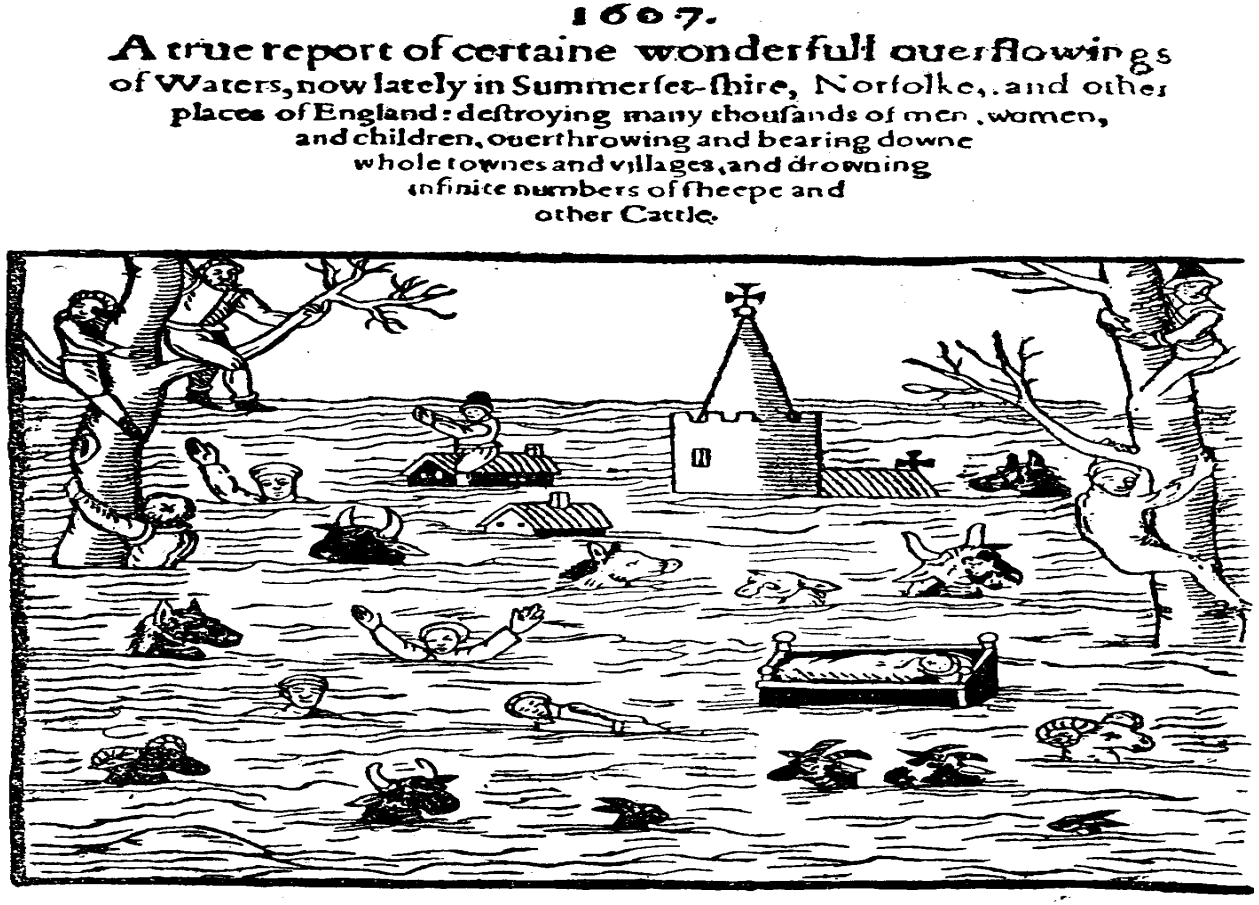
West Somerset Coastline

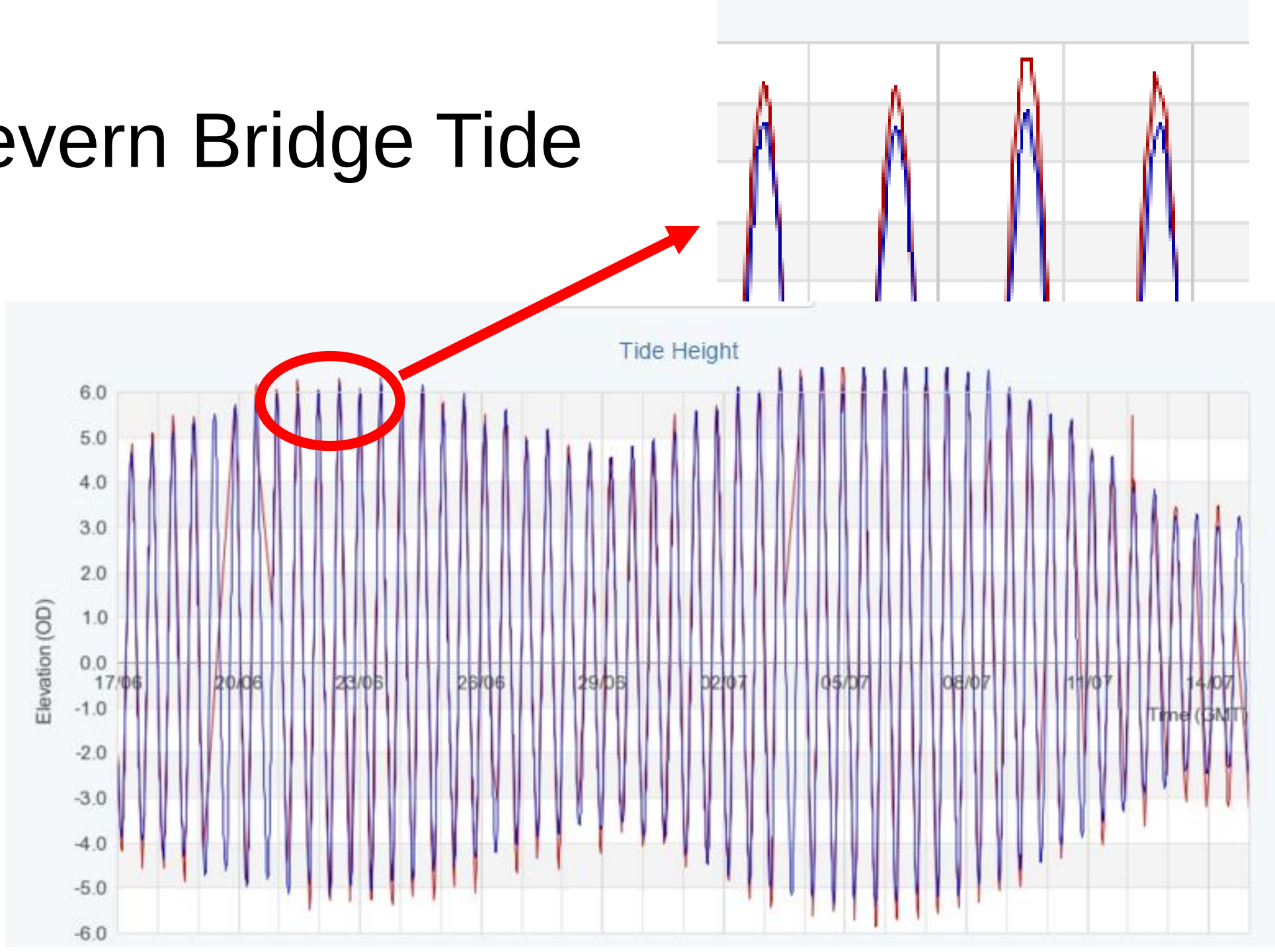
flood and erosion risks

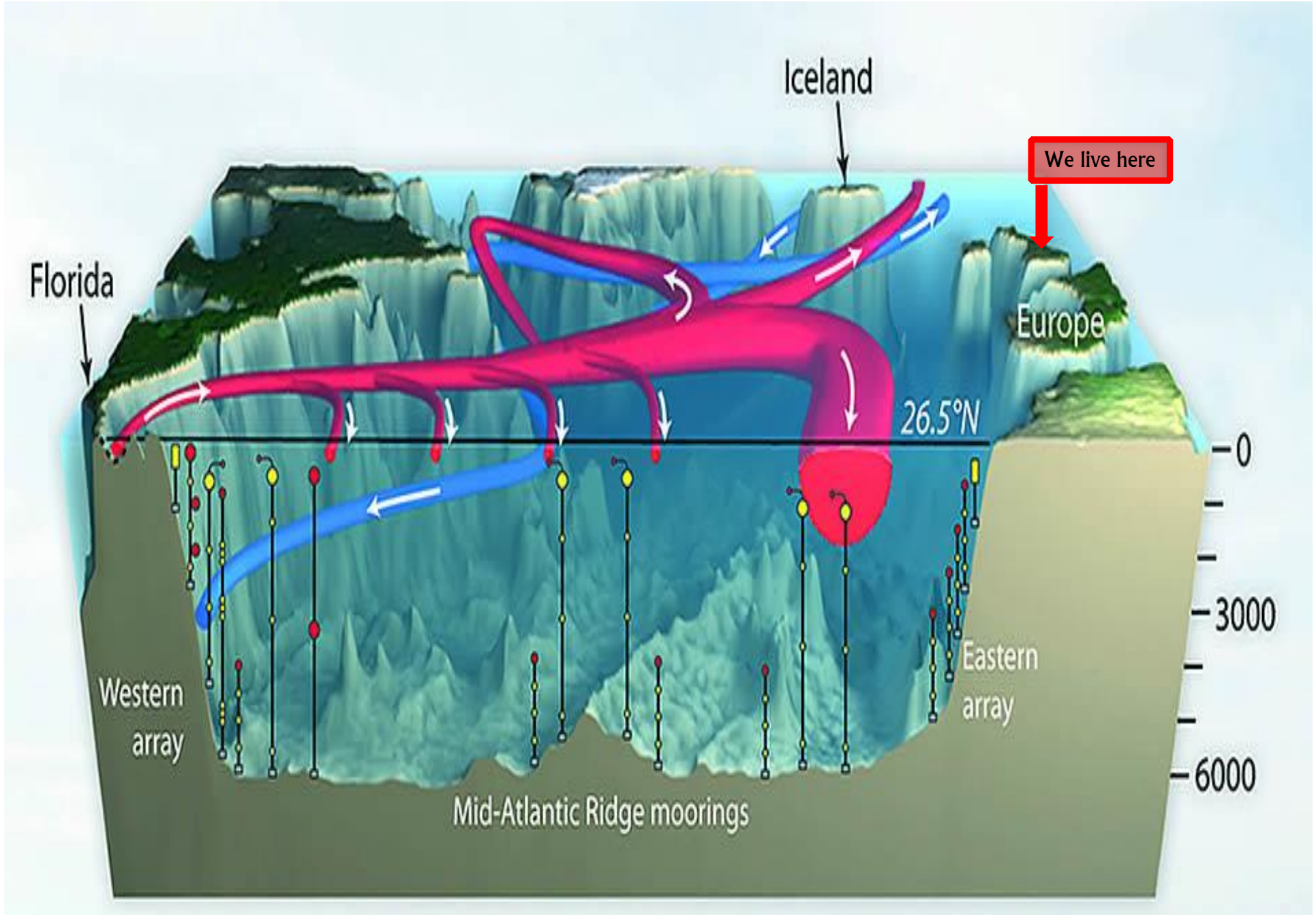


