



Society of Antiquaries  
of **Scotland**

## SCOTTISH ARCHAEOLOGICAL INTERNET REPORTS

e-ISSN: 2056-7421

**Prehistoric Settlement Patterns in the North-east of Scotland; Excavations at Grantown Road, Forres 2002–2013**

**How to cite:**

Cook, M 2016 'Prehistoric Settlement Patterns in the North-east of Scotland; Excavations at Grantown Road, Forres 2002–2013'. *Scottish Archaeological Internet Reports*, 61

**DOI link:**

[DOI: http://dx.doi.org/10.9750/issn.1473-3803.2016.61](http://dx.doi.org/10.9750/issn.1473-3803.2016.61)

Click <http://archaeologydataservice.ac.uk/archives/view/sair> to visit the journal homepage.

OPEN  ACCESS

**Please note:**

This document is the publisher's PDF of an article published in the Scottish Archaeological Internet Reports journal. This version has been peer-reviewed and contains all final editorial corrections and journal pagination.

Copyright © 2016 rests with the Society and the individual authors. Except where otherwise noted, this work is licensed under Creative Commons Attribution-NonCommercial-No Derivatives licence. <http://creativecommons.org/licenses/by-nc-nd/4.0/>

The permission to reproduce the Society's copyright-protected material does not extend to any material which is identified as being the copyright of a third party. Authorisation to reproduce such material must be obtained from the copyright holders concerned.



# Prehistoric Settlement Patterns in the North-East of Scotland; Excavations at Grantown Road, Forres 2002–2013

Martin Cook

with contributions by

David Dungworth, Clare Ellis, Rob Engl, Rachael Ives, Dawn McLaren & Jackaline Robertson

## Address

AOC Archaeology Group, Unit 7a Edgefield Industrial Estate, Loanhead, Midlothian EH20 9SY

## Author contact

Martin.cook@aocarchaeology.com

## Funding

Springfield Properties Ltd

e-ISSN: 2056-7421

DOI: <http://dx.doi.org/10.9750/issn.1473-3803.2016.61>

Published by the Society of Antiquaries of Scotland with the  
Archaeology Data Service [archaeologydataservice.ac.uk](http://archaeologydataservice.ac.uk).

Society of Antiquaries of Scotland  
National Museums Scotland  
Chambers Street  
Edinburgh EH1 1JF  
United Kingdom

Managing editor: Erin Osborne-Martin

Copy-editor: Helen Bleck

Production: Raspberry Creative Type, Edinburgh

Copyright © 2016 rests with the Society and the individual  
authors. Except where otherwise noted, this work is licensed  
under Creative Commons Attribution-NonCommercial-  
NoDerivatives licence. [http://creativecommons.org/licenses/  
by-nc-nd/4.0/](http://creativecommons.org/licenses/by-nc-nd/4.0/)

Requests for permission to reproduce material from a  
SAIR report should be sent to the Director of the Society  
of Antiquaries of Scotland, as well as to the author,  
illustrator, photographer or other copyright holder.

[www.socantscot.org](http://www.socantscot.org)

Registered Scottish charity no SC010440

TABLE OF CONTENTS

---

List of illustrations	v
List of tables	v
<b>1. Abstract</b> . . . . .	<b>1</b>
<b>2. Introduction</b> . . . . .	<b>1</b>
<b>3. Archaeological background</b> . . . . .	<b>1</b>
<b>4. Summary of results</b> . . . . .	<b>3</b>
4.1 Neolithic	3
4.2 Bronze Age activity	9
4.3 Iron Age activity	11
4.4 The Early Historic period	22
<b>5. Radiocarbon dating</b> . . . . .	<b>24</b>
<b>6. The ecofact assemblage</b> <i>by Jackaline Robertson</i> . . . . .	<b>24</b>
6.1 Cereals	24
6.2 Wild resources	24
6.3 Weed assemblage	24
6.4 Charcoal	25
6.5 Bone	25
6.6 Discussion	25
<b>7. The pottery</b> <i>by Dawn McLaren</i> . . . . .	<b>26</b>
7.1 Overview	26
7.2 Neolithic round-based bowls	26
7.3 Impressed ware	30
7.4 Grooved ware	33
7.5 Other Neolithic	35
7.6 Late Bronze Age bucket/barrel urn	35
7.7 Iron Age ceramics	36
7.8 Undiagnostic sherds	36
7.9 Medieval coarse wares	36
7.10 Conclusions	36
<b>8. The daub</b> <i>by Dawn McLaren</i> . . . . .	<b>37</b>
<b>9. The chipped stone</b> <i>by Rob Engl</i> . . . . .	<b>37</b>
<b>10. The coarse stone</b> <i>by Rob Engl &amp; Dawn McLaren</i> . . . . .	<b>37</b>
10.1 Introduction	37
10.2 Catalogue	37
10.3 Discussion	40
<b>11. The copper alloy</b> <i>by Dawn McLaren</i> . . . . .	<b>42</b>

<b>12. The iron</b> <i>by Dawn McLaren</i> . . . . .	<b>42</b>
12.1 Catalogue . . . . .	43
<b>13. Non-ferrous metalworking</b> <i>by Dawn McLaren</i> . . . . .	<b>43</b>
13.1 Catalogue . . . . .	44
<b>14. The ferrous metalworking</b> <i>by Dawn McLaren &amp; David Dungworth</i> . . . . .	<b>45</b>
14.1 Overview . . . . .	45
14.2 Methodology . . . . .	45
14.3 Classifications . . . . .	45
14.4 Distribution and contextual analysis . . . . .	51
14.5 Results of scientific analysis . . . . .	53
14.6 Summary of 2006 slag assemblage . . . . .	58
14.7 Beyond Grantown Road: ferrous metalworking in context . . . . .	59
14.8 Conclusions . . . . .	61
<b>15. Soil micromorphology</b> <i>by Clare Ellis</i> . . . . .	<b>61</b>
15.1 Introduction . . . . .	61
15.2 Results and discussion . . . . .	61
<b>16. Cremated bone</b> <i>by Rachael Ives</i> . . . . .	<b>62</b>
<b>17. Discussion</b> . . . . .	<b>63</b>
17.1 Neolithic activity . . . . .	63
17.2 Bronze Age activity . . . . .	64
17.3 Iron Age activity . . . . .	65
17.4 Early Historic activity . . . . .	69
17.5 Conclusion . . . . .	69
<b>18. Acknowledgements</b> . . . . .	<b>70</b>
<b>19. References</b> . . . . .	<b>71</b>

## LIST OF ILLUSTRATIONS

1. Location map	2
2. Location of evaluation areas	6
3. Features in the excavated areas	7
4. Neolithic features. A) Structure 1. B) Structure 10a. C) Structure 12 (12a and 12b)	8
5. Bronze Age features. A) Structure 11. B) Structure 10b	10
6. The bucket urn V1 under excavation	11
7. Iron Age structures lying west of Grantown Road	12
8. Iron Age structures lying east of Grantown Road	13
9. Sections through Furnaces [157] and [212], and Palisades 1 and 2	14
10. Furnace [157] after excavation	15
11. Section AA across the souterrain	16
12. Photograph of Section AA across the souterrain	17
13. Structures 2 and 3	20
14. Early Historic features. A) Structure 9. B) Structure 10c	23
15. Neolithic round-based pottery	27
16. Neolithic Impressed Ware and Grooved Ware pottery	32
17. Neolithic pottery V22 and V29, the bucket urn V1, ceramic mould SF 17, and nail SF 15	34
18. Coarse stone	38
19. Coarse stone	39
20. Scanning electron microscope images of samples 2, 3, 6a.	48
21. Scanning electron microscope images of samples 6b, 1, 5.	49
22. Upper: Iron and silicon content of the Grantown Road slag samples; Lower: Phosphorus and calcium content of the Grantown Road samples.	54
23. Upper: Aluminium and manganese content of the Grantown Road slag samples; Lower: Sodium and potassium content of the Grantown Road samples.	55
24. Linescans through sample 7.	56

## LIST OF TABLES

1. Radiocarbon dates	4
2. Range of diagnostic and undiagnostic debris present at Grantown Road, 2008–2013	46
3. Quantity of vitrified material by deposit type	51
4. Samples selected for analysis	53
5. Average chemical composition of the Grantown Road slags and some comparable Scottish bloomery slag (data for Argyll from Photos-Jones et al 1998; Atkinson and Photos-Jones 1999)	57
6. Cremated bone	63

## 1. ABSTRACT

---

The commercial development of the north-east of Scotland has resulted in a huge influx of new information on the prehistoric and Early Historic occupation of the area. A series of cropmarks investigated at Granttown Road, Forres between 2002 and 2013 has confirmed the presence of an extensive Iron Age settlement and revealed new evidence for activity from the Neolithic to the Early Historic period. The Iron Age settlement is represented by a variety of building types including ring-ditch, ring-groove and post-ring structures, in association with four-post structures, a souterrain and metalworking furnaces. Although the Neolithic, Bronze Age and Early Historic periods are not so well represented they nonetheless have provided evidence for the occupation of the area. The artefactual assemblage includes Neolithic and Bronze Age ceramic and coarse stone and Iron Age material relating to metalworking.

## 2. INTRODUCTION

---

Between 2003 and 2010 some 70ha of land was evaluated in advance of the proposed residential development of a greenfield site on the southern fringes of Forres, Moray (NGR: NJ 0263 5740; Illus 1) (Cook 2008; 2009; 2010). The majority of the development site is located on low-lying (19m OD) improved land, immediately above the eastern flood plain of the River Findhorn (Illus 1). The solid geology is overlain by a layer of glacial sand and gravel, clearly greatly affected by plough truncation. The subsequent excavation of four main land parcels (Cook 2008; 2010; Engl 2013) exposed a series of prehistoric structures partially identified by aerial survey in the 1990s (Greig 1994). The cropmarks comprised a series of linear marks, probable pits, a souterrain and a circular enclosure, spread across much of the site (Greig 1994). However, the main suite of features was located on a slight rise, bisected by the A940, and was only partially recognised by the aerial survey. The excavations confirmed the presence of an Iron Age settlement containing a large ring-ditch, souterrain, a smaller ring-ditch, two four-post structures, a post-ring and two ironworking/smelting furnaces. An isolated Bronze Age cremation with bucket urn was fully excavated during the evaluation phase (Cook 2008). The surrounding area also contained further evidence for prehistoric and Early Historic activity.

The range and scope of the features identified on site provided a rare opportunity within the framework of a commercial exercise to answer specific research questions and test existing hypotheses about the lifecycles of settlements, souterrain and four-post structures. Uniquely in Scotland, the

excavation provided evidence for a relatively long domestic settlement associated with a souterrain and ironworking features. The specific questions we therefore hoped to answer involved the date and abandonment of the four-post structures and their possible succession, the lifecycle of the souterrain and associated roundhouse, and questions relating to the ironworking industry in the north-east.

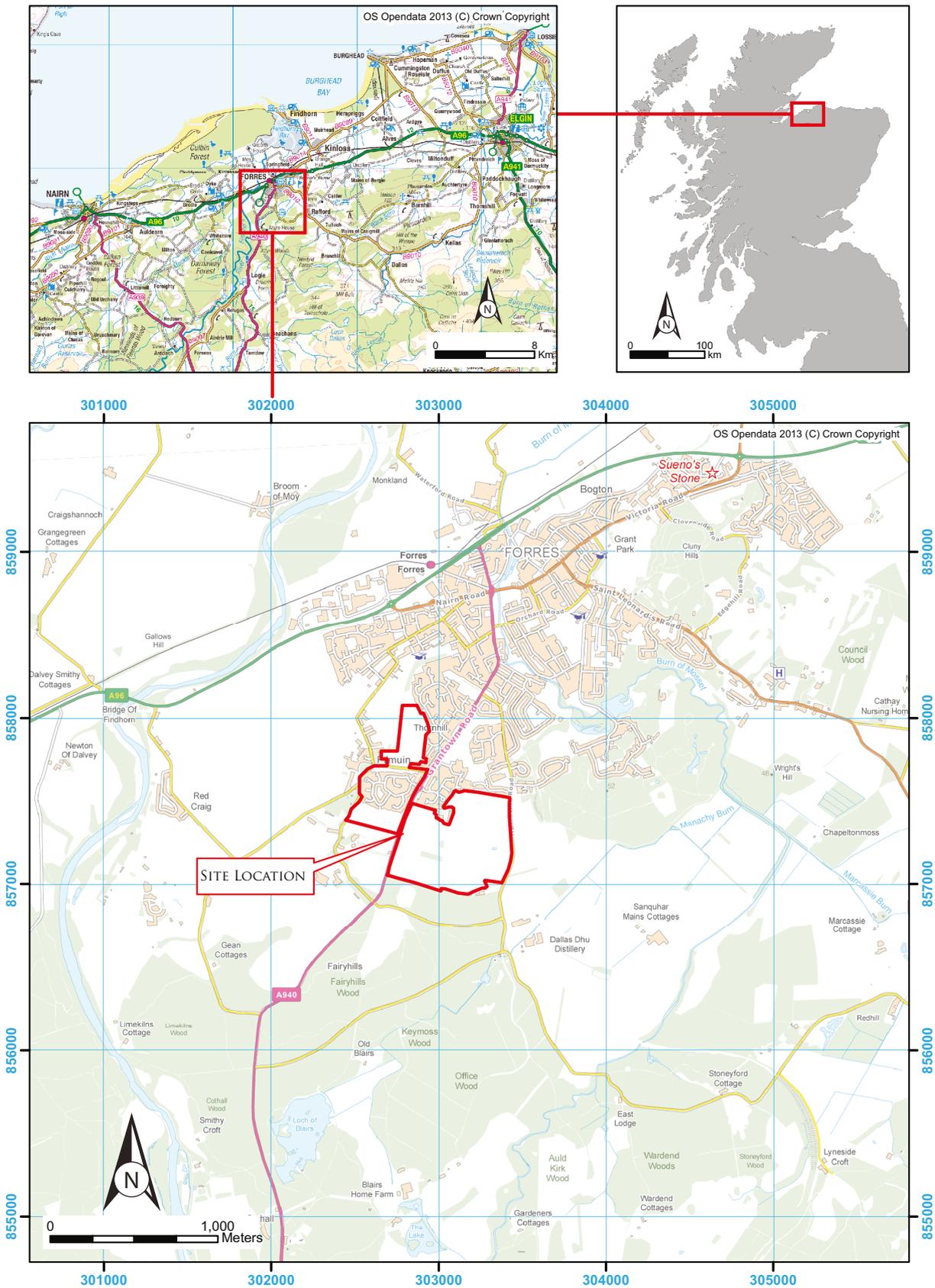
The results of the 2003 excavation have already been published (Cook 2008) but they are described again here so that as full a summary of what is essentially the same settlement landscape can be presented.

## 3. ARCHAEOLOGICAL BACKGROUND

---

In the last 20 years, the increased programme of aerial survey which has taken place along the coast (Greig 1994; Halliday 2008, 89), in conjunction with the many private research projects (Birnie, Clarkley Hill and Deskford-Hunter pers comm; Covesea-Armit et al 2011), has been enhanced by the large number of commercial evaluations and excavations which have happened as a result of the increased development of the north-east (for example Seafield West, Inverness – Cressey & Anderson 2011; Beechwood, Inverness – Engl & McLaren forthcoming; Culduthel, Inverness – Murray 2007; 2008; Bellfield Farm, North Kessock – Murray 2011).

The area of Forres in particular is rich in later prehistoric cropmark evidence with a suite of cropmark types being identified in close proximity to the site. The larger Neolithic monuments such as cursus and henges and Roman sites characteristic



Illus 1 Location map

of the southern and eastern lowlands are absent from the cropmark record in this area, which tends to be dominated by evidence of later prehistoric unenclosed settlement such as ring-ditches (96 sites in Moray) and souterrains (11 in Moray) and undefined enclosures (information from Canmore). This settlement type was partially confirmed by the 2003 excavation which identified a Neolithic structure, two Middle Iron Age ring-ditches and evidence for Early Historic activity (Cook 2008).

Archaeological evidence for Early Historic settlement and hillforts is rare in Moray, the fortified coastal promontories such as Burghead being the exception. Fortunately, however, place-name evidence is starting to illuminate the archaeological record, and it has been demonstrated that the names and therefore origins of some farms and villages in the area may have originated during this period (Watson 1926; Nicolaisen 1976; Halliday 2008, 130). The site occupies the former farm of Knockhomie, between two other areas, Balnaferry and Balnageith (Illus 1). While Knockhomie refers to the higher ground to the immediate south of the site, the two Gaelic 'bal' prefixes refer to farms and are usually associated with the favourable agricultural land (Halliday 2008, 132). Though surviving into the present, these names are generally thought to have their origin in the middle of the 9th century, hinting at the early occupation of the site (Halliday 2008, 132). Medieval activity around Forres is further implied by the occurrence of a thanage, Dyke, 4km to the west of the site (Smith 2001, 360), and also by the fact that the town was one of the first centres of the north-east to be made a royal burgh under David I in AD 1130. Of course, a final indicator of the early importance of Forres is the location of Sueno's Stone, the largest Pictish symbol stone in Scotland, a few miles from the site.

#### 4. SUMMARY OF RESULTS

---

The various archaeological investigations took place over a 10-year period (Illus 2). All of the main structures identified on the site were subject to a programme of radiocarbon dating, and wherever possible two dates were obtained from each structure. Evidence for activity in the Neolithic, Middle Bronze Age, the Middle to Late Iron Age

and the Early Historic period was recovered (Table 1). Pine charcoal recovered from two isolated pits produced Mesolithic dates but in the absence of any other evidence for Mesolithic activity on the site it is considered possible that these derived from ancient bog pine and neither will be discussed further. The majority of the structures and features which were Iron Age in date were identified within a 100m by 100m area bisected by the A940 road (Illus 1). The settlement occupied a slight rise, overlooking boggy and presumably marginal land. Earlier Neolithic and Bronze Age occupation occurred across this more marginal land as well as on the higher, more exposed ground. Isolated features were identified across the whole site but unless they contained artefactual material or a rich ecofactual assemblage, they were not analysed and will not be discussed here.

#### 4.1 Neolithic

The evidence for Neolithic activity on site was relatively ephemeral, with three possible structures or groupings and some isolated features (Structures 1, 10a and 12; Illus 3 and 4) being identified. Although the possible structures are perhaps not as convincing as structures identified from the other periods, they are described as such here, and will be discussed later on. In total 10 radiocarbon dates were obtained for Neolithic features, demonstrating activity from the beginning of the 4th millennium BC to the mid-3rd millennium BC (Table 1). In addition, 12 features contained diagnostic material including Grooved Ware, Carinated Bowls, Impressed Ware and some coarse stone artefacts.

##### 4.1.1 Structure 1

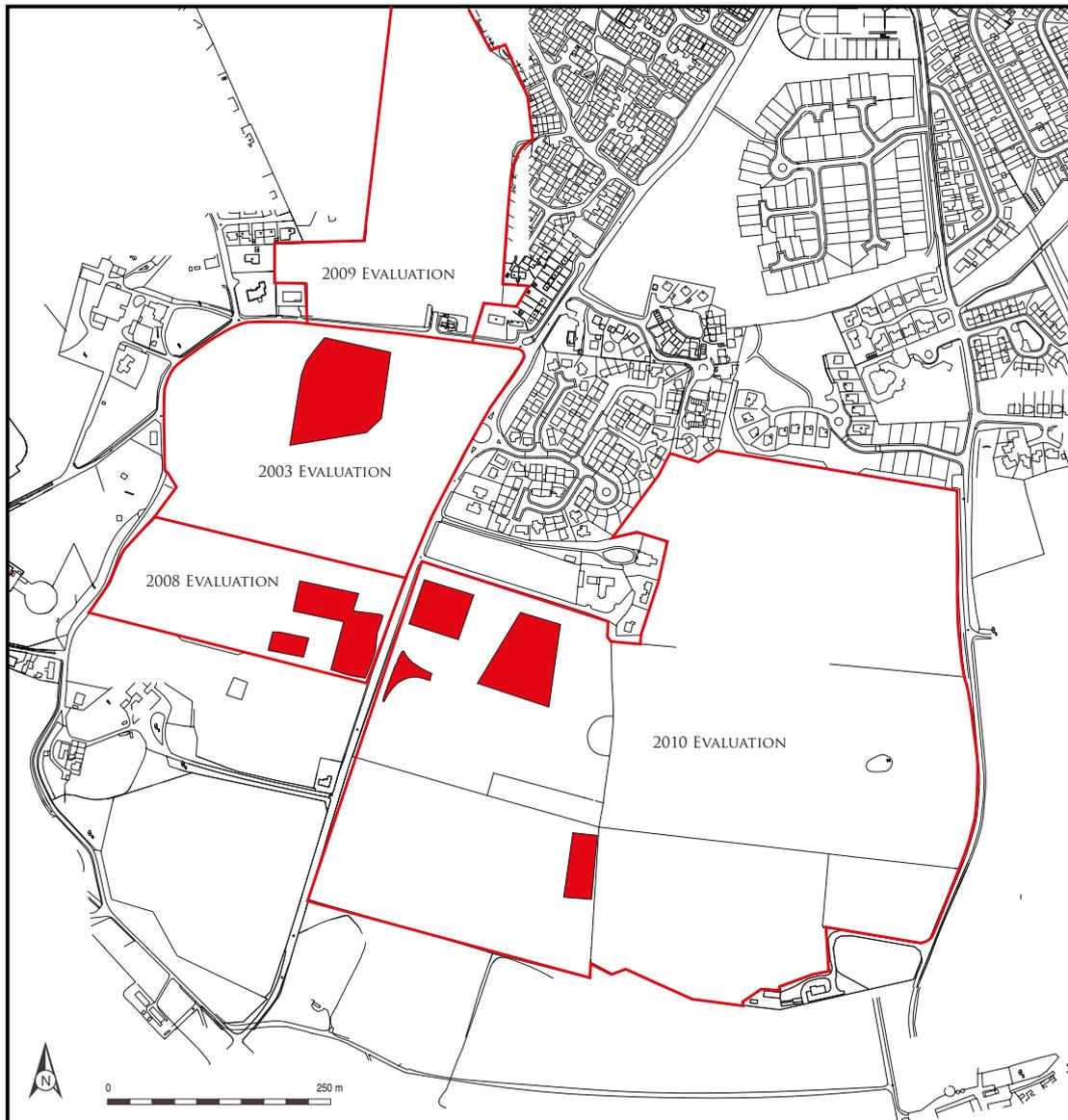
Structure 1 was excavated in 2003 (Cook 2008). The structure comprised 12 pits and an associated rectilinear Cut [124]. The rectilinear Cut [124] measured approximately 10m north to south, up to 6m east to west and was up to 0.40m deep (Illus 4A). The pits varied in size between 0.66m and 1.20m in length and between 0.03m and 0.26m in depth, and were located in and around the rectilinear cut. Generally, these features produced very little charcoal, but two identical radiocarbon dates were obtained from samples of oak, one from Pit [053] (SUERC-5089) and one from the overlying deposit

**Table 1** Radiocarbon dates

Laboratory ID	Structure/feature	Context	Material type	Species	$^{13}\text{C}$ (‰)	Radiocarbon age (BP)	Calibrated radiocarbon date (95% confidence)
<b>Mesolithic</b>							
SUERC-5100	Isolated pit	88	charcoal	Pine	-26.4	7770 ± 40	6660–6470 cal BC
SUERC-47066	Isolated pit	729	charcoal	Pine	-25.5	7204 ± 30	6205–6006 cal BC
<b>Neolithic</b>							
SUERC-5085	Structure 1	32	charcoal	Oak	-23.7	5030 ± 35	3950–3710 cal BC
SUERC-5089	Structure 1	54	charcoal	Oak	-26.8	5030 ± 35	3950–3710 cal BC
SUERC-47054	Structure 12/12a	585	charcoal	Birch	-26.3	4782 ± 29	3641–3520 cal BC
SUERC-47058	Structure 12/12a	675	charcoal	Alder	-25.3	4772 ± 29	3641–3386 cal BC
SUERC-47055	Structure 12/12a	587	charcoal	Hazel	-25.7	4753 ± 29	3638–3382 cal BC
SUERC-47064	Structure 10a	691	charcoal	Alder	-26.5	4739 ± 27	3635–3380 cal BC
SUERC-47068	Isolated pit	637	charcoal	Alder	-26.9	4677 ± 28	3621–3369 cal BC
SUERC-47062	Structure 12	687	charcoal	Alder	-27.6	4600 ± 38	3517–3119 cal BC
SUERC-47063	Structure 10a	689	charcoal	Alder	-25.4	4528 ± 27	3360–3103 cal BC
SUERC-47057	Isolated pit, St 12/12a	655	charcoal	Alder	-26.9	4131 ± 27	2872–2584 cal BC
<b>Bronze Age</b>							
SUERC-47067	Isolated pit, St 10a	731	charcoal	Oak	-26.8	3930 ± 27	2549–2306 cal BC
SUERC-47056	Structure 12 b	609	charcoal	Birch	-24.6	3054 ± 29	1410–1223 cal BC
SUERC-47053	Structure 11	573	charcoal	Alder	-24.1	3030 ± 27	1393–1212 cal BC
SUERC-21592	Burial	402	cremated bone	unknown	-23.4	2870 ± 40	1200–920 cal BC
<b>Iron Age</b>							
SUERC-21591	Furnace 157	158	charcoal	Oak	-25.9	2285 ± 40	410–200 cal BC
SUERC-5102	Structure 3	90	charcoal	Oak	-26.3	2175 ± 35	370–110 cal BC
SUERC-5101	Structure 3	90	charcoal	Hazel	-26.4	2130 ± 35	240–40 cal BC
SUERC-5090	Structure 3	25B	charcoal	Hazel	-26.5	2130 ± 35	210–40 cal BC
SUERC-5091	Structure 3	25B	charcoal	Birch	-26.1	2120 ± 35	210–40 cal BC
SUERC-5092	Structure 2	65C	charcoal	Alder	-25	2120 ± 35	210–40 cal BC

Table 1 *cont.*

SUERC-5093	Structure 2	65C	charcoal	Hazel	-26.7	2105 ± 40	210–40 cal BC
SUERC-5099	Heat-affected deposit	88	charcoal	Alder	-25.4	2100 ± 35	210–40 cal BC
SUERC-21576	Four-Post 1	156	charcoal	Oak	-26	2105 ± 35	350 cal BC–00 cal AD
SUERC-21580	Four-Post 1	156	charcoal	Alder	-25.1	2075 ± 40	200 cal BC–20 cal AD
SUERC-21585	Four-Post 2	226	charcoal	Oak	-24.2	2065 ± 40	200 cal BC–30 cal AD
SUERC-21586	Four-Post 2	226	charcoal	Alder	-26.5	2095 ± 40	350 cal BC–00 cal AD
SUERC-47034	Structure 6	16	charcoal	Birch	-27.3	2090 ± 27	191–44 cal BC
SUERC-47045	Structure 7	133	charcoal	Oak	-24.4	2081 ± 29	191–4 cal BC
SUERC-47046	Structure 8	188	charcoal	Birch	-25.5	2038 ± 29	162 cal BC–48 cal AD
SUERC-47042	Structure 6	92	charcoal	Hazel	-25.9	2001 ± 29	86 cal BC–70 cal AD
SUERC-21581	Souterrain	173	charcoal	Oak	-24.4	1970 ± 40	50 cal BC–130 cal AD
SUERC-21590	Structure 4	143	charcoal	Oak	-24.8	1965 ± 40	50 cal BC–130 cal AD
SUERC-47043	Isolated pit	113	charcoal	Birch	-25.9	1979 ± 29	44 cal BC–76 cal AD
SUERC-47036	Palisade 1	66	charcoal	Alder	-24.4	1954 ± 33	39 cal BC–125 cal AD
SUERC-21582	Souterrain	191	charcoal	Alder	-28.3	1915 ± 40	00–220 cal AD
SUERC-21584	Structure 5	124	charred cereal	Barley	-25	1910 ± 40	00–220 cal AD
SUERC-47044	Isolated pit	115	charcoal	Alder	-27.7	1926 ± 29	5–132 cal AD
SUERC-47033	Structure 6	12	charcoal	Alder	-26.5	1909 ± 27	23–209 cal AD
SUERC-47037	Palisade 2	87	charcoal	Alder	-27.6	1886 ± 29	60–219 cal AD
SUERC-47038	Palisade 2	87	charcoal	Hazel	-28.8	1865 ± 29	77–229 cal AD
SUERC-47035	Palisade 1	66	charcoal	Oak	-25.4	1964 ± 29	41–116 cal AD
SUERC-21583	Structure 5	124	charcoal	Oak	-24.8	1710 ± 40	240–420 cal AD
Early Historic							
SUERC-5094	Isolated pit	81	charcoal	Pomoideae	-27.5	1655 ± 35	320–470 cal AD
SUERC-5095	Isolated pit	81	charcoal	Alder	-25.9	1655 ± 35	320–470 cal AD
SUERC-21593	Isolated pit	171	charred cereal	Barley	-24.8	1215 ± 40	680–900 cal AD
SUERC-47047	Structure 9	503	charcoal	Birch	-26.3	1108 ± 29	882–1013 cal AD
SUERC-47048	Structure 9	503	charcoal	Alder	-26.1	1090 ± 29	892–1014 cal AD
SUERC-47052	Structure 9	508	charcoal	Oak	-24.7	1154 ± 29	779–972 cal AD
SUERC-47065	Structure 10c	713	charcoal	Birch	-27	1000 ± 27	985–1152 cal AD



**Illus 2** Location of evaluation areas

[032] (SUERC-5085) dating the structure to the early 4th millennium BC.

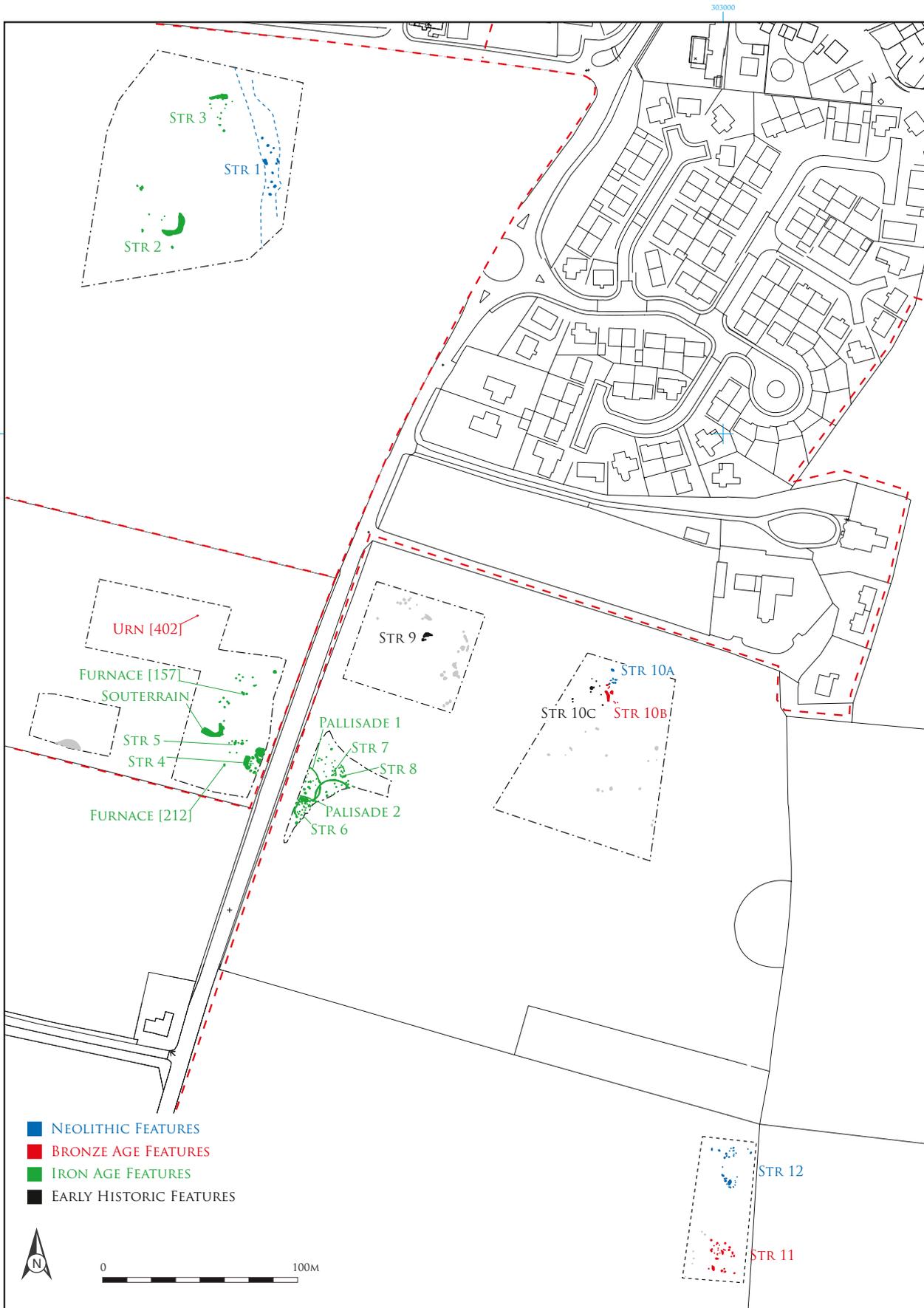
4.1.2 Structure 10a

The structure comprised a series of features (Illus 4b) located to the immediate north of the undated Structure 10b which appears to truncate Structure 10a. Due to the later activity on the site little can be said about the form and shape of the structure. Four radiocarbon dates were obtained from the features within this grouping, ranging from the Early Neolithic (SUERC-47064; SUERC-47062; SUERC-47063) to the Early Bronze Age (SUERC-47067). In addition, several of the larger pits in

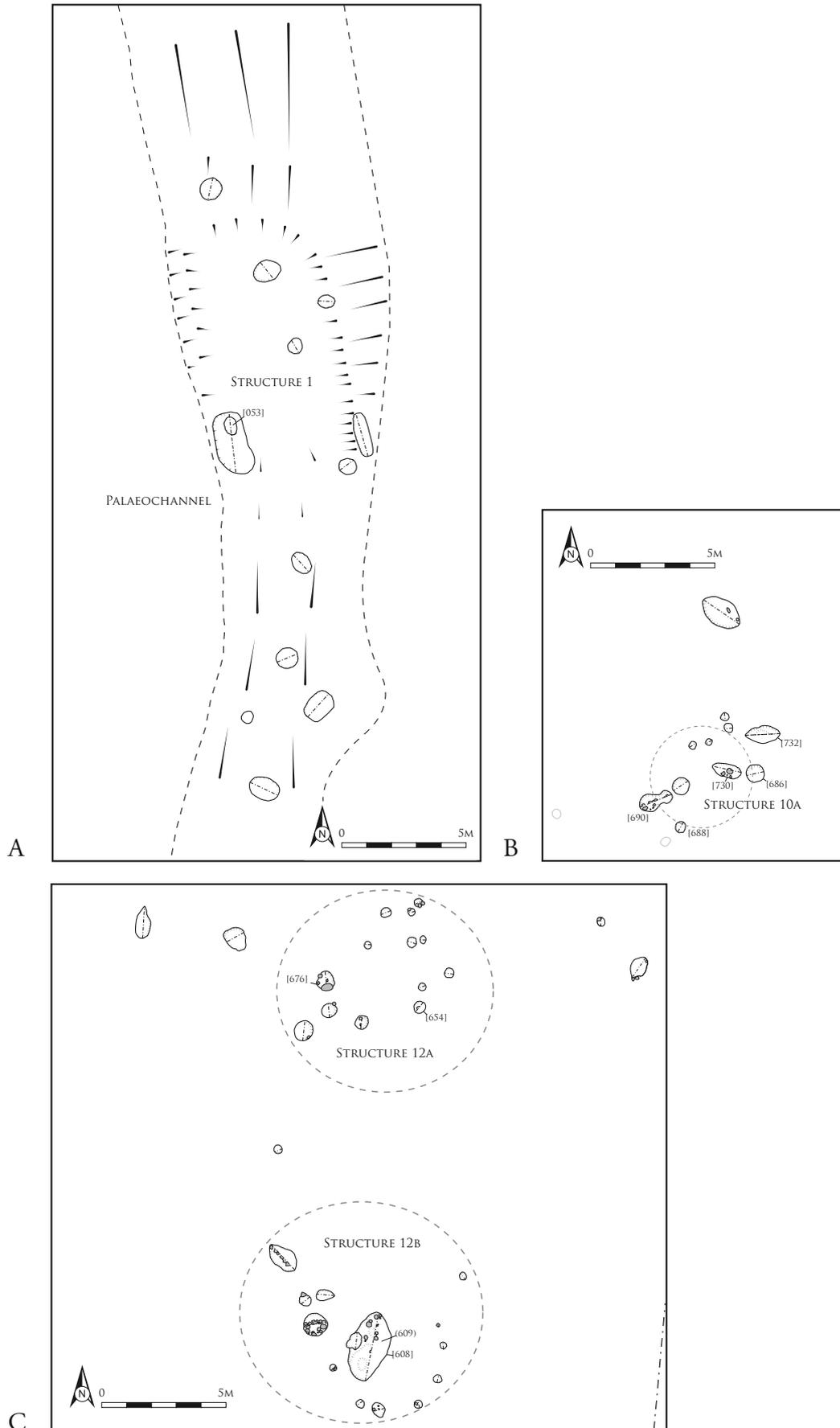
this group [686, 688, 690, 730 and 732] contained Neolithic ceramics, perhaps suggesting a domestic function. While the possibility remains that the group simply represents small groupings of adjacent features, the multiple Neolithic dates and ceramics suggest a structure is more likely. Pit [690] also produced an exceptionally large and homogeneous assemblage of charcoal which probably represents only a few large pieces of alder wood.

