

# What are the current challenges for coastal change in Dorset?

**Dorset Coast Forum Annual Meeting 2024**

*Dave Picksley, Senior Coastal Advisor, Environment Agency*



# Overview

## **Flood and Coastal Erosion Risk Management (FCERM) challenges – my Top 10**

- 1. Coastal Risk & Climate Change**
- 2. Coastal Plans and Funding**
- 3. Cliff Falls & Land Instability**
- 4. Storm Impacts**
- 5. Asset Management**
- 6. Heritage Assets**
- 7. Vanishing Beaches**
- 8. Environment**
- 9. Coastal Landfill**
- 10. Engagement & Adaptation**

# 1. Coastal Risk & Climate Change

# Coastal Risk – wind, waves, tides



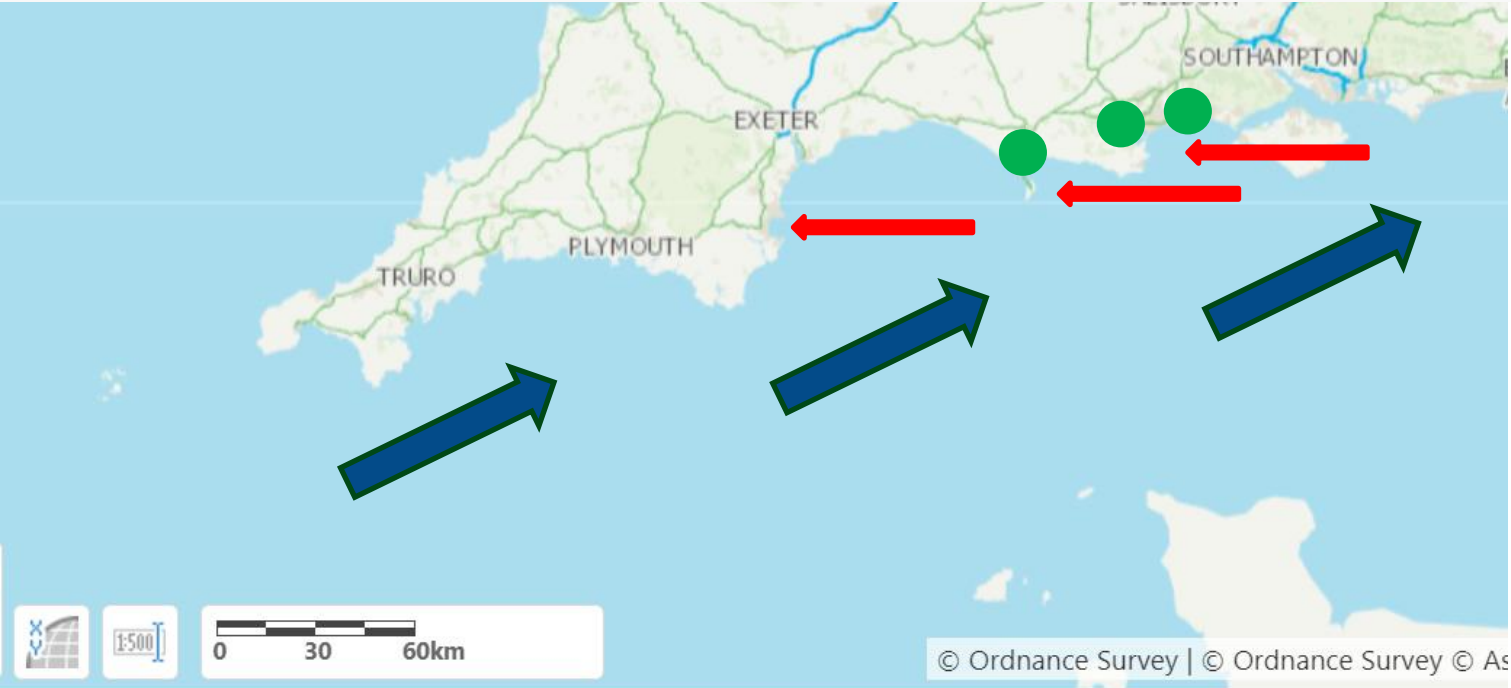
Long period swell waves



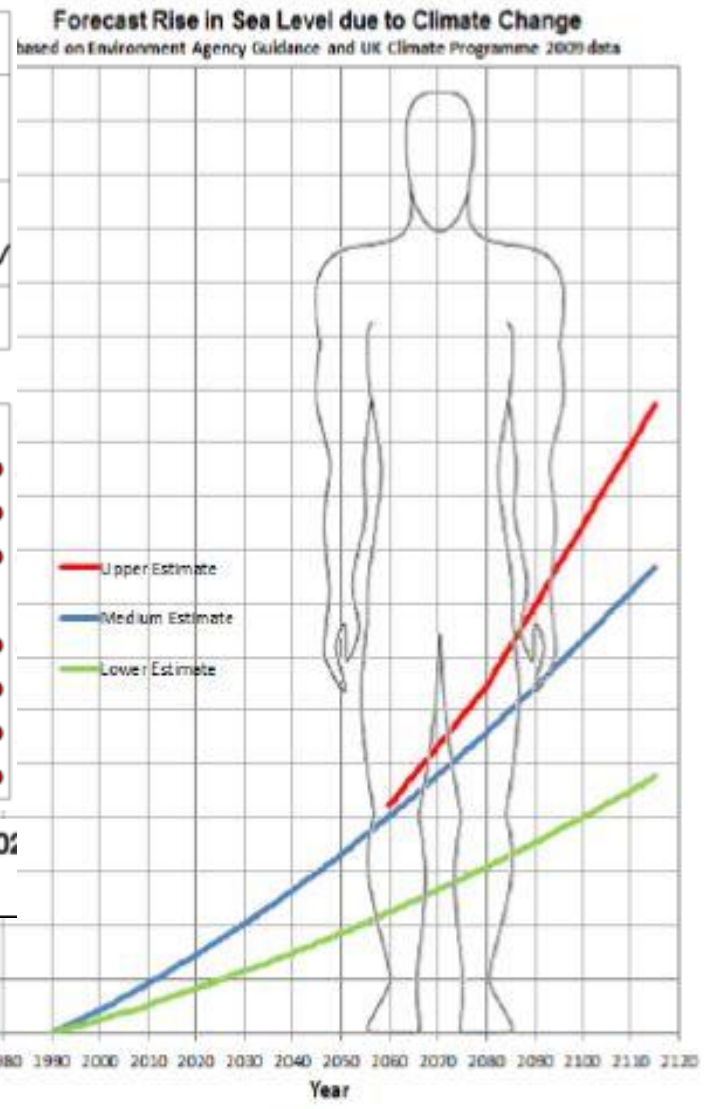
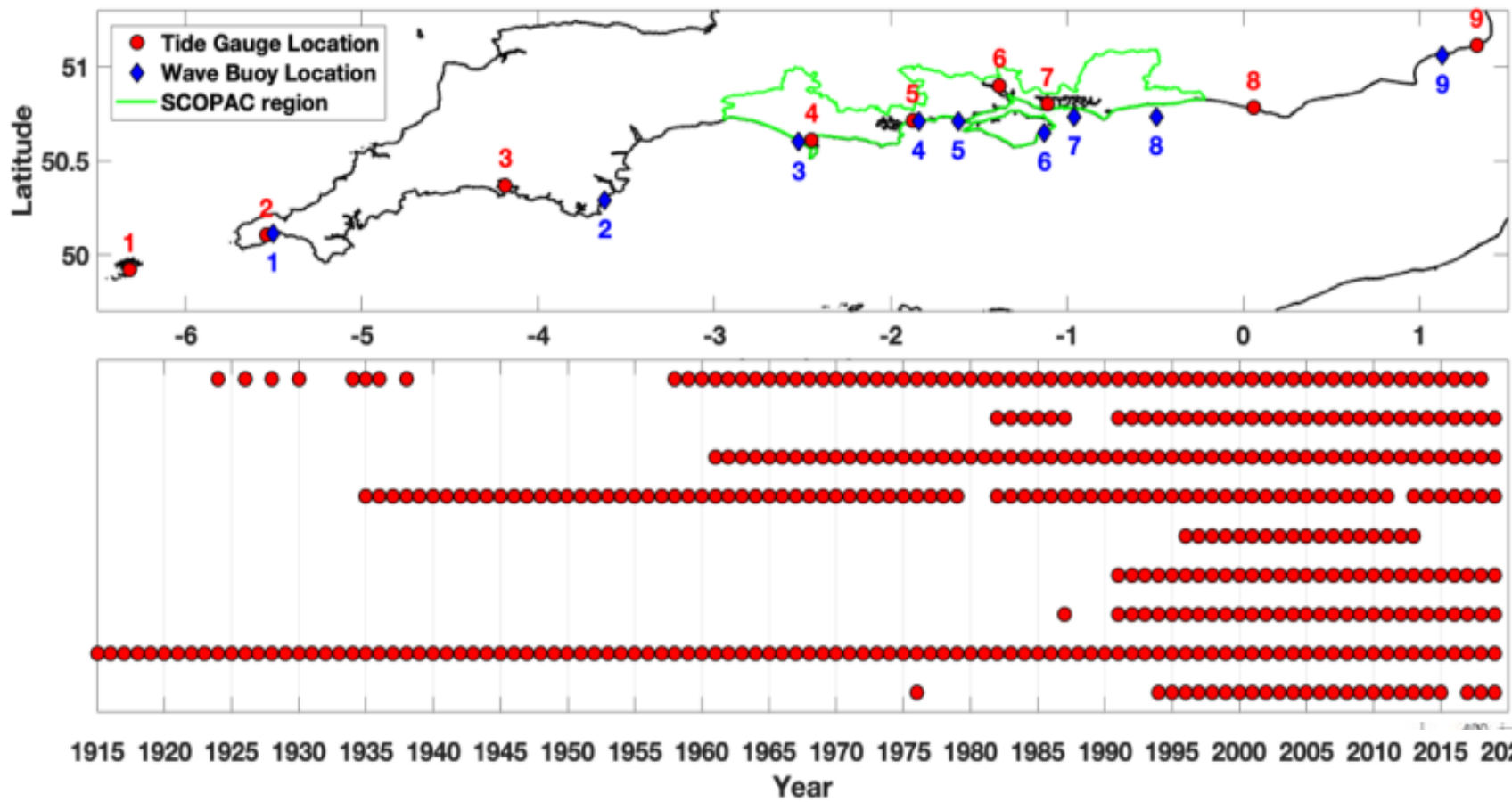
Prolonged easterly winds



