



WEYMOUTH BAY COASTAL DEFENCES

IN PICTURES, PAST & PRESENT

ROCKWATCH FIELD TRIP SERIES

ALAN HOLIDAY

INTRODUCTION

This week's field trip from home is a unique collection of photographs, telling the story of how the coastline in Weymouth Bay has changed over more than 100 years.

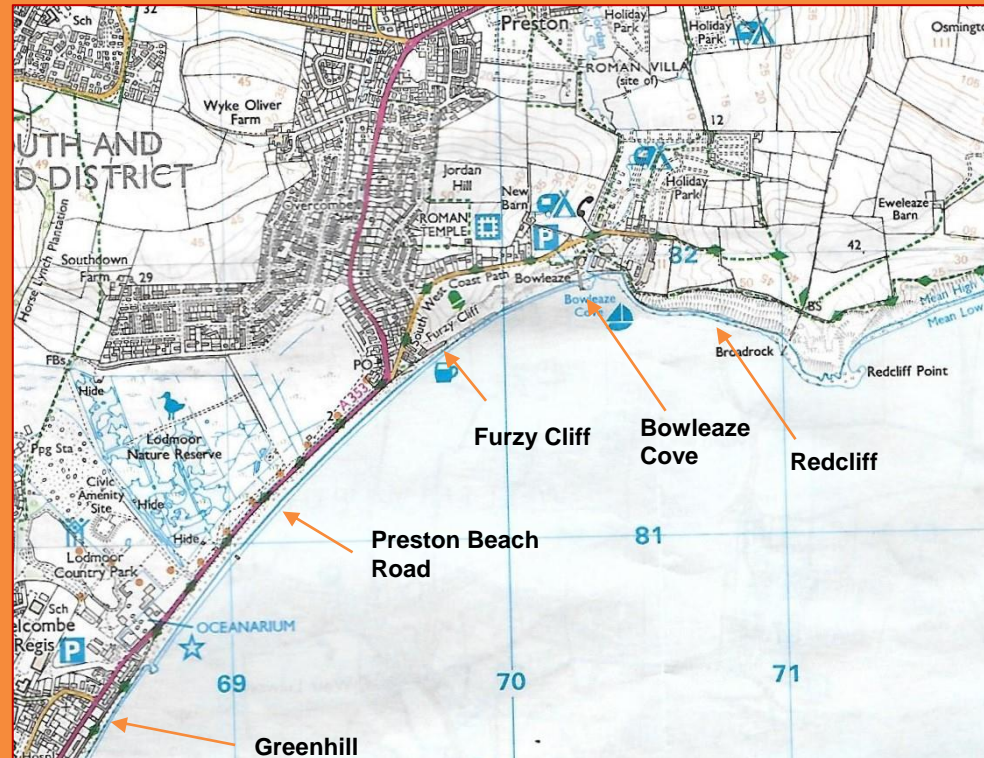
It shows how poor coastal defences and rough, stormy seas have shaped the coastline and how the authorities have responded.

Seeing places in the past and the present shows us what has changed so that experts can help to plan to protect the coastline way into the future.

See how many coastal defences you can spot in the photographs.

