

Salt Pans, Brora Back Beach, Clyne, Sutherland

**Coastal Erosion Monitoring Diary
October and November 2004**

Clyne Heritage Society/Shorewatch



**By Jacqueline E Aitken
2004**

(revised 2005)

Coastal Erosion Monitoring Diary – October and November 2004

The eroding wall at Site 1 has been monitored to assess the effects of high spring tides combined with recent storms, which have battered the coastline with tremendous force.

Saturday 30th October

Tide - 4.2m at 1.18pm

It was observed that the force of the tide had completely removed a sand and stone bank that had been protecting the eroding wall that was surveyed in June 2004 (figure 1). The built up bank was situated about 1-2m in front of the eroding wall and had provided an effective barrier against the tides in the recent past. The bank was quite stable in June 2004 but has now been washed away with the autumn high tides and storms. It is estimated that over 1m of cover has been removed from the area in front of the wall and photographic evidence has aided this judgement. The loss of sediment from this part of the beach has helped to reveal much more collapsed building material. It is very difficult to make sense of the mixture of stones and it is possible that traces of other old walls may be identified in the rubble on the beach.



Figure 1 - Protective stone and sand bank in front of eroding wall, October 2003

Now that the protective cover has been removed there is no barrier to prevent the tides from gaining access to the very fabric of the wall and causing further erosion. It was noted that the tide was lapping the wall itself and the sand dunes.



Figure 2 - A photograph taken a year later (October 2004) shows that the protective bank has been washed away and part of the upstanding wall has collapsed

The force of the sea had caused some parts of the wall to break apart and become dislodged from the foundation stones. The bottom courses of the wall are made from soft friable sandstone probably from the nearby Sputie Quarry and some of the larger flat blocks have broken apart and moved out of their original position in the wall. The stones are literally being lifted of their foundations.

It was observed that two different types of building methods have been used in the construction of the wall. The difference exists between the few courses above the foundation and the rest of the wall that can be seen in the surviving upstanding part. The foundation stones and the next two or three courses of the wall are all made from large sandstone blocks and appears to be well constructed probably for stability if the structure has been built straight onto a sandy surface. However, the upper courses of the wall are not made from large sandstone blocks but a range of roughly hewn stone building material of all shapes and sizes in a double skin manner with a considerable amount of mortar holding the pieces together. The appearance of this rubble wall is significantly different to the more finely constructed foundations and doorway.

The stones on either side of the doorway are becoming unstable and one has been propped up from underneath with stones from the beach to help prevent it from collapsing. The dark ashy deposit in the doorway has become exposed and is being washed away and a doorstep has been revealed along the edge of the doorway. The stones at the doorway are barely surviving in-situ, but it is hoped that with the use of sandbags this current state can be preserved, along with any archaeological deposits until the wall is further examined in the spring of 2005.

There is only one part of upstanding wall surviving and it is being attacked from below, where the force of the incoming tide is dislodging stones and sand from lower courses of walling causing instability and, potentially, the imminent collapse of the standing part of the wall. An industrial scale midden composed of ash, burnt coal and clinker approximately 1.5m in height is butted up against the outside face of this part of the wall and it is not known if the midden is contemporary with the use of the building or is it a later deposit of material associated with another period of industry at the site. The midden is eroding out of a large unstable sand dune and stretches approximately 4m along the edge of the eroding dune before it is engulfed by subsiding sand. The full extent of the midden is not known.



Figure 3 – Industrial midden composed of ash and burnt coal at the site of the old salt pans

Recommendations

It is recommended that the doorway and ashy deposit and the upstanding part of the wall are protected from the further effects from the incoming tides by using sandbags to protect these areas from subsidence and collapse. The site will be monitored on a daily basis until the sandbags are in position and then a weekly monitoring strategy will be undertaken at the site. Progress reports will be sent to Tom Dawson (SCAPE) and Anne Coombs (Historic Scotland).

14 November 2004

Tide - 4.5m at 12.58pm

The tides were high and the wall was again under threat. A photographic record was taken as the tide was approaching the wall against a westerly wind. It was observed that the stone and sand bank in front of the wall was beginning to build up again, where it had recently been removed by the combined action of a storm and high tides. It is now obvious that the bank may be removed again at a later date. The loose building blocks that make up the south part of the wall trends down towards the sea, and it is at this point where the tide meets them and washes over them daily. The rest of the wall has suffered from tidal damage and it is suspected that this pattern of destruction will continue during the coming months.



Figure 4 - The wall at Site 1 being battered by the tide, October 2004

15 November 2004

Tide - 4.4m at 1.40pm

As a precautionary measure sandbags were carefully secured into position up against the only surviving upstanding part of the wall and the adjacent doorway and ashy deposits. These two areas of the wall were specifically targeted as the wall construction is still intact and the remains of the doorway contain archaeological layers that may be later excavated. Stones from the beach were used to secure the tops of some of the sandbags especially along the doorstep and in the crevices of the collapsing wall. It is hoped that this protective action will help to slow down the imminent collapse of the wall until it can be properly recorded in Spring 2005. The sandbags will also help to reduce the erosive effects of wind and rain action from removing mortar from the more secure stones and this should also help to stabilise the parts of the wall targeted.



Photo 5 - Sandbags being placed into position against the wall at Site 1



Photo 6 - Sandbags securing the wall at the doorway and the last upstanding portion

Further Recommendations

It is recommended that more sandbags are required to further secure other parts of the wall. Monitoring will be undertaken twice weekly throughout the winter months. These reports will be sent to Historic Scotland to highlight the imminent threat to the site and provide useful information to assist in any future conservation strategies regarding the site. **Jacqueline E Aitken, 2004**