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Approved By: C. Longmire

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1.0 Introduction

The analysis within this annual report provides an overview of beach performance and wave and tidal measurements for coastal cell 4c (Beachy Head - Dover), using data collected over the last year from the strategic regional coastal monitoring programme. Topographic surveys are conducted at all viable sites using land based RTK GPS in the spring, summer 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 beach cross sectional areas (CSA) to be calculated as an indicator of beach quantity above and seaward of a master profile (Figure 1.1). Where available, seawalls are located spatially using a combination of design schematics and a sea defence survey conducted in 2003. The vertical level of master profiles are set close to the beach toe level or mean low water, whichever is deemed most appropriate. In some areas, clay levels have also been established using the results from trial holes dug into the 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.
Management Unit Overview

Figure 1.2

MU 1 - MU 26 (Eastbourne - Dover)
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 2-1.

Table 2-1: Management Unit Beach Change Summary (Spring 2006 - Spring 2007)

<table>
<thead>
<tr>
<th>Management Unit</th>
<th>No. of Profiles surveyed</th>
<th>Average CSA Change (%)</th>
<th>Average CSA Change (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MU 26</td>
<td>13</td>
<td>-8.4</td>
<td>-15.7</td>
</tr>
<tr>
<td>MU 25</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MU 24</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MU 23</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MU 22</td>
<td>8</td>
<td>2.360</td>
<td>-0.9</td>
</tr>
<tr>
<td>MU 21</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MU 20</td>
<td>53</td>
<td>-3.4</td>
<td>-7.3</td>
</tr>
<tr>
<td>MU 19</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MU 18</td>
<td>38</td>
<td>18.3</td>
<td>8.4</td>
</tr>
<tr>
<td>MU 17</td>
<td>51</td>
<td>7.6</td>
<td>21.2</td>
</tr>
<tr>
<td>MU 16</td>
<td>10</td>
<td>-2.2</td>
<td>-10.5</td>
</tr>
<tr>
<td>MU 15</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MU 14</td>
<td>23</td>
<td>0.9</td>
<td>6.1</td>
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<tr>
<td>MU 13</td>
<td>17</td>
<td>6.3</td>
<td>16.1</td>
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<td>MU 12</td>
<td>24</td>
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<td>13.4</td>
</tr>
<tr>
<td>MU 11</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MU 10</td>
<td>4</td>
<td>-13.6</td>
<td>-5.5</td>
</tr>
<tr>
<td>MU 9</td>
<td>3</td>
<td>-7.9</td>
<td>-7.1</td>
</tr>
<tr>
<td>MU 8</td>
<td>11</td>
<td>6.2</td>
<td>7.4</td>
</tr>
<tr>
<td>MU 7</td>
<td>24</td>
<td>-1.0</td>
<td>2.3</td>
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<tr>
<td>MU 6</td>
<td>11</td>
<td>1.0</td>
<td>-2.2</td>
</tr>
<tr>
<td>MU 5</td>
<td>17</td>
<td>3.2</td>
<td>8.1</td>
</tr>
<tr>
<td>MU 4</td>
<td>24</td>
<td>0.5</td>
<td>1.8</td>
</tr>
<tr>
<td>MU 3</td>
<td>20</td>
<td>-1.9</td>
<td>-7.8</td>
</tr>
<tr>
<td>MU 2 (Pevensey)</td>
<td>12</td>
<td>18.6</td>
<td>8.4</td>
</tr>
<tr>
<td>MU 2 (Eastbourne)</td>
<td>13</td>
<td>-1.9</td>
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</tr>
<tr>
<td>MU 1</td>
<td>21</td>
<td>-0.6</td>
<td>-2.3</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.

Those units that demonstrate an average change of less than 5% CSA, are considered to be within the possible effects of natural processes and survey error. It should be noted that the largest changes often result from units with very few profiles, where 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 as, for example, it is possible to have a small highly erosive area within a unit that accretes material overall.