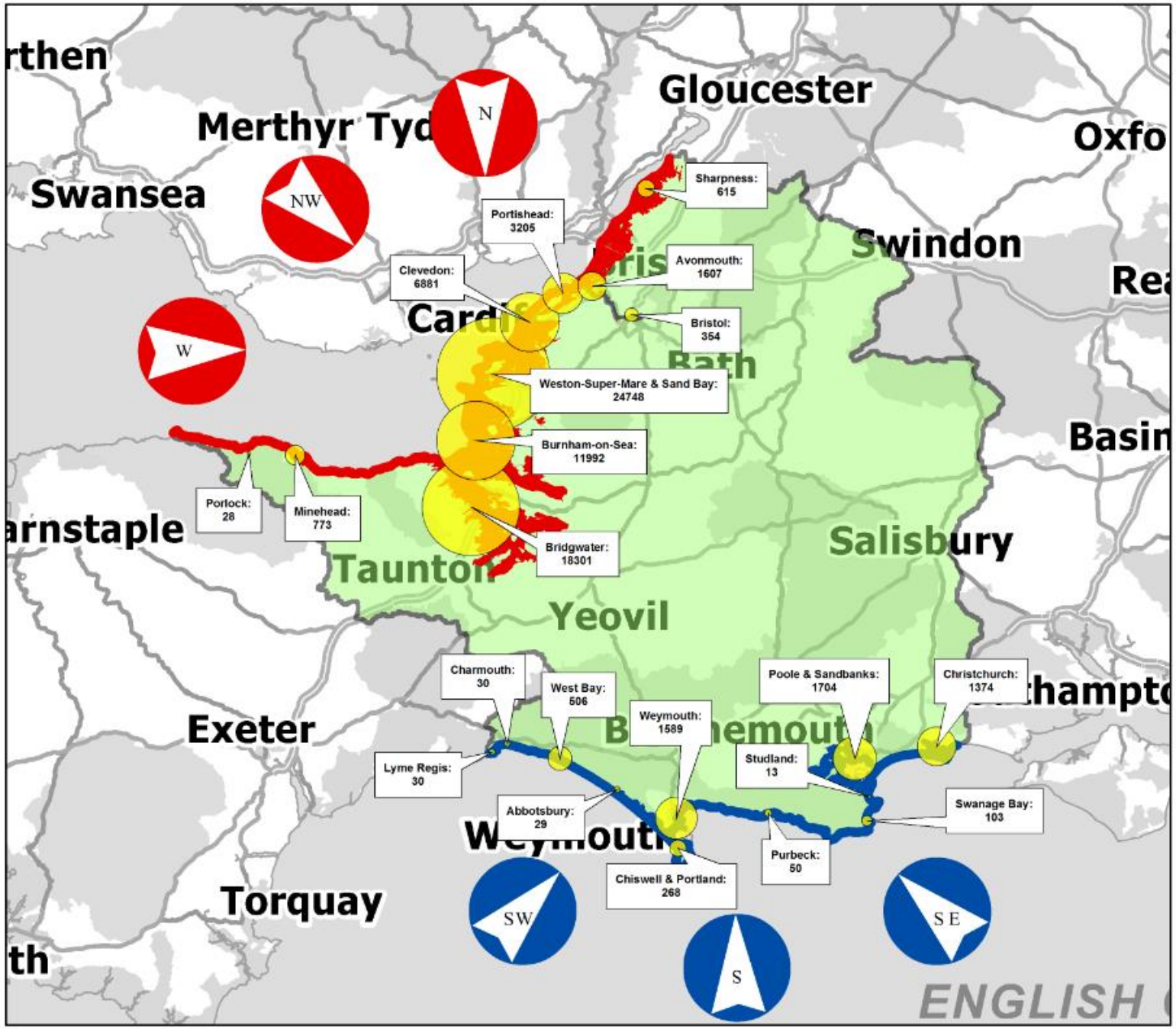
John Buttivant
Coastal Engineer

Environment Agency

Severn Bridge Tide




Iceland
We live here
Florida
Europe
26.5°N
0
3000
6000
Western
array
Eastern
array
Mid-Atlantic Ridge moorings



Environment Agency

Wessex Worst Case Coastal: North Coast and South Coast Events

This map shows the worst case North Coast scenario in red, with high tides exacerbated by strong winds from the North and West. The worst case South Coast scenario is in blue, with high tides exacerbated by strong winds from Southerly directions