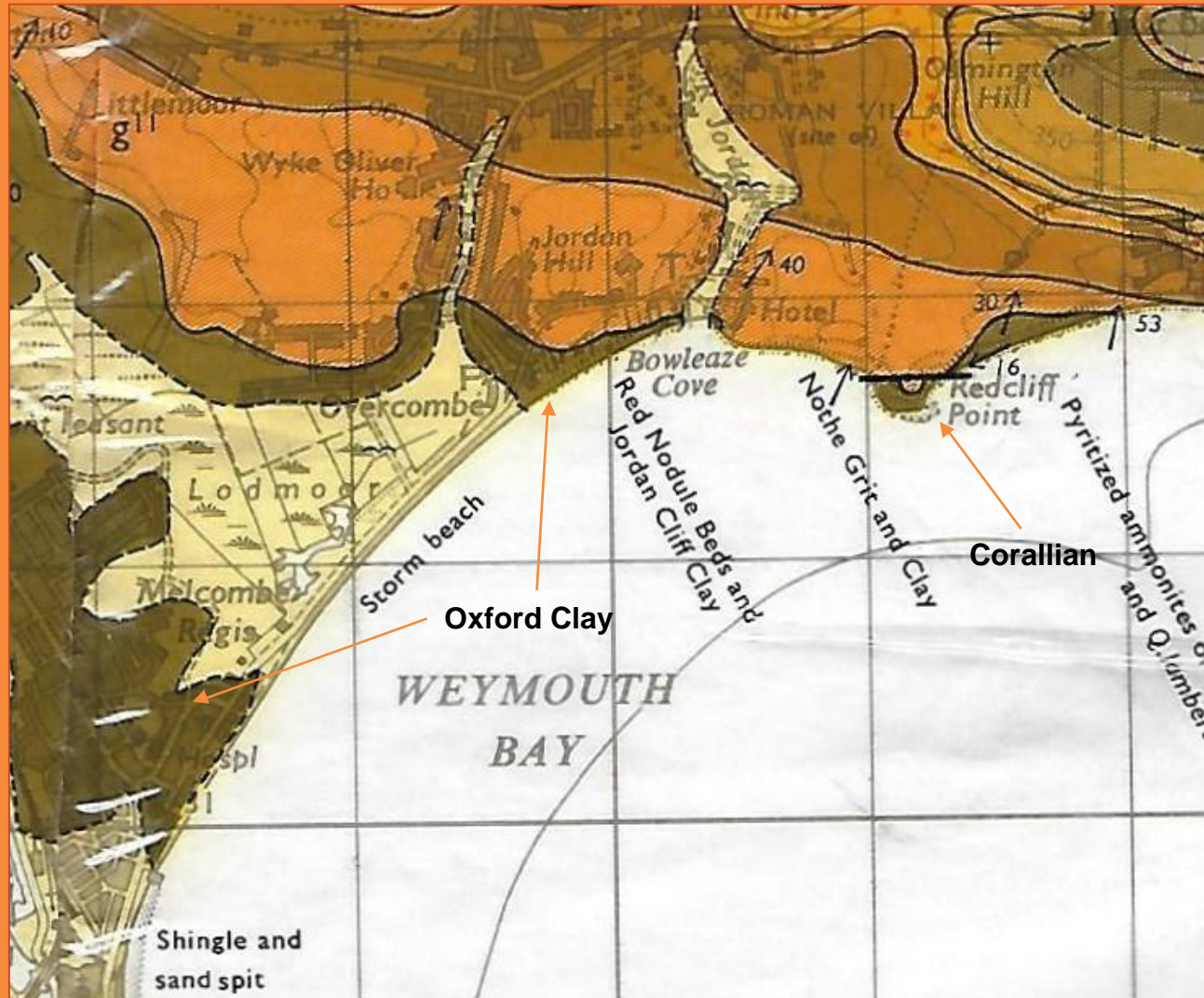
WEYMOUTH BAY AREA

WEYMOUTH BAY



Weymouth Bay from Greenhill to Redcliff Point

PART OF 1:50,000 BGS MAP SHOWING BASIC GEOLOGY

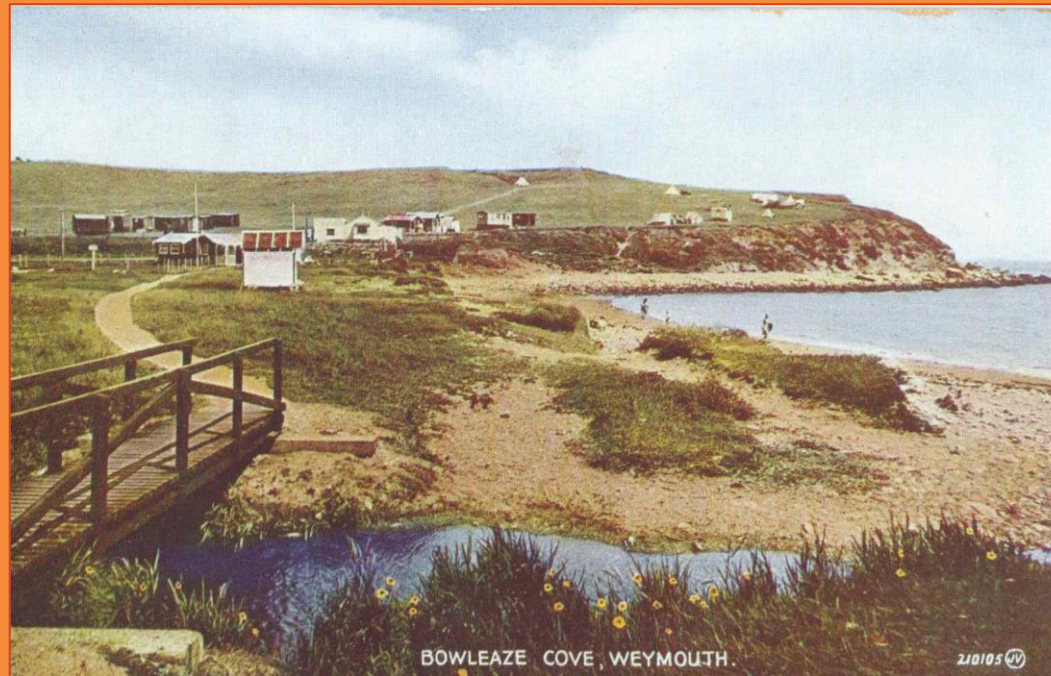


AERIAL VIEW LOOKING SOUTH WEST



BOWLEAZE COVE

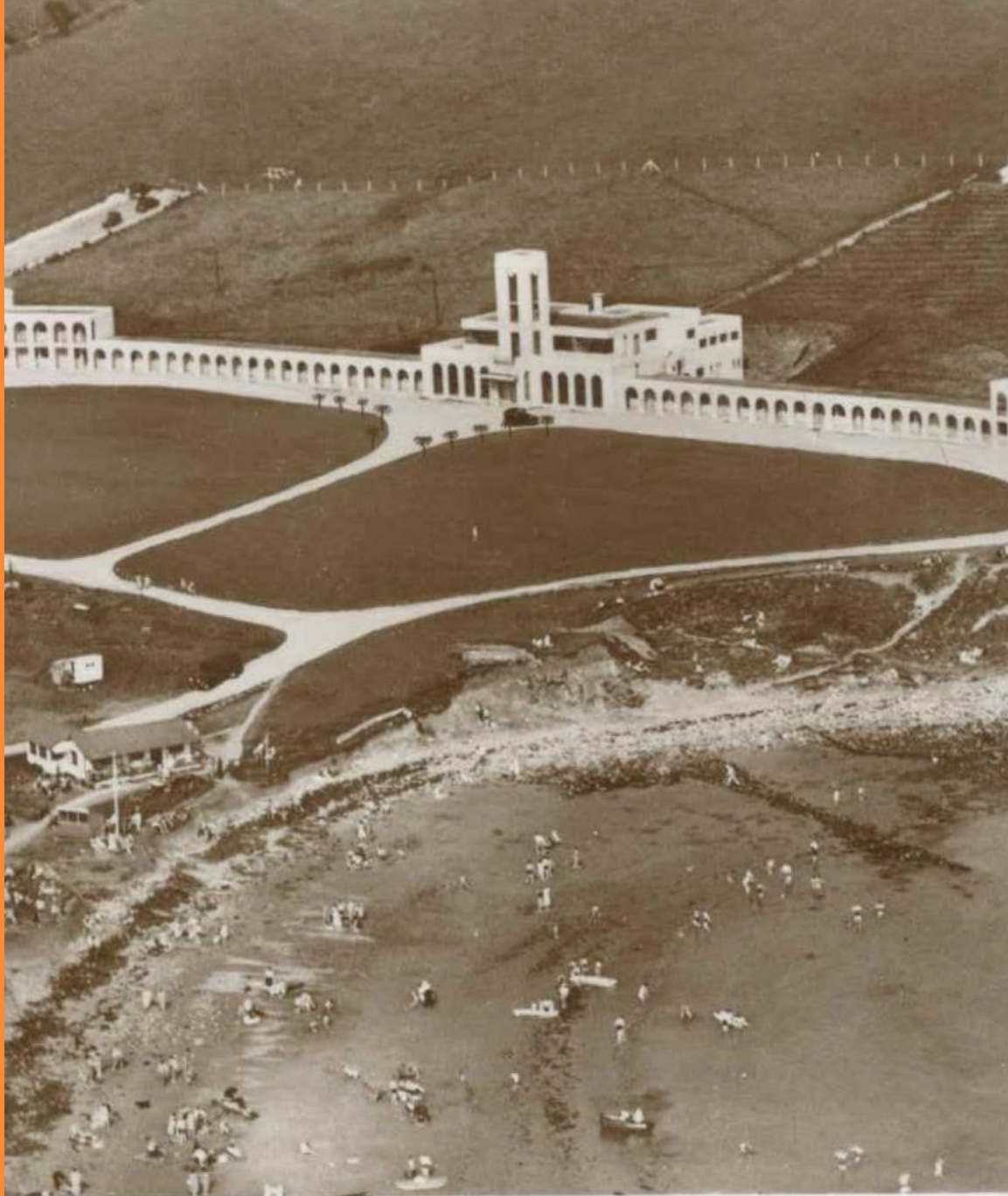
1920'S



Bowleaze Cove as it was prior to 1920s,
Before the Riviera Hotel was built

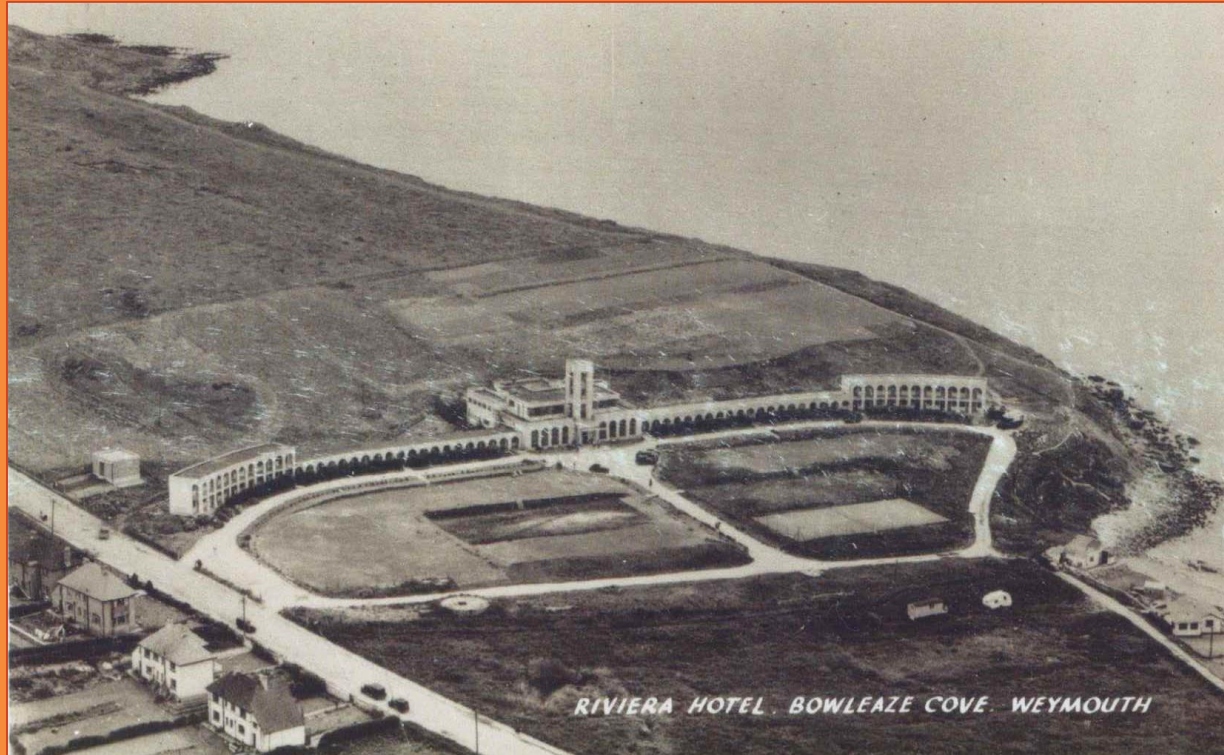
1930'S

As it was, possibly in the 1930s,
after the Riviera Hotel was built.



BOWLEAZE COVE. WEYMOUTH.

1940'S



Around 1947

1970'S



High tide in stormy conditions



1970'S

View of Bowleaze Cove, in the autumn of 1978 with gabions at the back of beach and hard engineering.

1980



Construction of new defences about the start

1980

Protection for Riviera Hotel included gabions, drainage and slope grading, costing £60,000.



2003



2017



Courtesy of the Coastguard helicopter

2018



REDCLIFF

2011



Note the fence on the left of picture

2016



Note the position of the fence

2019



Fence well and truly in the landslip!

2019



FURZY CLIFF

1970'S

High tide and stormy conditions in the 1970s, leading to serious marine erosion of the Oxford Clay.



1978 AND 1980'S

More peaceful conditions in 1978 and the early 1980s. The steep slope of the clay cliff means it was unstable.



2016

Eastern end of Furzy Cliff in April 2016, showing clear evidence of greater stability with well established vegetation.



2018



View of Redcliff from Redcliff Point looking North West, showing the problem with no protection. This is an excellent example of rotational slip mass-movement

SIMILAR VIEW IN WINTER 2019/20



OVERCOMBE CORNER

1900'S

Overcombe Corner in around 1909, with a fine view of the coastguard cottages.



