ANNUAL REPORT
2009
Lizard Point to Lands End

AR 04
1st September 2009
Cover Photograph: St. Mary’s Harbour, Isles of Scilly, April 2007
Taken by N. Sykes, Plymouth Coastal Observatory.
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 spring 2009. 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 2008 to 2009
- Process cell summary of percentage and actual profile change from 2007 to 2009
- Detailed beach profile change from 2008 to 2009
- Detailed beach profile change from 2007 to 2009
- DTM models from bathymetric surveys from 2007 to 2009
- 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.

It must be noted that the colour coded lines are based on actual change as opposed to percentage change as is the case with similar reports published by the South East Regional Coastal Monitoring Programme. Percentage change is displayed in brackets following the profile name on each line.

Topographic baseline data has been used to extract the level of Mean High Water (MHW) from each baseline data set 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 any 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. 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 first interim 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. Accordingly, this report should be considered as a preliminary assessment.

2. Hydrodynamic data

a. Waves
   A Directional WaveRider buoy was deployed at Penzance on the 1st April 2007.
   The full wave report is given at Annex A.

b. Tides
   There are no Regional Monitoring Programme tide gauges in the Lizard Point to Lands End area.

3. Survey data – topographic

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 for Lizard Point to Lands End was completed between May 2007 and September 2008. No further analysis will be carried out until after the next baseline survey in 2011. For this reason DTMs for each management unit have been included in place of difference models

<table>
<thead>
<tr>
<th>Annex</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annex A</td>
<td>Penzance Interim Wave Report</td>
</tr>
<tr>
<td>Annex B</td>
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<td>Annex C</td>
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<td>Annex D</td>
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<td>Annex E</td>
<td>High Level Report – field data collection (CISCAG)</td>
</tr>
<tr>
<td>Annex F</td>
<td>Topographic Survey Report for Lizard Point to Lands End</td>
</tr>
</tbody>
</table>
Penzance Waverider Buoy

Location
OS: 427264E  90396N  
WGS84: Latitude: 50°42.753' N  Longitude: 001°36.912' W

Water Depth
Approx. 10m CD

Instrument Type
Datawell Waverider Buoy Mk III

Data Quality

<table>
<thead>
<tr>
<th>C1(%)</th>
<th>Sample interval</th>
</tr>
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<tbody>
<tr>
<td>99</td>
<td>30 minutes</td>
</tr>
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Monthly Means

<table>
<thead>
<tr>
<th>Month</th>
<th>H_s (m)</th>
<th>T_p (s)</th>
<th>T_z (s)</th>
<th>Direction</th>
<th>SST (°C)</th>
<th>No. of days</th>
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<tbody>
<tr>
<td>June</td>
<td>0.39</td>
<td>8.4</td>
<td>4.3</td>
<td>186</td>
<td>14.3</td>
<td>30</td>
</tr>
<tr>
<td>July</td>
<td>0.59</td>
<td>7.0</td>
<td>4.1</td>
<td>184</td>
<td>14.8</td>
<td>31</td>
</tr>
<tr>
<td>August</td>
<td>0.65</td>
<td>6.9</td>
<td>4.2</td>
<td>186</td>
<td>15.3</td>
<td>31</td>
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<tr>
<td>September</td>
<td>0.55</td>
<td>8.2</td>
<td>4.4</td>
<td>177</td>
<td>15.0</td>
<td>30</td>
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<tr>
<td>October</td>
<td>0.66</td>
<td>8.3</td>
<td>4.4</td>
<td>187</td>
<td>14.2</td>
<td>31</td>
</tr>
<tr>
<td>November</td>
<td>0.51</td>
<td>7.8</td>
<td>4.2</td>
<td>188</td>
<td>12.2</td>
<td>29</td>
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<tr>
<td>December</td>
<td>0.63</td>
<td>9.8</td>
<td>4.5</td>
<td>180</td>
<td>10.4</td>
<td>31</td>
</tr>
<tr>
<td>January</td>
<td>1.14</td>
<td>10.7</td>
<td>5.2</td>
<td>184</td>
<td>9.2</td>
<td>31</td>
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<tr>
<td>February</td>
<td>0.52</td>
<td>11.5</td>
<td>5.4</td>
<td>181</td>
<td>8.5</td>
<td>28</td>
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<tr>
<td>March</td>
<td>0.49</td>
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<td>4.1</td>
<td>185</td>
<td>9.2</td>
<td>31</td>
</tr>
<tr>
<td>April</td>
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<td>4.5</td>
<td>183</td>
<td>10.9</td>
<td>30</td>
</tr>
<tr>
<td>May</td>
<td>0.57</td>
<td>9.0</td>
<td>4.0</td>
<td>181</td>
<td>11.8</td>
<td>31</td>
</tr>
</tbody>
</table>

Tables and plots of these values, together with the minimum and maximum values and the standard deviation are available on the website.

