

# Birling Gap 4dSU02- Cliff Survey Report 2015 to 2018

## 1.0 Introduction:

This report covers a brief overview of cliff erosion and accretion rates of the Birling Gap frontage. This area covers survey unit 4dSU02 as part of the frontages managed by Adur and Worthing Councils, as part of the Southeast Regional Coastal Monitoring Programme. The data used for this report is derived from surveys completed on the 5<sup>th</sup> of August 2015 and the 14<sup>th</sup> of August 2018.

## 2.0 Methodology:

Modelling of the point-cloud is achieved using inland reference planes. Inland Reference Planes have been selected simply as vertical planes that run parallel to the approximate line of the cliff face to provide a consistent comparison. This introduces the concept of 'cliff thickness', which is simply the orthogonal distance from the reference plane to the cliff face (Figure 1). As such, changes in cliff thickness are what are represented in the difference modelling with this methodology. The survey units are divided into sections which outline various areas, each with its own difference model. Each model shows erosion and accretion rates as colour shading, with the deepest colours showing the greater rate of change.

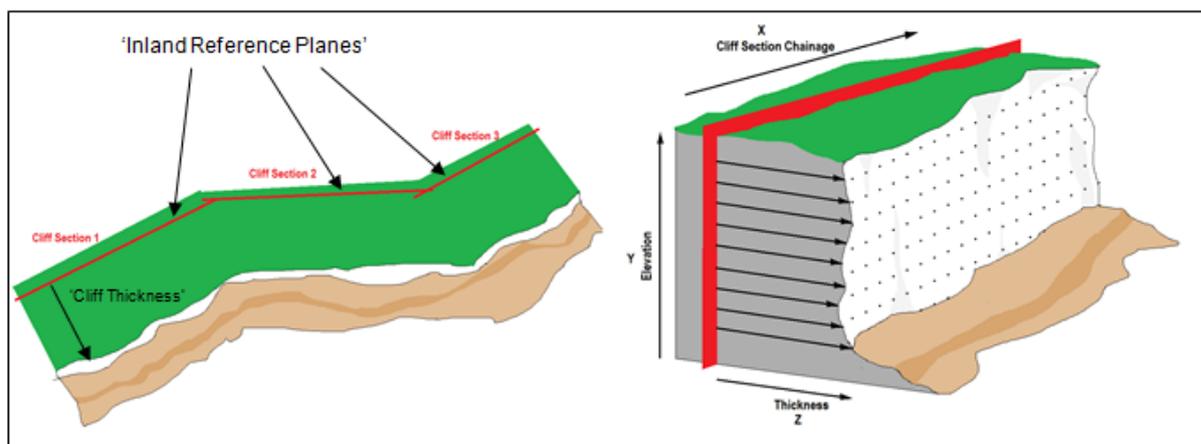


Figure 1- Inland Reference Planes and the concept of 'cliff thickness'

## 3.0 Survey Method and Report Limitations

A Rensihaw laser scanner mounted on a survey boat was the preferred survey method for both the 2015 and 2018 surveys. It should be realised that while every effort has been made to maximise the accuracy and reliability of the scanning equipment, all measurement systems are subject to a degree of error. It is possible that small, localised errors may show up as differences on the models. For this reason, differences between -0.25 and 0.25m are classed as 'no change', to highlight only the more significant changes. This is consistent with the accepted convention for difference modelling in standard Regional Coastal Monitoring Programme reports.

The difference model values are split into differing coloured section depending on the rate of erosion or accretion, shown in Figure 2.

The following examples give a non-exhaustive list of some of the possible causes of accretion and erosion highlighted on the difference models:

- Rock falls from the cliff face should show up as erosion, and may be accompanied by similar sized accumulation at the base of the cliff below, if not removed between surveys.
- Overhanging vegetation growing at the top of cliffs may appear as accretion if not completely removed from the point cloud during processing.
- Accumulation in rock fall nets may show up as a horizontal line of accretion if sufficient material is collected.
- Similarly, material removed from rock fall nets between surveys may show as a horizontal line of erosion if sufficient material removed.
- Any manual re-profiling or scaling of the rock mass may show up as erosion.
- Newly built structures may show up as accretion, and any removed structures as erosion.
- Access roads and paths may show up as erosion or accretion due to previous surveys being taken at differing angles.

