

Rural land resources

The coast is a narrow strip of shoreline that separates the land from the sea. The coast is the most varied and rapidly changing of all landforms and ecosystems and its development is affected by the inter-relationships between terrestrial, atmospheric, marine and human processes.

The demands made of the coastline

The coastline provides opportunities for human activities. Therefore it has to be carefully managed so that the natural coastal systems can be maintained, while at the same time it can be economically exploited in a sustainable way.

There are many demands made on the coastline and associated reasons for its management.

1. Many towns and cities are located near to, or on the coast and many people depend on the sea for their livelihood, e.g. fishing and port activities. Property close to the coast needs to be protected from the dangers of flooding or cliff collapse.
2. The coastline is an important tourist destination. Uncontrolled development (hotels, roads, etc.) can lead to unsustainable tourism where ecosystems are damaged.
3. The construction industry extracts huge quantities of sand and gravel from the sea floor just off the coast to produce cement and concrete. The extraction sites need to fit into the sediment transfer system to avoid harmful knock-on effects farther up the coast.
4. Coastal environments such as sand dunes and saltmarshes need protection and conservation if they are not to be damaged.
5. Recent climate change is causing sea levels to rise. Therefore flooding of low-level land adjacent to the coast is now more likely. Further, coastal erosion is also becoming greater due to increased storminess and this has led to cliff collapse.

Who manages the coastline?

There is no single body in charge of managing the coastline. Much of the **land** is under the control of the local authorities, while the **'sea'** part is managed mostly by government authorities and organisations, e.g. those involved in fisheries, mineral extraction, pollution control and maritime safety.

In an attempt to establish greater coordination in the management of the coastline in England and Wales, the Ministry of Agriculture and Fisheries (MAFF – now replaced by the Department for Environment, Food and Rural Affairs, DEFRA) introduced the concept of the **Shoreline Management Plan** in 1993. Under this plan, the coastline of England and Wales was divided up into eleven self-contained stretches (as far as the movement of sand was concerned) called **sediment cells** (Figure 1).

Figure 1: Major sediment cells around the coasts of England and Wales



(Waugh: *Geography, An Integrated Approach*, p.175)

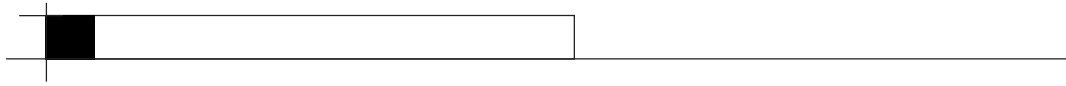
Having established the sediment cells, MAFF encouraged the setting up of **coastal groups**. These consisted of local authorities and other interested parties and their job was to get together and produce a Shoreline Management Plan for their sediment cell. The groups, which included planners, engineers, geomorphologists and people with specialised local knowledge, had to develop a management strategy for their particular cell taking into account the following factors:

- natural coastal processes
- coastal defence needs
- environmental considerations
- planning issues
- current and future land use.

The main objectives of a Shoreline Management Plan are to:

- assess coastal defence options and agree on the preferred approach;
- outline future requirements for monitoring and research related to the coastline;
- identify opportunities for maintaining and enhancing the coastal environment;
- ensure that consultation takes place between all interested parties for any future coastal plans or developments.

While the Shoreline Management Plans have no statutory status, they provide valuable information to the local authorities whose responsibility it is to implement the strategies.



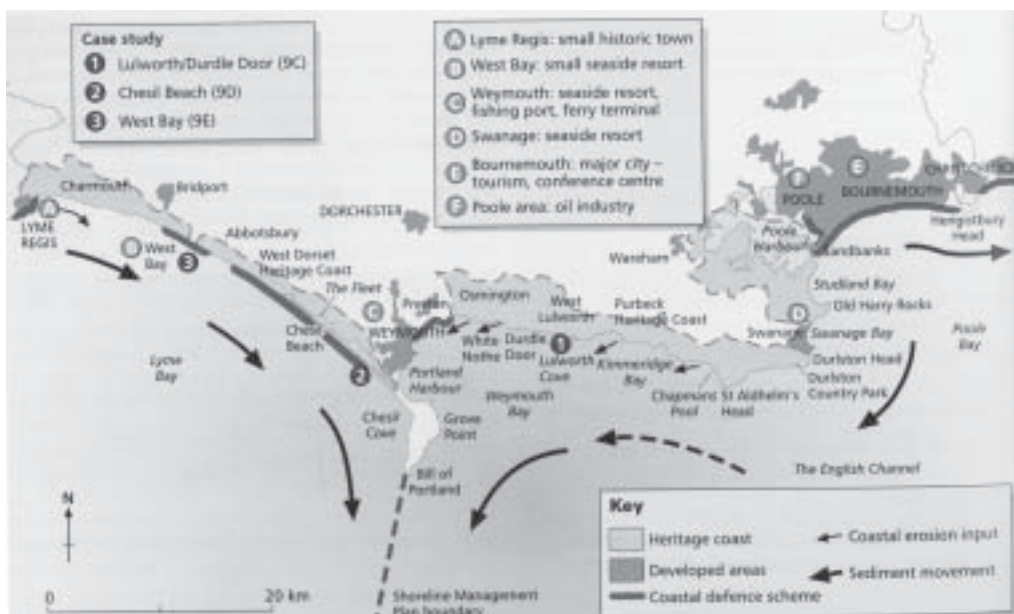
CASE STUDY

Case study: The Dorset coast

On the south coast of England, located between Devon and Hampshire is the relatively unexplored county of Dorset. The county is littered with ancient stone circles and hill forts as well as Roman and Saxon remains. It has rolling hills with ancient field patterns, market towns and small villages. Dorset was also the home of Thomas Hardy. In fact Dorset is 'Wessex', the county where Hardy based the majority of his books.

The Dorset coast is one of the most interesting coastal locations in the British Isles and boasts a variety of different types of coastal scenery. This area faces the English Channel and is divided into two major sediment cells, the Land's End cell to the west of Bill of Portland and the Portland Bill cell to the east (Figure 2).

Figure 2: The location of Dorset and the Dorset Coast



(Essential AS Geography, p.324)

Most of the Dorset coast is inhospitable. There are few natural harbours and only Poole and Weymouth have been developed as ports. Poole Harbour is Britain's largest natural harbour and its southern area overlays Britain's sixth largest oilfield, the largest onshore oilfield in Western Europe.

There are some holiday resorts such as Swanage, West Bay, Lyme Regis and Bournemouth. Sixteen million tourists visit Dorset each year and there are 37,500 tourist related jobs. There are many activities for tourists visiting the area. These include boat rides, long distance walks, cycleways, windsurfing, fishing, rock climbing and fossil hunting.

Large stretches of this coast have been designated **Sites of Special Scientific Interest (SSSIs)** due to their great diversity of coastal wildlife. For example, the Fleet, the name given to the lagoon behind Chesil Beach, is an important locality for birds, and the limestone cliffs on the Isle of Portland have rare orchids and butterflies. Also, the long sandy beaches and unique coastline have meant that this part of southern England has gained **World Heritage Site** status.

This is not a highly industrialised area.

