

Part D

CONTENTS

Process Unit Page Numbering is as follows:

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PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – DURLSTON HEAD TO DURLSTON CLIFF FLATS (DUR1)

PART D1 - CHARACTERISTICS

Location

The limits of this unit are:

- South – Durlston Head and limit of Process Unit (GR: 403595E, 077240N)
- North – Durlston Cliff Flats (End of Belle Vue Road) (GR: 403516E, 078098N)

Management Unit Description

High wooded cliffs extend along much of this stretch and the unit is completely undefended. This is an area of rapid cliff recession providing natural sediment inputs to Durlston Bay. Durlston Castle is situated on Durlston Head to the south, lying in the grounds of Durlston Country Park, an area heavily used for tourism and recreational pursuits with car parking facilities and an information centre set back from the cliff top. This coastline is of national landscape importance and designated AONB and Heritage Coast. The vegetated sea cliffs here are a candidate SAC and the area is also of high importance for geological conservation and thus designated a SSSI, forming part of a possible World Heritage Site for Jurassic Geology.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 956m; Defended frontage length: 0m

Environmental Designations

Statutory Designations

- Isle of Portland to Studland Cliffs cSAC – vegetated sea cliffs
- South Dorset Coast SSSI – ecology, geology and geomorphology
- Dorset AONB – landscape

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology
- Durlston Bay GCR – geological site
- Purbeck Heritage Coast – landscape

Description of Land at Risk

- Cliff Top
- Open Space
- Agricultural Land

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	H4 H8 T10 CC17	Infill Housing Flats policy area Caravan & Tent Camping Sites Quarrying	CC5 CC9 CC13 CC21	NNR, SSSI, Heathland Heath farms and countryside Coastal valleys and limestone plateau Heritage Coast

Coastal Defences

NONE

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE - DURLSTON HEAD TO DURLSTON CLIFF FLATS (DUR1)

Strategy Test Statements (See Part C)				Coastal Defence Strategy Options			
Core Objectives	Subcell	Coastal	Defence	Do Nothing	Hold	Retreat	Advance
Technically viable?				✓	✓	✓	×
Economically justifiable and environmentally acceptable?				✓	×	○	×
Compatible with adjacent strategies?				▲	×	○	×
Compatible with wider coastal processes?				✓	×	×	×
Process Unit Objectives (See Part C)							
Strategy should not impact on immediate or adjacent beach levels (1)				▲	○	○	×
Strategy should ensure protection of life and property where economically viable (2)				▲	×	○	×
Strategy based on geomorphological principles for Durlston Bay (3)				✓	×	✓	×
Strategy should not impact on important geological conservation designations (4)				✓	×	○	×
Strategy should not interfere with valuable habitats dependent upon contemporary coastal processes. (5)				✓	×	○	×
Strategy should have minimal impact on landscape quality (6)				▲	○	○	×
Strategy should have minimal impact on archaeological or historical potential (7)				✓	×	✓	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (8)				(✓ST) × (LT)	✓	○	×
Strategy should not impact on local economy, tourism or amenity (9)				× (LT) ✓ (ST)	○	○	
Suitability of Strategy Option				✓ (ST)	×	○ (LT)	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further. Hold the line also appears inappropriate in the short term.

Options for retreat are very much dependent upon how this method is implemented. Reducing erosion rates particularly to the north of the unit has obvious benefits to seek to protect assets long term at Duriston whilst allowing natural geomorphological evolution to continue at a managed rate. An assessment of retreat and do nothing shall be made.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE - DURLSTON HEAD TO DURLSTON CLIFF FLATS (DUR1)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	continue cliff sediment supply from backing cliff	terminate natural cliff sediment supply to Durlston Bay	reduce natural cliff sediment input into Durlston Bay	N/A
Effects on Human Environment	threat to Lighthouse Road, car park and Durlston Head Castle over the long term	protect built assets within the unit including road, car park and castle	reduce the threat of erosion to assets within the unit	N/A
Effects on Natural Environment and Conservation	- possible landscape issues within Durlston Country Park - beneficial for cSAC vegetation - beneficial for geological SSSI (GCR)	- damaging to cSAC vegetation site - damaging to geological designations	- reduce impact on cSAC reduce impact on geologically important areas - possible impact on AONB	N/A
Implications for Coastal Defences	N/A	need to introduce new protection schemes to hold the line effectively	need to introduce a method to reduce erosion rates whilst being environmentally acceptable	N/A
Impacts within Process Unit	possible increased risk of outflanking existing defences in DUR2	impact on sediment budget of the bay	reduce sediment input rates within Durlston Bay	N/A
Economics	long term risk to assets	not viable	possibly viable	N/A

Current Policy: Do Nothing

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – DURLSTON HEAD TO DURLSTON CLIFF FLATS (DUR1)

Do Nothing

This is the current policy with no man-made coast protection defences in the unit. It may be necessary to inform planners and the statutory planning system to cater for the future need to relocate or “setback” the present access road and set dereliction orders on properties that appear most at risk. The reason for this is that the nature of landslipping within the precarious Lower Purbeck Beds is only partly due to direct wave attack. In addition, weathering of the face by forces such as wind, rain and frost are significant in conjunction with groundwater rising in the winter and emanating from the face causing mudslides. The implication of this in management terms is that very little can be done to halt cliff top recession which is the key component here as cliff toe erosion is liable to represent only a fraction of total cliff movement over the Long Term. Cliff drainage intervention schemes in the Long Term may be more applicable if the assets at risk merit protection, both in benefit cost terms and considering the key geological exposure sequence within Durlston Bay. Therefore, this strategic option is currently considered suitable over the Short Term as part of an Observe and Monitor policy.

Hold the Existing Line

To Hold the Existing Line in this management unit would require the construction of new coastal defences along its length. Despite the proximity of the service road at the cliff top, it is unlikely that sufficient positive economic benefit would be generated to defend the cliff toe here, subsequently, this is not a viable strategic option. This option would also have a detrimental effect on the natural environment since it is important to maintain natural coastal processes to preserve the geology and coastal cliff flora within this SSSI location.

Retreat the Existing Line

Subject to a more detailed cost benefit appraisal of likely methods used, this strategic option could be viable over the Long Term depending on Purbeck District Council Planning Policy. Attempts could be made seeking to strategically “stabilise” sections of the Durlston Cliffs from future landslipping. The presence of numerous faults in the Lower Purbeck Beds exacerbates the problem as this increases this rock facies type to mechanical weathering (freeze thaw and exfoliation) which topples blocks onto the fronting beach. This process is almost impossible to prevent though some remediation methods (such as devegetation and cliff drainage schemes) can help. Therefore, this strategic option in the Long Term is possibly viable.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Do Nothing (Observe and Monitor)
Long Term (2005 to 2049)	Retreat the Existing Line (subject to monitored erosion rates and cliff fall types, economic viability, future planning policy for service roads)

Figure D2.1 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

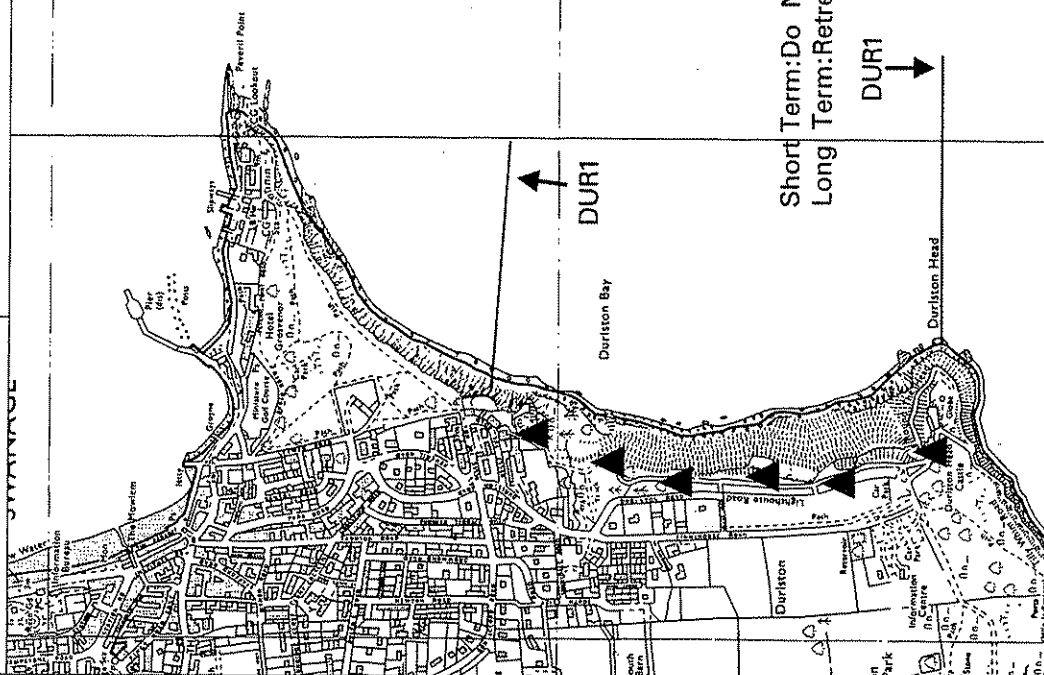
The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for DUR1. A Do Nothing policy (Short Term) can be justified on geomorphological and conservation grounds though it must ensure it will not increase the risk of erosion to built assets prior to a decision on future planning policy for this location (ie: within the next 5 years). Depending upon implementation methods used, a Retreat the Line policy would comply to Process Unit objectives, though its economic viability is dependent upon an initial Observe and Monitor period.

Impact on adjacent Management Units

As the preferred strategic option represents current policy for this management unit, it is unlikely that there would be any impacts upon adjacent management units in the Short Term. If the DUR2 policy is to hold in the Short Term, an assessment of possible outflanking at the management unit boundaries will need to be brought into the cliff monitoring exercise.

Review of Potential Implementation

Cliff stabilisation measures could reflect those being implemented at present in DUR2. Horizontal and upwardly inclined boreholes may be drilled into the face of the cliff to remove ground water pressure in the critical parts of the geological formations (subject to English Nature consent) with water being discharged near the foot of the cliff. It would be important to ensure that any cliff drainage scheme does not have any serious impact on the biodiversity of rare invertebrate species that occur in these locations. On the other hand, such cliff stabilisation would obscure the geological exposures and be visually intrusive. This issue must be addressed in the future implementation of the preferred policy.



Erosion rate of 0.44mpa has been reported (Trevor Crocker & Partners 1986) & is used to estimate the possible cliff top position in 2049

Short	Term: Do Nothing (involving observe & monitor)
Long	Term: Retreat the Existing Line

DUR1

▲ : Estimated position of the cliff top or marsh edge in 2049 based on published retreat rates, amended to accommodate for sea level rise. NB: not placed where Hold the Existing Line is proposed

○ : Existing Beach Monitoring Stations

☆ : Future Beach Monitoring Stations

Station	Future	Existing	Water Level	Tide Monitoring	Stations
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 : possible managed retreat sites

Durlston Bay Process Unit (DUR)
Management Unit DUR1
Durlston Head to Durlston Cliff Flats

Figure D2.1

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – DURLSTON CLIFF FLATS (DUR 2)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- South – Start of Durlston Cliff Flats (GR: 403516E, 078098N)
- North - End of Durlston Cliff Flats (GR: 403555E, 078189N)

Management Unit Description

This area is defended to maintain the integrity of flat development along the cliff top here. Controversial cliff stabilisation measures have been implemented to protect the area which is vulnerable to cliff erosion. The cliffs in front of the flats are of high geological importance and thus designated a SSSI and form part of a possible World Heritage Site for Jurassic Geology. The landscape of the area is also of high intrinsic quality and designated AONB and Heritage Coast status.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 69m; Defended frontage length: 69m

Environmental Designations

Statutory Designations

- Isle of Portland to Studland Cliffs cSAC – vegetated sea cliffs
- South Dorset Coast SSSI – ecology, geology and geomorphology
- Dorset AONB - landscape

Non-Statutory Designations

- Poole Bay and Isle of Purbeck SMA – marine ecology
- Purbeck Heritage Coast - landscape

Description of Land at Risk

- Housing (including Durlston Flats and adjacent highway and properties)
- Highway

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	H8 CC17	Flats policy area Quarrying	CC5 CC13 CC21	NNR, SSSI, Heathland Coastal valleys and limestone plateau Heritage Coast

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2307	1	Purbeck DC	0.06	Revetment	Class 1	>10	1989
681/2307	2	Purbeck DC	0.06	Gabions	Class 2	>10	1989

Description of Defences

- 2307** A cliff stabilisation scheme was carried out in 1989 which involved a 7.0m high 60m long armour rock revetment at the cliff toe, facing the 50m high cliffs with rockfill and cliff drainage measures. Cliff erosion was threatening the stability of a block of flats at the top of the cliffs. Erosion was caused by three factors, weathering, groundwater flow and wave action at the toe. The cliff stabilisation scheme is currently successful, though the degree of instability and asset outflanking caused by erosion along the unprotected lengths on either side may become an issue in the future.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – DURLSTON CLIFF FLATS (DUR 2)

Strategy Test Statements		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	○	✓	✓
Economically justifiable and environmentally acceptable?	✓	○	○	×
Compatible with adjacent strategies?	✓	✓(ST) ×(LT)	✓	×
Compatible with wider coastal processes?	✓	×	✓	×
Process Unit Objectives (See Part C)				
Strategy should not impact on immediate or adjacent beach levels (1)	▲	○	○	×
Strategy should ensure protection of life and property where economically viable (2)	×	✓(ST)	✓(ST) ×(LT)	✓
Strategy based on geomorphological principles for Durlston Bay (3)	×	✓(ST) ×(LT)	✓	✓
Strategy should not impact on important geological conservation designations (4)	▲	○	○	×
Strategy should not interfere with valuable habitats dependent upon contemporary coastal processes. (5)	✓	○	○	×
Strategy should have minimal impact on landscape quality (6)	▲	○	○	×
Strategy should have minimal impact on archaeological or historical potential (7)	✓	✓	✓	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (8)	×	✓(ST) ×(LT)	✓	×
Strategy should not impact on local economy, tourism or amenity (9)	×	✓	○	○
Suitability of Strategy Option	✓	✓(ST) ×(LT)	○	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further. Do nothing also appears inappropriate over the short term however, shall be evaluated in terms of what the implications of not doing something actually are likely to be in the short term and longer term.

A retreat policy is closely linked to methods to reduce groundwater instability, weathering of the cliff face and the frequency of wave action at the toe of the cliffs. The unstable geological nature of the Lower Purbeck Beds at the upper third of the cliff face result in long term problems in actually 'holding the line' have over the long term. It should be noted that continued failures of the cliff may obliterate the area of special geological interest to the north. An assessment of hold, retreat and do nothing shall therefore be made.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – DURLSTON CLIFF FLATS (DUR 2)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	increase of cliff failures as defence condition deteriorates	<i>continue to prevent cliff face being eroded and thus limit sediment supply to the Bay</i>	<i>allow natural realignment of cliff face over time whilst seeking to protect the cliff toe from erosion</i>	N/A
Effects on Human Environment	loss of Durlston Flats and road networks that serve them	protect Durlston Flats	<i>possible impacts on Durlston Flats</i>	N/A
Effects on Natural Environment and Conservation	- beneficial for cSAC vegetation - beneficial for the geological cliff face as a complete unit	- damage to cSAC vegetation - deleterious for the geological importance of the whole cliff face - impact on landscape value	- allow selective protection of the Durlston cliff face for geological reasons - possible impact on cSAC vegetation	N/A
Implications for Coastal Defences	<i>deterioration of existing structures present</i>	<i>need to introduce total cliff strengthening and improve standard of existing toe defence works</i>	<i>need to allow cliff top realignment in addition to toe strengthening</i>	N/A
Impacts within Process Unit	allow cliff processes to continue unhindered and the Durlston Bay shape to evolve naturally	impact on sediment budget of the bay, to a degree, over long term	prevent a 'hard point' occurring between two strategies for do nothing	N/A
Economics	dependent upon future planning policy	viable (depending on implementation)	dependent upon future planning policy	N/A

Current Policy: Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – DURLSTON CLIFF FLATS (DUR2)

Do Nothing

Selection of this option would result in the deterioration of existing defences in the Long Term coupled with slow episodic cliff top recession (after 10 years from 1999). It is probable that the condition of existing defences fronting this management unit would not change considerably in the Short Term, however, any cliff slumps that affect existing schemes to improve cliff drainage performance would not be rectified. Cliff instability on the upper parts of the Durlston Cliff may still occur due to the nature of landslipping within the precarious Lower Purbeck Beds which is only partly due to direct wave attack. Prior to defence construction, weathering of the face by forces such as wind, rain and frost was significant. Now, problems associated with groundwater rising in the winter and emanating from the face causing mudslides are the main concern. The implication of this in management terms is that very little can be done to halt cliff top recession which is the key component here. Cliff toe erosion would recommence over the Long Term once existing defences serve no future purpose or are removed.

Hold the Existing Line

For this strategic option to be successful in the Long Term, methods to hold the cliff toe would not result in the cliff top staying in its 1999 position. The nature of instability in these cliffs suggests that cliff top "movements" will continue regardless of schemes to prevent wave attack at the cliff toe. Consequently, whilst some success is apparent through cliff stabilisation methods to prevent cliff retreat, the geological composition of the cliffs suggest that to implement this policy over the Long Term could not be justified and would not be sustainable. This would be more acceptable in terms of geological conservation, even though defences are currently in place here.

Retreat the Existing Line

There is no open space left between the cliff top and the Durlston Cliff Flats and so any intended retreat strategy would be very difficult to manage. It is argued that the current Durlston Cliff Stabilisation scheme represents a form of Retreat as cliff falls are still accommodated for in its design. However, what is now recommended is to adopt a Retreat the Line policy that is more closely linked to statutory planning and coastal "setback" as opposed to the need to implement new coastal engineering schemes. This SMP recommends that due to the uncertainty over the timing of sporadic cliff falls in this Process Unit, attempts to manage retreat or "holding" the cliff top line are not practical and a Long Term setback planning policy for this location is required.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2009)	Hold the Existing Line (Observe and Monitor)
Long Term (2010 to 2049)	Do Nothing (subject to monitoring erosion rates and cliff fall types, economic viability, future planning policy for Durlston Cliff Flats)

Figure D2.2 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for DUR2. A Hold the Existing Line (Short Term) can only be justified on geomorphological and conservation grounds so long as the implementation methods just involve maintaining existing structures. The alongshore extent of existing defences should, if possible, not be increased. This will ensure there is no increased risk of erosion to built assets prior to a decision on future planning policy for this location (ie: within the next 5 years). Depending upon implementation methods used, a Long Term Retreat the Line policy would comply to Process Unit objectives, though this decision will need to be made from results of an initial Observe and Monitor period. This will need to deduce cliff fall type, frequency of mudflows/rock detachments and an assessment of cliff stabilisation results.

Impact on adjacent Management Units

It is reasonable to suggest that material released from the upper sections of the Durlston Cliffs that fall onto the foreshore will, through attritional processes, be broken down and transported within Durlston Bay. Therefore, the level of significance of cliff input is related to the immediate frontages within Durlston Bay.

Review of Potential Implementation

Implementation of the Hold the Line strategic option would involve maintaining existing defences in place (rock bund and gabion basket). The footpath presently crossing the bund would also need to be maintained in the Short Term. The Long Term life of this footpath will be subject to need.

Present and Future Monitoring/Studies

Cliff top monitoring and assessment of types of cliff fall will need to clearly be established to assess the most suitable implementation options required in the Long Term. Beach level monitoring within the Durlston Process Unit will need to be established and annual monitoring results suitably collated and stored digitally for wider future use.

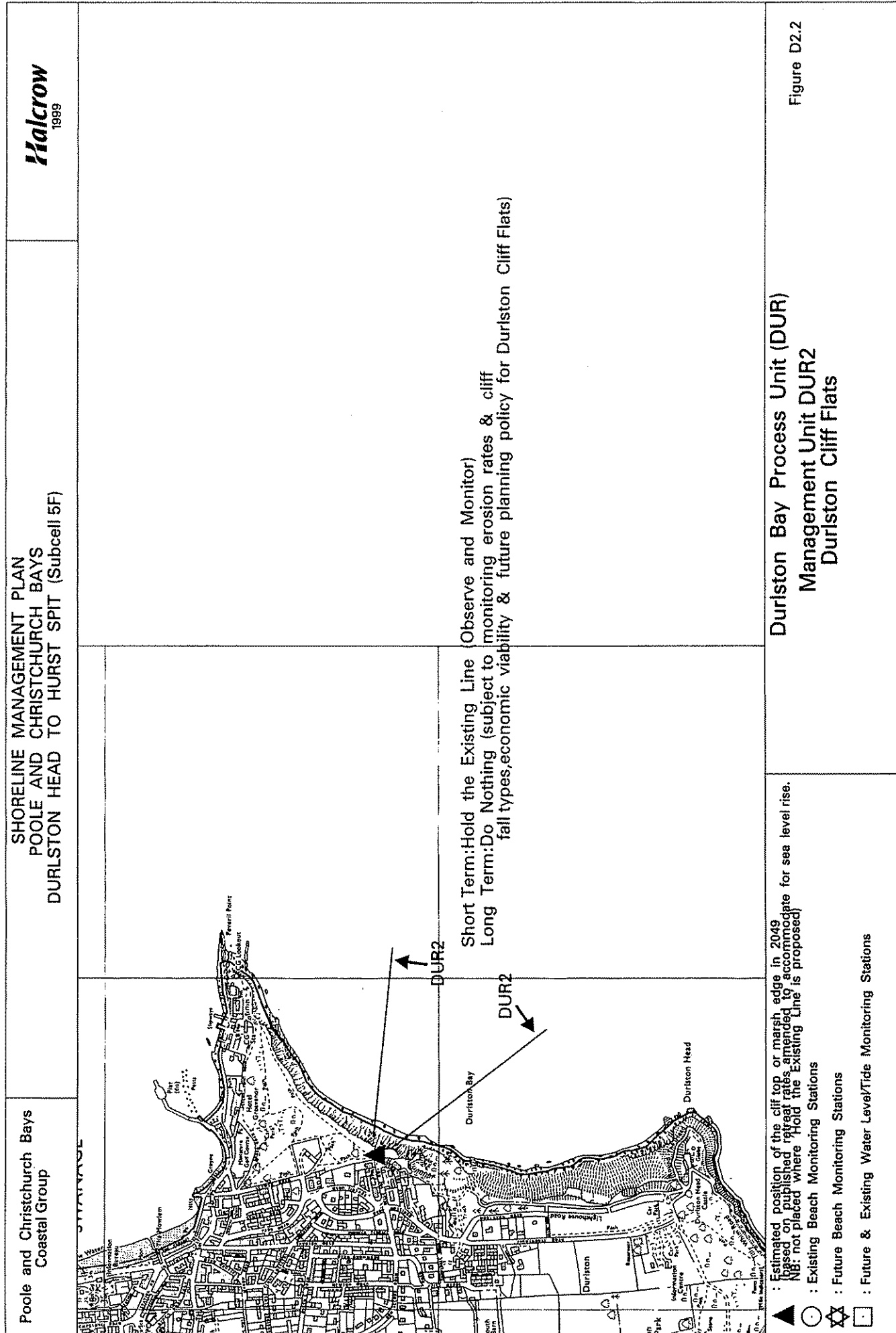


Figure D2.2

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – DURLSTON CLIFF FLATS TO PEVERIL POINT (DUR 3)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- South –Durlston Flats (GR: 403555E, 078189N)
- North – Peveril Point (GR: 404048E, 078647N)

Management Unit Description

Undeveloped cliff top extends along this length which is completely undefended. These cliffs are of national geological value being designated SSSI status and fresh exposures are maintained through active erosion. The only developments here are situated at the northern end of the unit consisting of a few scattered cottages and a coastguard station. A long outfall sewage pipe also extends from the shore at Peveril Point. Much of this area is an important area of open space for recreational pursuits and is designated Heritage Coast and AONB for its intrinsic landscape quality.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 704m; Defended frontage length: 0m

Environmental Designations

Statutory Designations

- Isle of Portland to Studland Cliffs cSAC – vegetated sea cliffs
- South Dorset Coast SSSI – ecology, geology and geomorphology
- Dorset AONB – landscape

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology
- Durlston Bay GCR – geological site
- Purbeck Heritage Coast – landscape

Description of Land at Risk

- Open Space
- Agricultural Land

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	H4 H7 H8 T10 T17 CC17	Infill Housing Important gaps / open areas Flats policy area Caravan & Tent Camping Sites Recreation / Leisure Facilities Quarrying	CC1-2 CC5 CC9 CC13 CC21	Conservation Area policies NNR, SSSI, Heathland Heath farms and countryside Coastal valleys and limestone plateau Heritage Coast

Coastal Defences

NONE

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – DURLSTON CLIFF FLATS TO PEVERIL POINT (DUR 3)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	○	✓	×
Economically justifiable and environmentally acceptable?	✓	×	○	×
Compatible with adjacent strategies?	✓(ST) ×(LT)	○	✓	×
Compatible with wider coastal processes?	✓	×	○	×
Process Unit Objectives (See Part C)				
Strategy should not impact on immediate or adjacent beach levels (1)	▲	×	○	×
Strategy should ensure protection of life and property where economically viable (2)	✓(ST) ×(LT)	✓(SH)	✓	×
Strategy based on geomorphological principles for Durlston Bay (3)	✓	×	○	×
Strategy should not impact on important geological conservation designations (4)	✓	×	○	×
Strategy should not interfere with valuable habitats dependent upon contemporary coastal processes. (5)	✓	×(ST) ○(LT)	○	×
Strategy should have minimal impact on landscape quality (6)	▲	×	○	×
Strategy should have minimal impact on archaeological or historical potential (7)	✓	×	○	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (8)	×	✓(SH)	×	×
Strategy should not impact on local economy, tourism or amenity (9)	✓	✓	✓	×
Suitability of Strategy Option	✓(ST)	×	○	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further.

Hold (long term) is not economically viable due to the land at risk along the cliffs fronting Peveril Point Road, this will not be assessed for its applicability as no assets are perceived at risk over the next 75 years. This may also impact upon the cSAC designation within Durlston Bay. An assessment of retreat and do nothing shall therefore be made.

3 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – DURLSTON CLIFF FLATS TO PEVERIL POINT (DUR 3)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	continue erosion of cliff face at contemporary rates	N/A	reduce erosion rate of cliff	N/A
Effects on Human Environment	increased risk of erosion to properties towards Peveril Point	N/A	reduced risk of erosion (long term) to built assets towards Peveril Point	N/A
Effects on Natural Environment and Conservation	- beneficial for cSAC vegetation habitat - beneficial for geological SSSI and GCR site	N/A	- possibly damaging to cSAC vegetation - possible long term damage to geological SSSI	N/A
Implications for Coastal Defences	N/A	N/A	need to introduce a scheme which would reduce erosion to the north and that is environmentally acceptable	N/A
Impacts within Process Unit	possible risk of outflanking with DUR2	N/A	reduction in sediment input to Durlston Bay	N/A
Economics	long term risk to assets to the north within Swanage Bay	N/A	viable if applied to selective sites (subject to need)	N/A

Current Policy:

Do Nothing

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – DURLSTON CLIFF FLATS TO PEVERIL POINT (DUR3)

Do Nothing

This is the current policy with no man-made coast protection defences in the unit. According to the Swanage Beach Management Plan (Halcrow 1998), assets within this management unit will not be at risk over the next 75 years based on an assessment of historical shoreline position. Therefore, this strategic option is suitable over the Long Term as part of an Observe and Monitor policy.

Retreat the Existing Line

Subject to a more detailed cost benefit appraisal of likely methods used, this strategic option could be viable over the Long Term depending on Purbeck District Council Planning Policy. Attempts could be made seeking to strategically "stabilise" sections of the Durlston Cliffs from future landslipping. The presence of numerous faults in the Purbeck Stone exacerbates the problem as this increases this rock facies type to mechanical weathering (freeze thaw and exfoliation) which topples blocks onto the fronting beach. This process is almost impossible to prevent. Therefore, as assets are not deemed to be at risk, this strategic option is not viable.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Do Nothing (Observe and Monitor)
Long Term (2005 to 2049)	Do Nothing (subject to monitored erosion rates and cliff fall types, economic viability, future planning policy for assets at risk)

Figure D2.3 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for DUR3. A Do Nothing policy (Long Term) can be justified on geomorphological and conservation grounds though it must consider the risk of erosion to built assets prior to a decision on Long Term future planning policy for this location (ie: within the next 50 years).

Impact on adjacent Management Units

As the preferred strategic option represents current policy for this management unit, it is unlikely that there would be any impacts upon adjacent management units in the Short Term. Assuming that DUR2 policy will be to hold in the Short Term, an assessment of possible outflanking at the management unit boundaries may need to be brought into the cliff monitoring exercise at the junction of the two management units.

Review of Potential Implementation

Not relevant

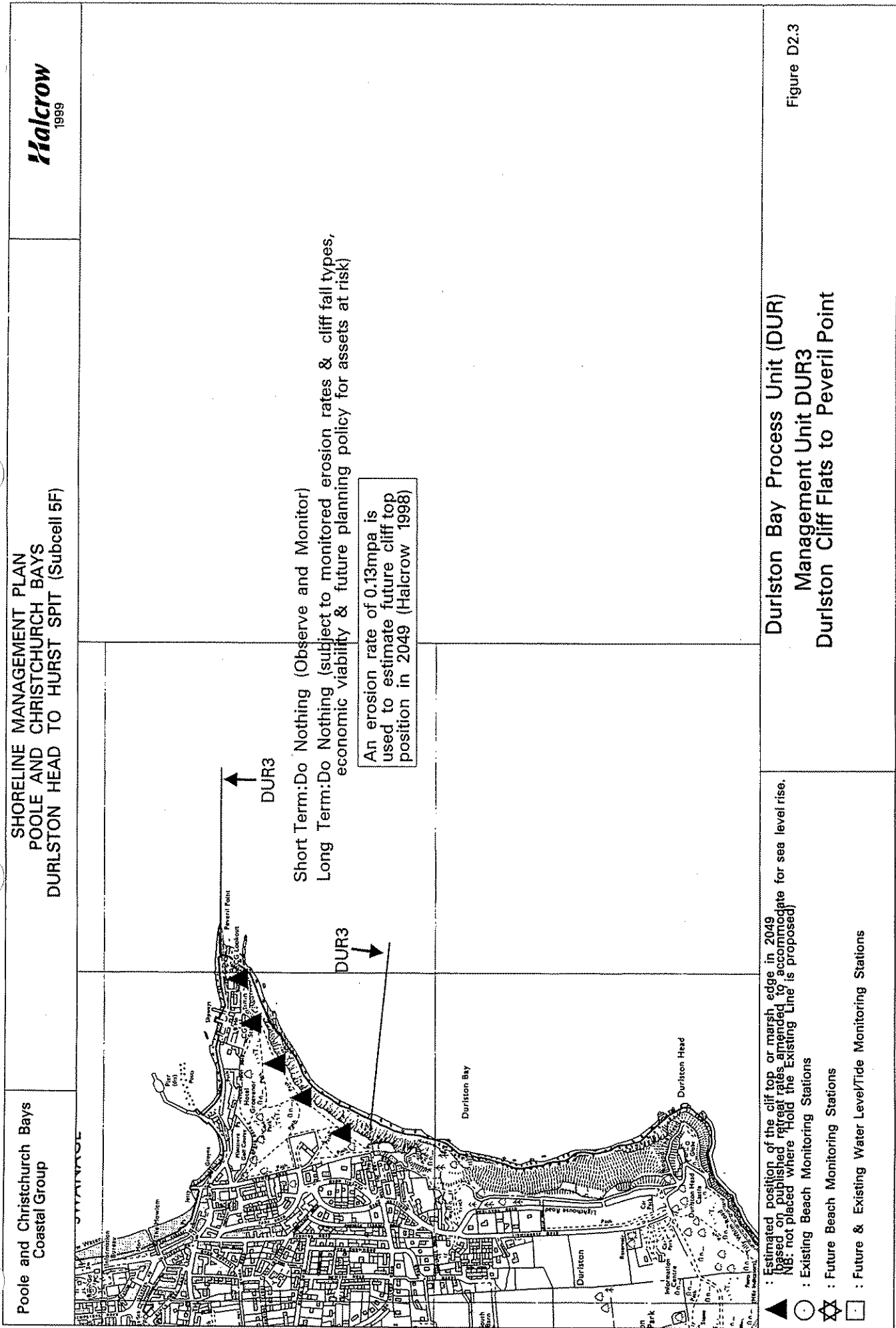


Figure D2.3

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – PEVERIL POINT TO SWANAGE PIER (SWA 1)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- East – Peveril Point (GR: 404048E, 078647N)
- West – Swanage Pier (GR: 403561E, 078714N)

Management Unit Description

Much of this unit is developed although not entirely defended along its length. Swanage Pier is a large tourist attraction, forming part of a major enhancement programme for the seafront which has been restored in recent years and includes many tourist facilities and attractions. It is also a popular site for diving enthusiasts with the pier often used for sightseeing tours and the launching of pleasure and dive boats. Housing, a sewage treatment works (under construction), a coastguard station and slipway also line this frontage which is considered to be of national landscape importance and designated AONB.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 609m; Defended frontage length: 140m

Environmental Designations

Statutory Designations

- Dorset AONB – landscape
- South Dorset Coast SSSI – ecology, geology and geomorphology

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology
- Durlston Bay GCR – geological site

Description of Land at Risk

- Housing
- R.N.L.I facility
- Fishermen's Huts
- Sewage Outfall
- Sewage Treatment Works
- Sailing Club

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	H3 H6 H17 CC17	Positive Infilling Infill Housing Residential development conditions Quarrying	C1-2 CC13 CC21	Conservation Area policies Coastal valleys and limestone plateau Heritage Coast

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2306	1	Wessex Water	0.20	Wall	Class 3	5-10	1950
681/2305	1	Wessex Water	0.17	Wall	Class 3	<5	1950
681/2305	2	Private	0.17	Wall	Class 3	<5	1980

Description of Defences

- 2305 To the south of Swanage, along this 170m defence length, a foul sewage outfall pipe runs along the foreshore in this area and discharges at Peverill Point. The outfall is owned and maintained by Wessex Water and has a concrete surround which although undermined in places has not degraded since 1993 (when the Coast Protection Survey of England was carried out). A private housing development has been built behind a masonry wall which extends along the rear of the foreshore along this defence length.
- 2306 Further east in Swanage Bay, a small 200m long concrete wall protects the houses on a grass bank above. There are two slipways along this defence length and the outfall pipe with concrete surround runs along the foreshore.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – PEVERIL POINT TO SWANAGE PIER (SWA 1)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	×	✓
Economically justifiable and environmentally acceptable?	×	✓	✓	×
Compatible with adjacent strategies?	×	✓	×	×
Compatible with wider coastal processes?	✓	×	○	×
Process Unit Objectives (See Part C)				
Strategy should not impact on immediate or adjacent beach levels (1)	▲	✓(ST) ×(LT)	○	×
Strategy should ensure protection of life and property where economically viable (2)	×	✓	×	×
Strategy based on geomorphological principles for Durlston Bay (3)	✓	✓(ST) ×(LT)	○	×
Strategy should not impact on important geological conservation designations (4)	✓	○	○	×
Strategy should not interfere with valuable habitats dependent upon contemporary coastal processes. (5)	✓	○	○	×
Strategy should have minimal impact on landscape quality (6)	▲	○	○	×
Strategy should have minimal impact on archaeological or historical potential (7)	✓1	○	○	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (8)	×	✓	×	×
Strategy should not impact on local economy, tourism or amenity (9)	×	✓	○	×
Suitability of Strategy Option	✓(ST)	✓(SH)	○	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SH Selective Hold

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further. Do nothing also appears inappropriate, however, it will be evaluated with the selective hold and retreat options to determine what the implications of not doing something actually are likely to be in the short and longer term.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – PEVERIL POINT TO SWANAGE PIER (SWA 1)

	DO NOTHING (short term effects in italics)	SELECTIVELY HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	<i>no significant alteration to the strategically important Peveril Point and thus the transport of littoral sediments around it (erosion of Upper Jurassic beds is low)</i>	unlikely to affect the strategically important Peveril Point and thus the transport of littoral sediments around it (erosion of Upper Jurassic beds is low)	<i>no significant alteration to the strategically important Peveril Point and thus the transport of littoral sediments around it (erosion of Upper Jurassic beds is low) dependent on methods used</i>	N/A
Effects on Human Environment	threat to residential assets and slipways along entire unit over the long term (especially flooding)	<i>protection of built residential assets along the unit from flooding</i>	reduced threat to residential assets over the long term with no likely benefits to prevent flooding to properties around the slipway	N/A
Effects on Natural Environment and Conservation	no impact on south Dorset Coast SSSI or on landscape value	possible impact on maerl beds and benthos	possible impact on South Dorset Coast SSSI dependent upon implementation	N/A
Implications for Coastal Defences	no new defences required	<i>maintenance of high masonry wall, outfall pipe, and gabions</i>	<i>schedules needed to reduce erosion or the need to "set back" structures</i>	N/A
Impacts within Process Unit	the main risk of erosion is likely to be from the Durlston side (DUR)	no significant change to the present	flooding of the slipway may occur and so retreat is unlikely to resolve the flooding issue	N/A
Economics	risk of flooding likely to increase long term	viable	not viable	N/A

Current Policy: Selectively Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – PEVERIL POINT TO SWANAGE PIER (SWA1)

Do Nothing

The selection of this strategic option would see an increased Long Term risk to the properties on Peveril Point though assets are still not seen to be at risk from erosion over a 75 year period. There is a high vertical masonry wall in front of part of this length called The Haven. Without maintenance, The Haven would be at risk in the Long Term. This option would see the gradual deterioration of slipways, short stone groyne structures and the outfall pipe (with concrete surround) which runs along the foreshore of this management unit. The outfall pipe and surround acts as a first line of defence. Whilst the current condition of these structures is good, the Long Term implication of doing nothing is questionable because properties around the slipway will be at increased risk to flooding as waves can run up the sloping concrete foreshore. Therefore, this strategic option is not applicable over the Long Term.

Selective Hold the existing line

This strategic option represents current policy. It would mirror the benefits set out under the Do Nothing strategic option though would provide the added benefit of allowing intervention (Long Term) at strategic locations (eg: to prevent flooding from the concrete slipway, at the Haven, or maintenance of the outfall pipe. Holding the Line where currently no built defences occur or would require stringent economic justification. There is perceived to be little need to intervene in the Short Term.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Selective Hold the Existing Line
Long Term (2005 to 2049)	Selective Hold the Existing Line

Figure D2.4 displays the likely implications of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for SWA1. This is because natural processes will be maintained allowing the existing littoral transport system to continue and the policy would ensure protection of life and property by not increasing the risks of erosion and flooding to immediate properties and on adjacent management unit lengths.

Impact on adjacent Management Units

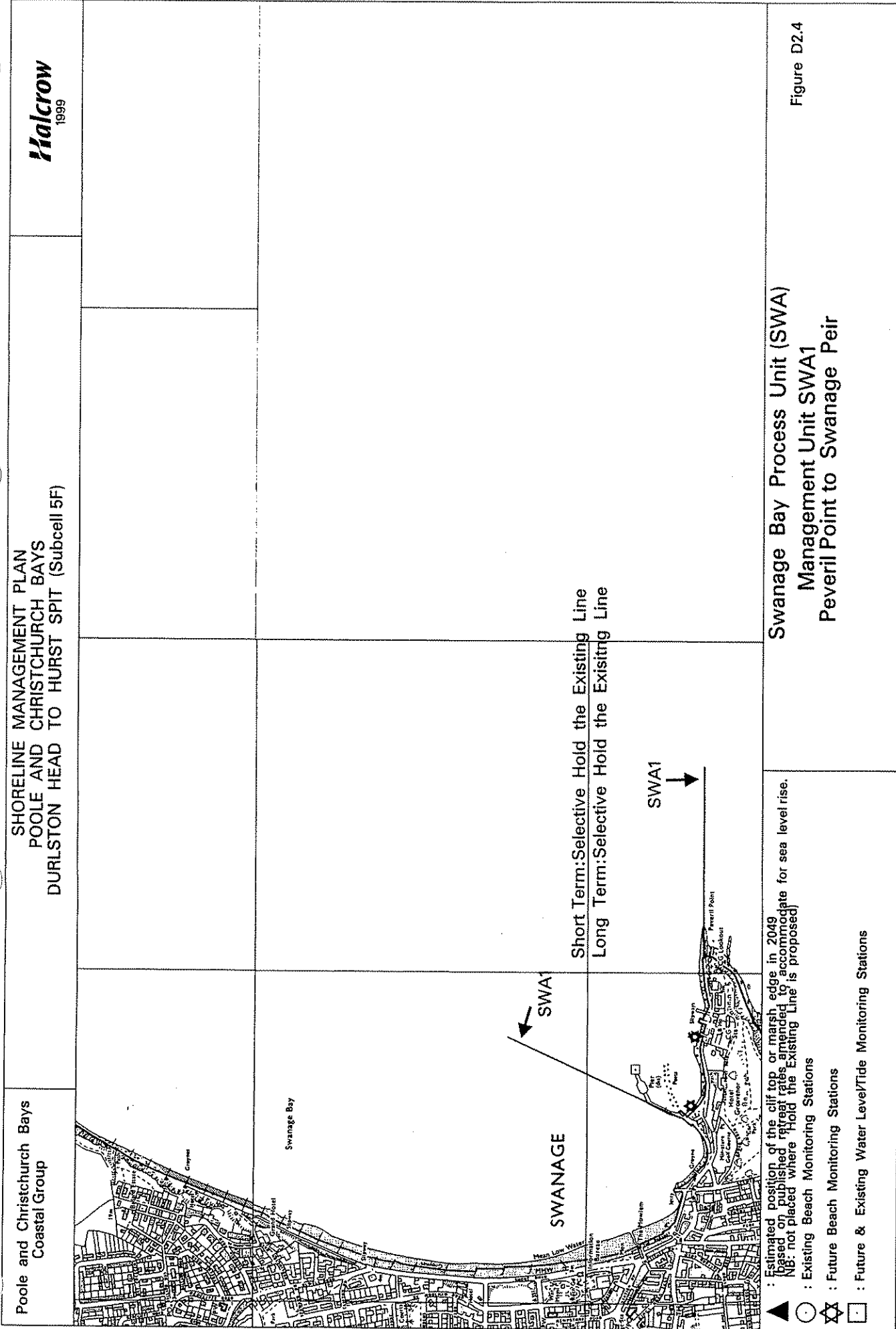
Maintaining existing defences would have no impact on adjacent management units or affect marine biota and subtidal habitats on the Peveril Ledges that occur offshore from this management unit. There is negligible transport along this length.

Review of Potential Implementation

This policy can be successfully implemented by maintaining existing defences and if necessary in the Long Term, introducing some flood protection structure to reduce the risk of flooding from wave run up at the current concrete slipway.

Present and Future Monitoring/Studies

There is no requirement to carry out beach profile monitoring along this management unit. The monitoring exercise set up for the Swanage Bay Beach Management Study needs to be continued on a bi-annual basis. The information should be stored in a suitable format so that time series assessments of change may be systematically compiled by Purbeck District Council.



PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – SWANAGE PIER TO OUTFALL JETTY (SWA 2)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- East - Swanage Pier (GR: 403561E, 078714N)
- West – Outfall Jetty (Swanage Bay) (GR: 403103E, 079325N)

Management Unit Description

This unit contains the southern frontage of Swanage including the town centre. The majority of coastal hinterland to the north of the unit is undeveloped and comprises a public recreation ground whilst to the south of the unit a miniature golf course is located behind the Parade. The town centre forms part of a Conservation Area that extends southwards towards the pier, the aim of which is to protect the character of the buildings in the area, some of which are Scheduled. The entire promenade frontage is heavily defended and lies behind a wide sandy beach that is a very popular tourist attraction.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 1335m; Defended frontage length: 900m

Environmental Designations

Statutory Designations

- Dorset AONB – landscape
- The Old Prison and Pump SM – historical interest

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology

Description of Land at Risk

- Tourist facilities
- Housing
- Commercial Properties
- Highway

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	H3 H6 H7 H17 T10 C8 C9 TR12 CC17	Positive Infilling Infill Housing Important gaps / open areas Occupancy of Residential Development Caravan & Tent Camping Sites Enhancement Scheme Redevelopment of Lower High Street Development Control Line Quarrying	C1-2 CC12 CC13 CC19	Conservation Area policies Clay Vale Coastal valleys and limestone plateau Archaeology

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2304	2	Purbeck DC	0.50	Groynes	Class 4	5-10	1930
081/1130	221	Purbeck DC	1.20	Wall	Fair	>5	1938

Description of Defences

2301 In Swanage the 500m length of coast is defended by a seawall and seven timber groynes, typically 30m long. Generally the seawall is in a good state of repair, however, some of the seawall along the lower part of the High Street is in a poor condition. Shore Road is immediately behind the seawall and although debris has been thrown up on the road during storms over the last four years, there have been no reports of damage or flooding in this area. The groynes were refurbished in 1985 and a section of seawall toe was rebuilt in recent years. The timber groynes appear to be in a reasonable state of repair, except some of the highest planking is missing. In 1993 the Outfall Jetty was constructed, seaward of Victoria Avenue, as part of the Swanage Flood Alleviation Scheme.

081/1130 The 1.2km stone wall at the rear of the beach and the timber groynes, see defence codes 2404 and 2405, are in fair condition.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – SWANAGE PIER TO OUTFALL JETTY (SWA 2)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	×	✓
Economically justifiable and environmentally acceptable?	✓	✓	×	×
Compatible with adjacent strategies?	×	✓	×	×
Compatible with wider coastal processes?	✓	○	○	×
Process Unit Objectives (See Part C)				
Strategy should not impact on immediate or adjacent beach levels (1)	▲	○	○	×
Strategy should ensure protection of life and property where economically viable (2)	×	✓	×	✓
Strategy based on geomorphological principles for Durlston Bay (3)	✓	○	○	×
Strategy should not impact on important geological conservation designations (4)	n/a	n/a	n/a	n/a
Strategy should not interfere with valuable habitats dependent upon contemporary coastal processes. (5)	✓	○	○	×
Strategy should have minimal impact on landscape quality (6)	×	○	○	×
Strategy should have minimal impact on archaeological or historical potential (7)	✓	○	○	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (8)	×	○	×	×
Strategy should not impact on local economy, tourism or amenity (9)	×	✓	×	✓
Suitability of Strategy Option	×	✓ (LT)	×	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further. Do nothing also appears inappropriate, however, shall be evaluated with the retreat option in terms of what the implications of this actually are likely to be in the short and longer term.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – SWANAGE PIER TO OUTFALL JETTY (SWA 2)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	continuation of slightly higher wave energies to those experienced further north	no significant alteration to sediment processes particularly if beach recharge methods are used	N/A	N/A
Effects on Human Environment	- increased risk of flooding to commercial backing assets - likely impact on tourism economy	- provide protection to commercial and residential assets - improve the frontage for tourism	N/A	N/A
Effects on Natural Environment and Conservation	- increase risks to historical assets - protection of Old Prison and Pump SM - deterioration of landscape of area as defences fail - beneficial for marine benthos	methods of beach recharge may impact on marine benthos (SMA)	N/A	N/A
Implications for Coastal Defences	deterioration of existing defences	need to improve standard of service of existing built defences in addition to beach recharge programmes	N/A	N/A
Impacts within Process Unit	sediment exchange with the offshore zone likely to be continued	sediment exchange with the offshore zone likely to be continued should beach recharge be used	N/A	N/A
Economics	not suitable due to risk to commercial and residential assets	viable	N/A	N/A

Current Policy: Hold the Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – SWANAGE PIER TO OUTFALL JETTY (SWA2)

Hold the Existing Line

From the Screening Procedures carried out, this is the only viable option to select for this management unit. This strategic option would represent a continuation of current practice and would be achieved through the maintenance and upgrading of defences (including beach recharge). The Hold strategy does not apply to maintenance of Swanage Pier structures as these do not serve any coastal defence purpose along this management unit frontage (open structures). This strategic option is economically viable as presented in the Swanage Bay Beach Management Plan (Halcrow 1999).

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line
Long Term (2004 to 2049)	Hold the Existing Line

Figure D2.5 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

A policy to Hold the Line in the Short Term and Long Term would comply with most of the Process Unit Objectives set out in the Objective Screening Table for SWA2. Complete compliance to the Process Unit Objectives for this management unit will be dependent upon implementation schemes used, particularly paying attention to mitigation against environmental impacts.

Impact on adjacent Management Units

Any future additional works that interfere with contemporary littoral processes within Swanage Bay (Long Term) may result in a concentration of erosion on adjacent undefended lengths further to the north (SWA4). The maintenance of existing structures and the adoption of the recommendations within the Swanage Bay Beach Management Plan (involving beach nourishment) would reduce the risk of future erosion and flood risks within this and adjacent management units over the Long Term. This is because the defended nature of this coast will not be able to naturally adjust to sea level rise or continue to supply sufficient sediments to the fronting beach resulting in potential beach scour and increased seawall overtopping.

Review of Potential Implementation

The defences within this management unit are performing satisfactorily, with no immediate adverse effects on coastal processes. It is suggested that implementation of this policy should involve maintaining existing defences as recommended in the Swanage Bay Beach Management Plan (Halcrow 1999) covering the issue of beach replenishment on a bay scale and not just related to this management unit. The recommendations set out in the Swanage Bay Beach Management Study set out clearly the possible environmental implications of using recharge on the sensitive maerl beds and subtidal fauna found on the limestone ledges that occur offshore. Consequently, there will be a requirement to

undertake a detailed Environmental Impact Assessment prior to the implementation of the recommended scheme covering this management unit.

Present and Future Monitoring/Studies

The monitoring exercise set up for Swanage Bay Beach Management Study needs to be continued on a bi-annual basis. The information should be stored in a suitable format so that time series assessments of change may be undertaken by Purbeck District Council when required.

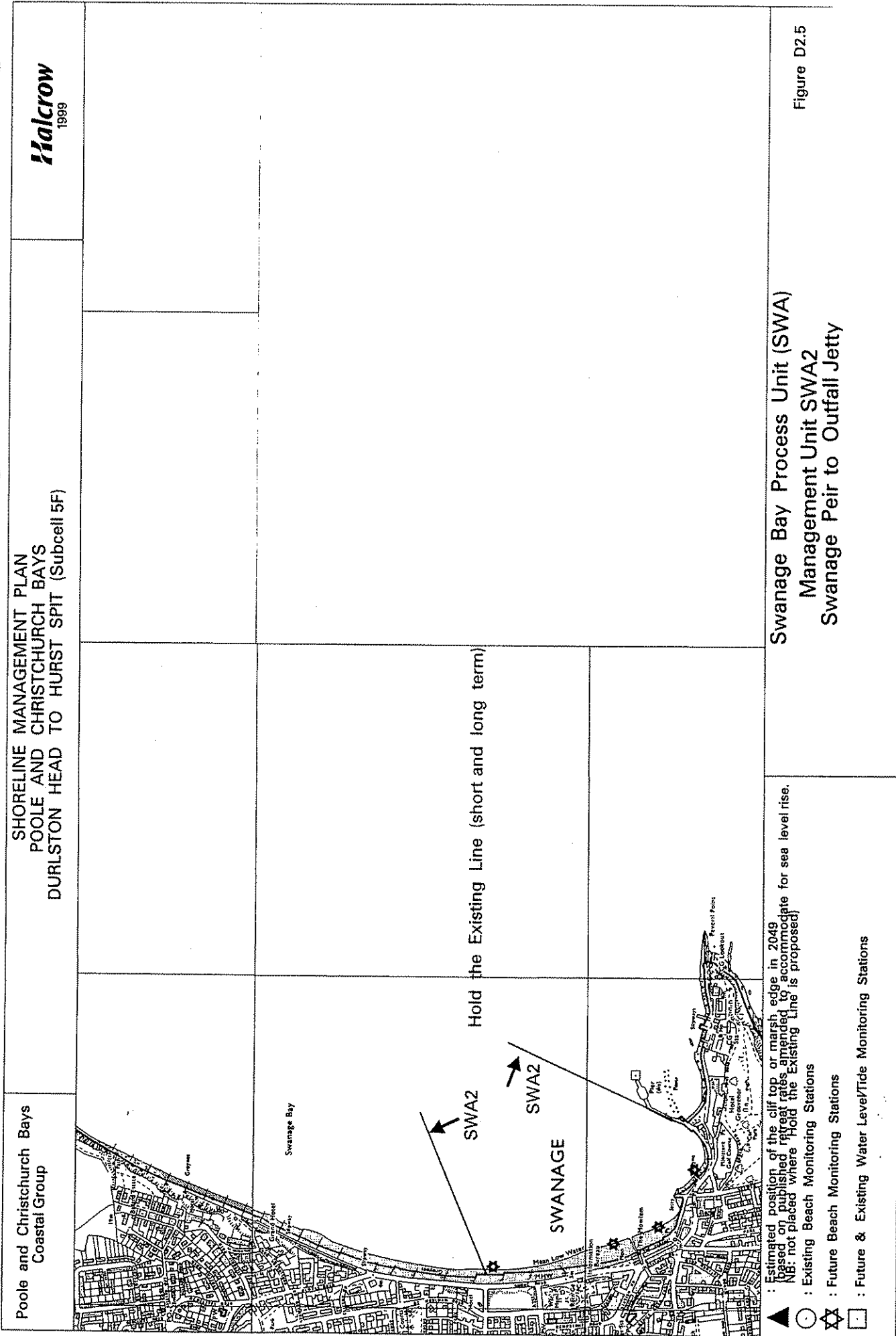


Figure D2.5

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – OUTFALL JETTY TO SHEPS HOLLOW (SWA 3)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- South – Outfall Jetty (Swanage Bay) (GR: 403103E, 079325N)
- North – Sheps Hollow (GR: 403442E, 080433N)

Management Unit Description

This unit contains the northern frontage of Swanage, a predominantly residential settlement with a number of hotels and associated tourist related facilities located along the promenade that fronts the town. Several beach huts line the back of the beach under the cliff which is badly eroding and slumping in places. A number of houses and hotels lie on or close to the cliff top, some of which have required cliff stabilisation measures.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 1187m; Defended frontage length: 1187m

Environmental Designations

Statutory Designations

- Studland Cliffs proposed SSSI – geology
- Dorset AONB - landscape

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology
- Swanage GCR – geological site

Description of Land at Risk

- Highway
- Amenity Land
- Housing
- Commercial Properties

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	H6 H7 H8 H17 T10 TR9	Infill Housing Important gaps / open areas Flats policy area Occupancy of Residential Development Caravan & Tent Camping Sites Footpath Extension	CC12 CC19 CC21	Clay Vale Archaeology Heritage Coast

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
081/1130	220	Purbeck DC	1.20	Groynes	Bad	2 to 5	
681/2304	1	Purbeck DC / Dorset CC	0.50	Wall	Class 2	5-10	1930
681/2303	4	Purbeck DC	0.60	Toe piling	Class 3	5-10	1962
681/2303	3	Purbeck DC	0.60	Wall	Class 3	>10	1962
681/2303	2	Purbeck DC	0.60	Groynes	Class 4	5-10	1962
681/2303	1	Purbeck DC	0.60	Wall	Class 4	5-10	1962
681/2302	2	Purbeck DC	0.24	Cliff/scarp			
681/2302	1	Purbeck DC	0.24	Groynes	Class 4	<5	1962

Description of Defences

2302 In North Swanage, four timber groynes, typically 30m long, were constructed along this 240m length in 1962 in an effort to maintain the beach in order to prevent further erosion of the cliffs. The timber groynes appear to be in a reasonable state of repair, although some of the highest planking is missing. The seaward end of the groynes are in the poorest condition. A lot of the sheet piled ends of the groynes have rusted through. The cliffs continue to erode, recently at Sheps Hollow a section of the cliff slipped destroying the landward end of the most northern groyne.

2303 In North Swanage a number of beach huts and shops on the promenade are protected by a 600m long series of small seawalls, built in the 1920s, of differing construction which follow an erratic line along the toe of the cliffs. The cliffs in this area are unstable and material falls annually onto the promenade. Several attempts have been made to protect the cliffs but groundwater levels and drainage pose a particular problem. In the 1960s the seawall was refurbished, a new concrete and sheet piled toe detail were added and some sections of seawall were rebuilt. Generally, the seawall appears to be in a reasonable state of repair.

A further ten timber groynes, typically 30m long, were constructed in 1962 and appear to be in a reasonable state of repair, although some of the highest planking is missing. The seaward end of the groynes are in the poorest condition and many of the sheet piles have rusted through.

2304 In Swanage the 500m length of coast is defended by a seawall and seven timber groynes, typically 30m long. Generally the seawall is in a good state of repair. Shore Road is immediately behind the seawall and although debris has been thrown up on the road during storms over the last four years, there have been no reports of damage or flooding in this area. The groynes were refurbished in 1985 and a section of seawall toe was rebuilt in recent years. The timber groynes appear to be in a reasonable state of repair, except some of the highest planking is missing and the sheet piled ends of the groynes have rusted through. In 1993 the Outfall Jetty was constructed, seaward of Victoria Avenue, as part of the Swanage Flood Alleviation Scheme.

681/1130 The 1.2km stone wall at the rear of the beach and the timber groynes, see defence codes 2404 and 2405, are in fair condition. Responsibility for maintenance is unclear and currently under discussion.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – OUTFALL JETTY TO SHEPS HOLLOW (SWA 3)

Strategy Test Statements (See Part C)	Coastal Defence Strategy Options			
Core Objectives	Do Nothing	Hold	Retreat (to the north only)	Advance
Technically viable?	✓	✓	○	✓
Economically justifiable and environmentally acceptable?	✓	○	○	×
Compatible with adjacent strategies?	×	○	✓	×
Compatible with wider coastal processes?	✓	○	○	×
Process Unit Objectives (See Part C)				
Strategy should not impact on immediate or adjacent beach levels (1)	✓	○	×	×
Strategy should ensure protection of life and property where economically viable (2)	×	✓	×	✓
Strategy based on geomorphological principles for Durlston Bay (3)	✓	○	×	×
Strategy should not impact on important geological conservation designations (4)	✓ ¹	○	○	×
Strategy should not interfere with valuable habitats dependent upon contemporary coastal processes. (5)	✓	○	○	×
Strategy should have minimal impact on landscape quality (6)	×	○	○	×
Strategy should have minimal impact on archaeological or historical potential (7)	×	○	×	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (8)	×	✓	×	✓
Strategy should not impact on local economy, tourism or amenity (9)	×	✓	×	○
Suitability of Strategy Option	×	✓	○ (LT)	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further.

The method of how to hold the line is important to establish to ensure protection of existing assets or increase the risk of outflanking. This unit may be subject to a southerly extension of the geological SSSI as well as also falling within a cSAC and so implementation must abide to the objectives and requirements of English Nature.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – OUTFALL JETTY TO SHEPS HOLLOW (SWA 3)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	allow natural bay shape to evolve over the long term	- prevent natural bay shape of Swanage Bay from occurring - possible long term impact on material moving offshore (dependent on methods used)	possible impact on cliff face (vegetation cover etc) should defences be set back to accommodate change	N/A
Effects on Human Environment	<i>significant risk of erosion to assets along the unit</i>	provide protection for commercial, residential and tourist assets	increase erosion risk to Shep Hollow and outflanking at the Pines Hotel defence	N/A
Effects on Natural Environment and Conservation	beneficial to the proposed southern extension of the geological SSSI	- damaging to the impact on proposed SSSI at Swanage Cliffs and GCR site. - beach recharge may impact on offshore marine benthos communities	extension to geological SSSI southwards would not benefit from retreating defences or introducing schemes to reduce erosion here to prevent outflanking.	N/A
Implications for Coastal Defences	deterioration of existing defences causing a possible hazard to beach walkers	need for regular maintenance coupled with beach recharge programmes	a balance between achieving geological conservation objectives and asset protection is needed here (ie: slow down erosion rate)	N/A
Impacts within Process Unit	no significant impacts	may prevent sediment input from cliffs between Pines Hotel and Sheps Hollow	any schemes introduced may alter sediment budget of Swanage Bay	N/A
Economics	loss of commercial and residential assets	viable	possibly viable for short stretch only	N/A

Current Policy: Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – OUTFALL JETTY TO SHEPS HOLLOW (SWA3)

Do Nothing

This strategic option would result in the deterioration of existing defences in front of New Swanage. According to the Swanage Beach Management Study (Halcrow 1999), it is predicted that with the existing defences in places, a Do Nothing strategic option would result in the fronting beach receding by approximately 7.5m in 10 years. There would be a gradual deterioration in the condition of existing defences which would reduce the standard of service that existing defences will provide. This will lead to the progressive failure of the paved surfaces behind the seawall during less severe events. The backing cliffs to the north and the highway to the south would be subject to increased wave attack as defences fail over the Long Term. Consequently, this strategic option is not viable.

Hold the Existing Line

To continue to maintain existing defences within this management unit, protecting existing built assets from erosion would be economically viable. However, the construction of new linear defences in the new proposed extension to the geological SSSI (to the north) would be inadvisable (currently no seawall present). Instead, the main issue that arises is that no further drainage / cliff stabilisation will be allowed here in the future. This strategic option, nonetheless, is viable depending upon methods of implementation used.

Retreat the Existing Line

There is limited open space behind the existing defence structures though there is more behind the northern part of this unit (cliffed section). Consequently, this strategic option may be technical viable, however, the unstable nature of the backing Wealden Bed cliffs to the north would make this very difficult to achieve as instability is exacerbated by seepage in the material and mudflows. Consequently, retreating the line landward would not be the complete sustainable solution to ensuring cliff stability Long Term.

This strategic option is therefore not viable.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line (maintain existing defences)
Long Term (2005 to 2049)	Hold the Existing Line (through the use of beach recharge especially to the north of the unit)

Figure D2.6 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

A policy to Hold the Line in the Short Term and Long Term would comply with most of the Process Unit Objectives set out in the Objective Screening Table for SWA3. The exceptions are the threat to long term geological conservation objectives and that the policy is not compliant with sound geomorphological

principles. Although the maintenance of littoral processes is of paramount importance within Swanage Bay, the threat of losing established property at New Swanage cannot be overlooked. A compromise needs to be reached between ensuring the continuation of natural processes and the required protection of property from erosion. By ensuring that any scheme proposed is sympathetic to the wider coastal processes, and not deleterious to adjacent units (ie. through the use of beach recharge), then compliance with the Process Unit Objectives will be attained.

Impact on adjacent Management Units

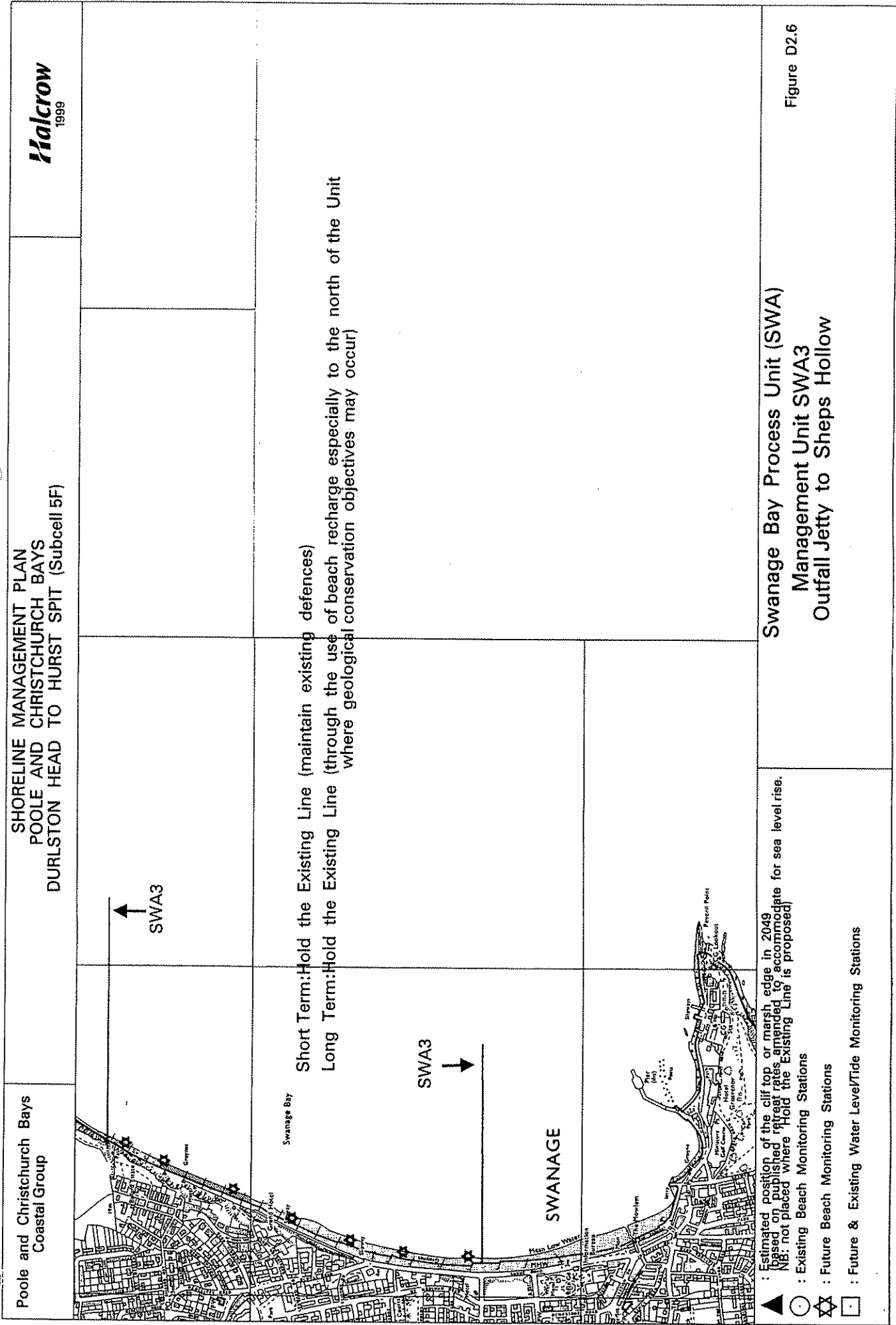
Any future additional works that interfere with contemporary littoral processes within Swanage Bay (Long Term) may result in a concentration of erosion on adjacent undefended lengths (SWA4) in addition to increasing the outflanking risk between SWA3 and SWA4. The maintenance of existing structures and the adoption of the recommendations within the Swanage Bay Beach Management Plan (involving beach nourishment) would reduce the risk of any future downdrift erosion event.

Review of Potential Implementation

The defences within this management unit are performing satisfactorily, with no immediate adverse effects on coastal processes. It is suggested that implementation of this policy should involve maintaining existing defences as part of the Swanage Bay Beach Management Plan (Halcrow 1999) covering the issue of beach replenishment on a bay scale and not just related to this management unit. Maintaining the beach width through recharge would be the most suitable approach as this would allow the cliffs in the northern half of the unit to erode (due to groundwater saturation and geotechnical issues) though at a lesser rate than if intervention on the foreshore isn't carried out. Depending on the future management of the proposed southerly extension to the geological SSSI, actions may be required to clear important stratigraphical sequences behind the existing defences. Consequently, actions to upgrade or renew existing defences need to be sensitive to this Long Term environmental requirement.

Present and Future Monitoring/Studies

The monitoring exercise set up for the Swanage Bay Beach Management Study as part of this SMP needs to be continued on a bi-annual basis. The information should be stored in a suitable format so that time series assessments of change may be undertaken by Purbeck District Council when required.



PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – SHEPS HOLLOW TO BALLARD POINT (SWA4)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Sheps Hollow (GR: 403442E, 080433N)
- East – Ballard Point (GR: 404741E, 081249N)

Management Unit Description

This stretch of cliffed coastline is undeveloped and thus undefended, suffering limited erosion. The coast here is considered to be of national landscape importance and designated AONB and Heritage Coast. It forms part of a candidate SAC due to the occurrence of vegetated sea cliffs and early gentian and the Purbeck Ridge (east) is a SSSI containing an important area of chalk grassland with great plant diversity. The unit is also of national geological importance forming part of the proposed World Heritage Site and of considerable archaeological importance due to the presence of Bronze Age Barrows located close to the cliff edge.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 1610m; Defended frontage length: 0m

Environmental Designations

Statutory Designations

- Isle of Portland to Studland Cliffs cSAC – sea cliff vegetation
- Studland Cliffs SSSI – geology, geomorphology and ecological interest
- Purbeck Ridge (east) SSSI – geology, grassland ecology
- Two round barrows, Ballard Down SM – archaeological site
- Bowl Barrow, Ballard Down SM – archaeological site
- Dorset AONB - landscape

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology
- Punfield Cave GCR – geological site
- Swanage GCR – geological site
- Ballard Down GCR – geological site
- Purbeck Heritage Coast - landscape

Description of Land at Risk

- Farmland
- Open Space
- Heathland

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	T10	Development Caravan & Tent	CC11 CC12 CC19 CC21	Chalk Ridge Clay Vale Archaeology Heritage Coast

Coastal Defences

Defence Elements within Management Unit

NONE

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – SHEPS HOLLOW TO BALLARD POINT (SWA4)

Strategy Test Statements (See Part C)				Coastal Defence Strategy Options			
Core Objectives	Subcell	Coastal	Defence	Do Nothing	Hold	Retreat	Advance
Technically viable?				✓	✓	✓	×
Economically justifiable and environmentally acceptable?				✓	×	○	×
Compatible with adjacent strategies?				▲	×	○	×
Compatible with wider coastal processes?				✓	×	○	×
Process Unit Objectives (See Part C)							
Strategy should not impact on immediate or adjacent beach levels (1)				✓	×	○	×
Strategy should ensure protection of life and property where economically viable (2)				n/a	n/a	n/a	n/a
Strategy based on geomorphological principles for Durlston Bay (3)				✓	×	○	×
Strategy should not impact on important geological conservation designations (4)				✓	×	○	×
Strategy should not interfere with valuable habitats dependent upon contemporary coastal processes. (5)				✓	×	○	×
Strategy should have minimal impact on landscape quality (6)				✓	×	×	×
Strategy should have minimal impact on archaeological or historical potential (7)				¹ n/a	n/a	n/a	n/a
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (8)				▲	✓ (SH) × (LT)	✓	×
Strategy should not impact on local economy, tourism or amenity (9)				✓	✓	✓	×
Suitability of Strategy Option				✓	×	○ (SR)	×

▲ Possible conflict with objective over longer term

✓ Complies with statement

× Conflicts with statement

○ Conflicts with statement, but is dependent upon implementation methods used

n/a Objective is not relevant to this management unit

ST Short Term

LT Long Term

SR Selective Retreat

¹ Shipwreck off Ballard Point

From the above screening exercise, the Advance the Line and Hold the Line option are not appropriate for this Management Unit and are not considered any further. Do nothing appears most appropriate, and, shall be evaluated in terms of what the implications of actually intervening are likely to be in the short and longer term.

