- Avoiding any worsening of navigational access into and out from Chichester Harbour;
- Preserving access along the whole Eastoke Point frontage at least for pedestrians;
- Preserving or enhancing the amenity / tourism value of the Eastoke Point shoreline;
- Preserving access to Black Point and Hayling Island Sailing Club, north of Eastoke Point; and
- Avoiding any unnecessary detrimental effects on the landscape value of the frontage.

As will become apparent later, the preservation / enhancement of the existing shingle beaches around Eastoke Point as foreseen in the Coastal Defence Strategy (Atkins, 2006) is an important step towards achieving all of the above environmental objectives, as well as being helpful in improving the present-day coastal defences to provide a satisfactory standard of protection.

6. Assessment of Erosion Losses: Do Nothing Scenario

6.1 INTRODUCTION

This chapter describes the prediction of future changes in the coastline at Eastoke Point if all current shoreline management activities were discontinued. The so called Do Nothing scenario is the first policy option to be considered in the strategic assessment of other coastal defence options for this frontage, and provides a baseline against which the benefits of maintaining or installing defences can be properly evaluated.

By predicting the future shoreline position, the potential loss of land, properties and infrastructure can be evaluated. Given this understanding, the economic consequences of the Do Nothing scenario can be determined. Predictions of shoreline position have been made at incremental time intervals from year zero to 100 years in order to complete the economic evaluation procedures as specified in the Defra guidelines.

6.1.1 Description of the Do Nothing scenario

Under the so called Do Nothing option, no further coastal defence works would be undertaken at Eastoke Point and therefore no expenditure on them would be incurred. Not only would maintenance of the existing defence structures (i.e. groynes and seawalls) cease, but so too would the regular recycling of beach sediments that are carried into this frontage from the west.

In considering the impacts of this option, the main issues are the likely effects on the adjacent stretches of coastline, on the low-lying hinterland (particularly the housing development at the eastern end of the Eastoke peninsula), and on the study area itself (including the Sandy Point Local Nature Reserve).

6.2 METHOD OF CALCULATING ECONOMIC LOSSES

The methodology and calculations presented in this report are based on the Defra guidance published in 'FCDPAG3 – Flood and Coastal Defence Project Appraisal Guidance – Economic Appraisal' (MAFF, 1999) as subsequently re-interpreted (Defra, 2003 and 2006).

Selected Base Date
The study uses a base date of July 2006.

Appraisal Period
An appraisal period of 100 years has been applied in accordance with UK Treasury Guidelines (HM Treasury, 2003).

Discount Rate
All future damage values have been discounted to a Present Value (PV) using the date given above. This conversion uses the algorithm:

PV = (Sum in year n) / (1 + r/100) n

where r is the percentage discount factor, and the base date is taken as year n = 0.

The declining long term discount rates (r) given in the table below have been taken from the HM Treasury Green Book (HM Treasury, 2003). By way of example, £1 in year 30 will be worth 70p (PV) and in year 100, £1 will be worth 4.6p (PV).

Table 6.1 Declining Long Term Discount Rates (HM Treasury 2003)

Period of Years (n)	0-30	31-75	76-125
Discount Rate (r)	3.5%	3.0%	2.5%

The method of evaluating economic losses selects the most likely position of the erosion contour from the probabilistic model for each of the seven time periods and interpolates these to 5 year intervals up to the end of the appraisal period.

6.3 ASSETS AT RISK

6.3.1 Land and property

This section outlines the principal assets, both natural and man-made, in the areas potentially at risk. A full description of these assets is presented in the Baseline Environmental Statement (Chapter 5).

Properties
Properties are defined as individual buildings digitised from the OS 1:10,000 scale map. Residential and Commercial properties are included. The valuations of each property have taken into account the possibilities of multiple properties (e.g. flats) being part of the same digitised building and also that of lower value buildings (e.g. barns).

There are in excess of 200 properties within the study area that have some likelihood of being affected by up to 100 years coastal erosion.
In accordance with standard economic guidelines, the maximum value of any property which can be included in the assessment of erosion losses over the appraisal period can be no greater than the present day free market value. The current value of each property near the cliff top in the principal coastal settlements has been obtained using property valuations conducted by Keys Auctioneers and Estate Agents in March 2004, and adjusted to 2006 values using regional house price increases (http://www.nationwide.co.uk/hpi/). Where no property valuation has been obtained by this process then an average estimate value (2006) has been assigned.

Properties are deemed unsafe and abandoned before the erosion contour reaches their digitised boundary. This is often due to the loss of the access road and / or services between the property itself and the shoreline. To account for this, properties have been economically lost

when the erosion contour reaches within 5m of the digitised property boundary at its closest point.

Land
The September 2002 Defra survey of land values for the eastern region, gives the average risk-market value of agricultural land as £6,769 / ha (2002). However, this sum includes a government subsidy (FCDPAG3, 1999). To account for this, the value of the land lost to erosion is given as the risk-market value multiplied by a factor of 0.45, before adjustment to 2006 values. This value has been assumed constant across the affected area.

