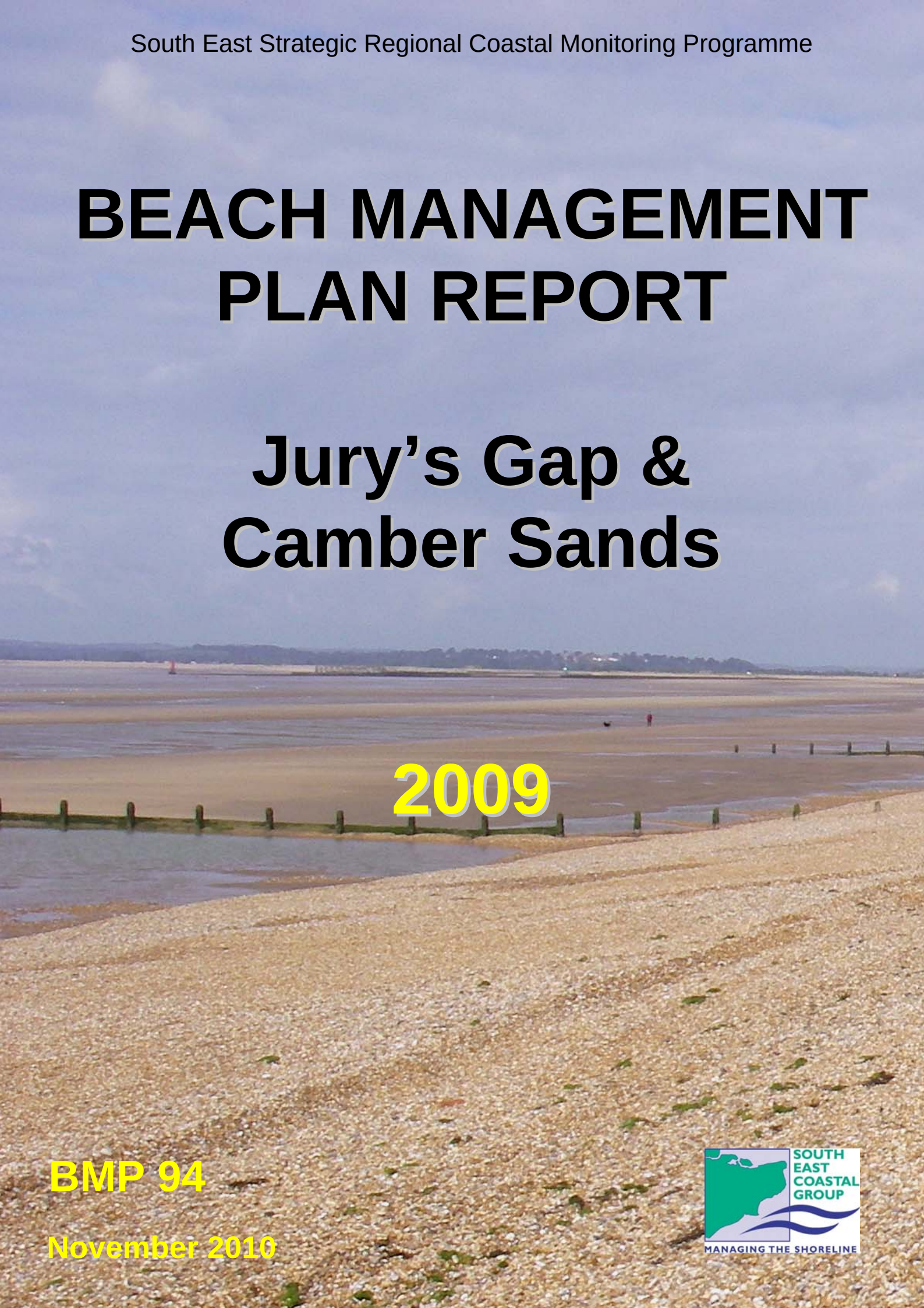
South East Strategic Regional Coastal Monitoring Programme

BEACH MANAGEMENT PLAN REPORT

Jury's Gap & Camber Sands

2009



BMP 94

November 2010

SOUTH EAST COASTAL GROUP
MANAGING THE SHORELINE

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Report Log

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Annual Report 2004	Dover Harbour to Beachy Head – AR 08		
BMP 2005	No BMP Report	No BMP Report	No BMP Report
Annual Report 2006	Dover Harbour to Beachy Head – AR 19		
BMP 2006	No BMP Report	No BMP Report	No BMP Report
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Annual Report 2009	Dover Harbour to Beachy Head – AR61		
BMP 2009	BMP93	**BMP94**	No BMP Report

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Summary

Management Units 15 & 16 comprises both shingle and sandy beaches with an extensive dune system. Without the protection of the shingle beaches particularly, many areas of this coastline would be subject to increased wave action and, consequently, the risk of over topping would significantly increase. The monitoring, analysis and feedback of the performance of the beaches is therefore crucial to the successful and sustainable delivery of flood defence and coastal erosion protection.

The condition and performance of the beach areas along the 4km frontage is currently monitored through the Strategic Regional Coastal Monitoring Programme. This report evaluates changes along the coastline in the previous years and compares these to baseline surveys conducted at the outset of the project. The key findings are listed below:

Management Unit 15

- Overall, this management unit has seen an increase in sediment volume during the 2008 to 2009 reporting period of 21,223m^3, with the greatest accretional trends present over the central and eastern reporting sections.

- The main area of accretion is primarily located at the beach crest and slope with notable advancements of both crest heights and widths.

- Erosion is most notably evident across the mid-foreshore area.

- Where the existing groynes cease along the lower foreshore, there is a general trend of erosion across the whole management unit.

- Ultimately, recycling along this management unit is essential to maintain the protective shingle bank. It is apparent that the bank can decrease in width and therefore this reduces the degree of protection in a relatively short time span without replenishment.

Management Unit 16

- Overall, this management unit has seen a net gain of 20,218m^3, with the greatest accretional trends over the central regions of the unit.

- The main accretional trend occurs over large expanses; primarily at the lower foreshore.

- The only distinct region of erosion has occurred at the western extent of the management unit within the lea of the harbour arm. In this location the lower foreshore was been eroded and consequently represents a distinct trend change from that of 2007-2008.

- The difference models indicate a fairly stable frontage although some small pockets of erosion are present within the difference model. At present it remains difficult to comment on the continuing processes driving these pockets of erosion and due to the lack of previous year's data. However, with continued monitoring a clearer understanding of the consistent processes and effects along this frontage it may be possible to make firmer conclusions over the coming years.

- Ultimately, the data indicates a relatively stable frontage with little need for replenishment works, though monitoring is necessary to gauge discrete changes over time and, particularly, sediment patterns over the eastern erosion area.

It is important to recognise the potential inconsistency in short-term trends. As with many coastal areas a lot of annual variability is expected, thus drawing conclusions with increased confidence will become possible as more data is collected, with regard to annual losses, net sediment drift and erosion/accretion trends in section sub-units.

Scheduled future monitoring includes profile surveys in Autumn 2009 and Spring 2010, and in addition post-storm surveys may be carried out if any event is deemed to have significantly affected the frontage. An interim report will be issued on completion of the spring profile survey, with the next BMP report scheduled to be issued after completion of the Summer 2010 beach plan survey. All historic monitoring data is accessible online (www.channelcoast.org), and future surveys will be available after satisfying quality assurance procedures.

