

Management Unit 4 : Bracklesham to East Wittering

Unit limits

3400m from 481450E, 095650N to 478500E, 097200N

Coastal processes

Area of historically eroding low cliffs now protected by seawalls, timber breastworks and timber groynes. Upper shingle beach is generally narrow and receding. The wide lower sand beach is suffering long term lowering due to storm erosion of the underlying clay platform.

- Geology*
- Bracklesham Beds overlain superficial lower sand beach and sandy gravel nearshore deposits, with a shingle upper beach fronting a low plateau of Brickearth deposits
- Wave climate*
- Dominant waves from southwest (45% of time)
 - Secondary waves from south (30% of time)
- Tidal regime*
- Ebb tide sets to south and southeast
 - Flood tide is more complex with flows both northwest and southeast at different times in each tidal cycle
 - Maximum nearshore current <0.5m/s
 - Very weak residual currents
- Sediment transport*
- Weak nett drift from southeast to northwest
 - Some feed from recharge operations in Unit 3 but general lack of input causes a negative sediment budget
- Possible future change-*
- 300mm sea level rise over 50 years
 - Drop in foreshore level due to erosion
 - Increased inshore wave energy, with mean direction shifting clockwise
 - Decreased nett drift to northwest, but increased short term fluctuations

Table 4.1 *Extreme wave heights and water levels*

Probability	1:1 year	1:10 years	1:50 years
Nearshore wave height Hs (m)*	4.3	5.2	5.8
Maximum water level (m OD)	2.82	3.18	3.32

* at the -2mCD contour assuming MHWS tide level. Waves assumed to be depth limited to 4.4m.

Existing defences

The frontage is protected by continuous concrete seawalls or timber breastworks, with timber groynes to control drift rates. Most built defences are in need of maintenance. Some overtopping occurs but little serious damage is caused, except at the western end of East Wittering where houses close to privately maintained seawalls are liable to more damage. Future standards of overtopping and erosion protection depend largely on the state of the upper shingle beach. The area benefits from some shingle feed from management operations in Unit 3.

Natural environment

The foreshore is part of the Bracklesham Bay SSSI and GCRS, designated for both biological and geological interest. Shoreline management operations must comply with statutory procedures. In particular, operations should avoid disturbing or burying the nearshore exposures of Palaeocene clays and fossils.

Land use

Medium density residential development with some open space. Access to the shoreline is restricted by private property in some areas.

Human environment

The local community has developed due to the attractions of the seafront. Shoreline recreation includes fishing, walking and water sports. There are several sites of historic interest along the shoreline and in the nearshore zone.

Planning policies

Housing developments are planned on three sites to landward of the existing built up area. Surrounding areas are designated as Countryside and will remain free of significant development.

Statutory policy documents - West Sussex Structure Plan, Deposit Draft
West Sussex Minerals Local Plan, Consultation Draft
Chichester District Local Plan, Deposit Draft

Strategic defence options

Table 4.2 *Impact matrix*

	Do nothing	Hold the line	Retreat the line	Advance the line
Effects on physical environment and coastal processes	Erosion of foreshore.	Erosion of lower foreshore. Increased wave energy at shoreline.	Shoreline and foreshore move landward to more stable position. New sediment available for drift.	Drift interrupted. Shoreline moved to zone of greater energy.
Effects on human environment	Increased overtopping damage followed by erosion when wall fails. Loss of land and property. Reduced recreational value.	Existing situation maintained or improved. Opportunities for improved public access.	Loss of land and property. Reduced recreational value until new line established.	Reclaimed land available for development or recreation.
Effects on natural environment	New exposures of beds and fossils.	Geological interest reduced due to loss of low tide access.	New exposures of beds and fossils. Loss of farmland for replacement housing.	Loss of geological interest.
Implications for coastal defence	Increased overtopping damage followed by wall and groyne failure.	Improve defences to adequate standard for future sea conditions.	New line of defence required.	Substantially improved defences required.
Impact on adjacent units	Short term release of drift material to Unit 5.	Depends on operations in unit and strategy for adjacent units.	Short term release of drift material to Unit 5.	Drift interrupted, possibly widening beach to east and erosion to west.

Losses due to “do -nothing” option

Existing defences have a residual life of approximately 5-20 years. After this time the existing groynes will no longer be effective in retaining the upper beach and the seawalls/timber breastworks will be liable to collapse. Rapid initial erosion will occur following a collapse as the foreshore is reestablished at a new equilibrium profile, damaging residential property and recreation facilities (slipways). Increased overtopping, due to reduced beach levels, will cause damage to shorefront properties. Future increases in water levels and wave heights will increase the risk of overtopping and the rate of erosion.

Overtopping damage to sea front properties in the short term. Medium term erosion damage/loss to properties within about 30m of the existing shoreline. As many houses, apartments and holiday developments are within or close to this erosion area, then loss values will be high relative to the standard for the land use type.

Other losses will include reduction in recreational value and loss of income associated with recreation. On-going erosion may benefit the geological interest of the area due to fresh exposures of beds and fossils.

Preferred option

Economic and recreation losses due to do-nothing or retreating the line are high in the short term and are not offset by limited improvements to geological interests. There is no existing need for land reclamation to justify the high costs of advancing the line. Therefore the preferred option is to **hold the line** by upgrading the existing defences. A 1:150 year standard of defence is assumed appropriate.

Schemes should be implemented within a strategic defence programme for the Selsey peninsula and the West Wittering frontage within Chichester Harbour.

Suggested management operations

- Short-medium term*
- Partial recharge of beach
 - Maintain groyne field, possible replacement of timber groynes with rock
 - Upgrade seawall/breastwork
 - Opportunistic purchase of private property along backshore zone to allow for easier maintenance and public access to shoreline
 - Support planning initiative to restrict additional residential development within 25m of existing shoreline.

Preliminary economic assessment

Losses due to “do-nothing”

- Medium density urban property along shoreline £20M

Cost of “hold the line”

- Upgrade groynes and seawall, partial recharge