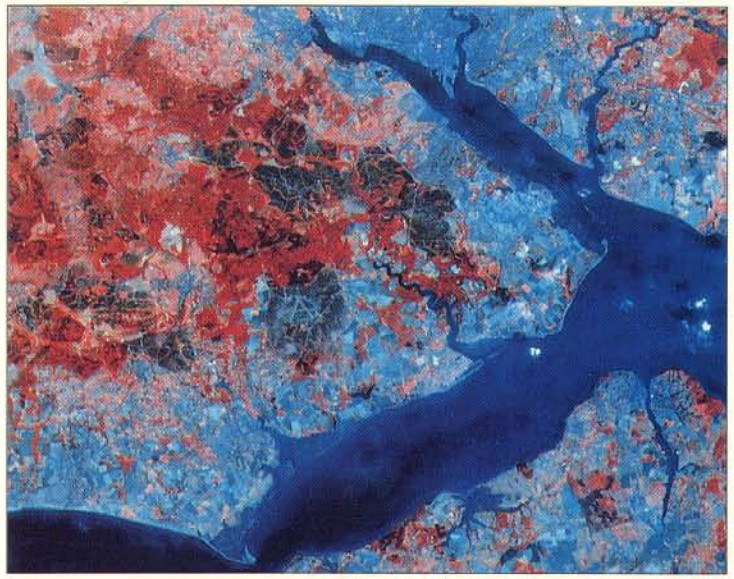
Western Solent and Southampton Water

Shoreline Management Plan



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SUMMARY

OPERATING AUTHORITIES

New Forest DISTRICT COUNCIL

EASTLEIGH BOROUGH COUNCIL

FAREHAM BOROUGH COUNCIL

SOUTHAMPTON CITY COUNCIL

ENVIRONMENT AGENCY

CONSULTING ENGINEERS

HALCROW

The Coastline: A Heritage to Preserve

For centuries, the coastline has been a focus for a variety of activities including industry, agriculture, recreation and fisheries. These national economic assets have developed and flourished despite constant changes in the physical characteristics of the coast. The coastline is a national heritage and in order to sustain it for future generations, proper management of coastal defences is essential.

There is a long history of human interference with coastal processes in order to protect hinterland property. Under usually piecemeal efforts, revetments and groynes were constructed to prevent or limit the loss of sediments. These localised defence schemes protected only the immediately threatened shore, but their effects on other parts of the coast were not always considered. Although long recognised, only recently has coastal defence planning taken into account these 'knock-on' effects. It should also be appreciated that the coastline can be divided into sediment cells - lengths of shoreline where the cycle of sediment erosion, transport and deposition are generally self-contained.

The Ministry of Agriculture, Fisheries and Food (MAFF), who are responsible for overseeing and funding coast and flood protection for the Government, have produced guidelines for the development of Shoreline Management Plans (SMP) within these sediment cells. SMPs promote cooperation between local authorities, the Environment Agency and other organisations involved with coastal defence. The cost of production of the SMP is grant-aided by MAFF.

The Western Solent and Southampton Water

The coastline between Chewton Bunny and Hook Park (the limits of the SMP) comprises a variety of physical environments. The Christchurch Bay frontage is an exposed coast characterised by eroding cliffs fronted by narrow shingle beaches, which to the east form Hurst Spit. The spit, possibly the most important natural feature of this coast, shelters the Western Solent creating its low energy environment. This has resulted in the formation of the saltmarshes and mudflats that characterise this area. Southampton Water is essentially a low energy estuary environment fed by the Rivers Test, Itchen and Hamble.

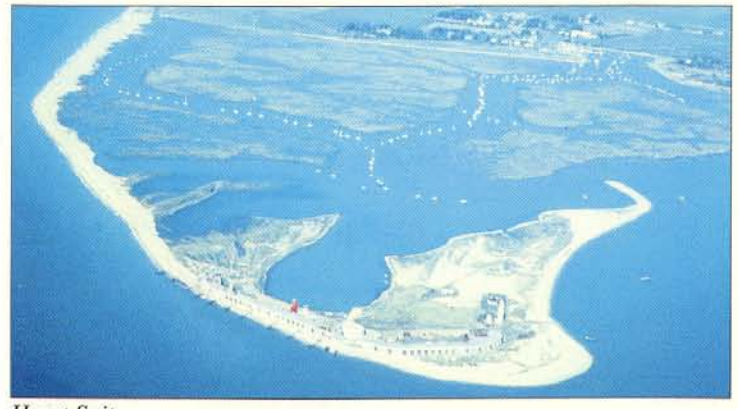
The Western Solent and Southampton Water region is also home to a diverse range of human activities - heavy industry, commercial, residential and recreational uses, on both land and water. The Southampton Water coast is highly developed. The Port of Southampton, one of the UK's largest, is situated here and is a major economic asset to the area. This contrasts withthe landscape of the Western Solent, which is within an Area of Outstanding Natural Beauty and, between Walhampton and Calshot, forms part of the New Forest.