1.0 Introduction

Boundaries for the extent of this report are consistent with the Beachy Head to South Foreland Shoreline Management Plan 2 (2006), comprising MU 15 and 16. These largely cover the Jury's Gap (Broomhill Sands) to Rye Harbour (including Camber Sands) frontage, managed by the Environment Agency where hold the line policy options are utilised in order to protect the road infrastructure and settlements.

Under the recommended survey specification created by the strategic regional coastal monitoring project, the beach would normally have been surveyed three times a year since the summer of 2003 with land based GPS techniques. This schedule comprises of biannual profile surveys and a complete beach plan survey every year, full details of which can be found in the explanatory notes (Annex A). In addition to this, bathymetric surveys are undertaken and analysed using the network of tide and wave gauges which have been set up in the southeast region.

MU 15 & MU16 have only been regularly surveyed since the beginning of Phase 2 of the monitoring project, in 2007. As a result, the data available is limited compared to adjacent management units. However, with a full programme of surveys planned for the future, it will be possible to formulate firmer conclusions and trends.

This report covers the changes in beach topography between the 2008 Beach Management Plan (BMP) survey and the most recent 2009 BMP survey. A previous report (AR61: 2009) covers the observed changes from historic surveys up until the 2009 spring survey. In addition this contains a lot of background information, design levels and site-specific information.

1.1 Coastal Processes & Management

Management Unit 15
MU15 is situated on the east Sussex coast and extends from Jury's Gap across Broomhill Sands to the eastern extent of Camber Sands. The western extent of this MU consists of a large sandy foreshore and dune formations, which are designated a Site of Nature Conservation Importance (SNCI). Shingle extends from the mid-shore to the backshore with a steepening shingle bank which protects the road beyond.

The frontage is divided by timber groynes at 50-90m spacing throughout all of its length. The shingle bank and surrounding shingle area undergo annual beach replenishment as part of the management works undertaken by the Environment Agency (EA) along this stretch. In April 2008, the EA carried out replenishment works along the MU15 (Broomhill Sands) crest line, replenishing approximately 29,000m^3 of shingle. Replenishment works were also scheduled for the autumn of 2008, and Spring 2009 indicating that six monthly replenishments are needed to maintain this dynamic stretch.

The location of the frontage is shown in Figure 1.1 and also includes the nearest wave buoy and tide gauges.

Management Unit 16

Management Unit 16 (MU16) is situated on the south Kent coast and extends from the west of Broomhill Sands to the Rye Harbour arm, including Camber Sands. Vegetated shingle and sand dunes form the backshore of the unit, with shingle and, predominantly, a large sandy foreshore providing the only protection to the beach. A large section of the western end of the dunes lie within the Camber Sands and Rye Saltings Site of Special Scientific Interest (SSSI), while the rest is designated a Site of Nature Conservation Importance (SNCI). There are currently no beach replenishment programmes in place for MU16.

The location of the frontage is shown in Figure 1.2 and also includes the nearest wave buoy and tide gauges.