Caravan Sites
Caravan sites have been included in the assessment, but damage values will only apply if the sites are affected by erosion. The factors influencing the economic value lost due to the erosion of these assets have been applied as follows:

- Light caravans and tents can easily be moved to alternative locations and as such contribute no significant economic loss;
- The value of the land lost will be included in calculating the average property valuations; and
- Any permanent structures associated with these sites will be included in the property calculations.

With regard to static caravans, Defra guidance to assessing the economic value of such assets is to assume that they are depreciating assets and, on average, are worth half their replacement cost. An analysis of the current market value of these caravans gives an average replacement cost of £30,000.

6.3.2 Transportation – roads

Whilst there are no major road intersections in the study area, Southwood Road runs along the length of the study frontage with various minor roads such as Creek Road, Bosmere Road and Eastoke Avenue leading to residential areas, the RNLI lifeboat station and the sailing club at Black Point. There are various beach access points within the study area.

6.3.3 Tourism and recreation

The Eastoke Peninsula receives over 2 million visitors per year, which generates an estimated revenue of around £45 million per year.

Within the study area itself, the only designated holiday accommodation is campsites and these are situated on the northern part of the peninsula. Although numerous properties along the study frontage are used as holiday homes rather than as primary references, they will not be assigned any additional value for the purposes of this assessment.

Whilst the nature reserve constitutes a tourist attraction (particularly for bird watching), visitors to the site are not encouraged in order to preserve the interest features.

Eastoke beach is an important recreational area and is a repeated winner of a Rural Seaside Award Flag. Whilst the beach is used extensively by locals throughout the year, the majority of tourists visit only during the summer months.

In addition to the beach as a recreational asset, there are a wide range of water based activities available. These include angling, boating, jet skiing and windsurfing. The most significant

such asset within the study area that may be affected by erosion is the Sailing Club at Black Point.

6.3.4 Commercial activities

Within the study area, there are no significant commercial activities except those attached to Tourism and Recreation (identified above in Section 6.3.3).

6.3.5 Black Point RNLI Station

The RNLI maintain an inshore lifeboat station at the north eastern end of the study frontage. The facilities there include a launch ramp, tractor shed, lifeboat shed with associated facilities. Planning permission is currently being sought for a major extension to the lifeboat station in order to accommodate the next generation of lifeboats.

6.3.6 Environmental assets

The study area is particularly rich in environmental assets including:

- Chichester Harbour Site of Special Scientific Interest;
- Chichester and Langstone Harbour Special Protection Area/RAMSAR site;
- Solent Maritime Special Area of Conservation;
- Eastoke Point Local Nature Reserve; and
- Chichester Area of Outstanding Natural Beauty.

In the DEFRA guidance note on Economic Appraisal (FCDPAG3) it is stated that the least contentious and lowest cost of deriving a proxy for the lower bound economic value of an environmental or heritage asset gained or lost as a result of a flood or coastal defence scheme can be taken to be the lowest of:

- The cost of creating a similar site elsewhere of equivalent environmental value;
- The cost of relocating to another site (e.g. Historic buildings or relocation of specially protected species); and
- The cost of local protection.

This proxy approach has been adopted, where appropriate, in estimating the economic value of the environmental assets listed above.

6.4 IMPACTS OF THE DO NOTHING SCENARIO

If the present recharge / recycling operations from the Eastoke Point frontage are not continued, it is clear that there would be a gradual lowering of the beaches along the main southern frontage of Eastoke as a consequence. This would ultimately result in increased wave overtopping along the main Eastoke frontage to the west of the Sandy Point Nature Reserve.

The potential for eastward shingle transport from this frontage towards Eastoke Point will gradually decrease in time as the beaches there become lower, while in the Eastoke Point area itself, the gradual deterioration of the groynes will allow a greater eastward and then northward transport of beach sediments, toward Black Point. This will lead to a deficit of shingle at the eastern end of the seawall that runs along the main southern frontage of Eastoke. This deficit will, in turn, lead to beach lowering, leading to wave reflections from the face of the seawall, causing a flattening of the shingle beach profile. This process will return the beach to its state prior to the recharge, with the associated problems of overtopping and

undermining of the seawall. Once the seawall fails, erosion of the land behind will rapidly lead to losses of the houses that are close behind it.

Further, in the absence of recycling operations, the shingle that is carried away eastwards from the main southern frontage at Eastoke will travel towards and past Eastoke Point, and will first build out seawards, at approximately the location shown in the 1992 aerial photograph shown in Figure 3.5 to form a "ness". This may extend sufficiently to provoke a change of course of the main tidal channel in the entrance to Chichester Harbour. In addition, a significant proportion of the shingle reaching the apex of this ness will be lost into deep water, with tidal currents then transporting this shingle offshore (the tidal currents in the Chichester Harbour deep-water channel are strongly ebb dominated).