Caution should be given to detailed coastal examination based on these results alone as they reflect a short-term trend based on the state of the beach at snapshots in time. These figures show overall trends, but individual profiles should be examined in more detail 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 monitoring programme in 2003.
Beach Change Summary - Spring 2006 to Spring 2007

Figure 2.1

SECG: Eastbourne - Fairlight Cove
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 3-40). 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.
Profile Change Summary for Spring 2006 to Spring 2007 - Figure 1 of 2

Annual Change in Cross-Sectional Area (m²)
(Spring 2006 - Spring 2007)

**Accretion**
- > 30%
- 15 - 30%
- 5 - 15%
- No change
- Less than 5%

**Erosion**
- 5 - 15%
- 15 - 30%
- > 30%

Profile Name

Management Unit Boundaries

CSA Change (m²)
Percentage Change

-4.00001 (-12)

Annual Change in Cross-Sectional Area
<table>
<thead>
<tr>
<th>Annual Change in Cross-Sectional Area (m²) (Spring 2006 - Spring 2007)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CSA Change (m²)</strong></td>
</tr>
<tr>
<td>4a00001</td>
</tr>
</tbody>
</table>

**Profile Change Summary for Spring 2006 to Spring 2007 - Figure 1 of 2**

SECG - Winchelsea Beach
South East Strategic Regional Coastal Monitoring Programme

Annual Report 2007

Coastal Cell 4c: East Sussex/South Kent

Profile Change Summary for Spring 2006 to Spring 2007 - Figure 2 of 2

SECG - Rye Harbour Beach
Annual Change in Cross-Sectional Area (m³)
(Spring 2006 - Spring 2007)

ACCUMULATION
> 30 %
15 - 30 %
5 - 15 %
Less Than 5 %
NO CHANGE
5 - 15 %
15 - 30 %
> 30 %

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

SECG - Camber Sands
Profile Change Summary for Spring 2003 to Spring 2007 - Figure 2 of 2

South East Strategic Regional Coastal Monitoring Programme

Annual Report 2007

Coastal Cell 4c: East Sussex/South Kent

SECG - Pevensey Bay
Profile Change Summary for Spring 2004 to Spring 2007 - 1 of 3

SECG - Cliff End to Winchelsea Beach
Annual Change in Cross-Sectional Area (m³)
(Spring 2003 - Spring 2007)

ACCRETION

> 30 %
15 - 30 %
5 - 15 %

NO CHANGE

Less Than 5 %

EROSION

5 - 15 %
15 - 30 %
> 30 %
Profile Change Summary for Spring 2003 to Spring 2007 - 4 of 5

South East Strategic Regional Coastal Monitoring Programme

Coastal Cell 4c: East Sussex/South Kent

Annual Report 2007
South East Strategic Regional Coastal Monitoring Programme

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Profile Change Summary for Spring 2005 to Spring 2007 - Figure 4 of 5

SECG - Folkestone Harbour to Hythe
South East Strategic Regional Coastal Monitoring Programme

Annual Report 2007

Coastal Cell 4c: East Sussex/South Kent

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

SECG - Dover Harbour
4.0 Hydrodynamic Data

Pevensey Bay Directional WaveRider Buoy

Location
OS: 569358E 99118N
WGS84: Latitude: 50°47'0.2''N Longitude: 00°25'1.5''E

Water Depth
9.8m CD

Instrument Type
Datawell Directional WaveRider Buoy Mk III

Data Quality

<table>
<thead>
<tr>
<th>C1(%)</th>
<th>Sample interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>96</td>
<td>30 minutes</td>
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</tbody>
</table>