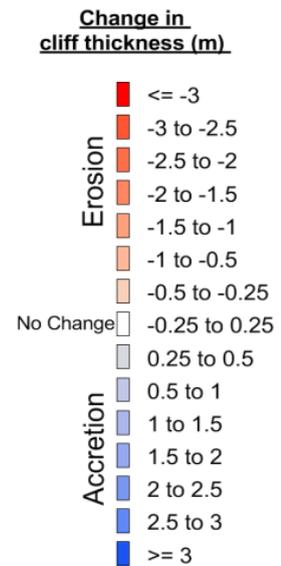
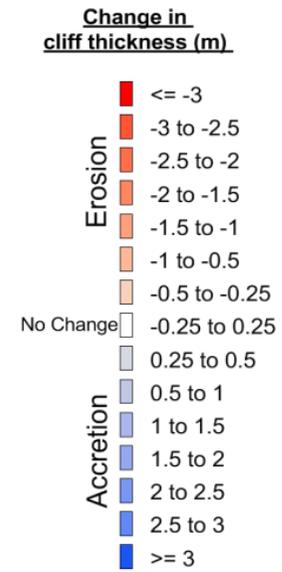
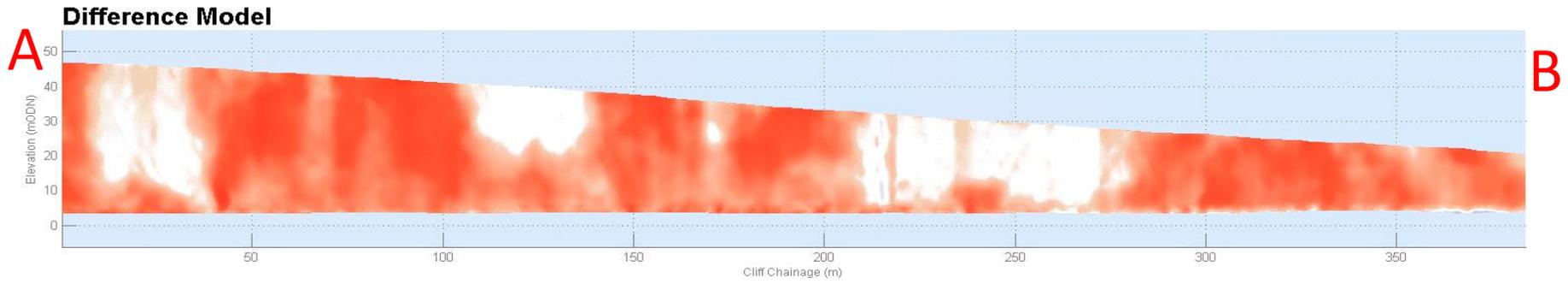


Figure 2- Difference model legend showing Change in Cliff Thickness (m)

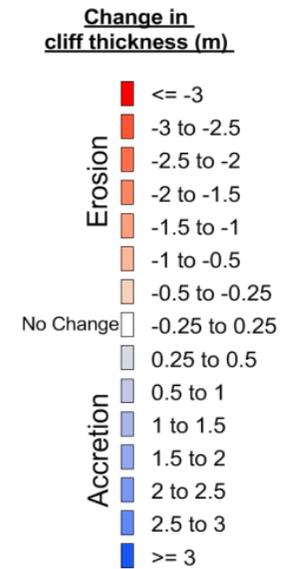
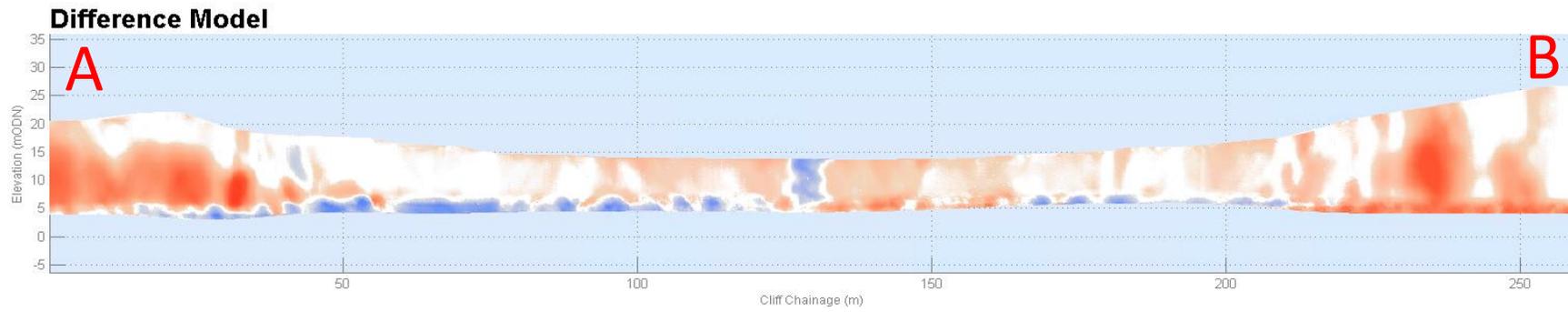
#### 4.0 Results:

The following maps show the resulting difference models of the cliff faces for each of the three cliff sections in 4dSU02. The orthorectified aerial photography used in this report is from an aerial survey undertaken in 2016. It should be noted that, as with all difference models, the changes represented should only be taken as indicative of areas potentially worthy of further investigation. Any areas of accretion or erosion on the maps require interpretation in the context of their respective locations.

4dSU02 Section 01- Cliff Face Difference Modelling August 2015 to August 2018



4dSU02 Section 02- Cliff Face Difference Modelling August 2015 to August 2018



4dSU02 Section 03- Cliff Face Difference Modelling August 2015 to August 2018