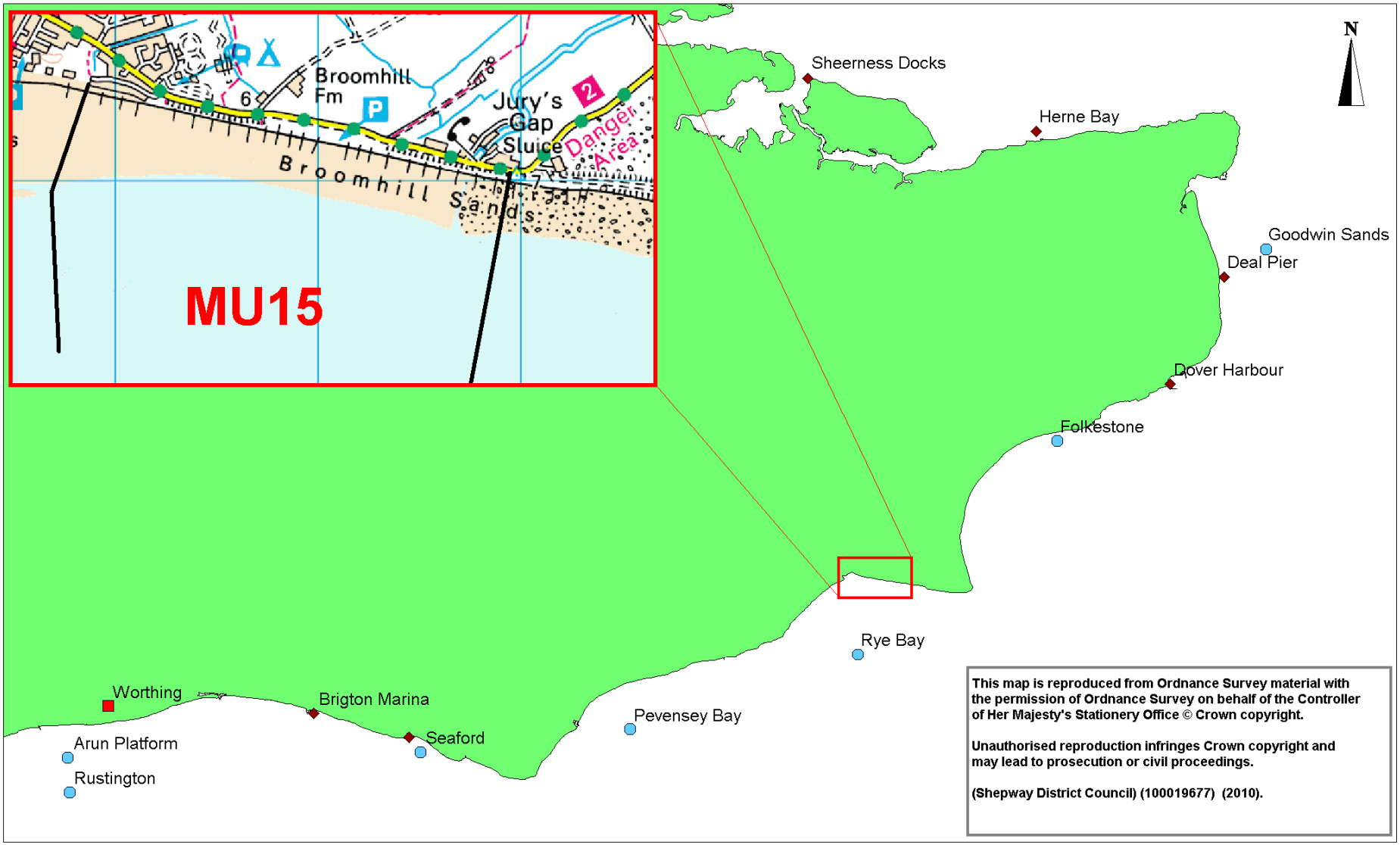


Figure 1.1: Site Location and Wave/Tide Gauge for MU15

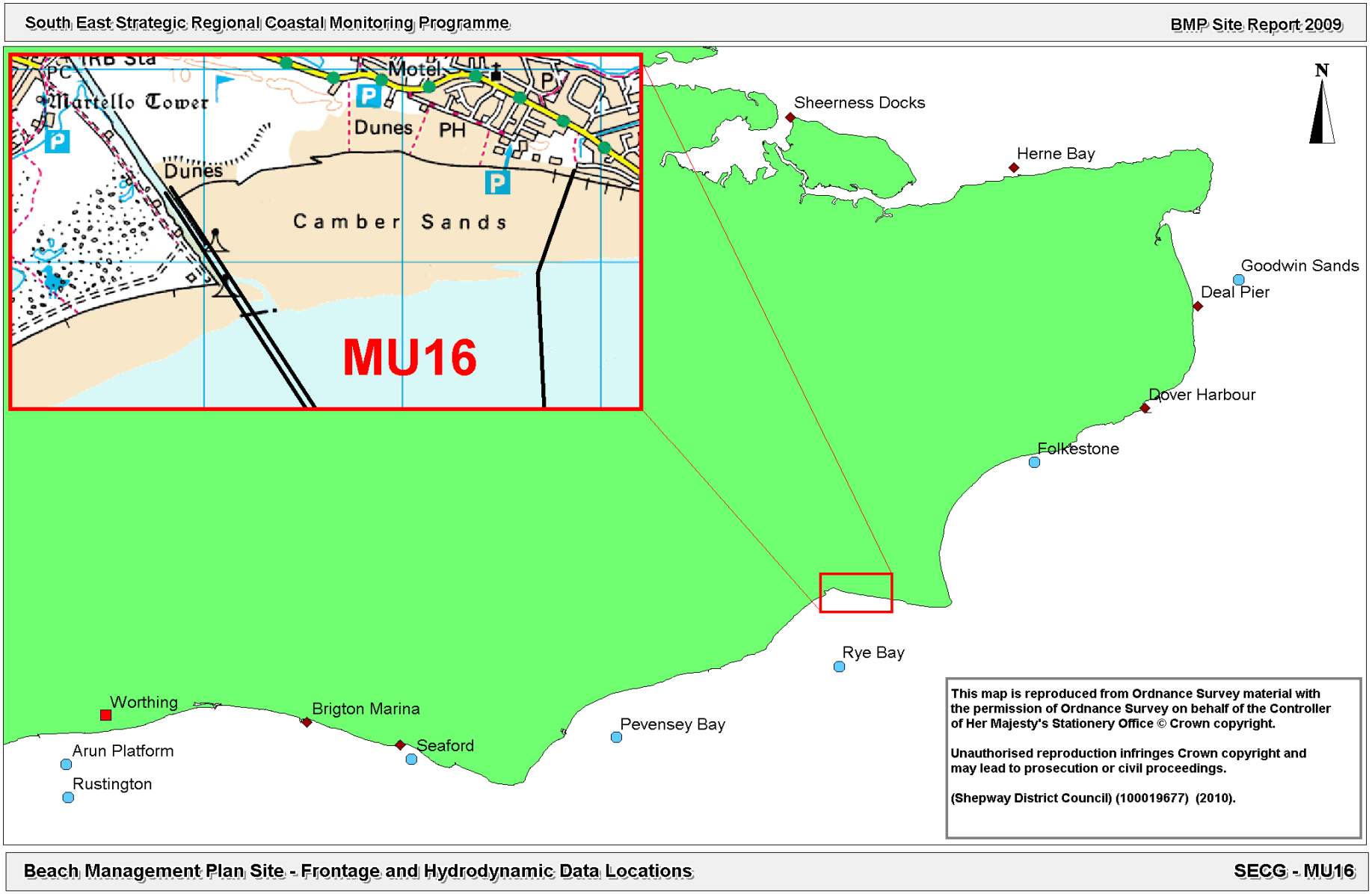


Figure 1.2: Site Location and Wave/Tide Gauge for MU16

2.0 Surveys

All topographic and bathymetric surveys are referenced to a Global Positioning System (GPS) control grid, established for this programme, and conducted according to the current Environment Agency's National Specification, summarised in the Explanatory Notes (Annex A).

2.1 Topographic Surveys

The schedule of completed surveys since the start of the Regional Monitoring Programme is given in Table 2.1 below.

Digital Ground Models of the 2009 Beach Management Plan topographic survey are shown in plate 3 and 4 (Annex B) superimposed upon the ortho-rectified aerial photograph of 2008. The method used for deriving Digital Ground Models is given in the Explanatory Notes (Annex A).

Table 2.1: Schedule of Topographic Surveys

MU15		
Profile	Beach Plan	Post Storm
31/08/2007	31/08/2007	
31/10/2007		
		07/02/2008
15/03/2008		
08/07/2008	08/07/2008	
20/11/2008		
02/03/2009		
30/07/2009	30/07/2009	

MU16		
Profile	Beach Plan	Post Storm
02/09/2007	02/09/2007	
31/10/2007		
		07/02/2008
15/03/2008		
20/06/2008	20/06/2008	
20/11/2008		
02/03/2009		
27/08/2009	27/08/2009	

2.2 Bathymetric Surveys

The schedule of surveys since the start of the Regional Monitoring Programme is given in Table 2.

Table 2: Schedule of Bathymetric Surveys

MU15		
Date	Line Spacing	Distance Offshore
25/11/2004	50m	1000m
21/07/2006	50m	1000m

MU16		
Date	Line Spacing	Distance Offshore
25/11/2004	50m	1000m
21/07/2006	50m	1000m

3.0 Analysis

3.1 Difference Models

Now that the 2009 BMP data set has been compiled, it is possible to overlay the results of the survey with BMP data from 2008. This enables comparative volumetric analysis to be undertaken to determine change over a given period. Through the use of three-dimensional ground models and ortho-rectified aerial photography, it is possible to create a visual interpretation of the volumetric change that has occurred during each analysis period. This is shown in Plate 1 (1 – 3) and 2 (1 - 3), which indicates areas of net erosion or accretion (N.B. a 0.25m difference in elevation is considered as “no change”) and the location of any extraction/deposition sites.

Negative values represent erosion that has occurred between 2008 & 2009, and positive values indicate accretion. Whilst these figures show an overall change in beach volume within each discrete section, it should be recognised that the data is based on the BMP survey, which is undertaken once each year. It is therefore only a snapshot of one moment in time, and the particular dynamics of each frontage need to be taken into account. This ensures that the information shown in the difference models represents the net change rather than capturing a particular extreme variation caused by a large event.

3.2 Profile Evolution

While beach plan surveys provide a more accurate view of morphological change and beach volume levels, profiles clearly illustrate the changes in beach cross section. In addition, the 2009 BMP survey beach profiles have been cross-referenced with the other profile surveys carried out over the past year in order to ensure that the results from the difference models are representative of net profile change. This then gives an indication of the beach variability over three time steps in each individual year.

The Cross-Sectional Area (CSA) has been calculated for all beach profiles. This is calculated as the area of profile above a Master Profile (MP). In general, the lower boundary of the MP is the transition between the beach face and the foreshore (i.e. the beach toe). The landward boundary is either the seawall or, where a hard structure is not present, the landward extent of the stable part of the beach. The Master Profile is held constant for a given profile line and therefore the changes in CSA through time can be derived.

3.3 Coastal Process Analysis – MU15

To aid purposeful analysis the unit has been split into four sections as depicted in Figure 3.1 overleaf. These reflect changes in apparent beach material dynamics as depicted in the difference models (Plate 1, 1-3). In the context of this report, beach change will be described in these three sections; section one extends from the western extent of MU15 to Broomhill Sands, section two covers Broomhill to Jury's Gap, and section three completes MU15 at the eastern end. However, to ensure all localised changes are fully recognised, volumetric data will also be displayed for each groyne bay in an attempt to identify groyne bay performance.