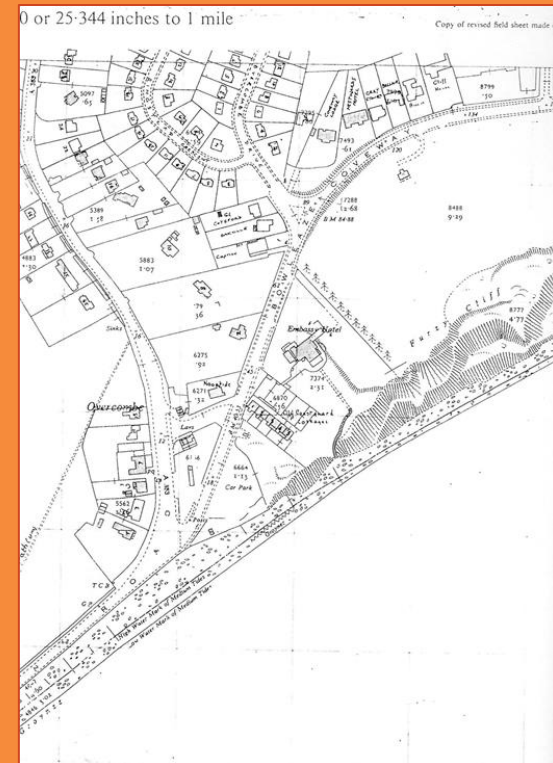
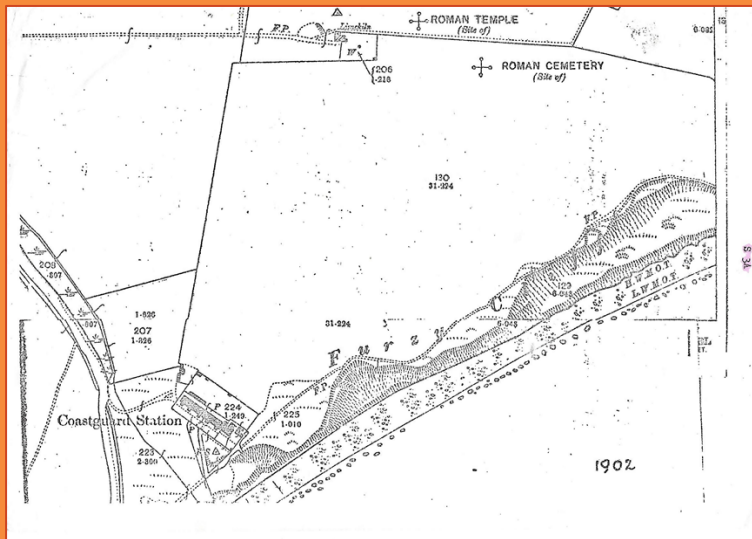
Further to the pictures of the old Preston beach sea wall featured on this page last month, today's second picture from Mike Venning goes even further back in time — so far, in fact, that the wall hadn't even been built. The picture, a postcard printed for J.B. Gray and Sons who ran Lennox Street Post Office, carries the date July 6 1909 on the reverse side. The picture was probably taken just before work began on the construction of the wall in the early 1900s. Featured in the picture on the left is the old coastguard station at Preston, part of which fell into the sea after years of cliff erosion.



VICTORIAN DEFENCES

Off shore evidence of rock armour from late Victorian times attempts to limit erosion.

LARGE SCALE MAPS OF OVERCOMBE AREA 1902 AND 1971





1970'S

Another view looking from Overcombe Corner, in the 1970s. Showing evidence of old coastal defences offshore.

1970'S



Overcombe Corner 1978



Closer view of the defences, date of construction unknown.

1970'S



Damaged coastguard cottages 1978

1980'S

High tide at Overcombe resulting in further erosion particularly of the Oxford Clay.



1980'S



Oxford Clay slumping across the beach

1990'S



View taken in 1996 following Preston Beach Road Scheme beach replenishment. Furzy Cliff now protected from marine erosion except in extreme circumstances.



1996

1983-4 defences cost c. £400,000.
This view was taken in 1996.

The beach had been built up due
to the beach replenishment
scheme along Preston Beach
Road.

2000'S



View from top of Furzy Cliff of clay flow / slide!

2018



So nearly 40 years on, these defences have been a success!

PRESTON BEACH

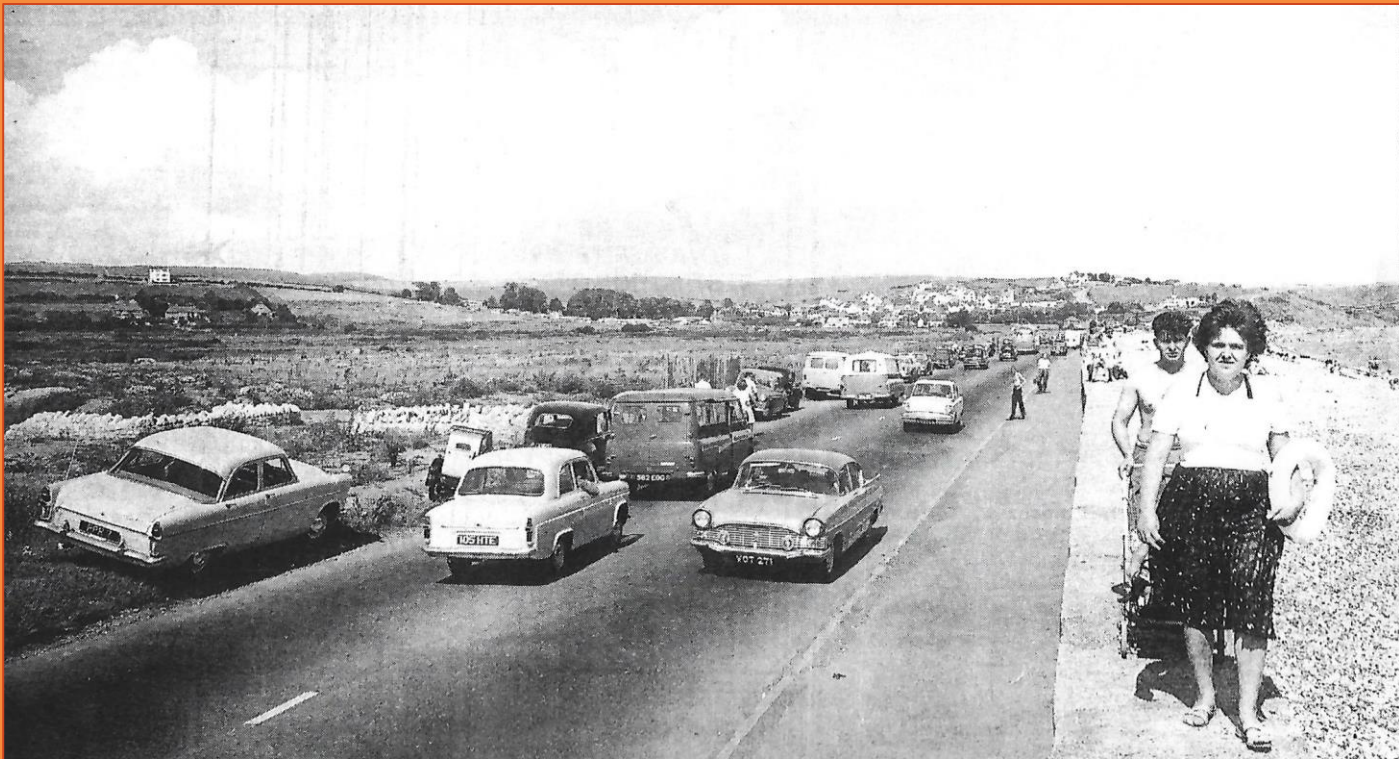
1960'S

Early 1960s, definitely a car park



PRESTON BEACH ROAD

View at Greenhill end early 1960s



1970'S



View of the 'car park' at Overcombe Corner c.1979.