4.1.3 Structures 12a and 12b

The cluster of features labelled as Structures 12a and 12b were originally described as a single structure (Illus 4c). The proposed structure would



Illus 3 Features in the excavated areas



Illus 4 Neolithic features. A) Structure 1. B) Structure 10a. C) Structure 12 (12a and 12b)

have measured 10m north to south by 6m east to west, although the east side was not present, and is almost identical to the size of Structure C at Greenbogs (Noble et al 2012). Structure 12 comprised a series of post-holes varying between 0.30m and 0.50m in width but only up to 0.18m in depth, demonstrating considerable truncation. An internal and possibly contemporary feature comprised a spread of midden-type material [609] in a shallow depression [608] that contained several pieces of pot including Neolithic Impressed Ware. A small pit [676] contained a saddle-quern (SF 5), a side/endscraper (SF 6) and numerous sherds of Carinated Bowl pottery (SF 4). This varied assemblage of artefacts may illustrate some form of structured deposition, as the quern and scraper appeared relatively fresh. Five radiocarbon dates were obtained from the spread of features. Three of the dates obtained for the proposed outer wall of the building were contemporary (SUERC-47054; SUERC-47055; SUERC-47058), suggesting a mid-4th millennium BC date for the structure. Two other dates obtained were later. Charcoal recovered from the midden spread [609] was dated to the Late Bronze Age (SUERC-47056), while Pit [654] produced a Neolithic date (SUERC-47057). An alternative explanation is that the features belong to two separate structures (12a and 12b), the former being a small Neolithic building, while the latter is a Bronze Age building or pit grouping containing residual Neolithic material. Given that the surviving evidence is so sparse both interpretations must remain open to criticism.

#### 4.1.4 Isolated features

In addition, a single isolated pit was dated, producing a Neolithic date of 3621–3369 cal BC (SUERC-47068) and demonstrating the continued activity on the site during the Middle Neolithic.

## 4.2 Bronze Age activity

The dated Bronze Age activity on site was restricted to Structure 11, an isolated urned cremation burial and a probable isolated pit within the Neolithic Structure 12 (Illus 3 and 5). The undated Structure 10b is also included here; morphologically it could date from the Middle Bronze Age onwards (Cook

& Dunbar 2008). A cup-marked stone of probable Neolithic or Bronze Age date was also found in the souterrain and is described in this section.

### 4.2.1 Structure 11

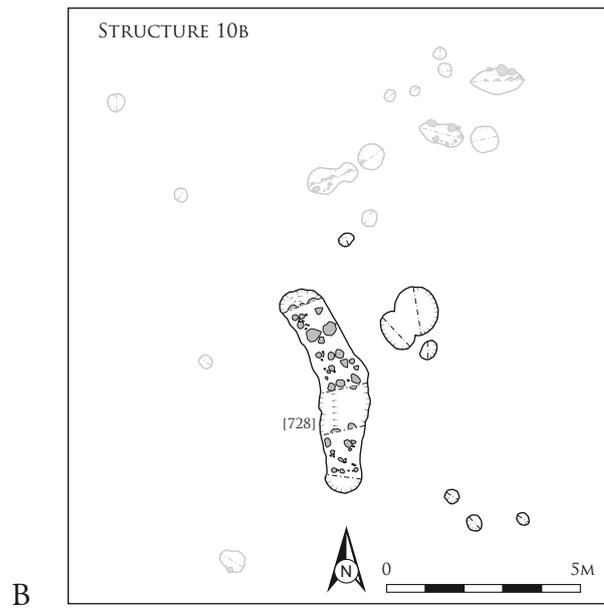
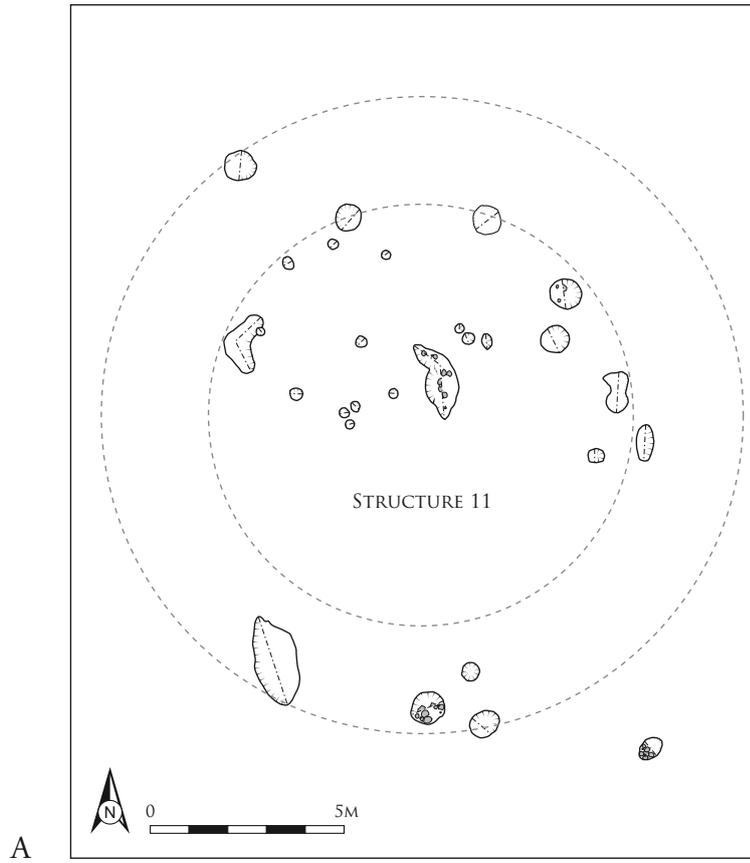
This large group of features comprises the fragmentary evidence of a double post-ring roundhouse (Illus 3 and 5a). The inner post-ring measured 5.8m, while the outer ring measured 8m. The remnants of a possible ring-ditch were identified within the two post-rings. The post-holes ranged from 0.20m to 0.28m in diameter and from 0.11m to 0.19m in depth. No artefactual material was recovered from the structure, but a radiocarbon date obtained from the fill of a post within the inner post-ring was dated to the Late Bronze Age (SUERC-47053). Similar Bronze Age structures in the area are rare, although further evidence of probable structures was identified during the evaluation of the higher ground (Cook 2010). These structures exist in an as yet undeveloped land parcel.

### 4.2.2 The bucket urn and cremation

An isolated pit [402], measuring 0.45m × 0.38m × 0.36m in depth, was identified and fully excavated during the evaluation phase of works (Illus 3 and 6). The feature contained a single undecorated, flat-rimmed, Late Bronze Age bucket or barrel-shaped urn (V1). It had been inverted over cremated human remains which represent the remains of a single adult individual. A single piece of cremated bone was radiocarbon dated, producing a date of 1200–920 cal BC (SUERC-21592).

### 4.2.3 Structure 10b

Structure 10b (Illus 5B) is undated but it truncated the Neolithic Structure 10a and was itself truncated by Early Historic Structure 10c (Illus 3). Analogy with similar structures at Kintore suggests that this is the truncated remains of a Bronze Age roundhouse (Cook & Dunbar 2008). It consisted primarily of a short length of ring-ditch and a few possibly associated pits and post-holes. The ring-ditch [728] was curvilinear in shape with a length of 6m and a maximum width of 1.30m. The feature had shallow terminals measuring 0.20m in depth and a deeper central portion measuring 0.50m. The ring-ditch



Illus 5 Bronze Age features. A) Structure 11. B) Structure 10b



**Illus 6** The bucket urn V1 under excavation

was filled with medium brown sandy silt which contained a deposit of large sub-rounded stones. A hammerstone (SF 8) and saddle-quern (SF 7) were recovered from the fill.

#### 4.2.4 The cup-marked stone

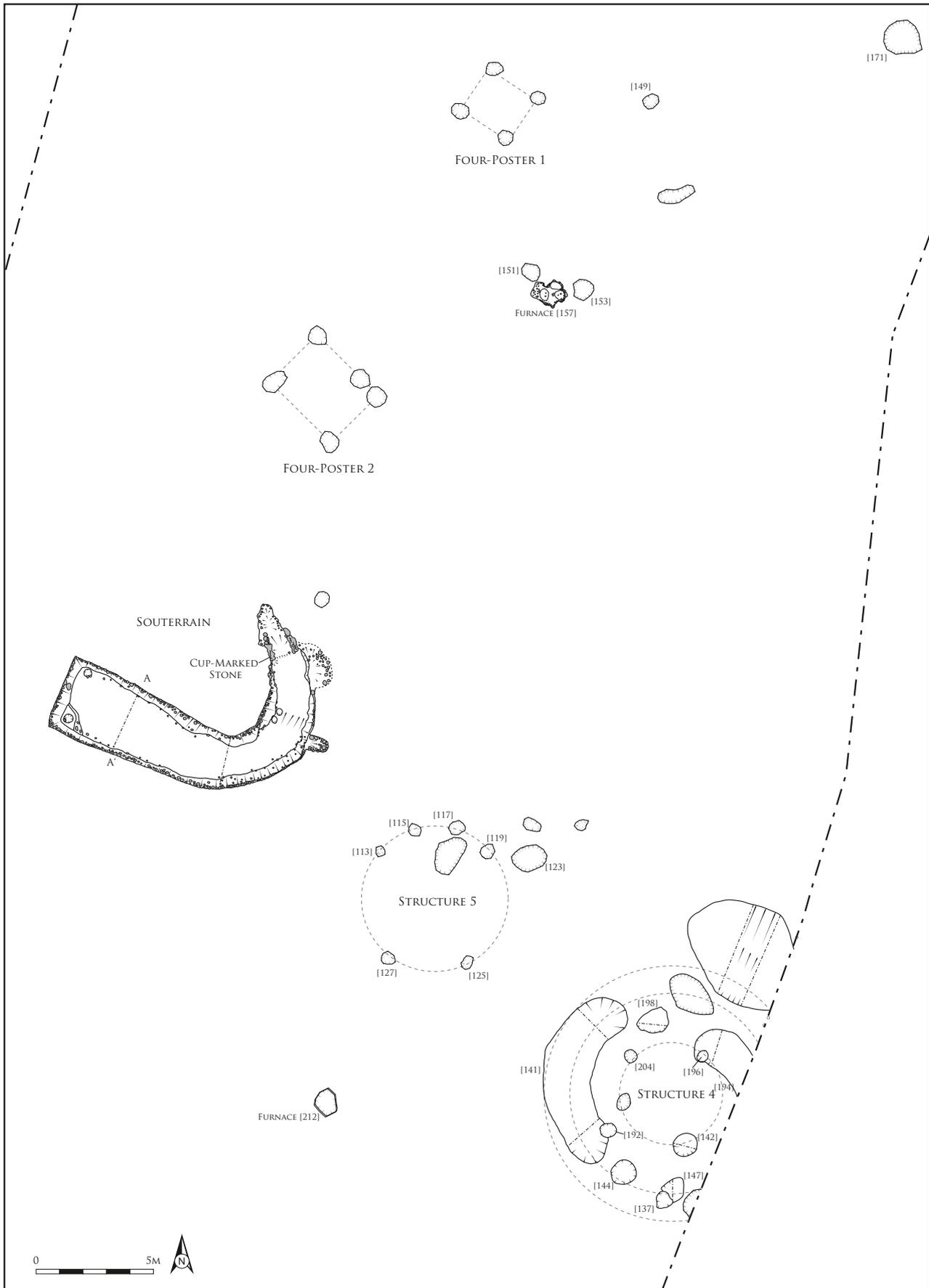
A single edge-set cup-marked stone (SF 109) was identified within the entrance of the souterrain (Illus 7). The red sandstone block was positioned with the three relatively ephemeral cup-marks facing out into the entrance. The stone has clearly been removed from an earlier monument.

Rock art is generally rare in Moray in comparison to Aberdeenshire for example, with only three sites previously known (Guestloan, Cabrach, NMRS NJ33SE6; Easter Backlands of Roseisle, Duffus, NMRS NJ16NW35 and Corskellie, Rothiemay, NMRS NJ54NE33). This thin distribution of rock art probably represents only a fraction of the original distribution, the majority being removed by land

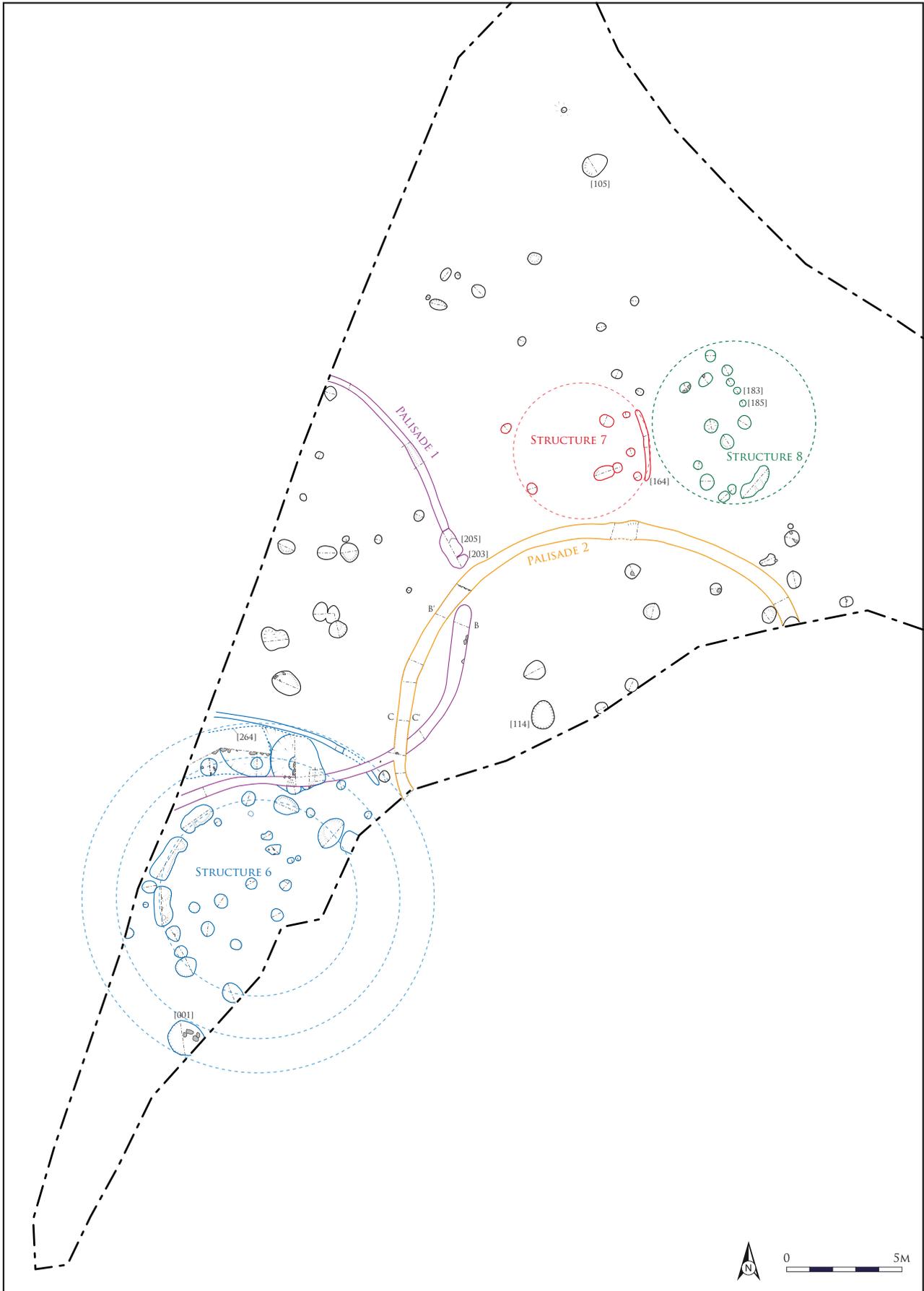
improvement including field clearance and dyke building (Gannon et al 2008, 73–4). Cup and ring marks were identified on all three sites, with multiple cups being identified at Easter Backlands of Roseisle (33 cups) and Corskellie (56 cups). In comparison, the example at Grantown Road represents a much simpler example of rock art.

#### 4.3 Iron Age activity

The majority of the activity on site was dated to the Iron Age, and formed a discrete settlement on the higher ground overlooking the Findhorn (Illus 7 and 8). The settlement comprised a huge substantial ring-ditch roundhouse, a smaller ring-ditch, two post-ring structures, a small ring groove, two palisade enclosures, two metalworking furnaces and a souterrain. Two smaller ring-ditches were identified to the immediate north-west of this main settlement. Evidence for both ferrous and non-ferrous metalworking was identified. Artefacts



Illus 7 Iron Age structures lying west of Grantown Road



Illus 8 Iron Age structures lying east of Grantown Road

were rare although a large assemblage of iron slag was recovered, as well as some coarse stone tools and some pottery. The radiocarbon dates demonstrate two main phases of successive activity straddling the first centuries BC/AD.

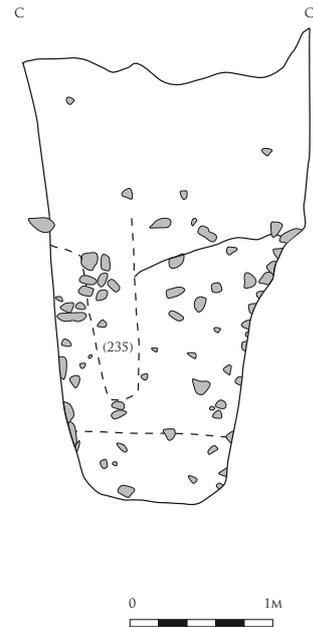
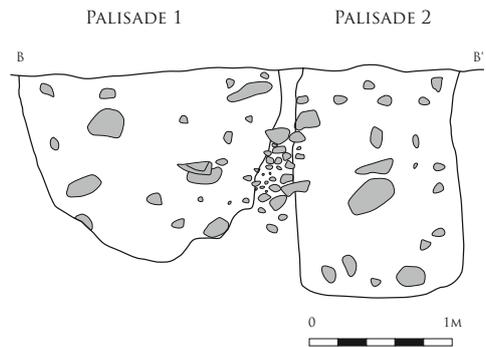
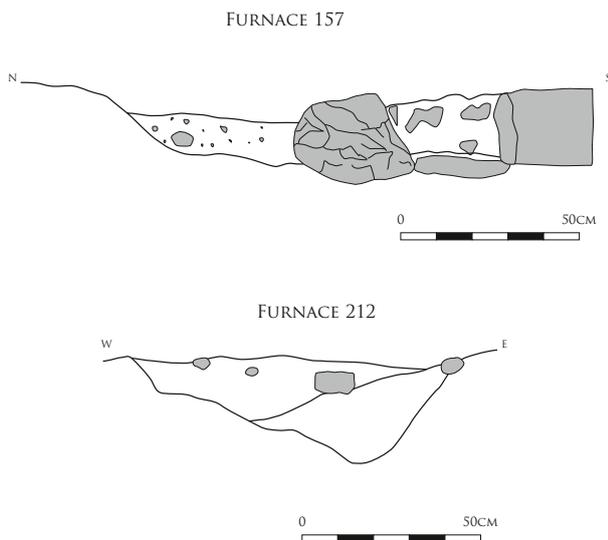
#### 4.3.1 Metalworking furnaces

A series of features excavated in association with metalworking debris were identified as furnaces (Illus 7, 9 and 10). Features [212] and [157] were definite furnaces, while three other Pits [151], [149] and [153], may have been the fragmentary remains of truncated examples.

The best preserved example, Furnace [157], comprised a cut measuring 0.80m × 0.90m and 0.26m in depth (Illus 9 and 10). It was lined in

its southern half by heat-affected bonded sand and stones, while its base was partly lined with a series of flat stones, creating a stable surface. The feature contained a large quantity of slag, metal waste and charcoal, while the actual structure incorporated a reused rotary quern. A radiocarbon date from charcoal from the lining of the furnace produced a date of 410–200 cal BC (SUERC-21591). This date represents the approximate date of the construction but it could be later, as it was obtained from a sample of oak.

Furnace [212] comprised a sub-circular cut with an approximate diameter of 1.06m × 0.27m deep (Illus 9). In comparison to Furnace [157] no in situ walling or lining was identified, although a single piece of vitrified ceramic was recovered from the



**Illus 9** Sections through Furnaces [157] and [212], and Palisades 1 and 2 (see Illus 8 for position of section lines)



**Illus 10** Furnace [157] after excavation

feature as well as some slag including runned slag and slag spheres.

#### 4.3.2 The souterrain

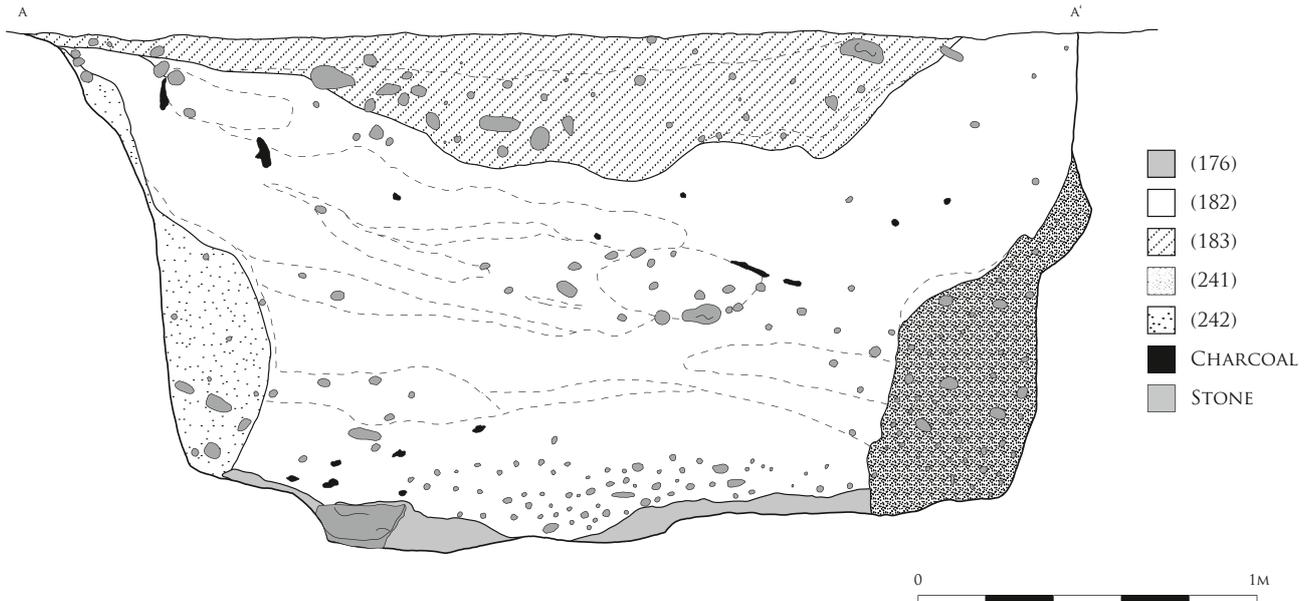
Identified as a cropmark in 1994 (NMRS: NJ05NW98) the souterrain comprised a single curvilinear cut, measuring 16m from the entrance to the terminal, between 1m and 3m in width and up to 1.5m in depth (Illus 7, 11 and 12). The edges of the cut were almost vertical, although slumping seems to have occurred. The feature was accessed through a small, steeply sloping entrance up to 0.72m in width, which sloped gradually down to the terminal end.

The entrance was lined on its eastern face by two granite slabs and on its west by a cup-marked red sandstone slab, SF 109 (Illus 7). The only internal features identified were four post-holes excavated into the base of the souterrain, two located at the

curve [174] and [189], and two at the terminal [184] and [187]. All four were very shallow; [174] was visible only on the north side, the rest eroded away. There was a possible step before the curve.

On excavation the edges of the souterrain cut survived relatively well, although evidence of slumping was identified along the outer curve [241]/[242] and possibly at the terminal. The primary deposit identified within the souterrain comprised a thin layer of redeposited compact gravel [176], up to 0.20m in depth, which sealed Post-holes [184] and [187]. The material was identified in the main chamber of the structure and appeared to abut the possible step.

A 0.2m-thick layer of charcoal-rich silt [173] was identified in patches across both the natural sand within the entrance and the earliest deposit [176] of the structure. The layer contained charcoal, burnt bone, metal slag and macroplants including barley (*Hordeum* sp.) and oat (*Avena* sp.). The main



**Illus 11** Section AA across the souterrain

fill of the souterrain comprised a deposit [182] of sands and gravels, in which tip lines were apparent. The homogeneous nature of the deposit and its deposition throughout the whole feature suggests it represents a single backfilling event, either as a result of the failure of the bank material, or deliberate backfilling. This fill was relatively rich in artefacts, with two whetstones, a stationary whetstone (found face down), a possible stone lamp and two large pieces of slag being recovered. There was also evidence of ferrous metalworking debris including vitrified ceramic (possibly lining for a hearth or furnace) from the lower fill [173]. The final and upper fill [183] of the souterrain comprised a 0.4m deposit of silt with frequent inclusions of stone, with evidence of manuring and, by implication, ploughing. No evidence was identified for the roof structure. The presence of a small amount of charred grain within the souterrain is likely to have been caused by residual factors such as people trailing floor debris between structures, or could have been deposited there by environmental factors such as wind if the entrance was left open. The volume of weed seeds was minimal and they were probably incorporated in the same fashion rather than as a result of having been deliberately stored there.

A general absence of suitable material meant that only two radiocarbon dates were obtained from

material recovered from the fill of the souterrain. A single piece of oak recovered from the lower deposit [173] produced a date of 50 BC–130 cal AD (SUERC-21581), while a single piece of alder charcoal recovered from the deposit within the entrance was dated to 0–220 cal AD (SUERC-21582).

As with the majority of excavated examples, the actual date of construction and subsequent occupation of the souterrain cannot be established and instead we are only able to date material from the post-abandonment phase and the last phase of occupation prior to it being backfilled. The two radiometric dates obtained from the souterrain represent the probable occupation debris and eroded material which formed across the base of the floor and the anthropogenic material dumped at the entrance. The calibrated radiocarbon dates demonstrate the structure had already been dismantled by the 1st or 2nd century AD, indicating its original occupation within this or the preceding centuries.

Souterrains have been identified across Scotland, but the majority of them occur in the east of the country, usually surviving as cropmarks. Analogy with souterrains in Moray is not possible, due to the lack of modern excavated and dated examples, but the Grantown Road structure is comparable with examples from further afield. The souterrains of the



**Illus 12** Photograph of section AA across the souterrain

southern Pictland group are generally thought to date somewhere between the late centuries BC and the early centuries AD (Dunwell & Ralston 2008, 116), as do those in Aberdeenshire (Halliday 2008, 88–92). To the north of Forres, the occupation of the timber souterrain at Cyderhall, Sutherland was dated to between 400 and 200 BC (Pollock 1992), indicating the possible earlier origins of the structures (Harding 2004, 198).

#### 4.3.3 Phase 1 – construction and occupation

Initially, a curvilinear cut was excavated through the free-draining soil to create a single feature up to 16m in length. The general absence of any stone paving, cobbling or walling precludes the suggestion that the souterrain was stone-lined, and instead an internal framework and overlying roof was supported by at least four wooden posts which were excavated or possibly hammered into the natural subsoil. The occurrence of an internal wooden structure is

suggested by the slumping 1m above the base of the feature and the steepness of the edges of the slumped material ([241]/[242]), which seems to have held the displaced material in place. Such an internal structure may have been tied together by either carpentry joints or rope lashing (Alexander 2005, 90). An alternative explanation for this feature is that it may represent a re-cut and therefore a secondary phase of occupation.

Both the excavation and subsequent post-excavation analyses failed to identify any evidence for the roof itself. Analogy with other examples suggests that the roof could have consisted of turf or stone lintels, but it is questionable whether such an apparently flimsy internal framework as that recorded at Grantown Road could have supported such a heavy load (Alexander 2005, 90). A more probable construction would have comprised a timber roof, as identified at Newmill (Watkins 1980), but again we have no direct evidence for this.

#### 4.3.4 Phase 2 – deconstruction

Once the souterrain had served its original purpose, the internal framework of the structure was dismantled. Thin-section analysis of the primary fill [176] of the souterrain suggests that the deposit represents the floor level of the structure, albeit a well-eroded material. That a thin layer of silt [173] with frequent inclusions of charcoal, charred macroplant including cereal grains and hazelnut shell and metal slag subsequently formed over the primary fill suggests that the structure was left open for a relatively long period of time. The majority of the environmental material recovered from [173] was identified in samples A–F, the area before the main turning point of the passage, suggesting that it may have been deposited by the wind. The material is consistent with domestic Iron Age assemblages recovered from both roundhouses and settlement sites associated with souterrains as at Shanzie (Hunter & Coleman 2002, 86).

A charcoal-rich deposit [108] was recovered from the entrance of the souterrain, between and abutting the orthostats and overlying the silt deposit [173]. The stratigraphic location of the deposit demonstrates it did not form when the souterrain was roofed, but it seems too large to have formed naturally and instead probably represents a deliberate act. As no evidence was identified for in situ burning it is assumed that the charcoal was laid there, perhaps as a closing deposit prior to the backfilling of the structure. Similarly, the souterrains at Newmill (Watkins 1980, 584) and Carlungie were deliberately sealed in an apparent ritual act (Armit 1999, 585). The charcoal is unlikely to represent the structural timbers from the souterrain as some time appears to have been left between the dismantling and the backfilling. It is perhaps more likely that the deposit resulted from the burning of one of the other structures on site, such as the roundhouse.

#### 4.3.5 Phase 3 – backfilling

The final activity comprises the infilling of the souterrain. The majority of the structure was filled by a mixture of rapidly accumulated material [182] (Ellis below). The material consisted of coarse sand and fine silt and derives from either imported material or more likely the proposed adjacent bank.

That the backfilling was deliberate is implied by the recovery of a series of artefacts from the infill. The recovery of two whetstones, a stationary whetstone (found face down), a possible stone lamp and two large pieces of slag within [182] throughout the structure suggest some care was taken to deposit them. Again, the material is consistent with domestic Iron Age assemblages recovered from settlement sites associated with souterrains as at Shanzie (Hunter & Coleman 2002, 86).

#### 4.3.6 Phase 4 – abandonment

The evidence for the deliberate backfilling of the souterrain appears irrefutable, but from the excavated evidence alone the reasons remain elusive. Historically, the deliberate dismantling of souterrains has been discussed in relation to a series of causes including structural problems such as drainage as at Ardestie (Wainwright 1963) and centralisation of society (Watkins 1984), but more recently has been linked to socio-political reasons relating to the Roman occupation of Scotland (Armit 1999, 583–4).

Structural problems seem an inadequate explanation for the dismantling of the Grantown Road souterrain. Analysis of timbers within roundhouses on wetland sites has demonstrated that structural timbers have to be replaced as little as every five years, although on land this may increase to every generation (Crone 2000, 160–1). Even considering the proposed drainage problems identified at the base of the souterrain, the maintenance of existing structures would be a common but manageable problem, and there should be no need to dismantle a structure completely. The replacement of a post within the ring-ditch demonstrates that structural maintenance took place across the site.

#### 4.3.7 The four-post structures

The two four-post structures identified during the excavation were positioned adjacent to each other (Illus 7).

Four-post 1 comprised four large post-holes positioned in an approximate square measuring 2.5m square. The post-holes were all uniform in size and shape, measuring approximately 0.5–0.7m in length by 0.5m in depth. Three shards of Neolithic

Carinated Bowl and various pieces of slag were recovered from Post-hole [161], demonstrating the obvious truncation that has affected the features. A sample of oak and alder from Post-hole [166] produced dates of 350 cal BC–00 cal AD (SUERC-21576) and 200 cal BC–20 cal AD (SUERC-21580) respectively. As the radiocarbon dates are statistically the same, and are found with slag, the Iron Age dates are preferred to the Neolithic date.

Four-post 2 comprised four large post-holes which formed in a rectangle 3.5m by 3m. An additional post-hole, [223], was identified to the north-west of Post-hole [219]; this may represent a replacement. The post-holes were similar in size and shape, measuring between 0.7–1.08m × 0.39–0.68m in plan and between 0.58 and 0.82m in depth. Slag was recovered from the structure. A sample of oak and alder recovered from Post-hole [226] produced dates of 200 cal BC–30 cal AD and 350 cal BC–00 cal AD respectively (SUERC-21585 and SUERC-21586).

#### 4.3.8 Structure 2

Structure 2 comprised a 12m-wide roundhouse with a ring-ditch and four internal post-holes (Illus 13). The ditch feature defined the southern and eastern perimeter of the roundhouse and was filled with inclusions comprising charcoal, animal bone, slag and hammerscale. Samples of alder and hazel charcoal recovered from the ditch produced radiocarbon dates of 210–40 cal BC (SUERC-5092) and 210–40 cal BC (SUERC-5093) respectively.

#### 4.3.9 Structure 3

Structure 3 was a roundhouse 11m in diameter consisting of a series of eight post-holes and an irregular fragment of a ring-ditch around its northern perimeter (Illus 13). The ditch was filled with a dark brown, gritty sandy silt which contained charcoal, burnt animal bone, slag and a rubbing-stone from a quern (SF 5, Cook 2008). Two rubbing-stones from saddle querns were recovered from the post-holes (SFs 1 and 2, Cook 2008). No floor levels or evidence for an entrance structure survived. Four individual charcoal samples retrieved from the roundhouse were dated. Two samples of birch and hazel from the ditch fill produced

radiocarbon dates of 210–40 cal BC (SUERC-5091 and SUERC-5090), while two samples of oak and hazel from a post-hole produced dates of 370–110 cal BC (SUERC-5102) and 240–40 cal BC (SUERC-5101) respectively.