River Hamble from Fawley

Shoreline Management Plans

The planning system is important in guiding the way in which the coast is developed and conserved. Both statutory and non statutory plans play an important role in achieving this. The statutory plans (eg Structure and Local Plans) are prepared against the background of National planning guidance, with non statutory plans (eg SMPs, Coastal Management Plans (CMPs) and Local Environment Agency Plans (LEAPs)) providing further advice and guidance on the development or management of a particular location or "theme".

SMPs are documents which set out a strategy for coastal defence for a specified length of coast taking account of natural coastal processes and human and other environmental influences and needs. They provide details on a wide range of coastal issues, and assist local councils to formulate planning strategies and control future development of the shoreline. Flood defence and coastal protection authorities will consult the SMP in developing coastal defence strategies. CMPs seek to integrate the management of all aspects of the coast, whilst LEAPs specifically target the quality of the water environment. These plans refer to each other, statutory and non statutory, for guidance on specific issues. Therefore, a process of informed advice takes place, limiting any duplication of planning effort.



Hurst Spit

The Process and Management Units

The coast of the Western Solent and Southampton Water SMP has been divided into seven process units. Within each unit, the natural coastal processes are largely independent of the stretch adjacent to it. The process units are described by letters representing a prominent feature within them. The key management issues of each are as follows:

BAR Christchurch Bay (Barton)
Coastal defences within the Bay have restricted cliffline erosion and consequently the supply of sediments to the beaches. Beach nourishment can compensate for this, with natural processes transporting sediment placed in the west of the Bay along the coast towards Hurst Spit. The potential for recycling material from Shingles Bank, offshore within the Bay, back onshore at Hengistbury Head should be explored.

LYM Western Solent (Lymington)
Coastal defence here depends on the maintenance of Hurst Spit which protects the saltmarsh environment in its lee. The saltmarshes play an integral part in flood defence as natural wave breakers. The nourishment of beaches east from Thorns Beach is integral to coast protection and, through natural sediment transport, the maintenance of shingle spits.

FAW Southampton Water West (Fawley)
Calshot Spit, in the south, preserves the low energy environment of the currently eroding saltmarshes. Further monitoring and study of saltmarsh erosion is required to understand and arrest their decline. Changes in tidal flows and intertidal narrowing must also be considered, within the context of protecting assets such as Fawley Power Station and the adjacent Esso Oil Refinery.

TEST River Test

Defence of the Test process unit is largely influenced by the need to protect existing developments. Saltmarsh erosion and intertidal narrowing must be addressed, while reclamation activities should be avoided as they can alter the tidal dynamics of the estuary, possibly changing erosion patterns.

ITCH River Itchen

Within the Itchen, cross-channel effects must be considered, particularly if defences are to be moved, as tidal flows may be affected. The valuable mudflat habitat of the river requires sympathetic management. Of primary concern is the protection of waterside developments throughout the unit.

NET Southampton Water East (Netley)

Mudflats throughout the unit should be maintained, whilst seeking to protect coastal developments. Cliff erosion and tidal currents supply and move sediments, and these processes must be sympathetically managed.

HAM River Hamble

Nature conservation, recreation and archaeology interests require resolution in the River Hamble. Cross-channel effects of defences must be considered, in relation to tidal flow changes. Intertidal narrowing is a concern and future coastal development should not threaten present sediment deposition rates, particularly in the light of predicted sea level rise rates.

To make implementation manageable, the process units are subdivided into smaller *management units* - each being a stretch of coastline with similar coastal process and land-use characteristics. The coastline of the Western Solent and Southampton Water is divided into 51 management units. These are identified by numbers following the process unit letters as shown on the accompanying map.

River Itchen

The Coastal Defence Options

The designation of most of the coastal area within the Western Solent Shoreline Management Plan as proposed Special Protection Area (pSPA) and proposed Special Area of Conservation (pSAC) has implications for the future management of the coastal defences. There is a need to meet the obligations of the Habitats Directive relating to protecting site integrity and the favourable conservation status of species and habitats, in the context of dynamic coastal systems within which habitats are being created and lost as a result of natural processes. Whereas a number of the coastal defence recommendations for each management unit in the Western Solent SMP may be sustainable in the short term, the long term situation is less clear particularly in relation to the implications of the

Habitats Regulations. For example maintaining existing defences in a situation where a seawall is fronted by eroding saltmarshes will eventually lead to coastal squeeze with the complete loss of saltmarsh habitat if alternative solutions are not considered. It is important to bear in mind that additional work will be required to assess the potential impacts in the medium to long term of different options related to net gain/loss of habitats. The proposed 'saltmarsh management strategy' will be important to help determine these potential losses in the future.

