GALLICA

Historical and Archaeological Interpretation

The Effects of Water-flow Around a Round House

The Effects of Water-flow Around a Round House

Author: David Freeman 2018

This paper deals with water movement around buildings, and the long term effects of water on sites that have multiple buildings within the water flow.

Where houses are built on a slope there will be movement of water on the ground surface around the house. Some of it will be surface flow down the slope, but the greatest amount affecting the house will be the shedding of rain off the roof. The rain falling on the entire surface area of the roof is concentrated in a drip line around the outer circumference. The larger the house the greater the effect will be. The water dropping off the lower edge of the roof creates a drip line.

As the water hits the ground there are two results.

Firstly, there will be splash.
This can wet the wall, affecting the wall materials. The construction of the house must take this into effect by creating a great enough distance between the wall and the outer rim of the roof.

Secondly, water creep.
This depends on the duct ability of the local soil, i.e., how far the water can creep through capillary action. Again, this is influenced by the distance between the wall and the outer rim of the roof and should be factored into the construction of the roof. If a great enough overhang is created, the water will never reach the wall.

If the houses are built on a slope, the water flowing down-hill can breach the drip-line, and end up soaking into the base of the wall. There are two solutions to this, that are visible in the archaeology.

One is a drip trench. This is the most effective solution for water flow off the roof of the house. It must be deliberately dug, to channel the rain water around the house to the lower level, and to release it to flow into the environment. The dimensions of the trenches are 15-20cm wide, with an unknown depth (due to variable soil depth). This solution is found on many sites. If no drip trench is dug, there will be an area below the drip line that will be kept damp for long periods, resulting in an increase of growth in the grass/plants. The side effect of this is prolonged retention of water, increasing the effect of water creep.

The second solution is not so common, and is designed to combat water flow across a slope surrounding a house. It is best suited to a site with a greater slope, and the right material to hand. On Danebury hill fort, it is achieved by construction of curved banks of compressed chalk (berms) around the upper slope side of the house. This acts as a barrier to the movement of surface water across the hill fort, and diverts the flow around the house. Where there were a number of houses in close proximity to each other, this needs to be duplicated around each building. On the occasions of high rainfall, this may have resulted in water flowing visibly across the lower slopes.

If the house is on level ground a drip trench is not always needed, but, a side effect of not having one is that the ground stays damp longer. This creates an increase in vegetation growth. If this is not controlled, it will hold water and put the house at risk.

Observed water interaction between houses.

At Butser Ancient Farm the following has been observed over a period of 12 years.
Within the iron age enclosure are a number of round houses. The two in question are the Little Woodbury round house (on the upside of the slope), and the Moel y gerddi round house (on the downside of the slope).

In 2002, when the Moel y gerddi was completed, a drip trench was dug to drain the rain water around the house. The house is 10m in diameter, and sheds a large amount of water in heavy rain. The drip trench has been maintained throughout the years, and the house can be said to be standing on the natural surface of the

enclosure. The drip trench directs the water to the lower side of the house, where it runs away across an open area.

In 2007 the Little Woodbury was built in the space formerly occupied by the Longbridge Deverell round house. A drip trench was dug around the house when the roof was completed. The Little Woodbury is 14.5m (wall to wall) and 16m (roof edge to edge) in diameter, and the water-flow off the roof is considerable. The drip trench directs the water flow around the house to the lowest point, where it runs onto an open space. This house is up the slope from the Moel y gerddi.

The water flowing off the Little Woodbury, runs in a direct line across the ground, following the down slope, and drops into the drip trench of the up side of the Moel y gerddi. With a distance between the houses of 10m, inevitably, some of the water soaks into the ground, without ever reaching the Moel y gerddi trench. This means that an area of ground on the edge of the Moel y gerddi trench is kept wet for a longer period after every rain fall. This maintains a prolonged growing period of the grass in the damp area. While vegetation grows, it encourages increased activity in the soil underneath, producing an increase in height of the soil surface.

The result is that over the last 12 years, there has been a height increase of 15-20cm in the apparent ground level on the outside of the Moel y gerddi trench, compared with the natural ground surface, still visible under the roof, between the trench and the surface the house wall is built on.

Conclusion
When undergoing any experiment, you must be prepared to recognise anything that is outside of the planned course of action. Every bit of information gained can lead to new understandings within archaeology, and lead to unexpected results.

References
Cunnliff B, Danebury Hill Fort, vol.3