

Salt Making at Street House in 2023: Guided Walk Information

Excavations at Street House between 2016-2022 unearthed evidence for Neolithic salt making and settlement at Street House, near Loftus, occurring 6,000 years ago. In 2023, we aimed to understand more about the Neolithic activity at Street House, to find out if salt manufacture was occurring elsewhere in the area and to gauge how the process worked.

At the south end of the site we have revealed evidence for a palisaded monument adjacent to the Neolithic saltern. Excavations in 2006-2007 demonstrated that salt making was occurring in the Late Iron Age and Early Roman period. In 2023 we have evidence for salt production within a Roman enclosure which is provisionally dated to the fourth century AD, that is, the Late Roman period. The evidence comprises a saltern hearth, with intense burning, flues and a large pit to store the brine brought from the shore (photograph).



Salt-making Experiments, 2-3 September 2023:



On Saturday and Sunday 2nd-3rd September we experimented with how to make salt from seawater collected from a coble off Whitby and then heated in a manner similar to the site discovered at Street House. This was a successful experiment. Salt is approximately a 3.5% component of seawater (or 35g of salt per litre of seawater). If we could get 30g from a litre of seawater that would be a good result.

Exp 1: 500ml brine solution was poured into tray 1, evaporated fully, and then repeated with another 500ml, then the crystalline product was weighed; 1 litre of brine solution was poured into tray 2, evaporated and then weighed.

Result: Tray 1 produced 2g of salt in 4 hrs 35 min; tray 2 produced 8g of salt in 5 hrs.

Exp 2: four trays (A-D) were positioned along the flue (with tray A closest to the fire). The trays were continually topped up to create a more concentrated solution as the day progressed.

Results:

Tray	Quantity of Salt (g)	Volume of Solution (l)	Time for Evaporation
A	9	1.5	5hr 28min
B	37	1.0	4hr 25min
C	15	2.0	4 hr 17min
D	38	1.0	5hr 52min

Lessons learned from the experiment

1. Pre-warm the brine solution prior to filling evaporation tray.
2. The brine solution will naturally evaporate in the settling tanks (as found at Street House), resulting in a more concentrated (higher salinity value) brine solution.
3. Solution in the settling tanks or pits nearest the ‘furnace’ or fire source will be heated or pre-warmed.
4. It is important as to where the evaporation trays are placed along the flue relative to the distance from the heat source. In our experiments, the quality of the salt grains was affected. In Experiment 2, the solution in the tray positioned furthest from the fire evaporated the slowest and produced the largest quantity of salt crystals in both large and small (fleur de sel) grain form.
5. The depth of the saltern (fire and flue) would have been important for managing the wind at this site in antiquity, in order to control the heat flow down the flue and maintain a consistent temperature.
6. Lots of kindling was required! We burned over 3 wheelbarrows full of wood over two days for the two experiments each lasting approximately 6 hours.
7. Even on a warm, dry, sunny day salt crystals will absorb moisture at this location. Therefore, the drying process is important.
8. More than one tray would have been used at any one time in antiquity.
9. The ‘furnace’ area may also have been utilised for evaporation in antiquity.
10. The evaporation trays appear to be more efficient after first use.
11. Two methods were tested for evaporating the brine solution to see if more salt resulted.
12. More salt was produced during Experiment 2: 37g from a concentrated brine solution of 42 parts per thousand (ppt) is a surprisingly efficient result, with even greater efficiency found with tray D, which evaporated more slowly at a lower temperature.

S Sherlock 9 September 2023