Between the eastern end of the main Eastoke defences and this predicted shingle ness, the beach will become very narrow, and a breach is likely occur as it almost did in 1992. This is likely to take place within one or two years after maintenance works are abandoned under this option.

Further, while it is not possible to forecast shoreline changes deterministically, because of the uncertainties regarding the residual life of defences, the changes in the tidal channel and the occurrence and timing of severe storms, it is considered that eventually the accumulation of shingle at the "ness" would also starve the beaches at Black Point spit, possibly leading to a breach in the vicinity of the lifeboat station, or further northwards along the narrow spit leading to the Sailing Club. This is made more likely by the lack of maintenance of the groynes and the potential changes in the course of the tidal channel under this defence option. (Note that if the channel is diverted offshore by the shingle ness, then erosion of the shoreline to the north is likely, i.e. on the outside of the bend in the channel during the dominant ebb flow periods).

It is therefore evident that "doing nothing" would quickly increase the risk of the breaching of the shingle ridge that forms the seaward boundary of the Sandy Point LNR, probably just east of the end of the seawall and promenade fronting Eastoke and/ or of Black Point Spit just north of the lifeboat station. Flooding and erosion would then take place, damaging or destroying the habitat in the LNR, and flooding the houses fringing the reserve.

In addition to the impacts on the shoreline, the "Do-Nothing" option would also impact on the marine environment. Past experience has shown that uncontrolled accretion at Eastoke Point, in the form of a shingle ness can be a navigation hazard, leading to changes in the navigation channel into Chichester Harbour, and it becoming partly blocked by shingle lost offshore from the apex of the ness.

6.5 CALCULATION OF LOSSES: DO NOTHING SCENARIO

Although the study area is contained within one so called Management Unit, the frontage has been split into defence lengths for the purposes of this assessment. This is due to the varying condition of the existing defences, which dictates when Do Nothing losses will commence (i.e. when the beach has been completely lost and the defences breached).

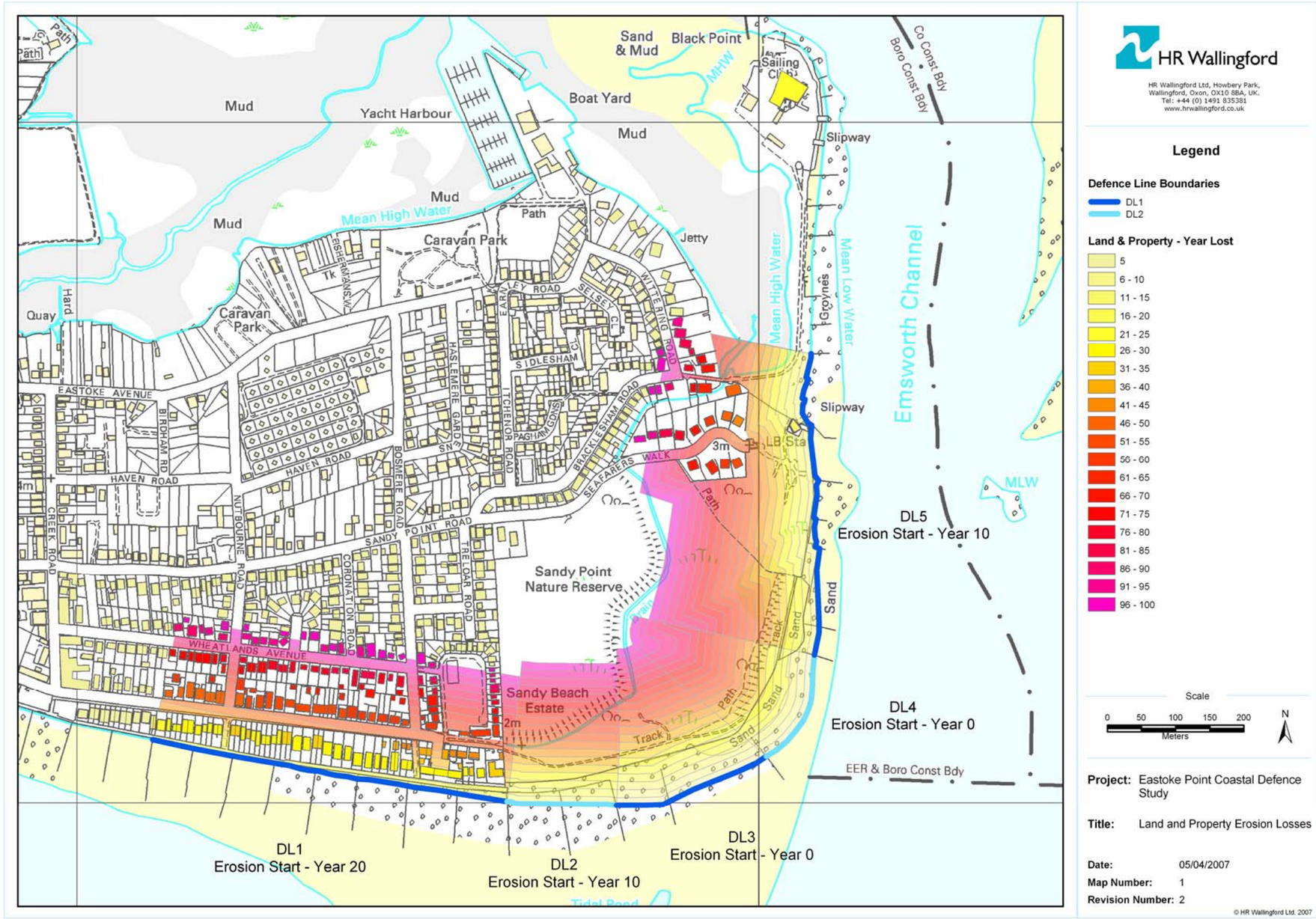
In the assessment of coastal processes carried out in this study (see Chapter 3), consideration was given to the likely rates of shoreline recession under the Do Nothing scenario. The beach management operations undertaken since 1985 have been very successful in maintaining the beach widths along both the main Eastoke frontage, in front of the promenade, and around Eastoke Point. However, if such operations were to cease, the beaches along this part of the coastline would begin to retreat as in the past. The initial rates of erosion would be moderated

