoe	Complete, arms narrowing to pointed tip.	13th/17th	medi/PM	XR Rec	X	SCS
–	–	185	3	–	Pottery	1	–	Local	Greyware, coarse sandy, olive glaze	15th/16th	medi/PM	–	–	4
–	N	187	–	–	Cu	1	–	Wire Pin	–	–	–	–	–	1
–	N	187	–	–	Cu	1	–	Wire Pins	Fragments of wire	–	–	?C Rec	–	1
–	–	187	–	–	Cu	1	–	Chain?	Very fragmentary copper, one fragment appears to be a very small loop	–	–	XR Rec	–	1
–	N	187	–	–	Fe	1	–	Comb / Rake?	26 fragments of narrow round-sectioned shafts, some corroded together in parallel. Curry comb, carder, rake?	–	–	XR Rec	–	1
–	N	187	–	–	Fe	1	–	Nail?	–	–	–	XR Rec	–	1
–	N	187	–	–	Fe	1	–	Obj	6 fragments from scoop shaped object	–	–	XR Rec	–	1
–	N	187	–	–	Fe	1	–	Tool	Hand pick? Thick shaft which tapers at both ends	–	–	XR Rec	–	1
–	–	187	–	–	Stone	1	–	Slate Pencil	–	–	Mod	–	–	2
–	N	187	–	–	Clay Pipe	1	–	Stem	Stem, narrow bore	19th	Mod	–	–	2

Phase	Area	Context	SF No	Sample No	Material	Qty	Weight (g)	Object	Description	Spot Date	Period	Conservation	Illustration	Box No
–	–	187	–	–	Glass	2	–	Window	1 window sherd and small frag of glass	–	Mod	–	–	2
–	Area 9	207	–	–	Fe	1	–	Nail	Modern type?	–	Mod?	–	–	1
–	–	207	–	–	Pottery	2	–	Modern	Porcelain, burnt	19th/20th	Mod	–	–	5
–	10	210	102	–	Cu	1	–	Obj	Lump, corroded and covered in dirt	–	–	XR Rec	–	SCS
–	–	212	–	–	Pottery	1	–	Local	PMR, olive glazed sherd	16th/17th	PM	–	–	4
–	–	234	–	–	Pottery	1	–	Local	PMR, olive glazed	16th	PM	–	–	4
–	5	242	101	–	Fe	1	–	Horseshoe	Complete, broad, arms narrowing to point	13th/17th	medi/PM	XR Rec	–	SCS
–	–	246	–	–	Pottery	2	–	Local	WG, grooved rod handle	13th/14th	medi	–	–	4
–	–	247	–	–	Clay Pipe	1	–	Stem	Wide bore	17th/e.18th	PM	–	–	2
–	–	247	–	–	Pottery	1	–	Local	PMR, olive glazed	c.16th	PM	–	–	4
–	Area 7 TP3	257	–	–	Cu	1	–	Lump	Small corroded lump	–	–	–	–	1
–	Area 7 TP3	257	–	–	Fe	2	–	Nails	Hand wrought nails	–	–	–	–	1
–	TP3	257	–	–	Pottery	2	–	Local	PMR/LWW, olive glazed sherds	15th/16th	medi	–	–	4
–	–	257	–	–	Pottery	1	–	Modern	Stoneware bottle sherd	19th/20th	Mod	–	–	5
–	–	261	–	–	Pottery	1	–	Local	PMR, olive glazed	c.16th	PM	–	–	4
–	–	264	–	–	Glass	1	40	Waste	Pale blue lump	–	–	–	–	2
–	–	266	–	–	Pottery	1	–	Local	WG, reduced, olive glazed	13th/15th	medi	–	–	4
–	–	266	–	–	Pottery	5	–	Modern	Whiteware; Porcelain; Redware; some burnt	19th/20th	Mod	–	–	5
–	–	267	–	–	Pottery	1	–	Local	WG, fragment, grey, olive glazed, impressed decor	13th/15th	medi	–	–	4
–	–	267	–	–	Pottery	2	–	Modern	Whiteware plate rim; Stoneware bottle sherd	19th/20th	Mod	–	–	5
–	–	274	–	–	Pottery	1	–	Modern	Whiteware, large jar base, red & greeen printed floral decoration	19th/20th	Mod	–	–	5
–	–	278	–	–	Glass	1	10	Waste	Small green/clear lump	–	–	–	–	2
–	–	278	–	–	Pottery	2	–	Local	PMR sherd, olive glazed; Unidentified sherd vitrified by attached ?iron slag deposit	16th/17th?	PM	–	–	4
–	8 TP1	280	–	–	Pottery	17	–	Modern	Pearlware, blue & black trans print, banded, redware, moulded stoneware, yellow ware, spongeware, hand painted (green & red)	19th	Mod	–	–	5
–	–	300	–	–	Wood	1	–	–	Small Strip	–	–	–	–	2
–	–	300	–	–	Pottery	3	–	Local	WG small sherd; PMR, jug base and sherd	13th-16th	medi	–	–	4
–	–	300	–	–	Wood	1	–	Point	Strip of wood possibly shaped to a point	–	–	–	–	F
–	–	306	–	–	Pottery	1	–	Local	PMR jug sherd	17th/e.18th	PM	–	–	4
–	–	311	–	–	Pottery	2	–	Local	WG; MedRW	14th/16th	medi	–	–	4
–	–	311	–	–	Wood	1	–	Strip	Small Strip of wood	–	–	–	–	F
–	–	323	–	–	Glass	1	–	Bottle	Burnt sherd	–	Mod	–	–	2
–	–	323	–	–	Clay Pipe	1	–	Stem	Wide bore	17th/e.18th	PM	–	–	2
–	–	323	–	–	Pottery	1	–	Import	TGE fragment	17th/e.18th	Mod	–	–	4
–	–	323	–	–	Pottery	1	–	Local	PMO	17th/e.18th	PM	–	–	4
–	–	323	–	–	Pottery	2	–	Modern	Stoneware, whiteware trans printed	19th	Mod	–	–	5
–	–	326	–	–	Glass	1	–	Bottle	Base sherd	L.18th/ e.19th?	Mod	–	–	2
–	–	326	–	–	Wood	1	–	Button	Small rounded object. From interior of cloth button?	–	–	–	–	2