The remainder of this chapter contains the digitised difference models and a narrative summarising the changes that have taken place over the last year, and hypotheses of the processes driving these changes.

Table 3.1 provides a summary of volume change within each section during the period between the 2008 and 2009 summer surveys.

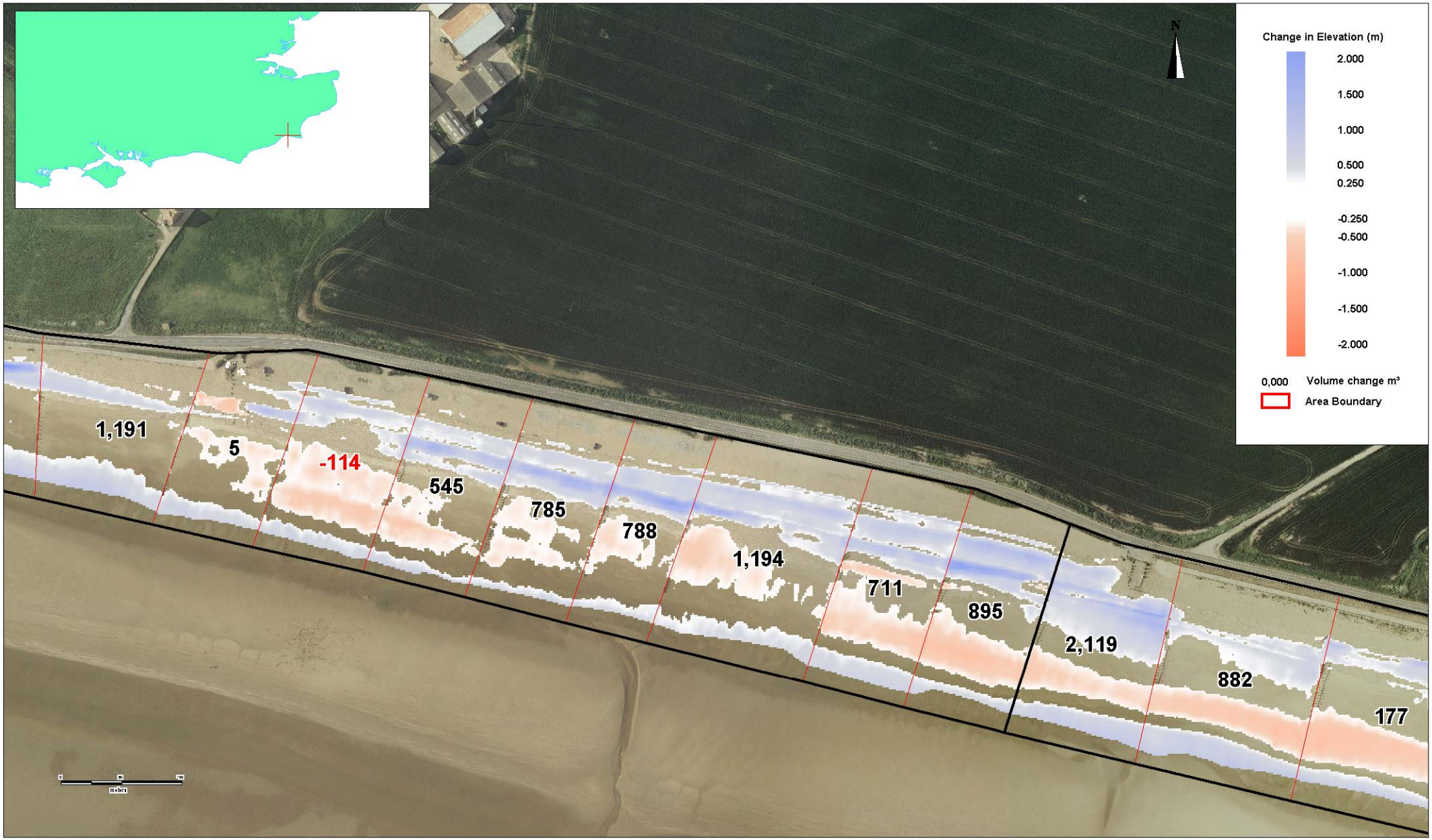
Table 3.1: Management Unit 15 - Summary of Erosion/Accretion Totals

Polygon	Area (m^2)	Error Estimate* (m^3)	Erosion/Accretion (2007 to 2008) (m^3)	Erosion/Accretion (2008 to 2009) (m^3)
1-8	81,170	*+/- 2,435*	-830	**3,697**
9-18	82,470	*+/- 2,474*	-12,269	**8,378**
19-26	87,180	*+/- 2,615*	-8.862	**9,148**
Net			-21,961	**21,223**

** Error estimates are calculated as the survey area multiplied by a +/- 30mm error margin, although unlikely the error of combined surveys can be up to double this figure*

Figure 3.1: Management Unit Section Overview


N
Change in Elevation (m)
2.000
1.500
1.000
0.500
0.250
-0.250
-0.500
-1.000
-1.500
-2.000
0,000 Volume change m³
Area Boundary
66
-1,046
-1,143
868
985
960
1,453
1,554
2,378
meters


N
Change in Elevation (m)
2.000
1.500
1.000
0.500
0.250
-0.250
-0.500
-1.000
-1.500
-2.000
0,000 Volume change m³
Area Boundary
1,191
5
-114
545
785
788
1,194
711
895
2,119
882
177
metres


Change in Elevation (m)
2.000
1.500
1.000
0.500
0.250
-0.250
-0.500
-1.000
-1.500
-2.000
0,000 Volume change m³
Area Boundary
N
882
177
42
-1,562
904
3,944
2,642

3.3.1 MU15 Section 1 (Polygons 1 – 8, Profiles 4c01001 – 4c00983)

Section 1 forms the western extent of this management unit. During the current reporting period this section has seen a small net increase in sediment volume. However, the trend illustrated within the difference model shows that the eastern half of the section is influenced by accretional processes whereas the western half is influenced by erosional processes. Therefore although the overall trend reflects a stable sediment regime, the localised processes should be taken into consideration with regards to the standard of protection provided by the mobile shingle beach.

Figure 3.2 below shows a comparison between two beach profiles located within section one. Profile 4c00998 is located within polygon 2, where net erosion has occurred and profile 4c00986 is located within polygon 7, where net accretion has occurred.

