ANNUAL REPORT
2007

Isle of Grain to North Foreland

AR29
August 2007
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1.0 Introduction

Analysis in this annual report provides an overview of beach performance and wave and tidal measurements for North Kent (Isle of Grain to Pegwell Bay), from the strategic regional coastal monitoring project, over the last year of data collection. Topographic surveys are conducted at all viable sites using land based RTK GPS in the spring and autumn of each year, covering pre-determined designated profiles at intervals along the coast. This report looks specifically at the difference between the latest survey set (Spring 2007) and the comparable data from Spring 2006.

All profile data was imported into SANDS® for analysis. This enables cross sectional areas (CSA) to be calculated providing a representative beach between a landward point, master profile and beach toe location (Figure 1.0-1). Where available, seawalls are located spatially using a combination of design schematics and a sea defence survey conducted in 2003. Master profiles are set at the beach toe level or mean low water, which ever is deemed most appropriate. In some areas clay levels have also been established using the results from trial holes dug in beach, these have been incorporated to produce a more accurate master profile that calculates the actual beach area.

Data is presented at a number of scales, from an overview of the average change in each management unit, to changes and trends for profiles that have exhibited a significant change. The topographic analysis section of the report highlights notable changes, and areas for concern, for each of the management units. While this provides an accurate portrayal of current beach conditions and changes over the preceding year it should be stressed that these are only short-term trends. In order to view the results in a meaningful light they should be compared to the full data set for each location. To put these into context total change is also shown from the baseline survey (2003/2004) to the most recent Spring survey (2007).

Those areas that are designated beach management plan sites (figure 1.2) benefit from a high-resolution beach plan survey every summer. These are utilised to produce a much more comprehensive beach analysis report, as such this report should be viewed as an interim update for those sites.
2.0 Condition of Management Units

To provide an overview of the annual change in each management unit the average change in beach profile CSA is calculated for each unit. These averages are expressed in terms of percentage difference and actual change (m²) and are presented in Table 2.0-1.

Table 2.0-1: Management Unit Beach Change Summary (Spring 2006 – Spring 2007)

<table>
<thead>
<tr>
<th>Management Unit</th>
<th>No. of Profiles</th>
<th>Average Change (%)</th>
<th>Average Change (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>6</td>
<td>0.12</td>
<td>0.51</td>
</tr>
<tr>
<td>1B</td>
<td>4</td>
<td>1.07</td>
<td>1.07</td>
</tr>
<tr>
<td>1C</td>
<td>4</td>
<td>0.49</td>
<td>0.18</td>
</tr>
<tr>
<td>2A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2B</td>
<td>12</td>
<td>3.56</td>
<td>2.99</td>
</tr>
<tr>
<td>2C</td>
<td>2</td>
<td>-2.24</td>
<td>-2.05</td>
</tr>
<tr>
<td>3A</td>
<td>12</td>
<td>0.01</td>
<td>-0.18</td>
</tr>
<tr>
<td>3B</td>
<td>7</td>
<td>-4.35</td>
<td>-4.88</td>
</tr>
<tr>
<td>3C</td>
<td>4</td>
<td>-4.54</td>
<td>-3.74</td>
</tr>
<tr>
<td>4A</td>
<td>18</td>
<td>2.65</td>
<td>0.40</td>
</tr>
<tr>
<td>4B</td>
<td>31</td>
<td>8.56</td>
<td>6.94</td>
</tr>
<tr>
<td>5A</td>
<td>19</td>
<td>-0.40</td>
<td>-1.08</td>
</tr>
<tr>
<td>5B</td>
<td>9</td>
<td>14.50</td>
<td>2.12</td>
</tr>
<tr>
<td>5C</td>
<td>23</td>
<td>-0.54</td>
<td>-2.02</td>
</tr>
<tr>
<td>5D</td>
<td>4</td>
<td>2.02</td>
<td>2.32</td>
</tr>
<tr>
<td>5E</td>
<td>23</td>
<td>-0.86</td>
<td>-3.93</td>
</tr>
<tr>
<td>6A</td>
<td>9</td>
<td>-7.80</td>
<td>-2.78</td>
</tr>
<tr>
<td>6B</td>
<td>13</td>
<td>-4.06</td>
<td>-1.01</td>
</tr>
<tr>
<td>6C</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>7A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>7B</td>
<td>8</td>
<td>180.35</td>
<td>18.43</td>
</tr>
<tr>
<td>8A</td>
<td>2</td>
<td>-14.05</td>
<td>-9.38</td>
</tr>
<tr>
<td>8B</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

These results are also illustrated as coloured thematic maps in figures 2-1 to 2-3, with arrows representing the average erosion, accretion or no change for each unit. Arrows pointing out to sea represent accretion, whilst those pointing landward are indicative of erosion.