Selectively Retreat the Existing Line and Do Nothing shall be assessed here.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – SHEPS HOLLOW TO BALLARD POINT (SWA4)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	SELECTIVELY RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	<i>continuation of cliff failure mechanisms providing sediment to immediate foreshore (especially to the south of this unit)</i>	N/A	<i>reduction in sediment provision to the fronting shingle beach</i>	N/A
Effects on Human Environment	no direct impacts	N/A	no additional benefits generated	N/A
Effects on Natural Environment and Conservation	maintain high geological and ecological value of the sea-cliffs	N/A	loss of areas of high conservation importance	N/A
Implications for Coastal Defences	no implications for future works	N/A	<i>need to introduce a scheme to reduce erosion rates. This is likely to be technically difficult and environmentally not suitable</i>	N/A
Impacts within Process Unit	no impact on wider sediment budget for the Process Unit	N/A	possible impacts on sediment budget for the Bay	N/A
Economics	viable and suitable	N/A	not viable	N/A

Current Policy: Do Nothing

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – SHEPS HOLLOW TO BALLARD POINT (SWA4)

Do Nothing

The geology comprising the cliffs in this management unit is complex and affects the cliff processes and distribution of mass movements. Falls and slips occur regularly here and are likely to increase with the onset of sea level rise and increased storminess. Groundwater levels and drainage are a key problem for cliff stability here. The cliffs within this unit are of international geological importance and are designated as SSSI and/or Geological Conservation Review (GCR) sites. In addition, the management unit is designated within the Dorset and Studland Downs candidate SAC because of the variety of heathland habitats present (including crossed leaved heath). Coupled with the fact that there are no built assets at risk, the above reasons suggest that this strategic option is viable.

Selective Retreat the Line

The potential risk of outflanking (over the Long Term) to the south of the management unit is a Long Term possibility depending upon future erosion rates. The undefended weak Wealden Clay outcrops that occur within this management unit border onto defended lengths to the south suggesting that Long Term outflanking at this point is a minor possibility. The selection of this strategic option, which applies only to this strategic location (at the boundary of SWA3 and SWA4) will be dependent on the Long Term policies within Swanage Bay Process Unit as a whole. It is not likely that such a strategic option is viable or even likely to be required in the Short Term. Any attempts to Retreat the Line for the whole unit would not be economically viable nor acceptable on environmental grounds. Any efforts to Selectively Retreat need to ensure that the geological conservation importance of the cliff is not compromised.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Do Nothing
Long Term (2005 to 2049)	Do Nothing

Figure D2.7 displays the implications of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets all of the objectives set out in the Objective Screening Table for SWA4. A Do Nothing policy can therefore be justified on geomorphological and conservation grounds.

Impact on adjacent Management Units

Whilst the preferred option needs to be compliant with sound geomorphological principles and the preservation of the internationally important geological exposures, there is a very small possibility that continuation of the ongoing erosion trend here (within the Wealden Beds) may increase the risk of outflanking in SWA3 over the Long Term. Nevertheless, it is very unlikely that any degree of intervention is required both in coastal defence terms and in relation to geological site management (eg: slump clearance) to ensure that impacts on adjacent lengths of coast are kept to a minimum. As this strategic option represents current

policy here, it is unlikely that there would be any immediate impacts upon adjacent management units.

Review of Potential Implementation

Not applicable.

Present and Future Monitoring/Studies

Monitoring is required of the fronting beaches in this management unit in order to develop further understanding of cliff and wider coastal processes within Swanage Bay. To assist in future coastal defence planning, a clear indication of erosion rates within this management unit is required and this project needs to be set up immediately.

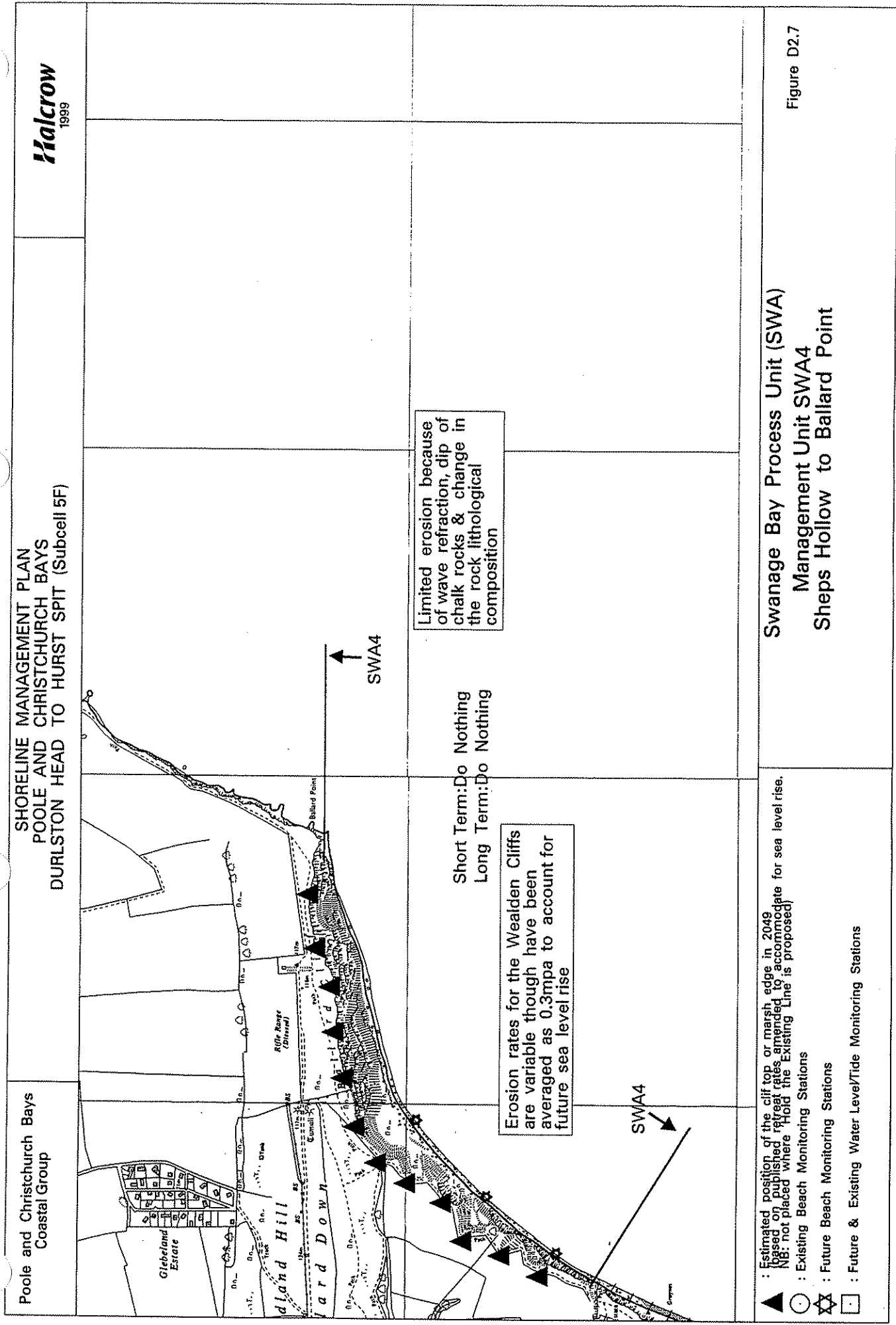


Figure D2.7

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – BALLARD POINT TO HANDFAST POINT (SWA5)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Ballard Point (GR: 404741E, 081249N)
- East – Handfast Point (GR: 405409E, 082487N)

Management Unit Description

This stretch of coast is undeveloped and characterised by actively eroding chalk vegetated sea cliffs of international nature conservation importance containing rare species such as the early gentian and forming part of the candidate SAC (Isle of Portland to Studland Cliffs SAC). The area of Ballard Down is also a key site for coastal geomorphology, best known for the stacks, caves and arches at Handfast Point, and is of archaeological importance due to the location of some Bronze Age Barrows. The entire area is designated a SSSI and is also part of the proposed World Heritage Site.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 1648m; Defended frontage length: 0m

Environmental Designations

Statutory Designations

- Isle of Portland to Studland Cliffs cSAC – sea cliff vegetation
- Studland Cliffs SSSI – geology, geomorphology and ecological interest
- Dorset AONB – landscape
- The King Barrow SM – archaeological site

Non-Statutory Designations

- Studland Hill SNCI – scrub and grassland ecology
- Ballard Down GCR – geological site
- Handfast Point to Ballard Down GCR – geological site
- Ballard Point to Studland Bay GCR – geological site
- Purbeck Heritage Coast - landscape

Description of Land at Risk

- Farmland
- Open Space
- Heathland

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	NONE		CC5 CC11 CC15 CC19 CC21	NNR, SSSI, Heathlands Chalk Ridge Ball Clay Conservation Area Archaeology Heritage Coast

Coastal Defences

Defence Elements within Management Unit

NONE

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – BALLARD POINT TO HANDFAST POINT (SWA5)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
		Hold	Retreat	Advance
Core Subcell Coastal Defence Objectives	Do Nothing			
Technically viable?	✓	✓	✓	×
Economically justifiable and environmentally acceptable?	✓	×	×	×
Compatible with adjacent strategies?	✓	×	×	×
Compatible with wider coastal processes?	✓	×	×	×
Process Unit Objectives (See Part C)				
Strategy should not impact on immediate or adjacent beach levels (1)	✓	×	×	×
Strategy should ensure protection of life and property where economically viable (2)	n/a	n/a	n/a	n/a
Strategy based on geomorphological principles for Durlston Bay (3)	✓	×	×	×
Strategy should not impact on important geological conservation designations (4)	✓	×	○	×
Strategy should not interfere with valuable habitats dependent upon contemporary coastal processes. (5)	✓	×	○	×
Strategy should have minimal impact on landscape quality (6)	✓	×	×	×
Strategy should have minimal impact on archaeological or historical potential (7)	✓	×	×	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (8)	n/a	n/a	n/a	n/a
Strategy should not impact on local economy, tourism or amenity (9)	✓	×	×	×
Suitability of Strategy Option	✓	×	○ (SR)	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SR Selective Retreat

From the above screening exercise, the Advance the Line and Hold the Line options are not appropriate for this Management Unit and are not considered any further.

Selective Retreat is not realistic as a management option due to the economic assets at risk though is assessed alongside Do Nothing to add weight to the latter's selection.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – BALLARD POINT TO HANDFAST POINT (SWA5)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	SELECTIVE RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	continuation of low erosion rates on chalk cliffs	N/A	possible impact on contemporary sediment budget of the area	N/A
Effects on Human Environment	no adverse impacts except for a long term risk to the Round Barrows on Ballard Down	N/A	- impact on landscape appearance of this area - No additional benefits accrued	N/A
Effects on Natural Environment and Conservation	maintain the high conservation value of the sea-cliffs	N/A	possible loss of important sea-cliff vegetation	N/A
Implications for Coastal Defences	no implications for future works	N/A	need to introduce methods to reduce erosion rates of Chalk cliffs at selected sites	N/A
Impacts within Process Unit	maintenance of existing physical and natural interrelationships	N/A	possible interruption of existing natural processes	N/A
Economics	viable and suitable	N/A	not viable	N/A

Current Policy: Do Nothing

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – BALLARD POINT TO HANDFAST POINT (SWA5)

Do Nothing

This is the current policy along this management unit with no man made coast protection defences present (as there are no major assets at risk from erosion). The contemporary erosion rates along this Chalk Foreland are low and it is expected that over the next 75 years, depending on rock lithology at this site, a maximum of 20m of cliff erosion is expected. This option would not have any impact upon the offshore Chalk platforms at Ballard Down thus maintaining their high marine biological interest. It would also be the preferred strategy to protect the internationally important vegetated sea cliffs and early gentian species as part of the candidate SAC (Isle of Portland to Studland Cliffs SAC) and also to maintain Ballard Down as a key site for coastal geomorphology (best known for its stacks, arches and caves). There is a possibility that ongoing erosion may lead to the loss of a strip of important maritime cliff top grassland (and associated flora and invertebrate populations). To continue with this policy will not cause a detrimental impact to the current coastal processes, natural environment or landscape appearance, and so this strategy is therefore viable.

Selective Retreat the Existing Line

The relatively resistant Chalk outcrops that occur within this management unit suggest that any natural defence outflanking is an improbability. In terms of coastal defence requirements, it is unlikely that any future intervention will be required due to the backing land at risk. Therefore, this strategic option is not viable.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Do Nothing
Long Term (2005 to 2049)	Do Nothing

Figure D2.8 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets all of the objectives set out in the Objective Screening Table for SWA5. A Do Nothing policy (Short Term) can therefore be justified on geomorphological and conservation grounds.

Impact on adjacent Management Units

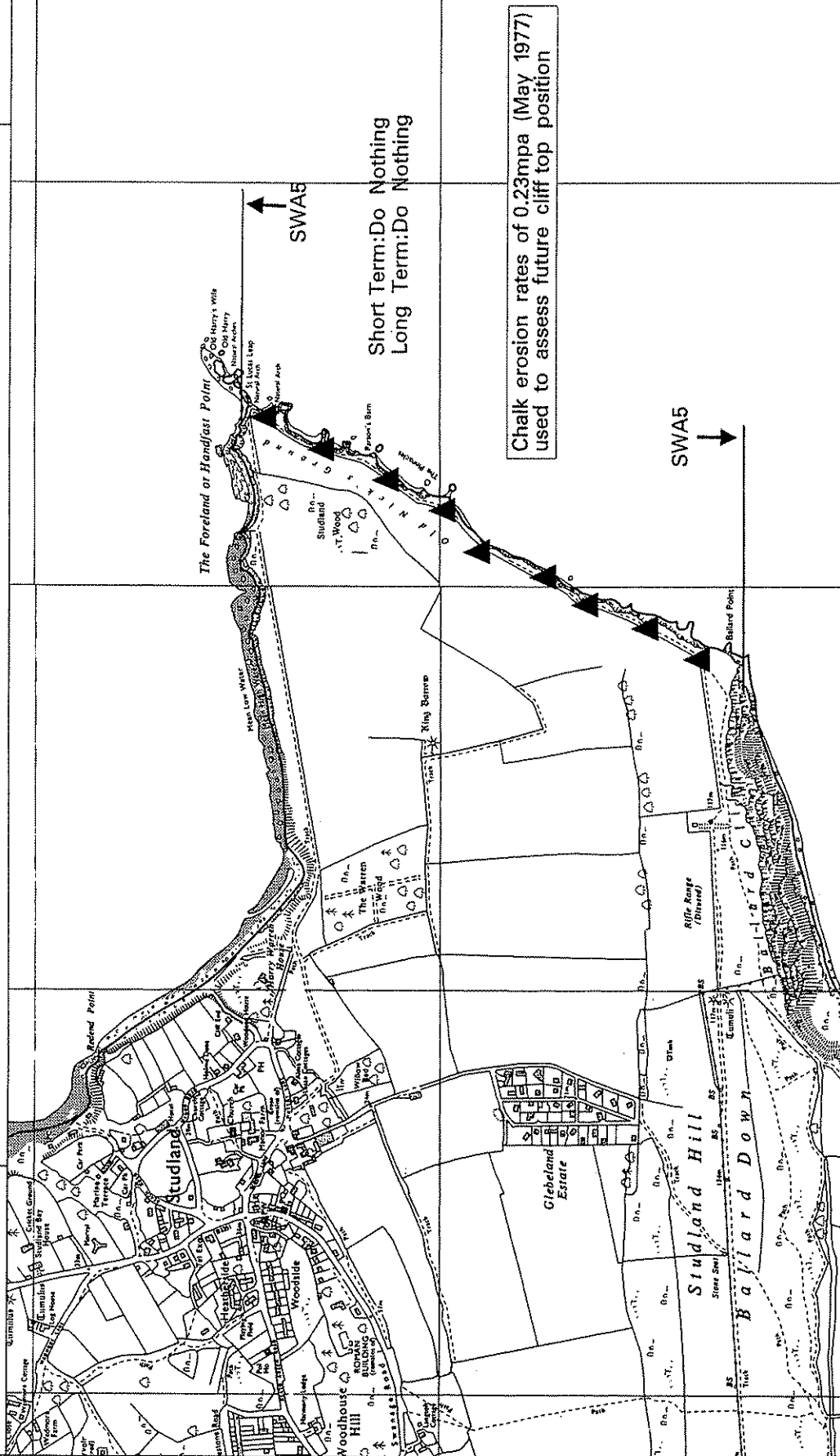
As the preferred strategic option represents current policy for this management unit, it is unlikely that there would be any impacts upon adjacent management units in the Short or Long Term.

Review of Potential Implementation

Continuation of current passive management policy.

Present and Future Monitoring/Studies

No specific monitoring is required of the fronting beaches to assist in future coastal defence planning.



 : Estimated position of the cliff top or marsh edge in 2049
 (based on published retreat rates, amended to accommodate for sea level rise.
 NB: not placed where 'Hold the Existing Line is proposed')
 : Existing Beach Monitoring Stations
 : Future Beach Monitoring Stations
 : Future & Existing Water Level/Tide Monitoring Stations

Swanage Bay Process Unit (SWA)
Management Unit SWA5
Ballard Point to Handfast Point

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – HANDFAST POINT TO THE WARREN (STU1)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- East – Handfast Point (GR: 405409E, 082487N)
- West – The Warren (GR: 404296E, 082352N)

Management Unit Description

This coastline is characterised by dramatic chalk cliffs that are internationally important for their maritime cliff top grassland and vegetated sea cliff habitats, forming part of the candidate SAC (Isle of Portland to Studland Cliffs SAC). Erosion rates here are relatively low and there are no developments along the cliff top therefore no coastal defences exist along this length. The cliffs here are also an outstanding site of national significance being an important location for palaeontological studies and forming part of a proposed World Heritage Site for their important Jurassic exposures. This coastline is also considered to be of national landscape importance and has been designated AONB and Heritage Coast.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 1156m; Defended frontage length: 0m

Environmental Designations

Statutory Designations

- Isle of Portland to Studland Cliffs Csac – sea cliff vegetation
- Studland Cliffs SSSI – geology, geomorphology and ecology
- Dorset AONB – landscape

Non-Statutory Designations

- Purbeck Heritage Coast – landscape
- Poole Bay to Isle of Purbeck SMA – marine ecology

Description of Land at Risk

- Open Space
- Farmland
- Heathland

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	NONE		CC5 CC7 CC8 CC11 CC19	NNR, SSSI, heathlands Heaths, Harbour and island Heaths, Harbour and Island Chalk Ridge policy area Archaeology

Coastal Defences

Defence Elements within Management Unit

NONE

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – HANDFAST POINT TO THE WARREN (STU1)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	✓	×
Economically justifiable and environmentally acceptable?	✓	×	×	×
Compatible with adjacent strategies?	✓	×	○	×
Compatible with wider coastal processes?	✓	×	○	×
Process Unit Objectives (See Part C)				
Strategy should not impact on immediate or adjacent beach levels (1)	✓	×	○	×
Strategy should ensure protection of life and property where economically viable (2)	n/a	n/a	n/a	n/a
Strategy based on geomorphological principles for Studland Bay (3)	✓	×	×	×
Strategy should not impact on important geological conservation designations (4)	✓	×	○	×
Strategy should not interfere with valuable habitats dependent upon contemporary coastal processes. (5)	✓	×	○	×
Strategy should have minimal impact on landscape quality (6)	✓	×	○	×
Strategy should have minimal impact on archaeological or historical potential (7)	✓	×	○	×
Strategy should not increase the risks of erosion and flooding on immediate or adjacent unit lengths (8)	✓	✓	✓	×
Strategy should not impact on local economy, tourism or amenity (9)	✓	✓	✓	×
Strategy should not impact on inshore fisheries (10)	✓	○	✓	×
Suitability of Strategy Option	✓	×	✓ (SR)	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SR Selective Retreat

From the above screening exercise, the Advance and Hold the Existing Line options are not appropriate for this Management Unit and are not considered any further. Do nothing appears the most appropriate, however, shall be evaluated along with a Selective Retreat the Line option over the short and longer term.

Outflanking to the west could warrant some long term retreat policy and this issue shall be assessed.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – HANDFAST POINT TO THE WARREN (STU1)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	SELECTIVE RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	continuation of waves diffracted around Handfast Point thereby providing protection from waves	N/A	<i>possible impact upon wave climate if schemes suggest the use of structures to reduce erosion</i>	N/A
Effects on Human Environment	no impacts on built or recreational assets	N/A	no significant benefits	N/A
Effects on Natural Environment and Conservation	maintain the high conservation value of the sea-cliffs	N/A	loss of important sea-cliff habitats (dependent upon implementation measures used)	N/A
Implications for Coastal Defences	N/A	N/A	would need to introduce a scheme to reduce erosion at strategic sites (only minimal along the length at present)	N/A
Impacts within Process Unit	no significant change to the present situation	N/A	possible change to coastal processes within Studland Bay long term	N/A
Economics	no impact on the local economy	N/A	not viable	N/A

Current Policy: Do Nothing

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – HANDFAST POINT TO THE WARREN (STU1)

Do Nothing

This is the current policy along this management unit with no man made coast protection defences present (as there are no major assets at risk from erosion). The contemporary erosion rates along this Chalk Foreland are low and it is expected that over the next 75 years, depending on changes in rock lithology, a maximum of 20m of cliff erosion is expected. This option would not have any impact upon the offshore Chalk platforms at Handfast Point thus maintaining their high marine biological interest. It would also be the preferred strategy to protect the internationally important vegetated sea cliffs and early gentian species as part of the candidate SAC (Isle of Portland to Studland Cliffs SAC). There is a possibility that ongoing erosion may lead to the loss of a strip of important maritime cliff top grassland (and associated flora and invertebrate populations). To continue with this policy will not cause a detrimental impact to the current coastal processes, natural environment or landscape appearance, and so this strategy is therefore viable.

Selective Retreat the Existing Line

The potential risk of outflanking (over the Long Term) to the west of the management unit is a remote Long Term possibility. However, the relatively resistant Chalk outcrops that occur within this management unit as opposed to the less resistant Tertiary Reading Formation rocks that occur to the west (STU2) suggest that any natural defence outflanking is an improbability. The selection of this strategic option, which would involve specific intervention at the boundary of STU1 and STU2, will be dependent on the Long Term policy at STU2 and thus the management of the adjacent frontage by National Trust. It is not likely that such a strategic option is viable or even likely to be required.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Do Nothing
Long Term (2005 to 2049)	Do Nothing (Observe and Monitor)

Figure D2.9 displays the likely implications of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets all of the objectives set out in the Objective Screening Table for STU1. A Do Nothing policy (Short Term) can therefore be justified on geomorphological and conservation grounds.

Impact on adjacent Management Units

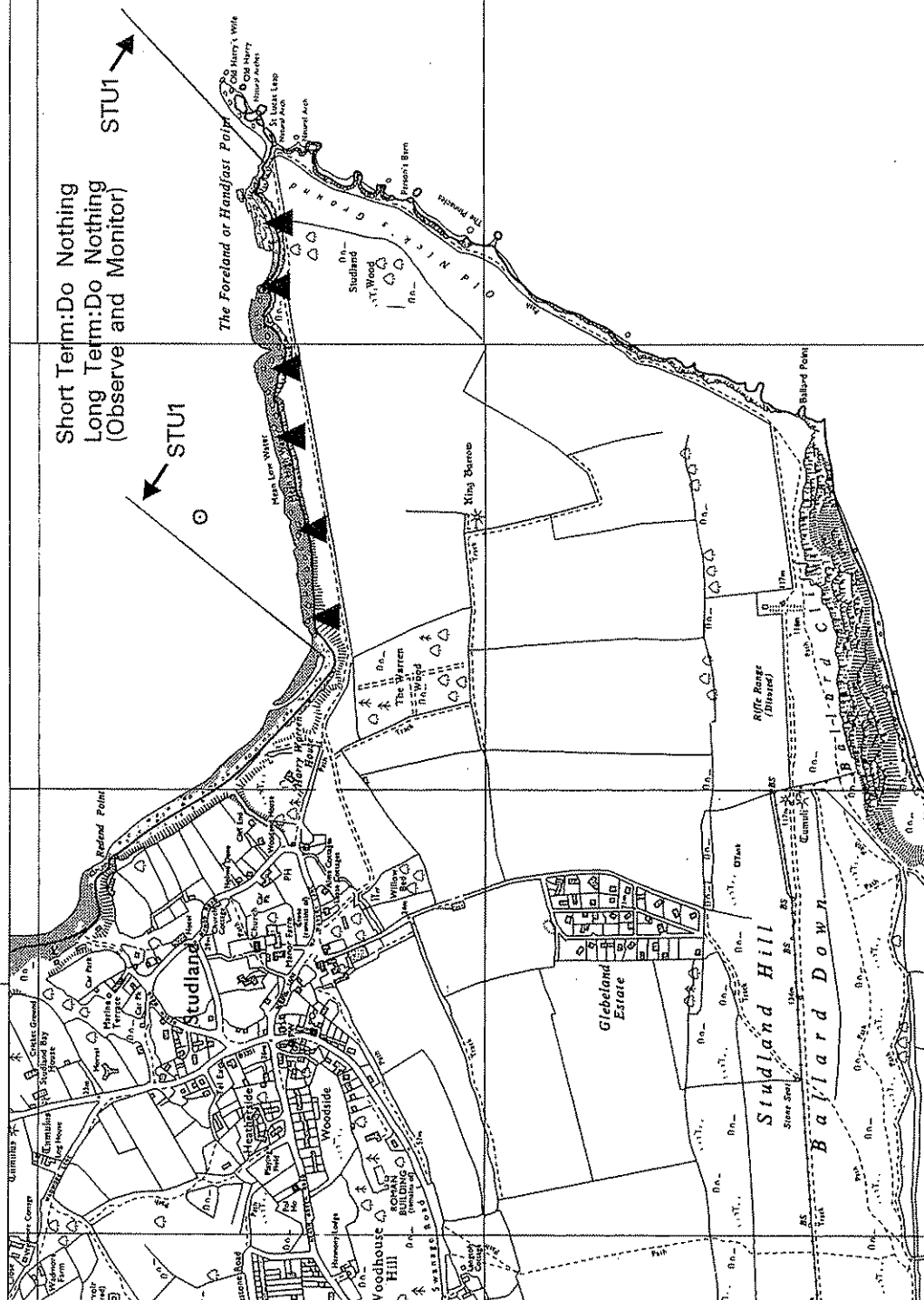
As the preferred strategic option represents current policy for this management unit, it is unlikely that there would be any impacts upon adjacent management units in the Short Term.

Review of Potential Implementation

Continuation of current passive management policy.

Present and Future Monitoring/Studies

Long Term cliff stability assessment to assess the risk of outflanking may be required. Should this take place, the National Trust should play an active role in its implementation.



Estimated position of the cliff top or marsh edge in 2049
(based on published retreat rates amended to accommodate for sea level rise.
NB: not placed where 'Hold the Existing Line' is proposed)

Existing Beach Monitoring Stations

Future Beach Monitoring Stations

Future & Existing Water Level/Tide Monitoring Stations

Studland Bay Process Unit (STU)
Management Unit STU1
Handfast Point to The Warren

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – THE WARREN TO STUDLAND SANDSPIT (STU2)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- East – The Warren (GR: 404296E, 082352N)
- West – End of National Trust Car Park (GR: 403432E, 083610N)

Management Unit Description

This unit comprises the small coastal village of Studland consisting of a small community of houses and shops, community open space, bed and breakfasts, a large hotel, village pubs and community buildings. The majority of these assets are set back from the coastal frontage with the exception of a large car park and information centre at Knoll Beach and smaller car parks further south. Numerous beach huts line the beach towards Redend Point which are currently defended but at risk from erosion over the long term. The area is of national landscape importance being designated AONB with Studland Heaths falling within the Dorset Heaths (Purbeck and Wareham) candidate SAC, SPA and Ramsar site, and Studland Dunes candidate SAC.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 1614m; Defended frontage length: 1614m

Environmental Designations

Statutory Designations

- Isle of Portland to Studland Bay Cliffs cSAC – vegetated sea cliffs
- Dorset Heaths (Purbeck and Wareham) and Studland Dunes cSAC – heathland ecology
- Bowl Barrow (w) SM – archaeological site
- Bowl Barrow (nw) SM – archaeological site
- Studland and Godlingston Heaths SSSI
- Dorset AONB – landscape
- Studland Cliffs SSSI – geology, geomorphology and ecology

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology
- Purbeck Heritage Coast – landscape

Description of Land at Risk

- Beach Huts
- Sand Dunes
- Heathland
- Access Roads
- Car Parks
- Cafe
- Shop

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	NONE		CI-C2 CC5 CC7 CC8 CC15 CC19	Conservation Area Policies NNR, SSSI, heathlands Heaths, Harbour and island Heaths, Harbour and island Ball Clay Conservation Area Archaeology

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
081/2820	431	Private	0.26	Banks	Poor	>5	
081/2810	430	Private	0.10	Gabions	Fair	>5	
081/2800	429	Private	0.30	Banks	Fair	>5	
081/2790	428	National Trust	0.07	Banks	Poor	<2	
081/2790	427	National Trust	0.07	Gabions	Poor	<2	
081/2790	426	National Trust	0.03	Armour	Poor	<2	
081/2780	425	National Trust	0.07	Wall	Poor	2 to 5	
081/2770	424	National Trust	0.16	Gabions	Bad	<2	

Description of Defences

081/2770 The dunes along this 4.3km length of coast have a typical crest height of +5.0m ODN but do not provide a continuous defence. Gaps between individual dunes occur frequently therefore providing little or defence against flooding. A 160m length of gabions have been placed at the southern end of the dunes.

There is a substantial concrete slipway for the ferry at South Haven Point which acts as groyne.

A major feature and influence is the 19th century, training wall which helps to stabilise the northern half of Studland.

- 081/2780 Immediately to the south of the dunes a 80m long vertical timber seawall with a crest height of +5.4m ODN protects a few timber buildings and a wooded cliff face.
- 081/2790 There are a mixture of defences along this 100m length, including armour and gabions on the foreshore with clay banks inshore of these defences.
- 081/2800 A privately owned 300m length of clay bank on the sand beach foreshore provides a degree of defence, although the 13m high clay and rock cliff face to the rear provides the main coastal defence along this length.
- 081/2810 A 100m long 1.0m high privately owned gabion wall provides the only defence to a series of beach huts. Inshore of the beach huts there is a steep wooded cliff face up to +13.0m ODN.
- 081/2820 Clay banks on the foreshore provide the only protection over a 260m length to a further set of beach huts. Inshore of the huts is a steep wooded cliff face.

Other Considerations (derived from consultation)

- Accretion and erosion at Studland and the implications of preventing littoral drift to the dunes further north
- How coastal defences may interrelate with obligatory requirements set out in the EC Directives (Annexe 1 – Habitats and Annexe 2 – Species) at the Dorset Heaths and Studland Dunes candidate SAC.
- Seek opportunities for habitat enhancement including restoration and re-creation of soft habitats adjacent to the dunes
- Need to highlight nationally and internationally important protected species (e.g. Sand Lizard) and the problems of coastal defence on sand dune development
- Recent establishment of lobster breeding grounds (artificial reef structure at Studland)
- Concern over erosion at Studland Beach and the possible options of car park relocation
- Accessibility of the beach at Studland is now a problem especially at high tide
- Need to review visitor management at Studland Beach

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – THE WARREN TO STUDLAND SANDSPIT (STU2)

Strategy Test Statements (See Part C)				Coastal Defence Strategy Options			
Core Objectives	Subcell	Coastal	Defence	Do Nothing	Hold	Retreat	Advance
Technically viable?				✓	✓	✓	×
Economically justifiable and environmentally acceptable?				✓	✓	✓	×
Compatible with adjacent strategies?				✓	× (LT)	✓	×
Compatible with wider coastal processes?				✓	× (LT)	✓	×
Process Unit Objectives (See Part C)							
Strategy should not impact on immediate or adjacent beach levels (1)				▲	✓ (ST) × (LT)	○	×
Strategy should ensure protection of life and property where economically viable (2)				✓ (ST) × (LT)	✓ (ST) × (LT)	✓ (LT)	×
Strategy based on geomorphological principles for Studland Bay (3)				✓	×	○	×
Strategy should not impact on important geological conservation designations (4)				✓	×	✓	×
Strategy should not interfere with valuable habitats dependent upon contemporary coastal processes. (5)				✓	×	✓	×
Strategy should have minimal impact on landscape quality (6)				✓ (ST) × (LT)	○	○	×
Strategy should have minimal impact on archaeological or historical potential (7)				✓	× (LT)	○	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (8)				✓	○	✓	×
Strategy should not impact on local economy, tourism or amenity (9)				×	✓	○	×
Strategy should not impact on inshore fisheries (10)				✓	○	✓	×
Suitability of Strategy Option				✓	✓ (ST)	✓ (LT)	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further.

Retreating the line is an option that warrants assessment as future erosion is likely to continue in the future through the economic justification of holding the line long term is not favourable nor is this suitable on geomorphological grounds. Retreat, do nothing and hold will be assessed here.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – THE WARREN TO STUDLAND SANDSPIT (STU2)

	DO NOTHING (short term effects in <i>italics</i>)	HOLD THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	RETREAT THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	ADVANCE THE EXISTING LINE (short term effects in <i>italics</i>)
Effects on Physical Environment and Coastal Processes	- increased threat of erosion and dune migration as sea level rise increases - limited impact on sediment budget regimes but will allow landform evolution	prevent natural evolution of landforms (dune fronts) leading to increased erosion and thus flood risk	allow a reduced degree of natural adaptation to changing coastal processes	N/A
Effects on Human Environment	- no immediate risk to assets in short term <i>impact on boat slipway condition</i>	<i>protect chalets, car park, NT shop and café area in their current locations</i>	need to relocate (setback) chalets to accommodate for natural landform evolution	N/A
Effects on Natural Environment and Conservation	no significant adverse effects	- works may damage coastal habitats (SSSI) - coastal defences may affect dune habitat in unit STU3	<i>works may damage coastal habitats (SSSI)</i> - loss of coastal habitats to a certain degree	N/A
Implications for Coastal Defences	<i>deterioration of existing rock gabions and timber revetments</i>	- need for more robust defences in strategic locations <i>need to improve existing gabion structures whilst planning for retreat long term</i>	low cost defence schemes need to be transportable and be set back over selected time spans	N/A
Impacts within Process Unit	allow natural evolution of Studland Peninsula and associated landforms	serious impacts on long term evolution of Studland Bay landforms and the environmental significance of the area	go some way to accommodate natural changes that are taking place within Studland Bay	N/A
Economics	long term need to relocate existing built assets	not viable long term	viable dependent upon implementation	N/A

Current Policy: Hold the Line

Preferred Policy: Observe and Monitor (Short Term), Retreat (Long Term)

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – THE WARREN TO STUDLAND SANDSPIT (STU2)

Do Nothing

To adopt this strategy along the whole management unit would lead to the eventual failure of existing defences (gabions) to the south of the unit (currently protecting National Trust property), the continued erosion of unprotected low dune faces and the timber defences towards the car park (north of the management unit). There would be a continuation of sediment supply from the erosion of Tertiary strata in the vicinity of Studland Village, this would continue to be transported in a northerly direction though total amounts are unquantified. This management unit is most likely to be at risk to accelerated sea level rise and increased storminess. This is because it is anticipated that current dune face erosion episodes are likely to increase due to the Long Term evolutionary trend which is being experienced on the Studland Peninsula (ie: the northern half is accreting whilst the southern half is eroding). The implication of adopting this strategic option would be the loss of existing National Trust assets unless some level of intervention or "adaptation" to the Long Term evolutionary trend is followed. This is not a suitable Long Term option.

Selectively Hold the Line

The Long Term implications of adopting this strategic option would be to create an artificial coastal orientation along a stretch of coast that naturally is experiencing erosion. Selectively Holding the Line would mean the maintenance of existing National Trust gabion defences which would only be viable in the Short Term whilst more pragmatic wider visions of managing this unit are agreed upon. Adopting this option over the Long Term would not be suitable on geomorphological grounds (combat natural coastal re-orientation) and is unlikely to be viable on economic grounds. Consequently it is improbable that this strategic option is viable over the Long Term.

Retreat the Existing Line

This strategic option would allow Studland Bay to naturally evolve in terms of coastal re-orientation and would be the most appropriate option for adapting to sea level rise and increased storminess in the Long Term. This strategic option does not require expenditure in terms of introducing new defence schemes (except for some dune management initiative – see Part E), though National Trust would have to incur some expense in "setting back" huts and sections of car park. One of the key issues of setting back assets here is that the topography of the hinterland behind the dunes appears to fall away quite significantly and so a breach through the existing dunes is likely to increase the flood risk to a wider area. As the majority of the National Trust assets are "mobile" within this unit (except for the shop to the north of the unit and the café / toilets to the south), it is recommended that assets should be repositioned to accommodate for Long Term change in coastal orientation. This management unit is important in terms of conservation (habitat, geology and geomorphology) and so any strategic option that does not consider the wider impacts of future coastal evolutionary trends within Studland Bay should not be considered. Therefore, this strategic option is viable

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 31:12:2001)	Do Nothing (Observe and Monitor)
Long Term (31:12:2001 to 2049)	Retreat the Existing Line (subject to monitored erosion rates and economic viability of such a policy to the National Trust)

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for STU2. A Do Nothing policy (Short Term) can be justified on engineering, geomorphological and conservation grounds as the expected life of the gabion structures is likely to be exceeded within 5 years (without maintenance) providing enough time to suitably plan the most suitable set back mechanisms and dune management initiatives. The landscape appearance of the gabions would significantly deteriorate after this timespan and so intervention would be required. The contemporary standard of service would be provided by these structures to existing assets for this time period (subject to damage caused by a severe storm event in this time). The Process Unit objectives would not be compromised by a Long Term Retreat the Line policy so long as methods to set back existing assets are compliant to a clear understanding of the coastal re-orientation taking place in Studland Bay, the natural environmental requirements and long term economic objectives of adopting this option for the National Trust.

Impact on adjacent Management Units

Adopting the Long Term strategy to retreat would allow the natural orientation of Studland Bay to occur and thus prevent any impacts upon the immediate foreshore (liable to be at risk as sea level rise accelerates) and prevent any end of defence outflanking that already occurs where gabion structures are present.

Review of Potential Implementation

This Long Term policy is likely to need the removal or "setting back" of defences within the next 5 years. The use of gabions is not recommended as part of a "Retreat the Line" policy as the topography of the hinterland area is low behind the dunes and thus they would no effective role. Dune management initiatives (see Part E) would provide a short term role whilst allowing Studland Bay to evolve to an equilibrium shape. The degree of defence deterioration will determine when intervention is required. Procedures to set back existing huts should be established within the next 3 years and so that a planned retreat of assets and soft defence initiatives (temporary "soft" measures to bolster existing dune fronts) can be undertaken under the management of both Purbeck District Council and the National Trust.

Present and Future Monitoring/Studies

A study should be initiated into assessing the exact locations for set back along this management unit. This should include a wider socio-economic assessment of alternative car parking arrangements or the introduction of visitor management / transport schemes from adjacent areas (ie: from Shell Bay). Monitoring of erosion rates and beach levels is important here and new monitoring points should be installed with results obtained and effectively stored on a bi-annual basis.

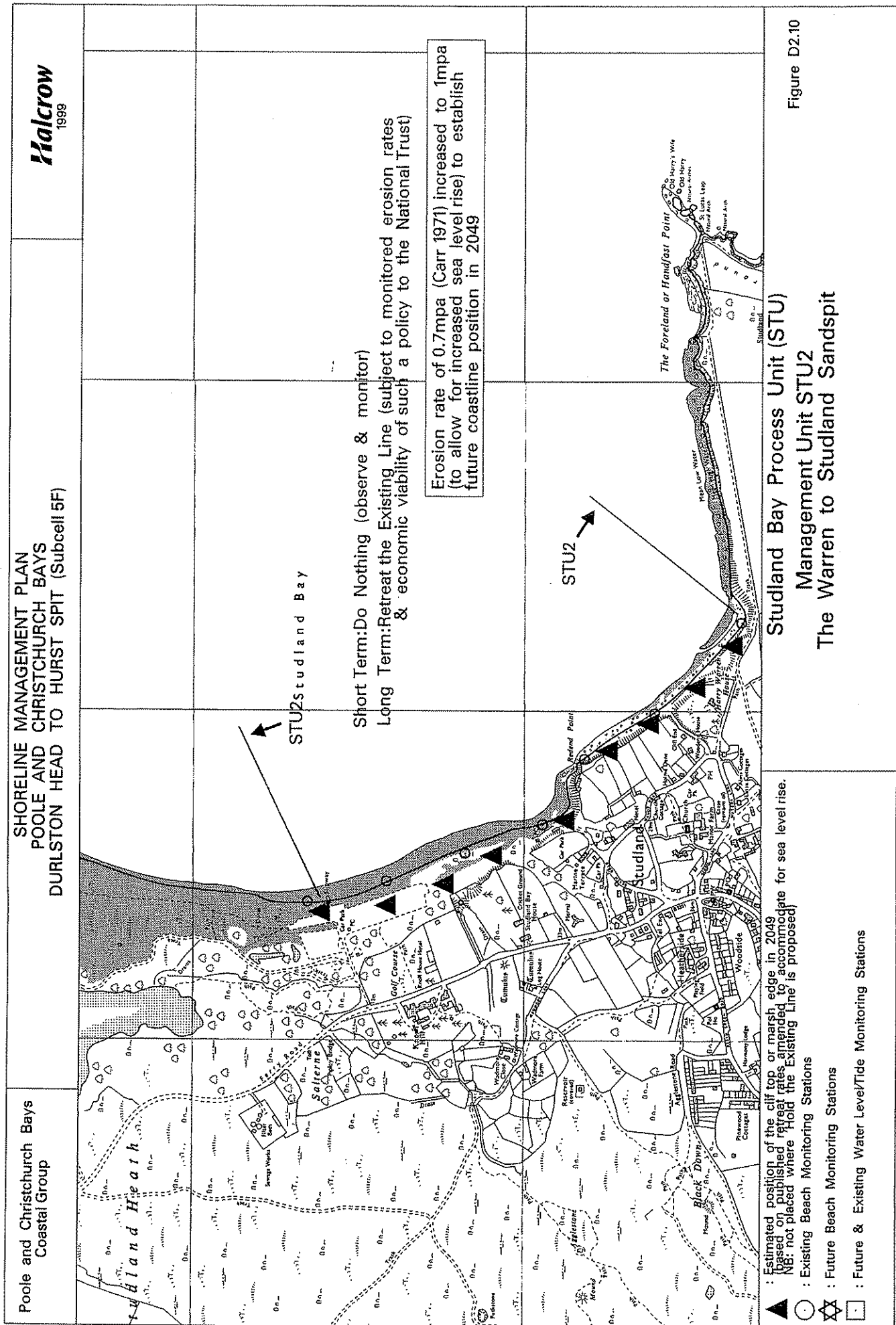


Figure D2.10

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – STUDLAND SANDSPIT (STU3)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- South – National Trust Car Park (Knoll Beach) (GR: 403432E, 083610N)
- North – Shell Bay (GR: 404205E, 086019N)

Management Unit Description

The entire frontage is characterised by generally accreting dune ridges that have rapidly evolved over the past century thus forming a key site for coastal geomorphology in Southern Britain. This dune system and the wide area of heathland that lie behind are both designated as candidate SACs due to the important habitats which they contain. The heathland is also a pSPA and Biogenetic Reserve due to the appreciable assemblages of rare plants and animals which it supports. The prograding nature of the beaches provides limited protection against flooding thus coastal defence structures have only been introduced at periodic intervals.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 2578m; Defended frontage length: 2578m

Environmental Designations

Statutory Designations

- Dorset Heathlands SPA – bird interests
- Dorset Heathlands Ramsar site – wetland habitats
- Dorset Heaths (Purbeck and Wareham) and Studland Dunes Csac – heathland, dunes and damselfly
- Studland and Godlingston Heaths SSSI – coastal geomorphology, heathland, dunes and damselfly
- Studland and Godlingston Heaths NNR – heathland, dunes and reptiles
- Dorset AONB – landscape

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology
- Purbeck Heritage Coast – landscape

Description of Land at Risk

- Sand Dunes
- Heathland

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	NONE		CC5 CC7 CC8 CC15 CC19	NNR, SSSI, heathlands Heaths, Harbour and island Heaths, Harbour and Island Ball Clay Conservation Area Archaeology

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
081/2770	423	National Trust	4.30	Embankment	Fair	>5	

Description of Defences

081/2770 The dunes along this length of coast have a typical crest height of +5.0m ODN but do not provide a continuous defence. Gaps between individual dunes occur frequently therefore providing little or defence against flooding.

A major feature and influence is the 19th century, training wall which helps to stabilise the northern half of Studland Bay.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – STUDLAND SANDSPIT (STU3)

Strategy Test Statements (See Part C)				Coastal Defence Strategy Options			
Core Objectives	Subcell	Coastal	Defence	Do Nothing	Hold	Retreat	Advance
Technically viable?				✓	×	✓	×
Economically justifiable and environmentally acceptable?				✓	×	○	×
Compatible with adjacent strategies?				✓	×	○	×
Compatible with wider coastal processes?				✓	×	○	×
Process Unit Objectives (See Part C)							
Strategy should not impact on immediate or adjacent beach levels (1)				✓	×	○	×
Strategy should ensure protection of life and property where economically viable (2)				n/a	n/a	n/a	n/a
Strategy based on geomorphological principles for Studland Bay (3)				¹ ✓	×	✓	○
Strategy should not impact on important geological conservation designations (4)				n/a	n/a	n/a	n/a
Strategy should not interfere with valuable habitats dependent upon contemporary coastal processes. (5)				✓	×	○	×
Strategy should have minimal impact on landscape quality (6)				✓	×	○	×
Strategy should have minimal impact on archaeological or historical potential (7)				n/a	n/a	n/a	n/a
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (8)				² ✓ (ST)	○	○ ✓ (LT)	×
Strategy should not impact on local economy, tourism or amenity (9)				✓	×	✓	×
Strategy should not impact on inshore fisheries (10)				✓	○	✓	×
Suitability of Strategy Option				✓ (ST)	✓ (SH)	✓ (LT)	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

¹ Accreting dune

² dependent on future rates of accretion

From the above screening exercise, the Advance and Hold the Line options are not appropriate for this Management Unit, however, a policy of selective hold at key points is possible. Do nothing and retreat policies appear appropriate for the majority of the management unit but not for the hinge point between STU3 and STU4 as a breach against the Training Bank could have serious implications for future management. This shall be evaluated against the implications of doing nothing or retreating in the short and longer term.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options
MANAGEMENT UNIT TITLE – STUDLAND SANDSPIT (STU3)

	DO NOTHING (short term effects in italics)	SELECTIVE HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	<i>continuation of current dune/foreshore sediment interaction</i> <i>continuation of natural accretion</i>	prevent a breach between STU 3 and STU 4 and thus a major hydrodynamic change	only applicable where natural accretion is not taking place, though benefits would not be any better than doing nothing	N/A
Effects on Human Environment	no deleterious impacts on NT built assets	Ensure no breach between STU 3 and STU 4	N/A	N/A
Effects on Natural Environment and Conservation	maintain high conservation value of the coast	will not alter current situation if intervention to prevent a breach occurs	Protection of heathland/dune habitats at (SSSI)	N/A
Implications for Coastal Defences	uncertainty over the future behaviour of the dunes at the junction of units STU3 and STU2	would need to undertake a scheme to ensure the Training bank is not outflanked	<i>dune management initiatives to 'set back' the dune system possibly impacting on ecology</i>	N/A
Impacts within Process Unit	allow natural evolution of dune landforms over time	potential wide implications on hydrodynamics and sediment budgets in both STU and PBY	possible benefits on areas further to the south	N/A
Economics	viable	viable, though not necessary except for ongoing dune management initiatives	potential economic and commercial implications for Poole Harbour Commissioners if a breach occurs.	N/A

Current Policy: Do Nothing (excluding dune management initiatives)

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – STUDLAND SANDSPIT (STU3)

Do Nothing

This strategic option would represent a continuation of current coastal defence policy for this management unit. This part of Studland Bay has generally accreted rapidly (particularly in the north) over the past century with recent accretion building new dune ridges and embryo dunes continuing to be formed. Sediment transport and deposition here is clearly controlled by wind direction with the dominant winds with respect to sand carrying capacity being virtually perpendicular to the shoreline (ie: easterly). It is anticipated that this part of Studland Bay may accrete slightly less rapidly than experienced at present. Although there is not a widespread threat to life and property and thus no major direct economic benefits to be derived, a policy of do-nothing may not be appropriate in the Long Term as this implies that no action should be taken. In addition, there is a potential Long Term risk of a breach between the land and the training bank to the north of the management unit. The likely impact on littoral processes of allowing a breach between management units STU3 and STU4 suggest that even the Short Term adoption of this option is not recommended.

Selective Hold the Existing Line

It is essential that no form of built defence is introduced for the whole management unit to prevent dune mobility. This is important because it is feasible that dune redistribution could take place along this frontage and the wide system at Studland Dunes may act as a source of material to depleted stores elsewhere. Thus the sustainability of the dune system to the whole of this Process Unit could be reliant upon such processes taking place. A strategic option to Selectively Hold the Line could be viable so long as any intervention is linked to the management of the dune system overall. The selective nature of the option basically allows localised intervention to occur at key points (eg: just to the north of the NT Car Park or at the junction of STU3 and STU4). This is perhaps most acute to the north of the unit to prevent a breach round the landward end of the Training Bank. Such a breach here could have a major effect on access to Poole Harbour and thus have a major economic impact upon Poole Harbour Commissioners commercially and otherwise as a breach could allow significant tidal flow to occur to the south of the Training Bank with consequences on the shipping channel approach to Poole Harbour. The Training bank has encouraged sediment accumulation at the north end of the unit and so future potential intervention is not likely to be needed.

The landward limits of the Studland Dune system are constrained by rising ground of a spur of ancient (Tertiary) sand and gravels. Consequently, there is a finite limit (hundreds of years) for any mobile change in dune configuration. There has historically been no need to intervene in coast protection terms due to the natural evolution (accretion) of the dune system, however, wardening does take place to prevent vegetation burning or excessive trampling. There is a chance that the combination of a serious fire (predominance of woody growths) and dry easterly gales may occur which could call for protective measures to be initiated.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Selective Hold the Existing Line (involving Observe and Monitor and selective intervention only at the junction of STU3 and STU4 should there be a need)
Long Term (2005 to 2049)	Selective Hold the Existing Line (allowing intervention subject to specific need – eg: breach into STU4)

Figure D2.11 displays the likely implications of adopting this policy.

Compliance with Process Unit Objectives

The preferred policies, presented above, meet most of the objectives set out in the Objective Screening Table for STU3. A Do Nothing policy (Short Term) can be justified on engineering, geomorphological and conservation grounds. In addition, depending upon need and dune management techniques used, a Selective Hold the Line option would allow natural littoral processes to continue whilst not increasing the risks of erosion or flooding on adjacent management unit lengths (key strategic points).

Impact on adjacent Management Units

These strategies would actively promote the continuance of natural processes and so would have no impact on adjacent management units. Any attempts to reduce the risk of a breach between STU3 and STU4 that may potentially take place in the future (Long Term) must ensure that a full appreciation of predicted shoreline evolution is accounted for.

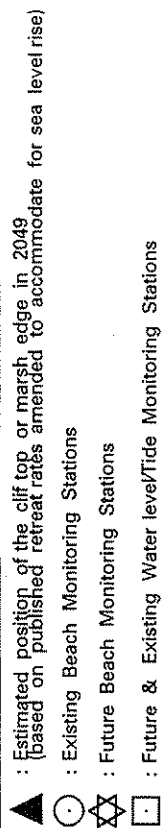
Review of Potential Implementation

In terms of coastal engineering schemes for the majority of the management unit, little if anything is required. Any scheme that prevented the prevailing transport of beach material to the backing dune system would prove deleterious to the Studland dune system as a whole. Standard dune management practices, currently being carried out by the National Trust, should continue to take place and should the situation arise in the Long Term, efforts to reduce erosion / pressure on the dune system should be carried out. In terms of intervention to prevent any future breach between the STU3 and STU4 boundaries, Poole Harbour Commissioners (who have statutory right to prevent such a breach) have the power to intervene as they own a strip of sea bed between the landward end of the training bank and South Haven Point (D. Appleton pers com 1998). However, the recently defined proposed SAC reaches to low water and so there would be international nature conservation implications for any future works here. English Nature would need to be closely informed of any potential need to intervene at this location.

Present and Future Monitoring/Studies

Specific monitoring of beach/foreshore and dune levels is important throughout this management unit rather than at any specific points to both appraise the present evolutionary trend and how this is likely to change in the future (with the onset of sea level rise and increased storminess). Where previous surveys have been undertaken (eg:BP Hook Island studies), future survey lines should include

coincidence with these. Funding to secure the recommendations set out in Part E ("Sand Dune Management Strategy) should be pursued by English Nature, the National Trust, Dorset County Council and Purbeck District Council.

[illegible]

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – SHELL BAY (STU4)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- East – Landward edge of Training Bank (GR: 404205E, 086019N)
- West – South Haven Point (GR: 403634E, 086684N)

Management Unit Description

There are no built developments along this length with the exception of the car passenger ferry service which operates between North Haven and South Haven Point and amenity car parking facilities to the north of the unit. Most of this area is prone to erosion and intermittently defended due to the location of a Training Bank which interrupts an element of sediment transport to the Bay. The dunes and backing heathland are of national and international importance, suffering threats from erosion and visitor pressure as the beaches here are a popular tourist attraction.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 1006m; Defended frontage length: 1006m

Environmental Designations

Statutory Designations

- Dorset Heathlands SPA – bird interests
- Dorset Heathlands Ramsar site – wetland habitats
- Dorset Heaths (Purbeck and Wareham) and Studland Dunes cSAC – heathland, dunes and damselfly
- Studland and Godlingston Heaths SSSI – coastal geomorphology, heathland and dune ecology
- Studland and Godlingston Heaths NNR – heathland, dunes and reptiles
- Dorset AONB - landscape

Non-Statutory Designations

- Poole Bay to Isle of Studland SMA – marine ecology
- Purbeck Heritage Coast - landscape

Description of Land at Risk

- Ferry Landing Point
- Highway
- Sand Dunes

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	NONE		CC4 CC5 CC7 CC8 CC15 CC19	Nature conservation / LNRs NNR, SSSI, heathlands Heaths, Harbour and island Heaths, Harbour and Island Ball Clay Conservation Area Archaeology

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
081/2770	423	National Trust	4.30	Embankment	Fair	>5	

Description of Defences

081/2770 The dunes along Shell Bay have a typical crest height of +5.0m ODN but do not provide a continuous defence. Gaps between individual dunes occur frequently therefore providing little or defence against flooding.

There is a substantial concrete slipway for the ferry at South Haven Point which acts as groyne.

A major feature and influence is the 19th century, training wall which helps to stabilise the northern half of Studland Bay.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – SHELL BAY (STU4)

Strategy Test Statements (See Part C)				Coastal Defence Strategy Options			
Core Objectives	Subcell	Coastal	Defence	Do Nothing	Hold	Retreat	Advance
Technically viable?				✓	✓	✓	×
Economically justifiable and environmentally acceptable?				✓	×	✓	×
Compatible with adjacent strategies?				✓	×	×	×
Compatible with wider coastal processes?				✓	×	○	×
Process Unit Objectives (See Part C)							
Strategy should not impact on immediate or adjacent beach levels (1)				¹ ✓	×	○	×
Strategy should ensure protection of life and property where economically viable (2)				n/a	n/a	n/a	n/a
Strategy based on geomorphological principles for Studland Bay (3)				✓	×	○	×
Strategy should not impact on important geological conservation designations (4)				✓	×	○	×
Strategy should not interfere with valuable habitats dependent upon contemporary coastal processes. (5)				✓	×	○	×
Strategy should have minimal impact on landscape quality (6)				✓	×	○	×
Strategy should have minimal impact on archaeological or historical potential (7)				³ n/a	n/a	n/a	n/a
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (8)				✓	✓	✓	×
Strategy should not impact on local economy, tourism or amenity (9)				✓	×	○	×
Strategy should not impact on inshore fisheries (10)				✓	○	○	×
Suitability of Strategy Option				✓ (ST)	✓ (SH)	▲	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SH Selective Hold

¹ Dependent upon future accretion rates

³ Dependent on natural rates of accretion

From the above screening exercise, the Advance and total Hold the Line options are not appropriate for this Management Unit and are not considered any further. Do nothing and Retreat options appear appropriate for the unit but not for the hinge point between STU3 and STU4 as a breach against the Training Bank could have serious implications for future management. Consequently, Selective Hold will also be evaluated in terms of what the implications of not doing something actually are likely to be in the short and longer term.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – SHELL BAY (STU4)

	DO NOTHING (short term effects in <i>italics</i>)	SELECTIVE HOLD THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	RETREAT THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	ADVANCE THE EXISTING LINE (short term effects in <i>italics</i>)
Effects on Physical Environment and Coastal Processes	<i>continued slight erosion of Shell Bay possibly caused by the training bank intercepting littoral drift from the south</i>	prevent a breach between STU 3 and STU 4 and thus a major hydrodynamic change	- possible impact on dune – foreshore sediment interactions - breach between land and training bank will alter hydrodynamics	N/A
Effects on Human Environment	<i>continued recreation pressure on bare dunes within Shell Bay</i>	no impact on recreational importance of Shell Bay	<i>dune erosion caused by recreational pressure may need more active management</i>	N/A
Effects on Natural Environment and Conservation	maintain high conservation value of the coast	<i>works may damage important habitats</i>	loss of heathland/dune habitats (SSSI)	N/A
Implications for Coastal Defences	increased risk of outflanking at the junction with STU3	need to strengthen strategic points (i.e. to prevent breaching)	<i>possible need for fencing, faggotting etc to reduce erosion rate of dunes</i>	N/A
Impacts within Process Unit	- continuation of natural development of the dune system - increased risk of breach between units STU 3 & STU 4	negligible impact	possible breach between land and Training Bank	N/A
Economics	not viable due to the commercial implications of a breach at the junction of the Training Bank	viable	potential economic and commercial implications for Poole Harbour Commissioners if a breach occurs.	N/A

Current Policy: Do Nothing

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – SHELL BAY (STU4)

Do Nothing

The selection of this strategic option would result in the continued Long Term erosion of the frontage. Contemporary erosion rates are uncertain though it is believed that the construction of the training bank may be responsible for changing the configuration of the Swash Channel thus causing increased scour in Shell Bay in addition to intercepting littoral drift from Studland Bay (STU3) to Shell Bay. It is estimated that rates of erosion in Shell Bay may increase as a consequence of sea level rise and the effects of increased storminess in a north easterly direction. This may see increased storm overtopping and beach profile readjustments. The risk of a breach through to the heathland behind is increased as gaps occur in the dune system. Whilst this is not deemed as detrimental to the evolution of the special wet heathland habitat (Ramsar and SPA designation), a real Long Term risk of a breach between management units STU3 and STU4 is apparent. In addition, the ferry landing point would be at risk. Consequently, this strategic option is not viable in the Long Term.

Selectively Hold the Existing Line

A strategic option to Selectively Hold the Line could be viable so long as any intervention is linked to the management of the Process Unit overall. The selective nature of the option basically allows localised intervention to occur at key points (eg: at the junction of STU3 and STU4 or to the south east of South Haven Point). This is perhaps most acute to the south east of the unit to prevent a breach round the landward end of the Training Bank. Such a breach here could have a major effect on access to Poole Harbour and thus have a major economic impact upon Poole Harbour Commissioners commercially and otherwise. This is because a breach could allow significant tidal flow to occur to the south of the Training Bank with consequences on the shipping channel approach to Poole Harbour. It will also be necessary to continue to protect the Studland Ferry landing point at the Harbour end of this unit for recreational and communication link purposes. Consequently, this strategic option is viable.

Retreat the Existing Line

This strategic option implies some schemes are required to retreat the shoreline over time. The implications of this on the training bank would mean the likely breach between management units STU3 and STU4 which would have a major effect on access to Poole Harbour and thus have a major economic impact upon Poole Harbour Commissioners commercially and otherwise. For this reason, a Retreat the Line option is not viable.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Selectively Hold the Existing Line (Observe and Monitor particularly at the boundary with STU3)
Long Term (2005 to 2049)	Selective Hold the Existing Line (allowing intervention subject to specific need – eg: breach into STU3)

Figure D2.12 displays the likely implications of adopting this policy.

Compliance with Process Unit Objectives

The preferred policies, presented above, meet most of the objectives set out in the Objective Screening Table for STU4. The strategic role of the training bank plays an integral role in the future management of this unit and needs to be incorporated in strategic decision making.

Impact on adjacent Management Units

The geomorphological implications of a breach between STU3 and STU4 on the wider sedimentary regime and on commercial activities are such that the proposed policy is the most suitable option to pursue.

Review of Potential Implementation

The need for intervention should be triggered from future monitoring within the Process Unit. Maintenance of the training bank will be required for commercial and navigational reasons. The use of recharge materials, possibly by recirculating dredged sediments from within Studland Bay to the south may be evaluated subject to further more detailed study of the implications of this action.

Present and Future Monitoring/Studies

Specific monitoring of beach/foreshore and dune levels is important throughout this management unit rather than at any specific points to both appraise the present evolutionary trend of Shell Bay and how this is likely to change in the future (with the onset of sea level rise and increased storminess). Where previous surveys have been undertaken, future survey lines should coincide with these. Funding to secure the recommendations set out in Part E ("Sand Dune Management Strategy") should be pursued by English Nature, National Trust, Dorset County Council and Purbeck District Council. Additional studies into the Long Term implications of maintaining the Training Bank in its current configuration should also be reviewed.

Review of Potential Implementation

The need for intervention should be triggered from future monitoring within the Process Unit. Maintenance of the training bank will be required for commercial and navigational reasons. The use of recharge materials, possibly by recirculating dredged sediments from within Studland Bay to the south may be evaluated subject to further more detailed study of the implications of this action.

Present and Future Monitoring/Studies

Specific monitoring of beach/foreshore and dune levels is important throughout this management unit rather than at any specific points to both appraise the present evolutionary trend of Shell Bay and how this is likely to change in the future (with the onset of sea level rise and increased storminess). Where previous surveys have been undertaken, future survey lines should coincide with these. Funding to secure the recommendations set out in Part E ("Sand Dune Management Strategy") should be pursued by English Nature, National Trust and Purbeck District Council. Additional studies into the Long Term implications of maintaining the Training Bank in its current configuration should also be reviewed.

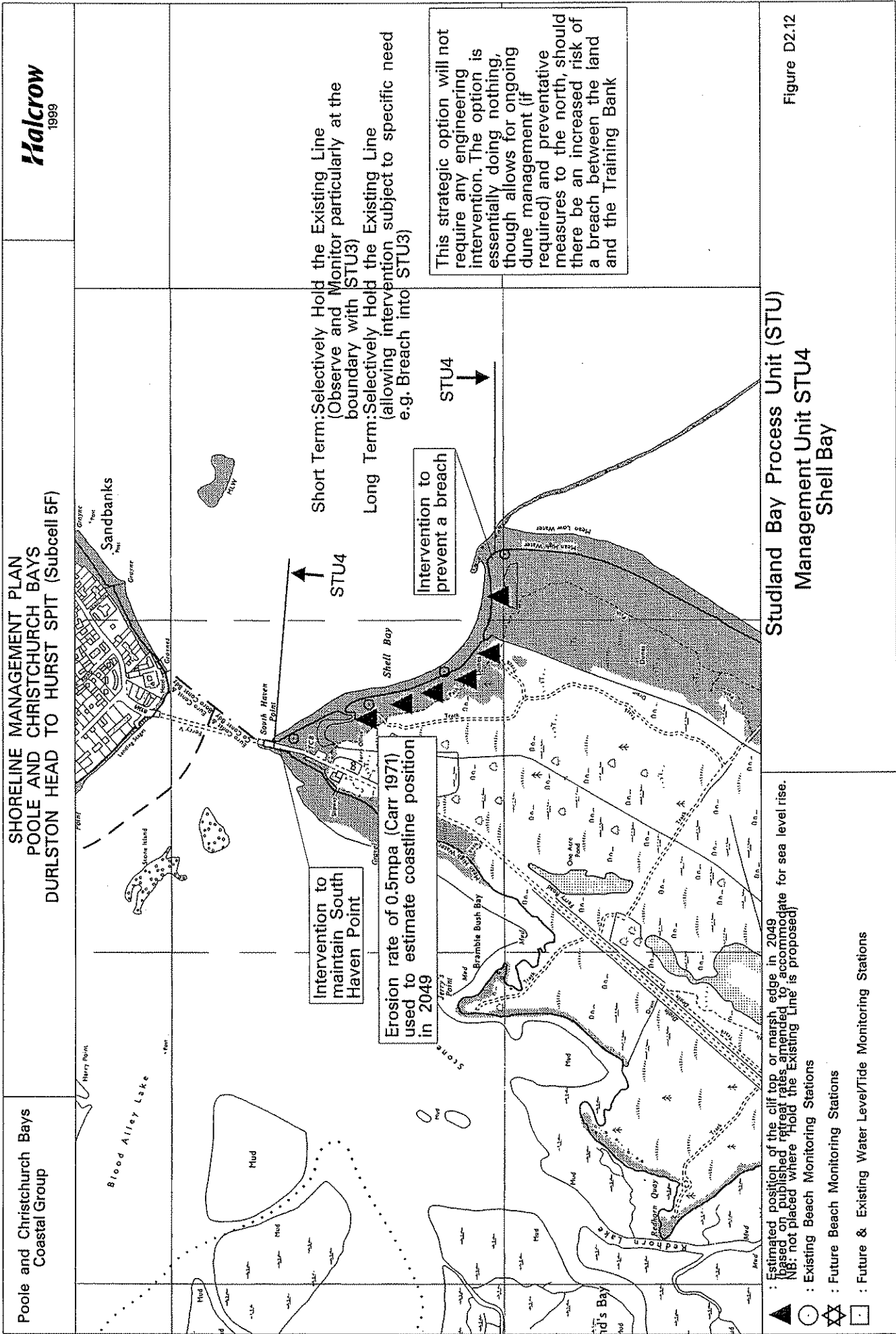


Figure D2.12

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – THE ISLANDS (EXCLUDING BROWNSEA) (PHB1)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

Management Unit Description

This unit comprises Furzey, Green, Round and Long Islands, all of which are completely undefended. Furzey is part of the Wytch farm oilfield containing a well site and associated infrastructure including slipway access which is in BP ownership. Green island is the site of the Green Island Holiday Trust containing isolated properties and slipway access. Many of these islands are of archaeological interest containing Iron Age settlements with Green Island containing remnants of a causeway linking the island to the mainland. These islands are also of considerable nature conservation importance with the inter-tidal areas a proposed SPA, qualifying under the Ramsar Convention. The whole area also forms part of the Poole harbour SSSI and is of great landscape importance and designated AONB and Heritage Coast.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 0m; Defended frontage length: 0m

Environmental Designations

Statutory Designations

- Poole Harbour SSSI – varied habitats
- Dorset AONB - landscape

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology
- Purbeck Heritage Coast - landscape

Description of Land at Risk

- Oilfield
- Farmland
- Undeveloped Land

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	NONE		CC5 CC7 CC8 CC15 CC21	NNR, SSSI, Heathlands Heaths, Harbour and Island Heaths, Harbour and Island Ball Clay Conservation Area Heritage Coast

Coastal Defences

Defence Elements within Management Unit

NONE

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – THE ISLANDS (EXCLUDING BROWNSEA) (PHB1)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	✓	×
Economically justifiable and environmentally acceptable?	✓	×	×	×
Compatible with adjacent strategies?	✓	×	○	×
Compatible with wider coastal processes?	✓	✓ (SH)	✓▲	×
Process Unit Objectives (See Part C)				
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)	✓	×	▲	×
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)	✓	×	○	×
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)	✓	×	○	×
Strategy should not impact on mobility / evolution of natural habitats (5)	✓	×	○	×
Strategy should have minimal impact on landscape quality (6)	✓	×	○	×
Strategy should have minimal impact on archaeological or historical potential (7)	▲	✓	○	×
Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)	✓	×	○	×
Strategy should not impact on local economy, commerce, tourism or amenity (9)	▲	✓	▲	✓
Strategy should seek to improve coastal access within the Harbour (10)	n/a	n/a	n/a	n/a
Suitability of Strategy Option	✓ (LT)	✓ (SH)	○	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SH Selective Hold

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and are not considered any further.

Selective Hold on the islands is assessed to compare benefits/shortfalls of these options against a do nothing strategy. Retreat, Hold and Do Nothing shall therefore be assessed.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – THE ISLANDS (EXCLUDING BROWNSEA) (PHB1)

	DO NOTHING (short term effects in italics)	SELECTIVELY HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	no significant change to contemporary sediment budget and tidal current patterns	likely change to tidal hydrodynamics and sediment budget	no significant change to contemporary sediment budget and tidal current patterns	N/A
Effects on Human Environment	long term impact on slipways and access structures especially on Furzey and Round Island	- Protect private built assets on islands - Protect commercial assets on Furzey Island if required	unlikely to have any significant benefit to human use of the islands	N/A
Effects on Natural Environment and Conservation	no significant effect	- works may damage inter-tidal habitats (SSSI) - coastal squeeze would result in loss of habitat (SSSI) long term	compensate for coastal squeeze as sea levels rise in places may damage freshwater or terrestrial habitats	N/A
Implications for Coastal Defences	no defence structures required	need to introduce new defences (privately funded)	need structures to reduce erosion or setback defences where these exist	N/A
Impacts within Process Unit	no significant impacts	Prevent natural evolution of islands within Poole Harbour	possible alteration to harbour configuration long term	N/A
Economics	suitable	not viable	not viable	N/A

Current Policy:

Do Nothing with Selective maintenance of slipways

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – THE ISLANDS (EXCLUDING BROWNSEA) (PHB1)

Do Nothing

This is the current policy along this management unit with no man made coast protection defences present (as there are no major assets at risk from erosion). Localised landing sites do occur around the islands, notably on Furzey and Green Islands, though these serve no coastal defence function and so their continued maintenance would not affect this strategic option. Further additional oil drilling on Furzey is not practical as all the well cellars on the eastern well site are occupied and it would not be possible to extend this site without jeopardising its tree screening. Therefore, there is no Short Term risk to the oilfield facilities and wellsites on Furzey Island and it is estimated that during the lifespan of these oil sites, no coastal protection measures will be required. This strategic option is viable as a result.

Selective Hold the Existing Line

In coastal defence terms, this would involve the construction of new defences at strategic sites, such as at existing Harbour access points, landing stages or slipways. This option would not be economically viable due to the land at risk from the increased threat of flooding or erosion. Improvements to landing sites are not classified as coastal defence and so are not incorporated within this strategic option. Consequently, this option is not viable or required.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Do Nothing
Long Term (2005 to 2049)	Do Nothing (allowing for maintenance of slipways and access points)

Compliance with Process Unit Objectives

The preferred policy, presented above, meets all of the objectives set out in the Objective Screening Table for STU1. A Do Nothing policy (Short Term) can therefore be justified on geomorphological and conservation grounds, protecting saltmarsh and mudflat habitat from any future coastal protection works.