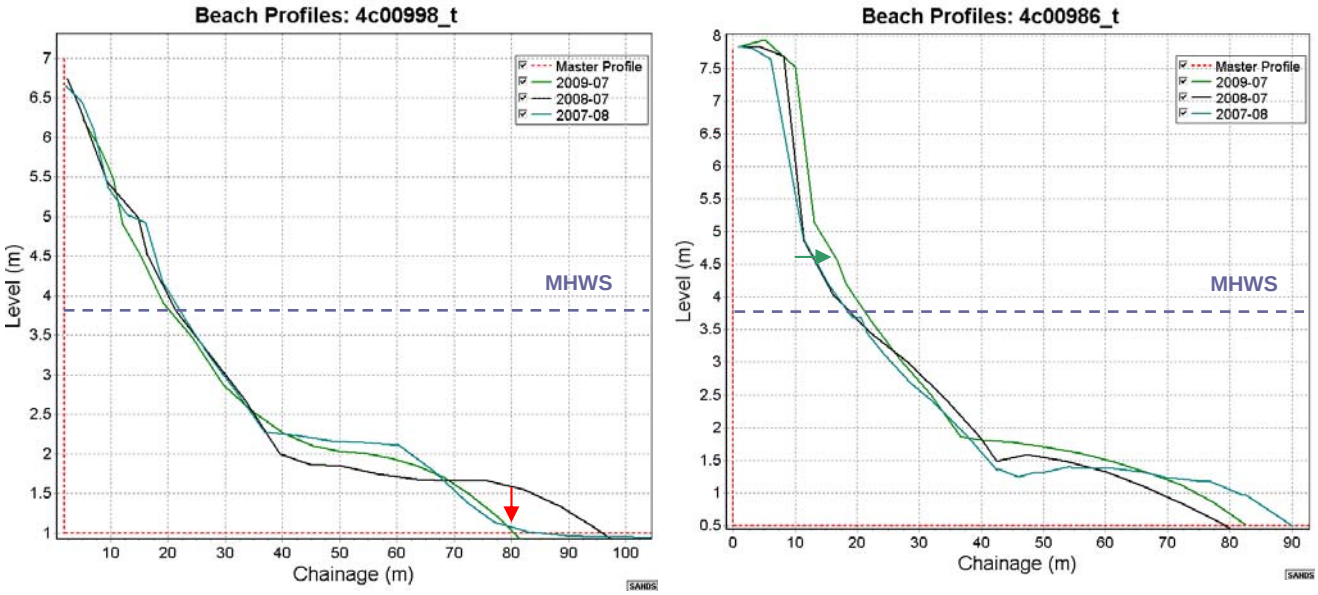


Figure 3.2 - Comparison of beach cross sections

From Figure 3.2 it is clear that the western and eastern regions of this management unit are currently experiencing differing cross sectional trends. The western region (profile 4c00998), demonstrates a loss of material at the toe of the beach, with an unchanged beach slope profile. The eastern region (profile 4c00986) conversely shows an increase in toe deposits with an advancement of the beach slope.

From this analysis it is clear that although some degree of erosion has occurred within this section, it is primarily limited to the toe of the beach and therefore does not significantly impact on the standard of protection provided by the beach.

3.3.2 MU15 Section 2 (Polygons 9-18, Profiles 4c00981 – 4c00965)

Section 2 covers the central section of this management unit. From the difference model shown in plate 2 (2 of 3), it is clear that this section has accreted overall during the current reporting period with only one out of ten polygons showing overall erosion. The current accretional trend has resulted in a net increase in material for this section with an increase in volume of 8,378m^3.

The difference model also shows that this section as a whole presents a far more dynamic pattern of change throughout the beach profile. The beach crest and slope have accreted significantly whilst the toe and foreshore have been dominated by patches of erosions. The difference model suggests limited intervention by the groyne field with no evident areas of erosion/accretion around the groyne interface. It is largely thought that a vast majority of the current accretional trend can be attributed to the Environment Agency beach renourishment works; however, with limited information on delivery volumes it remains difficult to separate the natural and anthropogenic agencies.

With the beach clearly showing accretional tendencies about the beach crest it remains important to assess how these changes have impacted on the level of protection provided by the beach. Figure 3.3 below represents a typical profile within the section, highlighting the increased level of protection afforded by this section.

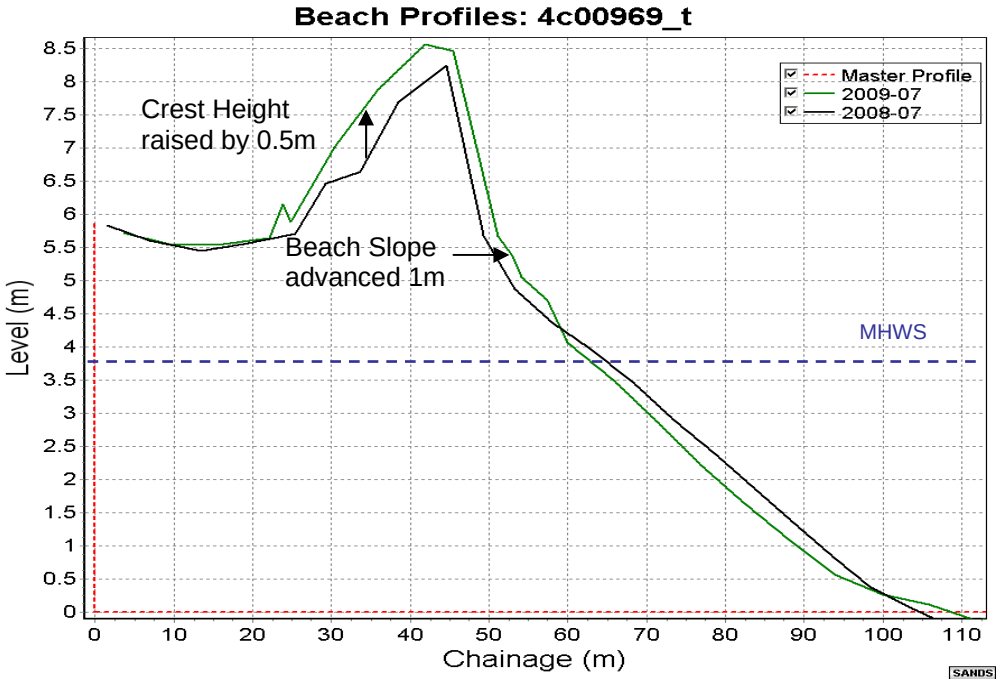


Figure 3.3- Beach cross section improvement

3.3.3 MU15 Section 3 (Polygons 19 – 26, Profiles 4c00964 – 4c00949)

The final section of this management unit, section 3, delimits the eastern extents and borders with Lydd Ranges. Overall this section has shown the greatest degree of accretion within this management unit with a net increase in sediment budget of 9,148m^3.

The difference model shown in Plate 2 (3 of 3) clearly shows the key areas of accretion for this section. From this it can be seen that the eastern region of this section has experienced a greater degree of accretion than the central and western regions. Again the difference model shows that a vast majority of accretion has occurred at the beach crest level with a small degree of toe erosion.

It can be concluded that the accretion of material at the crest level will improve the standard of protection by both advancing the raising the crest.

3.4 Management Unit 16

To aid purposeful analysis the unit has been split into three sections as depicted in Figure 3.4. These reflect changes in beach configuration and/or the presence of terminal structures.

The remainder of this chapter contains a narrative summarising the changes that have taken place over the last year, and hypotheses of the processes driving these changes.