The geological background

The rocks found here formed in a gently subsiding area known as the Wessex Basin. Because the earth's crust was sinking, a huge volume of rock accumulated, recording in the process a vast amount of information about past environments. The rocks contain many fossils and show evidence of the pattern of life during the Mesozoic Era (248 to 65 million years ago), particularly shallow-water sediments.

The Dorset coast also displays numerous features of coastal geomorphology. For example, there is a range of different mass movement systems, a unique barrier beach and lagoon, and classic examples of cliff erosion

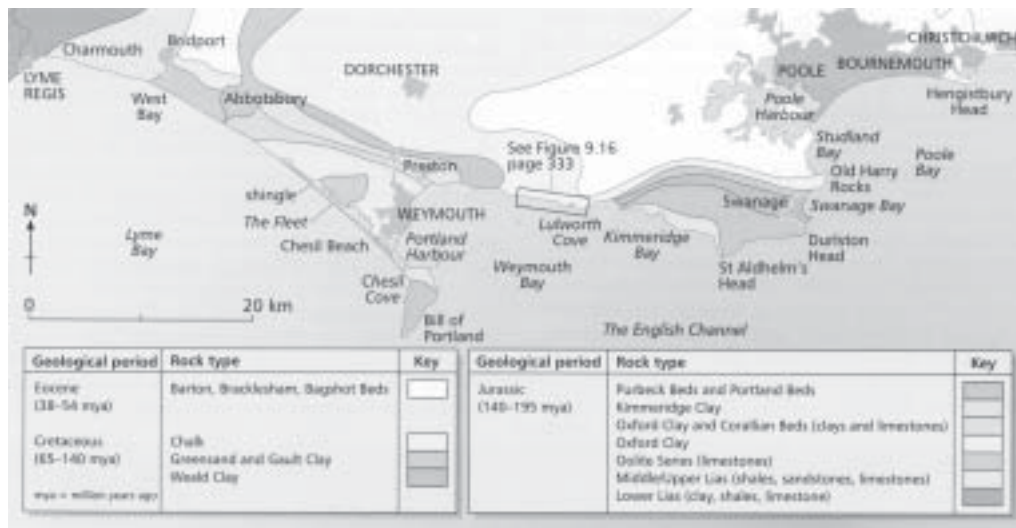
There are many types of rock that outcrop along the Dorset coast. These include the more resistant rocks such as chalk and limestone, and weaker rocks such as clay and shale. It is this variety that accounts for Dorset's magnificent coastal scenery. These rocks were folded during the Alpine orogeny (7–50 million years ago.) Indeed, because the rocks at the coast were folded almost vertically in places they produced coastal cliffs. In other areas faults running at right angles to the coast have been exploited by the sea to form inlets and bays.

Taking the geology and geomorphology into account for the purpose of this case study, the Dorset coast has been divided into two areas (Figure 3).

(**Note:** Land use conflict in Poole Harbour, to the east of Portland Bill, will be studied after this section.)

1. Coastal erosion: Lulworth Cove to Swanage Bay. Located to the east of Portland Bill.
2. Coastal deposition: to the west of Portland Bill.

Figure 3: The geology of the Dorset Coast



Coastal erosion: Lulworth Cove to Swanage Bay

This is one of the most dramatic and best known stretches of coastline in the UK. There are many classic coastal landforms here which make it an excellent case study for **coastal erosion**.

The most important control in the formation of the landforms in this area is the geology.

1. Concordant coastlines

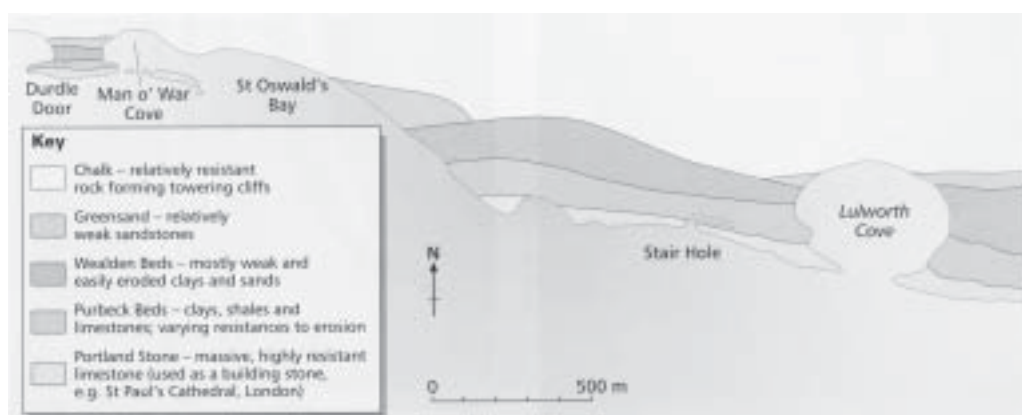
There are two main geological features at work:

- The rocks run parallel to the coast.
- There are alternative bands of hard and soft rocks.

The rock which runs adjacent to the coastline is a very resistant limestone called **Portland Stone**. Behind this wall of rocks are much weaker and softer ones, namely:

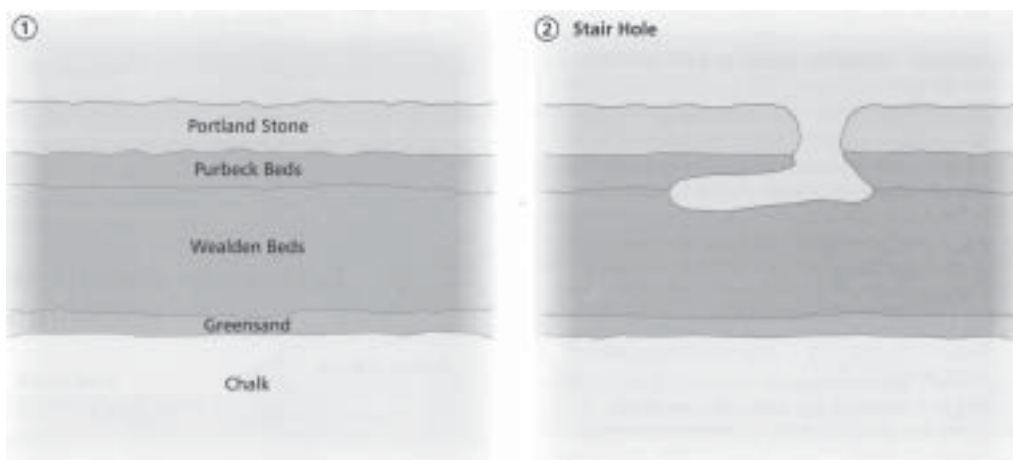
- Purbeck Beds of clays shales and softer limestones;
- Wealden Beds of weak, eroded clays and sands;
- Greensands which are relatively weak sandstones;
- Chalk, which is a relatively resistant rock compared to the other rocks, is found farthest inland (Figure 4).