Legend

Properties At Risk

10,000

10

Wessex North Coast

Wessex South Coast

Coastal Flood Risk NWessex

Coastal Flood Risk SWessex

Wessex Area

Worst Case Wind Direction
Red: North Coast
Blue: South Coast

Wessex Location map

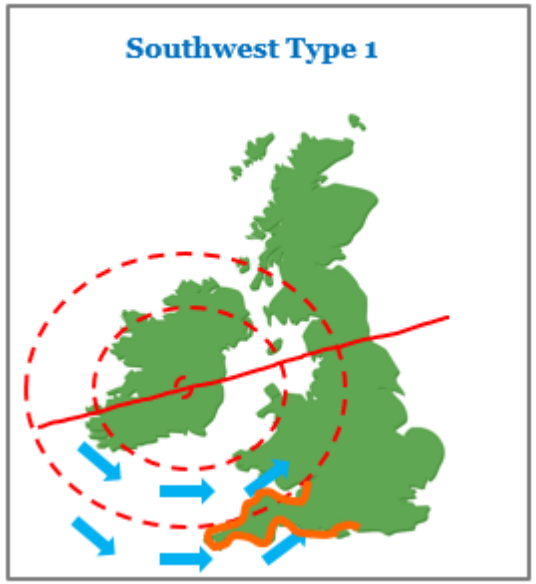
N

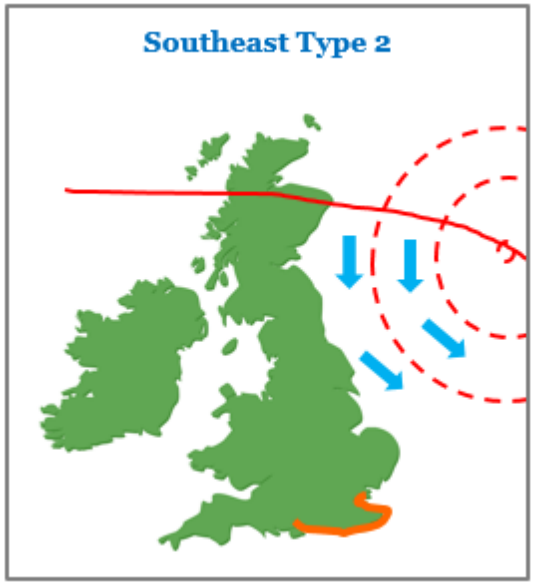
Scale: 1:1,000,000

0 10 20 40 Kilometers

Figure 1.2: The Source-Pathway-Receptor-Consequence "conceptual model" for coastal flooding. This study focuses primarily on sources data to determine if recent winters have been more extreme than ever before.