Surge / extreme sea levels



# Sea level rise

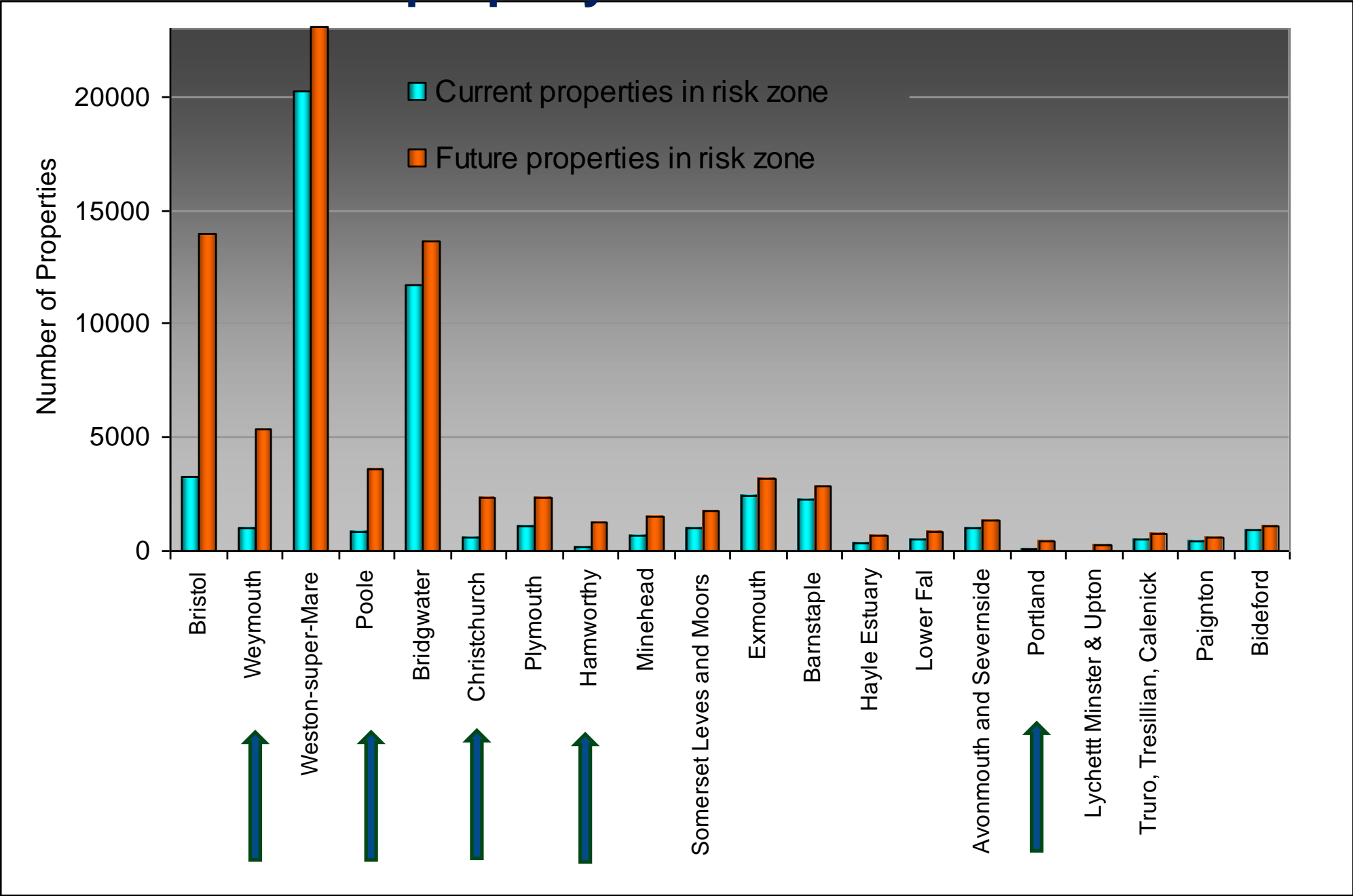


1915 - 2019  
1.86mm

average sea level rise per year

1990 - 2019  
3.8mm

# Current and Future property at risk in the southwest



# Climate change is not just effecting sea levels..

Applies around all the English coast 2000 to 2055 2056 to 2125

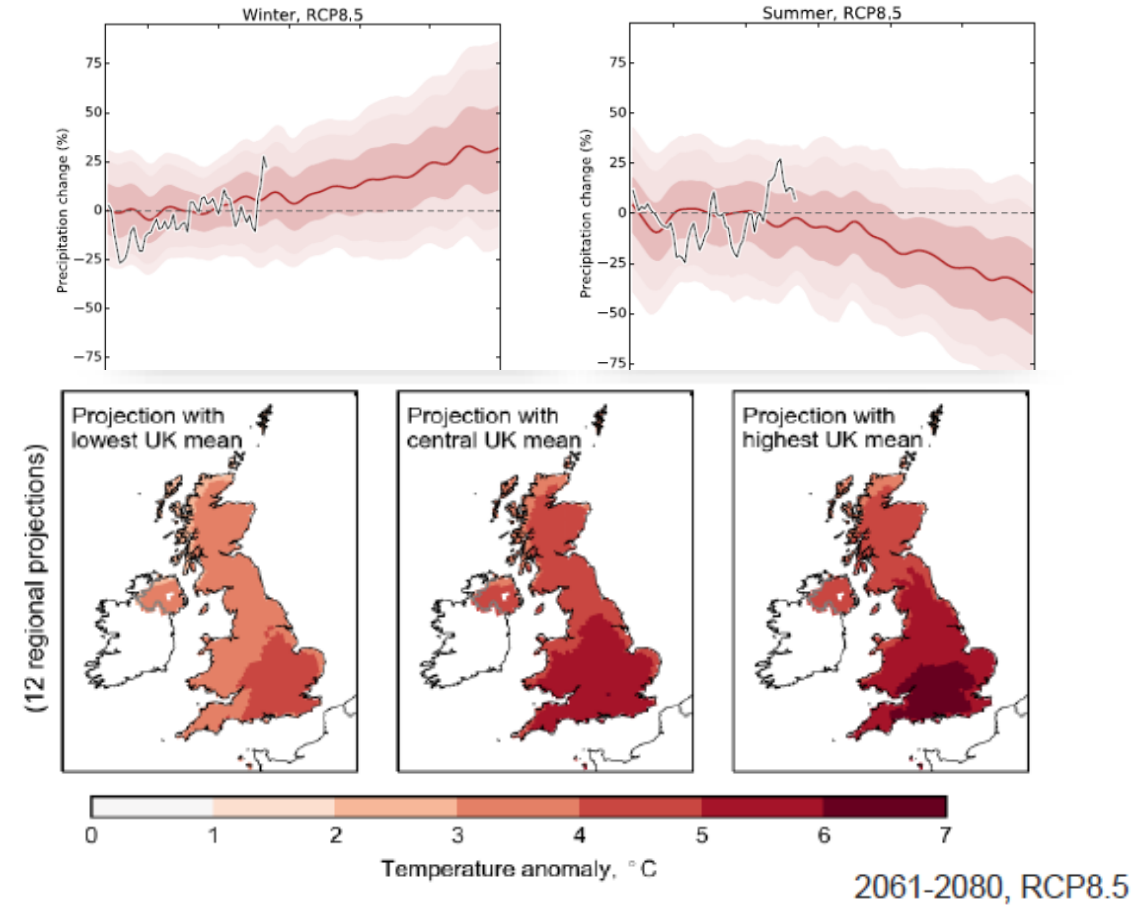
Offshore wind speed allowance	5%	10%	<i>Wind speed</i>
Offshore wind speed sensitivity test	10%	10%	
Extreme wave height allowance	5%	10%	<i>Wave heights</i>
Extreme wave height sensitivity test	10%	10%	

Table 2: peak rainfall intensity allowance in small catchments and urb catchments (based on a 1961 to 1990 baseline)

Applies across all of England	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2115)
Upper end	10%	20%	40%
Central	5%	10%	20%

*Rainfall intensity*

## Future UK precipitation



“a greater chance of warmer, wetter winters and hotter, drier summers”

## 2. Coastal Plans and Funding



# Coastal Plans

## South Devon & Dorset Shoreline Management Plan Review



## Shoreline Management Plans

(Long term management intent)



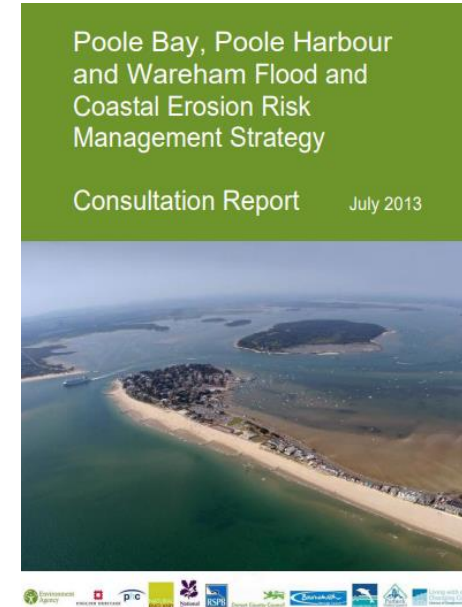
## FCERM Strategies

(Preferred approach to manage risk)