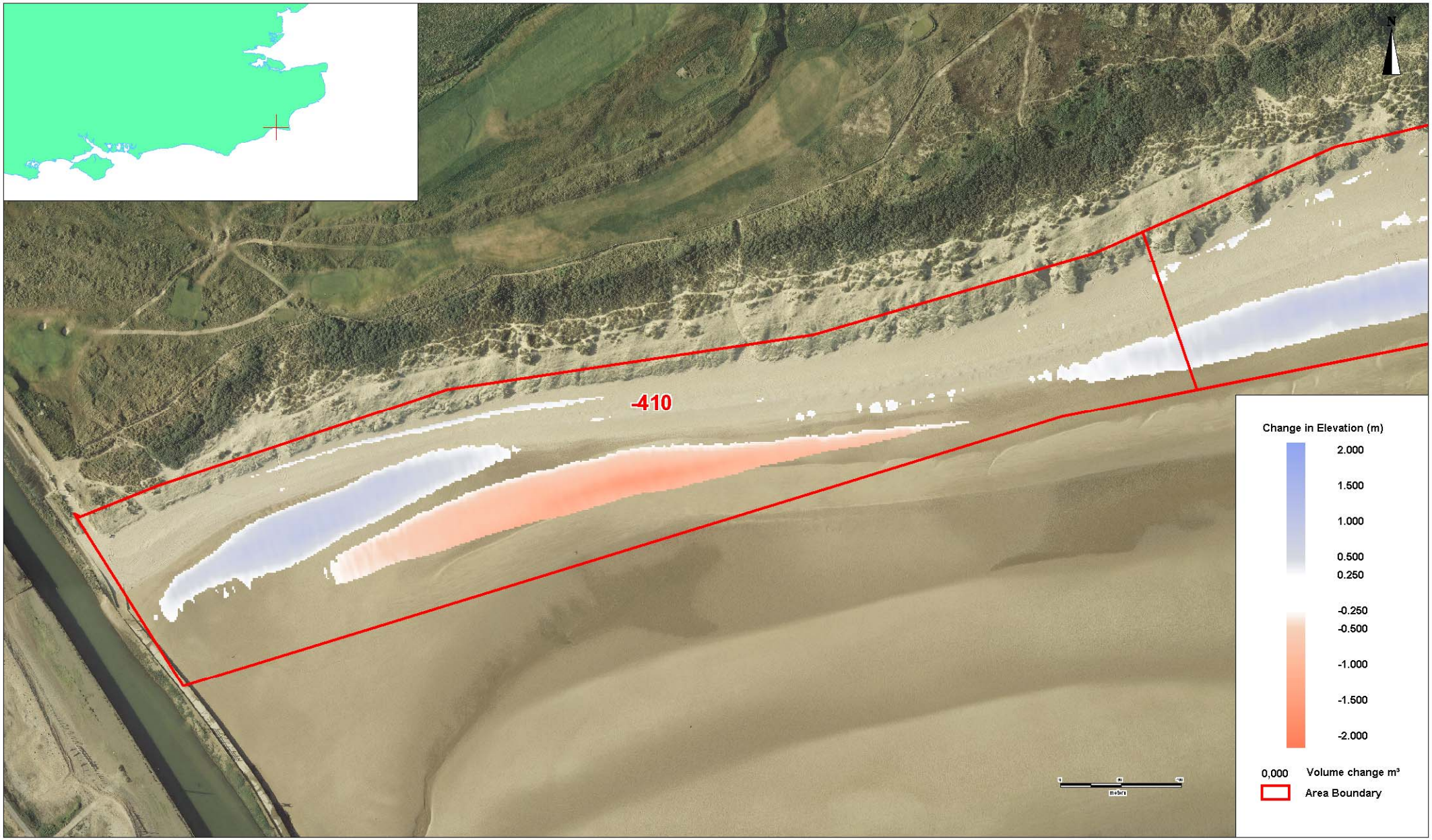
Table 3.2 provides a summary of volume change within each during the period between the 2008 and 2009 summer surveys.

Table 3.1: Management Unit 16 - Summary of Erosion/Accretion Totals

Polygon	Area (m²)	Error Estimate* (m^3)	Erosion/Accretion (2007 to 2008) (m^3)	Erosion/Accretion (2008 to 2009) (m^3)
1	66,440	*+/-1,993*	5,078	**-410**
2	85,350	*+/-2,560*	-6,704	**11,212**
3	56,960	*+/-1,708*	-5,995	**9.416**
Net			-7,621	**20,218**

** Error estimates are calculated as the survey area multiplied by a +/- 30mm error margin, although unlikely the error of combined surveys can be up to double this figure*

Figure 3.4- Management Unit 16 Beach Analysis Section


N
-410
Change in Elevation (m)
2.000
1.500
1.000
0.500
0.250
-0.250
-0.500
-1.000
-1.500
-2.000
0,000 Volume change m³
Area Boundary


N
Change in Elevation (m)
2.000
1.500
1.000
0.500
0.250
-0.250
-0.500
-1.000
-1.500
-2.000
0,000 Volume change m³
Area Boundary
11,212


N
Change in Elevation (m)
2.000
1.500
1.000
0.500
0.250
-0.250
-0.500
-1.000
-1.500
-2.000
0,000 Volume change m³
Area Boundary
9,416
meters

3.4.1 MU16 Section 1 (Profiles 4c01059 – 4c01044)

Located immediately east of the Rye Harbour arm, Section 1 represents the western boundary of Management Unit 16. From the data obtained from the 2009 BMP survey it is evident that this section exhibits a relatively stable trend with the marginal loss of material during the current reporting period.

The difference model for the current reporting period shows a distinct area of accretion some 30m from the toe of the dune, which then changes to an area of erosion 45m from the toe of the dune. It is clear that both erosional and accretional processes are taking place within this section however, in this instance, the erosional processes are of a greater magnitude. It is important to note that at approximately 45m from the toe of the dune the sand deposits become unconsolidated and consequently a semi solid layer of sediment (100-300mm thick) sits above the recorded surface. From this it could be argued that although the current trend represents an overall loss of material, the actual volume of material present in this section may be slightly larger than that shown. Figure 3.5 below shows a comparison of profile photograph located within the band of erosion, and clearly illustrates the difference in levels.

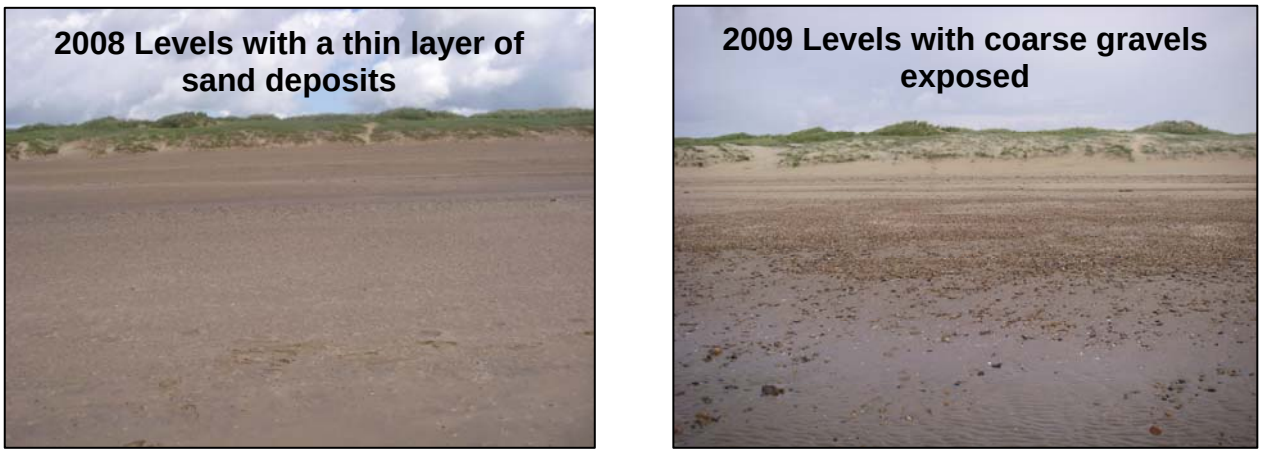


Figure 3.5- Level difference between 2008 and 2009

The current trend further provides evidence of the effect that the Rye Harbour Arm is having in mitigating the effects of littoral drift immediately east of the arm. The arm aids in dampening the effects of storm wave conditions and diffracts the larger magnitude south westerly storms to produce wave trains approaching more normal to the coast. This diffraction reduces wave speed and therefore promotes the deposition of material.