Figure 4: The geology of the Lulworth Cove area

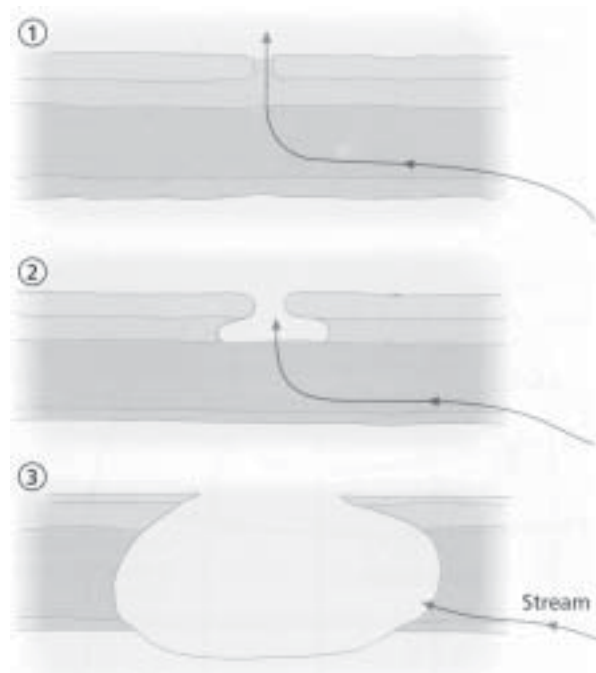


Because it has been intensely folded, the Portland Stone forms steep cliffs facing the sea. However, the folding caused cracks in the stone and these have been exploited and enlarged by the sea to produce caves. In places, for example at Stair Hole, the sea has broken through the resistant rock and into the softer and weaker clay and shale behind (the Purbeck Beds). Once the sea has broken through the outer wall of Portland Stone, erosion of these softer beds is rapid (Figure 5).

Figure 5: The formation of Stair Hole



Lulworth Cove is a small circular bay with a narrow seaward opening. Here it is thought that the weak point which produced the opening to the sea was due to a river. This river flowed over the land and eroded the Portland Stone when much of northern Britain was covered by glaciers and the sea level was lower than it is today. (This area was never glaciated.) As sea levels rose to their present levels (they were lower in the past as much of the water was locked up as ice on the land), marine erosion exploited the line of weakness produced by the river and eroded the weaker rocks behind the Portland Stone until the more resistant chalk rocks were reached. The chalk now forms a steep backdrop to the cove (Figure 6).

Figure 6: The formation of Lulworth Cove

Over time gradual enlargement could lead to Stair Hole (located 1,500 metres to the west of Lulworth Cove) becoming as large as Lulworth Cove and these two coves would join together. This is the process by which Worbarrow Bay to the east of Lulworth was formed. Here the broader outcrop of weaker clays and sandstones permitted deeper penetration of the sea.

Erosion has been more rapid farther west at Durdle Door where the sea has broken through the outer wall of Portland Stone and rapidly eroded the Purbeck Beds behind. Here the Portland Stone forms isolated rocky outcrops, remnants of a former cliff wall. Durdle Door is an **arch** and other arches would have existed linking the now separate outcrops of limestone which mark the entrance to Man o' War Cove. These isolated outcrops are called **stacks**. Over time these stacks are eroded to form **stumps** and as the cliff line retreats all that is left is a bare rock surface called a **wave-cut platform** which is exposed at low tide but covered at high tide (Figures 7 and 8).

Figure 7: The formation of stacks and stumps

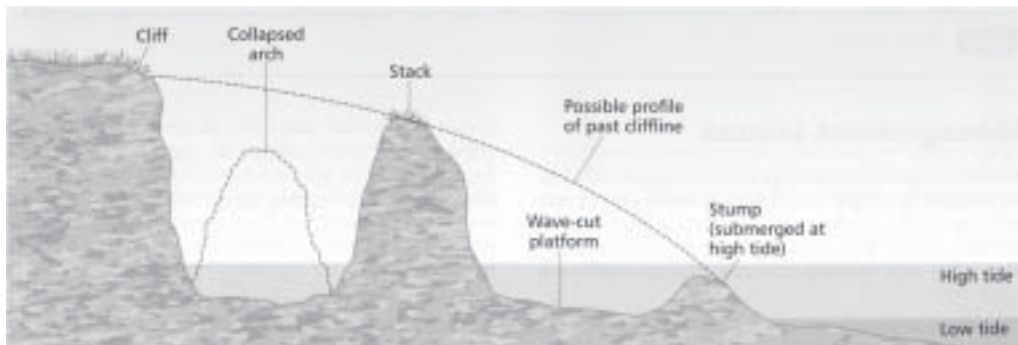
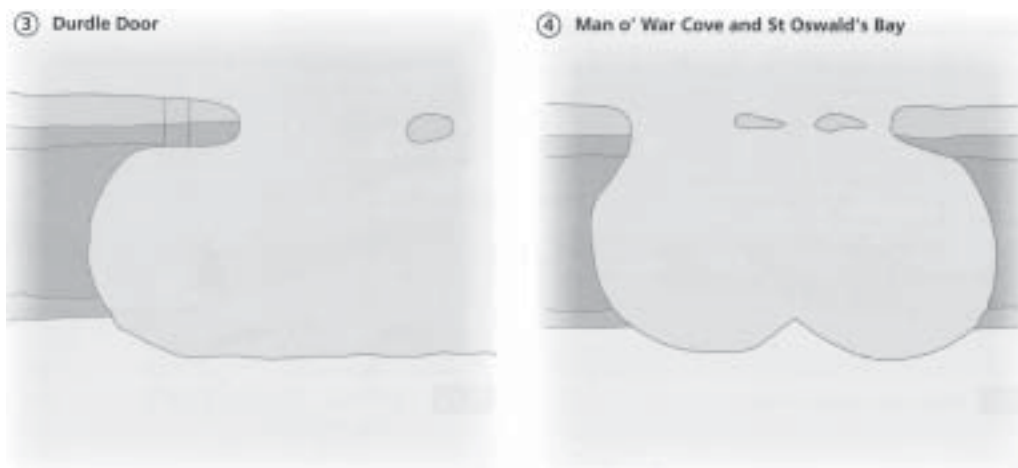


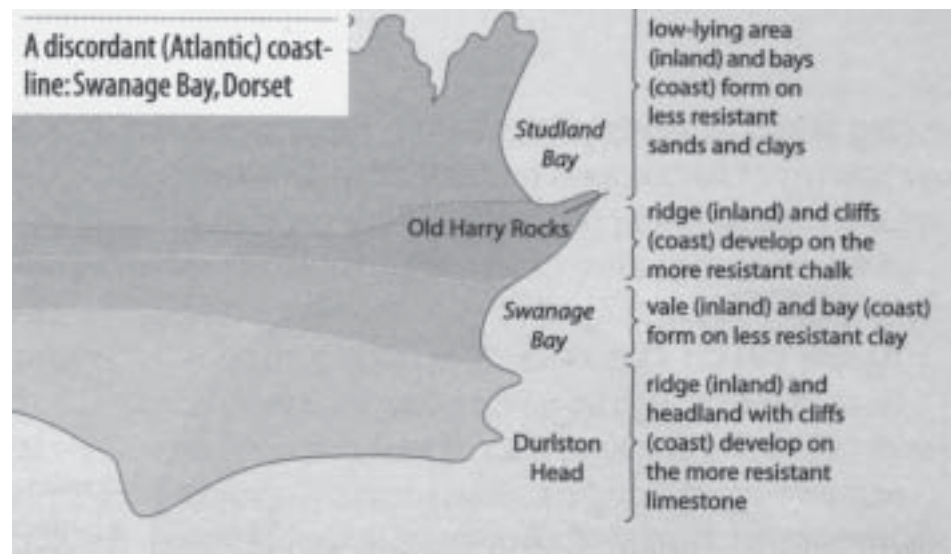
Figure 8: The formation of Durdle Door and Man o' War Cove



2. Discordant coastlines

Discordant coastlines are where the coast cuts across the rock structure, as in Swanage Bay. Here headlands are formed where the more resistant limestone (Portland Stone) and chalk meet the sea at right angles. Bays are formed when the sea erodes the softer sands and clays (Figure 9).

