Cover Photograph: Crow Point, July 2012
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Portland Bill to Exmouth

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Project Name: South West Regional Coastal Monitoring Programme

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Checked By: S. Humphry

Approved By: N. Baglow
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012 – Portland Bill to Exmouth

1. Introduction

Analysis presented in this report provides an overview of beach changes and wave and tidal measurements since the commencement of the Southwest Strategic Regional Coastal Monitoring Programme. The first beach surveys took place during the spring of 2007 and changes are reported until the baseline surveys of 2012 (spring to summer). This provides a short time base over which beach changes have been monitored. Detailed interpretation and decision-making is not advisable on the basis of these short-term changes, since the changes may not be representative of longer-term trends.

Data are presented at several levels:

- Process cell summary of percentage and actual profile change from 2011 to 2012
- Process cell summary of percentage and actual profile change from 2007 to 2012
- Detailed beach profile change from 2011 to 2012
- Detailed beach profile change from 2007 to 2012
- Topographic difference model change from 2007 to 2012
- Change in position of Mean High Water
- Surface sediment distribution
- Time series of beach profile 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.

Difference models have been produced where there are at least two baseline surveys to compare. In addition, the most recent LiDAR data has been used to extract the level of Mean High Water (MHW) from each survey unit and sediment distribution maps are produced from the latest survey information.

It must be appreciated that the accuracies of each measurement system must be taken into account when drawing conclusions, particularly from the difference models. In the case of topographic difference models from RTK GPS surveys, the accuracy of each data point is ±0.03m and therefore differences of ±0.06m can generally be considered as "real", whilst smaller changes may be an artefact of the measuring system, and are considered to be "No Change". Difference plots show changes >±0.25m, which should be indicative of areas of genuinely measurable change. Smaller changes may also be present but these are filtered from the analysis to provide clarity. This report displays difference models only where detailed analysis suggests that the changes are real but, nevertheless, the user should approach the results as indicative, unless reinforced overtime or with other information.

Where LiDAR has provided the source data sets, the modelling is less precise. Each LiDAR cell value has a plan position representative of a 1m² grid (with the exception of Chesil Beach which has a 0.5m² grid). It is not reasonable to expect to observe changes with positional
accuracy of better than 1-2m therefore. Profiles of steep slopes may suggest that the changes “bounce” back and forth. This is an artefact of the accuracy of the source data. LiDAR is particularly ineffective at identifying sharp edges or steep slopes e.g. cliffs, seawalls. Despite these limitations in accuracy the changes shown indicate an overview of profile change, but to a lower precision than the RTK data. The location of the regularly surveyed profiles superimposed on the difference plots indicates how representative these profiles might be of overall changes.

It must be emphasised that this is the fourth report of a series and that changes identified are indicative only of short-term trends. As the programme progresses, more detailed and meaningful reporting will be possible and this report should be treated accordingly.

2. Hydrodynamic data

a. Waves
Directional WaveRider buoys were deployed at Chesil on the 1st January 2007 and West Bay on the 1st November 2006.

The full wave reports are given at Annex A.

b. Tides
A WaveRadar Rex was installed at West Bay Harbour on 25th January 2008. This was replaced on 30th March 2011 by an Etrometa step gauge.

The full tide report is given at Annex B.

3. Survey data – Topographic

In terms of actual change, survey units in the eastern half of Lyme Bay, from Chesil to West Bay, show the most change. The majority of profiles in the western half of Lyme Bay look to have remained stable, although there are profiles in all survey units that have both gained and lost material. Chesil Beach and Burton Freshwater appear to have mostly gained material over the last year.

In the longer term, profiles at Chesil and Budleigh Salterton appear to have had an overall gain in material. There are signs of accretion in various profiles in most other survey units over the longer time period, along with many profiles that have remained stable. The Hive, Burton Freshwater, Sidmouth and the middle section of Exmouth all have a significant number of profiles that have lost material since the original baseline surveys.

Dates of surveys are shown in Annex E and the detailed topographic survey report is given at Annex F.

4. Survey data – Bathymetric

The first baseline bathymetric survey of Lyme Bay was completed between June 2007 and October 2008. No further analysis will be carried out until after the next baseline survey.
<table>
<thead>
<tr>
<th>Annex</th>
<th>Description</th>
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<tbody>
<tr>
<td>A</td>
<td>Chesil and West Bay Interim Wave Reports</td>
</tr>
<tr>
<td>B</td>
<td>West Bay Harbour Tide Report</td>
</tr>
<tr>
<td>C</td>
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<tr>
<td>D</td>
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<tr>
<td>E</td>
<td>High Level Report – field data collection (SDADCAG)</td>
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<td>F</td>
<td>Topographic Survey Report for Portland Bill to Exmouth</td>
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**Explanatory Notes**
Chesil Directional Waverider Buoy

Location
OS: 363033E 78457N
WGS84: Latitude: 50° 36.279' N  Longitude: 02° 31.424' W

Water Depth
10-12 m CD

Instrument Type
Datawell Directional Waverider Mk III

Data Quality

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<th>Sample interval</th>
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Monthly Statistics – 2011/12

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<th>$T_p$ (s)</th>
<th>$T_z$ (s)</th>
<th>Dir. (°)</th>
<th>SST (°C)</th>
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<td>225</td>
<td>13.9</td>
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Storm Analysis

| Date/Time     | $H_s$ (m) | $T_p$ (s) | $T_z$ (s) | Dir. (°) | Water level elevation (OD) | Tidal stage (hours re. HW) | Tidal range (m) | Tidal surge* (m) | Max. surge* (m) |
|---------------|-----------|-----------|-----------|----------|----------------------------|---------------------------|-----------------|-------------------|-----------------
| 03-Jan-2012 12:00 | 5.87      | 11.1      | 7.8       | 226      | 0.58                       | HW                        | 1.0             | 0.13              | 0.26             |
| 12-Dec-2011 23:30 | 5.53      | 10.0      | 7.4       | 222      | 0.27                       | HW +4                     | 1.6             | 0.39              | 0.50             |
| 07-Jun-2012 21:30 | 4.89      | 11.1      | 7.4       | 224      | 1.74                       | HW                        | 2.9             | 0.42              | 0.57             |
| 25-Apr-2012 22:30 | 4.54      | 13.3      | 8.0       | 214      | 1.18                       | HW +2                     | 1.6             | 0.42              | 0.70             |

* Tidal information is obtained from the nearest recording tide gauge (the National Network gauge at Weymouth). The surge shown is the residual at the time of the highest $H_s$. The maximum tidal surge is the largest surge during the storm event.
Distribution plots

The distribution of wave parameters are shown in the accompanying graphs of:

- Wave roses (Direction vs. $H_s$) from July 2011 to June 2012 (top) and for all measured data (bottom)
- Percentage of occurrence of $H_s$, $T_p$, $T_z$ and Direction from July 2011 to June 2012
- Monthly time series of $H_s$ (red line is the 4.5 m storm threshold)
- Incidence of storms during the reporting period and for all previous years. Storm events are defined using the Peaks-over-Threshold method. The highest $H_s$ of each storm event is shown

Summary

This reporting period showed some unusually large storms in December 2011 and January 2012, including the second highest storm measured at Chesil since the deployment of the Waverider. April and June 2012 also saw some moderate wave activity. The wave direction continued to predominate from the SW.

General

The wave buoy at Chesil was deployed on 22 December 2006.

Acknowledgements

The shore station is kindly hosted by the Weymouth & Portland National Sailing Academy. Tidal data were supplied by the British Oceanographic Data Centre as part of the function of the National Tidal and Sea Level Facility, hosted by the Proudman Oceanographic Laboratory and funded by DEFRA and the Natural Environment Research Council.
Offshore Wave Hs (m)  
Chesil WB: 01/07/2011 - 30/06/2012

July 2011 to June 2012

Offshore Wave Hs (m)  
Chesil WB: 22/12/2006 - 30/06/2012

All measured
West Bay Directional Waverider Buoy

Location
OS: 347123E 88451N
WGS84: Latitude: 50° 41.597' N Longitude: 02° 44.999' W

Water Depth
~10 m CD

Instrument Type
Datawell Directional Waverider Mk III

Data Quality

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<th>Recovery rate (%)</th>
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Monthly Statistics – 2011/12

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<th>Tp (s)</th>
<th>Tz (s)</th>
<th>Dir. (°)</th>
<th>SST (°C)</th>
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Storm Analysis

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<th>Date/Time</th>
<th>Hs (m)</th>
<th>Tp (s)</th>
<th>Tz (s)</th>
<th>Dir. (°)</th>
<th>Water level elevation (OD)</th>
<th>Tidal stage (hours re. HW)</th>
<th>Tidal range (m)</th>
<th>Tidal surge* (m)</th>
<th>Max. surge* (m)</th>
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<td>03-Jan-2012</td>
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* Tidal information is obtained from the nearest recording tide gauge (the step gauge at West Bay Harbour). The surge shown is the residual at the time of the highest Hs. The maximum tidal surge is the largest positive surge during the storm event.
Distribution plots

The distribution of wave parameters are shown in the accompanying graphs of:

- Wave roses (Direction vs. $H_s$) from July 2011 to June 2012 (top) and for all measured data (bottom)
- Percentage of occurrence of $H_s$, $T_p$, $T_z$ and Direction from July 2011 to June 2012
- Monthly time series of $H_s$ (red line is 2.0 m storm threshold)
- Incidence of storms during the reporting period and for all previous years. Storm events are defined using the Peaks-over-Threshold method. The highest $H_s$ of each storm event is shown

Summary

This reporting period showed a similar number and magnitude of storms to previous years focussed around December and early January followed by a calmer winter with some stormier conditions in June. The wave direction continued to predominate from SWbS.