Most units demonstrate an average change of less than 5% that is considered to be in the realms of natural variation. It should be noted that the largest changes result from units with very few profiles, in these areas a single profile can skew the results. Although these figures can highlight a highly erosive unit, or a recent replenishment, they should be viewed with caution, for example, it is possible to have a small highly erosive area within a unit that on average accretes material.

The results also reflect a short-term trend through just a snapshot in time, these figures can be viewed as a starting point, but individual profiles should be examined in those areas of interest. Crucially the significance of any results should be put in context with previous fluctuations in beach CSA since the start of the project in 2003, or even further back where reliable historic data exists.
Beach Change Summary - Spring 2006 to Spring 2007

SECG: Minnis Bay - Pegwell Bay
3.0 Profile Change Summary

Changes along individual profiles within each management unit are summarised in a series of thematic maps (figure 3-1 to 3-35). The maps show the location of each beach profile, superimposed on an aerial photograph (note the lines have been extended for clarity). Where possible the annual change in cross-sectional area (CSA) has been calculated from Spring 2006 to Spring 2007.

In order to put these changes in context thematic maps are also included illustrating the change from the first Spring survey in 2003/2004 and the most recent Spring survey (2007). These help to establish if recent changes in beach morphology are consistent with recent trends or an anomaly that has occurred in the past year.
Annual Change in Cross-Sectional Area (m²) (Spring 2006 - Spring 2007)

- **ACCRETION**
  - > 30 %
  - 15 - 30 %
  - 5 - 15 %
  - Less Than 5 %

- **EROSION**
  - 5 - 15 %
  - 15 - 30 %
  - > 30 %

**CSA Change (m²)**
- Percentage Change

**Profile Name**
- Management Unit Boundaries
- 4a00001 (-12)

**Annual Change in Cross-Sectional Area**
- 4a001501 2% (5)
- 4a001331 8% (10)
- 4a002531 6% (2)
- 4a001661 -1% (0)

**Profile Change Summary for Spring 2006 to Spring 2007 - Figure 1 of 3**

Garrison Point to Minster
Profile Change Summary for Spring 2006 to Spring 2007 - Figure 1 of 1  
Minster to Warden Point
Profile Change Summary for Spring 2006 to Spring 2007 - Figure 1 of 1

Plumpudding Island to Birchington

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Profile Change Summary for Spring 2004 to Spring 2007 - Figure 2 of 2

Grain Village to Horseshoe Point

Annual Change in Cross-Sectional Area (m²)
(Spring 2004 - Spring 2007)

<table>
<thead>
<tr>
<th>Category</th>
<th>CSA Change (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCRETION</td>
<td></td>
</tr>
<tr>
<td>&gt; 30 %</td>
<td></td>
</tr>
<tr>
<td>15 - 30 %</td>
<td></td>
</tr>
<tr>
<td>5 - 15 %</td>
<td></td>
</tr>
<tr>
<td>NO CHANGE</td>
<td></td>
</tr>
<tr>
<td>Less Than 5 %</td>
<td></td>
</tr>
<tr>
<td>5 - 15 %</td>
<td></td>
</tr>
<tr>
<td>15 - 30 %</td>
<td></td>
</tr>
<tr>
<td>&gt; 30 %</td>
<td></td>
</tr>
</tbody>
</table>

Annual Change in Cross-Sectional Area

-7% (-12)

Profile Name

Management Unit Boundaries
Annual Change in Cross-Sectional Area (m²)  
(Spring 2003 - Spring 2007)  

