



ARO57: Medieval Burgage Boundary at Carrick Street, Ayr

By Tamsin Scott

With contributions by Beverley Ballin Smith, Gemma Cruickshanks, Robin Murdoch, Susan Ramsay, Catherine Smith and Bob Will

ARO57: Medieval Burgage Boundary at Carrick Street, Ayr

Published by GUARD Archaeology Ltd, archaeologyreportsonline.com

Editor Beverley Ballin Smith

Design and desktop publishing Gillian Sneddon

Produced by GUARD Archaeology Ltd 2024.

ISBN: 978-1-7398668-8-4

ISSN: 2052-4064

Requests for permission to reproduce material from an ARO report should be sent to the Editor of ARO, as well as to the author, illustrator, photographer or other copyright holder. Copyright in any of the ARO Reports series rests with GUARD Archaeology Ltd and the individual authors.

The consent does not extend to copying for general distribution, advertising or promotional purposes, the creation of new collective works or resale.

Contents

Summary	5
Introduction	7
Archaeological background	7
Site history	8
Ayr – a trading town	8
The Castle and Citadel	9
The Friaries	9
Loudoun Hall	10
Other features	10
Carrick Street	10
Carrick Street Halls	10
The excavation	11
Medieval activity	11
The results of post-excavation analysis	17
Radiocarbon dates	17
Archaeobotany - Susan Ramsay	17
Animal bone - Catherine Smith	25
Medieval and later pottery and other clay materials - Bob Will	27
Worked stone - Beverley Ballin Smith	31
Metalwork and ironworking debris - Gemma Cruickshanks	33
Glass - Robin Murdoch	34
General discussion	35
Phase 1 - natural geology	35
Phase 2 - medieval	35
Phase 3 - medieval	35
Phase 4 - medieval	36
Phase 5 - late medieval to post-medieval	38
Phases 6 to 8 - modern	38
Conclusion	38
Afterword	39
Project archive and finds location	39
Maps	39
Bibliography	40

List of Figures

Figure 1: Location of the site in the town of Ayr	6
Figure 2: Extract from Armstrong's plan of Ayr, 1773	9
Figure 3: Extract from the Roy Map	10
Figure 4: Detail of the ditch found in the southern half of the trench in 2003 and the 2021 test pit locations	11
Figure 5: Section through the ditch deposits and fence line	12
Figure 6: Scottish Medieval Redware, SF 590 bridge spout from a jug	12

List of Figures *(continued)*

Figure 7: The wet ditch excavated in 2003 with the wooden fence alignment visible, From the north-west	13
Figure 8: Medieval pottery Scottish White Gritty Wares, SFs 326, 375, 443 and 483	14
Figure 9: Scottish Medieval Red Ware, SF 491 pinched decoration base sherd with white slip	14
Figure 10: Scottish Medieval Reduced Ware, SF 499 with applied strip decoration	14
Figure 11: Scottish Medieval Red Ware, SF 333 decorated strap handle	15
Figure 12: Scottish White Gritty Ware, SF 296 cooking pot rim	15
Figure 13: View of the roundwood in the ditch	18
Figure 14: Oak planks forming the fence in the middle of the ditch in slot 5B, From south	18
Figure 15: The infilled ditch and accumulated sand layers. From NE	36
Figure 16: Extract from Armstrong's plan of Ayr, 1773	37

List of Tables

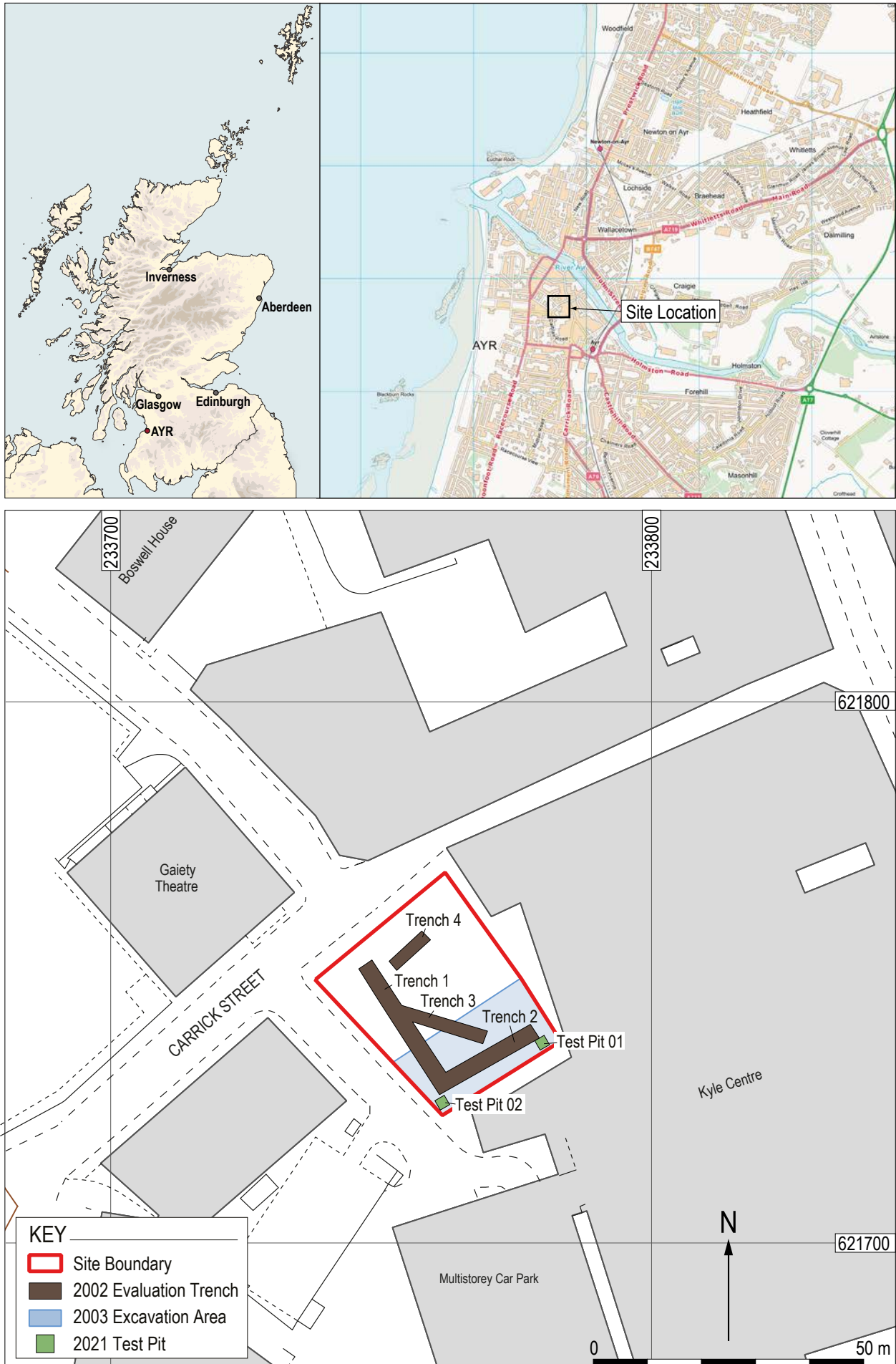
Table 1: Radiocarbon dates.	17
Table 2: Wood results from Carrick Street 2003 excavations	19 - 20
Table 3: Archaeobotanical results from waterlogged bulk samples, Carrick Street 2003 excavations	20 - 21
Table 4: Archaeobotanical results from Carrick Street TP01	22
Table 5: Wood results from Carrick Street TP01	23
Table 6: Archaeobotanical results from Carrick Street TP02	23
Table 7: Number of fragments identified, by species	25
Table 8: Percentage food-forming mammals, by fragment count	25
Table 9: Long bone size range summary	26
Table 10: Pottery recovered during each phase of work	28
Table 11: Fabric types from all all phases	28
Table 12: Fabric types from 1301.2 - 2002	28
Table 13: Fabric types from 1301.3 - 2003	29
Table 14: Fabric types from 5861 - 2021	29
Table 15: Location of the artefacts and their possible date	32
Table 16: Summary of iron working assemblage by material type	33
Table 17: Summary of metalwork assemblage. All measurements are in mm. L- length, T- thickness, D -diameter	34
Table 18: Glass assemblage	34

Summary

A medieval ditch and fence alignment were encountered on the site of the now demolished Carrick Halls in the centre of the historic town of Ayr. The discovery was made in 2002-2003 during excavations by Glasgow University Archaeological Research Division (G.U.A.R.D.). A further intervention on the site in 2021 by GUARD Archaeology Ltd was made in advance of development, which allowed specialist analysis of the earlier archaeological work.

The earliest activity identified on the site was the creation of a ditch that formed a medieval burgage plot boundary between the mid-twelfth and early thirteenth century, in the period immediately preceding or during the initial town expansion. The boundary was reinforced in the middle to late thirteenth century by an oak planked fence with roundwood stakes erected in the middle of the ditch. The location of the ditch is important in understanding the expansion of medieval Ayr to the south-east and it continued in use into the fourteenth century after which it was filled in. Evidence of iron smelting recovered from the ditch deposits indicated that metalworking took place nearby. The presence of Scottish medieval pottery and especially of imported French wares within the ditch deposits indicates that during the Middle Ages, Ayr, a royal burgh, was also an important international trading port.

The original excavations and subsequent analysis of artefacts found in the ditch revealed changes in land use and occupation of the burgage plot into the fourteenth and fifteenth centuries. The domestic uses of the land were brought to an end by the accumulation of windblown sand across the southern part of the town. A wide variety of plants were found growing on these deposits indicating that the plot may have remained as waste ground into the post-medieval and modern periods, prior to the construction and the eventual demolition of Carrick Halls in the twentieth century.



Reproduced by permission of Ordnance Survey on behalf of the Controller of His Majesty's Stationery Office. All rights reserved. Licence number 100050699.

Figure 1: Location of the site in the town of Ayr.

Introduction

In 2021 GUARD Archaeology Ltd were contracted by ARPL Architects, on behalf of Ayrshire Housing Association, to conduct a programme of specialist analyses, publication and final archiving of the results from the 2002 evaluation and 2003 excavation at the former Carrick Halls site. These interventions were conducted by the former G.U.A.R.D., dissolved in 2010. The site is located adjacent to the historic centre of the town of Ayr, south-west Scotland (NGR: NS 33762 21745) and is bound to the north and west by Carrick Street and by buildings to the south and east (Figure 1). The works were commissioned in order to fulfil planning requirements from the earlier scheme of archaeological works brief prepared by West of Scotland Archaeology Service (WoSAS), acting on behalf of South Ayrshire Council.

Archaeological background

A desk-based assessment conducted by G.U.A.R.D. in 2002 (Johnstone 2002) identified no information of historical significance concerning the site or the structure, Carrick Street Halls, located within it. However, the close proximity of the site to the centre of medieval Ayr was considered of note and warranted further investigation. Supplementary searches in 2023 revealed no further historical records.

In September 2002 G.U.A.R.D. undertook an archaeological evaluation of four trenches to ascertain the presence of archaeological remains within the site (Evans 2002). At this date, the site consisted of an area of flattened demolition rubble to street level, with the remains of the foundations of Carrick Hall still visible within the debris.

The evaluation trenches identified a fairly homogenous agricultural soil covering much of the site containing finds of modern to medieval date. Beneath the agricultural soil, at 1 m below ground level (BGL), a north/south aligned linear feature was recorded traversing the centre of the site cutting into a dark midden-like material

with sherds of medieval pottery and waterlogged organic materials that extended across the site (see below). On the evidence presented by the evaluation, a targeted archaeological excavation was instigated to further investigate these features.

The subsequent archaeological excavation (Becket 2003) identified an extensive assemblage of finds and a fence line of well-preserved timbers situated within a ditch, defining the limits of a medieval burgage plot. Five slot-trenches were placed through the medieval burgage boundary ditch, with their baulk sections preserved in-situ. Samples of the timbers and surrounding environmental deposits were recovered, together with the artefact assemblages, and stored in preparation for post-excavation analysis and publication. This phase of works was however, not commissioned, and the archive was placed in storage.

In 2021 GUARD Archaeology Ltd, at the behest of ARPL Architects, accessed the Glasgow University archives and identified a need for the recovery of new ecofactual and environmental samples for radiocarbon dating in order to fulfil the dating and archaeobotanical requirements for post-excavation analysis and publication. A limited intervention of two test pits was conducted in order to sample in-situ remains within the south-east of the site (Perez-Fernandez 2021), which by that time consisted of a car-park.

A Post-Excavation Research Design (PERD) drawing together the surviving original materials from the 2002-2003 excavations and the 2021 intervention was designed by GUARD Archaeology Ltd (Ferguson 2021). This was produced under agreement with the West of Scotland Archaeology Service (WoSAS), on behalf of South Ayrshire Council Planning Authority and the client, in order to complete all the necessary archaeological works pertaining to the site and fulfil the planning application requirements. The main aim of the work was to date the development of the southern part of the medieval burgh and investigate the activities that took place within it.

Site history

The history of the site and medieval Ayr was initially documented in the G.U.A.R.D. 2002 desk-based assessment (Johnstone 2002). Supplementary research was conducted in 2022 for the purposes of this report.

Ayr – a trading town

The town of Ayr was first documented in the *Chronicle of Melrose* in the early thirteenth century. At this time the surrounding landscape is believed to have comprised sand-dunes, mosses, scrub and wetlands, with few trees (Limond 1960, 183). A royal castle had been established in 1197 by King William the Lion and a burgh was founded close by (Perry 2012, 3). Between 1203 and 1207 AD a foundation charter, the earliest surviving in Scotland, was granted to the royal burgh, and Ayr, conveniently located in a position described as ‘a confluence point of five ancient routes’ by Gourlay and Turner (1977, 1), and including a natural harbour, became the most important burgh on the Scottish West coast with strong trading connections with Ireland and also France.

The original size of the town in the early thirteenth century after royal burgh status was granted is not confirmed, but given the founding of the St John’s Parish church near the castle in 1220 AD, and the early radiocarbon dates from the timber fence within the Carrick Street ditch (see below), suggests it was probably more extensive than previously considered. The finding of a sherd of prehistoric pottery (unconfirmed) at the site of New Bridge Street excavated in 1985 (Perry 2012, 43) may indicate that there was earlier occupation of the site, close to the lowest fordable point of the River Ayr.

Although there was further expansion of Ayr in the early fourteenth century because of its geopolitical importance, it did not last due to the promotion of the burgh of Irvine further up the west coast with its trading monopolies, and the continuing issue of windblown sand. Sandgate (previously Doongait) formed the original main thoroughfare of Ayr, bounded by the river to the north, and the castle and sand dunes to the west. It is documented that the north end of Sandgate

was narrowed in the early fifteenth century due to encroaching wind-blown sands (Perry 2012, 4). This intrusion of sands into the town continued over the following centuries. In the sixteenth century workmen were paid to remove sand and in the early seventeenth century a dyke was constructed at Sandgate Port to resolve the problem. The severity of the impact of intruding sands upon the town of Ayr was most notably documented by Paterson in 1863 who stated that in the early nineteenth century workmen had discovered stone pavements, an ash-pit with a poker and further kitchen items buried 2.8 m to 3 m below ground level (Paterson 1863 vol. I, 13 quoted in Gourlay and Turner 1977, 5).

