

# GeoArch

Report 2010/13

Evaluation of archaeometallurgical residues from the N7, Castletown to Nenagh (Derrinsallagh to Ballintoty), Contract 1, Busherstown, E3661

# Evaluation of metallurgical residues from the N7, Castletown to Nenagh (Derrinsallagh to Ballintoty), Contract 1, Busherstown, E3661

Dr T.P. Young

## Abstract

*The archaeometallurgical residue assemblage from Busherstown comprises just 1.4kg of material. All of the assemblage is compatible with an origin in the working of iron (blacksmithing). A single block of good-quality iron ore may be a natural occurrence. The preservation of the slag is variable, with some pieces being very heavily weathered. Only a very small quantity of residue was recovered from contexts that were certainly of the later phase of activity on the site (12<sup>th</sup>-14<sup>th</sup> century). Some slag was recovered from early medieval features. The material is indicative of smithing in the general area, but suggests the focus of that activity lay outside the investigated area.*

## Contents

Abstract	1
Methods	1
Results	
Description of the residues	
Iron slag	1
Oxidised fired clay	2
Iron ore	2
Distribution of the residues	2
Interpretation	2
Evaluation of potential	2
References	2
Tables	
1. Summary catalogue	3

## Methods

All investigated materials were examined visually, using a low-powered lens where necessary. All items were logged to a database (Table 1). As an evaluation, the materials were not subjected to any high-magnification optical inspection, nor to any other form of instrumental analysis. The identifications of materials in this report are therefore necessarily limited and must be regarded as provisional.

## Results

### Description of the residues

#### *Iron slag*

The clearest evidence for ironworking was provided by examples of smithing hearth cakes (SHCs): a complete example from the clean-back of c350 (644g), a part of an SHC from c324 (336g) and a possible fragment from a small example from c81 (44g). These three examples together formed 75% of the entire assemblage by weight.

Small nubs of slag, probably hearth slags from smithing, but technically of indeterminate origin, came from c324. Other indeterminate slags came from c615 and c657. Each of these two small (8g) pieces was a flowed slag but it was not possible to determine whether they were from smelting or smithing.

Slags from c403 were too badly weathered to be certain of their characteristics. One fragment was probably slightly flowed, but the other, low density, piece had a curious morphology terminating in an abrupt smooth contact surface. It is possible, though not certain, that these pieces might be non-metallurgical, perhaps fuel ash slags of a kind occasionally found in corn drying kilns (e.g. Young 2010).

*Oxidised fired clay*

The upper fill of the "moat" produced several sherds of oxidised fired clay with a vitrified and slagged surface, probably from a single piece from the tip of a tuyère. The pieces yielded no detailed evidence for the morphology of the tuyère.

*Iron Ore*

Context c380, a fill of a medieval ditch, produced a single, rather worn block of a good quality goethite iron ore. This material is probably a rock ore, given its density. Goethite may occur as an ore mineral in its own right, or may be a secondary mineral in the gossan in the supergene parts of sulphide mineral veins. The ultimate origin of this block is unknown, and its occurrence here was not necessarily through human agency.

## Distribution of the residues

The material described here was distributed across the excavated part of the site at a very low density and with no clear focus.

The two SHCs and the possible SHC, for instance, all came from different settings. The large complete example was from the upper fill of an undated feature in the area of the interior of the enclosure, the possible example came from a medieval ditch and the part SHC came from a post-medieval ditch.

A cluster of finds was associated with the area of the SE corner of the enclosure, but the material all appears to be of accidental occurrence within its context and there are no features of metallurgical origin.

**Interpretation**

The assemblage represents a low background level of slag dispersal on the site. The material indicates that smithing was undertaken in the vicinity. Some residues occur in features dated to the early medieval period and it is not known whether the occurrences in younger features indicate further smithing, or residuality.

**Evaluation of potential**

The assemblage has little potential for enhanced understanding through further investigation and accordingly there is none recommended.

The assemblage is not of high priority for retention.

**References**

YOUNG, T.P. 2010. Fuel ash slags from corn-drying kilns, South Hook LNG Terminal. *GeoArch Report 2010/04*, 24 pp.

Table 1: summary catalogue by context. Weights in gram.

context	sample	weight	no	description
A1	7	36	5	pieces, possibly from one original object of oxidised fired (sand-poor) ceramic with a right-angled edge. Over the edge the adhering slag changes from black to wood-ash green, probably tuyère
			4	2
81	2	44	1	thin slag sheet of dense slag, possibly part of very small SHC. Top appears flat but is heavily accreted with coarse sand with no microresidues, base deeply dimpled with charcoal lump in one dimple
324	3	336	1	very weathered fragment from smallish SHC, shape irregular so size not determinable, top has a small patch of weathered glass now grey/green, top slightly dished, base has probably slightly prilly structure, but is obscured, internally vesicular and charcoal rich. Piece is 80x90x35mm
			48	3
cleanback of c350	4	644	1	130x125x30mm flat, concavo-convex SHC, base rough and granular with small adhering flow lobes at proximal side, top mainly smooth, blown smooth distally and has impressed charcoal fragments proximally.
380	5	96	1	smooth, transported, dense block of goethite ore. Almost certainly a rock ore since so dense. Surface smooth so microstructure not visible one small patch has red powder suggesting some interstitial haematite is present too.
403	6	4	1	lining slag adhering to reduced fired gravelly ceramic. Lining slag has grains floating in blue glass
		68	1	low-density slaggy material with planar contact surface at one end of sheet at 70 degrees to sheet, slag very badly weathered and not identifiable -- could even be non-metallurgical. Contains charcoal
		64	3	very badly weathered slag, apparently deeply dimpled or lobed, and apparently highly vesicular
615	8	8	1	weathered prill or flow of slag, probably originally with maroon surface, possibly contorted
657	9	8	1	hollow horizontal flow, terminating in slight lobes and with basal dimples (shaped rather like a cat's paw), top maroon, base formed of large probable olivine crystals parallel to surface, highly vesicular.

# GeoArch



*geoarchaeological, archaeometallurgical & geophysical investigations*

54 Heol y Cadno,  
Thornhill,  
Cardiff,  
CF14 9DY.

*Mobile:*  
*Fax:*  
*E-Mail:*  
*Web:*

07802 413704  
08700 547366  
Tim.Young@GeoArch.co.uk  
www.GeoArch.co.uk