Cover photograph: Man O’ War Bay and St Oswald’s Bay
S.Hawkins
Southeast Regional Coastal Monitoring Programme

Annual Report 2014 – Durlston Head to Portland Bill

1. Introduction
Analysis presented in this interim report provides an overview of beach changes and wave and tidal measurements since the commencement of the Southeast Strategic Regional Coastal Monitoring Programme. The first beach surveys took place during the winter of 2003 and changes are reported until spring/summer 2014.

Data are presented at several levels:
- Process cell summary of profile change from 2013 to 2014
- Process cell summary of profile change from 2003/4/5 to 2014
- Detailed beach profile change from 2013 to 2014
- Detailed beach profile change from 2003/4/5 to 2014
- Difference models where applicable between previous topographic baseline surveys and 2014
- Profile envelope graphs (on CD)
- Trend analysis of beach cross-sectional area (on CD)

The process cell summary maps provide an at-a-glance summary of the changes during the past year and over the longer term. It is recommended that the user should use the maps to identify areas of interest and then examine the individual profile plots and trends. Colour-coded lines highlight areas of maximum change and identify profiles which might need closer examination.

2. Hydrodynamic data
a. Waves
A directional Waverider buoy was deployed in Weymouth Bay on 18 December 2006. The full wave report is given at Annex A.

b. Tides
A tide gauge was installed on Swanage Pier in March 2007 with kind permission of Swanage Pier Trust.

3. Survey data – topographic
From Worbarrow Tout around to Weymouth there have been some significant changes and the effects of the landslip in St Oswald’s Bay near Durdle Door can still be seen. Over the longer term the most notable erosion has generally occurred at the western end of units and accretion to the eastern ends.

Dates of the surveys are given in Annex E and the detailed topographic survey report is given in Annex F.
4. **Survey data- bathymetry**

A swath bathymetry survey was conducted in conjunction with the Maritime and Coastguard Agency’s Civil Hydrography Programme, Dorset Wildlife Trust and the Royal Navy, with contributions from Viridor Credits Environmental Company (the DORIS survey) in 2011.

Annex A  Weymouth Interim Wave Report
Annex B  N/A
Annex C  N/A
Annex D  N/A
Annex E  High Level Report – field data collection (SCOPAC)
Annex G  N/A

Explanatory Notes
Storm Report for Weymouth, Dorset

Wave conditions are measured with a buoy moored about 1.5 km off Weymouth, in about 10m CD water depth. The buoy has been in place for 7 years.

In an average year, there are usually 3 or 4 storms which have some impact on the beach; these are indicated in the graph below. The red line shows the wave height which a storm is likely to reach once a year, in an average year i.e. the 1 year Return Period.

Since 2007, 7 individual storms have exceeded the 1 year Return Period. 3 of those storms (43 %) occurred between October 2013 and February 2014.
The individual storms since 2007 are ranked in Table 1, together with the Return Period (this season’s storms are shaded pink). The Return Period statistics were last calculated for the period 2007 to 2012.

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Table 1: Storms exceeding 1 year Return Period at Weymouth since deployment in 2007. Those occurring during the storm season October 2013 to February 2014 are shaded pink.
## Southeast Regional Coastal Monitoring Programme - Phase III - Channel Coastal Observatory Topographic Surveys

### Annexe E

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**Southeast Regional Coastal Monitoring Programme - Phase III - Channel Coastal Observatory Topographic Surveys**

**Post-storm**

**Year 11 (2012/13)**

**Year 12 (2013/14)**

**Year 13 (2014/15)**

**Year 14 (2015/16)**

**Year 15 (2016/17)**

**Annexe E**
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<tr>
<td>3</td>
<td>Re-scheduled due to nesting birds</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>4</td>
<td>Re-scheduled due to beach works in March 2014</td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>Delayed due to access problems</td>
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<tr>
<td>6</td>
<td>No longer surveyed (no beach and difficult access, as approved by P Marsden)</td>
<td></td>
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Annex F – Topographic Survey Report for Durlston Head to Portland Bill

1. Introduction
Analysis has been conducted for those sites where a minimum of four surveys have been recorded. In general, changes are measured relative to the Mean Low Water Springs level, although this has not been possible for much of the historic data at many of the sites. Where possible, longer-term records from earlier programmes are also presented in the profile analysis, although historical data was often collected using significantly different survey techniques, specifications and even datums. Continuity of record has been attempted but is not always possible.