The Western Solent and Southampton Water Coastal Group

The coastline covered by the Plan comes within the boundaries of four local authorities. They and the Environment Agency have certain obligations for defending the coast. The local authorities for the most part have responsibility for defences which protect the coast from erosion by the sea, the Environment Agency for protection against flooding. As operating authorities (OA) they together are required to produce an SMP for sustainable coastal defence. This is achieved through the auspices of a Coastal Group which in this case is made up of the five OAs identified on the list below and other key bodies. Christchurch Borough Council and Isle of Wight Council are represented as observers from adjacent coastlines. The ports and harbour authorities are represented due to the importance of these activities along this coast, with English Nature providing guidance on nature conservation. The County Council have considerable ownership interests around the coast, and MAFF provide general guidance on the development of the Plan.

Associated British Ports
Christchurch Borough Council
Eastleigh Borough Council (OA)
English Nature
Environment Agency (OA)
Fareham Borough Council (OA)
Hampshire County Council
Isle of Wight Council
Lymington Harbour Commissioners
Ministry of Agriculture, Fisheries and Food
New Forest District Council (OA/Lead Authority)
Southampton City Council (OA)

Saltmarsh Management in the Western Solent and Southampton Water

Saltmarshes and mudflats abound in the estuaries of the Western Solent and Southampton Water. These intertidal tracts of land are host to a wide variety of plants and wildlife, with those of the study area considered to be of European importance. Saltmarshes and mudflats also act as a natural block to wave energy and inhibit erosion of the backing coast.

The presence of these features enhances the effectiveness of man-made protection works onshore as they absorb much of the force that the hard defence would otherwise have to resist. This effectively forms a two-tier coastal defence. Recent studies have shown that the saltmarshes of the Western Solent and Southampton Water are eroding.

Throughout the SMP it is recommended that the saltmarshes be monitored and, as far as possible, maintained, for both their nature conservation and coastal defence importance. An overall saltmarsh management strategy to preserve these important natural landforms is also presented within the SMP.

Further Information

If you wish to review the full Plan copies of the documents are available for review at the following locations:

New Forest DC	Town Hall, Lymington
Southampton CC	Planning and Development Reception
Eastleigh BC	Civic Offices, Leigh Road, Eastleigh
Fareham BC	Dept. of Planning and Development, Civic Offices, Civic Way, Fareham
Environment Agency	Sarum Court, Sarum Road, Winchester

Calshot Spit

Glossary of Terms

Beach nourishment	using imported material to supplement the existing natural material on a beach
Erosion	the wearing away of material due to wave action
Estuaries	the tidal stretch of a river where the saltwater of the tide mixes with the freshwater of the river current
Groyne	structure of rock, concrete or timber usually built perpendicular to the shoreline to trap or control movement of beach material
International nature conservation importance	sites identified for designation under European initiatives as supporting flora and fauna considered to be rare in an international context (these sites are not yet confirmed by the EC)
Intertidal	the area of shore between high water and low water
Low energy environment	a coastal region naturally or artificially protected from high wave activity
Revetment	man made barrier of rock or concrete to protect sloping embankments or shorelines from erosion
Saltern	historic salt making facilities - shallow lagoons in which sea water was impounded and allowed to evaporate
Seawall	generally vertical wall of stone, concrete or other material to protect shorelines from erosion
Soft engineering	the use of beach nourishment techniques or similar instead of seawall or revetments (hard engineering) for shore protection
Toe protection	protection provided to the foot or toe of cliffs or slopes where erosion may cause the entire cliff face to collapse

Published July 1998

The Coastal Defence Strategy

This SMP overlaps the ongoing Poole and Christchurch Bays SMP in Christchurch Bay. The recommended strategies presented for these units within the overlap (BAR) are thus preliminary and await the completion of the Poole and Christchurch Bays SMP before being finalised.

BAR 1 Chewton Bunny to Island View Road, Barton

Chewton Bunny marks the western extremity of the unit and the SMP as a whole. Walkford Brook enters Christchurch Bay at this point and the frontage is characterised by 30m cliffs that are designated SSSIs due to their fossil bearing strata. Cliff erosion threatens the chalets of Naish Farm Holiday Village immediately backing the cliffs. Beach nourishment techniques are recommended here, limiting cliff erosion whilst maintaining the geological value of the site.