General

The buoy was first deployed on 19 November 2006.

Acknowledgements

TASK2000 tidal prediction software was kindly provided by the Permanent Service for Mean Sea Level, Proudman Oceanographic Laboratory.
West Bay Harbour Tide Gauge

Location
OS: 346142.9E 90195.31N
WGS84: Latitude: 50° 42.532' N Longitude: 002° 45.846' E
Inner end of western breakwater

Instrument Type
Etrometa step gauge (from 30 March 2011)
Rosemount WaveRadar REX (from 25 January 2008 to 23 March 2011)

Benchmarks

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<th>Benchmark</th>
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<td>TGBM</td>
<td>Cross-headed bolt embedded into top of concrete seawall</td>
</tr>
<tr>
<td>Aux1</td>
<td>Top of step gauge</td>
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<tr>
<td>TGZ</td>
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<tr>
<td>TGZ = -2.425m above Ordnance Datum Newlyn</td>
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<td>TGZ = -0.175m above Chart Datum</td>
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<tr>
<td>TGZ = 6.376m below TGBM</td>
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Datum
All data are to Ordnance Datum Newlyn. The height of Chart Datum relative to Ordnance Datum at Bridport is -2.25m (Admiralty Tide Tables, Supplementary Table III).

Survey information
The site was surveyed on 29 May 2008.

Site characteristics
The breakwater is on open coast but some wave reflection can occur around the breakwater and harbour entrance. Spring tidal range is approx.3.2m.

Data Quality

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<td>10 minutes</td>
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Service history
The step gauge was last serviced in September 2012. No re-calibration of the instrument is required.

Measurements
Residuals and Elevations (OD and CD) for the whole year are shown in Figures 1 to 3 respectively.

Statistics

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<th>Month</th>
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<td>Elevation (OD)</td>
<td>Date/Time</td>
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<td>December</td>
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**Highest values in 2012**

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<thead>
<tr>
<th>Extremes</th>
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<th>Value (m)</th>
<th>Date/Time</th>
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<tr>
<td>2.79 (0.45)</td>
<td>17-Oct-2012 07:20</td>
<td>0.71</td>
<td>31-Oct-2012 17:40</td>
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<td>Annual surge maxima</td>
<td>Z₀ (OD)</td>
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<td>---------------------</td>
<td>--------</td>
</tr>
<tr>
<td></td>
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<td>Value (m)</td>
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</tr>
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<td>2.34 (-0.08)</td>
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<td>0.66</td>
</tr>
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<tr>
<td>2012</td>
<td>2.79 (0.45)</td>
<td>17-Oct-2012 07:20</td>
<td>0.71</td>
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</tbody>
</table>

¹ Due to the requirements of the Harbour owners, the tide gauge in 2008 was sited at a lower elevation than ideal. A combination of high surge, high spring tides and significant wave action caused the instrument to be swamped on 10 March 2008 and, accordingly, the elevations given in the table are likely to be an under-estimate of the actual tidal levels.

### Tidal levels

<table>
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<tr>
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<th>Elevation (CD)</th>
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<td>MHWS</td>
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<td>MHWN</td>
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<tr>
<td>MLWS</td>
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<td>0.85</td>
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<tr>
<td>LAT</td>
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</table>

**General**

The time series of 10 minute tidal elevations for one year is quality-checked in accordance with ESEAS guidelines, flagged and archived. The archived time series is continuous and monotonic, with missing data given as 9999. The missing data shown are days where the entire 24 hours of data are missing.

Monthly extreme maxima/minima are the maximum and minimum water levels from all measured data for that month. Monthly surge maxima/minima (residuals) are calculated in a similar manner from the time series of residuals. Residuals are derived as the measured tidal elevation minus the predicted tidal elevation.

The monthly Mean Level is calculated as the average of all readings for the given month. The annual Z₀ is the value of Mean Sea Level derived by the harmonic analysis of the year’s data. These values should not be used for any purpose without consideration of the recovery rate.

**Acknowledgements**

Tidal predictions were produced using the TASK2000 software, kindly provided by the Permanent Service for Mean Sea Level (PSMSL), Proudman Oceanographic Laboratory. Tide levels were produced by Fugro EMU Limited.
Figure 1: West Bay Harbour residuals for 2012
Figure 2: West Bay Harbour tidal elevations for 2012 relative to Ordnance Datum
Figure 3: West Bay Harbour tidal elevations for 2012 relative to Chart Datum
South West Regional Coastal Monitoring Programme
Field Data Collection - SDADCAG
Topographic Data

<table>
<thead>
<tr>
<th>Sub Cell</th>
<th>Survey Unit</th>
<th>Target</th>
<th>Completion</th>
<th>Target</th>
<th>Completion</th>
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<th>Completion</th>
<th>Target</th>
<th>Completion</th>
<th>Target</th>
<th>Completion</th>
</tr>
</thead>
</table>

Key:
- Green: Completed on time and accepted
- Red: Overdue
- Orange: Surveyed but not submitted / Accepted
- Yellow: Will not be surveyed

Surveys will return to the customary schedule following the completion of the baseline surveys.

For the most recent survey schedules for each survey unit please see [http://www.channelcoast.org/southwest/survey_programme_schedule/](http://www.channelcoast.org/southwest/survey_programme_schedule/)
Annex F – Topographic Survey Report for Portland Bill to Exmouth

1. Introduction

Analysis has been conducted for those sites where a minimum of three surveys have been recorded. In general, changes are measured relative to the Mean Low Water Springs (MLWS) level. In cases where this level cannot be reached the master profile is placed at the lowest level achieved by all profiles in the survey unit.

A full time series of plotted beach profiles are shown superimposed and relative to a Master Profile for each profile location (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).

![Example Master Profile with CSA calculated from the surveyed GPS Profile](image)

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 repeat baseline sites which receive an annual baseline. Baseline surveys include a full profile survey at 50m intervals and continuous spot height data collected at approximately 1m intervals across the whole beach to the level of MLWS. This continuous data also includes a feature code for each spot height data point recorded.

Where there are at least two baseline surveys for a survey unit a topographic difference model has been produced based on the spot height elevations. The raw spot height 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. The spot height data from each survey has also been used to approximate the level of MHW (Mean High Water) and MLW along each survey unit. In some cases, where there is no topographic baseline data collected on foot the information described above may be derived from LiDAR data.
2. **Condition of process sub-cell**

The Beach Change Summary maps contain an at-a-glance condition of the whole area between Portland Bill and Exmouth, with the lines representing the average accretion, no change or erosion for each survey unit where there is topographic data.

3. **Condition of individual survey units**

Changes within each survey unit are summarised on five maps: Beach change map (Spring to Spring), beach change map (Baseline to Spring), topographic difference model maps (where applicable), Mean High Water line maps and sediment distribution maps. Beach Change maps show the location of each beach profile, superimposed on an aerial photograph (note that the line has been extended for clarity). Where possible, the annual change in cross-sectional area has been calculated from spring 2011 to baseline 2012 and from baseline 2007 to baseline 2012.

**6aSU2: Chesil**

**Spring 2011 to Baseline 2012**

Accretion has occurred along the majority of profiles in this survey unit over the past year. This mid-section of the unit has some profiles with no change, and profiles 6a00140 and 6a00142 are shown to have lost material over this time frame.

**Baseline 2007 to Baseline 2012**

Converse to the previous year’s analysis, there is a marked pattern of transport towards the east, with notable overall sediment build-up at Portland Bill. Although several of the profiles in the mid-west section of the survey unit show erosion over the longer term, the most western profiles are shown with no-change or have gained material.

**Topographic difference model changes 2007 – 2012**

The south east half of the survey unit is dominated by accretion and the north west half of the beach has alternating bands of accretion and erosion running along the length of the beach. This fits with the pattern seen in the baseline profiles.

*Net Sediment Balance above MLWS from 2007 to 2012: +88,739m³*

*Net Sediment Change from 2007 to 2012: +2%*

**6aSU3-2: Abbotsbury & West Bexington (1 of 2, Abbotsbury)**

**Spring 2011 to Baseline 2012**

Neither of the profiles in this section have shown significant change over the past year.

**Baseline 2007 to Baseline 2012**

Over the longer period, both profiles have lost material and both profiles have lost similar amounts.
**Topographic difference model changes 2007 – 2012**
The difference model shows an unbroken band of erosion running along the seaward beach face with regular patches of accretion, no change and erosion running further landward along the crest of the beach. The landward section appears to have changed little over the longer time period.

**6aSU3-2: Abbotsbury & West Bexington (2 of 2, West Bexington)**

**Spring 2011 to Baseline 2012**
Both profiles in this section have shown no significant change over the past year.

**Baseline 2007 to Baseline 2012**
As with Abbotsbury, both profiles have lost material over the longer time period, with profiles 6a00521 and 6a00525 losing 29 m$^2$ and 24 m$^2$ respectively.

**Topographic difference model changes 2007 – 2012**
As with Abbotsbury, there is a solid band of erosion running along the seaward beach face. Further landward, along the crest of the beach, there are large alternating areas of erosion, no change and accretion. A strip of no change runs along the landward edge of the beach. The patches of erosion and accretion extend to the sea wall at the car park at West Bexington.