<table>
<thead>
<tr>
<th>Percentage Change</th>
<th>CSA Change (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 30 %</td>
<td>4a00001 (-7)</td>
</tr>
<tr>
<td>15 - 30 %</td>
<td></td>
</tr>
<tr>
<td>5 - 15 %</td>
<td></td>
</tr>
<tr>
<td>Less Than 5 %</td>
<td></td>
</tr>
<tr>
<td>5 - 15 %</td>
<td></td>
</tr>
<tr>
<td>15 - 30 %</td>
<td></td>
</tr>
<tr>
<td>&gt; 30 %</td>
<td></td>
</tr>
</tbody>
</table>

Profile Change Summary for Spring 2003 to Spring 2007 - 2 of 2

SECG - Seasalter to Whitstable
Profile Change Summary for Spring 2003 to Spring 2007 - Figure 3 of 3

Herne Bay
South East Strategic Regional Coastal Monitoring Programme

Annual Report 2007

Profile Change Summary for Spring 2003 to Spring 2007 - Figure 1 of 3

Northern Sea Wall

Annual Change in Cross-Sectional Area (m²) (Spring 2003 - Spring 2007)

- Accretion:
  - > 30%
  - 15 - 30%
  - 5 - 15%
  - Less Than 5%
- Erosion:
  - 5 - 15%
  - 15 - 30%
  - > 30%

Profile Name: 4a00001 - (43)

Annual Change in Cross-Sectional Area

Management Unit Boundaries

CSA Change (m²)

Percentage Change

5 - 15%

15 - 30%

> 30%
Annual Change in Cross-Sectional Area (m³) (Spring 2003 - Spring 2007)

<table>
<thead>
<tr>
<th>Profile Name</th>
<th>CSA Change (m³)</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>4a00001</td>
<td>-7%</td>
<td>-12%</td>
</tr>
</tbody>
</table>

Profile Change Summary for Spring 2003 to Spring 2007 - Figure 2 of 3  

Northern Sea Wall
4.0 Hydrodynamic Data

Herne Bay Step Gauge

Location

OS: 616870E 169390N
WGS84: Latitude: 51° 22' 55.5"N Longitude: 01° 06' 54.66"E

Water Depth

~0.5m CD

Instrument Type

Etrometa Step Gauge

Data Quality

<table>
<thead>
<tr>
<th>C1(%)</th>
<th>Sample interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>94</td>
<td>20 minutes</td>
</tr>
</tbody>
</table>

Monthly Means

<table>
<thead>
<tr>
<th>Month</th>
<th>H_s (m)</th>
<th>H_max (m)</th>
<th>T_p (s)</th>
<th>T_z (s)</th>
<th>Direction (°)</th>
<th>SST (°C)</th>
<th>No. of days</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>0.216</td>
<td>0.412</td>
<td>3.0</td>
<td>2.9</td>
<td>-</td>
<td>-</td>
<td>31</td>
</tr>
<tr>
<td>June</td>
<td>0.194</td>
<td>0.390</td>
<td>3.0</td>
<td>2.9</td>
<td>-</td>
<td>-</td>
<td>30</td>
</tr>
<tr>
<td>July</td>
<td>0.181</td>
<td>0.377</td>
<td>2.6</td>
<td>2.7</td>
<td>-</td>
<td>-</td>
<td>31</td>
</tr>
<tr>
<td>August</td>
<td>0.314</td>
<td>0.568</td>
<td>3.1</td>
<td>2.9</td>
<td>-</td>
<td>-</td>
<td>31</td>
</tr>
<tr>
<td>September</td>
<td>0.166</td>
<td>0.320</td>
<td>2.9</td>
<td>2.8</td>
<td>-</td>
<td>-</td>
<td>23</td>
</tr>
<tr>
<td>October</td>
<td>0.208</td>
<td>0.386</td>
<td>3.2</td>
<td>2.9</td>
<td>-</td>
<td>-</td>
<td>31</td>
</tr>
<tr>
<td>November</td>
<td>0.231</td>
<td>0.426</td>
<td>3.0</td>
<td>2.9</td>
<td>-</td>
<td>-</td>
<td>30</td>
</tr>
<tr>
<td>December</td>
<td>0.201</td>
<td>0.389</td>
<td>2.8</td>
<td>2.8</td>
<td>-</td>
<td>-</td>
<td>24</td>
</tr>
<tr>
<td>January</td>
<td>0.323</td>
<td>0.572</td>
<td>3.1</td>
<td>2.9</td>
<td>-</td>
<td>-</td>
<td>31</td>
</tr>
<tr>
<td>February</td>
<td>0.214</td>
<td>0.394</td>
<td>3.4</td>
<td>3.0</td>
<td>-</td>
<td>-</td>
<td>21</td>
</tr>
<tr>
<td>March</td>
<td>0.351</td>
<td>0.633</td>
<td>3.2</td>
<td>3.0</td>
<td>-</td>
<td>-</td>
<td>31</td>
</tr>
<tr>
<td>April</td>
<td>0.296</td>
<td>0.579</td>
<td>3.2</td>
<td>3.0</td>
<td>-</td>
<td>-</td>
<td>30</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 2006/7