The profile envelope, along with the two most recent profiles at each profile location, is shown superimposed and relative to a Master Profile (on the accompanying CD). The Master Profile provides the basis for calculation of beach cross-section area changes. Where possible, identical depth boundaries have been used for all profiles within a Survey Unit. However, even where this has not been possible, direct comparisons can be made for the beach cross sectional area at one profile over time, since the master profile is constant for each profile (Figure 1). In some instances, raising the lower depth of the Master Profile may reduce the overall cross sectional area of the profile. This may cause small changes in the beach profile to have a large impact on the percentage change. This effect has been taken into account in the analysis of change to beach profiles. The trend in cross-sectional area (CSA) is presented as a graph for each profile (Figure 2).

Figure 1: Example Master Profile with CSA calculated from the surveyed GPS profile
As part of the monitoring programme specification, each survey unit receives a full topographic baseline survey once every 5 years, with the exception of Beach Management Plan (BMP) sites which receive an annual baseline. Baseline surveys are now conducted using a laser scanner and continuous spot height data is collected at approximately 1m intervals across the lower beach to the level of MLWS.

Where there are at least two baseline surveys for each management unit a topographic difference model has been produced based on the spot height elevations or laser scan data. The data has been processed into a grid model and successive models have been subtracted from one another to produce a difference model for the survey unit.

2. **Condition of process sub-cell**

The Beach Change Summary map contains an at-a-glance condition of the whole of the Durlston Head to Portland Bill area, with the lines representing the percentage of accretion, no change or erosion within each Survey Unit for which there is topographic data.
3. **Condition of individual Survey Units**

Changes within each Survey Unit are summarised on up to four maps: Beach change maps (Spring to Spring and Baseline to Spring), and topographic difference models (year to year where possible and baseline to this year).

Beach Change maps show the location of each beach profile, superimposed on 2013 aerial photography (note that the line may have been extended for clarity). Where possible, the annual change in cross-sectional area has been calculated from spring 2013 to spring 2014 and from baseline 2003/04 to spring 2014.

In 5gSU13-15, as in previous years, spring to spring analysis was conducted to the Mean Low Water Spring level of -0.83mOD while baseline (2003) to Spring uses a level of 0mOD as the earlier surveys were not measured to the MLWS depth. It is also worth noting that sediment is routinely moved from 5gSU13 to 5gSU14 and re-profiling occurs in these units; consequently change in this area is not entirely natural.

**5gSU05: Arish Mell (East) to Worbarrow Tout**

*Spring 2013 to Spring 2014*

The inclusion of more profiles over the last couple of years allows for a more detailed analysis each year; this year a trend of erosion to the east and accretion to the westerly profiles can be seen.

*Baseline 2003 to Spring 2014*

Over the longer term this unit appears to be generally stable showing relatively minor erosion, with the exception of the most westerly profile.

**5gSU06: Lulworth Cove**

*Spring 2013 to Spring 2014*

The majority of profiles show stability over the year with only two of the westerly profiles showing more than 15% change, increasing in CSA across the whole beach.

*Baseline 2003 to Spring 2014*

Over the longer-term most profiles show some slight erosion but no more than 15% change is seen to any of them.

**Topographic Difference Model, 2013 to 2014**

The majority of this unit shows no change but on the eastern section there is a strip of erosion where the material appears to have moved offshore below Mean Low Water Spring level as there is no corresponding accretion seaward.

**Topographic Difference Model, 2003 to 2014**

The longer term comparison shows very little change to the elevation with pockets of accretion possibly due to cliff slumps and a similar but less pronounced strip of erosion.

