ENGLISH HERITAGE

Roman Town House
Colliton Park,
Dorchester
(Dorchester County Council)

Conservation Assessment

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1 Introduction

Site visit 27 November 2004 with John Low, Historic Environment Manager, Dorset County Council

The objective of the visit was to review conservation issues affecting the site and its mosaics, comment on recent reports and recommend appropriate conservation measures. Comments within this report are based on visible observations alone.

The Roman town house consists of eighteen rooms, excavated in 1938-39. Six of these have remnants of mosaic pavements and are protected by a cover building erected in1996-99. The metal frame structure has discontinuous cladding of glass and a wooden roof structure covered with stone slates.

A modest amount of conservation work was carried out on the pavements at the time of the construction of the new building. Although small sections of mosaic were reported to have been lifted and relaid (room 13), all other pavements appear to be on their original bedding. In addition, the central panel in room 8 appears to have been mechanically abraded sometime in the twentieth century in order to accentuate the decorative pattern.

2 Conservation issues

2.1 Primary conditions

Microbiological growth is visible on areas of all mosaics and some interior wall surfaces. Most of this is algae, with moss in selective areas. This is related to variable moisture content around the interior, the presence of sufficient light and reduced air circulation. Whilst algae is primarily disfiguring, moss is clearly damaging the mosaic and is much more difficult to eradicate.

Conservation cleaning of the mosaics was undertaken in November 2003. Currently, levels of algae are lowest in room 15, which is very well ventilated and where light levels are highest; moderate in rooms 8 and 13; moderate to high in room 18; and very high in room 10, which has lowest tight levels inside the structure and is also relatively enclosed. Although cleaned one year ago moss has taken root in some mortar joints in this room and begun to colonise the surfaces of adjacent tesserae.

2.2 Potential conservation issues

The design of the cover building provides virtually no buffer to the ambient environment, therefore any of the following phenomena may arise:

- Eventual heave of the *tessellatum* due to prolonged exposure to freezing conditions in winter. Probability (medium term): high.
- Long-term damage to the *tessellatum* through crystallisation pressures of soluble salts from the ground. At the moment there is no direct evidence of this. Some areas of mosaic surface manifest salt efflorescence, but these are not necessarily harmful. Probability based on current evidence: low.
- Detachment and heave of the *tessellatum* due to concentrated thermal/solar gain and expansion (particularly in room 13). Probability in mosaics exposed to direct sunlight: medium.

Risks previously posed by direct visitor access onto the mosaics have been eliminated by the prohibition of such access. Some damage had occurred in room 13. requiring subsequent consolidation.

2.3 Sources of moisture

Algae and moss require sufficient levels of moisture, light and reduced air movement to thrive; specific soluble salts require fluctuating moisture and relative humidity levels in order to cause damage to porous materials. Moisture at the Roman Town House undoubtedly derives from multiple sources:

- Condensation, likely to occur frequently throughout the year
- Precipitation, directly through voids in the perimeter glazing and gables; and indirectly, as dispersed water from the ground (as there are no gutters and downpipes to take water away)
- Groundwater

2.4 Drainage and site topography

The efficacy of site drainage will influence moisture levels in the town house:

- There are no roof gutters or downpipes on the cover building.
- There are five soakaway pits sunken into the chalk bedrock but these are situated close to the building.
- Two levels of field drains (pipes in gravel trenches) run along the southern elevation of rooms 8,10 and 13. However, there is no gravel on the surface at room 10 (with gable end), only turf and soil adjacent to the base of the wall.
- Gravel-filled trenches (some 300 mm? in depth) exist on the exterior perimeter of the building below roof eaves. In contrast, the ground below open gables is turfed over soil.

The building sits within a hollow which may act partially as a catchment drain for the local area, with higher levels of ground moisture.

3 Appraisal

The combinations of local climate, building design and site topography are likely to create conditions favourable for algal growth whatever modifications are made to the cover building. Algal growth is common on such archaeological sites in England and low concentrations are not threatening. However, the progression of species to moss in room 10 is particularly of concern as this is more tenacious, difficult to remove and control, and more damaging to the mosaic in the medium " long term.

The risks through freezing surface temperatures, concentrated thermal gain, and soluble salts are currently impossible to predict, but frost is perceived to present the greatest real risk. This can only be determined through monitoring. If proven to affect the mosaics, these can be protected with winter insulation covers. Such covers must be highly permeable to water vapour, be made of an inorganic material, be lightweight and preferably reusable.