Phase	Area	Context	SF No	Sample No	Material	Qty	Weight (g)	Object	Description	Spot Date	Period	Conservation	Illustration	Box No
–	–	326	–	–	Clay Pipe	36	–	Stem & Bowls	2 bowls and other bowl and heel fragments. Initials '?PC', 'WY', 'WI?'	m.17th-e.18th	PM	–	II	2
–	–	326	–	–	Glass	1	–	Waste	–	–	Mod	–	–	2
–	–	326	–	–	CBM	1	–	Pan Tile	–	–	–	–	–	3
–	–	326	–	–	Pottery	21	–	Local	PMR/PMO jug jar & skillet sherds, rims & handles	17th/e.18th	PM	–	–	4
–	–	326	103	–	Cu	1	–	Obj	Flat, square sheet of copper. Bronze diseased.	–	–	XR C Rec	–	SCS
–	–	333	–	–	Glass	2	–	Bottle	Neck fragment from mallet/onion	e/m.18th	PM/ Mod	–	–	2
–	–	333	–	–	Clay Pipe	23	–	Stems & Bowls	6 bowls all of similar large late type. ?Glasgow stamped, one odd '8?' heel stamp. Initials '?B' 'IB' 'WI' 'DW' 'DW'	e.18th?	PM	–	IIII	2
–	–	333	–	–	Glass	3	–	Window	Including crown rim	–	–	–	–	2
–	–	333	–	–	CBM	6	–	Pan Tile	–	–	–	–	–	3
–	–	333	–	–	Pottery	4	–	Import	TGE - plain base sherds, one blue banded	17th/e.18th	PM	–	–	4
–	–	333	–	–	Pottery	3	–	Import	LCRW? – CP sherds?	17th/e.18th	PM	–	–	4
–	–	333	–	–	Pottery	3	–	Import	Slipware – white slip trailing on red body, with dish rim poss from same vessel	17th?	PM	–	I	4
–	–	333	–	–	Pottery	25	–	Local	PMR/PMO, jugs, jars	17th/e.18th	–	–	–	4
–	–	333	–	–	Pottery	2	–	Modern	Modern Whitewares, trans printed, abraded	19th	Mod	–	–	5
–	–	339	–	–	Glass	1	–	Bottle	Mould made green bottle sherd	19th/20th	Mod	–	–	2
–	–	339	–	–	Pottery	5	–	Modern	Modern Whitewares, trans printed, spongeware	19th	Mod	–	–	5
–	–	348	–	–	Pottery	1	–	Local	LWW, jug strap handle	15th	medi	–	–	4
–	–	350	–	–	Clay Pipe	4	–	Stems	Wide bore, one heel	17th/e.18th	–	–	–	2
–	–	350	–	–	CBM	1	–	Pan Tile	–	–	–	–	–	3
–	–	350	–	–	Pottery	1	–	Import	RhenSW, tiger glazed wide jug rim	16th/17th	PM	–	I	4
–	–	350	–	–	Pottery	7	–	Local	PMR/PMO, jugs, jars, dish	17th/e.18th	PM	–	–	4
–	–	357	–	–	Pottery	1	–	Import	RhenSW, tiger glazed sherd	16th/17th	PM	–	–	4
–	–	357	–	–	Pottery	4	–	Local	PMR jug sherds	17th/e.18th	PM	–	–	4
–	–	359	–	–	Pottery	1	–	Import	SevOJ sherd	L.16th/17th	PM	–	–	4
–	–	359	–	–	Pottery	14	–	Local	PMR jug sherds	17th/e.18th	PM	–	–	4
–	–	360	–	–	Pottery	4	–	Local	PMR/PMO	17th/e.18th	PM	–	–	4
–	–	362	–	–	Pottery	1	–	Local	PMR ?bowl sherd	17th/e.18th	PM	–	–	4
–	–	367	–	–	Pottery	1	–	Import	LCRW?	16th/17th	PM	–	–	4
–	–	367	–	–	Pottery	2	–	Local	PMR/PMO jug & jar sherds	16th/17th	PM	–	–	4
–	–	369	–	–	Fe	3	–	Nails	–	–	–	XR Rec	–	1
–	–	369	–	–	Pottery	2	–	Local	WG, PMR	14th-16th	medi	–	–	4
–	–	383	–	–	Pottery	1	–	Local	PMO jar sherd	16th	PM	–	–	4
–	–	399	–	–	Glass	1	–	Bottle	Phial rim fragment?	–	PM/ Mod	–	–	2
–	–	399	–	–	Pottery	1	–	Import	RhenSW, tiger glaze, Col/Frech	16th/17th	PM	–	–	4
–	–	399	–	–	Pottery	25	–	Local	PMR/PMO jug & jar sherds	16th	PM	–	–	4
–	–	404	–	–	Pottery	20	–	Modern	Whiteware, joining sherds making complete profile of moulded green glazed bowl, basketry & flowers design. Marked 'A/13' on base	L.18th/19th	Mod	–	–	5
–	–	410	–	–	Pottery	5	–	Modern	Stoneware jar rim, redware flower pot rim, whitewares	19th	Mod	–	–	5

Phase	Area	Context	SF No	Sample No	Material	Qty	Weight (g)	Object	Description	Spot Date	Period	Conservation	Illustration	Box No
–	–	411	–	–	Pottery	1	–	Local	PMO skillet handle	17th/e.18th	PM	–	–	4
–	–	420	–	–	Wood	1	–	–	Small Strip	–	–	–	–	2
–	–	420	–	–	Pottery	2	–	Local	WG; PMR jug sherds	13th-15th	medi	–	–	4
–	–	423	–	–	Glass	1	–	Bottle	Green bottle sherd	–	PM/ Mod	–	–	2
–	–	423	–	–	Pottery	1	–	Local	PMR jug sherd	14th/15th	medi	–	–	4
–	–	425	–	–	Pottery	2	–	Local	WG	12th-15th	medi	–	–	4
–	–	425	106	–	Leather	1	–	Shoe Upper	Part of upper, comprising rear of vamp, with vamp throat, small latchet or leg flap and part of quarters. Edge-flesh stitching channel on vamp throat and on vertical edges of latchet and quarters, stitch length 3 - 4 mm. Top edge of quarters has been oversewn. Leather is exceedingly fragile and fragmentary, with considerable quantities of soil attached, making examination very difficult. This appears to be part of an ankle-boot of one-piece design, with vamp and quarters made out of one piece of leather. It is medieval in date, probably AD 1100 - 1400. Folded leather with seam, approx dimensions 14cm x 11xm; on anaerobic conditions	12th/14th	medi	C Rec	–	F
–	–	425	104	–	Fe	1	–	Object	Thick cylindrical shaft	–	–	XR Rec	–	SCS
–	–	427	–	–	Pottery	17	–	Local	LWW; PMR/PMO	15th/16th	medi	–	–	4
–	–	429	105	–	Fe	1	–	Horseshoe	Near complete show, broad web, calkin, L.Medi/e.PM type	14th/17th	medi/PM	XR Rec	I	SCS
–	–	435	–	70	Fe	1	–	Fragment	Small triangular, pointed frag	–	–	–	–	1
–	–	435	–	70	Fe	1	–	Fragment	Small frag	–	–	–	–	1
–	–	438	–	–	Clay Pipe	2	–	Stems	Narrow bore, one green glazed	19th	Mod	–	–	2
–	–	438	–	–	Pottery	9	–	Modern	Modern whitewares, blue trans printed, pearlware, porcelain, stoneware	19th	Mod	–	–	5
–	–	452	–	–	Pottery	1	–	Local	WG clubbed rim	13th/14th	medi	–	–	4
–	–	454	–	–	Pottery	1	–	Modern	Whiteware, yellow glazed	19th/20th	Mod	–	–	5
–	–	456	–	–	Pottery	1	–	Local	PMO jug fragment	15th/17th	medi/PM	–	–	4
–	–	456	–	–	Wood	1	–	Plank	Small piece of flat wood	–	–	–	–	F
–	–	456	–	–	Wood	1	–	Stopper	Facetted tapering cylinder of wood, barrel stopper?	–	–	–	–	F
–	–	466	–	–	Textile	2	–	Pieces	Two coarse woven pieces of textile from same item, both c.20 x 10cm. Remains of seam along one edge? Sack? Garment? From beneath (Post-Med/Mod?) cobbled surface.	–	–	–	–	F
–	–	470	–	–	Glass	1	–	Bottle	Moulded made bottle base	e/m.19th	Mod	–	–	2
–	–	470	–	–	Clay Pipe	1	–	Stem	Wide bore	17th/e.18th	PM	–	–	2
–	–	470	–	–	Pottery	1	–	Local	PMO jar/skillet rim	17th/e.18th	PM	–	–	4
–	–	470	–	–	Pottery	9	–	Modern	Porcelain; Whiteware trans printed, Rockingham; redware, brown glazed; Stoneware handled jar stamped 'Wm Morrison'	19th	Mod	–	–	5
–	–	471	–	–	Pottery	1	–	Local	PMO jar rim	16th	PM	–	–	4
–	–	475	–	–	CBM	1	–	Pan Tile	–	–	–	–	–	3
–	–	475	–	–	Pottery	14	–	Modern	Redwares, slip lined, flower pot, brown glazed; Whitewares, spongeware, unglazed knob; Stoneware jar rim, stopper from foot warmer?, stamped 'DOULTON & WATTS, PATENT, LAMBETH POTTERY' (1820-1858)	19th	Mod	–	–	5
–	–	476	–	–	Pottery	2	–	Modern	Whiteware, spongeware, trans printed	19th	Mod	–	–	5
–	–	484	–	–	Pottery	1	–	Local	PMR jug sherd	16th/17th	PM	–	–	4
–	E End	520	107	–	Leather	1	–	Shoe Sole	Very small – child's shoe. Waterlogged. Possibly Medi context?	–	–	–	–	F