Impact on adjacent Management Units

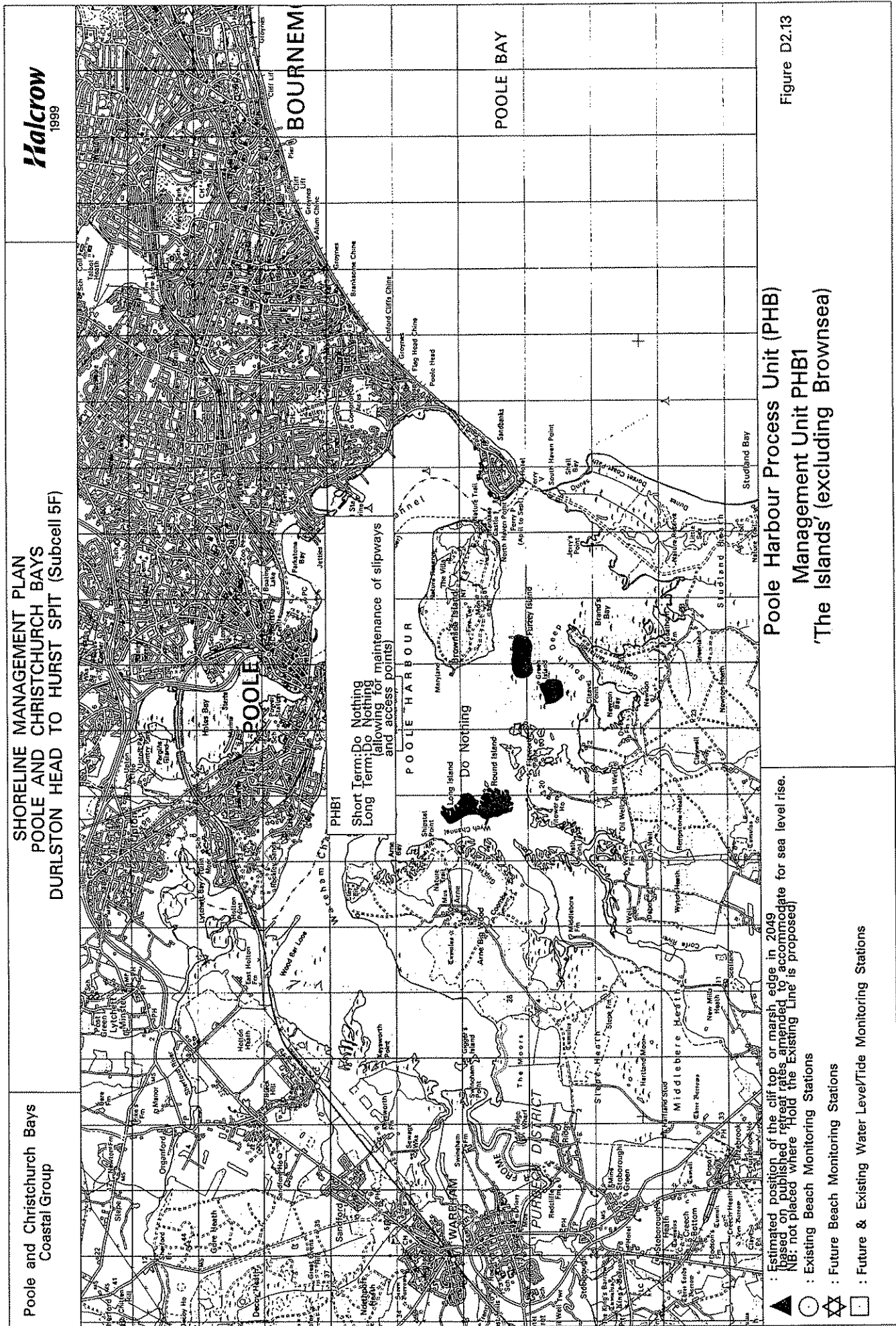
As the preferred strategic option represents current policy for this management unit, it is unlikely that there would be any impacts upon adjacent management units in the Short Term. It is unlikely that this policy will significantly alter the hydrodynamic regime of the Harbour as alterations to the tidal prism will be small due to the topographic nature of the islands. The increased release of sediment into the Harbour has not been quantified in this SMP though amounts are likely not to influence current dredging practices within the Harbour.

Review of Potential Implementation

Continuation of current passive management policy. To facilitate routine quay repairs at these locations, implementation measures should ensure that they are not impacting upon sediment budgets or the natural environment

Present and Future Monitoring/Studies

Long Term monitoring by BP is still required to inform the shoreline management process of any changes that are occurring on Furzey Island. BP have carried out numerous studies in this area on a number of topics along this part of Poole Harbour, though quantitative assessments of mudflat or saltmarsh change have not been undertaken. This is described more fully in Part E.



PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – BROWNSEA ISLAND (EASTERN DEFENDED SECTION) (PHB2)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- South – Portland Hill (GR: 402739E, 087387N)
- North – St Andrews Terrace (east) (GR: 402630E, 088346N)

Management Unit Description

The majority of this frontage is defended by a sea wall which encloses a large brackish lagoon in the north east corner of the island. The lagoon is fringed in the west by marshland with small areas of saltmarsh and shingle vegetation associated with the eastward projecting spits along the north shore. Two piers extend from the shoreline in the south east of the island, providing landing stages for the passenger ferries that operate from Poole Quay. Several properties line this shore including Branksea Castle and a number of quay cottages with farmland buildings further inland. The entire area is a candidate SAC and proposed SPA for its important heathland and wetland habitats and associated bird interest, also forming part of the Poole harbour SSSI. Important archaeological remains exist in this area, however, none of these are Scheduled.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 1819m; Defended frontage length: 1819m

Environmental Designations

Statutory Designations

- Dorset Heathlands SPA – bird interest
- Poole Harbour SSSI – varied habitats
- Dorset AONB – landscape
- Rempstone Heaths SSSI

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology
- Purbeck Heritage Coast - landscape

Description of Land at Risk

- Lagoon
- Tourist Facilities
- Housing

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	NONE		CC5 CC7 CC8 CC15 CC21	NNR, SSSI, Heathlands Heaths, Harbour and Island Heaths, Harbour and Island Ball Clay Conservation Area Heritage Coast

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
081/1140	222	Purbeck DC	1.25	Armour	Good	>5	1989
081/2090	330	Private	0.05	Wall	Poor	2-5	
081/2100	331	Private	0.05	Wall	Fair	>5	
081/2110	332	Private	0.10	Wall	Fair	>5	
081/2120	333	Private	0.02	Wall	Good	>5	
081/2130	334	Private	0.05	Banks	Fair	>5	
081/2130	335	Private	0.05	Wall	Fair	>5	
081/2140	336	Private	0.10	Groynes	Fair	>5	
081/2140	337	Private	0.14	Groynes	Fair	>5	
081/2140	338	Private	0.37	Wall	Fair	>5	

Description of Defences

- 081/1140 No data available.
- 081/2090 A 60m long privately owned concrete wall on the eastern shore of Brownsea Island. The wall is in poor condition and is at risk of failure due to undermining.
- 081/2100 A 60m long privately owned wall. Sheet piling encloses the original stone pier, and the whole structure has been capped with a slab which is in good condition. Erosion is a serious problem and rock armour has been placed at the toe of steel sheet piles.
- 081/2110 A 100m long privately owned masonry wall on the eastern shore of Brownsea Island. The wall is in fair condition, the stonework needs attention, and a rock armour toe has been added recently.
- 081/2120 A 20m long stone wall which is in good condition, responsibility for maintenance lies with the private owners.
- 081/2130 The shoreline is protected by a 60m length of sandbank and two masonry walls. These defences are in fair condition and are maintained by private owners.
- 081/2140 Along this 240m length on the coast of Brownsea Island there are a series of concrete and timber groynes. The concrete groynes are in a fair condition and perform well whilst the timber groynes are dilapidated and are of little value.

A wall protects the foot of hill. The wall clearly demonstrates its function in protecting the sandhill of Brownsea Island from erosion. From the end of the wall westwards the coastline is a scene of devastation caused by erosion – fallen trees and unstable cliffs as far as the eye can see.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – BROWNSSEA ISLAND (EASTERN DEFENDED SECTION) (PHB2)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	✓	✓
Economically justifiable and environmentally acceptable?	▲	○	○	×
Compatible with adjacent strategies?	✓	✓	✓	×
Compatible with wider coastal processes?	✓	○	○	×
Process Unit Objectives (See Part C)				
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)	✓ (ST) ▲	✓ (ST) ○ (LT)	○	×
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)	✓	▲	○	×
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)	×	○	○	×
Strategy should not impact on mobility / evolution of natural habitats (5)	▲	× (LT)	○	×
Strategy should have minimal impact on landscape quality (6)	✓ (ST) × (LT)	○	▲	×
Strategy should have minimal impact on archaeological or historical potential (7)	▲	✓	▲	×
Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)	×	○	○	×
Strategy should not impact on local economy, commerce, tourism or amenity (9)	×	✓	×	×
Strategy should seek to improve coastal access within the Harbour (10)	×	✓	▲	×
Suitability of Strategy Option	▲	✓ (SH)	▲	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SH Selective Hold

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further. Do nothing and retreat the line also appear inappropriate, however, shall be evaluated in terms of what the implications of not doing something actually are likely to be in the short and longer term. Therefore, retreat, selective hold and do nothing shall be assessed.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – BROWNSEA ISLAND (EASTERN DEFENDED SECTION) (PHB2)

	DO NOTHING (short term effects in italics)	SELECTIVELY HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	long term risk to lagoon feature and thus island configuration	<i>maintain contemporary coastal process regime</i>	<i>alter lagoon ecosystem and sediment and tidal dynamics within Poole Harbour</i>	N/A
Effects on Human Environment	risk of erosion to build assets within the unit (NT owned)	protection of build assets over long term	increased risk to built assets and access points on Brownsea (east)	N/A
Effects on Natural Environment and Conservation	long term possible impact on backing lagoon and bird roosting areas	works may damage inter-tidal habitats (SSSI) though likely to protect lagoon system	potential threat to lagoon ecosystem and thus habitats and associated bird life	N/A
Implications for Coastal Defences	<i>Deterioration of existing private defences</i> <i>Increased overtopping events into lagoon</i>	need to improve standard of existing defences to counter the threat of sea level rise and increased storminess	<i>need to set back defences line where possible</i>	N/A
Impacts within Process Unit	high risk of lagoon habitat being altered and thus configuration of Brownsea Island	no alteration to current situation	possible long term alteration to tidal dynamics and tidal prism within Harbour	N/A
Economics	loss or damage to NT assets	viable though financed by NT	not viable	N/A

Current Policy: Selective Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – BROWNSEA ISLAND (EASTERN DEFENDED SECTION) (PHB2)

Do Nothing

The adoption of this strategic option would see the Long Term deterioration of existing defence structures, increase the risk of flooding and erosion to established National Trust property and increase the Long Term risk to the reclaimed lagoon feature and thus the islands configuration. This would impact on Brownsea Island as a tourist attraction and as an important ornithological site. There would be significant alteration to contemporary tidal processes if a breach were to occur into the lagoon and the resulting change to sediment budgets may prove deleterious to the functioning of the Harbour commercially (impact on navigation and access). This strategic option is not viable

Selective Hold the Existing Line

This option would involve selective intervention to maintain existing private defences (National Trust responsibility). It would not mean the need for new defences to be built where currently lengths of coast are undefended. The lagoon system which is currently protected and has created an important saline lagoon habitat would be preserved in the Short Term, though the Long Term implications of increased sea level rise are likely to result in the need for a more adaptive approach to managing this site. This option is therefore viable and the responsibility for defence maintenance remains with the National Trust.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Selective Hold the Existing Line
Long Term (2005 to 2049)	Selective Hold the Existing Line (subject to improved knowledge of Long Term sea level rise rates)

Figure D2.14 displays the likely implications of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for PHB2. A strategic policy of "selective hold the line" would comply to the Process Unit Objectives. This is because natural processes will be maintained allowing the existing littoral transport system to continue and the policy would ensure protection of assets and property and would not alter the hydrodynamic regime of Poole Harbour or alter the sediment budget of the Harbour thereby causing increased sedimentation in commercially important channels.

Impact on adjacent Management Units

Within any estuarine or harbour situation, any action on the shoreline which may influence the tidal prism or sediment budget regimes, may impact on the shoreline along adjacent management units within the harbour / estuary. It is therefore stated that a Selective Hold the Line policy would be the most acceptable policy. This is because the maintenance of existing strategically important defences

would ensure protection to built assets and access points on Brownsea Island whilst seeking not to affect contemporary physical processes. This policy also would not be detrimental to important brackish lagoon conditions.

Review of Potential Implementation

Brownsea Island is owned by the National Trust and consists of 500 acres of wild and unspoilt heath and woodland. Since May 1963 the National Trust has opened Brownsea Island to the public during the summer months. The management unit is surrounded by important nature conservation designations including a cSAC which is of international importance. The fine ecological balance of the salt marshes and mud flats must not be disturbed. Sites around the Harbour are designated as areas of outstanding natural beauty and the southern shores have Heritage Coast status. These shorelines and inter-tidal areas are SAC designated thus are of international as well as national and local importance (including sites managed by the Dorset Wildlife Trust and the RSPB).

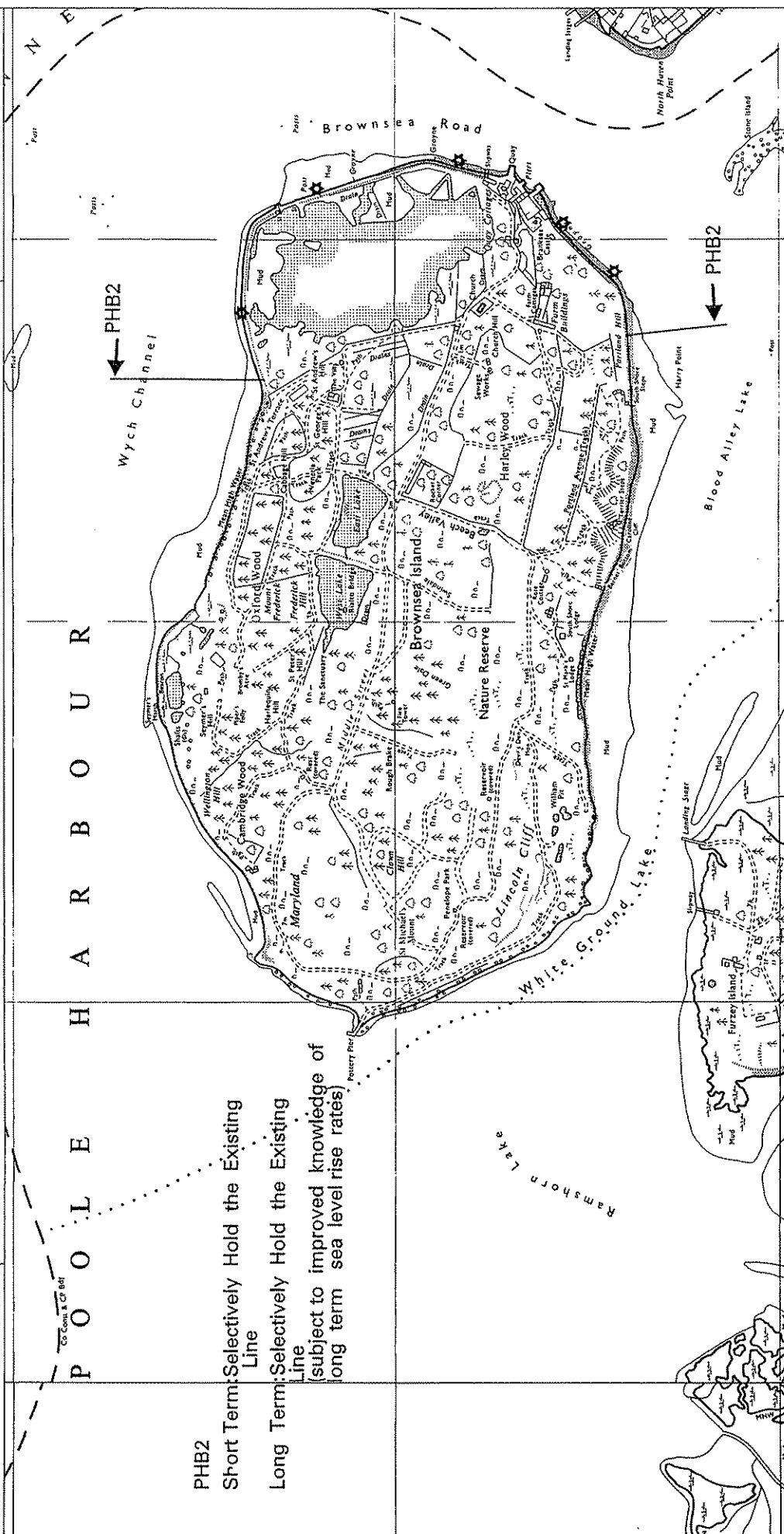
Present and Future Monitoring/Studies

Brownsea Island in Poole Harbour has become one of the first two nesting sites in Britain for the little egret. This elegant bird (a small white heron) has been slowly colonising Southern Britain over the last few years. For the past two summers little egrets have successfully nested on Brownsea, but this was not well publicised until more was known about how successful the breeding would be over two seasons. This finding is integral to the close management that is required at this site between the National Trust, Dorset Wildlife Trust and Purbeck District Council. Environmental monitoring should be formalised so that results may be incorporated into updates of the Shoreline Management Plan.

POLO L E H A R B O U R
Co. Cont. & Cf. Bgt

Short Term: Selectively Hold the Existing Line

Long Term: Selectively Hold the Existing Line (subject to improved knowledge of long term sea level rise rates)



▲ : Estimated position of the cliff top or marsh edge in 2049 (based on published retreat rates amended to accommodate for sea level rise. NB: not placed where Hold the Existing Line is proposed)

: Existing Beach Monitoring Stations

☆ : Future Beach Monitoring Stations

: Future & Existing Water Level/Tide Monitoring Stations

Poole Harbour Process Unit (PHB)
Management Unit PHB2
Brownsea Island (east)

Figure D2.14

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – BROWNSEA ISLAND (UNDEFENDED WESTERN SECTOR) (PHB3)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- South – Portland Hill (GR: 402739E, 087387N)
- North – St Andrews Terrace (east) (GR: 402630E, 088346N)

Management Unit Description

The unit consists largely of narrow beaches of sand and shingle which are being extensively eroded and completely undefended. These beaches are backed by wooded slopes of pine and birch, some of which have fallen onto the beach in places. A sandspit in the north west of the island encloses an area of saltmarsh with more areas occurring again further east. The former pottery industry on the western shore of the island has accounted for the remnants of pottery which are to be found here with much of the cliff line designated a RIGS for its important geological exposures. Isolated properties line the cliff top along the southern shore which is prevented from eroding by the presence of a wooden palisade. The entire area is a candidate SAC and proposed SPA for its important heathland habitats and associated bird interest, also forming part of the Poole Harbour SSSI.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 4502m; Defended frontage length: 0m

Environmental Designations

Statutory Designations

- Dorset Heaths cSAC – heathland habitats
- Dorset Heathland SPA – bird interest
- Poole Harbour SSSI - varied habitats
- Dorset AONB – landscape

Non-Statutory Designations

- Brownsea Island RIGS – geological site
- Poole Bay to Isle of Purbeck SMA – marine ecology
- Purbeck Heritage Coast - landscape

Description of Land at Risk

- Open Space
- Heathland
- Footpath
- Saltmarsh
- Housing

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	NONE		CC5 CC7 CC8 CC15 CC21	NNR, SSSI, Heathlands Heaths, Harbour and Island Heaths, Harbour and Island Ball Clay Conservation Area Heritage Coast

Coastal Defences

Defence Elements within Management Unit

NONE

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – BROWNSSEA ISLAND (UNDEFENDED WESTERN SECTOR) (PHB3)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	✓	×
Economically justifiable and environmentally acceptable?	✓	×	○	×
Compatible with adjacent strategies?	✓	○ (SH)	○	×
Compatible with wider coastal processes?	✓	×	▲	×
Process Unit Objectives (See Part C)				
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)	✓	×	×	×
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)	✓	×	○	×
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)	✓	×	○	×
Strategy should not impact on mobility / evolution of natural habitats (5)	✓	×	○	×
Strategy should have minimal impact on landscape quality (6)	▲	×	○	×
Strategy should have minimal impact on archaeological or historical potential (7)	▲	○	○	×
Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)	✓	×	○	×
Strategy should not impact on local economy, commerce, tourism or amenity (9)	▲	✓ (SH)	○	✓
Strategy should seek to improve coastal access within the Harbour (10)	×	✓ (SH)	×	○
Suitability of Strategy Option	✓ (LT)	✓ (SH)	○	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SH Selective Hold

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further.

Selective Hold of existing access points will be reviewed in conjunction with the wider implications of doing nothing or retreating the line.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – BROWNSEA ISLAND (UNDEFENDED WESTERN SECTOR) (PHB3)

	DO NOTHING (short term effects in <i>italics</i>)	SELECTIVELY HOLD THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	RETREAT THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	ADVANCE THE EXISTING LINE (short term effects in <i>italics</i>)
Effects on Physical Environment and Coastal Processes	<i>continued release of natural and unnatural (pottery) material onto the fronting beaches and those further east</i>	<i>termination of cliff sediment supplies to fronting and adjacent beaches further east</i>	reduction in the erosion rate being experienced along cliffed sections	N/A
Effects on Human Environment	possible impact on the condition of Pottery Pier and thus recreational access to Brownsea Island	<i>protect access point at Pottery Pier</i>	no direct benefits	N/A
Effects on Natural Environment and Conservation	- maintain geological interest to the cliffs (RIGS sites) - continued loss of Scots Pine trees	- works may damage inter-tidal habitats (SSSI) - coastal squeeze would result in loss of habitat (SSSI) - prevent further tree loss to erosion	- may impact upon habitat extent depending on methods used to retreat - impact on RIGS site	N/A
Implications for Coastal Defences	no new defences	<i>need to introduce new defence schemes</i>	foreshore structures possibly required to reduce erosion	N/A
Impacts within Process Unit	maintenance of natural sediment and tidal dynamics	significant impact on sediment budget of Poole Harbour	reduced impact on sediment budget of area	N/A
Economics	suitable though may mean deterioration of Pottery Pier	not viable	not viable or suitable	N/A

Current Policy: Do Nothing (with maintenance of Pottery Pier when required)

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – BROWNSEA ISLAND (UNDEFENDED WESTERN SECTOR) (PHB3)

Do Nothing

This is the current policy along this management unit with no man made coast protection defences present (as there are no major built assets at risk from erosion). Sporadic National Trust buildings such as St.Marks Lodge may be at Long Term risk to erosion though this is dependent upon future erosion rates and occupancy. Localised landing sites do occur such as Pottery Pier, though this serves no coastal defence function and so its continued maintenance (by the National Trust) would not affect the selection of this strategic option. The cliffs on the north and south sides of this management unit are designated of local geological conservation importance (RIGS) and so the continuation of present erosion would be preferred here to maintain the geological importance of the cliffs. An issue related to this is the concern that National Trust wardens are having in the loss of Scots Pine trees particularly on the north west coast (Cambridge Wood). This strategic option is viable as a result.

Selective Hold the Existing Line

Any protection schemes to protect selective built or natural assets would not be economically viable nor would such an approach be compliant with the objectives of the Process Unit as it is probable that this would interfere with contemporary sediment budgets in Poole Harbour. The maintenance of Pottery Pier is open to debate, though, as it serves no coast defence function, it does not fall within this strategic option. Any intervention that might take place (Long Term) would be the responsibility of the National Trust and should not involve any physical change to the orientation or form of the current structure. Overall, this strategic option is not viable or recommended.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 31:12:2004)	Do Nothing
Long Term (31:12:2004 to 2049)	Do Nothing (allowing for maintenance of Pottery Pier and slipway as required)

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for PHB3. A strategic policy of "Do Nothing" would comply to the Process Unit Objectives because natural processes will be maintained allowing the existing littoral transport system to continue. The policy would not, however, ensure the Long Term protection of sporadic built assets though importantly, it would not alter the hydrodynamic regime of Poole Harbour or its sediment budget regime. The archaeological importance of Brownsea Island and Poole Harbour is recognised and by deterring future coastal defence schemes would comply with the maritime archaeological objectives for Poole Harbour.

Impact on adjacent Management Units

Within Poole Harbour, any action on the shoreline that influences the tidal prism or sediment budget regimes, may impact on the shoreline along adjacent

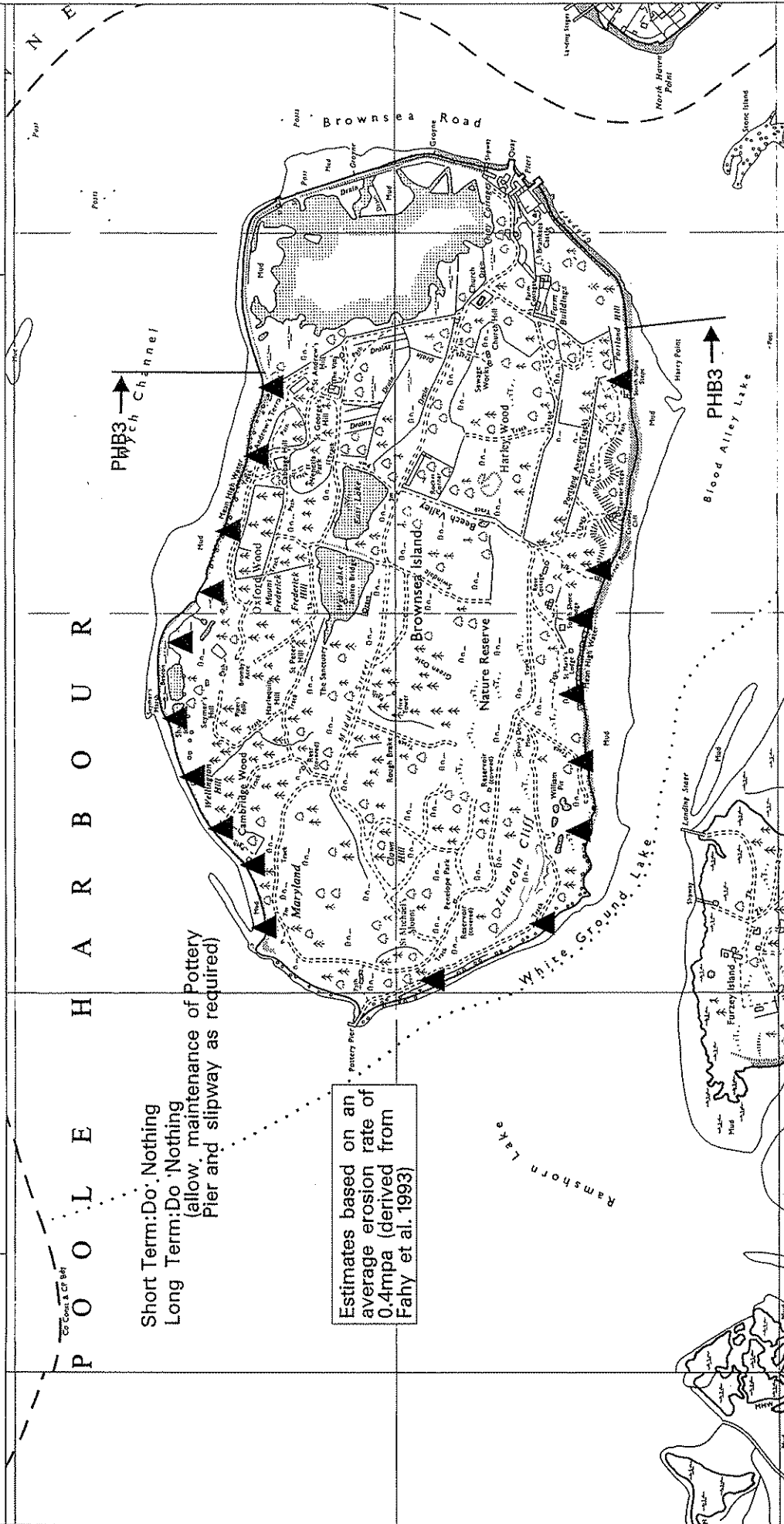
management units or internationally important natural habitats. Therefore, a Do Nothing policy would be the most acceptable option. This is because the maintenance of existing geological sites would be ensured on Brownsea Island and contemporary physical processes within the Harbour would not be affected.

Review of Potential Implementation

This would equate to a continuation of current passive management policy. To facilitate routine repairs to Pottery Pier, implementation measures should ensure that they do not impact upon sediment budgets or the natural environment. Poole Harbour is an area of international importance for nature conservation. The fine ecological balance of the salt marshes and mud flats must not be disturbed.

Present and Future Monitoring/Studies

Brownsea Island in Poole Harbour has become one of the first two nesting sites in Britain for the little egret. This elegant bird (a small white heron) has been slowly colonising Southern Britain over the last few years. For the past two summers little egrets have successfully nested on Brownsea, but this was not well publicised until more was known about how successful the breeding would be over two seasons. This finding is integral to the close management that is required at this site between the National Trust, Dorset Wildlife Trust and Purbeck District Council. Environmental monitoring should be formalised so that results may be incorporated into updates of the Shoreline Management Plan.



Poole Harbour Process Unit (PHB)
Management Unit PHB3
Brownsea Island (west)

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – SOUTH HAVEN POINT TO HYDE'S QUAY (PHB4)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- East – South Haven Point (GR: 403634E, 086684N)
- West – Hydes Quay (GR: 395654E, 087713N)

Management Unit Description

This unit is entirely undeveloped along its length, the majority of which is undefended, however, important archaeological remains occur on the Arne Peninsula. The shoreline is flanked with mudflats and marshland all of which have been designated SSSI due to the important wildfowl and associated wetland species they contain. These wetland habitats are also a proposed SPA and qualify under the Ramsar Convention with the reedbeds at Arne also forming part of an RSPB nature reserve. The land rises up to form heathland and coniferous plantations, the latter most dense along the Goathorn Peninsula and Rempstone Heath with mixed woodland along the western shores of Brands Bay. Important cliff exposures of the Poole Formation occur at Shipstal Point that have been designated GCR and RIGS status whilst the entire area has also been designated Heritage Coast and AONB for its outstanding landscape importance.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 57406m; Defended frontage length: 60m

Environmental Designations

Statutory Designations

- Dorset Heaths cSAC – heathland habitats
- Dorset Heathland SPA – bird interest
- Dorset Heathland Ramsar site – wetland habitats
- Poole Harbour SSSI – varied habitats
- Studland and Godlingston Heaths NNR – heathland, dunes and reptiles
- Arne SSSI – wetland ecology
- Dorset AONB – landscape
- Bowl Barrow on Arne Hill SM – archaeological site
- Bronze Age Bowl Barrow Arne Hill SM – archaeological site

Non-Statutory Designations

- Fitzworth SNCI – grassland and saltmarsh ecology
- Greenland SNCI – acid grassland ecology
- Shipstal Point, Arne RIGS – geological site

- Poole Bay to Isle of Purbeck SMA – marine ecology
- Purbeck Heritage Coast – landscape

Description of Land at Risk

- Marshes
- Farmland
- Woodland
- Café (Studland Ferry)

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	NONE		CC5 CC7 CC8 CC15 CC21	NNR, SSSI, Heathlands Heaths, Harbour and Island Heaths, Harbour and Island Ball Clay Conservation Area Heritage Coast

Coastal Defences

Defence Elements within Management Unit

DEFENCE CODE	SUB CODE	MAINTAINING AUTHORITY	ELEMENT LENGTH (KM)	STRUCTURE TYPE	CONDITION	RESIDUAL LIFE	YEAR BUILT
681/2301	1	Shell Bay	0.03	Revetment	Class 2	5-10	1980
681/2301	2	Shell Bay	0.03	Revetment	Class 2	>10	1980
681/2301	3	Shell Bay	0.02	Wall	Class 2	>10	1980

Description of Defences

- 2301 Along the 30m inshore face of South Haven Point a rubble revetment and masonry wall protect the privately owned Shell Bay boatyard, cafe and the nearby road to the ferry.

PART D2 APPRAISAL OF STRATEGIC OPTIONS FOR PHB

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – SOUTH HAVEN POINT TO HYDE'S QUAY (PHB4)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓ (SH)	✓	×
Economically justifiable and environmentally acceptable?	✓	× (LT) ✓	✓	×
Compatible with adjacent strategies?	✓	×	✓	×
Compatible with wider coastal processes?	✓	×	✓	×
Process Unit Objectives (See Part C)				
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)	✓	×	✓	×
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)	✓	×	✓	×
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)	✓	×	✓	×
Strategy should not impact on mobility / evolution of natural habitats (5)	✓	×	○	×
Strategy should have minimal impact on landscape quality (6)	✓	×	○	×
Strategy should have minimal impact on archaeological or historical potential (7)	▲	✓	○	×
Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)	▲	✓	○ (LT)	×
Strategy should not impact on local economy, commerce, tourism or amenity (9)	▲	○	✓	×
Strategy should seek to improve coastal access within the Harbour (10)	×	✓	○	×
Suitability of Strategy Option	✓	SH only	✓ (SR)	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SH Selective Hold
- SR Selective Retreat

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further.

Maintenance of existing slipways and selective protection of assets are included within the Selective Hold option. Selective Retreat will be viewed in terms of a strategic approval to manage set back along the south coast of Poole Harbour.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

	DO NOTHING (short term effects in italics)	SELECTIVE HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	SELECTIVE RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	- allow natural adaptation of landforms to long term sea level rise - may increase the sediment input to the Harbour from marsh front erosion - may alter tidal prism of Harbour Long Term	<i>exacerbate mudflat and saltmarsh erosion and overall habitat coastal squeeze</i>	- allow a degree of landform adaptation to long term sea level rise - may increase the sediment input to the Harbour from marsh front erosion	N/A
Effects on Human Environment	- no risk to human use of unit - no improvement to access problem - unlikely to affect siltation in navigation routes	- no direct benefits generated - protect access points and slipways	- no social or economic implications of retreating the shoreline - unlikely to affect siltation in navigation routes	N/A
Effects on Natural Environment and Conservation	allow mudflats and saltmarsh to adapt to longer term change	<i>works likely to damage inter-tidal habitats (SSSI)</i> - coastal squeeze would result in loss of habitat (SSSI)	compensate for coastal squeeze as sea levels rise in strategic locations	N/A
Implications for Coastal Defences	no defences to be built	<i>need to construct defences around parts of the undefended shores of south Poole Harbour</i>	closely manage strategic sites for retreat (ie involving controlling inundation and mudflat management techniques)	N/A
Impacts within Process Unit	allow long term evolution of the Harbour	serious impact on sediment budget and conservation value of the Harbour	identify potentially useful pilot areas for managed retreat	N/A
Economics	acceptable as no key assets at risk	not viable	viable in strategic locations	N/A

Current Policy: Do Nothing

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – SOUTH HAVEN POINT TO HYDE'S QUAY (PHB4)

Do Nothing

This would represent a continuation of current policy along this management unit. The Long Term implication of this strategic option would, however, be an increase in the rate of marsh edge erosion (currently being experienced at selected sites) and an increased frequency of tidal inundation. There is a risk of coastal squeeze causing existing saltmarsh to change in character from grazing marsh to actual saltmarsh as the marsh system retreats. Depending on sea level rise predictions, a worst case scenario (Long Term) could be total marsh and mudflat inundation by the sea. The Long Term survival of the wetlands would depend upon their being able to migrate inland as sea level rises. The topographically higher elevations (such as along the Goathorn Peninsula) would not incur the same impacts, though cliff erosion inputs may increase (exact amounts cannot be quantified). Therefore, it is recommended that this strategic option should incorporate some action to accommodate sea level rise which is required now within this management unit for the benefit of the wider Poole Harbour Process Unit.

Selective Retreat the Existing Line

Managed Retreat for the whole of this management unit is not feasible due to the topographic nature of backing land coupled with how it is currently used. Long Term, a blanket "Retreat" policy would also result in a net loss of saltmarsh and mudflat habitat due to coastal squeeze as these habitats retreat in response to sea level rise. Selective Retreat, in theory, is more feasible and could retain the high nature conservation interests of the marsh and fronting mudflats by allowing retreat into strategic locations inland, notably at Slepe Moor. Due to topographic, economic and political factors within this management unit, suitable sites are not plentiful thus it is important to undertake detailed studies to determine any further suitable locations and assess the Long Term applicability of this option (see Fig D2.16).

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2002)	Do Nothing (selective retreat the existing line at Slepe Moor & establishment of any further suitable sites)
Long Term (2003 to 2049)	Do Nothing (possible selective retreat following detailed studies to establish potential sites)

Figure D2.16 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets all of the objectives set out in the Objective Screening Table for PHB4. A strategic policy to "Do Nothing with possible Selective Retreat the Line" would comply to the Process Unit Objectives as estuarine processes will be maintained allowing the existing littoral transport system to continue. The policy would also seek that efforts are made now to set aside suitable locations for managed retreat within the upper limits of creek systems and inlets, however, these may be relatively limited. This would not increase the risks of erosion and flooding on adjacent management unit lengths if the implementation is carried out effectively and closely monitored. Limited impact would result on sediment stores within the Harbour, through adopting these policies, may prove strategically significant in the light of new information on sea level rise acceleration and its role in marsh erosion (contributing to the sediment budget Long Term).

Impact on adjacent Management Units

Within Poole Harbour, any intervention on the shoreline which influences the tidal prism or sediment budget regimes, may impact on the shoreline and navigational channels elsewhere within the harbour / estuary. It is recommended that a Do Nothing policy with selective retreat would be the most acceptable policy so long as close monitoring is carried out on any future change in tidal prism as a consequence of any retreat schemes that may be implemented (i.e. Slepe Moor). Alterations to tidal currents are only likely to be influential within inlets such as Brands Bay or Wytch Channel, thus it is not seen as being significant. It is more probable that with the onset of sea level rise, residual tidal currents within the Harbour will change impacting on the configuration of the ebb tidal delta (and flood delta). A precautionary approach to any intervention is therefore recommended after the Short Term using new background information that is collated to deduce the longer term approach. The intention is to allow the tidal prism to adapt by compensating for sea level rise.

Review of Potential Implementation

Poole Harbour is an area of international importance for nature conservation. The fine ecological balance of the salt marshes and mud flats must not be disturbed. Continuation of current management practice will continue in the Short Term over the majority of the unit in conjunction with monitoring mudflat and saltmarsh levels. Topographic surveys to deduce any additional potential sites other than Slepe Moor for Selective Retreat need to be carried out in this time. The use of dredge material to maintain mudflat levels may be pursued (subject to detailed study) should contemporary supplies of fine material from fluvial sources not be sufficient to sustain mudflat and saltmarsh health in the Harbour (with the onset of sea level rise).

Present and Future Monitoring/Studies

The recommendation set in Part E of this Volume (Saltmarsh and Mudflat Management Strategy) apply specifically to this management unit.

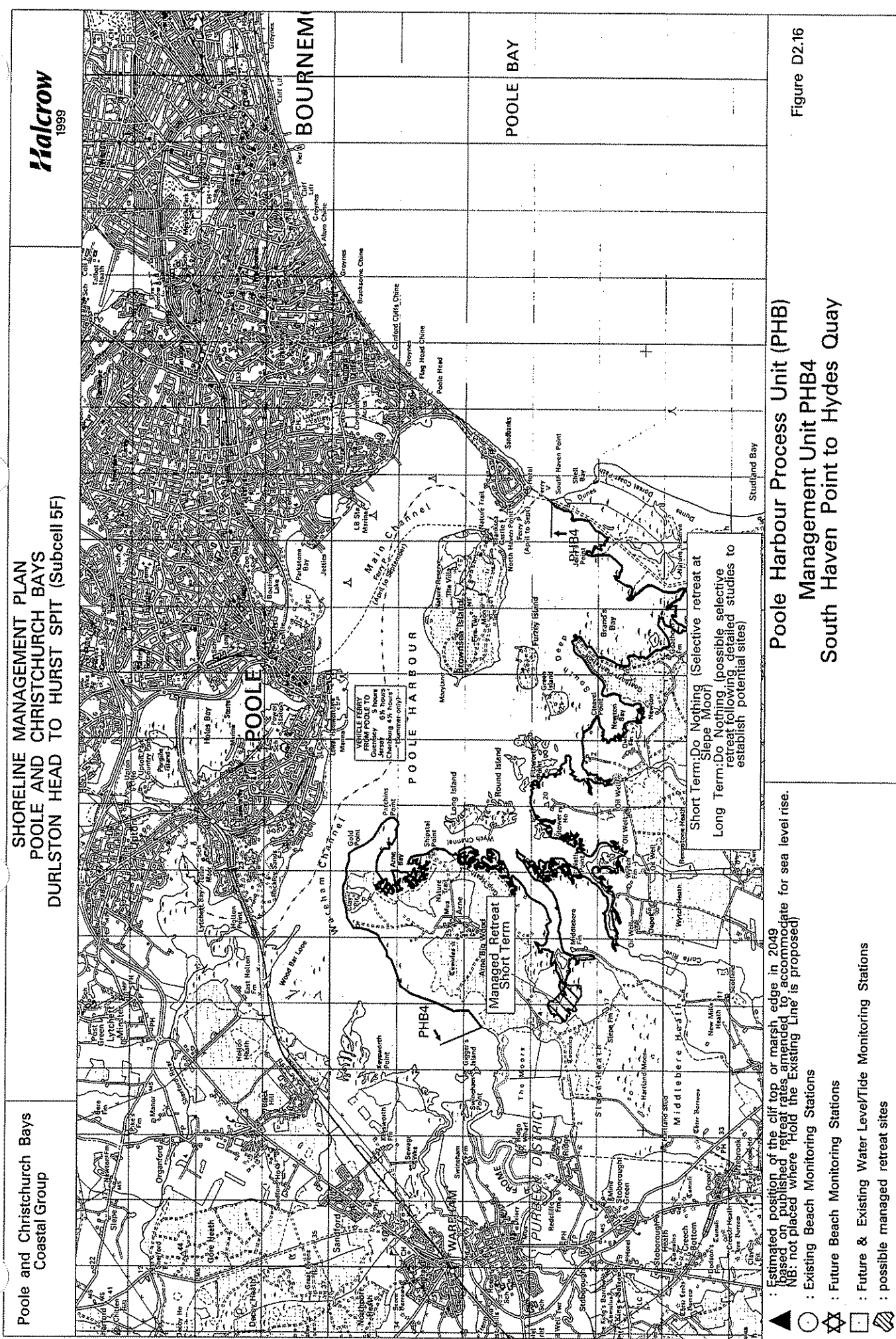


Figure D2.16

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – HYDE'S QUAY TO HOLTON POINT (PHB5)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- East – Hydes Quay (GR: 395654E, 087713N)
- West – Holton Point (GR: 397129E, 091405N)

Management Unit Description

This unit is characterised by tidal and reclaimed marshland and wetland, with woodlands to the north of the unit at Holton Heath and reclaimed pasture land further south at Keyworth and The Moors. Flood earth embankments occur in the unit which are currently maintained by the EA. These include a small earth embankment protecting the railway line which runs close to the shoreline to the west of Lytchett Bay and an industrial estate at Holton Heath which backs onto an area of wetland. A small eroding cliff line separates the edge of the marshes from seaward to the south of the unit near the mouth of the Wareham Channel. The wetlands which cover much of this area are an important area for wildfowl populations and therefore a proposed SPA whilst also qualifying under the Ramsar Convention. The whole area, including wetland, heathland, marshland and meadows is designated SSSI and an area of considerable landscape importance thus afforded AONB status.

Administrative Authority

Purbeck District Council

Frontage Lengths

Total frontage length: 27810m; Defended frontage length: (not classified in the CPSE though the Tidal Defence Survey Phase 4 classifies River Piddle defences at Keyworth Point to be 2.41km (excluding upstream defences) and 4.45km of river defences on the River Frome (from the Moors to Swineham Farm and Bestwall)

Environmental Designations

Statutory Designations

- Dorset Heathland SPA – bird interest
- Dorset Heathlands Ramsar site – Wetland habitats
- Dorset Heaths cSAC – heathland habitats
- Poole Harbour SSSI – varied habitats
- Holton Heath NNR – heathland ecology
- Arne Reedbeds NNR – wetland ecology
- Arne SSSI – wetland ecology
- Wareham Meadows SSSI
- The Moors SSSI
- Holton and Sandford Heaths SSSI
- Dorset AONB – landscape

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology
- Purbeck Heritage Coast - landscape

Description of Land at Risk

- Railway Line
- Saltmarsh
- Farmland

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Isle of Purbeck Local Plan	NONE	NONE		CC5 CC7 CC8 CC15 CC21	NNR, SSSI, Heathlands Heaths, Harbour and Island Heaths, Harbour and Island Ball Clay Conservation Area Heritage Coast
North East Purbeck Local Plan	NONE	CC1 CC2A,3, 4,6-13A CC5 CC5A E1 E6 E9 S1 T3 T4 T9 H4A	Green Belt Development in Green Belt Agricultural diversification Disabled Study Centre Industrial Allocation Industrial Redevelopment Industrial Development in the Green Belt Out of Town Shopping Redundant Buildings in Green Belt Caravan / camping zones Open space Low Density Housing Areas	CC2 CC13A CC14 CC15 CC16 CC20 CC21 CC22-3 T10	Protection of strategic gaps Conserving character of landscape Protection of Heritage Coast Protection of nature conservation sites Management of land for nature conservation Minerals in Heritage Coast /SSSI Minerals in Strategic Gaps Archaeological sites Conservation

Coastal Defences

Defence Elements within Management Unit

Details of individual river defences are presented for the Rivers Frome and Piddle in the 1994 Tidal Defence Survey Phase 4 (South Wessex Rivers) (Montgomery Watson 1994).

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – HYDE'S QUAY TO HOLTON POINT (PHB5)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓ (SH)	✓	×
Economically justifiable and environmentally acceptable?	▲	○	○	×
Compatible with adjacent strategies?	✓	✓	✓	×
Compatible with wider coastal processes?	✓	×	✓	×
Process Unit Objectives (See Part C)				
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)	×	✓ (ST) ×	○	×
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)	▲	○	✓	×
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)	▲	×	○	×
Strategy should not impact on mobility / evolution of natural habitats (5)	✓	×	✓	×
Strategy should have minimal impact on landscape quality (6)	✓	○	○	×
Strategy should have minimal impact on archaeological or historical potential (7)	▲	×	○	×
Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)	×	×	✓	×
Strategy should not impact on local economy, commerce, tourism or amenity (9)	▲	✓	○	○
Strategy should seek to improve coastal access within the Harbour (10)	×	○	○	○
Suitability of Strategy Option	▲	✓ (SH)	✓ (SR)	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SH Selective Hold
- SR Selective Retreat

¹ By boats not pedestrians

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further. The nature of the earth embankments and type of land use backing these structures lends itself to a review of the options for managed retreat in this unit. This shall be reviewed in addition to Do Nothing and Selective Hold of these earth embankments.

3 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – HYDE'S QUAY TO HOLTON POINT (PHB5)

	DO NOTHING (short term effects in italics)	SELECTIVELY HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	SELECTIVELY RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	<i>continued accretion of Keyworth Marsh adjacent area subject to Spartina coverage</i> - possible impact on extent of wetlands if existing embankments remain	<i>sterilise erosion of natural bluffs and thus impact on sediment budget of the area</i>	limited effect on sediment budget or extent of fronting habitats (ie: allowed to adapt to change under managed circumstances)	N/A
Effects on Human Environment	claimed pasture land likely to be at increased risk to flooding as sea level rise increases and water levels overtop existing embankments	- protect Wareham town long term - protect railway line and assets at Holton Heath - protect sewage works	- impact on agricultural land as defences are set back - not suitable in front of Holton Heath due to assets at risk	N/A
Effects on Natural Environment and Conservation	coastal squeeze may result in some loss of inter-tidal habitat (SSSI)	<i>works may damage inter-tidal habitats (SSSI)</i> <i>coastal squeeze would result in loss of habitat (SSSI)</i>	- compensate for coastal squeeze as sea levels rise - in places, may damage freshwater or terrestrial habitats	N/A
Implications for Coastal Defences	<i>deterioration in condition of EA earth embankments and drainage ditches</i>	<i>need to upgrade existing embankments or introduce new schemes of defence (hard or soft)</i>	<i>need to either cut through existing embankments, set them back or use dredged materials to increase the height of mudflats</i>	N/A
Impacts within Process Unit	allow natural evolution and adaptation of mudflats/saltmarshes to sea level rise	likely impacts on nature conservation value and ability of landforms to adapt to change in the future	long term benefits for habitats within Poole Harbour	N/A
Economics	increased risk of flooding on backing reclaimed land and thus increase flood risk to Wareham	not viable	possibly viable along strategic points of the unit	N/A

Current Policy: Hold the Line (where EA tidal embankments exist), Do Nothing elsewhere

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – HYDE'S QUAY TO HOLTON POINT (PHB5)

Do Nothing

It is likely that continued accretion of *Spartina* marsh will continue at Keyshaven though this trend is likely to be checked against the onset of accelerated sea level rise. As a consequence of this, there will be an impact upon backing wetlands where flood defences exist. Where existing earth embankments occur, there will be a Long Term risk of breaching or increased overtopping into the marsh grasses and floodplain of the River Frome. Bucks Cove Island and The Moors to the east of the River Frome are the most likely areas to be inundated by higher sea levels in the Long Term. This option would see an increased risk of flooding on backing land and thus to Wareham over the Long Term. Therefore, it is not a suitable option.

Selective Hold the Existing Line

This strategic option applies only to those lengths of coast where EA maintain flood embankments, however, a localised issue of consideration must be the protection of the industrial waste tip at Holton Heath. The tidal defence at the Moors situated on the right hand bank of the River Frome is set back from the River and is fronted by saltmarsh of varying width (100m wide at Turners Cove). Due to the overgrown nature of the embankment, no level of service has been given to this defence. There is an obligation for the EA to maintain it up to approximately 2005. After this date, it is agreed that in cost benefit terms, it would not be justifiable to maintain this defence. Further upstream, sluices do occur though are not maintained on a regular basis whereas the boat moorings that occur are regularly maintained. From Keyworth Point down to Swineham Point, earth flood banks which are in a deteriorating condition occur fronted by saltmarsh. It provides effective levels of protection in the Short Term, though Long Term, as well as the defence crest being affected, coastal squeeze is likely to occur.

Selective Retreat the Existing Line

This management unit provides a very good opportunity to adopt a "Selective Retreat the Existing Line" policy. As the obligation to maintain and upgrade the embankments (that are currently in place) expires in 2005, the EA have no responsibility after this date to undertake any further works here. Consequently, suitable sites should be investigated in the Short Term to accommodate managed retreat. The use of dredged material, which previously has been deposited onto the defence crest within this management unit, may in future be deposited further inland creating set back defences within the river flood plains where necessary. This option is viable environmentally and economically.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Selectively Hold the Existing Line (whilst establishing suitable Managed Retreat sites)
Long Term (2004 to 2049)	Selective Retreat the Existing Line (implementation of schemes for managed retreat)

Figure D2.17 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets all of the objectives set out in the Objective Screening Table for PHB5. A strategic policy to "Selectively Retreat the Line" Long Term would comply with the Process Unit Objectives as estuarine processes will be maintained allowing the existing littoral transport system to continue. The policy would also seek to ensure that efforts are made now to set aside suitable locations for managed retreat behind existing EA maintained earth embankments and within creek systems and inlets. This would not increase the risks of erosion and flooding on adjacent management unit lengths (particularly the town of Wareham) if the implementation is carried out effectively and is closely monitored. Limited impact would result on sediment stores that front the management unit.

Impact on adjacent Management Units

Within Poole Harbour, any intervention on the shoreline which influences the tidal prism or sediment budget regimes, may impact on the shoreline elsewhere within the Harbour. It is recommended that a Selective Retreat the Line policy would be the most suitable Long Term policy so long as close monitoring is carried out on any future change in tidal prism as a consequence of its implementation. Selectively Holding the Line in the Short Term will result in a continuation of current policy, even though actual intervention at existing embankments sites is minimal. It is unlikely that this will effect the evolution of natural habitats so long as efforts are made to allow habitat evolution of occur Long Term (ie; after 2005). A precautionary approach to intervention is therefore recommended after the Short Term using new background information that is collated to deduce the longer term approach.

Review of Potential Implementation

Implementation techniques are likely to involve creating strategic "breaks" in the existing earth embankments to allow sea inundation to occur. This needs to be set up in unison with a Mudflat and Saltmarsh Management Strategy which is proposed in more detail within Part E.

Present and Future Monitoring/Studies

The recommendation set in Part E of this Volume (Saltmarsh and Mudflat Management Strategy) applies specifically to this management unit.

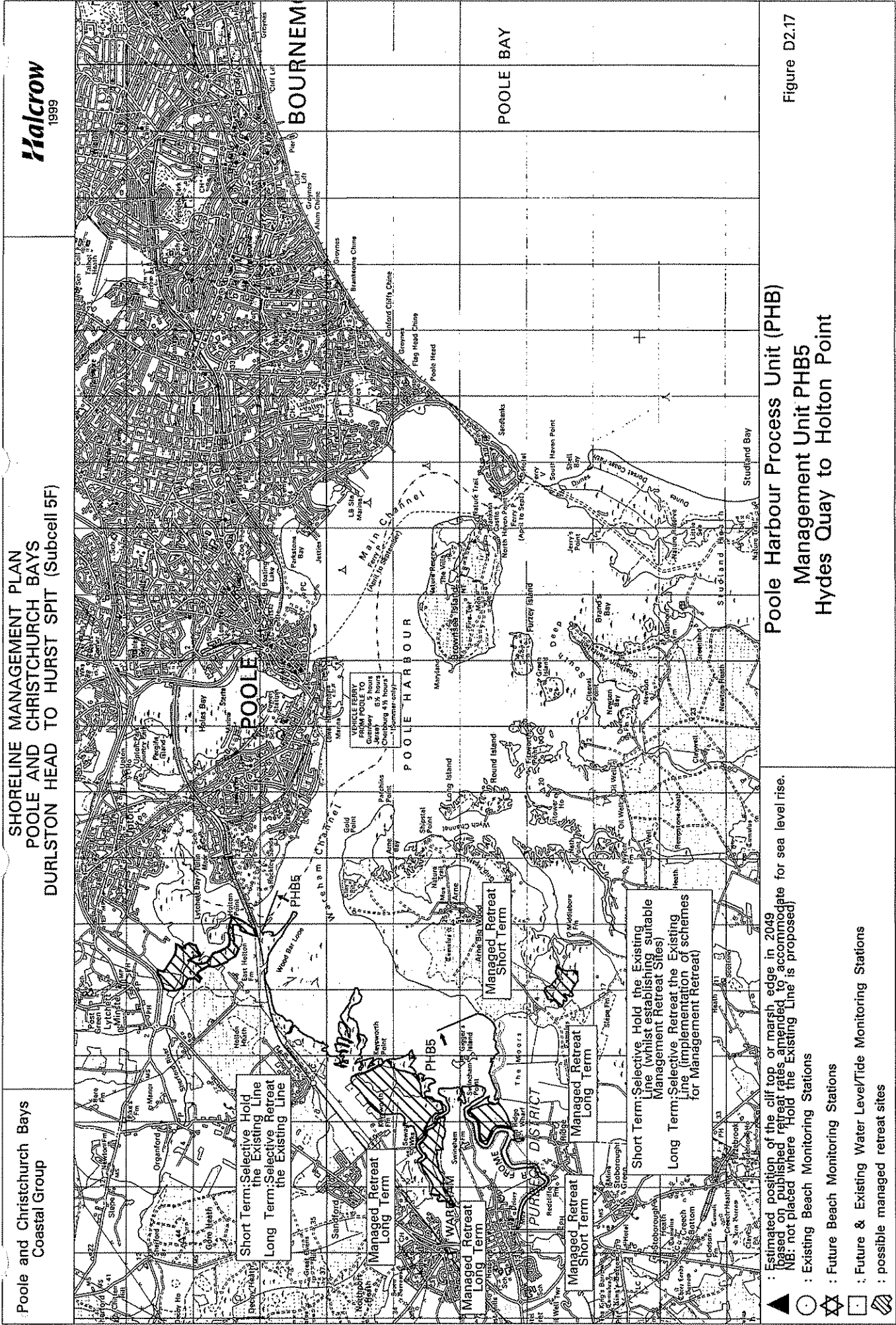


Figure D2.17

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – LYTCHETT BAY (PHB6)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Holton Point (GR: 397129E, 091405N)
- East – Rockley Viaduct (GR: 397282E, 08953N)

Management Unit Description

This unit is entirely undefended with the eastern and northern shores of the Bay highly developed. A housing estate has been constructed on higher ground behind the natural saltmarsh shoreline at Turlin Moor adjacent to a large recreational ground. Residential properties and a sewage pumping station also back the shore to the north of the bay. There are no developments along the western shore with the exception of a sewage works in the north west of the bay. The railway line cuts across the mouth of the bay via the Rockley Viaduct restricting sediment transport from the Sherford River and resulting in siltation. The north and western shores of Lytchett Bay are heavily protected by dense saltmarsh habitats which in conjunction with the meadow, grassland and remaining wetland ecology form part of the Poole Bay SSSI and are a proposed Ramsar site.

Administrative Authority

Purbeck District Council

Borough of Poole

Frontage Lengths

Total frontage length: 305m; Defended frontage length: 0m

Environmental Designations

Statutory Designations

- Poole Harbour SSSI – varied habitats
- Dorset AONB – landscape

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA –marine ecology
- Purbeck Heritage Coast - landscape

Description of Land at Risk

- Saltmarsh
- Farmland
- Sewage Works
- Housing
- Railway Line

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
North East Purbeck Local Plan	NONE	CC1 CC2A,3, 4,6-13A CC5 CC5A T3 T4 T9 T9A H4A	Green Belt Development in Green Belt Agricultural diversification Disabled Study Centre Redundant Buildings in Green Belt Caravan / camping zones Open space Informal Open Space Low Density Housing Areas	CC2 CC13A CC14 CC15 CC16 CC20 CC21 T10	Protection of strategic gaps Conserving character of landscape Protection of Heritage Coast Protection of nature conservation sites Management of land for nature conservation Minerals in Heritage Coast /SSSI Minerals in Strategic Gaps Conservation
Poole Local Plan	This plan is currently on deposit and no policies exist for this area until the plan is adopted.				

Coastal Defences

Defence Elements within Management Unit

NONE

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – LYTCHETT BAY (PHB6)

Strategy (See Part C)	Test	Statements	Coastal Defence Strategy Options			
			Do Nothing	Hold	Retreat (Selective Sites)	Advance
Core Subcell Coastal Defence Objectives						
	Technically viable?		✓	✓ (SH)	✓	×
	Economically justifiable and environmentally acceptable?		✓	○	✓	×
	Compatible with adjacent strategies?		✓	✓ (SH)	○	×
	Compatible with wider coastal processes?		✓	○	×	×
Process Unit Objectives (See Part C)						
	Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)		✓	○	○	×
	Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)		▲	×	✓	×
	Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)		✓	×	▲	×
	Strategy should not impact on mobility / evolution of natural habitats (5)		✓	×	✓	×
	Strategy should have minimal impact on landscape quality (6)		✓	×	○	×
	Strategy should have minimal impact on archaeological or historical potential (7)		✓	✓	○	○
	Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)		▲	○	▲	×
	Strategy should not impact on local economy, commerce, tourism or amenity (9)		▲	✓ (SH)	○	×
	Strategy should seek to improve coastal access within the Harbour (10)		×	✓ (SH)	×	×
Suitability of Strategy Option			✓ (ST)	✓ (SH)	✓ (LT)	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SH Selective Hold

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is considered any further. Maintenance of existing embankments are included within the selective hold option. The extent and rate of retreat of saltmarsh vegetation should be monitored to determine the applicability of a do nothing strategy for the longer term. Maintenance of saltmarsh is essential to the long term protection of assets eg sewage works, Turlin Moor housing estate, recreational land etc.

Retreat the line appears only viable for selected sites (the western shores) over the long term though could be considered over the short term along the eastern shores.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – LYTCHETT BAY (PHB6)

	DO NOTHING (short term effects in <i>italics</i>)	SELECTIVE HOLD THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	SELECTIVE RETREAT THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	ADVANCE THE EXISTING LINE (short term effects in <i>italics</i>)
Effects on Physical Environment and Coastal Processes	<i>continuation of current stable environment and sheltered hydraulic conditions</i>	likely impact on landform evolution within Lytchett Bay and thus sediment budget / tidal dynamics	allow a degree of natural landform evolution (under managed circumstances)	N/A
Effects on Human Environment	long term potential threat to housing estate behind saltmarsh at Turlin Moor	ensure protection to housing estate behind Turlin Moor and the village of Upton	allow protection of built assets when required (ie long term intervention using suitable methods)	N/A
Effects on Natural Environment and Conservation	- coastal squeeze may result in loss of inter-tidal areas (SSSI) (impact against earth embankments to the W & E) - protect natural transition from brackish saltmarsh to wet heathland habitat	<i>works may damage inter-tidal habitats (SSSI)</i> - coastal squeeze would result in loss on inter-tidal area and impact on backing reedbeds	compensate for coastal squeeze as sea level rise and allow a degree of natural habitat evolution (brackish saltmarsh to wet heathland)	N/A
Implications for Coastal Defences	overtopping of low earth embankments behind Otter Island and at Turlin Moor on the east shore	<i>need to introduce new built defences or upgrade existing earth embankments</i> <i>need to maintain railway viaduct defences (ST/L T)</i>	- need to establish a managed retreat mechanism of setting back earth embankments that currently exist. - possible use of dredge materials to raise areas of mudflats	N/A
Impacts within Process Unit	allow habitat and natural defence evolution (mudflat and saltmarsh)	impact on evolution of mudflat and saltmarsh and their adaptability to change	no significant impacts likely in terms of hydrodynamics or sediment budgets.	N/A
Economics	potential long term risk to developed assets to the east	not viable	viable	N/A

Current Policy: Selective Hold (railway viaduct structures) and Do Nothing

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – LYTCHETT BAY (PHB6)

Do Nothing

The adoption of this strategic option would be a continuation of current practice. It may see the deterioration of the railway viaduct structures over the Long Term, though this does not classify as a coastal defence structure and so further maintenance of this is not incorporated into this strategic option description. No other man made defences occur here. It is likely that the retreat of mudflats and saltmarsh within Lytchett Bay would continue as rates of sea level rise accelerate thus changing the area of the Poole Harbour cSAC and SSSI. The die back of the *Spartina* Marsh will continue to result in erosion of marsh margins and fronting mudflats. If sufficient sediment supply is not available to allow accretion rates to keep up with sea level rise rates, then these wetland habitats will retreat onto Turlin Moor and towards developed areas at Upton and Lytchett Minster.

Selective Hold the Existing Line

This strategic option would mean having to construct new defences at strategic locations within the management unit. The more developed side of Lytchett Bay falls under the responsibility of the Borough of Poole (notably Turlin Moor). Whilst the risk of flooding or erosion is likely only to be a Long Term issue, the natural retreat of fronting saltmarsh and mudflats onto the developed environment (and thus coastal squeeze) may become an issue in both conservation and land use planning terms. This option should be further reviewed once more detailed monitored information is attained out of the Saltmarsh and Mudflat Management Strategy monitoring exercise to determine its acceptability as a Long Term strategic option.

Selective Retreat the Existing Line

Managed Retreat for most of this management unit may be feasible due to the topographic nature of backing land coupled with how it is currently used. Such a policy could have a wider Long Term impact through a possible increase in the tidal prism of Poole Harbour. Long Term, a "Retreat" policy may result in maintaining the equilibrium balance between saltmarsh and mudflat habitat though to the detriment of wet heathland further inland due to coastal squeeze against developed land (Upton and Lytchett Minster) as these habitats retreat in response to sea level rise. Selective Retreat, in theory, is more feasible and could retain the high nature conservation interests of the marsh natural transition from brackish saltmarsh to wet heathland by allowing retreat at strategic locations (notably in undeveloped wetland margins on the western side of Lytchett Bay). It is essential to plan this approach carefully Long Term so that wetland "refuges" may be sought. This will entail more detailed studies to deduce suitable locations (involving topographic surveys) to implement the Long Term applicability of this option.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 31:12:2004)	Do Nothing (establishment of suitable Managed Retreat sites)
Long Term (31:12:2004 to 2049)	Selectively Retreat the Existing Line (implementation of schemes)

Figure D2.18 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets all of the objectives set out in the Objective Screening Table for PHB6. A strategic policy to "Selectively Retreat the Line" Long Term would comply to the Process Unit Objectives as estuarine processes will be maintained allowing the existing littoral transport system to continue. The Long Term implications on alterations to the tidal prism and exchange flows through the railway viaduct bridge have not been quantified, though it is believed that selective retreat will reduce any potential impacts on contemporary hydrodynamic processes as sea levels rise in the future.

Impact on adjacent Management Units

As the Short Term strategic option represents current policy for this management unit, it is unlikely that there would be any impacts upon Poole Harbour commercial, recreational or planning requirements. Over the Long Term, allowing retreat to occur for the whole of the management unit may change hydrodynamic flows through the railway viaduct however, if retreat is managed at selective sites, no significant change is likely to occur. The need for such retreat depends on the adaptation of adjacent mudflats to sea level rise and so the management of Lytchett Bay may need to be more closely married into a strategy for mudflat and saltmarsh enhancement (ie: foreshore management). For the purpose of this SMP, this option has been defined as "Selective Retreat the Existing Line" (Long Term). The continued maintenance of the viaduct structures will have no influence on Long Term littoral processes.

Review of Potential Implementation

Continuation of current management practice in the Short Term. Topographic surveys to deduce possible sites for Selective Retreat need to be carried out in this time. The use of dredge material to maintain mudflat levels may be pursued (subject to detailed study) should contemporary supplies of fine material not be sufficient to sustain mudflat and saltmarsh health in Lytchett Bay (with the onset of sea level rise). This needs to be set up in unison with a Mudflat and Saltmarsh Management Strategy that is proposed in more detail within Part E.

Present and Future Monitoring/Studies

The recommendation set in Part E of this Volume (Saltmarsh and Mudflat Management Strategy) apply specifically to this management unit.

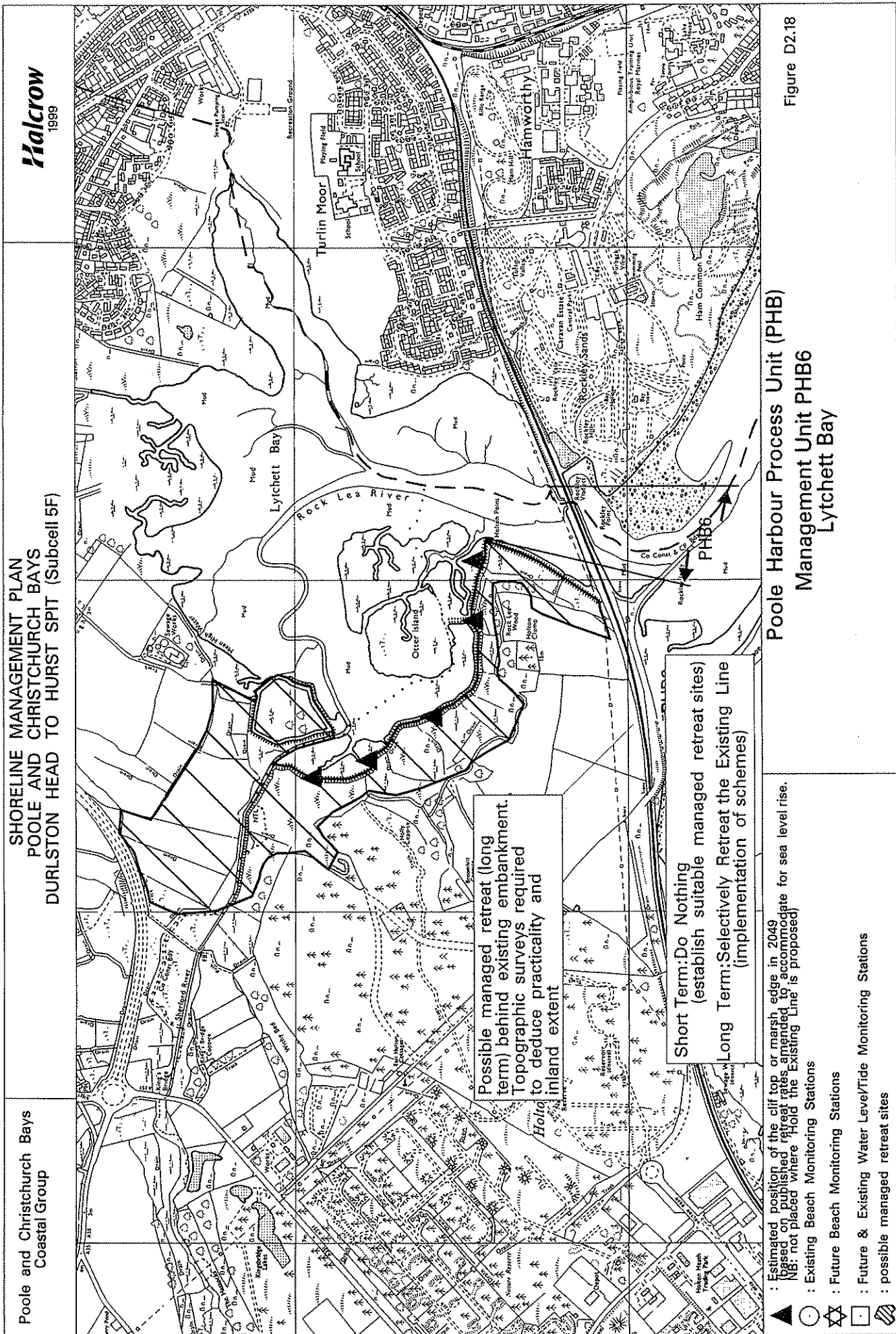


Figure D2.18

Poole Harbour Process Unit (PHB)
 Management Unit PHB6
 Lytchett Bay

- ▲ : Estimated position of the cliff top or marsh edge in 2049 based on published flood rates anticipated to accommodate NB: not placed where 'Hold the Existing Line' is proposed
- : Existing Beach Monitoring Stations
- ☆ : Future Beach Monitoring Stations
- : Future & Existing Water Level/Tide Monitoring Stations
- ◻ : possible managed retreat sites

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – ROCKLEY VIADUCT TO START OF DEFENCE 681/2442 (PHB7)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Rockley Viaduct (GR: 397282E, 091210N)
- East – Lake Pier (start of defence) (GR: 398304E, 090466N)

Management Unit Description

This unit is bordered by Rockley Viaduct to the west and is characterised by sandy beaches along its length. The area was formerly worked for ball clay but the eastern side of the unit, known as Ham Common, is now a local nature reserve and designated SSSI for its national geological and ecological importance. The low cliffs that back the beach here have a natural tendency to erode, with potential for slip failure, providing a rare example of active geomorphological processes within the Harbour. The west of the unit is occupied by a large caravan and camping site which is likely to be threatened by small scale cliff degradation in the near future and a marina at Rockley Point.