1970'S



1980's

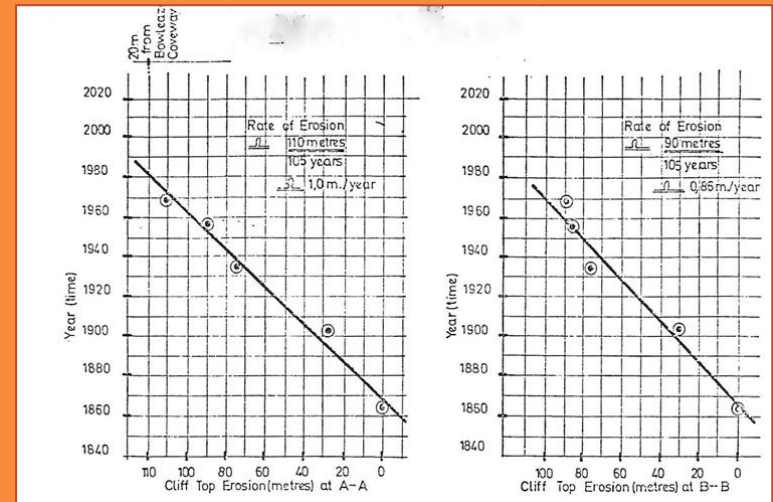
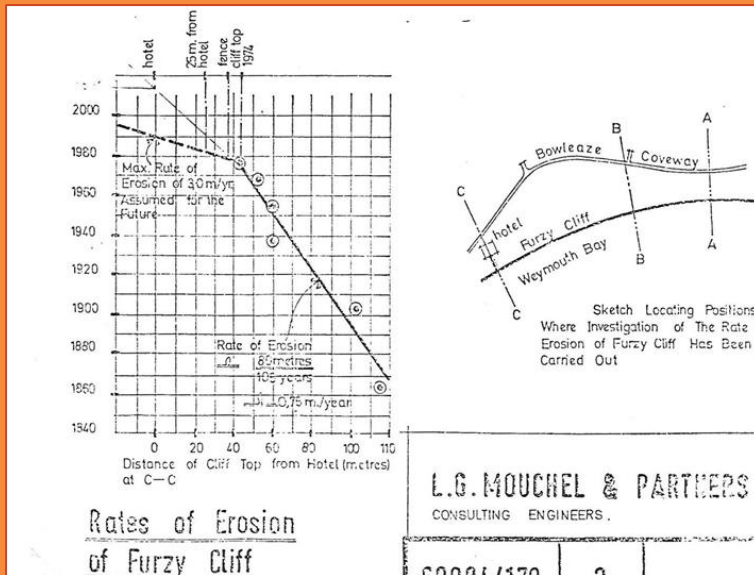


2013

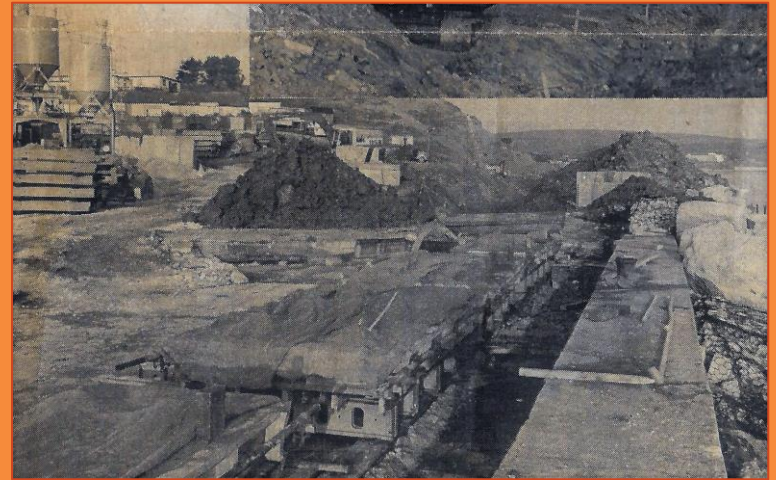
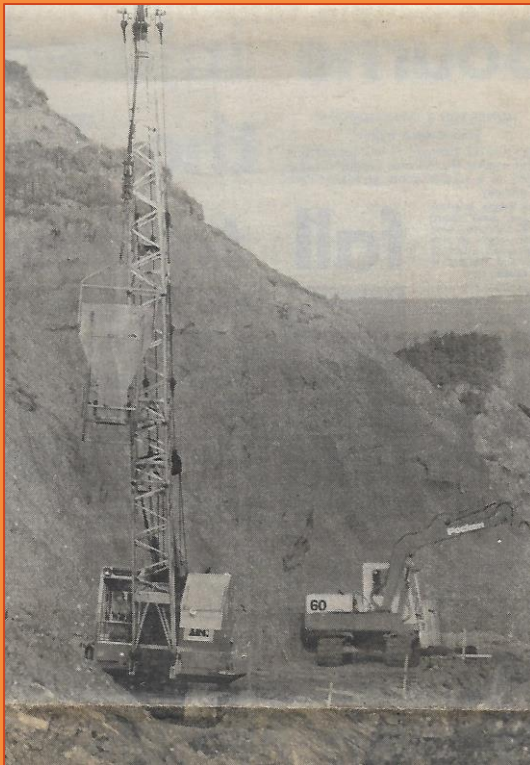


View in 2013 showing slumping still occurs after wet weather but it is not as severe as it was.