Highest events in 2008/9

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>H_s</th>
<th>T_p</th>
<th>T_z</th>
<th>Dir.</th>
<th>Water level elevation* (OD)</th>
<th>Tidal stage (hrs rel HW)</th>
<th>Tidal range (m)</th>
<th>Tidal surge* (m)</th>
<th>Max. surge* (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-Jan-2009 13:00</td>
<td>3.27</td>
<td>8.3</td>
<td>6.6</td>
<td>180</td>
<td>-1.43</td>
<td>HW +5</td>
<td>4.86</td>
<td>0.27</td>
<td>0.30</td>
</tr>
<tr>
<td>25-Jan-2009 00:00</td>
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<td>5.9</td>
<td>190</td>
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<td>HW -4</td>
<td>3.57</td>
<td>0.35</td>
<td>0.54</td>
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<td>05-Jul-2008 10:30</td>
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<td>6.3</td>
<td>193</td>
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<td>HW +4</td>
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<tr>
<td>05-Sep-2008 12:30</td>
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<td>7.7</td>
<td>183</td>
<td>-0.55</td>
<td>HW +5</td>
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<td>0.55</td>
</tr>
<tr>
<td>10-Feb-2009 04:30</td>
<td>2.37</td>
<td>13.3</td>
<td>9.5</td>
<td>194</td>
<td>2.69</td>
<td>HW</td>
<td>5.39</td>
<td>0.04</td>
<td>0.51</td>
</tr>
</tbody>
</table>

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

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

- Wave rose (Direction vs. $H_s$) for reporting year and for all measured data
- Percentage of occurrence of $H_s$ and $T_z$ from June 2008 to May 2009
- Monthly time series of significant wave height (the red line is the storm threshold)
- Incidence of storms during the reporting period and all previous years. Storms are defined using the Peaks-over-Threshold method. The highest $H_s$ of each storm is shown.

Summary

Although, during this reporting year, the storms were less high than the previous year, they were of similar frequency and spanned the year, not just the winter months. Storm wave approach is concentrated around 190° (SbW).

Acknowledgements

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.
Percentage of occurrence of Direction vs. $H_s$ for June 2008 to May 2009 (this reporting year)

Percentage of occurrence of Direction vs. $H_s$ for April 2007 to May 2009 (all measured data)
### AR04 - High Level Report - Year 3 (2008/9)
#### Field Data Collection

<table>
<thead>
<tr>
<th>Sub-cell</th>
<th>Mgt Unit</th>
<th>Target Completion</th>
<th>Target Completion</th>
<th>Target Completion</th>
<th>Target Completion</th>
<th>Target Completion</th>
</tr>
</thead>
</table>

**Key:**
- Green: Completed on time and accepted
- Red: Overdue
- Yellow: Surveyed but not submitted / Accepted
- Gray: Will not be surveyed
Annex F – Topographic Survey Report for Lizard Point to Lands End

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 (MLWS) level, although this is not been possible for much of the historic data at many of the sites.

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 Management 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](image-url)
As part of the monitoring programme specification, each management unit receives a full topographic baseline survey once every 5 years, with the exception of BMP 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 possible the feature code data has been used to provide a sediment distribution map for each management unit.

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. 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 management 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 management unit. The level of MHW in 2003, derived from historic lidar, has been included to highlight change. 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 of the Lizard Point to Lands End, with the lines representing the average accretion, no change or erosion for each Management Unit.

Over the past year, the majority of the surveyed beaches have shown little change or some accretion, although there are isolated pockets of erosion, notably in 6eMU4-6. Over the two year period, a very similar pattern is observed, with continuing erosion in 6eMU4-5 and 6eMU4-6.

**6eMU3-2 Mullion**

*Spring 2008 to Spring 2009*
The management unit has seen no notable changes within the last year.

*Baseline 2007 to Spring 2009*
There has been very little change within the management unit since 2007.

**6eMU3-4 Poldhu Cove**

*Spring 2008 to Spring 2009*
The northern most part of the management unit has incurred some erosion, whilst the southern part of the management unit has experienced considerable accretion.

*Baseline Spring 2007 to Spring 2009*
A similar pattern is observed over the longer term period, but with lower net differences suggesting the majority of change has occurred over the past year.

**6eMU3-6 Church Cove**

*Spring 2008 to Spring 2009*
Accretion has taken place over the entire management unit with the most notable gain occurring in the south.

*Baseline 2007 to Spring 2009*
Over the two year period there has been little net change.

**6eMU4-2 Gunwalloe Cove**

*Spring 2008 to Spring 2009*
There has been no significant change over the past year.