by the groynes and seawalls, but as these deteriorated, the rates of recession would increase. By that time, there may be a considerable difference in the wave conditions and in mean sea level since the time before the modern programme of beach recharge and recycling was started. Past experience has shown that where coastal defences are abandoned, the shoreline tends to erode much more rapidly than before they were installed.

It is impossible to accurately predict the rates of beach change under the Do Nothing scenario, and any estimates made will be subject to considerable uncertainty. In the Eastoke Sectoral Strategy Study (Atkins, 2006), however, it was concluded that, given the variation in erosion rate and the overall performance of the beach, an erosion rate of 2.3m per annum leading to failure of the defence was appropriate. To confirm this, a sensitivity analysis was performed for the original predicted rate of 1.6m per annum (Atkins, 2006). This was found to correlate closely with that of Havant Borough Council, whose assessment concluded that the average recession rate prior to 1992, when recycling commenced was 1.8m per annum (Atkins, 2006).

Therefore, for the purposes of this present study, this same recession rate of 2.3m per annum has been taken for the likely recession rate at Eastoke, to allow for the acceleration in sea level rise. However, it should be noted that severe, episodic erosion has taken place at Eastoke Point in the past, and during such periods in the future, the shoreline recession rate will far exceed the estimated average rate of 2.3m per annum. This average erosion rate has been applied to the whole study frontage, although in practice this will not be what actually occurs. For example, the beaches at the Black Point end of the frontage have been found to be increasing in volume in recent years. However, once beach levels have dropped at Eastoke Point, the supply of shingle to this frontage will be restricted, after which erosion along this frontage will increase dramatically. To reflect this, a time lag of 10 years has been allocated to this defence length to allow for sufficient depletion in the shingle supply around Eastoke Point. Additionally, it is not possible to predict with certainty what form the erosion contour will take as it cuts back into the LNR and what consequential impacts this new shoreline will have on the erosion rate.

Based on these assumptions, expected economic losses due to coastal erosion have been calculated for the appraisal period of 100 years. A schematic representation of this erosion is presented in Figure 6.1.



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Legend

Defence Line Boundaries

- DL1
- DL2

Land & Property - Year Lost

- 5
- 6 - 10
- 11 - 15
- 16 - 20
- 21 - 25
- 26 - 30
- 31 - 35
- 36 - 40
- 41 - 45
- 46 - 50
- 51 - 55
- 56 - 60
- 61 - 65
- 66 - 70
- 71 - 75
- 76 - 80
- 81 - 85
- 86 - 90
- 91 - 95
- 96 - 100

Scale

0 50 100 150 200 Meters

N

Project: Eastoke Point Coastal Defence Study

Title: Land and Property Erosion Losses

Date: 05/04/2007
Map Number: 1
Revision Number: 2

Figure 6.1 100 year Land and Property Erosion Losses

6.5.1 Description of losses by defence length

The losses to coastal erosion under the Do Nothing scenario have been based on the estimated retreat of the shoreline at five yearly intervals, as shown in Figure 6.1. The present defences will delay the onset of erosion, with the start date for this erosion being estimated on the basis of the review of the condition of the existing defences presented in Chapter 4 of this report. No attempt is made here to predict the details and sequence of beach changes, which would inevitably lead to a more complicated plan shape developing than the rather smooth shorelines shown in that figure. For example, it is likely that the first loss of houses just behind Defence Length 1 would be concentrated over a much shorter frontage, but potentially extending further inland, than shown in Figure 6.1. While a large number of alternative estimates of the future shoreline position could have been made, each resulting in an average retreat along the frontage of 2.3m per annum, it is judged that the overall result in terms of the erosion losses calculated would not be significantly different from those made using this simplified approach.