**5gSU07: Bats Head to Stair Hole**

*Spring 2013 to 2014*

Across Man O’War Bay and St. Oswald’s Bay, where a large landslip occurred in April 2013, a trend of erosion to the west and accretion to the east can be seen; it is not possible to make a comparison for the line closest to the landslip as it moved forward to such an extent last year. Material from the landslide can clearly be seen offshore in the aerial photography taken last year. The annual fluctuation to the most westerly profile in this unit, shown on map
2, continues, with a significant decrease in CSA this year. The extra lines added as profiles in 2012 allow a year to year comparison and they also show a pattern of erosion to the west and accretion towards Durdle Door, in contrast to what was observed last year.

**Baseline 2003 to 2014**
The profile lines in St Oswald’s Bay still show accretion over the longer term due to the increase in material on the beach from the landslip. Man O’War Bay shows accretion to its most westerly profile & erosion to the easterly profile. To the west of Durdle Door there is a general trend of erosion to the western end of the bay and accretion to the eastern end.

**Topographic Difference Model, 2013 to 2014**
The area where material was deposited by the landslip can clearly be seen on the difference model showing a dramatic decrease in elevation since last year. Material has spread along the beach to the east showing slight accretion although Man O’ War Bay generally shows slight erosion over much of the bay.

**Topographic Difference Model, 2007 to 2014**
Over the longer term Man O’ War Bay shows a slight decrease in elevation while St Oswald’s Bay shows an increase in elevation across the beach which is likely to be due to the input of material from the landslip.

**5gSU08: White Nothe to Ringstead Bay (west)**

**Spring 2013 to Spring 2014**
The most westerly profiles show a significant decrease in volume having suffered erosion during the winter storms, and the most easterly profile an increase possibly due to the movement of material eastwards.

**Baseline 2003 to Spring 2014**
A similar pattern can be seen over the longer term.

**Topographic Difference Model, 2013 to 2014**
In contrast to last year’s report, the difference model this year shows a pattern of erosion to the west and accretion to the east.

**Topographic Difference Model, 2003 to 2014**
Since 2003 the short term pattern of change is very similar to the longer term.

**5gSU09: Ringstead Bay (west) to Ringstead**

**Spring 2013 to Spring 2014**
The most westerly profile shows some erosion which has occurred at the top of the beach while the next profile shows accretion, largely to the back. Profiles 5g00264B and C show erosion across the entire length. At the eastern end of this unit the profiles show some accretion.

**Baseline 2007 to Spring 2014**
Using a comparison with the autumn 2007 survey data a trend of erosion to the most westerly extent surveyed at this time and accretion to the east can be seen.

**Topographic Difference Model, 2013 to 2014**
Generally the concave parts of this bay show accretion and between them there are smaller areas of erosion towards the back of the beach.
Topographic Difference Model, 2005 to 2014
Over the longer term only the eastern section of the beach can be compared; the section immediately adjacent to the rock groyne shows to have increased in elevation but a section towards the back of the beach further to the west shows some erosion.

5gSU12: Bowleaze Cove
Spring 2013 to Spring 2014
No change can be seen in the cove itself but the profile line to the west of the jetty shows some accretion.

Baseline 2006 to Spring 2014
The same pattern can be seen over the longer term.

Topographic Difference Model, 2013 to 2014
Little change has occurred across this small unit, the most noticeable is an area of accretion towards the back of the beach.

Topographic Difference Model, 2007 to 2014
Since 2006 Bowleaze Cove has been given a full baseline survey each year as it is the down-drift end of Preston Beach. Slight erosion can be seen over the lower beach but with some build up at the back over the longer term.

5gSU13: Bowleaze Cove (west) to Overcombe
January 2013 to February 2014
All profiles show small increases in their cross-sectional areas. This area is generally used for the extraction of material but no record of material being moved alongshore has been received this year, which may account for the increase.

Baseline 2003 to February 2014
Over the longer period, all profiles show accretion, more significantly towards the western end.

Topographic Difference Model, 2013 to 2014
Little change has occurred to the lower beach over the year whilst some minor accretion can be seen towards the back of the beach.

Topographic Difference Model, 2005 to 2014
Over the longer term more pronounced accretion has occurred above the crest apart from an area towards the northeast end which appears to have eroded at the base of the cliffs.