Two historical market crosses were recorded in the town, the Fish Cross and the Malt Cross. The Malt Cross stood at the junction of Sandgate and the High Street (Figure 2). The Fish Cross was located on the High Street, opposite the south end of the Auld Brig. The market area extended from the south of the Fish Cross, where town proclamations were declared, to the Malt Cross, located northwards, at the intersection of the High Street and Sandgate. Gourlay and Turner also identified a butter and cheese market, a meal market and a cattle market in that area.

The town prospered until the seventeenth century when trade with Ireland became banned or regulated, due in part, to the 1640s civil war. By this time the harbour and quayside were in desperate need of repair and regeneration. Works relating to this began in the seventeenth century and continued until the late eighteenth century, incurring public debts, including a loan of £15,000 to the council for harbour improvements calculated to increase trade. Despite this, Ayr’s trading capacity gradually declined into the eighteenth century, by which time public debts, conceivably contributed to by harbour developments and the Jacobite rising, likely led to the roup (sale) of the barony lands of Alloway in 1754 (Limond 1960 183-89).

The need for repair and regeneration as the town grew in size was not limited to Ayr harbour. Reverends Auld and Cuthill quoted the following statement about Ayr in the nineteenth century Edinburgh Encyclopaedia:

'...The streets are ill lighted, wretchedly paved, and very indifferently cleaned. Side pavements of flagstones for foot-passengers might be mentioned among the desiderata that might easily be supplied. The prison, like the old tolbooth of Edinburgh, interlines and almost blocks up one of the principal streets ... this public nuisance ... is not so much the terror of evil doers, as the horror of those who do dwell.' (Brewster 1830 quoted in Auld and Cuthill 1845, 21-22).

By 1845 regeneration of the town had improved the setting of Sandgate/New Bridge Street and removed the old gaol, whilst the town continued to expand in size.

The Castle and Citadel

Ayr Castle was burnt down by Robert the Bruce in 1298 in order to avoid it falling into the hands of the English army. It is believed to have been in the vicinity of *'...the east corner or bastion of Cromwell's Fort, not far from the academy'* (Auld and Cuthill 1845, 21). The Cromwellian Fort (the Citadel), was built in the area where the castle once stood between 1652 and 1654 (Gourlay and Turner 1977, 9). It encompassed an area of approximately sixteen acres, with a 10 ft high wall with six bastions and six curtain

walls. It was reputedly constructed *'using stones transported from Ardrossan Castle'* (NRHE, Canmore ID 41776). Of the four citadels built during this period, (Ayr, Inverlochy, Inverness and Leith), it is the best surviving example (Taylor 2011), with large sections of the wall extant. The barracks, which encompassed most of the Citadel lands, housed 800 foot soldiers and 200 horse soldiers (excluding officers) plus stables for approximately 220 further horses. A 1663 charter established the citadel area as the burgh of barony of Montgomeriestoun. Further infantry barracks were established outside the Citadel walls in 1794, which were re-named the Churchill barracks in 1942. The buildings were closed in 1958 and finally demolished in 1969 (NRHE, Canmore ID 41776 and 202154).

The Friaries

Blackfriar and Greyfriar monks were established in Ayr from the thirteenth and fifteenth centuries respectively. The Dominican Friary (Blackfriars), located on the east side of the High Street on the edge of the burgh, north of the *'Auld Kirk'* of Ayr, was established around 1230 by Alexander II (Cowan and Easson 1976, 130-1). It was demolished following the Reformation and its lands and properties were then made over to



Figure 2: Extract from Armstrong's plan of Ayr, 1773. Reproduced with the permission of the National Library of Scotland.

the burgh by Queen Mary in 1567. The Greyfriars were established in the 1470s on land vacated because of the shrinkage of the burgh at the location of what is now the 'Auld Kirk'. There are no extant remains of either friary (Perry 2012, Illus 2).

Loudoun Hall

Loudoun Hall in Boat Vennel is the oldest extant dwelling in Ayr. Believed to originally have been constructed in the late fifteenth century, the house was documented as owned by Sir Hugh Campbell of Loudoun by 1539. The house remained in possession of the Campbell's until the sixteenth century after which it was sold on to a number of owners. In the nineteenth century the house is rumoured to have been in use as a brothel and by the early twentieth century it was dilapidated and earmarked for demolition. A conservation programme was initiated to preserve and maintain the building however works were disrupted by the outbreak of World War II. Restoration works finally commenced in 1947 and were completed in 1956, however '... concern where the historical basis for much of the work undertaken (especially in the case of the two wooden balconies on the north side of the Hall) is unclear' (Hooper 1998, 9).

Other features

Other documented features of historical or archaeological value within the older parts of Ayr no longer survive. These included two tolbooths;

Laigh Tolbooth and Over Tolbooth, both removed in 1810 and 1825 respectively, a grammar school, an early seventeenth century hospital, and a number of mills and wells (Gourlay and Turner 1977).

Carrick Street

Carrick Street, formerly known as Carrick Vennel, runs north-east/south-west from opposite Wallace Tower on the High Street to Bahn's Street in the south-west. Gourlay and Turner's 1977 research of Ayr's expansion surmised that Carrick Street and its associated plots were established around 1660, when Sandgate expanded to the southwest. However, this is now known to be erroneous, because of the early radiocarbon dates from the plot boundary and ditch (see below), indicate that the early burgh was larger than originally thought.

Roy's 1752-1755 Lowland Map (Figure 3), details a north-east/south-west aligned street at the location of Carrick Street with the excavation area situated within the boundaries of a burgage plot associated with the High Street.

Carrick Street Halls

Carrick Street Halls were constructed opposite Ayr's Gaiety Theatre in the twentieth century. The halls were initially church buildings but were later repurposed as the burgh's social work departmental offices.



Figure 3: Extract from the Roy Map. © British Library Board.

The excavation

By using information from the 2002, 2003 and the 2021 archaeological interventions eight phases of activity were identified on the site, from the natural deposition of sand subsoil (context 11071, *Phase 1*) to the late twentieth century demolition of Carrick Halls (*Phase 8*).

The 2003 ground surface deposits (Phase 8) were formed from the Carrick Halls demolition materials, with underlying layers contemporary with Carrick Halls and its foundations to a depth of 0.8 m below the present ground level where post-medieval to modern agricultural features and soils (*Phases 7 to 8*) were encountered. Once the recording of the post-medieval layers was complete, excavation of the medieval deposits commenced.

The 2021 test pit excavations (Figure 1) recorded a surface level of tarmac with a gravel sub-

surface. This overlay a modern made-ground of re-deposited silts and sands formed from the backfill of the 2003 excavations. These deposits sealed the archaeological features left in-situ in 2003 at a depth of 1.95 m below ground level.

Due to an elapse of time between the 2003 and the 2021 archaeological works, changes in ground levels and composition of the ground surface were recorded and the 2021 levels and deposits were aligned to those of 2003 for the purposes of this report.

Medieval activity

Phase 2 – the Burgage plot ditch

A 3.15 m wide, curved and east/west aligned ditch (11210) extended across the southern part of the excavated area and turned northwards in the south-eastern corner of the trench (Figures 4 and 5). It was dug into the natural sand deposits (11071).

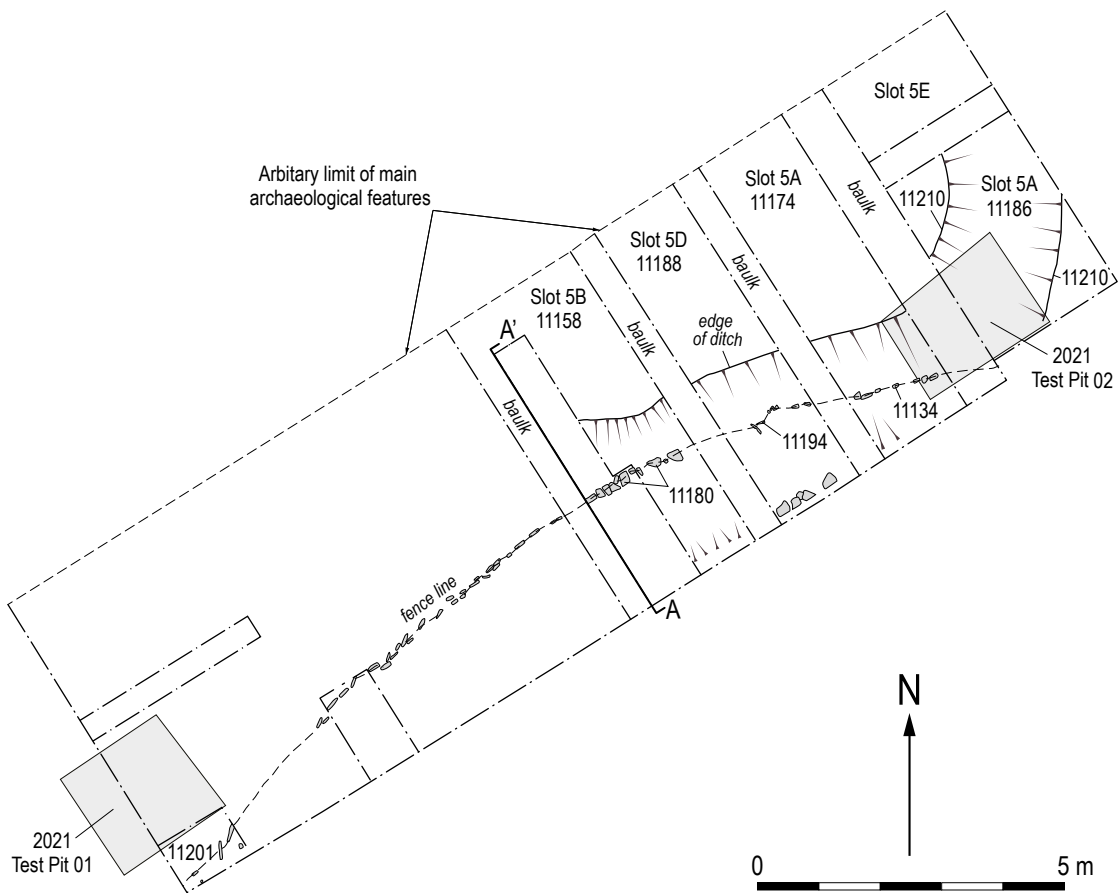


Figure 4: Detail of the ditch found in the southern half of the trench in 2003 and the 2021 test pit locations.

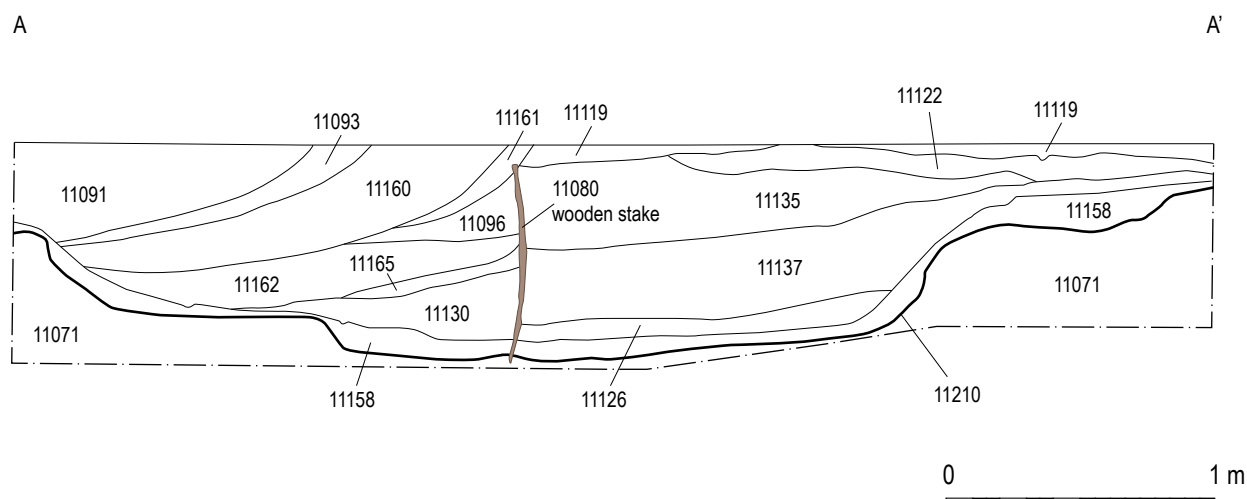


Figure 5: Section through the ditch deposits and fence line.

The primary fill of the ditch was composed of dark-brown waterlogged silty-clay deposits (11158/11191/209/109). Anaerobic conditions present within these lower ditch fills ensured excellent preservation of the timbers and other organic materials found there. Samples recovered in 2021 contained oak (*Quercus* sp) charcoal, wildflower and food plant seeds. Radiocarbon dating of hazel (*Corylus cf avellana*) charcoal recovered from sample O11 provided a calibrated date range of 995 – 1152 cal AD (UBA-49877, 990 ± 21 BP) for the felling of this timber (Table 1).

The waterlogged deposit was recorded along the full extent of the ditch. It sloped down both faces, across the ditch bottom and spread over 5 m northwards from the ditch, thinning at its northern extent. A large fragment of a Scottish Medieval Redware (SMR) pulled spout from a jug was recovered from this deposit (Figure 6).



Figure 6: Scottish Medieval Redware, SF 590 bridge spout from a jug.

Phase 3

Fence line

An oak timber alignment constructed from re-purposed square-cut stake-like timbers and wide, thin planks (11080, 11194, 11173, 11201) was inserted into the centre of the base of ditch (11210) forming a wooden fence line (Figure 7). Radiocarbon dating of two of its timbers (SF 13 and SF 14) recovered in 2021 provided a date range of 992 – 1157 cal AD (see Table 1) for the original felling of the timbers, prior to their (re-) use as a fence line. No timbers were present in the centre of the north/south aligned ditch in the south-east corner of the site however, four roundwood stakes (11200) cut from hazel and willow (*Salix* sp) were located the edge of the ditch cut there (context 11210).

Lower ditch fills

The deposition of fills within the ditch was notably different on the either side of the wooden fence. To the south of the fence, dumped midden deposits, rich in finds, sloped down from it to the south from. These were interspersed with layers of windblown sand with notably fewer finds. Conversely, to the north of the fence, deposition in the ditch had developed in evenly defined layers of midden deposits and sands (Figure 5).

Archaeobotanical samples of midden deposits from the southern part of the ditch contained organic inclusions of indigenous wildflowers, trees and flowering plant species including the



Figure 7: The wet ditch excavated in 2003 with the wooden fence alignment visible, From the north-west.

wetland bogbean. Agricultural and edible species present were hazel nutshell fragments, bramble, wild cherry and carbonised barley, cultivated flax and a single corn marigold seed. Radiocarbon dating of birch (*Betula* sp) recovered from sample 004 provided a date range of 1268 – 1299 cal AD (UBA-49876, 720 ± 20 BP) for the felling of this timber (Table 1).