BAR 2 Island View Road to Barton Golf Course

A fringe of undeveloped land backs the cliffs of this unit with the residential areas of Barton set back. Both residential housing and commercial properties are potentially threatened by erosion. The need to protect these assets justifies the maintenance of existing cliff stabilization and defence structures.

BAR 3 Barton Golf Course to Hordle Cliff

The clifftop of this unit consists of the golf course and agricultural land, with Hordle House School the only development. This frontage is unprotected and the cliffs are a SSSI for their geological exposures. No significant benefits are foreseen in protecting this frontage therefore the current status of this unit should be continued.

BAR 4 Hordle Cliff to End of Hurst Road

A heavily protected coastline, this unit comprises the residential village of Milford on Sea fronted by a strip of undeveloped land and a few car parks. Low cliffs give way to low-lying lands towards the east. The value of existing land and properties at risk justify the maintenance and improvement of existing protection measures. Protection efforts should however be sympathetic towards maintaining the geological interest of the cliffs.

BAR 5 Hurst Road to Hurst Spit

This low-lying frontage comprises mainly undeveloped land, and is backed by Sturt Pond. The flood risk inherent to this frontage extends into Milford centre and along the coast to Lymington and the village of Keyhaven. Thus a breach here would result in the flooding of these areas. Maintenance of existing defences is justified by the land and properties at risk. Works though must not interrupt the littoral drift critical to the preservation of Hurst Spit

BAR 6 Hurst Beach

This unit represents the exposed side of Hurst Spit. A feature of great geomorphological interest, the spit shelters the Western Solent and protects a large area of saltmarsh. Hurst Castle at the tip of the spit is a major landmark and was once part of the nation's maritime defence. Protection measures should be based on beach recharge to ensure continued sediment supply to maintain the shingle spit and protect the Western Solent, whilst using hard defences to protect Hurst Castle.

LYM 1 Hurst Castle to Hurst Spit North Point

The east facing recurve of Hurst Spit is represented here. Historic Hurst Castle remains the main feature, though its functions have shifted over the years from military to tourism. The spit falls within an Area of Outstanding Natural Beauty. The natural development of the spit should be allowed to continue, however there is much dependency on the strategy employed in BAR 6.

LYM 2 Hurst Spit North Point to Saltgrass Lane

The shingle bank gives way to saltmarshes on this north facing section of Hurst Spit. If the spit erodes this area will be lost, hence maintenance of the spit in BAR 6 is crucial to this unit, and protection of the coast to the east. Provided this is maintained the natural landscape and character of the spit can be maintained without interference within this unit.

LYM 3 Saltgrass Lane to Lymington Yacht Haven

Keyhaven is the important residential development, and Conservation Area, in this largely undeveloped unit. It is low-lying and dependent on the sea defences that protect it from coastal flooding. Flood risk from this unit also threatens Milford and Lymington. To protect these properties, and adjacent low lands, the existing defences, which must include Hurst Spit, should be maintained. The effectiveness of these defences is linked to the existence, and future management, of the fronting saltmarshes.

LYM 4 Lymington River

This management unit represents both sides of the Lymington River up to Bridge Road. On the west bank the town has developed to the river edge, part covered by a Conservation Area, while the east bank consists of the Wightlink ferry terminal and some housing and industry. The river itself has significant areas of saltmarsh. Developments on both banks of the river require protection through maintenance/upgrading of existing defences.

Lymington River and Marinas

LYM 5 Elmers Court Country Club to Pitts Deep

This low-lying coastline is fronted by a saltmarsh of international importance, but with little hinterland development. Pitts Deep has historical significance as a former saltern site. A saltmarsh management initiative to protect the integrity of the marsh and provide shelter to Lymington, in LYM 4 is necessary.

LYM 6 Pitts Deep to Warren Beach Cottage

This frontage consists of a sand and shingle beach of international nature conservation value, and is a departure from the typical saltmarsh which predominates the nearshore to the west. There are developments around Thorns Beach, with the whole unit low lying, thus requiring beach nourishment feeding through to LYM 7.

LYM 7 Warren Farm Spit

Warren Farm Spit and Gull Island together shelter the Beaulieu River from severe wave activity. The saltmarsh that fronts this management unit is of international nature conservation value, and is part of the North Solent National Nature Reserve. These factors make preservation of the spit and island important. This would be achieved through sediment feed from LYM 6, with the possibility of recycling material from the island back to Thorns Beach.