Defence Length 1 (DL1)

The existing sea wall will prevent any losses for the first 20 years of the study period. At this time, the assessment of the condition of the existing defences (Chapter 4) estimates that the groynes will have deteriorated to the point at which they are no longer able to effectively control beach levels. This together with a continuing loss of shingle will result in the seawall being undermined and failing. This will affect a residential area and the major losses are properties on Southwood Road and Wheatlands Avenue which run parallel to the coast.

It is estimated that the promenade running parallel to the beach will be lost after 25 years. After 30 years, all property on the south side of Southwood Road and the adjoining beach roads will be lost. Erosion over this period, 25-30 years hence, leads to the greatest losses over any future 5 year period. Properties at the southern ends of Nutbourne and Bosmere Roads will be lost, as well as the majority of Sandy Beach Estate properties. After 100 years, the estate's recreational park and a tennis court will also be lost.

Defence Length 2 (DL2)

Defence Length 2 is a shorter length with no residential properties to landwards. The existing sea wall is expected to prevent any losses for 10 years. After this period, initial losses will be from the beach. After 25 years, erosion of the Sandy Point Nature Reserve will commence and specific losses within the reserve include the main footpath to the beach and a drainage channel.

Defence Length 3 (DL3)

Defence Length 3 is similar to DL2. Erosion will start from year 0, but for the first 25 years, the only losses will be of the beach. The majority of this defence length is backed by the Nature Reserve and again land, footpaths and the drainage channel in the reserve will be lost.

Defence Length 4 (DL4)

Defence Length 4 is also made up of the beach and nature reserve and contains no properties. Erosion commences from year 0 and beach shingle and sand are the only losses in the first 20 years. After 20 years, nature reserve land is lost. DL4 is a narrow defence length but the combined erosion of DL2, 3, 4 and 5 will lead to more than half of the Nature Reserve being lost over the 100 year study period.

Defence Length 5 (DL5)

Defence Length 5 covers a wider section of the coastline. Losses to the beach will commence after 10 years. Early in the study period, the Lifeboat station will be lost together with some of the surrounding open land. After 25 years, erosion will isolate the spit to the north of the study area and access to the Sailing Club will be lost. In year 45, erosion will begin at the end of Seafarers Walk and Bracklesham Road. In the following years, residential properties will be lost, continuing to the south end of Wittering Road.

6.5.2 Appraisal of losses due to coastal erosion

The calculated losses by asset category and Defence Length, in each five yearly increment of the appraisal period are presented in Appendix 5.

Combined incremental and cumulative damages (100 years) are listed in Tables 6.3 and 6.4.

Figures 6.2 and 6.3 depict the cumulative losses for the whole frontage, followed by the losses in each of the Management Units respectively.

6.5.3 Summary of results

The total discounted damages in the Do Nothing case amount to over £11.2 million. This figure is made up as follows:

Table 6.2 Summary of Total Losses in 100 years – Do Nothing scenario

Management Unit	Do Nothing Damages (£)
DL 1	9,069,617
DL 2	1,770
DL 3	2,097
DL 4	1,827
DL 5	2,178,272
TOTAL	**11,253,583**

Damages due to the impact on tourism have been identified within the report but not calculated in monetary terms. In addition, as mentioned earlier, no attempt has been made to account for the economic consequences of erosion on the infrastructure of the Eastoke peninsula, for example the costs of providing alternatives to the present gas, electricity, water supply and sewage systems as elements of these are lost following recession of the coastline. Neither is any allowance made for any costs associated with possible re-creation of the designated habitats within the Sandy Point Nature Reserve as they are destroyed by erosion and flooding.

Therefore, the losses as presented in the above summary table (Table 6.2), and in more detail in the following tables (Tables 6.3 and 6.4), are an under-estimate of the true damages likely to be caused by coastal erosion under the Do Nothing scenario.

Table 6.3 Incremental Damages 100 years

	DL1		DL2		DL3		DL4		DL5			
Period	Un-disc. (£)	Disc.* (£)	Un-disc. (£)	Disc.* (£)	Un-disc. (£)	Disc.* (£)	Un-disc. (£)	Disc.* (£)	Un-disc. (£)	Disc.* (£)	Un-discounted (£)	Discounted* (£)
5	0	0	0	0	288	260	218	197	0	0	506	457
10	0	0	0	0	278	211	211	161	0	0	489	372
15	0	0	203	130	264	169	204	131	91,985	58,887	92,656	59,316
20	0	0	202	109	250	135	197	106	1,354	730	2,003	1,080
25	1,182,002	536,442	245	111	287	130	240	109	903,111	409,869	2,085,885	946,661
30	10,487,952	4,007,719	479	183	564	216	389	149	1,645	629	10,491,029	4,008,895
35	3,374,820	1,101,367	580	189	634	207	525	171	1,811	591	3,378,370	1,102,525
40	599,623	168,800	609	171	601	169	526	148	1,864	525	603,223	169,814
45	1,278,064	310,357	606	147	560	136	507	123	707,023	171,689	1,986,760	482,453
50	2,742,250	574,421	605	127	519	109	483	101	1,427,702	299,062	4,171,559	873,819
55	3,683,601	665,594	600	108	480	87	464	84	733,040	132,454	4,418,185	798,327
60	2,653,066	413,522	597	93	440	69	443	69	1,422,608	221,736	4,077,154	635,489
65	487,723	65,575	593	80	400	54	419	56	1,133,748	152,434	1,622,883	218,199
70	1,214,687	140,878	587	68	360	42	395	46	1,886,200	218,759	3,102,229	359,793
75	2,648,722	264,990	580	58	320	32	374	37	882,460	88,285	3,532,456	353,402
80	3,053,740	267,340	574	50	280	25	426	37	1,175,221	102,885	4,230,241	370,337
85	1,956,923	151,421	568	44	241	19	533	41	1,233,631	95,455	3,191,896	246,980
90	1,294,166	88,508	561	38	201	14	459	31	1,177,695	80,543	2,473,082	169,134
95	2,647,436	160,029	555	34	163	10	317	19	793,350	47,956	3,441,821	208,047
100	2,857,269	152,653	548	29	113	6	192	10	1,792,850	95,785	4,650,972	248,484

