



Oak Archaeology Wales CIC

DBA – Provenance Links Between the Craig Ruperra Quarry Scarp and the Ruperra–Machen Roman Military Complex: Evidence for On-Site Stone Dressing, Material Transport, and Architectural Use

1. Introduction

This Desk-Based Assessment (DBA) synthesises new field evidence relating to the quarrying, extraction, and preliminary dressing of sandstone near Craig Ruperra, and evaluates its relationship to the corpus of Roman architectural stone recovered across the Ruperra–Machen landscape. Building directly upon the conclusions of the previous DBAs—particularly the identification of the NE and SE boundary features and extraction scarp, and the demonstrated presence of Roman ashlar and reused masonry—this report integrates the recent detailed field survey, photographic analysis, and material comparison of stone fragments recovered both *in situ* at the suspected quarry face and at the nearby Roman military complex.

The objective is to determine whether (1) these two stone assemblages share a common provenance, (2) the observed dressing marks are consistent with Roman period working methods, (3) the quarry fits the operational footprint of a Roman supply system, and (4) the dressed fragments correspond to identifiable Roman architectural elements such as roofing tiles, paving slabs, ashlar blocks, or structural components.

The field report and recent photographic analysis substantially strengthen the case for an active Roman extraction and dressing zone at Craig Ruperra, supplying shaped stone to the main Roman complex approximately 1 km downslope.

2. Geological Context and Material Consistency

The stones from both contexts—the quarry scarp area and the Roman complex near Home Farm—share the same characteristics of the local Triassic and early Jurassic red–brown sandstone, the material historically exploited for Roman construction throughout southeast Wales (e.g., Caerleon, Usk, Caerwent). The quarry-side fragments display the same fine granular texture, laminated bedding planes, and weathering pattern as the fragments recovered at the Roman site.

Critically, the stone type is not only geologically consistent but demonstrates identical fracture behaviour:

- blocky detachment along bedding planes

- natural cleavage into trapezoidal segments
- a mix of rough quarry face surfaces and single dressed faces

Such uniformity argues strongly for a single localised quarry source—almost certainly the scarp identified in the LiDAR-based assessment.

3. Evidence for Quarrying and Preliminary Dressing Near the Scarp

The previous DBA identified a clear extraction scarp within the NE/SE boundary feature (formerly interpreted as non-natural), supported by LiDAR-derived geometry that aligns with Roman quarrying behaviours. The new field evidence builds upon that foundation, showing that several stones recovered below the scarp exhibit:

- **flat, intentionally worked faces**
- **straight or right-angled edges**
- **partial trimming consistent with rough-out preparation**
- **no evidence of complete finish or final dressing**

This is precisely what would be expected in a Roman quarry workflow, where heavy block reduction occurred at the extraction point to minimise weight and ease transport.

The stones photographed at the quarry site (IMG_0937, IMG_0939 and related frames) show rough-out working that is highly compatible with Roman practice: one face is flattened, edges are roughly squared, but the pieces remain unfinished. They correspond well with the “first-stage shaping” noted in comparable Roman quarries in the region.

4. Comparison with the Roman Masonry Assemblage at Home Farm

The stones recovered from the Roman complex exhibit:

- complete or near-complete flat slab faces
- consistent rectangular proportions
- thickness and dimensions suitable for:
 - paving stones
 - roofing slabs (stone tile substitutes)
 - structural interior flooring

- wall facings
- tooling or shaping marks consistent with secondary use and re-trimming

When directly compared with the quarry-side fragments, several of the Home Farm stones match the expected finished form of the rough-outs observed at the quarry. This includes thin rectangular slabs with flat faces, as well as more massive block fragments displaying squared corners.

The correspondence in material, working style, and size strongly suggests a direct operational link between the Craig Ruperra scarp extraction zone and the Roman military complex.

5. Roman Stone-Dressing Workflow and Its Relevance to Ruperra

Roman stone procurement typically followed a three-stage process:

1. **Extraction**
Removal of large blocks from a quarry face, producing rough, irregular forms.
2. **Rough Dressing at the Quarry**
Removal of waste stone and initial squaring to reduce transport weight.
This is precisely the stage represented by the quarry-side fragments.
3. **Final Dressing On Site**
Finishing of ashlar, paving slabs, roofing stones, or architectural elements.
This corresponds to the better-shaped material recovered at Home Farm.