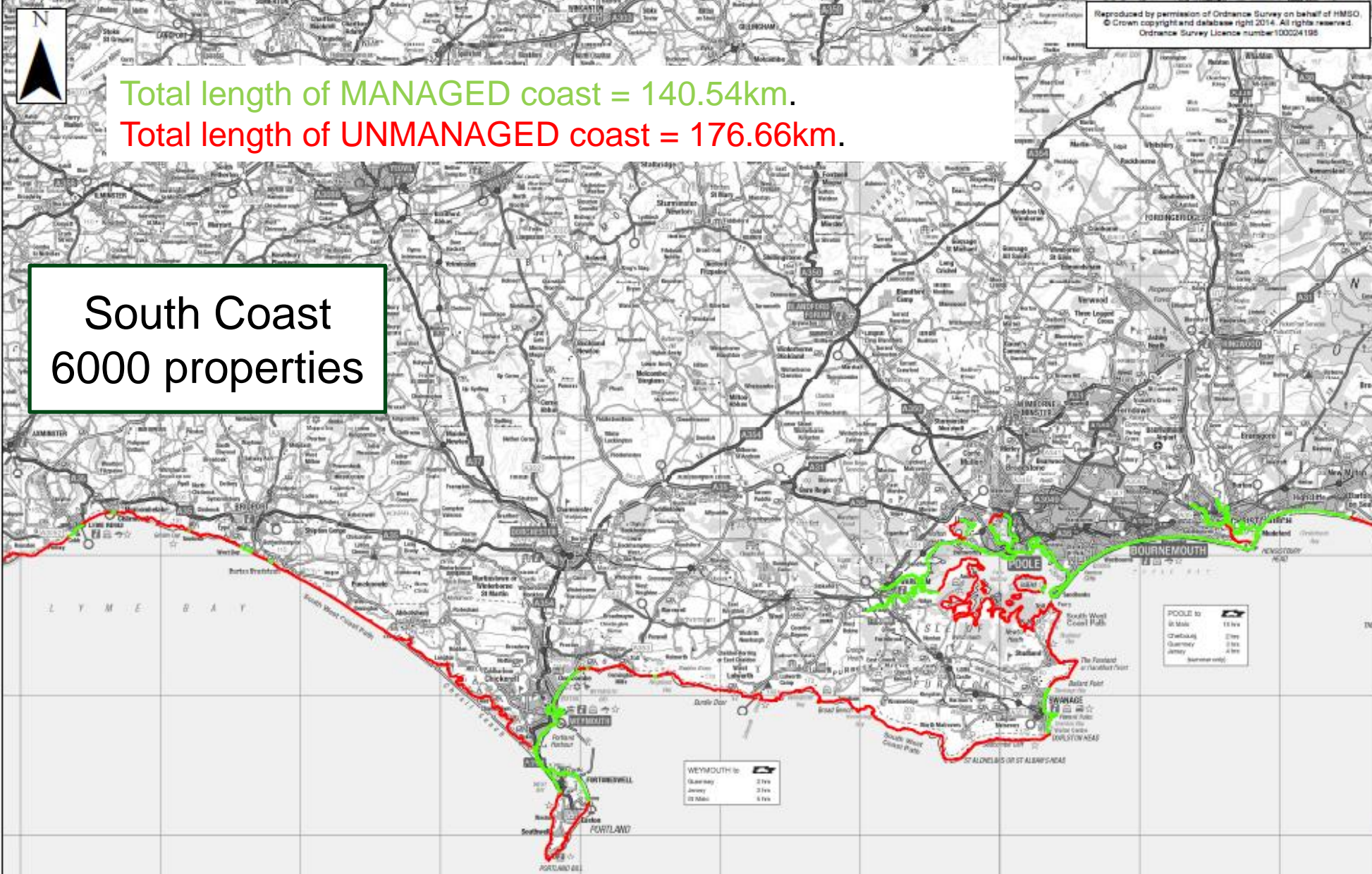


## FCERM Schemes

(Works on ground – subject to funding)

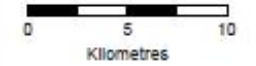
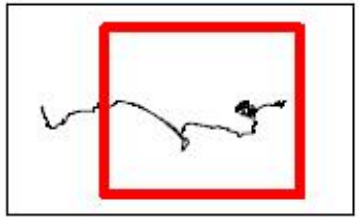


# Managed & Unmanaged risk



**KEY**

- Management
- Managed
- Unmanaged



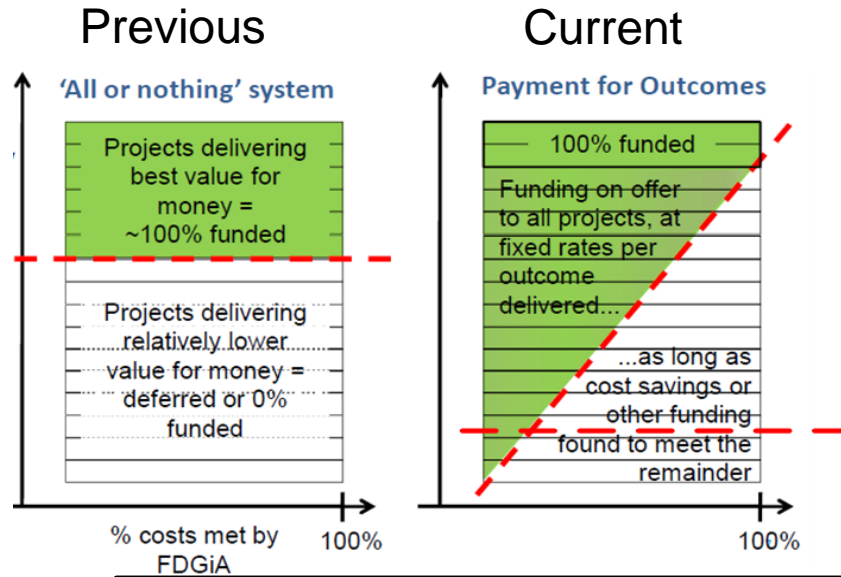
Rev	By	Chkd	Apprv	Date	Description

Client

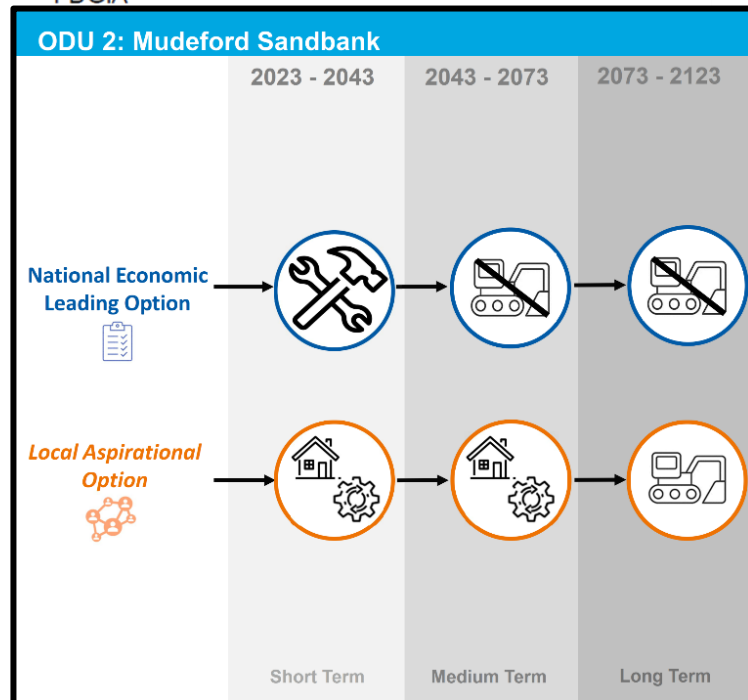


ment

# Funding



- Flood Defence Grant in Aid (FDGiA) allocated on a partnership funding approach
- Often requires multiple sources of funding partners
- Capital projects – no revenue funding for LA's asset maintenance



The current funding (and FCERM appraisal) arrangements focus on a narrow band of FCERM outcome measures are not designed to consider the needs of place-based resilience.

