

## Big Blue, Afton down, Freshwater Bay, Isle of Wight



September 18, 2022

## Big Blue, Afton down, Freshwater Bay, Isle of Wight

Historical OS maps of the area have been consulted and the rate of erosion of the cliff ascertained. A visit has also been made to the site and both the cliff face and ground above the cliff inspected.

The historical maps are attached as an appendix. These are overlain with a modern OS map. Some difficulty was encountered in trying to overlay the modern map on the historical ones in the correct position due to the great change in the local features, road systems etc. Nevertheless, it is clear that there has been a considerable retreat of the cliff adjacent to Big Blue since 1862, with the great majority of that movement, some 32m, occurring by 1909. Since 1909 the rate of retreat has been much slower and only some 11.5m has been lost. A rate of less than 0.12m per year.

It is noticeable that many areas, such as Stag rock and the cliffs to the east, have changed very little during the whole of this time. Also, the change to the large wave cut platforms shown on the earlier maps may well be a result of sea level rise during this time, which amounts to some 325mm over this period.

The cliff, itself, is formed from hard Grade A2 chalk and stands at about 60 degrees. It is capped near the top with approximately 2m of weathered melange chalk, grade DM, and the bottom few feet stands a little steeper, presumably due to wave action. There is a substantial beach formed from flint pebbles, extending nearly 3m above high tide level, which protects the base of the cliff. The chalk to the cliffs dips steeply into the cliff at 65° from the horizontal although there is much weaker secondary system of joints at about 47°. A section drawn through the site is shown in plan in fig.1 and section in fig.2,

The present position of the building from the cliff edge is about 55m at the closest point. The new building will be similar. At the current rate of erosion it will be 450 years before the building is affected, Averaging the erosion at the rate which occurred since 1862 to date, it would be 200 years before the house was affected.

The situation at present is that the cliff is stable. There are no signs of solution cavities or seepage which would suggest that the cliff will be affected by processes arising from the landward side. The current angle of dip and quality of rock suggests that it will remain stable unless it is undermined by wave action, with only slow weathering by frost action occurring otherwise.

The base of the cliff is currently protected by a substantial pebble beach which largely protects it from wave action, although it is probably overtopped by wave crests on occasion. Beaches tend to be mobile and therefore its continued existence cannot be guaranteed. However, the pebbles making up the beach are quite large, the beach is substantial and well above high water mark. Hence, there is no reason to believe that conditions will deteriorate significantly, even taking into account sea level rise over the next 100 years or so.

Therefore it is my considered opinion that the new building, sited in its proposed position, will not be affected by coastal erosion within a normal lifetime of, say, 100 years or so and possibly not for double that time.

The actual weight of the new building. will not affect the cliff or its rate of erosion.