Phase	Area	Context	SF No	Sample No	Material	Qty	Weight (g)	Object	Description	Spot Date	Period	Conservation	Illustration	Box No
–	–	545	–	–	Leather	1	–	Strip	Small triangular strip of leather. From layer below late Medi material. Possibly Anglian?	–	–	–	–	F
–	–	497	–	–	CBM	1	–	Pan Tile	–	–	PM-Mod	–	–	–
–	–	502	–	–	Pottery	1	–	Local	–	–	PM	–	–	–
–	–	502	–	–	Pottery	1	–	Local	–	–	PM	–	–	–
–	–	514	–	–	Pottery	3	–	Local	–	–	PM	–	–	–
–	–	502	–	–	Pottery	1	–	Local	–	–	PM	–	–	–
–	–	499	–	–	Pottery	1	–	Modern	–	–	Mod	–	–	–
–	–	538	–	–	Pottery	1	–	Local	–	–	Med	–	–	–
–	–	502	–	–	Pottery	1	–	Local	–	–	PM	–	–	–
–	–	497	–	–	Pottery	16	–	Local	–	–	PM	–	–	–
–	–	497	–	–	Pottery	1	–	Import	–	–	PM	–	–	–
–	–	497	–	–	Pottery	5	–	Local	–	–	PM	–	–	–
–	–	499	–	–	Pottery	1	–	Local	–	–	PM	–	–	–
–	–	499	–	–	Pottery	1	–	Local	–	–	Mod	–	–	–

APPENDIX 6 ENVIRONMENTAL

6.1 Environmental Samples Report

Sarah-Jane Haston

Introduction

A total of fourteen soil samples were processed for the recovery of charred plant remains and any other environmental or artefactual material. The samples were collected from the fills of culverts, midden deposits, deposits overlying cobbled surfaces, an old ground surface and a number of pits that were sealed by a layer of colluvium in the Grassmarket area of Edinburgh.

Methods

All samples were processed in laboratory conditions using a standard floatation method (cf. Kenward *et al*, 1980). All plant macrofossil samples were analysed using a stereomicroscope at magnifications of x10 and up to x100 where necessary to aid identification. Identifications were confirmed using modern reference material and seed atlases including Cappers *et al* (2006).

Results

The results for individual features or contexts are presented in Tables 1 (retent samples) and 2 (floatation samples).

A wealth of artefactual and environmental material was recovered from the samples. The majority of the samples, in particular those from the culverts, midden deposits, the deposits overlying the cobbled surfaces and those from the old ground surface produced a mixed assemblage of both domestic and industrial debris (ser Tables 1 and 2). The domestic waste included pottery, textile, both charred and uncharred mammal, fish and bird bone, a variety of marine shell, coal cinders and charcoal and a small amount of charred cereal grain, while the industrial debris was represented by metallic waste in the form of slag, hammerscale and prill and a number of metallic objects.

The pit samples did not contain any artefactual material but did contain a wealth of environmental remains such as carbonized cereal grain, charred and uncharred mammal bone, uncharred wood and wood charcoal (Table 2).

Discussion

The environmental assemblages from the features are discussed below together with the other domestic materials recovered from the individual deposits.

Culvert fills

The samples from the fills of the culverts (Samples 5, 6 and 7) were found to contain mammal and fish bone, marine shell, coal, cinders and charcoal together with a variety of finds including pottery, clay pipe fragments, glass, metallic objects, metallic waste and fragments of textile. This mixture of domestic and industrial debris relates to material that has accumulated during and after use of the culverts. Sample 5 contained sherds of Pearl ware pottery suggesting a late Post Medieval date (18th to 20th century), and Samples 6 and 7 contained a mixed pottery assemblage of red ware, yellow ware, stoneware and rockingham suggesting 19th century dates for these deposits.

Midden deposits

The midden deposits (Sample 26 and 30) were found to contain charred cereal grain including oat and poorly preserved barley, both charred and uncharred mammal and fish bone, marine shell including fragments of oyster shell, cinders and charcoal. Other finds included glass, mortar, metallic waste and a fragment of copper. This deposits uncovered consist mainly of domestic material characteristic of hearth sweepings and kitchen waste. This material would have built up over time and is likely to have occurred either by being dumped by the inhabitants of the Grassmarket or by having been washed down from the areas of Castle Hill upslope.

Cobbled surfaces and old ground surfaces

The deposits overlying the cobbled surfaces (Samples 27 and 28) were found to contain a mix of both charred and uncharred mammal and fish bone, marine shell and charcoal, along with glass, metallic waste and mortar. The mixed assemblage represents domestic and industrial debris that has probably been dumped in the immediate vicinity and then trampled into the soil matrix that has built up over the cobbled surface.

The old ground surface (Sample 22) contained a small number of charred cereal grains in such a poor state of preservation that identification was not possible; these are shown as Cereal indet (see Table 2). Other finds included both charred and uncharred bone, marine shell and charcoal fragments. The old ground surface was also found to contain mortar, metallic waste, a fragment of copper and fragments of modern glass.

Colluvium

The colluvium deposits (Samples 1 and 14) were found to contain contain marine shell, unburnt bone and charcoal. Other finds included metallic waste, small sherds of white gritty pottery suggesting a medieval date and a flat copper alloy ring buckle suggesting a late Medieval to Early Post Medieval date.

Pits

As stated above the pit samples (Samples 2, 21, 45, 50, 51, 53, 54) did not contain any artefactual material. The majority of the samples did, however, contain a variety of charred plant components and other food remains such as fragments of marine shell.

Sample 2 was found to contain an abundant amount of hulled barley (Hordeum vulgare) and a common amount of oat (Avena sp.) together with a number of agricultural weed seeds including sun spurge (Euphorbia helioscopia), basil-thyme (Acinos arvensis), pale persicaria (Polygonum lapathifolium) and hemp-nettles (Galeopsis sp.). The cereal grain assemblage, dominated by oat and hulled barley, is similar to other Dark Age and Medieval assemblages across Scotland (Boyd, 1988). The small numbers of weed seeds present are commonly found today on arable field margins and are most likely to have been brought on to the site as contaminants of the cereals. The deposit also contained occasional fragments of marine shell, burnt bone and an abundance of charcoal up to 2 cm in length.

Sample 21 contained an abundance of barley and occasional grains of oat, together with the agricultural weed seeds pale persicaria and those from the daisy family (*Asteraceae*). The deposit also contained fragments of marine shell, both charred and uncharred mammal bone and occasional fragments of charcoal. Barley from this deposit has been radiocarbon dated to 660 –810 AD (2-sigma).

