

Report on the metalworking remains at Ballymakeery 6, Co. Cork (E4918)

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Description and Interpretation

Excavations ahead of infrastructure works at Ballymakeera 6 uncovered a pit containing slag and a nearby charcoal-production pit.

The keyhole-shaped pit (1021) was 1.2m long, between 0.3 and 0.78m wide and up to 0.15m deep (Fig. 1). Its fill (1022) contained about 5.5kg of slag, the majority of which is dense to rather dense and has clear horizontal flow structure (Fig. 2). Less frequent is slag that is porous, charcoal-rich and notably lighter (Fig. 3). The fine-grained flotation residue consisted mostly of small slag fragments (1-3mm). Radiocarbon analysis on organic material from this fill returned a date of between the mid-twelfth and the mid-thirteenth century AD (95.4% probability).

The structure is interpreted as the base of an iron smelting furnace with lateral slag removal with adjoining tapping pit. This type of furnace is known to have been used in Ireland from the 9th to the 16th century (Rondelez 2014: 126) which conforms to the date obtained. The 0.3m wide heath-affected narrow and shallow part of the pit represents the base of the interior of the furnace and would have been surrounded by a clay shaft. The slag with flow structure would have left the furnace and solidified in the adjoining tapping pit. The porous slag has been interpreted as forming directly below the bloom (Young 2012). The nature of frequent small slag fragments from the flotation residue is unclear and not normally encountered. This could be the result of the crushing of slag after it had cooled (to be added to a next smelt?) or the natural disintegration of less stable slag.

Although the dates do not overlap, a nearby charcoal-production pit, radiocarbon dated to the 10th to mid-12th centuries AD (95.4% probability), could have been used to make fuel for use in this furnace.

Bibliography

Rondelez P. 2014 *Ironworking in late medieval Ireland, c. AD. 1200 to 1600*. Unpublished Doctoral Thesis, University College Cork.

Young T. 2012 *Assessment of archaeometallurgical residues from the N69 Rea to Tullig Road Realignment Scheme, Cloonafinneela 1, Co Kerry (11E0354)* (= GeoArch Report 2012/01). Unpublished specialist report, GeoArch Ltd.

Catalogue

Cut	Fill	Sample #	Feature	Description	Weight (g)
1021	1022	1	Tapping pit	27 pieces of dense to rather dense slag with flow structure. Several pieces clearly flowed/solidified horizontally	1937
1021	1022	1	Tapping pit	Three pieces of rather light slag with frequent air cavities and inclusions of charcoal	270
1021	1022	2	Tapping pit	Coarse flotation residue mostly consisting of dense to rather dense slag with flow structure. Also some lighter rusty fragments, often with frequent charcoal inclusions	1691
1021	1022	2	Tapping pit	Fine flotation residue mostly consisting of small slag fragments (1 to 3mm). Some larger pieces, some with flow structure	1661

Figures



Fig. 1. Heat-affected furnace base (right) and adjoining tapping pit (1021).



Fig. 2. Tap slag with horizontal flow structure from pit (1021)



Fig. 3. Porous, charcoal-rich slag from pit (1021)