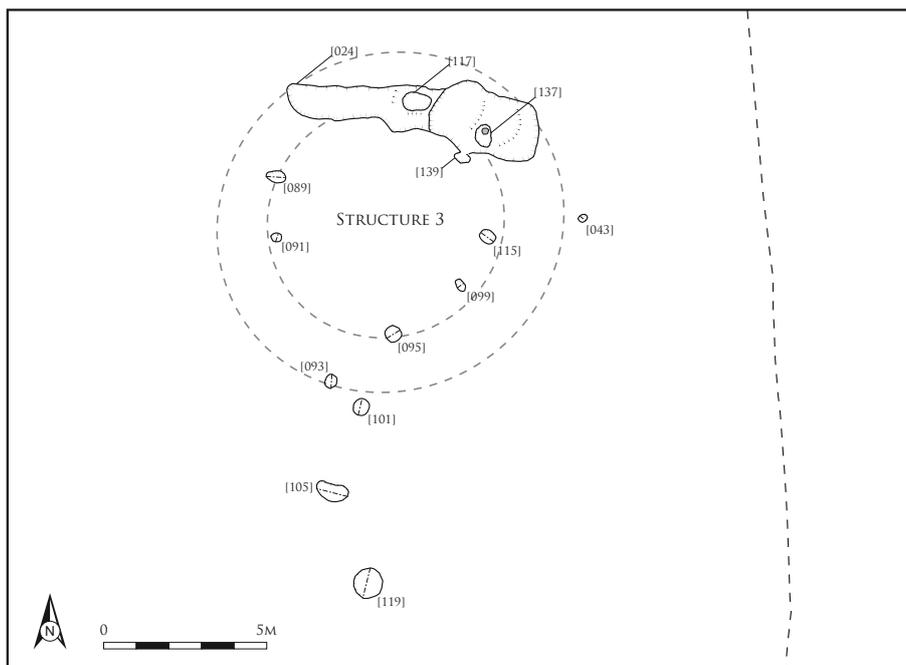
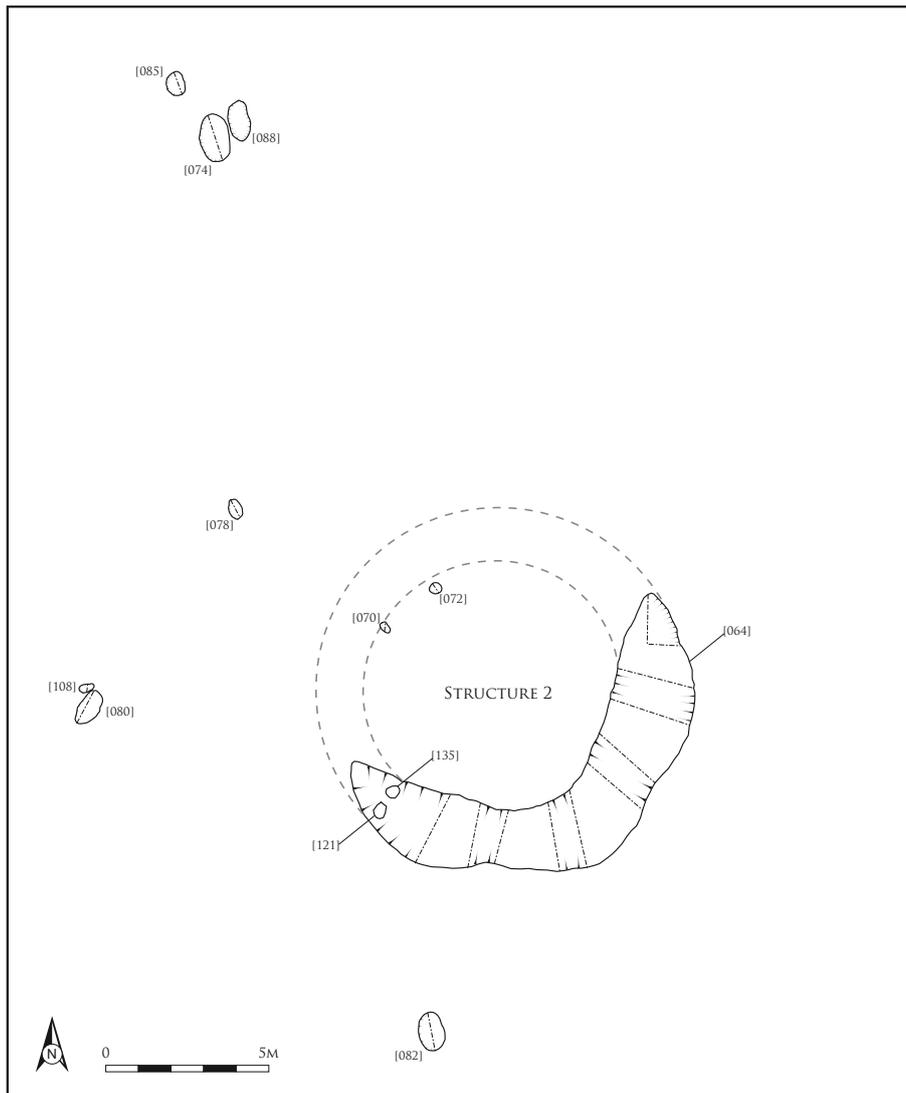
#### 4.3.10 Structure 4

Structure 4 was only partially revealed and excavated, much of the eastern fragment lying under the existing buffer zone between the site and the road (Illus 7). The excavated structure measured 9.5m in diameter, and consisted of a fragmentary curvilinear ditch comprised of four elements, [141], [194], [206] and [216], and a series of internal post-holes and/or pits.

The internal post-holes/pits vary in size, depth and form, which perhaps suggests some difference in function. Post-holes [142], [204], [202] and [196] may have formed part of a central post-ring, which would have supported the main load-bearing ring-beam. A 1.20m gap in the south-western part of the structure between features [137] and [144] may form the entrance to the structure. These post-holes measured between 0.75m and 1.06m respectively in diameter and would have held sizeable posts. [198] is similar in size but lies between the ring-ditch and the post-ring. However, analogy with other roundhouses suggests that entrances are more commonly placed in the south-east of the structure, so this example would be a rare occurrence. No other internal furniture, divisions or activity areas were observed. The truncation of Post-hole [137] by the later Post-hole [147] suggests that the roundhouse structure existed long enough for at least some repair work to be necessary and that more than a single phase of construction is present. A single radiometric date from a sample of oak recovered from Post-hole [143] produced a date of 50 cal BC–130 cal AD (SUERC-21590), making it contemporary with Structure 6. Several fragments of slag material were recovered from the various components of the roundhouse.

#### 4.3.11 Structure 5

Structure 5 comprised a series of features in close proximity to each other but lacking an immediately apparent coherent ground plan (Illus 7). Features



Illus 13 Structures 2 and 3

[113], [115], [117], [119], [125] and [127] appear to form a basic circular structure 6.5m in diameter. They are all broadly similar in size, measuring between 0.40m and 0.60m in diameter and between 0.10m and 0.25m in depth. Within the circle of the post-holes was a single large pit [131], which contained some charcoal.

Two radiometric dates were obtained from Pit [123], which lay adjacent to but outside the post-ring, but the relationship between the pit and the structure is unclear. Samples of oak charcoal and barley seeds were dated to 240–420 cal AD (SUERC-21583) and 00–220 cal AD (SUERC-21584) respectively.

#### 4.3.12 Structure 6

Structure 6 was only partially uncovered, the remainder lying under the road and site boundary (Illus 8). The excavated structure comprised a double post-ring roundhouse with four main parts; an outer ring-groove [237], a ring-ditch [264] and associated post-holes, a post-ring and a series of internal post-holes and pits. It would have been 18m in diameter, making it amongst the biggest roundhouses in Moray. The post-ring consisted of 13 post-holes and was 18m in diameter. In general these post-holes were massive, measuring between 0.54m and 1m in width, and up to 0.40m in depth. The ring-ditch is represented by a series of shallow depressions in the northern [264], and south-eastern [001] areas of the roundhouse. The features form the internal gully between the central post-ring and the external ring-groove, forming an area of erosion around the posts. The ditch [264] was full of occupational debris, including large amounts of charcoal. The external ring-groove [237] was only identified around the northern circuit of the structure where it was shallow and ephemeral. Within the central post-ring is a scatter of features, the small size of which suggests that they may form internal partitions or storage pits rather than load-bearing post-holes. No artefactual material was recovered to elucidate their function further. It is also possible that some of these post-holes represent a central post-ring (Illus 8) which was subsequently replaced and therefore indicating two phases of construction within the structure. The refurbishment could have happened while the building was still upstanding; this may

explain the slightly oblong shape of the post-holes, the posts being manoeuvred into place from the side. However, this is difficult to demonstrate on such little evidence. Three radiocarbon dates were obtained for the structure, all dating to the Middle to Late Iron Age (SUERC-47034; SUERC-47042; SUERC-47033). Both the Ring-ditch [264] and the Ring-groove [237] are cut by the later construction of Palisade 1.

#### 4.3.13 Structure 7

The fragmentary remains of a ring-groove structure comprised two main elements, an external ring-groove [164] and a series of pits or post-holes (Illus 8). The ring-groove would have defined a structure at least 6m in diameter, but possibly as large as upwards of 8m. Oak recovered from the general fill of a structural post-hole produced a radiocarbon date of 191–4 cal BC (SUERC-47045).

#### 4.3.14 Structure 8

A cluster of features to the immediate east of Structure 7 could represent a structure (Illus 8). There is no obvious ring of posts to define a perimeter but [249] might be a residual ring-ditch on the southern edge and there is a line of post-holes which might represent an internal partition. A piece of birch from a structural post-hole was radiocarbon-dated to the Late Iron Age (162 cal BC–48 cal AD, SUERC 47046).

#### 4.3.15 The palisades

Two intercutting palisades were identified at the eastern edge of the 2010 excavation (Illus 8 and 9). The stratigraphically earlier Palisade 1 had an entrance structure facing east which comprised a 1.5m gap with two post-holes, [203] and [205] on the northern terminal. Post-hole [205] was 0.70m wide by 0.54m deep and would have been capable of holding a relatively large structural post, while Post-hole [203] was much smaller, measuring 0.49m by 0.60m and up to 0.11m in depth. These post-holes may have supported the gate structure. The projected diameter of the enclosure would have been 21m. The palisade enclosed numerous cut features but their relationship to each other is unclear. A sample of alder and oak recovered from

the fill of the palisade produced dates of 39 cal BC–125 cal AD (SUERC-47036) and 41–116 cal AD (SUERC-47035) respectively.

Palisade 2 was 0.94m in width by 0.54m in depth and would have enclosed an area 23m in diameter. The fill of the palisade contained frequent inclusions of charcoal, pieces of slag, a fragment of copper alloy and a crucible fragment. A Cut [235] observed in one of the slots excavated across the palisade (Illus 9) represents either a re-cut or a large post-hole within the feature. Palisade 2 also enclosed numerous cut features but their relationship to each other is unclear. While datable ecofactual material was recovered from all of the features, artefactual material was only recovered from Pit [114]; these consisted of two iron objects (SF 15 and SF 16), a mould fragment (SF 17) and a piece of slag. A sample of alder and hazel recovered from the fill of the palisade produced dates of 60–219 cal AD (SUERC-47037) and 77–229 cal AD (SUERC-47038) respectively.

The palisade enclosures are broadly contemporary with the domestic settlement. Analogy with other Iron Age sites such as Seafeld West (Cressey & Anderson 2011, 36) and Kintore (Cook & Dunbar 2008) would suggest that such enclosures were used for stock management.

#### 4.4 The Early Historic period

The evidence for the Early Historic period, much like the rest of Morayshire and Aberdeenshire, is both minor and ephemeral. While seven radiocarbon dates indicate that two structures and two isolated pits belong to this period, there was nothing diagnostic in the form of building type or material culture to date them.

##### 4.4.1 Structure 9

This cluster consisted of the remains of a curvilinear feature [502] with two associated Post-holes [506 and 508] and truncated Pit [504] (Illus 14). [502] was 2.8m in length, 1.4m wide and only 0.28m deep, with sloping sides and a flat base. It was cut on its south-western edge by an oval, shallow pit [504], from which a large piece of slag was retrieved. Radiocarbon dates of 882–1013 AD (SUERC-47047) and 892–1014 AD (SUERC-47048) obtained from

the fill of [502] and 779–922 AD (SUERC-47052) from the Post [508] demonstrate an Early Historic date. Outwith the larger coastal forts, evidence for Early Historic structures is relatively rare in Morayshire, although some Iron Age examples have been excavated at Birnie and Clarkley Hill (Hunter forthcoming a; forthcoming b). Similar structures were excavated at Kintore, Aberdeenshire and were assigned an industrial function due to the material assemblage recovered (for example Feature 0027, Cook & Dunbar 2008, 149).

##### 4.4.2 Structure 10c

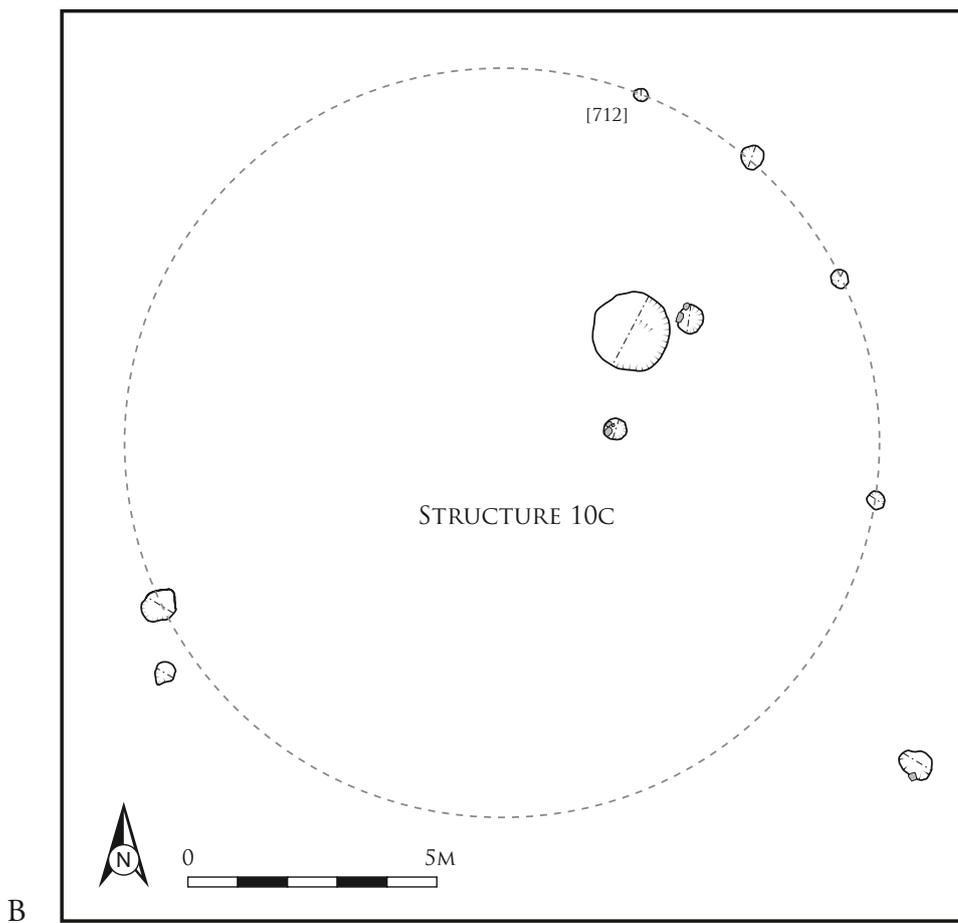
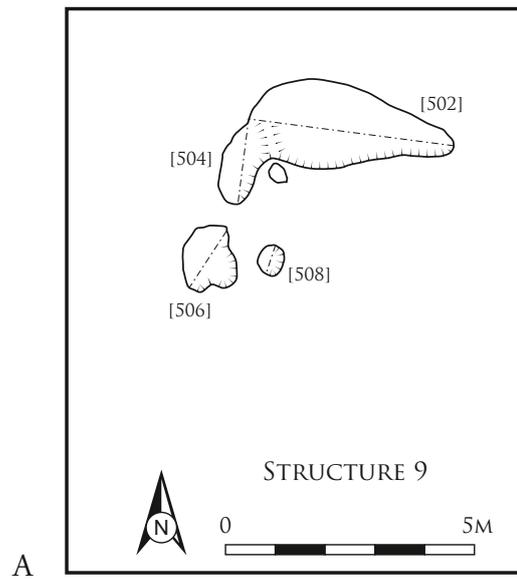
A partial arc of six truncated post-holes measuring 9.5m in diameter was located to the south-west of Structure 10b (Illus 14B). These ranged from 0.32m to 0.40m in diameter and from 0.14m to 0.22m in depth. Two post-holes and a large circular pit were located within the centre of the structure. A single radiocarbon sample from Post-hole [712] produced an Early Historic date (985–1152 AD; SUERC-47065) but whether this date can be applied to the proposed structure is moot. No other circular buildings of such a date are known in Scotland, the latest dated examples being the 7th-century AD roundhouses on Buiston crannog, Ayrshire (Crone 2000). If the radiocarbon date is accepted as dating the structure then this implies that circular buildings continued in use into the medieval period.

##### 4.4.3 Isolated Pit 171

An isolated pit was identified in the north-east corner of the site. The feature was sub-circular in plan, and measured 1.50m × 1.62m × 0.36m. The single fill of the pit was unexpectedly rich in environmental material; indeed, the bulk of the macroplant remains from Grantown Road were concentrated in this particular feature. Some 1877 charred remains were retrieved, of which 1302, or 69%, were identified as cereal grains. One of the barley seeds was radiocarbon dated to 680–900 cal AD (SUERC-21593).

##### 4.4.4 Isolated Pit 81

An isolated pit was located to the immediate west of Structure 2. The pit measured 1.02m × 0.85m and was 0.17m deep. It contained nothing but



Illus 14 Early Historic features. A) Structure 9. B) Structure 10c

some charcoal, fragments of which produced dates of 320–470 AD (GU-12602) and 320–470 AD (GU-12603).

## 5. RADIOCARBON DATING

---

As with all heavily plough-truncated sites, the general absence of sizeable deposits of taphonomically secure charcoal on the site meant that only a small proportion of the features could be dated. Wherever possible, material recovered from proposed structural features such as large post-holes was dated. However, it was generally not possible to determine the origin of the charcoal, i.e. whether it came from the post-pipe, the packing or from post-depositional fill. Wherever possible, two samples from each feature were dated, with a third sample selected should the first two be statistically different (Ashmore 1999). The results are presented in Table 1. Generally, the radiocarbon determinations were reliable, in that the pairs of samples from the same context produced comparable results. However, in one example the results raised questions about the taphonomic security of the samples. The radiocarbon dates obtained from Four-post 1 produced dates of 350 cal BC–00 cal AD (SUERC-21576) and 200 cal BC–20 cal AD (SUERC-21580) respectively but three sherds of Neolithic Carinated Bowl were also recovered from one of the post-holes. However, in the main the radiocarbon dates tend to support the generally accepted chronologies for the structure types they have come from so, rather than rehearse at length the arguments from more securely dated sites, it is assumed here that the radiocarbon dates do indeed reflect contemporary activity and are not residual.

## 6. THE ECOFACT ASSEMBLAGE

---

*Jackaline Robertson*

### 6.1 Cereals

While several features are relatively rich in ecofacts, the generally small size of the macroplant assemblage makes it difficult to establish whether agricultural practices changed over time from the Neolithic to the Early Historic period. This difficulty is further enhanced by the differential preservation affecting

particular areas of the site. During the Early Historic period the large concentration of grains in Pit [171] suggests that a cereal surplus may have been deliberately stored, whereas there is no evidence that food surpluses were kept on site during the Neolithic or Iron Age; this apparent difference is probably due to plough truncation.

Barley was typically the favoured cultivated crop throughout the use of the site, with oat playing a more marginal role. The only wheat found on the site was the single emmer caryopsis from the Neolithic Structure 5. Only hulled barley was identified at Grantown Road, but the supposed absence of naked barley from the assemblage does not necessarily increase the importance of the hulled variety, only that preservation of most of the barley caryopses was inadequate to allow for a fuller identification. Small amounts of oat occur in many of the Iron Age structures and in the Early Historic Pit [171].

A total of nine field peas were found in the Ring-ditch [141] of Iron Age Structure 4, Furnace [157], one of the Post-holes [189] in the souterrain, the Pit [171] and from an undated Post-hole [200]. Unlike cereal grain, field peas do not usually require any pre-treatment such as drying prior to long-term storage and this therefore limits the opportunity for peas to enter the archaeological record. The peas represent cooking waste which was thrown into the fire and later disposed of along with other food and domestic waste.

### 6.2 Wild resources

Hazelnut shells are among the most common finds from archaeological sites because of their easy availability and the ability of the shell to survive within the archaeological record even in the poorest environmental conditions (Bishop et al 2007). It is likely that the hazelnuts at Grantown Road had multiple uses, as a food source due to their nutritional value with the shells later reused as a kindling/fuel material (ibid).

### 6.3 Weed assemblage

The weed taxa collected from the western side of Grantown Road was diverse and included a range of species which typically favoured damp habitats, waste ground and agricultural land. The largest

quantity of weed taxa was recovered from Early Historic Pit [171]. The weed assemblage present in the eastern half of the site was noticeably smaller in both diversity and quantity, probably due to poorer preservation in this area.

Typical agricultural crop contaminants included wild radish, corn spurrey and goosefoot, which are easily left behind with the grain if it is not thoroughly cleaned during processing, although these weed species can also be eaten. Corn spurrey and goosefoot have been deliberately gathered for food especially in times of famine, but given the small numbers present it is more probable these were simply accidental inclusions within the cereal or growing on nearby land (Renfrew 1973). The remaining weed taxa were all indicative of damp waste ground habits, i.e. sedge, waterlily, knotweed, dock, nettle and violets. Sedge favours damp habitats and while it could have entered this site accidentally, it could also have been deliberately exploited for fuel, or for bedding and flooring.

#### 6.4 Charcoal

With a few exceptions the charcoal assemblage consists primarily of very small quantities of small fragments scattered across the site. The more secure concentrations of mixed species have typically been interpreted as fuel debris. The larger single species concentrations most likely represent the structural burning of oak and alder stakes or posts. Pit [690] in particular produced an exceptionally large and homogeneous assemblage of charcoal; it weighed 537g and consisted of 99% alder with a few fragments of birch. The fragments of alder were large, often greater in length than width. Some were as long as 40mm and 35mm wide, and it was possible to estimate minimum diameters of 40mm, 60mm and 70mm for some fragments. There was no evidence of small roundwood present and together with the freshly fractured nature of the fragments, this suggests that at most there were only a small number of medium-sized pieces of alder wood in the pit, and possibly only a single carbonised object.

The range of wood species available to the inhabitants of Grantown Road was varied and included trees which favour hedgerows and damp environments. The species exploited from the Neolithic to the Early Historic period do not appear

to change. This suggests that the local environment did not alter significantly.

#### 6.5 Bone

The bone assemblage was small and poorly preserved and appears to have suffered from extensive re-working and re-deposition. This limits its interpretive value and the most that can be ascertained is that this material was domestic cooking refuse which was allowed to accumulate on floor surfaces before being remixed into nearby pits and post-holes where unfavourable soil conditions have adversely affected preservation. Most of the bone fragments were completely calcified, indicating that they had been burnt at a consistently high temperature.

#### 6.6 Discussion

The environmental assemblage from Grantown Road is similar in most respects to those from other excavated prehistoric sites in north-east Scotland. The macroplant assemblages from the prehistoric sites at Beechwood (Engl & McLaren forthcoming) and Seafield (Cressey & Anderson 2011) in Inverness, and Kintore in Aberdeenshire (Holden et al 2008) are similar in terms of the food and weed taxa recovered. These sites have demonstrated the economic importance of barley as the major staple crop throughout the prehistoric and Early Historic periods in north-east Scotland. The dominance of barley is due to its ability to grow successfully in the environmental conditions typically found in coastal regions in northern Scotland, which do not favour the large-scale cultivation of other cereal species such as wheat. This explains why bread/club and emmer wheat were present in such low concentrations at these four sites and were unlikely ever to have been a significant crop.

The exploitation of wood species at all four sites was also similar, demonstrating that the local ecosystems did not vary extensively. Nor was there any evidence that cultural attitudes varied from site to site in what type of wood species were used and how.

Small bone assemblages were also recovered from Beechwood, Seafield and Kintore, and like Grantown Road these were dominated by unidentifiable burnt bone which was highly fragmented. The identifiable

fragments which were recovered were usually tooth enamel, which tends to survive in more inhospitable acidic soil conditions compared to other more fragile elements.

## 7. THE POTTERY

*Dawn McLaren*

### 7.1 Overview

A small assemblage of handmade ceramic vessel sherds was recovered across the excavated area, comprising 151 sherds in total, weighing 2.7kg. Examination of the sherds indicates that a minimum of 39 vessels are represented, dominated by diagnostic Neolithic wares. A range of vessel forms survive which suggest a Neolithic date for the majority of the assemblage. The assemblage consists primarily of sherds deriving from carinated vessels and round-bodied bowls but a small number of decorated Impressed Ware and Grooved Ware pots are also present.

In general, the early prehistoric pots are very fragmented, most represented by a small number of sherds or a single fragment, making confident identification of the form of the vessels problematic in some cases. Many of the sherds are unabraded, suggesting deposition of selected freshly broken fragments, but more weathered pieces are also present. In addition to the fragmentary Neolithic and early prehistoric vessels is a substantially complete undecorated Late Bronze Age bucket/barrel urn which was found inverted over a collection of cremated human bone and a single fragment of later prehistoric, probably Iron Age pot.

There are also two residual sherds from wheel-thrown medieval vessels in the assemblage.

The pottery was recorded by context with sherds being attributed to 'vessel' and then recorded together. Fabrics were recorded by eye and the type of clay and amount of any rock temper is also recorded. A full spreadsheet catalogue and details of the methodology can be found in the site archive.

### 7.2 Neolithic round-based bowls

#### 7.2.1 Summary of the assemblage

Sherds representing 21 round-bodied carinated and uncarinated bowls were recovered from six contexts across the excavated area (Post-hole [161],

Feature [12303], Pit [676], Pit [686], Pit [688] and Pit [789]). In most cases less than 5% of the pot is present, with a predominance of surviving rim sherds and body sherds from the upper portion of the pots.

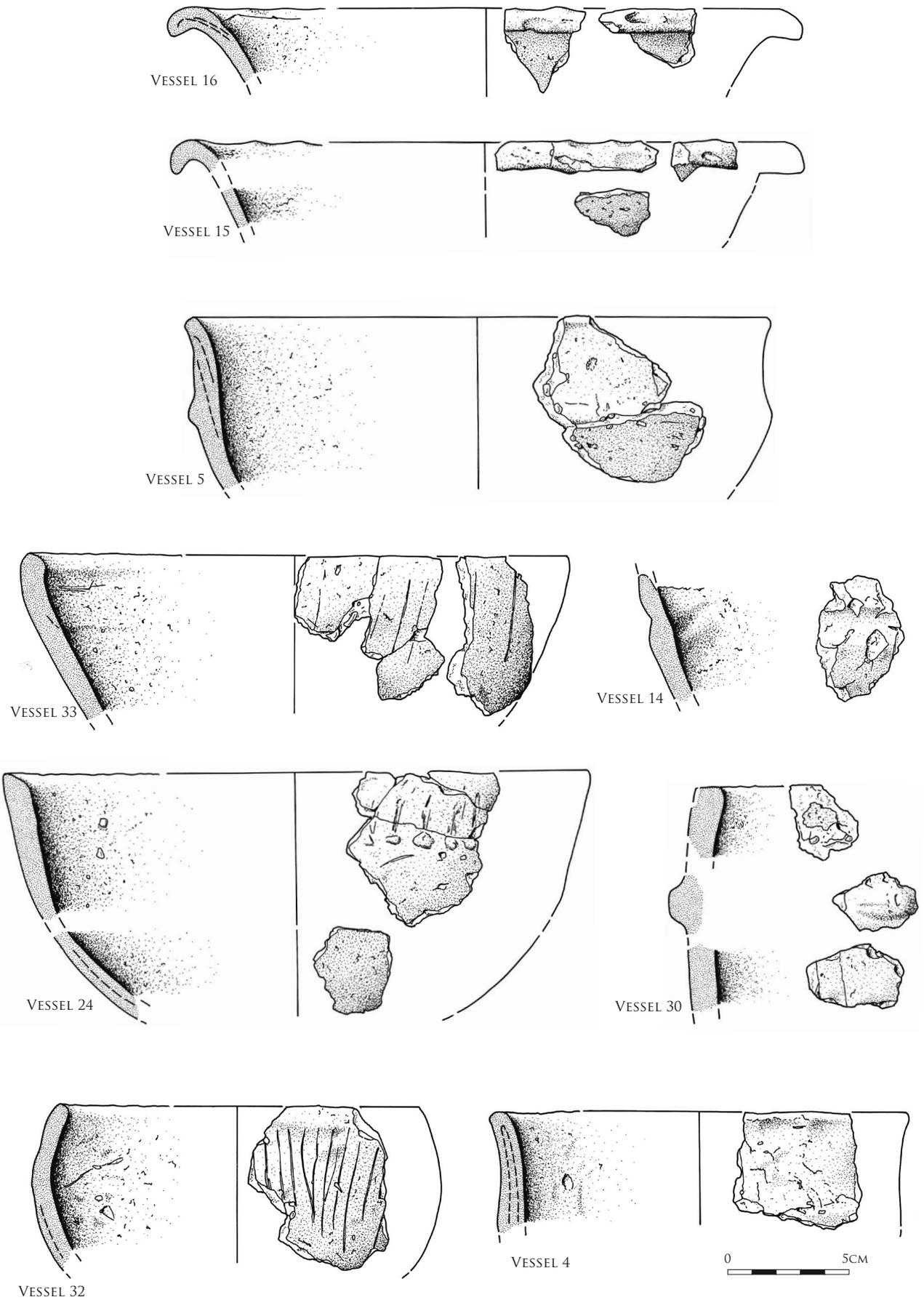
Some of the ceramic material discussed here was recovered from a feature, Pit [12303] uncovered but not fully excavated during the evaluation phase and therefore not recorded on the site plans in this report. However, the assemblages are discussed here for completeness' sake.

#### *Post-hole [161]*

Three sherds from two Carinated Bowls are present. These comprise a single body sherd from Carinated Bowl (V2) and the rim and body sherd from a second vessel (V39). This second vessel appears to be an open-mouthed wide bowl with a distinct plain everted almost rolled rim (approx. 300mm diameter) below which is a fairly deep carination. Horizontal finger scrapes are present directly below the rim on the exterior surface and possible finger-fluting is noted on the interior. The fabric is fine sandy clay with fairly soft surfaces and very infrequent stone inclusions (<10%) and appears to have been slipped prior to firing. All of the sherds from this context are lightly abraded, with no obvious surface sooting or residue.

#### *Feature [12303]*

Sherds comprising fragments of four individual pots were recovered from the fill of this feature. V4 is from a small steep-sided open-mouthed Carinated Bowl (Illus 15) represented by a slightly everted rim sherd with an external rim diameter of around 170mm. Little of the lower portion of the pot survives. The surfaces appear to have been hand-wiped to smooth when wet but are undecorated. V5 (Illus 15) consists of nine sherds, including one rim sherd, of a thick Carinated Bowl with everted plain rim. The body sherds appear to derive from the concave upper body which flares out towards the wide open mouth, the gently rounded middle below the carination and a single sherd from near the rounded base. V6 and V7 are both represented by single body sherds. These sherds are very similar in size and profile to the other vessels from this pit but V6 is distinctive due to the smoothed and almost burnished interior surface and the abraded condition of the sherd from V7.



Illus 15 Neolithic round-based pottery

*Pit [676]*

Sherds from eight Carinated Bowls and round-bodied uncarinated bowls were recovered from the fill of this pit. None of the vessels is represented by particularly large sherds and less than 5% of the vessel is present in most instances. V15 and V16 (Illus 15) are from fine Carinated Bowls with distinct rolled over, everted rims indicative of wide open-mouthed rounded bowls with a fairly narrow carination below the rim. In both instances the external surfaces appear to have been slipped and smoothed prior to firing. V14 (Illus 15) appears to derive from a similar Carinated Bowl with fairly steep carination but in this instance no rim fragments survive. The surfaces of the surviving sherds of this vessel are damaged and many spalls have become detached, possibly as the result of secondary heat damage. V17 comprises a body sherd from approximately mid-height on a round-bodied, fine-walled Carinated Bowl. The fabric is fine clay with 10% angular stone inclusions which has fired hard but is incompletely reduced. V18, V19, V20 and V21 also appear to derive from uncarinated and carinated vessels but are represented by single sherds, making confirmation of their form and size problematic to confirm with any certainty. All of the vessels from this pit appear to have had a fine slip applied to the external surface prior to firing.

*Pit [686]*

A small number of sherds from four separate vessels were recovered from the fill of this pit. These include eleven sherds of a decorated round-based bowl (V24) which match those found in Pit [688]. Also present was a rim sherd from an Impressed Ware vessel (V28), a decorated thick-walled vessel (V29) and a lugged pot (V30) (Illus 15). Charcoal associated with this context provided a date of 3517–3119 cal BC (SUERC-47062).

*Pit [688]*

Sherds representing five Carinated and round-bodied bowls were recovered from the fill of this pit (V23-V27, V38). The most well-represented vessel, in terms of the number of sherds surviving, is V24 (Illus 15). Approximately 10% of this round-based bowl survives, comprising three body sherds and an internally bevelled rim sherd; further sherds of this vessel come from Pit [686]. No sherds are

present from the lower body or base of the vessel. Below the rim on the external surface the pot is decorated with closely and regularly spaced vertical fingernail scrapes that were produced when the clay was still wet; the fingernail scraping downwards, removing the upper skin of the body allowing an oval or slightly rounded nodule of clay to collect at the terminal of each scraped line. Below this is a single curvilinear incised line; it is unclear whether this is further decoration or an accidental scrape. External surface may have been slipped prior to firing. V23 consists of one body sherd and crumbs from a round-based bowl with slight hints of a carination present. This pot appears to have been produced by joining strips of clay together rather than rolls or coils and the clear junctions suggest that each applied strip was left to dry slightly before the next was added. This vessel's surface has been smoothed when wet and is sooted from use. V25, V26 and V27 are represented by single body sherds, the profile of the sherds suggesting that they derive from gently rounded bowls. In each case the external surfaces appear to have been hand-smoothed when wet and the fractured edges are fairly fresh. In addition to the vessels already described from this pit were a small number of sherds from a thumb pot (V22) and an undiagnostic handmade pot (V38). Charcoal associated with this context provided a date of 3360–3103 cal BC (SUERC-47063).

*Pit [789]*

Sherds from two decorated thick-walled round-based bowls (V31 and V32) were recovered from the fill of this pit. V32 (Illus 15) is represented by a single sherd preserving a plain inverted rim with shallow external and internal bevel, and upper portion of a small, round-bottomed bowl. Slip appears to have been applied to the external surface prior to the rounded upper portion of the bowl being decorated by an irregular series of closely spaced, sometimes overlapping, fine lines which have been made by dragging the edge of a fingernail or bone point from the neck of the vessel down towards the base. V33 (Illus 15) is represented by a portion of the rim and upper body of a tall vessel with angled body and a round, slightly inverted rim with shallow external bevel. The upper body of the vessel has been smoothed, possibly slipped, prior to firing and is decorated by an irregular row of faint, shallow, dragged vertical lines.

