Stone Fish Weir off Eastbourne Bandstand

Summary of find

A submerged stone structure was initially identified from the Goole Earth image below. Figure 2.

A LiDAR image of the same feature, collected during a bathymetric survey conducted by National Oceanography Centre provides a more detailed image, Figure 3. The LiDAR has also defined the trend of the underlying bedrock, which is estimated to be approximately 30^0 to the alignment of the structure.

In August 2023, during a low spring tide, it was possible to wade out to the stone barrier closest to the shore. A bearing to the structure was established along the wooden groyne extending from the Bandstand. A hand bearing compass was used until a line of round boulders were encountered, situated on an otherwise sandy seafloor.

Using snorkelling gear an attempt was made to visualise the boulders, but visibility was virtually zero. However, it was possible to gauge the size and shape by feel. The boulders extended either side of the initial contact point along a line bearing 030^0-210^0, forming a low-lying barrier approximately 2m wide

The alignment of the boulders was established by wading along their contact with the seabed, using landmarks to judge bearing. Alignment conformed very much to that depicted in the arial and LiDAR images, confirming the feature had been located. The boulders are likely to be formed from local Upper Greensand outcrops and between 0.5 and 2.0 m in size. At time of low water, the depth was measured using a graduated shot line and was found to be between 1 and 1.2 m, at initial contact point.

The size of the boulders and trend of underlying geology demonstrates that the structure is discordant with the local geology and geomorphology. Therefore, likely to be of anthropogenic origin.

Initial Estimate of Age

To function as a fish weir the stone walls would have needed to be covered at HW and drained at LW. The depth of the far wall is estimated to be 3 m at spring LW. Assuming tidal ranges were the same during time of operation another 2 m is added to allow for the difference in height between neaps and spring. At a current estimated depth of 5m the fish weir would have been functional approximately 5000 years ago using a eustatic sea level rise rate of 1 mm per annum.

Other Considerations

The apparent opening to the fish weir faces north westwards, towards Carlise Road. This connects to Devonshire Park tennis courts, the former site of a Roman Harbour. It is possible that a river existed between the tennis courts, and the fish weir used to trap fish swimming downstream. However, the size and configuration in relation to the shore alignment are more in keeping with the round *ecluse* of Isle de Rei. These are designed to trap sea fish swimming inside during high water, which are recovered at low water.

Extant stone fish weirs are still being used at Minehead Bay, Somerset Levels. A photograph within an Historic England publication illustrates a similar stone structure[2]. The dimensions of the boulders, width and height are similar to the estimated dimensions of the structure lying off the Bandstand.

Source of the Boulders

The weathered Upper Greensand Outcrops, visible at low along the Holywell promenade has worn down to boulder sized clasts along the margins of the outcrop. Indicated in Figure 1. These are located less than 400 m from the western end of the fish weir.

Figure 1.

The outcropping upper greensands is unique along the coastline between Dover and the Solent. The local embayment that is now Pevensey levels would have been very attractive to settlers discovered at Butts Brow.

Neolithic occupation of the Sussex coastal Downland

The numerous stone implements and a significant number of earthworks dated to the Neolithic Age confirm that the area was occupied and exploited by Neolithic groups., with predominance close to the coast and estuaries. A map first published in 1907 details prehistoric finds within Sussex. Within these are Neolithic stone tools and cooking middens containing a variety of seafood. The author suggests a nomadic existence. The amount of effort required to build a stone fish weir does not suggest temporary use. Fish species vary between summer and winter. Today bass and mackerel feed close to the shore in the summer months, whilst cod and whiting pass during the winter. Therefore, the

structure could have served all year round. Another factor is that if abandoned during the winter months there is potential for extensive storm damage if retaining post are not maintained.

Further Investigation

- Under water survey: film, still camera, measurements, and positioning survey using tethered buoys
- Depth of supporting bedrock below sand veneer. This can be done with graduated rods.
- Establish accurate water depths of structure with respect to top of boulders and supporting bedrock, and use this to refine estimate of age.
- Compare the form and build characteristics with other examples.

Figure 2: Goole Earth image of stone structure approximately 230 m from Eastbourne Bandstand on a bearing of 120^0.