<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</th>
<th>Tidal range (m)</th>
<th>Tidal surge* (m)</th>
<th>Max. surge* (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No events exceeded the 1.6m storm threshold for Herne Bay in this reporting year

- Tidal information is obtained from the nearest recording tide gauge (the Step Gauge also records tidal elevation). 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:
- Percentage of occurrence of $H_s$, $T_p$, $T_z$ and Direction from May 2006 to April 2007
- 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

Following on from the last reporting period, which recorded only 2 storm events, the present period experienced no storms which exceeded the 1.6m threshold, although the gauge was non-operational for a period in December.

General

The Step Gauge was deployed on 19 March 1996.

Acknowledgements

TASK2000 tidal prediction software was kindly provided by the Permanent Service for Mean Sea Level (PSMSL), Proudman Oceanographic Laboratory.
Storms at Herne Bay from May 2006 to Apr 2007

Storms at Herne Bay - all years
5.0 Topographic Analysis

This section describes any significant changes that have taken place in each unit, highlighting any areas of concern, and putting the results in context with previous surveys. Where appropriate plots of different surveys are overlaid and included to illustrate the changes described in the text.

5.1 Isle of Grain

5.1.1 Unit 1A (4a00001 – 4a00057)

On the whole this unit is extremely stable with very little variation, most profile cross sectional areas (CSA) have changed by less than 2%. There is one exception to this however. Since 2004, profile 4a00036 has seen a reduction in CSA of 5% (7m$^2$). Historically this has been the most variable profile, mainly as a consequence of it being sited at a point where the orientation of the coastline changes by 45° from facing North to Northeast.

5.1.2 Unit 1B (4a00058 – 4a00099)

This unit supports very small beaches, consequently a small increase in beach material results in a large percentage change. Despite this most profiles are extremely stable and only vary by approximately 1m$^2$/year. The one exception to this is profile 4a00073. The beach area for this profile has increased by 23% (5m$^2$) since the Spring 2006 survey (Figure 5.1-1). An overall increase of 140% (16m$^2$) has been recorded here since the first survey in 2003. The majority of this change occurred between Spring 2005 and Autumn 2006. This profile is located in the only groyned section of the management unit. Given that no replenishment/recycling records have been received, this increase must be attributed to an accumulation of sediment held in place by the groyne field.

![Figure 5.1-1: Increase in beach volume at profile 4a00073](image-url)
5.1.3 Unit 1C (4a00100 – 4a00141)

All profiles in this unit demonstrate a small accretionary trend since the start of monitoring in 2003. Since spring 2006 most profiles have continued this trend with minor increases in beach CSA. The only profile to show a significant change is 4a00098, which has eroded by 14% over the last year. This however, has not had a significant impact upon actual beach CSA change (less than 1m$^2$) and the change to all profiles within Unit 1C has been less than 5m$^2$ since the start of the project.

5.2 Isle of Sheppey

5.2.1 Unit 2A (N/A)

Unit 2A covers Sheerness port and associated infrastructure, consequently no beach surveys are viable.

5.2.2 Unit 2B (4a00142 – 4a00281)

The area in front of Sheerness has a number of groynes, although most of the frontage has relatively low beach levels with crest heights in the region of 1-3m ODN. A concrete revetment backs the beach providing the most significant form of sea defence. Profiles in this area show a great deal of fluctuation in CSA, but a general long term accretionary trend can be seen since the Spring 2004 survey. This demonstrates the volatility of this section, however the changes in CSA are relatively small and may be partially attributed to reorientation within individual groyne bays.