### 7.2.2 Discussion

The pottery discussed here can be categorised as part of the Neolithic round-based bowl pottery tradition comprising both carinated and uncarinated bowls. Sheridan's work on the well-dated assemblage from Biggar Common (1997, 218–20) has allowed the refinement of potential groupings amongst this form of pottery. 'Traditional Carinated Bowl' pottery is the term used to refer to the initial phase of Early Neolithic plainware which has been found in much of northern and eastern Britain and Ireland. From this 'traditional' group, local and regional variations rapidly evolved and Sheridan proposes the use of the term 'modified Carinated Bowl pottery' to differentiate between the two assemblages (*ibid.*, 218–20). An example of such a regional style is epitomised by Henshall's 'North-Eastern style' pottery, a group which the Grantown Road assemblage fits comfortably within (Henshall 1984, 61).

The small assemblage recovered from Grantown Road is categorised by open-mouthed, carinated and uncarinated bowls and some neutral profiled vessels where the rim and the carination diameter are roughly the same (Sheridan 2011a, 15). Both the form of the round-based bowl assemblage from Grantown Road and the dates returned from associated charred materials indicate that the assemblage, in general, falls into Sheridan's 'Modified' rather than 'Traditional' Carinated Bowl grouping, the latter of which has a high incidence of remarkably thin-walled vessels of very fine fabric, a facet which is almost entirely lacking from the Grantown Road ceramic assemblage (Sheridan 2007, 461). In general, the vessels from this site range in thickness between 6 and 13mm and have been made with fairly coarse fabrics, putting the group as a whole at odds with Sheridan's definition of 'Traditional' Carinated Bowl vessels. Only vessels V15 and V16 stand out from the rest of the assemblage due to their fine, hard fabric, the smoothed and almost burnished external surfaces and the tightly rolled everted rims, which are similar in profile to open-mouthed Carinated Bowls from Easterton of Roseisle (Henshall 1983).

Fluting, where a fingertip is run vertically down the body of the pot when still wet, is a common facet of Carinated Bowl assemblages in north-east

Scotland, particularly those of Sheridan's 'Modified Carinated Bowl' group (2007, 460–1), and is repeatedly observed in assemblages from this region such as that from Crathes, Aberdeenshire (Sheridan 2009, 87). This surface finish is notably absent from the Grantown Road assemblage, with the exception of possible internal fluting noted on the rim of V39, as it is from another 'Modified Carinated Bowl' assemblage at Dubton Farm, Angus (MacSween 2002, 41). Yet at least two pots (V32 and V33) have crude incised vertical fingernail decoration on the exterior surfaces which may be an attempt to mimic fluting, similar to that noted on a small number of vessels from Easterton of Roseisle and Boghead, Moray and elsewhere (Henshall 1983; 1984, 66, figure 11:29; 1993). Lugs are also absent from this group of pottery but it should be noted that friable sherds from a fairly coarse lugged vessel (V30) were recovered from Pit [686] alongside sherds of a round-bodied bowl and the rim of an Impressed Ware vessel. The body of this vessel is far thicker and coarser than the rest of the round-based bowl/Carinated Bowl assemblage described here, hence its separation. Sooting on the exterior of some of the vessel sherds suggests that the bowls had been used for cooking, although others may have been used for serving as well as storage (Sheridan 2007, 458).

Where evidence of manufacturing techniques is recognised it is possible to determine that the pots were made using successive rings of clay to build up the body. This is evident from where sherds have broken along ring joint plains. The fabric and texture of the vessels varies from hard-fired, fine clay pots such as V15 and V16 to the coarser fabrics used in the production of vessels such as V14 and V32 where crushed angular rock inclusions make up around 30% of the fabric. The rock types present, however, are remarkably consistent, comprising mainly white quartzite inclusions with occasional shiny muscovite or feldspar grains. The combination of white and black minerals as filler within other early Neolithic pottery groups has been noted elsewhere, such as at Torrs Warren, Dumfriesshire (Sheridan 2011b, 43) and at Crathes, Aberdeenshire (Sheridan 2009, 86).

The dating of Carinated Bowl pottery and associated vessel types has been outlined at length elsewhere and does not require detailed rehearsal here (Sheridan 2007, 451–8; figure 6), suffice it to

say that this style of pot is likely to have been in use in Scotland between *c* 3950/3900 and 3800 cal BC and appears to have continued in use until at least *c* 3600 cal BC, as indicated by the dates obtained from cremated bone associated with a pot from Cairns of Atherb, Aberdeenshire (Sheridan 2003). The assemblage from Kintore, Aberdeenshire stretches the currency of use of this form of vessel ever further, with an associated date range of 3970–2880 cal BC (Cook & Dunbar 2008, 167–70). The associated dates from Grantown Road, which fall between 3360 and 3103 cal BC (SUERC-47063) confirm the chronological sequence suggested at Kintore, which indicate that Neolithic round-based bowls continued in use in the north-east of Scotland through the period of use of Impressed Ware (MacSween 2008, 181). This is reinforced by the recovery of both Carinated Bowl pottery and Impressed Ware pottery within pits at Dubton Farm, Angus (MacSween 2002, 39).

### 7.2.3 Context

The majority of the Neolithic round-bodied bowls and Carinated Bowls from Grantown Road came from a series of pits and Structures 12 and 10a. The pits each had a single homogeneous fill, suggesting they were backfilled as a single event. In each of the six pits, sherds from more than one vessel were present, ranging from a minimum of two pots to sherds representing eight vessels, but in most cases sherds from the same vessel usually derive from one pit. In many instances the pots were represented by a single sherd only, with few being represented by more than 5% or even 10% of the original vessel. Because of the small size and homogeneity of the sherds it is difficult to identify instances where parts of the same vessel have been deposited in more than one pit, but a few tentative identifications have been made, such as sherds from V24 being recovered from Pits [686] and [688]. Where this practice has been recognised the sherds in question come from adjacent or nearby features, like that noted at Warren Field, Crathes, Aberdeenshire (Sheridan 2009, 89).

The contents of these pits, which comprise a small quantity of broken pot sherds and charred organic waste, could lead to their interpretation as simple rubbish pits containing the detritus of everyday

cooking. The material could, however, also represent the deliberate selection of a few sherds from a number of vessels, perhaps used in a celebration or ritual, and this certainly seems to be the case with regard to the deposition of selected Impressed Ware sherds (see below). The general condition of the sherds is unabraded or only lightly abraded, which implies that they were buried in a freshly broken state, before any significant weathering of the surfaces had taken place.

The role of pottery and other artefactual material within Neolithic pit groups has recently been considered in length (Anderson-Whymark & Thomas 2012). Despite the mundane character of the material incorporated within many of the pit fills, the recurring combination of different material types deposited together or the apparent selection choices made with regard to what was incorporated is a familiar picture across much of Britain. Looking more specifically to Scotland, a similar picture is seen at Maybole, Ayrshire (Beckett & MacGregor 2012) although the recurring combination of particular materials, such as pitchstone, ceramics and polished stone axe fragments noted at Girvan and Maybole, are not seen here at Grantown Road, with the exception of a group of Carinated Bowl fragments recovered from Pit [676] which were associated with a red flint end-scraper (SF 6).

## 7.3 Impressed ware

### 7.3.1 Summary of the assemblage

Five vessels from Grantown Road (V28, V34–7) can be classed as Neolithic Impressed Wares. These pots are characterised by their highly decorated rims and exterior surfaces which are embellished with various impressions, including those from short twisted cord ‘maggots’, combs, bone points, fingernails, *inter alia* (MacSween 2007, 368). Each of those from Grantown Road are represented by very few sherds and in some instances (V34–6) by single sherds only; in most cases these represent less than 5% of the pot. The predominance of rim sherds amongst this group of vessels is notable and may suggest deliberate selection of sherds for deposition.

The Impressed Ware sherds derive from only three features: Pits [686] and [690] as well as the midden-like fill of a shallow depression [608] within Structure 12.

*Pit [686]*

Three sherds, consisting of two body sherds and a rim sherd of a single Impressed Ware vessel (V28) were recovered from the Fill [687]. The rim is flattened, slightly everted and the upper body below the rim is decorated by oblique rows of stabbed decoration, probably produced with the tip of a bone or wooden point (Illus 16). Below this decorated band the upper portion of the vessel is undecorated. Also present within the pit were sherds of three other early prehistoric vessels (V24, V29, V30).

*Pit [690]*

Single rim sherds from three separate Impressed Ware vessels (V34, V35, V36) came from the fill of this Pit [691]. All are decorated on or below the rim (Illus 16). The style of decoration present is quite similar in all three vessels, particularly V35 and V36, consisting of closely spaced oblique rows of stabbed decoration. The flat rim of V35 has a slight internal bevel and lipped exterior and has been decorated by a closely-spaced series of oblique impressed lines, produced either with a fine bone point or a comb. V36 is very similar in form and decoration, having a flat rim with internal bevel and lipped exterior which is decorated with oblique rows of lines produced by impressing a fine-tipped bone point. V34 is also decorated with stabbed decoration but unlike V35 and V36, this pot has a plain flat rim and slightly stepped external profile with decoration confined to a horizontal zone immediately below the rim on the external surface.

*Feature [608]*

Eight sherds, three joining, consisting of two rim and two upper sherds of a possible wide-mouthed, round-bodied Impressed Ware bowl (V37) with a thick externally bevelled rim (Illus 16) were recovered from the midden-like fill of this feature [609]. The rim is decorated with a closely-spaced, regular row of 15 diagonal jabbed-and-dashed lines, probably made with a bone or wood point. Below the decorated rim, the upper body of the vessel contracts gently, forming a rounded neck which gradually expands into a rounded body; only fragments of the upper portion of the pot, representing less than 15% of the circumference, survives. Below the neck are at least four irregularly-spaced vertical dragged lines probably made with fingernails during shaping. It is

unclear if these lines are simply a product of shaping or whether they were intended as decoration. Before decoration, the external surface of the pot was wiped smooth when wet.

## 7.3.2 Discussion

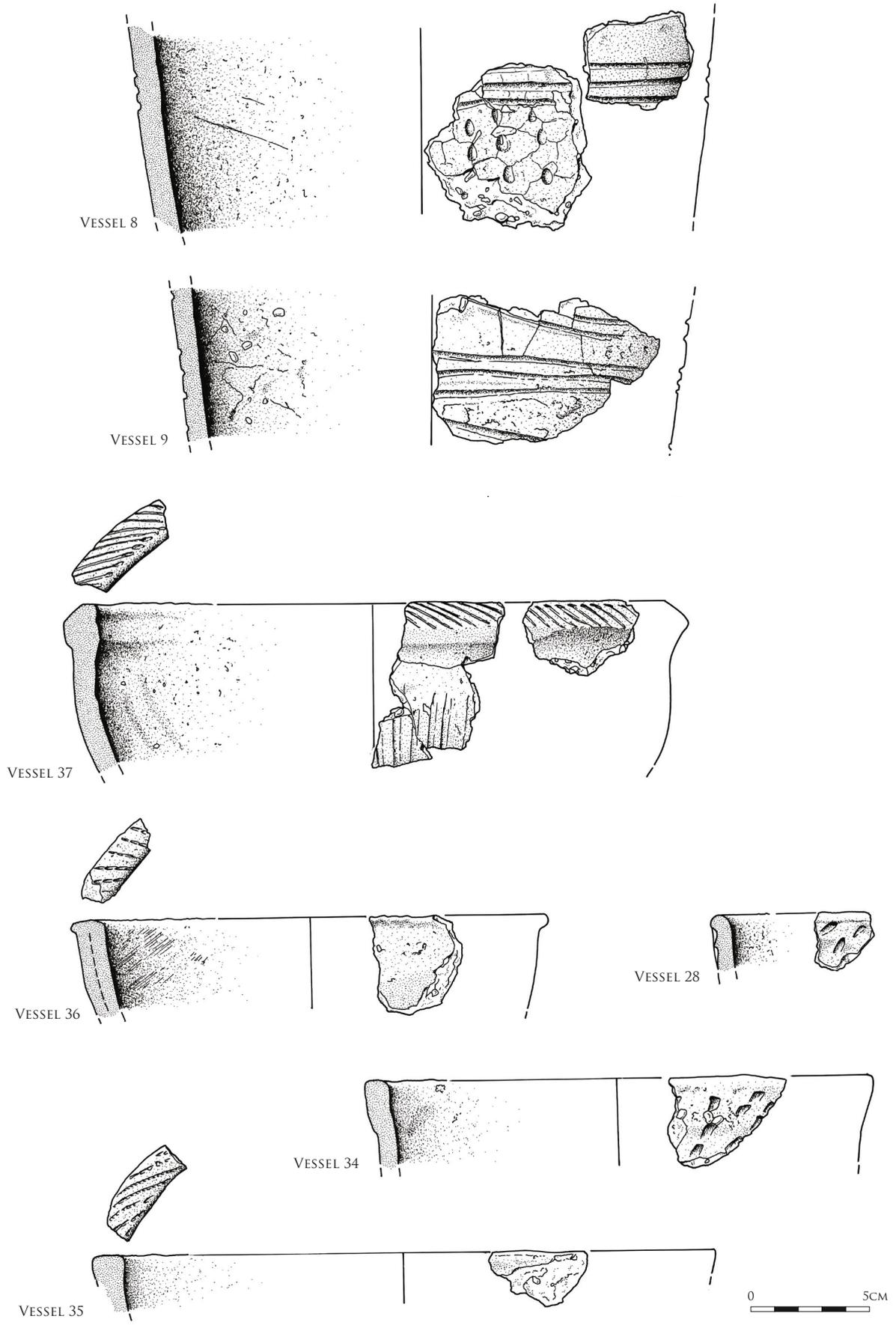
Late Neolithic Impressed Ware pottery, also known as 'Scottish Impressed Wares' (McInnes 1969) and 'Later Neolithic decorated wares' (Kinnes 1985) is characterised by thick-rimmed, heavy, often biconical vessels which display a range of impressed and stab-and-drag decoration (McInnes 1969, 25; Cowie 1993, 18). The context of such pottery types in Scotland as well as the existence of regional groupings has been outlined in detail by MacSween (2001, 79; 2007, 368–70).

An early to mid-3rd millennium date was, until recently, generally accepted for this type of pottery. Sheridan (1997) however, in discussing the Biggar Common, Lanarkshire, assemblage, suggested that the use of this form of pottery may have begun at a much earlier date, possibly from as early as the mid- to late 4th millennium BC. The association of mid-4th millennium dates for the Impressed Ware sherds within Pits [686] and [690] at Grantown Road (3635–3380 cal BC, SUERC-47064; 3517–3119 cal BC, SUERC-47062) complements the evidence for early use at Dubton Farm, Angus (3639–3374 cal BC (AA-39948); Cameron 2002, 68), Kintore, Aberdeenshire (3530–3340 cal BC (SUERC-1322); MacSween 2008, 181) and Kinbeachie, Black Isle (3500–2920 cal BC; Barclay et al 2001; MacSween 2007, 370).

In contrast, V37 sherds recovered from the curvilinear Feature [608] are associated with a Bronze Age date (1410–1223 cal BC; SUERC-47056). Rather than representing incorporation of Late Neolithic ceramics within a Middle Bronze Age feature, this material represents later contamination of a Neolithic structure.

## 7.3.3 Context

MacSween's summary of the context of Impressed Wares in Scotland (2001, 79) demonstrates that most assemblages that come from well stratified contexts were found in association with pit groups without direct association with contemporary



Illus 16 Neolithic Impressed Ware and Grooved Ware pottery

structural features. Despite the small number of sherds representing Impressed Ware pottery recovered at Grantown Road, the majority derive from the single fills of pits within larger pit groups or clusters of pits, similar to the distribution observed at Kintore, Aberdeenshire (MacSween 2008, 180–1) and Dubton Farm, Angus (MacSween 2002, 41).

The pattern of deposition observed for the Impressed Ware sherds at Grantown Road is consistent with that observed for the Carinated Bowls and uncarinated vessels from the site. With the exception of sherds from V37 which were recovered from the midden-like fill of an irregular curvilinear Cut [608] without any associated finds, the other Impressed Ware sherds at Grantown Road were all deposited within pit fills alongside a small group of sherds representing several other vessels. Unlike the Impressed Wares from Meldon Bridge (MacSween 1999), there is no evidence to suggest that the sherds at Grantown Road were used to line the earth-cut pits but the propensity for disposal of decorated rim sherds implies deliberate selection of sherds for burial rather than incidental deposition of domestic cooking debris. Within Pit [691], single rim sherds from three separate Impressed Ware pots were deposited together and Pit [686] contained three sherds of an Impressed Ware pot with stabbed decoration (V28) found alongside a small quantity of sherds from three other Neolithic pots: a decorated round-bodied bowl (V24), a thick-walled vessel with incised geometric decoration (V29) and a coarse lugged vessel (V30).

## 7.4 Grooved ware

### 7.4.1 Summary of the assemblage

Grooved Ware sherds were recovered from the upper Fill [904] of single isolated Pit [903]. The sherds derive from two separate Grooved Ware pots, representing less than 5% of each vessel. As is consistent with pots of this form from other sites in north-east Scotland, the sherds represent two wide, open-mouthed bucket or barrel-shaped vessels, both of which are heavily decorated on the exterior surfaces (MacSween 2007, 368).

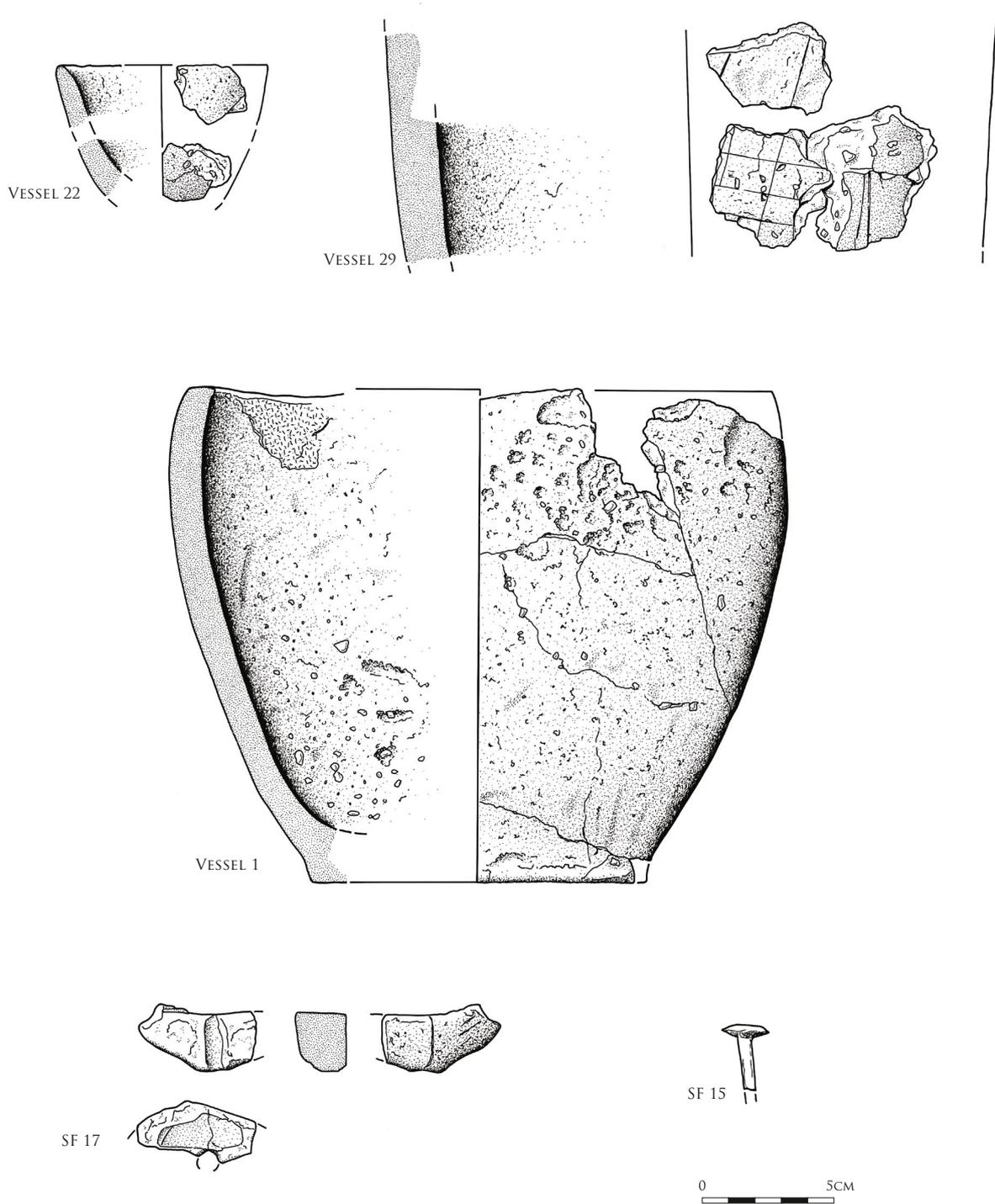
#### *Pit [903]*

The pottery from this feature comprises sherds from two vessels, V8 and V9, both decorated

with bands of incised lines which appear to form lozenges across the external surfaces of the pots (Illus 16). Less than 5% of each vessel survives but they are both likely to be squat bucket or tub-shaped vessels. V8 (Illus 16) is represented by three non-joining body sherds decorated with horizontal and vertical zones of incised decoration: one sherd has a group of three incised parallel horizontal grooves below which is a wide band of three regularly spaced vertical rows comprising small oval finger-tip impressions. V9 consists of six body sherds, five joining, of a squat bucket-shaped Grooved Ware pot, decorated with bands of incised lines forming lozenges. The surfaces appear to have been slipped prior to decoration. The external surfaces are coated in an ochre-brown powdery residue, which is possibly from the burial environment but could also be residue from use. Although the surfaces of the sherds from both pots are fairly fresh, the break edges are softened in places from abrasion, implying that neither was complete at the time of deposition.

### 7.4.2 Discussion

The Grooved Ware pottery assemblage from Grantown Road is restricted to a small quantity of lightly abraded sherds from only two vessels which were recovered together from the single fill of Pit [903]. Less than 5% of each of the two vessels survives and the edges of the sherds from the two separate pots are abraded but the surfaces appear fresh, implying that they had seen limited weathering prior to being incorporated, or deposited, within the pit fill. The external surfaces of both pots are highly decorated, as is consistent with Scottish Grooved Wares from other sites in the north-east and east-central Scotland, such as those from Milton of Leys, Inverness-shire (Connolly & MacSween 2003) and Kintore, Aberdeenshire (MacSween 2008, 181–7). Both of the Grooved Ware pots from Grantown Road incorporate multiple incised lozenge decoration, which is recognised as one of the most widespread decorative features of Scottish Grooved Ware (MacSween 2008, 185; 1995, 45, fig 4.2). Very similar pots come from Kintore, Aberdeenshire (MacSween 2008, 181–6, e.g. V180 and V215, figs 143 and 146); Balfarg, Fife (Barclay & Russell-White 1993, 97, fig 28). The zoned decoration with



**Illus 17** Neolithic pottery V22 and V29, the bucket urn V1, ceramic mould SF 17, and nail SF 15

a series of triangular-shaped impressions on pot V274 from Kintore, Aberdeenshire, is a particularly close parallel for V8 at Grantown Road (MacSween 2008, 181, fig 143).

The current dates available for north-east Scottish Grooved Ware assemblages have recently been summarised and suggest a late 4th millennium to mid-3rd millennium currency for use (MacSween

2007, 372–4, table 33.1). Insufficient charred organic material was present in the pit directly associated with the Grooved Ware from Grantown Road but the recognition of this small group of sherds is an important addition to the steadily growing corpus of later Neolithic ceramics from sites in the north-east and the Moray Firth area in particular (Cowie & MacSween 1999).

## 7.5 Other neolithic

### 7.5.1 Summary

In addition to the diagnostic categories of Neolithic pottery already described, sherds from a further three vessels are present (V22, V29, V30). These vessels are undoubtedly Neolithic in date based on their association both with other diagnostic forms of early prehistoric pottery and independent dating of the features they derive from.

#### *Pit [686]*

Sherds from four separate vessels (V24, V28–30) came from this pit. Two have been described previously, falling into the classifications of decorated uncarinated round-based bowls (V24) and Impressed Ware (V28) but sherds from two other vessels (V29 and V30) are more difficult to categorise. V29 (Illus 17) consists of three body sherds from a thick-walled bucket-shaped vessel decorated with a widely spaced grid of incised fine lines and two slightly oblique, horizontal splayed fine incised lines which appear to encircle the angled walls of the pot. A further body sherd is present, decorated with two widely spaced fine vertical lines, but it is unclear whether this sherd derives from the upper or lower portion of the pot. The exterior may have been slipped prior to decoration. The interior surfaces are coated in a thick residue. V30 (Illus 15) consists of 19 fairly heavily abraded friable sherds from a fairly thick-walled vessel with flat rim. An applied oval lug survives on one body sherd but the form of the vessel is not reconstructable from the remaining sherds due to their small size and abraded condition. The fabric is fine clay which is soft and easily scraped with a nail. Patches of possible sooting are present on the external surfaces.

#### *Pit [688]*

Amongst a suite of early Neolithic pottery sherds found in this pit (V23–27) was a plain rim sherd and body fragment from a small thumb pot (V22) (Illus 17). This is a small handmade open-mouthed pot with plain rim and fairly steeply sloping sides. The fabric is evenly fired buff-coloured sandy clay with up to 30% small rock inclusions, which has fired hard but is now quite friable. The fabric of this pot is distinctive amongst the assemblage. A date of

3360–3103 cal BC (at 2 sigma; SUERC-47063) was ascertained from associated charcoal. Similar ‘pinch-pot’ cups are known amongst the Neolithic ceramic assemblages from Crathes, Aberdeenshire (Sheridan 2009, 92, fig 41) and Balbridie (T Cowie, pers comm).

## 7.6 Late Bronze Age bucket/barrel urn

### *Pit [402]*

Substantially complete, wide-mouthed squat bucket or barrel-shaped urn (V1) represented by 15 surviving sherds and numerous small crumbs (Illus 17). The pot is thick-walled, with a gently rounded body and a slightly inverted, internally bevelled flat rim and footed flat base. Although the entire circumference of the urn survives, much of the flat base and rim have been lost. The fabric is fine clay which has fired hard with frequent (>70%) angular quartzite, schist and mica-plate inclusions and is dark brown in colour. The external surface has either been slipped or wiped when wet to smooth and disguise the larger stone inclusions and the internal surface has been smoothed when wet.

### 7.6.1 Discussion

The undecorated, plain form of this vessel is consistent with the group of vessels generally referred to as Late Bronze Age ‘bucket urns’ or ‘flat-rimmed ware’. Sheridan (2003, 208) has highlighted the problems with the use of such generic classification, which is likely to mask a range of styles of form and surface finish, particularly when one considers the long currency of use of this style of pottery, which saw use from the first half of the second millennium to around 800 BC in Scotland (ibid, 211).

The Grantown Road urn was found in an inverted position protecting a deposit of cremated human remains which have returned a date of 1200–920 cal BC (SUERC-21592). It was lifted intact but subsequent laboratory excavation and stabilisation confirmed that portions of the rim and base were missing. The pot may have been damaged prior to deposition; the missing base sherds are almost certainly the result of post-depositional truncation but the loss of a substantial portion of the rim

is more difficult to ascribe to post-depositional damage.

## 7.7 Iron Age ceramics

### 7.7.1 Summary of the assemblage

A single sherd of a fine-walled handmade ceramic pot (V40) came from a post-hole associated with Structure 4. The small fractured condition of the sherd makes it impossible to closely identify the form and therefore date of the pottery but its recovery from an Iron Age context suggests it is likely to be later prehistoric in date. It is the only sherd noted on site that is likely to be Iron Age.

#### *Post-hole [144]*

Small fractured body sherd, 7.5mm in thickness, from a fine-walled handmade ceramic vessel. The clay is fine with few inclusions and has fired hard and evenly throughout the thickness. The exterior surface appears to have been hand-smoothed when wet and the smoothed interior surface is darkly sooted from use. The form and original dimensions of this vessel are impossible to estimate based on the small and fractured condition of the bodysherd.

## 7.8 Undiagnostic sherds

### 7.8.1 Summary of the assemblage

Sherds from five vessels at Grantown Road cannot be assigned with confidence to any of the categories previously described. In some instances, like V10, V31 and V38, this is due to the friable and damaged condition of the surviving sherds and in others, such as V11, an insufficient surface area remains to allow detailed conclusions to be made about the form. All five of the vessels (V3, V10, V11, V31 and V38) derive from coarse, handmade pots. One, V3, has traces of sooting on the external surface from use.

#### *Context [12404]*

Eight damaged and abraded body sherds from thick-walled, undecorated vessel with a gentle carination (V3). The external surface appears to have been smoothed or hand-wiped when wet although spalls lost from external surface make this impossible to confirm with certainty. Traces of sooting are present on external surface.

#### *Post-hole [247]*

One small body sherd of a handmade coarse ware pot (V10); only one face survives. The fabric is consistent with early prehistoric pottery from the site but not enough remains to reconstruct form or size.

#### *Pit [041]*

Single body sherd of a very hard-fired, fine-walled vessel (V11) with fine organic impressions on exterior and interior surfaces which are probably grass impressions made on contact during drying. Both the interior and exterior surfaces appear to have been hand-smoothed when wet.

#### *Pit [730]*

Single body sherd (V31), internal face lost. The surface may have been slipped.

#### *Pit [688] and [732]*

Six body sherds and multiple crumbs of a friable pot (V38). The fabric is fine clay with 30% angular rock inclusions.

## 7.9 Medieval coarse wares

Two sherds of wheel-thrown medieval pots were recognised amongst the assemblage of prehistoric vessel sherds from Grantown Road. The sherds represent two separate vessels: a green glazed pot or jug of 14th-century date or later (V12) and a heavily abraded sherd from a wheel-thrown red ware vessel (V13). V12 was recovered from the fill of an erosional feature within Structure 6 and V13 came from the fill of an isolated Post-hole [195]. Both sherds are heavily abraded, suggesting that they had seen extensive weathering prior to their incorporation within the features noted.

## 7.10 Conclusions

This small but wide-ranging early prehistoric ceramic assemblage represents a useful addition to the growing number of sites in north-east Scotland with stratified, well-dated groups of Neolithic wares. Pottery representing vessels of Sheridan's modified Carinated Bowl tradition are found alongside a small assemblage of Impressed Wares. In addition, at least two Grooved Ware pots are present. Like most assemblages that derive from sites with multiple phases of occupation, a small number of sherds could

not be classified closely but are consistent with an early prehistoric date on the basis of their fabric and the apparent size of the vessels that they represent.

Recurrence of rim sherds and sherds from the upper portion of pots as opposed to base sherds implies the deliberate selection of sherds for inclusion within these pits, rather than simply representing the deposition of everyday domestic rubbish. With the exception of the Late Bronze Age funerary vessel, the Neolithic wares tend to be represented by a small number of sherds, and in some cases, a single fragment with none of the fragments representing more than 10% of a pot. The unabraded condition of most of the sherds suggests that the selected sherds were deposited in a freshly broken state.

## 8. THE DAUB

*Dawn McLaren*

Amorphous pieces of burnt clay were recovered from five contexts across the site: two small non-joining pieces within Pit [901] associated with ironworking waste and a large quantity of heavily abraded silty burnt clay came from the infill of Furnace [212]. Another small burnt clay fragment was found in association with Furnace [157]. The remaining fragments are small and abraded and derive from the fill of a Post-hole [037] associated with Structure 6, and from Post-hole [137] associated with Structure 4. The association of fired but unvitified pieces with vitrified material associated with ironworking makes it likely that these represent abraded fragments of the superstructure of a metalworking furnace or hearth. The other pieces are all too fractured and abraded to allow comment on their significance or original form.

## 9. THE CHIPPED STONE

*Rob Engl*

The assemblage of chipped stone from Grantown Road consists of five pieces of flint and three pieces of quartz. The assemblage is summarised below. A full catalogue is presented in the archive.

All of the chipped stone is of local derivation. The flint ranges in colour from pale grey to red and is typical of material found along the eastern Scottish seaboard. The assemblage is relatively fresh in appearance with no signs of patination or

burning. Where present, the cortex has a rolled and water-worn appearance, suggesting that it was obtained from the nearby shoreline or river.

A single modified piece was recovered in the form of a scraper, SF 6. This artefact was made on red flint and was fashioned on a thick secondary flake. Abrupt, regular and semi-invasive retouch had been applied to the proximal and left lateral edges.

All but one of the lithics was obtained from stratified pit fills. It would appear that the material therefore represents artefacts disposed of during the various phases of occupation. Little can be said of the assemblage given the paucity of artefacts, except the end/sidescraper, which suggests a Late Neolithic/Early Bronze Age activity.

## 10. THE COARSE STONE

*Rob Engl & Dawn McLaren*

### 10.1 Introduction

Despite the scale of the multiphase excavations undertaken at Grantown Road, a very limited group of worked stone objects were recovered. These consist of 10 individual items including two whetstones or hones, two saddle querns or grinding stones, a hollowed stone, a lightly used pounder and a heavily heat-damaged rotary quern fragment which was recovered in association with a metalworking feature. In addition to these tools, a cup-marked stone was incorporated into the stone-lined entrance of the souterrain and fire-cracked stone was recovered from the fill of a pit containing artefacts relating to Iron Age metalworking.

### 10.2 Catalogue

Abbreviations used: D – depth; L – length; W – width; T – thickness; R – remaining.

#### ► SF 03 Grinding stone/saddle quern

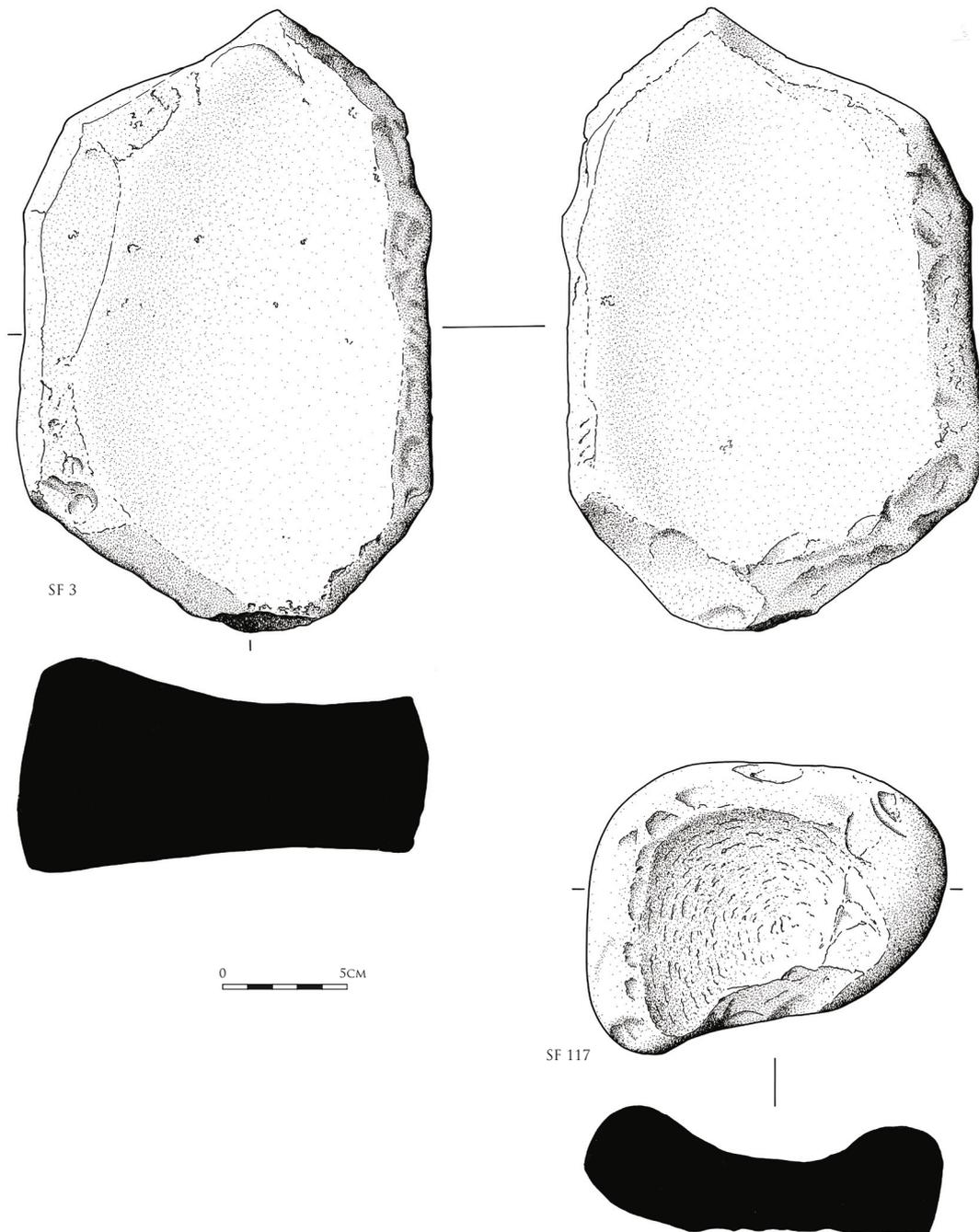
Sub-rectangular sandstone slab produced from a thick angular slab. Slightly irregular parallel, vertical sides, one irregular peckmarked to shape; both angular ends damaged causing spalls to detach from the circumference of both faces, particularly at the ends. Slab smoothed and dished from abrasion along the longitudinal axis of both extensive faces (L 214 W 145mm; L 224 W 130.5mm) with a bevelled

abrasion facet (W 20mm; W 23mm) on the flanking surviving surface adjacent to both damaged ends. Further dished linear abrasion facet present towards one end on edge overlapping the worked hollow. L 246mm, W 164mm, T 61–84.5mm. [665], fill of Pit [664], Structure 5. Illus 18.