Figure 9: The discordant coastline at Swanage Bay



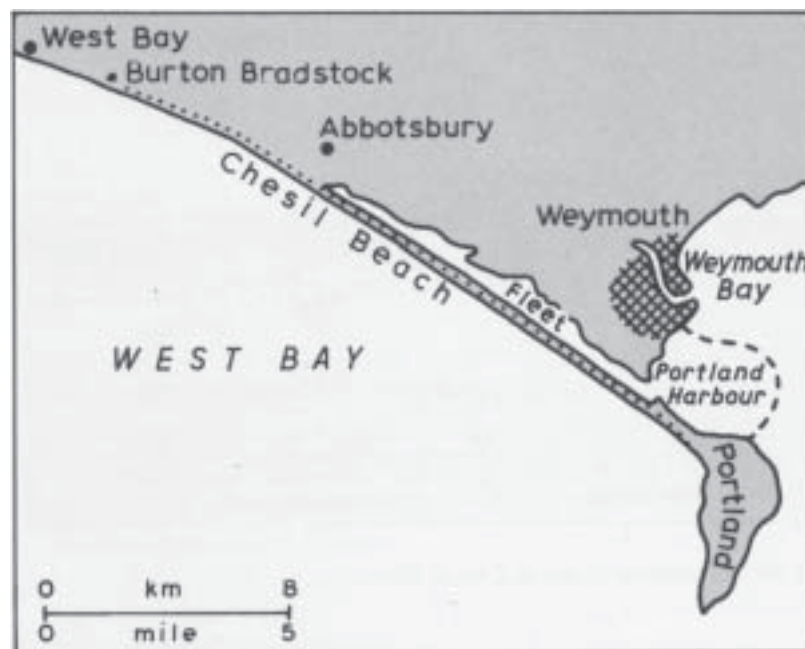
Coastal Deposition: Chesil Beach

Coastal deposition takes place when wave velocity drops so that the water is unable to hold sediment in suspension. Material is dropped and then transported from one place to another.

Chesil Beach

The so called 'island' of Portland is approached by a bridge and causeway carrying a road and a disused railway, but apart from this man-made feature it is also 'tied' to the mainland by the great shingle ridge of Chesil Beach. At the Portland end this ridge rises to about 15 metres above sea level and is composed of large pebbles averaging about 7 centimetres in diameter which increase in size towards the east. Its cross section shows a series of ever increasing storm ridges surmounted by a final uppermost ridge followed by a steep backslope dipping towards Portland Harbour. Chesil Beach is separated from the mainland by a **lagoon** of brackish water known as the Fleet which is between 100 and 1,000 metres in width (Figure 10).

Figure 10: Chesil Beach



How was Chesil Beach formed?

Chesil Beach was originally an offshore shingle bank. During a period of rapid sea level rise some 14,000–7,000 years ago, as glaciers melted following the last ice advance, the shingle bank was pushed towards the land by powerful waves and currents.

The increase in pebble size from west to east on Chesil Beach is the result of **longshore drift** which transports pebbles from west to east. Over time the pebbles become sorted so that the larger pebbles are found to the east and the smaller ones to the west. The increase in height of the shingle bank to the west also reflects the dominant east to west movement of material.

Managing the Dorset Coast

Managing the Dorset Coast is a very complex undertaking with several authorities, organisations and protection agencies involved (Figure 11).

1. Local Authorities

- (a) The Dorset County Council. The county council is involved in much of the large-scale strategic planning of the coastline, mineral extraction, waste removal, and transportation.
- (b) The local district councils (Christchurch, Purbeck, Weymouth & Portland and West Dorset). These four councils are involved in local planning and development control, environmental health and coastal protection.

2. Heritage Coast

In an attempt to protect certain coastlines from the growing pressure of agriculture, recreation and development, stretches of the United Kingdom's most beautiful and undeveloped coastlines have been given the title 'Heritage Coast'. Heritage Coast plans are prepared by the local authority following guidelines set down by the Countryside Commission.

About 25% of Dorset's coastline has been developed. Before the 1947 Town and Country Planning Act much of the development was haphazard. Since then, however, the emphasis has been on conservation and protection. In 1972 two stretches of the coast were designated a Heritage Coast: Purbeck Heritage Coast and West Dorset Heritage Coast. This designation with the emphasis on conservation imposes very strict planning restrictions and requires the production of Heritage Coast plans. The main objectives of these plans are based on conservation, recreation, rural economic development and environmental health.

3. Shoreline Management Plan

This is involved in, amongst other things, examining the options for future coastal defence. This area of coastline is divided into two major sediment cells, the Land's End cell to the west of Bill of Portland and the Portland Bill cell to the east. (See p.2)

4. **World Heritage Site**

UNESCO awarded the Dorset and East Devon Coast, World Heritage Site status in December 2001. It was awarded this in recognition that the coast had a variety of spectacular geological and geomorphological features. For example, it displays a range of mass movement systems, the development of a unique barrier beach and lagoon, classic examples of coastal cliff erosion as well as providing a glimpse into the entire Jurassic period. The rocks within the site have many fossils with a diverse range of species being represented including plants, insects, fish reptiles and dinosaur footprints.

5. **The Dorset Coast forum**

This was established in 1995 to examine long-term issues facing the Dorset Coast and to aid sustainable development, use and management of the coast.

6. **Areas of Outstanding Natural Beauty**

Some areas of Dorset's countryside, with its varied landscape rich in wildlife and heritage, have been designated as Areas of Outstanding Natural Beauty.