It means central government funding is not always available to allow communities to adapt and improve resilience

# 3. Cliff Falls & Land Instability

# Cliff falls & Land Instability



Somerset



Burton Bradstock

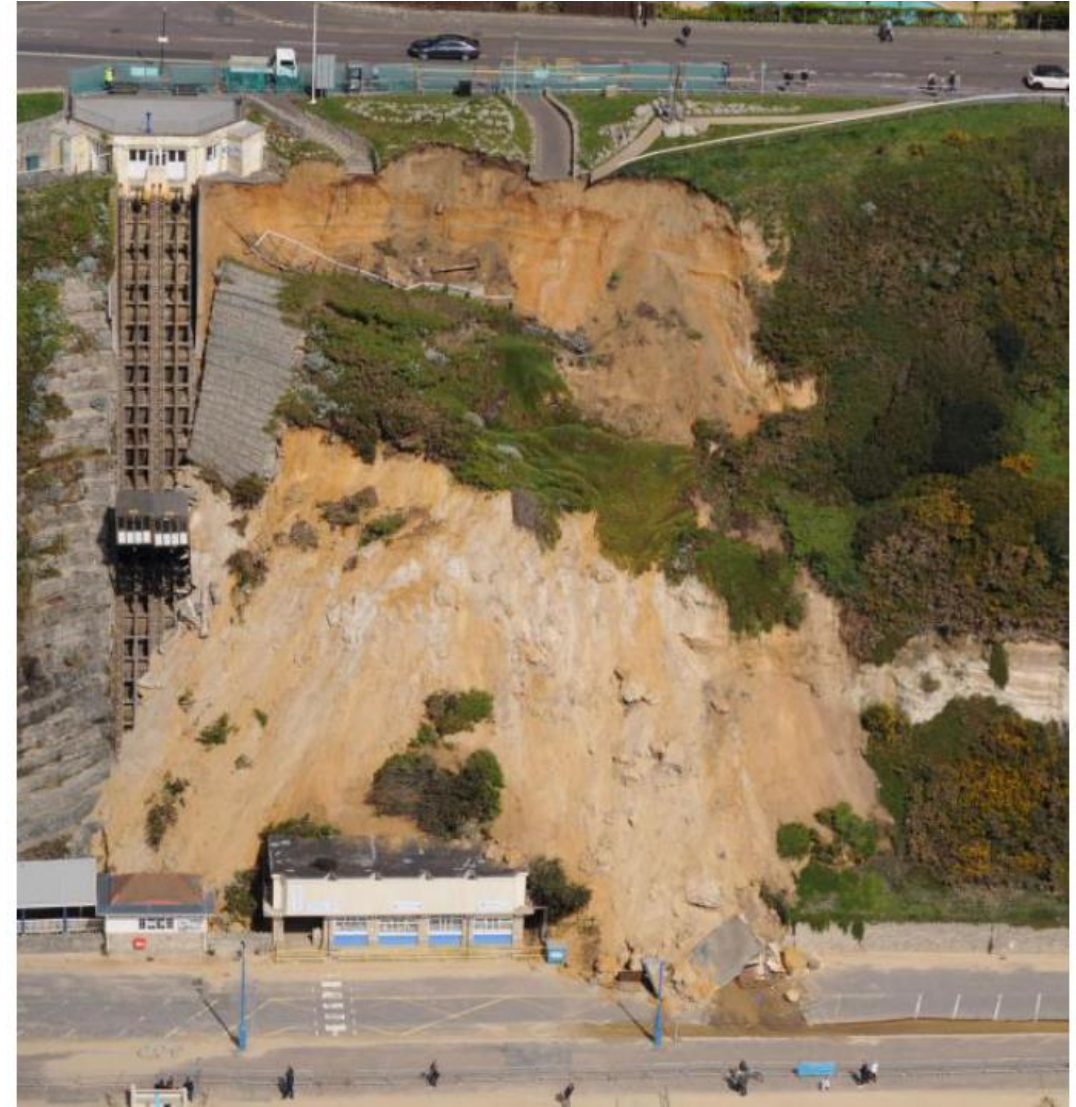


Portland



Bournemouth

# Cliff instability at Bournemouth



Before and after photographs of the East Cliff Lift slip in 2016 (images courtesy of Andrew Emery, 2016).

# 4. Storm Impacts

# Storm impacts

Storm Ciaran 4-5m of erosion



Communities cut off



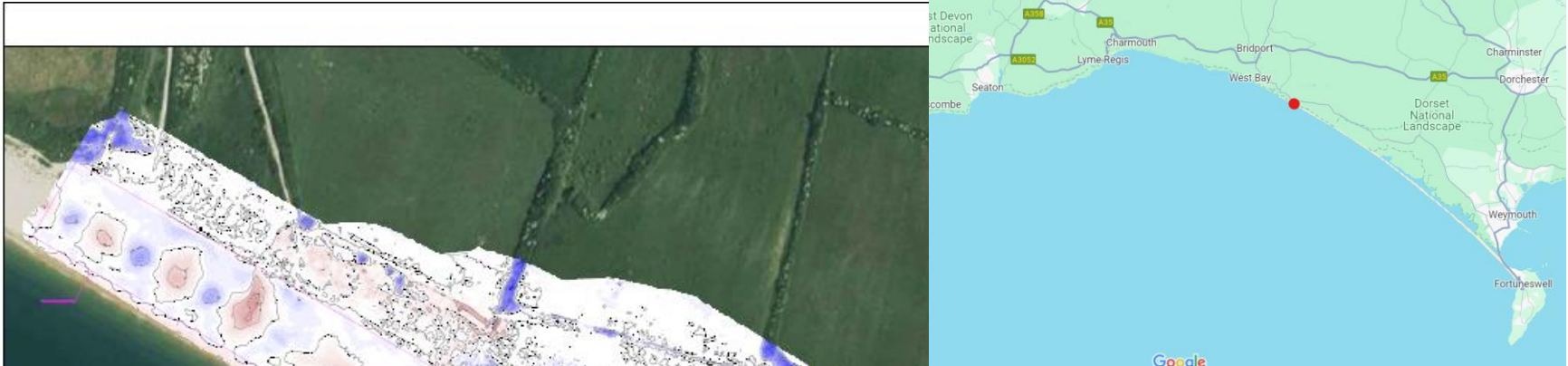
Vulnerable residents and tourists





# Breach

- Breach post storm Ciaran
- Over washing and rollback
- Consequences at other locations?