PROJECTED EROSION RATES ALONG FURZY CLIFF DURING PREPARATION FOR OVERCOMBE CORNER PROTECTION 1983-4



COASTAL PROTECTION WORK NOVEMBER 1983



1984



Preston Beach from Greenhill end

1985

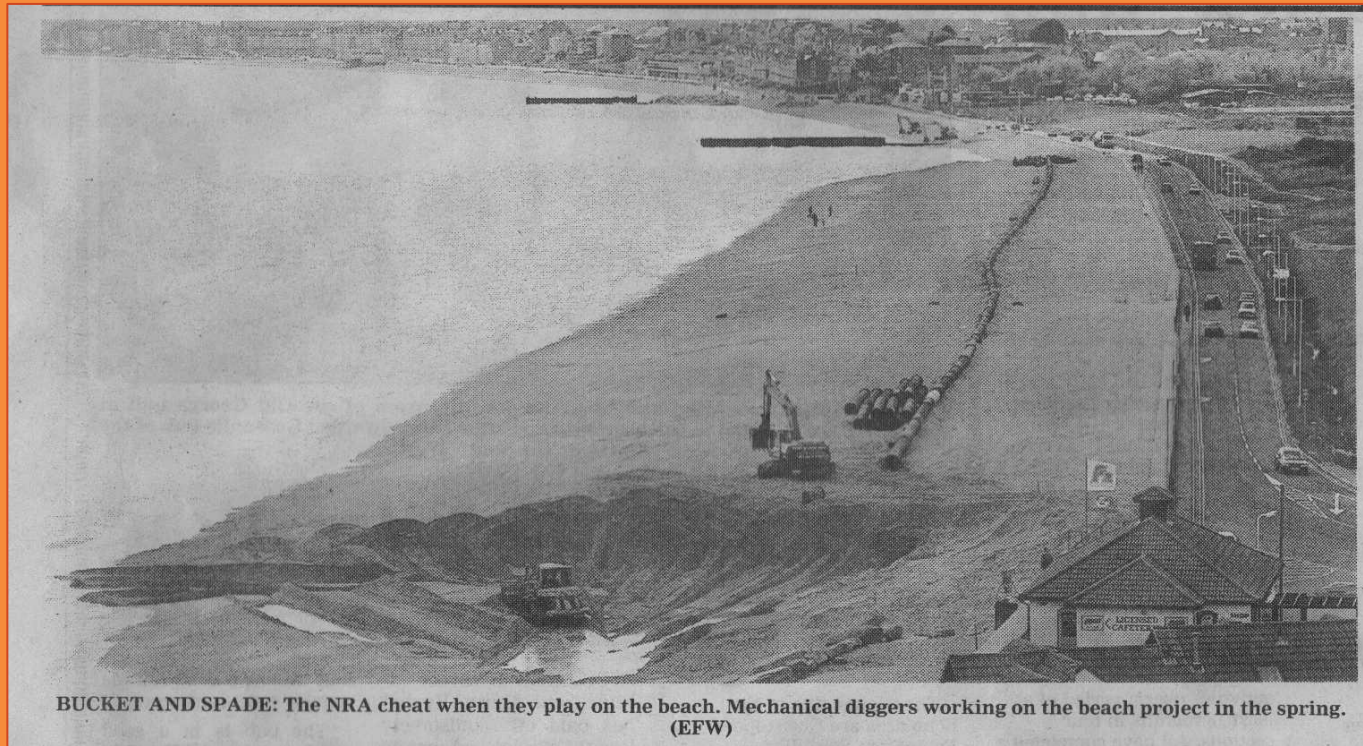


Picture taken in March 1985 just after protection was finished

1995

Beach replenishment work in 1995.

214,000 cubic metres of shingle from the Needles borrow area off the Isle of Wight.





The road was closed several times a year during storms which tossed shingle over the old sea wall onto the A353 causing major congestion on the A354, the other main road into Weymouth!

1996



View taken in 1996 when the construction was nearly complete

NEW SEA WALL BEING BUILT, COST AROUND £6 MILLION



STORM DAMAGE IN 2013-2014

Preston Beach works cost £544,713.58 and consisted of burying rock armour in front of the seawall and there was extensive re-profiling of the beach to return it to its design profile. This was paid for by the EA.

The rock was sourced locally from Portland and the shingle was 'native' which means from the local area, and won back from the foreshore after constructive waves had brought some of the material back.

In total works took about 6 weeks at Preston, it was a considerably smaller job than the repairs required at Chiswell. (Source: the EA)

2016

Things changed in 2016. Beach replenishment at Preston Beach Road has now provided protection for the cliff so marine erosion is unlikely and subaerial slumping has created a more stable slope.



2016



OVER-VIEW OF PRESTON BEACH FROM REDCLIFF



LAND THAT HAD NO VALUE HAS BECOME PRIME REAL ESTATE!



THE LAST OF THE COASTGUARD COTTAGES SPRUCED UP!



THE WRONG KIND OF SHINGLE AT GREENHILL, RIGHT, AND THE RIGHT KIND AT PRESTON BEACH ROAD, LEFT



The shingle from the beach replenishment scheme for Preston Beach Road now protects Furzy Cliff from marine erosion and the steepness of the slope of the cliff is slowing reducing so it becomes more stable. It is not as well rounded as beach shingle which affects its porosity and permeability.

It is not as well sorted as beach shingle hence after the beach was being eroded it was sieved to remove the sand. Sorting is to do with grain size. Well sorted shingle is all the same size, poorly sorted shingle is all different sizes. When waves break on a beach like Chesil Beach the water can pass between the pebbles rather than washing it away.

SIEVING THE SHINGLE!

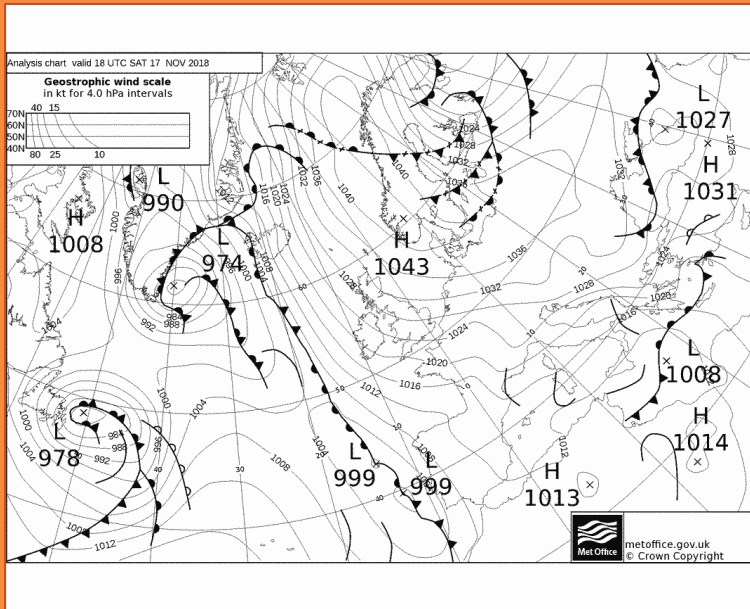


The shingle from off the Isle of Wight was deposited by a river when sea level was lower during a glacial period. This was less well sorted than beach shingle and was eroded by wave action.