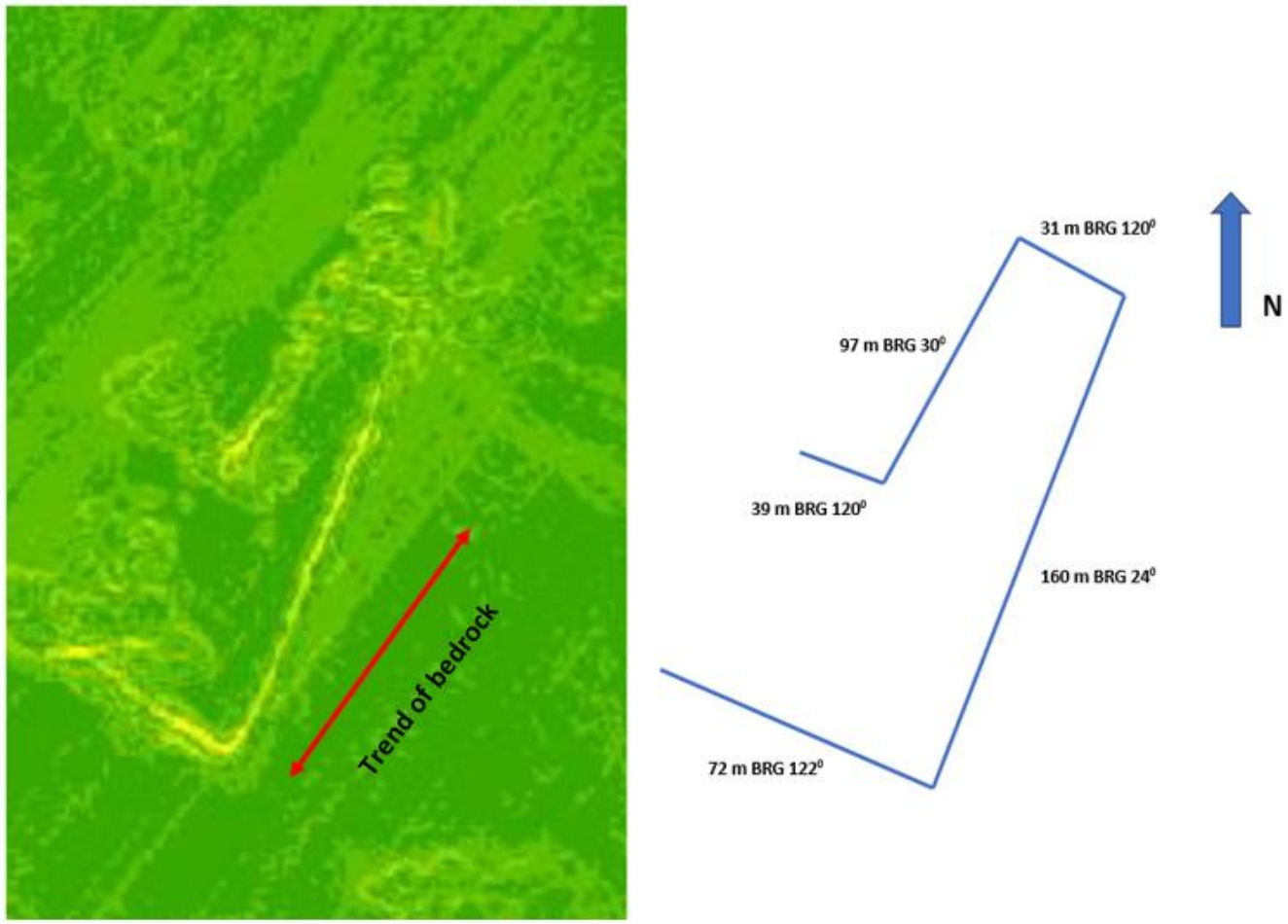

Figure 3. LiDAR image of the structure[2]. The trend of the underlying strata is approximately 30^0 to the bearing of longest length of the structure. The above schematic has been compiled using the measuring tool within the Google Earth program.

References

[1]A. Colenutt & J. Evans 2014
Seabed Mapping: Dungeness to Selsey Channel Coastal Observatory National Oceanography Centre European Way Southampton SO14 3ZH.
[2]Historic England 2018 *River Fisheries and Coastal Fish Weirs: Introductions to Heritage Assets.* Swindon. Historic England.