► **SF 06c Rotary quern fragment**

Approximately 30% of a heat-affected rotary quernstone, broken across the central biconical

circular socket, stone severely heat-affected causing discolouration and fire-cracking, as well as detachment of angular spalls from the former grinding face. The remaining D-shaped edge has been deliberately flattened and smoothed to provide a stable surface for the quern fragment to be sat upright with the broken central socket (D at upper surface: 66mm; min D 34mm) at the top. Adjacent to the flattened edge, iron-rich slag adheres to the flat upper quern surface, indicating



Illus 18 Coarse stone

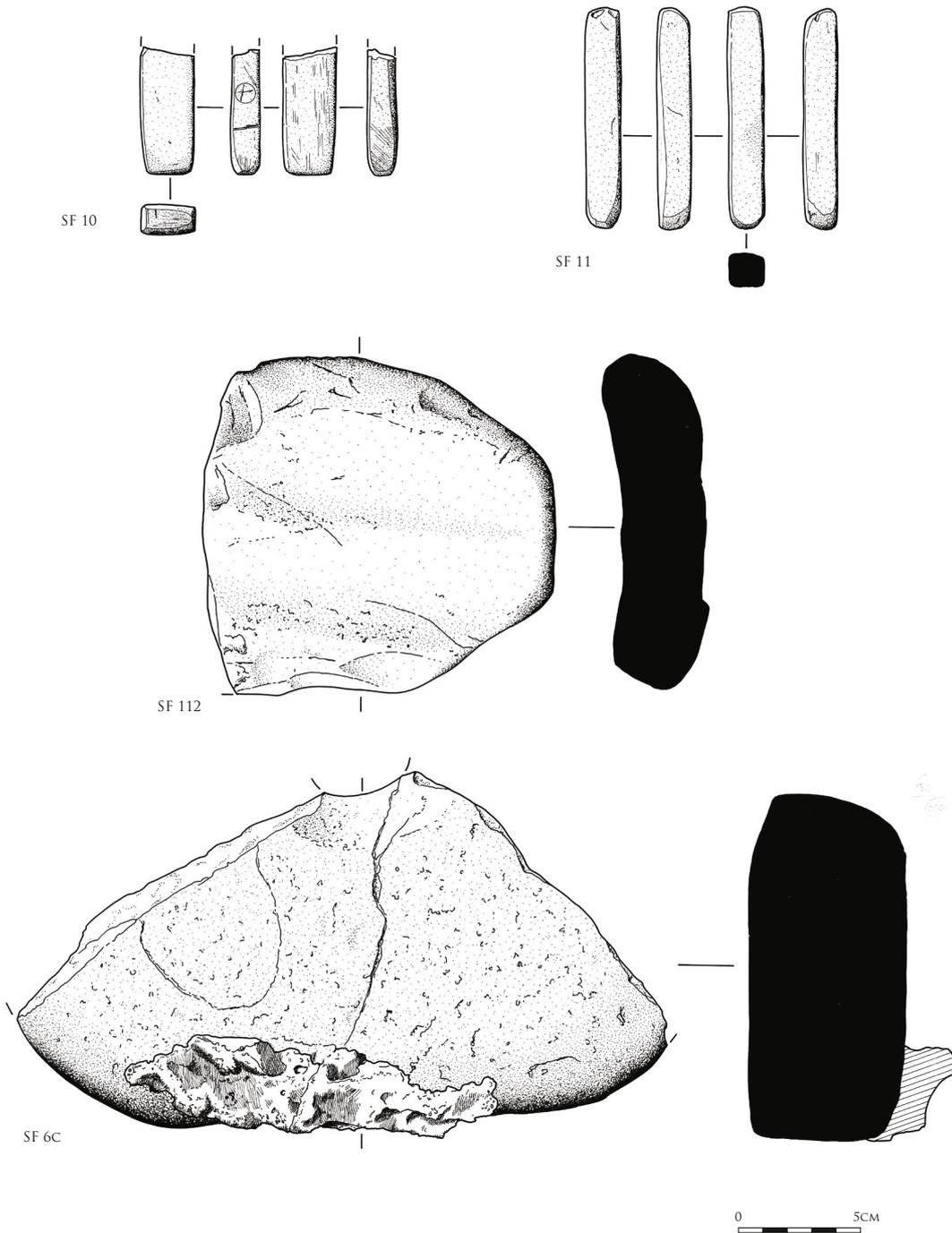
re-use of the stone within a metalworking structure, the broken central socket possibly used as a support or aperture for the bellows nozzle. No handle socket survives to identify the quern fragment as an upper or lower stone. The reshaping of the surviving edge makes the original diameter of the stone impossible to confirm with any accuracy but is likely to be a minimum of 360mm, T 62mm. [154], fill of Pit [153], spatially associated with Furnace [157]. Illus 19.

► **SF 08 Single-use pounder**

Flattened spherical granite cobble, dispersed shallow peckmarks (14.5mm × 23.5mm) from limited use at one rounded end, opposite end with occasional pitting. L 69mm, W 64mm, T 58mm. [729], fill of Pit/Post-hole [728].

► **SF 010 Whetstone/burnisher fragment**

Squared end fragment from a rectangular bar of very fine-grained dark grey/black siltstone; opposing end



Illus 19 Coarse stone

lost and original length unknown. The surviving squared end has been carefully ground at the tip and on both edges with striations from abrasions remaining from manufacture. Both flat faces and edges have seen extensive use, with distinct polish remaining towards the broken centre of each narrow slightly curving edge. Overlying this polish on one edge is a horizontal score mark, possibly a sharpening score and towards the broken end is a very shallow, ephemeral incised circle (D 6.5mm). It is unclear whether this is a decorative feature or the result of working. RL 51mm, W 22mm, T 12mm [182], fill of souterrain. Illus 19.

► **SF 011 Whetstone/burnisher**

This artefact is fashioned from a fine-grained laminated silt-stone. As with SF 010, it has a rectangular cross-section with ground parallel sides and flat faces. Heavy use-wear is apparent on both ends of the artefact and all four faces have been used for whetting. At one end distinct bipartite abraded facets are present, creating a blunt narrow tapering tip which is ground from use. L 91.2mm, W 15mm, T 14mm [182], fill of souterrain. Illus 19.

► **SF 011 Possible saddle quern fragment**

Blunt rounded tip of a substantial water-rounded sandstone boulder, the opposite end and one face lost with angular fracture scars remaining from damage sustained during breakage. The boulder has seen no modification prior to use, which is confined to one surviving face only in the form of a wide band of light abrasion across the extent of the surviving face. L 211mm, W 206mm, T 124mm [087], fill of Palisade 2.

► **SF109 Cup-marked slab**

This artefact is a large rectangular block of granite schist upon which a group of three cup-marks have been applied to the upper east face. The cup-marks are regular and fairly shallow with dimensions of 5 × 2mm. The cup-marks appear to have been pecked into the surface, probably with the use of a hammerstone or punch. L 800mm, W 500mm. [109], stone-lined entrance to souterrain.

► **SF 112 Grinding stone**

This fragmentary artefact was roughly fashioned on a large split boulder of fine-grained granite schist.

The artefact is roughly oval in shape with a relatively flat base which would have provided stability during use. The artefact is slightly higher towards the break. The working face of the artefact has two parallel and elongated concave dishes. These terminate towards the lower end of the artefact. This lower end has circular striations running from dish to dish. No centrally placed pitting appears to have been applied to the artefact, which implies that the quern was probably not used in the grinding of grain. It is possible that the artefact was used as a large stationary whetstone for the fashioning of metal or other stone artefacts. L 280mm, W 260mm, T 80mm [182], fill of souterrain. Illus 19.

► **SF 117 Hollowed stone**

This artefact is fashioned from an ovoid piece of fine-grained sandstone and is roughly cup-shaped with a flat base. Distinct circular striations are present within the oval hollow (L 91.4mm, W 89.5mm, D 7mm) which takes up the majority of the face. The artefact has a fragment missing from one side. This artefact is a possible stone lamp although no reddening of the upper face through burning is present. A further identification could be as a socket stone for a door post. RL 150mm, W 105mm, T 45mm. [182], fill of souterrain. Illus 18.

► **SF 118 Pounder**

Small ovoid water-rounded granite cobble, pitted at one end from light use (37 × 23mm). The opposite end is damaged but this appears to be a natural fracture across a flaw in the stone rather than being the result of use. L 74mm, W 62.5mm, T 46mm [046].

### 10.3 Discussion

The majority of stone tools from Grantown Road are suggestive of use in conjunction with a variety of craft activities, rather than being principally domestic in character. Most were recovered from the infill of the souterrain. The recovery of the objects from material interpreted as deliberately introduced mixed soils means that we cannot relate the objects found within the structure directly to its use but they all point to the existence of craft activities being performed in its immediate surroundings during the later Iron Age. These objects include two whetstones, one of

which was broken, a hollowed stone which may have functioned as a lamp or a socket stone and a grinding surface which had been used as an abrasive. Both of the whetstones are finely worked, showing extensive use after careful shaping during production.

A regional study of later prehistoric coarse stone tools from East Lothian highlighted a significant chronological aspect to the use of whetstones during the Iron Age (Hunter 2009). Although whetstones have a long chronology of use, found on sites of Bronze Age through to post-Medieval date, and are common artefacts associated with Iron Age sites, where found in greater numbers they tend to come from later Iron Age contexts (*ibid*, 148). The recovery of two such tools from the souterrain at Grantown Road confirms this previously recognised pattern. Here, the whetstones have clearly been carefully shaped prior to use; the edges straightened and flattened and the ends squared. Typologically these are consistent with other later Iron Age and Early Historic examples such as those from Hurly Hawkin, Angus (Henshall 1982, 235, fig. 10).

The hollowed stone is more problematic with regards to function and a good case can be made for it being either a stone lamp or a small socket stone for a door-post. The lack of any staining or heat damage, however, suggests that the later interpretation is more likely, but it should be noted that precedents are known for cupped or hollowed stones found in association with souterrains, such as that excavated at Redcastle, Angus (Dunwell & Ralston 2008, 123).

The discovery of the cup-marked stone in the stone lining of the souterrain is another readily attested Iron Age association. Wainwright (1963, 9), Hingley (1992, 29) and Armit (1999, 583) have discussed at some length the occurrences and possible interpretations of the incorporation of earlier cup-marked slabs and boulders within souterrains in Angus and elsewhere such as that from Newmills, Angus (Watkins 1980, 171, pl. 13a). The example from Grantown Road is a useful addition to this known pattern. Here, the decorated slab had been deliberately erected at the entrance to the souterrain passage. The recurring recognition of Bronze Age decorated slabs positioned at the boundary locations within Iron Age structures during construction, such as the cup-marked boulders deposited within paving at the entrance

to an intramural chamber of the broch at Hurley Hawkin, Angus (Henshall 1982, 235–6, fig 5, no. 71 and 72) has already been noted. Undoubtedly, these pecked, ground and incised features would have caught the light coming from hand-held or suspended lamps as well as the central household hearth, creating a pleasing aesthetic design, but their recurring placement within boundary locations such as entrances could imply a more symbolic role (Hingley 1992, 29).

Food-processing tools amongst the assemblage are unexpectedly scarce. The exceptions to this are two grinding surfaces and a single fragmentary rotary quern fragment. The shape, size and use-wear on the grinding surfaces are not typical of single-function saddle querns such as those found at Kintore, Aberdeenshire (Engl 2008). Rather, these tools appear to have been used principally to grind and abrade substances other than cereals and grains but could nonetheless have seen use as food-processing saddle querns. The single fragment of rotary quernstone was undoubtedly used to grind cereal grains into flour and is a typical find on Iron Age sites across Scotland. In this instance, the quern fragment appears to have been incorporated within the stone-lined walls of an iron smelting furnace. It came from rectangular Pit [153] in association with iron-rich slag and was located in close proximity to the iron-smelting Furnace [157], which has been dated to the early Iron Age, and a dump or heavily damaged second Furnace [151]. The stone appears to be a granite schist which is discoloured and cracked from heat damage and has a small quantity of iron-rich slag adhering to one face. The condition of the stone suggests that it had been incorporated into the smelting furnace in a fragmentary state and the rounded edge of the surviving circumference of the quern had been reworked to flatten it, allowing the stone fragment to be placed vertically on the ground or onto a clay pad and remain stable. The adhering slag clusters on one face towards the surviving semi-circular notch that was once the feeder pipe or central socket of the quernstone; this notch may have been used as a support for the bellows nozzle used during the smelting process, forming an expedient tuyère or tuyère support. The reuse of quernstone fragments within iron-smelting furnaces, such as that at Burland, Shetland (McLaren & Hunter 2014, 290–1, fig 4.40)

and Culduthel, Inverness (McLaren 2012) has been noted previously and stresses the recurring association of agricultural tools and iron. Hingley and others have suggested that querns and selected iron objects, by their deliberate placement within liminal or boundary features, could be interpreted as symbolically charged objects that were utilised as metaphors for broader cosmological concerns such as agricultural production and fertility (Hingley 1992; Williams 2003).

## 11. THE COPPER ALLOY

*Dawn McLaren*

A single small distorted fragment of copper alloy sheet was recovered from the fill of Palisade 2. Only one original edge survives, making it impossible to confirm the original form of the item it derived from. The association of the sheet fragment with a single crucible fragment from the same context (SF 22) could suggest that this was an off-cut or a scrap of sheet metal left over from non-ferrous metalworking which was discarded within the ditch fill alongside detritus of iron-smelting waste.

### ► SF 20

Small curving, distorted, sheet fragment, broken at both ends; original length unknown. Only one original straight edge survives, broken across a damaged right-angled projection or corner. L 14 W 7 T 0.5mm 0.2g. [87E], fill of Palisade 2.

## 12. THE IRON

*Dawn McLaren*

Despite the wealth of ironworking debris recovered over various seasons of fieldwork at Grantown Road only five iron objects are present, consisting of a small intact punch, an incomplete nail, a further small punch or headless nail and two fragmentary strips and bars. Most of the iron finds derive from contexts sufficiently rich in charred organic remains to allow radiocarbon dating, which confirms a broad Iron Age date for the use and deposition of this material. Although the number of iron artefacts from the site is small, this is entirely consistent with the picture revealed by contemporary Iron Age sites in the region. Very few Iron Age sites in Scotland

have informative ironwork assemblages, with most producing only a few highly corroded fragments (Manning 1981, 56).

Two items, the punch and the fragmentary nail, were recovered from the fill of Pit [114] within the area defined by Palisade 2. The punch (SF 16) is very similar in size and form to that found at Fairy Knowe, Buchlyvie (Hunter 1998, 359, no. 435, fig. 29) and may have been used as a metalworking tool. Also found in the pit fill were clay mould fragments for casting non-ferrous metal objects, pieces of vitrified ceramic and small, heavily fractured pieces of ironworking slag. The presence of the punch, a tool which could plausibly have been used in fine metalworking, alongside debris indicative of both ferrous and non-ferrous metalworking implies that this was a deliberate dump of metalworking-related material and equipment. Charcoal associated with this deposit has returned cal AD 1st–2nd century date for this activity (SUERC-47044).

One incomplete iron nail (SF 15; Illus 17) was also found within Pit [114]. Although nails are often considered to be ubiquitous finds on archaeological excavations they are surprisingly rare on sites of Iron Age date (Hunter 1998, 366), the site at Burghead, Moray being a notable exception (Young 1891, 441, 443). This is in stark contrast to Roman sites where they are a typical component of any iron assemblage (Manning 1985, 134). The recovery of a single example at Grantown Road emphasises this established pattern well and the reasons for this paucity are likely to be two-fold. The first relates to taphonomy; the widespread recycling of metals during the Iron Age has been demonstrated (e.g. Dungworth 1997) and it is likely that nails were routinely re-forged, only to survive in the archaeological record in exceptional circumstances (Hunter 1998, 367). The second explanation is likely to relate to their use. The rarity of nails on Scottish Iron Age sites in general implies that despite the local smith's ability to produce such items and other iron fittings which could have been employed in building construction, traditional organic materials continued to be favoured whilst the use of nails was perhaps restricted to use for more specialised items. The association of this incomplete example with a small group of equipment and debris resulting from metalworking could suggest that the nail was scrap metal, retained with the intention to

recycle and is unlikely, in this context, to have derived from a timber building.

The nail from Grantown Road is incomplete, making it difficult to fit within existing typologies (e.g. Ford & Walsh 1987) but a sufficient proportion of it survives to confirm that it is a small hand-forged nail with a flat square head and square-sectioned shank. Detailed metallurgical analysis of the nail was attempted (Dungworth, this paper) but was unsuccessful due to the heavily corroded condition of the metal. This analysis had been undertaken with the aim of identifying the iron alloy type (e.g. plain iron, phosphoric iron, low, medium or high carbon steel) and to determine whether the composition of the metal was consistent with the iron traces preserved with the iron-smelting waste from the site. Although macroscopic examination of the nail suggested it was stable, insufficient iron was present to allow useful analysis.

## 12.1 Catalogue

### ► SF 07 Possible punch or headless nail; incomplete

Rectangular-sectioned bar with wide squared end. From mid-length the bar tapers gently towards the opposite broken end; extreme tip lost. L 53mm, W 6–14.5mm, T 9mm [087], fill of Palisade 2.

### ► SF 10 Strip; incomplete

Short fragmentary piece of a narrow rectangular strip, tapering at one end; both ends broken. Heavily degraded, very little iron survives. L 44mm, W 13mm, T 5mm. Context 133, Fill of Post-hole [132] within Structure [125].

### ► SF 15 Nail; incomplete

Head and shank fragment from incomplete, hand-forged nail with distorted small flat sub-square head (W 19mm, T 5mm) and square-sectioned tapering shank (D 4.5mm), broken mid-length. Surviving L 25mm. [115], fill of Pit [114].

### ► SF 16 Punch; intact

Short square-sectioned rod (D 9.5mm), tapering gently at one end to a narrow blunt rounded tip (D 6mm) and at opposing end to squared head (D 6.5mm). The edges of the head are slightly lipped, suggesting burring as the result of use. L 57mm [115], fill of Pit [114].

### ► SF 21 Bar

Small tapering rectangular-sectioned bar. L 20.5mm, W 9mm, T 6mm [010], fill of Post-hole [009] associated with Structure 6.

## 13. NON-FERROUS METALWORKING

*Dawn McLaren*

A small number of fragments of clay moulds and a body sherd from a crucible, both used in the production of cast copper alloy objects, were recovered in and around the area defined by Palisade 2. Although the quantity of pieces recovered is few, the discovery adds to a growing corpus of Iron Age non-ferrous metalworking evidence in north-east Scotland.

The most significant items are the fragments of at least one valve of a two-piece ceramic mould (SF 06 and SF 17) which were found within Pit [114]. One mould, SF 06, survives only as a damaged rounded terminal fragment of a larger mould which has broken across a cylindrical hole which perforates the thickness of the valve (Illus 17). Fragments from both edges and the rounded terminal of the mould have been lost, causing damage to the surviving casting surface.

The purpose of the perforation or socket through the thickness of the valve is not well understood as it does not follow the form of a keying feature nor is it consistent with the shape of an in-gate where the molten metal was poured; pouring gates tend to be conical in shape rather than cylindrical. Nor does this appear to be an impression from a reinforcing splint like those observed on Late Bronze Age sword moulds such as those from Seafeld West, Inverness (Cowie & Eremin 2011, 25, fig 14a). The possibilities that remain are that this perforation was part of the overall design, perhaps to allow the integral casting of a short cylindrical central stem or shank similar to the various stud moulds from Mote of Mark (Laing & Longley 2006, 66–70, figs 27 and 28), or to allow a rod to be inserted through the hole to create a void during casting, although this later interpretation is less likely. Traces of a gently curving bevelled edge are observed on the casting surface but the form of the damaged bevelled end suggests that this edge is likely to have been straight, implying that the object being cast is sub-square or lozenge-

shaped in plan with at least one flat face and possibly with a central or slightly off-centre projecting stem. A very fine curving incised or impressed line is noted at the edge of the surviving casting face. It is not clear whether this is an impression from a fine hair or fibre that has become trapped within the mould matrix and subsequently burnt out during casting or whether it is a deliberately produced design element. The form of the surviving portion of the casting surface cannot be readily paralleled amongst the known corpus of Roman Iron Age copper alloy objects, particularly as the purpose of the cylindrical perforation noted on the fracture surface of the mould is not well understood. Similarly, fragment SF 17 preserves a slightly rounded casting surface but the opposing face has been lost and no original edges survive, making it impossible to identify with any certainty.

This disjunction between the surviving Roman Iron Age bronze artefact types and the forms observed on contemporary moulds is also seen with the group of well-preserved mould fragments found at Fairy Knowe, Stirlingshire (Willis 1998, 372–6, fig 34). At Fairy Knowe, several valve fragments, many with keying features surviving, were found to represent a minimum of 10 individual moulds but the identity of the objects being cast remains obscure, as few could be paralleled amongst known Roman Iron Age bronzes. Both the Grantown Road moulds and those from Fairy Knowe, *inter alia*, demonstrate well how partial the archaeological record is for some material types during this period and confirm that there was a suite of other artefact forms in use during the Roman Iron Age which, because of the practice of recycling metals, have not survived within the archaeological record.

These heavily fragmented and quite friable pieces were recovered from Pit [F114] closely associated with Palisade 2, which has been dated to 1st–2nd century AD (SUERC-47044). The crucible fragment came from the infill of the palisade. Refractory ceramics used in metalworking, particularly lightly fired mould fragments, are unlikely to survive on an exposed surface for an extended period and their surviving within an archaeological context is usually a result of the fragments being rapidly discarded and sealed. The recovery of mould and crucible fragments within Pit [114] and the fill of Palisade 2

suggest that the non-ferrous metalworking activities that these finds represent must have taken place in the immediate vicinity of these features. Alongside the mould fragments within Pit [114] were also a small iron punch SF 16, plausibly for use in sheet metalworking, an incomplete iron nail SF 15 (Illus 17), fragments of vitrified ceramic SF 17 and a small quantity of fractured ironworking slag. This group of finds is suggestive of a deliberate dump of debris and equipment related to metalworking.

The crucible sherd is small, lightly abraded and highly fired, yet it lacks any discernible surface residues from the metal that was melted within it. Despite its size and condition, the fragment derives from the body of an open-mouthed crucible of triangular form, the typical shape of crucible in use throughout much of the 1st millennium BC to the mid- to late 1st millennium AD (Heald 2006). The crucible is made of fine clay which was highly fired and lacks inclusions indicative of tempering, consistent with other Iron Age examples such as that from Thainstone Business Park, Inverurie (ibid, 12). It was recovered from the fill of Palisade 2, which has produced a range of dates from the mid-1st century AD to the beginning of the 3rd century AD.

### 13.1 Catalogue

#### ► SF 06 Mould fragment

Four joining fragments of a burnt ceramic mould, one smooth, slightly convex heat-affected original surface survives. The fabric is fine clay, with uneven levels of oxidation. Ranges in colour from light ashy-grey on the smooth convex surface to red-orange-brown on the angular broken edges. These mould fragments were recovered from the same context as mould SF 17, but it is unclear whether SF 06 derives from the same mould. Surviving L 36mm, W 34mm, T 24mm, 19.4g [115], fill of Pit [114].

#### ► SF 17 Mould fragment

Two joining pieces of an incomplete valve fragment from a two-piece mould. Portions of both the rounded external surface and the smooth, flat, interior casting surface survive, both edges are damaged; the mould appears to have broken across a fine cylindrical socket or hole (D 5.5mm) which

perforates the thickness of the surviving valve. The cylindrical profile of this socket or hole makes it unlikely to have functioned as the in-gate for the molten metal to be poured into but its function remains unidentified. The casting face is smooth and flat and heat-affected from use. What little survives of the edge of the casting surface is gently curved, suggesting a flat sub-circular object was being cast. Immediately adjacent to the edge is a fine incised oval loop or open spiral no more than 3mm in diameter and only 0.1mm thick. A third possible fragment of this mould is present but no original surfaces are present. Surviving W 45.5mm, T 21.5–26mm, 20.8g. Context 115, fill of Pit [114].

#### ► SF 22 Crucible fragment

Small body sherd from a thin-walled, triangular crucible; highly fired but lacking any visible vitrified residues. L 23mm, W 6mm, T 6.6mm, 2.16g. [087], fill of Palisade 2.

## 14. THE FERROUS METALWORKING

*Dawn McLaren & David Dungworth*

### 14.1 Overview

A large and significant assemblage of ferrous metalworking debris and associated vitrified material was recovered during excavations at Grantown Road between 2008 and 2013. Over 67.8kg of vitrified material was recovered, dominated by substantial furnace bottom fragments – dense accumulations of slag which formed in the basal pit of a smelting furnace during iron smelting – accompanied by a suite of vitrified waste consistent with primary ironworking. This discovery is important not just for the volume of ironworking waste present but also for the surviving remains of the basal pits of at least two heavily truncated iron-smelting furnaces, one of which has been directly dated to 410–350 BC. The significance of this assemblage is enhanced by the previous discovery of ironworking features, including evidence of iron smithing, in the adjacent field in 2006 (Cook 2008).

The ferrous metalworking evidence from 2008–13 will be considered alongside that from the previous excavation to enable a fuller understanding of the patterns of ironworking activities across the site

both spatially and chronologically, and of how the evidence from Grantown Road fits into the broader picture of ironworking in north-east Scotland during the Iron Age.

### 14.2 Methodology

Classification of the Grantown Road material was based on two stages of examination. The first involved macroscopic visual examination of the slag, categorising the material based on aspects of density, colour, morphology, vesicularity and magnetic levels. This examination formed the framework for individual classification of the material and the construction of a detailed catalogue, which can be found in the site archive. Following this initial classification, a limited sample of the assemblage was selected for chemical analysis to allow the composition of the slags to be identified and compared to the metallurgy of the iron objects from the site. The aim of this analysis was, in part, to confirm aspects of the visual categorisation and also determine whether differences in the composition of the slags could be identified which might indicate the use of different ores, technologies, techniques and chronology.

A limited but representational sample of the major diagnostic categories was selected, including waste from both smelting and smithing. In addition, there were some possible bloom fragments which were thought to have the potential to provide a chemical link between the smelting debris, smithing debris and finished iron objects from the site. The samples selected focused where possible on well-dated in situ furnace features and stratigraphically secure pits/post-holes.

A detailed description of the sampling strategy, preparation and methods of examination and analysis, as well as a full list of results, are included in the archive.

### 14.3 Classifications

A total of 67.8kg of vitrified material was recovered throughout the areas excavated between 2008 and 2013. This quantity includes both bulk slags recovered by hand and residues from soil samples.

The slag has been described throughout using common terminology (e.g. McDonnell 1994; Starley

**Table 2:** Range of diagnostic and undiagnostic debris present at Grantown Road, 2008–2013

Vitrified material type	Mass (g)
<i>Indicative of ironworking</i>	
Furnace bottom fragments (FB)	47899.3
Plano-convex cake fragments (PCC)	1950.9
Unclassified iron slag (UIS)	10101.9
Unclassified slag/Runned slag (UIS/RS)	2237.7
Runned slag (RS)	1940.9
Slag sphere (SS)	1.1
Slag attacked stone	73.3
Unclassified residues (UR)	1226.6
Other	1353.6
<i>Non-diagnostic vitrified material</i>	
Magnetic vitrified residues (MVR)	156
Vitrified ceramic (VC)	700
<i>Other</i>	
Fe nodules	6.3
Coal/cinder	6
Unfired clay	58.5
Fired clay	8.9
Heat-affected stone	114
<b>Total</b>	<b>67835.6</b>

2000; Bayley et al 2001; McLaren & Dungworth 2012). Many of the pieces were small and fragmentary, precluding definitive identification. However, where discernible they appear to fall into two broad types: significant quantities of bulk slags suggestive of ironworking (particularly smelting); and those created during a range of pyrotechnic processes, and not necessarily the result of metalworking (Table 2).

#### 14.3.1 Indicative of ironworking

##### *Furnace bases*

Large, heavy fragments of possible ‘furnace bases’ or ‘furnace bottoms’ dominate the slag assemblage from Grantown Road. Furnace bases are large dense slag cakes that form at the base of a non-tapped smelting furnace. Their presence within a slag assemblage indicates that the gangue extracted from the ore during smelting was allowed to collect

in a pit at the base of the furnace rather than being regularly raked out during the smelt. It is not always possible to distinguish between cakes produced as the result of smelting or smithing (Bayley et al 2001, 11) but at Grantown Road the distinction is clear due to the large dimensions of the cakes, their substantial weight and the frequent large charcoal impressions and/or inclusions present.

In total 31 fragments of possible furnace bottoms have been identified from seven contexts (contexts 107, 152, 154, 158, 197, 206, 13305) in addition to further unstratified pieces, weighing a total of 47.89kg. These fragments represent a minimum of 11 separate furnace bases which range in condition from fractured angular pieces with no surviving original edges, to substantially complete examples. None are complete but three examples represent at least 70% of the original cake (SF 6, SF 109, SF 113) ranging in diameter from 219mm to 37mm, and 105mm to 155mm

in thickness and individually weigh between 5.1kg and 9.3kg. Where the form can be discerned, the furnace bases are sub-circular or sub-square in plan and plano-convex in section, composed variously of dense, heavy dark grey slag, often runned in patches, and charcoal-rich red-brown slag. Many of the cakes preserve curving edges which are smooth and compact having apparently formed against the concave smooth surface of the furnace; fragments of coarse sandstone adhere in the case of SF 115 and SF 109, confirming that the base of the furnace pit was lined with stones. Typically the bases are not magnetic, although two, SF 6 and SF 109, incorporate possible nodules of iron-rich bloom which are highly magnetic and easily distinguished from the rest of the cake due to the difference in colour and texture.

In terms of context, 12 fragments of furnace bottom (representing a minimum of one cake, 3.6kg) were recovered from the interior of Furnace [157], probably representing the waste material from the last smelt. A further 10 fragments of furnace bottom were recovered from Pits [151] and [153] located adjacent to the furnace. In the absence of any burning or deliberate linings of the pits, these have been interpreted as deliberate dumps of smelting waste but could be heavily truncated and disturbed remains of further furnace structures. One substantially complete cake came from the fill of the souterrain and further pieces came from pit and post-hole fills [196] and [206].

Two furnace bottom fragments (SF 111 and SF 115) were analysed. The first (SF 111; Dungworth sample 2) is composed of a fayalitic slag with some wüstite, hercynite and leucite ( $\text{AlKS}_2\text{O}_6$ ) (Illus 20A). The sample contains several zones of vitrified ceramic. These are all at the margins of the sample (Illus 20B) and while the contact zone shows marked adhesion of slag to ceramic there appears to have been relatively little reaction between the slag and the ceramic. This is consistent with the slag settling into the base of a furnace where it cooled sufficiently to inhibit reactions between slag and ceramic.

The second furnace bottom sample (SF 115, Dungworth sample 3) displays rather different textures in different zones. The range of minerals remains largely unchanged although their size and distribution varies (Illus 20C).

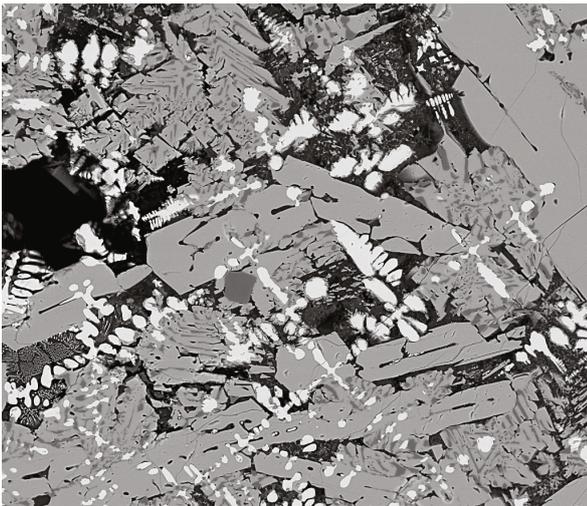
#### *Plano-convex cakes (PCC)*

These dense plano-convex accumulations of slag are referred to variously as 'plano-convex bottoms' and 'plano-convex slag cakes' (e.g. Heald 2008, 207). It is often difficult to distinguish on visual examination alone those cakes that are the result of iron smelting or smithing but the criteria applied here follows that outlined by McDonnell (1986) and aims to distinguish plano-convex accumulations of slag from smithing hearths from the furnace bases described previously.

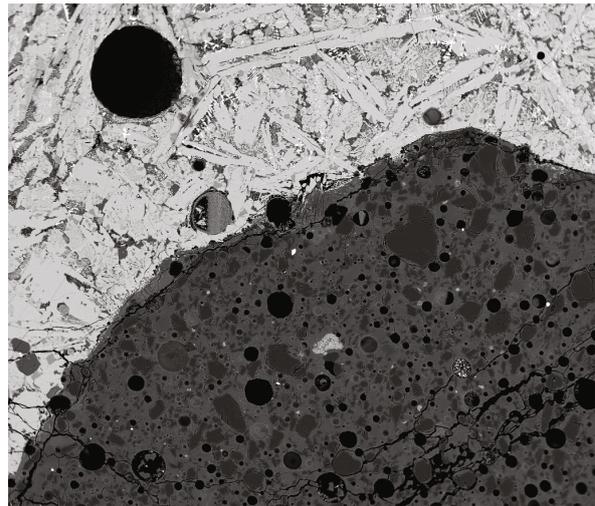
Hearth bottoms form as the result of high-temperature reactions between iron flakes, hammerscale and silica from the hearth lining or flux to form plano-convex accumulations at the base of the smithing hearth (Bayley et al 2001). They are recognisable by their characteristic plano-convex form, often displaying smooth dished upper surfaces which have become hollowed as a result of the downward pressure of the air from the bellows. Only four possible PCC fragments are present in the assemblage from Grantown Road (1.95kg). Two, SF 1 and SF 114, are substantially complete and are likely to be cakes formed in the base of a smithing hearth based on their size, morphology and magnetic levels; the other two fragments are dense wedge-shaped pieces with few surviving original surfaces, making further comment impossible.