Profiles around Barton’s Point have all accreted over the last year, by 0-13% (0-10m$^2$). This is in contrast to previous surveys where the profiles have been relatively stable. In the groyned stretch of coast approaching Minster, profiles are fairly stable with a slight bias towards erosion.

5.2.3 Unit 2C (4a00282 – 4a00295)

Most of the unit is composed of soft cliff and is not part of the topographic survey programme. The two profiles at Minster that are surveyed have eroded slightly over the last year but have historically been fairly stable.

5.2.4 Unit 3A (4a00333 – 4a00431)

The first profile east of Warden point (4a00345) has eroded since the start of the project and the previous year provided no exception with a 14% (3m$^2$) reduction in CSA. Most profiles in front of Warden and in the approach to Leysdown-on-sea have shown no significant change since the Spring 2006 survey.

Profiles east of Leysdown show more variability with alternating gains/losses of never more than 3m$^2$ in CSA.
5.2.5 Unit 3B (4a00433 – 4a00491)

Profile 4a00436 is located at the point of where coastal orientation changes from facing Northeast to Easterly. This area holds very little beach material and relies on a concrete revetment and associated seawall to form most of the coastal defence. Since the Spring 2006 survey this small beach profile has seen a 17% (2m$^2$) increase in CSA.

With the exception of the above the rest of the profiles along the north of the unit have lost material, with CSA %age changes ranging from 1 to 20% since the 2006 survey. For most of these profiles the historic erosive trend continues. Profile 4a00463 is the exception to this pattern as it has accreted by 11% (9m$^2$) since the start of the project in 2003.

Profiles along the southern end of the unit all demonstrate some small-scale erosion, over the last year, but not at any rate that can be viewed as significant.

5.2.6 Unit 3C (4a00493 – 4a00515)

Profile 4a00493 demonstrated accretion at every survey up until the autumn of 2005, where a significant reduction in CSA was observed. Monitoring between 2006 and 2007 also displays a loss (12%) of material. Profiles 4a00496 and 4a00505 display historic trends of erosion, ranging from 1-28% (1-16m$^2$). Profile 4a00514 continues to follow a pattern of accretion since surveys began in 2003, with a 46% (20m$^2$) overall increase (Figure 5.2-1). Accretion from 2006-2007 has been dramatic at 23% (12m$^2$). This profile has probably benefited from losses along the neighbouring coastline over this period.

![Figure 5.2-1: Accretion at Profile 4a00514](image-url)
5.3 **Canterbury District**

5.3.1 **Unit 4A (4a00539 – 4a00677)**

Castle Coot nature reserve has historically accreted material, similarly the two profiles to the east of the spit have both accreted material between spring 2006 and 2007. Both these profiles have seen increases in beach CSA since the onset of the project in 2003, averaging over 2m²/year. In a similar fashion neighbouring profile 4a00562 accreted material from the spring of 2003 up until the autumn 2004 survey. Since then the trend has reversed and eroded losing 10% of beach CSA in the last year alone.

The rest of the profiles in this unit are extremely stable and show very little variation since the start of the monitoring project in 2003. There are two notable exceptions to this however. Firstly, profile 4a00593 has endured a consistent loss of material since 2003, 22% (8m²) in total. Directly to the East of this profile lies 4a00602. Here, a consistent increase of material, totalling 23% (6m²) has occurred since the baseline survey.

The profiles to the East of this section are a little more volatile, fluctuating between −3 and +21% since 2003, the largest change shown is at 4a00675, where a gain of 17% (5m²) occurred over the last year alone.

5.3.2 **Unit 4B (4a00676 - 4a00801)**

In the Summer of 2006, a major coastal defence scheme was completed at Whitstable. This consisted of the construction of over 40 timber groynes, and a total beach recharge of approximately 73,000m².

Due to the complete change in dynamics and nature to the beach in this area, the survey completed directly after the completion of the scheme (October 2006) will now become the baseline survey. It is for this reason that comparisons for this report can be made only from Autumn 2006 to Spring 2007.