Modifications to the building to improve internal conditions have been proposed:

- *Enclosure of open gable ends to prevent access by birds and lateral ingress of precipitation.* This will certainly be of benefit in decreasing some moisture in rooms 8, 15. and 18. but at the expense of reduced ventilation.

- *Enclosure of the base of perimeter glazing to prevent ingress of precipitation and access by children.* This should benefit all mosaics adjacent to external walls, but not the mosaic of room 10 as there is very little pavement adjacent to such external glazing.

- *Installation of gutters and chain downpipes.* This is believed to critical to the reduction of moisture gradients on the site, since currently all the rainwater amassed and shed from very large areas of roof is delivered directly to the base of the building.

- *Consideration of a visitor access platform in Room 10, over areas of modern flooring.* Provided that there is adequate security (e.g. barriers and possibly sensor alarms at waist level), this is not expected to be detrimental to the mosaics. However, where a platform must cover any mosaic fragment (e.g. at the door threshold), there should be access for cleaning and inspection.

High light levels have been cited as encouraging microbiological growth inside the structure (Edwards). The levels of light in conjunction with the amount of moisture available influence which species colonise and thrive. At the time of viewing, room 10 with the lowest level of illumination and probably with less direct ventilation has the greatest concentration of microbiology. This may also be fed by very high local groundwater conditions, perhaps caused by the high ground level outside the southern external wall of the room. Therefore, the suggested reduction of light levels will certainly not be beneficial in controlling microbiological growth. However, this may eventually be proven necessary to eliminate thermal stresses in Room 13.

4 Recommendations

4.1 Hydrogeological survey

Reduction in the concentration of microbiological growth can best be affected by reducing the moisture content of the mosaics. Central to this objective is enhanced site drainage. Therefore, professional assessment of local geology and hydrology is strongly recommended. This is to:

- Determine the natural drainage characteristics of the site
- Appraise the drainage capacity of current field drains and soakaway pits
- Identify the risk and frequency of freezing conditions in the soil

A survey may entail some site investigations (soil cores). See Appendix 1 for a model survey brief.

The survey should identify the need of and make recommendations for:

- Any monitoring of site hydrogeology to inform modifications to the drainage regime and assess the efficacy of these modifications.

- Modification of draining regime. This may include removal of soil adjacent to the exterior southern wall of room 10 and filling with gravel. This is probably contributing to very high levels of microbiology in this room.

4.2 Building alterations

Proposed alterations to the building are certainly necessary. New gutters are essential and enclosed downpipes, as opposed to chains, are highly desirable. The ultimate areas of dispersal of rainwater need to be carefully considered; current soakaway pits may be inadequate and are certainly very close to the structure.

4.3 Environmental monitoring

The long term risk of frost damage to the mosaics needs to be evaluated by means of a very modest programme of real time monitoring in the winter months (air temperature and surface temperature). In order to eliminate annual aberrations in climate, monitory should be undertaken for a minimum of three years over the winter months. A data logger is small (the size of a pack of cards) and is battery operated. Monitoring of a minimum of two surfaces areas is recommended. This can be carried out by a conservation consultant and would require one site visit for installation, followed by one site visit a year to download data, However, sensors are at risk if unauthorised access into the structure by children remains possible.

References

Carol Edwards, *Roman Town House, Mosaics Conservation Study. Colliton Park, Dorchester.* Unpublished report. Southampton City Council Archaeology Unit, Report 583,2003

Dorset Country Council, *Roman Town House Partnership Brief,* September 2004.

Appendix 1 Brief for a hydrogeological survey of the Colliton Park Roman Town House site

1 Desktop survey

From existing published material and written reports:

1.1 Geology and soils

1.2 Hydrology **and** climate

1.3 Existing drainage systems (mains, surface, County Hall, **Roman** Town House)

2 Site reconnaissance and hydrogeological survey

Dependant upon the information **gleaned** from the desktop survey **and** subject **to** professional judgement;

2.1 Extraction of soil profiles (subject **to** Ancient Monuments Consent)

2.2 Laboratory analysis of soil samples (soluble salt content **and** moisture content)

2.3 Tree cover and role in site hydrology

2.4 Production of draft report with recommendations

3 Monitoring

Following the hydrogeological survey and subject to professional judgement, determination of changes to site hydrology both before and after any major changes to the drainage regime.

3.1 **Installation** of piezometers/soil moisture probes (subject to Ancient Monuments Consent)

3.2 Downloading and data analysis (minimum one year?)

4 Reporting

4.1 Summary of investigations

4.2 Summary of monitoring

4.3 Recommendations and costings for new drains and/or modifications to existing drains.