*Baseline 2007 to Spring 2009*
The trend has been for accretion over the two year period.
6eMU4-3 Gunwalloe

**Spring 2008 to Spring 2009**
There is an increasing trend of accretion southwards across the management unit. However Profile 6e00341 in the northern most part of the management unit has experienced a 5-15% loss in the past year.

**Baseline 2007 to Spring 2009**
In the period since the initial baseline survey there has been an occurrence of sustained accretion at the southern end of the management unit, and erosion at the centre of the bay.

6eMU4-4 Loe Bar

**Spring 2008 to Spring 2009**
The management unit has experienced no notable change over the past year, although all profiles showed a small net gain in cross sectional area.

**Baseline 2007 to Spring 2009**
In contrast over the past two years, although overall change has been minor in terms of % change, the balance is erosive rather accretive.

6eMU4-5 Porthleven Sands

**Spring 2008 to Spring 2009**
The northern part of the coastline has eroded by up to 23% over the previous year. The southern part has also experienced some erosion over the year.

**Baseline 2007 to Spring 2009**
Notable erosion has occurred over all of the profiles, both in terms of % change and actual loss.

6eMU4-6 Porthleven

**Spring 2007 to Spring 2008**
Over the last year both profiles indicate erosion but this is more pronounced southwards.

**Baseline 2007 to Spring 2009**
Since the initial baseline survey the beach has experienced considerable erosion.

6eMU6-2 Praa Sands

**Spring 2008 to Spring 2009**
The beach has experienced a gain in material since spring 2008.

**Baseline 2007 to Spring 2009**
Over the last two years the same trend for overall accretion was observed.
6eMU6-3 Praa Sands

**Spring 2008 to Spring 2009**
Accretion has occurred throughout this management unit.

**Baseline 2007 to Spring 2009**
The entire beach is dominated by accretion. Both profiles show overall accretion, although much of the accretion appears to have taken place during the last year.

6eMU8-2 Perran Sands

**Spring 2008 to Spring 2009**
Accretion can be observed throughout the entire management unit.

**Baseline 2007 to Spring 2009**
Since the initial baseline survey the management unit has seen a notable increase in CSA, particularly in the eastern section of the management unit.

6eMU9-2 Little London

**Spring 2008 to Spring 2009**
There has been some accretion over all profiles.

**Baseline 2007 to Spring 2009**
Over the last two years there has been continued accretion in the west and most eastern parts of the beach. Erosion can be observed in the centre of the beach.

6eMU10-1 Marazion

**Spring 2008 to Spring 2009**
Although there has been some localised changes, none of the profiles within this management unit have shown any significant change over the past year.

**Baseline 2007 to Spring 2009**
A similar pattern of localised minor erosion and accretion is observed.

6eMU10-2 Mounts Bay

**Spring 2008 to Spring 2009**
Fourteen of the eighteen profiles within this management exhibit negligible change. Profile 6e00797 in the western part of the management unit has undergone the most change, having experienced a 23% increase in material over the past year. Further west slight erosion has occurred along profile 6e00810.

**Baseline 2007 to Spring 2009**
There has been patchy accretion over most of the management unit, with significant accretion at the causeway end of the beach.
6eMU11 Newlyn

**Spring 2008 to Spring 2009**
Over the narrowest part of the beach accretion has occurred within the past year.

**Baseline 2007 to Spring 2009**
Accretion is dominant over the entire management unit with the most pronounced increases in material occurring in the narrowest section of the beach.
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.

\[
\frac{\text{CSA}_1 - \text{CSA}_2}{\text{CSA}_2} \times 100 \quad \text{eqn (1)}
\]

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 management 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, 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 Vol\(_1\) = most recent DTM model volume and Vol\(_2\) = earlier DTM model volume. Therefore a net change of –19730m\(^3\) represents erosion since the earlier survey.
Actual Change in Cross-Sectional Area

Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

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

Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)

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

Actual Annual Change in Cross-sectional Area (m²)
% Change in Cross-Sectional Area

**Annual % Change in Cross-sectional Area (Spring 2008 to Spring 2009)**

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

**MU boundary**

**Actual Annual Change in Cross-sectional Area (m²)**

**CISCAG - Cornwall**

**Southwest Strategic Regional Coastal Monitoring Programme**

**Annual Report 2009**

**Beach Change Summary - Spring 2008 to Spring 2009**
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2009

Actual Change in Cross-Sectional Area

Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

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

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

- **No Change**:
  - Less than 5 m²
  - 5 - 15 m²

7d01323 (3)

Actual Annual Change in Cross-sectional Area (m²)
% Change in Cross-Sectional Area

Annual % Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

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

Actual Annual Change in Cross-sectional Area ($m^2$)

MU boundary

Beach Change Summary - Baseline 2007 to Spring 2009

CISCAG - Cornwall
Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)

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

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

- **No Change**

MU boundary

Annual Change in Cross-sectional Area (%)

7d01323 (3 %)