LYM 8 Beaulieu River

Undeveloped and mostly agricultural, the hinterland along the banks of the Beaulieu fall within an extensive flood risk area. The entire frontage is of international nature conservation value while archaeological remains, some dating from the iron age, exist inland. The number of existing properties does not justify defence works.

LYM 9 Inchmery to Lepe

Inchmery marks the beginning of a low cliff frontage which is partially undeveloped along with historic Lepe House, the Watch House and the Coastguard Cottages. These landmark buildings are of sufficent local interest to justify maintenance of present defences.

LYM 10 Lepe to East of Stone Point

Lepe Country Park is the most significant feature in this unit. Erosion has threatened to sever the main access road to the Park and its car-parking facilities, and the flood threat extends a considerable distance inland affecting much of the National Nature Reserve. Maintenance of the existing defence line will protect the public facilities and road that serve Lepe Country Park. A 'soft engineering' scheme is favoured to minimise disruption to the sensitive natural habitats of the fronting beach.

LYM 11 East of Stone Point to South of Bourne Gap

This unit is mostly low lying agricultural land of international nature conservation value. Existing defences are in poor condition but the current value of the hinterland does not justify major expenditure on these structures in the long term. Further study is needed to determine the most appropriate long term strategy.

LYM 12 South of Bourne Gap to Hillhead

Low-lying cliffs front this unit, backed generally by undeveloped or agricultural land. Scattered properties at Eaglehurst and Hillhead form the only significant development. Eroding cliffs pose a future threat to these areas. With only some developments of concern, beach nourishment isrecommended to provide protection and enhance the natual sediment feed towards Calshot Spit.

LYM 13 Hillhead to Calshot Spit

Calshot Spit stems from the north end of this unit with a sandy beach that widens as it progresses eastwards. The area sustains much nature conservation interest for its bird population and backs onto reclaimed land owned by National Power. Existing defences were constructed to not only preserve the spit but to protect low-lying lands within FAW 2 to FAW 5, where high-value development exists. Existing defences are critical to the protection of power station and oil refinery facilities in the lee of the spit and thus must be maintained.

LYM 14 Calshot Spit

Calshot Spit is a stabilised shingle bank hosting a multitude of interests including nature conservation, historical and recreational. Calshot Activities Centre is one of the UK's leading outdoor recreational centres. Calshot Castle, like Hurst Castle, was built for maritime defence, but the spit has a larger role in protecting the saltmarsh and mudflats in its lee from wave activity. Existing coastal defences should be supplemented by beach nourishment which does not impede littoral drift along the spit.

FAW 1 Lee of Calshot Spit

This coastline is a low energy environment characterised by saltmarshes and mudflats, within the Calshot Marshes Local Nature Reserve. Much of the land is undeveloped while its waters are used for sports activities generated by the facilities on Calshot Spit. Defences are aimed at the prevention of flooding, protecting developments on the spit. Upgrading of existing structures and construction of new where necessary will prevent flooding and maintain a co-ordinated approach to the management of the whole spit.

