COASTAL MANAGEMENT AT LYME REGIS

by Garry Atterton

THE TOWN OF LYME REGIS lies at the heart of the World Heritage Site known as The Jurassic Coast, which is one of the most beautiful stretches of coastline in Britain. The spectacular scenery that surrounds the town was formed as a result of constant erosion by the sea and the slipping of cliffs and hills. In fact the magnificent coastal zone that Lyme Regis is built on is one of the most unstable and rapidly eroding in Europe! See Figure 1.

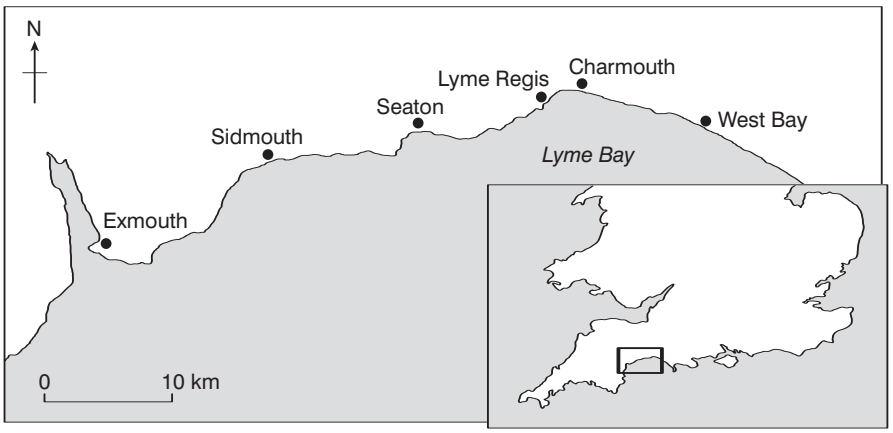

Figure 1: **Location of Lyme Regis**

Coastal management is nothing new to Lyme Regis. Over centuries a long line of structures, such as the famous Cobb sea wall and groynes, have been built to try to offer protection.

Why is Lyme Regis under threat?

Lyme Regis lies on slipped land that is made up of unstable soft clays and sands which move over stronger limestone and clay rocks. The limestone and clay rocks slope down towards the sea, making it easier to slip and cause landslides. The sea is rising and eroding the bottom of the cliffs, causing even more landslides. The old coastal defence sea walls and groynes are in a fragile state and are also being eroded away. See Figure 2.