Table 6.4 Cumulative Damages, 100 years

	DL1		DL2		DL3		DL4		DL5			
Period	Un-disc. (£)	Disc.* (£)	Un-disc. (£)	Disc.* (£)	Un-disc. (£)	Disc.* (£)	Un-disc. (£)	Disc.* (£)	Un-disc. (£)	Disc.* (£)	Un-discounted (£)	Discounted* (£)
5	0	0	0	0	288	260	218	197	0	0	506	457
10	0	0	0	0	566	471	429	357	0	0	995	828
15	0	0	203	130	830	640	633	488	91,985	58,887	93,650	60,144
20	0	0	405	239	1,080	775	830	594	93,339	59,616	95,653	61,224
25	1,182,002	536,442	650	350	1,367	905	1,070	703	996,450	469,486	2,181,538	1,007,885
30	11,669,954	4,544,161	1,129	533	1,931	1,121	1,459	852	998,095	470,114	12,672,567	5,016,780
35	15,044,774	5,645,528	1,709	722	2,565	1,328	1,984	1,023	999,906	470,705	16,050,937	6,119,306
40	15,644,397	5,814,328	2,318	894	3,166	1,497	2,510	1,171	1,001,770	471,230	16,654,160	6,289,120
45	16,922,461	6,124,685	2,924	1,041	3,726	1,633	3,017	1,294	1,708,793	642,919	18,640,920	6,771,572
50	19,664,711	6,699,106	3,529	1,167	4,245	1,741	3,500	1,395	3,136,495	941,981	22,812,479	7,645,391
55	23,348,312	7,364,700	4,129	1,276	4,725	1,828	3,964	1,479	3,869,535	1,074,435	27,230,664	8,443,718
60	26,001,378	7,778,223	4,726	1,369	5,165	1,897	4,407	1,548	5,292,143	1,296,171	31,307,818	9,079,207
65	26,489,101	7,843,798	5,319	1,449	5,565	1,951	4,826	1,605	6,425,891	1,448,604	32,930,701	9,297,406
70	27,703,788	7,984,675	5,906	1,517	5,925	1,992	5,221	1,650	8,312,091	1,667,364	36,032,930	9,657,199
75	30,352,510	8,249,665	6,486	1,575	6,245	2,024	5,595	1,688	9,194,551	1,755,649	39,565,386	10,010,601
80	33,406,250	8,517,005	7,060	1,625	6,525	2,049	6,021	1,725	10,369,772	1,858,534	43,795,627	10,380,938
85	35,363,173	8,668,426	7,628	1,669	6,766	2,067	6,554	1,766	11,603,403	1,953,988	46,987,523	10,627,917
90	36,657,339	8,756,934	8,189	1,707	6,967	2,081	7,013	1,798	12,781,098	2,034,531	49,460,605	10,797,052
95	39,304,775	8,916,964	8,744	1,741	7,130	2,091	7,330	1,817	13,574,448	2,082,487	52,902,426	11,005,099
100	42,162,044	9,069,617	9,292	1,770	7,243	2,097	7,522	1,827	15,367,298	2,178,272	57,553,398	11,253,583