Sample 53 contained only rare cereal grain that was too poorly preserved to allow identification. This is shown as cerealia indet. (see Table 2). The deposit also contained fragments of marine shell, charred and uncharred mammal bone and common amounts of charcoal up to 2.5cm in length. Charcoal, tentatively identified as holly (*Ilex aquifolium* L.) from this deposit has been radiocarbon dated to 690-900 AD (2-sigma).

Sample 50 was found to contain occasional fragments of uncharred wood and twigs and common amount of charcoal up to 2cm in length. The hazel (Corylus avellana) charcoal from this deposit has been radiocarbon dated to 1500-1380 BC (2-sigma).

The charred plant remains from Samples 45, 51 and 54 consisted only of common to abundant amounts of charcoal fragments. The fragments, between 1 and 2.5 cm, are of a size and condition suitable for radiocarbon dating.

The collective assemblages from the pit deposits are suggestive of *in-situ* primary refuse from features such as cooking pits or deliberately dumped fire debris from activities in the surrounding area. A large quantity of the well-preserved wood charcoal fragments present within samples are of a size and diameter that are indicative of the small twigs and branches that would have been selected for firewood.

Conclusions

The majority of finds and palaeoenvironmental remains recovered from the samples are post- medieval in date, although the colluvium deposit (Sample 14) contained small fragments of white gritty ware suggesting a medieval date for this deposit. Carbonized barley and wood charcoal from two pits (Samples 21 and 53), have provided radiocarbon dates between the late Dark Ages and Early Medieval periods while the charcoal from a third pit (Sample 50) has produced a Bronze Age date for the deposit.

Recommendations

The pit fills offer the best source of archaeobotanical information therefore it is recommended that charcoal from the remaining two pits should also be identified and sent for AMS radiocarbon dating. The charcoal data, as well as giving absolute dates for different phases of activity on the site, will also provide a useful indicator of the local woodland resource utilised on the site during the different periods of occupation.

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Retent Sample Results

Context No.	Sample No.	Retent Vol (l)	Pottery	Glass	Marine shell	Metallic objects	Metallic Waste	Ceramic building material	Charred cereal grain	Unburnt bone	Burnt Bone	Other plant material	Charcoal Qty	Charcoal max size (cm)	Charcoal AMS	Comments
6	1	10	–	–	+++	–	–	–	–	+	–	–	+	<0.5	–	–
7	2	10	–	–	+	–	–	–	–	++++	–	–	+++	2	*	–
24	5	20	++++	++++	++++	+++	+++	++++	–	+++	+++	–	+	1.5	*	Pottery includes clay pipe. Glass includes scrap and glass beads. Metallic objects are both Cu and Fe. Bone includes, mammal, fish and bird.
39	6	10	++++	++++	++++	+	++++	++++	–	+++	++	+	–	–	–	Pottery includes clay pipe fragments. Metallic objects are Cu.Plant material includes woven fibres.
41	7	10	++	++	++	+	+++	+++	–	+++	–	–	–	–	–	Metallic object is Cu. Ceramic building material is lime mortar.
88	14	10	+	–	++	+	+	–	–	++	–	–	+	<1	–	Metallic object is Fe.
101	22	5	–	–	++	–	–	–	–	++++	+	–	–	–	–	–
103	21	20	–	–	++	–	–	–	+++	++	+	–	+	<1	–	–
106	26	5	–	–	–	–	+++	–	–	++	–	–	++	<1	–	Sample also contains coal and cinders.
107	27	5	–	–	+++	–	+	–	–	++	+	–	++	1	*	–
108	30	5	–	–	++++	–	+	–	–	+++	+	–		–	–	–
110	28	1	–	++	+	+	+	++	–	++	–	–	+	1	*	Metallic object is Cu.
145	45	10	–	–	–	–	–	–	–	–	–	–	+++	1	*	–
157	50	10	–	–	–	–	–	–	–	–	–	–	+++	2	*	–
157	51	20	–	–	+	–	+++	–	–	–	–	–	++++	1.5	*	–
163	53	5	–	–	+++	–	–	–	+	+++	+++	–	+++	2.5	*	Bird and mammal bone
159	54	10	–	–	–	–	–	–	–	–	–	–	+++	2	*	–
435	70	14	–	–	–	+	–	–	+	++++	++	+	+++	1	*	Oter plant includes charred Corylus avellena (Hazel) nutshell

Key: + = rare ++ = occasional +++ = common ++++ = abundant
⋆ = sufficient sized charcoal for identification and AMS dating

Flotation Sample Results

Context No.	Sample No.	Total flot Vol (ml)	Cereal grain:	Avena sp.	Hordeum vulgare	Cerealia indet.	Other plant remains	Charcoal			Comments
								Qty	Max size (cm)	AMS	
6	1	30	–	–	+	–	Polygonum lapathifolium +	++	<1	–	–
7	2	30	–	++	++++	++	Acinos arvensis + Euphorbia helioscopia+ Galaeopsis sp.+ Polygonum lapathifolium+	++	<1	–	–
24	5	30	–	–	–	–	–	+	<0.5	–	–
39	6	40	–	–	–	–	–	–	–	–	Contains slag+ coal+ cinders+ twine+
41	7	10	–	–	–	–	–	+	<0.5	–	–
88	14	2	–	–	–	–	–	+	<0.5	–	–
101	22	2	–	–	–	+	–	+	<1	–	–

Context No.	Sample No.	Total flot Vol (ml)	Cereal grain:	Avena sp.	Hordeum vulgare	Cerealia indet.	Other plant remains	Charcoal			Comments
								Qty	Max size (cm)	AMS	
103	21	50	–	++	++++	–	Polygonum lapathifolium+ Asteraceae sp.+	++	<1	–	–
106	26	30	–	–	+	–	–	+	<0.5	–	Grain in poor condotion
107	27	10	–	–	–	+	Polygonum persicaria + Chenopodium album +	+	<0.5	–	–
108	30	15	–	+	–	–	–	++	<1	–	Cinders+ oyster shell+
110	28	10	–	–	–	–	–	+	<0.5	–	Burnt bone +
145	45	5	–	–	–	–	–	+	<0.5	–	–
157	50	70	–	–	–	–	uncharred wood and twigs	++++	1.5	*	–
157	51	40	–	–	–	–	–	+	<0.5	–	–
159	54	10	–	–	–	–	–	++	<0.5	–	–
163	53	5	–	–	–	–	–	+	<0.5	–	–
435	70	40	–	–	–	+	–	+	<0.5	–	Grain is very badly degraded

Key: + = rare ++ = occasional +++ = common ++++ = abundant
★ = sufficient sized charcoal for identification and AMS dating