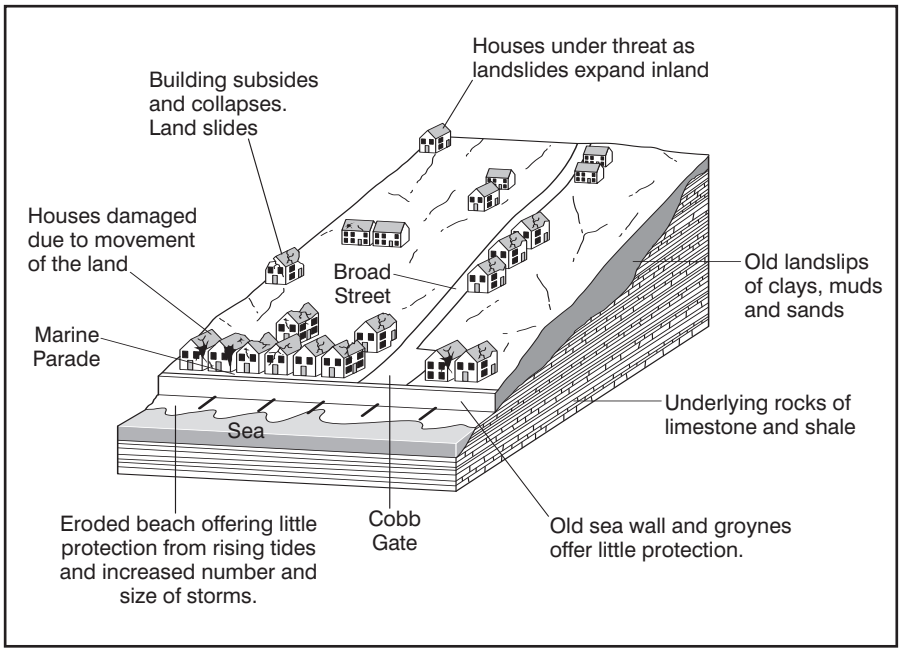

Figure 2: **The processes that make Lyme Regis unstable**

Consequently some buildings are subsiding as the landslides occur and other buildings are being damaged as the land moves. One local resident says he has spent 10 years and lots of money renovating his house and that half the garden has now disappeared. 'It's probably valueless now. You know, it's not money down the drain but down the cliff.' Around 170 houses close to the sea front are under threat as the landslides and coastal erosion move inland.

At the peak of summer the population of the town swells from a resident population of 5,000 to 15,000 as tourists arrive. Tourism is the main source of income to the town. So coastal management is not just about protecting buildings – it is also about protecting jobs and income for many local people.

What are the different options for coastal managers and engineers?

Five different options are considered by all coastal managers and engineers:

1 Hard engineering: construct sea walls, rock armour and groynes.

2 Soft engineering: build up beaches with sand and gravel from another area.

	ECONOMIC Advantage	Disadvantage	SOCIAL Advantage	Disadvantage	ENVIRONMENTAL Advantage	Disadvantage
Hard engineering	In the long term businesses will be protected.	Very expensive	In the long term houses will be protected.	Likely to create short-term problems of lack of access during construction	May improve the visual quality of the coastal zone	May lead to problems elsewhere where there may be no protection
Soft engineering	Local businesses will benefit if more tourists use the new beach	Expensive	Creates better beaches for tourists to use	Some people may not like the changed visual appearance	Improves visual quality of beaches	Another area may be affected by the loss of sand and shingle
Managed retreat	Long-term investment may help future generations	Expensive in the short term	Long-term investment may help future generations	Present generations will not benefit	New natural environments may be created	May create visual problems of an unmanaged coast
Do nothing	Costs nothing	Expensive to pay for new homes and businesses if they are damaged	There are no advantages	Will lead to continued problems; people may lose their homes and businesses	New natural environments may be created	Will create visual problems of an unmanaged coast
Prevent and discourage	Cheap option	Expensive to pay for new homes and businesses if they are damaged	There are no advantages	Will lead to continued problems; people may lose their homes and businesses	New natural environments may be created	Will create visual problems of an unmanaged coast

Figure 3: **Management options: their economic, social and environmental effects**

3 Managed retreat: do not protect the present coast but defend further inland.

4 Do nothing: let the natural processes happen.

5 Prevent and discourage: prevent further housing and commercial development.

Figure 3 shows the economic, social and environmental advantages and disadvantages of the five different coastal management options.

What can be done to protect Lyme Regis?

The increase in the ferocity of storms and how often they occur made it necessary to consider a scheme that will give long-term protection and reduce the increasing annual maintenance costs.

Coastal management can cost a lot of money. In the case of Lyme Regis it is costing a massive £30 million!

Before starting work coastal experts examine and test all the options; the public are then consulted. In the case of Lyme Regis 'Do nothing' was not a realistic option with so many houses and businesses at risk.

'Managed retreat' wasn't possible because there is nowhere to retreat to. 'Prevent and discourage' couldn't be done, firstly because the town depends so much on tourism and secondly because there is very limited space in the town for new development anyway. The preliminary investigation cost £1.5 million alone.

What was the final option for protecting Lyme Regis?

Too often coastal management schemes come about by a particular event such as cliff collapse. As a result often a patchwork of different schemes evolves, frequently coming too late to be effective. This is called a **reactive** approach. The new coastal protection scheme for Lyme Regis is **proactive** because it hopes to prevent long-term problems.

