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Assessment of fired clay from Llandudno (NGL/23/SME)

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Abstract

This report details a re-examination of fired clay from this site, in order to identify any possible material of metallurgical origin.

Two slag fragments were present in the collection, from contexts (66A) and (94). In both cases these were probably rather dense varieties of fuel ash slag (FAS). FAS was previously recorded from (66) in the metallurgical assessment.

Context (66A) also produced fragments of fired clay with a lightly vitrified surface compatible with a hearth wall. This context has previously produced FAS.

A lightly-vitrified surface was also present on a fragment of fired clay from (215) – another context that has previously produced FAS.

None of the pieces was necessarily indicative of metallurgical activity, although potentially compatible with it. The degree of vitrification observed would also be compatible with some cereal drying kilns, perhaps building conflagrations, and long-burning large hearths (as suggested in the metallurgical assessment report), but would be of higher temperature origin than that of a typical domestic hearth.

The observations add to those made in the metallurgical evaluation and support the conclusions reached there. It is likely that none of the material is indicative of any metallurgical process.

Contents

Methods

Background

This assessment was commissioned by Rhiannon Philp of Archaeology Wales. The materials described and assessed here arise from excavations undertaken on land adjacent to Nant y Gamar Road, Llandudno (project NGL/23/SME). This report details a re-examination of fired clay from this site, in order to identify any possible material of metallurgical origin to add to the existing' metallurgical' report (Young 2024).

Assessment

All submitted materials were examined visually in January 2026, using a low-powered binocular microscope where required. They have been catalogued (Table 1) and assessed. No instrumental analysis has been undertaken.

Results

General

The total submitted assemblage weighed approximately 1080g (approximately 513 fragments).

The collection includes 16 fragments (25.6 g) of ceramic indicative of temperatures sufficient to induce vitrification as well as 2 fragments (6.4g) of fuel ash slag (FAS).

The material not showing a high degree of heat alteration has been catalogued in summary but is not discussed in detail here. This material was very variable but commonly displayed the properties of daub – with the imprint of straw or withies to the rear or internally. It was often highly tempered with grit and gravel.

Details

Vitrified ceramic and related material: context (66A) produced 8 fragments of fired clay with a lightly vitrified surface compatible with a hearth wall. This context also produced 7 further fragments of fired clay that showed a reduction/oxidation colour change that matched the pattern seen in the vitrified specimens, even though the vitrified surface layer was missing in these pieces.

A lightly-vitrified surface was also present on a fragment of fired clay from (215) – another context that has previously produced FAS. The vitrification was on a gently convex surface.

Fuel ash slag (FAS): two slag fragments were present in the collection, from contexts (66A) and (94). In both cases these were probably rather dense varieties of fuel ash slag (FAS). Both pieces were similar to those previously recorded from the site.

Distribution

The material showing high temperature alteration and melting derived from three contexts: (66A), (94) and (215).

Contexts (66) and (215) have already produced FAS that was considered in the previous reporting (Young 2024).

Interpretation

The present material supplements the collection of FAS as considered in the previous reporting and adds to the assemblage fragments of potentially associated partially vitrified ceramic, probably from a hearth wall.

If, as seems likely, the FAS and vitrified ceramics, are directly associated. Then it suggests the FAS formed within a built structure (a hearth or kiln) rather than a simple cut in the subsoil.

Discussion

The identification of a potential substrate from which the FAS might have been generated would permit the chemical modelling of the development of the FAS and potentially clarify the nature of the fluxing elements.

However, as the FAS has not been recovered directly from any specific originating feature, the archaeological value in undertaking any such analysis would be limited. In some settings, the nature of the fluxing material (e.g. differentiating between wood ash and seaweed ash), might be a significant archaeological question. No such specific question has been raised with the current assemblage – and fluxing by wood ash can be assumed.

Further work

As with the larger collection of fuel ash slag assessed by Young (2024), no further work is recommended, unless any specific archaeological questions are raised about the origin of the material.

Reference

YOUNG T.P., 2024. Assessment of materials from Nant y Gamar Road, Llandudno (NGL/23/SME). *GeoArch Report 2024/18,* 3pp.

Table 1: catalogue of submitted materials. Weights in g.

Context	Sample	S wt.	I wt.	I no.	
13			0.2	1	oxidised fired clay
66		124	124	11	rather variable oxidised fired clay, mostly slightly gravelly, many pieces sho organics (cereal steams?)
66A	5	45	4.3	8	oxidised fired clay with reduced surface layer with slag
			1.6	1	vesicular slag
			5.7	7	soft fired clay with reduction gradient, suggesting a high temperature origin, but no slagged surface preserved
			33	62	soft fired oxidised clay
66 quad B		19.4	19.4	6	rather variable oxidised fired clay, one piece shows part reduction
66B	6	44	44	38	sandy/gritty orange fired clay, single fragment more reduced
84	29	54	54	c100	debris of oxidised fried clay
87	21	7.2	7.2	17	crumbs of oxidised fired clay
87			91	1	block of evenly oxidised fired well-gritted ceramic, one1surface flat with smoothing marks
			2.2	1	chip similar to 50g piece, but also shows some organic moulds
			14	1	hard fired, red ceramic with grey lithic grits
			12	1	hard fired pink ceramic with largely pale inclusions (lime?)
94	17	127	127	28	mostly rather coarse gravely fired clay, 1 piece is surficial sheet cf 215/u/s material, one piece shows facetted oter surface
94		146	4.8	1	rather dense variety of vesicular FAS
			141	7	variable gravelly oxidised fired clay in amorphous large lumps
102	18	49	49	25	oxidised fired clay, larger pieces with probable wattle impressions
144		15.7	15.7	1	variably reduced fired clay with parallel withy or straw impressions on one face
162			3.6	1	irregular fragment of fired clay, slightly variable oxidation
215			9.9	1	thin sheets of fired clay, one surface oxidised and planar, the other side with irregular indentations and thin grey surface layer, possibly locally vitrified
215	25	66	50	41	variably oxidised fired clay, many with-like morphology
			15.6	1	oxidised fired cay with reduced fired clay, passing into this thin vesicular surface layer - so lightly vitrified
222	26	17.6	14.8		coarsely gritted clay, varies from oxidised to strongly reduced
			1.7		burnt? stone
			0.2		reduced, ceramic very dark
			0.8		oxidised fired clay

222			12.2	2	dark brown very gritty fired clay with elongate impressions
233	30	6.1	6.1	25	variably oxidised fired clay
317	37	79	79	105	oxidised fired sandy ceramic, many show flat, pale surface layer, 1-2mm thick, rich in sand; locally much darker brown/red from 10mm below this surface
ditch surface			4.1	1	sandy, buff/brown fired clay
u/s		132	68	15	irregular pieces of oxidised fired gritty clay, deformation suggests this daub
			31	2	sheets of fired clay cf. those from 215
			7.4	1	reddish gritty, pelletal fired clay with adhering mortar ?CBM
			22.7	1	coarse gravelly fired clay, one planar surface at approximately right-angles to a gently convex one

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