The Ruperra assemblage exemplifies this workflow almost perfectly. The quarry-side stones are too rough and irregular to represent final-use pieces, yet they are unmistakably partly shaped. The Roman-site stones represent the continued process—flat, regulated, and conforming to architectural use.

This two-part assemblage (rough-outs at the quarry and finished pieces at the settlement) provides one of the strongest indications to date of a Roman-controlled supply chain operating along the Ruperra ridge.

6. Potential Architectural Uses: Roof Stones, Paving Slabs, Ashlar Blocks

Based on the dimensions, proportions, and working characteristics:

6.1 Stone Roofing Slabs

Several of the stones are the correct thickness (2–4 cm) and size for Roman stone roof tiles used where shale or sandstone was readily available. The stone in IMG_20250812_153340 (long rectangular slab) particularly matches this profile.

6.2 Paving Slabs and Floor Stones

The larger rectangular stones with flat upper surfaces are entirely compatible with Roman paving slabs, often used in barrack rooms, workshops, and storehouses.

6.3 Ashlar Facing Stones

Some fragments show the beginnings of squared corners and flattened faces—exactly the first-stage ashlar dressing seen in Roman fort and villa contexts.

6.4 Structural Fragments

A few stones show concave depressions or anomalous shaping, suggestive of broken architectural mouldings or the damaged remains of lintels or thresholds.

7. Spatial Relationship Between the Quarry and the Roman Complex

The proximity—approximately 1 km—between the Craig Ruperra extraction scarp and the Roman complex is entirely within the practical zone for Roman logistical supply. It would have been efficient to extract heavy stone at a ridge-top quarry, roughly dress it, and transport it downslope along established trackways to the construction area.

The LiDAR evidence documented in the earlier DBA demonstrates clear pathways and boundary alignments consistent with Roman land organisation and movement corridors. The new field evidence strengthens this interpretation.

8. Synthesis and Interpretation

Integrated together, the following points now form a coherent archaeological narrative:

- The Craig Ruperra scarp is almost certainly a Roman quarry, as previously proposed.
- Stone fragments directly below the scarp demonstrate Roman rough-dressing techniques.
- Matching stone at the Roman military complex exhibits the expected final-dressing stage.
- Geological identity and consistent working style indicate a single supply chain.

- The quarry and the settlement form an interdependent operational pair typical of Roman military installations.
- Roof, floor, and ashlar fragments confirm the architectural sophistication of the complex and its sustained occupation.
- Combined with previous LiDAR and masonry analyses, the landscape pattern at Ruperra now strongly resembles known Roman fort–annex–industrial precinct configurations elsewhere in Wales.

Taken together, this constitutes one of the clearest archaeological lines of evidence for a Roman military extraction and construction operation at Craig Ruperra.

9. Recommendations for Further Work

1. Petrographic Analysis

A thin-section petrographic comparison of quarry and site stones would conclusively confirm the shared provenance.

2. Microtoolmark Examination

High-magnification analysis may reveal chisel or pick marks diagnostic of Roman tools.

3. Targeted Archaeological Evaluation

Small test trenches at key points along the quarry floor and transport corridor could recover datable material.

4. Material Distribution Mapping

GIS-based mapping of stone fragments may reveal movement pathways or tipping zones.

5. Roofing Slab Experimental Reconstruction

Assessing the suitability of the stone as roofing material could support functional interpretations.

10. Conclusion

The combined evidence from the quarry scarp, the Roman complex, and the newly analysed stone fragments presents a consistent and persuasive argument for a Roman-controlled quarrying and construction network at Craig Ruperra. The rough-dressed stones at the scarp represent the first stage of Roman stone-working, while the finished pieces at Home Farm exemplify the second. Together, they provide compelling material confirmation of the

Roman architectural and logistical footprint previously inferred from LiDAR, boundary alignments, and reused masonry.

This third DBA therefore completes the interpretive arc begun in the earlier documents: the landscape surrounding Craig Ruperra can now be understood as a cohesive Roman military-industrial zone, integrating extraction, transport, construction, and occupation.

10. Illustrative Plates and Image-Based Evidence (Condensed Set)

Selected plates demonstrating quarry extraction, rough-out dressing, final dressing, and provenance linkage.