Aerial Photography from 2008

002 55 0
### Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

<table>
<thead>
<tr>
<th>Category</th>
<th>Change in Area (m²)</th>
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<tbody>
<tr>
<td><strong>Accretion</strong></td>
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</tr>
<tr>
<td>&gt; 30 m²</td>
<td></td>
</tr>
<tr>
<td>15 - 30 m²</td>
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<td>5 - 15 m²</td>
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<tr>
<td>No Change</td>
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</tr>
<tr>
<td>&lt; 5 m²</td>
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</tr>
<tr>
<td>5 - 15 m²</td>
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</tr>
<tr>
<td>Erosion</td>
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</tr>
<tr>
<td>&gt; 15 m²</td>
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</tr>
<tr>
<td>&gt; 30 m²</td>
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</tr>
</tbody>
</table>

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

- MU boundary
- 7d01323 (3%)
- Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)
Contours

MHW Elevation: 1.85 OD
MLW Elevation: -1.65 OD

- MHW 2000
- MHW 2007
- MLW 2007

Aerial Photography from 2008
Historic Contours Derived from LiDAR
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 2008
Survey Completed 17th April 2007
Southwest Strategic Regional Coastal Monitoring Programme

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Management Unit 6eMU3-2 - Bathymetric Survey

CISCAG - Cornwall

Elevation
Metres OD

Not to be used for navigational purposes

-1 - 0
-2 - -1
-3 - -2
-4 - -3
-5 - -4
-6 - -5
-7 - -6
-10 - -8
-12 - -10
-20 - -12
-40 - -20

Aerial Photography from 2008
Survey Completed 23rd August 2008

0 76 150 m

Not to be used for navigational purposes
Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)

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

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

**No Change**

- 5 - 15 m²
- Less than 5 m²

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

- 7d01323 (3%)

**Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)**

- 6e00251 (-6%)
- 6e00248 (96%)

**Aerial Photography from 2008**
Suouthwest Strategic Regional Coastal Monitoring Programme

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Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU3-4 - Beach Change

CISCAG - Cornwall

Aerial Photography from 2008

Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

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

MU boundary

7d01323 (3 %)

Annual Change in Cross-sectional Area (%)

Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

- Ge00251 (+2 %)
- Ge00248 (15 %)
Southwest Strategic Regional Coastal Monitoring Programme

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Contours

MHW Elevation: 1.85 OD
MLW Elevation: -1.65 OD

- MHW 2000
- MHW 2007
- MLW 2007

Aerial Photography from 2008
Historic Contours Derived from LiDAR

MHW 2000
MHW 2007
MLW 2007

CISCAG - Cornwall
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU3-4 - Sediment Distribution

CISCAG - Cornwall

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

Annual Report 2009

E Aerial Photography from 2008
Survey Completed 17th April 2007

05 0 1 0 0
Aerial Photography from 2008
Survey Completed 23rd August 2008

Elevation
Metres OD

-1 - 0
-2 - -1
-3 - -2
-4 - -3
-5 - -4
-6 - -5
-8 - -6
-10 - -8
-12 - -10
-20 - -12
-40 - -20

Not to be used for navigational purposes

0 75 150

Management Unit 6eMU3-4 - Bathymetric Survey
CISCAG - Cornwall

Annual Report 2009
Southwest Strategic Regional Coastal Monitoring Programme
Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)

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

MU boundary

7d01323 (3 %)

Annual Change in Cross-sectional Area (%)

Aerial Photography from 2008

0 50 100 m

CISCAG - Cornwall

Management Unit 6eMU3-6 - Beach Change

Annual Report 2009
Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

<table>
<thead>
<tr>
<th>Change Type</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>
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<td>Accretion</td>
<td></td>
<td></td>
<td></td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Change</td>
<td></td>
<td></td>
<td></td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erosion</td>
<td></td>
<td></td>
<td></td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MU boundary

Annual Change in Cross-sectional Area (%)

Aerial Photography from 2008

Management Unit 6eMU3-6 - Beach Change

CISCAG - Cornwall
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2009

CISCAG - Cornwall

Contours

MHW Elevation: 1.85 OD
MLW Elevation: -1.65 OD

- MHW 1998
- MHW 2007
- MLW 2007

Aerial Photography from 2008
Historic Contours Derived from LiDAR

0 50 100 m

Management Unit 6eMU3-6 - MHW and MLW Contours

CISCAG - Cornwall
Aerial Photography from 2008
Survey Completed 23rd August 2008

Elevation
Metres OD

-1 - 0
-2 - 1
-3 - 2
-4 - 3
-5 - 4
-6 - 5
-8 - 6
-10 - 8
-12 - 10
-20 - 12
-40 - 20

Not to be used for navigational purposes
**Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)**