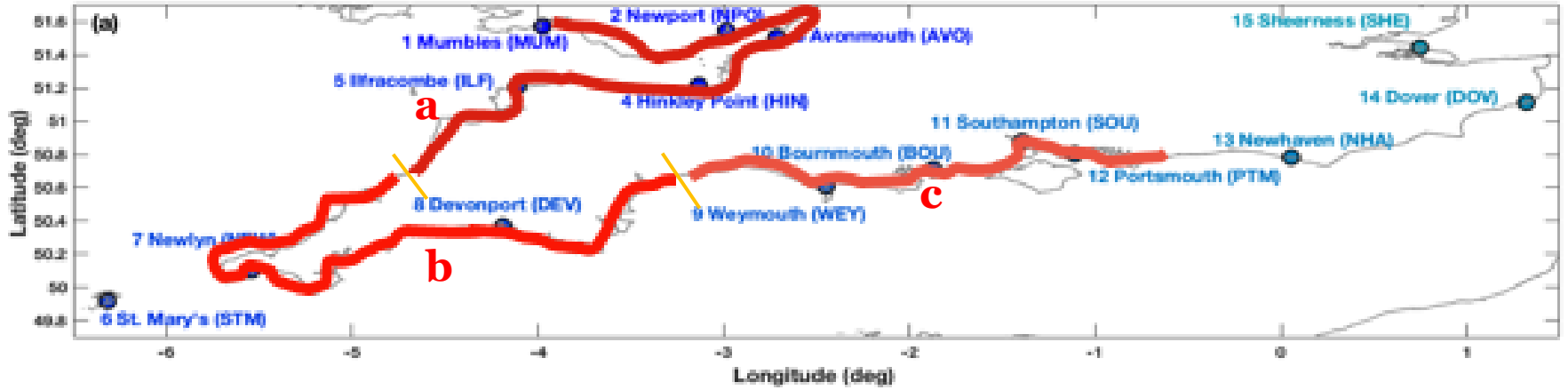
Uncertainty





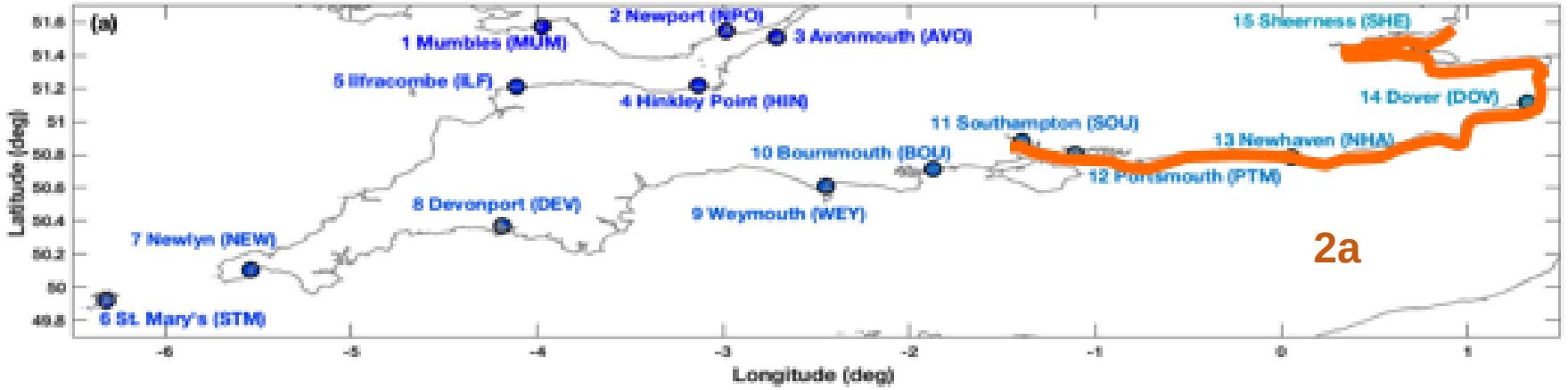
Type 1a, b and c: West to East propagating surge

Southwest spatial footprint – Mumbles to Portsmouth



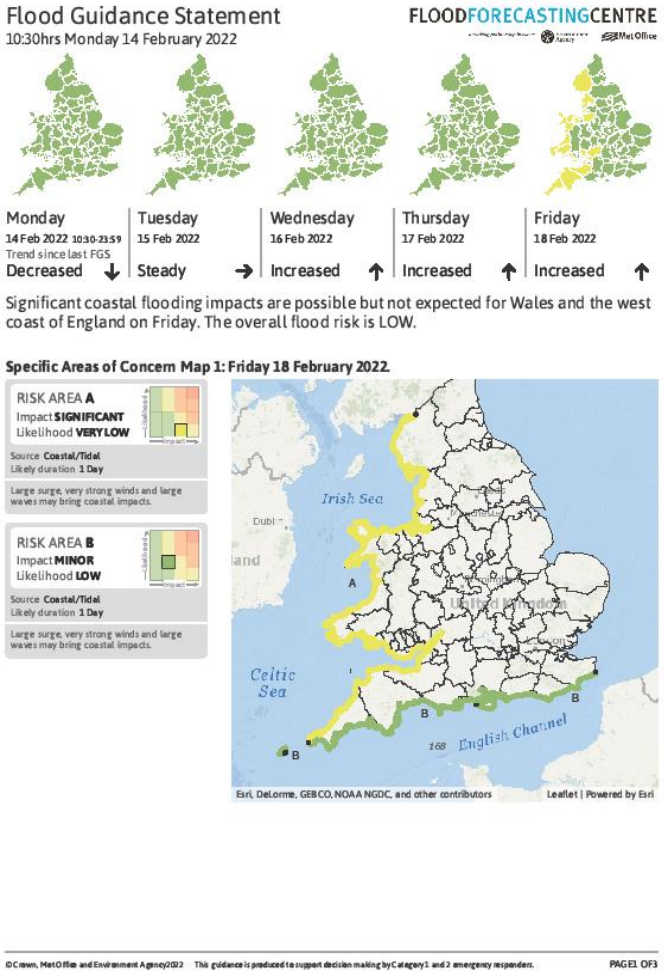
Type 2: East to west propagating surge – leak from North Sea

Southeast spatial footprint – Mumbles to Southampton



Southampton & Portsmouth lie at the interface and experience both types of events

Wake up call from Eunice



Flood Guidance Statement

10:30hrs Monday 14 February 2022

FLOODFORECASTINGCENTRE

Monday	Tuesday	Wednesday	Thursday	Friday
14 Feb 2022 10:30-23:59	15 Feb 2022	16 Feb 2022	17 Feb 2022	18 Feb 2022
Trend since last FGS				
Decreased ↓	Steady →	Increased ↑	Increased ↑	Increased ↑

Significant coastal flooding impacts are possible but not expected for Wales and the west coast of England on Friday. The overall flood risk is LOW.