Plate 1 – Large Rough-Dressed Quarry Block with Broad Flattened Face



Plate 1: A substantial sandstone block located approximately two-thirds up the Craig Ruperra extraction scarp. The stone displays a broad, intentionally flattened face indicative of early-stage Roman quarry dressing. The rough but deliberate surface preparation suggests waste removal and shaping carried out directly at the quarry before transport. The ruler provides scale, showing the block's significant size and suitability as a rough-out for subsequent architectural use at the Roman complex downslope.

Key features visible in the plate:

- **Large, quarried sandstone block** with a broad, roughly flattened working face, consistent with early-stage extraction and primary shaping directly on the Craig Ruperra scarp.

- **Surface shows deliberate tooling and waste removal**, with uneven but purposeful levelling typical of Roman rough-outs prior to finer dressing at a secondary working site.
- **Ruler provides scale**, demonstrating the block's substantial dimensions and suitability for architectural reuse, aligning with other quarry-derived material linked to the Machen–Ruperra Roman complex.

Plate 2 – Cluster of Rough-Out Quarry Fragments Beneath the Extraction Face



Plate 2: A tightly grouped assemblage of partially worked sandstone fragments located approximately two-thirds up the Craig Ruperra scarp. Each block displays at least one intentionally flattened or trimmed face, consistent with Roman rough-out dressing performed directly at the quarry. The presence of multiple shaped offcuts in a concentrated area strongly indicates on-site working and the discard of unusable or incomplete pieces. This deposit sits immediately below the extraction face, supporting interpretation of an active Roman quarrying and shaping zone.

Key features visible in the plate:

- Five sandstone blocks displaying partially dressed faces and planar surfaces, consistent with early-stage shaping rather than natural fracture.
- Mixed geometries (rectangular, trapezoidal, and squared forms) typical of quarry-face waste produced during Roman ashlar preparation.
- Location directly against the extraction scarp, supporting interpretation that these are discarded working pieces associated with on-site stone dressing.

Plate 3 – Rectangular Worked Sandstone Block from Craig Ruperra (Two Views)



Plate 3: Two views of the same rectangular worked sandstone block recovered c. $\frac{2}{3}$ of the way up the Craig Ruperra extraction scarp. The block shows a uniform, artificially flattened face and clear straight-edge geometry, indicating deliberate shaping rather than natural fracture. The even thickness, rectilinear edges and tooling-consistent surface texture strongly support interpretation as a discarded or unfinished Roman ashlar or potentially an early roof/tiling element. The presence of weather-softened strike marks is consistent with Roman-period stone dressing, matching debitage characteristics recorded at other auxiliary fort quarries. The block's location upslope from the main quarried face reinforces the assessment that it represents on-site shaping waste, left behind before transport.

Plate 4 – Exposed Quarry Extraction Scar Showing Sequential Chisel Removal



Plate 4: An exposed extraction scar on the Craig Ruperra quarry face showing distinct stepped chisel removals created during the removal of a long sandstone block. The parallel ridges and negative impressions reveal systematic dressing with a straight-edged tool, consistent with Roman quarrying technique, where blocks were freed by cutting vertical and horizontal channels around the intended piece.

Key features visible in the plate:

- Clear stepped tool marks where successive slices of stone were removed.
- A long, linear extraction channel running beneath the ruler — matching the width of slabs found discarded on the terrace below.
- The sharpness and spacing of the tool traces correspond to Roman-period point and claw chiselling, not later post-medieval quarrying methods.

This scar provides rare in situ evidence of Roman extraction methodology on Craig Ruperra, directly linking the site to the rough-outs and shaped blocks found downhill.

Plate 5 – Partially Worked Stone Assemblage Found 800 m Downslope from Craig Ruperra



Plate 5: A dispersed group of sandstone blocks located approximately 800 m south of the Craig Ruperra quarry scarp, on the projected route toward the Roman military complex. The assemblage includes stones showing clear evidence of preliminary shaping:

- The large block on the left displays a hollowed working depression (“cup-mark”) consistent with failed or abandoned quarry rough-out.
- Several mid-sized blocks (centre) show flat struck faces, moss-covered but still visibly tool-prepared.
- The lower right block has straight, regulated edges, indicating quarry-side preparation prior to intended transport.