The concentration of finds was markedly different between the north and south ditch deposits divided by the fence line. The southern deposits contained a large number of sherds (76) of Scottish Medieval wares representing Scottish White Gritty Wares (SWGW), including a number of cooking pots, a reduced triangular rim with light green glaze (SF 443, Figure 8), a rounded rim with handle terminal, reduced core and heat skin (SF 375, Figure 8) and a fine everted flat rim with fuming (SF 483, Figure 8), all found in 2003. Scottish Medieval Red Wares included a pinched decoration base sherd with white slip (SF 491 Figure 9) and Reduced Wares included one sherd with applied strip decoration (SF 499, Figure 10).

Two imported ceramics, including late twelfth to thirteenth century French Saintonge wares were also recovered from these deposits.

The animal bone assemblage comprised 88 fragments from cattle, horse, pig, large ungulates and indeterminate mammals, some with butchery marks, including a horse radius/ulna and sacrum (SF 598 and SF 704). Two fragments of smelting slag (SF 469) and a sandstone cobble rubber (SF 639) were also recovered from these southern deposits.

A concentration of large stones was recorded south of the fence line in the south-east corner of the site within ditch deposit (11131). One discarded worked grey granite fragment (SF 492) was architectural and was identified as a step. Large quantities of uncarbonised seeds from wetland species, egg cases of water fleas (*Daphnia* spp), cereal 'straw' and seeds indicative of enriched soils were sampled from directly beneath the stones. Additional fragments from the samples included a few willow twigs and flax fragments, plus traces of oak charcoal.

The assemblage from the north of the ditch contrasted greatly to that of the south. Only 19 sherds of Scottish Medieval wares and one pottery import of unknown origin were recovered from the northern deposits. The animal bone assemblage of cattle, sheep/goat and horse was significantly smaller at 29 fragments and there was reduced evidence of butchery, but one notable find was a horse radius (SF 589) cut across its shaft. A single, irregular lump of glassy iron slag with charcoal adherents (SF 584) was also recovered from the northern deposits.

Upper ditch fills

The uppermost fills within the ditch were formed of midden deposits, rich in finds, spread across its width to seal the timbers beneath. They included 34 sherds of Scottish Medieval wares comprising Scottish White Gritty Wares, Scottish Medieval Redwares and Reduced Wares, plus three imported examples, including one sherd of French Saintonge ware. Also recovered were 64 animal bones comprising large ungulates, pig, cattle, sheep/goat and one butchered bone

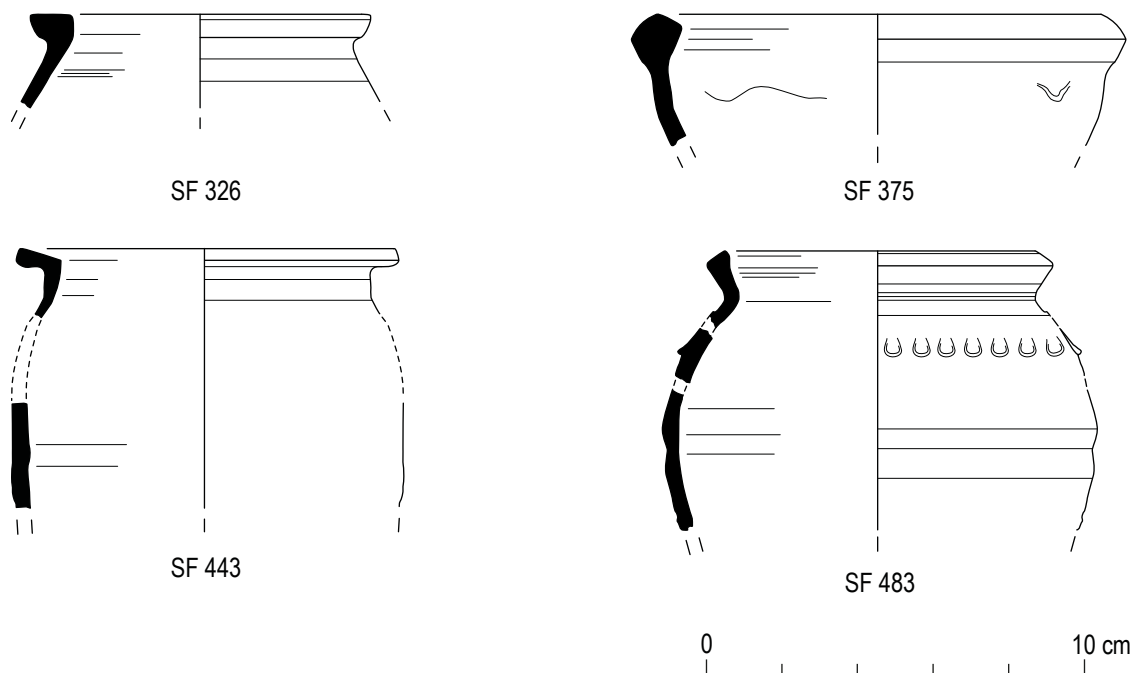


Figure 8: Medieval pottery Scottish White Gritty Wares, SFs 326, 375, 443 and 483.



Figure 9: Scottish Medieval Red Ware, SF 491 pinched decoration base sherd with white slip.



Figure 10: Scottish Medieval Reduced Ware, SF 499 with applied strip decoration

from (11044), plus one worked stone - a possible polisher or hone (SF 449) from (11091).

Archaeobotanical samples and wood retents from these midden deposits contained fragments of the previously mentioned tree species, predominantly in the form of roundwood or fragmentary roundwood, but also including fragments of flat worked oak.

Ditch dis-use

Above the ditch, layers of dark sandy-silt midden deposits were recorded spread across the south portion of the excavated area. An assemblage of five sherds of Imported French pottery, including four Saintonge sherds and 194 sherds of Scottish Medieval Redwares (SMR), Scottish White Gritty Ware (SWGW) and Reduced Wares were recovered from these midden deposits. The SMR assemblage included one highly decorated strap handle (SF 333, Figure 11) and a square cooking pot rim (SF 326, Figure 8), and the SWGW included cooking pots. Further finds included part of a medieval roof tile with an intact ceramic pin (SF 31), an abraded fragment of plano-convex cake of iron slag from a furnace base (SF 149) and a fragment of undiagnostic iron slag (SF 009). Animal bone retents comprised 88 bone fragments, with cattle (two with distinct

butchery marks: SF 378 and SF 587), pig, horse, other large ungulate, indeterminate mammals and two deer antler (SF 166). Archaeobotanical samples (SF 464, SF 542, and SF 559) from these midden deposits contained fragments of oak with birch and willow roundwood.

Phase 4

A sequence of thin windblown sand deposits with varying levels of silt inclusions overlay the final midden deposits of Phase 3 in the south of the site and the natural subsoil (11071) in the north.

An assemblage of 90 sherds of Scottish Medieval wares including SWGW cooking pots (SF 296, Figure 12) were recovered from the sand deposits along with 36 animal bone fragments, including cattle, sheep/goat, horse, large ungulate and indeterminate mammal, with a single example of the latter with butchery marks (SF 457). The metalwork assemblage contained small quantities of iron slag (SFs 32, 33, 351, 361, 399, 484 and 730) and a corroded tapering iron rod or bar (SF 56).

Archaeobotanical samples from the Phase 4 sands were devoid of organic materials, but with a single fragment of oak roundwood recovered from sample (527).



Figure 11: Scottish Medieval Red Ware, SF 333 decorated strap handle.



Figure 12: Scottish White Gritty Ware, SF 296 cooking pot rim.

Three features were identified cutting into the sand deposits. In the northern part of the site a small pit (11054) cut into the primary silty sand deposit (11059) that overlay the natural subsoil (11071). One fragment of a SWGW rim was recovered from its silty-sand fill (11053).

A thin, shallow north/south aligned linear feature (2015/11056) was recorded cut into the natural sand subsoil in the centre of the site. Ten fragments of Scottish wares including six SMR and four SWGW, plus a cattle tooth (SF 167), two indeterminate mammal fragments and one from a large ungulate (SF 244 and SF 241) were recovered from its silty sand fill (11055). A second north/south linear feature (11042) was recorded in the western part of the site. Three sherds of Scottish wares including one SMR and two SWGW, plus two indeterminate mammal bones were recovered from its silty-sand fill (11041).

Phase 5 - post-medieval to modern – twentieth century

An interface deposit of mixed sands and agricultural soils (11033) was identified overlying the natural sand subsoil (11071) in the north of the site and the windblown silts and sands of Phase 4 in the south. A small pottery assemblage of seven sherds, including one imported Saintonge ware, one SMR and five SWGW were recovered from this deposit along with a heavily corroded iron rod (SF 721), possibly an awl tapered at both ends. No animal bone was encountered.

Layer (11033) was overlain by a thick homogenous brown agricultural soil (11030) that extended across the entire site. A fragment of a green glass seventeenth-eighteenth century onion bottle (SF

642) was recovered from this layer in addition to an assemblage of 56 Scottish Medieval ware sherds, a single fragment of imported late medieval to post-medieval Martinicamp ware and seven sherds of Scottish Post-medieval Reduced Ware (SPMRW). A small animal bone assemblage included a single fish vertebra from sample (001).

Of greater note was the metalwork assemblage from included 120 fragments of smithing iron panning (SF 729), a possible smithing hearth base (SF 133) and roasted bog iron ore (SF 722) along with a range of industrial waste, primarily formed of slag and a possible copper-alloy brooch fragment (SF 20).

Phases 6 to 7

Cutting into the Phase 5 agricultural soil (11030) at 0.8 m below present ground level, and heavily truncated by the Phase 8 Carrick Halls foundations, were two phases of modern agricultural bedding trenches aligned east/west and north/south. Their residual assemblages were reflective of the medieval to post-medieval pottery sherds, animal bone and industrial waste found within the site, combined with modern metalwork and ceramic building materials.

Phase 8

A range of finds from medieval to modern date were recovered from the twentieth century deposits associated with the construction and demolition of Carrick Halls. Residual finds associated with earlier phases were identified alongside un-retained modern artefacts.

The results of post-excavation analysis **Archaeobotany**

By Susan Ramsay

Radiocarbon dates

Three samples and two small finds of wood from the ditch timber alignment, recovered during the targeted test pit excavations in 2021 were selected for radiocarbon dating (Table 1). The dates of oak wood (SF 13 and SF 14) from Test Pit 01 (TP01) indicate an early date range of cal AD 992 to as late as cal AD 1157 (UBA-49879 and UBA-49880). Hazel wood (UBA-49877) provided a similar range of cal AD 995 to 1152 suggesting that contexts (107 and 109), lower ditch deposits, were contemporary. In addition, the lowest organic ditch deposits (206) in TP02 also provided a contemporary date range (UBA-49878).

UBA-49876, although from context (107) in TP01, may have been intrusive in the upper part of the layer as its thirteenth century date range indicates.

The evidence suggests that the oak fencing was erected in the ditch no earlier than the end of the tenth century AD and no later than the middle of the twelfth century.

This archaeobotanical report details the analysis and interpretation of carbonised and uncarbonised botanical remains recovered from 10 samples taken during archaeological investigations within the site of the former Carrick Halls, Ayr in Oct 2021 and those from the 2003 excavations that were still available for analysis. Archaeobotanical analysis was conducted on samples from Phases 2 to 4. The results are given in the tables.

Results from the 2003 excavations

Phase 3

Two pieces of willow roundwood, around 30 mm in diameter, were recovered from the timber alignment in the south-west of the site. A further four roundwood stakes were recovered from the alignment in the south-east of the site. Three of these stakes were identified as hazel (between 35 – 50 mm in diameter) and the fourth stake was made of willow (c. 30 mm in diameter).

A number of contexts identified as midden-like material (11096, 11108, 11110 to 11114, 11157 and 11176) contained wooden fragments.

Lab Code	Sample Nr	Context	Sample description (all charcoal)	Radiocarbon Age BP	Dates at 1 sigma (68.2% probability)	Dates at 2 sigma (95.4% probability)
UBA-49876	004	context 107 TP01	Betula sp	720 ± 20	cal AD 1275 – 1288	cal AD 1268 – 1299
UBA-49877	011	context 109 TP01	Corylus cf avellana	990 ± 21	cal AD 998 – 1000 cal AD 1021 – 1045 cal AD 1085 – 1093 cal AD 1104 – 1120	cal AD 995 – 1004 cal AD 1018 – 1049 cal AD 1081 – 1152
UBA-49878	003	context 206 TP02	Corylus cf avellana	998 ± 24	cal AD 995 – 1004 cal AD 1018 – 1044 cal AD 1086 – 1092 cal AD 1106 – 1118	cal AD 994 – 1048 cal AD 1082 – 1130 cal AD 1138 – 1151
UBA-49879	SF 13	context 107 TP01	Quercus sp	953 ± 19	cal AD 1038 – 1048 cal AD 1082 – 1129 cal AD 1139 – 1150	cal AD 1032 – 1053 cal AD 1061 – 1067 cal AD 1075 – 1157
UBA-49880	SF 14	context 107 TP01	Quercus sp	1012 ± 21	cal AD 995 – 1005 cal AD 1017 – 1033	cal AD 992 – 1045 cal AD 1085 – 1093 cal AD 1105 – 1119

Table 1: Radiocarbon dates.

The wood fragments identified were mainly willow, with smaller amounts of birch and oak also present, as well as a single fragment of hazel. The willow, birch and hazel were either obviously roundwood or probably fragments of small roundwood (Figure 13). The pieces of oak tended to be flat 'lath-like' fragments rather than roundwood (Figure 14). Although tool marks were not visible, it is likely these pieces of oak have been worked (see Table 2 for the full list of wood identified).



Figure 13: View of the roundwood in the ditch.



Figure 14: Oak planks forming the fence in the middle of the ditch in slot 5B, From south.

Two waterlogged contexts were also examined for the presence of botanical macrofossil remains: (11096 and 11131) Table 3. The baulk sample recovered from (11096) produced significant numbers of uncarbonised plant remains. Wood remains were common and these were identified as willow twigs (<10 mm diameter) and consistent with the wood remains from the other sample (11096). In addition, there were significant amounts of leaf fragments from broad leaved trees but these were not well enough preserved to identify to genus. The seeds suggested a damp waste ground habitat with bogbean indicating areas of standing water. Seeds of edible plants included bramble and wild cherry and this context also contained a few seeds of cultivated flax and a fragment of a flax seed capsule. Flax may have been grown for its fibres or to use the seeds to produce linseed oil. A single seed of corn marigold is the only evidence for arable agriculture, since it is a weed of cereal crops.