*The Net Sediment information is for the full extent of 6aSU3-2, covering Abbotsbury and West Bexington*

**Net Sediment Balance above MLWS from 2007 to 2012:** -171,783 m$^3$

**Net Sediment Change from 2007 to 2012:** -3%

**6aSU3-3: The Hive**

**Spring 2011 to Baseline 2012**
Both profiles on the main beach at The Hive have remained stable over the past year. Profile 6a00616 at the far east of the survey unit has lost 10 m$^2$ in the same year.

**Baseline 2007 to Baseline 2012**
All profiles have lost significant amounts of material since the original baseline survey, with all profiles losing at least 20 m$^2$.

**Topographic difference model changes 2007 – 2012**
Given the significant loss of material in the baseline to baseline profiles, the difference model shows erosion appearing as the dominant feature in the DTM, although there are still large areas of no change and smaller isolated patches of accretion.

**Net Sediment Balance above MLWS from 2007 to 2012:** -10,896 m$^3$

**Net Sediment Change from 2007 to 2012:** -9%
6aSU3-5: Burton Freshwater

Spring 2011 to Baseline 2012
All three profiles have gained a significant amount of material over the last year, with most gains along the profiles at either edge of the survey unit.

Baseline 2007 to Baseline 2012
Since the original baseline survey, all profiles have lost significant amounts of material, with the highest losses (over 160 m²) occurring at the eastern end of the survey unit.

Topographic difference model changes 2007 – 2012
The dominating feature of the difference model is the intense area of erosion in the east of the survey unit. This extreme change could be attributed to the dynamic nature of the river at this end. The majority of the seaward beach face has lost material, graduating to an area of little or no change at the far west of the survey unit. There is a very small band of accretion along the beach crest and a small but intense area by the river mouth. The very landward section of the unit appears to have remained stable.

Net Sediment Balance above MLWS from 2007 to 2012: -19,537 m³

Net Sediment Change from 2007 to 2012: -7%

6aSU4: West Bay

Spring 2011 to Baseline 2012
This survey unit is split into three distinct sections. The profiles on East Beach have all lost significant amounts of material over the past year, with all profiles losing over 30 m². The central section shows one profile with accretion to the east, and losses from the mid and west profiles. The profiles on the far west of the survey unit show accretion and erosion in the east and west respectively, gaining and losing a similar quantity of material each.

Baseline 2007 to Baseline 2012
In the longer term, changes are very definite for each of the three sections. With the exception of profile 6a00695 the east and mid sections have lost significant amounts of material in all profiles. Profiles in the west section have gained material (although 6a00706 has not gained enough to be significant). The percentages gained appear large in the west section, but this is due to the short nature of the profile lines.

Topographic difference model changes 2007 – 2012
The east section shows areas of erosion along the majority of the seaward beach face. A thin band of no change separates the band of erosion from two separate areas of accretion, one to the east and one to the west. The bulk of the accretion could be attributed to human activity in this area. The middle section has mostly lost material between the two baseline surveys with the most material lost along the central stretch of the beach. The western section has mostly gained material, with the amount of change decreasing from east to west, finishing with an area of no change at the very west of the survey unit.

Net Sediment Balance above MLWS from 2007 to 2012: -7,374 m³

Net Sediment Change from 2007 to 2012: -3%
6aSU5-2: Seatown

**Spring 2011 to Baseline 2012**
Both profiles have remained stable over the past year.

**Baseline 2007 to Baseline 2012**
Over the longer time period there is a mixture of erosion and accretion. The two eastern profiles have lost material, profile 6a00789 has remained stable and the westernmost profile has gained material.

**Topographic difference model changes 2007 – 2012**
The seaward face of the beach has a band of erosion across the full width of the model extent. A smaller band of erosion is seen further landward. A band of no change separates the two, with a couple of patches of accretion to the west. Two, more intense areas of accretion can be seen towards the back of the beach.

*Net Sediment Balance above MLWS from 2007 to 2012: -3,286m$^3$*

*Net Sediment Change from 2007 to 2012: -10%*

6aSU5-4: Charmouth

**Autumn 2011 to Baseline 2012**
Additional profiles were added at the beginning of Phase 2, therefore data from autumn 2011 have been used for comparison. Profiles 6a00905 and 6a00906A have both lost material and profile 6a00904 to the east has gained more than 30m$^2$ over the past year.

**Baseline 2007 to Baseline 2012**
Over the longer time period, only profile 6a00905 has lost material, with the remaining profiles all having an increase in cross-sectional area.

**Topographic difference model changes 2007 – 2012**
Areas of erosion and accretion in the difference model are consistent with the profile analysis over the same time period. There is a region of erosion in the middle of the survey unit, where profile 6a00905 is located. Patches of accretion are at either side of the survey unit, with areas of no change situated towards the landward and seaward extents as well.

*Net Sediment Balance above MLWS from 2007 to 2012: +2,307m$^3$*

*Net Sediment Change from 2007 to 2012: +6%*

6aSU6-1: Lyme Regis

**Autumn 2011 to Baseline 2012**
Additional profiles were added at the beginning of Phase 2, therefore data from autumn 2011 have been used for comparison. Profiles 6a00947A and 6a00953A, at the edges of the survey unit, have remained stable. Profile 6a00951A, in the middle of the unit, has lost a small but still significant quantity of material.
Baseline 2007 to Baseline 2012
Profiles in the northern half of the survey unit (6a00947 to 9a00950) have all gained material over the longer time period, with profiles in the southern half (6a00951A to 6a00954) remaining stable.

Topographic difference model changes 2007 – 2012
The majority of the area covered by the difference model is shown to have remained stable over the longer time period. This could be due to the bulk of the survey unit being a stable rock platform. The most dynamic features are shown to be a gain in material at the rear of the beach, which fits well with the pattern seen in the baseline profile analysis but shows a more precise location for the accretion.

Net Sediment Balance above MLWS from 2007 to 2012: +4,966 m³
Net Sediment Change from 2007 to 2012: +8%

6aSU6-2: Lyme Regis

Autumn 2011 to Baseline 2012
Additional profiles were added at the beginning of Phase 2, therefore data from autumn 2011 have been used for comparison. With the exception of profiles 6a0955, 6a00962A and 6a00969A – which have not shown enough change to be significant – all profiles have lost material since the 2011 survey.

Baseline 2007 to Baseline 2012
Profiles along the whole of the survey unit show a variety of changes over the five year period. There are signs of erosion in the western, sandy section of the survey unit. Profiles in the middle, shingle section have mostly gained material with the exception of 6a00961A at the far east of the middle section, which has lost material. Profiles 6a00955 to 6a00960 in the eastern section of the survey unit have either remained stable or gained small amounts of material.

Topographic difference model changes 2007 – 2012
Over the longer time period, the difference model shows the most erosion in the western sandy section of the survey unit. Within the harbour a much larger area of erosion is visible, particularly in the south western corner, as well as the northern section and along the eastern harbour arm.
The middle, shingle section has both erosion and accretion along with areas that have remained stable. The biggest section of accretion is seaward of the beach toe in the middle of the survey unit. This middle section also has a band of erosion running along the beach crest, with increased losses showing towards the eastern end.
There are small areas of accretion in the eastern section, also at the toe of the beach, with a band of stable material and slight losses towards the landward edge of the eastern beach.

Net Sediment Balance above MLWS from 2007 to 2012: -1,767 m³
Net Sediment Change from 2007 to 2012: -1%
6aSU7-1: The Cobb

**Spring 2011 to Baseline 2012**
Profiles over the last year have shown a mixture of accretion, erosion and remaining stable. The westernmost profile (6a00984) has lost material and profile 6a00978 towards the east has gained material. The other profiles have remained stable.

**Baseline 2007 to Baseline 2012**
Over the longer time period, there is a clear pattern of accretion in the majority of the survey unit, switching to erosion at the outer edges. Profiles 6a00978 through to 6a00985 have all gained material and the remaining profiles, with the exception of 6a00975 and 6a00977 have all lost material.

**Topographic difference model changes 2007 – 2012**
The difference model shows a large area of accretion in the middle of the survey unit. This area of accretion covers almost all the beach in the very middle, from the landward limit to the seaward limit. Moving away from the middle, this stretches into a thinner band of accretion along the beach face in the west and the beach crest in the east. There is a thin band of erosion along the beach crest along the western quarter of the survey unit. There are some small patches of erosion in the very east of the unit, with the largest along a section of the beach toe.

*Net Sediment Balance above MLWS from 2007 to 2012: +7,166m³*

*Net Sediment Change from 2007 to 2012: +4%*

6aSU8-1: Seaton

**Spring 2011 to Baseline 2012**
On the whole, the majority of this survey unit has remained stable over the last year. However, profiles 6a01161, 6a01165 and 6a01169 at the eastern end of the unit have lost material and profiles 6a01181 and 6a01185, situated more towards the west, have gained and lost material respectively.

**Baseline 2007 to Baseline 2012**
Over the longer period, the majority of profiles have lost material. The pattern seen appears to be in waves of erosion and stability with a few profiles at the extreme ends showing accretion. The largest amount of change occurs along profile 6a01193 with +148% change in cross-sectional area – this extreme change can be attributed to the very small profile length and as such any changes will be shown as a large percentage; the actual cross-sectional area gain is only 10 m².