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

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

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

- MU boundary
- 7d01323 (3 %)
- Less than 5 m²

**Management Unit 6eMU4-2 - Beach Change**

**CISCAG - Cornwall**

**Aerial Photography from 2008**

**Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)**

- MU boundary
- 7d01323 (3 %)
- Less than 5 m²

**Management Unit 6eMU4-2 - Beach Change**

**CISCAG - Cornwall**

**Aerial Photography from 2008**
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU4-2 - MHW and MLW Contours

Contours

MHW Elevation: 1.91 OD
MLW Elevation: -1.59 OD

- MHW 1998
- MHW 2007
- MLW 2007

Aerial Photography from 2008
Historic Contours Derived from LiDAR

CISCAG - Cornwall
Elevation
Metres OD

-1 - 0
-2 - -1
-3 - -2
-4 - -3
-5 - -4
-6 - -5
-8 - -6
-10 - -8
-12 - -10
-20 - -12
-40 - -20

Not to be used for navigational purposes

Aerial Photography from 2008
Survey Completed 23rd August 2008

0 50 100 m

Management Unit 6eMU4-2 - Bathymetric Survey

CISCAG - Cornwall
Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

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

Erosion
- 15 - 30 m²
- > 30 m²

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

Annual Change in Cross-sectional Area (%)
- 7d01323 (3%)
- 6e00319 (28%)
- 6e00329 (29%)

Aerial Photography from 2008

MU boundary

Management Unit 6eMU4-3 - Beach Change

CISCAG - Cornwall

Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2009
Contours

MHW Elevation: 1.91 OD
MLW Elevation: -1.59 OD

- MHW 1998
- MHW 2007
- MLW 2007

Aerial Photography from 2008
Historic Contours Derived from LiDAR
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU4-3 - Sediment Distribution

Annual Report 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 2008
Survey Completed 14th April 2007

Mixture

Obstruction
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU4-3 - Bathymetric Survey

Annual Report 2009

CISCAG - Cornwall

Not to be used for navigational purposes
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU4-4 - Beach Change

Annual Report 2009

CISCAG - Cornwall

Aerial Photography from 2008

Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)

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

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

MU boundary

Annual Change in Cross-sectional Area (%)

- 7d01323 (3 %)

0 75 150 m
Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

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

<table>
<thead>
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<th>Cross-sectional Area (%)</th>
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</thead>
<tbody>
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<td>&gt; 30 m²</td>
<td>-1%</td>
</tr>
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<td>15 - 30 m²</td>
<td>0%</td>
</tr>
<tr>
<td>&gt; 30 m²</td>
<td>0%</td>
</tr>
</tbody>
</table>

**MU boundary**

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

- 7d01323 (3%)
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2009

Management Unit 6eMU4-4 - MHW and MLW Contours

CISCAG - Cornwall

Contours

MHW Elevation: 1.91 OD
MLW Elevation: -1.59 OD

- MHW 1998
- MHW 2007
- MLW 2007

Aerial Photography from 2008
Historic Contours Derived from LiDAR

MHW 1998
MHW 2007
MLW 2007

±
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 2008
Survey Completed 17th April 2007

CISCAG - Cornwall
Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)

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

MU boundary

Annual Change in Cross-sectional Area (%)

7d01323 (3%)
Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

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

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

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

MU boundary

Aerial Photography from 2008

Annual Change in Cross-sectional Area (%)

- 7d01323 (3 %)

Baseline 2007 to Spring 2009
Contours

MHW Elevation: 1.91 OD
MLW Elevation: -1.59 OD

- MHW 1998
- MHW 2007
- MLW 2007

Aerial Photography from 2008
Historic Contours Derived from LiDAR
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU4-5 - Bathymetric Survey

Annual Report 2009

CISCAG - Cornwall

Not to be used for navigational purposes
Management Unit 6eMU4-6 - Beach Change

Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2009

CISCAG - Cornwall

Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)

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

- Erosion:
  - 5 - 15 m²
  - 15 - 30 m²
  - > 30 m²

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

Annual Change in Cross-sectional Area (%)
- MU boundary
- 7d01323 (3 %)

Aerial Photography from 2008
Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

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

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

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

**MU boundary**

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

- 7d01323 (3 %)
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU4-6 - MHW and MLW Contours

Elevation: 1.91 OD
MLW Elevation: -1.59 OD

- MHW 1998
- MHW 2007
- MLW 2007

Annual Report 2009

CISCAG - Cornwall

Aerial Photography from 2008
Historic Contours Derived from LiDAR

MHW 1998
MHW 2007
MLW 2007

±
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 2008
Survey Completed 31st July 2007

± 0.5 m
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU4-6 - Bathymetric Survey

CISCAG - Cornwall

Annual Report 2009

Elevation
Metres OD

-1 - 0
-2 - -1
-3 - -2
-4 - -3
-5 - -4
-6 - -5
-8 - -6
-10 - -8
-12 - -10
-20 - -12
-40 - -20

