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## **Archaeological Investigations at Vineyards Weir, Tewkesbury, Gloucestershire**

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### **Background**

An archaeological watching brief was undertaken at Vineyards Weir, on the River Swilgate, Tewkesbury, Gloucestershire (NGR: SO 88975 32263). It was undertaken on behalf of the Environment Agency, who were undertaking a programme of works to modify the weir and banks to improve fish passage.

Vineyards Weir lies within an area of open public space adjacent to St Mary's Abbey and in close proximity to Tewkesbury town centre. To the south the area is used for football pitches and to the north are the grounds of the Abbey. The Abbey is a Scheduled Ancient Monument (SAM 21704) and consent for the works was granted by English Heritage.

Prior to submission of the application a Heritage Impact Assessment was prepared (Worcestershire Archaeology 2013) which identified the potential impact of the application. This study noted that the weir was probably post medieval in date, but that the structure retains an archaeological significance in relation to the later history of the Abbey as well as a visual contribution to the surrounding area.

A subsequent geophysical survey was carried out which identified anomalies which are likely to represent monastic buildings close to the Abbey; ditches and robbed out wall trenches.

The weir was built of four courses of large stone blocks above a larger plinth (1-1.5m in width) on the downstream side. The downstream face was formed by roughly shaped stone blocks forming an incline. The structure was capped with concrete and a concrete sluice had been inserted to the north.

Revetment walls stand against both banks of the river adjacent to the weir. The wall in the north bank is constructed of large, shaped stone blocks and appears to have two phases or build styles. The wall in the southern bank comprises shaped blocks of Oolitic Cotswold limestone.

Fieldwork was undertaken between 1st and 11th September 2014. Two slots to the west of the weir and into the northern bank of the river were excavated for the purpose of installing pre-barrages, constructed to raise the water level immediately adjacent to the weir to facilitate access during the works.

### **Methodology**

Due to the indurated form of the structure and proximity to deep water, the removal of the weir was achieved using a tracked excavator employing a toothed bucket and under close archaeological supervision. Both slots into the north bank were also excavated in this manner. A photographic record was made of the structure as water was drained from upstream in advance of and during demolition. All deposits were inspected on the river bank for the retrieval of artefactual material and environmental samples, as well as to determine their nature.

### **Results of Watching Brief**

Excavation of the weir revealed a structure of sandstone blocks of various shapes and sizes, measuring up to 0.25m x 0.29m x 0.70m in size and set in a hard yellow/pink mortar.

The eastern face (upstream) comprised of squared ashlar blocks on stretchers creating a vertical face of four courses against the flow of the river. The stones were carefully shaped but widely variable in size indicating probable re-use. No defined silt layers were noted against the vertical face of the weir, only rough stone rubble, bricks and modern debris.

The western side (downstream) was made up of roughly chamfered blocks, sloping down into the water for approximately 1m. These stones, unlike the eastern face, were generally not dressed but

rather more crudely shaped. Evidence of tooling/chisel marks on some of the sandstone blocks were observed during removal.

The core of the structure was also formed from worked blocks of sandstone. Some of these blocks showed evidence of re-use. They were not squared as the blocks of the exterior but, showed signs of medieval carving and included fragments of columns with signs of roll moulding. Stone jambs were also noted, with identifiable incised right-angles, used to line windows and doors, most likely for the installation of glass panes.

Two concrete additions to the weir structure were recorded. They both appeared to be 20<sup>th</sup> century in origin and take the form of a capping stone across the weir and walls for a sluice constructed at the north end of the weir which included steel reinforcing bars. Both of these later insertions were bedded directly upon the sandstone blocks of the weir.

### Environmental Analysis

The two slots excavated in the northern river bank could not be closely inspected due to the depth of the water and therefore a more thorough evaluation of the deposits was undertaken on the river bank. This revealed a grey clay deposit observed within slots 1 (102) and 2 (201), which was not fully excavated and which was partially obscured by the river level. An intact monolith of these deposits was recovered mechanically.

Two small grab samples were taken from the monolith at 0.19–0.24m and 0.30–0.34m, with a view to obtaining material for radiocarbon dating but no suitable material was identified.

### Pollen assessment by Suzi Richer

Three samples from the top (3 cm), middle (25 cm) and bottom (45 cm) of the profile were taken.

#### Preservation

Pollen was preserved in all three samples; however the abundance of pollen improved with depth. The upper and mid samples (3cm and 25cm) exhibited good-poor preservation, with some grains showing signs of mechanical damage. In particular, some grains were crumpled suggesting either drying out or that the sediment had been compacted and water extruded (Delcourt and Delcourt 1980). The abundance and preservation of pollen was best in the lowest sample, perhaps indicating that this had remained waterlogged and had not been subject to same drying or compaction as the upper samples.