FAW 2 Calshot Spit to Fawley Power Station

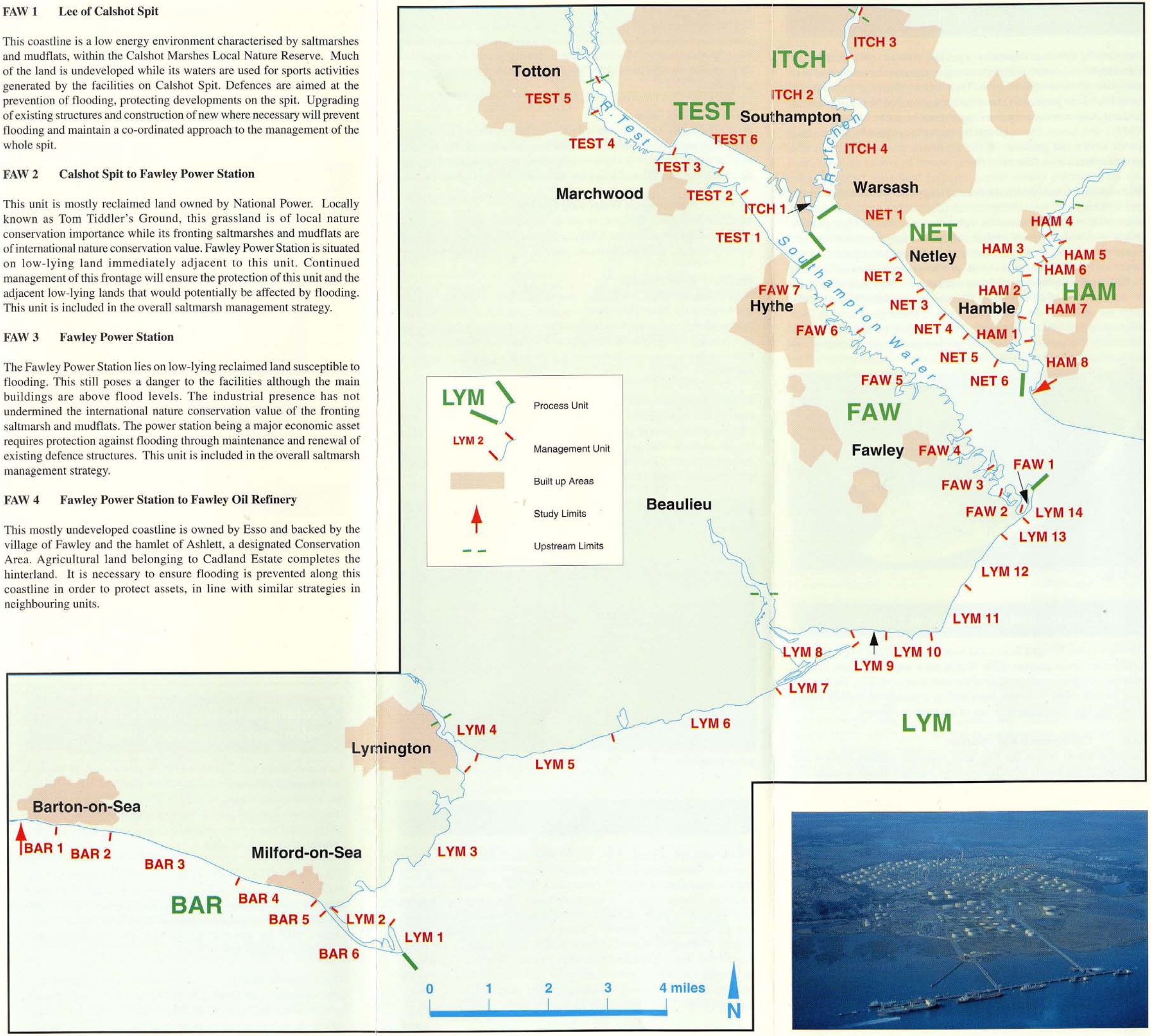
This unit is mostly reclaimed land owned by National Power. Locally known as Tom Tiddler's Ground, this grassland is of local nature conservation importance while its fronting saltmarshes and mudflats are of international nature conservation value. Fawley Power Station is situated on low-lying land immediately adjacent to this unit. Continued management of this frontage will ensure the protection of this unit and the adjacent low-lying lands that would potentially be affected by flooding. This unit is included in the overall saltmarsh management strategy.

FAW 3 Fawley Power Station

The Fawley Power Station lies on low-lying reclaimed land susceptible to flooding. This still poses a danger to the facilities although the main buildings are above flood levels. The industrial presence has not undermined the international nature conservation value of the fronting saltmarsh and mudflats. The power station being a major economic asset requires protection against flooding through maintenance and renewal of existing defence structures. This unit is included in the overall saltmarsh management strategy.

FAW 4 Fawley Power Station to Fawley Oil Refinery

This mostly undeveloped coastline is owned by Esso and backed by the village of Fawley and the hamlet of Ashlett, a designated Conservation Area. Agricultural land belonging to Cadland Estate completes the hinterland. It is necessary to ensure flooding is prevented along this coastline in order to protect assets, in line with similar strategies in neighbouring units.



Fawley Oil Refinery

FAW 5 Fawley Oil Refinery

Fawley Oil Refinery, one of the largest in Europe, is owned by Esso. A flood risk area extends inland behind the refinery's marine terminal to sections vital to the operation of the refinery. This major economic asset clearly warrants continued protection, and flood prevention here involves the co-ordinated protection of adjacent low-lying units. A saltmarsh management scheme will enhance flood defence efforts.

FAW 6 Fawley Oil Refinery to Hythe Sailing Club

This stretch of coast provides a break between the Esso petrochemical complexes and Hythe. The unit is mostly wooded or agricultural along with a rail line and road, and is partly backed by developments at Hythe. The fronting saltmarsh remains one of international nature conservation importance. Set-back development permits a retreated defence to be constructed, thus protecting the railway and road approaching Hythe. However, where Shore Road is close to the coast, the existing defences need to be held.