Very little variation in the profiles can be seen along this frontage At the Western extent of the unit, percentage changes in CSA vary from only −2 to +4% (-2 to +2m²). Towards the Whitstable central area, again changes are minimal varying by 2% (1m²).

At the eastern extent (Whitstable Harbour) a similar pattern can be noted, the largest CSA change being at profile 4a00764, with an increase of 4% (7m²). It is expected that any notable changes in this unit will emerge in the coming year as the beach settles.
5.3.3 Unit 5A (4a00802 – 4a00904)

Profiles east of Whitstable Harbour and along Long Beach appear to have stabilised over the past year, following works carried out between 2005-2006. Volume changes here range from 1-5m$^2$, compared to 1-12m$^2$ prior to the works. These included 3 new groynes and a boat ramp at the eastern end of Long Beach. As a result some significant artificial movement is apparent here. Profile 4a00811 was also relocated at this time to accommodate the new groyne field.

Profile 4a00804 has reverted back to its historic erosive trend prior to the works, losing 21% (32m$^2$) between 2006-07 alone.

The heavily groyned area east of Long Beach has historically been the most stable section of the frontage, surveying results over the last year support this with a negligible change in CSA. In 1999 the area from the Street to the Tankerton sailing club underwent the first two phases of the Tankerton coastal defence works. Profiles 4a00822-4a00855 appear to have stabilised since, where changes of only 1-3% can be seen.

The third phase of the Tankerton coastal defence works, stretching from the sailing club to the mouth of Swalecliffe brook, was completed in the summer of 2004. As a consequence all trend analysis stems from this date. Generally, all profiles here exhibit losses in CSA since 2004. This is an expected occurrence produced by the loss of fine material and settlement of the new beach. However, Given the trends in evolution of the first two phases the magnitude of these losses should reduce as the scheme matures, and this appears to be the case, with changes of only 1-3%.

Over the last year, and indeed since the start of monitoring here in 2003, it is Profile 4a00897 that displays the most significant change, with an increase in volume of 5% (2m$^2$) in the past year and 13% (5m$^2$) overall since 2004.
5.3.4 Unit 5B (4a00905 – 4a00967)

Designated profiles along this whole unit have all undergone significant changes from spring 2006 to spring 2007. Profiles 4a00905-4a00959 show a net gain over the last year, most significant is profile 4a00929 which has seen an increase in CSA of 11m² during the winter of 2006/07.

A thin, low beach dominates along the central part of this unit, backed by a concrete apron and a dual level seawall. Profiles along the Studd hill frontage can be divided into two halves, those on the west have shown significant erosion, up to 14% (4m²) whilst those towards the east have accreted, the largest volume of accretion at profile 4a00929 being 11m².

The remaining profiles in the approach to Hampton Pier Avenue have fluctuated in CSA over the past year. Profile 4a00959 has followed a predominant historic accreting trend, whereas profile 4a00954 has eroded marginally, by 8% (5m²).

5.3.5 Unit 5C (4a00970 – 4a01148)

Extending from Hampton pier to Bishopstone cliffs, most of this unit encompasses the Herne Bay frontage. Regular recycling is conducted along this coastline, mostly within the breakwater arm, with most material being placed by the pier and some westwards of this point. The works also incorporate some regarding of the beach for aesthetic and recreational purposes, as a result this work is typically carried out in the spring.

The first profile east of Hampton pier, 4a00970, has seen a decrease in CSA of 20% (30m²) over the last year. Historically, a negative trend has been consistent here, so these figures support this pattern. All other profiles between Hampton pier and the remains of Herne Bay pier show no significant change, with the exception of 4a00991, which encountered a gain of 14% (19m²) in CSA between Spring 2006 and 2007. Recycling activities around the breakwater have lead to some huge variations along the profiles in the area. Profile 4a01025 has demonstrated a significant decrease of 21% (17m²). As this area relies heavily upon beach recharge for its maintenance, much of the recharge material has already eroded since the spring 2006 works.

East of the Herne Bay breakwater, profile 4a01036 currently has the highest recorded CSA since the breakwater was built in 1992. Between spring 2006 and 2007 it has increased by 19% (32m²). This material has undoubtedly moved from the east, where the two adjacent profiles have lost between 9-15% (4-14m²), and all profiles as far as Herne Bay sailing club show smaller losses in beach material.