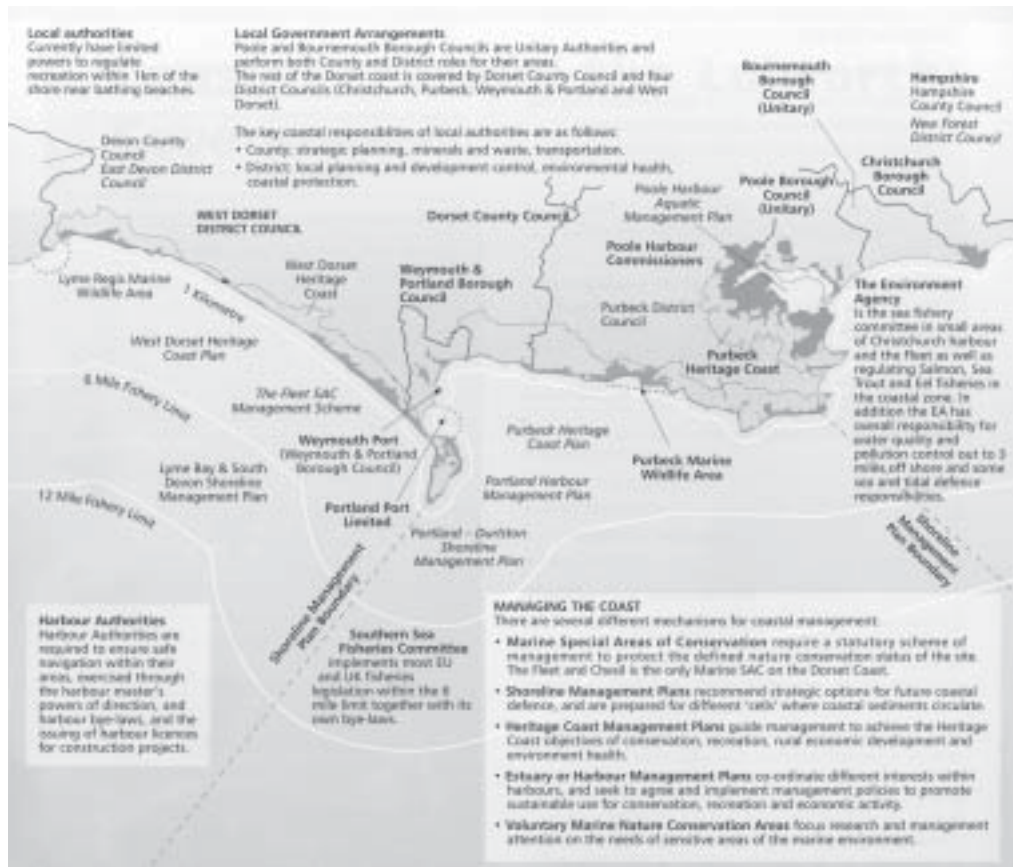
7. **Marine Special Areas of Conservation (Marine SAC)**

The Fleet and Chesil Marine SAC is a statutory scheme of management to protect the nature conservation status of the site, i.e. Europe's longest shingle bar which has developed a diverse wetland community dependent on fresh and salt water conditions. The Fleet is an important locality for birds, especially terns and mute swans.

8. **Sites of Special Scientific Interest (SSSIs)**

Large stretches of this coast have been designated **Sites of Special Scientific Interest (SSSIs)** due their great diversity of coastal wildlife. For example, the Fleet, the name given to the lagoon behind Chesil Beach, is an important locality for birds and the limestone cliffs on the Isle of Portland have rare orchids and butterflies and there are several species of rare wild plants on the sand dunes at Studland.

Figure 11: Who manages the Dorset Coast?



(Essential AS Geography, p.327)

Managing coastal erosion

Coastal erosion usually involves cliff collapse and retreat. For much of the coast this is not an issue because people are not involved. However, where the coast has been developed there is a threat to farmland, property and communications.

Who is responsible for coastal protection?

At present in England and Wales no single government department has overall responsibility for coastal protection. It is divided up amongst the Department for Environment, Food and Rural Affairs, the Environment Agency (responsible for protection against coastal flooding), maritime local authorities, district councils and county councils, English Nature, the Countryside Commission (responsible for Heritage Coasts), the National Trust, National Parks and National Nature Reserves.

How is the coast protected?

1. Hard defences

This involves the construction of major engineering works such as sea walls, revetments, groynes and breakwaters.

Sea walls

The aim here is to absorb wave energy in place of a beach and to protect the foot of a cliff from wave attack. Designs include concrete walls, slatted revetments (wooded angular walls) and stone or concrete blocks. The problem with these, however, is that they are expensive, unsightly and restrict access to the beach.

Groynes

Groynes are wooden walls constructed at right angles to the shoreline to reduce the effects of longshore drift. They are particularly used in tourist areas where they help reduce the removal of sand from beaches, but this can result in the loss of protection to the base of the cliffs down drift of the groynes.

2. Soft defences

This approach is based on the idea that human interference should be kept to a minimum and that natural processes of beach renewal should be maximised.

Beach nourishment

This is the replacement of beach material that has been removed by longshore drift or attrition. Sand and shingle extracted from nearby gravel pits, dredged from offshore submerged banks, or recycled from other beaches where gravel accumulation is becoming a problem are used to replenish beaches.

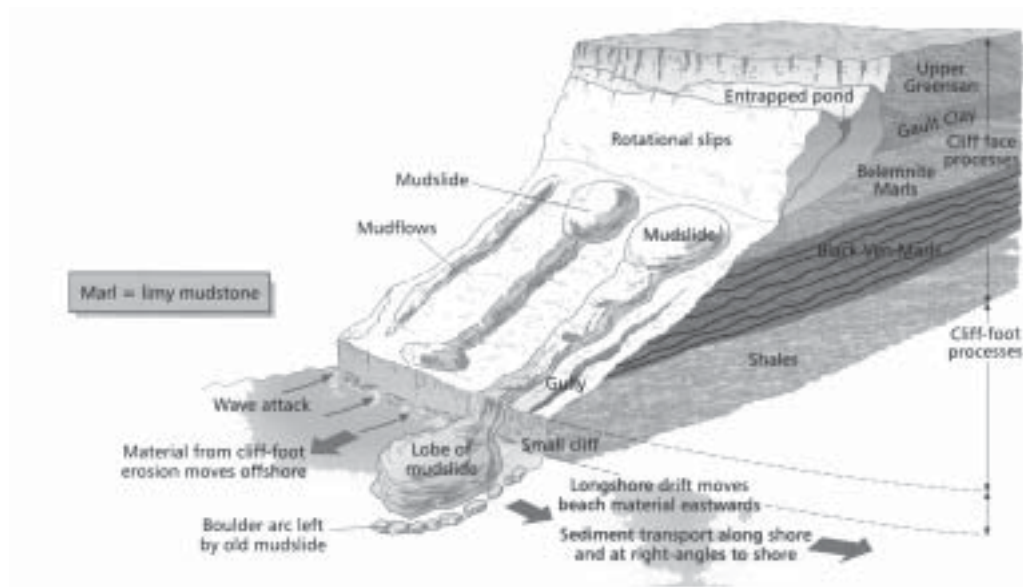
Beach stabilisation

This is done by reducing the slope angle of the beach, draining cliffs and growing vegetation on vulnerable coastal areas such as sand dunes.

Managing coastal erosion in Dorset

The cliffs between Lyme Regis and West Bay are composed of a mixture of thinly bedded and alternating bands of sandstones, clays, shales and limestones. Water drains freely through the sandstones but the clays and shales become saturated during periods of heavy rainfall and crack during periods of dry weather. The alternating beds of rocks results in water accumulation between the beds of different permeability and **landslips** take place. The cliffs are made even more unstable by the constant pounding and undercutting by the sea (Figure 12).