**Topographic difference model changes 2007 – 2012**
In comparison to the along-shore waves of erosion and stability seen in the baseline to baseline profiles, the difference model shows clear bands of erosion along the beach face and accretion running parallel along the beach crest and at the back of the beach. There are a couple of areas running between the two where there appears to be no change. Although the baseline to baseline profiles look to show an overall loss of material between the two baseline surveys, the difference model shows that there is in fact a small, overall gain in material.
Net Sediment Balance above MLWS from 2007 to 2012: +2,552m³

Net Sediment Change from 2007 to 2012: +1%

6aSU10: Sidmouth

Spring 2011 to Baseline 2012
Additional profiles were added at the beginning of Phase 2, therefore data from autumn 2011 have been used for comparison. The three eastern profiles have all remained stable over the past year. Profiles 6a01453A and 6a01456 either side of the offshore rock breakwaters, have lost and gained material respectively, each having a 3% change in cross-sectional area. Profile 6a01463 at the far west of the survey unit has lost the most material over the past year.

Baseline 2007 to Baseline 2012
Over the longer time period there is a complete mixture of erosion, accretion and stability in all profiles in the survey unit. To the east of the river, profiles 6a01440 and 6a01442 have lost and gained high levels of material. Profiles on the beach between the eastern rock groynes (York Steps groyne bay) have all lost material and the profiles in the western rock groynes (Bedford Steps groyne bay) have lost, remained stable and gained material, moving east to west respectively. The remainder of the profiles in the western half of the survey unit have mostly gained material, with the exception of 6a01454 and 6a01464 which have lost material and 6a01452, 6a01453A, 6a01455 and 6a01460 which have all had no significant change.

Topographic difference model changes 2007 – 2012
The difference model between the two baseline surveys shows most change to occur towards the landward side of the model extent. There are clear patterns in each of the sections. East of the river there is a band of erosion at the very back of the beach, with a large area of accretion at the seaward limit – this could be due to either the river mouth or sediment introduced from the cliffs at the very back of the beach. The beach between the eastern rock groynes (York Steps groyne bay) shows a band of erosion at the back of the beach, which ties in with the profiles in this section. The beach between the western rock groynes (Bedford Steps groyne bay) has separate bands of erosion in the east and accretion in the west with larger areas further down the beach, seaward of the beach toe. The main beach section, with the offshore rock breakwaters, has lost and gained material moving east to west along the beach face, with an area of accretion at the seaward limit of the model extent just to the west of the western offshore rock breakwater. The section of beach at the very west of the survey unit has a clear and intense band of accretion along the beach face, extending to the western boundary of the model extent.

Net Sediment Balance above MLWS from 2007 to 2012: +6,367m³

Net Sediment Change from 2007 to 2012: +4%

6aSU12: Budleigh Salterton

Spring 2011 to Baseline 2012
Additional profiles were added at the beginning of Phase 2, therefore data from autumn 2011 have been used for comparison. The two eastern profiles in this survey unit have both gained
material, with the most gains along profile 6a01615 at the very east. Profile 6a01621 has remained stable over the past year and profile 6a01624, at the very west, has lost a small but significant amount.

**Baseline 2007 to Baseline 2012**
Over the longer time period, the trend has switched so that, with the exception of the two easternmost profiles which have gained material, the changes observed progress from erosion in the east through stable in the middle to accretion in the west.

**Topographic difference model changes 2007 – 2012**
Over the longer time period, there appears to be very definite changes throughout the survey unit. Differences can be seen from the beach crest down to the seaward limit. There is a very intense area of accretion at the far east of the unit, but this could be attributed to the dynamic nature of the river. There is also a large, intense area of erosion in the middle of the unit, but this is only apparent from along the beach face. The whole length of the beach crest, and the western beach face, from crest down to the seaward limit, has gained material between the two baseline surveys.

*Net Sediment Balance above MLWS from 2007 to 2012: +10,192m³*

*Net Sediment Change from 2007 to 2012: +4%*

**6aSU13: Budleigh Salterton**

**Spring 2011 to Baseline 2012**
With the exception of profiles 6a01651 and 6a01655 which have gained and lost material respectively, all the profiles in this survey unit have remained stable over the last year.

**Baseline 2007 to Baseline 2012**
Over the longer time period, the beach has shown a pattern of strong accretion to the east, and moderate erosion to the western end.

**Topographic difference model changes 2007 – 2012**
The difference model shows two clear sections of change – accretion in the east and erosion in the west, with a band of no change in the middle, spreading out either side. Most of the accretion in the east is along the beach crest, but this extends down to the seaward limit at the very east of the survey unit. The beach, landward of the crest, in the eastern half of the survey unit, appears to have remained stable between the two baseline surveys. There is a large area of erosion covering the full width of the model extent towards the west of the survey unit. This band of erosion thins to be apparent just along the crest of the beach as it moves to the very west of the unit, and is shown to be two thin bands at the very landward limit and along the beach face down to the seaward limit, as it moves towards the middle of the survey unit.

*Net Sediment Balance above MLWS from 2007 to 2012: +9,527m³*

*Net Sediment Change from 2007 to 2012: +2%*
6aSU16-1: Exmouth

Spring 2011 to Baseline 2012
Over the past year, this survey unit has experienced a mixture of erosion, accretion and stability along the length of the beach. The far eastern section has mostly gained material, the middle section has mostly lost material and the western end has mostly remained stable with accretion along profile 6a01808. Accretion can be observed along profile 6a01780, gaining 7% of its cross-sectional area. The largest change in material over the past year can be seen along profile 6a01796, losing over 30m² of its cross-sectional area.

Baseline 2007 to Baseline 2012
Over the longer time period, the middle section shows heavy erosion along the majority of profiles, especially between 6a01778 and 6a01793. The remaining profiles to the east and west show a mixture of accretion and no change, with a couple of profiles losing material too. The far eastern profiles have mostly gained material and the far western profiles have mostly remained stable. There are a small number of profiles between 6a01804 and 6a01810 that have also gained material between the two baseline surveys.

Topographic difference model changes 2007 – 2012
The difference model appears to show several distinct sections. The eastern section has clear bands of erosion and accretion separated by an area of no change. Erosion can be seen at the back of the beach and accretion can be seen towards the seaward edge of the difference model. The middle section of the survey unit is dominated by a band of erosion with a small area of accretion along the sand bar that extends into the water. The western section is mostly accretion, with a large band extending almost the full width of the model, along with some areas of no change. These tie in with the pattern seen in the baseline to baseline profiles, and help to identify precise locations of where beach material has been gained or lost.

Net Sediment Balance above MLWS from 2007 to 2012: +10,646m³

Net Sediment Change from 2007 to 2012: +2%
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.

\[
\frac{CSA_1 - CSA_2}{CSA_2} \times 100 \quad \text{eqn}(1)
\]

Where CSA\(_1\) = most recent springtime survey and CSA\(_2\) = 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.

Net Sediment Calculation

The value derived from this calculation represents the volume change in m\(^3\) across each individual survey unit over time. The initial volumes are derived from the Digital Terrain Models made for consecutive baseline topographic surveys. Both models are clipped to cover the same area, then and a volume above the MLWS plane is calculated for each DTM. The net sediment change is calculated as

\[
\text{Vol}_1 - \text{Vol}_2 \quad \text{eqn}(2)
\]

Where \text{Vol}_1 = most recent DTM model volume and \text{Vol}_2 = earlier DTM model volume. Therefore a net change of \(-19730\text{m}^3\) represents erosion since the earlier survey.
Note that additional profiles were added to survey units 6aSU2, 6aSU3-2, 6aSU5-4, 6aSU6-1, 6aSU6-2, 6aSU10 and 6aSU12 at the beginning of Phase 2. As profiles for Spring 2011 are not available, profiles for Autumn 2011 have been used for comparison.
Note that additional profiles were added to survey units 6aSU2, 6aSU3-2, 6aSU5-4, 6aSU6-1, 6aSU6-2, 6aSU10 and 6aSU12 at the beginning of Phase 2. As profiles for Spring 2011 are not available, profiles for Autumn 2011 have been used for comparison.
Note that LiDAR data has been used for Phase 1 Baseline profiles at 6aSU3-2, 6aSU3-3 and 6aSU4. LiDAR data has also been used for Phase 2 Baseline profiles at 6aSU3-2.
Annual % Change in Cross-sectional Area (Baseline 2007 to Baseline 2012)

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

- **Erosion**
  - 15 - 30%
  - > 30%

No Change: 5 - 15%

% Change in Cross-Sectional Area

Actual Annual Change in Cross-sectional Area (m²)

Note that LiDAR data has been used for Phase 1 Baseline profiles at 6aSU3-2, 6aSU3-3 and 6aSU4. LiDAR data has also been used for Phase 2 Baseline profiles at 6aSU3-2.
Aerial Photography from 2009

Note that additional profiles were added to this survey unit at the beginning of Phase 2. As data for Spring 2011 are not available for all profiles, data from Autumn 2011 have been used for comparison.
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

6aSU2: Chesil Beach - Topographic Difference Model (1 of 2)

Aerial Photography from 2009

Change in Elevation (m) between November 2006 and October 2012

Model Extent

ACCRETION  NO CHANGE  EROSION

±

SDADCAG - Dorset
Aerial Photography from 2009

Contours

MHW Elevation: 1.30OD
MLW Elevation: -0.85OD

- MHW 2011-11
- MHW 2010-10
- MHW 2009-09
- MHW 2008-11
- MHW 2007-09
- MLW 2011-11
6aSU2: Chesil Beach - Sediment Distribution (1 of 2)

Sediment Type
- Gravel
- Gravel & Sand
- Sand
- Boulder
- Dune
- Dune Vegetated
- Grass
- Gravel & Mud
- Mud
- Mud & Sand
- Rock
- Saltmarsh
- Sea Defence
- Shell
- Water Body
- Mixture
- Obstruction

Aerial Photography from 2009
Survey Completed 5th October 2012
Actual Change in Cross-sectional Area (Autumn 2011 to Baseline 2012)