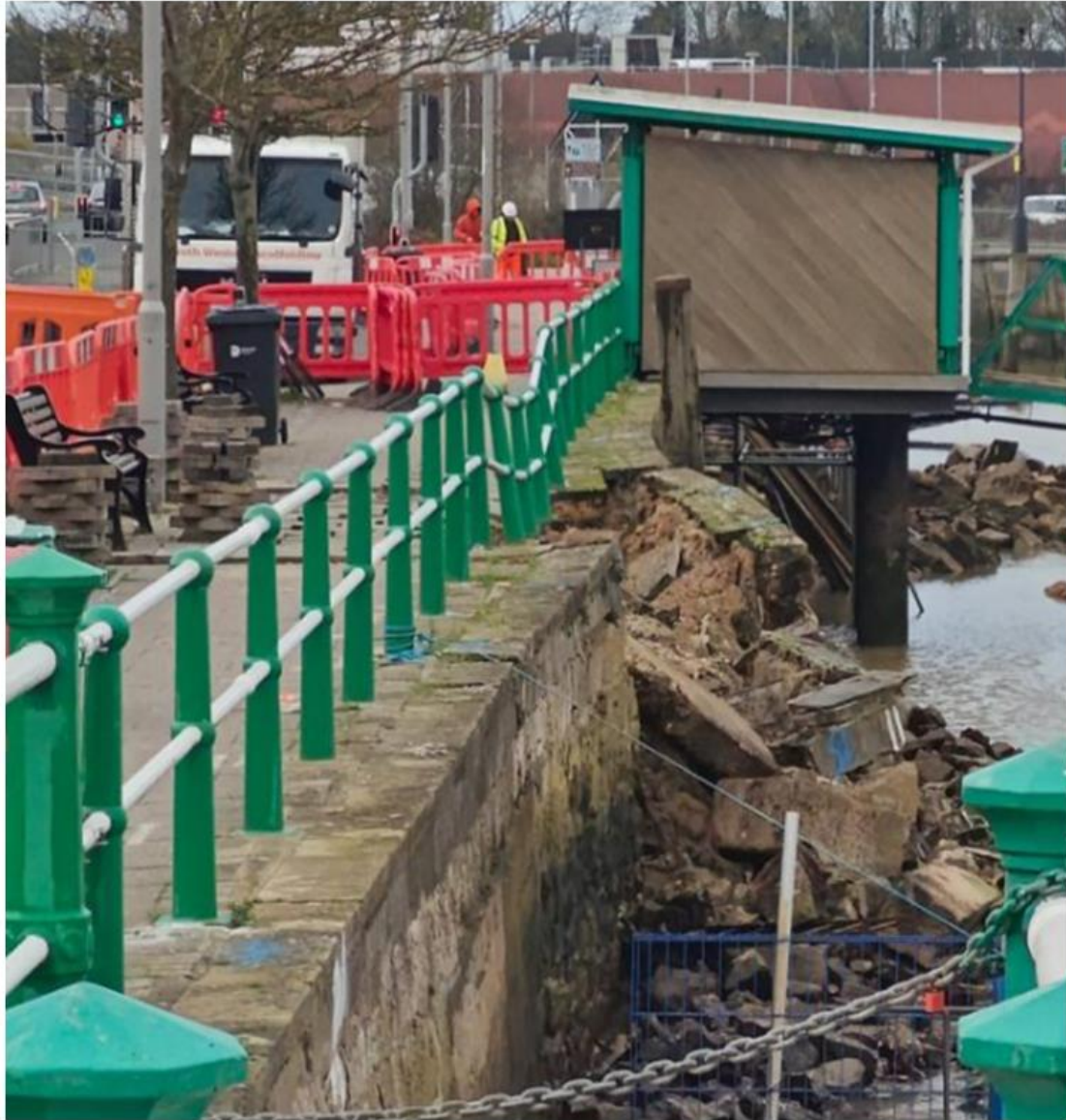
Legend	
Topographic Data	
1:0 - 1:99m	Blue
2:0 - 2:99m	Light Blue
3:0 - 3:99m	Light Green
4:0 - 4:99m	Green
5:0 - 5:99m	Yellow-Green
6:0 - 6:99m	Yellow
7:0 - 7:99m	Orange
8:0 - 8:99m	Red-Orange
9:0 - 9:99m	Red
10:0 - 10:99m	Dark Red
11:0 - 11:99m	Brown
12:0 - 12:99m	Dark Brown
13:0 - 13:99m	Black

Metadata	
Project Name	CHESIL BEACH
Client	Environment Agency
Contract Reference	000001
Product	PHOTOGRAMMETRY DSM VERSUS LiDAR DSM DIFFERENCE MODEL
Scale	1:5000
Map Date	14/09/2010
Map Version	1.0
Map Author	Environment Agency
Map Checker	Environment Agency
Map Approver	Environment Agency
Map Status	Final
Map Format	PDF
Map Size	A3
Map Orientation	Portrait
Map Units	Meters
Map Projection	WGS 84 UTM
Map Datum	WGS 84
Map Contour Interval	1m
Map Contour Style	Solid
Map Contour Color	Blue
Map Contour Width	2
Map Contour Label	Yes
Map Contour Label Color	Blue
Map Contour Label Font	Arial
Map Contour Label Size	10
Map Contour Label Angle	0
Map Contour Label Offset	0
Map Contour Label Spacing	0
Map Contour Label Rotation	0
Map Contour Label Alignment	Center
Map Contour Label Baseline	Bottom
Map Contour Label Offset	0
Map Contour Label Spacing	0
Map Contour Label Rotation	0
Map Contour Label Alignment	Center
Map Contour Label Baseline	Bottom

# 5. Asset Management

# Asset Management





- Lack of funding for maintenance
- No warning of sudden failure
- High repair costs

# 6. Heritage Assets

# Heritage Assets

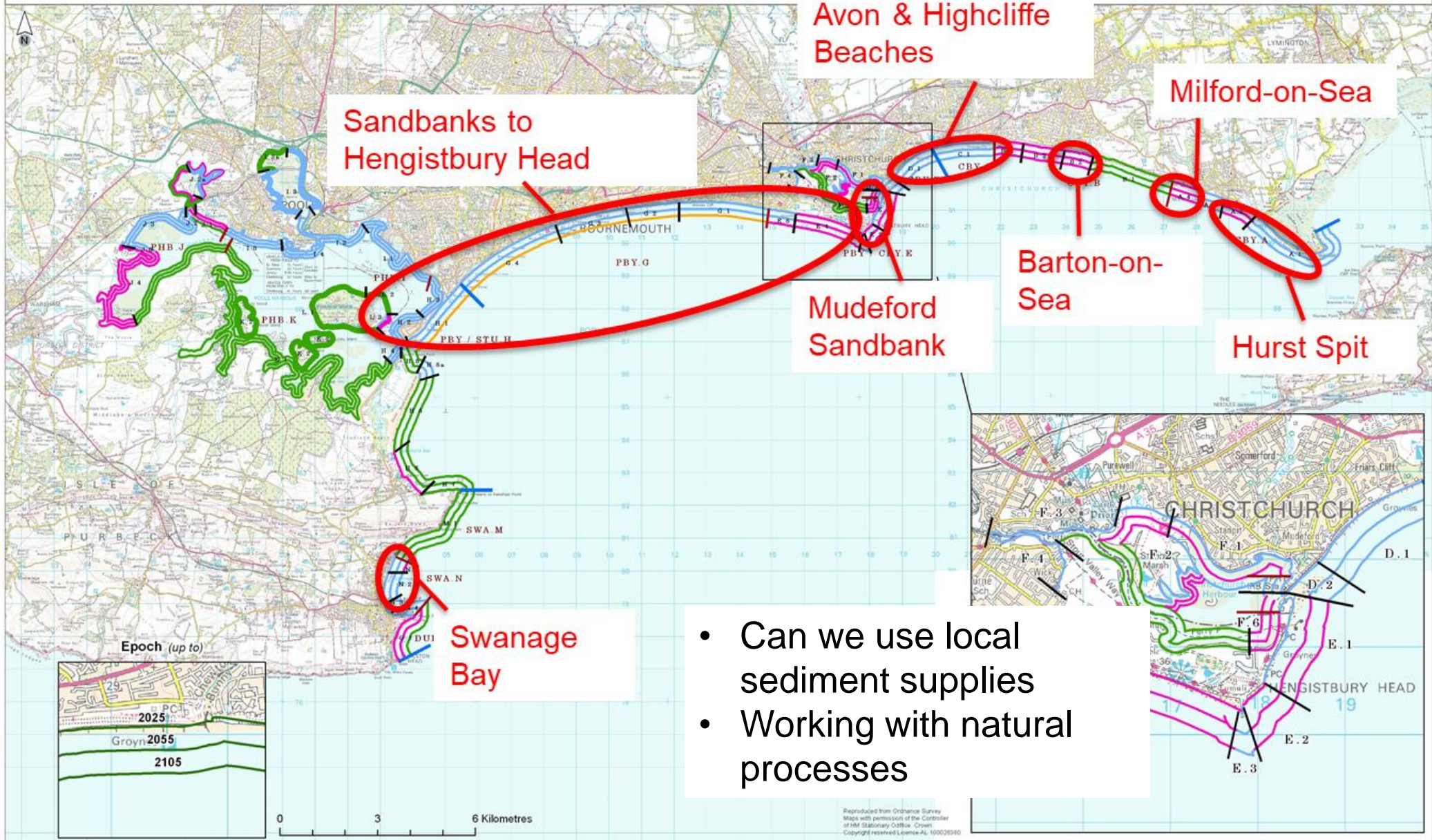
Lose or protect?