Sample	Context	Pollen present	Pollen abundance	Pollen preservation	Observed taxa
3cm	<2> Alluvial	Y	Low	Good to variable	<i>Ranunculus acris</i> -type, Poaceae, Chenopodiaceae, <i>Centaurea cyanus</i> , <b>Papaver</b> , <i>Achillea</i> -type, microcharcoal
25cm	<2> Alluvial	Y	Med	Good to variable	<i>Diphasiastrum</i> , <b>Papaver</b> , Chenopodiaceae, Poaceae, <i>Alnus</i> , <i>Papaver</i> , <i>Achillea</i> -type, Ranunculaceae, microcharcoal
45cm	<2> Alluvial	Y	Med-high	Good	Papaver, <b>Cichorium intybus</b> -type, <b>Alnus</b> , Poaceae, <b>Corylus</b> , Betula, Chenopodiaceae, Salix, Ranunculaceae, Poaceae, <b>Cannabaceae</b> , <i>Radiola linoides</i> , <i>Diphasiastrum</i> , Apiaceae, Cyperaceae, <i>Polygonum</i>

Table 1 Summary of the pollen assemblages, taxa in **bold** are dominant in the sample

The presence of *Centurea cyanus* (corn flower) pollen in the top sample (3cm) is likely to be indicative that the top of the profile dates to at least the medieval period. This is based on Greig's (1982) observation that *Centaurea cyanus* first appears in the pollen record, and by inference, in the British vegetation, from the 12<sup>th</sup> century onwards.

#### Vegetation information

Overall, the taxa present across the sequence are indicative of a highly anthropogenic environment. Pollen from *Papaver* and *Centaurea Cyanus* was present in the upper sample (3cm), both are weeds of arable land, suggesting that cultivated/fallow fields were situated close by. In contrast, the high levels of Cannabaceae, suggest that either hop or hemp crops were growing or being processed locally. Cannabaceae is notoriously difficult to differentiate, however, and therefore based on the size of the grains observed and the pore protrusion (after Mercuri *et al.* 2002) the pollen is likely to be from hops (*Humulus lupulus*).

The remaining pollen is indicative of a waterside environment (alder and willow) with meadows close by indicated by the presence of pollen from grasses (Poaceae), meadow buttercup (*Ranunculus acris*-type) and dandelion (*Cichorium intybus*-type). Some disturbed areas of ground are indicated by the presence of Chenopodiaceae in the middle sample.

#### Molluscan analysis, by Andy Mann

Two bulk samples were taken at locations where molluscan remains were visible to the eye, at 0.19–0.24m and 0.30–0.34m, assuming these would yield the richest mollusc assemblages.

Samples 19-24 cm and 30-34 cm both produced a small mollusc assemblage, each containing less than 30 molluscs (Table 2). Both assemblages were also of low species diversity, each containing less than four different species.

SAMPLE	1	2
DEPTH	19-24cm	30-34cmm
VALVATIDAE		
Valvata Cristata	+	
Valvata Piscinalis		+
BITHYNIIDAE		
Bithynia Tentaculata	+	+
PLANORBIDAE		
Anisus Leucostoma	+	+
SPHAERIIDAE		
Pisidium sp		+

Table 2: Summary of the mollusc assemblages (+=occasional, ++=moderate, +++=abundant)

Both samples were dominated by *Bithynia Tentaculata*, *Valvata Cristata* and *Valavata Piscinalis* species that inhabit slow or still moving bodies of water which is well oxygenated and richly vegetated. *Anisus Leucostoma* was also relatively common within each sample suggesting that the water level may have seasonally dropped, exposing the rivers banks.

No terrestrial species were present in either of the samples.

## Synthesis

### Watching brief

It is concluded that Vineyards Weir was constructed from re-used medieval shaped stones of high status, almost certainly related to the Abbey and possibly from buildings that are known to have existed in the precinct between the Abbey cloister and the Swilgate (Graham Keevill, pers comm.), the remains of which have been tentatively located by a geophysical survey. The stones were set

in a 'best fit' arrangement re-using previously shaped stones including a column shaft and jamb stones, to create the weir. The mortar in which the stones were set, hard pink/beige cement with white lime fragments, is typical for the late 19<sup>th</sup> Century (pers. comm. Shona Robson-Glyde, Worcestershire Archaeology Historic Buildings Archaeologist) and this corresponds with cartographic evidence for the construction of the weir, which does not appear on maps prior to 1886.

Larger worked pieces of stone, high in status, within the abbey grounds are rare, however smaller, cruder pieces of worked stone still reside in the abbey grounds to the present day and may explain how stone from such structures may be used in such a late construction. No footings for an earlier built structure were observed during the works.

Although it has not been possible to securely date the layers from which the environmental samples have been taken, the pollen spectra suggest that they are likely to be of some antiquity. The pollen and molluscan assemblages have both illustrated different aspects of the local vegetation around the site. The molluscs have shown that still or slow moving water was present on the site, and that water levels have fluctuated. This is consistent with the preservation of the pollen within the upper samples – these exhibited signs of deterioration due to the drying out of the pollen grains. Despite signs of slight deterioration, the pollen has provided a good indication of land-use history in the area, although no pollen evidence for vines was seen during this quick assessment. However, it appears that initially hop growing was occurring within a wider meadow landscape. The samples from the top of the profile indicate that the landscape was arable at a later date.

The lack of organic material suggests the general level of surrounding vegetation during deposition was relatively low. A possible explanation would be that the clay formed in a relatively large body of water, with the bankside some distance from the current location of the two slots. Another explanation is that the water was deliberately kept clear, a maintained fish pond for example, which are known to have existed in the general location of the abbey.

## **Bibliography**

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## Plates



*Plate 2: The weir [302] looking northwest.*



*Plate 3: The weir [302] partially removed, looking northwest.*

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Plate 5: Part of window jamb (scale with 0.20m divisions).



Plate 6: Part of door or window jamb (scale with 0.20m divisions).

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*Plate 7: Socket on moulded stone (scale with 0.20m divisions).*



*Plate 9: Moulded stone (scale with 0.20m divisions).*