Figure 12: Cliff profile at Lyme Regis



Case study 1: Managing the coast at West Bay

West Bay is a small seaside resort and fishing village located in the west of the area. The cliffs to the west of West Bay are made up of alternating bands of clays and limestones and are faulted. The combination of weak rocks and faulting has made the cliffs highly unstable and prone to landslips (Figure 13).

Figure 13a: The location of West Bay

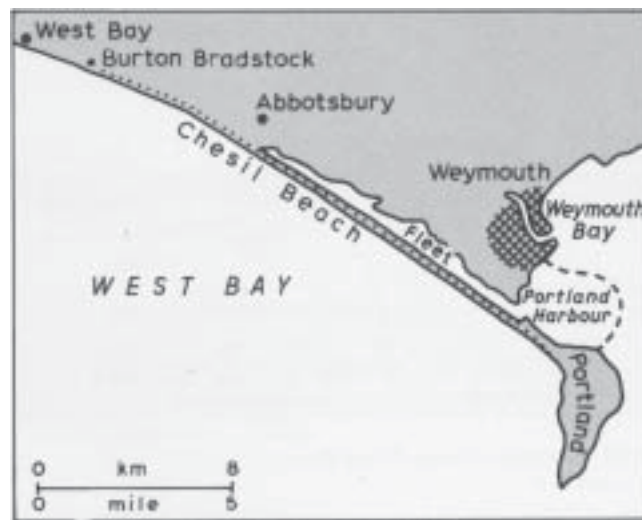
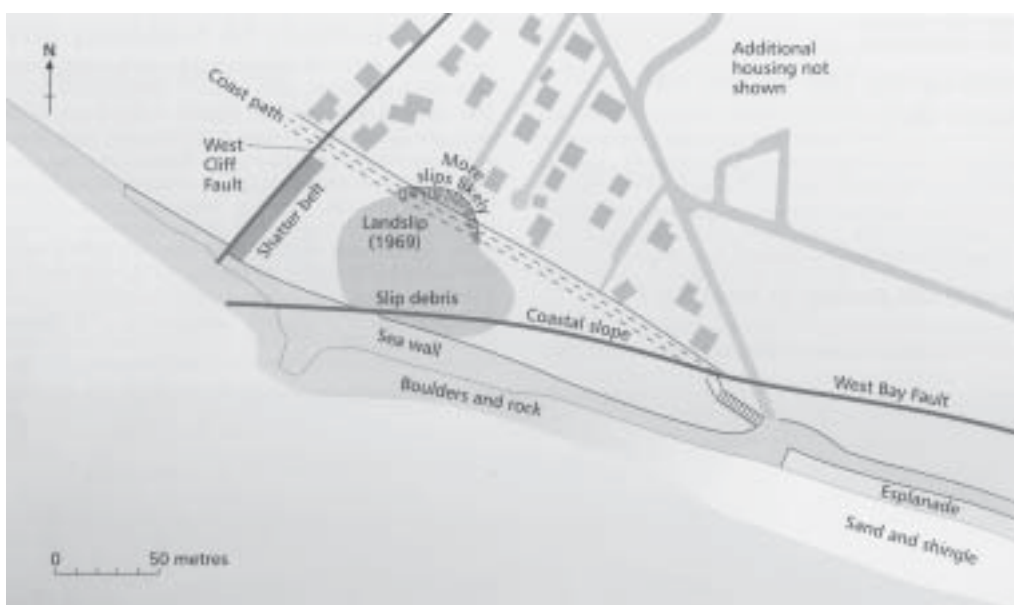


Figure 13b: West Bay



The area to the east of the bay is also prone to flooding. Serious flooding occurred here as recently as 1990. The shingle beach on West Bay is actually the start of Chesil Beach, but easterly longshore drift has depleted it. Also in the past, some of the shingle was removed for commercial purposes.

The management issues are as follows;

- Cliff top recession at West Cliff has receded by 25 metres since 1903 and requires to be stopped.
- The beach is the best form of sea defence because it acts as a barrier to potentially destructive wave energy.
- The piers and harbour area need to be managed to maintain access to the harbour for fishing and pleasure boats.
- The local economy is heavily dependent on tourism, so management must take into account public access while ensuring safety.

What has been done so far?

- In 1887 the sea wall was constructed to the west of the piers to protect the cliffs. Strengthening work has been carried out from time to time.
- Groynes were introduced in an attempt to limit beach erosion. These were not maintained and, with the beach continuing to erode, this has led to a series of wall failures.
- A groyne made out of huge boulders (rock bastion) has been built to add stability to the beach and promote the build-up of beach material.
- The cliffs behind the esplanade have been drained and regraded to improve stability.
- Nourishment has taken place in the east of the bay to maintain the beach.

It is recognised that coastal management will have to continue well into the future if the resort at West Bay is to survive. If nothing is done the beach will become increasingly reduced. Flooding in the harbour area will increase, the harbour piers will collapse if they are not maintained, and the sea wall needs to be continually repaired as already storm waves overtop the wall.

There are three broad options available to the decision makers:

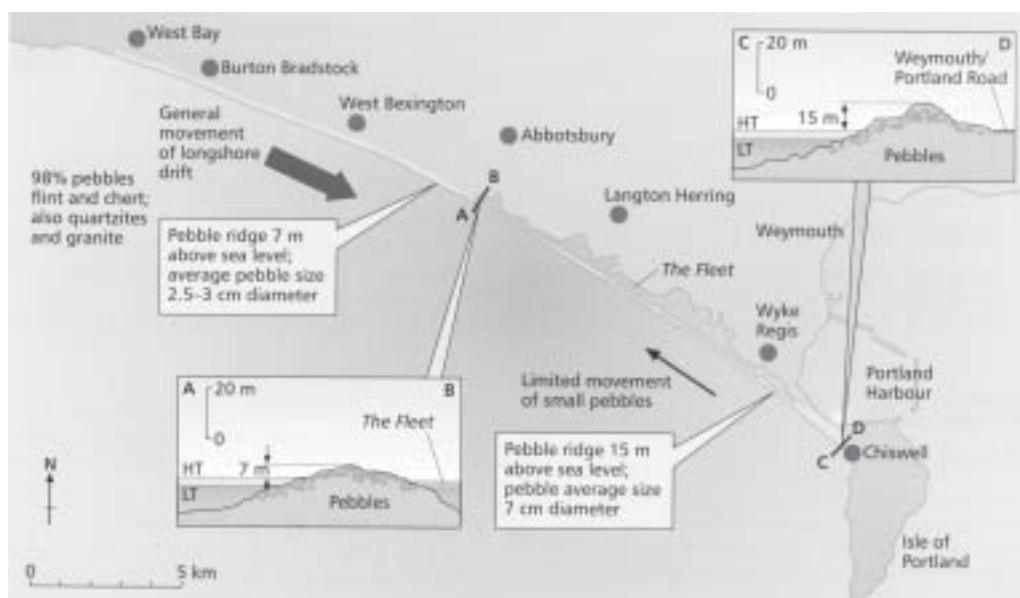
- 1. Do nothing. Take no action at all to maintain existing defences and maintain new ones.**
- 2. Sustain. This involves work to maintain the current level of protection by repairing existing structures and adding sediment by nourishment.**
- 3. Change. This strategy includes new control measures to improve the performance of existing defences, and construction of a new defence forward of the existing defences and a new one behind.**

A cost benefit analysis will be undertaken to examine the most appropriate course to follow.