This cluster provides strong circumstantial evidence for a transport corridor or working zone, where stones were roughed out at the Craig and then moved downslope in batches toward the Roman site, consistent with Roman logistical practice and the findings from the previous DBAs.

Plate 6 – Reused Roman Dressed Block in the Boundary Wall at St James’ Church, Rudry



Plate 6: A finely tooled sandstone block incorporated into the boundary wall of St James’ Church, Rudry, displaying distinctive parallel tooling marks (fluting) consistent with Roman-period ashlar dressing. The crisp, evenly spaced grooves are characteristic of Roman claw-chisel or comb-chisel finishing, not later medieval or post-medieval working techniques.

This reused masonry fragment provides:

- A direct comparative example for identifying Roman tooling in the Craig Ruperra assemblages.
- Evidence of Roman dressed stone circulating in the immediate region, supporting the case that high-quality stonework was quarried locally and redistributed.
- A meaningful typological match with the heavily tooled surfaces visible on fragments found at the Craig scarp and within the Home Farm Roman complex.

This plate acts as a diagnostic reference for recognising Roman workmanship in the Ruperra landscape.

Plate 7 – Secondary Use of Roman Ashlar in the Rudry Churchyard Boundary Corner



Plate 7: Corner of the boundary wall at St James’ Church, Rudry, incorporating a heavily worked block with deep, regular claw-chisel grooves—a diagnostic hallmark of Roman ashlar finishing. The worked face is built sideways into the corner, demonstrating secondary use (“spolia”) in a later structure.

In contrast to the medieval rubble surrounding it, the tooled block is:

- Better dressed, with a uniformly flattened face;
- Marked by parallel, purposeful tooling, inconsistent with natural fracturing;
- Comparable in tooling style and sandstone type to the fragments recorded at the Craig Ruperra quarry and the Roman military complex at Home Farm.

This plate reinforces the DBA conclusion that Roman masonry circulated widely across the area and was repurposed in later historic buildings, providing a crucial comparative reference point for identifying Roman workmanship at Craig Ruperra.

Plate 8 – Wider View of Boundary Wall at St James’ Church, Showing Reused Roman Block in Context



Plate 8: A wider elevation of the **south boundary wall** at St James’ Church, Rudry, showing the architectural context in which Roman ashlar fragments are reused. The wall is predominantly constructed of irregular dark rubble stone, typical of post-medieval boundary construction.

Within this matrix, one rectangular, lighter-coloured block near the centre (slightly right of middle) exhibits:

- A noticeably smoother worked face,
- More regular geometry than the surrounding stones,
- A likely reused Roman origin, matching the tooling and stone type observed in Plates 6 and 7.

This plate demonstrates how Roman masonry was selectively incorporated into later structures, often standing out due to its superior dressing, even after centuries of weathering.

11. Summary of Visual Evidence and Its Significance

The photographic plates presented in this assessment provide a coherent and demonstrable visual chain linking the Craig Ruperra extraction scarp with the Roman military complex at Ruperra–Machen. The images document three essential strands of evidence: (1) in situ quarry activity, (2) shaped and partially worked material along the projected transport route, and (3) fully dressed Roman masonry reused in the wider landscape. Together, these illustrate a continuous operational sequence spanning extraction, rough-out dressing, movement downslope, and final architectural finishing.

At the quarry itself, multiple stones exhibit deliberately flattened faces, rectilinear shaping, and early-stage dressing entirely incompatible with natural breakage. These rough-outs, found directly beneath the scarp, strongly indicate on-site preparation typical of Roman quarrying practice. Further downslope, additional shaped blocks appear along the implied transport corridor, mirroring the morphology and working style observed at the scarp. Their presence reinforces the interpretation of systematic movement of stone from the ridge toward the Roman complex.

The comparative plates from St James' Church, Rudry, provide external validation. The reused ashlar fragments display characteristic Roman claw-chisel tooling and high-quality finishing, offering a diagnostic reference against which the Craig Ruperra material can be reliably assessed. The striking similarity in sandstone type and working technique strengthens the identification of the Craig assemblage as Roman in origin.

Overall, the photographic evidence significantly enhances the material narrative of this DBA. It visually substantiates the quarry-to-settlement supply chain proposed in earlier reports, supports the interpretation of Roman extraction and construction infrastructure at Craig Ruperra, and provides clear comparative markers for recognising Roman workmanship across the surrounding landscape.