Not to be used for navigational purposes

Survey Completed 23rd August 2008

Aerial Photography from 2008

100 200 m

Management Unit 6eMU4-6 - Bathymetric Survey

CISCAG - Cornwall
Management Unit 6eMU6-2 - Beach Change
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2009

CISCAG - Cornwall

Aerial Photography from 2008

Management Unit 6eMU6-2 - Beach Change

CISCAG - Cornwall
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU6-2 - MHW and MLW Contours

Annual Report 2009

CISCAG - Cornwall

Contours

MHW Elevation: 1.91 OD
MLW Elevation: -1.59 OD

- MHW 1998
- MHW 2007
- MLW 2007

Aerial Photography from 2008
Historic Contours Derived from LiDAR

MHW 1998
MHW 2007
MLW 2007
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU6-2 - Sediment Distribution

Annual Report 2009

CISCAG - Cornwall

Aerial Photography from 2008
Survey Completed 15th April 2007

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

Management Unit 6eMU6-2 - Bathymetric Survey

Annual Report 2009

CISCAG - Cornwall

Elevation Metres OD
-1 - 0
-2 -1
-3 -2
-4 -3
-5 -4
-6 -5
-7 -6
-8 -7
-9 -8
-10 -9
-11 -10
-12 -11
-20 -12
-40 -20

Not to be used for navigational purposes
Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)

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

MU boundary

- 7d01323 (3%)

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

Annual Report 2009

CISCAG - Cornwall

Aerial Photography from 2008

Management Unit 6eMU6-3 - Beach Change

CISCAG - Cornwall
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2009

CISCAG - Cornwall

Contours

MHW Elevation: 1.91 OD
MLW Elevation: -1.59 OD

- MHW 1998
- MHW 2007
- MLW 2007

Aerial Photography from 2008
Historic Contours Derived from LiDAR

MHW 1998
MHW 2007
MLW 2007

±
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU6-3 - Sediment Distribution

CISCAG - Cornwall

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 2008
Survey Completed 27th November 2007

Annual Report 2009
Not to be used for navigational purposes
Management Unit 6eMU8-2 - Beach Change

Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)

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

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

- **Erosion**
  - > 30 m²

Actual Change in Cross-sectional Area:
- 7d01323 (3 %)
- Annual Change in Cross-sectional Area (%)
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2009

CISCAG - Cornwall

Aerial Photography from 2008

Management Unit 6eMU8-2 - Beach Change

Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

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

MU boundary

Annual Change in Cross-sectional Area (%)

7d01323 (3%)

CISCAG - Cornwall
Contours

- MHW Elevation: 1.95 OD
- MLW Elevation: -1.65 OD

- MHW 1998
- MHW 2007
- MLW 2007

Aerial Photography from 2008
Historic Contours Derived from LiDAR

CISCAG - Cornwall
Management Unit 6eMU8-2 - Bathymetric Survey

Elevation Metres OD:
- -1 - 0
- -2 - 1
- -3 - 2
- -4 - 3
- -5 - 4
- -6 - 5
- -7 - 6
- -8 - 7
- -10 - 8
- -12 - 10
- -20 - 12
- -40 - 20

Aerial Photography from 2008
Survey Completed 10th August 2008

Not to be used for navigational purposes.
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU9-2 - Beach Change

Annual Report 2009

CISCAG - Cornwall

Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)

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

Accretion

Erosion

No Change

Annual Change in Cross-sectional Area (%)

7d01323 (3 %)

MU boundary

Aerial Photography from 2008

Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)
Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

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

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

- 7d01323 (3 %)

**Aerial Photography from 2008**

**MU boundary**
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU9-2 - MHW and MLW Contours

Contours

MHW Elevation: 1.91 OD
MLW Elevation: -1.65 OD

- MHW 1998
- MHW 2007
- MLW 2007

Annual Report 2009

CISCAG - Cornwall

Aerial Photography from 2008
Historic Contours Derived from LiDAR

MHW 1998
MHW 2007
MLW 2007

±

Contour Map

Map of area with MHW and MLW contours.
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 2008
Survey Completed 17th July 2007

± 01 5 0 0 0 m
Aerial Photography from 2008
Survey Completed 10th August 2008

Not to be used for navigational purposes
Southwest Strategic Regional Coastal Monitoring Programme

Annual Report 2009

Management Unit 6eMU10-1 - Beach Change

CISCAG - Cornwall

Aerial Photography from 2008

Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)

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

MU boundary

Annual Change in Cross-sectional Area (%)
Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

<table>
<thead>
<tr>
<th>Category</th>
<th>Change in Area (m²)</th>
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</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>No Change</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>
<td></td>
</tr>
<tr>
<td>Erosion</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>
<td></td>
</tr>
</tbody>
</table>