- **Accretion**
  - > 30 m²
  - 15 - 30 m²
  - 5 - 15 m²
- **No Change**
  - Less than 5 m²
  - 5 - 15 m²
  - 15 - 30 m²
  - > 30 m²

Note that additional profiles were added to this survey unit at the beginning of Phase 2. As data for Spring 2011 are not available for all profiles, data from Autumn 2011 have been used for comparison.
Aerial Photography from 2009

Model Extent

Change in Elevation (m) between November 2006 and October 2012

<table>
<thead>
<tr>
<th>Change in Elevation (m)</th>
<th>ACCRETION</th>
<th>NO CHANGE</th>
<th>EROSION</th>
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</thead>
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<tr>
<td>&gt;= 3</td>
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<tr>
<td>2.5 - 3</td>
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<tr>
<td>2  -  2.5</td>
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<tr>
<td>1.5  -  2</td>
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<tr>
<td>1  -  1.5</td>
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<td>-2.5  -  -2</td>
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<tr>
<td>-3  -  -2.5</td>
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<td></td>
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<tr>
<td>&lt;= -3</td>
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</tr>
</tbody>
</table>
Contours

MHW Elevation: 1.30OD
MLW Elevation: -0.85OD

- MHW 2011-11
- MHW 2011-03
- MHW 2010-01
- MHW 2009-03
- MHW 2007-09
- MHW 2006-11
- MLW 2011-11

Aerial Photography from 2009
Sediment Type

- Gravel
- Gravel & Sand
- Sand
- Boulder
- Dune
- Dune Vegetated
- Grass
- Gravel & Mud
- Mud
- Mud & Sand
- Rock
- Saltmarsh
- Sea Defence
- Shell
- Water Body
- Mixture
- Obstruction

Aerial Photography from 2009
Survey Completed 5th October 2012
Southwest Strategic Regional Coastal Monitoring Programme

Annaual Report 2012

SU boundary

Actual Change in Cross-sectional Area (Spring 2011 to Baseline 2011)

Accretion
- > 30 m²
- 15 - 30 m²
- 5 - 15 m²
No Change
- Less than 5 m²
- 5 - 15 m²
- 15 - 30 m²
- > 30 m²

Erosion

Note that Phase 2 baseline data for this Survey Unit was collected using LiDAR on 25/11/2011.

Aerial Photography from 2009

SDADCAG - Dorset
Note that Phase 1 baseline data for this Survey Unit was collected using LiDAR on 03/11/2006 and Phase 2 baseline data for this Survey Unit was collected using LiDAR on 25/11/2011.
Change in Elevation (m) between November 2006 and November 2011

Note that Phase 1 baseline data for this Survey Unit was collected using LiDAR on 03/11/2006 and Phase 2 baseline data for this Survey Unit was collected using LiDAR on 25/11/2011.
Aerial Photography from 2009

Contours

MHW Elevation: 1.30OD
MLW Elevation: -1.15OD

- MHW 2011-11
- MHW 2011-03
- MHW 2009-10
- MHW 2009-03
- MHW 2007-09
- MHW 2006-11
- MLW 2011-11
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

6aSU3-2: Abbotsbury & West Bexington - Beach Change (2 of 2)

Actual Change in Cross-sectional Area (Spring 2011 to Baseline 2011)

- Accretion
  - > 30 m²
  - 15 - 30 m²
  - 5 - 15 m²
- No Change
  - Less than 5 m²
  - 5 - 15 m²
  - 15 - 30 m²
- Erosion
  - > 30 m²

Note that Phase 2 baseline data for this Survey Unit was collected using LiDAR on 25/11/2011.
Actual Change in Cross-sectional Area (Baseline 2006 to Baseline 2011)

- **Accretion**
  - > 30 m²
  - 15 - 30 m²
  - 5 - 15 m²

- **Erosion**
  - Less than 5 m²
  - 5 - 15 m²
  - 15 - 30 m²
  - > 30 m²

**Su boundary**

Note that Phase 1 baseline data for this Survey Unit was collected using LiDAR on 03/11/2006 and Phase 2 baseline data for this Survey Unit was collected using LiDAR on 25/11/2011.
Change in Elevation (m) between November 2006 and November 2011

Note that Phase 1 baseline data for this Survey Unit was collected using LiDAR on 03/11/2006 and Phase 2 baseline data for this Survey Unit was collected using LiDAR on 25/11/2011.
Contours

MHW Elevation: 1.30OD
MLW Elevation: -1.15OD

- MHW 2011-11
- MHW 2011-03
- MHW 2009-10
- MHW 2009-03
- MHW 2007-09
- MHW 2006-11
- MLW 2011-11
Southwest Strategic Regional Coastal Monitoring Programme

SuSU3-3: The Hive - Beach Change

Annual Report 2012

SDADCAG - Dorset

Aerial Photography from 2009

Actual Change in Cross-sectional Area (Spring 2011 to Baseline 2012)

Accretion
- > 30 m²
- 15 - 30 m²
- 5 - 15 m²
No Change
- Less than 5 m²
- 5 - 15 m²
- 15 - 30 m²
Erosion
- > 30 m²

Annual Change in Cross-sectional Area (%)

SU boundary

Aerial Photography from 2009
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

6aSU3-3: The Hive - Beach Change

Aerial Photography from 2009

Actual Change in Cross-sectional Area (Baseline 2007 to Baseline 2012)

- Accretion
  - > 30 m²
  - 15 - 30 m²
  - 5 - 15 m²
- No Change
  - Less than 5 m²
  - 5 - 15 m²
  - 15 - 30 m²
- Erosion
  - > 30 m²

SU boundary

Annual Change in Cross-sectional Area (%)

7d01323 (3 %)

Cross-sectional Area (Baseline 2007 to Baseline 2012)

- Actual Change in Cross-sectional Area
- Boundary

0 50 100 m

Aerial Photography from 2009

6aSU3-3: The Hive - Beach Change

SDADCAG - Dorset
Change in Elevation (m) between November 2006 and May 2012

ACCRETION
NO CHANGE
EROSION

Note that Phase 1 baseline data for this Survey Unit was collected using LiDAR on 03/11/2006.
Contours

MHW Elevation: 1.30OD
MLW Elevation: -1.15OD

- MHW 2011-11
- MHW 2011-03
- MHW 2009-10
- MHW 2009-03
- MHW 2007-09
- MHW 2006-11
- MLW 2011-11

Aerial Photography from 2009
Survey Completed 18th May 2012
Aerial Photography from 2009
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

Aerial Photography from 2009

Actual Change in Cross-sectional Area (Baseline 2007 to Baseline 2012)

Accretion
- > 30 m²
- 15 - 30 m²
- 5 - 15 m²

No Change
- Less than 5 m²
- 5 - 15 m²
- 15 - 30 m²
- > 30 m²

Erosion

SU boundary

Annual Change in Cross-sectional Area (%)

7d01323 (3 %)

6aSU3-5: Burton Freshwater - Beach Change
6aSU3-5: Burton Freshwater - Beach Change

SDADCAG - Dorset
Aerial Photography from 2009

Change in Elevation (m) between August 2007 and August 2012

<table>
<thead>
<tr>
<th>Erosion</th>
<th>Accretion</th>
<th>No Change</th>
</tr>
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<tbody>
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<td>0.5 - 1</td>
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<tr>
<td>-3 - -2.5</td>
<td></td>
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</tbody>
</table>

Model Extent

Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

6aSU3-5: Burton Freshwater - Topographic Difference Model

SDADCAG - Dorset
Contours

MHW Elevation: 1.30OD
MLW Elevation: -1.15OD

- MHW 2011-11
- MHW 2011-03
- MHW 2009-10
- MHW 2009-03
- MHW 2007-09
- MHW 2006-11
- MLW 2006-11
- MLW 2011-11

Aerial Photography from 2009
Survey Completed 31st August 2012
Aerial Photography from 2009
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

Aerial Photography from 2009

6aSU4: West Bay - Beach Change

Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

SDADCAG - Dorset

Actual Change in Cross-sectional Area (Spring 2011 to Baseline 2012)

- Accretion
  - > 30 m²
  - 15 - 30 m²
  - 5 - 15 m²

- No Change
  - Less than 5 m²
  - 5 - 15 m²
  - 15 - 30 m²

- Erosion
  - > 30 m²

SU boundary

Annual Change in Cross-sectional Area (%)

E

7d01323 (3 %)

Aerial Photography from 2009

0 50 100 m

6aSU4: West Bay - Beach Change

SDADCAG - Dorset
Note that LiDAR collected on 03/11/2006 was used as Phase 1 baseline data for this Survey Unit.