6.2 Bone

Julie Lochrie

Hand Collected Bone & Shell List

Area	Context No.	Sample No.	Material	Qty	Weight (g)	Description	Box No.
–	U/S	–	Bone	–	3	Burnt	6
5	U/S	–	Bone	–	336	–	6
Western Area	U/S	–	Bone	–	25	–	6
–	U/S	–	Bone	–	383	–	6
–	U/S	–	Bone	–	30	Incl. tooth	6
Post-med over N cobbles	U/S	–	Bone	–	10	–	6
–	U/S	–	Bone	–	172	Incl. horn core	6
Post-med deposit over cobbles	U/S	–	Shell	–	–	Mussel?	6
–	015	–	Bone	–	21	Incl. tooth	6
–	024	05	Bone	–	2	Small Mammal	6
–	024	05	Bone	–	3	Fishbone	6
–	024	05	Bone	–	3	Fishbone	6
–	024	05	Bone	–	4	–	6
–	024	05	Bone	–	19	Frags, incl. small teeth	6
–	024	–	Shell	–	2	Mussel?	6
–	024	05	Shell	–	10	Whelk	6
–	024	05	Shell	–	6	Cockle	6
–	024	05	Shell	–	3	Frags	6
–	024	05	Shell	–	16	Oyster	6
–	24	05	Shell	–	3	Land snail	6
–	039	06	Bone	–	3	Fishbone	6
–	039	06	Bone	–	9	Frags	6
–	039	06	Shell	–	5	Frags, mussel/	6
–	039	06	Shell	–	3	Scallop?	6
–	039	06	Shell	–	2	Frags, Oyster?	6
–	039	06	Shell	–	33	Cockle	6
–	039	06	Shell	–	98	Whelk	6
–	041	07	Bone	–	3	Small Mammal	6
–	041	07	Bone	–	3	Fishbone	6
–	041	07	Bone	–	4	Frags	6
–	041	07	Shell	–	3	Frags	6
–	041	07	Shell	–	9	Cockle	6
–	047	–	Shell	–	4	Oyster	6
–	052	–	Bone	–	3	Burnt	6
–	052	–	Shell	–	–	Oyster	6
–	088	14	Bone	–	2	Fishbone	6
–	088	14	Shell	–	3	Oyster	6
–	088	14	Shell	–	3	Frags	6
–	88	14	Bone	–	19	Frags	6
8	094	–	Shell	–	14	Oyster	6
–	101	22	Bone	–	2	Small Mammal	6
–	101	22	Bone	–	2	Fishbone	6
–	101	22	Bone	–	14	Frags	6
–	101	22	Shell	–	5	Frags	6
–	106	26	Bone	–	38	Frags	6
–	106	26	Shell	–	3	Frags	6
–	106	26	Shell	–	7	Shell	6
–	107	27	Bone	–	2	Fishbone	6
–	107	27	Bone	–	4	Frags	6
–	107	27	Shell	–	3	Frags	6
–	107	27	Shell	–	7	Frags, oyster?	6
–	108	30	Bone	–	3	Fishbone	6
–	108	30	Bone	–	11	Frags	6
–	108	30	Shell	–	71	Oyster	6
–	108	30	Shell	–	3	Frags	6
–	110	28	Bone	–	5	Frags	6
–	110	28	Shell	–	2	Frag	6
–	187	–	Bone	–	3	Some burnt, + some fishbone	6
–	187	–	Shell	–	2	v. small frags	6
–	187	–	Shell	–	2	Frag	6
–	247	–	–	–	686	Incl. jawbone of horse	6
–	268	–	Bone	–	528	Incl. horn core, jawbone and teeth	6
7	278	–	Bone	–	73	–	6
–	289	–	Bone	–	55	–	6
–	298	–	Bone	–	471	–	6
–	300	–	Bone	–	361	Incl. teeth	7
–	300	–	Bone	–	169	–	7

Area	Context No.	Sample No.	Material	Qty	Weight (g)	Description	Box No.
–	300	–	Bone	–	539	Incl. jawbone and teeth; some v. visible cut marks	7
–	306	–	Bone	–	158	Incl. teeth	7
4/5	311	–	Bone	–	478	Incl. teeth	7
–	312	–	Bone	–	358	–	7
–	326	–	Bone	–	967	Incl. horn cores	7
–	330	–	Bone	–	793	–	7
–	330	–	Bone	–	437	–	7
4/5	332	–	Bone	–	123	–	7
–	333	–	Bone	–	2	–	7
4	342	–	Bone	–	577	–	7
–	348	–	Bone	–	31	–	7
–	367	–	Bone	–	72	–	7
–	375	–	Bone	–	375	Incl. jawbone and teeth, horn cores	7
–	409	–	Bone	–	535	Incl. horn cores	8
–	410	–	Bone	–	373	–	8
–	420	–	Bone	–	1206	Incl. horn cores	8
–	423	–	Bone	–	35	–	8
–	423	–	Shell	2	46	Oyster	8
–	425	–	Bone	–	26	–	8
–	426	–	Bone	–	6	–	8
–	427	–	Bone	–	–	2 bags; incl. jawbones, teeth and horn cores	9
–	435	–	Bone	–	14	–	8
–	443	–	Bone	–	84	–	8
–	443	–	Bone	–	196	Incl. teeth	8
–	452	–	Bone	–	622	–	8
–	452	–	Shell	1	2	–	8
–	454	–	Bone	–	142	–	8
–	456	–	Bone	–	9	–	8

6.3 Report on Faunal Material from Grassmarket Edinburgh

Fiona Beglane

1 Introduction

A small assemblage of animal bones recovered during excavation in Grassmarket, Edinburgh as part of the Capital Streets Project was submitted for analysis.

2 Methodology

Mammalian faunal remains were identified using comparative collections held by the author and by reference to Hillson (1992) and Schmid (1972). For cattle toothwear was recorded per Grant (1982) and Higham (1967) after Silver (1963). Evidence for chopping, cutting and sawing were recorded, as was gnawing by carnivores and rodents. Burnt material was classified as singed for bone with only partial blackening, burnt for blackened bones or calcinated for those bones that were predominantly white/blue-grey in colour. Cortical bone is found in the shafts of long bones, while trabecular bone is found at the ends of the long bones and is also used to make up the form of the flat and irregular bones such as the pelvis, ribs and scapula. In a Scottish context the classification "Large Mammal" includes cattle, horse and large deer while "Medium Mammal" includes species such as pig, sheep, smaller deer and larger dogs.

Throughout the text the common names for species have been used. A translation of common to Latin names is shown in Table 1, based on Schmid (1972).

Common Name	Latin Name
Cattle	Bos sp.
Sheep/Goat	Ovis/Capra

Table A6.3.1
Translation of Latin to Common Names

3 Results

Results are summarised in Table 2. The assemblage included the remains of cattle, sheep/goat and fish. Other bone fragments could be identified as having come from large and medium mammals, so that it is likely that these were further cattle and sheep remains.

Context No.	Area	Sample	Species	Part present	Side	Notes
101	–	22	Fish	Vertebral centrum	–	~2.5mm
101	–	22	Fish	Unknown	–	3 frags 5-8mm
101	–	22	Large mammal	Long bone frag	–	3 long bone frags ~20mm
101	–	22	Medium/Large mammal	Cranial fragment	–	Fragment
101	–	22	Medium/Large mammal	Long bone epiphysis	–	Frag of unfused long bone epiphysis.
101	–	22	Sheep/goat	Molar/premolar	–	Fragment
101	–	22	Unidentified	Trabecular bone	–	Fragment
101	–	22	Unidentified	Unknown	–	35 frags unid bone ranging from <10mm-38mm.
435	–	–	Cattle	Pyramidal carpal	R	Covered in metal splatter
435	–	–	Large mammal	Long bone frag	–	19mm in length
435	–	–	Medium/Large mammal	Cranial fragment	–	Fragment
545	4/3		Cattle	Centrotarsale	R	Partial
545	4/3	–	Cattle	Mandible - Toothrow and articular process	R	Cut marks on lingual side below toothrow. Branch singed and partially missing.

545	4/3	–	Large mammal	Long bone frag	–	66mm in length.
545	4/3	–	Sheep/goat	Humerus, distal, fused	L	Gnawed - probably by rodents.

Table A6.3.2
Summary of results

Context 101
This context was a buried topsoil associated with pit [102] that dated to AD660-810. It contained a fish vertebra and three small fragments of fish bone as well as a sheep/goat molar or premolar tooth. There were also a number of fragments that could not be identified to species.

Context 435
This fill of a shallow gully or beam slot [431] was dated to AD590-670 and yielded a cattle carpal bone as well as fragments that could not be identified to species. The carpal bone was covered in metal splatter suggesting that metalworking may have taken place in the vicinity.