# 7. Vanishing Beaches

# Vanishing beaches – beach management

Poole & Christchurch SMP Policy Summary Map



- Can we use local sediment supplies
- Working with natural processes

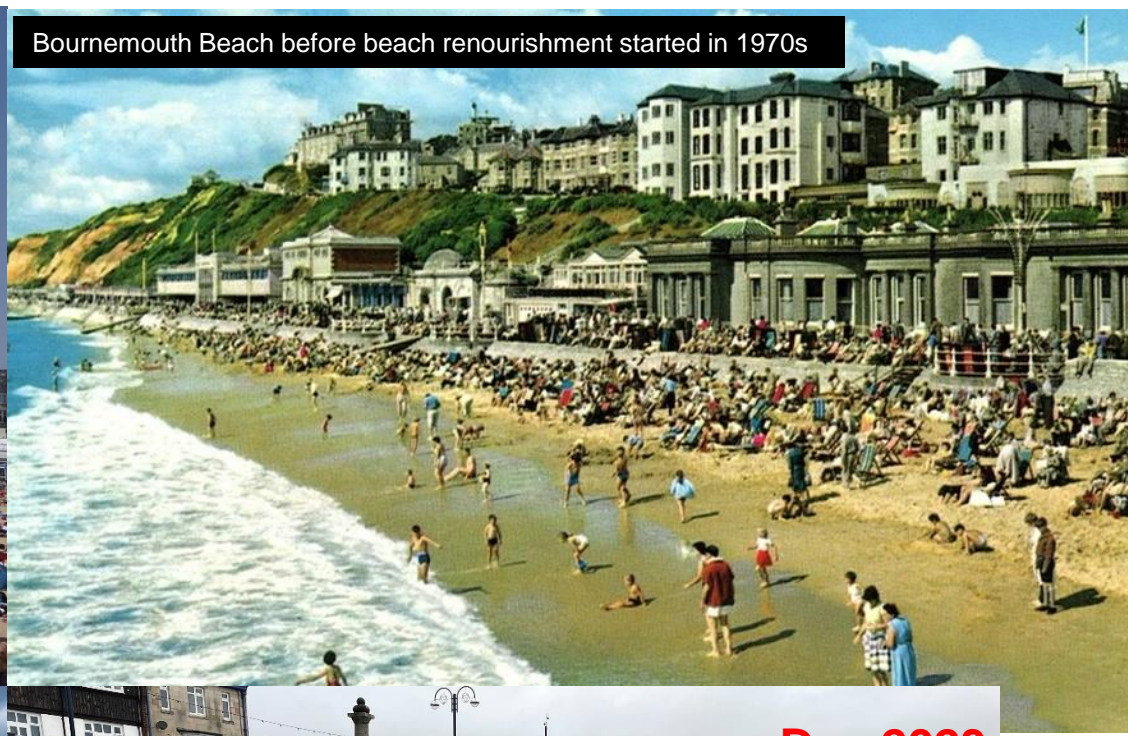


# Beach loss

Bournemouth Beach, June 2022 (photo from Bournemouth Echo)



Bournemouth Beach before beach renourishment started in 1970s



Aug 2023



Dec 2023



Increased wave overtopping and defence failure  
Beach amenity loss

# Future management choices

- Available sediment? Move to shingle beaches?
- Timber supply for groynes? Rock?
- Management costs? - wind blown sand, sea weed removal.



GETTY IMAGES

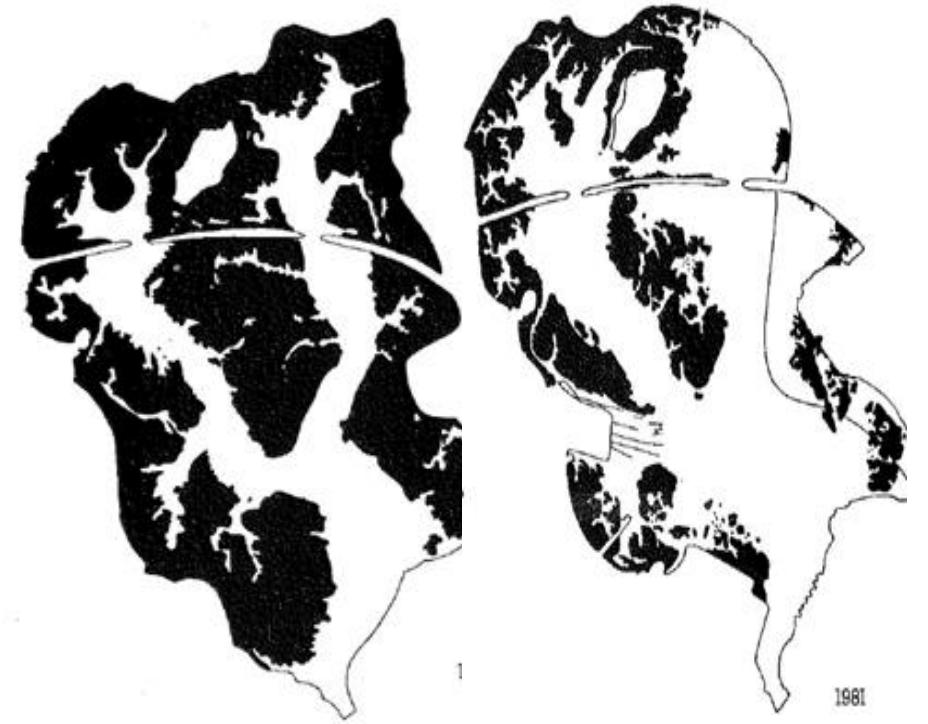
Visitors complained about wading through seaweed to reach the water