Aerial Photography from 2009.
Change in Elevation (m) between November 2006 and August 2012

-3 <= x <= -2
-2 <= x <= -1.5
-1.5 <= x <= -1
-1 <= x <= -0.5
-0.5 <= x <= -0.25
-0.25 <= x <= 0.25
0.25 <= x <= 0.5
0.5 <= x <= 1
1 <= x <= 1.5
1.5 <= x <= 2
2 <= x <= 2.5
2.5 <= x <= 3
3 <= x <= 3.5

ACCRETION
NO CHANGE
EROSION

Model Extent

Aerial Photography from 2009

-3 <= x <= -2
-2 <= x <= -1.5
-1.5 <= x <= -1
-1 <= x <= -0.5
-0.5 <= x <= -0.25
-0.25 <= x <= 0.25
0.25 <= x <= 0.5
0.5 <= x <= 1
1 <= x <= 1.5
1.5 <= x <= 2
2 <= x <= 2.5
2.5 <= x <= 3
3 <= x <= 3.5

Change in Elevation (m) between November 2006 and August 2012

-3 <= x <= -2
-2 <= x <= -1.5
-1.5 <= x <= -1
-1 <= x <= -0.5
-0.5 <= x <= -0.25
-0.25 <= x <= 0.25
0.25 <= x <= 0.5
0.5 <= x <= 1
1 <= x <= 1.5
1.5 <= x <= 2
2 <= x <= 2.5
2.5 <= x <= 3
3 <= x <= 3.5

ACCRETION
NO CHANGE
EROSION

Model Extent

Aerial Photography from 2009
Contours
MHW Elevation: 1.30OD
MLW Elevation: -1.15OD

- MHW 2011-11
- MHW 2011-03
- MHW 2009-10
- MHW 2009-03
- MHW 2007-09
- MHW 2006-11
- MLW 2011-11
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

6aSU4: West Bay - Sediment Distribution

Survey Completed 30th August 2012
Aerial Photography from 2009

Sediment Type
- Gravel
- Gravel & Sand
- Sand
- Boulder
- Dune
- Dune Vegetated
- Grass
- Gravel & Mud
- Mud
- Mud & Sand
- Rock
- Saltmarsh
- Sea Defence
- Shell
- Water Body
- Mixture
- Obstruction
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

6aSU5-2: Seatown - Beach Change

Annual Change in Cross-sectional Area (%)

Actual Change in Cross-sectional Area (Spring 2011 to Baseline 2012)

- Accretion
  - > 30 m²
  - 15 - 30 m²
  - 5 - 15 m²
- No Change
  - Less than 5 m²
  - 5 - 15 m²
  - 15 - 30 m²
- Erosion
  - > 30 m²

Aerial Photography from 2009

0 50 100 m

SU boundary

7d01323 (3 %)

Annual Change in Cross-sectional Area (%)

6a00790 (3 %)

6a00789 (0 %)

6a00789 (0 %)

6a00789 (0 %)
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

6aSU5-2: Seatown - Beach Change

Aerial Photography from 2009

Accuracy of Aerial Photography: 5 - 15 m²

Actual Change in Cross-sectional Area (Baseline 2007 to Baseline 2012)

- Accleration
- Erosion
- No Change

<table>
<thead>
<tr>
<th>Annual Change in Cross-sectional Area (%)</th>
<th>Actual Change in Cross-sectional Area (Baseline 2007 to Baseline 2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 30 m²</td>
<td>7d01323 (3 %)</td>
</tr>
<tr>
<td>15 - 30 m²</td>
<td></td>
</tr>
<tr>
<td>5 - 15 m²</td>
<td></td>
</tr>
<tr>
<td>Less than 5 m²</td>
<td></td>
</tr>
<tr>
<td>5 - 15 m²</td>
<td></td>
</tr>
<tr>
<td>15 - 30 m²</td>
<td></td>
</tr>
<tr>
<td>&gt; 30 m²</td>
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</tbody>
</table>

SU boundary

Annual Change in Cross-sectional Area (%)
Southwest Strategic Regional Coastal Monitoring Programme

6aSU5-2: Seatown - MHW and MLW Contours

Aerial Photography from 2009

Contours

MHW Elevation: 1.30OD
MLW Elevation: -1.15OD

- MHW 2011-11
- MHW 2009-10
- MHW 2009-03
- MHW 2008-02
- MHW 2007-02
- MLW 2011-11
Aerial Photography from 2009
Survey Completed 21st May 2012

Sediment Type
- Gravel
- Gravel & Sand
- Sand
- Boulder
- Dune
- Dune Vegetated
- Grass
- Gravel & Mud
- Mud
- Mud & Sand
- Rock
- Saltmarsh
- Sea Defence
- Shell
- Water Body
- Mixture
- Obstruction
Note that additional profiles were added to this survey unit at the beginning of Phase 2. As data for Spring 2011 are not available for all profiles, data from Autumn 2011 have been used for comparison.
6aSU5-4: Charmouth - Beach Change

Actual Change in Cross-sectional Area (Baseline 2007 to Baseline 2012)

- Accretion
  - > 30 m²
  - 15 - 30 m²
  - 5 - 15 m²

- No Change
  - Less than 5 m²
  - 5 - 15 m²
  - 15 - 30 m²

- Erosion
  - > 30 m²

Aerial Photography from 2009

Annual Change in Cross-sectional Area (%)
Southwest Strategic Regional Coastal Monitoring Programme

6aSU5-4: Charmouth - Topographic Difference Model

Annual Report 2012

SDADCAG - Dorset

Change in Elevation (m) between March 2007 and May 2012

ACCRETION  NO CHANGE  EROSION

Model Extent

Aerial Photography from 2009

0  50  100 m

Change in Elevation (m) between March 2007 and May 2012

>= 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

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

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

± 0.5  0  0.5  1  1.5  2  2.5  3
Contours
MHW Elevation: 1.35OD
MLW Elevation: -1.20OD

- MHW 2012-04
- MHW 2009-10
- MHW 2009-03
- MHW 2008-02
- MHW 2007-03
- MLW 2012-04

Aerial Photography from 2009
Aerial Photography from 2009
Survey Completed 9th May 2012

Sediment Type
- Gravel
- Gravel & Sand
- Sand
- Boulder
- Dune
- Dune Vegetated
- Grass
- Gravel & Mud
- Mud
- Mud & Sand
- Rock
- Saltmarsh
- Sea Defence
- Shell
- Water Body
- Mixture
- Obstruction
Actual Change in Cross-sectional Area (Autumn 2011 to Baseline 2012)

- **Accretion**
  - > 30 m²
  - 15 - 30 m²
  - 5 - 15 m²
  - Less than 5 m²

- **Erosion**
  - 5 - 15 m²
  - 15 - 30 m²
  - > 30 m²

**Note that additional profiles were added to this survey unit at the beginning of Phase 2. As data for Spring 2011 are not available for all profiles, data from Autumn 2011 have been used for comparison.**
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

Actual Change in Cross-sectional Area (Baseline 2007 to Baseline 2012)

Accretion:
- > 30 m²
- 15 - 30 m²
- 5 - 15 m²
- Less than 5 m²
- 5 - 15 m²
- 15 - 30 m²
- > 30 m²

No Change:
- Less than 5 m²

Erosion:
- Less than 5 m²

Annual Change in Cross-sectional Area (%)

7d01323 (3%)

6a00947 (32%)
6a00947A (13%)
6a00949 (21%)
6a00950 (14%)
6a00952A (11%)
6a00952 (0%)
6a00953A (1%)
6a00953 (0%)
6a00947A (32%)

Aerial Photography from 2009
Change in Elevation (m) between March 2007 and August 2012

ACCRTION  NO CHANGE  EROSION

Model Extent

Aerial Photography from 2009
Contours

MHW Elevation: 1.35OD
MLW Elevation: -1.20OD

- MHW 2012-04
- MHW 2009-10
- MHW 2009-03
- MHW 2008-02
- MHW 2007-03
- MLW 2012-04
Survey Completed 21st August 2012
Aerial Photography from 2009

Sediment Type:
- Gravel
- Gravel & Sand
- Sand
- Boulder
- Dune
- Dune Vegetated
- Grass
- Gravel & Mud
- Mud
- Mud & Sand
- Rock
- Saltmarsh
- Sea Defence
- Shell
- Water Body
- Mixture
- Obstruction
Note that additional profiles were added to this survey unit at the beginning of Phase 2. As data for Spring 2011 are not available for all profiles, data from the 2011 Baseline survey have been used for comparison.
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

Actual Change in Cross-sectional Area (Baseline 2007 to Baseline 2012)

- **Accretion**
  - > 30 m²
  - 15 - 30 m²
  - 5 - 15 m²
  - Less than 5 m²

- **No Change**
  - 5 - 15 m²
  - 15 - 30 m²
  - > 30 m²

- **Erosion**
  - > 30 m²

SU boundary

Annual Change in Cross-sectional Area (%)

- 7d01323 (3 %)

Accretion:
- > 30 m²
- 15 - 30 m²
- 5 - 15 m²
- Less than 5 m²

Erosion:
- > 30 m²

No Change:
- 5 - 15 m²
- 15 - 30 m²
- > 30 m²

Actual Change in Cross-sectional Area (Baseline 2007 to Baseline 2012)

- 6a00970A (-5%)
- 6a00971A (-5%)
- 6a00972A (-21%)
- 6a00974A (0%)
- 6a00975A (8%)
- 6a00976A (1%)
- 6a00977A (6%)
- 6a00978A (11%)
- 6a00979A (12%)
- 6a00980A (137%)
- 6a00981A (152%)

Aerial Photography from 2009

6aSU6-2: Lyme Regis - Beach Change

SDADCAG - Dorset
Change in Elevation (m) between March 2007 and August 2012

- EROSION
- ACCRETION
- NO CHANGE

Model Extent

Change in Elevation (m) between March 2007 and August 2012

-3 ≤ -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 -0.5
1 -1
1.5 -1.5
2 -2
2.5 -2.5
3 -3

Aerial Photography from 2009
Southwest Strategic Regional Coastal Monitoring Programme

6aSU6-2: Lyme Regis - MHW and MLW Contours

Aerial Photography from 2009

Contours

MHW Elevation: 1.35OD
MLW Elevation: -1.20OD

- MHW 2012-04
- MHW 2009-10
- MHW 2009-03
- MHW 2008-02
- MHW 2007-03
- MLW 2012-04
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