Administrative Authority

Borough of Poole

Frontage Lengths

Total frontage length: 1192m; Defended frontage length: 421m

Environmental Designations

Statutory Designations

- Dorset Heathland Ramsar site – wetland habitats
- Dorset Heathland SPA – bird interest
- Dorset Heaths cSAC – heathland SAC
- Poole Harbour SSSI – varied habitats
- Ham Common SSSI – geology, heathland and reptile ecology
- Ham Common LNR – ecology and geology

Non-Statutory Designations

- Ham Hill Copse SSSI – heath and scrub ecology
- Poole Bay to Isle of Purbeck SMA – marine ecology

Description of Land at Risk

- Open Space
- Caravan Park
- Boat Repair Yard

Planning

No planning policies exist for this area at present due to the abandonment of the Hamworthy, Central and East Poole Local Plan. Policies in the Poole Local Plan (1994) which is currently on deposit will be of relevance to this area.

Coastal Defences

Defence Elements within Management Unit

DEFENCE CODE	SUB CODE	MAINTAINING AUTHORITY	ELEMENT LENGTH (KM)	STRUCTURE TYPE	CONDITION	RESIDUAL LIFE	YEAR BUILT
681/2443	1	BoP	0.15	Gabions	Class 4	<5	1980
681/2443	2	BoP	0.28	Gabions	Class 4	<5	1980

Description of Defences

2443 At Rockley Sands, to the west of Ham Common, a 150m length of gabion wall was constructed in the 1980s to protect the caravan park. The majority of the wall is in need of repair.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – ROCKLEY VIADUCT TO START OF DEFENCE 681/2442 (PHB7)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓ (SH)	✓	×
Economically justifiable and environmentally acceptable?	✓	×	✓	×
Compatible with adjacent strategies?	✓	✓ (SH)	○	×
Compatible with wider coastal processes?	✓	×	○	×
Process Unit Objectives (See Part C)				
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)	✓	✓ (ST) × (LT)	× (LT)	×
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)	▲	×	✓	×
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)	✓	× (LT)	○	×
Strategy should not impact on mobility / evolution of natural habitats (5)	✓	×	○	×
Strategy should have minimal impact on landscape quality (6)	▲	○	○	×
Strategy should have minimal impact on archaeological or historical potential (7)	▲	○	○	×
Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)	✓	○	○	×
Strategy should not impact on local economy, commerce, tourism or amenity (9)	¹ ▲	✓	✓	○
Strategy should seek to improve coastal access within the Harbour (10)	×	✓	○	○
Suitability of Strategy Option	✓	✓ (SH)	(✓LT)	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SH Selective Hold

¹ Impact on beach, however caravans could be moved

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further. There is little economic justification for a hold the line strategy (long term) though this shall be assessed against the Retreat and Do Nothing options.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – ROCKLEY VIADUCT TO START OF DEFENCE 681/2442 (PHB7)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	SELECTIVE RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	- Allow natural evolution of the sand spit adjacent to the channel at Lytchett Bay <i>continued relocation of old china clay deposits and erosion to the east</i>	<i>continued low beach levels and exposure of underlying clay</i> <i>prevent cliff sediments being input to the littoral system</i>	<i>increase the natural supply of cliff sediments to adjacent coasts</i>	N/A
Effects on Human Environment	long term risk of erosion to Ham Common for amenity and Rockley Sands Caravan Park	- protect residential and access points - protect Rockley Sands Caravan Park	<i>need to relocate some caravans further inland</i> - possible impact on access to boat facilities at Rockley - possible impact on navigation channels due to increased siltation	N/A
Effects on Natural Environment and Conservation	<i>maintain geological exposure at Ham Common (SSSI) as gabbions break down</i> - loss of heathland habitats (SSSI) long term	impact on the continued maintenance of geological exposures at Ham Common (SSSI)	- in places may provide area for inter-tidal habitat to develop - loss of heathland - suitable for GCR sites depending on methods used to retreat	N/A
Implications for Coastal Defences	<i>deterioration of existing gabions towards Rockley Sands</i> <i>deterioration of privately owned defences at Lake</i>	<i>need for nourishment scheme and groyning to protect Rockley.</i> <i>need for rock toe structures</i>	<i>need to remove gabions and allow cliffs to erode naturally whilst being closely monitored</i>	N/A
Impacts within Process Unit	increase sediment supply to downdrift beaches once gabions deteriorate	significant impacts on sediment budget regime	- increase sediment supply to downdrift beaches - possible impacts on	N/A

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	SELECTIVE RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
	possible impacts on sediment budget regime		sediment budget regime	
Economics	long term risk to residential and recreational assets	not viable at Rockley	likely short term financial implications for Rockley Sands Caravan Park	N/A

Current Policy: Selective Hold the Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – ROCKLEY VIADUCT TO START OF DEFENCE 681/2442 (PHB7)

Do Nothing

This strategic option would result in the natural evolution of the sand spit fronting Lytchett Bay to the west. There would be continued deterioration of the gabion protection near Rockley Point (in the Short Term). This is likely to result in the onset of increased small scale cliff erosion adjacent to Rockley Caravan Park, increasing the supply of sediments to the beaches at the cliff toe, downdrift and possibly increasing siltation within existing navigation channels (Long Term) though this has not been quantified. Future erosion would be beneficial in terms of geological conservation (Ham Common SSSI), however, there may be significant wider conservation and economic implications of adopting this option (ie: increased costs of navigational dredging, implications for Rockley Sands holiday park) that require investigation in the Short Term. Thus the Long Term selection of this option should only take place following a detailed cost – benefit analysis for the management unit. It is, however, viable over the Short Term.

Selective Hold the Existing Line

This strategic option would require the future maintenance and upgrade of existing structures. This option is not favoured as it is unlikely to be economically viable (caravan assets at risk are not fixed and so can be moved) and because the existing gabion structures have impacted upon the fronting foreshore locally and on downdrift beaches. This option is not preferred.

Selective Retreat the Existing Line

The adopting of this option would involve removal of the existing gabion defences fronting the caravan site whilst relocating some of the mobile caravan units thus allowing the cliffs to erode naturally which is important for the integrity of the Ham Common and Lake GCR sites Long Term. This would restore the supply of material to the fronting beach and adjacent coast thereby increasing the degree of natural protection. However, there is the Long Term possibility of increased siltation rates within navigational channels, thereby imposing an increased financial burden on Poole Harbour Commissioners. Bournemouth University are currently finalising a report that is looking into the implications of managed retreat at Ham Common and the findings should be incorporated into future reviews of the SMP in the future. A precautionary approach is preferred here and so this option is only viable once detailed studies are carried out to determine siltation rates and to determine how much supply to the beaches will be produced by renewed cliff erosion.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Do Nothing
Long Term (2005 to 2049)	Selective Retreat (subject to forthcoming study findings)

Figure D2.19 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policies, presented above, meet most of the objectives set out in the Objective Screening Table for PHB7. A Selective Retreat policy (Long Term) can be justified on physical grounds as littoral processes will remain unaltered and changes to the sediment budget are not likely to occur prior to the onset of renewed cliff erosion. There would be no significant change to the present in terms of risk to mobile caravan assets at Rockley Sands caravan park as the present gabion structures are expected to function as a coastal protection structure over the next 5 years. The Long Term policy to selectively retreat should only be pursued if recent ongoing studies show that there would be no significant adverse impacts on siltation rates within navigation channels or irreversible economic impacts on the Rockley Sands caravan park. It must ensure no impacts on immediate or adjacent beach levels and does not impact upon important natural habitats within the Harbour.

Impact on adjacent Management Units

The fronting beach levels are low in front of existing structures. This is likely to change with the onset of erosion on the Tertiary cliffs as increased sediment input to the fronting and adjacent foreshores will occur. Any retreat of the management unit here (Long Term) is unlikely to affect the tidal prism of Poole Harbour, though changes to the sediment budget may prove more significant. The fronting foreshore will act as a sediment store for beach building material, though there will be increased winnowing of finer material into Poole Harbour itself. The predominant west – east drift direction may result in fine sediment stores further east receiving more material on the mudflats.

Review of Potential Implementation

Long Term, actions to implement a Selective Retreat the Line policy must be subject to a detailed review of the impacts and effects on littoral budgets regimes and socio-economic implications.

Present and Future Monitoring/Studies

The outcome of the Bournemouth University Ham Common Managed Retreat report will need to be instilled within future management policy for PHB7. Monitoring of beach levels in the Short Term (Observe and Monitor) is required to compile a sound time series database of contemporary conditions prior to any intervention.

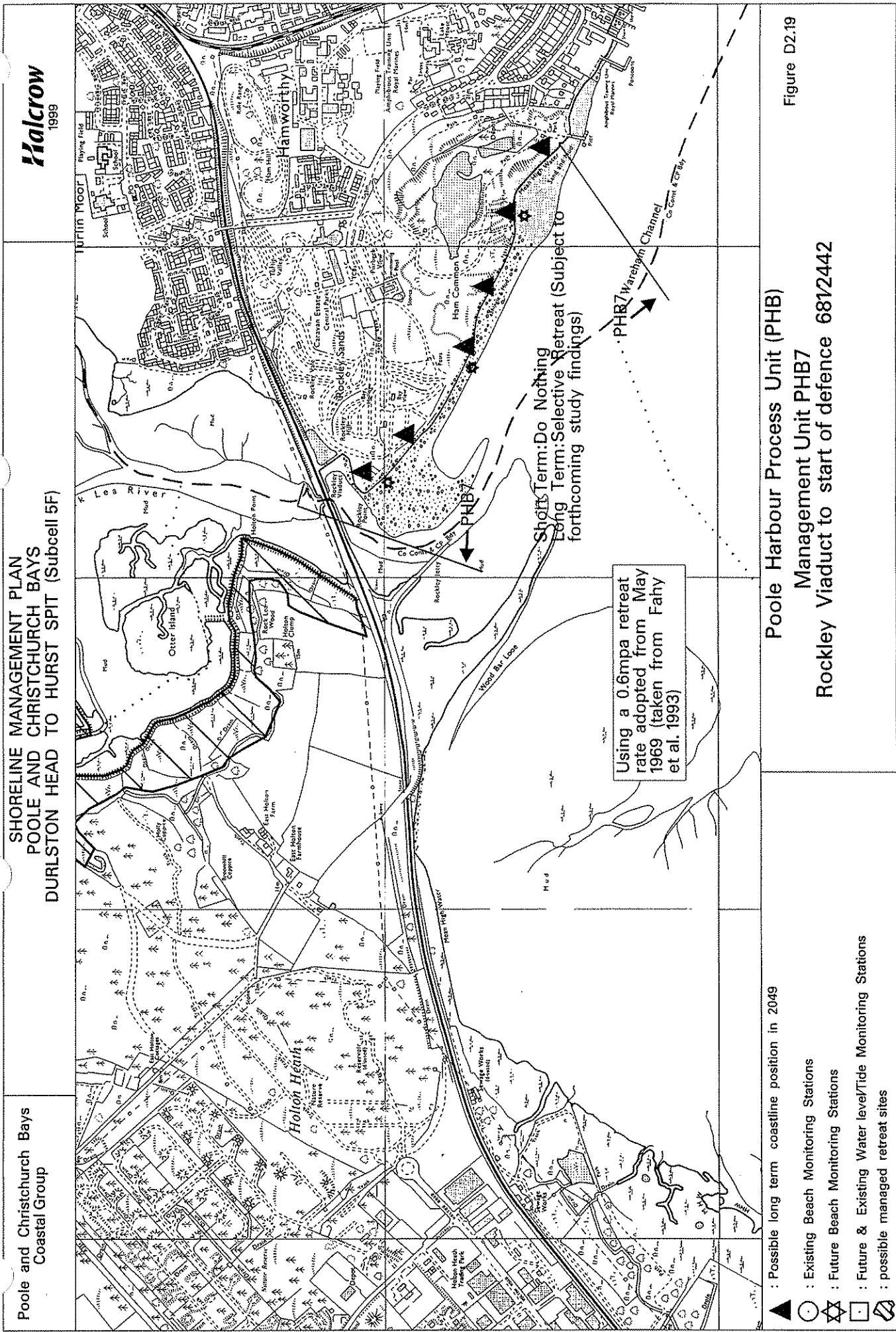


Figure D2.19

Poole Harbour Process Unit (PHB)
 Management Unit PHB7
 Rockley Viaduct to start of defence 681/2442

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – DEFENCE 681/2442 TO HAMWORTHY QUAY (PHB8)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Lake Pier (defence 681/2442) (GR: 398304E, 090466N)
- East – Hamworthy Quay (GR: 400129E, 090124N)

Management Unit Description

This unit is characterised by low-lying land, the majority of which has been reclaimed, forming areas such as Hamworthy Park recreational ground. A number of beach huts line this area of open space which is fronted by a sandy beach, forming a popular amenity site with public access along the promenade which runs along this frontage. Further west lie the Moriconium Quay marina, numerous boatyards and the Royal Marines amphibious training unit restricting any further public access. These commercial sites are interspersed with residential properties, some of which extend to the foreshore. A sandy beach extends along the coastal frontage from the marine base backed by a car park and road access. The western end of this unit includes part of Ham Common, an area of national geological and ecological importance with LNR status.

Administrative Authority

Borough of Poole

Frontage Lengths

Total frontage length: 2799; Defended frontage length: 2756m

Environmental Designations

Statutory Designations

- Poole Harbour SSSI – varied habitats
- Ham Common LNR – ecology and geology

Non-Statutory Designations

- Brooks Pit SNCI – reptile interest
- Poole Bay to Isle of Purbeck SMA – marine ecology

Description of Land at Risk

- Housing
- Open Space
- Commercial Properties

Planning

No planning policies exist for this area at present due to the abandonment of the Hamworthy, Central and East Poole Local Plan. Policies in the Poole Local Plan (1994) which is currently on deposit will be of relevance to this area.

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2439	1	Private	0.21	Beach Ridge			
681/2440	1	BoP	0.61	Wall	Class 4	<5	1960
681/2440	2	BoP	0.61	Groynes	Class 2	>10	1970
681/2441	1	Private	1.03	Wall	Class 2	>10	1970
681/2442	1	BoP	0.09	Gabions	Class 2	<5	1980
081/2740	420	Poole HC	0.07	Wall	Fair	>5	
081/2750	421	Private (various)	0.47	Wall	Poor	>5	
081/2760	422	Private (various)	0.05	Wall	Good	>5	

Description of Defences

- 2439 At Hamworthy a low eroding bank is the only defence to the railway. There is one redundant outfall structure on the beach.
- 2440 At Hamworthy Park the defences along the 660m length comprise five 30m long timber groynes and a vertical concrete wall. Parts of the wall have been buttressed and repaired since it was first constructed, probably in the 1920s. However at the eastern end of the wall has been undermined and is in need of repair over a 100m length. BOP recognise that the defences are in need of upgrading, unfortunately the benefit cost ratio is insufficient to justify capital works along this defence length. EA may provide some form of flood protection scheme in future.
- 2441 At Lake a 1.03km length of various masonry and concrete walls defend a number of private properties. This also includes the marines base and a small marina boatyard.
- 2442 A short length (90m) of gabion wall, constructed in the 1980s, protects the car park at Lake Pier, to the east of Ham Common. BOP are responsible for the maintenance of this defence length. There is an undefended length in front of Ham common to the east, which is eroding.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – DEFENCE 681/2442 TO HAMWORTHY QUAY (PHB8)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	✓ (SR)	✓
Economically justifiable and environmentally acceptable?	✓	✓	✓ (SR)	×
Compatible with adjacent strategies?	✓	✓	○	×
Compatible with wider coastal processes?	✓	✓	○	×
Process Unit Objectives (See Part C)				
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)	▲LT	✓	×	×
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)	▲LT	○	✓LT	×
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)	✓	×	✓	×
Strategy should not impact on mobility / evolution of natural habitats (5)	✓	×	○	×
Strategy should have minimal impact on landscape quality (6)	✓	○	○	○
Strategy should have minimal impact on archaeological or historical potential (7)	✓	✓	✓	○
Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)	▲LT	✓	○	×
Strategy should not impact on local economy, commerce, tourism or amenity (9)	×	✓	✓	✓
Strategy should seek to improve coastal access within the Harbour (10)	×	✓	○	○
Suitability of Strategy Option	✓	✓ (LT)	✓ (SR)	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SR Selective Retreat

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further.

A hold the line strategy is likely to be the most appropriate option for the western half of this length due to the developed nature of the frontage. However, the possibility of retreat will be evaluated for Hamworthy Park over the long term taking into consideration the nature of the ecological SSSI which relates to the intertidal area.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – DEFENCE 681/2442 TO HAMWORTHY QUAY (PHB8)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	<i>continued easterly longshore drift regime</i> - increase in littoral supply of material depending on strategy for PHB7	continued easterly longshore drift regime dependent on implementation methods used	likely alteration to tidal dynamics and easterly littoral drift rates	N/A
Effects on Human Environment	increased overtopping risk to residential gardens and onto promenade (fronting Hamworthy Park)	- protection to residential (Lake) and public assets (Hamworthy Park) long term <i>maintain present recreation and amenity value</i>	- loss of certain stretches of Hamworthy Park - increased risk of erosion to residential assets of Lake	N/A
Effects on Natural Environment and Conservation	no significant impacts	- coastal squeeze may result in loss of inter-tidal habitat (SSSI) - works may be damaging to inter-tidal habitat (SSSI)	compensate for coastal squeeze, as inter-tidal habitats allowed to move inland	N/A
Implications for Coastal Defences	<i>deterioration of existing defences</i>	continued need for beach nourishment long term subject to works in PHB7	need to setback existing defence line where suitable (eg: fronting Hamworthy Park)	N/A
Impacts within Process Unit	<i>continuation of contemporary littoral processes short term</i>	no deleterious long term impacts so long as beach recharge event continue to protect promenade	- possible change to tidal dynamics in front of Hamworthy Park - possible increased siltation in adjacent navigation channels	N/A
Economics	increased risk long term to amenity and residential assets	viable	viable for Hamworthy Park only long term	N/A

Current Policy: Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – DEFENCE 681/2442 TO HAMWORTHY QUAY (PHB8)

Do Nothing

The selection of this strategic option would result in the gradual deterioration of existing coastal defence structures. The Long Term implications of this would result in increased overtopping along the recreational area of Hamworthy Common though this is unlikely to affect residential property in the Short Term. The renourished beaches fronting Hamworthy Park may reduce in volume (Long Term) thus impacting upon the recreational and touristic value of the site as beach conditions deteriorate. The implications of this episode happening on the hydrodynamics of Poole Harbour and the operations of Poole Harbour Commissioners cannot be quantified though there would be no significant in terms on habitat or geological conservation sites of importance. Alterations to littoral drift regimes and tidal hydrodynamics may occur as a consequence of sea level rise in general within Poole Harbour and would not be attributable specifically to change within this management unit. Based on the economic assets at risk, this strategic option is not viable.

Hold the Existing Line

This strategic option would represent a continuation of current practice and would be achieved through the maintenance and upgrading of defences (possibly including future additional beach recharge to the east of the management unit at Hamworthy Park). This strategy selection would ensure the continued protection of built assets along the management unit. Continuation of sediment supply from Rockley Park will be important. Consequently, this strategic option would be viable depending on implementation techniques on the adjacent units. The Environment Agency are investigating the viability of flood protection at Hamworthy Park.

Selective Retreat the Existing Line

This strategic option is only suitable to the east of the management unit in front of Hamworthy Park. Currently defended with low sea walls, this location experiences occasional overtopping onto the backing recreational park. The frequency of this overtopping is likely to increase in the Long Term as sea level rise rates increase. The implications of allowing retreat in this open space would be threefold. Firstly, it would result to the loss of recreational land. Secondly, it may increase the risk of inundation to the most easterly residential properties within the management unit and finally, it would mean having to "set back" the defence line releasing new sediments into the littoral budget regime which may have implications on siltation within navigational channels thus imposing an extra economic dredging liability on Poole Harbour Commissioners. There is negligible transport east past the marina breakwater. This option should only be revisited if alternative options for retreat elsewhere within Poole Harbour appear to be inappropriate. This is unlikely to be the case as this strategic option is not economically viable.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line
Long Term (2005 to 2049)	Hold the Existing Line

Figure D2.20 displays the likely implication of adopting this policy

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for PHB8. A Hold the Line policy (Short and Long Term) can be justified so long as methods used to implement the policy are compatible with littoral processes. They also need to ensure that it will have no impact on immediate or adjacent beach levels and does not impact upon natural habitats in immediate or adjacent management units.

Impact on adjacent Management Units

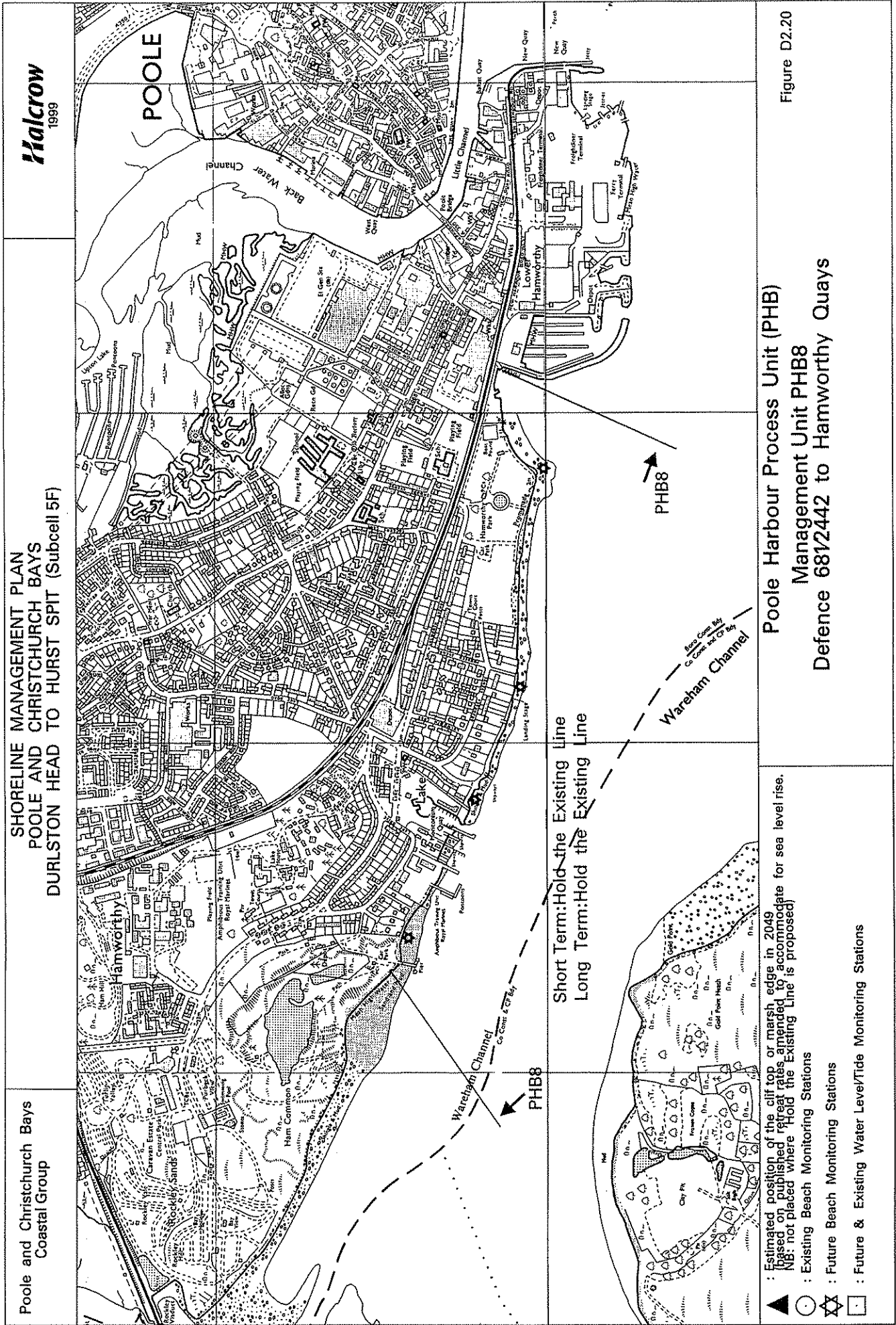
As the preferred strategic option represents current policy for this management unit, it is unlikely that there would be any impacts upon adjacent management units so long as any future beach replenishment schemes that are introduced at Hamworthy Common do not detrimentally affect navigation or impact upon contemporary dredging programmes. Over the Long Term, depending on future information relating to sea level rise in Poole Harbour (see recommendations in Part E) the frequency and magnitude of nourishment events may need to be altered and adapted accordingly.

Review of Potential Implementation

Due to the defended nature of the frontage (including cliffs) in this management unit, it is predicted that the shoreline in PHB8 will not adapt naturally to sea level rise and thus be unable to provide significant amounts of material to the immediate foreshore and wider sediment budget. The implication that future sea level rise may result in beach lowering in PHB8 suggests that beach nourishment schemes may be required in the future management of this unit. Within the Long Term, monitoring of beach levels will help determine whether any increased sedimentation within navigation channels is likely.

Present and Future Monitoring/Studies

Current and future monitoring locations are set out in Figure D2.20. A study looking into the implications of setting back defences at Hamworthy Quay should overtopping frequencies increase may be required if it is perceived there is a Long Term need.



- ▲ : Estimated position of the cliff top or marsh edge in 2049 based on published retreat rates amended to accommodate for sea level rise. NB: not placed where 'Hold the Existing Line' is proposed
- : Existing Beach Monitoring Stations
- ☆ : Future Beach Monitoring Stations
- : Future & Existing Water Level/Tide Monitoring Stations

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – HAMWORTHY QUAYS (PHB9)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Hamworthy Quay (West) (GR: 400129E, 090124N)
- East – Old Power Station (GR: 400545E, 090697N)

Management Unit Description

This frontage comprises various quays, marinas and commercial developments at Lower Hamworthy whilst upstream of the swing bridge lie a number of boat yards and the derelict power station. The majority of this frontage is occupied by the Poole Ferry Terminal and other PHC quays with a marina development located at the western end of the unit, most of which has been reclaimed. Public access along this length is severely restricted due to the commercial activities that are undertaken here. Nature conservation interest within this area is minimal, however, the unit is included within the Poole Bay and Isle of Purbeck SMA for its marine environmental importance.

Administrative Authority

Borough of Poole

Frontage Lengths

Total frontage length: 3798m; Defended frontage length: 3798m

Environmental Designations

Statutory Designations

NONE

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology

Description of Land at Risk

- Port Facilities (ferry operations, offices, storage)
- Marina
- Commercial Properties

Planning

No planning policies exist for this area at present due to the abandonment of the Hamworthy, Central and East Poole Local Plan. Policies in the Poole Local Plan (1994) which is currently on deposit will be of relevance to this area.

Coastal Defences

Defence Elements within Management Unit

DEFENCE CODE	SUB CODE	MAINTAINING AUTHORITY	ELEMENT LENGTH (KM)	STRUCTURE TYPE	CONDITION	RESIDUAL LIFE	YEAR BUILT
681/2437	1	Poole HC	0.50	Piling	Class 3	5-10	1944
681/2437	2	Poole HC	0.26	Piling	Class 2	>10	1929
681/2437	3	Poole HC	0.32	Piling	Class 2	>10	1972
681/2437	4	Poole HC	0.23	Piling	Class 2	>10	1984
681/2437	5	Poole HC	0.20	Piling	Class 1	>10	1988
681/2436	1	Private	0.50	Wall	Class 2	>10	1960
081/2380	371	PHC	0.20	Wall	Fr	>5	
081/2490	386	Private	0.05	Wall	Pr	<2	
081/2500	387	Private	0.12	Wall	Fr	>5	
081/2540	391	NP	0.28	Wall	Fr	>5	
081/2550	392	PHC	0.07	Wall	Fr	>5	
081/2560	393	PHC	0.07	Wall	Fr	>5	
081/2570	394	PHC	0.07	Wall	Pr	>5	
081/2580	395	Private	0.05	Wall	Fr	>5	
081/2590	396	PHC	0.01	Apron	Fr	>5	
081/2590	397	PHC	0.05	Wall	Fr	>5	
081/2600	398	PHC	0.05	Wall	Pr	>5	
081/2610	399	PHC	0.02	Wall	Fr	>5	
081/2620	400	PHC/Lessee	0.02	Wall	Pr	2-5	
081/2630	401	PHC/Lessee	0.02	Wall	Fr	>5	
081/2650	404	PHC/Lessee	0.01	Bkwtrs	Good	>5	
081/2650	405	PHC/Lessee	0.17	Wall	Good	>5	
081/2660	406	PHC/Lessee	0.17	Pitching	Good	>5	
081/2660	407	PHC/Lessee	0.17	Banks	Good	>5	
081/2670	408	PHC/Lessee	0.62	Banks	Good	>5	
081/2670	409	PHC/Lessee	0.62	Armour	Good	>5	
081/2680	410	PHC	0.38	Wall	Good	>5	1988
081/2690	411	PHC	0.25	Armour	Fair	>5	
081/2690	412	PHC	0.25	Banks	Fair	>5	
081/2700	413	PHC	0.01	Bwtrs	Bd	2-5	
081/2700	414	PHC	0.12	Armour	Good	>5	
081/2700	415	PHC	0.12	Banks	Good	>5	
081/2710	416	PHC	0.16	Wall	Fr	>5	
081/2720	417	PHC	0.09	Wall	Pr	>5	
081/2730	418	PHC	0.07	Brwork	Pr	>5	
081/2730	419	PHC	0.07	Wall	Fr	>5	
081/2740	420	PHC	0.07	Wall	Fr	>5	

Description of Defences

- 2436 At Hamworthy there are 500m of privately owned defences. These generally include concrete walls but also piling towards Poole Bridge. The northern edge of the former power station site has a bituminous revetment.
- 2437 Sheet steel piling has been installed at New Quay along various lengths between 1924 and 1988. PHC own and maintain the wall and report that it is currently in a variable condition along its length.
- Poole Harbour Commissioners (PHC) operate the port, which comprises a variety of quay walls (both concrete and steel) of varying ages and one short length of rock revetment. These are maintained regularly by PHC.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – HAMWORTHY QUAYS (PHB9)

Strategy (See Part C)	Test	Statements		Coastal Defence Strategy Options			
Core Objectives	Subcell	Coastal	Defence	Do Nothing	Hold	Retreat	Advance
				✓	✓	×	✓
				×	✓	×	○
				×	✓	×	✓
				×	✓	×	✓
Process Unit Objectives (See Part C)							
				×	✓	×	○
				×	✓	×	✓
				✓	✓	○	×
				✓	✓	○	×
				×	✓	×	×
				✓	✓	✓	×
				×	✓	×	○
				×	✓	×	✓
				×	✓	×	✓
Suitability of Strategy Option				×	✓ (LT)	×	✓

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

From the above screening exercise, the Retreat and Do Nothing (long term) options are not appropriate for this Management Unit and not considered any further.

The importance of this area for shipping/cargo handling lends itself to a hold the line strategy with possible advancement of the line in the longer terms, however this requires further assessment in terms of its wider impacts on coastal processes and intertidal/marine habitats.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – HAMWORTHY QUAYS (PHB9)

	DO NOTHING (short term effects in <i>italics</i>)	HOLD THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	RETREAT THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	ADVANCE THE EXISTING LINE (short term effects in <i>italics</i>)
Effects on Physical Environment and Coastal Processes	N/A	<i>no significant alterations to tidal hydrodynamics which currently exist (high tidal currents and wave activity)</i>	N/A	<i>increased exposure to wave activity</i> <i>likely impact on already high tidal currents caused by constriction of Holes Bay entrance</i> <i>changes to sediment transport and hydrodynamics</i>
Effects on Human Environment	N/A	- protection to existing quays, marinas and other commercial frontages <i>maintain current port activity</i>	N/A	possible impact on redevelopment to the SW of Holes Bay
Effects on Natural Environment and Conservation	N/A	- new works may release contaminants from sediments - little intertidal or subtidal habitat exists due to vertical walls	N/A	<i>new works likely to impinge upon intertidal mudflat habitats</i>
Implications for Coastal Defences	N/A	possible increase in overtopping rates as sea level rise increases	N/A	<i>need to advance existing quay line or allow further reclamation</i>
Impacts within Process Unit	N/A	no significant additional impacts	N/A	<i>possible impact on tidal dynamics within Holes Bay</i>
Economics	N/A	viable	N/A	probably not viable

Current Policy: Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – HAMWORTHY QUAYS (PHB9)

Do Nothing

Whilst the Hamworthy Quays are expected to remain stable and provide an adequate level of protection over the Short Term, there are serious commercial and economic implications on Poole Harbour should Hamworthy Quays deteriorate or current overtopping rates increase. This strategic option is therefore not viable.

Hold the Existing Line

This strategic option would represent a continuation of current policy with Poole Harbour Commissioners monitoring and maintaining the sections of the Quay for which they are responsible. Based on the economic assets at risk from erosion and / or flooding, this is an economically viable option to select.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line
Long Term (2005 to 2049)	Hold the Existing Line

Figure D2.21 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

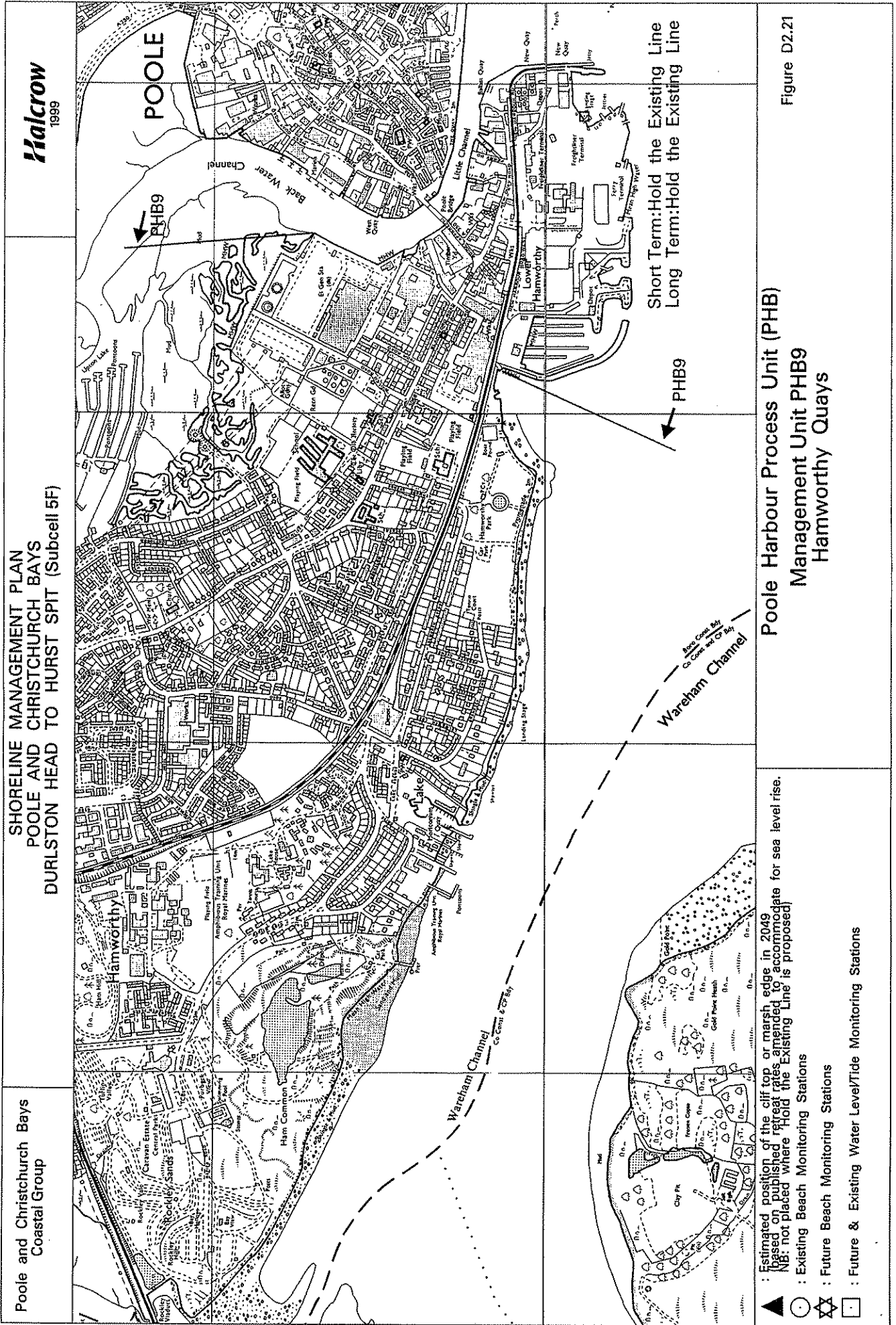
The preferred policy, presented above, meets all of the objectives set out in the Objective Screening Table for PHB9.

Impact on adjacent Management Units

As this strategic option represents current policy for this management unit, it is unlikely that there would be any impacts upon adjacent management units. Any planned redevelopment of the Quays that may involve advancing the line should be closely studied using numerical models of waves and tidal flows to assess the wider implications within Poole Harbour.

Review of Potential Implementation

The standard of defences, in the Long Term, may need to be upgraded to accommodate for accelerated rates of sea level rise and increased storminess.



▲ : Estimated position of the cliff top or marsh edge in 2049
 based on published retreat rates, amended to accommodate for sea level rise.
 NB: not placed where 'Hold the Existing Line' is proposed

○ : Existing Beach Monitoring Stations

☆ : Future Beach Monitoring Stations

□ : Future & Existing Water Level/Tide Monitoring Stations

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – HOLES BAY (E,N & W) (PHB10)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Old Power Station (GR: 400545E, 090697N)
- East – Eastern Shore Holes Bay (GR: 400833E, 091025N)

Management Unit Description

Land around the periphery of Holes Bay is largely developed and reclaimed along the eastern shore to form the A350 which is separated from the sea wall by a footpath and an area of wasteland. Industrial properties line the frontage to the south, on low-lying land whilst a viaduct to the north divides the bay. The northern foreshore is backed mainly by farmland and the estate of Upton Country Park, with Cobbs Quay marina comprising the principal structure of note along the western shore. Land backing the marina consists chiefly of housing estates with industrial estates to the south. The bay contains wide expanses of mudflats and saltings, particularly along the north and western shores. These habitats support large numbers of intertidal birds and have been designated within the Poole Harbour biological SSSI and Poole Bay and Isle of Purbeck SMA for their ecological importance.

Administrative Authority

Borough of Poole

Frontage Lengths

Total frontage length: 11938m; Defended frontage length: 4426m

Environmental Designations

Statutory Designations

- Poole Harbour SSSI – varied habitats

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology

Description of Land at Risk

- Commercial Properties
- Marina
- Highway
- Housing

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Broadstone Creekmoor local Plan	NONE	4.18 10.21 10.26 10.28 10.38 10.45	Green Belt Green Belt development Upton Country Park Recreation Pedestrian footpaths Caravan / Chalet Parks	10.31 10.33	Protection of Roman Road Archaeology
Poole Town Centre Local Plan	NONE	7.17 7.20	Stadium recreational use Open space	NONE	

Coastal Defences

Defence Elements within Management Unit

DEFENCE CODE	SUB CODE	MAINTAINING AUTHORITY	ELEMENT LENGTH (KM)	STRUCTURE TYPE	CONDITION	RESIDUAL LIFE	YEAR BUILT
681/2432	1	Private	0.45	Revetment	Class 2	>10	1980
681/2433	1	BoP	0.05	Wall	Class 2	>10	1970
681/2434	1	BoP	2.10	Revetment	Class 1	>10	1986
681/2435	1	BR	1.35	Revetment	Class 2	>10	1970
081/1050	206	BoP	1.40	Embankmt	Gd	>5	
081/2450	381	Private	0.38	Pitching	Fr	>5	
081/2450	382	Private	0.38	Banks	Fr	>5	

Description of Defences

2432 There is a 450m long privately owned small rock revetment on the edge of Holes Bay that protects a number of facilities. The revetment was constructed in the 1980s.

2433 A 50m long concrete wall constructed in the 1990s protects the A350 along the shore of Holes Bay. PBC are responsible for maintaining this structure.

2434 Adjacent to the concrete wall a 2.1km long rock revetment on the east shore of Holes Bay protects the A350 bypass. The level and form of the foreshore varies between saltings and mud/silt. BoP are responsible for maintaining this structure.

A clay embankment was constructed across the middle of Holes Bay in the 1900s. A concrete revetment was added in the 1970s and repairs were carried out in 1993. The structure is owned and maintained by Railtrack and supports the main railway line.

Between defence length 2435 and 2436, there are a variety of quay walls and slipways at Cobbs Quay marina, in fair condition generally. The marina has extensive pontoons but no breakwaters, being in a sheltered part of Holes Bay.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – HOLES BAY (E,N & W) (PHB10)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	¹ ✓	✓ SH	✓ SR	✓
Economically justifiable and environmentally acceptable?	✓	✓ (LT)	✓	×
Compatible with adjacent strategies?	▲	○	○	×
Compatible with wider coastal processes?	✓	✓	✓	×
Process Unit Objectives (See Part C)				
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)	✓ (SH)	² ✓	✓	×
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)	✓	○	✓	×
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)	✓	○	✓	×
Strategy should not impact on mobility / evolution of natural habitats (5)	✓	○	○	×
Strategy should have minimal impact on landscape quality (6)	▲	○	○	×
Strategy should have minimal impact on archaeological or historical potential (7)	▲	○	○	×
Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)	▲	✓	○	○
Strategy should not impact on local economy, commerce, tourism or amenity (9)	▲	✓	○	✓
Strategy should seek to improve coastal access within the Harbour (10)	×	✓	○	✓
Suitability of Strategy Option	✓ (ST)	✓ (SH) (LT)	✓ (SR)	○

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SH Selectively Hold
- SR Selective Retreat

¹ Do nothing may be applicable over the short term in sheltered non developed stretches of the unit

² The sheltered nature of Holes Bay does not warrant any intervention to hold in the short term

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – HOLES BAY (E,N & W) (PHB10)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	<i>maintenance of low energy stable conditions within Holes Bay</i> - Any changes to the Back Water Channel may only slightly increase risk to northern Holes Bay (re: change in hydrodynamics)	possible long term impacts on fronting saltmarshes and mudflats and thus tidal prism of Holes Bay (excluding northern Holes Bay)	no significant change to the already very sheltered environment here	N/A
Effects on Human Environment	- long term impact on A350 road to the east - possible increased flood risk to low lying residential areas in Holes Bay - possible long term risk of flooding to Creekmore properties via western culvert	<i>maintain marine recreational interest to the west</i> <i>ensure maintenance of culverts and drainage system in northern Holes Bay</i> - possible need to protect western half over long term	- threat to residential properties to the west <i>threat on A350 to the east</i>	N/A
Effects on Natural Environment and Conservation	- continued importance of fronting mud flats for intertidal birds - continued risk of pollution in N. Holes Bay	- coastal squeeze may result in loss of inter-tidal habitat (SSSI) - works may damage SSSI - works may release contaminants from sediments	- compensate for loss of inter-tidal habitats as a result of sea-level rise - works may release contaminants from sediments	N/A
Implications for Coastal Defences	<i>no deterioration of rock revetment to the east in short term</i>	beneficial to change existing vertical structures (eg Cobbs Quay) to reduce wave reflection caused by vessels wake	movement of rubble earth embankments inland or their reconstruction in more landward positions (including existing rock revetment)	N/A
Impacts within Process Unit	limited impact on tidal dynamics long term	selective hold around Holes Bay would have no adverse impacts long term	likely sediment and water quality issue as defences are set back onto reclaimed land	N/A
Economics	<i>acceptable over short term</i> - possible increasing flood risk long term to the west or to proposed future redevelopment to the SW of Holes Bay	viable (selective hold only)	not viable	N/A

Current Policy: Selective Hold the Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – HOLES BAY (E,N & W) (PHB10)

Do Nothing

Long Term, this strategic option would result in the deterioration of built defences on the east side of Holes Bay and the increased risk of flooding to built assets on the east and west sides of Holes Bay. The sheltered nature of the north section of Holes Bay (enclosed by the railway viaduct) shows no signs of coastal erosion and this is likely to continue. Regardless, due to the built assets at risk on the east and west banks, this strategic option is not economically viable as a defence option.

Selectively Hold the Existing Line

This option represents current policy and considers the continued defence of part of the management unit. This would maintain the marine recreational interest to the west, will ensure the maintenance of culverts and drainage systems to the north of Holes Bay and will protect built assets that occur to the south west of the unit. Economically, this option is still justifiable due to the economic implications of allowing parts of Poole town to erode or flood (loss of residential and industrial assets). Consequently, this is a viable option.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Selectively Hold the Existing Line
Long Term (2005 to 2049)	Selectively Hold the Existing Line

Figure D2.22 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets all of the objectives set out in the Objective Screening Table for PHB10. A strategic policy to "Selectively Hold the Line" Long Term would comply to the Process Unit Objectives as existing estuarine processes will be maintained allowing the existing littoral transport system and hydrodynamic regime to continue unaltered. The Long Term implications on alterations to the tidal prism and exchange flows through the railway viaduct bridge have not been quantified, though it is believed that the northern part of Holes Bay would not be adversely influenced by this strategic option as sea levels rise in the future.

Impact on adjacent Management Units

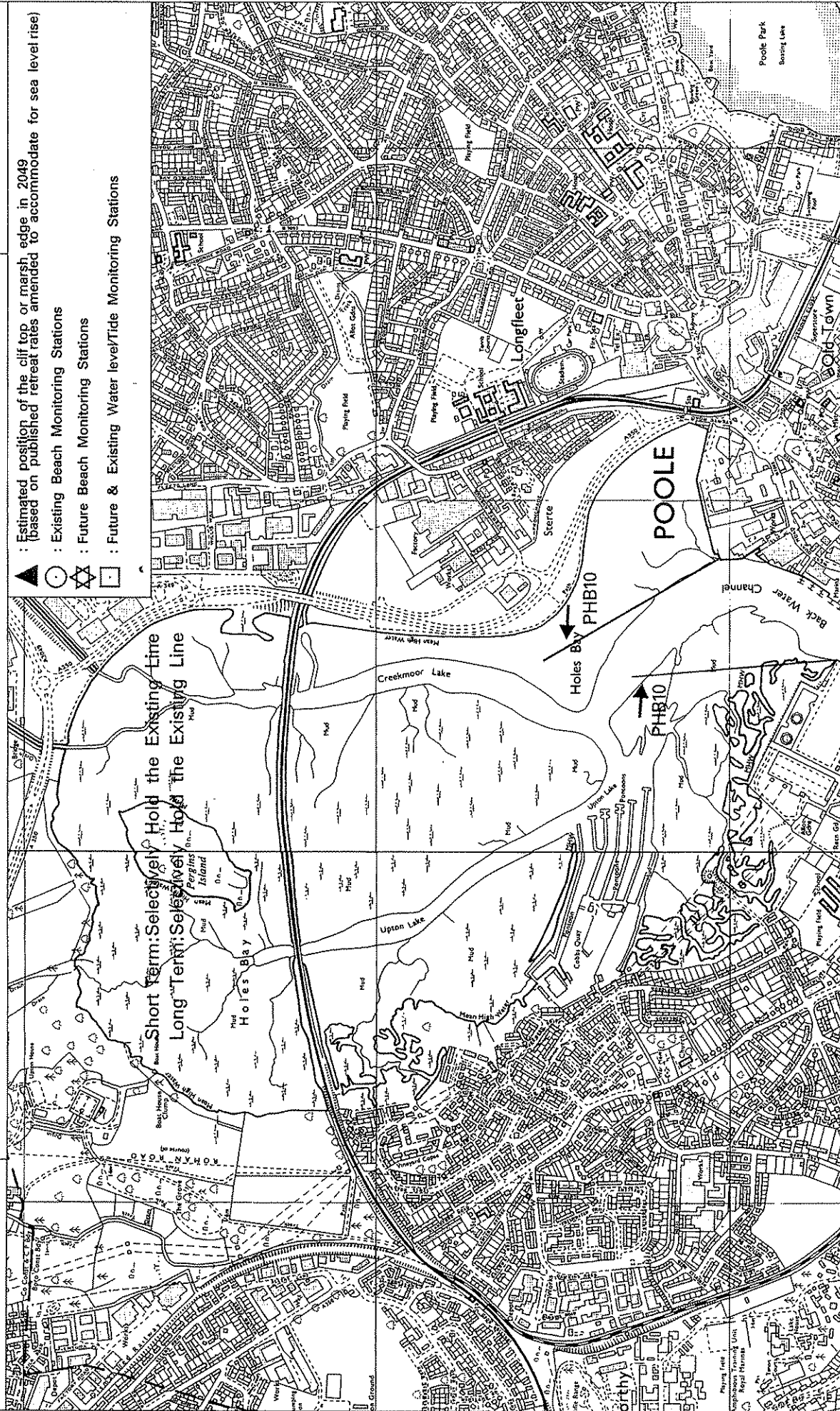
Within Poole Harbour, any intervention on the shoreline which influences the tidal prism or sediment budget regimes, may impact on the shoreline elsewhere within the harbour / estuary. It is recommended that a Selective Hold the Line policy would be the most acceptable policy (Long Term) so long as close monitoring is carried out on any future change in tidal prism as a consequence of this policy.

Review of Potential Implementation

Providing any maintenance work is carried out in an environmentally sensitive manner, there should be no adverse impacts on the coastal processes within Poole Harbour or the natural environment (pSPA and pRamsar). Implementation schemes however need to be set up in unison with a Mudflat and Saltmarsh Management Strategy which is proposed in more detail within Part E.

Present and Future Monitoring/Studies

The recommendations set in Part E of this Volume (Saltmarsh and Mudflat Management Strategy) apply specifically to this management unit.



Poole Harbour Process Unit (PHB)	Management Unit PHB10	Holes Bay

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – TOWN QUAY (PHB11)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Holes Bay (Eastern Shore) (GR: 400833E, 091025N)
- East – Town Quay Breakwater (GR: 401521E, 090256N)

Management Unit Description

This frontage contains the historic part of Poole that has been reclaimed by works to construct the various quays and is fronted by a number of vertical sea walls that have been constructed for boat access. The land behind the quays is occupied by industrial and commercial properties as well as roads, car parks and amenities which are potentially at risk from flooding. The Town Quay is of historic importance, containing a number of Scheduled Monuments and has been designated a Conservation Area to maintain the intrinsic character of the area which attracts many visitors. This unit is included within the Poole Bay and Isle of Purbeck SMA for its marine environmental importance.

Administrative Authority

Borough of Poole

Frontage Lengths

Total frontage length: 1665m; Defended frontage length: 1665m

Environmental Designations

Statutory Designations

- Poole Harbour SSSI – varied ecology
- The Town Cellar SM – historical site
- The Guildhall SM – historical site
- Scaplans Court High Street SM – historical site
- The Town Wall SM – historical site
- The Customs House SM – historical site

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology

Description of Land at Risk

- Commercial Properties
- Highways
- Housing over an extensive area at risk from flooding

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Poole Town Centre Local Plan	NONE	6.10 5.13 5.15 7.09 7.12 7.16 7.20 10.57 12.03, 5,7	Deep water frontage Retail floor space Car Parking Hotel development (East Quay depot) Marina development Recreation facilities Open space Highway Control Lines Poole Quay policies	7.10 9.04 9.17	Conservation Area Policies Listed buildings / archaeology Archaeology

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2427	1	Poole HC	0.26	Breakwater	Class 4	<5	1920
681/2428	1	BoP	0.15	Wall	Class 1	>10	1990
681/2429	1	Poole HC	0.57	Wall	Class 2	>10	1960
681/2429	2	Poole HC	0.19	Piling	Class 1	>10	1980
681/2430	1	Poole HC	0.19	Wall	Class 3	5-10	1950
681/2431	1	Poole HC	0.75	Piling	Class 3	5-10	1970
681/2432	1	Private	0.45	Revetment	Class 2	>10	1980
081/2340	367	Poole HC	0.02	Wall	Pr	2-5	
081/2350	368	Poole HC	0.07	Wall	Fr	>5	
081/2360	369	Poole HC	0.10	Wall	Fr	>5	
081/2370	370	Poole HC	0.05	Wall	Fr	>5	
081/2380	371	Poole HC	0.20	Wall	Fr	>5	
081/2390	372	Poole HC	0.17	Wall	Fr	>5	
081/2400	373	Poole HC	0.15	Wall	Fr	>5	
081/2410	374	Poole HC	0.03	Bkwtrs	Pr	>5	
081/2410	375	Poole HC	0.03	Wall	Fr	>5	
081/2420	376	Poole HC	0.07	Bkwtrs	Pr	>5	
081/2420	377	Poole HC	0.07	Wall	Pr	>5	
081/2470	384	Private	0.20	Wall	Bd	2-5	
081/2480	385	Private	0.17	Wall	Fr	>5	
081/2490	386	Private	0.05	Wall	Pr	<2	
081/2500	387	Private	0.12	Wall	Fr	>5	
081/2510	388	Private	0.01	Wall	Pr	2 to 5	
081/2520	389	Private	0.13	Wall	Fr	>5	
081/2530	390	Private	0.07	Wall	Bd	2 to 5	
081/2730	418	Poole HC	0.07	Brwork	Pr	>5	
081/2730	419	Poole HC	0.07	Wall	Fr	>5	
081/2740	420	Poole HC	0.07	Wall	Fr	>5	

Description of Defences

- 2427 The 110m long rubble breakwater at Fishermans Dock protects the coast to the north and provides sheltered moorings for small vessels. It is proposed to replace the existing breakwater with a 500m long rubble-mound breakwater as part of the proposed boat haven development.
- 2428 A short length (150m) of masonry wall constructed in the early 1900's protects the RNLI lifeboat station and car park in Fisherman's Dock.
- 2429 At Poole Quay the construction of the seawall varies along its length. There is a 570m length of near vertical stone faced concrete wall, constructed in the 1890s. In the 1980s a steel sheet piled wall was installed in front of a 190m length of the older wall. Both walls are protected with timber fenders. PHC maintain these structures.
- 2430 At Poole Quay a further 190m length of quay wall constructed from concrete. The wall is in a poor state of repair and the remains of timber piles/fenders are visible in front of the wall. PHC maintain these structures.
- 2431 At West Quay there is a 750m length of sheet steel piled and concrete walls in various states of repair. Private Ownership.
- 2432 There is a 450m long privately owned small rock revetment on the edge of Holes Bay that protects a number of facilities. The revetment was constructed in the 1980s.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – TOWN QUAY (PHB11)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	×	✓
Economically justifiable and environmentally acceptable?	✓	✓	×	○
Compatible with adjacent strategies?	×	✓	×	×
Compatible with wider coastal processes?	✓	○	×	○
Process Unit Objectives (See Part C)				
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)	✓	✓	×	○
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)	✓	×	×	×
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)	✓	✓	○	×
Strategy should not impact on mobility / evolution of natural habitats (5)	✓	○	✓	×
Strategy should have minimal impact on landscape quality (6)	×	✓	×	×
Strategy should have minimal impact on archaeological or historical potential (7)	▲	✓	×	○
Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)	▲	✓	×	○
Strategy should not impact on local economy, commerce, tourism or amenity (9)	▲	✓	×	✓
Strategy should seek to improve coastal access within the Harbour (10)	×	✓	×	✓
Suitability of Strategy Option	✓ (ST)	✓ (LT)	×	✓

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

From the above screening exercise, the Retreat the line option is not appropriate for this Management Unit and is not considered any further. Do nothing also appears inappropriate, over the long term however, shall be evaluated in terms of what the implications of not doing something actually are likely to be in the short and longer term.

The commercial and residential nature of this area requires some level of intervention strategy, and so the potential for future advancement should be evaluated as part of a longer term strategy. This should consider potential impacts on the marine archaeological resource as well as on marine habitats.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – TOWN QUAY (PHB11)

	DO NOTHING (short term effects in <i>italics</i>)	HOLD THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	RETREAT THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	ADVANCE THE EXISTING LINE (short term effects in <i>italics</i>)
Effects on Physical Environment and Coastal Processes	no measurable impacts short term due to nature of existing frontage (<i>defended</i>)	- continuation of contemporary hydrodynamic conditions - possible impact on Back Water Channel should schemes affect fluvial dynamics	N/A	likely implications on estuarine hydrodynamics particularly adjacent to the Back Water Channel
Effects on Human Environment	increase flood risk to backing commercial residential assets	- protection of the historic part of Poole - maintain boat access points	N/A	- protect historic Poole from flooding - likely to impact on the landscape appeal of the area
Effects on Natural Environment and Conservation	long-term erosion may result in damage to 5 Scheduled Monuments	protect the historic and landscape interest of Poole Old Town	N/A	impact on subtidal <i>benthos</i>
Implications for Coastal Defences	increased overtopping frequency and decay of structures themselves	need for upgrade of defences long term to counter the effect of sea level rise and against a 1:200yr event	N/A	need to introduce defences seaward of existing location
Impacts within Process Unit	long term tidal dynamics as overtopping frequency increases	no impact likely	N/A	reduce tidal prism area and thus impact on harbour hydrodynamics
Economics	flood risk to commercial and residential assets of historic Poole	viable	N/A	not viable

Current Policy: Hold the Existing Line.

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – TOWN QUAY (PHB11)

Do Nothing

A Do Nothing Strategic option for this management unit would result in the continued deterioration and eventual failure of the flood defence structures protecting the developed areas of Poole Old Town. Continued overtopping of defences will increase in frequency affecting communication routes and the risk to commercial property. This is particularly the case as sea level rise rates change. The value of the densely developed land at risk cannot allow for such a strategic option to be selected. This is not viable.

Hold the Existing Line

Being a high density urban community, Poole warrants protection against a 1:100 year return period storm event in line with MAFF recommendations (PAGN Annex K). To Hold the Existing Line would represent a continuation of current policy for this management unit as the entire unit is protected by man-made defences. To continue with this strategic option would not impact upon the coastal processes operating within the Harbour or the natural environmental assets, so long as maintenance does not involve alterations to the contemporary hydrodynamic regime within Poole Harbour. This option is economically viable.

Advance the Existing Line

A Boat Haven with protective breakwater is planned for this frontage. The breakwater will have the added benefit of improving flood protection. Additional flood protection may separately be required. The potential impacts on altering the estuarine tidal prism, the natural environment implications (reducing spatial extent of SSSI) and the landscape affect on this important historical site needs to be minimised. Overall, this option is viable.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line
Long Term (2005 to 2049)	Hold the Existing Line

Figure D2.23 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets the objectives set out in the Objective Screening Table for PHB11. It is recommended that flood defences are upgraded to establish the necessary standard of service required by the Town Quay and that this is sufficient to accommodate for sea level rise and increased storminess. Creating additional impacts on the wider natural environment are unlikely to be considerable in this management unit due to the already developed nature of this part of Poole Harbour.

Impact on adjacent Management Units

The Boat Haven will alter slightly the local hydrodynamics, however, depending on the design, it is unlikely that there would be any impacts upon adjacent

management units. Overtopping within Town Quays has previously caused flooding in Green Gardens (management unit PHB12) and this problem should be addressed when schemes are proposed to implement this strategy.

Review of Potential Implementation

The standard of defences, in the Long Term, will need to be upgraded to accommodate for accelerated rates of sea level rise and increased storminess. Consequently, upgrading defences (that does not interfere with the fronting mudflats and hydrodynamic conditions) will be required to implement this policy. Poole Town Quay is of historic importance attracting many visitors to the area. Its function as a commercial quay constrains the type of sea defence structure which would be suitable here and this factor must be considered when final implementation options are selected.

Present and Future Monitoring/Studies

Current monitoring of defence condition should continue to assess the Long Term need and timing for additional maintenance or defence upgrade.

Current monitoring of quay condition should continue to assess the Long Term need for intervention or defence upgrade.

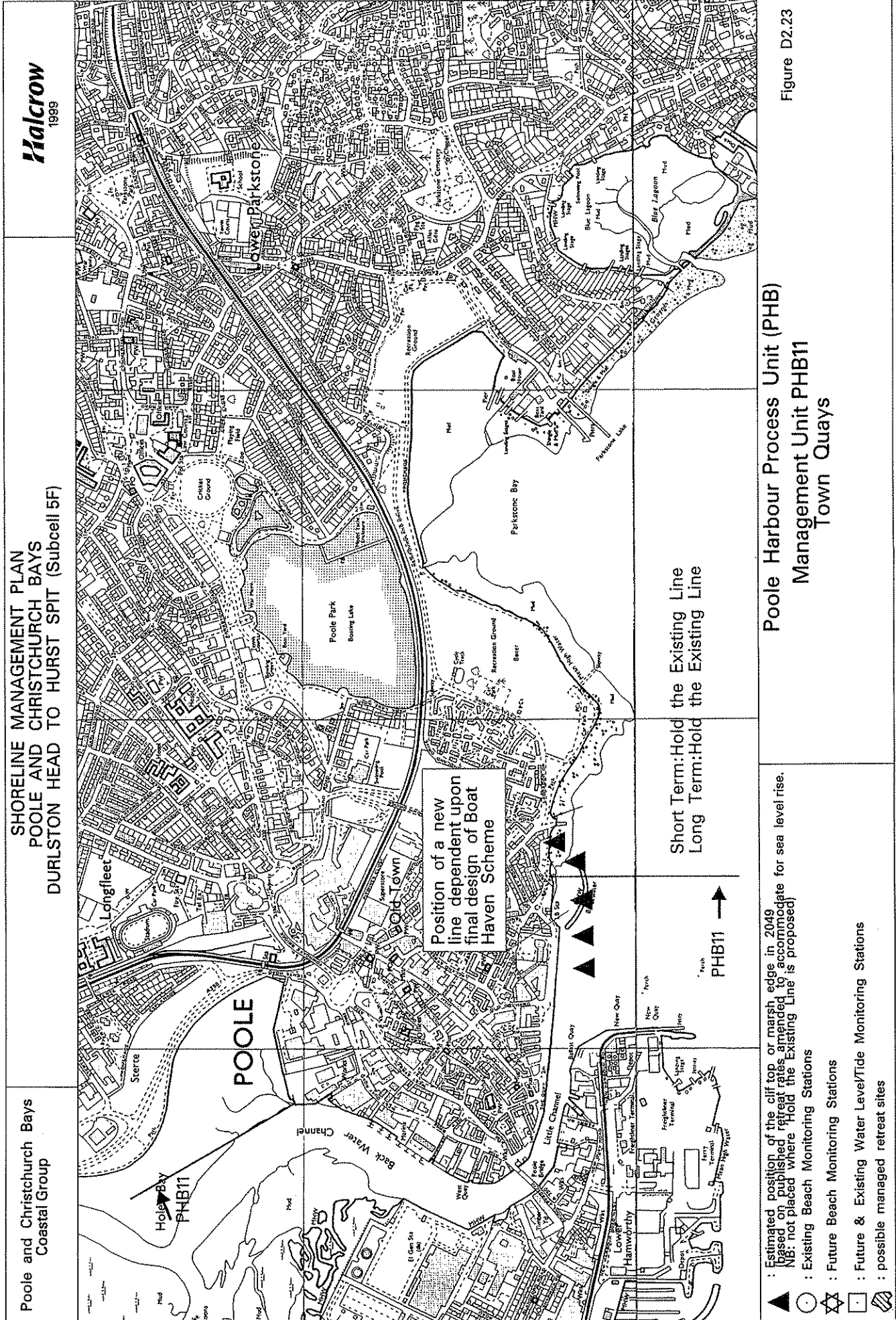


Figure D2.23

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – PARKSTONE BAY AND BAITER PARK (PHB12)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Poole Quay Breakwater (GR: 401521E, 090256N)
- East – Parkstone Yacht Club (GR: 402919E, 090331N)

Management Unit Description

The shores of most of this unit are low lying and have been reclaimed including the hinterland of recreational ground at Baiter which constitutes the main public slipway access for the Harbour and a large amenity car park. A railway line across Parkstone Bay separates the boating lake from the rest of the Bay, essentially cutting it off from the Harbour. A promenade provides access to the shoreline along the length of this unit with further recreational land on the eastern shore of Parkstone Bay. The area here is backed by residential properties and roads, most of which are not at risk from flooding. Large areas of intertidal mudflats provide an important feeding ground for numerous bird species with the grasslands behind used for roosting, hence their inclusion in the Poole Harbour SSSI and SMA.

Administrative Authority

Borough of Poole

Frontage Lengths

Total frontage length: 2533m; Defended frontage length: 2465m

Environmental Designations

Statutory Designations

- Poole Harbour SSSI - varied habitats
- Parkstone Bay proposed LNR – bird interest

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology

Description of Land at Risk

- Open Space
- Highway

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Poole Town Centre Local Plan	NONE	7.16 7.20 12.03, 5,7 10.22,3 10.27 12.10 12.19	Recreation facilities Open space Poole Quay policies Road Alterations Road Link Car Parking Traffic Management	7.10 9.04 9.17	Conservation Area Policies Listed buildings / archaeology Archaeology

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2426	1	EA	0.13	Revetment	Class 2	>10	1980
681/2425	1	EA	0.16	Revetment	Class 1	>10	1980
681/2424	1	BoP	1.21	Revetment	Class 4	<5	1970
681/2423	1	BoP	0.27	Revetment	Class 3	>10	1970
681/2423	2	BoP	0.27	Wall	Class 2	>10	1970
681/2422	1	Private	0.88	Wall	Class 2	>10	1960
681/2422	2	Private	0.40	Breakwater	Class 1	>10	1996
081/2430	378	PHC / EA	0.10	Bkwtrs	Pr	>5	
081/2430	379	PHC / EA	0.10	Banks	Gd	>5	
081/1070	213	BoP	0.60	Pitching /Rock	Pr	>5	
081/1070	214	BoP	0.20	Wall	Pr	>5	
081/1060	207	PHC (Private)	0.30	Embkmt	Gd	>5	1990
081/1060	208	PHC	0.20	Bkwtrs	Gd	>5	
081/1060	209	EA	0.30	Revetment	Gd	>5	1990
081/1060	210	EA	0.30	Rock	Gd	>5	1990
081/1060	211	BoP	0.16	Banks & Wall	Gd	>5	1995
081/1060	212	BoP	0.60	Rock	Fr	>5	
081/1060		EA?	0.20	Wall	Fr	2 to 5	

Description of Defences

- 2422 A 880m long masonry wall constructed in the 1960s to protect the private properties at Parkstone. This length also includes a marina and boatyards.
- 2423 A concrete faced masonry revetment and 270m long vertical wall were constructed in the 1930s as reclamation for open space.
- 2424 A small rock revetment constructed in the 1970s protects a 1.2km length of footpath along the edge of Parkstone Bay. The condition of the revetment is generally good although there is some overtopping damage near the slipway. Part of the formerly undefended length between 2424 and 2425 is now protected by a concrete wall (1994).

- 2425 Another 160m long small rock revetment constructed in the 1980s defends the coastline at Baiter. The defences along this length will require maintenance.
- 2426 Immediately to the west a 130m long armour-flex revetment (EA) protects a further length of the coast at Baiter.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – PARKSTONE BAY AND BAITER PARK (PHB12)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	✓	✓
Economically justifiable and environmentally acceptable?	✓	✓	✓	×
Compatible with adjacent strategies?	×	✓	×	×
Compatible with wider coastal processes?	✓	○	✓	×
Process Unit Objectives (See Part C)				
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)	✓	○	✓	×
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)	✓	○	✓	×
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)	✓	○	○	×
Strategy should not impact on mobility / evolution of natural habitats (5)	✓	✓ (ST) × (LT)	✓	×
Strategy should have minimal impact on landscape quality (6)	▲	○	○	×
Strategy should have minimal impact on archaeological or historical potential (7)	×	○	○	×
Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)	×	✓	× (LT)	×
Strategy should not impact on local economy, commerce, tourism or amenity (9)	×	✓	×	✓
Strategy should seek to improve coastal access within the Harbour (10)	×	✓	○	○
Suitability of Strategy Option	(▲)	✓ (SH)	○	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SH Selective Hold

From the above screening exercise, the Advance the Existing Line option is not appropriate for this Management Unit and is not considered any further. Do nothing also appears inappropriate, due to the risk of long term flooding, however, shall be evaluated in terms of what the implications of not doing something actually are likely to be in the short and longer term.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – PARKSTONE BAY AND BAITER PARK (PHB12)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	<i>maintain current estuarine processes and sediment budget</i>	<i>maintain current estuarine processes and sediment budget</i>	rate of erosion increase on reclaimed land area possibly releasing extra sediments into navigation channels.	N/A
Effects on Human Environment	- risk to some residential areas in Parkstone and at Green Gardens - possible long term erosion of dangerous household refuse and glass on Baiter reclaimed area	protection of low lying areas in Parkstone and Green Gardens	<i>setting back of defences likely to release reclaimed material (waste) into the littoral system</i> <i>reduce area for recreation</i>	N/A
Effects on natural Environment and Conservation	no significant effects except for possible water quality issue linked to erosion of reclaimed areas	- coastal squeeze may result in loss of inter-tidal habitats (SSSI) - works may damage inter-tidal habitats (SSSI)	compensate for loss of inter-tidal habitats as a result of sea level rise	N/A
Implications for Coastal Defences	no urgent requirement to upgrade coastal defences	<i>need to maintain, upgrade or introduce measures to reduce flooding/ overtopping where required</i>	costly exercise to place existing defence landward of present	N/A
Impacts within Process Unit	possible changes to estuarine processes should existing defences ever be breached (long term)	no adverse impacts so long as fronting mudflats are maintained	possible impacts on environmental quality of mudflats and Parkstone Bay as a whole	N/A
Economics	<i>suitable short term</i>	viable	not viable	N/A

Current Policy: Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – PARKSTONE BAY AND BAITER PARK (PHB12)

Do Nothing

The Long Term implications of this strategic option would be the continued deterioration of existing defences (particularly the older masonry revetments). This would increase the risk of overtopping into Whitecliff recreation ground and residential areas in Parkstone and at Green Gardens (at risk to extreme water level surges being below 1.7m ODN). There is also the Long Term risk of erosion freeing hazardous waste refuse material onto the foreshore. The undefended shingle ridge at the Head of Parkstone Bay (representing the only undefended section of the management unit) will remain relatively sheltered from wave conditions though increased water levels in the future may result in flooding along the backshore and natural retreat of the fronting mudflats.

Hold the Existing Line

This would represent a continuation of present strategy and in the short and long term, would provide for the defence of all developed land along the shoreline. If the Boat Haven scheme proceeds in the adjacent management unit, it will mean that Poole Harbour Commissioners (under the Section 106 Agreement) will take upon themselves the obligation to maintain the beach from Boat Haven to Baiter Point. This action would not be compromised by the selection of this strategic option. Depending on implementation methods used, the Long Term impacts of such a strategy on the sediment budget and future habitat evolution of fronting mudflat habitats are points of key concern (pSPA and pRamsar within Parkstone Bay). This strategy would have no implications on contemporary coastal processes or any significant immediate adverse impacts on the environment since these structures already exist.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line
Long Term (2005 to 2049)	Hold the Existing Line (possible soft intervention at undefended section)

Figure D2.24 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for PHB12. The only potential non compliance to Process Unit Objectives relates to whether such a Long Term Hold the Line strategic option would increase the coastal squeeze of important environmental assets. This important factor need to be considered when any scheme to implement the policy is carried out.