FAW 7 Hythe Sailing Club to Hythe Marina

Hythe is famous as the site where the 'Flying Boats' of the 1930's and 1940's were built. Its waterfront includes residential and military interests. A majority of Hythe is designated as Conservation Area, with the fronting mudflats carrying international nature conservation designation. Current waterfront land development justifies the maintenance and improvement of existing defences. Such work should complement the Conservation Area status of Hythe and be sympathetic to intertidal habitats.

TEST 1 Hythe Marina to Marchwood Military Port

This coastline comprises Dibden Bay where proposals for port related development are being prepared by Associated British Ports (ABP) on reclaimed land. This low grade agricultural land remains undeveloped except for Hythe Marina to the southwest. The mud and shingle foreshore is of international nature conservation importance. Maintenance of existing structures should protect Hythe Marina and any potential future development.

TEST 2 Marchwood Military Port

Marchwood Military Port, the only one of its kind in the country, and Cracknore Hard, an industrial area, form this management unit. Flooding threatens the area north of the Port around the industrial area, including Husbands Shipyard. Much of this area is proposed for development. Upgrading and maintenance of existing defences is necessary to protect the military port and industrial area. Similar maintenance work is appropriate for the undeveloped area between, provided that present development plans go ahead.

TEST 3 Marchwood Military Port to Magazine Hard, North

This coastline includes the site of the former Marchwood Power Station, now allocated for business, industrial and office developments by New Forest DC. Adjacent to this is the RNAD, a site of considerable historic importance. The planned developments require protection from flooding and erosion through maintenance of existing structures, however this will be reviewed should they not go ahead.

TEST 4 Magazine Hard, North to Eling Creek

This predominantly agricultural and wooded stretch includes the village of Eling. A designated Conservation Area, Eling's history traces back to medieval times with the village being developed around a toll bridge over the Eling Channel and an 18th century tide mill. The set-back nature of Eling permits erosion of limited coastal land of low economic value, and retreat of the fronting saltmarsh.

Port of Southampton

TEST 5 Eling Creek to Redbridge

This frontage is backed by the southern end of Totton, the largest town in the New Forest District. Much of densely developed Totton is low-lying and a flood risk while the fronting mudflats and saltmarsh are of international nature conservation value. Maintenance and upgrading of the existing defences is necessary to protect commercial and industrial properties, schools and recreational land as well as the A35 - a major route into Southampton.

TEST 6 Redbridge to South tip, Southampton Port

The ABP-owned Port of Southampton dominates this unit. The port frontage is built on reclaimed land and above flood levels. Mayflower Park towards the east backs into the port's commercial area and is part of the Southampton city centre. Several scheduled ancient monuments are located here. With the functioning of the port dependant on the continued protection of its frontage, existing dock walls and defence structures need to be maintained and upgraded.

ITCH 1 South tip of Southampton Port to Ocean Village

Located on the west side of the Itchen river mouth, the frontage includes Empress Dock which is a continuation of the ABP-owned Port of Southampton. The dock facilities are located above flood levels, but consistent with the policy for all other operational facilities of the port, continued maintenance of the existing defences is necessary to ensure operations are not interrupted.

ITCH 2 Ocean Village to Woodmill Lane Bridge

Ocean Village comprises leisure facilities and other recreational outlets as well as a growing residential and office presence. Between Crosshouse and Northam Bridge lies the most densely developed area on the Itchen's west bank. This coastal stretch is fronted by wharfs and jetties and is heavily protected. Continued protection of the entire frontage is required to prevent potential flooding of the west bank of the Itchen in this region, up to 800m inland.

Ocean Village and Weston Shore

ITCH 3 Woodmill Lane Bridge to Cobden Bridge

This coastline on the east bank of the Itchen features the Southampton CC owned Riverside Park. This recreational area is low-lying and backs into the residential Bitterne Park. The parks' amenity value, as well as potential risks to backing residential areas justifies the upgrading/ maintenance of existing defences.

ITCH 4 Cobden Bridge to Weston Point

This frontage is a mix of residential, commercial and industrial uses with a majority built on reclaimed land. The mudflats around Bitterne Manor, Spitfire Quay and Woolston are of international nature conservation importance. Flooding threatens these developments and may extend to the edges of residential areas further inland unless existing defences are maintained / upgraded.

NET 1 Weston Point to Netley Castle

The Weston shoreline is predominantly recreational open space, partially backed by the Weston and Netley residential areas, and protected by a vegetated shingle bank, and mudflats which are of international conservation value. Protection of the residential area of Weston is recommended. The final choice of strategy will be based on economics, and the outcome of a study to establish the amenity, environmental and recreational value of Weston Shore.