REGULAR MAINTENANCE IS ESSENTIAL TO RETAIN THE SHINGLE



2018



View taken following strong easterly winds and synoptic chart for 17 November 2018



Rock armour put in place in 2014

2018



2019



Strong gales

2019



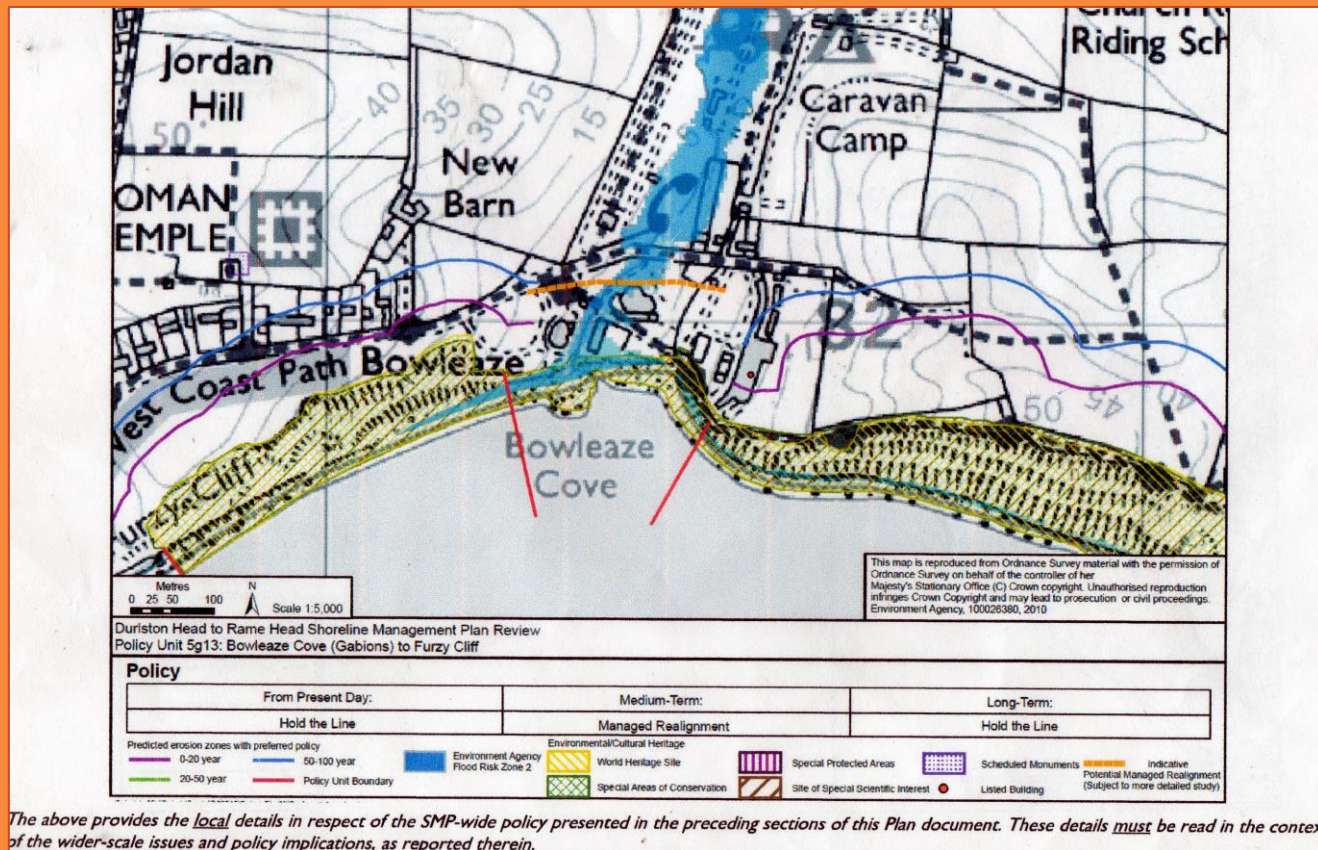
The groyne at Greenhill designed to stop shingle moving towards Weymouth. Why didn't they put a groyne at Overcombe?