Very large quantities of grass stems from a robust, wide-stemmed species were noted in context (11131) and it is likely that these are the remains of cereal 'straw'. A few willow twig fragments and traces of oak charcoal were also identified. In addition, very large numbers of uncarbonised seeds were present, with weeds of damp waste ground again abundant. Standing water or very wet conditions are indicated by bogbean, celery-leaf buttercup, nodding bur-marigold and the egg cases of water fleas (*Daphnia* spp). It may be that the straw was being used as matting to make the wet ground easier to walk upon. Stitchwort/mouse-ear seeds were extremely abundant along with seeds of thistles, hemlock, docks (including broad-leaved dock), and nettles, which indicate enriched soil often associated with habitation. Seeds and capsule fragments of flax were also present.

Phase 4

Phase 4 seemed to represent a period of inactivity on the site. Only a single context (11086) was examined and this produced one piece of oak roundwood (c. 20 mm in diameter). This appears to be too thin to be a major piece of structural material.

Site Code	Phase	Context	Sample	Description	Wood identifications	Comments
1301.3		11096	SF507	Layer	Salix sp (120 mm x 7 mm x 7 mm)	Roundwood
					Corylus cf avellana (50 mm x 10 mm x 10 mm)	Roundwood
					Salix sp (40 mm x 5 mm x 5 mm)	Roundwood
					Salix sp (35 mm x 5 mm x 5 mm)	Roundwood
					Salix sp (50 mm x 5 mm x 5 mm)	Roundwood
					Salix sp (40 mm x 5 mm x 5 mm)	Roundwood
					Salix sp (40 mm x 5 mm x 5 mm)	Roundwood
		Also present are fragment of long bone (75 mm 15 mm x 10 mm) and a large mammal tooth				
1301.3		11108	SF401	Layer	Quercus sp (90 mm x 30 mm x 20 mm)	
1301.3		11110	SF478	Layer	Betula sp (130mm x 35mm x 30mm)	Roundwood with bark
1301.3		11112	SF535	Layer	Salix sp (110 mm x 30 mm x 10 mm)	
1301.3		11113	SF532	Layer	Salix sp (200 mm x 40 mm x 30 mm)	
					Salix sp (95 mm x 15 mm x 15 mm)	
					Salix sp (50 mm 15 mm 15 mm)	
1301.3		11114	SF529	Layer	Salix sp (180 mm x 25 mm x 25 mm)	Roundwood
1301.3	3	11114	General	Layer	Corylus cf avellana (80 mm x 30 mm x 25 mm)	Roundwood
					Corylus cf avellana (90 mm x 40 mm x 30 mm)	Roundwood
					Corylus cf avellana (50 mm x 10 mm x 10 mm)	Roundwood
					Corylus cf avellana (55 mm x 10 mm x 10 mm)	Roundwood
					Corylus cf avellana (45 mm x 8 mm x 8 mm)	Roundwood
					Corylus cf avellana (40 mm x 8 mm x 8 mm)	Roundwood
1301.3		11148		Layer	Salix sp (95 mm x 15 mm x 15 mm)	Roundwood
					Salix sp (90 mm x 15 mm x 15 mm)	Roundwood
					Salix sp (90 mm x 15 mm x 15 mm)	Roundwood with bend
					Salix sp (60 mm x 15 mm x 10 mm)	Roundwood
					Salix sp (45 mm x 15 mm x 15 mm)	Part roundwood
					Salix sp (35 mm x 15 mm x 10 mm)	Part roundwood
					Salix sp (80 mm x 25 mm x 15 mm)	Part roundwood
					Salix sp (65 mm x 20 mm x 15 mm)	Part roundwood
					Salix spp 26 x small fragments	Roundwood
					Quercus sp (110 mm x 30 mm x 10 mm)	Flat lath
					Quercus sp (25 mm x 20 mm x 5 mm)	
Quercus sp (30 mm x 20 mm x 5 mm)						
1301.3		11157	SF464	Layer	Betula sp (95 mm x 15 mm x 15 mm)	Roundwood
					Betula sp (80 mm x 15 mm x 15 mm)	Roundwood
					Betula sp (60 mm x 15 mm x 15 mm)	Roundwood
					Betula sp (55 mm x 10 mm x 10 mm)	Roundwood
					Betula sp (60 mm x 15 mm x 10 mm)	Roundwood
					Betula sp (50 mm x 20 mm x 5 mm)	
					Betula sp (50 mm x 30 mm x 5 mm)	

Table 2: Wood results from Carrick Street 2003 excavations.

Site Code	Phase	Context	Sample	Description	Wood identifications	Comments	
1301.3	3	11157	SF464	Layer	Betula sp (35 mm x 20 mm x 5 mm)		
					Betula sp (20 mm x 5 mm x 5 mm)		
					Quercus sp (40 mm x 30 mm x 10 mm)		
					Quercus sp (30 mm x 25 mm x 10 mm)		
1301.3		11173	SF570	Stakeline in Slot SW	Salix sp (115 mm x 30 mm x 30 mm)	Roundwood	
					Salix sp (70 mm x 40 mm x 30 mm)	Roundwood	
1301.3		11176	SF542	Layer	Salix sp (90 mm x 25 mm x 15 mm)	Roundwood	
				Salix sp (55 mm x 20 mm x 15 mm)	Roundwood		
1301.3	11177	SF559	Layer	Quercus sp (85 mm x 25 mm x 15 mm)			
1301.3	11183	General	Layer	Quercus sp (115 mm x 30 mm x 15 mm)			
1301.3	3	11200		Wooden pegs/stakes	Peg 1: Corylus cf avellana (470 mm x 40 mm x 40 mm)	Bark present. Sloping cut at one end	
					Peg 2: Corylus cf avellana (180 mm x 50 mm x 50 mm)	Bark present, some working visible	
					Peg 3: Salix sp (180 mm x 30 mm x 30 mm)	No obvious working	
					Peg 4: Corylus cf avellana (260 mm x 35 mm x 35 mm)	Bark present. Sloping cut at one end	
1301.3		4	11086	SF527	Layer	Quercus sp (320 mm x 20 mm x 20 mm)	Roundwood

Table 2 (continued): Wood results from Carrick Street 2003 excavations.

	Phase	3	3
	Context	11096	11131
	Sample	521	63
	Description	Ditch fill / midden?	Sample of straw from under stones in Slot 5A
Volume analysed		200ml	500ml
General composition			
clay silt		+++++	+++++
sand		+++	+++
wood		++++	+++
bark		++++	-
monocot stem frags		+++	+++++
dicot leaf frags		++++	+++
charcoal		-	+++
Charcoal			
Quercus	oak	-	7 (0.10g)
Uncarbonised wood			
Salix spp twigs (<10mm diam)	willow twigs	38	8
Uncarbonised seeds etc			
cf Arctium sp	cf lesser burdock	-	1
Asteraeae	daisy family	1	-
Ajuga reptans	bugle	-	-
cf Bidens cernua fruit	cf nodding bur marigold	-	7
Carex spp (biconvex)	sedge (biconvex)	-	-
Carex spp (trigonous)	sedge (trigonous)	-	5
Chenopodium album	fathen	6	16

Table 3: Archaeobotanical results from waterlogged bulk samples, Carrick Street 2003 excavations.

	Phase	3	3
Chenopodium bonus-henricus	good king henry	-	4
Cirsium spp	thistle	2	-
Conium maculatum	hemlock	2	38
Galeopsis tetrahit	common hemp nettle	-	1
Glebionis segetum	corn marigold	1	-
Lamiaceae	dead nettle family	-	1
Linum usitatissimum	cultivated flax	3	7
Linum usitatissimum capsule frag	cultivated flax capsule frag	1	10
Lycopus europaeus	gypsywort	-	6
Menyanthes trifoliata	bogbean	2	1
Persicaria maculosa	redshank	7	6
Polygonum aviculare agg	common knotgrass	-	1
Prunus avium	wild cherry fruitstone	1	-
Ranunculus spp (large)	buttercup (large)	1	4
Ranunculus sceleratus	cerely leaved buttercup	-	13
Rubus fruticosus	bramble	2	2
Rumex cf obtusifolius fruit	broad leaved dock	-	9
Rumex spp	docks	2	32
Rumex spp fruit	dock fruit	-	8
Spergula arvensis	corn spurrey	3	-
Stellaria / Cerastium	stitchwort / mouse-ear	53	572
Urtica dioica	common nettle	12	52
Urtica urens	small nettle	5	18
Valeriana officinalis	common valerian	-	6
Viola spp	violet	1	-
Misc			
Daphnia ephippia	water flea egg case	-	14

Table 3 (continued): Archaeobotanical results from waterlogged bulk samples, Carrick Street 2003 excavations.

Results from the 2021 excavations

Two trial pits (TP01 and TP02) were excavated in 2021 to provide the most recent samples for analysis and AMS dating. The results are grouped by test pit, with numbers in brackets indicating individual context numbers. Round brackets relate to deposits or fills and square brackets indicate cuts or features. The full results are given in tables in the project archive.

Trial pit TP01 (Tables 4 and 5)

Samples were recovered from two deposits retained within an *in-situ* baulk section during the 2003 excavations. These formed the primary fill of the ditch (109 = 11058) and homogenous grey silt (107), a ditch midden fill.

Deposit (109) contained significant amounts of oak charcoal with traces of willow and carbonised hazel nutshell. In addition, large quantities of

uncarbonised indeterminate wood were also present. The significant amounts of oak charcoal might suggest the remains of structural material. Only small numbers of uncarbonised seeds were identified from this context, with buttercup, bramble and raspberry identified.

Deposit (107) contained large amounts of pottery, burnt bone and five wooden stakes that were found *in situ* in an upright position. The stakes were all identified as oak, and appeared worked, with a rectangular cross section and evidence of shaping to a point at one end. The charcoal assemblage from layer (107) contained small amounts of birch, hazel and oak, with a couple of grains of carbonised barley and fragments of carbonised hazel nutshell. This is a similar carbonised assemblage to that seen in the other ditch contexts. Significant amounts of uncarbonised wood were also present but these wood fragments were generally very dried

and twisted and so not identifiable without significant amounts of additional work. A few pieces of wood were identifiable as birch and oak and there were also a couple of small twigs with spines, suggesting the presence of a species such as hawthorn or blackthorn within the

assemblage. Uncarbonised hazel nutshell was also present. The range of uncarbonised seeds present was similar to that in layer (106) but less diverse. Edible types included sloe, raspberry and bramble, with the wet nature of the area again indicated by the presence of bogbean.

	Context	107	109
	Sample	4	11
	Area	TP01	TP01
	Description	Fill of ditch (108)]	Primary Fill of Ditch (108)
Volume of charcoal >4 mm		5ml	15ml
Volume of uncarb wood >1mm		40ml	400ml
% uncarb material 500um - 4mm ID		100%	100%
Charcoal			
Betula spp	birch	4 (0.14g)	-
Corylus cf avellana	hazel	10 (0.18g)	1 (0.03g)
Prunoideae	cherry type	-	-
Quercus	oak	4 (0.06g)	45 (2.51g)
Uncarbonised wood			
Betula spp	birch	1 (0.16g)	-
Quercus spp	oak	6 (0.14g)	-
Indet spiny twig	indet spiny twig	2 (0.04g)	-
Indet wood	indet wood	40ml (4.06g)	400ml (90.20g)
Carbonised cereals			
Hordeum vulgare sl	barley	2	-
Cereal indet	indet cereal	2	-
Carbonised seeds etc			
Corylus avellana nutshell	hazel nutshell	6 (0.16g)	1 (0.02g)
Uncarbonised seeds			
Apiaceae	carrot family	2	-
Chenopodium album	fathen	1	-
Cirsium spp	thistle	3	-
Conium maculatum	hemlock	2	-
Corylus avellana nutshell	hazel nutshell	27 (0.27g)	-
Galeopsis tetrahit	common hemp nettle	36	-
Menyanthes trifoliata	bogbean	2	-
Persicaria maculosa	redshank	21	-
Prunus spinosa	sloe fruitstone	2	-
Ranunculus spp (large)	buttercup (large)	5	9
Rubus fruticosus	bramble	7	2
Rubus idaeus	raspberry	2	6
Rumex spp	docks	1	-
Stellaria / Cerastium	stitchwort/mouse-ear	2	-
Misc			
Bone	bone	2 (0.52g)	-

Table 4: Archaeobotanical results from Carrick Street TP01.

Site code	Context	Sample	Area	Wood identifications	Comments
5861	107	SF 12	TP01	Quercus sp (610 mm x 110 mm x 90 mm)	Squared post/plant worked to a point at one end
5861	107	SF 13	TP01	Quercus sp (690 mm x 100 mm x 40 mm)	Squared post/plant worked to a point at one end
5861	107	SF 14	TP01	Quercus sp (630 mm x 80 mm x 55 mm)	Squared post/plant worked to a point at one end
5861	107	SF 15	TP01	Quercus sp (700 mm x 100 mm x 60 mm)	Squared post/plant worked to a point at one end
5861	107	SF 16	TP01	Quercus sp (190 mm x 60 mm x 30 mm)	Squared post/plant worked to a point at one end

Table 5: Wood results from Carrick Street TP01.

	Context	208	209
	Sample	6	7
	Area	TP02	TP02
	Description	Yellowish brown sand deposit	Dark brown silty clay
Volume of charcoal >4 mm		-	2.5ml
Volume of uncarb wood >1mm		-	50ml
% uncarb material 500um - 4mm ID		100%	20%
Charcoal			
Quercus	oak	-	9 (0.20g)
Indet cinder	indet cinder	-	8 (0.80g)
Uncarbonised wood			
Indet wood	indet wood	-	50ml (12.25g)
Uncarbonised seeds			
Carex spp (trigonous)	sedge (trigonous)	-	3
cf Crataegus monogyna	cf hawthorn fruitstone	-	1
Menyanthes trifoliata	bogbean	-	1
Ranunculus spp (large)	buttercup (large)	-	2
Rubus idaeus	raspberry	-	8
Viola spp	violet	-	1

Table 6: Archaeobotanical results from Carrick Street TP02.

Trial pit TP02 (Table 6)

A column sample was recovered from three deposits retained *in-situ* during the 2003 excavations (205, 208 and 209) and an overlying sand deposit (206) along with a selection of bulk samples. The natural sandy subsoil (205 = 11071) produced only a trace of oak charcoal. The primary deposit (209 = 11158), dark brown organic silty clay contained wood inclusions. The uncarbonised wood was not identifiable but small amounts of oak charcoal were recorded from this deposit. Only a few uncarbonised seeds were recorded. These comprised seeds of damp waste ground with a possible hawthorn berry and seeds of raspberries as the only possible evidence for food plant remains. Deposit (208) was identified as an *in-situ* windblown sand deposit which contained no identifiable botanical remains.

Discussion

The charcoal and wood assemblages

The charcoal assemblages from Carrick Street were never extensive and tended to comprise a range of charcoal types consistent with collection from locally available woodland sources. These assemblages are consistent with hearth waste, with no deliberate selection of wood types for specific purposes.