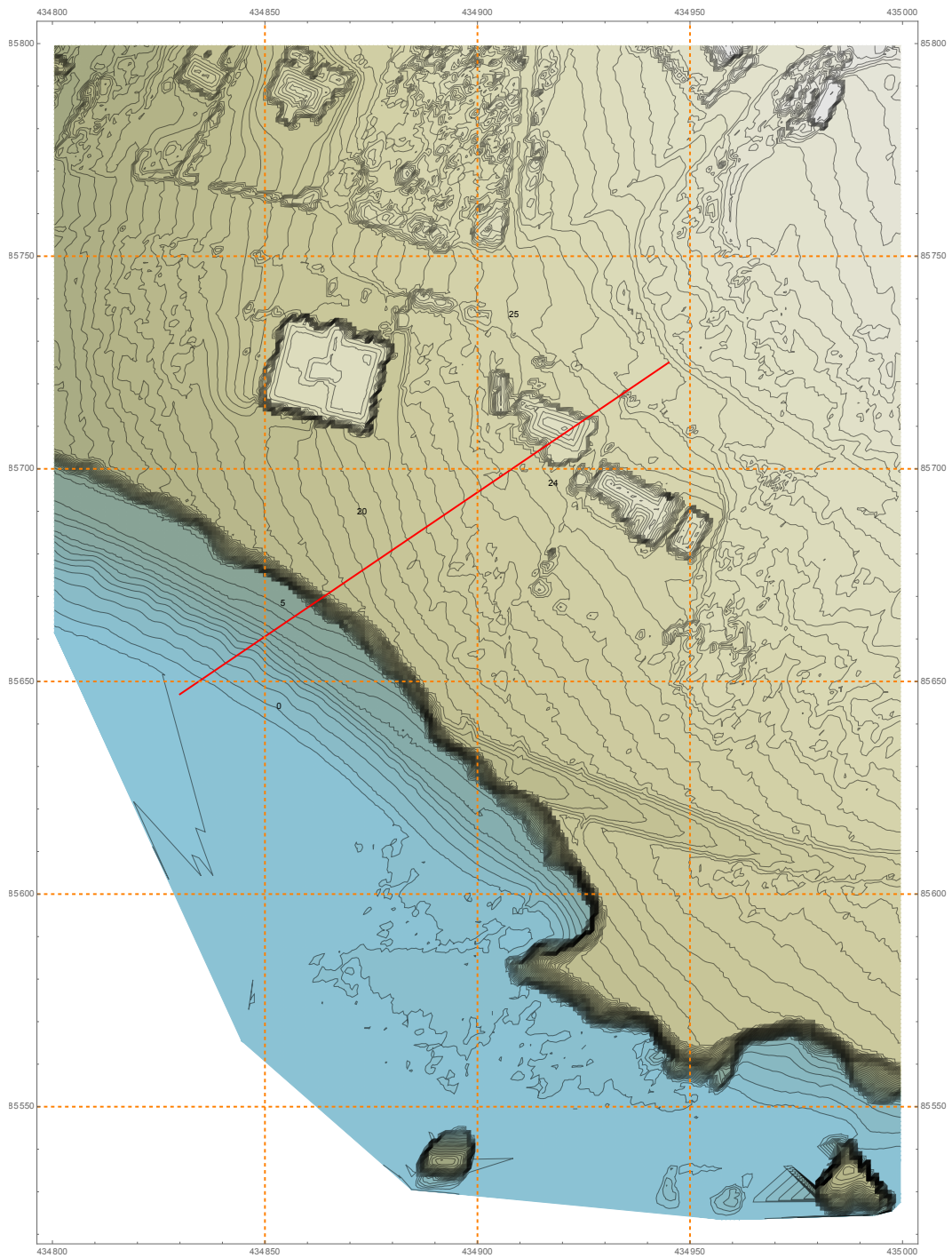


Figure 1: Existing Plan Showing Contours and Position of Section

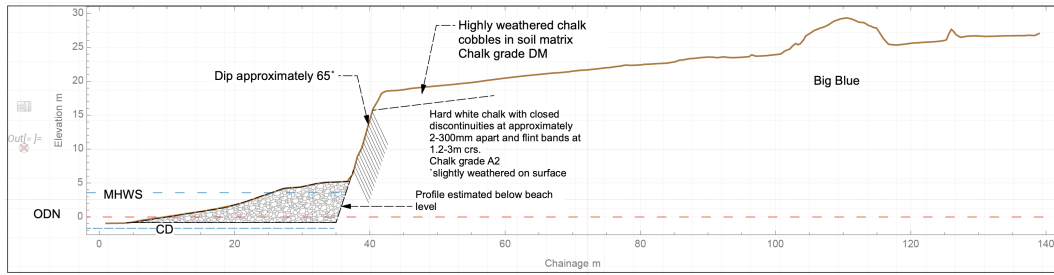


Figure 2: Section Drawn from Lidar Data

Therefore the proposed development will not be affected, within its lifetime, by slope instability, nor will it increase the likelihood of ground instability and hence the requirements of PPG14 are satisfied.

Eur. Ing. Dr. Malcolm Woodruff Ph.D., M.Sc.  
M.I.C.E., M.I.Struct.E., F.G.S.