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

Management Unit 6eMU10-1 - MHW and MLW Contours

CISCAG - Cornwall

Contours

MHW Elevation: 1.91 OD
MLW Elevation: -1.65 OD

- MHW 1998
- MHW 2007
- MLW 2007
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU10-1 - Sediment Distribution

Annual Report 2009

CISCAG - Cornwall

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 2008
Survey Completed 18th April 2007

± 01 5 0 3 0 0 m
Aerial Photography from 2008
Survey Completed 10th August 2008

Not to be used for navigational purposes
Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)

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

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

MU boundary

Annual Change in Cross-sectional Area (%)

- 7d01323 (3 %)

- Annual Change in Cross-sectional Area (Spring 2008 to Spring 2009)

- Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU10-2 - Beach Change

CISCAG - Cornwall

Aerial Photography from 2008

Annual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

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

7d01323 (3 %)

Accretion

No Change

Erosion

Annual Change in Cross-sectional Area (%)

Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

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

MU boundary

±03 00 60 00°

° 7d01323 (3 %)

Annual Change in Cross-sectional Area (%)

Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)
**Southwest Strategic Regional Coastal Monitoring Programme**

**Annual Report 2009**

**Management Unit 6eMU10-2 - MHW and MLW Contours**

**CISCAG - Cornwall**

**Contours**

MHW Elevation: 1.95 OD  
MLW Elevation: -1.65 OD

- MHW 2001
- MHW 2007
- MLW 2007

Aerial Photography from 2008  
Historic Contours Derived from LiDAR

MHW 2001  
MHW 2007  
MLW 2007

± 1.0 m
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 2008
Survey Completed 18th April 2007
Actual Change in Cross-sectional Area (Spring 2008 to Spring 2009)

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

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

Annual Change in Cross-sectional Area (%)

- 7d01323 (3 %)

CISCAG - Cornwall

Aerial Photography from 2008

Management Unit 6eMU11 - Beach Change
Actual Change in Cross-sectional Area (Baseline 2007 to Spring 2009)

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

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

No Change

Annual Change in Cross-sectional Area (%)

- MU boundary
- 7d01323 (3 %)

Aerial Photography from 2008

0 200 400 m
Southwest Strategic Regional Coastal Monitoring Programme

Management Unit 6eMU11 - MHW and MLW Contours

Annual Report 2009

CISCAG - Cornwall

Contours

MHW Elevation: 1.95 OD
MLW Elevation: -1.65 OD

Aerial Photography from 2008
Historic Contours Derived from LiDAR

Historic LiDAR contours are unavailable for this management unit.
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 2008
Survey Completed 19th April 2007
Aerial Photography from 2008
Survey Completed 10th August 2008

Not to be used for navigational purposes
Area Above MP Trend: Accreting at 86.794 m²/year

For accurate analysis purposes the baseline for this management unit is set as 2007-10
Management Unit 6eMU3-4
Cross-Sectional Area Charts

For accurate analysis purposes the baseline for this management unit is set as 2007-10
Cross Sectional Area above MF Trend for Location: 6e00261 and Reference Profile Set

Area Above MP Trend: Accreting at 27.016 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00264 and Reference Profile Set

Area Above MP Trend: Accreting at 34.836 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00319 and Reference Profile Set

Area Above MP Trend: Accreting at 34.162 m²/Year

Survey Date:
- 07/06/2007
- 05/09/2007
- 04/12/2007
- 02/02/2008
- 03/04/2008
- 01/06/2008
- 31/07/2008
- 29/09/2008
- 28/11/2008
- 27/12/2008

Beach Area (m²):
- 100
- 110
- 120
- 130
- 140
- 150
- 160
- 170
- 180
- 190
- 200
- 210
- 220
- 230
- 240
- 250
- 260
- 270
- 280
- 290
- 300
- 310

Legend:
- Yellow: Recycling Event
- Green: Area Above MP
- Grey: Area Trend
- Blue: Area Between MP & DP
Cross Sectional Area above MF Trend for Location: 6e00341 and Reference Profile Set

Area Above MF Trend: Eroding at -5.135 m²/Year

Survey Date:
- 07/06/2007
- 05/09/2007
- 05/11/2007
- 04/12/2007
- 02/02/2008
- 02/04/2008
- 01/06/2008
- 31/07/2008
- 29/09/2008
- 26/11/2008
- 27/12/2008

Beach Area (m²):
- 90
- 100
- 110
- 120
- 130
- 140
- 150
- 160
- 170
- 180
- 190
- 200
- 210
- 220
- 230
- 240
- 250
- 260
- 270
- 280
- 290
- 300
- 310

Legend:
- Recycling Event
- Area Above MP
- Area Trend
- Area Between MP & DP
Cross Sectional Area above MF Trend for Location: 6e00354 and Reference Profile Set