Significant amounts of uncarbonised wood were located in layers (107, 109 and 209) from the 2021 excavations and from several contexts representing Phase 2 and Phase 3 of the 2003 excavations. The uncarbonised wood was generally identified as willow, birch and hazel roundwood. The hazel and willow fragments

sometimes had a sloping cut at one end indicating that they were the remains of posts or pegs. Oak wood was generally not roundwood but had been shaped into a rectangular cross section, and sharpened to a point at one end. It is possible that birch could have been growing as scrub on the damp waste ground that probably existed in the medieval period, but it is unlikely that the oak is from *in situ* growth. The oak probably represents the remains of the fence-line that was located in the ditch between the burgage plots but it is clear that hazel and willow pegs or posts were also used. There was some evidence for spiny twigs in layer (107) which suggests the remains of a tall shrubby species such as blackthorn or hawthorn might have been deposited onto this ground. Sloe fruitstones (from blackthorn) were also found within this context and a possible hawthorn fruitstone was identified from layer 209). The deliberate deposition of twigs might have been to help dry up the wet ground, but spiny twigs could also suggest the creation of a barrier, perhaps to keep animals out of a particular area.

Cereals

Evidence for barley was found from this site but the carbonised cereal grains were only present in trace amounts. The quantities involved are not sufficient to suggest processing or storage of cereals in the immediate vicinity. The presence of barley is in keeping with the medieval dates for this site.

Other food plants

Hazel nutshell was present in many of the contexts, in both carbonised and uncarbonised forms. However, the quantities of nutshell recovered were relatively small and so it is not possible to rule out accidental incorporation of hazelnuts into hearth or midden waste with hazel wood that had been collected for fuel.

Seeds and fruitstones of a number of potentially edible plants were identified from the site. These included brambles, raspberries, sloe, hawthorn, wild cherry and flax. Of these, only raspberry and bramble would normally be eaten unprocessed or uncooked. These seeds/fruitstones all have a very robust outer layer which helps protect them if they are eaten and then pass through the human digestive tract. The occurrence of these

types of botanical remains may indicate the presence of sewage waste within the deposits. The presence of seeds and capsule fragments of cultivated flax seeds and capsule fragments might suggest that this species was being grown as a crop nearby, either for the production of flax fibre for linen or for the seeds to produce linseed oil.

Medicinal plants

Several of the midden contexts contained seeds of hemlock (*Conium maculatum*), which is a highly toxic plant. Hemlock is a weed of waste ground, but one which prefers damp ground. It is rare over much of Scotland and tends to grow more commonly towards the east, but also near the sea (Dickson and Dickson 2000). It may have been spread by cultivation for its medicinal properties from further south in the UK. All parts of the plant are poisonous, including the seeds, although there are some claims that plants that grow in cold climates are less poisonous than those growing in warmer areas. The active ingredient in hemlock is coniine which has painkilling and sedative properties but is a very potent poison if administered incorrectly. Hemlock seeds were found in a cesspit deposit from the Roman fort of Elginhaugh (Dickson and Dickson, 2000) and from the medieval deposits analysed from Blackfriars in Edinburgh (Ramsay and Miller 2008) and Stirling (Ramsay 2015). The medieval and post-medieval drain fills from Paisley Abbey also yielded seeds of hemlock (Dickson and Dickson 2000; Dickson 1996).

It is possible that the hemlock was simply growing as a weed of waste ground in and around the areas of occupation. However, it is possible that it was being administered, in the form of seeds, as some form of medicinal treatment and then was excreted with other seeds, such as the raspberries, brambles etc., ending up in midden deposits.

Weed seeds

A diverse assemblage of weed seeds was identified from the Carrick Street contexts. In general, the seeds were indicative of damp waste ground (ruderal) habitats. Sedges, buttercups, fathen, docks, chickweed/stitchwort, common hemp-nettle and nettles were particularly common. The only weed species that is directly

related to crop plants was corn marigold but this was only present in trace amounts and so is not sufficient to say cereal processing or growing was being undertaken nearby. The presence of seeds of bogbean, celery-leaf buttercup, nodding bur-marigold and the egg cases of water fleas (*Daphnia* spp) indicates that some areas were not just damp but that standing water was present, even if only in small patches or for part of the year.

Animal bone

By Catherine Smith

Three hundred and eighty-eight fragments of animal bone were recovered from both the 2003 and 2021 excavations. All of the material from hand excavation was identified as mammalian bar one tiny fish bone. Preservation at the site was poor, causing preservation bias of older and more robust mammalian species, limiting identification of species type, age and the compilation of metrical data.

Species present

The bones identified by species are displayed in Table 7 and those from mammals that were food species are shown in Table 8.

Species	No. of fragments
cattle	74
cf cattle	3
sheep/goat	18
pig	3
horse	6
dog	1
?deer sp (antler)	2
Large Ungulates	45
Large/Small Ungulates (teeth fragments)	7
Indeterminate Mammal	229

Table 7: Number of fragments identified, by species.

Species	No. of fragments	%
cattle and cf cattle	77	74
sheep/goat	18	17.3
pig	3	2.9
horse	6	5.8
Total	104	100

Table 8: Percentage food-forming mammals, by fragment count.

Size of animals

Measurements for individual bones are recorded in the full catalogue and summarised in Table 9. Measurements exceed those recorded at medieval urban sites in Scotland and all fall within the ranges for the large animal bone assemblage from 75–77 High Street, Perth (Hodgson *et al.* 2011). Several sheep/goat metapodials were recovered intact and provided estimates of mean withers heights of 54 cm, well within the Perth High Street range of 46.8–65.8 cm (*ibid.*, 17).

Butchery evidence

Incidences of knife cuts, hack marks and chopping associated with butchery were observed on cattle, large ungulate, sheep/goat, pig and horse bones. In the case of horse, a metatarsal SF 530 from (1114) and sacrum SF 704 from (11201) showed knife cuts, and a radius SF 589 from (1185) and radius/ulna SF 598 from (11199) were chopped across their shafts. The single dog bone was unbutchered.

Discussion

Previous archaeological work in Ayr in the 1980s recovered bone assemblages from backland sites, mainly to the rear of the High Street and the medieval church of St John's Tower (Smith 2012, 120-3). Similarly, poor conditions of preservation to that noted at the present site were noted at Site 3C, 167-169 High Street, to the south of Carrick Street (Perry 2012, Illus 2). Site 3C represented backland activity in the fourteenth century followed by subsequent dumping and possible cultivation (*ibid.*, 32) although comparable garden soil accumulation in the Scottish burgh of St Andrews has been interpreted as a consequence of bioturbation of midden material (Carter 2001).

The assemblage from the present site at Carrick Street appears to represent material of late medieval origin, most convincingly indicated by the dimensions of the long bones, which are similar to those of the small animals found elsewhere in Scotland in this period. Sheep at Carrick Street were certainly small in stature, with an average height at the withers (shoulders) of about 54 cm. The butchery evidence of chopping (with axes or cleavers) rather than sawing also supports a medieval date for the bones. Saws

were not commonly used for butchery in Scotland until the mid-nineteenth century and their use was reserved for carefully removing valuable parts of the carcass such as antlers or long bones intended for artefactual use.

Based on the assemblage recovered, the flesh part of the diet of the inhabitants of Carrick Street seems to have been based on domestic livestock such as cattle, sheep/goats and pigs. Knife cuts on horse bones could relate to skinning, but as two of the equine long bones appear to have been chopped, it is quite likely that the meat was also used. This is not unusual in a Scottish medieval urban context and has been noted in many of the east coast burghs (Smith 1998) as well as at Site 8C (St John's Tower) and site 11C (12-18 New Bridge Street) both in Ayr (Smith 2012, 122).

The small number of pig and horse bones compared to cattle and sheep/goats is typical of

medieval urban sites in Scotland. Although pigs were kept and fattened within towns and were thus an important domestic food source, their numbers were always overshadowed by the high volume of cattle and sheep/goats brought into towns for commercial slaughter.

The only evidence that wild mammals were exploited is from two possible antler fragments, but as these may have been collected as cast (shed) antler they do not necessarily represent a carcass even if identification was more certain. However, as both red and roe deer bones (*Cervus elaphus* and *Capreolus capreolus*) were found at the sites of 8C (St John's Tower), 11C (12-18 New Bridge Street) and 6C (South Harbour Street) in Ayr it seems likely that venison was occasionally eaten in the burgh (Smith 2012, Table 22). A sawn antler offcut from Site 6C (South Harbour Street) was thought to represent small-scale cottage industry (ibid, 123).

Bone	Measurement	Minimum	Maximum	No.	Σ	Σ/n
Cattle						
horn core	max	45.4	46.9	2	92.3	46.2
	min	31.9	39.6	2	71.5	35.8
		BC	122	144	2	266
		OC	165		1	
radius	Bp	79.4		1		79.4
	Bd	58.3	67.6	2	125.9	63
ulna	SDO	48.9		1		48.9
metacarpal	Bp	46.8		1		46.8
Dp	28		1		28	Dp
tibia	Bp	77.6		1		77.6
	Bd	56		1		56
	Dd	40.9		1		40.9
Sheep/goat						
metacarpal	GL	104.6	113.6	2	218.2	109.1
	Bp	19	19.2	2	38.2	19.1
	Dp	14.2	14.8	2	29	14.5
	Bd	20.7	22	2	42.7	21.4
	SD	11.4	12.7	2	24.1	12.1
metatarsal	GL	113.4	125.1	2	238.5	119.3
	Bp	16.4	17	2	33.4	16.7
	Dp	16.9	17.8	2	34.7	17.4
	Bd	19.6	20.4	2	40	20
	SD	9.4	11.6	2	21	10.5
Horse						
radius	Bp	89.4		1		89.4
metatarsal	Bp	45.2		1		45.2
	Dp	39.8		1		39.8
	SD	28.3		1		28.3

Table 9: Long bone size range summary.

No bird remains were recovered at the present site, unsurprising given the poor conditions of preservation. It might have been expected that domestic fowl (*Gallus gallus*) and domestic geese (*Anser anser*) would have been present, as they were at several other medieval sites in Ayr, including Site 3C, 167-169 High Street (ibid, 121).

Despite Ayr's coastal location, only a single unidentified calcined fish vertebra was recovered from the retents. Only a very small quantity of unidentified fish bones has previously been recovered from other sites in Ayr, at Site 8C (St John's Tower), 11C (12-18 New Bridge Street) and 6C (South Harbour Street) (ibid) and it is suggested that the conditions of preservation at many locations within the burgh has not been conducive to fish bone survival. Certainly the presence of a Fish Cross, erected 1538-9 on the site of the original mercat cross of the burgh of Ayr is an indicator of the importance of fish as a commodity (Perry 2012, 5).

Medieval and later pottery and other clay materials¹

By Bob Will

Introduction

The assemblage of pottery recovered from the different phases of archaeological investigations at Carrick Street, Ayr consisted of 901 sherds (11,674.4kg). (Tables 10, 11, 12-14) It comprised material mainly from the medieval period but also included some post-medieval sherds and a few modern industrial wares. In addition to the main medieval fabric groups found in Scotland, a small number of imported sherds from France were also recovered. The imported material aided dating of the assemblage, with the main group dating from the thirteenth to early fourteenth century. Many of the sherds were quite small and abraded while others had evidence of burning and fuming on the breaks and both sides. This had occurred after the vessels had been broken or discarded. Similarly, there were very few sherds that could be joined together and there were no complete vessels or profiles.

Scottish White Gritty Ware

Four hundred and forty seven sherds (4035.3g) in Scottish White Gritty Ware fabrics were recovered in total, forming the main fabric group in the assemblage. Scottish White Gritty Ware is found throughout Scotland, particularly from the east coast towns and the central belt, but is also found in the west. White gritty wares first appear in the late twelfth century but the tradition lasted into the late fifteenth century. So far, the only published kiln site is at Colstoun in East Lothian. This fabric has been extensively studied and it is likely that a number of kilns were in production throughout Scotland (Jones *et al.* 2003).

The sherds from Carrick Street are in a number of similar but different fabrics from white to pale pink to buff in colour with varying amounts of quartz inclusions. The fabrics display evidence of different kiln firings, manufacturing techniques and potting skill. Some vessels are very well made with thin walls with abundant quartz inclusions and a light green or yellow glaze while others are thick walled with reduced cores.

The vessels represented in the assemblage are mainly cooking pots or storage jars with a few glazed sherds that are probably from jugs, for example SF 296 (Figure 11). The cooking pots were identified by soot or black fuming marks on the underside of the bases and exterior of the body sherds. The number of cooking pot sherds would suggest an early date as cooking pots tend to be replaced by metal vessels in the later fourteenth/fifteenth century.

Reduced Gritty Wares

On a number of excavations in particular from the West of Scotland a reduced version of white gritty ware has been identified and called 'Reduced Gritty Ware'. These have been found on excavations at Partick (Will 2022), Dundonald Castle (Caldwell 2004) and further sites in Ayr (Franklin and Hall 2012). This pottery type is usually highly decorated with a full green glaze. It is also highly fired with a completely reduced black fabric and no white or pale margin below the glaze. Although glazed and decorated, the

1. All the sherds were examined, weighed and recorded according to guidelines and standards produced by the Medieval Pottery Research Group (MPRG 1998; MPRG 2001).

fabric is sometimes uneven and thick in places, with a slightly crude finish. The 13 reduced fabric sherds (109.4g) from Carrick Street were from glazed jugs including highly decorated vessels with applied strips and rosettes. These tend to

date to the fourteenth century. One sherd, SF 499 from excavation phase 2003 has applied strip decoration consisting of flattened pellets or dots, possibly from a rosette (Figure 10).

Phase	Year	Total sherds	Rims	Bases	Handles	Body sherds	Weight (g)
1301.2	2002	279	27	25	7	220	4690.7
1301.3	2003	582	62	70	16	434	6504.3
5861	2021	40	6	4	2	28	479.4
	Total	901	95	99	25	682	11674.4

Table 10: Pottery recovered during each phase of work.

Fabric	Total	Rims	Bases	Handles	Body sherds	Weight (g)
Scottish White Gritty Ware (SWGW)	447	44	40	14	349	4035.2
Scottish Medieval Redwares (SMR)	309	32	39	9	229	3592.5
Scottish Medieval Reduced Ware (SMRW)	13				13	109.4
Scottish Post-Medieval Reduced Wares (SPMRW)	47	6	3	1	37	945.5
Saintonge	16	3	2		11	128.1
Import?	7	2	3		2	77.6
Martincamp	3				3	101
Salt glaze stoneware	1	1				40.5
Post-medieval	2				2	40.9
Modern white earthenware	26	2	7		17	382.1
Modern red earthenware	11	4	4	1	2	596.6
Industrial stoneware	4		1		3	218.8
Brick/tile	14				14	1392.1
Ceramic marble	1					8.2
Total	901	95	99	25	682	11674.4

Table 11: Fabric types from all all phases.