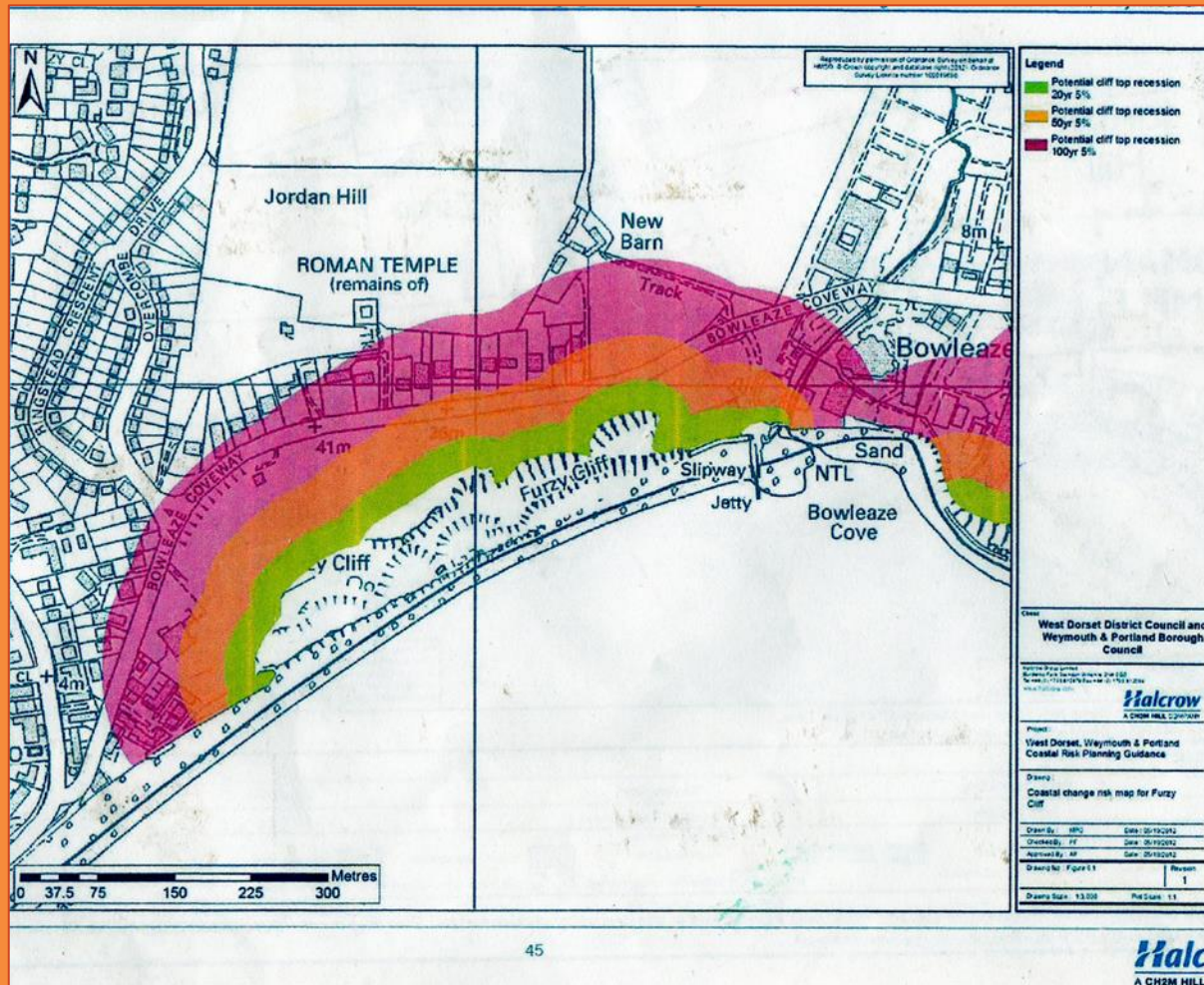
6,200 tons of Portland Stone

THE FUTURE

THE NEXT 50 YEARS?

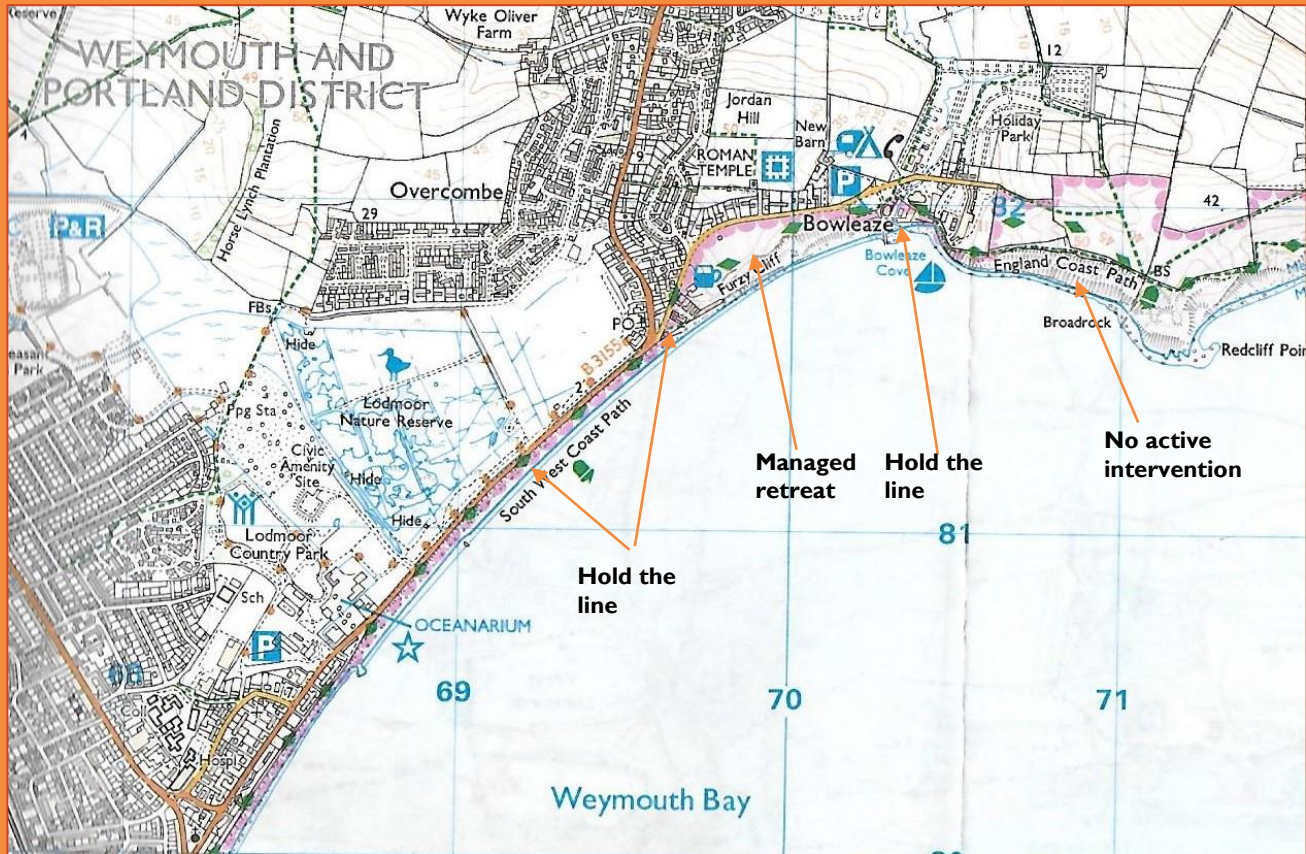


Coastal management plans are in place for up to 50 years to help protect against the impact of the rise in sea levels and stormier conditions



Possible long term erosion projected in 2013 although the wider beach below Furzy Cliff is likely to result in less erosion. The area above Furzy Cliff is a public open space.

Likely long term coastal management strategy for this section of coast



ABOUT THE AUTHOR ALAN HOLIDAY

Professionally, Alan Holiday was a geography and geology teacher in the Weymouth area for 37 years and also had a year in the oil industry as a mud logger.

Alan enjoys an active role in local geological groups and is a regular Rockwatch Field Trip Ambassador, including our Annual Residential to Dorset.

His favourite fossil type is a trilobite. This example of Wenlock Limestone has a trilobite pygidium, collected at Ironbridge about 45 years ago.



CREDITS

Local archive centre

Dorset Evening Echo (slides 31, 46, 50, 53, and 55)

Weymouth coastguard

British Geological Survey (slide 5)

All other photos have been taken by the author

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