Impact on adjacent Management Units

As this strategic option represents current policy for this management unit, it is unlikely that there would be any impacts upon adjacent management units. Over the Long Term, depending on the adaptation of adjacent mudflats to sea level rise,

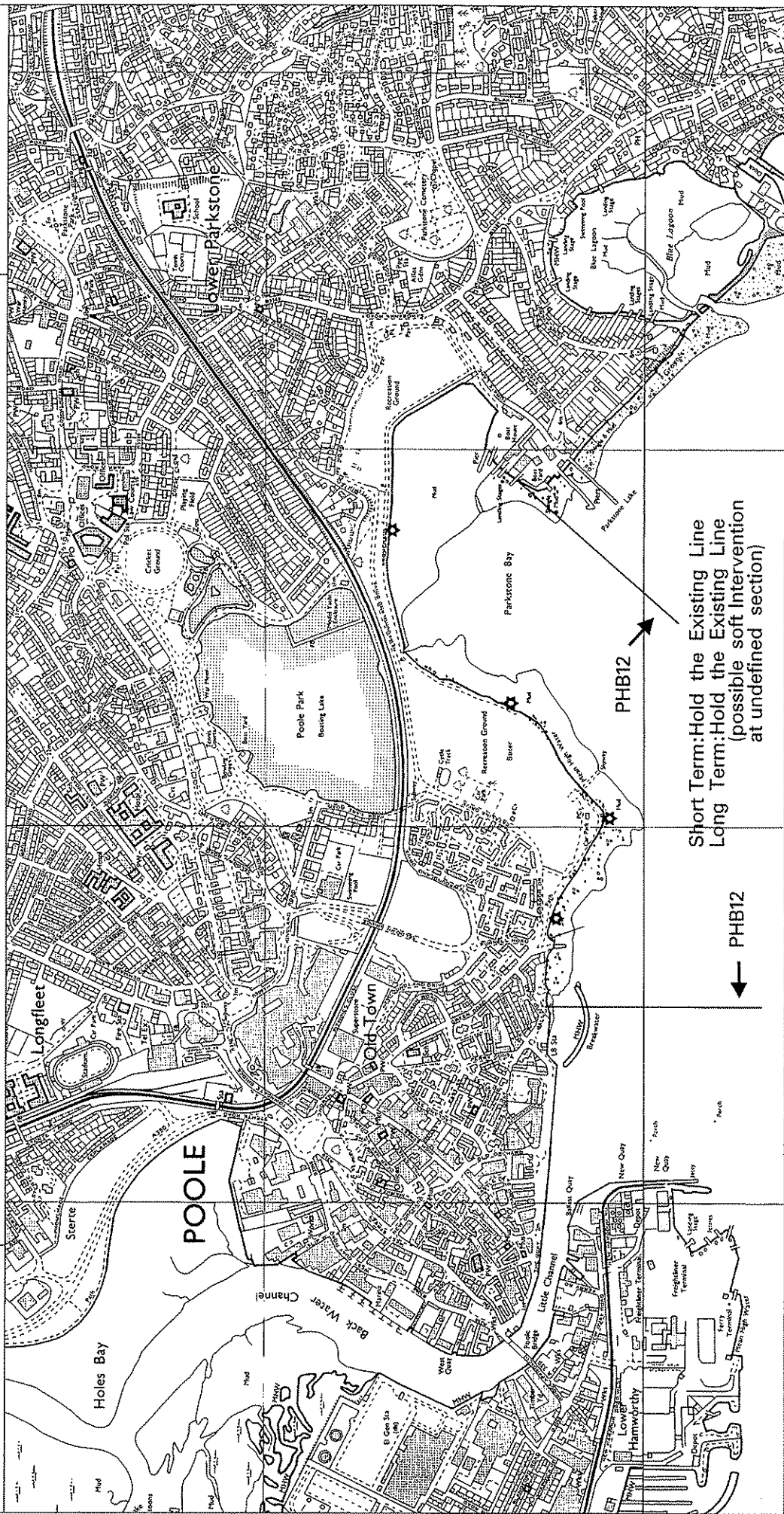
the management of this unit may need to be more closely married into a strategy for mudflat and saltmarsh enhancement (ie: foreshore management).

Review of Potential Implementation

Schemes that make use of dredged materials to raise the levels of fronting mudflats and saltmarsh should be pursued to implement a Long Term Hold the Existing Line Policy. This method would be a "soft" approach to reducing the frequency of overtopping rates and future erosion. It would abide to the Process Unit Objectives set for Poole Harbour so long as there is no increased risk to environmental assets. Implementation could involve the redistribution of fine materials already present within the Harbour so that minimal impact on the sediment budget of the Process Unit occurs.

Present and Future Monitoring/Studies

Regular inspections of existing defences should be carried out to ensure that they continue to maintain an adequate level of protection against coastal erosion and flooding. The undefended section of the management unit should be continually monitored to detect trends of erosion in the Long Term. The recommendation set in Part E of this Volume (Saltmarsh and Mudflat Management Strategy) also applies to this management unit.



▲ : Estimated position of the cliff top or marsh edge in 2049 based on published retreat rates, amended to accommodate for sea level rise.
NB: not placed where 'Hold the Existing Line' is proposed
○ : Existing Beach Monitoring Stations
☆ : Future Beach Monitoring Stations
□ : Future & Existing Water Level/Tide Monitoring Stations

Poole Harbour Process Unit (PHB)
Management Unit PHB12
Parkstone Bay to Baiter Park

Figure D2.24

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – PARKSTONE YACHT CLUB TO SALTERNS MARINA (PHB13)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Parkstone Yacht Club (GR: 402919E, 090331N)
- East – Salterns Marina (GR: 403737E, 089663N)

Management Unit Description

The sloping hinterland of this unit is occupied by private properties with the jetties of Parkstone Yacht Club and Salterns Marina forming the barriers to the unit. This entire frontage is defended protecting the Parkstone Clay behind from erosion. A bar across the Blue Lagoon provides shelter to the shoreline within, with flood risk restricted to a few properties on the eastern side. There is limited public access along this length with the exception of the jetties and marinas and although the entire length forms part of the Poole Harbour SSSI and SMA, the mudflats and natural vegetation of the lagoon are more ecologically significant.

Administrative Authority

Borough of Poole

Frontage Lengths

Total frontage length: 3885m; Defended frontage length: 3885m

Environmental Designations

Statutory Designations

- Poole Harbour SSSI – varied habitats

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology

Description of Land at Risk

- Marinas
- Housing
- Commercial Properties

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Poole Coastal Local Plan	NONE	10.22	Recreation facilities	9.35	SSSIs

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2422	1	Private	0.88	Wall	Class 2	>10	1960
681/2422	2	Private	0.40	Breakwater	Class 1	>10	1996
681/2421	1	PHC	0.28	Wall	Class 4	<5	1930
681/2420	1	Private	0.39	Breakwater	Class 1	>10	1986
681/2420	2	Private	0.10	Revetment	Class 1	>10	1986
081/2330	366	Parkway Marine	0.05	Wall	Pr	>5	
081/2320	365	Lilliputs . C	0.07	Wall	Pr	2 to 5	
081/2220	348	Salterns Marina	0.12	Pitching	Bd	2 to 5	
081/2260	356	Salterns Marina	0.41	Wall	Gd	>5	
081/2250	354	Salterns Marina	0.01	Bkwtrs	Gd	>5	
081/2250	355	Salterns Marina	0.07	Wall	Gd	>5	
081/2230	350	Salterns Marina	0.09	Banks	Gd	>5	
081/2230	351	Salterns Marina	0.09	Wall	Gd	>5	
081/2220	349	Salterns Marina	0.12	Banks	Pr	>5	

Description of Defences

2420 Two breakwaters, constructed from tubular steel raking piles and vertical sheet steel piles in 1972/73 provide a sheltered area for the private marina at Lilliput. In addition a 100m long rock revetment constructed at the same time protects the flats built within the marina area.

At Salterns Marina, there is a 410m long privately owned breakwater constructed from vertical steel sheet piles and raking tubular steel piles.

2421 A 280m long concrete wall built in the 1930s protects Blue Lagoon. The lagoon is fronted by private properties and a boatyard/pool. Although there are various walls within the lagoon, the PHC wall provides the first line of defence.

2422

A 880m long masonry wall constructed in the 1960s to protect the private properties at Parkstone. This length also includes a marina and boatyards.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – PARKSTONE YACHT CLUB TO SALTURNS MARINA (PHB13)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	¹ ×	✓
Economically justifiable and environmentally acceptable?	✓	✓	×	×
Compatible with adjacent strategies?	×	✓	×	×
Compatible with wider coastal processes?	✓	○	○	×
Process Unit Objectives (See Part C)				
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)	▲	² ✓	×	×
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)	✓	○	×	×
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)	▲	○	×	×
Strategy should not impact on mobility / evolution of natural habitats (5)	▲		×	×
Strategy should have minimal impact on landscape quality (6)	▲	✓	×	×
Strategy should have minimal impact on archaeological or historical potential (7)	▲	✓	×	×
Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)	×	✓	×	×
Strategy should not impact on local economy, commerce, tourism or amenity (9)	×	✓	×	×
Strategy should seek to improve coastal access within the Harbour (10)	×	○	×	×
Suitability of Strategy Option	×	✓ (LT)	×	×

▲ Possible conflict with objective over longer term

✓ Complies with statement

×

○ Conflicts with statement, but is dependent upon implementation methods used

n/a Objective is not relevant to this management unit

ST Short Term LT Long Term

¹ Strategy is not viable in this unit due to the limited land (private) available to retreat within

² Alterations to the bar fronting Blue Lagoon (natural) may increase wave attack and higher water levels to impact upon the backing land (properties)

From the above screening exercise, the Advance and Retreat the Line options are not appropriate for this Management Unit and are not considered any further. Do Nothing, shall be evaluated in terms of what the implications of not doing something actually are likely to be in the short and longer term.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – PARKSTONE YACHT CLUB TO SALTURNS MARINA (PHB13)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	- possible breach (long term) of the Blue Lagoon Bar releasing soft muddy and sandy sediments into Harbour <i>continuation of easterly littoral drift</i> - onset of erosion in front of properties long term	<i>prevent wave climate changing within Blue lagoon</i> <i>continuation of easterly littoral drift</i> - future land claim through defences may affect tidal dynamics	N/A	N/A
Effects on Human Environment	- increased risk of defence overtopping - increased risk of wave attack within Blue Lagoon should the fronting bar breach	<i>protection of build assets and recreational facilities</i>	N/A	N/A
Effects on Natural Environment and Conservation	breach of bar across Blue Lagoon may result in erosion of enclosed saltmarsh habitat (SSSI)	- coastal squeeze may result in loss of inter-tidal habitat at (SSSI) <i>works may damage inter-tidal habitats (SSSI)</i>	N/A	N/A
Implications for Coastal Defences	<i>existing defences (private) unlikely to fail in short term</i>	future defence structures or soft schemes to regenerate the fronting mudflat may be required along the foreshore	N/A	N/A
Impacts within Process Unit	possible alteration to estuarine dynamics should the Blue Lagoon bar be breached	no significant impacts so long as the foreshore mudflats remain unaffected	N/A	N/A
Economics	increased risk of flooding	viable	N/A	N/A

Current Policy: Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – PARKSTONE YACHT CLUB TO SALTERNS MARINA (PHB13)

Do Nothing

The Long Term implications of this strategic option would be the continued deterioration of existing defences (particularly those currently in poor condition). This would increase the erosion risk to backing residential private land (gardens) though the actual properties are set back enough not to be at risk over the next 50 years. The bar across Blue Lagoon would deteriorate further and breach over time as a consequence of this option altering the wave climate and tidal hydrodynamics within the lagoon increasing the flood risk to unprotected shoreline behind. The economic and commercial implications of this policy are significant and so this strategic option is therefore not viable.

Hold the Existing Line

This strategic option would ensure the maintenance of existing private frontage defences and those across the mouth of the Blue Lagoon bar (variety of concrete, steel and gabion structures). This will continue to provide the necessary protection and shelter within the Blue Lagoon to reduce the risk of flooding to the topographically lower eastern end of the feature. As there is no complete defence around the Blue Lagoon (mostly vegetated backshore), there may be a Long Term need to assess the need for new defences (preferably soft schemes to allow a degree of habitat migration). This need should come out of an ongoing monitoring exercise. Based on the land at risk, this option appears to be viable.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line
Long Term (2005 to 2049)	Hold the Existing Line (possible soft intervention on the banks of Blue Lagoon)

Figure D2.25 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for PHB13. The only potential non compliance to Process Unit Objectives relates to whether such a strategic option would be able to adapt to the onset of sea level rise whilst ensuring protection of life, property and habitats (allowing their mobility and evolution where applicable). These factors should be considered when any scheme to implement the policy is carried out, particularly should new defences be required (Long Term) on the shores of the Blue Lagoon.

Impact on adjacent Management Units

By ensuring that the current policy continues which would mitigate against a breach into Blue Lagoon, it is unlikely that there would be any significant change to contemporary estuarine processes or alterations to the sediment budget within Poole Harbour. The enclosed nature of the Blue Lagoon makes it a relatively self

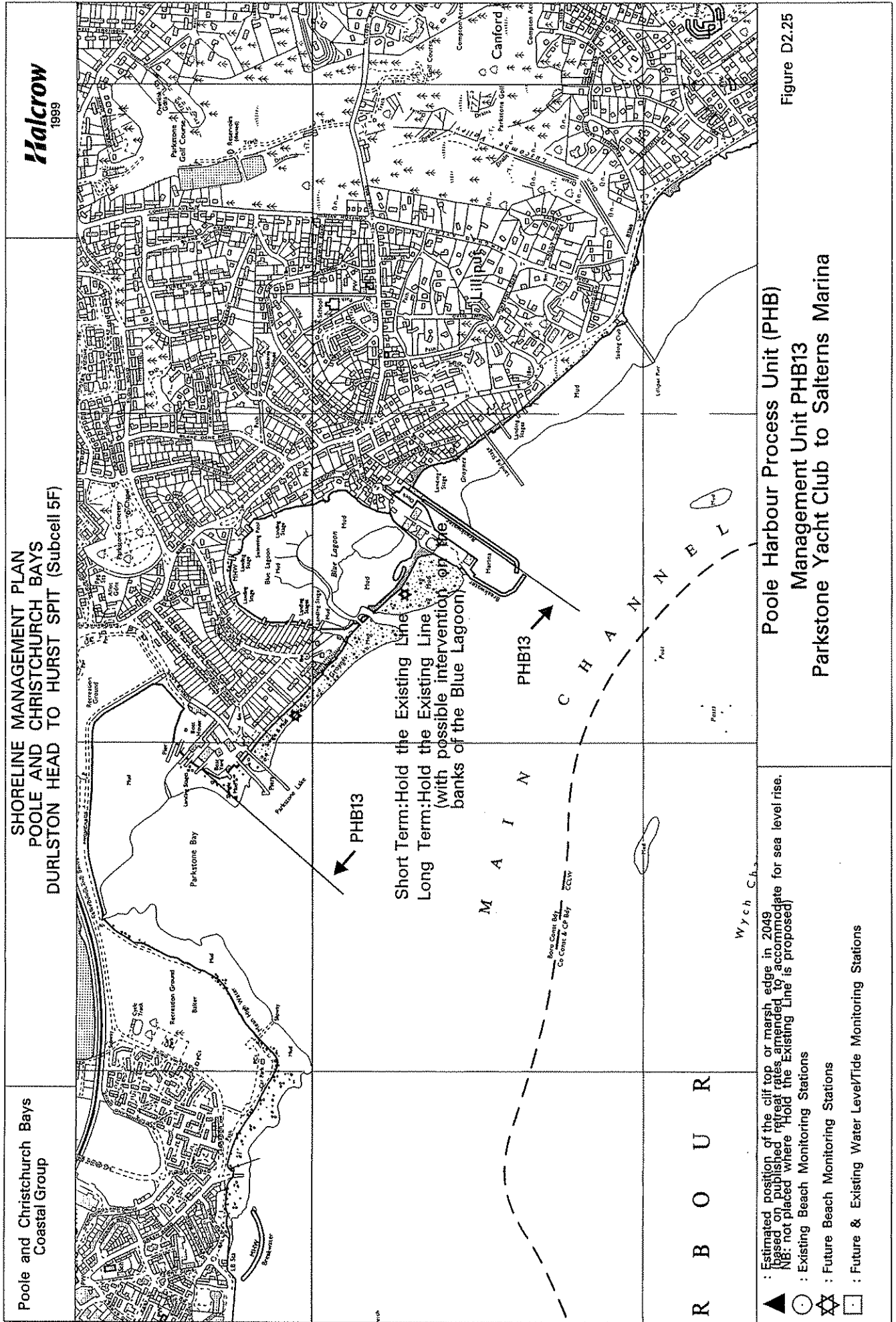
contained unit and so there would be no cohesive sediment interaction between the lagoon and the adjacent management units.

Review of Potential Implementation

It is recommended that existing defences are upgraded to establish the necessary standard of service required by the properties within the management unit and that this is sufficient to accommodate for sea level rise and increased storminess. Creating additional impacts on the wider natural environment are unlikely to be considerable in this management unit due to the already developed nature of this part of Poole Harbour. New works within Blue lagoon must be appreciative of the impacts on mudflat habitats that may occur. Work to de-block the sluice which occurs at the mouth of the Blue Lagoon may be required in the Short Term.

Present and Future Monitoring/Studies

Annual inspections of existing defences should be carried out to ensure that they continue to maintain an adequate level of protection against coastal erosion and flooding. It is also recommended that as well as regular monitoring within the management unit, particular examination of the bar across Blue Lagoon should be carried out to assess the need for necessary intervention. The undefended section of the management unit should be continually monitored to detect trends of erosion in the Long Term. The recommendation set in Part E of this Volume (Saltmarsh and Mudflat Management Strategy) also applies to this management unit.



PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – SALTERNS MARINA TO LILLIPUT PIER (PHB14)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Salterns Marina (GR: 403737E, 089663N)
- East – Lilliput Pier (GR: 404281E, 089044N)

Management Unit Description

The southern frontage of the unit is backed by vegetated slopes leading up to an SSSI, Evening Hill, an area of open space whilst to the north sloping gardens of private properties extend directly onto the shore. The risk of modest erosion and slip failure exists along this length, however, this is minimised to some extent by the presence of seawalls. A number of private jetties extend along the frontage that are used by pleasure craft, the beaches here are dug extensively for bait and also attract large numbers of wading birds. The mudflats along this intertidal foreshore are rich in burrowing marine organisms and form part of the Poole Harbour SSSI and SMA.

Administrative Authority

Borough of Poole

Frontage Lengths

Total frontage length: 1554m; Defended frontage length: 1554m

Environmental Designations

Statutory Designations

- Poole Harbour SSSI – varied habitats
- Evening Hill - SSSI

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology

Description of Land at Risk

- Highway
- Marina
- Sailing Club
- Housing

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Poole Coastal Local Plan	NONE	9.40,10.08-9 10.11 10.22	Open space Recreation facilities	9.35	SSSIs

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2420	1	Private	0.39	Breakwater	Class 1	>10	1986
681/2420	2	Private	0.10	Revetment	Class 1	>10	1986
681/2419	1	Private	0.45	Wall	Class 3	<5	1960
681/2418	1	BoP	0.32	Gabions	Class 4	<5	1975
081/2300	361	Salterns Marina	0.01	Bkwtrs	Gd	>5	
081/2300	362	Salterns Marina	0.02	Pitching	Pr	2 to 5	
081/2300	363	Salterns Marina	0.02	Banks	Fr	>5	
081/2270	357	Salterns Marina	0.11	Wall	Fr	>5	
081/2270	358	Salterns Marina	0.11	Wall	Gd	>5	
081/2260	356	Salterns Marina	0.41	Wall	Gd	>5	
081/2210	347	Private	0.44	Wall	Pr	>5	
081/2200	346	Private	0.10	Banks	Pr	>5	
081/1080	215	BoP	0.30	Gabions	Bd	<2	

Description of Defences

- 2418 A 320m length of footpath at Evening Hill is protected by gabions installed in 1975. A number of the gabions have broken and are in need of repair. BOP are progressing a scheme to build a rock revetment along this frontage.
- 2419 Various masonry and concrete walls defend private properties at Lilliput, a runs along the 450m length at the toe of the walls. There are also some outfalls and jetties along this length. There is a large cast iron outfall pipe running along the back of the foreshore over the last 200m length, and the defences rely heavily on it to prevent undermining. Generally the wall is in poor condition.
- 2420/2644 Two breakwaters, constructed from tubular steel raking piles and vertical sheet steel piles in 1972/73 provide a sheltered area for the private marina at Lilliput. In addition a 100m long rock revetment constructed at the same time protects the flats built within the marina area.

At Salterns Marina, there is a 410m long privately owned breakwater constructed from vertical steel sheet piles and raking tubular steel piles.

PART D2 APPRAISAL OF STRATEGIC OPTIONS FOR PHB

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – SALTERNS MARINA TO LILLIPUT PIER (PHB14)

Strategy Test Statements (See Part C)				Coastal Defence Strategy Options			
Core Objectives	Subcell	Coastal	Defence	Do Nothing	Hold	Retreat	Advance
Technically viable?				✓	✓	¹ ✓	✓
Economically justifiable and environmentally acceptable?				✓	✓	×	×
Compatible with adjacent strategies?				×	✓	×	×
Compatible with wider coastal processes?				✓	○	✓	×
Process Unit Objectives (See Part C)							
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)				✓	✓	×	×
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)				✓	○	✓ (LT)	×
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)				✓	○	✓	×
Strategy should not impact on mobility / evolution of natural habitats (5)				✓	○	✓	×
Strategy should have minimal impact on landscape quality (6)				▲	○	▲	×
Strategy should have minimal impact on archaeological or historical potential (7)				▲	✓	○	×
Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)				×	✓	×	×
Strategy should not impact on local economy, commerce, tourism or amenity (9)				×	✓	×	×
Strategy should seek to improve coastal access within the Harbour (10)				×	○	×	×
Suitability of Strategy Option				×	✓ (LT)	×	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

¹ Would involve the removal of existing gabion defences

From the above screening exercise, the Advance and Retreat the Line options are not appropriate for this Management Unit and are not considered any further. Do nothing is inappropriate, however, shall be evaluated in terms of what the implications of not doing something actually are likely to be in the short and longer term.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – SALTURNS MARINA TO LILLIPUT PIER (PHB14)

	DO NOTHING (short term effects in <i>italics</i>)	HOLD THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	RETREAT THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	ADVANCE THE EXISTING LINE (short term effects in <i>italics</i>)
Effects on Physical Environment and Coastal Processes	onset of cliff erosion over the long term once existing gabion defences are broken down	continued easterly drift of littoral material dependent upon implementation method used	<i>removal of existing defences would result in the commencement of cliff recession</i>	N/A
Effects on Human Environment	<i>overtopping to continue in the short term</i> - frequency of overtopping likely to increase with sea level rise	<i>continued protection to commercial/recreation pursuits</i> <i>maintain bait digging interest</i>	increased risk to commercial/residential assets	N/A
Effects on Natural Environment and Conservation	- coastal squeeze may result in loss of saltmarsh/mudflat area - increased long term risk of erosion at Evening Hill Site	- coastal squeeze may result in loss of mudflat area <i>works may damage mudflats (SSSI)</i>	compensate for loss of saltmarsh as a result of sea level rise	N/A
Implications for Coastal Defences	risk of long term erosion behind gabion baskets is moderate	<i>need to upgrade gabion defences or replace with other linear defences</i>	<i>need to relocate existing defences landward of present location</i>	N/A
Impacts within Process Unit	possible alteration to sediment budget long term	no significant impacts though defences that intrude onto the foreshore should be avoided on environmental and amenity grounds	change current coastal orientation and sediment budget regime	N/A
Economics	loss of residential and commercial assets	viable	not viable	N/A

Current Policy: Hold the Existing Line

Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – SALTERNS MARINA TO LILLIPUT PIER (PHB14)

Do Nothing

The Long Term implications of this strategic option would be the continued deterioration of existing defences (particularly the gabion promenade). This structure could even deteriorate in the Short Term. The rock debris derived from the failed gabions may provide some Short Term natural defence to the cliff toe. On the other hand, this would cover the foreshore which would not be suitable for English Natures objectives for this site. Long Term, the onset of cliff erosion will continue altering sediment budget inputs and possibly affecting sedimentation within current navigation routes though this is less likely. Erosion would also jeopardise the road and communication links on the cliff top. There would subsequently be an increased risk of erosion to the important Evening Hill recreation and environmental site (undefended vegetated slopes seaward of this site at present) and the highway at the top of the slope. The frequency of overtopping will be a particular issue in the Long Term within this management unit, increasing the risk of erosion and flooding to backing residential property. Consequently, this is not a viable option.

Hold the Existing Line

This would represent a continuation of current coastal defence policy. However, there will be a need, in the Long Term, to improve the standard of protection that is currently afforded to backing property by the failing gabion baskets (currently in bad condition). The management unit is important for bait digging and thus for wading birds on the intertidal foreshore. Subsequently, methods to implement this strategic option must minimise their impact upon this important natural habitat. The value of assets potentially at risk makes this a viable option to pursue.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line
Long Term (2005 to 2049)	Hold the Existing Line

Figure D2.26 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for PHB14. There are a few potential non compliance objectives relating to this option though most are only uncertainties that may arise should implementation techniques not be suitable. These factors should be considered when any scheme to implement the policy is carried out.

Impact on adjacent Management Units

As the preferred policy represents current policy for this management unit, it is unlikely that there would be any impacts upon Poole Harbour's commercial, recreational or environmental requirements. Littoral budgets would remain unchanged and so long as new schemes to upgrade defences minimise impact

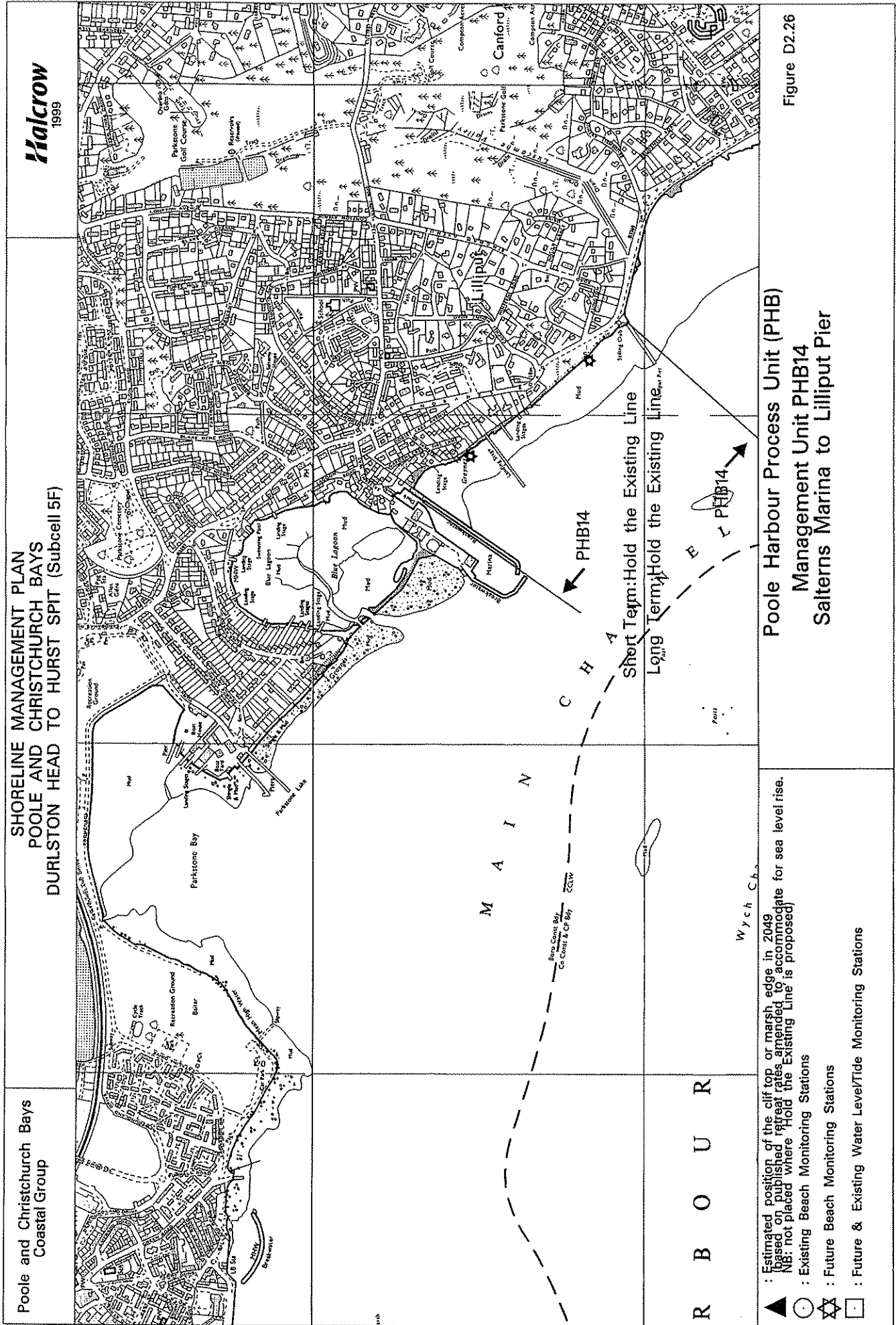
upon the fronting mudflat habitats, there would be minimal impact on either adjacent management units or the net change to environmental habitat extent.

Review of Potential Implementation

It is recommended that existing defences are upgraded to establish the necessary standard of service required by the properties within the management unit and that this is sufficient to accommodate for sea level rise and increased storminess. Creating additional impacts on the wider natural environment are unlikely to be considerable in this management unit due to the already developed nature of this part of Poole Harbour. Particular attention needs to be given to the condition of the gabion promenade frontage which is reaching the end of its useful life and needs an upgrade in its defence standard.

Present and Future Monitoring/Studies

Regular inspections of existing and future defences should be carried out to ensure that they continue to maintain an adequate level of protection (and warning of failure) against coastal erosion and flooding. The recommendation set in Part E of this Volume (Saltmarsh and Mudflat Management Strategy) also applies to this management unit.



PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – WHITLEY LAKE (PHB15)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Lilliput Pier (GR: 404281E, 089044N)
- East – Whitley Lake (GR: 404301E, 087700N)

Management Unit Description

The shoreline flanked by Shore Road and Banks Road forms a wide flat, west-facing embayment. Lining these roads are a number of commercial and residential properties including the Dorset Yacht Club, most of which are not susceptible to flooding. The intertidal area of the bay is used for mooring pleasure craft and is a popular focus for water-based recreation. Saltmarsh vegetation persists in the centre of the bay with intertidal mudflats along the foreshore and dune vegetation developing along some of the backshore, forming important ecological habitats and designated part of the Poole Harbour SSSI and SMA. The low lying area of Luscombe Valley is also a SSSI and LNR due to its ecological importance, varied habitats and reptiles.

Administrative Authority

Borough of Poole.

Frontage Lengths

Total frontage length: 2181m; Defended frontage length: 2181m

Environmental Designations

Statutory Designations

- Poole Harbour SSSI – varied habitats
- Luscombe Valley SSSI – varied habitats / sand lizard

Non-Statutory Designations

- Sandbanks SNCI – dune and grassland habitats
- Luscombe Valley LNR – varied habitats and reptiles
- Poole Bay to Isle of Purbeck SMA – marine ecology

Description of Land at Risk

- Highway
- Housing
- Saltmarsh
- Road

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Poole Coastal Local Plan	NONE	5.04 – 5.14 9.40 10.08- 9 10.22 10.24	Flats policy Area A Open Space Open Space Recreation facilities Car Parking Whitley Lake	9.35 9.36	SSSIs Luscombe Valley Nature Reserve

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2417	1	BoP	1.25	Wall	Class 2	<5	1950
681/2417	2	BoP	0.15	Groynes	Class 3	5-10	1950
681/2416	1	BoP	0.90	Wall	Class 2	5-10	1982
081/2190	345	PHC & BoP	0.89	Wall	Fr	>5	
081/2180	343	BoP	0.25	Banks	Fr	>5	
081/2180	344	PHC & BoP	0.25	Wall	Pr	>5	
081/2170	341	BoP	0.28	Banks	Gd	>5	
081/2170	342	PHC & BoP	0.28	Splash Wall	Fr	>5	1895
081/2160	340	BoP	0.61	Splash Wall	Fr	>5	1895
081/1120	218	BoP	1.00	Wall	Gd	>5	
081/1120	219	PDC & BoP	1.20	Splash Wall	Gd	>5	

Description of Defences

- 2416 Along a further 900m length on the inshore face of Poole Sandbanks, a concrete wall was built to protect Sandbanks Road in 1982. There are some signs of undermining. BoP are responsible for the maintenance of this structure.
- 2417 At Shore Road a 1.25km concrete wall with bull-nose was constructed in the 1950s. BoP are responsible for the maintenance of this structure and work was undertaken in 1995 in order to prevent collapse. In front of the wall a series of shore/low concrete groynes were constructed in the 1950s.

PART D2 APPRAISAL OF STRATEGIC OPTIONS FOR PHB

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – WHITLEY LAKE (PHB15)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	¹ ✓	² ×	✓
Economically justifiable and environmentally acceptable?	✓	✓	×	×
Compatible with adjacent strategies?	▲	✓	×	×
Compatible with wider coastal processes?	▲	○	×	×
Process Unit Objectives (See Part C)				
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)	×	✓	×	×
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)	✓	○	×	×
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)	✓	○	×	×
Strategy should not impact on mobility / evolution of natural habitats (5)	✓	×	○	×
Strategy should have minimal impact on landscape quality (6)	▲	○	×	×
Strategy should have minimal impact on archaeological or historical potential (7)	▲	✓	×	×
Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)	×	✓	×	×
Strategy should not impact on local economy, commerce, tourism or amenity (9)	×	✓	×	×
Strategy should seek to improve coastal access within the Harbour (10)	×	✓	×	○
Suitability of Strategy Option	×	✓ (LT)	×	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

¹ Dredging activities of navigation channel offshore are instrumental on the future management of this unit

² Retreat not viable as there is insufficient land available to relocate defences

From the above screening exercise, the Advance and Retreat the Line options are not appropriate for this Management Unit and are not considered any further. Do nothing also appears inappropriate, however, shall be evaluated in terms of what the implications of not doing something actually are likely to be in the short and longer term.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – WHITLEY LAKE (PHB15)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	• <i>continuation of slight mudflat accretion rates</i>	• reconstruction of existing wall could impact upon fronting mudflats	N/A	N/A
Effects on Human Environment	• cut off access to Sandbanks long term • increase risk of flooding to Shore Road and Sandbanks Road	• protection to important road connections • protection to houses and commercial property • maintain recreational interests	N/A	N/A
Effects on Natural Environment and Conservation	• increased salinity risk to habitats in Luscombe Valley (SSSI) • loss of grassland habitats at Sandbanks (SNCI)	• works may damage saltmarsh/mudflats SSSI • coastal squeeze may result in loss of intertidal habitat (SSSI)	N/A	N/A
Implications for Coastal Defences	• <i>fairly rapid decay of existing old structures</i>	• <i>continual maintenance of seawalls to reduce the threat of overtopping onto Shore Road and Sandbanks Road</i>	N/A	N/A
Impacts within Process Unit	• mudflats possibly affected by coastal squeeze long term unless existing defences were taken away	• no significant impact unless beach recharge materials are used which may smother saltmarsh vegetation	N/A	N/A
Economics	• loss of built assets and roads	• viable	N/A	N/A

Current Policy:

Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – WHITLEY LAKE (PHB15)

Do Nothing

Long Term, this strategic option would result in increased overtopping onto Shore Road and Sandbanks Road and thus a significant risk to road damage and closure. Properties behind these roads are set back though extreme events will significantly increase the risk of flooding. In addition, properties on the edge of Luscombe Valley may be at risk from extreme water level surge events. The key issue here is the potential cutting off of access to Sandbanks over the Long Term. The onset of increased sea level rise rates will mean that the current occasional flood events will become more frequent. Consequently, this strategic option is not viable.

Hold the Existing Line

Being a medium density high value area, the Sandbanks / Canford Cliffs district of Poole warrants protection against a 1:100 year return period storm event in line with MAFF recommendations (PAGN Annex K). To Hold the Existing Line would represent a continuation of current policy for this management unit as the majority of the unit is protected by man-made defences. To continue with this strategic option would not impact upon the coastal processes operating within the Harbour or the natural environmental assets, so long as maintenance does not involve alterations to the contemporary hydrodynamic regime, navigational and environmental importance within Poole Harbour. This option is therefore economically viable.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line (including Observe and Monitor fronting mudflats)
Long Term (2005 to 2049)	Hold the Existing Line (incorporating mudflat, saltmarsh and dune management techniques)

Figure D2.27 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for PHB15. The only potential non compliance to Process Unit Objectives relates to whether such a strategic option abides to geomorphological principles, and whether it would impact upon important conservation designations / marine habitats and landscape quality. These factors need to be considered when any scheme to implement or maintain the policy is carried out.

Impact on adjacent Management Units

As this strategic option represents current policy for this management unit, it is unlikely that there would be any impacts upon adjacent management units. This management unit represents a sediment store area for fine grained sediments though its littoral inter-relationship with management units further south west (ie:

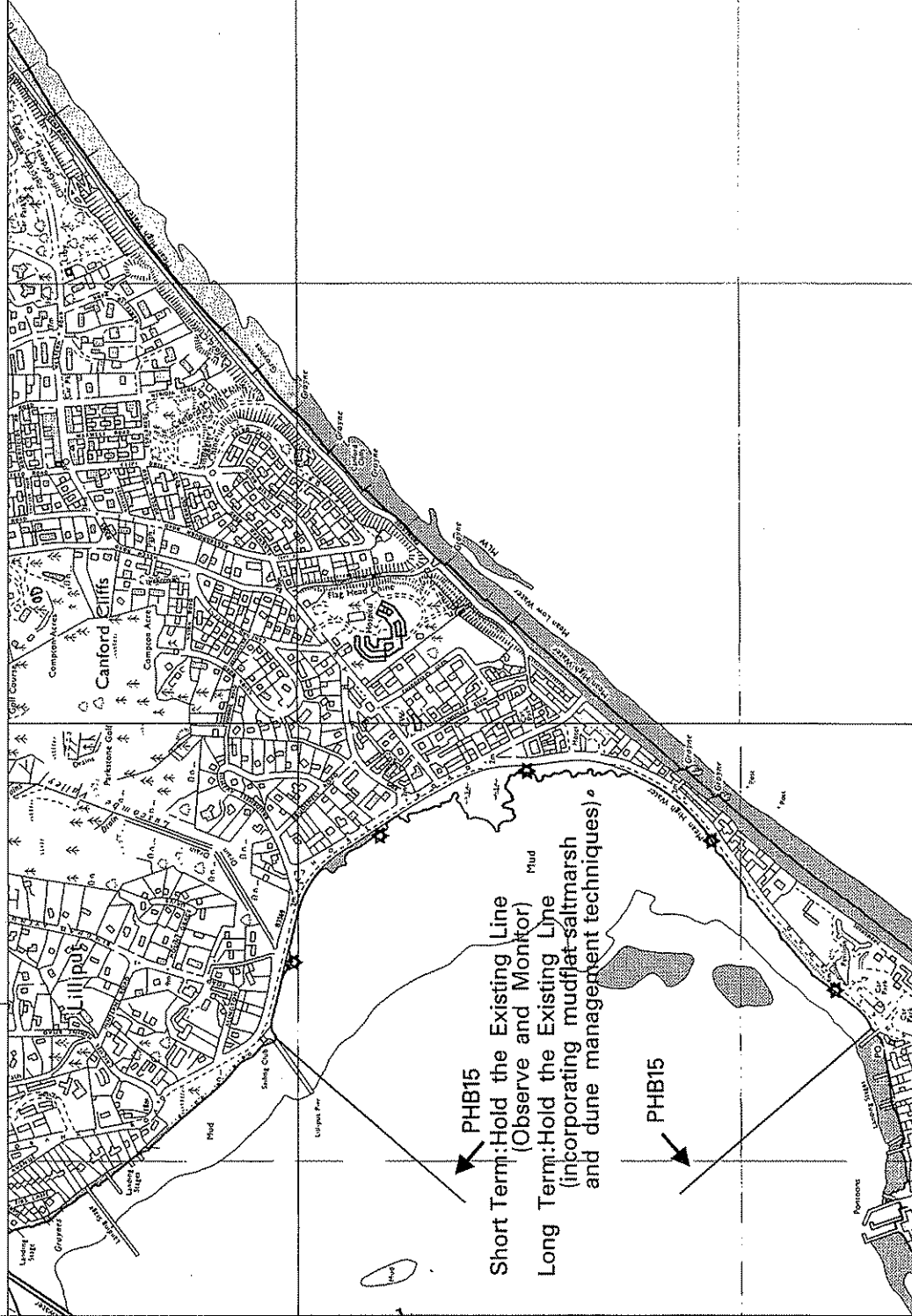
PHB16 and PHB17) is perceived to be negligible. Over the Long Term, depending on the adaptation of adjacent mudflats to sea level rise, the management of this unit may need to be more closely married into a strategy for mudflat and saltmarsh enhancement (ie: foreshore management).

Review of Potential Implementation

The standard of defences, in the Long Term, will need to be upgraded to accommodate for accelerated rates of sea level rise and increased storminess (ie: increased frequency of overtopping onto Shore Road and Sandbanks Road. Consequently, upgrading defences (that does not interfere with the importance of marine recreation, landscape, fronting mudflats and hydrodynamic conditions) will be required to implement this policy.

Present and Future Monitoring/Studies

It is recommended that the fronting foreshore levels are monitored as part of a regional mudflat monitoring programme. A continued structure inspection routine is required in unison to assess the need for future intervention should the frequency of overtopping increase in the Long Term.



: Estimated position of the cliff top or marsh edge in 2049 (based on published retreat rates amended to accommodate for sea level rise. NB: not placed where 'Hold the Existing Line' is proposed)

: Existing Beach Monitoring Stations

Future Beach Monitoring Stations

: Future & Existing Water Level/Tide Monitoring Stations

Poole Harbour Process Unit (PHB)
Management Unit PHB15
Whitley Lake

Figure D2.27

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – WHITLEY LAKE TO NORTH HAVEN POINT (PHB16)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Whitley Lake (GR: 404301E, 087700N)
- East – North Haven Point (GR: 403500E, 087311N)

Management Unit Description

This unit comprises flat sandy foreshores, backed by the gardens of private properties and marinas including the Royal Motor Yacht Club. There are several wooden jetties and moorings along the frontage which is heavily used by pleasure craft users. The majority of the backshore is protected from erosion by seawalls, however, a converted boathouse at the southern end of the unit has suffered overtopping and damage during storms. The area forms part of the Poole Harbour SSSI and the muddy substrates to the east of the Yacht Club are of considerable ecological importance and designated a SMA.

Administrative Authority

Borough of Poole

Frontage Lengths

Total frontage length: 1668m; Defended frontage length: 1668m

Environmental Designations

Statutory Designations

- Poole Harbour SSSI – varied habitats

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology

Description of Land at Risk

- Marinas
- Housing
- Commercial Properties

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Poole Coastal Local Plan	NONE	5.04 – 5.14 5.11 9.40 10.08-9 10.22 10.24	Flats policy Area A Open Space Open Space Recreation facilities Car Parking Whitley Lake	9.35 9.36	SSSIs Luscombe Valley Nature Reserve

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2415	1	Private	1.42	Wall081/2190	Class 4	<5	1960
081/2190	345	PHC & BoP	0.89	Wall	Fr	>5	
081/2150	339	Private	0.30	Wall	Pr	>5	

Description of Defences

2415 There are various private masonry and concrete walls along this 1.42km length on the inshore face of Poole Sandbanks, whose age and condition varies. The walls have been undermined in places.

PART D2 APPRAISAL OF STRATEGIC OPTIONS FOR PHB

1 Screening of Defence Options against Strategy Test Statements

Strategy Test Statements (See Part C)				Coastal Defence Strategy Options			
Core Objectives	Subcell	Coastal	Defence	Do Nothing	Hold	Retreat	Advance
Technically viable?				✓	✓	¹ ×	✓
Economically justifiable and environmentally acceptable?				✓	✓	×	○
Compatible with adjacent strategies?				▲	✓	×	▲
Compatible with wider coastal processes?				✓	○	×	×
Process Unit Objectives (See Part C)							
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)				▲	✓	×	×
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)				×	✓	×	✓
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)				✓	○	×	×
Strategy should not impact on mobility / evolution of natural habitats (5)				▲	○	×	×
Strategy should have minimal impact on landscape quality (6)				▲	○	×	×
Strategy should have minimal impact on archaeological or historical potential (7)				▲	○	×	×
Strategy should not increase the risks of erosion and flooding on the immediate or adjacent unit lengths (8)				× (LT)	✓	×	×
Strategy should not impact on local economy, commerce, tourism or amenity (9)				× (LT)	✓	×	✓
Strategy should seek to improve coastal access within the Harbour (10)				× (LT)	✓	×	○
Suitability of Strategy Option				✓ (ST) × (LT)	✓	×	○

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

¹ Retreating the existing defence line is not an option in this unit.

From the above screening exercise, the Advance and Retreat the Line options may not be appropriate for this Management Unit but advance is still not considered in the assessment. Do nothing also appears inappropriate, however, shall be evaluated in terms of what the implications of not doing something actually are likely to be in the short and longer term.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – WHITLEY LAKE TO NORTH HAVEN POINT (PHB16)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	low wave exposure likely to continue here	no change to current hydrodynamics of Whitley Lake	N/A	likely impact on tidal prism regime of Poole Harbour
Effects on Human Environment	- unlikely to be a problem in the short term - long term risk of defence failure and thus flooding to assets behind	protect residential assets from future flooding or erosion	N/A	ensure protection to road and built assets
Effects on Natural Environment and Conservation	no significant effects though sea level rise will result in mudflat squeeze against existing defences	- works may damage inter-tidal habitat (SSSI) - coastal squeeze may result in loss of habitat (SSSI)	N/A	loss of fronting mudflats and intertidal epifauna
Implications for Coastal Defences	long term risk of defence failure	probably only a need for regular inspections as opposed to new capital works	N/A	need to develop and construct new defences seaward of existing wall
Impacts within Process Unit	long term backshore erosion problems likely which may alter sediment budget characteristics	maintenance of existing situation so long as new schemes impacting on the foreshore are not introduced	N/A	likely impacts on tidal dynamics of Poole Harbour
Economics	loss of assets long term	viable	N/A	not viable

Current Policy: Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – WHITLEY LAKE TO NORTH HAVEN POINT (PHB16)

Do Nothing

Although this management unit is relatively sheltered from direct wave attack and has a less dynamic hydrodynamic environment, it is likely that the consequences of a "Do Nothing" strategy would be the continued deterioration of existing defences and the likelihood of shoreline readjustment as erosion started up. Flood damage would occur prior to this along the private frontages at the southern end of the management unit. The economic and commercial implications of this policy are significant and so this strategic option is therefore not viable.

Hold the Existing Line

Being a medium density high value area, the Sandbanks / Canford Cliffs district of Poole warrants protection against a 1:100 year return period storm event in line with MAFF recommendations (PAGN Annex K). To Hold the Existing Line would represent a continuation of current policy for this management unit as the majority of the unit is protected by man-made defences. To continue with this strategic option would not impact upon the coastal processes operating within the Harbour or the natural environmental assets, so long as maintenance does not involve alterations to the contemporary hydrodynamic regime, navigational and environmental importance within Poole Harbour. This option is therefore economically viable.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line
Long Term (2005 to 2049)	Hold the Existing Line

Figure D2.28 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for PHB16. A Hold the Line policy (Short and Long Term) can be justified so long as methods used to implement the policy are compatible with littoral processes and do not interfere with the activities of a commercial Harbour (ie: navigation). It also needs to ensure it will have no impact on immediate or adjacent mudflats levels.

Impact on adjacent Management Units

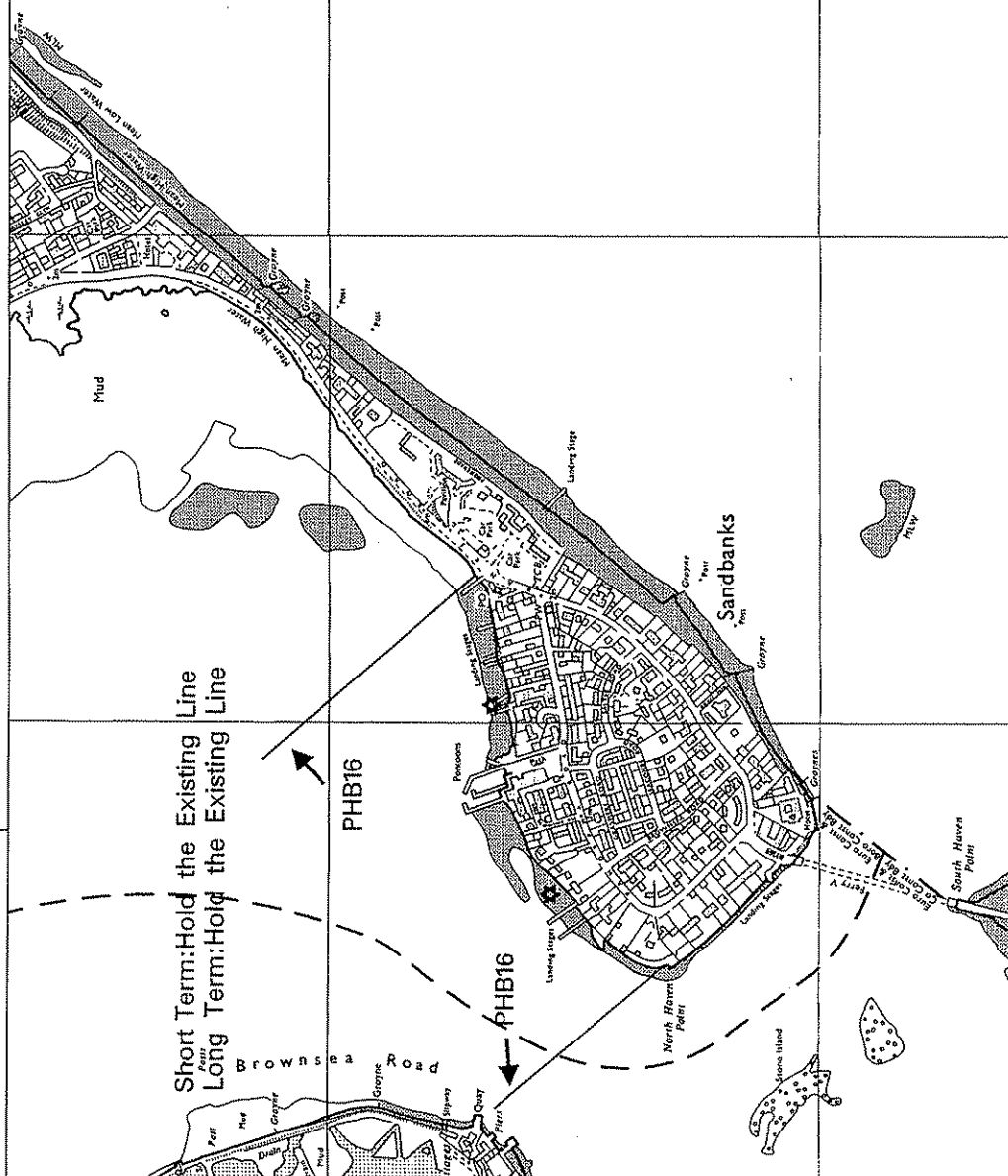
A hold the existing line policy will have no detrimental impacts upon adjacent management units, as it will essentially involve the maintenance of existing structures, and continuation of the current status quo.

Review of Potential Implementation

Maintain and upgrade (where necessary) existing private defences.

Present and Future Monitoring/Studies

A routine structure inspection should be carried out by private frontagers to assess the need for future private intervention should the frequency of overtopping increase in the Long Term.



: Estimated position of the cliff top or marsh edge in 2049 based on published retreat rates amended to accommodate for sea level rise. NB: not placed where 'Hold the Existing Line' is proposed)

○ : Existing Beach Monitoring Stations

☆ : Future Beach Monitoring Stations

• : Future & Existing Water Level/Tide Monitoring Stations

: possible managed retreat sites

Poole Harbour Process Unit (PHB)
Management Unit PHB16
Whitely Lake to North Haven Point

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – NORTH HAVEN POINT TO SANDBANKS FERRY SLIPWAY (PHB17)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – North Haven Point (GR: 403500E, 087311N)
- East – Sandbanks Ferry Slipway (GR: 403780E, 087008N)

Management Unit Description

Flanking the Poole Harbour entrance, the shoreline here is lined with private properties, the gardens of which slope down towards a variety of privately owned sea walls, protecting the frontage against shoreline erosion. A number of private jetties exist along this stretch that are used for mooring pleasurecraft. This length is submerged in most tidal states only being exposed during low spring tides and is subject to not only strong tidal conditions but also waves from both within and outside the harbour. The northern tip of the unit forms part of the Poole Harbour SSSI and the inter-tidal area has been designated a SMA for its considerable marine environmental importance.

Administrative Authority

Borough of Poole

Frontage Lengths

Total frontage length: 409m; Defended frontage length: 409m

Environmental Designations

Statutory Designations

- Poole Harbour SSSI – varied habitats
- Poole Harbour marine SPA

Non-Statutory Designations

- Poole Bay to Isle of Purbeck SMA – marine ecology

Description of Land at Risk

- Housing
- Ferry Facilities

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES	COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Poole Coastal Local Plan	NONE	5.04 –5.14 5.11 9.40 10.08-9 10.22	Flats policy Area A Open Space Open Space Recreation facilities	9.35 9.36	SSSIs Luscombe Valley Nature Reserve

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2415	1	Private	1.42	Wall	Class 4	<5	1960
681/2414	2	Poole BC	0.04	Toe piling	Class 2	>10	1960
681/2414	1	Poole BC	0.04	Wall	Class 3	>10	1960

Description of Defences

2414 A 40m long stepped concrete wall was constructed on Poole Sandbanks with sheet steel toe piling to protect the car park adjacent to the ferry crossing and is in good condition.

2415 There are various private masonry and concrete walls along this 1.42km length on the inshore face of Poole Sandbanks, whose age and condition varies. The walls have been undermined in places.

The first length is a 300m long privately owned concrete wall on the inshore tip of Poole Sandbanks. The foreshore is littered with the remains of previous walls constructed to prevent the erosion of the high sandbank on which high value property is built and each one is different in height and texture. The quality of the materials used is good, but the design of some of the walls is poor. Generally the walls are in a poor state of repair and BoP plan to provide a rock toe to counteract undermining.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – NORTH HAVEN POINT TO SANDBANKS FERRY SLIPWAY (PHB17)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	¹ ×	×
Economically justifiable and environmentally acceptable?	✓	✓	×	×
Compatible with adjacent strategies?	▲	✓	×	×
Compatible with wider coastal processes?	▲	✓	×	×
Process Unit Objectives (See Part C)				
Strategies should not alter estuarine processes unless paramount to protection of life, assets or navigation (1)	▲	○	×	×
Strategy should be able to adapt to the onset of sea rise whilst ensuring protection of life, property and habitats (2)	×	○	×	×
Strategy should seek to reduce impact on important conservation designations and/or marine habitats (4)	✓	○	×	×
Strategy should not impact on mobility / evolution of natural habitats (5)	² ×	○	×	×
Strategy should have minimal impact on landscape quality (6)	×	○	×	×
Strategy should have minimal impact on archaeological or historical potential (7)	×	○	×	×
Strategy should not increase the risks of erosion and flooding on the immediate on immediate or adjacent unit lengths (8)	×	✓	×	×
Strategy should not impact on local economy, commerce, tourism or amenity (9)	×	✓	×	³ ×
Strategy should seek to improve coastal access within the Harbour (10)	×	✓	×	○
Suitability of Strategy Option	×	✓ (LT)	×	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term LT Long Term

¹ Not applicable as an option for this unit.

² Long term do nothing would not be beneficial in wider habitat terms as there would be no scope for habitat retreat/adaptation

From the above screening exercise, the Advance or Retreat the Line option are not appropriate for this Management Unit and are not considered any further. Do nothing also appears inappropriate, however, shall be evaluated in terms of what the implications of not doing something actually are likely to be in the short and longer term.

³ Impacts on navigation routes

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – NORTH HAVEN POINT TO SANDBANKS FERRY SLIPWAY (PHB17)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	channel migration may result in sudden bed level changes	<i>continuation of strong tidal currents mobilising beach material</i>	N/A	N/A
Effects on Human Environment	- increase flood risk to residential properties - deterioration of jetties and slipway	- protect all built assets at the head of Sandbanks Peninsula - maintain Harbour entrance as a viable shipping channel	N/A	N/A
Effects on Natural Environment and Conservation	no significant effects	no significant effects	N/A	N/A
Implications for Coastal Defences	- wall undermining may increase if channel migration occurs <i>increased deterioration of walls</i>	need to maintain and upgrade existing walls to counter future flood risk	N/A	N/A
Impacts within Process Unit	<i>no impact in the short term</i> - dependent upon whether landward migration of tidal channel occurs long term	no significant impacts dependent upon methods used	N/A	N/A
Economics	loss of high value assets	viable	N/A	N/A

Current Policy: Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – NORTH HAVEN POINT TO SANDBANKS FERRY SLIPWAY (PHB17)

Do Nothing

Without major maintenance work or replacement, Long Term deterioration of existing defences is likely due to the hydrodynamic forces which are prevalent along this management unit. Long Term, defence collapse would lead to the risk of shoreline configuration changes which not only would have a major influence on Sandbanks, but there would be major implications for Poole Harbour Commissioners and the running of Poole Harbour as a commercial Harbour. Consequently, this option is not viable.

Hold the Existing Line

This strategic option would ensure the protection of existing assets through the maintenance and upgrade of existing private frontages. There is considerable dependency on the level of the foreshore within this management unit and so the use of dredged material to supplement periods of low foreshore levels may be appropriate. Rock armour toe protection has recently been undertaken along this frontage to combat undermining. The importance of this location as a feature and based on the economic value of assets at risk make this a viable strategic option.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line
Long Term (2005 to 2049)	Hold the Existing Line

Figure D2.29 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for PHB17. A Hold the Line policy (Short and Long Term) can be justified so long as methods used to implement the policy are compatible with littoral processes and do not interfere with the activities of a commercial Harbour (ie: navigation). It also needs to ensure it will have no impact on immediate or adjacent foreshore levels which are integral to the successful implementation of this strategic option.

Impact on adjacent Management Units

The maintenance of existing structures will not be detrimental to adjacent management units or impact upon the future management of sites opposite at South Haven Point and Brownsea Island.

Review of Potential Implementation

Maintain and upgrade (where necessary eg: toe protection existing private defences.

Present and Future Monitoring/Studies

A routine structure inspection should be carried out by private frontagers and by Borough of Poole to assess the need for future private intervention should the frequency of overtopping increase in the Long Term.

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – SANDBANKS FERRY SLIPWAY TO POINT HOUSE CAFÉ (PBY1)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Sandbanks Ferry Slipway (GR: 403780E, 087008N)
- East – Point House Cafe (GR: 415312E, 090973N)

Management Unit Description

This unit comprises the coastal frontages of Bournemouth (including Southbourne and Boscombe) and the Canford Cliffs, Branksome Chine and Sandbanks areas of the Borough of Poole. These settlements are largely residential with hotels and tourism related infrastructure along the Poole and Bournemouth frontage including Bournemouth and Boscombe Piers. Interspersed along much of the cliff top are areas of open space some of which are designated SNCIs. The Poole Bay cliffs also contain important reptile and invertebrate populations and are designated a SSSI. This entire length is defended and heavily used for recreational pursuits with amenity car parks located both along the seafront and much of the cliff top.

Administrative Authority

Borough of Poole.

Bournemouth Borough Council

Frontage Lengths

Total frontage length: 1313m; Defended frontage length: 1313m

Environmental Designations

Statutory Designations

- Poole Bay Cliffs SSSI – geology, reptiles and invertebrates.

Non-Statutory Designations

- Boscombe to Southbourne Cliffs SNCI – cliff grassland ecology
- Alum Chine SNCI – woodland ecology
- Flaghead Chine SNCI – heath and reptiles
- Branksome Chine SNCI – grassland and heath ecology
- Sandbanks SNCI
- East of Bournemouth Cliffs GCR – geological site
- West Bournemouth Cliffs GCR – geological site
- Poole Bay and Isle of Purbeck SMA – marine ecology

Description of Land at Risk

- Tourist Related Assets
- Commercial Properties
- Open Space
- Leisure Facilities
- Cliff Top Highway and Housing

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Poole Coastal Local Plan		NONE	5.17 5.19 9.40 10.08,09 10.13,14 10.17	Flat Development Flat Redevelopment Public & Private Open Space Open Space Development Beach Hut Development Environmental Improvements	9.06, 08, 9.11 9.25 9.35 9.36 9.38	Conservation Area Policies Archaeological / historical interest SSSIs Luscombe Valley Nature Reserve Specially protected flora and fauna
Boscombe Local Plan	T & I 29 T & I 30	Cliffs Unstable Ground	P & H2 T5 R4	Flats Development Entertainment/ recreation development Public gardens, sea front & cliff areas	R5 C&T20	SSSIs, SPA, SAC and Ramsar Sites Archaeology
Bournemouth Borough Local Plan	8.8 11.47 11.48	Land liable to flooding Cliffs Unstable ground	8.7 9.10 9.15	Recreation Public gardens, sea front & cliff areas Water based recreation	8.9 9.13 9.14 10.25	Nature conservation SSSIs, SPA, SAC and Ramsar sites Heathland Archaeology
Bournemouth Town Centre Local Plan		NONE	7.1 7.4	Tourism and recreation Public gardens seafront and Cliff Areas		NONE

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2513	1	BBC	0.40	Revetment	Class 2	>10	1909
681/2513	2	BBC	0.57	Revetment	Class 2	>10	1929
681/2513	3	BBC	0.49	Revetment	Class 2	>10	1930
681/2513	4	BBC	0.26	Revetment	Class 2	>10	1909
681/2513	5	BBC	0.20	Revetment	Class 2	>10	1957
681/2513	6	BBC	0.20	Recurved Wall	Class 2	>10	1957
681/2513	7	BBC	1.91	Groynes	Class 2	5-10	1980
681/2513	8	BBC	1.91	Splash Wall	Class 1	>10	1957
681/2513	9	BBC	1.91	Recharge	Class 3	5-10	1989
681/2512	1	BBC	1.58	Revetment	Class 2	>10	1911
681/2512	2	BBC	0.80	Revetment	Class 2	>10	1907
681/2512	3	BBC	0.55	Toe Piling	Class 2	>10	1972
681/2512	4	BBC	2.49	Groynes	Class 2	>10	1980
681/2512	5	BBC	2.49	Groynes	Class 2	>10	1970
681/2512	6	BBC	2.49	Splash Wall	Class 2	>10	1970
681/2512	7	BBC	2.49	Recharge	Class 2	5-10	1989
681/2512	8	Bourne Stream	0.30	Groynes	Class 3	>10	1972
681/2512	9	BBC	0.11	Wall	Class 2	>10	1930
681/2511	1	BBC	0.41	Revetment	Class 2	>10	1958
681/2511	2	BBC	0.51	Revetment	Class 2	>10	1975
681/2511	3	BBC	0.73	Revetment	Class 2	>10	1958
681/2511	4	BBC	0.74	Revetment	Class 2	>10	1935
681/2511	5	BBC	0.97	Revetment	Class 2	>10	1932
681/2511	6	BBC	0.84	Revetment	Class 2	>10	1927
681/2511	7	BBC	4.20	Groynes	Class 2	5-10	1980
681/2511	8	BBC	4.20	Recharge	Class 2	5-10	1989
681/2511	9	BBC	4.20	Splash Wall	Class 2	>10	1930
681/2511	10	BBC	0.18	Groynes	Class 4	<5	1930
681/2511	11	BBC	0.07	Wall	Class 2	>10	1927
681/2510	1	BBC	0.19	Groynes	Class 2	5-10	1987
681/2510	2	BBC	0.02	Groynes	Class 2	5-10	1976
681/2510	3	BBC	0.81	Recharge	Class 2	5-10	1988
681/2510	4	BBC	0.10	Gabions	Class 2	5-10	1987
681/2413	1	Private	0.21	Recurved Wall	Class 1	>10	1990
681/2413	2	Private	0.21	Toe Piling	Class 1	>10	1990
681/2413	3	Private	0.21	Revetment	Class 1	>10	1990
681/2413	4	Private	0.21	Groynes	Class 1	>10	1990
681/2412	1	Private	0.05	Wall	Class 2	>10	1970
681/2412	2	Private	0.07	Piling	Class 4	<5	1960
681/2412	3	Private	0.07	Wall	Class 3	>10	1960
681/2412	4	Private	0.08	Wall	Class 3	>10	1970
681/2412	5	Private	0.04	Toe Piling	Class 2	>10	1980
681/2412	6	Private	0.04	Wall	Class 2	>10	1980
681/2412	7	BoP	0.20	Recharge	Class 2	5-10	1992
681/2412	8	Private	0.08	Armour	Class 2	>10	1970
681/2412	9	BoP	0.20	Revetment	Class 1	>10	1996

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2412	10	BoP	0.20	Groynes	Class 1	>10	1996
681/2411	1	BoP	0.10	Wall	Class 1	>10	1990
681/2411	3	BoP	0.10	Revetment	Class 1	>10	1996
681/2411	4	BoP	0.10	Groynes	Class 1	>10	1996
681/2410	1	Private	0.15	Piling	Class 1	>10	1990
681/2410	3	BoP	0.15	Revetment	Class 1	>10	1996
681/2410	4	BoP	0.15	Groynes	Class 1	>10	1996
681/2409	2	BoP	0.10	Revetment	Class 1	>10	1996
681/2409	3	BoP	0.10	Groynes	Class 1	>10	1996
681/2408	1	Private	0.15	Breastwork	Class 2	>10	1970
681/2408	2	BoP	0.15	Revetment	Class 1	>10	1996
681/2408	3	BoP	0.15	Groynes	Class 1	>10	1996
681/2407	1	BoP	0.10	Revetment	Class 2	>10	1970
681/2407	2	BoP	0.20	Wall	Class 2	>10	1960
681/2407	3	BoP	0.16	Recurved Wall	Class 2	>10	1960
681/2406	1	Private	0.63	Revetment	Class 3	5-10	1960
681/2405	1	BoP	0.45	Wall	Class 2	>10	1960
681/2405	2	BoP	0.45	Groynes	Class 2	>10	1980
681/2404	1	BoP	0.44	Recurved Wall	Class 3	>10	1970
681/2404	2	BoP	0.44	Groynes	Class 4	>10	1970
681/2404	3	BoP	0.44	Splash Wall	Class 2	>10	1970
681/2403	1	BoP	0.44	Recurved Wall	Class 2	>10	1970
681/2403	2	BoP	0.44	Groynes	Class 4	<5	1980
681/2402	1	BoP	0.13	Wall	Class 2	>10	1970
681/2402	2	BoP	0.13	Groynes	Class 4	>10	1980
681/2401	1	BoP	1.29	Wall	Class 3	>10	1960
681/2401	2	BoP	0.15	Wall	Class 2	>10	1985
681/2401	3	BoP	0.15	Splash Wall	Class 2	>10	1985
681/2401	4	BoP	1.44	Groynes	Class 4	<5	1980

Description of Defences

- 2510 In 1987 two 70m long timber groynes were constructed along Solent Beach and a short section of gabion wall was constructed to protect the beach access and low lying cliffs. 143,000 tonnes of beach recharge was placed to recharge the beach between the Long Groyne and Southbourne promenade in 1988. The next phase of beach recharge is programmed for 2003. Two 70m long permeable groynes were constructed along this length in 1976 to reduce the effects of terminal erosion at the end BBC's groyne field. BBC are currently investigating whether to replace the permeable groynes with traditional timber or rock groynes since further groynes have been constructed to the east and there is no longer a terminal erosion problem in this area. The permeable groynes are due to be replaced in 1999.
- 2511 There are 33 timber groynes along the 4.2km long Southbourne frontage, typically 50m long. For the 52 groynes along their frontage BBC have established a phased replacement programme, maintaining groynes as necessary and replacing them at the end of their 20 to 25 year life. Between 1974 and 1986 approximately two

groynes were built per year and from 1986 four to five groynes were built per year. Thus in October 1998 three groynes will be replaced, in 1999 the permeable groynes will be replaced (in defence length 2510) and in 2000 four groynes will be replaced. Therefore the age of the groynes vary between 20 years old and new.

658,000 cubic metres of sand recharge was placed to recharge the beach between Bournemouth Pier and the Southbourne end of the promenade in 1975. Approximately 300,000 cubic metres were placed along this defence length in 1989. The next phase of beach recharge has been programmed for 2003.

Coast protection structures were first constructed in western Poole Bay in the 1890s. Further schemes involved the construction of revetments, seawalls and groynes, progressing eastwards, for example 1907-11 (Bournemouth to Boscombe), 1927-35 (Boscombe to Southbourne) and 1955-75 (Southbourne). By 1975 virtually the whole frontage from Poole Head to Solent Road was protected. Thus the masonry revetments were originally constructed along this frontage between 1927 and 1975, although a short length of vertical masonry wall was constructed in the 1930s. A splash wall was constructed along the entire length in the 1930s.

Boscombe Pier was originally built in 1889 as a 183m long wooden and iron structure. The head was re-built in reinforced concrete in 1927 and the neck in 1960.

Between Boscombe and Bournemouth there are five timber groynes (typically 50m long), two permeable concrete groynes and one solid concrete groyne (which is an outfall) of varying ages, see note for defence length 2511. The 2.5km masonry revetment was constructed between 1907 and 1911, however only 550m have a steel sheet piled toe. A short length of masonry wall was constructed in the 1930s and a splash wall was constructed in the 1970s, to protect the base of the environmentally sensitive and unstable cliffs.

In 1975 658,000 cubic metres of sand recharge was placed on the beach between Bournemouth Pier and the end of the promenade at Southbourne. The next phase of beach recharge has been programmed for 2003.

A wooden jetty was constructed on the site of Bournemouth Pier in 1861. In 1880 this structure was replaced with a 225m long pier constructed with a lattice girder neck with iron screw piles. In 1894 and 1909 the pier was extended to 305m. The pier head was rebuilt in 1950, again in 1960 in reinforced concrete and the whole of the promenade deck of the pier was reconstructed in reinforced concrete in 1979/80.

There are ten timber groynes, typically 50m long, of varying age along the 1.9km length of Bournemouth West. The groynes are maintained and replaced in line with BBC's phased replacement programme. A masonry wall of varying construction extends along the rear of the beach and was constructed between 1909 and 1957. A re-curved wave wall has been built along a short length of

revetment to reduce overtopping. To the rear of the promenade a splash wall protects the toe of the cliffs.