Phase	Fabric	Total	Rims	Bases	Handles	Body sherd	Weight (g)
1301.2	Scottish White Gritty Ware (SWGW)	100	7	8	3	82	871.5
1301.2	Scottish Medieval Reduced Ware (SMRW)	99	10	4	3	82	878.3
1301.2	Scottish Post-Medieval Reduced Wares (SPMRW)	33	3	1		29	525.7
1301.2	Import?	1		1			36.7
1301.2	Martincamp	2				2	95.9
1301.2	Salt glaze stoneware	1	1				40.5
1301.2	Modern white earthenware	25	2	7		16	381.2
1301.2	Post-medieval	1				1	40
1301.2	Modern red earthenware	9	4	3	1	1	579.8
1301.2	Industrial stoneware	3		1		2	187.2
1301.2	Brick/tile	4				4	1045.7
1301.2	Ceramic marble	1					8.2
	Total	279	27	25	7	220	4690.7

Table 12: Fabric types from 1301.2 - 2002.

Phase	Fabric	Total	Rims	Bases	Handles	Body sherds	Weight (g)
1301.3	Scottish White Gritty Ware (SWGW)	328	36	29	10	253	3006.9
1301.3	Scottish Medieval Redware (SMR)	193	18	35	5	135	2427.1
1301.3	Scottish Medieval Reduced Ware (SMRW)	13				13	109.4
1301.3	Scottish Post-Medieval Reduced Wares (SPMRW)	14	3	2	1	8	425.7
1301.3	Saintonge	14	3	2		9	109.4
1301.3	Martincamp	1				1	5.1
1301.3	Post-medieval	1				1	0.9
1301.3	Imports	6	2	2		2	40.9
1301.3	Modern white earthenware	1				1	0.9
1301.3	Industrial stoneware	1				1	31.6
1301.3	Brick/tile	10				10	346.4
	Total	582	62	70	16	434	6504.3

Table 13: Fabric types from 1301.3 - 2003.

Phase	Fabric	Total	Rims	Bases	Handles	Body sherds	Weight (g)
5861	Scottish White Gritty Ware (SWGW)	19	1	3	1	14	156.8
5861	Scottish Medieval Redware (SMR)	17	4		1	12	287.1
5861	Saintonge	2	1			1	18.7
5861	Modern red earthenware	2		1		1	16.8
	Total	40	6	4	2	28	479.4

Table 14: Fabric types from 5861 - 2021.

Scottish Medieval Redwares

A total of 309 sherds (3592.5g) of Scottish Medieval Redware fabrics were recovered from Carrick Street. This type of pottery is found across most of Scotland and has recently been the subject of an extensive research programme funded by Historic Scotland (Haggarty *et al.* 2011). The largest assemblages of Scottish Medieval Redwares have been recovered from excavations in Aberdeen and Perth. Two kiln sites are known: one at Rattray near Peterhead that produced wheel-thrown and hand-made vessels, and the other at Stenhouse near Falkirk. These fabrics are thought to date from the thirteenth to fifteenth century although the publication of the Perth High Street excavations has identified Scottish redware fabrics from the mid to late twelfth century (Hall *et al.* 2012, 3-11; 27-33). There was a wide variation in the fabric, from quite crude and rough, to well-sorted thin-walled, and with pronounced rilling or throwing marks. The firing conditions also varied from oxidised to reduced or partly reduced. These variations may reflect different kilns, manufacturing sites or chronological differences.

The sherds from Carrick Street comprise mainly, jugs and cooking pots/storage jars, although bowls are also present. A number of sherds had sooting or fuming marks on the exterior and may derive from cooking pots. They are generally well-made with thin walls and could date to the late twelfth or early thirteenth century. Redware cooking pots are not common, even in Perth where redware is the main local medieval fabric. However, they were recovered from excavations at Partick Castle in Glasgow (Will 2022, 59-61). Cooking pots tend not to be decorated but have simple rounded or square rims. Unfortunately, none of the sherds are large enough to determine the shape of these vessels.

The jugs from Carrick Street generally have simple pulled spouts, although SF 590 is a bridge spout (Figure 6), and upright rims, for example SF 326 (Figure 8), and grooved strap handles. They tend to have a clear glaze, which on the red clay body produces a brown or dark green coloured glaze. The handles are mainly grooved or flat strap handles although two small rod handles were recovered and these may be from

small jugs or mugs. One of the strap handles is highly decorated with a central band of thumbled decoration, SF 333 from the 2003 excavation (Figure 11).

All the jugs have flat or slightly sagging bases some with thumbled decoration round the base. One sherd, SF 491 from 2003 (Figure 9) had a thumbled or pinched decoration round its base and white slip on the exterior. Several of the body sherds were decorated with applied dots and strips, some with a rouletted design along them. The applied decoration is usually a different colour from the rest of the vessel, often brown, while the rest of the body is green.

Several of the sherds both from cooking pots and jugs had traces of a white slip over the red fabric to make the vessel appear to be white rather than red. The use of white slip in areas where white firing clay is not so plentiful has been noted in Stirling and Perth. Its use was more common in the thirteenth and fourteenth centuries and appears to have fallen out of use in the fifteenth century (MacAskill 1987).

Scottish Post-Medieval Reduced Wares

A total of 47 sherds (945.5g) of Scottish post-medieval Reduced Wares were recovered from Carrick Street. This fabric was first classified at Stirling Castle (Haggarty 1980) and the pottery dates from the late fifteenth to eighteenth centuries. The only published kiln site for this fabric in Scotland is at Throsk on the banks of the River Forth just outside Stirling (Caldwell and Dean 1992), but other kiln sites making similar vessels are likely to have been in operation across Scotland. Historical research at Throsk has uncovered details about the potters and their families and links to other parts of Scotland (Harrison 2002). It has been suggested that it was the draining of the carse that led to the development of pottery production as the carse clays were then more easily accessible (Haggarty and Lawson 2012). The best range of vessels so far recovered comes from the sites at Throsk and Stirling Castle where platters, bowls, skilletts, fish dishes and money boxes or *pirlie pigs* as well as the more common jugs have been recovered.

Scottish Post-Medieval Reduced Wares tend to be thick-walled and the fabric is usually heavily reduced to grey or black with few inclusions and

a thick dark green glaze. Two further sherds were recovered that are probably post-medieval as they are both quite thick and crude but have no glaze or diagnostic features.

Imports

Saintonge Green Glazed Ware

Sixteen sherds (128.1g) were recovered in this distinctive pale white fabric with a bright green speckled glaze. The main vessels were tall jugs, often with parrot beaks and a strap handle. Unfortunately, the sherds from Carrick Street are all too small to provide evidence of vessel shape or size. Of the three rim sherds that were found, one has a square rim and the scar from attaching a strap handle. In addition there were two small base sherds. Pottery was made in the Saintonge region of south-west France and was imported into Scotland in the thirteenth and fourteenth centuries (Brown 2002). A large number of Saintonge sherds have already been found in excavations in Ayr (Franklin and Hall 2012), suggesting strong trading links with France during the medieval period.

Martincamp

Three sherds (101g) were recovered in a pale orange/tan fabric, two of the sherds are from the neck of a flask. The neck had been joined to the body of the vessel leaving a slightly rough overlapping lip on the inside. This distinctive type of flask or costrel with a long neck and slightly flattened body is associated with the Martincamp area of northern France. In Martincamp there is a long tradition of pottery manufacture using different fabrics, including stoneware. The sherds from Carrick Street are in the Type 1 fabric which has been closely dated in England to the period 1475 to 1550 (Hurst *et al* 1986). These vessels have been found on a number of sites in Scotland.

Additional imported wares

Seven unidentified, but probable imported sherds were recovered. Two are likely to be Saintonge or French as the pale white fabrics are very similar, but these sherds have no green glaze on them. The remaining four sherds are in red fabrics one of which is reduced and are all well-made, two of the sherds have a full white slip covering the red fabric.

White Salt-Glazed Stoneware

A large body sherd with rim was recovered from a white salt-glazed and decorated beaker or vase. White salt-glazed stoneware was developed in the early eighteenth century and was made in large quantities in the Staffordshire potteries between 1720 and 1780 (Jennings 1981) using plaster of Paris moulds. It was also made in other potteries throughout the UK, including Scotland and there are references to it being made at the Auld Kirk Pottery in Prestonpans, East Lothian between 1755-1774, after which it went over to creamware and whiteware (Scottish Pottery Society 2023).

Modern

A small number of modern factory-produced industrial ceramics were retained, these comprise 26 sherds of white earthenware (382.1g), 11 sherds of red earthenware (596.6g) and four sherds of modern stoneware (218.8g). The white earthenwares were mainly table wares and were decorated with blue transfer printed designs and hand-painted bands and date to the late nineteenth century. Five small sherds with flaking glaze may be earlier in date and could represent tin-glazed earthenwares from the late eighteenth or early nineteenth century. The red earthenwares are more utilitarian wares, storage jars and bowls with brown glaze on the exterior. Some of the bowls have cream/white coloured slip-trailed decoration on the interior and could be from dairy bowls that would date to the nineteenth century. Four sherds of industrial stoneware were recovered from large storage jars and flagons. One sherd has part of an inscription 'David Du.... Ayr'. These large vessels were often used for whisky or other liquids and were made specifically for merchants and shopkeepers and have the companies name and address moulded into the body of the vessel usually on the shoulders or neck and again, this would date to the late nineteenth century.

Marble

A compete clay marble made from white pipe clay with a cream and brown glaze was recovered and probably dates to the nineteenth century.

Brick and tile

Fourteen fragments (1392.1g) of brick, drainage pipes and tile were recovered. One of the fragments (SF 31 from the 2002 excavations) is part of a medieval roof tile as the nib or ceramic pin used to hold the tile in place survives. Medieval roofing tiles are usually rectangular with a hole or nib on the top edge for attaching the tile to the roof and the lower portion is often glazed.

Discussion

The assemblage covers a wide date range of pottery from predominantly the medieval to modern period. The medieval sherds are mixed in terms of vessels and fabrics but include possibly late-twelfth or thirteenth century cooking pots and storage jars along with later fourteenth century decorated jugs. The two main fabrics found in Scotland during the medieval period were present - Scottish White Gritty Wares and Scottish Medieval Redwares. The sherds from Carrick Street fit well with the range of vessels and dates from other assemblage of medieval pottery from Ayr (Franklin and Hall 2012) and from Dundonald Castle (Caldwell 2004). The different phases of work all display a similar range of fabrics and vessels. Of particular note was the Saintonge sherds which have been found previously in Ayr and together make up one of the largest assemblages of this material in Scotland and highlight the importance of trade to Ayr in the medieval period.

Worked stone

By Beverley Ballin Smith

Of the stone assemblage retained from Carrick Street Halls, Ayr, five artefactual worked stones, including one architectural piece, were analysed. The geology of the individual artefacts includes metamorphosed mudstone or very fine-grained sandstone, grey sandstone, and possibly fine-grained schist. The architectural piece is of grey granite.

Hones

Fine-grained stones of schist, mudstone and sandstone were chosen for the three hones (SFs 12, 449 and 716) that were used as tools for sharpening iron blades. The fine linear striations on some of the surfaces of these tools is from use, but the wearing away of surfaces to form a concave dip on SFs 449 and 716 indicated more prolonged usage. SF 716, formed from a possible schist bar, is the best preserved tool of this small collection, even though it has lost part of its length. The worn areas around its drilled perforation indicate it was probably suspended from its owner's belt, but the faceting of the wear on its shaft and its smooth and shiny surface areas indicate it had extensive use. It may also have knocked against a metal object while being worn as there are noticeable random incisions on one of its worn surfaces.

Rubbing stone or smoother

SF 639, formed from a sandstone cobble, is a slightly different tool from those described above, even though it has two smoothed and worn surfaces. The darker wear around the edges of the largest, smooth and flat surface suggest its function was as a rubbing stone, for example, for smoothing hides or even wooden objects.

Architectural piece

SF 492 is a tooled piece of grey granite that might have been a step with a rebate, where it fitted against a wall or door jamb. Except where the piece is damaged, the largest surface has a smooth finish, possibly also worn; the edges of the rebate are similarly smoothed but the vertical surfaces of the piece are only roughly finished.

Discussion

As Ayr is situated on the coast, many of the stones such as sandstones and mudstones could have derived ultimately from beaches close to the town or from coastal outcrops of Coal Measures Formations that are recorded lying beneath the town (BGS Viewer 2023). The piece of schist may have originally derived from the island of Arran across the Forth of Clyde from Ayr. The grey granite could also have been quarried on Arran or possibly even Ailsa Craig.

Most of the artefacts are described as waterworn (smooth and often rounded) stones found on the shore or near the mouth of the River Ayr or along its course, for example bars (SF 12) or cobbles (SF 639 and 449). This also indicated that the raw materials used for artefacts were available locally to the excavation, excluding the granite piece.

Radiocarbon dating of sample 004 from which perforated hone (SF 716) was recovered provided a date range of 1268-1299 cal AD for the original felling of a timber fragment located within ditch fill (107). Whilst it is not possible to allocate a time period to hones because these types of tool have been required as long as iron has been in use for blades, hones (SF 449, 716), rubber (SF 639) and step (SF 492) were all recovered from within ditch fills securely dated to the fourteenth century by the accompanying pottery assemblage.

Step (SF 492) was recovered along with additional large unworked stones from within context (11131), a midden rich deposit forming an upper fill of the ditch. It likely formed part of a demolished building in the vicinity of the site. Hone (SF 12) was recovered from Phase 8 deposit (context 002) and may therefore be residual medieval or post-medieval in origin. The location of the artefacts and their possible date are noted in Table 15.

Phase	Artefact	SF	Context	Date of artefact
1301.2	Hone	12	Trench 2, context 2	residual medieval to post-medieval
1301.3	Polisher/Hone	449	Area 11, context 11091, dark midden-like grey "greasy" silty sand around timbers ditch fill	medieval
1301.3	Rubber	639	11096 ditch fill	medieval
5861	Perforated hone	716	107 (2021) ditch fill	medieval. See Hones in Perth High Street Fascicule 4 p 134-135.
1301.3	Step	492	11131 ditch fill	medieval

Table 15: Location of the artefacts and their possible date.

Metalwork and ironworking debris

By Gemma Cruickshanks²

Fourteen metal artefacts were retrieved during excavations at Carrick Street, Ayr, all are wrought iron apart from one of copper alloy and one of lead. Over 11.5 kg of vitrified material was also collected. Vitrified material can be produced during a range of high temperature processes from daily domestic hearth activity to specialist craftwork. The material in this assemblage is dominated by ironworking slag, including fragments diagnostic of both iron smelting and blacksmithing, as well as possible roasted ore fragments.

The assemblage

The material was visually examined and classified using common terminology (e.g. Crew and Rehren 2002; Lucas and Paynter 2010; McDonnell and Milns 2015) based upon characteristics such as size, morphology and density. The assemblage is summarised below and a full catalogue is in the archive.

Process	Material type	Weight (g)
Ore Processing	Roasted ore	46
Iron smelting	Smelting slag	3724
	Furnace base fragment	408
Bloom processing		66
Blacksmithing	Smithing hearth base	614
	Smithing pan	3173.2
Ironworking, undiagnostic	Undiagnostic iron slag	2832.3
	Slag-spheres (misshapen)	0.4
Undiagnostic	Vitrified ceramic	686.1
	Heat-affected stone	25
	Natural iron concretion	80.4
Total		11655.4

Table 16: Summary of iron working assemblage by material type.