6aSU7: Lyme Regis, Monmouth Beach - Beach Change

SDADCAG - Dorset

Actual Change in Cross-sectional Area (Spring 2011 to Baseline 2012)

- **Accretion**
  - > 30 m²
  - 15 - 30 m²
  - 5 - 15 m²

- **No Change**
  - Less than 5 m²
  - 5 - 15 m²
  - 15 - 30 m²
  - > 30 m²

- **Erosion**
  - Less than 5 m²
  - 5 - 15 m²
  - 15 - 30 m²
  - > 30 m²

Aerial Photography from 2009

Aerial Photography from 2009
Change in Elevation (m) between March 2007 and March 2012

<table>
<thead>
<tr>
<th>Change in Elevation (m)</th>
<th>ACCRETION</th>
<th>NO CHANGE</th>
<th>EROSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;= 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5 - 3</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1.5 - 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0 - 1.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.5 - 1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.25 - 0.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.25 - 0.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.5 - -0.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1.0 - -0.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1.5 - -1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-2.0 - -1.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-2.5 - -2.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-3.0 - -2.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;= -3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Model Extent

Aerial Photography from 2009
Contours

MHW Elevation: 1.35OD
MLW Elevation: -1.20OD

- MHW 2012-04
- MHW 2009-10
- MHW 2009-03
- MHW 2008-02
- MHW 2007-03
- MLW 2012-04
### Actual Change in Cross-sectional Area (Baseline 2007 to Baseline 2012)

<table>
<thead>
<tr>
<th>Change</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accretion</td>
<td></td>
</tr>
<tr>
<td>&gt; 30 m²</td>
<td></td>
</tr>
<tr>
<td>15 - 30 m²</td>
<td></td>
</tr>
<tr>
<td>5 - 15 m²</td>
<td></td>
</tr>
<tr>
<td>Less than 5 m²</td>
<td></td>
</tr>
<tr>
<td>Erosion</td>
<td></td>
</tr>
<tr>
<td>&gt; 30 m²</td>
<td></td>
</tr>
<tr>
<td>15 - 30 m²</td>
<td></td>
</tr>
<tr>
<td>5 - 15 m²</td>
<td></td>
</tr>
<tr>
<td>Less than 5 m²</td>
<td></td>
</tr>
</tbody>
</table>

**SU boundary**

**Annual Change in Cross-sectional Area (%)**

---

**Aerial Photography from 2009**

---

**6aSU8-1: Seaton - Beach Change**
Change in Elevation (m) between March 2007 and March 2012

<table>
<thead>
<tr>
<th>Change in Elevation (m)</th>
<th>ACCRETION</th>
<th>NO CHANGE</th>
<th>EROSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;= 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;= 2.5</td>
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<td></td>
</tr>
<tr>
<td>&gt;= 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;= 1.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;= 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;= 0.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;= 0.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;= -0.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;= -0.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;= -1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;= -1.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;= -2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;= -2.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;= -3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Model Extent

Aerial Photography from 2009
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

SDADCAG - South Devon

Contours

MHW Elevation: 1.35OD
MLW Elevation: -1.20OD

- MHW 2012-04
- MHW 2009-10
- MHW 2009-03
- MHW 2008-02
- MHW 2007-03
- MLW 2012-04

Aerial Photography from 2009
Survey Completed 29th March 2012
Aerial Photography from 2009

Sediment Type
- Gravel
- Gravel & Sand
- Sand
- Boulder
- Dune
- Dune Vegetated
- Grass
- Gravel & Mud
- Mud
- Mud & Sand
- Rock
- Saltmarsh
- Sea Defence
- Shell
- Water Body
- Mixture
- Obstruction
Note that additional profiles were added to this survey unit at the beginning of Phase 2. As data for Spring 2011 are not available for all profiles, data from Autumn 2011 have been used for comparison.
Change in Elevation (m) between August 2007 and August 2012

-3 ≥ -2.5
-2.5 ≥ -2
-2 ≥ -1.5
-1.5 ≥ -1
-1 ≥ -0.5
-0.5 ≥ -0.25
-0.25 ≥ -0.5
0.25 ≥ 0.5
0.5 ≥ 1
1 ≥ 1.5
1.5 ≥ 2
2 ≥ 2.5
2.5 ≥ 3

ACCRETION  NO CHANGE  EROSION

Model Extent

Aerial Photography from 2009

E

6aSU10: Sidmouth - Topographic Difference Model

SDADCG - South Devon

Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

SDADCAG - South Devon

Contours

MHW Elevation: 1.56OD
MLW Elevation: -1.34OD

- MHW 2012-04
- MHW 2009-09
- MHW 2008-06
- MHW 2007-04
- MLW 2012-04

MHW 2012-04
MHW 2009-09
MHW 2008-06
MHW 2007-04
MLW 2012-04

Aerial Photography from 2009

0 150 300 m
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

Survey Completed 31st August 2012

Aerial Photography from 2009

6aSU10: Sidmouth - Sediment Distribution

SDADCAG - South Devon
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

Actual Change in Cross-sectional Area (Autumn 2011 to Baseline 2012)

<table>
<thead>
<tr>
<th>Erosion</th>
<th>&gt; 30 m^2</th>
<th>15 - 30 m^2</th>
<th>5 - 15 m^2</th>
<th>Less than 5 m^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Change</td>
<td>5 - 15 m^2</td>
<td>15 - 30 m^2</td>
<td>&gt; 30 m^2</td>
<td></td>
</tr>
</tbody>
</table>

Note that additional profiles were added to this survey unit at the beginning of Phase 2. As data for Spring 2011 are not available for all profiles, data from Autumn 2011 have been used for comparison.

Aerial Photography from 2009

Annual Change in Cross-sectional Area (%)

SU boundary

7d01323 (3 %)

Actual Change in Cross-sectional Area (Autumn 2011 to Baseline 2012)

Accretion

> 30 m²

15 - 30 m²

5 - 15 m²

Less than 5 m²

5 - 15 m²

15 - 30 m²

> 30 m²

Annual Change in Cross-sectional Area (%)
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

Actual Change in Cross-sectional Area (Baseline 2007 to Baseline 2012)

<table>
<thead>
<tr>
<th></th>
<th>&gt; 30 m²</th>
<th>15 - 30 m²</th>
<th>5 - 15 m²</th>
<th>Less than 5 m²</th>
<th>5 - 15 m²</th>
<th>15 - 30 m²</th>
<th>&gt; 30 m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accretion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Change</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erosion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

SU boundary

7d01323 (3 %)

Annual Change in Cross-sectional Area (%)

Aerial Photography from 2009

6aSU12: Budleigh Salterton, East - Beach Change

SDADCAG - South Devon
Change in Elevation (m) between April 2007 and February 2012

-3 -2.5 -2 -1.5 -1 -0.5 0 0.5 0.25 0.5 1 1.5 2 2.5 3
ACCRETION NO CHANGE EROSION

Model Extent

Aerial Photography from 2009

6aSU12: Budleigh Salterton, East - Topographic Difference Model
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

SDADCAG - South Devon

Contours

MHW Elevation: 1.56OD
MLW Elevation: -1.34OD

- MHW 2012-04
- MHW 2009-09
- MHW 2007-04
- MLW 2012-04

Aerial Photography from 2009

MHW 2012-04
MHW 2009-09
MHW 2007-04
MLW 2012-04
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

SDADCAG - South Devon

Aerial Photography from 2009
Survey Completed 6th February 2012

Sediment Type:
- Gravel
- Gravel & Sand
- Sand
- Boulder
- Dune
- Dune Vegetated
- Grass
- Gravel & Mud
- Mud
- Mud & Sand
- Rock
- Saltmarsh
- Sea Defence
- Shell
- Water Body
- Mixture
- Obstruction

6aSU12: Budleigh Salterton, East - Sediment Distribution
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

5aSU13: Budleigh Salterton - Beach Change

SDADCAG - South Devon

Aerial Photography from 2009

Actual Change in Cross-sectional Area (Spring 2011 to Baseline 2012)

<table>
<thead>
<tr>
<th>Category</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accretion</td>
<td>&gt; 30 m²</td>
</tr>
<tr>
<td></td>
<td>15 - 30 m²</td>
</tr>
<tr>
<td></td>
<td>5 - 15 m²</td>
</tr>
<tr>
<td>No Change</td>
<td>Less than 5 m²</td>
</tr>
<tr>
<td>Erosion</td>
<td>5 - 15 m²</td>
</tr>
<tr>
<td></td>
<td>15 - 30 m²</td>
</tr>
<tr>
<td></td>
<td>&gt; 30 m²</td>
</tr>
</tbody>
</table>

SU boundary

Annual Change in Cross-sectional Area (%)
### Actual Change in Cross-sectional Area (Baseline 2007 to Baseline 2012)

<table>
<thead>
<tr>
<th>Erosion</th>
<th>Change in Cross-sectional Area (%)</th>
<th>SU boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accleration</td>
<td>&gt; 30 m²</td>
<td>7d01323 (3 %)</td>
</tr>
<tr>
<td></td>
<td>15 - 30 m²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 - 15 m²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Less than 5 m²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 - 15 m²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 - 30 m²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 30 m²</td>
<td></td>
</tr>
<tr>
<td>No Change</td>
<td>Less than 5 m²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 - 15 m²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 - 30 m²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 30 m²</td>
<td></td>
</tr>
</tbody>
</table>