Context 545
This deposit was dated to AD1010-1160 and yielded substantial insect remains. The faunal material included a cattle mandible, a cattle tarsal or foot bone and a sheep/goat humerus. The mandible came from an individual aged 40-50 months at the time of its death. Mandible data is shown in Table 3, with measurements in Table 4. This is an age commensurate with an animal slaughtered to produce prime beef. The sheep/goat humerus had been gnawed, probably by rodents, although the gnaw pattern was somewhat irregular.

Context	Section	Species	Element	Side	P2	P3	P4	M1	M2	M3	Grant MWS	Age
545	4/3	Cattle	Mandible	R	P	P	b	h	g	d	34	40-50 months

P – Present, a-o – toothwear stages

Table A6.3.3
Cattle mandible data

Measurement	M1WA	M1WP	M1L	M2WA	M2WP	M2L
Measurement at bite	10.9	11.2	24.6	10.7	10.7	26.5
Measurement at base	13.1	13.4	20.4	13.3	12.8	24

Table A6.3.4
Cattle tooth measurements (mm)

4 References

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6.4 The Insect Remains from excavations at the Grassmarket, Edinburgh, Midlothian

Dr. Emma Tetlow & Dr Lynda Howard

The insect remains discussed are from two samples recovered from excavations at the Grassmarket, Edinburgh, radiometric evidence indicates deposit formation commenced c. cal AD1010 to 1160. The assemblages from both contexts consist largely of taxa associated with fresh dung and accumulations of foul, rotting organic material such as stable manure.

Introduction

Palaeoentomological analysis was undertaken on two layers (543 and 545) exposed in Area 4, which were found to contain organic material and underlie a medieval cobbled surface (539). Radiometric dating indicates the basal fill began to accumulate at cal AD1010 to 1160 (SUERC-22072). Previous palaeoentomological analysis has been undertaken on material from excavations at St. Patricks Church in the nearby Cowgate (Reilly unpublished). Initial assessment of the abundance and diversity of the assemblages from the Grassmarket, coupled with exceptional preservation indicated good potential to add substantially to the existent environmental and archaeological data hence, full analysis was undertaken. It was hoped that the analysis of the insect remains would provide information on a number levels: to establish the environment surrounding the features, to define the nature of land use and to look for evidence of human activity; ultimately facilitating further landscape reconstruction and visualisation.

Methods

The samples were processed at Headland Archaeology using the standard method of paraffin flotation outlined in Kenward *et al.* (1980). The insect remains were then sorted from the paraffin flot and the sclerites identified under a low power binocular microscope at x10 magnification. The sclera were identified using published taxonomic keys and by comparison with the Gorham Collection housed at the University of Birmingham by kind permission of Dr. David Smith. The taxonomy used for the Coleoptera (beetles) follows that of Lucht (1987) with revisions by Böhme (2005) and Gustaffsson (2005).

Results

The Coleoptera and Diptera recovered from samples 545 and 543 are presented in Table 1. An overview of the ecological preference of each species is presented

Context 545
Whilst smaller than the subsequent assemblage, the fauna from this suite was well preserved and many of the taxa were identifiable to species level. The largest constituents are species associated with dung and accumulations of foul, rotting organic material. The Scarabaeidae (dung beetles) comprise nearly 40% of the entire assemblage (Figure 1), with the exception of Aphodius rufipes, which is associated with the dung of cattle and horses, the remaining species Aphodius sphacelatus, and Aphodius granarius are both found amongst accumulations of decomposing vegetable matter as well as dung (Jessop 1986, Koch 1989a, Landin 1961, Machatschke 1969), as are the Staphylinidae, Anotylus sculpturatus, and Platystethus arenarius, and the Hydrophilidae, Cercyon lateralis (Duff 1993, Hansen 1987, Koch 1989a).

Context	543	545
Processed Weight	**7kg**	**7kg**
Processed Volume	**10l**	**10l**
COLEOPTERA		
Carabidae		
Trechus sp.		1
Pseudoophonus rufipes (Deg.)	1	
Pterostichus diligens (Sturm)	1	
Hydraenidae		
Helophorus sp.		2
Hydrophilidae		
Sphaeridium scarabaeoides/lunatum F./(L.)	2	
Cercyon haemorrhoidalis (F.)	1	
Cercyon marinus Thoms.	1	
Cercyon lateralis (Marsham)	2	1
Cercyon unipunctatus (L.)	3	
Cercyon tristis (Ill.)	1	
Cercyon sternalis Sharp	2	
Cercyon analis (Payk.)		1
Cercyon spp.	5	1
Megasternum obscurum (Marsham)	1	
Cryptopleurum minutum (F.)	1	
Chaetarthria seminulum (Hbst.)	1	
Histeridae		
Abraeus perpusillus (Marsham)	1	

Context	543	545
Silphidae		
Silpha sp.	1	
Staphylinidae		
Omalium sp.	2	1
Xylodromus sp.		1
Carpelimus bilineatus (Steph.)	1	
Carpelimus sp.		2
Oxytelus spp.	2	1
Anotylus rugosus (F.)	1	
Anotylus sculpturatus (Grav.)	1	1
Anotylus sp.	2	2
Platystethus arenarius (Geoff.)	8	3
Platystethus spp.	6	2
Lathrobium brunnipes (F.)		1
Leptacinus sp.		1
Gyrohypnus fracticornis (Müll.)	2	
Xantholinus sp.	2	4
Philonthus spp.	2	
Tachinus corticinus Grav. Type	1	
Staphylinidae		
Tachinus sp.	1	
Tachyusa sp.	2	
Aleocharinae indet.	3	4
Cantharidae		
Cantharis sp.	1	
Nitidulidae		

Context	543	545
Brachypterus urticae (F.)		1
Omosita sp.		1
Cryptophagidae		
Atomaria sp.	2	
Lathridiidae		
Latridius minutus (grp.) (L.)	1	
Corticaria sp.	1	
Scarabaeidae		
Geotrupes sp.	1	
Aphodius subterraneus (L.)	1	
Aphodius fossor (L.)	2	
Aphodius rufipes (L.)	3	1
Aphodius pusillus/coenosus (Hbst.)/(Panz.)	2	
Aphodius sphacelatus (Panz.)	6	4
Aphodius foetens (F.)	3	
Aphodius rufus (Moll)	1	
Aphodius granarius (L.)	1	1
Aphodius sp.	5	7
Chrysomelidae		
Phyllotreta sp.	1	
Chaetocnema concinna (Marsham)	1	
Curculionidae		
Barypeithes sp.	1	
Barynotus sp.		1

Context	543	545
Sitona sp.	1	
Hypera sp.	1	
DIPTERA		
Diptera indet (puparia)	3	7
SUBORDER CYCLORRHAPHA		
Thoracochaeta zosterae (Haliday)	2	

Table A6.4.1
The Insect remains from the Grassmarket, Edinburgh

Taxa associated with the wider environment or surrounding vegetation are scant. The nitidulid, *Brachypterus urticae*, is a monophagous species associated with *Urtica spp*., the species has also been recorded on Umberliferae (Bullock 1993), analysis of waterlogged plant remains from this sample contained abundant *Urtica urens* (Timpany pers. comm.). A single specimen of the *curculionid* genus, *Barynotus*, was also found, these large weevils are found in a variety of habitats with luxuriant vegetation such as woodlands, waysides and meadows (Morris 1997).

Context 543

The upper-most sample from this suite also produced a large, diverse and well preserved assemblage, with the majority of the sclera identifiable to species level. The assemblage from this sample reflects trends already observed in the preceding, basal Context 545, however, the fauna is significantly larger and considerably more diverse.