NET 2 Netley Castle to Netley Hard

This stretch is predominantly the residential frontage of Netley, which includes Netley Castle. The area is fronted by low cliffs and largely lies within a designated Conservation Area. The fronting intertidal mudflats are of international nature conservation importance. Cliff retreat poses a significant threat to coastal developments here. Current economics only marginally justify maintenance of existing defences and future construction. This erosion threat needs to be quantified to establish the most suitable defence method.

NET 3 Netley Hard to Cliff House, Hamble

The Royal Victoria Country Park dominates this coastline and is an important recreational amenity. Erosion threatens the coastal fringe of the park, Netley Sailing Club, and an access road into the park. As the developments alone do not warrant continued maintenance of defences, the final choice of strategy will be based on economics, and the outcome of a study to value the amenity and environmental value of the Country Park frontage.

NET 4 Cliff House to Ensign Industrial Park

There are no developments at risk along the cliff tops of this coastline. However, some industrial works that exist further inland may be threatened in the long term if nothing is done to the expected cliff slope retreat. The establishment of toe protection measures would help limit the perceived long term erosion threat to backing developments.

NET 5 Ensign Industrial Park and Hamble Oil Terminal

The BP-owned Hamble Oil Terminal which serves the Wytch Farm exploration site is a major economic asset to the area but is sited on flood threatened land. The main operational sections of this facility are threatened and there is little choice but to ensure its protection through maintenance of existing defences.

NET 6 Hamble Oil Terminal to Hamble Common Point

Hamble Common, a designated SSSI, backs this coastal stretch containing several Scheduled Ancient Monuments. The defence of Hamble Common is linked to potential outflanking of the Oil Terminal flood defences. Archaeological, amenity and outflanking considerations promote flood defence construction with implementation dependant on a valuation study. However, the preference of English Nature to allow for the flooding of the Common may influence implementation.

HAM 1 Hamble Common Point to Satchell Marshes

This unit lies on the west bank of the River Hamble backing onto Hamble Common and the developed Hamble village frontage, one of the UK's major yachting centres. Continued protection must be afforded to the waterfront developments of Hamble and link with that for NET 6 to protect Hamble Common. Again implementation should consider English Nature's wish to allow for flooding of Hamble Common.

HAM 2 Satchell Marshes to Badnam Creek

Fronting this unit is Satchell Marsh which is of international nature conservation importance. Inland of the marshes is part of Hamble village, the fringe of which is threatened by flooding, with Mercury Yacht Marina also threatened. As Hamble's development is mostly set-back, a retreated defence can be built. Current interests may require some existing defences to be maintained.

HAM 3 Badnam Creek to Lands End Lane

This unit falls within the Bursledon Conservation Area and is fronted by Lincegrove and Hackett's Marshes. Backing the marsh is a railway line running over undeveloped land. Major assets including the railway line are not at risk.

HAM 4 Lands End Lane to Swanwick Shore Road

Covering both banks of the Hamble up to Bursledon Railway Bridge, this unit is predominantly low-lying with some land reclaimed. The Bursledon and Lower Swanwick developments include industrial, commercial, residential and maritime uses. The flood threat covers extensive residential and industrial areas including part of the railway line as it approaches the railway bridge. In view of the value of land at risk, maintenance and upgrading of existing structures, complemented by limited new construction is necessary.

HAM 5 Swanwick Shore Road to Crableck Marina

This agricultural and wooded stretch features a few coastal houses with the southern extremes low-lying and giving way to Crableck Marina. The only major development is the marina itself. The economic value of the land at risk cannot justify a unit wide protection strategy.

HAM 6 Crableck Marina

The marina and its associated boatyard is an important facility to the boating community of the Hamble and its narrow mudflats have international nature conservation value. Flooding could inundate the entire frontage resulting in the loss of the marina whose existence depends on the continued maintenance of defences which require upgrading.

HAM 7 Crableck Marina to Warsash North

A clay embankment lines the river bank along this stretch, but the unit is a continuation of undeveloped, wooded land with scattered housing. A number of drainage channels feature in the gently sloping hinterland with typical saltmarsh and mudflats characterising the nearshore. There are no assets at risk requiring protection.

HAM 8 Warsash North to Hook Park

The Warsash frontage is represented by this unit. Most of the development is set back and not at risk except for the reclaimed area around the Harbour Master's Office, including a car park and sailing facilities, and the frontage of the College of Nautical Studies further to the south. Maintenance of existing structures would suffice to protect this unit, thus minimising any construction activities that could potentially affect the internationally important intertidal habitat.