Monthly Means

<table>
<thead>
<tr>
<th>Month</th>
<th>Hs (m)</th>
<th>Hmax (m)</th>
<th>Tp (s)</th>
<th>Tz (s)</th>
<th>Direction</th>
<th>SST (°C)</th>
<th>No. of days</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>0.723</td>
<td>1.129</td>
<td>6.0</td>
<td>3.7</td>
<td>201</td>
<td>11.9</td>
<td>31</td>
</tr>
<tr>
<td>June</td>
<td>0.367</td>
<td>0.567</td>
<td>4.3</td>
<td>3.1</td>
<td>126</td>
<td>14.1</td>
<td>18</td>
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<tr>
<td>July</td>
<td>0.435</td>
<td>0.671</td>
<td>4.3</td>
<td>3.1</td>
<td>167</td>
<td>17.9</td>
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<tr>
<td>August</td>
<td>1.560</td>
<td>0.873</td>
<td>4.9</td>
<td>3.4</td>
<td>204</td>
<td>18.4</td>
<td>31</td>
</tr>
<tr>
<td>September</td>
<td>0.641</td>
<td>0.991</td>
<td>5.5</td>
<td>3.4</td>
<td>183</td>
<td>18.1</td>
<td>30</td>
</tr>
<tr>
<td>October</td>
<td>1.012</td>
<td>1.602</td>
<td>5.5</td>
<td>3.8</td>
<td>189</td>
<td>16.9</td>
<td>31</td>
</tr>
<tr>
<td>November</td>
<td>1.123</td>
<td>1.774</td>
<td>5.9</td>
<td>4.0</td>
<td>195</td>
<td>13.7</td>
<td>30</td>
</tr>
<tr>
<td>December</td>
<td>1.268</td>
<td>1.989</td>
<td>6.1</td>
<td>4.1</td>
<td>189</td>
<td>10.7</td>
<td>31</td>
</tr>
<tr>
<td>January</td>
<td>1.279</td>
<td>1.993</td>
<td>6.6</td>
<td>4.3</td>
<td>202</td>
<td>9.3</td>
<td>31</td>
</tr>
<tr>
<td>February</td>
<td>0.927</td>
<td>1.438</td>
<td>6.5</td>
<td>4.0</td>
<td>184</td>
<td>8.5</td>
<td>26</td>
</tr>
<tr>
<td>March</td>
<td>0.788</td>
<td>1.214</td>
<td>7.1</td>
<td>4.0</td>
<td>182</td>
<td>9.2</td>
<td>30</td>
</tr>
<tr>
<td>April</td>
<td>0.443</td>
<td>0.681</td>
<td>5.5</td>
<td>3.4</td>
<td>137</td>
<td>10.8</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.

5 Highest events in 2006/7

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Hs</th>
<th>Tp</th>
<th>Tz</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>
</tr>
</thead>
<tbody>
<tr>
<td>18-Jan-2007 12:00</td>
<td>4.2</td>
<td>10.0</td>
<td>6.8</td>
<td>222</td>
<td>2.42</td>
<td>-2</td>
<td>5.3</td>
<td>0.54</td>
<td>0.91</td>
</tr>
<tr>
<td>03-Dec-2006 09:30</td>
<td>4.1</td>
<td>9.1</td>
<td>6.6</td>
<td>205</td>
<td>3.15</td>
<td>HW</td>
<td>6.0</td>
<td>0.17</td>
<td>0.70</td>
</tr>
<tr>
<td>11-Jan-2007 14:00</td>
<td>3.6</td>
<td>10.0</td>
<td>6.2</td>
<td>211</td>
<td>0.77</td>
<td>-2</td>
<td>3.6</td>
<td>-0.04</td>
<td>0.75</td>
</tr>
<tr>
<td>30-Dec-2006 06:30</td>
<td>3.6</td>
<td>7.7</td>
<td>5.9</td>
<td>205</td>
<td>2.01</td>
<td>HW</td>
<td>4.6</td>
<td>-0.32</td>
<td>0.65</td>
</tr>
<tr>
<td>07-Dec-2006 08:00</td>
<td>3.4</td>
<td>9.1</td>
<td>6.1</td>
<td>208</td>
<td>-0.66</td>
<td>-4</td>
<td>6.3</td>
<td>0.23</td>
<td>0.49</td>
</tr>
</tbody>
</table>

* Tidal information is obtained from the nearest recording tide gauge (the National Network gauge at Newhaven). 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 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

The reporting period has experienced a higher storm frequency than in previous years, with the storms concentrated over the winter months (mid-November to mid-January). December 2006 and January 2007 experienced the largest wave conditions (average 1.26m $H_s$) and longest wave period, accompanied by storm surges between 0.5 and 0.9m. As in previous years, dominant wave approach remained from the southwest, with a clear secondary peak of easterly waves.