5gSU14: Overcombe to Preston Beach Groyne
Spring 2013 to Spring 2014
Preston Beach shows mostly minor changes compared to last year with just two profiles towards the western end showing more than 15% decrease in cross-sectional area. Major works were carried out on Preston beach in March to restore the beach following the damage caused by the winter storms.

Baseline 2003 to Spring 2014
The majority of profiles in this unit show little change over the long term but generally all show some slight erosion with the notable exception of 5g00296 at the eastern end, which shows a considerable increase in cross-sectional area.
Topographic Difference Model, 2013 to 2014
The difference model shows a strip of erosion above the crest and accretion below. However, these changes reflect the damage and subsequent repair works here.

Topographic Difference Model, 2005 to 2014
In the long term a strip of erosion along the crest is apparent across most of the survey unit while an area of accretion can be seen at the northern end where material naturally tends to accumulate.

5gSU15: Preston Beach Groyne to Commercial Pier
Spring 2013 to Spring 2014
The majority of this unit shows very little change the most notable being some relatively minor erosion at the southern end of the unit and accretion at the northern end.

Baseline 2003 to Spring 2014
Overall, the majority of this management unit has been generally accreting over the longer term, with the exception of profile 5g00318 for which the 2003 value was relatively high and may account for the decrease in CSA seen here.
% Change in Cross-sectional Area

% change in cross-sectional area 2013 to 2014

Dorset Annual Survey Report 2014

- ± 0.5 Kilometers
- Accretion:
  - > 30%
  - 15 - 30%
  - 5 - 15%
  - Less than 5%
- Erosion:
  - > 30%
  - 15 - 30%
  - 5 - 15%
  - Less than 5%
- No Change

eg: 5f00420 (45)
Line name (actual change, m²)

Survey Unit Boundary

% change in cross-sectional area 2013 to 2014

Dorset
Southeast Regional Coastal Monitoring Programme

% Change in Cross-sectional Area

Dorset Annual Survey Report 2014

Dorset

± 0.5 Kilometers

Accretion

- 5 - 15%
- > 30%

Erosion

- Less than 5%
- 5 - 15%
- 15 - 30%

No Change

- Less than 5%
- 5 - 15%
- 15 - 30%
- > 30%

eg: 5f00420 (45)

Line name (actual change, m²)

% change in cross-sectional area Baseline to 2014

Dorset
Actual change in cross-sectional area 2013 to 2014

Dorset Annual Survey Report 2014
Actual change in cross-sectional area Baseline to 2014

Dorset Annual Survey Report 2014

Southeast Regional Coastal Monitoring Programme
Southeast Regional Coastal Monitoring Programme

% change in cross-sectional area August 2013 to October 2014

Dorset Annual Report 2014

Arish Mell (East) to Worbarrow Tout: 5gSU05

% change in cross-sectional area

- Greater than 30%
- 15 - 30%
- 5 - 15%
- Less than 5%
- 15 - 30%
- Greater than 30%
- No Change

Aerial Photography: 2013

Line name (actual change, m²)

eg: 5f00420 (45)
Southeast Regional Coastal Monitoring Programme

% change in cross-sectional area May 2003 to October 2014

Dorset Annual Report 2014

% change in cross-sectional area

- > 30 %
- 15 - 30 %
- 5 - 15 %
- Less than 5 %
- 15 - 30 %
- > 30 %
- No Change

eg: 5f00420 (45)
Line name (actual change, m²)

SU Boundary

Aerial Photography: 2013

% change in cross-sectional area May 2003 to October 2014

Arish Mell (East) to Worbarrow Tout: 5gSU05
% change in cross-sectional area May 2013 to April 2014

Lulworth Cove : 5gSU06

Southeast Regional Coastal Monitoring Programme

Dorset Annual Report 2014

% change in cross-sectional area

- > 30%
- 15 - 30%
- 5 - 15%
- Less than 5%
- 15 - 30%
- > 30%
- No Change

eg: 5f00420 (45)