SF 114 represents approximately 90% of a small compact and robust sub-circular cake of red-brown dense slag which is magnetic and vesicular in patches, with occasional small charcoal impressions. The upper surface of the cake is dished towards one damaged edge, consistent with smoothing of the surface due to sustained pressure from the air from the bellows. The cake has a maximum diameter of 110mm and is 55mm thick, consistent with McDonnell's classification. It was recovered from the fill of Post-hole [198] associated with Structure 4. The second cake (SF 1) is also substantially complete and represents an oval PCC with frequent large charcoal voids (D 15mm) on the slightly dished upper surface and charcoal impressions on the convex base. Only two original curving edges survive, making the original dimensions of the cake difficult to estimate, but must have been a minimum of 150mm in diameter and 56.5mm thick. This cake came from the fill of Pit [149].

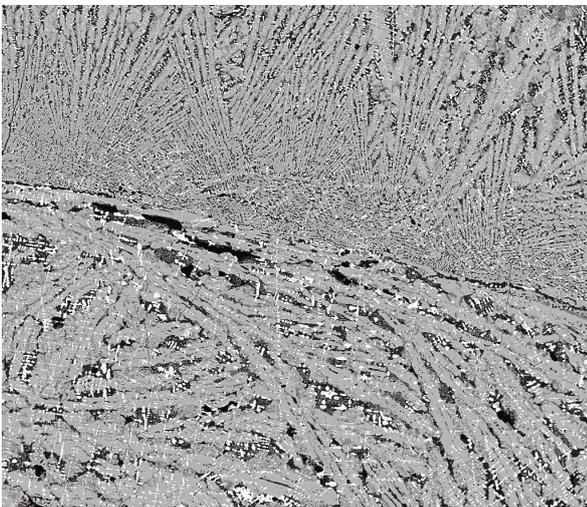
SF 114 was sampled twice for analysis: once from near the core (sample 6a) and once from near



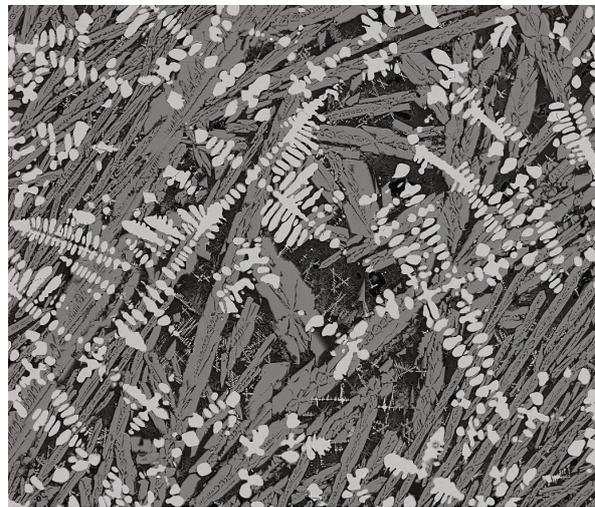
A



B



C



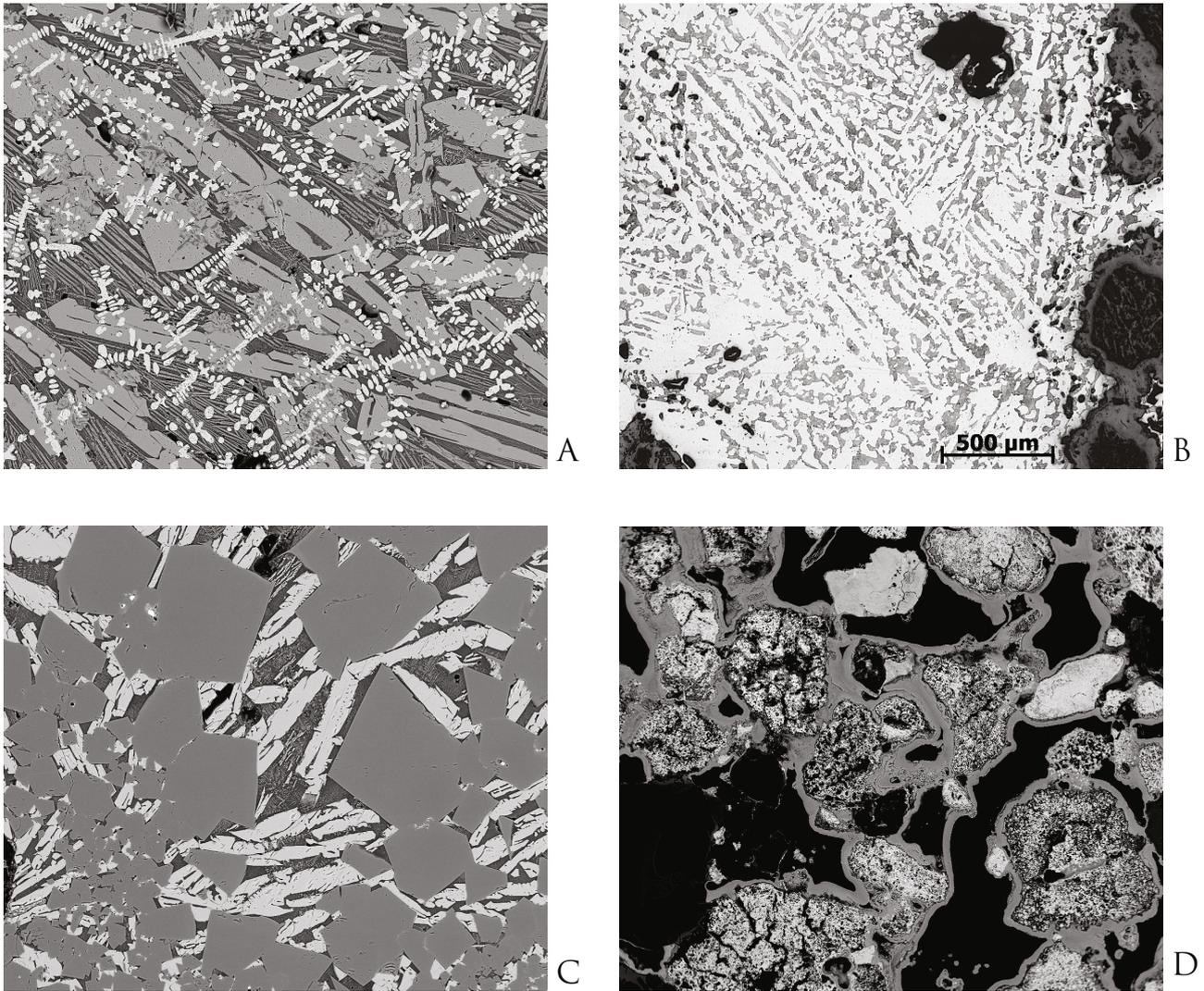
D

**Illus 20** A) Scanning electron microscope image of sample 2 (image width = 0.6mm); showing wüstite (white dendrites), fayalite (light grey laths) and hercynite (grey equiaxed crystals) in a complex matrix. Note the presence of some ex-solution hercynite within the margins of some fayalite laths. The matrix contains numerous patches of wüstite-leucite eutectoid; B) Scanning electron microscope image of sample 2 (image width = 3mm); showing slag at top and ceramic below. The slag contains wüstite (white dendrites), fayalite (light grey laths) in a complex matrix. The ceramic is vitrified with relict silica (dark grey) and rutile/illmenite/zircon/monazite (white); C) Scanning electron microscope image of sample 3 (image width = 1.2mm); showing two contrasting textures resulting from the build up of slag over time; D) Scanning electron microscope image of sample 6a (image width = 1.2mm); showing wüstite (rounded white dendrites) and fayalite (light grey laths) in a complex matrix

the periphery (sample 6b). The two samples have broadly similar microstructures: both contain wüstite dendrites, fayalite laths, occasional hercynite (both as individual equiaxed grains and as ex-solution at the margins of fayalite) and a complex matrix which contains some wüstite and fayalite dendrites in a glassy groundmass, and some leucite (Illus 20D & 21A).

*Unclassified iron slag*

Over 10kg of small, fractured pieces of magnetic and non-magnetic vitrified material is present. Such slags are a common component within a slag assemblage and can be produced during both smelting and smithing. Differentiating between the two through visual analysis alone is difficult and, as a result, such slags are often described as



**Illus 21** A) Scanning electron microscope image of sample 6b (image width = 1.2mm); showing wüstite (rounded white dendrites) and fayalite (light grey laths) in a complex matrix; B) Optical microscope image of part of sample 1 showing ferrite and pearlite; C) Scanning electron microscope image of sample 1 (image width = 1.2mm); showing hercynite (large grey equiaxed crystals) and fayalite (light grey laths) in a glassy matrix; D) Scanning electron microscope image of sample 5 (image width = 3mm); showing iron-rich particles cemented by iron corrosion

undiagnostic or unclassified iron slags. Those from Grantown Road consist of a mixture of red-brown, charcoal-rich amorphous nodules and fractured, dense, dark-grey pieces which can be magnetic and non-magnetic.

*‘Runned’ slag*

A total of 1.9kg of slag has a distinctive ‘ropey’, runned or flowed appearance and is often dark metallic grey in colour. Typically, this material is not magnetic and can often display large charcoal impressions where the molten waste has flowed

around and between charcoal lumps and then solidified. Such slags are typical of non-tapping bloomery furnaces (McLaren & Dungworth 2012), but small flowed runs can also be produced in a smithing hearth so not all slags with a runned appearance, particularly small pieces, are necessarily associated with smelting (Heald 2008, 207). ‘Runned’ pieces are often found in association with quantities of unclassified iron slag. At Grantown Road, 2.2kg of material is a mixture of small runned and unclassified fragments.

'Runned' slag should not be confused with tapped slag, where molten slag separated from the iron is deliberately 'tapped' from the furnace and allowed to pour out of the structure, either into a pre-prepared pit or channel or onto the ground to form extensive flat plates of slag (Bayley et al 2001; Paynter 2008, 267).

#### *Unclassified residues*

This class of material refers to small fractured pieces of amorphous iron slags and is essentially an extension to what has already been classified here as unclassified iron slags. The distinction is simply down to the size of the fragments, which are small enough to be mistaken for smithing residues on site or during sampling but contain no diagnostic smithing slags. A total of 1.2kg of such material was recovered. A further sub-group are those classified here as magnetic vitrified residues (58g). These include large plate-like flakes of slag which could easily be mistaken for hammerscale flakes diagnostic of smithing, but their size and morphology indicates that they are more likely to be plate-like spalls or films from larger corroding slag lumps.

#### *Slag spheres*

Slag spheres, when found in quantity, are typically considered to be diagnostic of iron-smithing consisting of small (cf around 1mm diameter) magnetic spheres of molten slag ejected from the bloom or billet during primary smithing. A single example is present amongst the Grantown Road assemblage. It is 2.7mm in diameter, weighs less than 0.1g and is magnetic. The sphere was recovered from soil sample retents from the fill of Post-hole [258], associated with palisade ditch 1.

#### *Other*

During visual analysis, several possible bloom fragments (1.35kg), including a possible part-forged example (SF 116) were identified amongst the assemblage. However, metallurgical analysis of two samples was unable to confirm this identification and the process that they result from remains uncategorised.

SF 116 was thought initially to be significant as it takes the form of a sub-square heavy cake (1.12kg) with rounded corners and is composed

of very dense, highly magnetic material. The cake is 120mm in length, 100mm in width and 56mm thick. The upper surface and edges of the cake are heavily cracked due to post-depositional corrosion in a similar form to that seen on iron objects. In contrast, the rounded base appears less well consolidated and retains the granular appearance of a slag cake with frequent small charcoal impressions. X-radiography confirms the object is very dense, implying that primary smithing may have taken place in an attempt to consolidate the material. However, on sectioning it was apparent that this sample (Dungworth sample 1) is composed mainly of slag but with perhaps 10% metallic inclusions, mostly present as a discontinuous band. The metal is composed of ferrite (iron) and pearlite (a eutectoid mixture of ferrite and cementite, an iron carbide) in proportions which suggest an overall carbon content of 0.3–0.4wt% (Illus 21B). The slag is dominated by hercynite ( $\text{FeAl}_2\text{O}_4$ ) with some fayalite ( $\text{Fe}_2\text{SiO}_4$ ), wüstite ( $\text{FeO}$ ) and a glassy matrix (Illus 21C). Hercynite is a frequent component of a wide range of early ironworking slags especially where the ore is rich in aluminium and/or where the slag contains an appreciable proportion of melted furnace lining. Hercynite usually forms a rather small proportion of ironworking slags (usually less than 10% by volume); however, this sample is most unusual as it contains around 50% hercynite by volume. The carbon content of the iron particles analysed indicates that the Grantown Road smiths were producing low-carbon steel (natural steel) rather than plain iron, consistent with the evidence emerging for contemporary ferrous metal production at Culduthel, Inverness (McLaren & Dungworth 2012).

A further possible bloom fragment (SF 111) from Context [158] displays no evidence of shaping or consolidation, maintaining a granular, red-brown, vesicular appearance. A sample of this material was also analysed (Dungworth sample 5). The results of this analysis are also contradictory to the visual classification as no metallic iron was found to be present. The sample presents a granular texture and this comprises iron-rich particles cemented by iron corrosion products (Illus 21D). The chemical analysis of the particles and the cement corrosion suggests the presence of hematite and goethite, but no relict microstructures were detected. It is likely

that this sample has been transformed by post-depositional processes (corrosion), but the original nature of the sample is not immediately apparent.

The third possible bloom fragment, SF 109, was recovered from the fill of Pit [151]. It was not subject to metallurgical analysis. Based on the results of the analysis of the other two ‘bloom’ fragments caution must be applied in this instance to the visual categorisation of this piece.

14.3.2 Non-diagnostic vitrified material

*Vitrified ceramic*

Recovery of vitrified ceramic is not indicative of ironworking but could have been produced within any clay-built high-temperature hearth. Surprisingly little vitrified ceramic was recovered at Grantown Road (0.7kg), which is likely to be a testament to the degree of truncation and weathering of features rather than a lack of use of clay components in association with the identified metalworking features. Where present the vitrified ceramics range in colour and texture from red-orange burnt clay through to dark brown/green/white-flecked vesicular fuel ash-type slag. One significant fragment is present, SF 3, which comprises superimposed layers of vitrified ceramic with slag-attacked faces, indicating at least two phases of firing. This fragment, likely to be furnace lining, was recovered from the fill (context 1110) of figure-of-eight-shaped Pit [1109].

14.3.3 Other

A single fragment of unworked coal and three very lightly vitrified, low-density pieces of cinder (6g) were recovered from the fill of truncated Post-hole [662]. It is likely that these represent fuel residues and are not necessarily linked to metalworking.

Small pieces of fired clay (8.9g), lacking any original surfaces, came from Furnace [157], as did fragments of heat-affected stone (114g). These probably derive from the furnace lining or superstructure. A nodule of unfired clay (58.5g) came from Pit [151].

**14.4 Distribution and contextual analysis**

A summary of the distribution of slags at Grantown Road is presented in Table 3 by context, feature and range of slag types present. The most significant deposit of material, consisting of a large quantity of smelting slags, came from the interior of a heavily truncated furnace [157]. Two closely associated Pits, [151] and [153], also contained a range of smelting slags and could plausibly be heavily truncated furnaces, but this was not confirmed in the field and they have therefore been described below as deliberate dumps in the absence of any associated structural remains. The greatest quantity of vitrified material at Grantown Road came from post-holes associated with ring-ditch Structure 4. These slags consist entirely of large fractured pieces of bulk slags,

**Table 3:** Quantity of vitrified material by deposit type

Deposit type	Feature	Mass (g)
Metalworking features	Furnace [157]	7924.8
	Furnace [212]	702.5
Deliberate dumps & significant deposits	Pit [149]	1352
	Pit [151] (furnace?)	14436.1
	Pit [153] (furnace?)	1519
	Souterrain [105]	5126.05
	Pit [208]	1126
Re-use as post-packing material	Structure [140]	15540.8
Residual material within secondary contexts		5776.75
Unstratified		14331.6
Total		67835.6

dominated by waste indicative of smelting and may have been deliberately incorporated within the post-holes as post-packing material. Several deliberate dumps of waste were also identified.

#### 14.4.1 In situ metalworking structures and associated features

##### *Furnace [157]*

Over 7.9kg of vitrified material and associated debris was recovered from the fill of this heavily truncated basal pit of a stone- and ceramic-lined iron-smelting furnace. The debris from this feature is dominated by bulk vitrified slags including large fragments of a dense furnace bottom (3.6kg) diagnostic of iron-smelting. Various fragments of unclassified iron slags (2.89kg), molten-looking runned slags (161.4g) and mixtures of the two (676g) were also recovered. A small edge fragment of a plano-convex cake, either a fragment of a further dense furnace base or portion of a smithing hearth bottom (177g), and small nodules of unprocessed bloom (96.7g) were also present alongside fragments of fired clay, heat-affected and slagged stone. This suite of slags is almost certainly the surviving remains of the last smelt undertaken within the furnace; associated charcoal dates this activity to 410–340 cal BC (SUERC-21591).

##### *Furnace [212]*

This heavily truncated basal pit of a furnace was identified in the field due to the heat-affected character of the soils within and immediately surrounding the pit. With the exception of a single small fragment of vitrified ceramic (329g), no substantial clay or stone lining survived and only 702.53g of vitrified slags, including runned slags and slag spheres, were recovered from its fill.

#### 14.4.2 Secondary dumps and significant deposits

##### *Pits associated with Furnace [157]*

Located in close proximity to Furnace [157] were several pits also containing bulk slags suggestive of waste from ironworking, probably smelting. These may be deliberate dumps of waste associated with Furnace [157]. Pit [149] contained over 1.3kg of bulk slags, consisting of a fragment of plano-convex cake (861g) and small fractured fragments of unclassified iron slag (491g) and Pit [153] contained large

furnace bottom fragments (914.4g) and unclassified iron slags (567g) as well as possible bloom fragments (37.6g). Pit [151] in contrast contained a large quantity of waste indicative of smelting (14.4kg) including large fragments representing a minimum of one substantial furnace bottom (10.6kg) as well as large quantities of runned/unclassified iron slags (3.57kg), a single small fragment of a plano-convex slag cake (26.7g), magnetic vitrified residues (17.2g), slag spheres (0.1g), as well as fragment of bloom (71.8g). Also present were small quantities of vitrified residues, vitrified ceramic and unfired clay. The quantity and range of iron-smelting slags present within Pit [151] in particular, but also possibly Pits [149] and [153], could hint towards these features being further heavily truncated furnace basal pits. Their close proximity with Furnace [157] helps to bolster this interpretation but the absence of any in situ clay or stone lining and the lack of heat damage to surrounding soils, as seen in conjunction with Furnace [157], makes confident interpretation problematic.

##### *The souterrain*

A substantial fragment of furnace bottom (5.1kg) and further small fractured residues (26.05g) indicative of iron smelting was recovered from the infill material within the interior of the souterrain. Identification of tip lines during excavation of this feature indicates the souterrain was deliberately backfilled and it is likely that the furnace base fragment was deliberately or incidentally incorporated within the infill material and cannot be directly related to the use or abandonment of the structure. Dating of associated charred material within the souterrain fills indicates a date range of 50–220 cal AD (SUERC-21590 and SUERC-21581) for this activity.

##### *Pit [208]*

Isolated Pit [208] contained only two fragments of vitrified material – a heavy dense sub-square cake (SF 13), and a small fragment of unclassified residue (6g). On the basis of visual examination alone SF 13 was initially identified as a partly forged bloom. Subsequent chemical analysis reveals that this cake has a very unusual composition dominated by hercynite, with only a very small proportion of iron present. The iron content of this cake is so low it

implies that any attempt to forge it into useable iron would have been unsuccessful.

#### 14.4.3 Secondary re-use

##### *Structure 4*

The greatest volume of slag from the site was recovered from features associated with Structure 4. A total of 15.5kg of bulk ironworking debris was found within three Post-holes ([196], 4.4kg; [198], 883.9g; [204], 548g) and Pit/Post-hole [207] (9.65kg). In addition, a small fragment of fuel ash slag (0.3g), not indicative of ironworking, came from Post-hole [216]. These bulk slags include two large fragments of at least two substantial furnace bottoms (4.36kg and 9.3kg respectively), a plano-convex cake likely to be a hearth bottom produced during iron smithing (886.2g) and unclassified iron slag (981.3g). The deliberate reuse of slags as metalling and building material is well attested elsewhere and has been noted at the recently excavated Iron Age sites at Birnie, Moray (F Hunter, pers comm) and at Culduthel Mains Farm, Inverness (McLaren & Dungworth 2012). Reuse of slags typically involves bulk slags only, with a preference towards large fractured pieces of plano-convex cakes and rake-out material as bulk slags such as these are fairly robust and would have been hard-wearing underfoot. Within Structure 4 they were confined to negative features, particularly post-holes, which make up the internal post-ring of the building and suggest that the slags may have been reused as post-packing material.

#### 14.4.4 Residual scatters

Background quantities (5.7kg in total) of waste material, typically small fractured pieces of bulk-slags, were observed as low-density scatters over wide areas of the site. This material probably derives from nearby in situ metalworking features as well as secondary dumps and spreads which have infiltrated many negative features on the site such as pits, post-holes and ditch fills, through a combination of soil creep, hillwash, human action and post-depositional slumping.

Residual scatters of waste were recovered from pits and post-holes associated with palisade ditches 1 and 2, structures 5, 6, 7, 8 and 9, four-posts 1 and 2, and isolated Features [169], [171], [193], [215], [238], [503] [901], [1109], [13305].

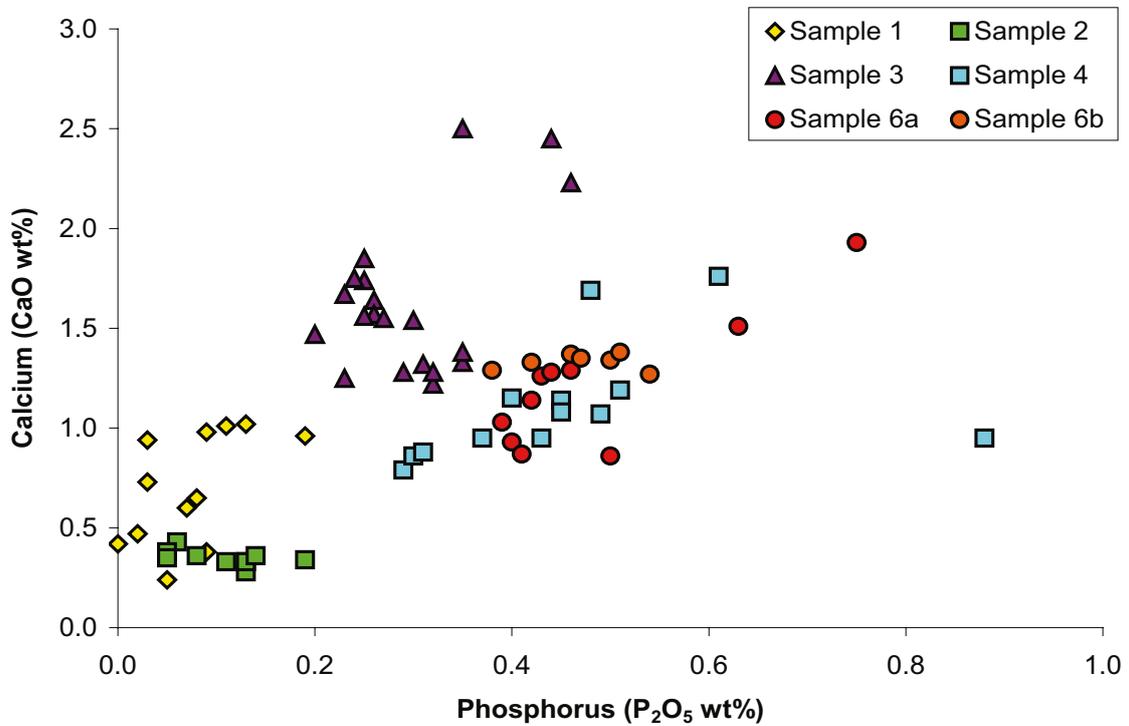
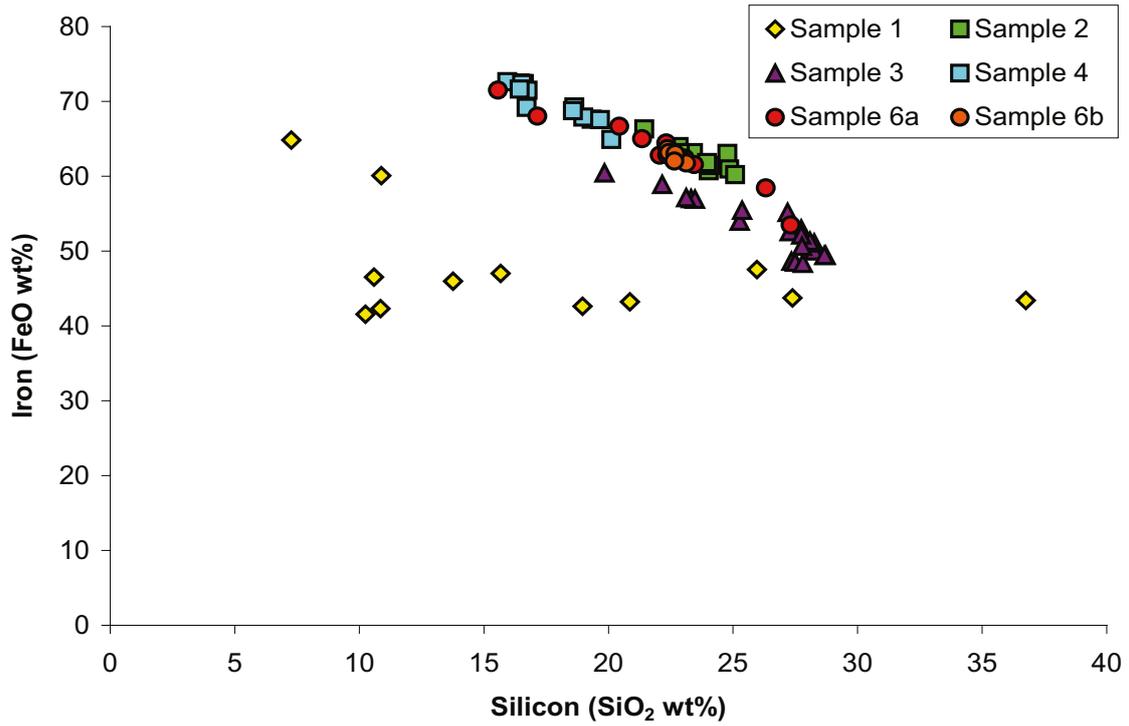
#### 14.5 Results of scientific analysis

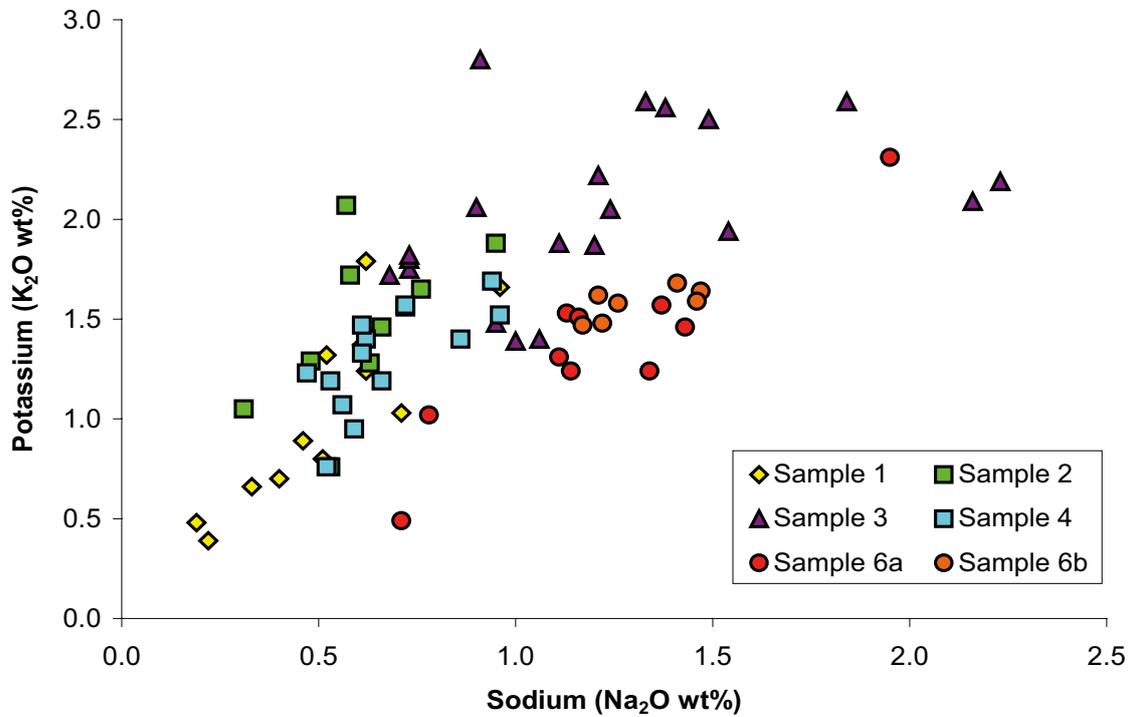
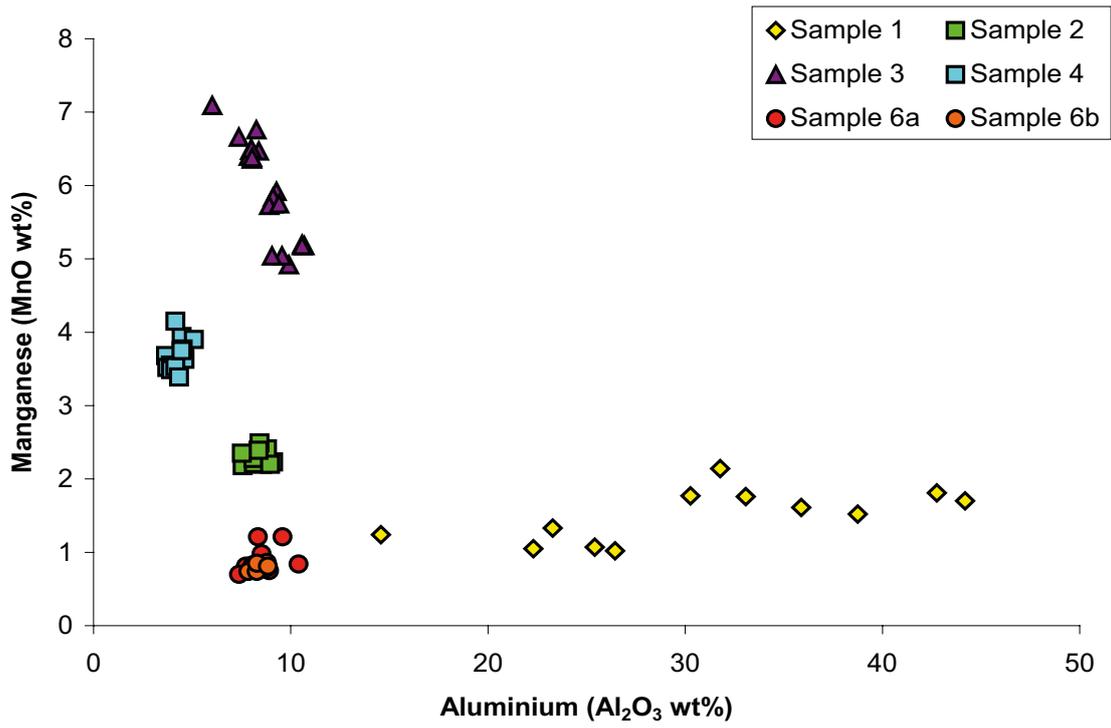
In all, seven samples of slag comprising a representational sample of the various diagnostic slag types identified at Grantown Road during macroscopic examination were selected for further analysis to determine the chemical composition and microstructure of the metallurgical debris (Table 4).

All samples were analysed using an energy-dispersive X-ray detector (abbreviated hereafter to EDS) attached to a scanning electron microscope (SEM). Each sample was analysed several times (each time in a new area). The analysis of multiple areas serves to provide an overall composition that is a better estimation of the bulk composition than

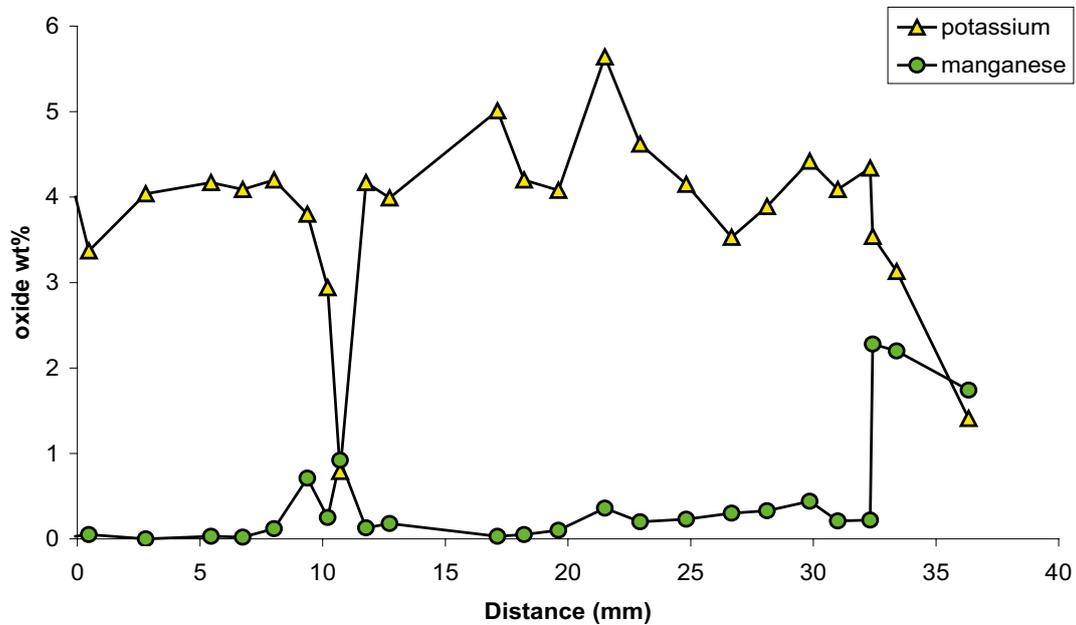
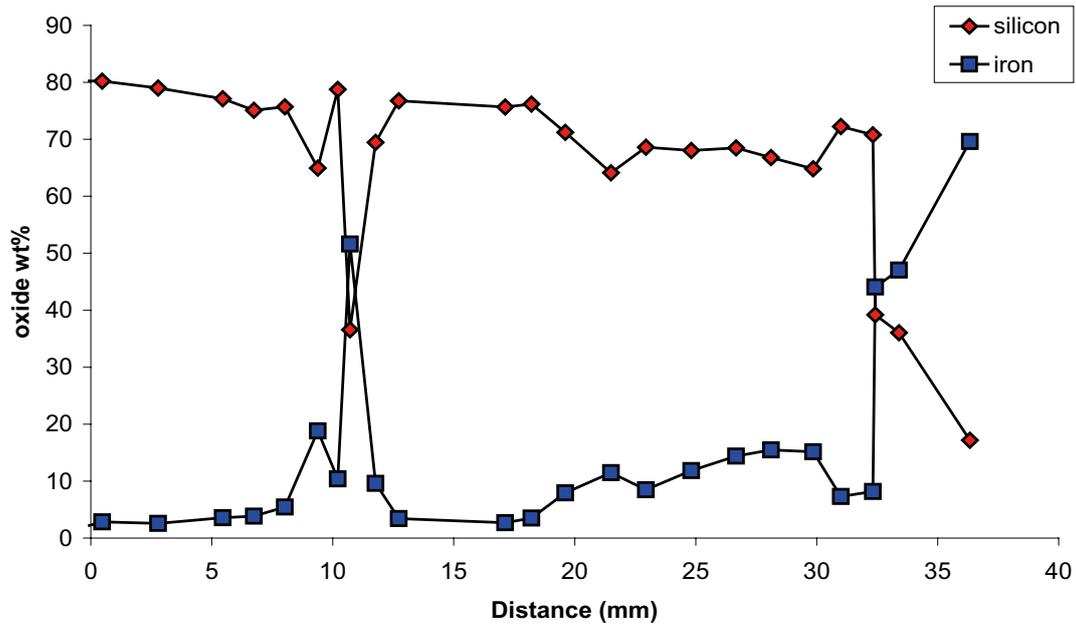
**Table 4:** Samples selected for analysis

Sample Number	SF No.	Context	Context Description	Visual Identification
1	116	209	Pit	Worked bloom
2	115	197	Post-hole	Furnace bottom
3	111	158	Furnace	Furnace bottom
4	111	158	Furnace	Unclassified ironworking slag
5	111	158	Furnace	Bloom
6a	114	199	Post-hole	Plano-convex slag
6b	114	199	Post-hole	Plano-convex slag
7	3	1110	Pit	Vitrified ceramic (furnace lining, repaired)
8	13	115	Pit	Nail





Illus 23 Upper: Aluminium and manganese content of the Grantown Road slag samples; Lower: Sodium and potassium content of the Grantown Road samples



**Illus 24** Upper: Linescan through sample 7. The drop in the silicon content and the rise in the iron content corresponds with the most vitrified portions of the sample; Lower: Linescan through sample 7. The drop in the potassium content and the rise in the manganese content corresponds with the most vitrified portions of the sample

any one individual area and also indicates the degree of chemical homogeneity/heterogeneity. All of the individual area analyses for all samples are shown in Illus 22–24.