Iron smelting and blacksmithing

The furnace base fragment (SF 149), smelting slag (SF 469) and undiagnostic slag (SF 009 and SF 584) recovered from within the Phase 3 medieval ditch fills indicate that iron smelting works were occurring within the vicinity at this time. These works apparently continued during

the accumulation of sand accumulations in Phase 4 (SFs 32, 33, 351, 361, 399, 484 and 730) within which a corroded tapering iron rod or bar (SF 56) was also recovered.

A larger metalworking assemblage was recovered from the post-medieval Phase 5 agricultural soil where a continuation of smelting works was indicated by numerous slag deposits and ore processing was evidenced by small fragments of roasted bog iron ore (SF 722). Evidence of blacksmithing was recovered in the form of 120 fragments of smithing pan (SF 729) and a possible smithing hearth base (SF 133). Post-medieval to modern phases of activity (Phases 6 to 8) continued to evidence iron smelting and blacksmithing, with fragments of nails, bars or rods, bloom processing, undiagnostic vitrified ceramics and heated stone also recovered.

Metalwork

Too little of the copper alloy artefact (SF 20) survives to be certain of its function but possibilities include a needle or brooch pin. The only lead find is an intrusive lead shot (SF 14a). The nine iron finds comprise three nails and two probable nail shanks (SFs 7, 35, 698 and 723b), four bar or rod fragments (SFs 14b, 23, 56 and 721) and one unidentifiable fragment (SF 128).

Discussion

Artefacts recovered from the ditch at Carrick Halls suggest that Iron smelting and blacksmithing were occurring in the local area during the medieval period and the small fragments of rarely surviving roasted bog iron ore recovered from the Phase 5 soil are typical of medieval Scotland.

Of greater significance was the post-medieval blacksmithing evidence recovered from the Phase 5 agricultural soils. The presence of smithing pan that forms around anvils from repeated trampling of iron particles into the floor, indicates the occurrence of intensive blacksmithing activity. However, these fragments and all the other material within the iron working assemblage were notably corroded and abraded. This suggests that artefacts recovered from the Phase 5 agricultural soil comprise a dump of material, spread by agricultural ploughing activity that originated from a nearby source.

While none of the metalwork finds are particularly chronologically distinct, most are in keeping with the medieval to post-medieval dates. Nails in a range of forms are ubiquitous finds on medieval settlements and may therefore be residual artefacts of medieval or later origin, while the rods and bars could have been components of a variety of implements or stock iron related to medieval and post-medieval blacksmithing activity.

Glass

By Robin Murdoch

A small assemblage of glass was recovered from the Carrick Halls excavations. A single sherd forming part of a base and kick of a green onion bottle (wine bottle) dated to 1700 was recovered from the Phase 5 agricultural soils and a mid to late nineteenth century embossed aqua medicine bottle sherd was recovered from the Phase 8 modern deposits associated with Carrick Halls, the latter likely being a residual artefact (see Table 18)

Small Find	Context	Phase	Material Type	Dimensions	Description
SF 7	3	8	Iron	L 61 mm, head D 24 mm, shank D 10 mm	Nail Domed or discoidal head, straight, square-sectioned shank, tip broken. Heavily coated in corrosion.
SF 14a	2	8	Lead	D 18.3 mm	Lead shot with slight surface corrosion in places. Incised/impressed circular line c.16mm in diameter - possibly a corrosion feature. Weight 32.6g
SF 14b	2	8	Iron	L 26.5 mm x W 9-13 mm; L 40 mm x W 10 mm	Two fragments of iron, one sub-rectangular with expanded ends obscured by corrosion the other a fragmentary bar, damaged by corrosion blistering
SF20	4	5	Fine copper alloy	L 17 mm x T 3.5-4.5 mm	Rod, beginning to flatten and expand at one end before breaking and tapering at the other end before breaking. The flattening at one end is reminiscent of a needle, or a buckle/ brooch pin but too little survives to be certain
SF 23	3	8	Iron	L 64 mm, T 7 x W 13 mm	Iron bar with rectangular section. Layer of corrosion obscures ends, making it unclear if it is broken or not
SF 35	7003	8	Iron	Total length at least 65b mm, D 12 mm	Iron fragments, probably all from one nail with robust square-sectioned shank. Head form unclear
SF 56	1014	4	Iron	L 60 m, D 13-7 mm	Tapering iron rod or bar, obscured by thick corrosion. Unclear if slight protrusion on one side near narrower end is part of object or a corrosion feature
SF 128	11030	5	Iron	L 14 mm x W 14 mm x T 11b mm	Small rounded, corroded iron fragment, probably broken from a larger object. Unidentifiable
SF 698	11030	5	Iron	L 94 mm, ball D 40 mm, shank D 13 mm	Iron shank, tapering to point at one end with solid sphere at the other end. All heavily coated in corrosion, obscuring details
SF 721	11033	5	Iron	L 108 mm, max D 11 mm	Iron rod, tapering to both ends. One end has a rectangular section while the other is more oval/ round, but heavy corrosion obscures details. Appears to be intact, and likely a fine hand tool such as an awl (dimensions not including area which appears to be a lump of corrosion)
SF 723b	11019	7	Iron	L 35 mm, D 11 mm	Corroded fragment of iron displaying sub-square-section on broken edge. Most likely part of a nail shank, tool or fitting.

Table 17: Summary of metalwork assemblage. All measurements are in mm. L- length, T- thickness, D -diameter.

Small Find	Context	Phase	Type	Date
18	2	8	Part of slightly indented sidewall from probable medicine bottle in pale aqua. Neatly embossed with 'Crown' in lettering with an embossed crown below.	mid to late nineteenth century
102	11030	5	Base and kick from wine bottle in green with moderate to heavy corrosion. Gentle curve through base ring indicating probable onion bottle.	1700

Table 18: Glass assemblage.

General discussion

The results of the excavations at Carrick Halls revealed that eight main phases of activity had occurred on the site, from its original natural state to the destruction of the Carrick Halls in recent years. These phases are described in chronological order.

Phase 1 - natural geology

The natural deposition of windblown sand forms the superficial geology at Carrick Street. Historical accounts of windblown sand deposition at Ayr from the establishment of the medieval burgh and up to the post-medieval period were confirmed in the High Street and in other more recent archaeological excavations across Ayr (Perry 2012, 125). The windblown sand laminations and thick deposits evident throughout phases 1 to 4 in the site confirm these prior findings.

Phase 2 - medieval

The earliest archaeological features identified during excavations at Carrick Street were a ditch dug into the natural windblown sandy subsoil and the subsequent accumulation of an organic-rich clay layer both within the ditch as a primary fill and across the surrounding excavated area. The ditch was located near the south-east limits of medieval Ayr, an area previously associated with the suggestion of the expansion of the medieval town after it had received its chartered status in the early thirteenth century (Gourlay and Turner 1977), but which is now considered part of the original extent of the burgh.

Significant quantities of uncarbonised wood fragments recovered from sample 011 of the primary ditch fill (109) in 2021 are suggestive of scrubby vegetation growth in the area and a possible deliberate deposition of twigs to consolidate the clayey wet land for utilisation. Furthermore, radiocarbon dating of hazel fragments recovered from sample 011 provided an eleventh to twelfth century date range for the felling of this timber. An SMR pulled spout (SF 590) recovered also from the primary fill provides a date range of middle to-late twelfth century to the fifteenth century.

These dates suggest that land clearance, utilisation, and felling of timbers began in the south-east of Ayr in the later part of the early-

medieval period (eleventh to twelfth century), prior to expansion of the medieval town in the fourteenth century.

Historical mapping identifies medieval burgage plots extending north-west/south-east from Doongait (now Sandgate) with a dog-leg shape to the south-east caused by the curving course of the High Street to the north. The High Street would also have had corresponding burgage plots, some of which were later truncated by the construction of Carrick Vennel (now Carrick Street) in the seventeenth century. The north-east/south-west alignment of the ditch with its north-west/south-east aligned corner may form a corner and extent of a -medieval burgage plot extending west from the High Street frontage. This evidence suggests that the initial ditch may have been dug between the mid-twelfth and early thirteenth century.

Phase 3 - medieval

This phase represents the insertion of the timber fence line and subsequent land-use in association with the ditch. The timbers comprised a mixture of re-purposed oak stakes and planks across the centre of the north-east/south-west aligned ditch with occasional hazel roundwood and willow stakes. Analysis of timbers recovered from the fence-line provided calibrated radiocarbon dates between the eleventh to mid-twelfth century AD for the initial felling of the timbers, in keeping with samples recovered from Phase 2.

The central ditch fence line established a definite boundary between different plots of land. This supposition is supported by the differences in depositional processes evident between the northern and southern ditch deposits. The series of dumped deposits, rich in finds and organic materials interspersed with windblown sands recorded in the southern half of the ditch are in stark contrast to the simpler deposition sequence of silts and sands, with sparse artefactual finds, recorded north of the fence-line. This southernmost limit of the burgage plot, located at a some distance from the buildings on the High Street was less well used than the southern plot that evidenced human activity within close proximity. It is clear that either an entirely separate plot of land or sub-division of the backlands of the burgage had occurred at this location during the medieval period. It is also possible that Carrick Vennel may have originally

been a thoroughfare through a redundant burgage plot, which was later formalised (Hugh McBrien, WoSAS, pers. comm.).

Radiocarbon dating of birch fragments recovered from ditch sample 004 provided a date range of mid to late thirteenth century for the felling of the timber fragment located within the lower ditch fill (107). Pottery sherds recovered from both the lower and upper ditch fills comprised medieval Scottish wares of twelfth to fourteenth century date and imported French Saintonge pottery dating from the twelfth to thirteenth century. This included the two main Scottish wares; Scottish White Gritty Wares, plus the less common Scottish Medieval Redwares and Reduced Gritty Wares. More precise dating of the lower ditch deposits is provided by the presence of a highly decorated Reduced Gritty Ware Sherd (SF 499) of fourteenth century date, plus white slip Scottish Medieval Redware sherds which date from the thirteenth to fourteenth centuries.

Organic analysis of the ditch fills identified plant and insect species common to wetlands and further species common to soils enriched by localised habitation. A deliberate deposition of twigs was also recorded within ditch deposit (107) and notable quantities of grass stems and willow twigs were recovered from (11131). This again, may have been a purposeful consolidation of the clayey soils. However, the use of spiny twigs could also suggest the creation of a barrier, beyond that of the fence line, perhaps to prevent animal movement. Additional finds of metalworking recovered from the ditch fills indicates that iron smelting activities were occurring within the vicinity at this time and mammal bone analysis results suggest that diets were typical of the Scottish medieval period.

As the ditch boundary was abandoned, layers of dark sandy-silty midden deposits spread across the south of the site, sealing the ditch. The pottery assemblage from these deposits was in keeping with that from within the ditch, including twelfth to fourteenth century Scottish wares and twelfth to thirteenth for century French imports. The combined dating evidence provided from re-purposed timbers and discarded pottery fragments suggests that the boundary ditch continued to be used into the fourteenth century from which point it became filled in during, or after that century.

Whilst the pottery assemblage from Carrick Street fits well with other Ayrshire sites, it is interesting to note the uncommon use of redware cooking pots in Ayr from the late twelfth to early thirteenth century. Furthermore, the importance of international trade with France during the medieval period is confirmed by the recovery of French sherds from the ditch and Phase 3 deposits.

Phase 4 - medieval

This phase is characterised by a sequence of thin windblown silty sand deposits with little botanic inclusions and occasional artefacts, sealed the Phase 3 deposits. The Scottish White Gritty Wares and Scottish Medieval Redware fragments recovered from the Phase 4 sand deposits could date up to as late as the late-fifteenth century, providing a deposition date range from the disuse of the ditch in the fourteenth century onwards (Figure 15). The two north/south aligned linear features dug into deposits from the earliest period of this phase appear to function as drains. Their single fills and few finds suggest a short phase of use. This, combined with the natural deposition of blown sand, indicates a period of increasing inactivity on the site, with only the accumulated discarded materials including ironworking, demonstrating activities of the wider area.



Figure 15: The infilled ditch and accumulated sand layers. From NE.

Hans Tessin's map of 1654 shows the contracted extent of the seventeenth century town of Ayr and the Cromwellian citadel. It also portrays the Kyle Port or South Port location just to the south of Carrick Vennel and Mill Vennel, discussed by Perry (2012, 5) as probably the original southern limit of the burgh before its expansion at the beginning of the fourteenth century. The Roy

Map, 1752-1755 (Figure 3) also shows Ayr as not much larger than its medieval extent apart from the continuation of the High Street to the south-east. Armstrong's 1773 map of Ayr identifies a sub-rectangular plot boundary adjacent to Carrick Vennel (Carrick Street), at the location of the site and aligned with the south-east ditch corner (Figure 16) but it is considered that his plans were



Figure 16: Extract from Armstrong's plan of Ayr, 1773. Reproduced with the permission of the National Library of Scotland, highlighting the medieval ditch within the plot outline.

not particularly accurate. Research by Gourlay and Turner identified that the Carrick Street plots were established in the mid-seventeenth century, dissecting the north-west/south-east medieval burgage plots and incorporating some prior burgage boundaries. The development of Carrick Street clearly incorporated the boundary line of this earlier ditch, far beyond its period of use and caused a change of land usage within the site. This may account for the additional accumulation of soil identified in Phase 5.

Phase 5 - late medieval to post-medieval

Phase 5 was the dark post-medieval agricultural garden soils that extended across the extent of the site with no obvious adherence to the burgage boundaries of Phases 2 to 4. By the mid-eighteenth century The Roy lowland 1752-55 map of Ayr (Figure 3) illustrates that the site was situated within the boundaries of a northeast/south-west aligned burgage plot associated with the High Street.

Artefacts recovered from the soils date from the late-fifteenth and up to the eighteenth centuries support the dating of this change of plot design, however modern OS maps do respect the plot boundary identified by Gourlay and Turner. This suggests that whilst the plot boundary was not respected for ploughing purposes, it still existed, likely due to collective farming practices prior to the Commonalty Acts, with the principal Act being in 1695 (Wightman *et al.* 2003, 6). Furthermore, the notable metalwork and industrial waste assemblage indicates that a smithy continued to be located in the vicinity, albeit not within the site itself.

Phases 6 to 8 - modern

Post-medieval to modern bedding trenches represent phases 6 to 7 within the site and confirm a continued agricultural usage from the eighteenth to twentieth centuries, prior to the construction and subsequent demolition of Carrick Halls in the mid to late twentieth century.

Conclusion

Excavations at the site of Carrick Halls have provided further details as to the layout and dating of medieval Ayr and its subsequent changes. The High Street burgage plots extended to the south during the initial establishment of the medieval burgh, with the Carrick Street ditch and boundary fence indicating that the town's layout was most likely planned.