Line name (actual change, m²)
Southeast Regional Coastal Monitoring Programme

% change in cross-sectional area February 2003 to April 2014

- Lulworth Cove: 5gSU06

Aerial Photography: 2013
Southeast Regional Coastal Monitoring Programme

Change in elevation (Topographic Difference Models) 2013 to 2014

Lulworth Cove: 5gSU06

± 0.5
25 m

Aerial Photography: 2013

Accretion

Erosion

Δ Δ ++

<= -3
-3 - -2.5
-2.5 - -2
-2 - -1.5
-1.5 - -1
-1 - -0.5
-0.5 - -0.25
-0.25 - 0.25
0.25 - 0.5
0.5 - 1
1 - 1.5
1.5 - 2
2 - 2.5
2.5 - 3
>= 3

Change in Elevation (m)
Southeast Regional Coastal Monitoring Programme

Change in elevation (Topographic Difference Models) 2003 to 2014

Lulworth Cove: 5gSU06

Aerial Photography: 2013

Accretion

Erosion

>= 3
2.5 - 3
2 - 2.5
1.5 - 2
1 - 1.5
0.5 - 1
0.25 - 0.5
-0.25 - 0.25
-0.5 - -0.25
-1 - -0.5
-1.5 - -1
-2 - -1.5
-2.5 - -2
-3 - -2.5
<= -3

Model Extent

Change in Elevation (m)

Aerial Photography: 2013

0 25 50 m
% change in cross-sectional area June 2013 to May 2014

Southeast Regional Coastal Monitoring Programme

Dorset Annual Report 2014

% change in cross-sectional area

- > 30%
- 15 - 30%
- 5 - 15%
- Less than 5%
- No Change

5 - 15%
15 - 30%
> 30%
Less than 5%
No Change

eg: 5f00420 (45)
Line name (actual change, m²)

SU Boundary

Aerial Photography: 2013

Bat's Head to Stair Hole: 5gSU07 (1 of 2)
Southeast Regional Coastal Monitoring Programme

% change in cross-sectional area May 2003 to May 2014

SU Boundary

Aerial Photography: 2013

eg: 5f00420 (45)

Line name (actual change, m²)

% change in cross-sectional area

- > 30%
- 15 - 30%
- 5 - 15%
- Less than 5%
- 15 - 30%
- > 30%
- No Change

Bat's Head to Stair Hole: 5gSU07 (1 of 2)
Southeast Regional Coastal Monitoring Programme

Change in elevation (Topographic Difference Models) June 2013 to May 2014

Bat's Head to Stair Hole: 5gSU07

±

Accretion

Erosion

Change in Elevation (m)

2.5 - 3
2 - 2.5
1.5 - 2
1 - 1.5
0.5 - 1
0.25 - 0.5
-0.25 - 0.25
-0.5 - -0.25
-1 - -0.5
-1.5 - -1
-2 - -1.5
-2.5 - -2
-3 - -2.5
<= -3

Model Extent

Aerial Photography: 2013

0 25 50 100 150 m
Southeast Regional Coastal Monitoring Programme

Change in elevation (Topographic Difference Models) 2007 to 2014

Dorset Annual Report 2014

± 0

50

100

150

25 m

Aerial Photography: 2013

Accretion

Erosion

Change in Elevation (m)

Model Extent

Aerial Photography: 2013

0 25 50 100 150 m

Change in elevation (Topographic Difference Models) 2007 to 2014

5gSU07
Southeast Regional Coastal Monitoring Programme

% change in cross-sectional area June 2013 to May 2014

Dorset Annual Report 2014

Aerial Photography: 2013

eg: 5f00420 (45) Line name (actual change, m²)

% change in cross-sectional area

- > 30 %
- 15 - 30 %
- 5 - 15 %
- Less than 5 %
- 15 - 30 %
- > 30 %
- No Change

Bat's Head to Stair Hole: 5gSU07 (2 of 2)
% change in cross-sectional area May 2003 to May 2014

Bat's Head to Stair Hole: SU07 (2 of 2)

Southeast Regional Coastal Monitoring Programme

Dorset Annual Report 2014

% change in cross-sectional area

Accretion

- > 30%
- 15 - 30%
- 5 - 15%
- Less than 5%

Erosion

- > 30%
- 15 - 30%
- 5 - 15%
- Less than 5%

No Change

Line name (actual change, m²)

eg: 5f00420 (45)
% change in cross-sectional area June 2013 to June 2014

White Nothe to Ringstead Bay (west) : 5gSU08
Southeast Regional Coastal Monitoring Programme