In addition to the individual samples already outlined, a single iron nail (SF 15, Dungworth sample 8) was analysed to determine whether the composition of this finished product could be compared to the range of slags. However, sample 8 was found to be completely corroded and no metal (or slag inclusions) survived and so no quantitative analysis was attempted. Similarly, sample 5 – a possible bloom fragment – contained no recognisable slag or metal. In all other cases the data have been normalised to 100wt% in order to facilitate comparison between different samples and between the Grantown Road samples and those from other sites.

All samples except sample 1 are rich in silicon and iron; in most samples these two elements are negatively correlated and (as oxides) account for 85–88wt% of the sample (Illus 22). Sample 1 is exceptionally rich in aluminium (Illus 23) and this is reflected in the abundance of hercynite. Other elements are moderately abundant and include sodium, potassium, calcium and manganese. While the absence of any analysed ore samples makes it difficult to be sure of the extent to which these elements derived from the ore, the ceramic furnace lining and charcoal ash, some suggestions can still be made. The slags generally contain much more sodium (0.9wt% Na<sub>2</sub>O) than the furnace lining (0.3wt% Na<sub>2</sub>O) and this element is rarely a significant component of iron ores and so

presumably derives primarily from the charcoal ash. The slags contain more calcium than the furnace lining although this element could derive from ore or charcoal ash (or both). The slags contain less potassium than the furnace lining and this element could derive from the furnace lining or charcoal ash (or both) but is unlikely to have been contributed by the iron ore. Manganese is virtually absent from the furnace lining but is moderately abundant in the slags. This element can be present in some charcoal ash but is also very common in some iron ores. The nature of the ore source used at Grantown Road is uncertain but a bog ore is possible.

Sample 1, identified during initial visual examination as a possible fragment of worked bloom (SF 116) is quite distinct from the rest of the analysed samples due to the rich aluminium levels and the abundance of hercynite. This unusual chemical composition and microstructure is not readily paralleled amongst other analysed Iron Age, Roman or later slag assemblages and is not well understood. The low levels of aluminium present in the analysed furnace lining fragments from Grantown Road suggest that the high proportion of this mineral in sample 1 did not derive from the clay and is more likely to have been contributed by the ore. Sample 1 is also unusual due to the abundance of hercynite present and the very small quantity of iron that survives, implying the smelt that this slag is a bi-product of was highly efficient in extracting the iron particles from the gauge. The density, magnetic level and shape of the cake during visual examination was interpreted initially as resulting from primary smithing, leading to its classification as a worked

**Table 5:** Average chemical composition of the Grantown Road slags and some comparable Scottish bloomery slag (data for Argyll from Photos-Jones et al 1998; Atkinson and Photos-Jones 1999)

	Na <sub>2</sub> O	MgO	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	P <sub>2</sub> O <sub>5</sub>	SO <sub>3</sub>	Cl	K <sub>2</sub> O	CaO	TiO <sub>2</sub>	MnO	FeO	BaO
Grantown Rd	0.9	0.2	11.5	21.6	0.3	0.2	<0.2	1.5	1.1	0.1	2.5	59.8	<0.2
	±0.4	±0.1	±9.6	±3.4	±0.2	±0.1		±0.3	±0.5	±0.1	±2.0	±8.1	
Birnie	0.7	0.3	6.4	24.4	0.7	<0.2	0.3	1.1	1.1	0.2	3.8	60.7	0.3
	±0.3	±0.1	±2.4	±6.9	±0.4		±0.3	±0.5	±0.9	±0.1	±5.4	±9.7	±0.7
Culduthel	0.9	0.5	7.2	24.0	0.6	0.2	nr	1.9	3.3	0.1	3.0	58.0	0.3
	±0.5	±0.2	±2.9	±7.4	±0.2	±0.1		±0.8	±1.6	±0.1	±3.1	±12.8	±0.4
Argyll	0.9	0.3	7.1	22.3	0.5	0.4	nr	1.3	1.2	0.3	8.5	56.7	0.4
	±0.7	±0.3	±1.6	±4.8	±0.2	±0.1		±0.6	±0.7	±0.3	±4.0	±10.7	±0.2

bloom, but the composition and microstructure on analysis makes this interpretation unlikely.

Overall the Grantown Road slag samples share very similar chemical compositions with other early bloomery slags from Scotland (Table 5). The composition of these slags is also distinct from early bloomery slag from England (cf Paynter 2006). While the Scottish bloomery slags share the same high aluminium and manganese contents of slags from the east Midlands and the Weald, the latter are distinguished by higher levels of titanium (the Wealden slags also contain ore calcium). The differences between the different English iron-smelting regions are likely to be a result of the use of different ores (although furnace technology may also play a role). The differences between the Scottish and the English slags suggest that the Scottish ore sources were distinct from English ones. The dataset for Scottish bloomery smelting slags does not yet allow any identification of regional differences in the composition of the slags.

Sample 7 is a sample of ceramic showing two layers of vitrification. This suggests that it was part of a hearth or furnace and that this was repaired after a period of use. Analyses carried out on this sample through its entire surviving width show how composition changes with vitrification (Illus 24). The increase in iron and manganese in the most vitrified portions suggests that the vitrification took place in close proximity to molten iron-smelting slag.

This ceramic clearly formed part of the lining of a furnace and came from a part of the furnace subjected to some of the highest temperatures produced during iron smelting. The two layers of ceramic display the same chemical composition and it can be concluded that the repair was made using the same clay that was used for the initial construction. Other zones of vitrified ceramic adhering to other slag samples show more varied composition (in particular elevated levels of iron oxide) and are likely to have been altered by reactions with the adhering slag.

One sample of slag was identified as deriving from smithing (sample 6), three from smelting (samples 1–3) and one of uncertain origin (sample 4). The smithing slag has a composition which is in most respects within the range of compositions found in the smelting slags. The exceptions to this

are titanium, which is slightly higher in the smithing slag, and manganese, which is markedly lower in the smithing slag. McDonnell's (1986) study of early ironworking slags found that smithing slags contained little or no manganese (<0.3wt% MnO). McDonnell (1994) applied the manganese criterion to slags from Howe, Orkney but found that all slags (including examples which had been identified on the basis of their morphology as smithing slags) contained significant levels of manganese (0.6–3.0wt% MnO). The author's study of early ironworking slags from Culduthel and Birnie also found that almost all slags contained at least 0.5wt% MnO. The analysed slags from Birnie included certain smithing slags with hammer scale inclusions which still contained more than 0.3wt% MnO. McDonnell's manganese criterion for identifying smelting slags does not appear to apply in its original form to the Scottish bloomery slags which have been analysed to date. Scottish smelting slags do contain very high levels of manganese compared to most English slags and it is likely that the smithing slags derive in part at least from these slags (via the slag inclusions in the iron that was smithed). It would seem that Scottish smithing slags may contain up to 1wt% (or more) of MnO.

The microstructure of the iron within sample 1 suggests that at least some of the iron manufactured at Grantown Road was a natural steel rather than a plain iron. The smelting slags (and the unclassified slag lump) have compositions which are closely comparable with analysed examples from elsewhere in Scotland.

#### 14.6 Summary of 2006 slag assemblage

Excavations by AOC Archaeology Group in 2006 in a field adjacent to the areas currently under discussion here recovered a small suite of metalworking waste of Iron Age date (Heald & McLaren 2008). The assemblage consisted of over 2.4kg of vitrified material of which 2.19kg was indicative of ironworking. In contrast to the assemblage from the recent phases of excavation at Grantown Road, the waste recovered in 2006 comprises significant quantities of hammer scale flakes and slag spheres, considered to be diagnostic of iron smithing (Bayley et al 2001; Dungworth & Wilkes 2009). Similarly, the diagnostic bulk

slags from the site include plano-convex cakes consistent in size and morphology with smithing hearth bottoms rather than furnace bottoms resulting from iron smelting.

The majority of the vitrified material from the 2006 intervention – including those apparently associated with ironworking – was recovered from contexts associated with, or from the vicinity of, a timber-built roundhouse (Structure 2): from the fill of the roundhouse gully; three individual pit fills; surrounding heat-affected soil. Although none of the features can be stratigraphically related to each other it appears that some, if not all, were contemporary and Iron Age in date. Radiocarbon dates associated with Structure 2 indicate that the suite of slag was deposited during the 3rd century BC (Cook 2008). The amount of hammer scale and slag spheres from the site is very small and was not found in association with a hearth which could have been interpreted as evidence of in situ activity but the general spread of micro-debris does suggest that ironworking took place in the vicinity of the roundhouse during the pre-Roman Iron Age.

#### 14.7 Beyond Grantown Road: ferrous metalworking in context

In 2006 Hunter, Cowie and Heald (see references) drew attention to the need for archaeometallurgical research to better understand metalworking technologies, processes and the role of metalworking during the later prehistoric period in Scotland. It was highlighted that very little work had been undertaken on Scottish ironworking in particular, and that ironworking debris had seen little work beyond site-specific summaries.

Over five years on from the publication of this important paper the number of sites with comprehensive, well dated, in situ Iron Age ironworking evidence in the north-east of Scotland has grown considerably, due in part to developer-led excavations. And yet, even with the important recent excavations at Birnie, and Clarkly Hill (Morayshire – Hunter forthcoming a; Hunter forthcoming b), Culduthel Mains Farm, Beechwood, Seafield West and Bellfield Farm, North Kessock (all in and around Inverness – Murray 2007; 2008; Engl & McLaren forthcoming; Cressey & Anderson 2011; Murray 2011), and Kintore (Aberdeenshire – Cook &

Dunbar 2008), the number of sites involved remains small and many await full publication, necessarily limiting the comparisons that can be made here to the Grantown Road assemblage. The ironworking evidence from each of these sites is significant due to the quality of the preservation, each providing the potential to enhance our understanding of the craft, the technologies used and the role of iron production within site-wide economies and the region as a whole. The importance of iron and ironworking in north-east Scotland is currently the subject of detailed analysis as part of an ongoing doctoral research project (Cruikshanks forthcoming).

Whilst the results of this wider regional study are eagerly awaited, what can be said of Grantown Road and its significance within the context of ferrous metalworking in Moray and the north-east more generally? Two main points stand out. The first concerns the physical remains of ironworking structures on site. The heavily truncated Furnace [157] at Grantown Road is significant as it represents a poorly preserved but important addition to the growing corpus of Iron Age in situ ironworking structures known in the area. Only shallow traces of the basal pit of this feature survive, with stone and clay lining remaining on the base and three sides of the pit, but it appears to have been constructed following the same basic design as those at Culduthel Mains Farm, Inverness (Murray 2007; 2008), North Kessock (Murray 2011) and Tarra Farm, Forres (Will 1998, 66<sup>1</sup>) as well as having many points of similarity with the furnaces excavated at Birnie, Moray (F Hunter pers comm). Unlike the furnaces from Culduthel, no fragments of the clay superstructure of the furnace survive, making it impossible to estimate its original appearance or height but by reference to these other examples, a shaft furnace with clay-built superstructure is implied. At least one other Furnace [212] was noted at Grantown Road and two pits closely associated with Furnace [157] were associated with significant quantities of smelting slags; enough material to raise the question of whether these pits are the heavily truncated remains of two further iron-smelting furnaces.

The second point is the broad similarities between the chemical composition of the smelting

<sup>1</sup> Comparisons with the furnace at Tarra Farm remain speculative as the structure and associated ironworking debris have not been independently dated.

and smithing slags at Grantown Road with other analysed Iron Age assemblages in the area, specifically Culduthel. From analysis of only a small sample of the assemblage, we have been able to demonstrate that the smiths at Grantown Road were producing at least some low-carbon steel (natural steel) rather than plain iron, which suggests a sophisticated and comprehensive knowledge of the smelting process in order to control the iron alloy being produced. Analysis also reveals that the smiths were skilled in controlling the temperatures within the furnace as well as demonstrating that they had ready access to suitable qualities and quantities of raw ore, probably bog ore, and fuel in the form of charcoal. The production of natural steel at Grantown Road during the Iron Age is broadly contemporary with high-carbon steel production at Culduthel (McLaren & Dungworth 2012). This implies that the high degree of skill and technological knowledge required to control the alloy types being produced was more widely established and practised than originally thought, complementing even earlier evidence for high-quality steel production during Early Iron Age at Broxmouth, East Lothian (McDonnell 2014).

In general, the ferrous metalworking assemblage from Grantown Road is fairly homogeneous in terms of the range of slag types represented being dominated by large robust fragments of furnace bottoms and a range of rake-out materials suggestive of the use of non-tapping bloomery furnaces. In contrast to the well represented survival of waste indicative of iron smelting, iron-smithing waste is poorly represented and restricted to a couple of fragments of possible smithing hearth bottoms. Although some magnetic residue contained large plate-like flakes of slag, the morphology of these flakes is atypical of what would be anticipated from hammerscale produced as the result of smithing activities and is more consistent with flakes which have spalled off from larger slag nodules or even the interior of a smelting furnace and cannot be considered diagnostic of smithing activities on site. This picture contrasts sharply to the evidence recovered during the subsequent excavations (Heald & McLaren 2008). If the features excavated in both areas are considered to be part of a contemporary settlement or landscape, it appears that there was spatial, and possibly chronological,

separation between the main focus for smelting and smithing activities at Grantown Road.

Fragments of re-lined vitrified ceramic confirm that the furnaces would have seen repeated use, requiring frequent repairs to the clay shaft to maintain the furnaces' efficiency, confirming the observations noted at Culduthel (McLaren & Dungworth 2012). Observations on furnace re-use during experimental smelting suggests that a furnace could be used up to 40 times prior to the structure requiring significant reconstruction (Crew 1991, 22).

In pulling all of this data together, it is possible to see many points of similarity between the ironworking processes employed by the Grantown Road smiths and other Iron Age metalworking sites in the area, including similarities in the style of furnaces, the ore type being used and the general composition of the slag, all of which demonstrate shared technological knowledge. Where the Grantown Road assemblage stands out is in the different approach the smiths had towards slag produced within the furnace. Here, furnace bottoms predominate amongst the assemblage. These substantial slag cakes demonstrate that the smiths were regularly allowing the slag to build up in the bottom of the furnace during smelting. This contrasts to the assemblages from Culduthel, Birnie, Clarkly Hill, North Kessock, Beechwood and Kintore where, in general, the slag within smelting furnaces appears to have been raked out during the smelt, preventing any significant built up of slag. A few substantial furnace base fragments were recognised amongst the assemblage at Culduthel (McLaren & Dungworth 2012) but they were rare. Removing the slag during the smelt, rather than allowing it to accumulate, enabled the smelt to continue for longer and a larger bloom of iron to be produced (Bayley et al 2001, 11) but the multiple furnace bottom fragments found at Grantown Road suggests that this approach was not followed for each smelt.

What about scale of production? The number of furnaces at Grantown Road is small and the quantity of slag present, although significant, is overshadowed by the vast quantities of Iron Age iron waste present at Culduthel, Birnie and Clarkly Hill (McLaren & Dungworth 2012; Cruickshanks pers comm). It is possible that the latter sites were producing iron, and finished iron products, for trade outwith the settlement. Yet this level of production

is hard to argue for on the basis of the surviving remains at Grantown Road. Rather, this may simply be the traces of an occasional craft activity that took place as a series of short-lived individual episodes punctuated by periods in which no ironworking was being undertaken. A similar picture emerges from the ironworking evidence at East Beechwood Farm, Inverness, where the remains of a single furnace were revealed by excavation (Engl & McLaren forthcoming), making it clear that a variety of scales of production were taking place in the region during the Iron Age.

## 14.8 Conclusions

The ironworking evidence at Grantown Road forms an important addition to the growing corpus of Iron Age ferrous metalworking sites in north-east Scotland. A targeted approach to metallurgical analysis of representative samples of diagnostic waste associated with in situ, independently dated features was attempted, with significant results demonstrating that the Grantown Road smiths were highly skilled, producing at least some low-carbon steel rather than plain iron. The value of this chemical analysis has also demonstrated the ability to confirm visual, macroscopic identifications and to enhance our understanding of the technologies and processes used that would not have been otherwise accessible through visual examination alone. It has also highlighted the presence of individual fragments of waste within the assemblage where the macroscopic categorisation and chemical signatures are at odds. At present, understanding of these samples remains elusive but as the database of analysed material grows and as the concordance between visual identification and archaeometallurgical analysis becomes tighter it is hoped that outliers such as this will be better understood.

## 15. SOIL MICROMORPHOLOGY

*Clare Ellis*

### 15.1 Introduction

Three kubiena samples were taken from a section excavated through the fills of the souterrain. The summary results are given below (methodology and full descriptions can be found in the site archive).

## 15.2 Results and discussion

### 15.2.1 Summary description

All three contexts comprise coarse sand; the lowermost sampled deposit [176] is moderately sorted, while the middle Fill [182] and the upper Fill [183] are poorly sorted (Illus 11). Quartz dominates and there are few feldspars and frequent rock fragments. Very few to frequent rounded clasts comprising reddish brown silty clay occur in all the sampled contexts. Very few rounded clasts of well sorted sand and silt occur in all the contexts. The microstructure of Contexts [176] and [183] comprises weakly to moderately developed angular blocky peds; that of the lower portion of [183] and [182] is predominantly pellicular (thin coating of fine material around the mineral grains) with some bridged grain microstructure (thin coating of fine material around the mineral grains that forms bridges between the grains). The thin coatings are dominated by goethite. The lowermost Contexts [176] and [182] are compact. There is limited matrix material in Contexts [182] and [183]; but where present the fine material is yellowish to orange brown and isotropic to weakly anisotropic in CPL. The upper portion of [183] exhibits an enaulic related distribution (skeleton of coarse mineral grains with smaller aggregates between), while the lower portion and [182] a gefuric (coarser units linked by braces of fine material) and [176] a close porphyric (coarse mineral grains set within dense groundmass of fine material) related distribution. There is minimal charcoal; most is silt-sized and scattered within the finer matrix material, although there are a few coarse sand-sized fragments in [183] and lens of charcoal in association with phosphate and fragmentary biogenic silica in both [183] and [176]. All three contexts exhibit partially and wholly infilled channels, and a very few excrement pellets occur in [176]. The lowermost context also exhibits very few goethite coatings to voids and a few mottles.

### 15.2.2 Mode of formation and accumulation

The lowermost sampled Context [176] is a compact 'dirty' moderately sorted coarse sand. The moderately developed blocky peds may have accumulated as the result of natural fracturing and

gravitational transfer (Stoops 2003) of the coarse sand. The lack of an internal fabric is largely a consequence of post-depositional bioturbation, evident by the presence of infilled and partially infilled channels, rounded pellets of excrement and rounded fabric pedofeatures. As a consequence of this, any relic microstructure and fabric features produced as a consequence of the process or processes of accumulation have been destroyed. The fine material which occurs between the coarse sand contains some ash, mainly minute fragments of charcoal, which has been mixed throughout the unit. The compact, bioturbated and dirty nature of the deposit is likely to be a consequence of its use as a 'floor' layer; such a floor would have been inherently unstable. Given the mixed nature of the deposit it is unlikely to have accumulated through such natural eroding forces as wind-blow and runoff. It seems more likely that it accumulated relatively gradually during the use of the structure, mainly through the build-up of eroded material from the sides of the feature and the churning-up of the natural sands by tramping feet, etc. This is the only sampled unit that has goethite coatings to voids that have accumulated in situ from solution. One explanation is that moisture became trapped within the souterrain, causing episodic and localised saturation of the underlying sand.

Context [182] has been interpreted as a post-abandonment fill. Its rapid accumulation within the souterrain is indicated by the poorly sorted nature of the mineral grains, the lack of fine internal microstructure and lack of fine matrix material. The means of deposition is not clear, but could include a massive failure of banked material located adjacent to the feature or equally deliberate backfilling. The preferred orientation of around 35° dip of most (but not all) the larger rock and silt fragments is indicative of deposition from one side of the feature. There were at least two sources for this unit, a poorly sorted coarse sand about which goethite had precipitated prior to its disturbance and an organic, interbedded silt; the silt would probably have accumulated in a low-velocity environment rich in vegetation (e.g. pool, pond, abandoned river channel).

Context [183] is similar to Context [182] although it exhibits weakly developed blocky peds which are probably a consequence of ploughing

and/or natural fracturing and gravitational transfer. Context [183] is also less compact than [182] and the matrix material contains more amorphous organic material. The larger rock fragments show a preferred orientation about the horizontal. The presence of silt-sized charcoal and poorly defined clasts rich in ash derivatives are probably a consequence of manuring. Although the source of this unit must have been similar to that of [182] only two small clasts of silt rich in organic matter were observed and these occurred at the base of the slide. Context [183] has also been much disturbed by post-depositional bioturbation.

## 16. CREMATED BONE

*Rachael Ives*

A single cremation burial was recovered from the Late Bronze Age bucket urn V1.

The burnt bone was identified as human and represented a minimum of one adult individual. No pathological changes were identified on the remains. A few small pieces of charcoal were found with the cremated bone. No other associated pyre goods or grave goods were identified in the sample analysed for this report.

The results of sample total weight and weight per fraction as well as maximum bone fragment size are presented in Table 6. The total weight of burnt bone was 379g and of this 237g was identified to bone region (e.g. cranial, axial). The cremated human bone from Grantown Road was preserved in relatively large pieces as represented by a large total weight of the 10mm size fraction evident in the sample (40.6% of the total weight). The smallest percentage of the sample weight was represented by bone at the 2mm fraction size (24% of the total weight).

The burnt bone found in the bucket urn represented one adult individual aged 18+ years. There was insufficient skeletal evidence to enable a more accurate determination of individual age-at-death. Based on the robusticity of one region of the skull the remains were from a probable male.

The bone was highly calcined, indicating an efficient cremation pyre. The weight of the bone sample suggests incomplete retrieval of the skeleton from the pyre as well as some probable disturbance to the deposit following burial.

**Table 6: Grantown Road: Cremated bone weights and percentage distribution by fraction size and skeletal area, and maximum fragment size**

Context number	Total	10mm	% total	5mm	% total	2mm	% total	max frag	id. wt.	% total	skull	% id.	axial	% id.	u.limb	% id.	l.limb	% id.	
	wt. (g)	mm.	wt. (g)																
4003	379	154	40.6	118	31.1	91	24.0	62.8	237	62.5	71	29.9	20	8.4	71	29.9	75	29.9	31.6

17. DISCUSSION

**17.1 Neolithic activity**

Neolithic activity on site is restricted to three possible structures and a series of pits (Illus 4 and 5) ranging in date from the Early to Late Neolithic. That none of the three structures presents a recognisable ground plan, but instead generally comprises an irregular grouping of negative features, demonstrates the subsequent truncation observed across the site, which has removed much of the associated evidence. This is particularly evident in Structures 10a, 10b and 10c. The results are in keeping with recent excavations of Neolithic structures, which have identified more ephemeral buildings rather than the timber halls that have come to be associated with the period (for general discussion see Barclay 1996; Beechwood – Engl & McLaren forthcoming; Kintore – Cook & Dunbar 2008; Blairhall Burn – Strachan et al 1998; Milton of Leys – Connolly & MacSween 2003; Chapelfield – Atkinson 2002; Wardend of Durris – Cameron 2002; Kinbeachie – Barclay et al 2001; Deers Den – Alexander 2000; Beckton Farm – Pollard 1997; Millfield Basin – Waddington 2011; Laigh Newton – Toolis 2011; Newbigging – Cook et al forthcoming).

The possible Structure 12 contains perhaps the best preserved or most realistic ground plan, and contained an artefact assemblage including a saddle quern, end scraper and ceramics which are all suggestive of a domestic building. The building is larger than some of the more temporary structures excavated elsewhere and suggests more permanent occupation. A similar structure, although thought to date to the Later Neolithic, was excavated at Greenbogs (Structure C – Noble et al 2012), which further demonstrates the variety in Neolithic architecture.

A relatively large Neolithic ceramic assemblage was recovered, Impressed Ware and Carinated Wares from the structures and Grooved Ware from a single isolated pit. This small group of Grooved Ware sherds is an important addition to the steadily growing corpus of later Neolithic ceramics from sites in the north-east and the Moray Firth area in particular (Cowie & MacSween 1999). The Impressed Ware and Carinated assemblage, the majority of which was recovered from Structures

12 and 10a, was interesting in that both types were occasionally deposited in the same feature.

The role of pottery and other artefactual material within Neolithic pit groups has recently been considered at length (Anderson-Whymark & Thomas 2012). The evidence from Grantown Road broadly fits the picture emerging throughout much of the British Isles, of irregular shaped and perhaps ephemeral architecture associated with pits containing structured deposits.

Three sherds of two different carinated bowls were recovered from Four-post 2, a structure radiometrically dated to the Middle Iron Age. There is no reason to doubt the accuracy of the radiocarbon dates; two were obtained, from separate pieces of wood (although it should be noted here that Neolithic dates were obtained from four-post structures at Greenbogs (Noble et al 2012)). The Neolithic ceramic could have been deposited in the Iron Age structure either inadvertently through natural taphonomic processes or deliberately, as an act of curation. The Bronze Age cup-marked stone at the entrance to the souterrain is another example of this type of re-use of earlier material in an Iron Age structure.

## 17.2 Bronze Age activity

The Bronze Age occupation of the site consists of a single domestic structure, a burial and some isolated pits. Although spatially separate, the dated features all lie within the Later Bronze Age.

The general absence of more Bronze Age activity within the development is also reflected in the settlement pattern of the surrounding area. Large-scale excavations on the lowlands in the north-east such as Beechwood (Engl & McLaren forthcoming) and Culduthel (Murray 2007; 2008) have also demonstrated a general absence of Bronze Age activity in comparison to the extensive evidence for Iron Age activity. The reason for this absence may simply be that the lower-lying ground was not so intensively used at this time. At Grantown Road, additional features and structures were evaluated on the higher ground overlooking the sites discussed in this paper. The artefactual material recovered during the evaluation included undiagnostic ceramics which could be Neolithic or Bronze Age in date. The complete absence of recognisable Iron Age structures

on the higher ground supports the view that the higher ground was occupied in the Bronze Age, but was abandoned some time around the start of the 1st millennium BC, as at Lairg (McCullagh & Tipping 1998, 209) and Navidale (Dunbar 2007, 165) in Sutherland. However, an equally likely scenario is that we have simply not recognised the Bronze Age features in the truncated record and the evidence gives a false impression of the settlement record.

The domestic structure, Structure 11, comprises a double post-ring roundhouse with a possible ring-ditch. Few examples have been excavated in Moray, although at least one of a series of hut circles surveyed at Tulloch Wood is broadly contemporary (Carter 1993). No material culture was recovered from the house but analogy with excavated examples across Scotland, for example at Kintore (Cook & Dunbar 2008) suggests that this would have formed a residence for a family group.

Perhaps surprisingly, given the preponderance of Bronze Age burials in the surrounding counties (for example see Greig et al 1989; Hanley & Sheridan 1994; Ralston 1996; Cook 2008) few examples have been excavated in Moray. The majority of burials that have been identified in the north-east comprise cist burials disturbed by ground works, particularly ploughing. However, in Moray, of the 24 recorded Beaker sites, the contexts of only 13 are recorded as coming from either a cist or a mound, while another site was thought to be a cemetery site (information from Canmore). Only one modern excavation has taken place, at Corbiewells (Cook 2007). Such is the preponderance of Early Bronze Age burials in the north-east that Greig et al (1989) were able to discuss specific patterns in orientation of male and female burials in the area. Unfortunately, but perhaps unsurprisingly, the same level of information is not available in the Middle or Late Bronze Age. Cremation was used to inter the dead from 1500 BC onwards, but the evidence suggests that this was not as common a practice in Aberdeenshire as inhumation burial (Ashmore 2001, 2–3). However, this may be due to the factors of discovery rather than a true bias (*ibid*, 2). Only one other urned cremation has been identified in the area, at Findhorn, but this was a cordoned urn and was earlier in date (Shepherd & Shepherd 2001).

Previous discussions on Bronze Age burial and burial practice have generally concentrated on the

Early Bronze Age (Bruck 2004), perhaps due to the dearth of information for the Middle or Late Bronze Age (Ashmore 2004). However, analogy exists at Kintore, where three urned cremations, one of which contained a bucket urn and one an inverted urn, were excavated and dated to the Middle to Late Bronze Age (Cook & Dunbar 2008, 96).

Possible Bronze Age activity in the area is also reflected in the cup-marked stone used in the construction of the souterrain. The historic disturbance of rock art is attested in the identification of examples in other souterrains (for example Carlungie, Tealing III, Letham Grange and Pitcur; Hingley 1992; Dunwell & Ralston 2008). Hingley considered their inclusion within later monuments as an association with both ancestors and fertility linking the past landscape with the present (1992, 29). The red sandstone block is certainly of local origin. It seems likely that a local Bronze Age monument was disturbed, either accidentally or purposefully, when the souterrain was built.

### 17.3 Iron Age activity

The most extensive evidence for settlement activity on the site was of Middle Iron Age date. Located on an area of higher ground, the settlement contained evidence for a substantial ring-ditch roundhouse, a smaller ring-ditch, at least three other post-ring structures, two four-post structures, a souterrain and two palisaded enclosures. Another two ring-ditch roundhouses were identified to the immediate north-west, and certainly form part of the same settlement. Unfortunately this substantial settlement was bisected by the modern 8m-wide road and pavement, which probably removed other structures (Illus 3). The radiocarbon dates for the surviving structures demonstrate that there were at least three main phases of occupation during the Iron Age: IA Phase 1 (410–340 cal BC), IA Phase 2 (240 cal BC–00 cal AD) and IA Phase 3 (00 cal AD–220 cal AD).

The radiocarbon evidence suggests that there may have been a settlement here from at least the 4th century BC. However, the 4th century BC date came from a piece of oak recovered from Furnace [157], and although analogy with other sites suggests that ironworking activity at this date is possible (McLaren pers comm), it is also possible

that this apparently early date arises from the ‘old oak’ effect. That there are no other structures of this date supports this likelihood. If this is the case, the furnace is likely to be contemporary with IA Phase 2. This settlement comprised at minimum a substantial ring-ditch roundhouse (Structure 6), two small ring-ditches (Structures 2 and 3), a smaller post-ring (Structure 7) and a ring-groove (Structure 8), two four-post structures, and the ironworking furnace and possibly Palisade 1 (Illus 9 and 11). IA Phase 3 comprised a ring-ditch roundhouse (Structure 4), a post-ring structure (Structure 5), a souterrain and Palisade 2. Although it seems likely that the road has removed at least part of the contemporary settlement, it is clear that the site contained a relatively prosperous community which was able to produce enough surplus agricultural material to support metalworking activities. This is perhaps demonstrated by the presence of the enclosures, which would have contained a relatively large area for crops or animals. Like sites such as Seafeld West (Cressey & Anderson 2011), its location on the edge of a flood plain would have been advantageous, giving the settlement access to a greater diversity of wetland resources.

The settlement evidence is discussed below under three headings; domestic activity, agricultural activity and industrial activity.

#### 17.3.1 Domestic activity

It is argued below that not all the structures uncovered at Grantown Road were necessarily residential. Instead, it is proposed that the larger ring-ditch structures were the main residences, with the smaller structures for other functions.

The main domestic structures identified on site were the two substantial ring-ditches, which may have formed the focus of the settlement. The ring-ditch is a type of residential building identified throughout Scotland, and particularly in the eastern and southern lowlands, where cropmarks are more prevalent. The two examples at Grantown Road are comparable in plan, date and probable function to fully excavated examples recorded in Aberdeenshire (Cook & Dunbar 2008) and Angus (Dunwell & Ralston 2008), and more specifically to cropmark examples in Moray. The size, chronology and subsequent function of such structures has long

been discussed in terms of their use as byre-houses (Jobey & Tait 1966; Reynolds 1982; Armit 2002, 32; Harding 2004, 98; Cook & Dunbar 2008, 333; Dunwell & Ralston 2008, 101), where humans may have lived on an upper floor above storage space and the animals in the lower area. The identification of metalworking debris in Structure 1 at Grantown Road (Cook 2007) and a furnace within a roundhouse at Culduthel, Inverness (Murray pers comm) demonstrates the possibility of industrial functions for such structures. However, although the ring-ditch structures excavated at Grantown Road were either too poorly preserved or only partially excavated, the associated evidence implies that they were likely used mainly for domestic purposes. The identification of isolated furnaces, although they may pre-date the roundhouses (see above), demonstrate that metalworking took place outdoors, rather than within a structure. The possible contemporaneity of all three roundhouses with either the souterrain or the four-post structures suggests that the majority of foodstuffs might have been stored outwith the house. It is possible that animals were still kept stalled within the structures, but other than the ring-ditches, there is no direct evidence to support this.

Further analogy is only partially revealing as very few have been investigated in the immediate Moray area, with only one excavation known to the author, at Birnie (Hunter pers comm). Analysis of the Canmore database identified 96 individual ring-ditch sites in Moray, all of them unenclosed and lying between 1m and 300m OD. Of the total ring-ditch sites identified 57 consisted of single examples while 39 contained two or more examples. Few of the sites contained evidence for non-domestic buildings, although at least 11 were associated with linear enclosures and five with souterrains.