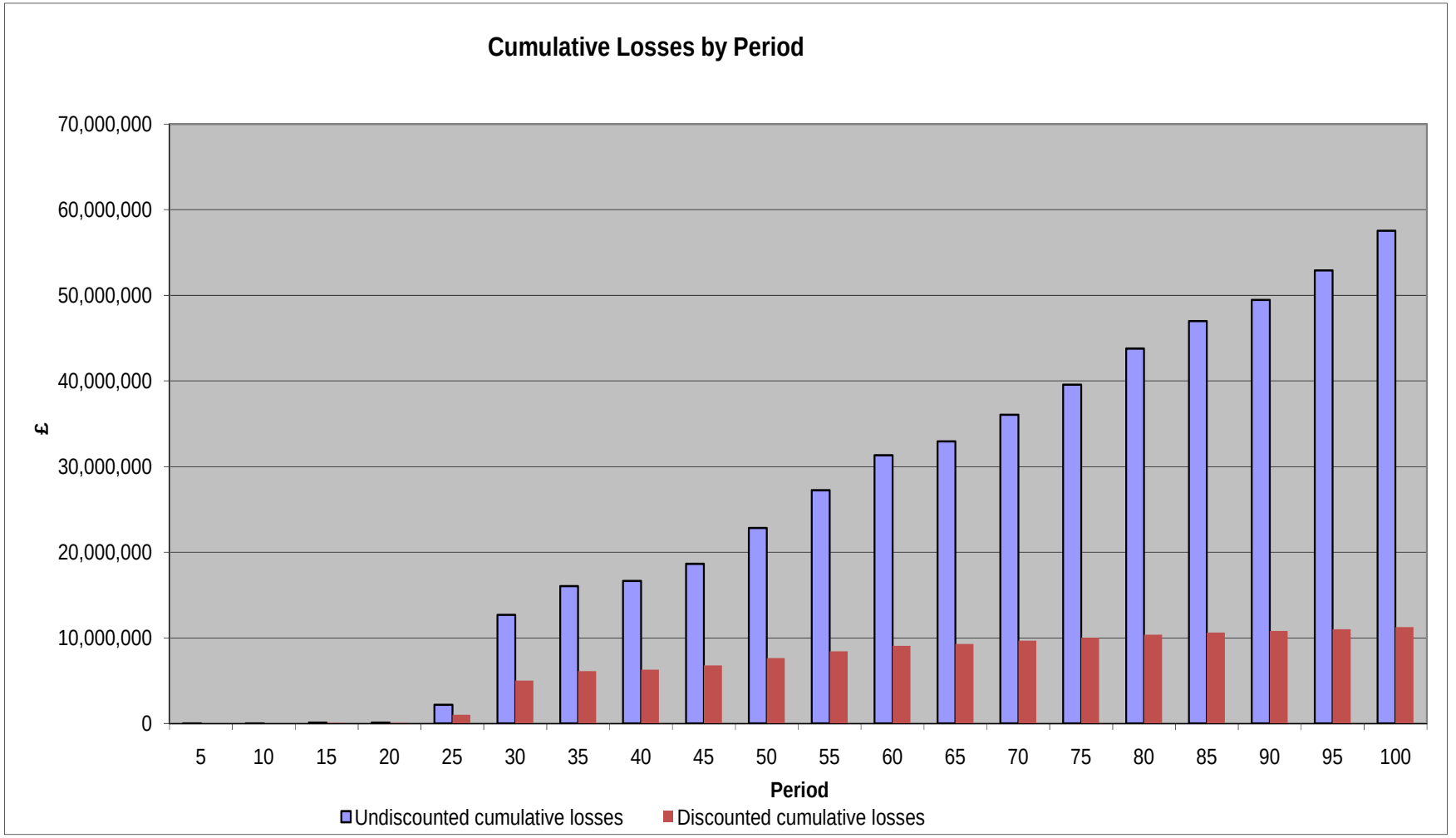

Figure 6.2 Total Damages

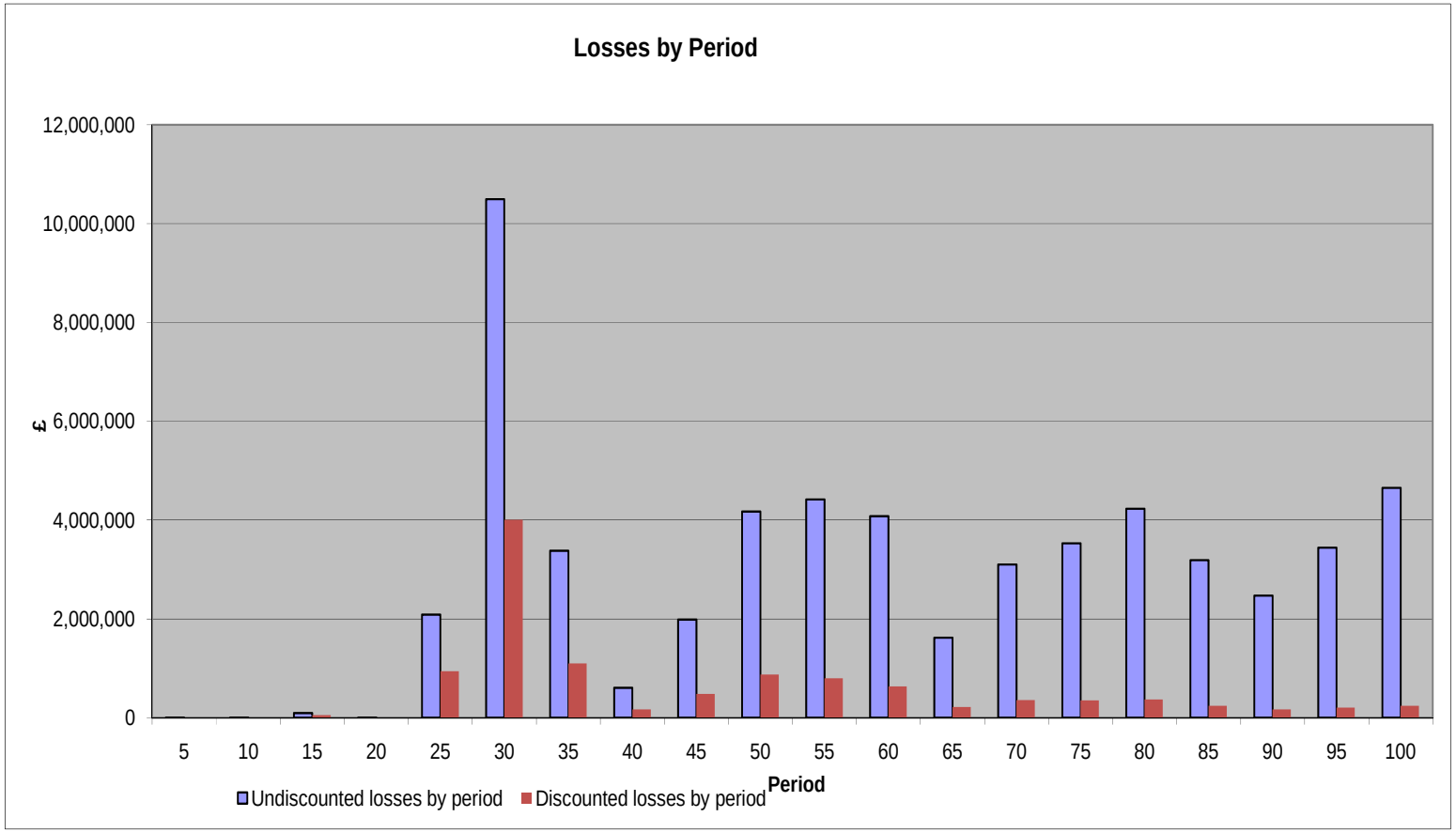

Figure 6.3 Total Losses by Period

6.6 SUMMARY

This report presents an overview of how the coastline would evolve at Eastoke point if all current beach management activities were to cease. The predicted shoreline evolution under a Do Nothing scenario has been derived from the likely shoreline recession rate as presented in the Coastal Processes chapter (Chapter 3) and the condition assessment of the existing defences (Chapter 4). Given the complex nature of the coastal processes acting upon the Eastoke Point frontage it is difficult to predict with certainty what would happen initially, if the current beach management programme was discontinued. For this reason, a constant erosion rate has been applied to the entire frontage. Whilst this does not allow for any accretion or periods of more rapid shoreline recession (for example, if a ness were to form in Defence Length 3 and then rapidly erode), the predicted erosion losses for the frontage as a whole are realistic. The start date for the onset of erosion varies for the five defence lengths, depending on the expected lifetime of the existing defences, as predicted in their condition assessment (see Chapter 4).

The predicted losses for the 100 year duration of the study period were found to exceed £57 million or (£11 million discounted to present values). These losses should however be treated with a degree of caution given that the land lost from the LNR has been assigned a land only value if a Do Nothing policy were to be adopted for this frontage. The habitats that the area contains could not be easily re-created elsewhere, and therefore this policy would damage the status of this designated conservation area, raising the possibility of costs associated with creating a similar area of habitat elsewhere.