As part of the Beach Improvement Scheme Stage 2 carried out in 1974, a dredger dumped 106,260 cubic metres of dredged material between Bournemouth Pier and Durley Chine in the offshore zone where field studies, conducted in conjunction with HR Wallingford, demonstrated that dumped material would be transported onshore due to wave and current action.

Some 300,000 cubic metres of sand recharge was placed on the beach in 1989. The defences along the following length are maintained by Borough of Poole, unless otherwise stated.

- 2401 At Branksome twelve groynes, typically 30m long, defend this 1.3km length of coast. the groynes were constructed in 1980 generally using steel piles and timber planking and are in good condition. The structure at Branksome Chine is a concrete and steel piled outfall. The groynes along this length are not as effective in maintaining the beach since they are short, 30m long, compared to the 50m long groynes along Bournemouth's frontage. At the root of the groynes, the promenade is protected by a stepped concrete wall. Although a short length of seawall was constructed recently, (1985), the majority of the wall was constructed in the 1960s and requires maintenance.
- 2402 Along the toe of Canford Cliffs a 130m long near vertical concrete wall was constructed in the 1970s, the crest of which is above promenade level, to protect the cliffs. One 30m long timber groyne was constructed in 1980.
- Along a further 440m length of Canford Cliffs four 30m long timber groynes were constructed in 1980. One or more of these groynes are likely to require major repair within 5 years. At the toe of the cliffs a 440m long concrete wall, with a re-curved crest wall, protects the promenade and cliff toe.
- Further west along Canford Cliffs, one 30m long timber groyne was constructed in the 1970s whilst the remainder of the Groynes were constructed in 1980 whilst the toe of the cliffs and promenade are protected by a 180m long concrete wall with re-curved crest wall and a masonry splash wall.
- 2405 The last 450m length of Canford Cliffs are defended by four 30m long timber groynes which were constructed in 1980 and are in good condition. Once again the promenade is protected by a concrete wall. The concrete wall is stepped and was constructed in the 1960s.
- 2406 Along this 630m length of Poole Sandbanks, various private properties are protected by a concrete revetment. There are also two low timber groynes. The condition of the revetment varies along its length.
- 2407 Along this section of Poole Sandbanks the form of the defences vary with a short length of masonry revetment (100m), near vertical concrete wall (200m) and near vertical concrete wall with wave return wall (160m). The condition of these defences is generally good. The beach is eroding and the remains of a number of rubble groynes

constructed in 1898 but removed in the 1990's are being exposed. Borough of Poole are considering how to secure the beach in this area.

- 2408 At Poole Sandbanks a 150m length of timber breastwork provides the defence for a further short length (150m) of private properties.
- 2409 There are private properties along this 100m length of Poole Sandbanks. "Rock groynes built in 1995/6 have increased beach levels".
- 2410 A vertical steel sheet piled wall surmounted by an armour-flex slope was built along this 150m length of Poole Sandbanks to protect the private properties following damage in the 1989/90 storms.
"Rock groynes built in 1995/6 have increased beach levels".
- 2411 A one to seven tonne rock armour groyne and concrete wall were built in 1990 along this 100m length of Poole Sandbanks to replace damaged groynes.
"Rock groynes built in 1995/6 have increased beach levels".
- 2412 Vertical sheet steel piles with a concrete capping beam and porous concrete wall were constructed in the 1960s to protect the 200m length of private properties along Poole Sandbanks. The steel piles are in need of replacement. A further length of wall was constructed from masonry in the 1970s during which rock armour was placed at the toe, presumably to prevent undermining. A concrete crest wall was added in 1980 and the beach was re-nourished with 40,000m³ of fine sand in 1992 with material dredged by Poole Harbour Commissioners.
"Rock groynes built in 1995/6 have increased beach levels".
- 2413 The defences along this 210m length of Poole Sandbanks were improved in 1990 to defend the Haven Hotel and comprise; a rock revetment, sheet steel toe piling, promenade, concrete re-curved wave wall and a series of steel groynes.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – SANDBANKS FERRY SLIPWAY TO POINT HOUSE CAFÉ (PB1)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	² Retreat	Advance
Technically viable?	✓	✓	×	✓
Economically justifiable and environmentally acceptable?	▲	² ✓	×	○
Compatible with adjacent strategies?	▲	✓	×	×
Compatible with wider coastal processes?	✓	○	×	×
Process Unit Objectives (See Part C)				
Strategy should not impact any further on immediate or adjacent beach levels (1)	▲	○	×	×
Strategy should ensure protection of life and property where economically viable (2)	×	✓	×	○
Strategy based on geomorphological principles for Durlston Bay (3)	×	✓	×	×
Strategy should not impact on important geological conservation designations (4)	✓	○	✓	×
Strategy should not interfere with valuable habitats dependent upon contemporary coastal processes. (5)	▲	○	○	×
Strategy should have minimal impact on landscape quality (6)	○	○	○	○
Strategy should have minimal impact on archaeological or historical potential (7)	×	✓	×	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (8)	×	✓	×	○
Suitability of Strategy Option	×	✓(LT)	×	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

¹ Dependent on the use of beach recharge material

² Retreat at Sandbanks would cause breach altering dynamics and affecting property

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and not considered any further. Do nothing is also inappropriate due to the high value and developed nature of the coastline along this frontage though shall be assessed against a hold option to show the benefits occurred as a result.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – SANDBANKS FERRY SLIPWAY TO POINT HOUSE CAFÉ (PB41)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	<i>continuation of eastward drift along most of Poole Bay except for the most westerly sector (variable)</i>	terminate natural cliff input where this still occurs	N/A	N/A
Effects on Human Environment	threat to existing built commercial tourist and resident assets along the stretch from Sandbanks through to Bournemouth and Southborne	protection of the Poole and Bournemouth conurbation	N/A	N/A
Effects on Natural Environment and Conservation	- decline in landscape value of seafront as artificial structures deteriorate - Improve nature conservation value of the coast over long term (faunal and flora habitats)	works may damage geological / ecological SSSIs and SNCIs	N/A	N/A
Implications for Coastal Defences	<i>deterioration of existing defences and likely lowering of beach levels</i>	<i>continued need to introduce beach recharge programmes over the short to medium term</i>	N/A	N/A
Impacts within Process Unit	breaching of Sandbanks spit would impact severely on Poole town	No deleterious impact so long as beach recharge materials are used	N/A	N/A
Economics	loss of commercial and residential/built assets	viable	N/A	N/A

Current Policy: Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – SANDBANKS FERRY SLIPWAY TO POINT HOUSE CAFÉ (PBY1)

Do Nothing

This is not an appropriate strategic option given the value of the residential and commercial developments potentially at risk from Sandbanks through to Southbourne and the present works programme which is currently underway on both the Poole / Bournemouth frontages. Therefore, this strategic option is not viable.

Hold the Existing line

This strategic option would represent a continuation of current practice and would be achieved through the maintenance and upgrading of defences (including beach recharge). The Hold strategy does not apply to maintenance of Pier structures (such as Bournemouth and Boscombe) as these serve little coastal defence purpose along this management unit frontage (open structures). Any new works or maintenance would have to be carried out in an environmentally sensitive manner to safeguard the geological and nature conservation interests in the area. This strategic option is viable.

Retreat the Existing Line

Technically, retreat along this length is not feasible as little open space occurs between the present line and the seaward limit of the developed frontage. Therefore this strategy is not recommended.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 31:12:2002)	Hold the Existing Line
Long Term (31:12:2002 to 2049)	Hold the Existing Line (start of the next phase of beach nourishment)

Figure D2.30 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for PBY1. A Hold the Line policy (Short and Long Term) can be justified so long as methods used to implement the policy are compatible with littoral processes. They also need to ensure it will have no impact on immediate or adjacent beach levels and do not impact upon important geological conservation designations or important natural habitats for herpetological species, birds and invertebrates (where water seepage occurs through the cliffs).

Impact on adjacent Management Units

As the preferred strategic option represents current policy for this management unit, it is unlikely that there would be any impacts upon adjacent management units so long as continued beach replenishment schemes are introduced at strategically timed intervals and locations. Over the Long Term, depending on the

new information relating to sea level rise in Poole Bay (see recommendations in Part E) the frequency and magnitude of nourishment events may need to be altered and adapted accordingly.

Review of Potential Implementation

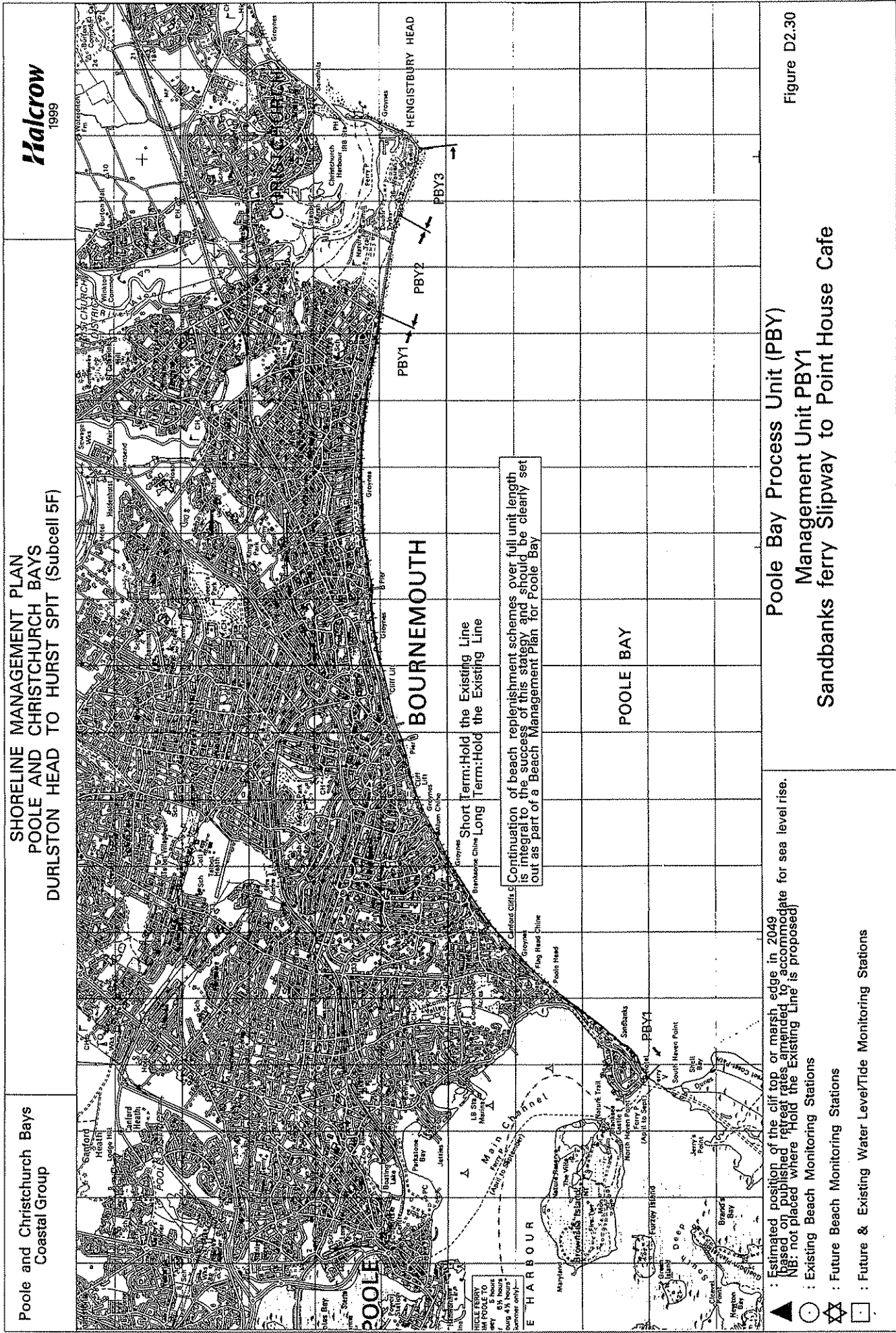
Cliff stabilisation measures could reflect those being implemented at present in DUR2. Horizontal and upwardly inclined boreholes may be drilled into the face of the cliff to remove ground water pressure in the critical parts of the geological formations (subject to English Nature consent) with water being discharged near the foot of the cliff. It would be important to ensure that any cliff drainage scheme does not have any serious impacts on the biodiversity of rare invertebrate species that occur in these wetland locations. This issue must be addressed in the future implementation of the preferred policy.

It is of paramount importance that beach nourishment material, that may be used in the future, has minimal impact on the local fishing industry. Large oyster beds occur offshore which are of great commercial value and so it is imperative to determine how far beach renourishment material migrates offshore from this management unit and to determine whether or not there is any impact on the fishery resource. Beach nourishment schemes have in the past dealt with the Bournemouth Borough Council frontage in isolation. Future schemes will need to include the Borough of Poole frontage including Poole Sandbanks and to cater for sea level rise. The need to consider a Beach Management Plan for the whole of Poole Bay is identified in section 3.5.2 of Part E, this would involve a review of current practices and recommendations for best future practice.

Present and Future Monitoring/Studies

The majority of this management unit is currently monitored by BBC. It is presently surveyed by BBC on a bi-annual basis and it is recommended that this survey frequency continues. The bathymetry of this frontage should also be surveyed at approximately 5 yearly intervals. It is recommended that a Poole Bay wide Beach Management Plan is undertaken to formalise this procedure and to set appropriate beach threshold levels to deduce intervention timings.

The date when a future beach replenishment scheme (BIS4) will be needed has been anticipated (Harlow and Cooper 1995) using a predicted rate of volumetric decline from the present day. Following BIS2 in 1974-5, unacceptable damage to defences along the Bournemouth frontage began to re-occur in 1987 when the total net beach volume was 6.9 million m³. Assuming this figure to be a critical volume based on beach behaviour over the monitoring period and a maximum rate of sea level rise of 6mm per year (Bray 1997), it can be anticipated that the next phase of beach replenishment (BIS4) will be required before the year 2003. In considering the unit as a whole, the state of knowledge of the sediment interaction of Hook Sands with Poole Sandbanks and the rest of the unit must be improved. Changes in Hook Sands will also alter the nearshore wave climate generally and tidal currents along Poole Sandbanks.



Poole Bay Process Unit (PBY)
 Management Unit PBY1
 Sandbanks ferry Slipway to Point House Cafe

Figure D2.30

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – POINT HOUSE CAFÉ TO WARREN HILL (PBY2)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Point House Café (end of Southbourne Promenade) (GR: 415312E, 090973N)
- Warren Hill (GR: 416810E, 090723N)

Management Unit Description

This unit is defended along its length and comprises the eastern extremity of the residential settlement of Southbourne. These properties and the amenity car parks to the east are set well back from the coastal frontage. Fronting these developments are recently formed sand dunes containing important species of flora and fauna. These dunes, a relic dune system and coastal dry grassland habitats are all of considerable ecological importance and lie within the Hengistbury Head LNR and Christchurch Harbour SSSI.

Administrative Authority

Bournemouth Borough Council

Frontage Lengths

Total frontage length: 1694m; Defended frontage length: 1694m

Environmental Designations

Statutory Designations

- Christchurch Harbour SSSI –
- SMs – archaeological sites.
- Hengistbury LNR – range of habitats.

Non-Statutory Designations

NONE

Description of Land at Risk

- Open Space
- Heathland
- Archaeological Assets
- (Christchurch Harbour: Housing, Commercial Properties)

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Bournemouth Borough Local Plan	8.8 11.47 11.48	Land liable to flooding Cliffs Unstable ground	8.1 8.7 8.9-8.14 9.15	Green Belt Policies Recreation Development in the Countryside Water based recreation	9.13 9.14 10.25	SSSIs, SPA, SAC and Ramsar sites Heathland Archaeology

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2510	1	BBC	0.19	Groynes	Class 2	5-10	1987
681/2510	2	BBC	0.02	Groynes	Class 2	5-10	1976
681/2510	3	BBC	0.81	Recharge	Class 2	5-10	1988
681/2510	4	BBC	0.10	Gabions	Class 2	5-10	1987
681/2509	1	BBC	0.37	Groynes	Class 2	>10	1987
681/2509	2	BBC	0.21	Gabions	Class 2	>10	1987
681/2509	3	BBC	0.37	Recharge	Class 2	5-10	1988
681/2508	1	BBC	1.46	Beach Ridge			
681/2508	2	BBC	1.46	Cliff/scarp			

Description of Defences

2508 On Hengistbury Head at the toe of the cliffs there is currently only a 1.5km long eroding shingle bank. BBC plan to build five 50m long rock groynes to reduce erosion of the cliffs, between Double Dykes and the Long Groyne. Work is programmed to start in October 1998 and is due to finish in spring 1999.

2509 To the east of the BBC's groyne field, the cliffs at Double Dykes continued to erode rapidly, threatening to breach the cliff line to the east. This erosion would have created a flood channel into the southern side of Christchurch Harbour and separated Hengistbury Head from the mainland. To prevent this, in 1986 three 50m long rock groynes and a high gabion wall were constructed to extend the groyne field eastwards and to protect the 370m length of coast. At the same time, the northern end of the flood channel on the southern bank of Christchurch Harbour was protected with gabions. In 1988 143,000 tonnes of shingle were placed to recharge the beach between the Long Groyne and Southbourne promenade. The next recharge is planned for 2003.

In 1987 two 70m long timber groynes were constructed along Solent Beach and a short section of gabion wall was constructed to protect the beach access and low lying cliffs. 143,000 tonnes of beach recharge was placed to recharge the beach between the Long Groyne and Southbourne promenade in 1988. The next phase of

beach recharge is programmed for 2003. Two 70m long permeable groynes were constructed along this length in 1976 to reduce the effects of terminal erosion at the end BBC's groyne field. BBC are currently investigating whether to replace the permeable groynes with traditional timber or rock groynes since further groynes have been constructed to the east and there is no longer a terminal erosion problem in this area. The permeable groynes are due to be replaced in 1999.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – POINT HOUSE CAFÉ TO WARREN HILL (PBY2)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	✓	✓
Economically justifiable and environmentally acceptable?	▲	✓	×	×
Compatible with adjacent strategies?	▲	✓	×	×
Compatible with wider coastal processes?	×	○	×	×
Process Unit Objectives (See Part C)				
Strategy should not impact any further on immediate or adjacent beach levels (1)	▲	✓	×	×
Strategy should ensure protection of life and property where economically viable (2)	×	✓	×	○
Strategy based on geomorphological principles for Durlston Bay (3)	×	✓	×	×
Strategy should not impact on important geological conservation designations (4)	n/a	n/a	n/a	n/a
Strategy should not interfere with valuable habitats. (5)	▲	○	×	×
Strategy should have minimal impact on landscape quality (6)	▲	○	×	×
Strategy should have minimal impact on archaeological or historical potential (7)	▲	✓	×	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (8)	▲	✓	×	○
Suitability of Strategy Option	▲	✓ (LT)	×	×

▲ Possible conflict with objective over longer term

✓ Complies with statement

×

○ Conflicts with statement, but is dependent upon implementation methods used

n/a Objective is not relevant to this management unit

ST Short Term

LT Long Term

From the above screening exercise, the Managed retreat option is not appropriate for this Management Unit and is not considered any further. Do nothing also appears inappropriate, however, shall be evaluated in terms of what the

implications of not doing something actually are likely to be in the short and longer term. Advancing the line is not an economically viable option along this stretch.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – POINT HOUSE CAFÉ TO WARREN HILL (PBY2)

	DO NOTHING (short term effects in <i>italics</i>)	HOLD THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	RETREAT THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	ADVANCE THE EXISTING LINE (short term effects in <i>italics</i>)
Effects on Physical Environment and Coastal Processes	<i>reduction in sediment drift volume if recharge episodes were terminated (impacting on Hengistbury Head)</i>	<i>without the use of recharge, a hold strategy would probably result in the termination of natural cliff inputs</i>	N/A	N/A
Effects on Human Environment	significant risk of flooding through Double Dykes impacting on Christchurch and Mudeford	ensure protection of assets along the unit (ie: car park) and within Christchurch Harbour	N/A	N/A
Effects on Natural Environment and Conservation	- loss of archaeologically important sites (SMs) - loss of heathland	- protect SMs - protect heathland	N/A	N/A
Implications for Coastal Defences	<i>deterioration of existing defences and groyne</i>	<i>continual need for beach recharge and for maintenance / upgrade of defences</i>	N/A	N/A
Impacts within Process Unit	more likely to have wider impacts within the Christchurch Harbour Process Unit	no wide impacts within Poole Bay so long as beach recharge materials are used	N/A	N/A
Economics	not suitable as an option	viable	N/A	N/A

Current Policy: Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – POINT HOUSE CAFÉ TO WARREN HILL (PBY2)

Do Nothing

The selection of this strategic option would result in the gradual deterioration of existing coastal defence structures. The Long Term implications of this would result in a terminal breach at Double Dykes and would create a permanent flood channel into the southern side of Christchurch Harbour thereby separating Hengistbury Head from the mainland exposing Christchurch harbour to higher wave energy and increased flooding of property. The implications of a breach on the hydrodynamics of both Poole Bay, Christchurch Bay and Christchurch Harbour are also significant in terms of habitat management due to altering littoral drift regimes and wave attenuation. Overall, this strategic option is not viable.

Selectively Hold the Existing Line

This strategic option would represent a continuation of current practice for most of the unit and would be achieved through the maintenance and upgrading of defences at key points (possibly including future beach recharge to the west of the management unit). At this location, it incorporates the strategically important Double Dykes which warrants a 1 in 100 year standard of protection because of its importance in the defence of the open coast and protection of properties within Christchurch Harbour. For the eastern end of the unit, between Double Dykes and Warren Hill, there is an undefended eroding length which needs to be protected against a breach. It falls within a GCR sites but the need for protection is overriding and it is not within the key GCR length of interest. Strategy selection along this management unit needs to be mirrored by a suitable strategy for the Harbour side of Double Dykes (management unit CHB2). The management unit boundary stops at the beginning of the Hengistbury Head GCR site, however, implementation methods need to be fully conversant with the future management needs of the adjacent management unit PBY3. Consequently, this strategic option would be viable.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2002)	Selectively Hold the Existing Line (maintenance of existing structures and implementation of new scheme at eastern end)
Long Term (2003 to 2049)	Selectively Hold the Existing Line (to coincide with the next phase of beach nourishment in PBY1)

Figure D2.31 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for PBY2. A Selective Hold the Line policy (Short and Long Term) can be justified so long as methods used to implement the policy are compatible with littoral processes and minimise the effect on key conservation objectives further east at Hengistbury Head. They also need to ensure it will have no impact on immediate or adjacent beach levels and do not impact upon

important archaeological assets or natural habitats for herpetological species, birds and / or invertebrates.

Impact on adjacent Management Units

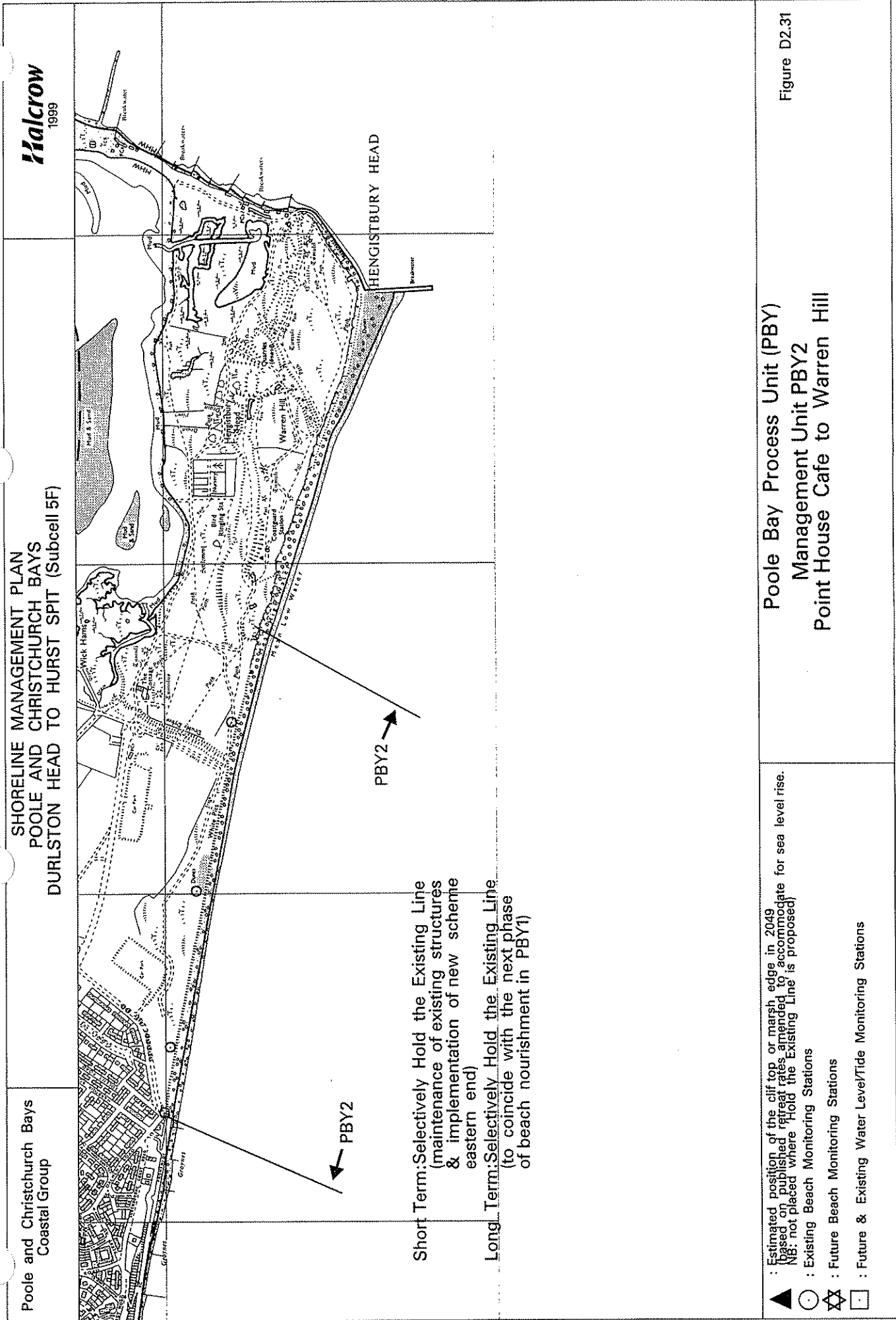
The preferred strategic option will promote the continuance of natural littoral processes thus it is unlikely that there would be any impacts upon adjacent management units. Any scheme to prevent against a breach must minimise the impact on adjacent units. This is subject to the necessity that schemes introduced are sensitive to the requirements of English Nature and the sustainable management of Hengistbury Head (PBY3) and Christchurch Harbour as a whole. Over the Long Term, depending on the new information relating to sea level rise in Poole Bay (see recommendations in Part E) the frequency and magnitude of nourishment events may need to be altered and adapted accordingly.

Review of Potential Implementation

Due to the defended nature of the frontage (including cliffs) in this Process Unit, it is predicted that the shoreline in PBY2 will not adapt naturally to events such as sea level rise and thus be unable to provide significant amounts of material to the sediment budget. The implication that future sea level rise may result in beach lowering in PBY2 suggests that beach nourishment schemes are seen as integral to the future management of this unit. To a degree, this is true, though amounts should avoid impact on important geological exposures that exist further east at Hengistbury Head (PBY3).

Present and Future Monitoring/Studies

This management unit is currently monitored by BBC on a bi-annual basis and it is recommended that this survey frequency continues. The bathymetry of this frontage should also be surveyed at approximately 5 yearly intervals. It is recommended that a Poole Bay wide Beach Management Plan is undertaken to formalise this procedure to set appropriate beach threshold levels to deduce intervention timings and to ensure that nourishment schemes within Poole Bay are part of a planned programme for the Bay as a whole.



▲ : Estimated position of the cliff top or marsh edge in 2049 (based on published retreat rates amended to accommodate for sea level rise. NB: not placed where Hold the Existing Line is proposed)

○ : Existing Beach Monitoring Stations

☆ : Future Beach Monitoring Stations

□ : Future & Existing Water Level/Tide Monitoring Stations

Poole Bay Process Unit (PBY)
Management Unit PBY2
Point House Cafe to Warren Hill

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – WARREN HILL TO HENGISTBURY LONG GROUYNE (PBY3)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Warren Hill (GR: 416810E, 090723N)
- East – Hengistbury Head Long Groyne (GR: 417818E, 090292N)

Management Unit Description

This area is characterised by the dramatic promontory of Hengistbury Head which forms the eastern most point of Poole Bay and is at constant risk from erosion. The Head contains a wide range of habitats supporting a number of scarce and rare species of flora and fauna and is designated a SSSI and LNR for its botanical and geological interest. The headland also forms part of the Dorset Heaths cSAC and is a proposed SPA for its important bird populations. Dating from before the Iron Age the site is rich in archaeological remains and has been designated a Scheduled Monument.

Administrative Authority

Bournemouth Borough Council

Frontage Lengths

Total frontage length: 1284m; Defended frontage length: 0m

(Long Groyne structure not included as part of defended frontage length)

Environmental Designations

Statutory Designations

- Dorset Heathland pSPA – wet heathland habitats.
- Dorset Heaths cSPA – heathland ecology.
- Hengistbury LNR – range of habitats.

Non-Statutory Designations

- Poole Bay and Isle of Purbeck SMA – marine ecology.
- Description of Land at Risk
- Open Space
- Heathland
- Archaeological Assets

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Bournemouth Borough Local Plan	8.8 11.47 11.48	Land liable to flooding Cliffs Unstable ground	8.1 8.7 8.9-8.14 9.15	Green Belt Policies Recreation Development in the Countryside Water based recreation	9.13 9.14 10.25	SSSIs, SPA, SAC and Ramsar sites Heathland Archaeology

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2507	1	BBC	0.20	Groynes	Class 2	>10	1938
681/2507	2	BBC	0.20	Armour	Class 2	>10	1987

Description of Defences

- 2507 The Hengistbury Head Long Groyne was constructed in 1938 to encourage the accumulation of sediment in front of the cliffs, but this resulted in starving the beaches to the north and an increased rate of slippage of the adjacent cliffs. The mass concrete structure was constructed with dry mix concrete placed inside sand bags along its sides and a 20m long groyne with the same armour, extending from the middle of its eastern side. The Long Groyne was repaired following the Hurricane in 1988 using rock armour. The landward end of the Long Groyne is protected, whilst the middle third and seaward end are vulnerable to wave attack. Maintenance is not urgent at the moment. The Long Groyne is seen to be a key element in BBC's current coastal management strategy.

PART D2 APPRAISAL OF STRATEGIC OPTIONS FOR PBV

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – WARREN HILL TO HENGISTBURY LONG GROVNE (PBV3)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	✓	×
Economically justifiable and environmentally acceptable?	×	✓	○ (ST)	×
Compatible with adjacent strategies?	▲	× (ST) ✓ (LT)	✓ (ST)	×
Compatible with wider coastal processes?	▲	○	✓ (ST)	×
Process Unit Objectives (See Part C)				
Strategy should not impact any further on immediate or adjacent beach levels (1)	▲	○	✓ (ST) ○ (LT)	×
Strategy should ensure protection of life and property where economically viable (2)	×	✓ (LT)	✓ (ST)	○
Strategy based on geomorphological principles for Durlston Bay (3)	✓	○	○	×
Strategy should not impact on important geological conservation designations (4)	✓	×	○	×
Strategy should not interfere with valuable habitats (5)	▲	✓	○ (LT) ✓ (ST)	×
Strategy should have minimal impact on landscape quality (6)	▲	○	○ (LT) ✓ (ST)	×
Strategy should have minimal impact on archaeological or historical potential (7)	▲	✓	○ (LT) ✓ (ST)	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (8)	▲	✓	✓ (ST)	○
Suitability of Strategy Option	▲	○	✓	×

▲ Possible conflict with objective over longer term

✓ Complies with statement

× Conflicts with statement

○ Conflicts with statement, but is dependent upon implementation methods used

n/a Objective is not relevant to this management unit

ST Short Term

LT Long Term

From the above screening exercise, the Advance the line option is not appropriate for this Management Unit and is not considered any further.

Retreat may be possible in terms of managing cliff recession rates, however, there is a need to evaluate the potential impact on geological exposures and archaeological resource. Hold the line strategy in the longer term shall be reviewed in relation to the foreshore as opposed to "holding" the promontory landform feature of Hengistbury Head. The lateral strategy concept shall be applied for this unit to assess its long term applicability.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – WARREN HILL TO HENGISTBURY LONG GROYPE (PBY3)

	DO NOTHING (short term effects in <i>italics</i>)	HOLD THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	RETREAT THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	ADVANCE THE EXISTING LINE (short term effects in <i>italics</i>)
Effects on Physical Environment and Coastal Processes	<i>continued supply of material to fronting beaches at present day rates</i> <i>continued loss of material to Christchurch Bay via Dolphin Sand</i>	<i>termination of cliff sediment material being provided to fronting beaches</i>	reduced supply of cliff material to fronting beaches	N/A
Effects on Human Environment	- increase risk of flooding through Double Dykes - increase risk of erosion to archaeological sites	- ensure protection of assets within Christchurch Harbour - protect historical/archaeological value of Hengistbury	reduced impact to archaeological sites and amenity pathways	N/A
Effects on Natural Environment and Conservation	- maintain geological exposures at Hengistbury Head (SSSI) - potential loss of archaeological important sites (SM2) - loss of heathland (SPA)	<i>damage to geological exposure (SSSI)</i> - protect Scheduled Monuments - protect heathland	<i>potential damage to geological exposure (SSSI)</i> - damage to archaeological sites (SMs) <i>potential damage to heathland (SPA)</i>	N/A
Implications for Coastal Defences	<i>continued erosion of undefended cliffs</i> - deterioration of Long Groyne as a structure	<i>beach recharge would have to be initiated in conjunction with some levels of cliff material clearance for conservation purposes</i>	<i>methods need to be introduced to manage Hengistbury Head as a landform feature, allowing erosion at a reduced rate</i>	N/A
Impacts within Process Unit	continuation of sediment budget regime in Poole and Christchurch Bays	long term implications on sediment budget within Christchurch Bay as well as Christchurch Harbour	- reduced impact on sediment budget regime - reduced impact on landform integrity	N/A
Economics	viable	not viable	viable	N/A

Current Policy: Retreat the Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – WARREN HILL TO HENGISTBURY LONG GROUYNE (PBY3)

This management unit is one of only a few cliff situations where the following strategic management approach is applicable, due to the multiple issues and disparate objectives that are set for Hengistbury Head from different stakeholders. A "Lateral Strategy " approach (McCue 1999) is therefore adopted whereby Long Term strategies are set for the "landform" of Hengistbury Head (ie: cliff toe landward) in addition to strategies set for the fronting "intertidal area". This approach therefore allows intervention along the foreshore whilst leaving the internationally important geological exposures to remain undisturbed subject to the needs of English Nature. A conceptual diagram explaining this option occurs within a full description of this approach in Appendix 1 (Paper entitled "Balancing the aims of geological conservation with coastal defence requirements – Journal of CIWEM February 1999).

Do Nothing

Landform

Without any intervention, it is probable that the adoption of this strategic option for the cliff face would result in natural landform evolution. A gradual accumulation of shingle (from cliff falls) would occur from time to time and thus theoretically, a reduction in cliff erosion rates to the east of the management unit depending on the frequency of wave attack and littoral drift effect. This strategic option would not necessarily be beneficial to maintain fresh stratigraphical exposures in the cliff face unless English Nature continually cleared accumulated talus slopes at the cliff toe which, in definition terms, would be "doing something" Natural processes (eg: storms) commonly do this clearance work. The strategic option may also result in the possible Long Term loss of rare Sea knotgrass and heathland on Hengistbury Head which is covered by the Dorset Heaths pSAC and pSPA.

Intertidal Area

Although a substantial shingle beach has accumulated against Long Groyne, the cliffs in management unit PBY3 have continued to erode. The beach does not provide full protection of the cliff and may be insufficient to maintain the long term integrity of Hengistbury Head, which has strategic significance because a breach to Christchurch Harbour would cause extensive flooding and alter sediment movements for all of Christchurch Bays, particularly at Mudeford Sandbank and Christchurch Harbour entrance. Therefore, with accelerated sea level rise and increased storminess in the Long Term, it would appear that some level of intervention on the foreshore may be required to, at least, reduce erosion rates of the cliff face at strategically important sites (ie: to the west of this management unit). This is not a viable option over the Long Term.

Hold the Existing Defence Line

Landform

Adopting this strategic option would not comply with the geological conservation objectives of English Nature and would cut off the supply of fresh beach material to the intertidal area of immediate and adjacent frontages. Cliff erosion provides a significant source of fresh building material to both the immediate management unit and the wider sediment budget and so this strategic option is not suitable in

the short to medium term. In the Long Term, the threat of a breach here may necessitate a future "Hold" policy. The extent of erosion will need to be monitored and risk of breach re-evaluated over time. As erosion continues to form a bay shape, the rate should decrease. This is therefore not a viable strategic option.

Intertidal Area

Under this strategic option heading, attempts to "control" the evolution of the fronting beach at a critical width such that the frequency of wave attack at the cliff toe is reduced is the ultimate aim. This will allow cliff sediment inputs to continue and the landform behind to evolve semi-naturally thereby maintaining the geological exposures and providing necessary protection to high risk breach areas. Adopting this strategic option for the intertidal area would mean "holding" the 1999 MLW and MHW positions for the whole unit length. Whilst this in theory is achievable by using containment structures (rock groynes) and continual beach nourishment, it is not currently economically viable over the Long Term nor environmentally suitable as important geological horizons exposures are likely to become covered as beach stability encourages backshore dune development (Long Term). It is understood that the integrity of the beaches in this management unit are partially dependent on the supply of beach material released from local cliff falls behind whilst other sources include residual sediment feed from periodic beach replenishment at Solent Beach (management unit PBY2) and from within Poole Bay (PBY1). Strategic placement of containment structures to capture some of this material coupled with sediment redistribution from the backshore to the fronting beach would be a suitable compromise. This compromise may be termed as "*Selectively Hold Beach Width*".

Retreat the Existing Defence Line

Landform

This strategic option would be beneficial on two fronts. Firstly, it would have limited impact on the prevailing sediment budget regime and secondly, it would not prevent intervention taking place within the fronting intertidal zone. This would allow the cliff to be strategically protected at key sites at the low points east of Double Dykes whilst geomorphologically, allowing the cliff to settle to a natural angle of repose (landform management).

The removal of eroded and fallen material from the foot of the cliffs is currently funded by English Nature to maintain the internationally important geological exposures. A concern is that future coastal erosion and increases in sea level rise rates are likely to result in the loss of high ecological value land with zones of important vegetation habitats being condensed. This is particularly acute at Warren Hill where valuable assets are likely to be lost if some kind of intervention is not undertaken to reduce erosion rates. In addition, the source of material for adjacent beaches only has a finite life since the headland only extends 100m inland at some points which, in strategic management terms, is a key issue.

Therefore, by adopting a "Retreat the Line" strategy for the cliff, efforts may be carried out by English Nature to reprioritise habitat management or trade off geological conservation loss for habitat preservation depending on circumstances that may arise. Cliff toe clearance procedures would also fall under this strategic option though methods used would have to be agreed with Bournemouth Borough Council in terms of how the intertidal strategy will be implemented. This is a viable Short Term and Long Term option for the Hengistbury Head as a landform feature.

Intertidal Area

In order for Hengistbury Head to semi – naturally evolve as a landform feature, a level of intervention on the intertidal area is required. By definition, this strategic option would result in the Long Term reduction in current intertidal area width which would prove very similar to a do nothing situation. Consequently, this option for the foreshore would be difficult to implement and would not gain any extra benefits to that explained above as "Selectively Hold Beach Width". This option is not viable.

Select Preferred Option

TIMESCALE	PREFERRED OPTION FOR THE "LANDFORM"	PREFERRED OPTION FOR THE "INTERTIDAL AREA"
Short Term (1999 to 2000)	Retreat the Line (management of cliff recession rates)	Selectively Hold Beach Width (2 rock groynes to west of unit)
Long Term (2001 to 2049)	Retreat the Line (allowing strategic landform retreat and re-use of fallen material)	Selectively Hold Beach Width

Figure D2.32 display the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred "Lateral" policies, presented above, meet most of the objectives set out in the Objective Screening Table for PBY3. A Selectively Hold Beach Width policy (Short and Long Term) can be justified so long as methods used to implement the policy are compatible with littoral processes and are not detrimental to the broader conservation objectives of English Nature for Hengistbury Head. The Retreat the Line policies proposed for the Landform of Hengistbury Head would comply with the Process Unit objectives so long as necessary monitoring of the low point towards Double Dykes is carried out.

Impact on adjacent Management Units

The natural landform of Hengistbury Head plays an important role in the integrity and configuration of both Poole and Christchurch Bays and so it is important that policies along this management unit recognise the status and position of it within integrated process systems. Whilst the preferred options need to be compliant with sound geomorphological principles and the preservation of the internationally important geological exposures, continuation of the ongoing erosion trend here would undoubtedly have a significant impact on the shoreline configuration of Poole Bay, Christchurch Bay and Christchurch Harbour over the Long Term. Consequently, some degree of intervention is likely to be required both in coastal defence terms and in relation to geological site management (eg: slump clearance) to ensure that impacts on adjacent lengths of coast are kept to a minimum.

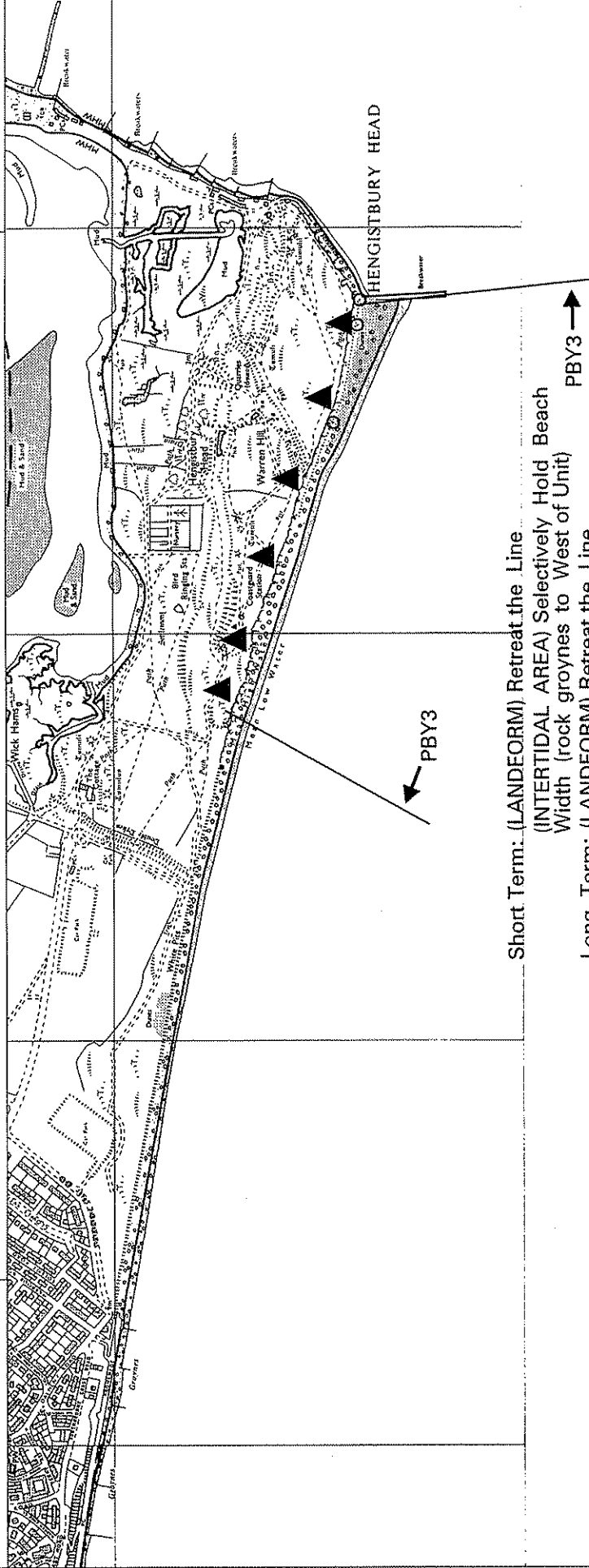
Review of Potential Implementation

A series of up to 5 rock groynes are proposed to be constructed within this management unit. It is indicated by English Nature that a preference would be to take out the 2 proposed groynes (numbers 60 and 60a) in the key geological length below Warren Hill in order that beaches do not accumulate and obscure the geological exposures. Over that length, Bournemouth Borough Council will need to work closely with English Nature to produce a solution that accommodates the objectives of geological conservation whilst ensuring protection against a breach

to Christchurch Harbour near Double Dykes. In addition to the above, any implementation scheme carried out in the future needs to be sympathetic to a range of natural environmental issues, including Hengistbury Head being an important arrival and departure location for migrating birds.

Present and Future Monitoring/Studies

This management unit is currently monitored by on a bi-annual basis and it is recommended that this survey frequency continues. The bathymetry of this frontage should also be surveyed at approximately 5 yearly intervals. It is recommended that a Poole Bay wide Beach Management Plan is undertaken to formalise this procedure to set appropriate beach threshold levels to deduce intervention timings and to ensure that nourishment schemes within Poole Bay are part of a planned programme for the Bay as a whole.



Short Term: (LANDEORM) Retreat the Line

(INTERTIDAL AREA) Selectively Hold Beach
Width (rock groynes to West of Unit)

PB3 →

Long Term: (LANDEORM) Retreat the Line
(allowing strategic landform retreat &
re-use of fallen material)

(INTERTIDAL AREA) Selectively Hold Beach Width

- ▲ : Estimated cliffline position in 2049
(exact position dependent upon beach replenishment supply
from the west & methods used to hold the beach width)
- : Existing Beach Monitoring Stations
- ☆ : Future Beach Monitoring Stations
- : Future & Existing Water level/Tide Monitoring Stations
- ◻ : possible managed retreat sites

Poole Bay Process Unit (PB3)
Management Unit PB33
Warren Hill to Hengistbury Long Groyne

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – HARBOUR SIDE OF MUDEFORD SPIT (CHB1)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – East of Lobbs Hole (GR: 418283E, 091501N)
- East – Foot Passenger Ferry (GR: 418148E, 090961N)

Management Unit Description

Mudford Sandbank forms an important natural coastal defence function against erosion and flooding of Christchurch Harbour. The inshore bank is currently suffering from attrition which is threatening the integrity of the beach huts and defences that exist along this length. A passenger ferry service operates between the spit and Mudford Quay providing important access within the Harbour and the sand spit itself is designated a SNCI for its semi-improved grassland and fern ecology, supporting diverse plant and animal communities. It is also a site of considerable archaeological interest, containing remains of a permanent harbour entrance and ship building associations.

Administrative Authority

Christchurch Borough Council

Frontage Lengths

Total frontage length: 553m; Defended frontage length: 142m

Environmental Designations

Statutory Designations

- Christchurch Harbour SSSI – Saltmarsh ecology.
- Hengistbury Head x17 SMs – archaeological sites.
- Hengistbury Head LNR – range of habitats.

Non-Statutory Designations

- Hengistbury Head SNCI – coastal habitats.
- Poole Bay and Isle of Purbeck SMA – marine ecology.

Description of Land at Risk

- Beach Huts
- Café
- Toilets
- Offices

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
South Christchurch Local Plan		NONE	RT 1 TC17	Harbour recreation Green Belt	TC1-3 TC18	Conservation Area Policies SSSI
Bournemouth Borough Local Plan		NONE	8.7 9.15	Recreation Water based recreation	8.9 9.13 10.25	Nature conservation SSSIs, SPA, SAC and Ramsar sites Archaeology

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2610	1	CBC	0.27	Bank			
681/2502	1	CBC	0.08	Armour	Class 1	>10	1990
681/2502	2	CBC	0.38	Bank		5-10	1900

Description of Defences

There are no defences protecting the beach huts on this 270m length on the distal end of the Mudeford Sandbank. Currently the beach is deteriorating and the dunes are being lost. CBC consider that there is a need for formal managed defences along this length. (adjust position of CPSE markers on plan, see CBC plan).

2502 The inshore face of Mudeford Sandbank, beach access road and beach huts are protected by a 380m long sandbank which is reinforced in places with a small rock armour revetment. The 30m wide sandbank is subject to gradual erosion. CBC has carried out coast protection duties on Mudeford Sandbank since 1931, under the terms of the lease of the Sandbank from BBC because of the importance in maintaining the Sandbank, to prevent coastal erosion and flooding in Christchurch Harbour. A constant programme of works has been carried out to prevent a breakthrough of the sea through the split and is only now nearing completion.

Overall the attrition on the inshore face of Mudeford Sandbank is threatening the beach huts and the rear of the seaward defences. A new defence strategy is required along this length.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – HARBOUR SIDE OF MUDEFORD SPIT (CHB1)

Strategy Test Statements		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	×	×
Economically justifiable and environmentally acceptable?	✓	✓	×	×
Compatible with adjacent strategies?	✓	✓	×	×
Compatible with wider coastal processes?	✓	✓	×	×
Process Unit Objectives (See Part C)				
Strategy should not Contemporary sediment processes (1)	✓ (ST) × (LT)	○	×	×
Strategy should ensure protection of life and property where economically viable (2)		✓	×	✓
Strategy based on geomorphological principles (3)	▲	○	○	×
Strategy should not impact on important conservation designations (4)	▲	○ (LT)	×	×
Strategy should have minimal impact on landscape quality (5)	▲	○	×	×
Strategy should have minimal impact of archaeological or historical potential (6)	×	✓	○	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (7)	×	✓	○	×
Strategy should not impact on local economy, tourism or amenity (8)	×	✓	×	○
Strategy should not impact on inshore fisheries at Mudeford (10)	✓	○	○	×
Suitability of Strategy Option	▲	✓ (LT)	×	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

From the above screening exercise, the Advance the Line and Retreat options are not appropriate for this Management Unit and are not considered any further. Do

nothing also appears inappropriate however, shall be evaluated in terms of what the implications of not doing something actually are likely to be in the short and longer term.

This management unit is closely linked to the strategies proposed/not applicable for CBY1 (Mudford Spit). Retreat is not seen as relevant on the grounds of technical viability and due to the wider implications of a Terminal breach of Mudford Spit on the habitats and tidal prism of Christchurch Harbour. Consequently, hold and do nothing shall be assessed here.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – HARBOUR SIDE OF MUDEFORD SPIT (CHB1)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	longer term implications of a breach from the seaward side include significant alterations to the tidal prism and a change to the estuary dynamics of the harbour	<i>maintain ebb and flood current regime as present</i> <i>continued negligible supply of coarse material from the 'Run'</i>	N/A	N/A
Effects on Human Environment	long term impacts on flooding increases at Christchurch and Muford	long term protection from flooding for Muford and Christchurch (subject to Double Dykes being defended)	N/A	N/A
Effects on Natural Environment and Conservation	maintain shingle habitats	possible damage to shingle habitats	N/A	N/A
Implications for Coastal Defences	<i>dependent upon strategy selected for the open coast (Muford Spit)</i>	<i>need for continuous defence works on inward arm of spit</i>	N/A	N/A
Impacts within Process Unit	<i>dependent upon strategy selected for the open coast (Muford Spit)</i>	no impact in terms of sediment supply to flood tidal delta	N/A	N/A
Economics	increase risk of flooding to Christchurch and Muford	viable	N/A	N/A

Current Policy:

Selective Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – HARBOUR SIDE OF MUDEFORD SPIT (CHB1)

Do Nothing

A Do Nothing Strategy for the lee side of Mudeford Sandbank would pose a Long Term threat to the integrity of the feature as the extent and frequency of flooding from the seaward side will continue to increase due to sea level rise and increased storminess. The need to ensure the integrity of the assets within Christchurch Harbour suggest that this strategic option is not viable.

Selective Hold the Existing Line

This would represent a continuation of current practice as the beach access road is protected by a length of rock armour revetment and the beach in front of the huts has had shingle added to protect them. The Black House has also had rock armour protection added. A constant programme of works has been carried out here in the past to prevent a breakthrough of the sea through the spit so, to ensure that coast protection duties are continually carried out, this strategic option is viable and is the most appropriate.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 31:12:2004)	Hold the Existing Line (in unison with a Hold policy for management unit CBY1b)
Long Term (31:12:2004 to 2049)	Hold the Existing Line (in unison with a Hold policy for management unit CBY1b)

Figure D2.33 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for CHB1. A Hold the Line policy (Short and Long Term) can be justified together with the similar policy for the seaward side of Mudeford Sandbank (CBY1b). Integral to the successful defence on both sides is a co-ordinated approach to future planning for the whole feature and not as two disparate strategy lengths. The fact that Mudeford Sandbank has been divided between two different Process Units (CBY and CHB) does not mean that the two are mutually independent of each other, and for the future management of Christchurch Harbour, it is vital that management policies are not at odds.

Impact on adjacent Management Units

A Hold the Line strategy would ensure, Long Term, that there is limited change to the contemporary tidal prism regime experienced within Christchurch Harbour. Consequently, there would be little impact on adjacent management units within the Process Unit itself. In nearby proximity to this management unit is a Council identified (ref: Mudeford Sandbank CPW – 16 April 1998) sediment sink which may be a possible site for the exploitation of nourishment material for coastal engineering. The potential hydrodynamic implications and environmental impact of extracting material from this site need to be clearly understood as any action that alters sediment budgets within the Harbour cause seriously impact on the Long Term sustainability of this preferred coastal defence policy.

Review of Potential Implementation

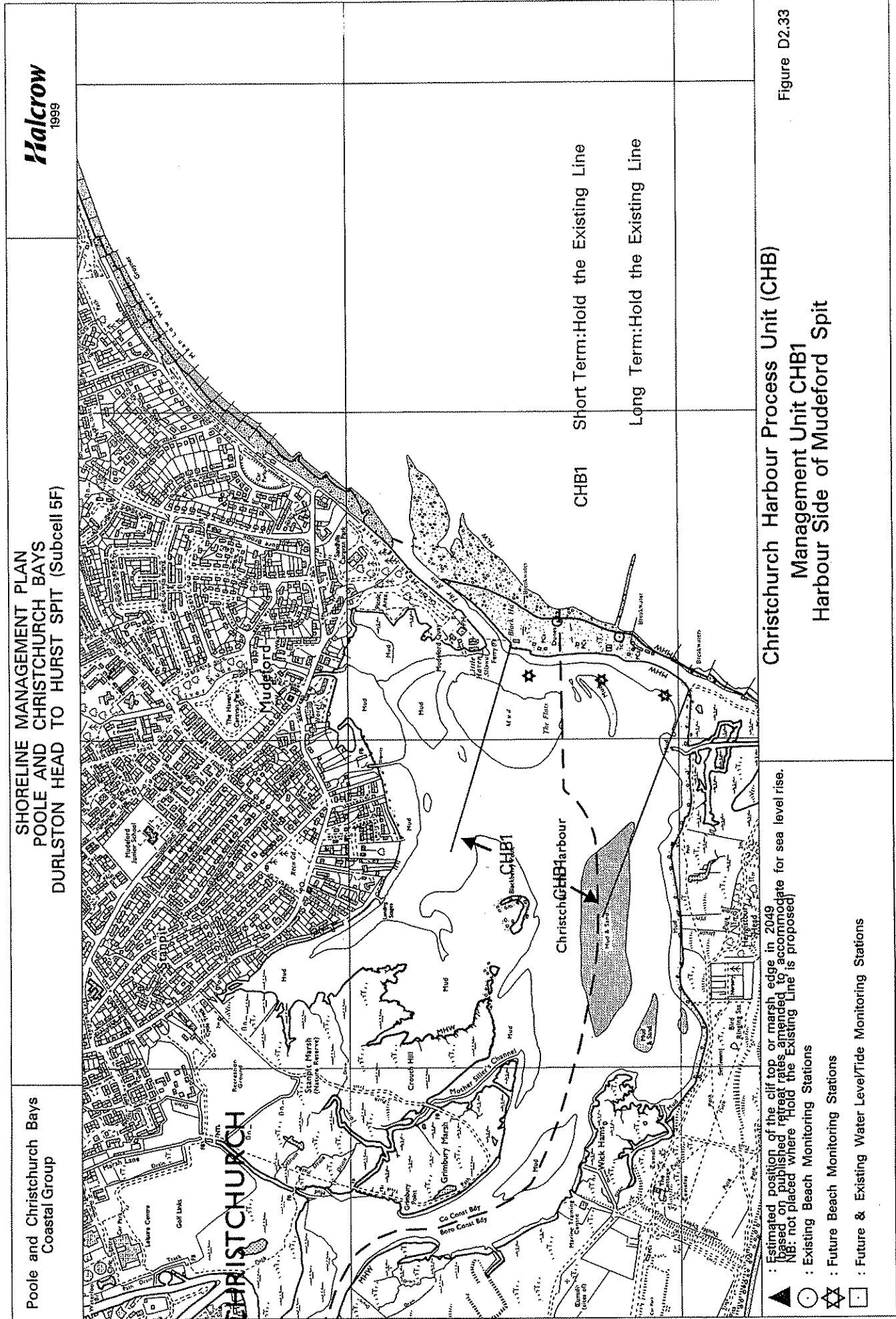
Under present day water levels, the defences will provide protection against structural damage during the 1:20 year storm event. However, taking account of sea level rise over the next 50 years, this standard of service reduces to protection for a 1:2 year storm event. Consequently, there will be a need to maintain and upgrade existing defences to counter the risk of a breach of Mudeford Sandbank.

Any proposed beach nourishment that is deemed necessary to protect the Sandbank in the inside of the Harbour (adjacent to this management unit), will require an Environmental Impact Assessment to establish whether proposed methods will have a detrimental impact upon the ecology of the Harbour foreshore area. For example, a survey of the littoral fauna may be required. Information on other "softer" methods of beach nourishment should be provided and considered in order to remain sympathetic to the natural foreshore.

Present and Future Monitoring/Studies

Recommendations for the preparation of a Mudeford Sandbanks Beach Management Plan have been raised by Christchurch Borough Council (Mudeford Sandbank CPW – Environmental Matters Statement of Intention - 16 April 1998). It is recommended that this strategy is pursued.

Additional work / separate studies may be required to assess the potential impacts of this policy on the adjoining nature conservation interests in the Long Term.



PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – SOUTH SIDE OF CHRISTCHURCH HARBOUR (CHB2)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Grimbury Point (GR: 418148E, 090961N)
- East – East of Lobbs Hole (GR: 416569E, 091845N)

Management Unit Description

This unit is completely undeveloped and undefended for most of its length with the exception of the Hengistbury Head centre to the east of Wick Hams. The area contains a wide range of habitats including saltmarsh, mudflats, reedbeds and grassland which support diverse plant and animal communities and the site is of great ornithological importance. These areas have been designated for their national nature conservation importance, forming part of Christchurch Harbour SSSI, Stanpit Marsh and Hengistbury Head LNR's and Poole Bay SMA. Hengistbury Head is also of great archaeological interest and designated a Scheduled Monument due to the significant remains discovered here.

Administrative Authority

Christchurch Borough Council

Frontage Lengths

Total frontage length: 10427m; Defended frontage length: 145m

Environmental Designations

Statutory Designations

- Dorset Heathland pSPA – heath ecology.
- Christchurch Harbour SSSI – saltmarsh ecology.
- Hengistbury Head 17 SMs – archaeological sites.
- Bronze Age Barrows 2x SMs – archaeological sites.

Non-Statutory Designations

- Stanpit Marsh LNR – grazing marsh.
- Hengistbury Head LNR – range of habitats.
- River Avon ESA – chalk stream ecology.
- Poole Bay and Isle of Purbeck SMA – marine ecology.
- Stanpit Marsh SNCI – grazing marsh.

Description of Land at Risk

- Marshland
- Farmland
- Sailing Club
- Highway

- Open Space
- Woodland

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
South Christchurch Local Plan		NONE	RT 1 RT 2 TC17	Harbour recreation Open Space Green Belt	TC18	SSSI
Bournemouth Borough Local Plan		NONE	8.7 9.15	Recreation Water based recreation	8.9 9.13 10.25	Nature conservation SSSIs, SPA, SAC and Ramsar sites Archaeology

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2501	1	BBC	0.16	Gabions	Class 2	>10	1987

Description of Defences

2501 A 160m long low level gabion wall protects the inshore face of Hengistbury Head and an exposed length of private road that provides access to Mudeford Sandbank. The gabion wall was constructed in 1987 and is in good condition.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – SOUTH SIDE OF CHRISTCHURCH HARBOUR (CHB2)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing ✓	Hold ✓	Retreat ✓	Advance ×
Technically viable?	✓	✓	✓	×
Economically justifiable and environmentally acceptable?	▲	×	○	×
Compatible with adjacent strategies?	✓	×	✓	×
Compatible with wider coastal processes?	✓	×	✓	×
Process Unit Objectives (See Part C)				
Strategy should not disrupt contemporary sediment processes (1)	✓	×	✓	×
Strategy should ensure protection of life and property where economically viable (2)	▲	✓ (LT)	○ (LT)	×
Strategy based on geomorphological principles (3)	✓	×	○	×
Strategy should not impact on important conservation designations (4)	✓	×	○	×
Strategy should have minimal impact on landscape quality (5)	✓	×	○	×
Strategy should have minimal impact of archaeological or historical potential (6)	▲	×	○	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (7)	▲	✓ (SH)	▲	×
Strategy should not impact on local economy, tourism or amenity (8)	▲	✓	✓	×
Strategy should not impact on inshore fisheries at Mudeford (10)	n/a	n/a	n/a	n/a
Suitability of Strategy Option	✓	×	○▲	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SH Selective Hold

From the above screening exercise, the Advance the Line and Retreat options are not appropriate for this Management Unit and are not considered any further.

The harbour side of Double Dykes is a strategically important length within this unit that may require more active intervention compared to the rest of the undefended unit. Consequently, an assessment of selective hold, retreat and do nothing shall be reviewed.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – SOUTH SIDE OF CHRISTCHURCH HARBOUR (CHB2)

	DO NOTHING (short term effects in <i>italics</i>)	HOLD THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	RETREAT THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	ADVANCE THE EXISTING LINE (short term effects in <i>italics</i>)
Effects on Physical Environment and Coastal Processes	- release of fine sediments from saltmarsh erosion, likely to increase with sea level rise - Natural evolution of sandy mudflats, saltmarsh and subtidal features	prevent natural evolution of saltmarsh and mudflats exacerbating erosion	reduce volume of present day fine sediments being input to the harbour	N/A
Effects on Human Environment	increase risk of flooding if defence at Double Dykes is not maintained	selective hold of Double Dykes defence would protect this strategic location and reduce risk of flooding to Christchurch and Mudeford	increased risk of a breach at Double Dykes	N/A
Effects on Natural Environment and Conservation	- erosion and loss of Hengistbury Head archaeological site (SMs) - Possible loss of Dorset Heathland (SPA)	- Works may damage saltmarsh (SSSI) - Protect SMs and Dorset Heathland (SPA) - coastal squeeze will result in loss of saltmarsh (SSSI)	- Possible loss of SMs - Possible loss of Dorset Heathland (SPA)	N/A
Implications for Coastal Defences	deterioration of defence at Double Dykes	maintain existing defence at Double Dykes	need to set back defence in the short term	N/A
Impacts within Process Unit	allow natural evolution of mudflat and saltmarsh	only suitable as a strategy for existing defence structure	long term flood risk potential within the Harbour	N/A
Economics	viable though not suitable in front of Double Dykes	only viable for existing defence	not viable	N/A

Current Policy: Selective Hold and Do Nothing

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – SOUTH SIDE OF CHRISTCHURCH HARBOUR (CHB2)

Do Nothing

This strategy is acceptable for the great majority of this frontage, on environmental and physical grounds as it would allow natural evolution of habitats and the release of fine sediments from fronting saltmarsh which may be incorporated into the sediment budget for the harbour. At Double Dykes, however, the implication of this strategic option would be to increase the Long Term risk of a breach through the low point here. This risk is likely to increase with sea level rise. Such a breach could affect the tidal prism and sediment regime within the Harbour and along the open coast (PBY Process Unit) if a permanent tidal channel were to become established. Consequently, this option is not viable in the Long Term for the short length fronting Double Dykes and the short length of gabions supporting an access road, however it is acceptable elsewhere.

Selective Hold the existing line

This strategic option would mirror the benefits set out under the Do Nothing strategic option whilst ensuring the continued maintenance of existing structures. There are, however, only very short lengths for which intervention would be appropriate, and these do not require the adoption of a selective hold approach for the entire unit. For the great majority of this frontage any form of hold the line intervention would be unacceptable on environmental and aesthetic grounds. Thus this strategy is not deemed acceptable for the entire unit.

Retreat the existing line

A set back hard defence throughout this management unit is neither financially or environmentally acceptable since it would require construction of extensive new defences along a more landward alignment on internationally valuable saltmarsh (SPA). The strategic significance of the Double Dykes location renders a retreat policy unsuitable, and no additional benefits to undefended areas would be added to those that would occur under a do nothing strategic option. This option is therefore not considered viable.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Do Nothing (Observe and Monitor at Double Dykes)
Long Term (2005 to 2049)	Do Nothing (limited intervention at Double Dykes)

Figure D2.34 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for CHB2. A strategic policy of "do nothing" would comply to the Process Unit Objectives. This is because natural processes will be maintained allowing the existing littoral transport system to continue. The policy would ensure protection of life and property as limited intervention, necessary to protect Double Dykes and the access road, would be allowed. There would be no increase in the risk of erosion or flooding on adjacent management unit lengths.

Impact on adjacent Management Units

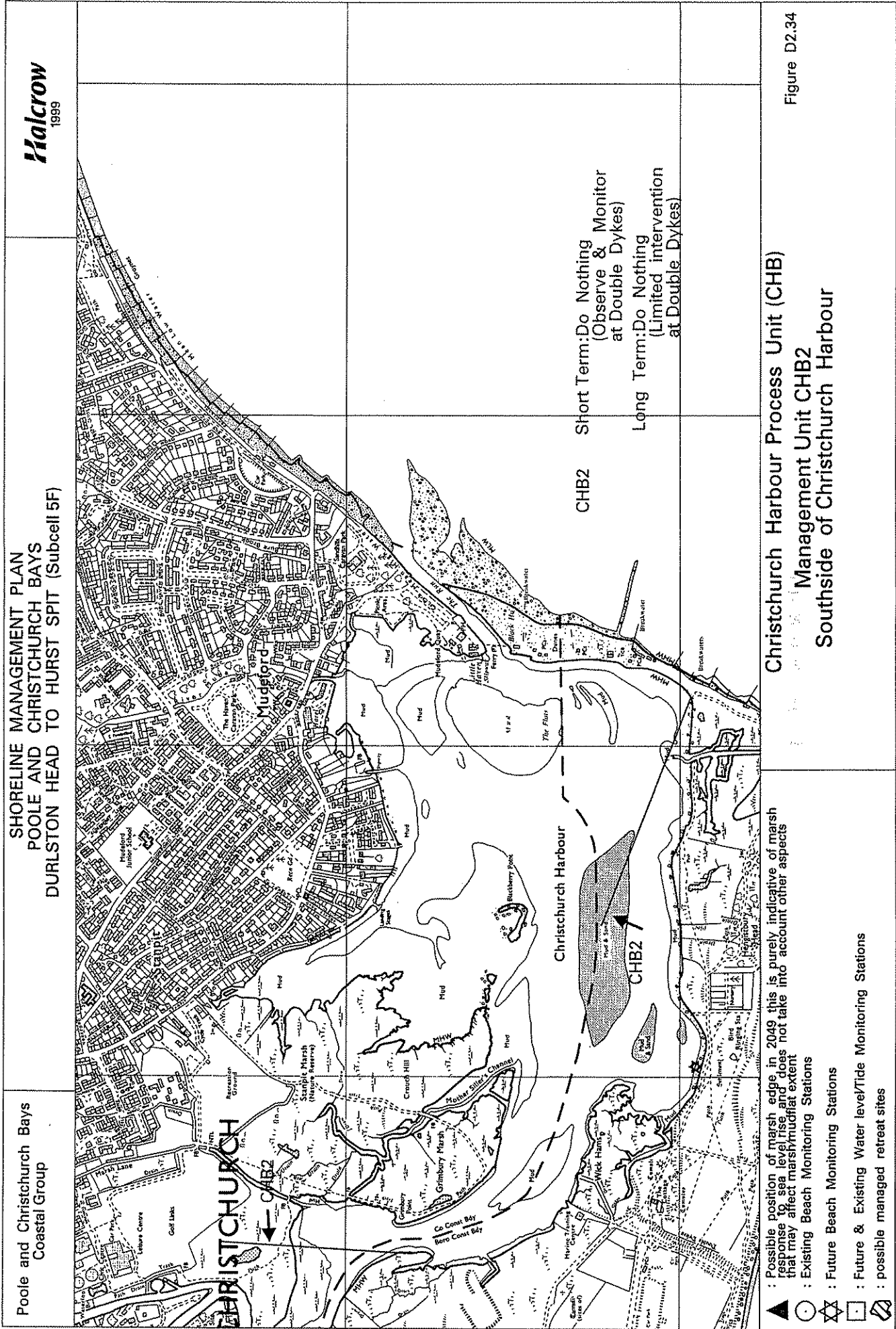
Within any estuarine or harbour situation, any action on the shoreline which may influence the tidal prism or sediment budget regimes, may impact on the shoreline along adjacent management units within the harbour/estuary. It is therefore stated that a do nothing policy would be the most acceptable approach. This is because intervention along the shoreline will be kept to a minimum and thus not affect contemporary physical processes, or have detrimental impacts on important brackish lagoon conditions.

Review of Potential Implementation

A close relationship occurs between the magnitude of the saltmarsh within Christchurch Harbour and the protection of existing defences that occur within it (inclusive of defences outside of management unit CHB2). Under this policy the internationally important brackish lagoon conditions will be maintained to their fullest possible extent. The brackish lagoons consist of relatively low species abundance, but have large populations of intertidal and marine invertebrates making up the Avon Valley proposed SPA/Ramsar site.

Present and Future Monitoring/Studies

The recommendation set in Part E of this Volume (Saltmarsh and Mudflat Management Strategy) apply specifically to this management unit.



- ▲ : Possible position of marsh edge in 2049 this is purely indicative of marsh response to sea level rise and does not take into account other aspects that may affect marsh mudflat extent
 ○ : Existing Beach Monitoring Stations
 ☆ : Future Beach Monitoring Stations
 □ : Future & Existing Water level/Tide Monitoring Stations
 ◻ : possible managed retreat sites

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – STANPIT AND GRIMBURY MARSHES (CHB3)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Opposite Grimbury Point (GR: 416569E, 091845N)
- East – Start of Mudeford Developed Frontage (GR: 417244E, 092373N)

Management Unit Description

The frontage of this unit is entirely undeveloped and undefended, consisting chiefly of grazing marsh of national nature conservation importance which has been designated a LNR and SSSI for its saltmarsh and mudflat habitats. The marshes form a sink for fluvial material which enters the Harbour from the Rivers Stour and Avon, although Stanpit Marsh is currently suffering erosion on its weather side. A recreation ground and golf course lie to the north of the marsh, built on a dis-used landfill site and thus posing a potential long term risk. The area is also of considerable archaeological interest containing remains of prehistoric occupations.