3.4.2 Section 2 (Profiles 4c01042 – 4c01022)

The central section of this management unit, Section 2, has shown a large degree of accretion during the current reporting period. The accumulation of 11,212m^3 of material has principally occurred at the toe of the dunes and the lower foreshore in shore parallel bands with little evidence of any significant pockets of erosion.

This current trend shows a direct contrast to the previous report (2007-2008) where this section eroded by 6,704m^3. With the limited data available for this section it remains difficult to comment on the long-term changes however it is evident that this section is relatively dynamic year on year.

The sediment dynamics for this section are also particularly difficult to comment on as the beach is significantly affected by aeolian processes in additional to wave and tide agencies. Any changes in wind conditions prior to a BMS survey could significantly affect the data collected and therefore wind conditions should be considered when analysing beach data.

3.4.3 Section 3 (Profiles 4c01021 – 4c01002)

The accretional pattern experienced in section two extends into Section 3, but is largely restricted to the lower foreshore of the beach. During the current reporting period this section has accreted by 9,416m^3 which again shows a direct contrast to the previous reporting period. The area of accretion is primarily located in the eastern end of the section in one discrete pocket.

With the area of accretion limited to the lower foreshore, the current increase in sediment budget offers a limited improvement to the current level of protection provided by the sandy beach.

3.5 Coastal Works

The environment agency currently maintains the level of protection provided by the beach for Management Unit 15. This maintenance regime involves renourishing the beach when levels are low by sourcing material from a local quarry. These works are reflected in the data provided within this report with many of the polygons showing an unusually high level of shingle for an erosion dominant frontage.

Conversely, currently there are no coastal works undertaken to maintain the standard of protection within management unit 16 with the section being naturally stable.

3.6 Sediment Budget

Both Management Units 15 and 16 have demonstrated an overall increase in sediment volume during the current reporting period. This therefore suggests a relatively healthy sediment trend for these areas however as the degree of human intervention cannot be quantified, the overall sediment budget for these areas cannot be calculated. 0020Conversely however it can be concluded that the current beach management works are effective in keeping the beach levels at an acceptable level.

4.0 Long-term summary

4.1 Management Unit 15

When considering the long term evolution of Management Unit 15 it is evident that the Unit reflects a very dynamic and changing coastline. The overall impression gained from the data acquired suggests that the coastline is dominated by erosional processes although the past year's beach management works have aided in stabilising long term losses. As only three years of data have been obtained for this frontage the long-term patterns of change cannot yet be summarised. Table 4.1 below illustrates the summary data for beach volume change since 2007. The figures within this table include any replenishment that has been carried out since monitoring began.

Table 4.1- MU15 long-term summary

Polygon	Volume Change (m^3)		
	2007-2008	2008-2009	NET
1	-590	66	-524
2	-436	-1046	-1,482
3	-217	-1143	-1,360
4	-68	868	800
5	304	985	1,289
6	-531	960	429
7	436	1453	1,889
8	273	1554	1,827
9	-334	2378	2,044
10	-1613	1191	-422
11	-1439	5	-1,434
12	-1850	-114	-1,964
13	-1410	545	-865
14	-1556	785	-771
15	-1140	788	-352
16	-2086	1194	-892
17	-621	711	90
18	-219	895	676
19	-818	2119	1,301
20	-2384	882	-1,502
21	-2757	177	-2,580
22	-2033	42	-1,991
23	-78	-1562	-1,640
24	-425	904	479
25	-945	3944	2,999
26	577	2642	3,219
NET	-21,960	21,223	-737

4.2 Management Unit 16

When analysing the current reporting period it is evident that MU16 has seen an increase in sediment volume. Table 4.2 below outlines the main beach volume trends since 2007 and shows that the frontage is currently supporting a trend of accretion, which when compared to the erosion experienced in the 2007-2008 period, suggests a trend reversal.

When viewing the long-term trends of sediment movement in MU15, it is evident that the western sections remain the most effective in reducing drift rates and as such have indicated net gains overall.

Continued monitoring is paramount to establishing whether the present trends identified represent a long-term movement to sediment stability or simply a short term misrepresentation. The figures within this table include any replenishment that has been carried out since monitoring began.

Table 4.2- MU16 long-term summary

Polygon	Volume Change (m^3)		
	2007-2008	2008-2009	NET
1	5175	-410	4,765
2	-3030	11212	8,182
3	-9774	9416	-358
NET	-7,629	20,218	12,589

5.0 Wave climate & storm events

Wave records are recorded by a Datawell Directional Waverider buoy in Rye Bay, first deployed on 08 July 2003. This reporting year was characterised by a high frequency and magnitude of storm events spanning September to May. January was the stormiest month, although the highest event occurred in October with a significant wave height of 3.71m. A detailed analysis of the wave climate for August 2008 to June 2009 is given in Annex C.

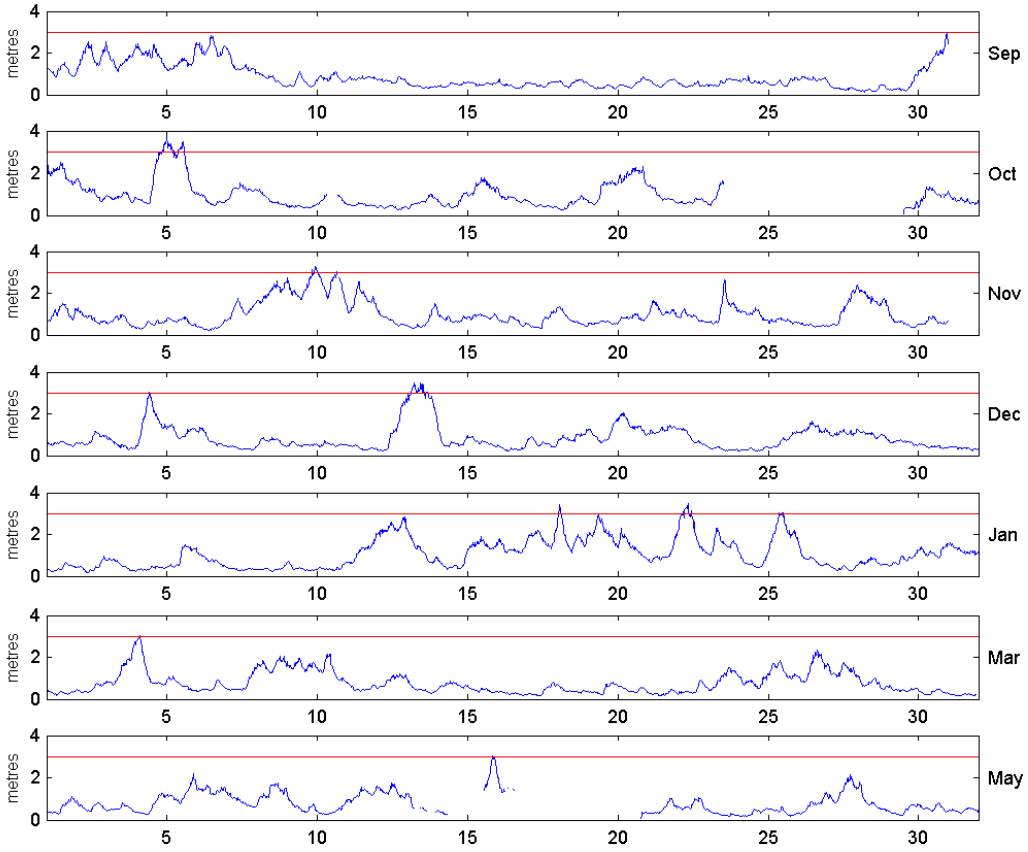


Figure 5.1: Monthly time series of Hs at Folkestone

Blue Line – Significant wave Height (Hs)
Red Line – Storm Threshold (2.5m)

The most significant storm event over the past year (5th October 2008) was marked by a lengthy period of waves exceeding the 3m threshold. Wave height increased steadily over a 12 hour period and peaked at 3.71m H_s. Due to the relatively exposed nature of this site, south-westerly swell can reach this location, as is indicated in the consistent direction of storm wave approach (~210°, SWbS). Storm surge at Dover was negative prior to and at the peak of the storm in Rye Bay.