# 8. Environment

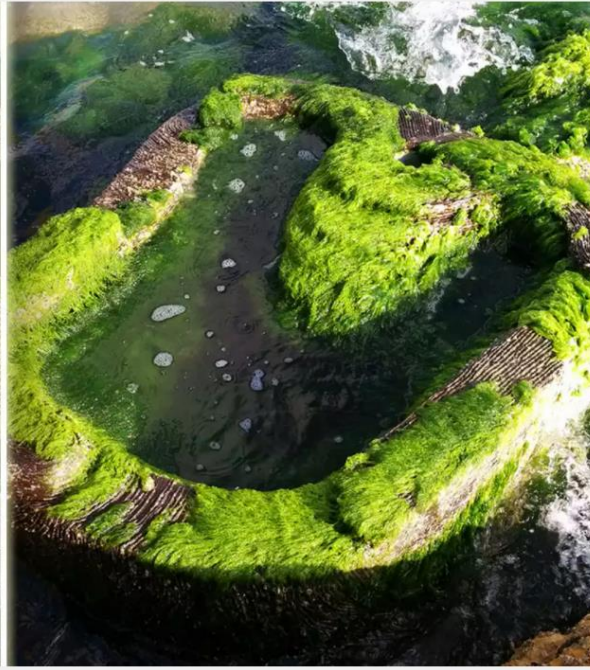
# Habitat loss



Archaeology



# Biodiversity Net Gain



# 9. Coastal Landfill

# Coastal Landfill

## SCOPAC HISTORIC LANDFILLS PROJECT

### BACKGROUND



Around 1200 historic landfills in England are at risk of coastal flooding and erosion



When most sites were filled there weren't strict regulations in place

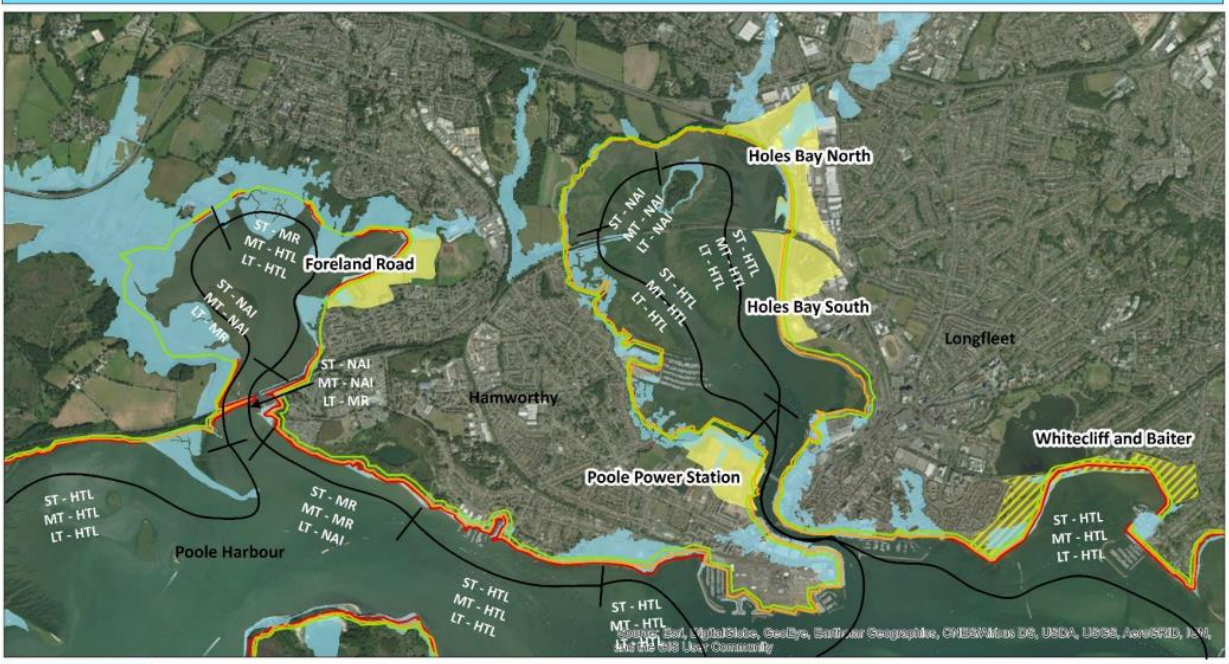
Their contents are largely unknown

Many landfills were put on saltmarshes and are now close to environmentally designated areas



This waste could be hazardous to people and wildlife

### CASE STUDY SITE - POOLE HARBOUR



<b>POOLE HARBOUR</b>	<b>SMP Erosion Limits &amp; Policy</b>	<b>EA Flood Zone 3 (0.5% AEP)</b>
	<ul style="list-style-type: none"> <li>NAI 0 - 20 years</li> <li>NAI 20 - 50 years</li> <li>NAI 50 - 100 years</li> </ul>	<ul style="list-style-type: none"> <li>Landfill Sites (EA Database)</li> <li>Landfill Site (ESCP / PBC data 2018)</li> </ul>
Aerial Photography: ESRI (2017)	<ul style="list-style-type: none"> <li>ST Short term (0 - 20 yrs)</li> <li>MT Medium term (20 - 50 yrs)</li> <li>LT Long term (50 - 100 yrs)</li> <li>HTL/ATL Hold/Advance the line</li> <li>MR Managed realignment</li> <li>NAI No active intervention</li> </ul>	



### CASE STUDY SITE - LYME REGIS



<b>LYME REGIS</b>	<b>SMP Erosion Limits &amp; Policy</b>	<b>EA Flood Zone 3 (0.5% AEP)</b>
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# 10. Engagement & Adaptation



# Engagement and adaptation

## North Swanage Householder's Guide to a Changing Coast



**Spatial Objective 5: Reduce vulnerability to climate change and dependence upon fossil fuels**

### Policy CE: Coastal Erosion

Unstable coastal land is often the result of the geology and hydrology of the coastline, predicted rising sea levels and changing management practices. It is important to ensure that new development is not at risk of subsidence or aggravating existing coastal instability. Therefore:

- New residential development will not be permitted in the Indicative Erosion Zones, as identified in the Shoreline Management Plan.
- New development within 400 metres of the coastline as shown on the proposals map, known as the 400m No-water Discharge Consultation Zone, that has the potential to impact upon surface water and/or groundwater drainage, should demonstrate how water can be discharged without having an adverse effect upon the stability of nearby cliffs. This may preclude the use of soakaways.

Identification of Coastal Change Management Areas (CCMAs) will require further geological investigation and consideration through the Swanage Local Plan, neighbourhood plans, or the Site Allocations Plan. CCMAs will be a material

## Coastal Change Management Areas (CCMAs)

## Coastal Change... everyone's talking about it!

Ever wondered about how the changing coast may affect you, your community or your business? If so, come and browse our exhibition, watch a presentation and find out more about coastal change in Swanage.

**Thursday 30th June (open 10am to 9pm)**

**& Saturday 2nd July (open 10am to 7pm)**

Mowlem Theatre Community Room, Swanage  
(presentation at 1pm and 7pm Thursday and 3pm Saturday)



Come along to the exhibitions to find out more about how coastal erosion may affect your community, who makes management decisions on the coast and how coastal management is funded. Take a look at how your coast may look in 20, 50 and 100 years and explore some of the ideas which communities themselves have come up with to adapt to change.



Tea and biscuits will be served and everyone is welcome! To find out more about the Jurassic Coast Pathfinder Project, visit:  
[www.jurassiccoast.com/pathfinder](http://www.jurassiccoast.com/pathfinder)  
Or contact the project team on 01305 225515

# Partnerships and groups



## Mission Statement

To manage Studland Bay in a collaborative and sustainable way, ensuring that MCZ objectives are met, nature conservation is maintained without seriously impacting the environment. Ensuring the success of this environmental initiative to restore seagrass meadows

*The pessimist sees difficulty in every opportunity.  
The optimist sees the opportunity in every difficulty.*  
Winston Churchill