The associated and probably contemporary buildings are far less substantial than the ring-ditches. Unfortunately, little survives of the internal architecture of these structures to demonstrate any sort of pattern. On sites where survival is better, variation in, for example, size, architecture and artefact distribution has been used to demonstrate the possible presence of different classes living in different structures (Cook & Dunbar 2008, 342). While this is possible, all we can definitely say from

the surviving evidence at Grantown Road is that they probably represent a combination of additional domestic, industrial or agricultural structures built in close proximity to a more substantial ring-ditch. The problem is that it is rare for large areas to be excavated, in which the variety of all possible structures is exposed. At Seafeld West, irregular shaped post-built structures were recorded as livestock pens (Cressey & Anderson 2011, 36). These structures may have been used to house craft activities, although there is no tangible evidence for this. Perhaps each phase of settlement contained at least one domestic residence, an associated agricultural storage facility, a field system and outbuildings for craft activities.

Excavations in north-east Scotland and East Lothian have revealed the successive use of specific locales, due to a variety of factors not least of which may have been the overcrowding of the land (Romancamp, Fochabers, Barclay 1993; East Lothian, Haselgrove 2009). The interpretation of this pattern is that the inhabitants of the settlement stayed within the same area, but episodically moved around, perhaps at the end of the lifetime of the roundhouse. Dendrochronological evidence suggests that roundhouses may have had a lifespan as short as 15 years (Crone 2000), although the evidence, for example from Structure 4 (see above), suggests that houses were maintained and may have lasted longer than this lifespan. We could envisage a relatively small settlement, which grew and contracted over the years. The smaller houses may have been associated with the four-post structures and the souterrain while the ring-ditches were large enough not to need additional storage. If this were the case, then a single family could have occupied the general area, with the size of the roundhouse demonstrating a change in the wealth of the inhabitants.

### 17.3.1 Agricultural storage

The site contained three separate structures that are generally considered to relate to agricultural storage. The two four-post structures are broadly contemporary, relating to IA Phase 1, while the souterrain relates to IA Phase 2. In addition, two enclosures representing probable fields or stock enclosures were identified (see below).

### 17.3.2 The four-post structures

The two four-post structures are similar in size, shape and date. Such structures are known throughout Scotland, their morphology and date being diagnostic to neither period nor area. Recent discussion of these buildings has focused on their use as above-ground grain-storing structures, but alternative forms of storage are equally likely. The shape and size of the Grantown Road examples compare favourably with excavated examples in Angus and Aberdeenshire, falling between the top and bottom size range (Cook & Dunbar 2008, 344–45; Dunwell & Ralston 2008, 127–8). Although few charred cereal remains were recovered from the structures, this would be expected as the material was stored above ground. Rare dating evidence provided by radiometric dating and artefactual evidence places both structures within the 1st or 2nd centuries BC, immediately prior to the activity associated with the souterrain, and it would be tempting to suggest that the latter superseded the former (Dunwell & Ralston 2008, 127). To stretch the evidence slightly further, the combined volume of the two four-post structures might be equivalent to that of the souterrain.

Large-scale excavations at Deer's Den (Alexander 2000) and Kintore (Cook & Dunbar 2008), suggest that most four-post structures lie within specialist areas, often in rows, away from the main area of settlement. That the four-post structures are located next to an ironworking furnace suggests that there may have been a specialist area at Grantown Road too. The two four-post structures are broadly contemporary with Structures 2 and 3, which also contained evidence for metalworking.

Generally, four-post structures are almost completely absent from Moray, the only other example identified being at the excavations at Birnie, where an unenclosed settlement comprising ring-ditches and other features is currently being investigated. However, this almost certainly reflects the failure of the aerial surveys to pick up such structures rather than representing a genuine absence. A possible scenario is that when the four-post structures went out of use, they were replaced by the single souterrain, which could have stored the same amount of material.

An alternative explanation of the four-post structures is as the central setting of a roundhouse. Examples identified through aerial photography at Greenbogs (Donside) and Chapleton (Angus), with comparably sized square settings, enclosed by a ditch or post-ring, have been interpreted as residential buildings (Halliday 2008, 86–7). At Grantown Road, the relative depth and good survival of the central posts suggest that if there were surrounding wall structures they should survive, so their absence could be explained by the use of turf-built walls. Similar examples were excavated at Greenbogs, but produced Neolithic dates (Noble et al 2012). However, while this may be a likely scenario on other sites, the lack of associated features, especially in comparison to other structures on site, suggests that they were simple four-post structures.

### 17.3.3 The souterrain

The recent publication of a series of modern souterrain excavations from the 'southern Pictland' group (Coleman & Hunter 2002; Alexander 2005; Anderson & Rees 2006; Dunwell & Ralston 2008; Rees 2009) and the RCAHMS area surveys (Halliday 2008) has greatly increased our knowledge of this type of structure, but similar examples from modern excavations in the north-east remain rare. For example, despite containing comprehensive evidence for Late Iron Age domestic occupation, no souterrains were identified at Birnie (Hunter pers comm), Seafeld West (Cressey & Anderson 2011), Culduthel (Murray 2007; 2008), Beechwood (Engl & McLaren forthcoming) or Kintore (Cook & Dunbar 2008). Similarly, the souterrains of Moray remain relatively unexplored. Of the 11 known examples within the county, nine are known only through aerial photography, one appears to have been discovered in antiquity (Easter Backlands of Roseisle, NJ16NW39), and only one has been excavated under modern techniques (NMRS: NJ56SW16, Leitchestown Farm, Hunter 1994, for distribution map see Harding 2004, 199). The Grantown Road souterrain is therefore a very important addition to this limited corpus. It is also important for its possible association with a settlement, the associated evidence for ironworking and its chronology. Despite its apparent simplicity, evidence suggests that the structure underwent

at least two main phases of activity, including its deliberate dismantling and backfilling.

The abandonment of souterrains and associated settlements has long been discussed since they were first considered as 'Pict's Houses' by antiquarians. In relation to the souterrain at Newmills, Watkins considered that the souterrain and settlement was abandoned as the power of the local elite groups who controlled grain production was lost to more central, regional rulers (Watkins 1984). The radiocarbon dates suggest that both Structure 4 and the souterrain could conceivably have been abandoned at the same time. However, the radiocarbon dates demonstrate that the settlement continued after the demise of the souterrain. Alternatively, Armit discussed the abandonment of a series of souterrains in Angus due to the socio-political factors, specifically the Roman occupation of eastern Scotland. This is also questionable in relation to our example. While the souterrain was abandoned at roughly the right time, i.e. within the first two centuries AD, it is located outside the traditional boundaries of southern Pictland (Armit 1999, 591). Although evidence of Roman material and subsequent contact has been recorded at the Iron Age settlement at Birnie, the general paucity of artefacts and specifically Roman material at Grantown Road argues against major contact. Could a more straightforward argument for abandonment be that both structures were simply abandoned at the same time, at a birth or death in the family (Cook & Dunbar 2008, 342–4), or even the loss of access to local raw materials (such as iron or ore) required to remain on site?

The use and function of lowland souterrains has been discussed in depth elsewhere, although less has been written about the Highland examples, but it is perhaps worth reiterating Armit's observation that the variation in construction, size and lifecycle probably reflects similar variations in function (Armit 1999, 582, Anderson & Rees 2006, 53). The environmental sample recovered reflects the material deposited once the roof had been removed so does not necessarily have any bearing on its function. It is interesting that all but one of the artefactual items recovered from the backfill were associated with metalworking, whether as a waste product of the industrial process or as a metal-sharpening tool, but again this does not necessarily relate to its initial function. Previous discussions on the use of souterrains have suggested

both the ritual aspect of an underground chamber (Hingley 1992, 29; Armit 1999, 585) and their possible use as workshops. Although souterrains are now generally accepted as being for agricultural storage (Armit 1999; Harding 2004, 198; Alexander 2005, 91; Dunwell & Ralston 2008, 116), the proposed ritual aspect of the structure cannot be ignored, particularly when considering the inclusion of the cup-marked stone and the probable closing deposit of charcoal discussed above.

#### 17.3.4 General discussion of the Iron Age settlement

The structures uncovered during four episodes of fieldwork at Grantown Road are undoubtedly part of the same settlement which has evolved over time, and therefore provides important information on the development of Late Iron Age domestic settlement in the north-east of Scotland.

The earliest Iron Age activity on site, IA Phase 1 comprises the construction of an ironworking furnace between the 4th and 5th centuries BC (but see caveats about the dating of old oak above). The next phase of activity, IA Phase 2, comprises the two ring-ditch houses identified in 2002 and the two four-post structures, all of which date to between the 3rd century BC and the 1st centuries AD. The final phase of activity, IA Phase 3, comprises the construction and excavation of the ring-ditch and souterrain between the end of the 1st century BC and the 3rd century AD.

Although there is little stratigraphic link between any of the structures, the possibility remains that at least some of the undated structures are contemporary with the dated remains. Analogy with the evidence from both Romangate (Barclay 1993) and Birnie (Hunter pers comm), suggests that the Late Iron Age of the north-east may have involved a move towards permanent occupation, in contrast to the preceding Bronze Age, where activity was more episodic.

At Grantown Road we have the best evidence so far discovered for the direct succession of four-post structures by souterrains. The radiometric dates suggest that they could have co-existed, but it is more likely that the earlier four-post structures were superseded, on this site at least, by a new innovation. Though we cannot be certain of the total volume stored at each structure, the size of a souterrain is

roughly comparable to that of the two four-post structures combined (6.25 sq m plus 12.25 sq m compared to 24 sq m).

The volume of material stored within each of the structures raises the secondary question, who was it for? Combined with the possible storage space available within the roundhouses themselves, the settlement would have had the potential to provide for a relatively large group. Recent excavations have highlighted the fact that not all Late Iron Age settlements contain either four-post structures or souterrains (Dunwell & Ralston 2008, 131–2), and while the former could simply be the result of truncation, souterrains would be expected to survive better than most other structures on site. If we accept then that this is a true representation of settlement in Moray, rather than a result of survival, what are the reasons behind the evidence for storage facilities at Grantown Road? The general paucity of souterrains within Moray should not disguise the fact that the area must have been relatively well occupied in the Late Iron Age. The coastal forts of Burghead (Shepherd pers comm) and Cullykhan (Greig pers comm) were occupied at this time, while cropmark evidence has identified 96 ring-ditch sites throughout the lowlands of Moray, and Iron Age hut circles have been recorded in the uplands (Carter 1993). Even allowing for the probability that the ditches within some ring-ditches would have acted as souterrains, the possibility exists that some settlements may have been controlled or at least associated with other sites. However, it would be stretching the evidence to detect what type of relationship this would involve.

Similarly, the presence of ironworking furnaces implies that the status of the site may have been more than a domestic settlement. While it has been suggested that localised smithing would have been a domestic industry taking place on a small scale within settlements (Hingley 1992, 35), it seems improbable that it would have taken place at every domestic residence. Instead, we may be witnessing a minor but locally important residence that controlled both the agricultural produce and the local metalworking. The combination of aerial photography and evaluation has mapped the archaeology of the area, with at least three known ring-ditches within 600–1000m. Could the Grantown Road site have

controlled these surrounding settlements? Or were such sites the residences of the local farm workers? The unenclosed settlement at Birnie may have served a similar function, albeit one with much wider and more established connections.

#### 17.4 Early Historic activity

The evidence for Early Historic activity on site was limited, with only two structures and some isolated pits and areas of burning. This paucity of Early Historic evidence is reflected in other large excavations such as Kintore (Cook & Dunbar 2008, 356–7), Seafeld West (Cressey & Anderson 2011) and Beechwood (Engl & McLaren forthcoming), and has been further discussed in detail for the Angus area generally (Dunwell & Ralston 2008, 133–40). As is the case at the sites listed above, the structures at Grantown Road do not readily fall into any obvious existing structure types. Structure 9 shares some basic elements with a prehistoric ring-ditch, but also with some of the industrial features at Kintore. The identification of an Early Historic roundhouse, Structure 10c is unusual, particularly of so late a date. With no obvious parallels, the function of such a structure remains unknown. An interesting point is that without dating, this building would have been described as a prehistoric structure. It is possible that there is no real absence of buildings of this period. Instead, we are simply not recognising these structures as Early Historic.

#### 17.5 Conclusion

Since the early 1990s, commercial development has rapidly improved the archaeological record across Britain. This has also occurred in central and eastern Scotland, but it is perhaps only in the last 10 years that this has been demonstrated in the north-east. Perhaps more importantly, large-scale development involving large area strips is identifying material that would not be easily interpreted in small-scale work. This is particularly pertinent to some of the metalworking features identified in the north-east. The full extent of the settlement at Grantown Road has still not been exposed but at least through the investigation of four large adjoining areas we have been able to recognise the scale of the settlement.

While the residential development at Forres suffers from the same fate as the majority of sites identified on good agricultural land, i.e. it is subject to deep truncation, the sample size means we are still able to record a wide variety of features and structures ranging from the early prehistoric to the Early Historic period.

The evidence recorded from the four excavations completed at Grantown Road, Forres, indicates a landscape occupied episodically from the Neolithic through the Late Bronze Age and Iron Age to the Early Historic period, comprising both domestic and funerary activity. However, the floruit of activity occurred during the last two centuries BC and the first two centuries AD, in the form of an extensive Iron Age settlement which, together with the emerging evidence from the many other local sites mentioned in this paper, demonstrates the vitality of the area in this period.

#### 18. ACKNOWLEDGEMENTS

---

The various evaluations, excavations and post-excavation programme were funded by Springfield Properties Ltd, and their staff, in particular Mr

Bob McLeod and Joe Geoghegan, are thanked for their help throughout. Thanks are due to all the excavators; Stuart Farrell, Joe Feeney, Jamie Humble, John Bendicks, Ralph Troup, Ken Cooper, Alex Cooper, Nick Johnston, Jake Streatfeild-James, Jim Knowles, Lindsay Dunbar, Kevin Paton, Michel Kempinski, Rob Engl. The works were project managed by Murray Cook, and subsequently John Gooder. Anne Crone managed the post-excavation programme and we are grateful for her thorough editing of the report. The specialist reports presented in this paper are edited versions. The full texts, drawings and appendices are stored with the rest of the site archive in the National Monuments Record of Scotland (RCAHMS). Graeme Carruthers, Stefan Sagrott and Jamie Humble completed the illustrations, while Alan Braby drew the artefacts. The paper was refereed by Professor Dennis Harding and Strat Halliday, who was particularly generous with his time; their comments were very useful and have helped shape the final report. Ian Shepherd, Moira Greig and finally Bruce Mann were the curators responsible for the project on behalf of Moray Council and are thanked for all their help.

## 19. REFERENCES

- Alexander, D 2000 'Excavation of Neolithic pits, later prehistoric structures and a Roman temporary camp along the line of the A96 Kintore and Blackburn Bypass, Aberdeenshire', *Proc Soc Antiq Scot* 130, 11–76.
- Alexander, D 2005 'Redcastle, Lunan Bay, Angus: the excavation of an Iron Age timber-lined souterrain and a Pictish barrow cemetery', *Proc Soc Antiq Scot* 135, 41–118.
- Anderson, S and Rees, A 2006 'The excavation of a large-double-chambered souterrain at Ardownie Farm Cottages, Monifieth, Angus', *Tayside and Fife Archaeological Journal* 12, 14–60.
- Anderson-Whymark, H and Thomas, J (eds) 2012 *Regional perspectives on Neolithic pit deposition: beyond the mundane*. Oxford: Oxbow (= Neolithic Studies Group Seminar Papers 12).
- Armit, I 1999 'The abandonment of souterrains: evolution, catastrophe or dislocation?', *Proc Soc Antiq Scot* 129, 577–96.
- Armit, I 2002 *Celtic Scotland*. London: Batsford.
- Armit, I, Schutling, R, Knusel, CJ and Shepherd, IG 2011 'Death, decapitation and display? The Bronze and Iron Age human remains from the Sculptor's Cave, Covesea, North-east Scotland', *Proc Prehist Soc* 77, 251–278.
- Ashmore, P J 1999 'Radiocarbon dating: avoiding errors by avoiding mixed samples', *Antiquity* 73: 279, 124–130.
- Ashmore, P 2001 'Settlement in Scotland during the second millennium BC', in J Bruck (ed) 2001 *Bronze Age landscapes, tradition and transformation*. Oxford: Oxbow Books, 1–8.
- Ashmore, P 2004 'Absolute Chronology' in I Shepherd & G Barclay (eds) 2004 *Scotland in Ancient Europe: The Neolithic and Early Bronze Age of Scotland in their European context*. Edinburgh: Soc Antiq Scot Monog Ser, 125–38.
- Atkinson, J 2002 'Excavation at a Mesolithic and Neolithic occupation site at Chapelfield, Cowie, Stirling', *Proc Soc Antiq Scot* 132, 139–192.
- Barclay, G J 1993 'The excavation of pit circles at Romancamp Gate, Fochabers, Moray 1990', *Proc Soc Antiq Scot* 123, 255–68.
- Barclay, G J and Russell-White, C J 1993 'Excavations in the ceremonial complex of the fourth to second millennium BC at Balfarg/Balbirnie, Glenrothes, Fife', *Proc Soc Antiq Scot* 123, 43–210.
- Barclay, G J 1996 'Neolithic buildings in Scotland', in T Darvill & J Thomas, (eds), *Neolithic houses in Northwest Europe and beyond*, Oxford: Oxbow Books, 61–75.
- Barclay, G J, Carter, S P, Dalland, M, Hastie, M, Holden, T G, MacSween, A and Wickham-Jones, C R 2001 'A possible Neolithic settlement at Kinbeachie, Black Isle, Highland', *Proc Soc Antiq Scot* 131, 57–85.
- Bayley, J, Dunworth, D and Paynter, S 2001 *Archaeometallurgy*. English Heritage (= CFA Guideline 2001: 01).
- Becket, A & MacGregor, G 2012 'Big, pit, little pit, big pit, little pit ... Pit practices in Western Scotland in the 4th millennium BC', in H Anderson-Whymark & J Thomas (eds), 51–62.
- Bishop, R R, Church, M J and Rowley-Conwy P A 2007 'Cereals, fruits and nuts in the Scottish Neolithic', *Proc Soc Antiq Scot* 139, 47–103.
- Bruck, J, 2004 'Early Bronze Age burial practices in Scotland and beyond: differences and similarities', in I Shepherd & G Barclay (eds), 179–190.
- Cameron, K 2002 'The excavation of Neolithic pits and Iron Age souterrains at Dubton Farm, Brechin, Angus', *Tayside and Fife Archaeological Journal* 8, 19–76.
- Carter, S 1993 'Tulloch Wood, Forres, Moray: the survey and dating of a fragment of prehistoric landscape', *Proc Soc Antiq Scot* 123, 215–33.
- Coleman, R and Hunter, F 2002 'The excavation of a souterrain at Shanzie Farm, Alyth, Perthshire', *Tayside and Fife Archaeological Journal* 8, 77–101.
- Connolly, R and MacSween, A 2003 'A possible Neolithic settlement at Milton of Leys, Inverness', *Proc Soc Antiq Scot* 133, 35–45.
- Cook, M 2007 *The excavation of an isolated Bronze Age Beaker burial at Corbiewells*. HS Call Off Contract 4077/24.
- Cook, M 2008 'Neolithic and Iron Age structures at Grantown Road, Forres, Morayshire', *Northern Studies* 40, 3–22.
- Cook, M 2009 'Grantown Road, R2, excavation: data structure report'. Unpub rep for AOC Archaeology Group.

- Cook, M 2010 'Grantown Road, R2, evaluation and excavation: data structure report'. Unpub rep for AOC Archaeology Group.
- Cook, M, Engl, R, Hunter Blair, A and MacSween A forthcoming 'Prehistoric settlement and occupation at Newbigging Quarry, South Lanarkshire'.
- Cook, M and Dunbar, L 2008 *Rituals, roundhouses and Romans; excavations at Kintore. Vol. 1: Forest Road*. Edinburgh: STAR Monog Ser 8.
- Cowie, T 1993 'A survey of Neolithic pottery of eastern and central Scotland', *Proc Soc Antiq Scot* 123, 13–41.
- Cowie, T and MacSween, A 1999 'Grooved Ware from Scotland: a review', in R Cleal & A MacSween (eds) *Grooved Ware in Britain and Ireland*, Oxford: Oxbow Books, 48–56.
- Cowie, T G and Eremin, K 2011 'Fragments of Bronze Age sword moulds', in M Cressey & S Anderson, 24–7.
- Cressey, M and Anderson, S 2011 'A later prehistoric settlement and metalworking site at Seafeld West, near Inverness, Highland', *Scottish Archaeological Internet Report* 47.
- Crew, P 1991 'The experimental production of prehistoric bar iron', *Historical Metallurgy* 25.1, 21–36.
- Crone, B A 2000 *The history of a Scottish lowland crannog: excavations at Buiston, Ayrshire 1989–90*. Edinburgh: STAR Monog Ser. 4.
- Cruickshanks, G forthcoming *Iron in Iron Age Scotland: a regional study of production and use of iron from c.800 BC to AD 800*. PhD thesis; Univ Edinburgh.
- Dunbar, L 2007 'Fluctuating settlement patterns in Bronze Age Sutherland: excavation of a roundhouse at Navidale, Helmsdale', *Proc Soc Antiq Scot* 137, 137–168.
- Dungworth, D B 1997 'Iron Age and Roman copper-alloys from northern Britain', *Internet Archaeology* 2 (intarch.york.ac.uk/issue2/).
- Dungworth, D & Wilkes, R 2009 'Understanding hammerscale: the use of high-speed film and electron microscopy', *Historical Metallurgy* 43.1, 33–46.
- Dunwell, A and Ralston, I 2008 *Archaeology and early history of Angus*. Stroud: Tempus.
- Engl, R 2008 'The coarse stone', in M Cook & L Dunbar, 210–25.
- Engl, R and McLaren, D forthcoming 'The excavations at East Beechwood Farm', *Scottish Archaeological Internet Reports*.
- Engl, R 2013 'Grantown Road, R2, excavation: data structure report'. Unpub rep for AOC Archaeology Group.
- Ford, B and Walsh, A 1987 'Iron nails' in B Holdsworth (ed) *Excavations in the medieval burgh of Perth 1979–1981*, 139. Edinburgh: Soc Antiq Scot.
- Gannon, A, Halliday, S, Sherriff, J and Welfare, A 2008 'The Neolithic and Bronze Age landscape', in *In the shadow of Bennachie*, Edinburgh: RCAHMS, 45–78.
- Greig, M, Greig, C, Shepherd, A N and Shepherd, I A G 1989 'A Beaker cist from Chapelden, Tor of Troup, Aberdour, Banff and Buchan District, with a note on the orientation of Beaker burials in north-east Scotland', *Proc Soc Antiq Scot* 119, 73–81.
- Greig, M 1994 'Sites identified while checking aerial photographs and maps held by GRC, or as the result of an aerial reconnaissance programme', *Discovery & Excavation Scot* 1994, 29.
- Halliday, S 2008 'The later prehistoric landscape', in *In the Shadow of Bennachie: A Field Archaeology of Donside, Aberdeenshire*, Edinburgh; RCAHMS, 79–114.
- Hanley, R and Sheridan, A 1994 'A beaker cist from Balblair, near Beaully, Inverness District', *Proc Soc Antiq Scot* 124, 129–39 .
- Harding, D (ed) 1982 *Later Prehistoric Settlement in South-east Scotland*. Edinburgh: Univ Edinburgh Occasional Paper, 8.
- Harding, D 2004 *The Iron Age in northern Britain: Celts and Romans, natives and invaders*. London: Routledge.
- Haselgrove, C (ed) 2009 *The Traprain Law Environs Project: fieldwork and excavations 2000–2004*. Edinburgh: Soc Antiq Scot.
- Heald, A 2006 'The crucible', in H K Murray and J C Murray, 'Thainstone Business Park, Inverurie, Aberdeen', *Scottish Archaeological Internet Rep* 21, 12.
- Heald, A 2008 'Metalworking byproducts', in M Cook & L Dunbar 2008, 206–210.
- Heald, A and McLaren, D 2008 'The metalworking', in M Cook, 2008a, 8–11.

- Henshall, A 1982 'The finds', 225–244 in D B Taylor, 'The excavation of a promontory fort, broch and souterrain at Hurly Hawkin, Angus', *Proc Soc Antiq Scot* 112, 215–253.
- Henshall, A S 1983 'The Neolithic pottery from Easterton of Roseisle, Moray', in A O'Connor & D V Clarke (eds) *From the Stone Age to the 'Forty Five: essays presented to R B K Stevenson*, 19–44. Edinburgh; John Donald.
- Henshall, A S 1984 'Appendix 1: The pottery from Boghead, Fochabers, Moray', in HAW Burl, 'Report on the excavation of a Neolithic mound at Boghead, Speymouth Forest, Fochabers, Moray, 1972 and 1974', *Proc Soc Antiq Scot* 114, 35–73: 59–66.
- Henshall, A S 1993 'The Grooved Ware', in C J Barclay & C K Russell-White, 94–108.
- Hingley R 1992 'Society in Scotland from 700 BC to AD 200', *Proc Soc Antiq Scot* 122, 7–53.
- Holden, T, Hastie, M and Lyons, S 2008 'The carbonized plant remains', in M Cook & L Dunbar 2008, 251–272.
- Hunter, F 1994 'Leitchestown Farm' in M King & C Batey *Discovery and Excavation in Scotland 1994: an annual survey of Scottish archaeological discoveries, excavation and fieldwork*, 23.
- Hunter, F 1998 'The iron', in L Main 1998, 356–69.
- Hunter, F and Coleman, R 2002 'The excavation of a souterrain at Shanzie Farm, Alyth, Perthshire', *Tayside & Fife Archaeological Journal*, 8, 77–101.
- Hunter, F 2009 'The finds assemblages in their regional context', in C Haselgrove 2009, *The Traprain Law Environs Project*, 140–156. Edinburgh: Society of Antiquaries of Scotland.
- Hunter, F forthcoming a 'The excavations at Birnie, Moray'.
- Hunter, F forthcoming b 'The excavations at Clarkly Hill, Moray'.
- Hunter, F, Cowie, T and Heald, A 2006 'Research priorities for archaeometallurgy in Scotland', *Scottish Archaeological Journal* 28.1, 49–62.
- Jobey, G and Tait, J 1966 'Excavations on palisaded settlements and cairnfields at Alnham, Northumberland', *Archaeologia Aeliana*, 4 ser, 44, 5–48.
- Kinnes, I A 1985 'Circumstance not context: the Neolithic of Scotland as seen from the outside', *Proc Soc Antiq Scot* 115, 15–57.
- Laing, L and Longley D 2006 *Mote of Mark. A Dark Age hillfort in south-west Scotland*. Oxford: Oxbow.
- McCullagh, R P J and Tipping, R 1998 *The Lairg Project 1988–1996: The evolution of an archaeological landscape in Northern Scotland*. Edinburgh; STAR Monog Ser 3.
- McDonnell, J G 1986 *The classification of early ironworking slags*. Unpub PhD thesis; Aston Univ.
- McDonnell, G 1994 'The slag report', in B Ballin-Smith (ed) *Howe: Four millennia of Orkney prehistory. Excavations 1978–82*, 228–34. Edinburgh: Soc Antiq Scot Monog Ser 9.
- McDonnell, G 2014 'Metallurgical and vitrified material', in I Armit & J MacKenzie (eds), *An inherited place: Broxmouth Hillfort and the south-east Scottish Iron Age*, 393–402. Edinburgh: Soc Antiq Scot.
- McInnes, I J 1969 'A Scottish Neolithic pottery sequence', *Scottish Archaeological Forum* 1, 19–30.
- McLaren, D 2012 *Culduthel: the coarse stone*. Unpubl. report for Headland Archaeology Ltd.
- McLaren, D and Dungworth, D 2012 *The manufacture of iron at Culduthel: ferrous metalworking debris and iron metallurgy*. Unpubl. report for Headland Archaeology Ltd.
- McLaren, D and Hunter, F 2014 'The stone objects; Burland', in H Moore & G Wilson *Ebbing shores: survey and excavation of coastal archaeology in Shetland, 1995–2008*, 284–96. Edinburgh: Historic Scotland (= Historic Scotland Archaeology Report No. 5).
- MacSween, A 1995 'Grooved Ware from Scotland: aspects of decoration', in I Kinnes & G Varndell (eds) *'Unbaked Urns of Rudely Shape': essays on British and Irish pottery for Ian Longworth*, 41–8. Oxford.
- MacSween, A 1999 'Discussion: the Impressed Wares', in S Speak & C Burgess 'Meldon Bridge: a centre of the third millennium BC in Peebleshire', *Proc Soc Antiq Scot* 129, 76–80.
- MacSween, A 2001 'Pottery and Scottish Neolithic Impressed Wares', in G J Barclay et al, 62–5, 57–85.
- MacSween, A 2002 'The pottery', in K Cameron, 34–42.

- MacSween, A 2007 'The Meldon Bridge Period: the pottery from south and east Scotland twenty years on', in C Burgess, P Topping, & F Lynch (eds) 2007 *Beyond Stonehenge. Essays on the Bronze Age in honour of Colin Burgess*, 367–76. Oxford: Oxbow.
- MacSween, A 2008 'The prehistoric pottery', in M Cook & L Dunbar 2008, 173–89.
- Main, L 1998 'Excavation of a timber round-house and broch at the Fairy Knowe, Buchlyvie, Stirlingshire, 1975–8', *Proc Soc Antiq Scot* 128, 293–417.
- Manning, W H 1981 'Native and Roman metalwork in north Britain: a question of origins and influences', *Scottish Archaeology Forum* 11, 52–61.
- Manning, W H 1985 *Catalogue of the Romano-British iron tools, fittings and weapons in the British Museum*. London: British Museum.
- Murray, R 2007 *Culduthel Mains Farm Inverness Phase 5. Excavation of a later prehistoric settlement; assessment report*. Unpubl. report for Tulloch Homes Ltd.
- Murray, R 2008 *Data structure report of an archaeological excavation at Culduthel Mains Farm Phases 7 & 8*. Unpubl. report for Tulloch Homes Ltd.
- Murray, R 2011 *Bellfield Farm, North Kessock. Area 2 & 3 archaeological excavation*. Unpubl. report for Tulloch Homes Ltd.
- Nicolaisen, WFH 1976 *Scottish place-names: their study and significance*. London: Batsford.
- Paynter, S 2006 'Regional variations in bloomery smelting slag of the Iron Age and Romano-British Periods', *Archaeometry* 48, 271–92.
- Paynter, S 2008 'Metalworking remains', in P Booth, AM Bingham & S Lawrence, *The Roman roadside settlement at Westhawk Farm. Ashford, Kent, Excavations 1998–9*, 267–301. Oxford: Oxford Archaeology Monograph Series.
- Noble, G, Greig, M and Millican, K 2012 'Excavations at a multi-period site at Greenbogs, Aberdeenshire, Scotland and the four-post timber architecture tradition of Late Neolithic Britain and Ireland', *Proceedings of the Prehistoric Society* 78, 135–72.
- Pollard, T 1997 'Excavation of a Neolithic settlement and ritual complex at Beckton Farm, Lockerbie, Dumfries and Galloway', *Proc Soc Antiq Scot* 127, 69–121.
- Pollock, D 1992 'The excavation of a souterrain and roundhouse at Cyderhall, Sutherland', *Proc Soc Antiq Scot* 122, 149–60.
- Ralston, I B 1996 'Four short cists from north-east Scotland and Easter Ross', *Soc Antiq Scot* 126, 121–55.
- Rees, A 2009 'The excavation of an Iron Age unenclosed settlement and an Early Historic multiple burial and metalworking area at Hawkhill, Lunan Bay, Angus', *Tayside and Fife Archaeological Journal* 15, 23–72.
- Renfrew, J. 1973 *Palaeoethnobotany. The prehistoric food plants of the Near East and Europe*. London: Methuen & Co Ltd.
- Reynolds, P 1982 'Aspects of later prehistoric timber construction in south-east Scotland' in D Harding (ed), 44–56.
- Shepherd, I G and Shepherd, A 2001 'A Cordoned Urn burial with faience from 102 Findhorn, Moray', *Proc Soc Antiq Scot* 131, 1001–28.
- Sheridan, A 1997 'Pottery', 202–23, in D A Johnston 1997 'Biggar Common, 1987–93: an early prehistoric funerary and domestic landscape in Clydesdale, South Lanarkshire', *Proc Soc Antiq Scot* 127, 185–253.
- Sheridan, A 2003 'The National Museums of Scotland dating cremated bones project: results obtained during 2002/3', *Discovery & Excavation Scotland* 4, 167–9.
- Sheridan, A 2007 'From Picardie to Pickering and Pencaig Hill? New information on the "Carinated Bowl Neolithic" in northern Britain', in A Whittle & V Cummings (eds) 2007 *Going over. The Mesolithic and Neolithic transition in north west Europe*. Oxford: Oxford University Press (= *Proceedings of the British Academy* No. 144).
- Sheridan, A 2009 'The pottery', in H K Murray, J C Murray & S M Fraser *A tale of the unknown unknowns. A Mesolithic pit alignment and a Neolithic timber hall at Warren Field, Crathes, Aberdeenshire*, 81–93. Oxford: Oxbow.
- Sheridan, A 2011a 'The prehistoric pottery', in M Kirby 2011 'Lockerbie Academy: Neolithic and Early Historic timber halls, a Bronze Age cemetery, an undated enclosure and a post-medieval corn-drying kiln in south-west Scotland', *Scottish Archaeological Internet Report* 46, 12–18.

- Sheridan, A 2011b 'The pottery', in D Coles, A Sheridan & C Begg, 2011 'The excavation and recording of three sites at Knocknab on Torrs Warren, West Freugh', *Transactions of Dumfries and Galloway Natural History and Archaeology Society* 85, 37–44 (17–52).
- Smith, R 2001 *The making of Scotland*. Edinburgh: Canongate Books.
- Starley, D 2000 'Metalworking debris', in K Buxton & C Howard-Davis (eds) *Bremetenacum: Excavations at Roman Ribchester 1980, 1989–1990*, 337–47. Lancaster: Lancaster Imprints Ser 9.
- Stoops, G 2003 *Guidelines for analysis and description of soil and regolith thin sections*. Madison: Soil Science of America, Inc.
- Strachan, R, Ralston, I and Finlayson, B 1998 'Neolithic and later prehistoric structures and early medieval metalworking at Blairhall Burn, Amisfield, Dumfriesshire', *Proc Soc Antiq Scot* 128, 55–94.
- Toolis, R 2011 'Neolithic domesticity and other prehistoric anomalies: excavations at Laigh Newton, East Ayrshire', *Scottish Archaeological Internet Report* 49.
- Waddington, C 2011 'Towards synthesis: research and discovery in Neolithic North-East England', *Proc Prehist Soc* 77, 279–320.
- Wainwright F T 1963 *The souterrains of southern Pictland*. London: Routledge.
- Watkins, T 1980 'Excavation of a settlement and souterrain at Newmill, near Bankfoot, Perthshire', *Proc Soc Antiq Scot* 110, 165–208.
- Watkins, T 1984 'Where were the Picts?', in J G P Friell & W G Watson (eds) *Pictish Studies*, 63–86. Oxford (= BAR Brit Ser 125).
- Watson, WJ 1926 *The History of the Celtic Placenames of Scotland*. Edinburgh and London: Blackwood.
- Will, B 1998 'Tarra Farm, Forres: evaluation and excavation', *Discovery & Excavation Scotland*, 66.
- Williams, M 2003 'Growing metaphors: the agricultural cycle as metaphor in the later prehistoric period of Britain and North Western Europe', *Journal of Social Archaeology* 3.2, 223–55.
- Willis, S 1998 'Industrial fired clay objects', in L Main 1998, 371–6.
- Young, H W 1891 'Notes on the ramparts of Burghead, as revealed by recent excavations', *Proc Soc Antiq Scot* 25, 435–47.