The final option was made up of three main parts (Figure 4):

1 Stabilising the land behind the beach by fixing unstable slipped land to firmer rocks below.

2 Protecting the foreshore from attack from the sea with a new sea wall and an extended offshore barrier.

3 Replenishing the two areas of the beach with sand and shingle.

1 Stabilising the land

Access to the sea front has to be improved. Cobb Road, which was slipping down the hill, has been stabilised, strengthened and widened. The land behind the beach has been stabilised to prevent landslides, with over 1,000 deep-bored pins fixing it to the firmer rocks below. New drainage systems have been put into the reshaped parkland. There will be improved ramp access, woodland walks and new planting schemes in Langmoor and Lister Gardens.

2 Protecting the foreshore

The old rock armour called Beacon Rocks at the end of the Cobb has been extended with the use of giant boulders (each weighing 18 tonnes) of a resistant igneous rock brought all the way from Norway. The main aim is to protect the foreshore from the sea and hopefully stop the new sandy beach being washed away. The new sea wall and two new jetties will protect the promenade and also stop the beach from being washed away by longshore drift.

Series 18 Spring issue Unit 364 *Coastal Management at Lyme Regis*

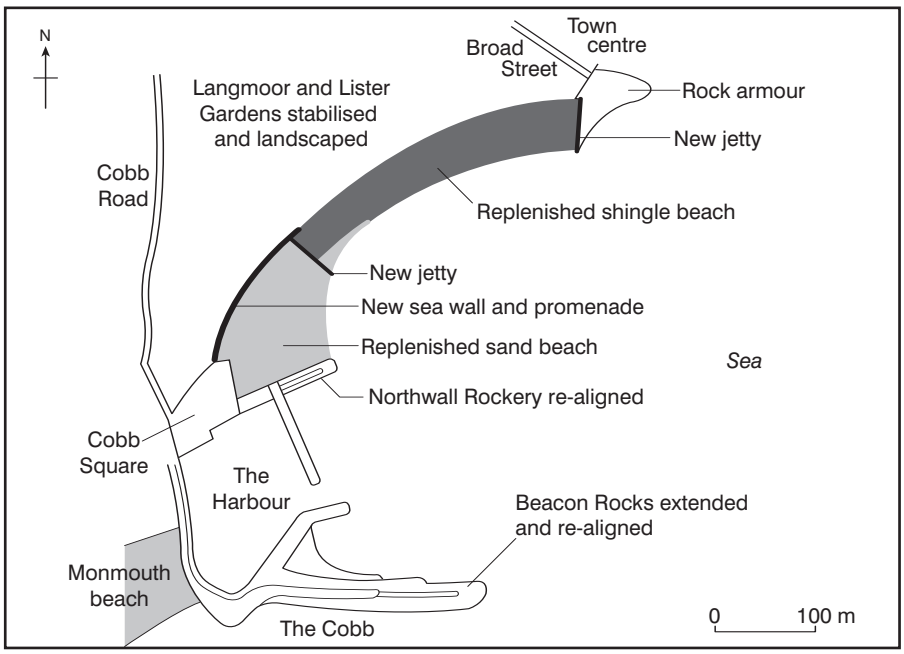

Figure 4: **The main features of the coastal management plan at Lyme Regis**

3 Replenishing the beach

The new sand and shingle beaches have been restocked with material brought from France. The new beach also acts as protection for the new promenade.

The construction stage

What are the potential economic, social and environmental consequences of the engineering works during the construction phase?

Lyme Regis is very dependent on tourism, so to lose two car parks during construction would mean a loss of income to the town council. The solution has been to set up two park-and-ride schemes outside the town. Owners of beach huts on Marine Parade (see Figure 4) will not be able to use their huts for part of one summer season and the whole of another. Again the town council have lost money from the annual fees paid by the beach hut owners.