Also, no utility (electricity / sewerage etc) losses have been taken into account, and the replacement of these to serve the remaining properties in Eastoke would add significantly to the benefits of a coastal defence scheme for Eastoke Point.

The evaluation of the Do Nothing scenario and the economic losses generated will be used (in conjunction with the results of the Do Nothing flood risk assessment) as a baseline against which all potential coastal defence options will be evaluated including a full cost benefit analysis of the short-listed solutions.

7. Flood Risk Assessment

7.1 INTRODUCTION

Flooding of the Eastoke Peninsula during storm conditions has been recorded on a number of occasions since residential development first took place. The first defences were constructed during the late 1930s, but continued erosion of the beaches in front of the sea wall resulted in further overtopping and damage to sea front properties by the late 1970s, with major overtopping events occurring in 1978 and 1979. The major beach recharge scheme completed in 1985 provided significant additional protection against overtopping and since that time, additional coastal defence structures have been constructed in order to maintain beach levels to the required standard. Havant Borough Council have subsequently carried out recycling operations to maintain beach levels, including periodic dredging in the entrance to Chichester Harbour to recover beach sediments lost offshore from Eastoke Point. Despite this, overtopping has again become a problem, for example in 1994, 2005 and 2008, and a further recharge of the beach was carried out in early 2008 to help improve beach levels.

The design crest level of the beach along the study frontage is ~5.6m. This is considered to provide adequate protection from overtopping and extreme storm surges. However, in