Habitation of this plot clearly continued into the fourteenth and fifteenth centuries, long before the construction of Carrick Street however, but a lull in local activity is evident from an increase in deposition of windblown sands during the fifteenth to sixteenth centuries. The ongoing impact of windblown sands in Ayr throughout the medieval period was clearly demonstrated by the deposition of silts and sands within the site, and aids understanding of the extent of this problem inland.

The presence of imported French wares within the ditch deposits confirms the importance of international trade to this port city during the medieval period. This is further highlighted by the fact that excavations within Ayr have now provided one of the largest assemblages of Saintonge pottery recovered from Scotland. During the seventeenth century, the establishment of Carrick Street and its associated plots created further changes in land use within the site. An increase in silt deposition led to the build-up of agricultural soils evident by the eighteenth century but the former ditch alignment remained in use as a plot boundary. Discrepancies in site boundaries recorded by Gourlay and Turner and on the Roy map may be explained by activation of the Enclosure Act in the middle to late-eighteenth century.

Afterword

Although much of the build-up of stratigraphy found at the Carrick Street site is similar to others excavated in Ayr, such as at the High Street site 3C (Perry 2012, 32) there is little independent dating of the activities and use of the backlands, of ditched boundaries, sand accumulation, or that of the accumulation or deposition of garden soils of later periods. Much of the dating of all the excavated Ayr sites is heavily reliant on pottery types, both Scottish and imported wares, and their accepted currency date ranges.

Where possible more radiocarbon dates are needed to confirm the earlier history of the burgh of Ayr as demonstrated by the excavation at Carrick Street. Other sites, such as Fort Street, excavated in 1998 provided evidence of another boundary ditch, a retaining wall and wells, which was dated only by their assemblage of late medieval pottery (Neighbour 1998). Excavations in 2000 in Nile Court east of the High Street, again recorded ditched burgage plot boundaries later replaced in stone, but no radiocarbon dating of the features took place (Duffy 2000). The excavations at Kyle Street in 2004 indicated the remains of a medieval tannery and wells beneath the garden soil and demolition layers, but they too were only dated only through the presence of thirteenth and fourteenth century pottery (Swan 2004). The presence of wooden structures such as those at New Bridge Street site 11C (Perry 2012, 32), are rare but suggest beneath the sand accumulation a wealth of organic and inorganic materials survive for further discovery, research and publication.

These small glimpses into the earlier history of the burgh indicate there is much more to learn and understand about this important town in the Middle Ages.

Acknowledgements

Project 1301 (2002-2003) was initiated by Joseph Stuart (Stuart McTaggart Consulting Engineers) and managed for G.U.A.R.D. University of Glasgow by Beverley Ballin Smith. Administrative support

was provided by Jen Cochrane and Laura Hayes, and technical support by Lorraine McEwan, Ross McGrehan, Chris Connor, and Mel Richmond. Thanks also go to Hugh McBrien (WoSAS), The Kyle Centre, and Jamieson Plant Hire. Special thanks are due to Scott Coulter, Chris Dalgliesh, Alison Harry, Alan Matthews, Gert Petersen, Sarah Phillips, Ingrid Shearer and Joe Somerville for the 2003 excavations, Jennifer Miller and Aileen Maule for help and advice with botanical remains and to Bob Will for pottery guidance. Thanks also go to John Carroll, Lorna Johnstone the author of the Desk-Based Assessment, and Caitlin Evans and Alastair Becket who authored the original reports.

Project 5861 (2021) was initiated by ARPL Architects on behalf of Ayrshire Housing Association and managed for GUARD Archaeology by John Atkinson. Plant and drivers were supplied by JR Group. Administrative support was provided by Jen Cochrane and technical support by Aileen Maule and Clark Innes. Thanks also go to Eduardo Perez-Fernandez and Fiona Fraser for the 2021 archaeological works, Natasha Ferguson for the Post-Excavation Research Design and Bob Will and Hugh McBrien (WoSAS) for additional information. Illustrations were produced by Jennifer Simonson.

Project archive and finds location

The site archives will be lodged with the NRHE at Historic Environment Scotland, Edinburgh, and the finds will be reported to Treasure Trove Scotland.

Maps

Armstrong, Andrew, 1775 A new map of Ayrshire...(South-east section). Available from: <https://maps.nls.uk/joins/797.html>

Roy Military Survey of Scotland, 1747-1755: Lowlands 1752-55. Available from: <https://maps.nls.uk/roy/>

All links were active at the time of publication

Bibliography

- Armitage, P L 1982 A system for ageing and sexing the horn cores from British post-medieval sites (17th to early 18th century) with special reference to British Longhorn cattle, 255-61, in Wilson, B, Grigson, C and Payne, S (eds.) *Ageing and Sexing Animal Bones from Archaeological Sites*. Oxford: British Archaeological Reports, British Series 109.
- Auld, Rev R and Cuthill, Rev A 1845 Ayr, County of Ayrshire, *New Statistical Account of Scotland*, Vol V
- Becket, A 2003 Project 1301.3: Carrick Street, Ayr. Unpublished Excavation Report, G.U.A.R.D. University of Glasgow.
- Brown D 2002 *Pottery in Medieval Southampton: c. 1066-1510*, Research reports Series No 133
- Caldwell D 2004 The medieval pottery, 92-99, in Ewart G and Pringle D Dundonald Castle Excavations 1986-93, *Scottish Archaeological Journal* 26.1-2.
- Caldwell, D and Dean, V E 1992 The pottery industry at Throsk, Stirlingshire, in the 17th and 18th century, *Post-Medieval Archaeology* 26, 1-46.
- Cappers, R T J, Bekker, R M and Jans, J E A 2006 *Digital Seed Atlas of the Netherlands*. Groningen Archaeological Studies 4. Eelde, The Netherlands: Barkhuis Publishing,
- Carter, S 2001 A reassessment of the origins of the St Andrews 'garden soil', *Tayside and Fife Archaeological Journal* 7, 87-92.
- Cowan, I B and Easson, D E 1976 *Medieval religious houses, Scotland: with an appendix on the houses in the Isle of Man*. 2nd edition. London/ New York: Longman.
- Crew, P and Rehren, T 2002 High temperature workshop residues from Tara: iron, bronze and glass, 83-102, in Roche, H (ed.) *Excavations at Ráith na Ríg, Tara, Co Meath 1997*. Dublin: Royal Irish Academy, Discovery Programme Reports 6.
- von den Driesch, A 1976 *A Guide to the Measurement of Animal Bones from Archaeological Sites*. Peabody Museum Bulletin No 1. Harvard University, USA.
- Dickson, C A 1996 Food, medicinal and other plants from the fifteenth-century drains of Paisley Abbey, Scotland, 25-31, in Behre, K-E and Oeggl, K (eds.) *Early Farming in the Old World. Vegetation History and Archaeobotany Special Volume*.
- Dickson, C A and Dickson, J H 2000 *Plants and People in Ancient Scotland*. Stroud: Tempus Publishing Ltd.
- Dobney, K and Rielly, K 1988 A method for recording archaeological animal bones, *Circaea* 5, 79-96.
- Duffy, P. 2000 Report 810/810.2 Evaluation, excavation and watching brief at Nile Court, High Street, Ayr. Unpublished Data Structure Report, G.U.A.R.D, University of Glasgow.
- Evans C 2002 Project 1301.2: Carrick Street, Ayr. Unpublished Evaluation Report. G.U.A.R.D. University of Glasgow.
- Ferguson, N 2021 Project 5861 Carrick Street, Ayr. Unpublished Post-Excavation Research Design. GUARD Archaeology Ltd.
- Franklin, J and Hall, D 2012 The pottery, 39-69, in Perry, D *et al.* Excavations in Ayr 1984-1987, Ayrshire Archaeological and Natural History Society Monograph 37.
- Harry, R 1996 Project 307: High Street, Ayr. Reports on trial excavations at 162-170 Mill Street. Unpublished Data Structure Report. G.U.A.R.D. University of Glasgow.
- Hooper, J 1998 Project 422.3 Loudoun Hall. Unpublished building survey report. G.U.A.R.D. University of Glasgow.
- Gourlay R and Turner A 1977 *Historic Ayr, the archaeological implications of development*. Scottish Burgh Survey. Glasgow: Department of Archaeology, University of Glasgow.

- Grant, A 1982 The use of tooth wear as a guide to the age of domestic ungulates, 91-107, in Wilson, B, Grigson, C and Payne, S (eds.) *Ageing and Sexing Animal Bones from Archaeological Sites* Oxford: British Archaeological Reports, British Series 109.
- Haggarty, G 1980 The pottery, in Ewart, G Excavations at Stirling Castle, 1977-78, *Post Medieval Archaeology* 14, 36-46.
- Haggarty, G, Hall, D and Chenery, S 2011 Sourcing Scottish Redwares. Medieval Pottery Research Group Occasional paper 5.
- Haggarty, G and Lawson, J 2012 The pottery assemblage, in Cook, M, Cross, M and Lawson J Marlin's Wynd: New Archaeological and Documentary Research on post-medieval settlement below the Tron Kirk, Edinburgh, *Scottish Archaeological Internet Reports* 55, 17-29.
- Hall, D, Haggarty, G and Vince, A 2012 The Ceramics, 3-73, in *Perth High Street: Archaeological Excavation 1975-1977: The ceramics, the metalwork and the wood. Fascicule 2*. Perth: Tayside and Perth Archaeological Committee.
- Harrison J 2002 The pottery at Throsk, Stirlingshire and c.1600 - c.1800: contexts, links and survival, *Proceedings of the Society of Antiquaries of Scotland* 132, 459-473.
- Hodgson, G W I, Smith C and Jones, A 2011 The mammal bone, 5-44, in Hodgson, G W I et al. *The Perth High Street Archaeological Excavation 1975-1977. Living and Working in a Medieval Scottish Burgh. Environmental remains and miscellaneous finds. Fascicule 4*. Perth: Tayside and Fife Archaeological Committee.
- Hurst, J G, Neal, D S and van Beuningen, H J E 1986 *Pottery produced and traded in north-west Europe 1350-1650*. Rotterdam Papers VI. Rotterdam: Stichting.
- Jennings S 1981 Eighteen Centuries of Pottery from Norwich, *East Anglian Archaeology* 13.
- Johnstone, L 2002 Project 1301: Carrick Street Halls, Ayr. Unpublished Desk-Based Assessment, G.U.A.R.D. University of Glasgow.
- Jones, R, Will, B, Haggarty G and Hall D 2003 Sourcing Scottish White Gritty ware, *Medieval Ceramics* 26 and 27 (2002-3), 45-84.
- Limond T 1960 The rroup of the lands of Alloway, in *The Scottish Historical Review* 39, no. 127, 182-204.
- Lucas, V A and Paynter, S 2010 *Whitby Cliff, Whitby, North Yorkshire – an assessment of metalworking debris from the Whitby Cliff Excavations*. English Heritage Research Department Report Series No 31.
- MacAskill, N L, Brittain, J and Scott C 1987 Pottery, 89-120, 156-7, in Holdsworth, P (ed.) *Excavations in the Medieval Burgh of Perth 1979-81*. Edinburgh: Society of Antiquaries of Scotland Monograph Series 5.
- McDonnell, J G and Milns, J 2015 Ferrous and non-ferrous metalworking, 392-428, in Dockrill, S, Bond, J, Turner, V, Brown, L, Bashford, D, Cussans, J and Nicholson, R *Excavations at Old Scatness, Shetland Volume 2: The Broch and Iron Age Village*. Lerwick: Shetland Amenity Trust.
- Miller, J and Ramsay, S 2008 Project 2240: Blackfriars. Unpublished archaeobotanical report, G.U.A.R.D. University of Glasgow.
- MPRG 1998 *A Guide to the Classification of Medieval ceramic Forms*. Medieval Pottery Research Group Occasional Paper 1.
- MPRG 2001 Minimum Standards for the processing, recording, analysis and publication of Post-
- NRHE = National Record of the Historic Environment, Canmore ID 41776 and 202154.
- Neighbour, T 1998 Report 381: Archaeological Evaluation at Fort Street, Ayr, South Ayrshire. Unpublished Data Structure Report, CFA Archaeology.
- Payne, S 1973 Kill-off patterns in sheep and goats—the mandibles from Aşvan Kale, *Journal of Anatolian Studies* 23, 281-303.
- Perez-Fernandez, E 2021 Project 5861 Carrick Street, Ayr, South Ayrshire. Unpublished Data Structure Report, GUARD Archaeology Ltd, Glasgow.

- Perry, D 2012 *Excavations in Ayr 1984-1987*. Ayrshire Archaeological and Natural History Society Monograph 37.
- Ramsay, S 2015 Project 4000 Station Square, Stirling. Unpublished Archaeobotanical Specialist Report, GUARD Archaeology Ltd, Glasgow.
- Schweingruber, F H 1990 *Anatomy of European Woods*. Berne and Stuttgart: Haupt.
- Scottish Pottery Society 2023 <https://www.scottishpotterysociety.org.uk/auld-kirk/>
- Silver, I 1969 The ageing of domestic animals, 283-302, in Brothwell, D and Higgs, E S (eds.) *Science in Archaeology*. 2nd edition. London: Thames and Hudson.
- Smith, C 1998 Dogs, cats and horses in the Scottish medieval town, *Proceedings of the Society of Antiquaries of Scotland* 128, 859-85.
- Smith, C 2012 The animal bone, 120-23, in Perry, D *Excavations in Ayr 1984-1987*. Ayrshire Archaeological and Natural History Society Monograph 37.
- Stace, C 1997 *New Flora of the British Isles*. 2nd Ed. Cambridge: Cambridge University Press.
- Swan, D 2004 Report 1541 and 1720: Kyle Street, Ayr. Unpublished Data Structure Report, G.U.A.R.D, University of Glasgow.
- Taylor, R 2007-11 ScotWars: Scottish Military History and Re-enactment. Available from: http://old.scotwars.com/Ayr_citadel.htm
- Teichert, M 1975 Osteometrische Untersuchungen zur Berechnung der Widerristhöhe bei Schafen, 51-69, in Clason, A T (ed.) *Archaeozoological Studies*. Amsterdam: North Holland/American Elsevier.
- Will B 2022 The medieval and later pottery, 54-66, in Spence B, Atkinson J J et al. *Medieval Partick 2016 Scottish Archaeological Journal* 44, 1-92.
- Wightman, A, Callander, R and Boyd, G 2003 *Common land in Scotland: a brief overview*. Caledonia Centre for Social Development. London: MCPGOLDIES Ltd.
- Zohary, D and Hopf, M 2000 *Domestication of Plants in the Old World*. 3rd ed. Oxford: Oxford University Press.

ArchaeologyReportsOnline 

Archaeology Reports Online

52 Elderpark Workspace

100 Elderpark Street

Glasgow

G51 3TR

Tel: 0141 445 8800

Fax: 0141 445 3222

editor@archaeologyreportsonline.com

archaeologyreportsonline.com