At first it was thought that the engineering works would stop people coming to the town. Seafront traders were horrified that the beach would be closed until July 2006. Coupled with restricted access to the harbour and limited parking it was thought it would put businesses and jobs under serious threat.

However, the opposite seems to have happened, as people were actually attracted to the works! In August 2005, 2,000 more people visited the town than the previous year. There may be many other factors why numbers went up, such as better weather or fewer people travelling abroad. The Visitor Centre located on the beach had 25,000 visitors in April 2005 alone. During April 2006 the developers worked hard to keep part of the beach open and improve the access along the promenade.

Geography students from The Castle School Thornbury designed a questionnaire to ask tourists and local people about the impact of the coastal management scheme. Figure 5 summarises the results. The questionnaire asked which three of the six statements were the most important to them (for costs and benefits). For example, 80% of the tourists had increased shelter in their top three benefits.

Figure 5 shows that tourists' views do differ from those of local people about the impact of the coastal management scheme, particularly in relation to costs.

Like any major coastal or river protection project, the Lyme Regis coastal management scheme will only prevent slow change. In November 2005 the promenade and harbour were hit by 20 feet waves as strong winds and high tides battered the coast. In January 2006 a massive landslide occurred at Charmouth just 3 miles away and 17 people were trapped. So will it all be worthwhile? Only time will tell.

Tourists		Local people	
Benefits			
1 Increased shelter for the boats in the harbour	80%	1 More sand and shingle on the beach	70%
2 Improved access to the beach	80%	2 New improved promenade	60%
3 More sand and shingle on the beach	60%	3 Improvement to Cobb Road	60%
4 New improved promenade	60%	4 Increased shelter for the boats in the harbour	50%
5 Re-landscaped parks	30%	5 Re-landscaped parks	40%
6 Improvement to Cobb Road	20%	6 Improved access to the beach	30%
Costs			
1 Noise pollution	80%	1 Parking problems	80%
2 Visual impact	60%	2 Loss of income to local businesses	60%
3 Parking problems	50%	3 Loss of parks	50%
4 Loss of parks	50%	4 Visual impact	40%
5 Loss of income to local businesses	50%	5 Noise pollution	40%
6 Lack of information	40%	6 Lack of information	20%

Figure 5: **Summary of questionnaire results**

Activities

1 Study Figure 2 and the section 'Why is Lyme Regis under threat?'
(a) What material makes up the slipped land on which Lyme Regis is built?
(b) What types of rocks does the slipped land sit on?
(c) What has the sea done to the old coastal defences?
(d) What is happening to some of the houses in Lyme Regis?

2 Imagine you are the Tourism Officer for Lyme Regis. Write a short letter (about 75 words) to the West Dorset District Council explaining the economic reasons why Lyme Regis *must* be protected from landslips and coastal erosion.

3 Carefully study Figure 3 and draw up a large copy of Figure 6. Give each advantage a score of +1 or +2 or +3 (+3 is best). Give each disadvantage a score of –3 or –2 or –1 (–3 is the worst). Add up the total for the + scores and the – scores and then complete the total points column.

4 Study your table from Activity 3. Decide which option has the highest score. Explain why you chose that option and why you turned down the other three options.

5 Study Figure 4 and the section of text 'What was the final option for protecting Lyme Regis?' Briefly outline the plan proposed.

6 Study Figure 7 and then draw up a table using the following three column heads:

Talking head
Economic/Social/Environmental
Advantage/Disadvantage

For each person state whether they give an economic, social or environmental viewpoint. Also state whether they see the coastal management scheme as an advantage or a disadvantage.