Little variation occurred amongst the rest of the profiles leading to Bishopstone cliffs, with just one notable exception. Profile 4a01089 showed an increase of 30% (16m²) in CSA. With no information on the surrounding groyne bays, interpreting these results is difficult and best left until the completion of the beach plan survey and subsequent annual report.

5.3.6 Unit 5D (4a01149 – 4a01175)

This unit contains four designated profiles in front of the cliffs, three of which gained small amounts of material over the last year, the other making a small loss. None of these changes are viewed as significant.
5.3.7 Unit 5E (4a01180 – 4a01298)

Stretching from the Reculver Towers to Minnis Bay this section of coastline was heavily recharged in 1997, with the addition of a several large rock groynes at 200m intervals. Beach monitoring has been conducted since the scheme completion, and in spring 2003 this was taken over by the strategic coastal monitoring project.

The small beach east of Reculver towers has produced varying gains and losses over the last year. Profile 4a01185 has gained by 63% (10m$^2$) in CSA over the last year. Despite losses here between 2005/06 this profile follows an accretionary trend apparent here since the start of monitoring. In contrast profiles 4a01180 and 4a01188 located on either side of 4a01185 have seen decreases in CSA of 23% (-7m$^2$) and 25% (-37m$^2$) respectively. This follows the trend of what has historically been an erosive area of coastline.

For most of the Profiles to the east of the beach adjacent to the Reculver Towers, and stretching along the Northern Sea Wall, no significant changes can be reported. Profiles 4a1191 to 4a1292 have varied very little in CSA over the last year, with volumes ranging from –5%(-7m$^2$) to +2%(+2m$^2$). This follows the year on year negative correlation since the completion of the scheme in 1997.

Some exceptions to this trend can be seen at the Western saline Lagoon. Profile 4a01239 displays a significant loss of 9% (-19m$^2$). Historically, due to the high degree of beach recycling used to clear the outfalls and maintain the shingle ridge at this location, an accretionary trend has been typical. However, no recycling works have been carried out here since the spring 2005 survey and this therefore, may explain the losses here. Profile 4a01298, located at the most eastern extent of the unit is the other notable exception. Here, CSA has decreased by 19% (21m$^2$). In early 2006 recycled beach material was extracted from the Minnis Bay area and deposited here. This dramatic loss may therefore result from natural processes eroding a large amount of material since this time.
5.4 **North Thanet**

5.4.1 **Unit 6A (4a01299 – 4a01338)**

Comprising Minnis Bay, and marking the Thanet district boundary, this unit forms a transition to predominantly sand beaches. As a result beach gradients are typically a lot shallower. Most of the beaches are also relatively small, as such small changes in CSA values can produce a large percentage change. For example profile 4a01330 has decreased by 44% between the spring 2005 and spring 2006 surveys, but this only represents an increase of 6$\text{m}^2$ in CSA.

The profiles in this area notably fluctuate in CSA, with changes ranging from $-10\%$ ($-7\text{m}^2$) to $+13\%$ ($11\text{m}^2$) in the Eastern section of the unit. To the west, erosion has been more dominant over the last year, as mentioned with Profile 4a1330.

5.4.2 **Unit 6B (4a01359 – 4a01441)**

The two pocket beaches, at Westgate-on-sea and St Mildred’s Bay, have relatively low beaches with the beach crest at the seawall typically below 2m ODN. Notably large losses can be seen at profiles 4a01359 and 4a01378, in the western sections of both bays. At these locations, CSA has reduced by 32% ($12\text{m}^2$) and 19% ($10\text{m}^2$) respectively. To compensate for these losses, both have gained a small amount of material on the eastern sides of the pocket beaches, with CSA increase ranging from 7% ($6\text{m}^2$) to 20% ($9\text{m}^2$).

Margate seafront is the only other area surveyed in the unit. Two profiles, 4a01397 and 4a01421, have lost material since the spring 2006 survey, at 41% ($12\text{m}^2$) and 22% ($6\text{m}^2$) respectively. The rest of the profiles in this area display no significant change, indicating that the beach here is of a relatively stable nature.

5.4.3 **Unit 6C (N/A)**

No topographic beach surveys are conducted in this unit.