---

# Appendices

## 1 Old Maps

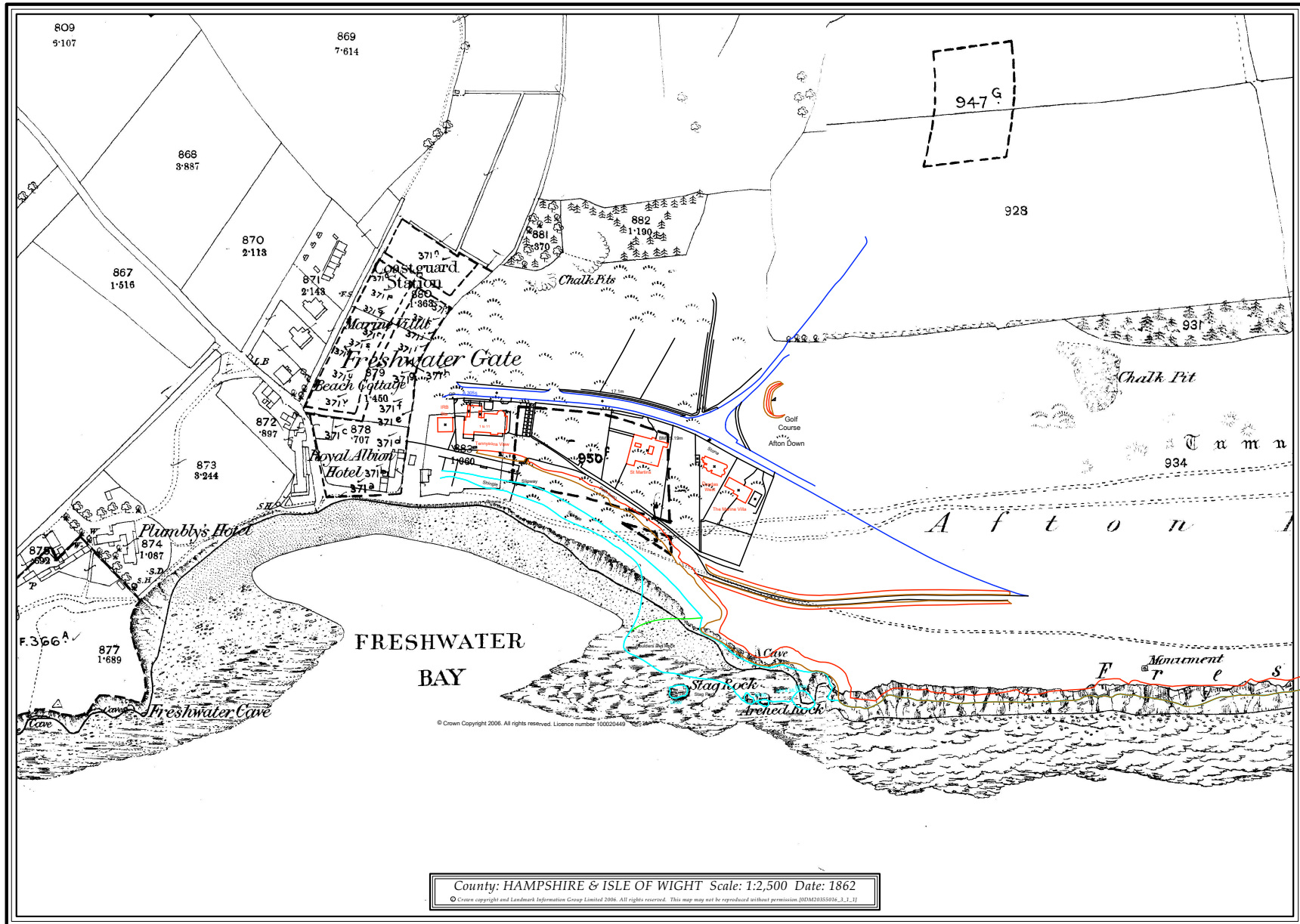