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.
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 Folkestone and Dover

5.1.1 MU26: Dover Harbour (4c00001 – 4c00060)

The two 1.2km long beaches to the west and east of the Western Docks, Dover, have remained fairly stable since the monitoring programme began. To the east of the docks however, there has been a marked decrease in CSA, especially at profile 4c00011, where 16% (18m²) has been lost over the last year alone.

![Figure 5.1-1: Loss of Material at Profile 4c00011](image)

Within this pocket beach notable increases in beach volume of up to 23m² can be seen at the western extent (profile 4c00024). These changes may be due to localised shifts in sediment transport patterns. At the western pocket beach, CSA trends have followed the same patterns since monitoring began in 2004, with accretion to the east (up to 9%/48m² at profile 4c00032), and erosion to the west (up to 25%/63m² at profile 4c00056).

5.1.2 MU22: Folkestone Warren (4c00097 – 4c00130)

Some areas of the 3km Folkestone Warren frontage possess very low beach levels. This means relatively small changes in beach topography result in large CSA percentage changes. To the east of this unit for example, profiles 4c0097-99 have both lost 48% of their CSA in the last year. However, this only accounts for 2m² and 4m² losses respectively. This is also the case in the central region of the unit.
There is one notable exception to this however, in the west of MU22, profiles 4c00122-130 have not experienced much change over the last year and have, historically, been fairly stable. However, the remaining profiles are located over very low beach levels, consequently, these profiles show very dynamic CSA trends over time, as a relatively small elevation change can lead to percentage CSA changes of 50% year on year.

Profile 4c00103, which shows an increased in CSA of 19,048% (33m²) over the last year, is due to the installation of a rock revetment. This increase should, therefore be disregarded.

5.1.3 MU20: Hythe to Folkestone Harbour (4c00150 – 4c00346)

The Hythe to Folkestone Harbour frontage has undergone a complex series of recycling schemes over the last year, as a result many areas of the beach to have been influenced by human intervention. The three large groyne bays in the western half of the frontage are replenished by recycling material from the far east, to the far west of each bay. This results in shingle moving through the frontage in line with the prevailing westerly longshore drift. CSA change in this area does not correspond with this pattern over the last year however, mainly due to the timing of the surveys, as accretion has occurred in the eastern regions of the groyne bays, and erosion in the west. Most profiles away from the groyne structures are fairly stable suggesting that the extra drift of sediment through the bay is sustaining beach levels effectively.

Profiles within the three comparatively narrow groyne bays at Mill Point were much more variable, especially the western, and central bays. This is also a consequence of recycling activities. Profiles 4c00198-4c00196 have eroded by a total of 93m² over the reporting period. It appears that in this particular groyne bay the sediment lost has been re-deposited at the eastern extent, following the recycling pattern since surveys began here. Profiles 4c00181A-4c00186A also follow a similar trend, but with less dramatic losses and gains. The remainder of the frontage, from profiles 4c00150-4c00172, changed little over the reporting period.

5.2 Romney Marshes

5.2.1 MU18: Littlestone on Sea to Hythe Ranges (4c00444 - 4c00612)

MU18 stretches from Littlestone-on-Sea in the south to Dymchurch Redoubt in the north. This frontage has undergone two major capital engineering works since the regional monitoring programme began. A beach replenishment scheme completed in the summer of 2003 added 250,000m³ of shingle between Littlestone-on-Sea and St. Mary’s Bay. Work is continuing on a rock revetment in the far north of the unit, and profile analysis will not be included in this report for this area given the absence of any topographic data collected here in spring 2006, therefore comparisons over the last year cannot be made.

Towards the southern extent of the unit, most profiles (between 4c00468 and 4c00612) have increased in CSA over the reporting period. This is more notable towards the central regions, with increases of up to 65% (30m²) at profile 4c00488. Losses in beach volume throughout the aforementioned profiles range very little from -1%(-2m³) to -14% (-7m³).
5.2.2 MU17: Dungeness to Littlestone on Sea (4c00617 - 4c00767)

The 8.5km MU17 frontage extends from Dungeness to Littlestone-on-Sea, and was influenced by a recycling scheme that removed some 38,000m³ of shingle shortly before the spring 2006 surveys were completed. An area bounded by profiles 4c00752 and 4c00767 marked the extent of the shingle extraction, which was used to recharge the Lydd ranges frontage (MU15).