% change in cross-sectional area August 2003 to June 2014

White Nothe to Ringstead Bay: 5gSU08

Aerial Photography: 2013
Southeast Regional Coastal Monitoring Programme

Change in elevation (Topographic Difference Models) 2013 to 2014

Dorset Annual Report 2014

White Nothe to Ringstead Bay (west) : 5gSU08

Aerial Photography: 2013

Change in Elevation (m)

- Model Extent

- Change in Elevation (m)
  - >= 3
  - 2.5 - 3
  - 2 - 2.5
  - 1.5 - 2
  - 1 - 1.5
  - 0.5 - 1
  - 0.25 - 0.5
  - -0.25 - 0.25
  - -0.5 - -0.25
  - -1 - -0.5
  - -1.5 - -1
  - -2 - -1.5
  - -2.5 - -2
  - -3 - -2.5
  - <= -3
Southeast Regional Coastal Monitoring Programme

Change in elevation (Topographic Difference Models) 2003 to 2014

Dorset Annual Report 2014

White Nothe to Ringstead Bay (west) : 5gSU08

Change in Elevation (m)

Accretion

Erosion

Model Extent

Aerial Photography: 2013
% change in cross-sectional area June 2013 to June 2014

Ringstead Bay (west) to Ringstead: 5gSU09

Southeast Regional Coastal Monitoring Programme
% change in cross-sectional area September 2007 to June 2014

Ringstead Bay (west) to Ringstead: 5gSU09

Southeast Regional Coastal Monitoring Programme

Dorset Annual Report 2014
Southeast Regional Coastal Monitoring Programme

% change in cross-sectional area May 2013 to April 2014

Dorset Annual Report 2014

<table>
<thead>
<tr>
<th>Line name (actual change, m²)</th>
<th>% change in cross-sectional area</th>
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<tbody>
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<td>SU Boundary</td>
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<tr>
<td>Bowleaze Cove: 5gSU12</td>
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Aerial Photography: 2013

% change in cross-sectional area

- > 30 %
- 15 - 30 %
- 5 - 15 %
- Less than 5 %
- 15 - 30 %
- > 30 %

eg: 5f00420 (45)

Line name (actual change, m²)

SU Boundary

0 10 20 30 40 50 m

Bowleaze Cove: 5gSU12
Southeast Regional Coastal Monitoring Programme

% change in cross-sectional area April 2006 to April 2014

Dorset Annual Report 2014

- Accretion
  - > 30%
  - 15 - 30%
  - 5 - 15%
  - Less than 5%

- Erosion
  - 15 - 30%
  - > 30%
  - No Change

eg: 5f00420 (45)

Line name (actual change, m²)

SU Boundary

Aerial Photography: 2013

% change in cross-sectional area April 2006 to April 2014

Bowleaze Cove: 5gSU12
Southeast Regional Coastal Monitoring Programme

Change in elevation (Topographic Difference Models) 2013 to 2014

Dorset Annual Report 2014

± 0
50
10
20
30
40
m

Accretion
Erosion

Change in Elevation (m)

Model Extent

Change in Elevation (m)

Aerial Photography: 2013

Bowleaze Cove : 5gSU12

Change in elevation (Topographic Difference Models) 2013 to 2014
Southeast Regional Coastal Monitoring Programme

Change in elevation (Topographic Difference Models) 2007 to 2014

Bowleaze Cove: 5gSU12

Aerial Photography: 2013

Change in Elevation (m)

- >= 3
- 2.5 - 3
- 2 - 2.5
- 1.5 - 2
- 1 - 1.5
- 0.5 - 1
- 0.25 - 0.5
- -0.25 - 0.25
- -0.5 - 0.25
- -1 - 0.5
- -1.5 - -1
- -2 - -1.5
- -2.5 - -2
- -3 - -2.5
- <= -3