Figure 3: 1862

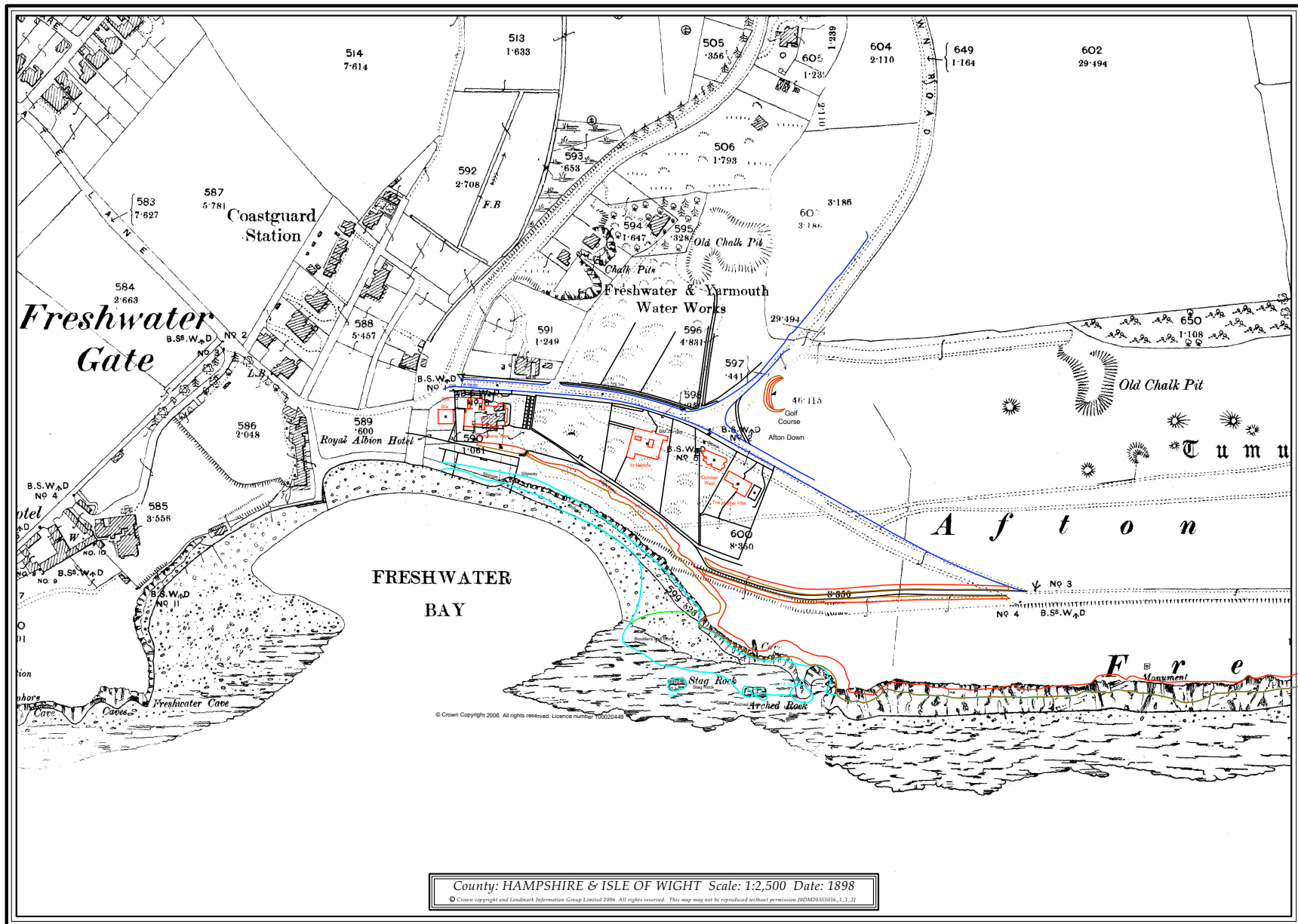


Figure 4: 1898