Profile changes in MU17 can be generalised into two sections over the last year. In the southern regions of the unit, accretion and erosion have occurred between profiles, to varying degrees. In the north of the management unit, accretion has been dominant over the last year.

To the north, accretion occurs at all profiles without exception due to the dominant northerly longshore drift direction along this frontage, indicating that there is enough material in the Southern extent of the unit to maintain beach levels further north. Increases in CSA volume vary from 1% (1m²) to 15% (40m²).

To the south there are some significant areas of accretion and erosion. Major accretion has occurred between profiles 4c00761 and 4c00749, in particular the latter, which has seen an increase of 133m² (28%) over the last year. Adjacent to this profile however is 4c00746, which has encountered erosion of 58m². It may be the case that localised sediment transport shifts are responsible for these differences, or perhaps that this area is still recovering from the recycling works carried out in 2006. Another example of this pattern is demonstrated at profiles 4c00728 (gain of 175m²) and 4c00725 (loss of 75m²), as shown in figures 5.2-1 and 5.2-2.

![Figure 5.2-1: Increase in CSA of 175m² at profile 4c00728](image-url)
5.2.3 MU16: Dungeness Power Station (4c00770 - 4c00800)

An annual recycling scheme conducted by the EA/Halcrow moves shingle from the eastern side of the Ness peninsula (far south of MU17) to the MU16 frontage. Since surveys began here in 2004, trends are bias towards accretion in this area, for the above reason. Over the last year however, profiles suggests that erosion is more apparent. Erosion has dominated at profiles 4c00800, 4c00797 and 4c00779, with decreases varying from -10% (-46m²) and -6% (-32m²) at these locations.

5.3 Camber Sands

5.3.1 MU14: Rye Harbour East to Camber Sands (4c00949 – 4c01046)

Lydd Ranges (MU15) utilises a recycling programme where material taken from around the Dungeness peninsula is deposited as far east as Jury’s Gap. This explains the CSA gain at profiles 4c00957 to 4c00965 caused by an increase in berm width and beach face accretion.

The remainder of MU14 was relatively stable from spring 2006 to spring 2007 in the central regions of the unit. From the Rye Harbour entrance at the west of the unit to profile 4c1024, large increases in CSA were encountered. Profile 4c1037 displays the largest increase of 37m² (6%), with most profiles in this western section demonstrating an increase since the start of monitoring in 2004. The remainder of the unit is more dynamic, with two profiles eroding and two accreting by more than 10% in the last year.
5.4 **Pett Levels**

5.4.1 **MU13: Rye Harbour West (4c01061 - 4c01144)**

MU13 stretches from Winchelsea Beach in the west to Rye Harbour in the east. The terminal groyne that protects the entrance to the harbour acts as a shingle trap, which in turn is recycled back to the western end of MU12.

Profile CSA change within the unit has been particularly dynamic over the last year. Profiles 4c01144 to 4c01111, to the west of the unit have all gained in CSA, with increases ranging from 3% (10m²) to 25% (89m²). It appears that most of the profiles here have been influenced by recycling schemes and receive a natural supply of shingle from MU12. To the east of the unit erosion dominates the profiles CSA, with values ranging from –1% (-3m²) at profile 4c01107 to -10% (-41m²) at profile 4c01089. The most easterly profile (4c01061) is located in the middle of the recycling extraction site, explaining why it eroded by 19m² (6%) in the last year.

5.4.2 **MU12: Cliff End to Winchelsea Beach (4c01156 - 4c01264)**

The beaches south of Winchelsea and Rye undergo recycling whereby shingle is excavated from the terminal groyne at Rye Harbour (MU13) and deposited into the groyne bays at the western end of MU12. Works began in 2006 on a Capital Coastal Defence Scheme in this area, consequently in the western extent of the unit surveys could not be carried out and therefore comparisons for 2006 to 2007 cannot be made in this report.