Case study 2: Managing the coast at Chesil Beach

Chiswell, a small village located at the most easterly end of Chesil Beach (Figure 14) has had a long history of flooding during storms as there is only a small ridge of shingle between it and the open sea. Flooding takes place on average every 5–10 years causing damage to homes and communications. Damage caused to the beach, however, is repaired by natural processes as constructive waves built up the beach again.

Figure 14: The location of Chiswell



Five million pounds was spent to protect the village in the following ways:

- The 300-metre esplanade wall was modified with concrete and steel to prevent undermining by the sea.
- A new wave wall was built to reduce the amount of overtopping by storm surge waves.
- A culvert with openings to the seaward side and top to allow water to enter was built on the landward side of the beach. The culvert drains into an open channel leading to Portland Harbour.
- The A354 road was raised above previous flood levels.

Changing sea levels and the Dorset Coast

There is little doubt that the climate is becoming warmer and this may cause sea levels to rise in some parts of the world. Authorities with a responsibility for managing the coast have to take these changes into consideration when they are developing their plans for coastal defence.

A future rise in sea levels will have a considerable effect on the landforms of the Dorset Coast. The weak rocks at Lyme Regis and West Bay will be more prone to erosion, Chesil Beach may be more prone to breaching and Chiswell's flood problems may increase again.

However Dorset's coastal managers are more concerned about the predicted increase in storminess. They believe that an increase in the magnitude and frequency of storms will have a far greater effect on the Dorset Coast than a slow rise in sea levels.

The threatened coast

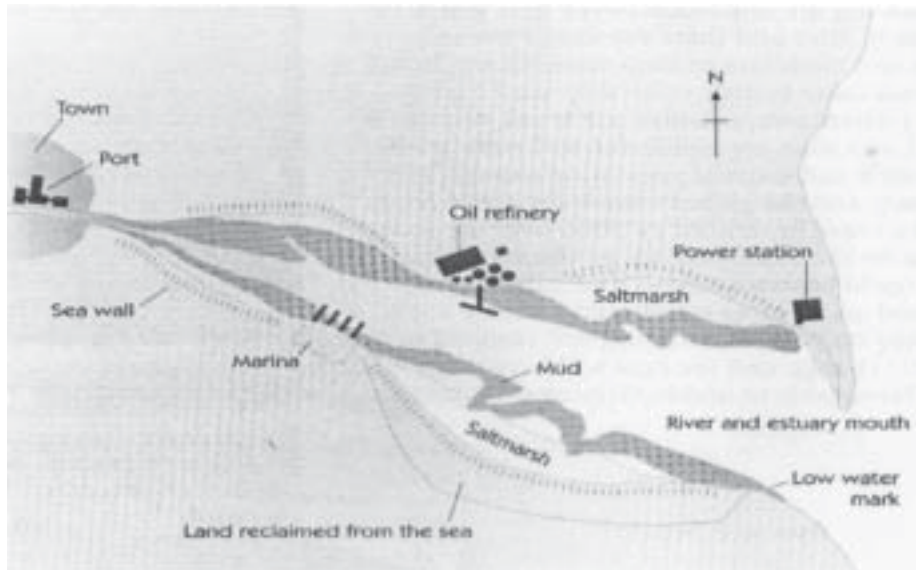
There is still some coastline in the UK that is natural, but much of it has been developed or threatened. Figure 15 shows some of the threats to the coasts.

Figure 15: The threats to the coast



There are about 160 river estuaries, river mouths and natural harbours in the UK and many are under threat. These are sheltered water areas used for commercial shipping and pleasure boats. Access from the land is usually very easy and they are often popular for leisure activities. Industry has located on the estuaries because of the available flat land and the easy disposal of waste and effluents. Features of a typical estuary are shown on the next page (Figure 16).

Figure 16: Features of a typical estuary



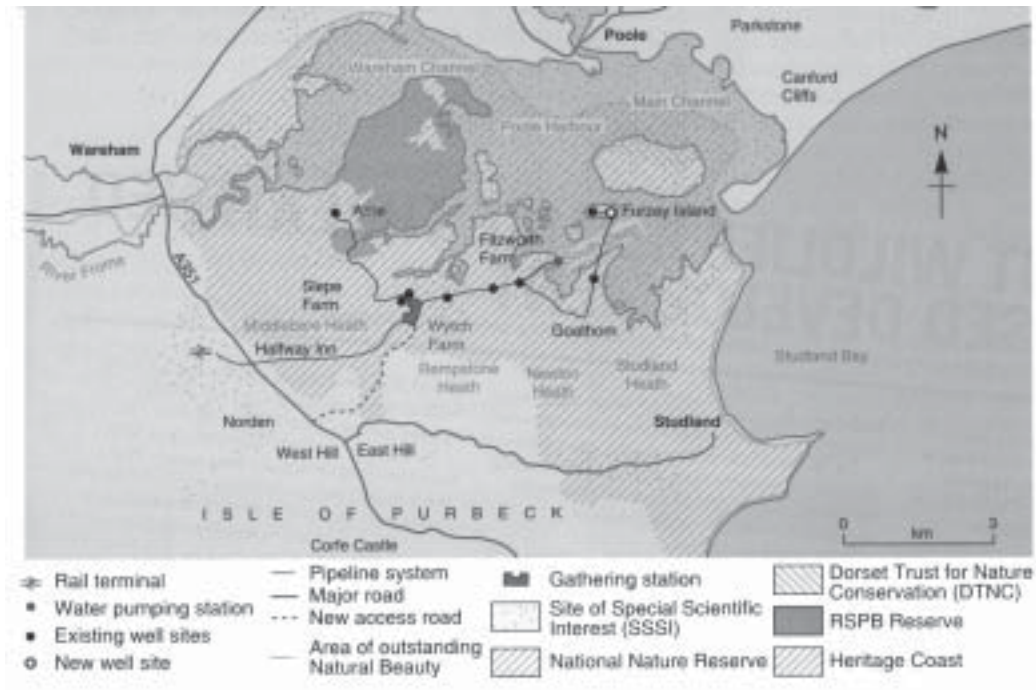
Case study: Poole Harbour

Poole Harbour is Britain's largest natural harbour. It is the estuary of two rivers which flow into the north-west corner of this large, shallow, tidal basin. The rivers provide very little fresh water inflow; the northern areas remain covered with water even at low tide but extensive areas of soft mudflats remain exposed. There are numerous muddy creeks and saltmarshes in the west and south of the estuary, and the mouth of the harbour is restricted by two low-lying sand and shingle spits. The vast expanse of water is home to 22,000 wintering waterfowl and is of international importance for other species of birds. The area is surrounded by heathland which has developed on sands and gravels, and to the south are the chalk hills and cliffs of the Foreland with the sea stacks of Old Harry Rocks.

The area is sheltered from the prevailing south-west winds. The winters are mild, (average 6 degrees centigrade) and the summers are warm (16 degrees centigrade). Sunshine hours are high for Britain.