#### Annual Change in Cross-sectional Area (%)

- Accretion
  - > 30 m²
  - 15 - 30 m²
  - 5 - 15 m²
  - Less than 5 m²
- Erosion
  - Less than 5 m²
  - 5 - 15 m²
  - 15 - 30 m²
  - > 30 m²
Change in Elevation (m) between April 2007 and March 2012

ACC CREATION  NO CHANGE  EROSION

Model Extent

Aerial Photography from 2009

Change in Elevation (m) between April 2007 and March 2012

>= 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

Change in Elevation (m) between April 2007 and March 2012

0 200 400 m

%¥
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

SDADCAG - South Devon

Contours

MHW Elevation: 1.56OD
MLW Elevation: -1.34OD

- MHW 2012-04
- MHW 2009-09
- MHW 2007-04
- MLW 2012-04

Aerial Photography from 2009
Sediment Type

- Gravel
- Gravel & Sand
- Sand
- Boulder
- Dune
- Dune Vegetated
- Grass
- Gravel & Mud
- Mud
- Mud & Sand
- Rock
- Saltmarsh
- Sea Defence
- Shell
- Water Body
- Mixture
- Obstruction
Actual Change in Cross-sectional Area (Spring 2011 to Baseline 2012)

<table>
<thead>
<tr>
<th>Erosion</th>
<th>&gt; 30 m²</th>
<th>15 - 30 m²</th>
<th>5 - 15 m²</th>
<th>Less than 5 m²</th>
<th>5 - 15 m²</th>
<th>15 - 30 m²</th>
<th>&gt; 30 m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Change</td>
<td>blue</td>
<td>blue</td>
<td>blue</td>
<td>blue</td>
<td>gray</td>
<td>gray</td>
<td>gray</td>
</tr>
</tbody>
</table>

SU boundary

7d01323 (3 %)

Annual Change in Cross-sectional Area (%)

Aerial Photography from 2009
**Southwest Strategic Regional Coastal Monitoring Programme**

**Annual Report 2012**

---

**Actual Change in Cross-sectional Area (Baseline 2007 to Baseline 2012)**

- **Accretion**
  - > 30 m²
  - 15 - 30 m²
  - 5 - 15 m²
- **No Change**
  - Less than 5 m²
  - 5 - 15 m²
- **Erosion**
  - 15 - 30 m²
  - > 30 m²

SU boundary

Annual Change in Cross-sectional Area (%)

- 7d01323 (3 %)

---

**Aerial Photography from 2009**
Change in Elevation (m) between April 2007 and June 2012

ACCRETION  NO CHANGE  EROSION  EROSION

Model Extent

Aerial Photography from 2009

Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

SDADCAG - South Devon
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2012

Aerial Photography from 2009

Contours

MHW Elevation: 1.56OD
MLW Elevation: -1.34OD

- MHW 2012-04
- MHW 2009-09
- MHW 2007-10
- MHW 2007-04
- MLW 2012-04
Actual Change in Cross-sectional Area (Spring 2011 to Baseline 2012)

- **Accretion**
  - > 30 m²
  - 15 - 30 m²
  - 5 - 15 m²
  - Less than 5 m²

- **Erosion**
  - 15 - 30 m²
  - > 30 m²

**SU boundary**

- **Annual Change in Cross-sectional Area (%)**
  - 7d01323 (3 %)
  - 6a01816 (21 %)
  - 6a01812 (-16 %)
  - 6a01804 (5 %)
  - 6a01904 (5 %)
  - 6a01893 (21 %)
  - 6a01896 (21 %)
  - 6a01903 (5 %)
  - 6a01905 (5 %)
  - 6a01758 (9 %)
  - 6a01792 (-4 %)

**Aerial Photography from 2009**
Change in Elevation (m) between April 2007 and June 2012

Model Extent

-3 to -3 m
-2.5 to -2.5 m
-2 to -1.5 m
-1.5 to -1 m
-1 to -0.5 m
-0.5 to -0.25 m
-0.25 to 0 m
0 to 0.25 m
0.25 to 0.5 m
0.5 to 1 m
1 to 1.5 m
1.5 to 2 m
2 to 2.5 m
2.5 to 3 m
3 to 3.5 m

ACCRETION
NO CHANGE
EROSION

Aerial Photography from 2009
Contours

MHW Elevation: 1.56OD
MLW Elevation: -1.34OD

- MHW 2012-04
- MHW 2009-09
- MHW 2007-10
- MHW 2007-04
- MLW 2012-04

Aerial Photography from 2009
Cross Sectional Area above MP Trend for Location: 6a00120 and Reference Profile Set

Survey Unit 6aSU2

Cross-Sectional Area Charts

Survey Date

Area Above MP Trend: Acquiring at 13.496 m²/Year
Cross Sectional Area above MP Trend for Location: 6a0014B and Reference Profile Set

Area Above MP Trend: Eroding at -0.105 m²/Year

Survey Unit 6aSU2
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6a00616 and Reference Profile Set

Area Above MP Trend: Eroding at -0.292 m²/Year

Survey Unit 6aSU3-3
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location 6a00623 and Reference Profile Set

Area Above MP Trend: Eroding at -3.121 m²/Year

Survey Unit 6aSU3-3
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6a00705 and Reference Profile Set

Area Above MP Trend: According at 2.422 m/Year

Survey Unit 6aSU2
Cross-Sectional Area Charts
Cross-Sectional Area above MP Trend for Location: 6a00908A and Reference Profile Set

Area Above MP Trend According to 2.738 m²/year

Survey Unit 6aSU5-4
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 8a00559 and Reference Profile Set

Area Above MP Trend: Eroding at -0.419 m²/Year

Survey Unit 8aSU6-2
Cross-Sectional Area Charts
Cross-sectional Area above MP Trend for Location: Sa00970A and Reference Profile Set

Area Above MP Trend: Eroding at -4.27 m²/Year
Cross Sectional Area above MP Trend for Location: 6a009/6 and Reference Profile Set

Area Above MP Trend Increase at 1.694 m²/Year

Survey Unit 6aSU7-1
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6a00586 and Reference Profile Set

Area Above MP Trend: Eroding at -1.477 m²/Year

Survey Unit 6aSU7-1
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6a05987 and Reference Profile Set

Area Above MP Trend: Eroding at -1.870 m²/Year

Survey Unit 6aSU7-1
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6a01181 and Reference Profile Set

Area Above MP Trend: Eroding at -1.245 m²/Year
Cross Sectional Area above MP Trend for Location: 8a01185 and Reference Profile Set

Survey Unit 8aSU8-1

Cross-Sectional Area Charts

Area Above MP Trend: Eroding at 2.815 m²/Year
Cross Sectional Area above MP Trend for Location: 6a01177 and Reference Profile Set

Area Above MP Trend: Eroding at -0.519 m²/Year

Survey Unit 6aSU8-1
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6a01139 and Reference Profile Set

Area Above MP Trend: Eroding at -0.99 m²/Year

Survey Unit 6aSU8-1
Cross-Sectional Area Charts

Survey Date

- Recycling Event
- Area Above MP
- Area Trend
- Area Between MP & DP
Cross Sectional Area above MP Trend for Location: 6a01196 and Reference Profile Set

Area Above MP Trend, According at 0.750 m/2 Year

Survey Unit 6aSU8-1
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6aSU10 and Reference Profile Set

Area Above MP Trend Ending at 300 m²/Year

Survey Unit 6aSU10

Cross-Sectional Area Charts

Survey Date


Survey Date


Survey Date
Cross Sectional Area above MP Trend for Location: 6aSU1454 and Reference Profile Set

Area Above MP Trend: According at 1.571 m3/Year

Survey Unit 6aSU10
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6aSU12 and Reference Profile Set

Area Above MP Trend: According at 1.333 m/Year

Survey Unit 6aSU12
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6aSU12 and Reference Profile Set.

Area Above MP Trend: According at 4.151 m²/Year.

Survey Unit 6aSU12
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6aSU13 and Reference Profile Set

Area Above MP Trend: According at 7.67 m²/Year

Survey Unit 6aSU13
Cross-Sectional Area Charts

Survey Date

Recycling Event
Area Above MP
Area Trend
Area Between MP & DP
Cross Sectional Area above MP Trend for Location: 6aSU13 and Reference Profile Set

Survey Unit 6aSU13
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6aSU1774 and Reference Profile Set

Area Above MP Trend: Ending at -1241 m³/Year

Survey Unit 6aSU16-1
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6aSU1779 and Reference Profile Set

Area Above MP Trend: Eroding at -0.507 m/2/Year

Survey Unit 6aSU16-1
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6aSU1700 and Reference Profile Set

Area Above MP Trend: Eroding at -0.781 m²/year

Survey Unit 6aSU16-1
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6aSU1702 and Reference Profile Set

Area Above MP Trend: According at 0.662 m3/Year
Cross Sectional Area above MP Trend for Location: 6aSU16-1 and Reference Profile Set

Area Above MP Trend: Eroding at +14,732 m²/Year

Survey Unit 6aSU16-1
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6aSU1796 and Reference Profile Set
Area Above MP Trend: Increasing at 1.484 m³/Year

Survey Unit 6aSU16-1
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6aSU1803 and Reference Profile Set

Area Above MP Trend: Accruing at 1.221 m²/Year

Survey Unit 6aSU16-1
Cross-Sectional Area Charts
Cross Sectional Area above MP Trend for Location: 6aSU16-1 and Reference Profile Set

Area Above MP Trend: According to 10.614 m²/Year
Cross Sectional Area above MP Trend for Location: 6aSU16-1 and Reference Profile Set

Survey Unit 6aSU16-1
Cross-Sectional Area Charts

Area Above MP Trend: Ending at -0.009 m²/year