Model Extent

Change in elevation (Topographic Difference Models) 2007 to 2014

Bowleaze Cove : 5gSU12
Southeast Regional Coastal Monitoring Programme

Dorset Annual Report 2014

% change in cross-sectional area February 2013 to April 2014

Dorset Annual Report 2014

% change in cross-sectional area

- > 30%
- 15 - 30%
- 5 - 15%
- Less than 5%
- 15 - 30%
- > 30%
- No Change

eg: 5f00420 (45)
Line name (actual change, m²)

SU Boundary

Aerial Photography: 2013

Bowleaze Cove (west) to Overcombe: 5gSU13
% change in cross-sectional area April 2003 to April 2014

Southeast Regional Coastal Monitoring Programme

Dorset Annual Report 2014

% change in cross-sectional area

- > 30 %
- 15 - 30 %
- 5 - 15 %
- Less than 5 %
- 15 - 30 %
- > 30 %
- No Change

eg: 5f00420 (45)
Line name (actual change, m²)

SU Boundary

Aerial Photography: 2013

Bowleaze Cove (west) to Overcombe : 5gSU13
Southeast Regional Coastal Monitoring Programme

Change in elevation (Topographic Difference Models) 2013 to 2014

Aerial Photography: 2013

Change in Elevation (m)
- >= 3
- 2.5 - 3
- 2 - 2.5
- 1.5 - 2
- 1 - 1.5
- 0.5 - 1
- 0.25 - 0.5
- -0.25 - 0.25
- -0.5 - -0.25
- -1 - -0.5
- -1.5 - -1
- -2 - -1.5
- -2.5 - -2
- -3 - -2.5
- <= -3

Model Extent

Aerial Photography: 2013
Southeast Regional Coastal Monitoring Programme

Change in elevation (Topographic Difference Models) 2005 to 2014

Dorset Annual Report 2014

Bowleaze Cove (west) to Overcombe: 5gSU13

Change in Elevation (m)
- >= 3
- 2.5 - 3
- 2 - 2.5
- 1.5 - 2
- 1 - 1.5
- 0.5 - 1
- 0.25 - 0.5
- -0.25 - 0.25
- -0.5 - -0.25
- -1 - -0.5
- -1.5 - -1
- -2 - -1.5
- -2.5 - -2
- -3 - -2.5
- <= -3

Model Extent

Aerial Photography: 2013
Southeast Regional Coastal Monitoring Programme

% change in cross-sectional area May 2013 to May 2014

Dorset Annual Report 2014

% change in cross-sectional area

Delta

Accretion

15 - 30 %

5 - 15 %

> 30 %

Less than 5 %

No Change

Erosion

SU Boundary

eg: 5f00420 (45)

Line name (actual change, m²)

Overcombe to Preston Beach Groyne : 5gSU14

Aerial Photography: 2013

0 50 100 150 200 250 m
Southeast Regional Coastal Monitoring Programme

Dorset Annual Report 2014

% change in cross-sectional area February 2003 to April 2014

Overcombe to Preston Beach Groyne : 5gSU14

Aerial Photography: 2013

% change in cross-sectional area

- > 30%
- 15 - 30%
- 5 - 15%
- Less than 5%
- No Change
- 15 - 30%
- > 30%

eg: 5f00420 (45)

Line name (actual change, m²)

SU Boundary

0 50 100 150 200 250 m
Southeast Regional Coastal Monitoring Programme

Change in elevation (Topographic Difference Models) 2013 to 2014

Dorset Annual Report 2014

±

0 50 100 150 200 250 m

Overcombe to Preston Beach Groyne : 5gSU14

Aerial Photography: 2013

Accretion

Erosion

Change in Elevation (m)

Model Extent

Aerial Photography: 2013

0 50 100 150 200 250 m

Overcombe to Preston Beach Groyne : 5gSU14
Southeast Regional Coastal Monitoring Programme

Change in elevation (Topographic Difference Models) 2005 to 2014

Overcombe to Preston Beach Groyne: 5gSU14

Model Extent

Change in Elevation (m)

Accretion:

- >=3
- 2.5 - 3
- 2 - 2.5
- 1.5 - 2
- 1 - 1.5
- 0.5 - 1
- 0.25 - 0.5

Erosion:

- -0.5 - -0.25
- -1 - -0.5
- -1.5 - -1
- -2 - -1.5
- -2.5 - -2
- -3 - -2.5
- <= -3