Its 4,000 hectares of water attract thousands of watersports enthusiasts every year. In fact the whole area is a 'honeypot' location for recreation and tourism. Leisure activities are numerous, with marinas and large numbers of moorings on the northern shores of the estuary. The season for boating is from April to October with the peak months being July and August. In these months as many as 8,000 boats may be moored in the harbour area. Sailing occurs around the main channels and up the rivers, and wind-surfing is centred on the north-east of the site. Water skiers use the Wareham Channel and canoeing is done from Poole. Beach recreation is most intensive in the north-east of the harbour and at Rockleigh. Shell Bay and Studland Bay are also high-quality amenity beaches and access is good both by road along the peninsula and by ferry from Sandbanks.

The tourist season is from May to September with peak use in July and August. Fine weather early or late in the year can bring a large number of tourists into the area especially at Easter. Bird watching occurs around Brownsea Island, Arne, Studland and Hole's Bay (Figure 17).

Figure 17: Land use in Poole Harbour

Exploitation of the natural resources involves grazing on the saltmarshes, cutting reeds for roofing, oyster and mussel cultivation, and fishing.

Industrial activities include the port and a chemical works at Poole, and a large engineering works at Hamworthy. Further, the southern area has Britain's sixth largest oilfield (Figure 17).

The harbour and its surrounding heathland is one of the country's most important conservation areas. It is a fragile coastal environment under constant pressure from people's activities. 30,000 people live along its northern shores and the densely populated Poole and Bournemouth built up areas spread towards the east from the eastern part of the harbour. There is pressure for better roads, more watersports facilities and ever more housing and industrial development.

Conflicting uses and environmental pressures.

The tables below show the conflicting uses and environmental pressures placed upon this area.

1. Studland Heath and sand dunes

Studland Heath and sand dunes are managed by English Nature under a lease from the National Trust. Studland itself is a Heritage Coast. Rare heathland plants grow here and it is home to all six British reptiles – three species of lizard and three species of snake. The beach is a resting place for winter migratory birds.

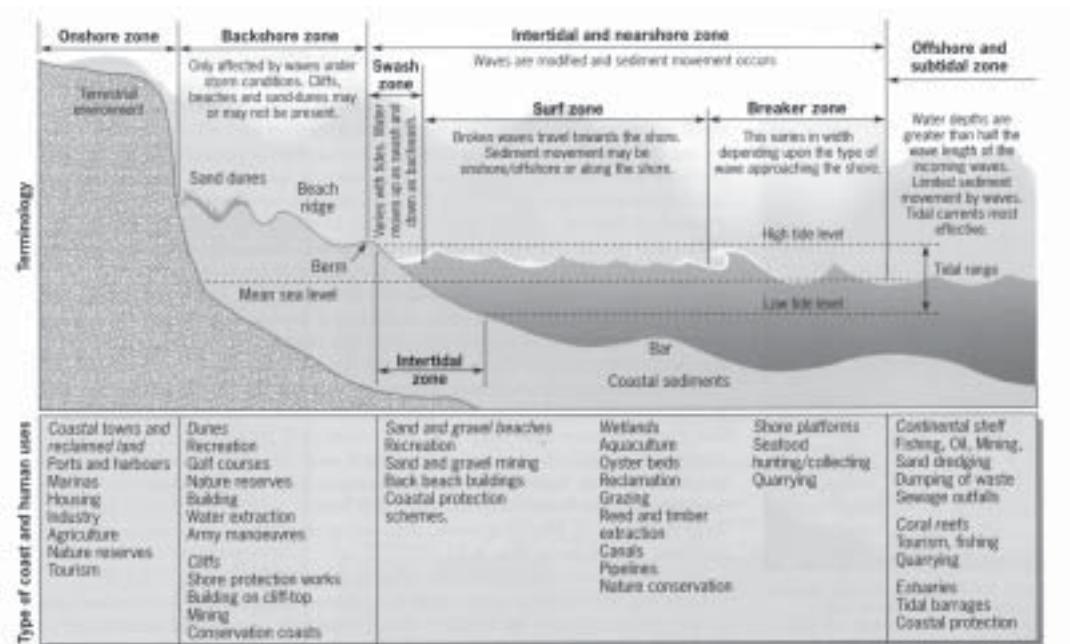
Problems	Solutions
20,000 visitors can be on Studland beach on a hot summer's day	Bring people into Studland on ferries from nearby towns. Try to set up a poop scoop scheme to stop dogs fouling the beaches
Most visitors arrive by car and the road to the beach is also the road which crosses to Sandbanks	Ditches to stop 4 x 4 vehicles crossing the heathland; prosecuting off-road motor cyclists
Up to 200 cars park illegally on the roadside or on the fragile heath next to the road	Fences along roadside to prevent illegal parking; overflow car parks have been made but no more are possible because they will destroy more heathland; set up a park and ride scheme
400 yachts can anchor overnight in the bay producing unpleasant pollution	None as yet
A coastal path goes along the beach which gets very busy during bank holidays	Footpaths to follow the public's 'desire lines' – the routes they naturally follow
The beach is a resting place for winter migratory birds. Walkers disturb them.	None as yet.

2. Poole Harbour and the surrounding wetlands

There are many pressures on the Poole Harbour area and careful management is required to preserve the natural environment and economic and leisure activities.

Problems	Solutions
There are about 18 different users within Poole Harbour and 4,000 boats using the harbour at peak times. Oil drilling and service boats operate between the islands and Poole is a commercial port with cross-Channel ferries to Cherbourg	An aquatic management plan where different water uses are zoned and quiet areas are encouraged
A range of watersports takes place here as well as bird watching, angling and wildfowl shooting Leisure sport boats and yachts have moorings located in the harbour	Encourage small boats and wind surfers to go out to sea rather than stay in the harbour Built more marinas which are safer than swinging moorings, e.g. the proposed marina at Fisherman's Dock
The harbour is a popular location for holiday makers and day trippers	Try to spread visitors throughout the year
More developments will increase threats to the natural environment.	Regular management meetings of interested parties such as local councils, Poole Harbour commissioners and conservation groups commissioners and conservation groups.
	Attract money from the EU.

Figure 18: Land use in coastal areas



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Sources of figures

Figure 1: *Geography, An Integrated Approach*, p. 175

Figure 2: *Essential AS Geography*, p. 324

Figure 3: *Essential AS Geography*, p. 325

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Figure 5: *Essential AS Geography*, p. 337

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Figure 8: *Essential AS Geography*, p. 337

Figure 9: *Geography, An Integrated Approach*, p. 166

Figure 10: *Landscape Studies, An introduction to Geomorphology*, p. 59

Figure 11: *Essential AS Geography*, p. 327

Figure 12: *Essential AS Geography*, p. 348

Figure 13a: *Landscape Studies, An introduction to Geomorphology*, p. 59

Figure 13b: *Essential AS Geography*, p. 350

Figure 14: *Essential AS Geography*, p. 342

Figure 15: *The UK Places and Cases*, p. 16

Figure 16: *The UK Places and Cases*, p. 21

Figure 17: *Landform Systems*, p. 59