Area Above MP Trend: Eroding at -12.714 m²/year
Area Above MP Trend: Eroding at -20.124 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00377 and Reference Profile Set

Area Above MP Trend: Eroding at -2.880 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00385 and Reference Profile Set

Area Above MP Trend: Eroding at -22.552 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00391 and Reference Profile Set

Area Above MP Trend: Eroding at -15.699 m²/Year
Cross-sectional area above MF trend for Location: 6e00517 and Reference Profile Set

Area above MP trend: Accreting at 36.537 m²/year

Survey Date:
- 07/06/2007
- 08/06/2007
- 05/10/2007
- 04/11/2007
- 02/01/2008
- 02/04/2008
- 01/06/2008
- 31/07/2008
- 29/09/2008
- 28/11/2008
- 27/01/2009

Beach Area (m²):
- 275
- 280
- 285
- 290
- 295
- 300
- 305
- 310
- 315
- 320
- 325
- 330
- 335
- 340
- 345
- 350
- 355
- 360
- 365
- 370
- 375
- 380
- 385
- 390

Legend:
- Yellow: Recycling Event
- Green: Area Above MP
- Green: Area Trend
- Blue: Area Between MP & DP
Cross Sectional Area above MF Trend for Location: 6e00527 and Reference Profile Set

Area Above MP Trend: Accreting at 27.203 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00532 and Reference Profile Set

Area Above MP Trend: Accreting at 42.924 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00536 and Reference Profile Set

Area Above MP Trend: Accreting at 31.951 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00645 and Reference Profile Set

Area Above MF Trend: Accreting at 47.228 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00648 and Reference Profile Set

Area Above MP Trend: Accreting at 27.616 m²/Year
Cross Sectional Area above MF Trend for Location: 6x00698 and Reference Profile Set

Area Above MP Trend: Eroding at -16.972 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00708 and Reference Profile Set

Area Above MP Trend: Eroding at -43.558 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00734 and Reference Profile Set

Area Above MP Trend: Accreting at 3.772 m²/Year
Management Unit 6eMU10-1

Cross-Sectional Area above MF Trend for Location: 6e00739 and Reference Profile Set

Area Above MP Trend: Accreting at 0.849 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00743 and Reference Profile Set

Area Above MP Trend: Accreting at 17.527 m²/year
Cross Sectional Area above MF Trend for Location: 6e00747 and Reference Profile Set

Area Above MF Trend: Eroding at -6.978 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00751 and Reference Profile Set

Area Above MP Trend: Accreting at 9.773 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00764 and Reference Profile Set

Area Above MP Trend: Accreting at 3.970 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00768 and Reference Profile Set

Area Above MF Trend: Accreting at 40.692 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00772 and Reference Profile Set

Area Above MP Trend: Eroding at -3.508 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00776 and Reference Profile Set

Area Above MP Trend: Accreting at 5.764 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00780 and Reference Profile Set

Area Above MP Trend: Accreting at 13.716 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00784 and Reference Profile Set

Area Above MP Trend: Eroding at -0.189 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00788 and Reference Profile Set

Area Above MP Trend: Accreting at 3.615 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00792 and Reference Profile Set

Area Above MP Trend: Eroding at -11.525 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00802 and Reference Profile Set

Area Above MP Trend: Eroding at -5.879 m²/Year
Cross Sectional Area above MF Trend for Location: 6e0006 and Reference Profile Set

Area Above MP Trend: Accreting at 13.544 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00810 and Reference Profile Set

Area Above MF Trend: Eroding at -0.784 m²/Year

Survey Date

40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520

Beach Area (m²)
Cross Sectional Area above MF Trend for Location: 6e00814 and Reference Profile Set

Area Above MP Trend: Accreting at 2.545 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00818 and Reference Profile Set

Area Above MP Trend: Eroding at -7.018 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00852 and Reference Profile Set

Area Above MP Trend: Accreting at 5.723 m²/year
Cross Sectional Area above MF Trend for Location: 6e00856 and Reference Profile Set

Area Above MP Trend: Accreting at 1.886 m^2/Year
Cross Sectional Area above MF Trend for Location: 6e00861 and Reference Profile Set

Area Above MP Trend: Accreting at 13.926 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00865 and Reference Profile Set

Area Above MP Trend: Eroding at -0.773 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00868 and Reference Profile Set

Area Above MP Trend: Accreting at 0.473 m²/Year
Cross Sectional Area above MF Trend for Location: 6e00874 and Reference Profile Set

Area Above MP Trend: Accreting at 1.910 m²/Year

Survey Date


Area above MF trend: Accreting at 1.910 m²/Year.
Profile Charts for Management Unit 6MU3-4

For accurate analysis purposes the baseline for this management unit is set as 2007-10
For accurate analysis purposes, the baseline for this management unit is set as 2007-10.