Aerial Photography: 2013

0 50 100 150 200 250 m

0 50 100 150 200 250 m
Southeast Regional Coastal Monitoring Programme

% change in cross-sectional area May 2013 to May 2014

Dorset Annual Report 2014

% change in cross-sectional area

-30 %
-15 %
-15 %
> 30 %
Less than 5 %
5 - 15 %
15 - 30 %
No Change
Accretion
Erosion

eg: 5g00420 (45)

Line name (actual change, m²)

SU Boundary

Aerial Photography: 2013

Preston Beach Groyne to Commercial Pier: 5gSU15
Southeast Regional Coastal Monitoring Programme

% change in cross-sectional area February 2003 to May 2014
Dorset Annual Report 2014

% change in cross-sectional area

Accretion

- > 30 %
- 15 - 30 %
- 5 - 15 %

Erosion

- Less than 5 %
- 5 - 15 %
- 15 - 30 %
- > 30 %

No Change

eg: 5f00420 (45)
Line name (actual change, m²)

SU Boundary

Aerial Photography: 2013

% change in cross-sectional area February 2003 to May 2014

Preston Beach Groyne to Commercial Pier : 5gSU15
EXPLANATORY NOTES

Change in Cross-sectional Area (CSA)

The annual change in cross-sectional area is calculated as the difference in CSA between two surveys, expressed as a percentage change compared to the earlier CSA.

\[
\frac{CSA_1 - CSA_2}{CSA_2} \times 100
\]

Eqn (1)

where CSA₁ = most recent springtime survey and CSA₂ = spring survey previous year. Therefore, an annual change of −14% represents erosion during the last year of 14% of the area of last year’s survey.
Beach Profiles: 5p0138
Changes between 2012-06 and 2013-06

Accretion = 0.33 Erosion = -0.89 Total = 7.34
Beach Profiles: 5g0161
Changes between 2012-10 and 2013-05
Accretion = 2.18 Erosion = -0.88 Total = 1.32
Beach Profiles: 5g00163
Changes between 2012-10 and 2013-05

Accretion = 3.79  Erosion = -2.52  Total = 1.27
Beach Profiles: 5g0164
Changes between 2012-10 and 2013-05

Accretion = 5.47  Erosion = -3.68  Total = 1.81
Beach Profiles: 5g00165
Changes between 2012-10 and 2013-05

Accretion = 5.99 Erosion = 4.40 Total = 1.54
Beach Profiles 500167
Changes between 2012-10 and 2013-05
Accretion = 2.24  Erosion = -1.88  Total = 0.36
Beach Profiles: 5g00170
Changes between 2012-10 and 2013-05

Accretion = 0.88 Erosion = -0.79 Total = -0.12
Beach Profiles: 5q00172
Changes between 2012-10 and 2013-05

Accretion = 0.55 Erosion = -2.72 Total = -2.17
Beach Profiles: 5g00186
Changes between 2013-01 and 2013-06
Accretion = 3.01 Erosion = -0.07 Total = 2.94
Beach Profiles 5990291
Changes between 2012-12 and 2013-06

Accretion = 0.70  Erosion = -1.74  Total = 1.06
Beach Profiles: 5g90210
Changes between 2012-12 and 2013-06
Accretion = 5.94; Erosion = 0.00; Total = 5.94
Beach Profiles: 5g99261
Changes between 2012-05 and 2013-06

Accretion = 11.95  Erosion = 0.00  Total = 11.95
Beach Profiles: 5900096
Changes between 2012-05 and 2013-05

Accretion = 2.26 Erosion = -5.12 Total = -2.87
Beach Profiles: 5g90314
Changes between 2012-05 and 2013-05
Accretion = 2.93  Erosion = -1.85  Total = 0.98
Cross Sectional Area above MP Trend for Location: 5g00290 [12400] and Reference Profile Set 2

Area Above MP Trend: Accomplishing at 1.347 m²/year
Cross Sectional Area above MP Trend for Location: 5g00292 [12200] and Reference Profile Set 2

Area Above MP Trend: Increasing at 1.384 m2/m2year