Type of coastal management scheme	ECONOMIC		SOCIAL		ENVIRONMENTAL		Total points
	Adv	Dis	Adv	Dis	Adv	Dis	
Hard engineering							
Soft engineering							
Managed retreat							
Do nothing							
Prevent and discourage							

Key
Adv = Advantages
Dis = Disadvantages

Figure 6: **Framework for Activity 3**

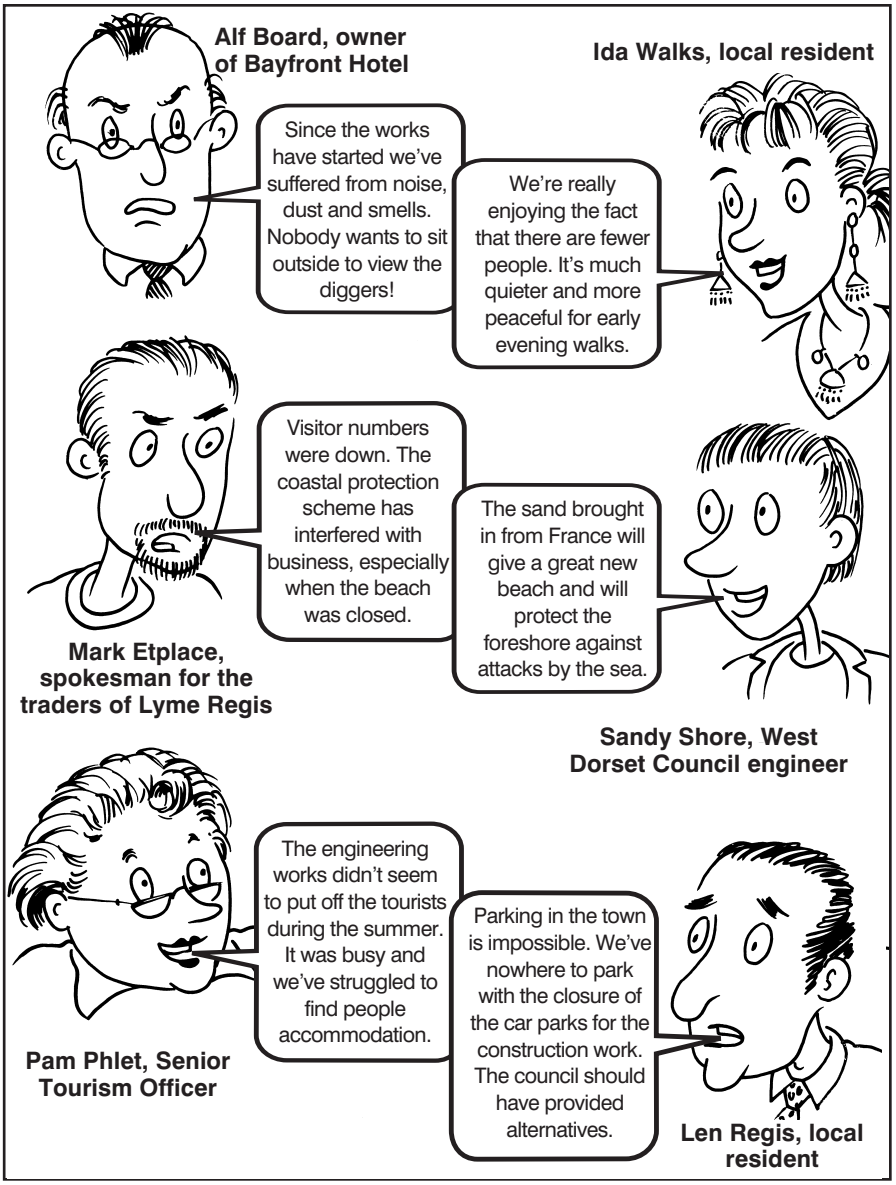

Figure 7: **Different views on the impact of the coastal protection scheme on Lyme Regis**

7 The following hypothesis was set up and tested using the results of the questionnaire summarised in Figure 5:
'How do the views of local people compare with those of tourists regarding the costs and benefits for the coastal management schemes at Lyme Regis?'
Write a detailed answer to this hypothesis (around 250 words). Make sure you cover economic, social and environmental viewpoints in your answer.

Series 18 Spring issue Unit 364 *Coastal Management at Lyme Regis*