# GeoArch

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# Assessment of industrial residues from Wessex House, Gloucester (WHG/25/SME)

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## Abstract

*This report details a small collection of ten hand-picked items (total 7.8kg) and 9.9kg of residues from a single processed bulk sample.*

*The materials form a coherent group of mixed industrial waste materials, including fresh and spent fuel waste (coal, coke and clinker), a glassy slag, sand and gravel, ceramic materials (brick and tile), as well as probable mortar and pieces of iron.*

*The largest clasts are of a glassy slag. Without instrumental analysis this is not interpretable in detail but visually resembles slag from an iron foundry.*

# Contents

Abstract ..... 1

Contents ..... 2

Methods ..... 2
Background ..... 2
Assessment ..... 2

Results ..... 2
General ..... 2
Details ..... 2

Interpretation ..... 2

Further work ..... 2

Table 1: summary catalogue ..... 3

# Methods

## *Background*

This assessment was commissioned by Rhiannon Philp of Archaeology Wales. The materials described and assessed here arise from excavations undertaken on land formerly Wessex House, Gloucester. The site code is WHG/25/SME.

## *Assessment*

All submitted materials were examined visually in April 2026, using a low-powered binocular microscope where required. They have been examined and assessed. Given the nature of the collection, a narrative description, rather than a catalogue, is more appropriate. No instrumental analysis has been undertaken.

# Results

## *General*

The submitted assemblage comprised some blocks hand-picked from excavations (from contexts (1010), (1032) and (1055)), as well as a suite of residues from sample <1> context (1010).

The materials from all these sources formed a related group of materials.

The fine fraction (<5mm) of sample <1> from context (1010) was dominated by fuel waste, almost entirely coke, but with minor contributions from the other inclusion types. The coarse fraction (>5mm) was also dominated by particles of coke, but the other inclusion types were more strongly represented. The other inclusions include fragments of CBM, probably mostly brick, clinker, coal and a dark glassy slag.

The hand-picked larger blocks from both (1010) and (1032) included cemented material and large blocks of the glassy slag. A fragment of highly vitrified brick was recovered from (1055).

## *Details*

**Dark glassy slag:** these slags were of a dark green colour, translucent, but appearing almost black in substantial pieces. The large blocks show that the slag can occur in flows of up to 100mm in thickness (although some pieces represent much thinner flows, or parts of flows). The way-up of the fragments could not be determined, but it is believed most likely that the thick, massive glass flows (of up to 80mm) underlay a zone with tabular voids (with maroon surfaces to the glass). The probably upper sections included abundant pale partially melted inclusions. Without instrumental analysis it could not be determined whether these were relict coal-dirt particles (derived from the fuel) or were deliberate additions of a flux (for instance limestone) to facilitate slag formation. No inclusions of either metal or coke were observed.

**Clinker:** the samples were rich in fragments of clinker (the inorganic waste from burning coal). These were mostly in small pieces and commonly fragments of thin sheets (less the 5mm). These pieces are not what is typically seen in boiler clinker, and thus a metallurgical origin is possible.

One single fragment in the bulk sample <1> showed copper corrosion products on the surface of a clinker fragment. This resembles the waste commonly encountered from spillage in a foundry handling copper alloys in crucibles, but a more fortuitous origin from corrosion of a small copper alloy particle within the bulk sediment cannot be excluded.

In contrast, the single unstratified clinker fragment was part of a sheet approximately 35mm thick and was much more in keeping with typical boiler clinker – although that identification cannot be made positively.

**Coke/coal**: fuel waste was the dominant component of the sediment comprising (1010) and (1032). The majority of this was present as coke, almost certainly spent coal waste, rather than metallurgical coke.

Coal was present mostly as fine dust (<3mm), but a few more substantial lumps were observed.

Traces of charcoal were observed, but contrary to the context description, this was not, at least in the concretions, a significant component.

**CBM**: fragments of fired clay, probably highly fragmented brick or tile fragments were common in the sediments of (1010)/(1032). In the bulk sample, one thinner piece was almost certainly tile, the remainder was indeterminate.

Context (1055) yielded a highly vitrified fragment, probably from the corner of a brick. It was in a few sandy fabric. The high degree of vitrification suggests that this piece had formed part of a metallurgical installation and probably reached the site with the other metallurgical materials.

**Other materials**: the sediment of (1010)/(1032) include sand and gravel of both a siliceous and limestone compositions. Such material might be of a local origin. There were also small clasts of pale materials, probably burnt limestone or mortar.

Concretions: large concretions were present, derived from both (1010) and (1032). These showed an assemblage of clasts similar to those present in the bulk samples from (1010). They are likely to have formed through post-depositional cementation. One

shows hints of cracking associated with rust and it is likely that both may have formed around (unseen) pieces of iron.

## Interpretation

The material derives from an infill within the footprint of the 19th century buildings, but it is believed that they are not sealed by any pre-modern deposits – and may thus post-date the construction of those buildings.

The materials do not relate to any known use of the site itself and have therefore probably been imported. The adjacent railway would make such movement straightforward. The residues are not themselves directly associated with the activity on the railway.

The large works to the south of the city centre that produced railway wagons through the 19th and much of the 20th centuries, might be a plausible source for such a waste assemblage, but other smaller foundries were also present in other parts of Gloucester during the period.

## Further work

No further work is recommended, unless any specific archaeological questions are raised about the origin of the material.

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

| C | S | swt | it wt | notes |
|---|---|---|---|---|
| u/s | | | 77 | clinker; has coke clasts; variable vesicularity; from margin of mass c35mm thick |
| 1032 | slot 3 | | 816 | concretion; bears quartz grit, coal, coke, CBM, ash, glassy slag; probably formed on iron object |
| 1032 | | | 292 | dark glassy slag with pale inclusions |
| 1032 | | | 104 | glass with flow lines where intermixed with khaki glass; more vesicular than most of these examples, becoming very vesicular on one margin |
| | | | 500 | dark glass, shows basal flow over mixed limestone/quarz sand, some of which is partially incorporated; becomes more vesicular upwards over 50mm away from this surface; usual pale, siliceous clasts |
| 1010 | <1> >5mm 1 of 3 | 3500 | | see text |
| 1010 | <1> >5mm 2 of 3 | 3537 | | |
| 1010 | <1> >5mm 3 of 3 | 1624 | | |
| 1010 | <1> 2-5mm | 1250 | | |
| 1010 | | | 1175 | large block of glass slag; flow at least 90mm thick with inclined internal layers; abundant white/buff partially melted lithic clasts, more concentrated in some zones than others, bulbously lobed top |
| | | | 1205 | similar to 1175g block |
| 1010 | | | 1443 | concretionary layer 100mm or so thick, with all the clast types of the bulk samples |
| | | 3483 | 2040 | 95mm thick or more glassy slag flow; 35mm with large voids and slightly maroon surfaces; 60mm massive flow; way up not entirely certain, but vesicular part with abundant pale lithic clasts probably on top |
| 1055 | | | 189 | fractured corner from vitrified and slagged brick; very sandy composition |

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