Administrative Authority

Christchurch Borough Council

Frontage Lengths

Total frontage length: 3571m; Defended frontage length: 0m

Environmental Designations

Statutory Designations

- Christchurch Harbour SSSI – Saltmarsh ecology.

Non-Statutory Designations

- River Avon ESA – chalk stream ecology.
- Poole Bay and Isle of Purbeck SMA – marine ecology.
- Stanpit SNCI – grassland ecology.

Description of Land at Risk

- Marshland
- Farmland
- Amenity / Open Space
- Former Landfill Site

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
South Christchurch Local Plan		NONE	RT 1 RT 2 TC16 TC17	Harbour recreation Open Space Recreational ground development Green Belt	TC18	SSSI

Coastal Defences

Defence Elements within Management Unit

NONE

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – STANPIT AND GRIMBURY MARSHES (CHB3)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	×	✓	×
Economically justifiable and environmentally acceptable?	✓	×	○	×
Compatible with adjacent strategies?	▲	×	✓	×
Compatible with wider coastal processes?	✓	×	○	×
Process Unit Objectives (See Part C)				
Strategy should not Contemporary sediment processes (1)	✓	×	✓	×
Strategy should ensure protection of life and property where economically viable (2)	▲	× (LT)	▲○	×
Strategy based on geomorphological principles (3)	✓	×	○	×
Strategy should not impact on important conservation designations (4)	✓	×	✓	×
Strategy should have minimal impact on landscape quality (5)	✓	×	○	×
Strategy should have minimal impact of archaeological or historical potential (6)	▲	×	○	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (7)	▲	×	✓	×
Strategy should not impact on local economy, tourism or amenity (8)	▲	×	✓	×
Strategy should not impact on inshore fisheries at Mudeford (10)	n/a	n/a	n/a	n/a
Suitability of Strategy Option	✓ (ST)	×	✓ (LT)	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

From the above screening exercise, the Advance the Line and Hold options are not appropriate for this Management Unit and are not considered any further. Do

nothing and retreat appear appropriate, and, shall be evaluated in terms of what the implications are for Christchurch Harbour as a whole.

Retreat and Do Nothing strategies shall therefore be assessed.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – STANPIT AND GRIMBURY MARSHES (CHB3)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	<i>continued natural supply of fine sediments to estuarine system from marsh erosion</i> - Natural evolution of mud flats and saltmarsh but with long term loss of material from natural sediment stores	N/A	alteration to present day estuarine processes dependent on methods used to retreat	N/A
Effects on Human Environment	- erosion of redundant waste site at Stanpit Marsh - possible erosion of disused landfill site, and pollution of harbour.	N/A	- ensure integrity of marsh systems, whilst allowing space and opportunity for them to evolve - increase salting effectiveness as a coastal defence for Mudeford - protection of landfill site	N/A
Effects on Natural Environment and Conservation	saltmarsh will move inland to adapt to sea level rise	N/A	prevent coastal squeeze and possibly increase area of high conservation interest	N/A
Implications for Coastal Defences	no defence structures required	N/A	<i>possible need for mudflats and saltmarshes to be recharged with fine material to build up mudflat levels</i>	N/A
Impacts within Process Unit	reduction in size of saltmarsh area may alter tidal dynamics of the Harbour long term	N/A	allow natural evolution of habitats within the Harbour	N/A
Economics	viable	N/A	<i>no short term benefit</i>	N/A

Current Policy: Do Nothing

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – STANPIT AND GRIMBURY MARSHES (CHB3)

Do Nothing

This would represent a continuation of current policy at Stanpit and Grimbury Marshes. The Long Term implication of this strategic option would, however, be an increase in the rate of marsh edge erosion (currently being experienced) and an increased frequency of tidal inundation. There is a risk of coastal squeeze causing existing saltmarsh to change in character from grazing marsh to actual saltmarsh as the marsh system adapts. Depending on sea level rise predictions, a worse case scenario (Long Term) could be total marsh inundation by the sea. It is likely that this scenario would be exacerbated if strategic policy not to hold Mudeford Sandbank is not followed.

Selective Retreat the Existing Line

Managed Retreat for the whole of this management unit is not feasible due to the topographic nature of backing land coupled with how it is currently used. Long Term, this would result in a net loss of saltmarsh and mudflat habitat due to coastal squeeze as these habitats retreat in response to sea level rise. A localised issue that is integral to managed retreat at Stanpit Marsh is the presence of a disused semi toxic landfill site which is now used as a golf course and playing field. It also represents an important part of Christchurch's Green Belt. Allowing the Marsh to erode back into here could (Long Term) result in a pollution problem within Christchurch Harbour. Infront of the landfill site a 'retreat' strategy would involve the Long Term defence of a set back position, allowing a natural defence to form infront of any hard structures, under what is essentially a 'holding' of a set-back position.

Selective Retreat, in theory, is more feasible and could retain the high nature conservation interests of the marsh by allowing it to develop at strategic locations inland. More detailed studies to deduce suitable locations (involving topographic surveys) should be undertaken to assess the Long Term applicability of this option.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Do Nothing (Observe and Monitor)
Long Term (2005 to 2049)	Selective Retreat the Existing Line (subject to future survey results)

Figure D2.35 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets all of the objectives set out in the Objective Screening Table for CHB3. A strategic policy to Do Nothing in the Short Term (Observe and Monitor) and "Selective Retreat the Line" Long Term would comply to the Process Unit Objectives. This is because natural processes will be maintained allowing the existing littoral transport system to continue and the policy would ensure protection of life and property, and would prevent erosion of the toxic disused landfill site. Limited impact on sediment stores within the Harbour, through adopting these policies, may prove strategically significant in the light of

light of new information on sea level rise acceleration and its role in marsh erosion (contributing to the sediment budget Long Term).

Impact on adjacent Management Units

Within any estuarine or harbour situation, any intervention on the shoreline which may influence the tidal prism or sediment budget regimes, may impact on the shoreline along adjacent management units within the harbour / estuary. It is therefore stated that a Selective Retreat the Line policy would be the most acceptable policy (Long Term). Any future change in tidal prism as a consequence of Selective Retreat (Long Term) could affect tidal current locally, though this is not seen as being significant as it is more probable that with the onset of sea level rise, residual tidal currents within the Harbour will change at the Harbour entrance impacting on the configuration of the ebb tidal delta (and flood delta). A precautionary approach to intervention is therefore recommended after the Short Term policy of "Observe and Monitor" has collected enough background information to deduce the longer term approach.

Review of Potential Implementation

Continuation of current management practice in the Short Term. Topographic surveys to deduce possible sites for Selective Retreat need to be carried out in this time. The use of dredge material to maintain mudflat levels may be pursued (subject to detailed study) should contemporary supplies of fine material from fluvial sources not be sufficient to sustain mudflat and saltmarsh health in the Harbour (with the onset of sea level rise). In front of Stanpit Marsh there will be a need for hard defence intervention at a set-back position in order to prevent erosion of the landfill site, and the release of toxins into the valuable harbour environment.

Present and Future Monitoring/Studies

The recommendation set in Part E of this Volume (Saltmarsh and Mudflat Management Strategy) apply specifically to this management unit.



CHB3 Short Term: Do Nothing (Observe and Monitor)
Long Term: Selective Retreat the Existing Line
(subject to future survey results)

Christchurch Harbour Process Unit (CHB)
Management Unit CHB3
Stanpit and Grimbury Marshes

- ▲ : Possible location for Managed Retreat (depending upon topographic surveys). Position of marsh edge (Long Term) is dependent upon numerous factors (sea level rise, harbour use, pollution, etc) & so cannot be mapped
- : Existing Beach Monitoring Stations
- ✱ : Future Beach Monitoring Stations
- : Future & Existing Water level/Tide Monitoring Stations
- ◻ : possible managed retreat sites

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – MUDEFORD TOWN FRONTAGE (CHB4)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Start of Defences (Mudeford) (GR: 417244E, 092373N)
- East – End of Defences (Mudeford) (GR: 418322E, 091976N)

Management Unit Description

This unit contains the developed frontages of Mudeford and Stanpit which are defended along much of their length. These settlements are predominantly residential in nature although both contain holiday accommodation in the form of hotels, guest houses and bed and breakfast establishments. The area is heavily used due to the location of amenity car parking and boat launching facilities which exist at Fisherman's Bank. Most of this frontage is also of considerable historic importance and afforded Conservation Area status in an effort to maintain the buildings here which are integral to the character of the area.

Administrative Authority

Christchurch Borough Council

Frontage Lengths

Total frontage length: 1730m; Defended frontage length: 1700m

Environmental Designations

Statutory Designations

- Christchurch Harbour – Saltmarsh ecology

Non-Statutory Designations

- Stanpit Marsh LNR – grazing marsh.
- Poole Bay and Isle of Purbeck SMA – marine ecology.

Description of Land at Risk

- Housing
- Commercial Properties
- Open Space
- Highway

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
South Christchurch Local Plan		NONE	RT 1	Harbour recreation	TC1-3 TC6 TC7 TC8 TC18	Conservation Area Policies Conservation Area Enhancement Harbour Frontage Harbour Frontage SSSI

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
081/2080	329	Private	0.02	Wall	Fr	>5	
081/2070	328	Private	0.07	Wall	Fr	>5	
081/2060	327	Avonmth Hotel	0.14	Embankment	Fr	>5	
081/2060	326	Avonmth Hotel	0.14	Wall	Fr	>5	
081/2050	325	Private	0.20	Wall	Pr	2 to 5	
081/2040	324	Private	0.30	Embankment	Pr	2 to 5	
081/2030	323	Private	0.75	Wall	Pr	2 to 5	
081/2020	322	Private	0.07	Wall	Fr	>5	
081/2010	321	Private	0.10	Wall	Pr	>5	
081/2010	320	Private	0.10	Banks	Pr	>5	

Description of Defences

- 081/2080 A 30m length of privately owned concrete wall with a pitched toe has a crest level of +1.92m ODN. The wall is in a poor state of repair and is currently being undermined.
- 081/2070 A 70m long sheet steel piled wall retains the garden of a residential block built in the early 1990s. The wall is privately owned and is in a poor state of repair.
- 081/2060 At Mudeford a privately owned 140m long embankment and concrete wall. The wall protects the hotel and its garden and forms a protective face for the embankment.
- 081/2050 A 200m long privately owned wall constructed from timber sheet piles. The wall is in a poor condition since the fill has been washed out from behind the wall.
- 081/2040 The foreshore to the west of Mudeford is protected by a 300m long clay embankment which is in a poor state of repair. The embankment is privately owned. The embankment acts as a protection to a small tidal lagoon and protects the adjacent portion of timber wall.
- 081/2030 This 750m length is defended by a privately owned masonry wall. The condition of the wall is very poor in places. The walls are of

varied construction but are generally of a similar height and condition. The shingle beach levels are low and undermine the walls. Some repairs have been carried out at the toe of the walls but erosion is continuing and the stability of the walls is threatened in places.

081/2020 A 80m length of privately owned masonry wall, which is in a fair condition.

081/2010 Clay banks and a masonry wall extend over this 100m length.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – MUDEFORD TOWN FRONTAGE (CHB4)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing ✓	Hold ✓	Retreat ×	Advance ✓
Technically viable?				
Economically justifiable and environmentally acceptable?	✓	✓	×	×
Compatible with adjacent strategies?	✓	✓	✓	×
Compatible with wider coastal processes?	✓	✓	✓	×
Process Unit Objectives (See Part C)				
Strategy should not Contemporary sediment processes (1)	▲	✓	▲	×
Strategy should ensure protection of life and property where economically viable (2)	×	✓	×	✓
Strategy based on geomorphological principles (3)	▲	○	○	×
Strategy should not impact on important conservation designations (4)	✓	○	✓	×
Strategy should have minimal impact on landscape quality (5)	▲	○	○	×
Strategy should have minimal impact of archaeological or historical potential (6)	×	✓	×	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (7)	×	✓	×	×
Strategy should not impact on local economy, tourism or amenity (8)	×	✓	×	○
Strategy should not impact on inshore fisheries at Mudeford (10)	×	✓	×	○
Suitability of Strategy Option	×	✓(LT)	×	×

▲ Possible conflict with objective over longer term

✓ Complies with statement

×

○ Conflicts with statement, but is dependent upon implementation methods used

n/a Objective is not relevant to this management unit

LT Long Term

From the above screening exercise, the Advance the Line and Retreat options are not appropriate for this Management Unit and are not considered any further.

Holding the line would appear the only suitable option and will be assessed against the implications of doing nothing.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE -- MUDEFORD TOWN FRONTAGE (CHB4)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	<i>continued slow contemporary accretion in front of defences at Mudeford</i> <i>change to estuarine dynamics as defences start to fail</i>	<i>maintain present day estuarine processes and sediment transport regimes</i>	N/A	N/A
Effects on Human Environment	<i>increased risk of flooding to properties at Mudeford</i>	safeguard commercial and residential assets from flooding	N/A	N/A
Effects on Natural Environment and Conservation	<i>coastal squeeze will result in loss of saltmarsh habitat (SSSI)</i>	works may damage saltmarsh extent (SSSI) particularly to the west	N/A	N/A
Implications for Coastal Defences	<i>deterioration of existing defences</i>	need to maintain defence and seek the need to upgrade over the longer term	N/A	N/A
Impacts within Process Unit	<i>alter estuarine dynamics over the long term</i>	no impact so long as estuarine dynamics are not altered or fronting mudflats interfered with	N/A	N/A
Economics	<i>loss of residential assets to flooding</i>	viable	N/A	N/A

Current Policy: Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – MUDEFORD TOWN FRONTAGE (CHB4)

Do Nothing

A Do Nothing Strategic option for this management unit would result in the continued deterioration and eventual failure of the flood defence structures protecting the developed areas of Mudeford. The value of the densely developed land at risk cannot allow for such a strategic option to be selected.

Hold the Existing Line

Being a medium density urban community, Mudeford warrants protection against a 1:100 year return period storm event in line with MAFF recommendations (PAGN Annex K). To Hold the Existing Line would represent a continuation of current policy for this management unit as the majority of the unit is protected by man-made defences. There are isolated properties at risk from flooding for which it is currently not possible to justify protection on benefit-cost grounds. To continue with this strategic option would not impact upon the coastal processes operating within the Harbour or the natural environmental assets, so long as maintenance does not involve alterations to the contemporary hydrodynamic regime. The close proximity to Stanpit Marsh and adjacent mudflat habitats suggest that a key aspect of implementing this strategic option is linked to the management of these fronting mudflats which play a significant role in dissipating the low wave energies that occur in the Harbour.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line
Long Term (2005 to 2049)	Hold the Existing Line

Figure D2.37 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for CHB4. The only potential non compliance to Process Unit Objectives relates to whether such a strategic option abides to geomorphological principles, and whether it would impact upon important conservation designations and landscape quality. These factors need to be considered when any scheme to implement the policy is carried out.

Impact on adjacent Management Units

As this strategic option represents current policy for this management unit, it is unlikely that there would be any impacts upon adjacent management units. Over the Long Term, depending on the adaptation of adjacent mudflats to sea level rise, the management of this unit may need to be more closely married into a strategy for mudflat and saltmarsh enhancement (ie: foreshore management).

Review of Potential Implementation

The standard of defences, in the Long Term, will need to be upgraded to accommodate for accelerated rates of sea level rise and increased storminess. It

has been calculated that structural damage due to overtopping will occur as a result of any storm more severe than the 1 in 5 year (for existing) and the 1 in 1 year events for 50 year water level events. Consequently, upgrading defences (that does not interfere with the fronting mudflats and hydrodynamic conditions) will be required to implement this policy.

Present and Future Monitoring/Studies

There is little current monitoring along this length. The condition of defences and effects of sea level rise needs to be monitored.

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – MUDEFORD QUAY (CHB5)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – End of Defences (Mudeford Frontage) (GR: 418322E, 091976N)
- East – Mudeford Quay (GR: 418306E, 091770N)

Management Unit Description

This unit comprises the Mudeford Quay frontage which has been designated a Conservation Area due to the historical interest and visual quality of the area, providing an important visitor attraction. A large amenity car park is located on the Quay and a passenger ferry service operates between here and Mudeford sand spit providing access across the Harbour entrance. The Quay supports a locally important fishing industry of up to 30 registered boats that land here with boat launching facilities also available to the public. A caravan park adjacent to the Mudeford frontage also provides important tourist accommodation and is surrounded by an area of public open space of considerable ecological interest (SNCI) extending along the Quay.

Administrative Authority

Christchurch Borough Council

Frontage Lengths

Total frontage length: 362m; Defended frontage length: 362m

Environmental Designations

Statutory Designations

- Christchurch Harbour SSSI – Saltmarsh ecology.

Non-Statutory Designations

- Mudeford Quay SNCI – grassland ecology.
- Poole Bay and Isle of Purbeck SMA – marine ecology.

Description of Land at Risk

- Open Space
- Sailing Club
- R.N.L.I Lifeboat Station
- Public House

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
South Christchurch Local Plan		NONE	RT 1 RT2 RT9	Harbour recreation Open Space Sandhill Caravan Park	TC4 TC5 TC18	Mudford Quay Improvements SSSI

Coastal Defences

Defence Elements within Management Unit

A low lying sea wall of approximately 1m in height built in 1958 provides some protection to Mudford Car Park. This is fronted by rock armouring and beach nourishment is undertaken at this site on a periodic basis. These defences are not classified by the EA as part of the Sea Defence Survey.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – MUDEFORD QUAY (CHB5)

Strategy Test Statements (See Part C)				Coastal Defence Strategy Options			
Core Objectives	Subcell	Coastal	Defence	Do Nothing	Hold	Retreat	Advance
Technically viable?				✓	✓	✓	×
Economically justifiable and environmentally acceptable?				✓	✓	✓	×
Compatible with adjacent strategies?				✓	✓	▲	×
Compatible with wider coastal processes?				✓	×	○	×
Process Unit Objectives (See Part C)							
Strategy should not Comtemporary sediment processes (1)				✓	○	○	×
Strategy should ensure protection of life and property where economically viable (2)				▲	✓	×	×
Strategy based on geomorphological principles (3)				✓	×	✓	×
Strategy should not impact on important conservation designations (4)				▲	○	○	×
Strategy should have minimal impact on landscape quality (5)				▲	○	○	×
Strategy should have minimal impact of archaeological or historical potential (6)				▲	✓	✓▲	×
Strategy should not increase the risks of erosion and flooding on adjacent unit lengths (7)				✓ (ST) × (LT)	✓	✓▲	×
Strategy should not impact on local economy, tourism or amenity (8)				×	✓	▲	×
Strategy should not impact on inshore fisheries at Mudeford (10)				✓ (ST) ▲	✓	▲	×
Suitability of Strategy Option				✓ (ST) ▲	✓	○ (LT)	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and not considered any further.

Suitable methods to hold or retreat the line need to be assessed against the long term implications of doing nothing.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – MUDEFORD QUAY (CHB5)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	- continued negligible supply of coarse material from the adjacent 'Run' <i>fine material supply from saltmarsh erosion to continue</i>	<i>termination of fine material supply from backing saltmarsh</i> <i>alteration to contemporary estuarine processes</i>	impact on contemporary estuarine processes to a reduced degree	N/A
Effects on Human Environment	possible long term threats to backing picnic area	<i>protect backing picnic area</i> <i>reduce outflanking concerns at Mudeford Quay</i>	reduced threat to backing picnic area over the short term	N/A
Effects on Natural Environment and Conservation	- coastal squeeze will result in loss of saltmarsh habitat (SSSI) as habitats migrate - loss of grassland ecology at Mudeford Quay	- maintain grassland ecology - works may damage Saltmarsh (SSSI)	- loss of grassland ecology - possible extension to area of saltmarsh depending on sea level rise rate	N/A
Implications for Coastal Defences	<i>no damage to that presently experienced</i>	<i>possible need for new defences to be constructed</i>	possible use of dredged materials to raise level of fronting saltmarsh	N/A
Impacts within Process Unit	<i>continuation of present day estuarine processes</i>	- possible alteration to estuarine dynamics within harbour - Reduce capacity of marsh to adapt to sea level rise	possible long term alteration to tidal prism	N/A
Economics	viable	few assets at risk	viable long term	N/A

Current Policy: Do Nothing

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE – MUDEFORD QUAY (CHB5)

Do Nothing

This would represent a continuation of current policy for this management unit. Due to the sheltered nature of the management unit behind Mudeford Quay, it is unlikely to experience significant erosion or increases in the frequency of contemporary flood events over the Short Term. Over the Long Term, with the onset of accelerated sea level rise, there may be an increased risk of habitat squeeze as natural retreat takes place and the issue of breaching through Mudeford Quay would need to be more focused. In the Short Term, this strategic option (incorporating Observe and Monitor) would be suitable.

Hold the Existing Line

To Hold the Line throughout this management unit would provide continued protection to the rear of the seaward defences and the backing amenity car park, reducing outflanking concerns at Mudeford Quay. Any new maintenance works in this area would have to take into account the sensitive balance between mudflats and saltmarsh adaptation to sea level rise, sediment budget variations and tidal prism changes. It would be inadvisable to construct any new defences on the foreshore (mudflats).

Retreat the Existing Line

The concept of a Retreat the Line strategic option for this management unit would be to introduce schemes to manage the future rates of wave overtopping and / or erosion rates. This is most suitably undertaken by focussing on the management of the fronting mudflats as opposed to introducing built defences to a set back position. By improving the level of fronting mudflat through sediment recirculation / nourishment, the management unit would be more able to adapt to rising sea levels and respond to increased storm frequency events.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line (observe and monitor)
Long Term (2004 to 2049)	Hold the Existing Line (possible retreat the Existing Line)

Figure D2.38 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for CHB5. The only potential non compliance to Process Unit Objectives relates to whether such a potential Long Term Retreat the Line strategic option would increase the flood risk to build assets in adjacent management unit CHB4. This important factor needs to be considered when any scheme to implement the policy is carried out.

Impact on adjacent Management Units

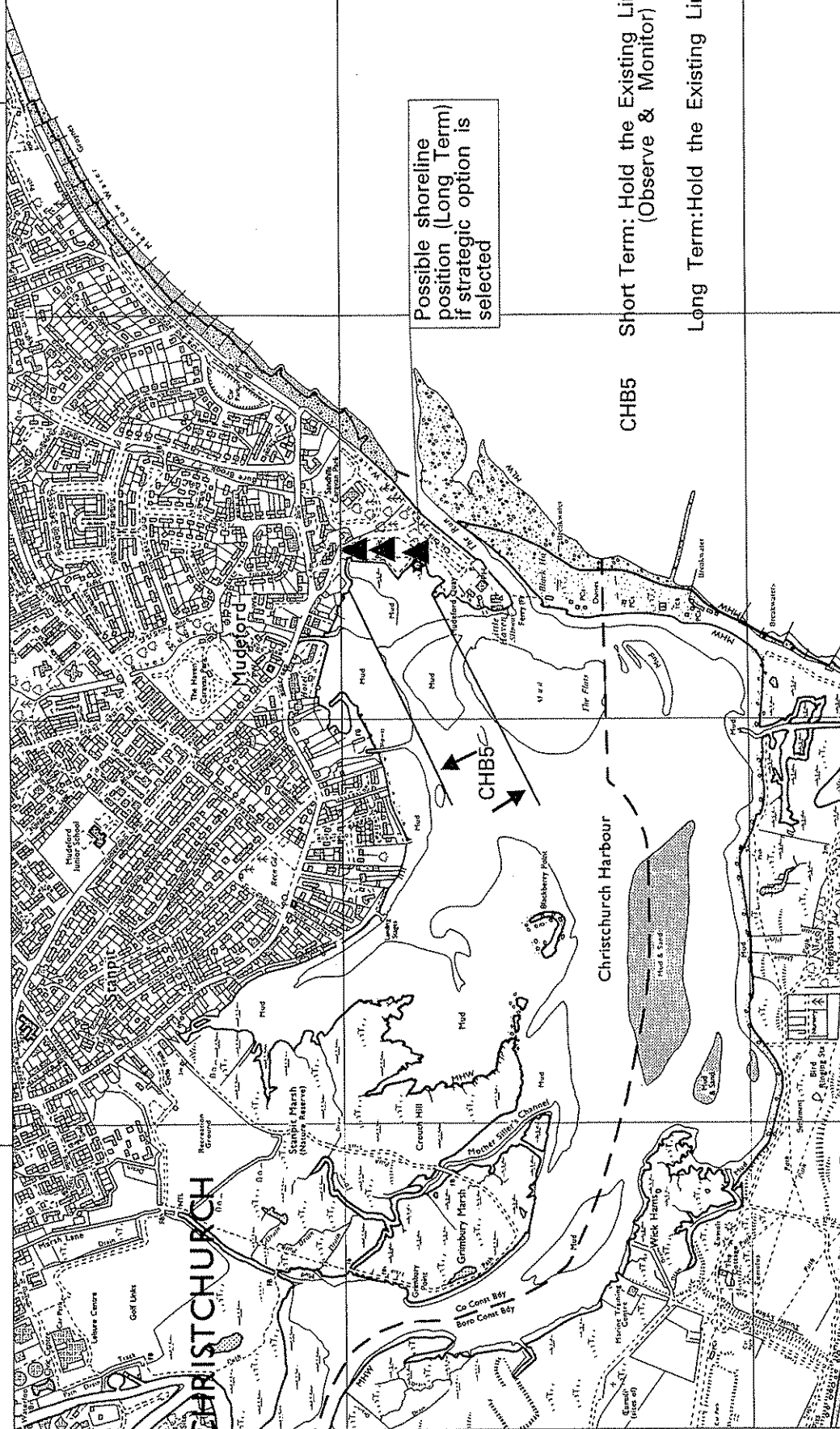
It is unlikely that a short term policy of Hold the Line would impact upon adjacent management units. Over the Long Term, depending on the adaptation of adjacent mudflats to sea level rise, the management of this unit may need to be more closely married into a strategy for mudflat and saltmarsh enhancement (ie: foreshore management). For the purpose of this SMP, this potential option has been defined as Retreat the Existing Line (Long Term).

Review of Potential Implementation

Schemes that make use of dredged materials to raise the levels of fronting mudflats and saltmarsh should be considered to implement any possible Long Term Retreat the Line Policy. This method would be a "soft" approach to reducing the frequency of overtopping rates and future erosion. It would abide to the Process Unit Objectives set for Christchurch Harbour so long as there is no increased risk to the valuable built assets in adjacent management unit CHB4. Implementation could involve the redistribution of fine materials already present within the Harbour so that minimal impact on the sediment budget of the Process Unit occurs.

Present and Future Monitoring/Studies

There has been occasional surveys of this frontage and its condition is monitored from time to time. Future monitoring will be needed to confirm that the current and proposed policies are valid



▲ : Estimated position of the cliff top or marsh edge in 2049
based on published retreat rates, amended to accommodate for sea level rise.
NB: not placed where 'Hold the Existing Line' is proposed

○ : Existing Beach Monitoring Stations

☆ : Future Beach Monitoring Stations

□ : Future & Existing Water Level/Tide Monitoring Stations

Christchurch Harbour Process Unit (CHB)
Management Unit CHB5
Mudford Quay

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – HENGISTBURY LONG GROYPE TO TIP OF MUDEFORD SANDBANK (CBY1A & B)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Hengistbury Long Groype (GR: 417818E, 090292N)
- East – Tip of Mudeford Sandbank (Christchurch Harbour) (GR: 418283E, 091501N)

Management Unit Description

This unit is largely undeveloped and defended along much of its length. Mudeford Sandbank performs an important coastal defence function protecting Christchurch from inundation by the sea. This spit extends from the promontory of Hengistbury Head, a Scheduled Monument and site of great archaeological interest as well as being designated a SSSI for its botanical and geological interest. There are a few hundred beach huts on Mudeford Sandbank.

Administrative Authority

Christchurch Borough Council

Frontage Lengths

Total frontage length: 1860m; Defended frontage length: 1860m

Environmental Designations

Statutory Designations

- Christchurch Harbour SSSI – saltmarsh ecology.
- Hengistbury Head – 17 SMs – archaeological sites.
- Dorset Heathland SPA – wet heathland habitats.
- Dorset Heaths cSAC – heathland ecology.
- Hengistbury Head NNR – range of habitats.

Non-Statutory Designations

- Stanpit SNCI – grassland ecology.
- Poole Bay and Isle of Purbeck SMA – marine ecology.
- Hengistbury SNCI – coastal habitats.

Description of Land at Risk

- Open Space
- Heathland
- Archaeological Assets
- Beach Huts
- Café
- Office
- Highway

- (Christchurch Harbour: housing, commercial properties)

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
South Christchurch Local Plan		NONE	RT 1 TC17	Harbour recreation Green Belt	TC1-3 TC6 TC18	Conservation Area Policies Enhancement in Conservation Areas SSSI
Bournemouth Borough Local Plan		NONE	8.7 9.15	Recreation Water based recreation	8.9 9.13 10.25	Nature conservation SSSIs, SPA, SAC and Ramsar sites Archaeology

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2611	1	CBC	0.19	Revetment	Class 2	>10	1980
681/2611	2	CBC	0.19	Groynes	Class 2	>10	1980
681/2610	1	CBC	0.27	Bank			
681/2508	1	BBC	1.46	Beach / ridge			
681/2508	2	BBC	1.46	Cliff / scarp			
681/2507	1	BBC	0.20	Groynes	Class 2	>10	1938
681/2507	2	BBC	0.20	Armour	Class 2	>10	1987
681/2506	1	BBC	0.36	Revetment	Class 1	>10	1987
681/2506	2	BBC	0.36	Groynes	Class 1	>10	1987
681/2506	3	BBC	0.36	Groynes	Class 1	>10	1965
681/2506	4	BBC	0.04	Armour	Class 2	>10	1991
681/2506	5	BBC	0.02	Groynes	Class 1	>10	1991
681/2506	6	BBC	0.13	Gabions	Class 2	>10	1987
681/2505	1	CBC	0.34	Revetment	Class 3	<5	1965
681/2505	2	CBC	0.34	Groynes	Class 3	<5	1965
681/2505	3	CBC	0.06	Armour	Class 1	>10	1990
681/2604	1	CBC	0.27	Wall	Class 2	>10	1960
681/2604	2	CBC	0.27	Splash Wall	Class 2	>10	1960
681/2604	3	CBC	0.27	Toe Piling	Class 2	>10	1960
681/2604	4	CBC	0.27	Recharge	Class 2	>10	1990
681/2604	5	CBC	0.27	Groynes	Class 1	>10	1990
681/2503	1	CBC	0.22	Revetment	Class 2	5-10	1980
681/2503	2	CBC	0.22	Groynes	Class 2	>10	1980

Description of Defences

2611

There are no defences protecting the beach huts on this 270m length on the distal end of the Mudeford Sandbank. Currently the beach is deteriorating and the dunes are being lost. CBC consider that there is a need for formal managed defences along this length. (adjust position of CPSE markers on plan, see CBC plan).

2610 Two 20m long rock groynes and a rock revetment were constructed and shingle re-nourishment was placed on the beach in 1980 to reduce coastal erosion along this 190m length of Mudeford Sandbank. The defences were designed and built to 1970s standards and are now inadequate and need to be upgraded.

The following coastal defences are maintained by Bournemouth Borough Council.

2505 On Hengistbury Head a 360m length of coast, immediately to the east of the Long Groyne, a rock revetment, five rock groynes (typically 45m long) and gabions, at the foot of the cliffs, were constructed in 1987 to retain the beach and halt erosion of the cliffs. The groynes have subsequently trapped large volumes of sand, however at the same time the middle of Mudeford Sandbank suffered beach lowering. In 1991 a 20m long rock groyne was added at the northern end of the 1987 groyne scheme to overcome terminal erosion and one of the existing timber groynes was lined with rock armour.

At the Southern end or root of the Sandbank.

2506 At the southern end or root of the Sandbank, four 60m long timber and concrete groynes and a seawall were constructed in the late 1940s and 1950s along a 340m length of the coast to the east of the Long Groyne. The wall was strengthened and rebuilt in parts during 1965 and 1972. In 1985 three timber groynes were replaced and in 1990 the northern groyne was lined with rock armour. The defences along this length are in a poor state of repair, the timber groynes are inadequate, the beach level is low and the old timber revetment is exposed. The Mudeford Sandbank Groyne Scheme is due to start on site in winter 1998/1999 and involves increasing the standard of protection with additional rock groynes and beach recharge.

2504 A further 270m length on the offshore face of Mudeford Sandbank. Timber and concrete groynes and a seawall were installed in the late 1940s and 1950s. The concrete wall and sheet piled toe were constructed in the 1960s to prevent the breakthrough of the Sandbank. Following this a splash wall was installed to prevent overtopping which was undermining the rear of the wall. In 1991 two rock armour groynes, 60 and 66 m long, were constructed and shingle re-nourishment was placed on the beach. Since 1991 the beach along this length has continued to accrete, the original 12m wide berm of shingle re-nourishment is now covered with sand, and the sheet piled toe is currently buried. The defences here are adequate at present, however beaches are being starved due to updrift deficiencies.

2503 A 200m length of the offshore face of Mudeford Sandbank is protected with a rock armour revetment, three 60m long rock groynes and shingle re-nourishment completed in 1980. The defences were designed and built to 1970s standards and are now inadequate and need to be upgraded.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – HENGISTBURY LONG GROYPE TO TIP OF MUDEFORD SANDBANK (CBY1A & B)

Strategy Test Statements (See Part C)				Coastal Defence Strategy Options			
Core Objectives	Subcell	Coastal	Defence	Do Nothing	Hold (Spit only)	Retreat (Cliff only)	Advance
Technically viable?				✓	✓	✓	○
Economically justifiable and environmentally acceptable?				×	✓	○	×
Compatible with adjacent strategies?				×	✓	×	×
Compatible with wider coastal processes?				▲	✓	○	×
Process Unit Objectives (See Part C)							
Strategy should not impact on fronting or adjacent beach levels (1)				▲	✓	○	×
Strategy should not interfere any further with sediment processes (2)				▲	○	▲	×
Strategy should ensure protection of life and residential property where economically viable (3)				✓ (ST) × (LT)	✓	×	○
Strategy compliant with sound geomorphological principles (4)				✓ (ST) × (LT)	○	✓	×
Strategy should not impact on important conservation designations (5)				✓ (ST) × (LT)	○	✓	×
Strategy should not detract from the units landscape quality (6)				× (LT)	○	✓	×
Strategy should not impact on archaeological or historical potential (7)				×	✓	✓	✓
Strategy should not increase the threat of erosion and flooding on immediate or adjacent units (8)				×	✓	▲	×
Strategy should not impact on local economy, tourism or amenity (9)				×	✓	✓	○
Will the strategy seek to improve beach access? (9)				×	✓	×	○
Strategy should not comprise inshore fisheries at Mudeford (10)				×	✓	N/A	○
Suitability of Strategy Option				×	✓ (LT)	✓	×

▲ Possible conflict with objective over longer term

✓ Complies with statement

× Conflicts with statement

○ Conflicts with statement, but is dependent upon implementation methods used

n/a Objective is not relevant to this management unit

ST Short Term

LT Long Term

This management unit contains both cliff (a) and spit (b). At this screening stage, attempts have been made to assess options for both aspects together. From the above screening exercise, the Retreat and Advance the Line options are not appropriate for part (b) of this Management Unit and are not considered any further. It is possible that retreat of the cliffed section of this unit (a) is achievable, however, this is dependent to some extent upon the future strategy set for the spit. Do nothing appears inappropriate, due to the strategic nature of Mudeford Spit in forming an important defence line for assets within Christchurch Harbour. Any breach of this structure would have serious repercussions for the Christchurch and Mudeford frontages.

For this unit, the benefits of hold shall be assessed against doing nothing for the spit and retreat for the cliff sub-section.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – HENGISTBURY LONG GROYNES TO TIP OF MUDEFORD SANDBANK (CBY1A & B)

	DO NOTHING (short term effects in <i>italics</i>)	HOLD THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	RETREAT THE EXISTING DEFENCE LINE (for part a) (short term effects in <i>italics</i>)	ADVANCE THE EXISTING LINE (short term effects in <i>italics</i>)
Effects on Physical Environment and Coastal Processes	<i>continued significant easterly littoral drift depending on strategy proposal for Hengistbury Head</i> - Inputs of material from cliff long term - continued important littoral role of Christchurch Ledge and long term roll back of Spit	- maintain existing configuration of Mudeford Spit - terminate sediment supply from cliff face - impact on the ability of the landform to naturally evolve - integrity of spit dependent on strategy set for Hengistbury Head	reduced input of cliff derived material to fronting beach and adjacent spit	N/A
Effects on Human Environment	- risk to assets within Christchurch Harbour long term <i>impact on navigation and the morphology of the "Run"</i>	- protection of built assets in Christchurch Harbour - protect beach huts on Spit - continue to provide shelter for marine recreational activities and fishing	re-routing of coastal path required long term	N/A
Effects on Natural Environment and Conservation	- allow natural shingle habitat evolution - loss of archaeologically important sites at Hengistbury Head	possible damage to shingle habitats long term (unable to roll back)	- maintain to a degree the geological interest in site - possible impact a archaeological sites	N/A
Implications for Coastal Defences	<i>deterioration of existing defences</i>	- need to introduce methods that can adapt to the onset on sea level rise long term <i>compatibility with strategy for Hengistbury Head required</i>	replacement of rock groynes with a foreshore berm structure	N/A
Impacts within Process Unit	<i>continued limited supply of material to the rest of Christchurch Bay</i> <i>change in hydrodynamics should the spit be permanently breached</i>	dependent upon methods used to hold Mudeford Spit	impact on landform management	N/A
Economics	increased risk to built and natural assets in Christchurch Harbour	viable	possibly viable for cliff section only	N/A

Current Policy: Hold the Existing Line

3 Assessment of Preferred Option

MANAGEMENT UNIT TITLE – HENGISTBURY LONG GROUYNE TO TIP OF MUDEFORD SANDBANK (CBY1A & B)

Do Nothing

Adopting a Do Nothing strategy would lead to the eventual failure of the existing man made defences and an increased risk of a breach to Christchurch Harbour, which would cause increased flooding and erosion. This would result in significant economic impact, particularly for the spit section of the management unit (loss of the Sandbank as important amenity value), with the increased risk of a breach into Christchurch Harbour. For the cliffed section, it is uncertain whether over the long term, a do nothing strategy would be acceptable due to the dip angle of geologically important Tertiary strata. Consequently, this strategic option is not considered viable over the whole unit and should not be pursued long term for the cliffed section until a clear understanding of the impacts on geological (cliff face) and archaeological (cliff top as well as unfound within specific bed horizons) conservation are realised.

Hold the Existing Defence Line

This would represent a continuation of present strategy and in the short and long term, would provide for the defence of all land lying behind into Christchurch Harbour. Whilst this is economically justified for the northern spit section of the management unit, it is less well defined (long term) for the defended cliff section. This is due to its geological conservation importance and the fact that it represents a source of beach building material for the immediate and adjacent frontages within Christchurch Bay.

Retreat the Existing Line

This option would not be appropriate for the spit section (b) of the management unit as this would undoubtedly increase the risk of a breach into Christchurch Harbour. Suitable secondary defences would be needed which would impact upon the tidal prism, navigation, access and habitat extent of the Harbour. Since the topography of Hengistbury Head falls sharply inland, the headland is a finite resource playing a significant role as a landform feature within Poole and Christchurch Bays. Reducing the threat to important geological features whilst ensuring the strategic protection of properties at Christchurch and archaeological assets (tumuli) on Hengistbury Head by limiting erosion rates would need the introduction of a new scheme. This may involve initiatives whereby existing structures fronting the cliff are altered to accommodate natural change (under a retreat strategy possibly reducing the number of rock groynes).

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Retreat the Existing Line (a) Hold the Existing Line (b)
Long Term (2004 to 2049)	Retreat the Existing Line (a) Hold the Existing Line (b)

This management unit is unique in this SMP as it contains both cliff and lower lying spit features, thus preferred strategy options for each feature vary as shown in Figure D2.38.

Compliance with Process Unit Objectives

The preferred policies, presented above, meet the objectives set out in the Objective Screening Table for CBY1. A hold the Line option for the spit would prevent a breach into Christchurch Harbour whilst retreat of the cliffed section will limit erosion of Hengistbury Head yet maintain important geological exposures.

Impact on Adjacent Management Units

The natural landform of Hengistbury Head plays an important role in the integrity and configuration of both Poole and Christchurch Bays and so it is important that policies along this management unit recognise the status and position of it within integrated process systems. The Retreat the Existing Line policy is likely to reduce natural feed of cliff derived material and so artificial sediment input is most likely to be a requirement over the long term. This may involve sediment feed to maintain alongshore sediment supply. Failing to introduce such schemes would have significant impacts on the sediment budget of Christchurch Bay.

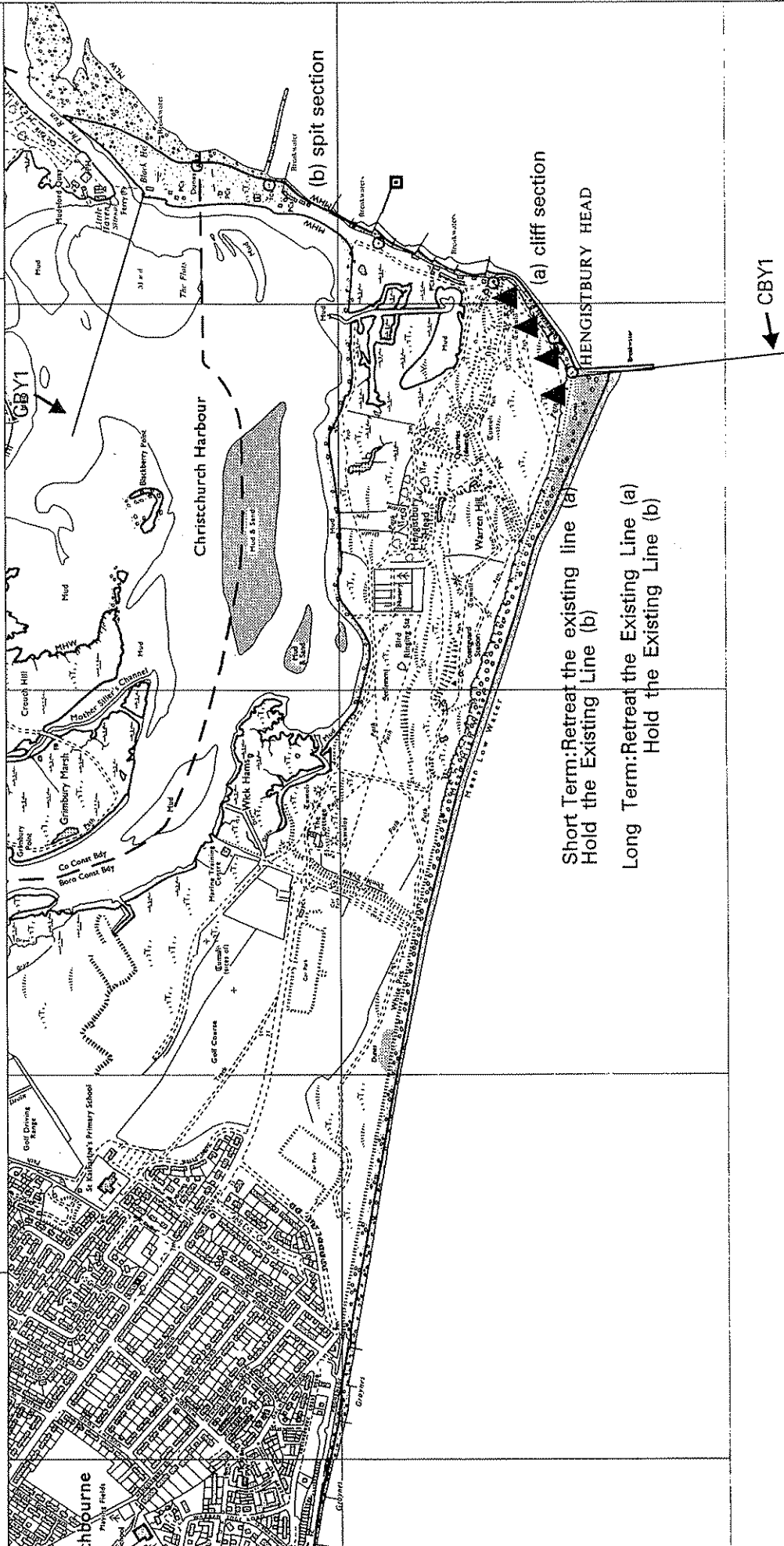
Review of Potential Implementation

The current standard of defence for the spit (b) is 1:20 years whereas 1:200 would be expected for such a key section of coastline. A scheme to improve the standard of protection by means of beach recharge replacing some failing timber groynes with rock groynes which involves extending some of the existing rock groynes is also planned.

Present and Future Monitoring/Studies

Christchurch Borough Council has been monitoring the coastline here regularly since 1977, taking the form of annual aerial photography and six monthly hydrographic and topographic surveying. The existing and planned coastal works for Mudeford Sandbank should be monitored as a routine operation. Additional ground surveys to identify and quantify a Beach Management Plan (with BBC) are a strong recommendation.

Of great importance over this management unit is to continue to monitor beach level change and to quantify sediment transport rates around Hengistbury Long Groyne onto this frontage. Foreshore levels should be continually assessed to deduce their future effectiveness.



Christchurch Bay Process Unit (CBY)
Management Unit CBY1
Hengistbury Head Long Groyne
to top of Mudeford Sandbank

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – MUDEFORD SANDBANK TO CHEWTON BUNNY (CBY2)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Mudeford Sandbank (GR: 418306E, 091770N)
- East – Chewton Bunny (GR: 421816E, 093115N)

Management Unit Description

The majority of this frontage is cliffed in nature and heavily developed containing the largely residential settlements of Highcliffe and Friars Cliff. These cliffs form part of the Highcliffe to Milford geological SSSI, containing important fossil rich exposures of Tertiary Barton and Headon Beds. There are amenity car parking areas along the cliff top and adjacent open space in the vicinity of Highcliffe Castle, a Grade 1 Listed Building. The beaches at the base of the cliffs are intensively used during the summer months, however they suffer from direct wave attack and are consequently at risk from erosion. These cliffs give way to Mudeford Quay at the western boundary of the unit, an important tourist attraction with a nearby caravan / camping site along the coastal frontage.

Administrative Authority

New Forest District Council

Frontage Lengths

Total frontage length: 4489m; Defended frontage length: 3804m

Environmental Designations

Statutory Designations

- Highcliffe to Milford Cliffs SSSI – geological importance.
- Bronze Age Bowl Barrow SM – archaeology.
- Christchurch Harbour SSSI – saltmarsh habitat.

Non-Statutory Designations

- Highcliffe GCR – geological site.
- Barton GCR – geological site.
- Chewton Bunny SNCI – woodland habitat.
- Friars Cliff GCR – geological site.
- Mudeford Quay SNCI – grassland ecology.
- Poole Bay and Isle of Purbeck SMA – marine ecology.

Description of Land at Risk

- Housing
- Commercial Property
- Open Space
- Woodland
- Highway

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
South Christchurch Local Plan		NONE	RT 1 RT 9	Harbour recreation Sandhill Caravan Park	TC1-3 TC4 TC5 TC6 TC18	Conservation Area Policies Mudford Quay Improvements Enhancement in Conservation Areas SSSI
Highcliffe and District Local Plan		NONE	CE6 CE8 RT4 RT6 RT7 RT8 T12	Highcliffe Castle Green Belt Public Open Space Recreation and tourism Cliff Top Path Highcliffe Castle Grounds Highcliffe Cliff Top Car Park	CE1-4	Conservation Area Policies

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2609	1	CBC	0.40	Piling	Class 1	>10	1996
681/2609	2	CBC	0.03	Piling	Class 1	>10	1996
681/2609	3	CBC	0.02	Piling	Class 1	>10	1996
681/2609	4	CBC	0.08	Piling	Class 1	>10	1996
681/2609	5	CBC	0.07	Piling	Class 1	>10	1996
681/2609	6	CBC	0.02	Piling	Class 1	>10	1996
681/2609	7	CBC	0.01	Groynes	Class 1	>10	1996
681/2608	1	CBC	0.38	Wall	Class 2	>10	1978
681/2608	2	CBC	0.38	Toe Piling	Class 2	>10	1978
681/2608	3	CBC	0.38	Groynes	Class 2	>10	1978
681/2608	4	CBC	0.38	Splash Wall	Class 2	>10	1978
681/2608	5	CBC	0.38	Apron	Class 2	>10	1978
681/2607	1	CBC	0.21	Wall	Class 2	>10	1960
681/2607	2	CBC	0.21	Groynes	Class 2	>10	1988
681/2607	3	CBC	0.21	Recharge	Class 2	>10	1988
681/2606	1	CBC	0.38	Wall	Class 2	>10	1960
681/2606	2	CBC	0.38	Groynes	Class 2	>10	1984
681/2606	3	CBC	0.14	Wall	Class 2	>10	1960
681/2606	4	CBC	0.24	Splash Wall	Class 2	>10	1960

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
681/2605	1	CBC	0.38	Revetment	Class 3	5-10	1960
681/2605	2	CBC	0.38	Toe Piling	Class 2	>10	1979
681/2605	3	CBC	0.38	Groynes	Class 2	>10	1979
681/2605	4	CBC	0.38	Revetment	Class 2	>10	1979
681/2604	1	CBC	0.31	Recurved Wall	Class 2	>10	1960
681/2604	2	CBC	0.31	Toe Piling	Class 3	5-10	1960
681/2604	3	CBC	0.31	Groynes	Class 4	5-10	1900
681/2603	1	CBC	0.10	Revetment	Class 3	>10	1989
681/2603	2	CBC	0.10	Recharge	Class 3	>10	1989
681/2602	1	CBC	1.35	Revetment	Class 2	>10	1968
681/2602	2	CBC	1.35	Toe Piling	Class 3	>10	1968
681/2602	3	CBC	1.35	Groynes	Class 2	>10	1992
681/2602	4	CBC	1.35	Recharge	Class 3	5-10	1992
681/2602	5	CBC		Wall	Class 2	>10	1970
681/2601	1	CBC	0.07	Breakwater	Class 1	>10	1991
681/2601	2	CBC	0.03	Recharge	Class 1	>10	1993

Description of Defences

- 2601 At Chewton Bunny the 70m long armour rock, shore-linked, shore-parallel breakwater was constructed in 1991 to protect properties above Chewton Bunny. Cliff drainage was installed in 1993 and shingle was placed in the lee of the breakwater. These measures were reasonably effective in preventing further erosion of the cliffs immediately adjacent to Chewton Bunny by wave action.
- 2602 At Highcliffe, a timber revetment and groyne scheme was constructed in the 1960s to protect the 1.35km frontage from coastal erosion. A programme of cliff stabilisation works was carried out in the 1970s. The timber groynes were replaced with alternating long and short groynes (70m and 25m long respectively) in 1980, 1984 and 1992. CBC's current policy is to re-nourish the beach. 75,000 tonnes of shingle were placed in 1985, 28,000 tonnes in 1992 and CBC currently place 1-2,000m³ of nourishment annually at the western end of Highcliffe.
- 2603 At Steamer Point, a crude 100m long rock revetment was constructed in 1989 to halt terminal erosion.
- 2604 Immediately to the west a 310m long apron with a massive re-curve sea wall was constructed in the 1960s. Although the toe piling is currently buried, it is in poor condition and if the beach level falls, the piles will deteriorate rapidly.
- 2605 A series of six 50m long timber groynes and a concrete revetment with a sheet piled toe were constructed in 1979 to defend 380m length of Friars Cliff. The concrete revetment is deteriorating, with cracks evident and a possible loss of fines immediately behind the sloping upper section of the revetment. The stepped toe of the revetment is currently buried by sand, levels which have increased over the last 10 years.

- 2606 At Avon Beach, a further five 50m long timber groynes are backed by a concrete wall, a promenade and a 240m long concrete splash wall. The sand beach has increased in size over the last 10 years.
- 2607 Along a further 210m length of Avon Beach, shingle nourishment and two 60m long groynes, constructed from 1 to 4 tonne rock armour in 1988, provide the main defence. The shingle nourishment has been buried by accreted sand. At the rear of the beach there is a large wave wall with a stepped toe, there is a promenade behind the wave wall.
- 2608 The primary feature at Gundimore is the 380m long wave wall with a sloping concrete apron and sheet piled toe. Behind the wall a promenade and splash wall provide secondary defences. When the wave wall was constructed in 1978 a large beach accreted and was retained by constructing a series of rubble groynes, using material from the old seawalls. The frontage appears relatively stable.
- 2609 Concrete piles were installed around Mudeford Quay in 1935. In 1970 and 1976 sheet piles were installed following the collapse of the concrete piles, further sheet piles were installed in 1946, 1950 and 1961. In early 1994 the piles were at the end of their useful life and a new sheet pile wall was constructed 2m seaward of the existing line of piles. The area between was reclaimed to provide a new quay structure.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – MUDEFORD SANDBANK TO CHEWTON BUNNY (CBY2)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing (unde-fended stretch) ✓	Hold	Retreat (unde-fended stretch only)	Advance
Technically viable?	✓	✓		✓
Economically justifiable and environmentally acceptable?	×	*✓	✓	×
Compatible with adjacent strategies?	▲	*✓	○	×
Compatible with wider coastal processes?	▲	○	○	×
Process Unit Objectives (See Part C)				
Strategy should not impact on fronting or adjacent beach levels (1)	▲	*✓	○	×
Strategy should not interfere any further with sediment processes (2)	✓	○	✓	×
Strategy should ensure protection of life and residential property where economically viable (3)	×	✓	✓	○
Strategy compliant with sound geomorphological principles (4)	✓	○	○	×
Strategy should not impact on important conservation designations (5)	✓	○	○	×
Strategy should not detract from the units landscape quality (6)	▲	○	○	×
Strategy should not impact on archaeological or historical potential (7)	▲	○	✓ (ST) × (LT)	×
Strategy should not increase the threat of erosion and flooding on immediate or adjacent units (8)	▲	○	○	×
Strategy should not impact on local economy, tourism or amenity (9)	×	✓	○	○
Will the strategy seek to improve beach access? (9)	×	✓	×	○
Strategy should not comprise inshore fisheries at Mudeford (10)	n/a	n/a	n/a	n/a
Suitability of Strategy Option	×	✓ (SH)	✓ (SR)	×

- * If beach recharge used.
- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SH Selective Hold
- SR Selective Retreat

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further. Do nothing also appears inappropriate, however, shall be evaluated along with possible selected retreat along the undefended stretch. A selective Hold the Line strategy appears most appropriate with development of beach management strategies for undefended stretches of frontage. Do Nothing, selective retreat and selective hold shall therefore be assessed for the unit.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – MUDEFORD SANDBANK TO CHEWTON BUNNY (CBY2)

	DO NOTHING (short term effects in <i>italics</i>)	SELECTIVELY HOLD THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	SELECTIVELY RETREAT THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	ADVANCE THE EXISTING LINE (short term effects in <i>italics</i>)
Effects on physical Environment and Coastal Processes	- accelerated erosion along the undefended section fronting Highcliffe Castle <i>continued limited natural sediment supply except for the undefended length</i>	<i>reduce/terminate any sediment supply from natural sources</i> - increase downdrift erosion risk dependent on method used to hold	partially reduce natural cliff sediment inputs and supply to downdrift lengths	N/A
Effects on Human Environment	- increased risk of erosion to Highcliffe properties - increased risk of flooding to areas backing Mudeford Quay	ensure long term protection of residential and historical assets at Highcliffe and Mudeford	- attempt to reduce the erosion rate in front of properties at Highcliffe - attempt to reduce the erosion rate in front of Highcliffe Castle and golf course (long term)	N/A
Effects on natural Environment and Conservation	- maintain exposures of geological interest (reason for SSSI status) - loss of woodland habitat at Chewton Bunny	loss of geological exposure as direct wave attack is reduced	- potential loss of geological exposure - potential loss of woodland habitat at Chewton Bunny	N/A
Implications for Coastal Defences	<i>deterioration of existing defences</i>	- long term need to maintain existing defences - increased need to introduce shingle as a recharge material (slower transport rate)	<i>need for either cliff strengthening measures, managed retreat using recharge or groyne type structures to retain beach widths</i>	N/A
Impacts within Process Unit	enhance the long term prospect of shoreline reorientation	<i>prevent natural bay reorientation or evolution.</i> <i>Terminate natural cliff sediment inputs</i>	reduce the sediment volume supply to fronting adjacent units	N/A
Economics	loss of residential and commercial assets	viable	possibly viable	N/A

Current Policy: Selectively Hold the Existing Line

3 Assessment of Preferred Option

MANAGEMENT UNIT TITLE – MUDEFORD SANDBANK TO CHEWTON BUNNY (CBY2)

Do Nothing

With the exception of the undefended section east of Steamer Point, adopting a Do Nothing strategy would lead to the eventual failure of the existing man made defences at the end of their residual lives. This would result in significant economic impact to assets at Highcliffe, Friars Cliff and Mudeford Quay (increased flood risk). Doing nothing in front of the undefended length would ensure that no further impacts on contemporary sediment budgets are created and geological conservation objectives are met.

Selective Hold the Existing Line

This would represent a continuation of present strategy and in the short and long term, would provide for the defence of all developed land along the shoreline. It is based on continued protection to the shoreline where defences currently exist and a Do Nothing for the undefended section fronting Highcliffe Castle. Depending on implementation methods used, the Long Term impacts of such a strategy on the sediment budget and downdrift sediment supply are points of key concern. Any termination of the contemporary natural sediment supply would impact upon current sediment budgets. As a result, this may prove deleterious to Christchurch Bay as a whole. Due to the presence of these structures, this strategy would have no implications on contemporary coastal processes or any significant adverse impacts on the environment.

Selective Retreat the Line

This would only apply to the undefended length of the management unit over the Long Term. Should erosion rates along this stretch increase as a consequence of sea level rise and increased storminess, this may result in a real risk of defence outflanking on either side should beach levels not be adequately maintained. Consequently, schemes to reduce the erosion rate at this location may have to be sought either as direct intervention (linear defence structure) or as part of a more strategic beach management initiative. This strategy is not recommended in the Short Term and would need to be confirmed as a viable option only after accumulating an extensive set of beach profile time series data at this site, as part of a Beach Management Plan for Christchurch Bay.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Selective Hold the Existing Line
Long Term (2005 to 2049)	Selective Hold the Existing Line and / or possible Selective Retreat the Line along currently undefended length

To Selectively Hold the Line is the preferred policy for this management unit and the implication of this is shown in Figure D2.39.

Compliance with Process Unit Objectives

The preferred policy, presented above for the Short and Long Term, meets most of the objectives set out in the Objective Screening Table for CBY2. Compliance with many of the Process Unit Objectives is, however, likely to be dependent upon the implementation methods used. Nevertheless, it is unlikely that the adoption of this policy, in the Short Term, will create significant changes to contemporary coastal processes in the management unit. The Long Term implications of adopting a Selective Retreat policy may not comply with 1999 Process Unit Objectives, though these may alter in time.

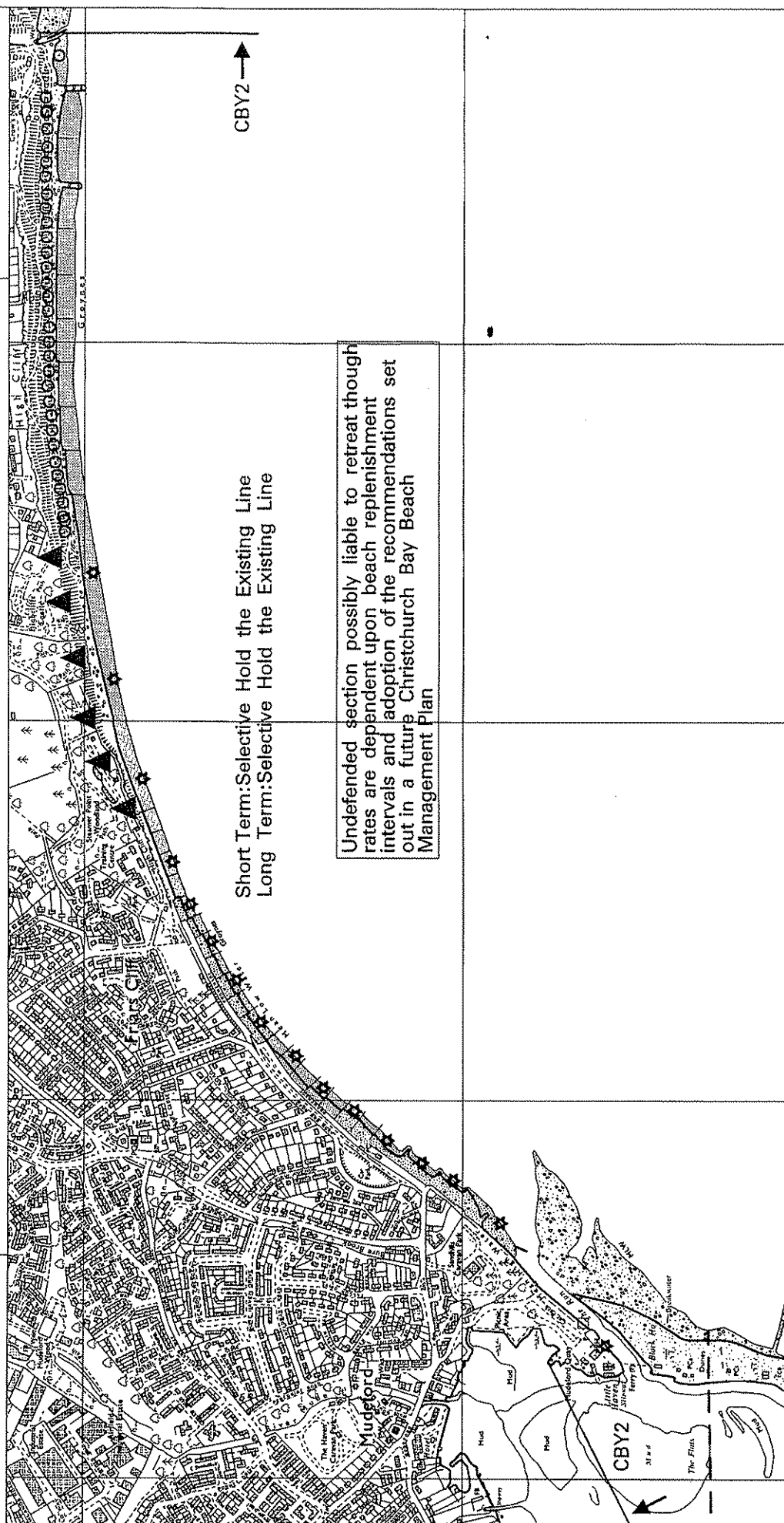
Impact on adjacent Management Units

To Selectively Hold the Line in the Short Term is unlikely to alter sediment budgets further or impact on adjacent management units due to the contemporary shortage of beach material in Christchurch Bay as a whole. Any future cliff stabilisation on currently undefended lengths within this unit (Long Term) is likely to result in a concentration of erosion on adjacent undefended lengths (such as at Naish Farm – management unit CBY3) in addition to increasing the outflanking risk towards Barton on Sea (management unit CBY4). Current schemes to improve the standard of defence along Mudeford Sandbank must be sensitive to the interdependencies of sediment budget requirements elsewhere in the Process Unit. This may involve sediment feed to maintain alongshore sediment supply.

Review of Potential Implementation

As the main sediment input within Christchurch Bay (cliff erosion) has been reduced over historic time, it is recommended that implementation of this policy continues to make effective use of beach nourishment schemes. This should be adopted as part of a Bay wide Beach Management Plan as opposed

SHORELINE MANAGEMENT PLAN
POOLE AND CHRISTCHURCH BAYS
DURLSTON HEAD TO HURST SPIT (Subcell 5F)



 : Estimated position of cliff top in 2049 (subject to implementation of a Beach Management Plan for Christchurch Bay)
 : Existing Beach Monitoring Stations
 : Future Beach Monitoring Stations
 : Future & Existing Water level/Tide Monitoring Stations

Christchurch Bay Process Unit (CBY)
Management Unit CBY2
Mudford Sandbank to Chewton Bunny

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – CHEWTON BUNNY TO START OF DEFENCE AT BARTON ON SEA (CBY3)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Chewton Bunny (GR: 421816E, 093115N)
- East – Start of defence at Barton on Sea (GR: 423080E, 092980N)

Management Unit Description

Chewton Bunny at the western end of the unit is the point where Walkford Brook enters Christchurch Bay. The coastline is characterised by eroding cliffs of approximately 30 metres in height and is undefended. The fossil rich cliffs are of national geological value, with fresh exposures maintained by continued cliff erosion. The current erosion trend also has the potential to uncover archaeological material within the cliff. The main development here is the Naish Farm Holiday Village, however this unit also includes the western boundary of Barton on Sea (Marine Drive West).

Administrative Authority

New Forest District Council

Frontage Lengths

Total frontage length: 1270m; Defended frontage length: 1270m

Environmental Designations

Statutory Designations

- Highcliffe to Milford Cliffs SSSI – geological importance. One of Britain's most important stratigraphic and palaeontological sites.

Non-Statutory Designations

- Highcliffe GCR – geological site.
- Barton GCR – geological site.

Description of Land at Risk

- Naish Farm Holiday Village
- Adjacent properties
- Open space
- Woodland

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Coastal Towns Local Plan	C10	Provision and maintenance of coastal defences	H9 & H12 R1 R19	Height of new developments at Barton and Milford Open Space Beach Huts Barton on Sea	C6	SSSIs and SNCIs

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
571/2769	1(part)	NFDC	1.30	Cliff/Scarp	Poor		

Description of Defences

- 2769 Chewton Bunny is on the boundary of NFDC. To the east of this point are significantly eroding cliffs. Naish Farm holiday village is reported to have lost several buildings due to cliff erosion. there is a lack of sediment deposited in this area due to coast protection work west of Highcliffe which intercepts the littoral drift. The length of cliff in front of Naish Farm is unprotected. NFDC were planning to implement a scheme in early 1997 which would have involved depositing 450,000m³ of shingle between Chewton Bunny and Barton-on-Sea. For several reasons NFDC were not able to obtain the material whilst available and the scheme did not proceed.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – CHEWTON BUNNY TO START OF DEFENCE AT BARTON ON SEA (CBY3)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing ✓	Hold	Retreat	Advance
¹ Technically viable?	✓	✓	✓	×
Economically justifiable and environmentally acceptable?	✓ (ST)	✓	² ○ (LT)	×
Compatible with adjacent strategies?	³ ▲✓ (ST)	×	✓	×
Compatible with wider coastal processes?	✓ (ST)	×	○	×
Process Unit Objectives (See Part C)				
Strategy should not impact on fronting or adjacent beach levels (1)	▲✓ (ST)	×	○	×
Strategy should not interfere any further with sediment processes (2)	▲✓ (ST)	×	○ ⁴ ✓ (LT)	×
Strategy should ensure protection of life and residential property where economically viable (3)	×	○	○	×
Strategy compliant with sound geomorphological principles (4)	▲✓ (ST)	×	✓	×
Strategy should not impact on important conservation designations (5)	✓ (ST)	×	○ (LT)	×
Strategy should not detract from the units landscape quality (6)	▲✓ (ST)	×	○	×
Strategy should not impact on archaeological or historical potential (7)	▲	×	○ (LT)	○
Strategy should not increase the threat of erosion and flooding on immediate or adjacent units (8)	✓ (ST)	✓ (ST) × (LT)	○ (LT)	×
Strategy should not impact on local economy, tourism or amenity (9)	×	✓ (ST)	×	×
Will the strategy seek to improve beach access? (9)	n/a	n/a	n/a	n/a
Strategy should not comprise inshore fisheries at Mudeford (10)	n/a	n/a	n/a	n/a
Suitability of Strategy Option	✓ (ST)	×	✓ (LT)	×

▲ Possible conflict with objective over longer term

✓ Complies with statement

× Conflicts with statement

○ Conflicts with statement, but is dependent upon implementation methods used

n/a Objective is not relevant to this management unit

¹ Retreat technically viable but to limit retreat rather than to build defence structure inland

² Subject to long term importance of geological exposures in front of Naish

³ Long term would lead to outflanking

⁴ Controlled erosion to toe to enable maintenance of suitable sediment volumes in front of cliff

ST Short Term
LT Long Term

Proposed do nothing strategy to observe and monitor appears immediately relevant here. Retreat long term is applicable to limit retreat within the area using soft defence techniques and cliff drainage/stabilisation measures.

From the above screening exercise, the Hold and Advance the Line options for the whole unit are not appropriate for this Management Unit and are not considered any further. Selective Hold for the corner limits of the management unit may be applicable to allow protection of vulnerable assets at the limits of the unit. Do nothing appears in appropriate long term, however, shall be evaluated in terms of what the implications of not doing something actually are likely to be in the short and longer term.

The decision is ultimately dependent upon the significance of the stratigraphical horizons present at this location and their long term sustainability.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – CHEWTON BUNNY TO START OF DEFENCE AT BARTON ON SEA (CBY3)

	DO NOTHING (short term effects in italics)	SELECTIVELY HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	- continued present rate of cliff toe erosion resulting in cliff failure, - continual supply of material to fronting beaches at contemporary rates	- halt to eroded sediment supply from the limits of the unit - continual supply of material to fronting beaches at contemporary rates from majority of unit	- reduced rate of cliff toe erosion - reduced feed of sediment to shoreline	N/A
Effects on Human Environment	loss of tourism infrastructure and property – Naish Farm Holiday Village	- protection of vulnerable assets at the unit margins - no specific protection to Naish Farm Holiday Village	reduced loss of cliff top property and access road at Naish Farm Holiday Village up to set-back defence line	N/A
Effects on Natural Environment and Conservation	maintain exposures of geological features in cliff face (reason for SSSI status)	maintain clean geological exposures in cliff face in the central part of the unit	potential loss of internationally important geological strata	N/A
Implications for Coastal Defences	- continue minimal supply of cliff material to immediate beach area at present day rates - increased risk of outflanking and flooding problems to the west of Chewton Bunny	- new defences required at the unit edges to maintain required standard of protection - small loss of local sediment supply to beaches downdrift	possible need to seek to maintain foreshore levels whilst allowing the cliff face and top to evolve/stabilise naturally	N/A
Impacts within Process Unit	- supply of sediments to down drift coastlines in the east at present day rate and amount - the probability of outflanking problems to the west likely to increase	potential reduction in littoral budget volumes	- reduce threat of defence outflanking in front of Highcliffe - allow the impact of shoreline realignment to be less severe	N/A
Economics	viable (however, likely loss of sections of Naish Holiday Village)	viable	possibly viable long term	N/A

Current Policy: Do Nothing (Observe and Monitor)

3 Assessment of Preferred Option

MANAGEMENT UNIT TITLE – CHEWTON BUNNY TO START OF DEFENCE AT BARTON ON SEA (CBY3)

Do Nothing (Observe and Monitor)

Under this policy, the undefended cliff frontage would continue to retreat and provide fresh beach building material to management units CBY3 and CBY4. As the extremities of the unit are fixed by artificial hardpoints, it is likely that if the cliff was left to retreat, it would (over the Long Term) develop into a plan shape in equilibrium with the dominant wave direction. Contemporary sediment supply rates are unlikely to change in the Short Term, however, it is a little uncertain as to how much this rate would reduce as the cliff line develops a stable profile. A key issue relating to this policy would be the increased risk of defence outflanking to the east and west of the unit boundaries. It is therefore concluded that whilst this option is suitable on environmental and sediment budget terms, efforts to reduce outflanking are likely to come to the fore in the coming years. It is recommended that an Observe and Monitor policy is adopted in the Short Term to deduce the extent of internationally important stratotype beds before they are naturally eroded away (ie: as they naturally dip inland).