The assemblage contained a comprehensive suite of Scarabaeidae, Staphylinidae and Hydrophilidae are associated with dung and foul, decaying organic material, indicators of the wider environment are limited (Figure 1). Large numbers of Scarabaeidae (dung beetles), clearly indicate large quantities of fresh dung. *Aphodius fossor*, *Aphodius foetens,* and *A. rufipes*, are all strongly associated with dung of cattle and horses (Jessop 1986, Koch 1989a, Landin 1961, Machatschke 1969). *Aphodius rufipes*, prefers more shaded environments than the remaining Scarabaeidae from this sample (Koch 1989a).

Generalist taxa, not closely associated with the dung of a specific beast include *Aphodius subterraneus*, *A. sphacelatus*, *Aphodius rufus*, and *A.granarius* (Jessop 1986). *A. subterraneus*, *A. sphacelatus*, and *A. granarius* are also associated with accumulations of decomposing vegetable matter (Jessop 1986, Koch 1989a) and with the exception of *A. granarius* the remaining three are described as having been found with horse, cattle and sheep dung (Landin 1961, Machatschke 1969).

Hydrophilidae associated with similar accumulations of foul material are also abundant. Cercyon haemorrhoidalis, and C. lateralis, are found with horse, cattle and sheep dung, stable manure and with accumulations of damp, rotting plant material such as compost heaps (Hansen 1987, Koch 1989a). A further suite of hydrophilids, which include Cercyon unipunctatus, Megasternum obscurum, and Cryptopleurum minutum, are all found in with dung, carrion, rotting vegetation, compost heaps and stable manure (Duff 1993, Hansen 1987, Koch 1989a), Staphylinidae associated with this type of material include Carpelimus bilineatus, Anotylus rugosus, A. sculpturatus, and P. arenarius (Duff 1993, Koch 1989).

Whilst the majority of species from this sample were associated with accumulations of dung and decomposing organic material, two smaller groups were associated with human habitation and the wider, natural environment. A small assemblage of synanthropes was also present, the cryptophagid, *Atomaria* sp. and the Lathridiidae, *Latridius minutes*, and *Corticaria* sp. all form part of Kenward's 'House Fauna' (Hall and Kenward 1990, Kenward and Hall 1997, Kenward and Hall 1995).

The final group, those of the 'natural environment' included a group of Curculionidae, such as *Barypeithes* sp., *Hypera* sp., and *Sitona* sp., the cantharid, *Cantharis* sp. and the carabid, *Pseudoophonus rufipes*, which are often associated with meadow, arable and disturbed ground (Koch 1992, Lindroth 1974, 1986). A small component present, which consists of a second carabid, *Pterostichus diligens*, the hydrophilid, *Cercyon sternalis*, and the stapylinid, *Lathrobium brunnipes* are more associated with bogs and mires (Duff 1993, Hansen 1987, Lindroth 1986).

	Ecological Preference
COLEOPTERA	
Carabidae	
Pseudoophonus rufipes (Deg.)	Open ground, meadows and cultivated fields
Pterostichus diligens (Sturm)	Moist ground and bogs
Hydrophilidae	
Cercyon haemorrhoidalis (F.)	Dung and rotting organic material
Cercyon marinus Thoms.	Plant debris and rotting organic material
Cercyon lateralis (Marsham)	Dung and rotting organic material
Cercyon unipunctatus (L.)	Plant debris and rotting organic material
Cercyon tristis (Ill.)	Plant debris and rotting organic material
Cercyon sternalis Sharp	Plant debris and rotting organic material
Cercyon analis (Payk.)	Plant debris and rotting organic material
Megasternum obscurum (Marsham)	Dung and rotting organic material
Cryptopleurum minutum (F.)	Dung and rotting organic material
Chaetarthria seminulum (Hbst.)	Wed mud at the margins of stagnant water
Histeridae	
Abraeus perpusillus (Marsham)	Rotten wood
Silphidae	
Silpha sp.	Carrion
Staphylinidae	
Carpelimus bilineatus (Steph.)	Dung and rotting organic material
Anotylus rugosus (F.)	Dung and rotting organic material
Anotylus sculpturatus (Grav.)	Dung and rotting organic material
Platystethus arenarius (Geoff.)	Dung and rotting organic material
Lathrobium brunnipes (F.)	Plant debris and rotting organic material
Gyrohypnus fracticornis (Müll.)	Dung and rotting organic material
Tachinus corticinus Grav. Type	
Cantharidae	
Cantharis sp.	Open ground, meadows and cultivated fields
Nitidulidae	
Brachypterus urticae (F.)	On Urtica spp.
Omosita sp.	
Cryptophagidae	
Atomaria sp.	Drier rotting organic material
Lathridiidae	
Latridius minutus (grp.) (L.)	Drier rotting organic material
Corticaria sp.	Drier rotting organic material
Scarabaeidae	
Geotrupes sp.	Dung
Aphodius subterraneus (L.)	Dung
Aphodius fossor (L.)	Dung
Aphodius rufipes (L.)	Dung
Aphodius pusillus/coenosus (Hbst.)/ (Panz.)	Dung
Aphodius sphacelatus (Panz.)	Dung
Aphodius foetens (F.)	Dung
Aphodius rufus (Moll)	Dung
Aphodius granarius (L.)	Dung
Aphodius sp.	Dung
Chrysomelidae	
Chaetocnema concinna (Marsham)	Disturbed environments
Curculionidae	
Barypeithes sp.	Open ground, meadows and cultivated fields
Barynotus sp.	Open ground, meadows and cultivated fields
Sitona sp.	Open ground, meadows and cultivated fields
Hypera sp.	Open ground, meadows and cultivated fields

Table 6.4.2
The ecological preferences

Discussion

The surrounding environment

Overall, the larger environmental picture indicated by these assemblages is very restricted. During the accumulation of both deposits, the assemblages suggest the area was clearly being used by livestock, for exactly what purpose is ambiguous. The abundance and diversity of the dung beetle fauna coupled with the large group of species associated with foul, rotting material (such as dung), would indicate that both deposits accumulated in close proximity to either a midden, used exclusively for the dumping of stable and animal waste, near a stable or byre complex or a pathway in constant use by large herbivores.

The constitution of the assemblages from Grassmarket compare well with the 'RF decomposer' group identified at a number of sites of Romano-British and Viking York (Hall and Kenward 1990, Kenward and Hall 1995). At the Coppergate and 'Colonia' sites, this group of species was used to define accumulations of rotting vegetation and dung, which possibly indicate the presence of stable waste (Hall and Kenward 1990, Kenward and Hall 1995). Many of the taxa which form the 'RF' group appear in the Grassmarket samples, these include Sphaeridium, A. granarius C. haemorrhoidalis, C. unipunctatus, C. minutum, and Platystethus arenarius, (Hall and Kenward 1990, Kenward and Hall 1995). A small component was associated with drier, less foul, rotting organic material which Kenward and Hall (1995) defined as the 'house' fauna. Several species from this group were recovered from Context 543. However, the assemblage is too restricted and the numbers are too limited to directly suggest the dumping of domestic waste associated with human occupation. The 'House Fauna' group is commonly associated with unheated earthen-floored dwellings and wooden or wattle and daub structures and is also associated with relatively dry 'hay-like' material in the early stages of decay (Hall and Kenward 1990; Kenward and Hall 1995). It seems likely that the source of these species is a hayrick or similar store of hay or straw used as fodder or stabling material.