The second highest storm of this period (13th December 2008) was similar to the highest event of the year in that wave height exceeded 2.5m for a period of 24 hours. Wave direction varied significantly as the storm progressed. Initially wave approach was from the SSW, backing to S at the peak of the storm and then to SE 8 hours after the

peak, whilst wave height remained between 2.5 and 3.5m and wave period increased slightly. The peak of the storm occurred around Low Water and was accompanied by a negative surge of -0.5 m (at Dover).

The storm of 22nd January 2009 was typical of the conditions associated with the passage of frontal systems from a near-stationery, deep depression (central pressure 948 hPa, deepening to 938 hPa by 00:00Z 23 January 2009) situated to the north of the UK. Waves remained over 2m H_s for around 18 hours, peaking at 3.49m, over High Water though on a neap tide. Storm wave approach was generally from the south. A negative surge of -0.69m was present (at Dover) at the storm peak and persisted for the following 12 hours.

6.0 Conclusion

The data recorded over this reporting period and summarised in this report exhibit a variety of trends. In the past report, the majority of data has indicated a tendency for erosion along these frontages with both sections demonstrating an overall loss between 2007 and 2008. However, when comparing the data acquired from the 2008 and 2009 beach management surveys it can be seen that both frontages have shown a healthy increase in sediment budget.

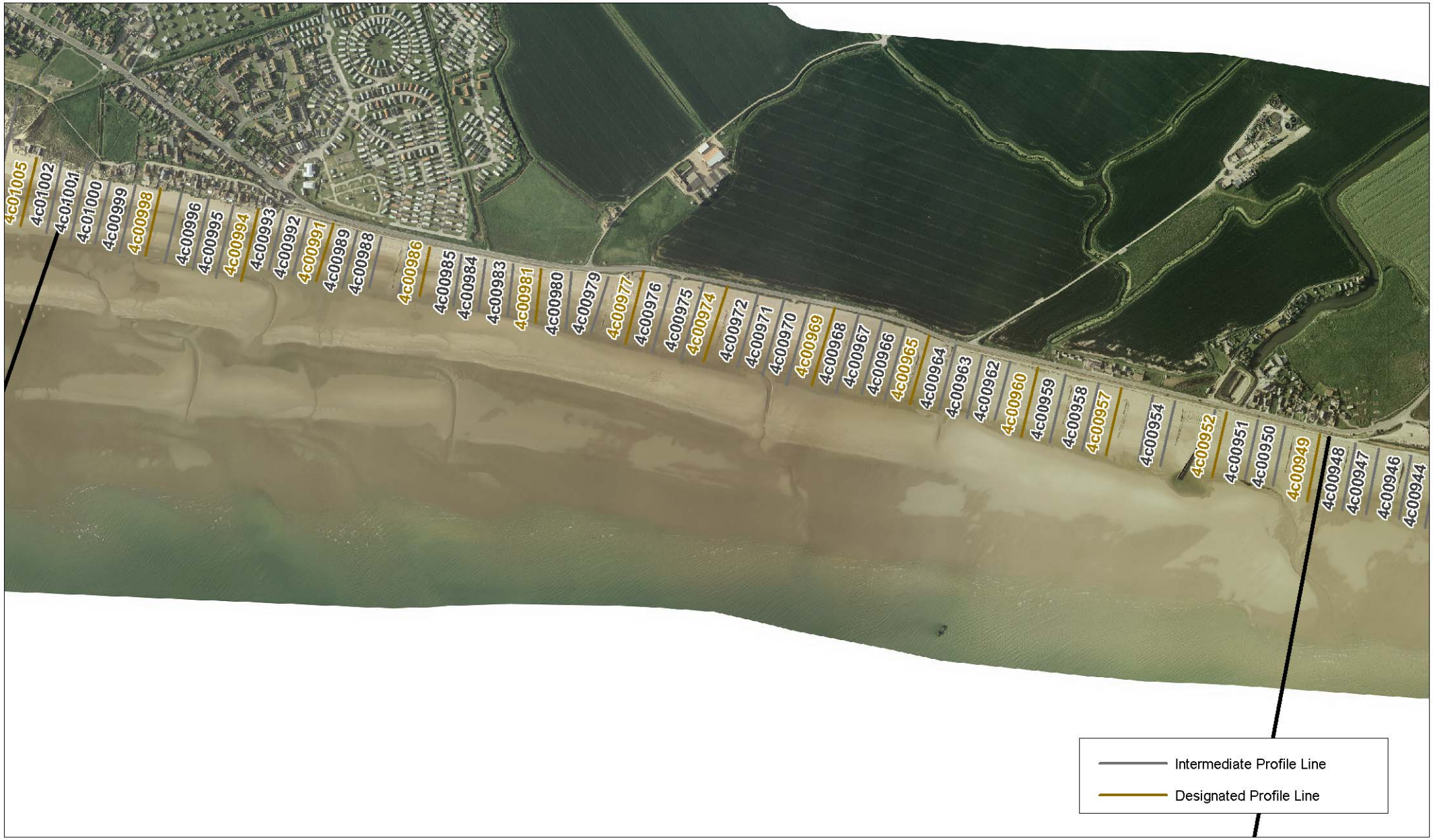
Overall these management units present relatively dynamic sediment characteristics. Management Unit 15 is clearly heavily influenced by annual recycling activities whereas management Unit 16 seems to show some alternation between natural erosional and accretional tendencies. Although trends demonstrate some degree of sediment budget stabilising, it must however be acknowledged that until further data is acquired a firm conclusion cannot be obtained. The data trends highlighted may prove to be a short-term anomaly, and as a result only with further monitoring can the hypothesis be fully supported.

With the coast protection works being continually carried out along the Jury's Gap frontage, it will remain important to monitor whether these works are effective in providing stable beach levels in the long term.

It is important to recognise the inconsistency in short-term trends. As with many coastal areas a lot of annual variability is expected, thus drawing conclusions with increased confidence will become possible as more data is collected, with regards annual losses, net sediment drift and erosion/accretion trends in section sub-units.

Scheduled future monitoring includes profile surveys in Autumn 2009 and Spring 2010, and in addition post-storm surveys may be carried out if any event is deemed to have significantly affected the frontage. An interim report will be issued on completion of the spring profile survey, with the next BMP report scheduled to be issued after completion of the Summer 2010 beach plan survey. All historic monitoring data is accessible online (www.channelcoast.org), and future surveys will be available after satisfying quality assurance procedures.

Profile Location Diagrams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