Selectively Hold the Existing Line

This policy over the Short and Long Term would allow for action to take place on the limits of the management unit where the risk of outflanking is most acute, whilst not cutting off the supply of fresh beach material to immediate and adjacent beaches. It is not economically viable to protect the Naish Farm Holiday Village complex and coupled with the internationally important geological strata of the Highcliffe to Milford Cliffs SSSI, any scheme to prevent contemporary erosion this would not be acceptable. Without this natural sediment input, the sustainability of the defences further to the east (Barton and Milford) would be reliant on periodic replenishment from artificial sources. Terminating fine material supply is an issue within Christchurch Bay as a whole as if supplies to augment existing stores are reduced, this may have implications on the sustainability of fine sediment stores (inter tidal mudflats) within adjacent SMP areas (ie: West Solent). New works at the limits of this unit are unlikely to be detrimental to the site, however, preventing cliff slipping in the Long Term due to the clayey / silty nature of the sediments is an inherent problem along this length. The value of the assets at risk on the limit edges of this unit make such an option viable over the Long Term.

Retreat the Existing Line

A policy to retreat the existing line would appear to be the most suitable option for this unit over the Short and Long Term for the central part of the unit. This would allow for permanent exposure of a geological sequence of the SSSI in a context of appropriate, effective and essentially non-damaging coastal protection works or site clearance. Natural cliff slumping is a characteristic of these cliffs and even with cliff drainage schemes, this is likely to continue in the Long Term. Adopting a Retreat the Line policy would thereby allow for attempts to not only control erosion rates, but also to allow English Nature to clear slumps that occur over important stratigraphic sequences or, more effectively, to clear sites where "lost" exposure sequences could be set up again. Attempts have been sought by English Nature to "bank" or create an inventory of sites where these internationally important horizons occur. Enquiries into previous drainage works here, unfortunately, suggest that this is the only site where a complete geological coverage is found.

Therefore, alternative locations cannot be set up elsewhere which would maintain this Critical Natural Asset. A scheme developed in consultation with English Nature that is designed to reduce the rate of erosion and to provide environmental enhancement of the beach needs to be pursued.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2009)	Retreat the Existing Line
Long Term (2010 to 2049)	Selectively Hold the Existing Line (intervention in sub parts a and c)

Figure D2.40 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

A policy to Retreat the Existing Line in the Short Term and Selectively Hold the Existing the Line in the Long Term would comply with the Process Unit Objectives by ensuring that due consideration is made of the geological conservation importance of the site, the natural processes acting within Christchurch Bay whilst protecting built assets at risk from Long Term erosion. Should intervention be needed in the Short Term (outflanking at unit boundary limits) then it is recommended that beach recharge materials are used prior to establishing a more permanent implementation option.

Impact on Adjacent Management Units

Whilst the preferred option needs to be compliant with sound geomorphological principles and the preservation of the internationally important geological exposures, continuation of the ongoing erosion trend here would undoubtedly have a significant impact on the adjacent shoreline configuration, increasing the risk of outflanking over the Long Term. Consequently, some degree of intervention is likely to be required both in coastal defence terms and in relation to geological site management (eg: slump clearance) to ensure that impacts on adjacent lengths of coast are kept to a minimum. This may involve sediment feed to maintain alongshore sediment supply.

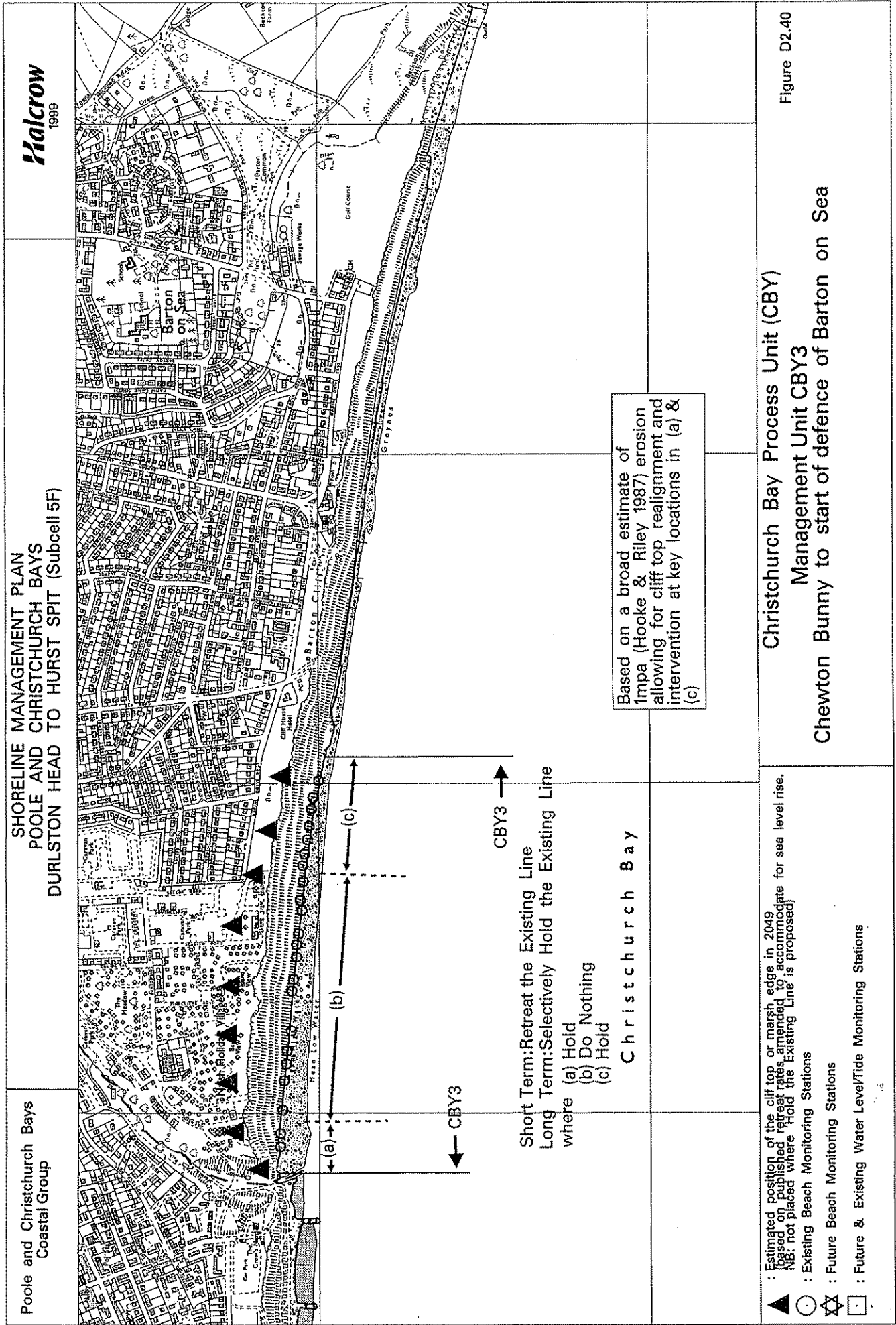
Review of Potential Implementation

A controlled retreat scheme is most likely to involve intervention along the foreshore as opposed to the cliff face (for environmental reasons). This may possibly involve using beach recharge materials regraded in a conventional manner along the foreshore coupled with the introduction of dynamic free-standing shingle groynes. This has already been model tested and may provide a suitable solution to the Long Term management of this unit. The economic viability of this initiative will be dependent upon sourcing shingle at a price that meets cost/benefit criteria.

Present and Future Monitoring/Studies

This management unit is currently monitored both as part of the Environment Agency's ongoing photogrammetric survey, and by NFDC. It is covered by 7 EA profiles and 15 NFDC profiles. It is presently surveyed by NFDC on a quarterly basis and it is recommended that this survey frequency continues. The bathymetry of this frontage should also be surveyed at approximately 5 yearly intervals. It is recommended that a Christchurch Bay wide Beach Management Plan is

undertaken to formalise this procedure and to set appropriate beach threshold levels to deduce intervention timings.



▲ : Estimated position of the cliff top or marsh edge in 2049
 (based on published retreat rates amended to accommodate
 NB: not plotted where 'Hold the Existing Line' is proposed)

○ : Existing Beach Monitoring Stations

☆ : Future Beach Monitoring Stations

□ : Future & Existing Water Level/Tide Monitoring Stations

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – START OF DEFENCE AT BARTON ON SEA TO BARTON GOLF COURSE (CBY4)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Start of Defence at Barton on Sea (GR: 423080E, 092980N)
- East – Barton Golf Course (GR: 424926E, 092655N)

Management Unit Description

The unit has a fringe of defended undeveloped land along the cliff top backed by residential areas with the Barton Golf Course at the eastern end. Barton is the seaward part of New Milton, a town with a population of approximately 21,000. Set behind a strip of open land and a number of car parks, the Barton frontage is predominantly residential although there is a small area of commercial use at the War Memorial. The cliffs contribute part of the Highcliffe to Milford Cliffs SSSI and thus are of great geological conservation value.

Administrative Authority

New Forest District Council

Frontage Lengths

Total frontage length: 1887m; Defended frontage length: 1887m

Environmental Designations

Statutory Designations

- Highcliffe to Milford Cliffs SSSI – geological importance. Barton Cliff is important for early Tertiary reptiles, particularly turtles.

Non-Statutory Designations

- Barton GCR – geological site.

Description of Land at Risk

- Golf Course and club house
- Open Space
- Car parks
- Commercial buildings
- Coastal footpath
- Housing
- Hotels
- Highways

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Coastal Towns Local Plan	C10	Provision and maintenance of coastal defences	H9 & H12 R1 R19 R31.1	Height of new developments at Barton and Milford Open Space Beach Huts Barton on Sea Public access(extension of Solent Way through Barton Golf Course)	C6	SSSIs and SNCIs

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
571/2769	1(part)	NFDC	1.30	Cliff/Scarp			
571/2768	1	NFDC	1.88	Cliff/Scarp			
571/2768	2	NFDC	1.88	Revetment	Class 1	>10	1990
571/2768	3	NFDC	1.88	Groynes	Class 1	>10	1977
571/2767	1	NFDC	0.43	Cliff / scarp			
571/2767	2	Southern Water	0.03	Armour	Class 3	>10	1980

Description of Defences

Extensive cliff stabilisation measures were first carried out in the 1960's along the Barton-on-Sea frontage to arrest the cliff erosion problem. The scheme included the construction of a timber piled revetment for toe protection and the works extended from Marine Drive West to the edge of Barton Golf Course. The cliff stabilisation comprised an extensive sheet-pile cut-off wall diverting groundwater towards a perforated pipe drainage system and out to sea through a series of outfalls. Correspondingly, slope reprofiling was also undertaken and surface drains, berms and access tracks were constructed to reduce the risk of instability. In 1989, further cliff stabilisation works were carried out at Hoskin's Gap after localised failure had occurred.

In 1994, refurbishment work was carried out to replace corroded segments of the original drainage system at Marine Drive East and since then similar work was undertaken near Cliff House Hotel.

The existing structural defences are relatively new ones which have replaced the original structures and are described below.

- 2769 Chewton Bunny is on the boundary of NFDC. To the east of this point are significantly eroding cliffs. Naish Farm holiday village is reported to have lost several buildings due to cliff erosion. there is a lack of sediment deposited in this area due to coast protection work west of Highcliffe which intercepts the littoral drift. The length of cliff in front of Naish Farm is unprotected. NFDC were planning to implement a scheme in early 1997 which would have involved depositing

450,000m³ of shingle between Chewton Bunny and Barton-on-Sea. For several reasons NFDC were not able to obtain the material whilst available and the scheme did not proceed.

Coast protection measures extend over the 1.88 km length of eroding cliffs in front of New Milton and Barton-on-Sea. Protection takes the form of rock groynes between Cliffhouse Hotel and the Golf Course. The groynes are approximately 50 m long and some of which were constructed between 1975 and 1983, using 4 tonne rock armour. This length is also protected by a 3-4 tonne rock armour revetment which was constructed in 1990. The revetment comprises two parts. The lower part is at beach level, and the higher part protects the upper slope. To the rear of the upper slope is a 7m wide compacted earth access roadway. Both the rock groynes and the rock revetments are in a satisfactory condition.

2767

The outfall at Beckton Bunny consists of a 12" cast iron pipe with concrete surround, contained within steel sheet piles, and behaves in a similar manner to a groyne, in terms of its effect on sediment transport. There is some 2-6 tonne rock armour protection mainly to the eastern side of the outfall. There is heavy algal growth on the rocks and a strong odour from the outfall. It is estimated that the rock armour was originally placed in 1980, with more extensive protection works carried out in March 1996. The cliffs at Beckton are unprotected and are reported to be suffering from significant erosion.

PART D2 APPRAISAL OF STRATEGIC OPTIONS (CBY)

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – START OF DEFENCE AT BARTON ON SEA TO BARTON GOLF COURSE (CBY4)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	×	✓	✓	✓
¹ Economically justifiable and environmentally acceptable?	○	○	×	×
Compatible with adjacent strategies?	○	✓	×	×
Compatible with wider coastal processes?	✓	✓	× (LT)	×
Process Unit Objectives (See Part C)				
² Strategy should not impact on fronting or adjacent beach levels (1)	▲	○	○	×
Strategy should not interfere any further with sediment processes (2)	▲	○	○	×
Strategy should ensure protection of life and residential property where economically viable (3)	×	✓	○	✓
Strategy compliant with sound geomorphological principles (4)	✓	×	○	×
Strategy should not impact on important conservation designations (5)	✓	○	○	×
Strategy should not detract from the units landscape quality (6)	×	○	×	×
Strategy should not impact on archaeological or historical potential (7)	×	✓	○	○
Strategy should not increase the threat of erosion and flooding on immediate or adjacent units (8)	○	○	○	×
Strategy should not impact on local economy, tourism or amenity (9)	×	✓	×	○
Will the strategy seek to improve beach access? (9)	×	✓	×	○
Strategy should not comprise inshore fisheries at Mudeford (10)	n/a	n/a	n/a	n/a
Suitability of Strategy Option	×	✓ (LT)	×	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

¹ Reduce potential impact on geological SSSI however this may have other environmental benefits eg increase in invertebrates in vegetated cliff face (Hold Strategy)

² There would be a halt to eroded sediment supply along the undefended stretch to the west (Hold Strategy)

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further. Do nothing also appears inappropriate, however, shall be evaluated in terms of what the implications of not doing something actually are likely to be in the short and longer term.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – START OF DEFENCE AT BARTON ON SEA TO BARTON GOLF COURSE (CBY4)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	<i>continued failure of cliffs (long term) caused by groundwater/ drainage seepage patterns at present day rates</i> - termination of cliff stabilisation works would encourage natural geomorphological processes to commence	halt to eroded sediment supply along unit and to fronting beaches	- reduced erosion of coast slope to predetermined retired line - incorporate a suitable cliff drainage system reducing the threat of cliff failure	N/A
Effects on Human Environment	- considerable loss of cliff top property at Barton-on-Sea (long term) - reduction in amenity value - loss of part of Golf Course	<i>protection of cliff top property at Barton-on-Sea</i> <i>maintenance of the present day amenity value of the unit</i>	loss of cliff top property access road at Barton-on-Sea up to set-back defence line	N/A
Effects on Natural Environment and Conservation	exposures of geological strata in cliff face (reason for SSSI status) likely to be affected if no face clearance activity occurs	continued diminution of geological exposures within cliff face	eventual loss of geological exposures in cliff face at set-back defence line	N/A
Implications for Coastal Defences	<i>deterioration of existing defences</i> - acceleration in cliff failure rates	<i>continued maintenance/ sediment recharge programmes required</i> <i>improved cliff drainage measures throughout the unit</i>	introduce selected techniques to reduce the frequency of cliff failure events	N/A
Impacts within Process Unit	- increased supply of sediments down-drift - enhance the prospect of wider shoreline reorientation	reduction of sand/gravel volume being eroded from the cliff altering the sediment budget of Christchurch Bay	reduced supply of sediment volume down drift	N/A
Economics	loss of residential assets at Barton-on-Sea	viable	not viable	N/A

Current Policy: Hold the Existing Line

Assessment of Preferred Options

MANAGEMENT UNIT TITLE – START OF DEFENCE AT BARTON ON SEA TO BARTON GOLF COURSE (CBY4)

Do Nothing

This strategy is not acceptable for the Barton-on-Sea frontage due to the area of development at risk. To 'do nothing' would result in the loss of significant residential and commercial properties, car parks, cliff top recreational space and part of Barton Golf Course, including the Club House. All of which together are of significant economic and amenity value. This strategic option is therefore not viable

Hold the existing defence line

A strategy to hold the existing defence line within this management unit would maintain current protection to coastal land and the majority of associated developments. Some readjustment of the cliff slope and drainage for Long Term protection may mean the loss of a strip of land next to the cliff edge. The value of those properties at risk from erosion is sufficient to give economic justification for this strategy particularly as this can largely be achieved through the maintenance and improvement of existing cliff toe and stabilization schemes. Neither the newly defended lengths or presently protected areas are expected to retain exactly their present cliff top position, as sub-aerial processes will contribute some retreat, however, the intention is to hold the cliff system in its present position. This strategic option is not compliant to the objectives of geological conservation, and so the possibility of re-exposing stratigraphic sequences in the cliffs behind the defences may be a requirement within this option. This strategic option is economically viable.

Retreat the existing defence line

The strip of open land along the majority of cliff top in this unit makes retreat appear a possibility. Nevertheless, the commercial properties, Cliff House Hotel, and car parks which are at the cliff edge, together with the open space, do have considerable amenity and economic value as well as the existing cliff vegetation being an important habitat for invertebrates. The fact that cliff stabilisation structures are presently in place makes it less expensive to maintain the existing structures than to build new 'retired' defences. Consequently, for this management unit, it is not economically viable as a strategic option to re-position them.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line
Long Term (2004 to 2049)	Hold the Existing Line

Figure D2.41 displays the likely implication of adopting this policy.

Compliance with Process Unit Objectives

A policy to Hold the Line in the Short Term and Long Term would comply to most of the Process Unit Objectives set out in the Objective Screening Table for CBY4. The exceptions are the threat to long term geological conservation objectives and that the policy is not compliant with sound geomorphological principles. Although the maintenance of littoral processes is of paramount importance within Christchurch Bay, the threat of losing established property at Barton-on-Sea cannot be overlooked. A compromise needs to be reached between ensuring the continuation of natural processes and the required protection of property from erosion. By ensuring that any scheme proposed is sympathetic to the wider coastal processes, and not deleterious to downdrift units (ie. through the use of beach recharge), then compliance with the Process Unit Objectives will be attained.

Impact on adjacent Management Units

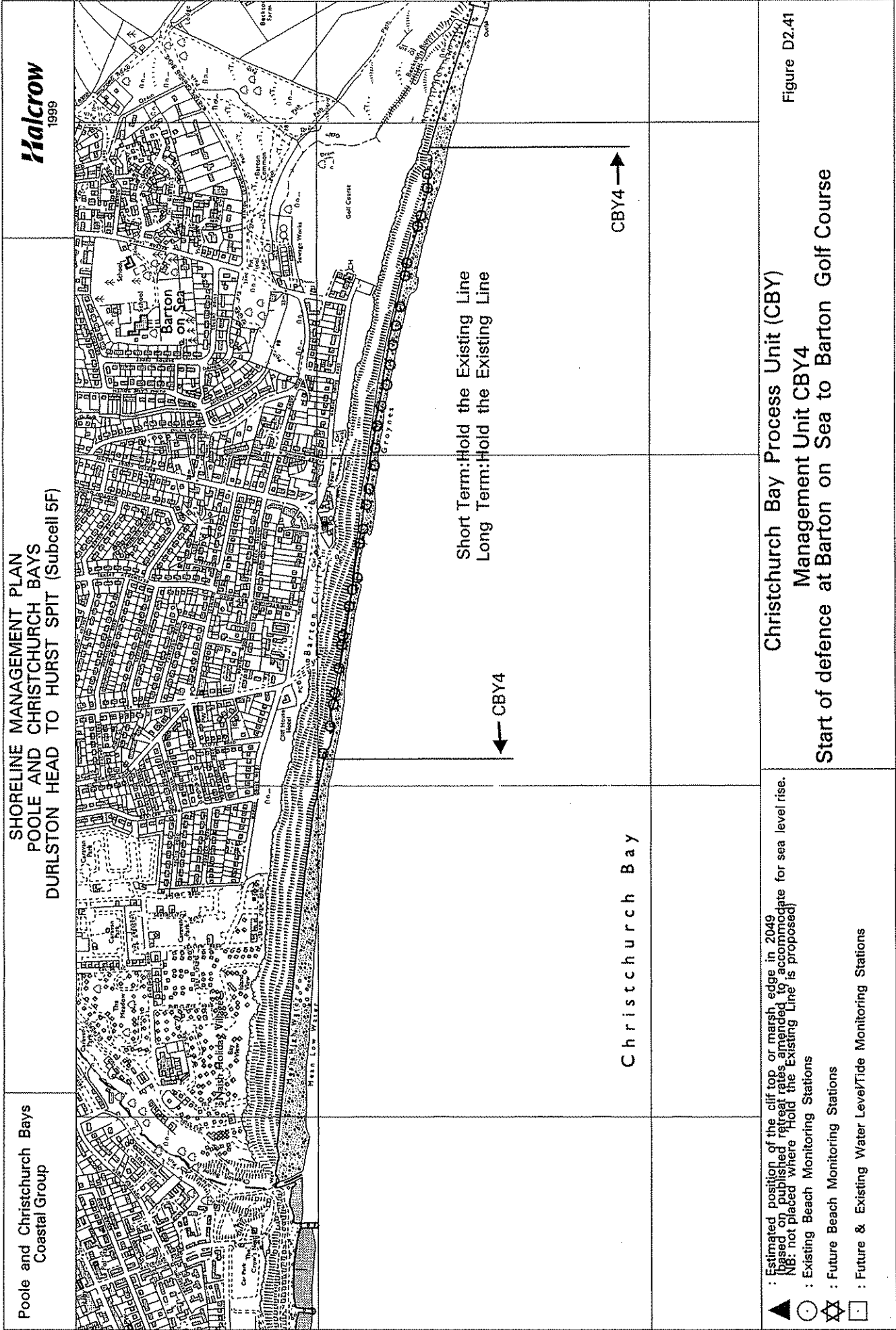
Any future additional works that interfere with contemporary littoral processes within Christchurch Bay (Long Term) may result in a concentration of erosion on adjacent undefended lengths in addition to increasing the outflanking risk to the east of Beckton Bunny (management unit CBY5). The maintenance of existing structures and the adoption of a Christchurch Bay wide Beach Management Plan (involving beach nourishment) would reduce the risk of any future downdrift erosion event. This may involve sediment feed to maintain alongshore sediment supply.

Review of Potential Implementation

The shoreline defences within this management unit are performing satisfactorily, although the cliff drainage is in need of improvement. It is suggested that implementation of this policy should involve maintaining existing defences as part of a Christchurch Bay wide Beach Management Plan covering the issue of beach replenishment on a bay scale and not just related to this management unit. Depending on the future management of geological exposures at Naish Cliff, (management unit CBY3), actions may be required to uncover similar stratigraphical sequences (should they exist) behind the existing defences. Consequently, actions to upgrade or renew existing defences need to be sensitive to this Long Term environmental requirement. In general, maintenance of existing structures incorporating beach recharge schemes that acknowledge the wider Christchurch Bay processes should be adopted to implement this policy.

Present and Future Monitoring/Studies

The coast within this management unit is presently monitored both as part of the Environment Agency's (EA) ongoing photogrammetric survey, and by New Forest District Council (NFDC). It is covered by 17 EA profiles (Hamp 47 to 66) and 23 NFDC profiles (sections 11 to 33. NFDC presently survey this frontage quarterly, and it is assumed that this will continue in the future. It is proposed that this data be used to assess the quality of the EA profiles. The bathymetry of this frontage should also be surveyed at approximately 5 year intervals. Also of great importance here is the monitoring of cliff stability.



▲ : Estimated position of the cliff top or marsh edge in 2049 based on published retreat rates amended to accommodate sea level rise.
 NB: not placed where 'Hold the Existing Line' is proposed
 ○ : Existing Beach Monitoring Stations
 ☆ : Future Beach Monitoring Stations
 □ : Future & Existing Water Level/Tide Monitoring Stations

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – BARTON GOLF COURSE TO HORDLE CLIFF (CBY5)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West – Barton Golf Course (424926E, 092655N)
- East – Hordle Cliff at the West end of Milford on Sea (GR: 427266E, 091870N)

Management Unit Description

From Barton Golf Course towards Milford-on-Sea, the cliff top land is under agricultural use. The only development is Hordle House School which is set slightly back from the cliffs near Milford. The cliffs over this length are unprotected, and are SSSI designated for their geological exposures. Hordle Cliff is a key site for fossil birds, mammals, reptiles and plants and associations of plant fossil with faunal remains make this unit a critical site for European Tertiary palaeo environmental analysis. Erosion of the cliffs also has the potential to uncover new archaeological sites and other Palaeolithic finds.

Administrative Authority

New Forest District Council

Frontage Lengths

Total frontage length: 2461m; Defended frontage length: 2461m

Environmental Designations

Statutory Designations

- Highcliffe to Milford Cliffs SSSI – geological importance. Barton cliff is important for early Tertiary reptiles, particularly turtles.

Non-Statutory Designations

- Barton Common and Beckton Bunny SNCI – heathland ecology. Areas of heathland vegetation; including matrices of dwarf shrub, grassland, valley mires and scrub.
- Barton Golf Course – geological site

Description of Land at Risk

- Golf Course
- Agricultural land
- School grounds
- Coastal footpath
- Archaeological assets

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Coastal Towns Local Plan	C10	Provision and maintenance of coastal defences	R1 R31.1	Open Space Public access(extension of Solent Way through Barton Golf Course)	C6	SSSIs and SNCIs

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
571/2767	1	NFDC	0.43	Cliff/Scarp			
571/2767	2	S. Water	0.03	Armour	Class 3	>10	1980
571/2766	1(part)	NFDC	2.51	Cliff/Scarp			

Description of Defences

- 2767 The outfall at Beckton Bunny consists of a 12" cast iron pipe with concrete surround, contained within steel sheet piles, and behaves in a similar manner to a groyne, in terms of its effect on sediment transport. There is some 2-6 tonne rock armour protection mainly to the eastern side of the outfall. There is heavy algal growth on the rocks and a strong odour from the outfall. It is estimated that the rock armour was originally placed in 1980, with more extensive protection works carried out in March 1996. The cliffs at Beckton are unprotected and further east are experiencing significant erosion.
- 2766 Between Beckton Bunny and Milford-on-Sea is Hordle Cliff. This consists of 2.5 km of unprotected, eroding cliff face over which many significant slippages have been reported. This stretch fronts an area of mainly agricultural land with some development further inland.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – BARTON GOLF COURSE TO HORDLE CLIFF (CBY5)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	✓	×
Economically justifiable and environmentally acceptable?	✓	○	×	×
Compatible with adjacent strategies?	✓	○	✓	×
Compatible with wider coastal processes?	✓	×	✓	×
Process Unit Objectives (See Part C)				
Strategy should not impact on fronting or adjacent beach levels (1)	▲	×	○	×
Strategy should not interfere any further with sediment processes (2)	✓	○	✓	×
Strategy should ensure protection of life and residential property where economically viable (3)	×	✓	○	×
Strategy compliant with sound geomorphological principles (4)	✓	×	○	×
Strategy should not impact on important conservation designations (5)	✓	○	○	×
Strategy should not detract from the units landscape quality (6)	✓	○	×	×
Strategy should not impact on archaeological or historical potential (7)	✓	×	×	×
Strategy should not increase the threat of erosion and flooding on immediate or adjacent units (8)	○	○	○	×
Strategy should not impact on local economy, tourism or amenity (9)	×	✓	×	✓
Will the strategy seek to improve beach access? (9)	×	✓	○	✓
Strategy should not comprise inshore fisheries at Mudeford (10)	n/a	n/a	n/a	n/a
Suitability of Strategy Option	✓ (ST)	○	○ (LT) (SR)	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- ×
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term
- SR Selective Retreat

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further. Hold the Existing Line also appears inappropriate, however, shall be evaluated in terms of what the implications of doing nothing are likely to be in the short and longer term.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – BARTON GOLF COURSE TO HORDLE CLIFF (CBY5)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	- continued present day rate of cliff erosion resulting in future cliff failure - continued supply of material to fronting beaches at present day rates	halt in the provision of eroded sediment supply to fronting and adjacent beaches	- reduced erosion of cliff top to predetermined retired line, - reduced feed of sediment to immediate and adjacent shorelines	N/A
Effects on Human Environment	significant loss of agricultural land, sections of Barton Golf Course and land at Hordle House School	protection of Barton Golf Course and agricultural land	reduced loss of agricultural land and sections of Barton Golf Course up to set-back defence line	N/A
Effects on Natural Environment and Conservation	- maintain exposure of geological features in cliff face (reason for SSSI status) - loss of archaeological sites due to continued erosion - loss of heathland vegetation (SINC at Beckton Bunny)	- loss of geological exposures in cliff face due to the encouragement of vegetation growth - archaeological sites preserved - heathland areas preserved	- gradual loss of important geological strata in cliff face - selected protection of archaeological sites seaward of retired line	N/A
Implications for Coastal Defences	- continued supply of eroded material to beach providing a natural defence - deterioration in condition of existing structures	continued maintenance /sediment recharge programme required	- addition of beach recharge materials to slow down present erosion rates - selective defence methods strategically placed within the unit	N/A
Impacts within Process Unit	- continued supply of sediments to down drift units - threat of defence outflanking with adjacent units	potential reduction in sediment drift to east, which could lower beach levels	reduced threat of defence outflanking within adjacent units	N/A
Economics	viaible	not viable	not viable	N/A

Current Policy: Do Nothing

3 Assessment of Preferred Options

MANAGEMENT UNIT TITLE – BARTON GOLF COURSE TO HORDLE CLIFF (CBY5)

Do Nothing

A Do Nothing strategy for this frontage would amount to a continuation of present practice. Land use along the cliff top is generally agricultural, with only part of Barton Golf Course and Beckton Bunny outfall at risk from erosion over the next 75 years. These do not generate sufficient benefits to justify the expense of cliff stabilization works. The cliffs of this unit are also of international geological importance, and under this option, the integrity of existing fresh exposures would be maintained. These considerations make this the preferred option. The maintenance of Becton outfall has been an important strategic issue in this area as its presence ensures that this structure continue to act as a groyne. Downdrift erosion from this structure is likely to continue at present day rates, though future rates would be influenced by the intensity of terminal scouring action immediately downdrift. It is now understood that removal of the outfall may be under active consideration by South West Water. A staged removal may be preferred. It's removal will reduce the differential in erosion rates on either side.

Hold the existing defence line

Holding the existing cliff toe line within this unit would involve the introduction of new defence structures along with the requirement for extensive stabilization works. Such works would eventually remove all geological interest in the area. Additionally, it would be very unlikely that any future coastal defence scheme could be financially justified based on the land use presently at risk (ie: a golf course and agricultural land). Therefore, for the unit as a whole, this is not a viable strategy. However, it will be necessary to maintain defences at the western end of this unit as part of the Hold the Existing Line strategy for CBY4.

Selective Retreat the existing defence line

There are no significant set-back features within the risk area of this unit which justify the defence of a retired position apart from Beckton Bunny Outfall which is now likely to become redundant. Retreat in the form of reducing erosion rates by soft defence techniques would be acceptable, but there is little economic justification for this. Removal of the outfall may accelerate erosion adjacent to CBY4, necessitating consideration of intervention measures in the Long Term (as part of a Selectively Retreat the Line strategy).

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Do Nothing (Observe and Monitor)
Long Term (2004 to 2049)	Selective Retreat the Existing Line

Figure D2.42 displays the likely implication of adopting this policy

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for CBY5. A strategic policy of "do nothing" would comply to the Process Unit Objectives as natural processes will be maintained allowing the existing littoral transport system to continue. However, over the Long Term, it is possible that there may be a physical impact on tourism / recreational assets (ie: in terms of loss of land) though it cannot be proven whether there would be an economic impact.

Impact on adjacent Management Units

The integrity of defences further east at Milford on Sea are likely to remain dependent on sediment released from both this management unit and CBY3 respectively. This interdependence is likely to become critical in the future if estimates of increased storminess are to be proved correct. However, estimates of the effectiveness of the partial sediment boundary at Hordle indicate a decreasing percentage of drift towards Milford on Sea. Consequently, the majority of material released from this management unit is likely to remain within its bounds, reducing the supply of fresh material further east (towards Milford). A Do Nothing policy for this management unit is seen as strategically the most sensible over the Long Term with allowance for a Selective Retreat both to the east and west of the management unit to allow for intervention (ie: beach recharge) over the Long Term should contemporary littoral drift rates continue (ie: reduction towards Milford on Sea) or accelerate due to outfall removal.

Review of Potential Implementation

There will be a continual need to assess changes in littoral drift rates to establish whether, Long Term, there is a need to intervene at management unit boundary limits. Beach recharge will be the most suitable implementation option should any work be required.

Present and Future Monitoring/Studies

The coast within this unit is presently monitored both as part of the Environment Agency's (EA) ongoing photogrammetric survey, and by New Forest District Council (NFDC). It is covered by 20 EA profiles (Hamp 62 to 81) and 12 NFDC profiles (sections 32 to 43). NFDC presently survey this frontage quarterly, and it is assumed that this will continue in the future. It is proposed that this data be used to assess the quality of the EA profiles. The bathymetry of this frontage should also be surveyed at approximately 5 year intervals.

Cliff erosion will need to be monitored to assess changes in the rate of erosion as well as for establishing any new archaeological finds that recent cliff falls may uncover.

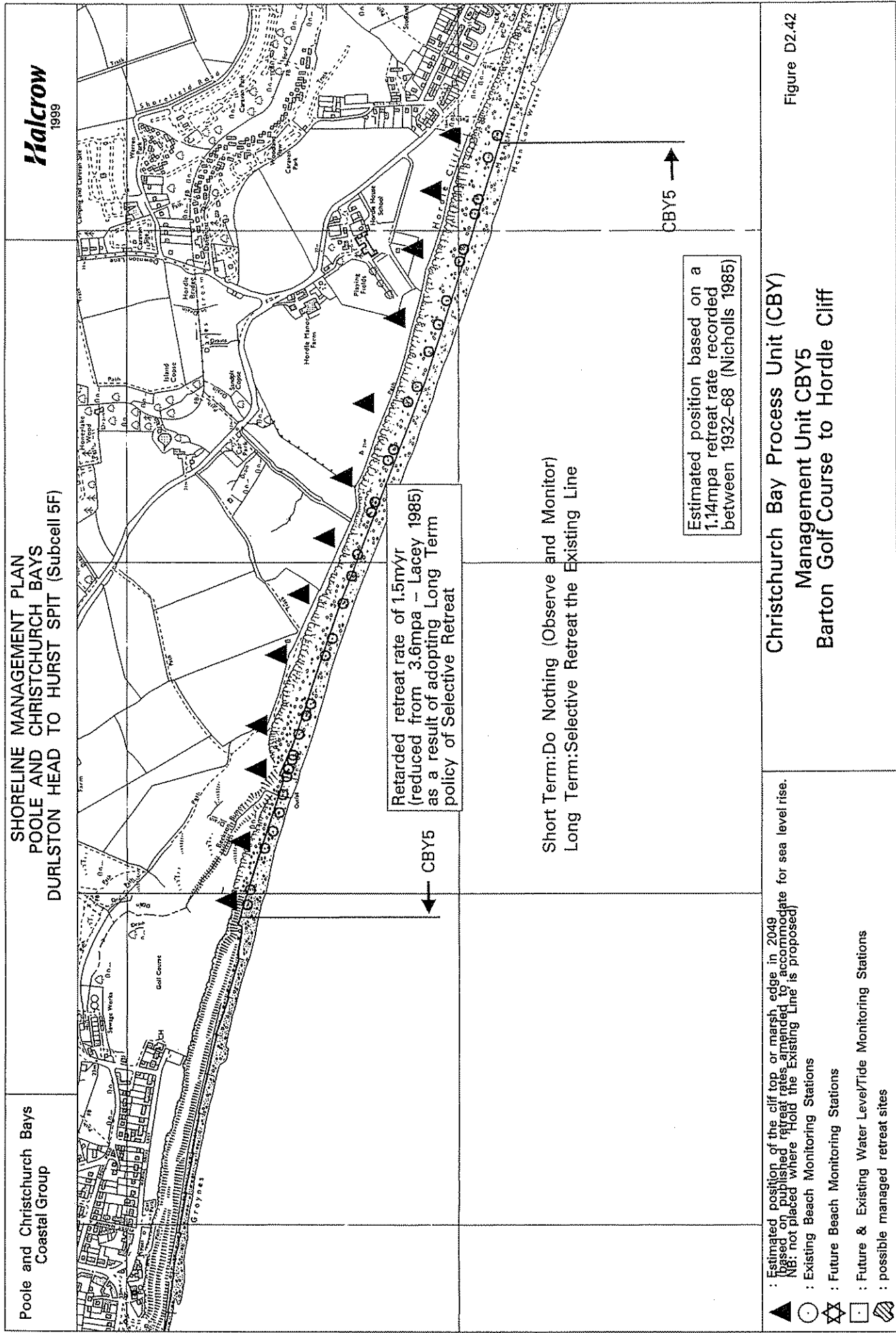


Figure D2.42

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE – HORDLE CLIFF TO HURST SPIT (CBY6)

PART D1 – CHARACTERISTICS

Location

The limits of this unit are:

- West - Hordle Cliff at the west end of Milford-on-Sea (GR: 427266E, 091870N)
- East - Hurst Beach (GR: 429487E, 091114N)

Management Unit Description

The predominantly residential village of Milford on Sea lies within this unit and is fronted by a strip of undeveloped land along with a number of car parks. The Milford frontage is defended throughout with both coast protection and sea defence structures. The cliffs fronting the west part of Milford are within the Highcliffe to Milford SSSI and thus are of international importance for their stratigraphical and palaeontological composition. The coastal land towards the east of this unit is mainly low-lying and undeveloped fronting a flood risk area on the west side of Sturt Pond, a feature fed by a tidal channel from Hurst marshes. The remaining land in the unit is agricultural. The shingle beach fronting this area forms the start of Hurst Spit.

Administrative Authority

New Forest District Council

Frontage Lengths

Total frontage length: 2347m; Defended frontage length: 2347m

Environmental Designations

Statutory Designations

- Solent Maritime pSAC (SAC citation ref 1) - botanical importance, threatened Atlantic saltmarsh
- Solent and Southampton Water pSPA/Ramsar site (SPA citation ref 1) - great diversity of habitats
- Hurst Castle and Lymington River Estuary SSSI (SSSI citation ref 2) - ecological and geomorphological interest
- Highcliffe to Milford Cliffs SSSI – geological importance

Non-Statutory Designations

- Sturt Pond SNCI – semi natural coastal habitats
- Studland Common SNCI – unimproved grassland
- Pleasure Grounds SNCI – ancient woodland and unimproved habitat
- Sharvells Copse SNCI – heathland vegetation
- Solent and Isle of Wight SMA – marine ecology
- Barton GCR – geological site

Description of Land at Risk

- Open Space
- Car parks
- White House
- Properties
- Bowling green
- Archaeological assets
- Highways

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Coastal Towns Local Plan	C10	Provision and maintenance of coastal defences	R1 R6 R21 H7 (E) H9 & H12 T16 & 20	Open Space Provision of small scale tourist facilities Beach huts – Milford Residential development Height of new developments (Milford) Traffic & Parking	C6 CV1-3 CV4-6 CV8	SSSIs and SNCIs Conservation Area Policies Listed Buildings Scheduled Monuments & Archaeology

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
571/2766	1(part)	NFDC	2.51	Cliff/Scarp			
571/2765	1	NFDC	0.92	Cliff/Scarp			
571/2765	2	NFDC	0.78	Wall	Class 2	>10	1970
571/2765	3	NFDC	0.78	Toe Piling	Class 2	>10	1970
571/2765	4	NFDC	0.78	Groynes	Class 3	5-10	1970
571/2765	5	NFDC	0.21	Armour	Class 2	>10	1970
571/2765	6	NFDC	0.18	Revetment	Class 1	>10	1995
571/2765	7	NFDC	0.12	Revetment	Class 1	>10	1996
571/2764	1	NFDC	0.17	Wall	Class 3	>10	1960
571/2764	2	NFDC	0.17	Groynes	Class 2	5-10	1960
571/2763	1	NFDC	0.08	Wall	Class 2	>10	1980
571/2763	2	NFDC	0.08	Groynes	Class 2	5-10	1970
571/2763	3	NFDC	0.08	Armour	Class 3	>10	1991
571/2762	1	NFDC	0.28	Wall	Class 3	>10	1960
571/2762	2	NFDC	0.28	Wall	Class 3	>10	1964
571/2762	3	NFDC	0.28	Groynes	Class 2	5-10	1960
571/2761	1	NFDC	0.18	Wall	Class 3	>10	1960
571/2761	2	NFDC	0.18	Apron	Class 3	>10	1960
571/2761	3	NFDC	0.16	Groynes	Class 2	>10	1960
571/2760	1	NFDC	0.23	Wall	Class 2	>10	1964
571/2760	2	NFDC	0.23	Apron	Class 3	>10	1964
571/2760	3	NFDC	0.25	Groynes	Class 2	>10	1964
571/2759	1	NFDC	0.54	Embankment	Class 2	>10	

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
571/2759	2	NFDC	0.55	Revetment	Class 1	>10	1996
071/1054D	1	NFDC	0.63	Pitching	Good	>5	1991
071/1054D	2	NFDC	0.63	Embankment	Good	>5	1991
071/1053D	1	NFDC	0.23	Bastion	Fair	>5	
071/1053D	2	NFDC	0.23	Groynes	Good	>5	
071/1053D	3	NFDC	0.23	Apron	Fair	>5	
071/1053D	4	NFDC	0.23	Wrtn	Good	>5	
071/1053D	5	NFDC	0.23	Recharge	Good		
071/1053D	6	NFDC	0.23	Groynes	Good	>5	
071/1052D	1	NFDC	0.18	Groynes	Fair	>5	
071/1052D	2	NFDC	0.18	Apron	Fair	>5	
071/1052D	3	NFDC	0.18	Wall	Good	>5	
071/1052D	4	NFDC	0.18	Recharge	Good		
071/1052D	5	NFDC	0.18	Groynes	Good	>5	

Description of Defences

- 2766 Between Beckton Bunny and Milford-on-Sea is the Hordle Cliff. This consists of 2.5 km of unprotected, eroding cliff face over which many significant slippages have been reported. This stretch fronts an area of mainly agricultural land with some residential properties.
- 2765 At Milford-on-Sea over a length of 0.9 km is the weathered Rook Cliff. The cliff toe is protected by a concrete wall founded on a steel sheet piled toe, estimated to have been constructed in 1970. Due to the wall foundations becoming exposed during storms in 1989, 200 m of 2-4 tonne rock revetment and nourishment using gravel rejects was undertaken by NFDC in 1992 ("Hordle Cliff Emergency Works 1992 - Engineer's Report", 1993). Currently, both the concrete wall and the steel sheet piling are under severe threat of undermining failure. There is further protection in the form of timber groynes which are substantially covered by the beach shingle. The groynes are in a poor condition requiring some maintenance work to return them to a satisfactory state.
- 2764 The eastern side of Milford-on-Sea (from White House to Sturt Pond) is protected by concrete sea walls of slightly varying forms. There is a 170m length of masonry wall with concrete coping, reported to be in poor condition. The lower part of this wall has a stepped profile. The estimated construction year is 1960.
- 2763 The form of construction changes further east to a 80 m length of concrete sea wall backed by a boundary wall, protected by rock armour. The concrete wall is reported to be in a satisfactory condition, whereas the rock armour requires some maintenance. At its eastern end, this wall rises from a level of 5.00 m relative to Ordnance Datum Newlyn (m ODN) to 5.60 m ODN over 10 m. The wall was originally constructed in 1939 and renovated in 1992. The rock revetment was constructed in 1994. Due to the relatively low beach and the dependence of the structure on adequate beach levels for stability, this section appears to be vulnerable to undermining.

2762

The next 280m to the east consists of a stepped stone masonry wall constructed in 1964, backed by a wall constructed of concrete blockwork. This rear wall, estimated to have been constructed in 1960, descends from a level of 5.60m ODN to 5.00 m ODN at its eastern end. To the rear of the landward wall (the concrete blockwork wall) is a promenade and car park. Between the two walls is a 7m wide lower level promenade which also contains beach chalets. Both these walls are considered to be in a poor condition, requiring maintenance work.

Over the next stretch of 180 m is a concrete wall and stepped apron slab. The apron slab provides adequate space for beach chalets. Over the entire length between White House and the end of this concrete wall and apron slab, there are timber groynes in a poor state of repair. The year of construction is estimated as 1960.

The next 250m to the east, up to Sturt Pond, consists of a concrete stepwork profile backed by a recurved concrete wave wall. At the bottom of the steps is a sloping apron. The concrete wall has experienced some overtopping. The variable beach level means the structure could be in danger of undermining if beach levels reduce significantly. Further protection to this section is afforded by a number of 20 to 30 m long rock groynes constructed over this section. The year of construction of the defence is believed to be 1964.

Under the above scheme, the 550m length from the eastern rock groyne at Milford to Saltgrass Lane, the existing rock armour has been dismantled and re-constructed as a 3-6 tonne rock revetment. The hinterland to this length is rural.

071/1054D See notes for defence length 2759.

071/1053D See notes for defence length 2760.

071/1052D See notes for defence length 2761.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE – HORDLE CLIFF TO HURST SPIT (CBY6)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	○	✓	×	✓
Economically justifiable and environmentally acceptable?	×	✓	×	○
Compatible with adjacent strategies?	×	✓	×	×
Compatible with wider coastal processes?	○	✓	○	×
Process Unit Objectives (See Part C)				
Strategy should not impact on fronting or adjacent beach levels (1)	×	✓	×	×
Strategy should not interfere any further with sediment processes (2)	✓	○	○	×
Strategy should ensure protection of life and residential property where economically viable (3)	×	✓	×	✓
Strategy compliant with sound geomorphological principles (4)	✓	○	×	×
Strategy should not impact on important conservation designations (5)	✓	¹ ○	×	×
Strategy should not detract from the units landscape quality (6)	×	✓	×	×
Strategy should not impact on archaeological or historical potential (7)	✓	² ×	○	×
Strategy should not increase the threat of erosion and flooding on immediate or adjacent units (8)	×	✓	×	×
Strategy should not impact on local economy, tourism or amenity (9)	×	✓	×	×
Will the strategy seek to improve beach access? (9)	×	✓	○	○
Strategy should not comprise inshore fisheries at Mudeford (10)	n/a	n/a	n/a	n/a
Suitability of Strategy Option	×	✓ (LT)	×	×

▲ Possible conflict with objective over longer term

✓ Complies with statement

×

○ Conflicts with statement, but is dependent upon implementation methods used

n/a Objective is not relevant to this management unit

ST Short Term

LT Long Term

¹ Geological exposures likely to be obscured. GCR site and geological SSSI.

² Holding/Advancing the line likely to have impact on possibility of uncovering future archaeological material from cliff top

From the above screening exercise, the Advance the Line option is not appropriate for this Management unit and is not considered any further. Do nothing also appears inappropriate, however, shall be evaluated in terms of what the implications of not doing something actually are likely to be in the short and longer term. Consequently, hold and do nothing shall be assessed.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE – HORDLE CLIFF TO HURST SPIT (CBY6)

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Effects on Physical Environment and Coastal Processes	<i>continued cliff toe erosion resulting in potential cliff failure</i> <i>continued limited supply of material to fronting beaches</i>	<i>halt to sediment supply to fronting beaches</i> <i>potential impact on littoral drift rates if recharge is not used</i>	N/A	N/A
Effects on Human Environment	- loss of property at Milford-on-Sea - loss of amenity land and public utilities	- protection of residential conurbation at Milford-on-Sea - protection of amenity land and public utilities	N/A	N/A
Effects on Natural Environment and Conservation	maintain exposure of geological features in cliff face (reason for SSSI status)	loss of geological exposures in cliff face due to vegetation growth	N/A	N/A
Implications for Coastal Defences	- supply of eroded material to beach - deterioration of existing coastal defences	<i>continued maintenance/ sediment recharge programme</i>	N/A	N/A
Impacts within Process Unit	<i>continued supply of sediments to down drift coastlines at present day rates</i>	potential impact on sediment drift rates to the east	N/A	N/A
Economics	loss of residential property	viable	N/A	N/A

Current Policy: Hold the Existing Line

3 Assessment of Preferred Options

MANAGEMENT UNIT TITLE – HORDLE CLIFF TO HURST SPIT (CBY6)

Do Nothing

This strategic option is not acceptable for the Milford-on-Sea frontage because of the threat to seafront developments. To 'do nothing' would cause the loss of the White House and other properties, and result in an immediate threat to considerable areas of housing after 75 years. Also at risk would be four car parks, sections of Cliff Road, Park Lane and Hurst Road, and cliff top recreational space and amenities. All of these together are of significant economic and amenity value.

Hold the existing defence line

A strategic option to hold the existing defence line within this unit would maintain current protection to coastal land and developments. The value of the land and properties at risk from erosion is sufficient to give economic justification for this strategy particularly as, to some extent, this can be achieved through the maintenance and improvement of existing schemes. Any addition to the existing defences should seek to minimise the threat of any schemes that may reduce the geological interest of the cliffs to the west of the management unit. This is a viable strategic option.

Select Preferred Option

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line
Long Term (2005 to 2049)	Hold the Existing Line

Figure D2.43 displays the likely implication of adopting this policy

Compliance with Process Unit Objectives

The preferred policy, presented above, meets most of the objectives set out in the Objective Screening Table for CBY6. A strategic policy of "Hold the Line (Short Term and Long Term) would comply to the Process Unit Objectives so long as implementation measures pay due consideration to the natural processes acting within the Process Unit when ensuring the protection of Milford-on-Sea. So long as soft engineering solutions are promoted to achieve the strategy, then a compromise may be reached between maintaining the littoral budget regime for coast protection purposes and seeking to acknowledge geological conservation objectives.

Impact on adjacent Management Units

To Hold the Line in the Short Term is unlikely to alter sediment budgets further or impact on adjacent management units due to the contemporary shortage of beach material in Christchurch Bay as a whole. Over the Long Term, there will be an increasing need to co-ordinate beach replenishment programmes on a cyclical basis within Christchurch Bay that reflects current and future understanding of sediment recirculation frequency events.

Review of Potential Implementation

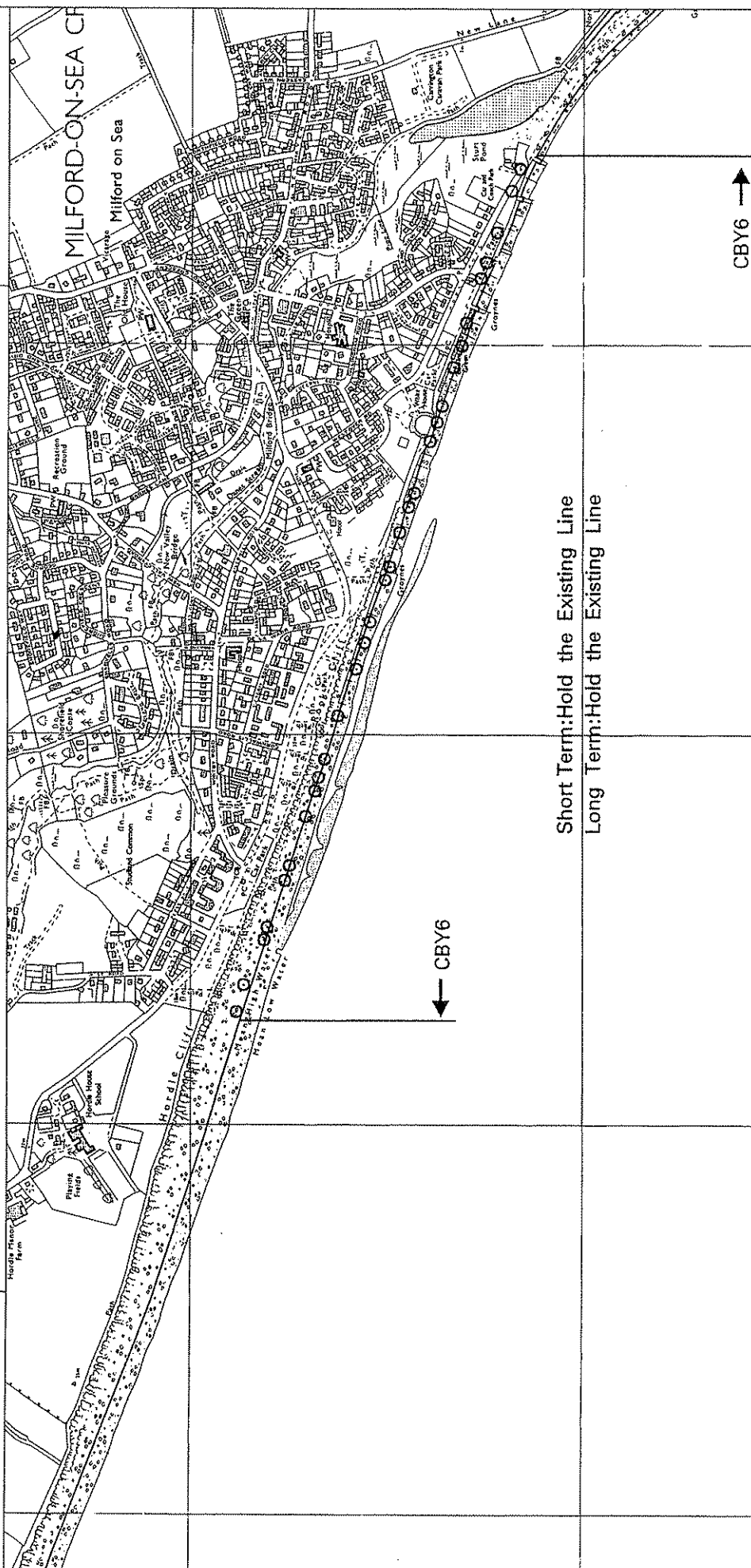
The defences within this management unit are performing satisfactorily, with no new adverse effects on coastal processes further downstream towards Hurst Spit. Undoubtedly, the key issue is related to the diminution of natural sediment supply entering Christchurch Bay and so it is suggested that implementation of this policy should involve both maintaining existing defences and introducing beach replenishment schemes as part of a Christchurch Bay wide Beach Management Plan. This should ensure that piecemeal replenishment schemes are not undertaken that are just related to this management unit.

Present and Future Monitoring/Studies

The coast within this unit is presently monitored both as part of the Environment Agency's (EA) ongoing photogrammetric survey, and by New Forest District Council (NFDC). It is covered by 18 EA profiles (Hamp 82 to 99) and 12 NFDC profiles (sections 44 to 55). NFDC presently survey this frontage quarterly, and it is assumed that this will continue in the future. It is proposed that this data be used to assess the quality of the EA profiles. The bathymetry of this frontage should also be surveyed at approximately 5 year intervals.

SHORELINE MANAGEMENT PLAN
POOLE AND CHRISTCHURCH BAYS
DURLSTON HEAD TO HURST SPIT (Subcell 5F)

Malcrow
1999



: Estimated position of the cliff top or marsh edge in 2049 (based on published retreat rates amended to accommodate for sea level rise. NB: not placed where Hold the Existing Line is proposed)

⊙ NB: not placed where Hold the EX
: Existing Beach Monitoring Stations

☆ : Future Beach Monitoring Stations

☐ : Future & Existing Water Level/Tide Monitoring Stations

Christchurch Bay Process Unit (CBY)
Management Unit CBY6
Hordle Cliff to Hurst Spit

Figure D2.43

PART D MANAGEMENT UNIT STRATEGIES

MANAGEMENT UNIT TITLE - HURST SPIT (CBY7)

PART D1 – CHARACTERISTICS

Management Unit Limits

The limits of this unit are:

- West – Hurst Beach (GR: 429487E, 091114N)
- East – Tip of Hurst Spit and limit of Process Unit (GR: 431863E, 089722N)

Management Unit Description

The Hurst Spit unit comprises the exposed side of a shingle spit that is particularly important as a geomorphological feature. The spit shelters the Western Solent from storm surges and consequently supports a large area of saltmarsh that has colonised within the finer mud deposits. Both the shingle spit and backing saltmarsh are of international nature conservation importance. Hurst Castle and lighthouse are major landmarks at the end of the spit, and are part of a Scheduled Ancient Monument. The entire spit is included within the South Hampshire Coast AONB for its valued landscape qualities.

The coastal land lying to the west of the spit is mainly low lying and undeveloped fronting a flood risk area. The beach is backed by Sturt Pond and the tidal channel which feeds into it from Hurst marshes. The pond is considered to be of international conservation importance. Inland of the pond and channel the immediate low lying area includes mainly agricultural land, although the flood risk extends along the coast to Lymington and covers the village of Keyhaven. Hurst beach, which fronts most of the unit, forms the start of Hurst Spit. Hordle Salterns which were originally in the lee of Hurst Beach are now covered by the feature, and are archaeologically significant.

Administrative Authority

New Forest District Council

Frontage Lengths

Total frontage length: 2893m; Defended frontage length: 2893m

Environmental Designations

Statutory Designations

- Solent Maritime pSAC (SAC citation ref 1) - botanical importance, saltmarsh.
- Solent and Southampton Water pSPA/Ramsar site (SPA citation ref 1) - great diversity of habitats.
- Hurst Castle and Lymington River Estuary SSSI (SSSI citation ref 2) - ecological and geomorphological interest
- The South Hampshire Coast AONB
- Scheduled Monument - SM137; Hurst Castle

Non-Statutory Designations

- Solent and Isle of Wight SMA.

Description of Land at Risk

- Hurst Spit
- Hurst Castle and environs
- Milford houses
- Agricultural land
- (Western Solent: saltmarsh, Keyhaven/Lymington properties, agricultural land)

Planning

STATUTORY PLAN TITLE	COAST DEFENCE POLICIES		COASTAL DEVELOPMENT POLICIES		CONSERVATION AND ENVIRONMENTAL POLICIES	
Coastal Towns Local Plan	C10	Provision and maintenance of coastal defences	R1	Open Space	C6 CV4-6 CV8	SSSIs and SNCIs Listed Buildings Scheduled Monuments & Archaeology

Coastal Defences

Defence Elements within Management Unit

Defence Code	Sub Code	Maintaining Authority	Element Length (km)	Structure Type	Condition	Residual Life	Year Built
571/2759	1	NFDC	0.54	Embankment	Class 2	>10	
571/2759	2	NFDC	0.55	Revetment	Class 1	>10	1996
571/2758	1	NFDC/HCC	1.87	Beach Ridge			
571/2758	2	NFDC/HCC	1.87	Recharge	Good	5 - 10	1996
571/2757	1	English H.	0.06	Breastwork	Fair	>10	1980
571/2757	2	English H.	0.04	Wall	Bad	5 - 10	1850
571/2757	3	English H.	0.15	Breastwork	Poor	5 - 10	1970
571/2757	4	English H.	0.03	Breastwork	Poor	5 - 10	1970
571/2757	5	English H.	0.04	Breastwork	Fair	>10	1980
571/2757	6	English H.	0.25	Armour	Fair	>10	1980
571/2757	7	English H.	0.41	Groynes	Poor	>10	1970
071/1054D	1	New Forest D.C	0.63	Pitching	Gd	>5	1991
071/1054D	2	New Forest D.C	0.63	Embankment	Gd	>5	1991
071/1055D	1	New Forest D.C	1.54	Embankment	Gd	>5	1991

Description of Defences

- 2759 Under the above scheme, the 550 m length from the eastern rock groyne at Milford to Saltgrass Lane, the existing rock armour was dismantled and re-constructed as a 3-4 tonne rock revetment. The hinterland to this length is rural.

2758 Immediately to the south of Saltgrass Lane, is a 6-10 tonne rock armoured breakwater, measuring 90 m in the longshore direction, and 50 m in a cross shore direction. The crest of this breakwater is at a level of 2.5m ODN.

Over the 1.87m length south of Saltgrass Lane, the existing shingle embankment has been renourished using material obtained from Shingles Banks. The embankment has a crest level of 7m ODN (sloping to 5.0 m ODN at Hurst Castle), and a crest width of 12 m. The crest width prior to this scheme was 5.20 m ODN. The seaward slope of the new embankment will be built at 1 in 4, with a 1 in 2.5 landward slope.

2757 At Hurst Castle, there is a 100 m length of 3-6 tonne rock revetment. There is a masonry castle wall, built in the nineteenth century, to the rear of the defence.

It is envisaged that a regular programme of re-nourishment will be in place to maintain the spit as an effective barrier protecting the Western Solent.

071/1055D A 1.54km long shingle embankment along Hurst Spit, which was built up with shingle recharge in 1996, see the notes for defence lengths 2757 and 2758.

071/1054D See notes for defence length 2759.

PART D2 APPRAISAL OF STRATEGIC OPTIONS

1 Screening of Defence Options against Strategy Test Statements

MANAGEMENT UNIT TITLE - HURST SPIT (CBY7)

Strategy Test Statements (See Part C)		Coastal Defence Strategy Options		
Core Subcell Coastal Defence Objectives	Do Nothing	Hold	Retreat	Advance
Technically viable?	✓	✓	✓	○
Economically justifiable and environmentally acceptable?	×	✓	×	×
Compatible with adjacent strategies?	×	✓	○	×
Compatible with wider coastal processes?	○	✓	○	×
Process Unit Objectives (See Part C)				
Strategy should not impact on fronting or adjacent beach levels (1)	✓	○	○	×
Strategy should not interfere any further with sediment processes (2)	✓	○	○	×
Strategy should ensure protection of life and residential property where economically viable (3)	×	✓	○	×
Strategy compliant with sound geomorphological principles (4)	✓	×	○	×
Strategy should not impact on important conservation designations (5)	×	✓	×	×
Strategy should not detract from the units landscape quality (6)	×	×	○	×
Strategy should not impact on archaeological or historical potential (7)	×	✓	○	○
Strategy should not increase the threat of erosion and flooding on immediate or adjacent units (8)	×	¹ ✓	×	✓
Strategy should not impact on local economy, tourism or amenity (9)	×	✓	○	✓
Will the strategy seek to improve beach access? (9)	×	✓	○	✓
Strategy should not comprise inshore fisheries at Mudeford (10)	n/a	n/a	n/a	n/a
Suitability of Strategy Option	×	(LT)	○	×

- ▲ Possible conflict with objective over longer term
- ✓ Complies with statement
- × Conflicts with statement
- Conflicts with statement, but is dependent upon implementation methods used
- n/a Objective is not relevant to this management unit
- ST Short Term
- LT Long Term

¹ The wider benefits of holding the line apply to other assets outside this area (see West Solent SMP – Halcrow 1998)

From the above screening exercise, the Advance the Line option is not appropriate for this Management Unit and is not considered any further. Do nothing also appears inappropriate, however, shall be evaluated in terms of what the implications of not doing something actually are likely to be in the short and longer term.

2 Environmental Summary Matrix for Preferred Coastal Defence Policy Options

MANAGEMENT UNIT TITLE - HURST SPIT (CBY7)

	DO NOTHING (short term effects in <i>italics</i>)	HOLD THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	RETREAT THE EXISTING DEFENCE LINE (short term effects in <i>italics</i>)	ADVANCE THE EXISTING LINE (short term effects in <i>italics</i>)
Effects on Physical Environment and Coastal Processes	- continued erosion resulting in flattening of Hurst Beach - increased threat of a total change in coastline configuration through breaching of spit - continued reduction of sediment supply to Shingles Bank	- halt to eroded sediment supply to <i>foriting</i> and <i>downdrift</i> beaches - maintain current shoreline orientation position - prevent natural migration of Hurst Spit	- exacerbate a change in coastline configuration possibly impacting upon coastal processes - increased exposure potential of backing marshland - increased risk of crest flattening and reduction in crest height and volume - reduced volume of littoral material transported to Shingles Bank	N/A
Effects on Human Environment	- loss of agricultural land through erosion - flooding of low-lying agricultural hinterland	- protection of lighthouse and other buildings on spit - protection of property at Keyhaven and Pennington - protection of Hurst Castle and other ancient monuments on spit	protection of all coastal land from flooding	N/A
Effects on Natural Environment and Conservation	- eventual loss of internationally significant nature conservation sites in marshland on leeward side of spit - a real threat of saline intrusion into LYM process unit (West Solent SMP)	- protection of internationally significant nature conservation sites on leeward side of spit - loss of the "natural" appearance of Hurst Spit as a geomorphological feature	impact on backing mudflats and marshland of international importance (reduce spatial extent of habitats)	N/A
Implications for Coastal Defences	- frequency of flooding events likely to increase towards Keyhaven - deterioration of existing defences	- continued maintenance/sediment recharge programme - possible need to upgrade defences in the light of future sea level rise	- possible need for new protection structures for selective defence of assets - removal of existing defences	N/A

	DO NOTHING (short term effects in italics)	HOLD THE EXISTING DEFENCE LINE (short term effects in italics)	RETREAT THE EXISTING DEFENCE LINE (short term effects in italics)	ADVANCE THE EXISTING LINE (short term effects in italics)
Impacts within Process Unit	• interruption of supply of sediments to Hurst Spit due to potential breach • increased threat of a total change in coastline configuration • significant threat to marshes at Pennington	• potential impact to sediment drift volumes to the east, which could lower beach levels towards Hurst Spit	• likely long term environmental impact on internationally important lagoons and general trend towards an intertidal system as opposed to one of grazing marshes and lagoons • <i>littoral budget within Christchurch Bay slightly altered</i>	
Economics	• threat to backing land and assets	• viable	• not viable	

Current Policy:

Hold the Existing Line

3 Assessment of Preferred Strategic Options

MANAGEMENT UNIT TITLE - HURST SPIT (CBY7)

Do Nothing

A do nothing strategy for this frontage would involve the deterioration of the existing rock armouring and defences along the management unit. This would (over the Long Term) return the beach to an erosive retreating trend, encroaching upon strategic features such as the Sturt Pond channel. Under conditions of rising sea level, and given the management units wave exposure, the frequency of breaching would be likely to increase, eventually resulting in flooding of the backing low lying area developing the threat of saline intrusion. This would outflank flood defences along the Solent coast and cause considerable economic damage, along with a significant deleterious impact to the fragile internationally important habitats that are nearby. The threat to land, property and the environment of adopting this option make it strategically inappropriate. Hurst Castle itself would continue to be under threat from erosion. English Heritage have been unsuccessful in achieving the necessary funds to ensure its Long Term protection.

Hold the existing defence line

A strategy to hold the line along Hurst Beach would maintain the integrity of the spit. This would protect both Hurst Castle and the lighthouse on the tip of the spit, protect land and developments along the Western Solent shore, and maintain the conservation interest of the area. Although there is considerable need to 'hold' the spit in its present day position, by its very nature, it is a highly dynamic feature. Consequently, any hard engineering schemes implemented are likely to terminate any future "natural" adaptation to local or global coastal changes. Hard structures may also impede longshore movement starving the distal (unattached) end of beach building material. Thus 'soft' measures are deemed more appropriate over the majority of its length in the Long Term. This is likely to be a continuation of present practice, with defences at the neck (to stabilise this area), and tip (to protect Hurst Castle), with recharge and reprofiling along the centre part of the spit. This is not intended to hold the exact position of the spit feature, but to maintain its form and function. The use of soft defences is also less disruptive to the landscape/environmental value of the spit. This is a viable strategic option over both the Short and Long Term.

Retreat the existing defence line

As stated under the 'hold' option, geomorphologically the preferred strategy would be a form of retreat to allow for landform evolution. However, due to the economic and environmental consequences of such a strategy, it is not considered to be suitable even over the Long Term. The adopted strategy for New Forest District Council is to hold the spit as far as possible without excessive disruption to its natural state. Thus a strategic option to retreat is here considered inappropriate.

Recommended Strategy

TIMESCALE	PREFERRED OPTION
Short Term (1999 to 2004)	Hold the Existing Line
Long Term (2005 to 2049)	Hold the Existing Line

Figure D2.45 displays the likely implication of adopting this policy

Compliance with Process Unit Objectives

It is of wide strategic importance that Hurst Spit is maintained in its present position. A strategic policy to "hold the existing line" can therefore be justified for economic, social and environmental reasons and so complies to the core objectives of the SMP. Therefore, a strategic policy to "hold the existing line" can be justified so long as sensible implementation procedures are adopted that allow the continuation of littoral processes within Christchurch Bay. This also needs to provide adequate protection to the low-lying land and adjacent sensitive Keyhaven marsh system present in the adjacent SMP.

Impact on adjacent Management Units

Although integral to the CBY Process Unit and thus the littoral budget of Christchurch Bay, Hurst Spit also acts as a hinge point with the adjacent Shoreline Management Plan Process Unit, (LYM within the West Solent and Southampton Water SMP). Consequently, the selection of a Short and Long Term policy to Hold the Line is appropriate so long as implementation options comply not only to the needs of Christchurch Bay as a whole, but also to the requirements set out in the adjacent SMP.

Review of Potential Implementation

Fronting Hurst Castle, the 100m length of rock revetment in addition to the remainder of the management unit (covered by shingle nourishment) will need to be continually maintained through a programme of regular nourishment.

It is important to bear in mind that additional work will be required to assess the long term sustainability of this strategy in the light of rising sea levels. Impacts on nature conservation interest must also be considered, particularly in the light of the EU Habitats Directives.

Present and Future Monitoring/Studies

The coast within this management unit is presently monitored both as part of the Environment Agency's (EA) ongoing photogrammetric survey, and by New Forest District Council (NFDC). It is covered by 12 EA profiles (Hamp 103 to 114) and 12 NFDC profiles (sections 59 to 70). NFDC presently survey this frontage quarterly, and it is assumed that this will continue in the future. It is proposed that this data be used to assess the quality of the EA profiles. A quarterly spot height survey of the zone 200m downdrift of the breakwater should be surveyed to assess recycling requirements. The bathymetry of this frontage should also be surveyed annually.