Profiles 4c01195-1156 have generally all accreted over the reporting period, predominantly due to recycling and gradual recharge of the new groyne bays. The highest CSA percentage increase, of 11% (20m²) can be seen at profile 4c01188. One notable exception to this is profile 4c01156, at the very eastern extent of the unit. CSA change here was –4% (-14m²) over the last year. This loss follows the historic trend of the profile since surveys began.

5.5 **Fairlight**

5.5.1 **MU10: Fairlight Cove (4c01275 – 4c01288)**

Only the eastern half of Fairlight Cove contains profiles surveyed by the monitoring programme. Profile 4c01288, which does not front the rock revetment in this management unit, accreted by 1% CSA, possibly due to erosion and transport of the landslide at Rockmead Road to the southwest.

The rest of the profiles in this unit all encountered erosion over the last year. Profile 4c01275 at the very eastern extent suffered the most with a CSA loss of -41% (-11m²). Profiles 4c01279 and 4c01283 both eroded due to a lowering of the beach face, though the beach berm remained stable. Short-term changes to beach shape and level over the last year follow the long term trend experienced within MU10, since the monitoring programme began.
5.5.2 MU9: Hastings Cliff to Fairlight Cove (4c01302 – 4c01324)

Only three designated profiles exist within a small section in the west of MU9, therefore substantial conclusions of beach movement are difficult to make. Erosion at this location dominates, with the eastern, and western profiles eroding by 6% (10m²) and 10% (9m²) respectively. The central profile (4c01314) has accreted slightly over the last year.

5.6 Hastings

5.6.1 MU8: Hastings East (4c01349 - 4c01382)

MU8, stretching from the pier to East Hill, Hastings generally exhibited little profile CSA change in the last year. Only three profiles changed by more than 5% CSA, with most showing slightly accretional tendencies. Marked increases occurred to the west of the unit, where profiles 4c01382 and 4c01376 (Figure 5.6-1) increased by 23% (29m²) and 46% (46m²) respectively. The remainder of the frontage is historically stable or slightly accretional.

5.6.2 MU7: Hastings West (4c01389 - 4c01490)

A capital beach scheme was recently completed at Bulverhythe in 2006. Profile data for 2006 to 2007 therefore displays CSA changes over the year after the works were carried out. Immediately to the east of Bulverhythe, from profiles 4c01490-1475, there has been a dramatic loss of beach material (Figure 5.6-2). These losses range from 43% to 61%. The predominant westerly direction of longshore transport along this coastline may be responsible for this loss, as transport dynamics readjust after the completion of the defence works.

Profiles to the west of the new defences have increased, some markedly, with the largest increase of 95% (68m²) at 4c01450. With the exception of 4c01446 and 4c01441, the rest of the profiles in this unit have remained stable, with a bias towards accretion over the last year, especially towards Hastings Pier.
5.7 Bexhill

5.7.1 MU6: Bexhill East (4c01495 - 4c01565)

The eastern half of MU6 is part of the site for a new rock revetment and beach replenishment scheme at Bulverhythe, which was completed in the summer of 2006. The reader should be aware that, as part of the Bulverhythe scheme, profile positions and names have changed as a result of this due to the repositioning of groyne fields and the revetment construction.

The CSA change in the remainder of MU6 can be split up into three distinct sections. In the west, profile CSA and beach shape notably changed from spring 2006 to spring 2007, with increases of up to 32m$^2$. Profiles 4c01547 and 4c01543, to the east of the aforementioned accreting area both eroded by 6-7% CSA due to a narrowing of the beach berm and erosion of the beach face. Profiles adjacent to the start of the capital scheme generally show accretion, with the exception of just one, 4c01522. A wider berm has formed over the last year, with the material removed from the profiles downdrift likely to be the source of this extra shingle.