This evidence would also indicate that this assemblage was largely autochthonous in nature. The allocthonous component, those species associated with the wider environment, are extremely restricted and are virtually absent from the lower context (545). Whilst Hall and Kenward (1998) suggest that both allocthonous and autochthonous taxa would be diagnostic of stable manure. The limited allocthonous component which is present consists of species of waste and disturbed ground and pasture and meadowland, it is not impossible that animal feed such as hay would provide a source for the species of this type of environment recovered from both samples.

Further possible sources for these grassland species at Grassmarket, include an autochthonous source, e.g. the presence of herbaceous species which support these coleoptera within the area immediately surrounding the ditch this is a possible source for the specimens of Sitona, Barynotus and Barypeithes. This explanation seems the most likely, herbaceous such as vetches, clovers and particularly docks and sorrels all contain stress-tolerant species, which will exploit this type of disturbed environment. A number of fruits and seeds from ruderals and stress tolerators such as Rumex sp. were also recovered from this sample (Timpany pers. comm.). A further explanation for the presence of these species is via accidental transportation this may be via hay or straw used as fodder from a more distant source or on the coats or in the hooves of the animals themselves. Again, this is a strong possibility when considering the assemblage from Context 543 contains a small group of species associated with swamps and bogs. Inclusion via ingestion and excretion can also not be discounted (Kenward and Hall 1997, Osborne 1983).

The limited nature of the possible 'hay' assemblage renders firm interpretation of this material as thus problematic, at Wheatpieces, Tewkesbury, a considerable component of the non dung or 'RF' fauna is associated with meadows and pasture (Tetlow 2007). Reinterpretation of data from the Bedern, York which produced comprehensive 'RF' faunas and which reflect components of the Grassmarket assemblage a great deal, is also thought to consist of stable manure (Kenward *et al*. 1986). Further comparison may also be drawn with assemblages from the Romano British fort at Ribchester, Lancashire (Large *et al*. 1994), this will be discussed in greater detail below.

Once again, caution is required as the Bedern and Ribchester assemblages also contain a more substantial allocthonous component than that of the Grassmarket which draws a variety of species from a number of habitats. Further discussion on the diversity of assemblages derived from stable manure is discussed by Kenward and Hall (1996). They suggest that the curculionid families, Apion, Sitona and Gymnetron are classic taxa of hay and related materials (RD), as well as a large group associated with drier, mouldy hay such as Typhaea stercorea, Anthicus formicarius, and Mycetaea hirta (Kenward and Hall 1995, 1996), once again, such species are entirely absent fromthe the Grassmarket samples. Robinson (1981) suggests that both the phytophagous Sitona genus is commonly found in pasture but is more abundant in hay-meadows. This is not unsurprising, on grazed land, the herbaceous species have little opportunity to realise their full potential as, new, fresh growth will be quickly eaten, hay meadows allow the plants to grow unchecked until mowing, hence a more abundant and diverse fauna of insects will exploit this niche.

Comparison with similar, contemporary features

Material of this date from Scotland is restricted to St. Patrick's Church, Grassmarket (Riley unpublished) and two sites in Aberdeen (Hall *et al*. 2004, Kenward and Hall 2001). There is little similarity between the material examined by Riley (unpublished) and this more recent work. The ditch fills from St. Patrick's, particularly those from Context 90, display a greater similarity to the environment found in Context 545. Whilst present the overall abundance and diversity of the dung beetle assemblage is relatively small and other indicators of stable manure are limited, the allocthonous component is also substantially more diverse (Riley unpublished). Direct comparison between the Grassmarket and the sites from Aberdeen (Hall *et al*. 2004, Kenward and Hall 2001), is also problematic.

Perhaps the strongest parallel between the Grassmarket and another site can be drawn with the Ribchester Roman Fort where a similar paucity of species associated with the wider environment was observed (Large *et al*. 1994). The ditch fills from the site largely consisted of communities such as the Grassmarket assemblage, associated with dung, foul rotting material and a small synanthropic component (Large *et al*. 1994). Phytophages and other species associated with vegetation surrounding the site were similarly restricted to stress tolerators and ruderals which could have been opportunistic invaders (Large *et al*. 1994). The intermittent layers from this site are thought to represent alternate dumping of manure and dung from the stockyard with more organic rich deposits of stable manure (Large *et al*. 1994).

In the wider British Isles, the dung and stable manure component of the Grassmarket samples strongly resemble that from a number of Romano-British wells such as Alcester, Warwickshire (Osborne 1971), Empingham, Rutland (Buckland 1986), Piddington (Simpson 2001), amd Wheatpieces, Tewkesbury (Tetlow 2007). At all four sites, archaeological evidence and palaeoenvironmental data clearly indicates that some form of animal husbandry was practiced at the head of each well, at Wheatpieces, palaeoentomological evidence is even more emphatic and undoubtedly suggests that the area at the head of the well was being used as a stockyard and that hay from a number of distant sources was being brought to the site (Tetlow 2007). Further, similar assemblages were also recovered from prehistoric enclosure ditches from the Middle Bronze Age at Perry Oaks, Stanstead Airport and Heathrow Terminal 5 (Robinson, unpublished, 2008, Tetlow 2006) and later, Iron Age enclosures at Mingies Ditch (Robinson 1993). Direct comparison between these sites and the Grassmarket is beset by a number of problems, not least the rural location of the other sites but also the 'pit-fall' effect which contributes significantly to the nature of assemblages from this type of deposit, the very nature of a well also promotes formation over these deposits over a substantial period of time. It is not impossible that the Grassmarket deposits would have been subject to prolonged accumulation but this does, given the location, seem unlikely. Furthermore the' location of the Grassmarket at the periphery of the 11th century city also requires careful consideration.

The paucity of directly comparable sites would suggest that sites with such as large component associated with dung and rotting material and such a limited component associated with other environments is very rare. Does this then suggest that the assemblages from the Grassmarket indicate that the area was being used for a purpose more specific than merely a stable or stockyard?

Conclusions

The area surrounding the Grassmarket ditch was clearly being used for either some form of animal husbandry or for the stabling of animals, be it on a long or short term basis. Considering the existing paradigms for stable manure and the detritus associated with stabling activity (Hall and Kenward 1998), the absence of a large allocthonous component is surprising and raises questions on the exact nature of the activity at the site. Comparable sites are limited to the Romano-British fort at Ribchester, where the assemblage strongly mirrors that of the Grassmarket. It does, however, seem likely that the deposit was formed largely of a mixture of fresh dung and what could tentatively be described as 'stable manure' however, this could equally be a melange of dung, detritus and waste which accumulated at this medieval site.

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6.5 ^{14}C Reults

Context	Sample	Material	Radiocarbon Age BP	δ^{13}C relative to VPDB	Calibrated Age Ranges – 2σ
007	SUERC-19839(GU-17091)	Charred grain: Barley (Hordeum Vulgare)	1365 + 35	-22.50/00	600-710 AD 740-770 AD
103	BETA 242132	Charred grain: Barley (Hordeum Vulgare)	1280 + 40	-21.90/00	660-810 AD
145	SUERC-19840 (GU-17092)	Charcoal: Hazel (Corylus avellana)	3675 ± 35	-24.20/00	2200-2170 BC 2150-1950 BC
157	BETA 242133	Charcoal: Hazel (Corylus avellana)	3160 + 40	-23.30/00	1500-1380 BC
163	BETA 242134	Charcoal: Holly (Ilex Aquifolium L.)	1200 + 40	-24.30/00	690-900 AD 920-950 AD
435	SUERC-19986 (GU-17201)	Charred grain: Barley (Hordeum Vulgare)	1405 + 30	-22.80/00	590-670 AD
545	SUERC-22072 (GU-17998)	Plant macrofossil: Cirsium sp. (thistle) fruits	965 + 30	-26.70/00	1010-1160 AD