5.7.2 MU5: Bexhill West (4c01571 - 4c01672)

The densely groyned Bexhill frontage does not lend itself to regular recycling schemes. It is believed a small extraction of shingle from profile 4c01667 in the far west of MU5 is the only mechanically derived beach change in the reporting period. This explains the slight CSA loss here and as far as 4c01658 that could have suffered from a lack of beach material feeding from the west. The central section of the frontage, as far as 4c01602, has a marked accretional trend despite no recorded recycling activity. The largest increase of 17% (33m$^2$) occurs at profile 4c01647. The origin of the material needed to cause such large topographic beach alterations is unclear, but it could originate from unsurveyed groyne bays. Most profiles here are historically accretional (i.e. since 2004), yet rates over the last year have increased notably in the west.
Continuing east, the profiles are of a more stable nature, varying between -2% and 11% in CSA change. CSA at these profiles has been historically stable, thus this recent change is probably a short-term trend that will be reversed in the next year. The remaining profiles, (4c01582 to 4c01571) in this frontage bias towards an erosional trend. An absence of terminal structures assists to make the beaches in MU5 particularly dynamic and prone to short-term changes, many of which were probably captured by the surveys used to calculate CSA changes in this report.

5.8 Pevensey Bay

5.8.1 MU4: Norman’s Bay (4c01679 - 4c01702)

Management unit 4, which stretches from Beachlands, Pevensey, to Cooden, Bexhill, is a heavily managed beach with a complex seasonal recycling programme in place. This mechanical movement of material appears to correlate with the profile CSA changes seen along this frontage. Recycling deposition site is the likely cause of accretion in the far south-western section of MU4 (profiles 4c01702 and 4c01701). It is probable that the location of an extraction site stretching from profiles 4c01693 to 4c01689 explains the slight beach losses here. The profiles to the east of this unit appear to have remained stable, with a slight bias towards accretion, as they have historically done so. This is due to the relocation of extracted recycling material from the western extent of the unit.

The validity of the discussion at Pevensey heavily relies on the regional monitoring programme continually being informed and updated on recycling activities. Since the beaches of Pevensey (MU3-4) are heavily managed to a predefined profile/level, analysis of these management units is more a review of mechanical processes rather than natural shingle movement.

5.8.2 MU3: Pevensey Bay (4c01703 - 4c01722)

Sections of MU2 were recycled within the reporting period. Most profile CSA to the east of the unit changed by less than 10%, indicating the beaches stability over the past year. However, four sets of four adjacent profiles were more dynamic. At profiles 4c01703-04, 4c01705-06, 4c01707-08 and 4c01709-10. At all of these locations, the more southwestern of the 2 profiles eroded by at least the magnitude that the other accreted, suggesting that any material eroded has been transported with the prevailing north easterly wave approach direction reflecting reorientation of the beach berm within the groyne bays.

At profiles 4c01711 to 4c01722 the beach is of a more stable nature, varying in CSA by 10% on average. There is one exception to this however, at profile 4c01715. Here there has been a marked increase in CSA of 20% (37m²). Beach recycling is the probable cause for this.
5.9 **Eastbourne**

5.9.1 **MU2: Eastbourne East (4c01723 - 4c01783)**

Sovereign Harbour separates the beaches contained within MU2, with beach recycling schemes transferring beach material from Langney point to the northeast of the harbour arms on a seasonal basis. A north easterly longshore drift direction causes shingle to move towards Langney outfall, though the fairly constant CSA values to the west of this structure suggest beach material is still moving freely between groyne bays. The four groyne bays immediately east of the outfall marks the extraction site for beach recycling to Pevensey; the accretion shown here over the last year is likely to be a trend that will be reversed when future recycling takes place. The abrupt transition between this accretion dominant zone and the erosion downdrift of the harbour arm is demonstrated in Figure 5.9-1.

Towards the central region of this unit, the beach at Eastbourne is fairly stable, as it has historically been, with CSA variations all below 5%. The one exception to this is profile 4c01776, where 28m$^2$ has been lost over the last year.

![Figure 5.9-1: Erosion at profile 4c01746](image)

5.9.2 **MU1: Eastbourne West (4c01787 - 4c01857)**

This southwestern section of the Eastbourne frontage is slightly erosional, with all profiles eroding by less than 5%. In general, those profiles that erode do so without changes to the beach face gradient or profile shape. Instead, slight removal of material across the beach face appears to be the most common cause of CSA loss in MU1. There are however, some areas of accretion within the unit, ranging from 5% (10m$^2$) to 11% (22m$^2$). These increases are predominantly in the northeast, suggesting transport of material in a north easterly direction.