Specific Areas of Concern Map 1: Friday 18 February 2022.

RISK AREA **A**
Impact **SIGNIFICANT**
Likelihood **VERY LOW**
Source **Coastal/Tidal**
Likely duration **1 Day**
Large surge, very strong winds and large waves may bring coastal impacts.

RISK AREA **B**
Impact **MINOR**
Likelihood **LOW**
Source **Coastal/Tidal**
Likely duration **1 Day**
Large surge, very strong winds and large waves may bring coastal impacts.

Irish Sea
Celtic Sea
English Channel
Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors
Leaflet | Powered by Esri

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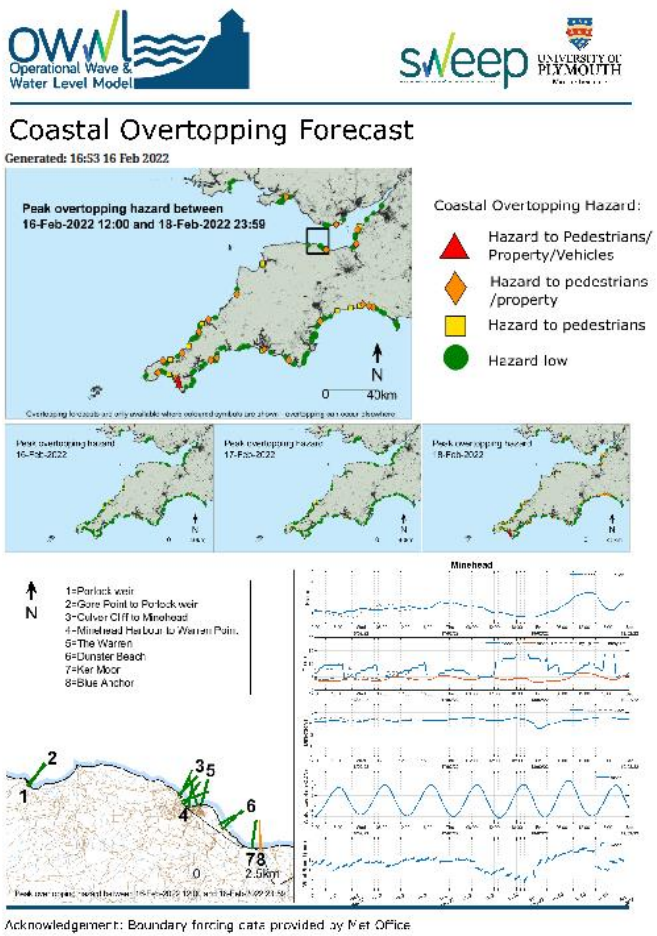
Property no.s	Scenario
16.02.2022	
66070	Worst case
3382	Best estimate
3621	Operational
17.02.2022	11am
12094	Worst case
3278	Best estimate
3698	Operational
17.02.2022	12.30pm
4362	Worst case
2606	Best estimate
3698	Operational



OWWL Operational Wave & Water Level Model

sweep University of Plymouth

Coastal Overtopping Forecast

Generated: 16:53 16 Feb 2022

Peak overtopping hazard between 16-Feb-2022 12:00 and 18-Feb-2022 23:59

Coastal Overtopping Hazard:
- Hazard to Pedestrians/ Property/Vehicles
- Hazard to pedestrians /property
- Hazard to pedestrians
- Hazard low

N
0 40km

1=Porlock weir
2=Gore Point to Porlock weir
3=Culver Cliff to Minehead
4=Minehead Harbour to Warren Point
5=The Warren
6=Dunster Beach
7=Ker Moor
8=Blue Anchor

Minehead

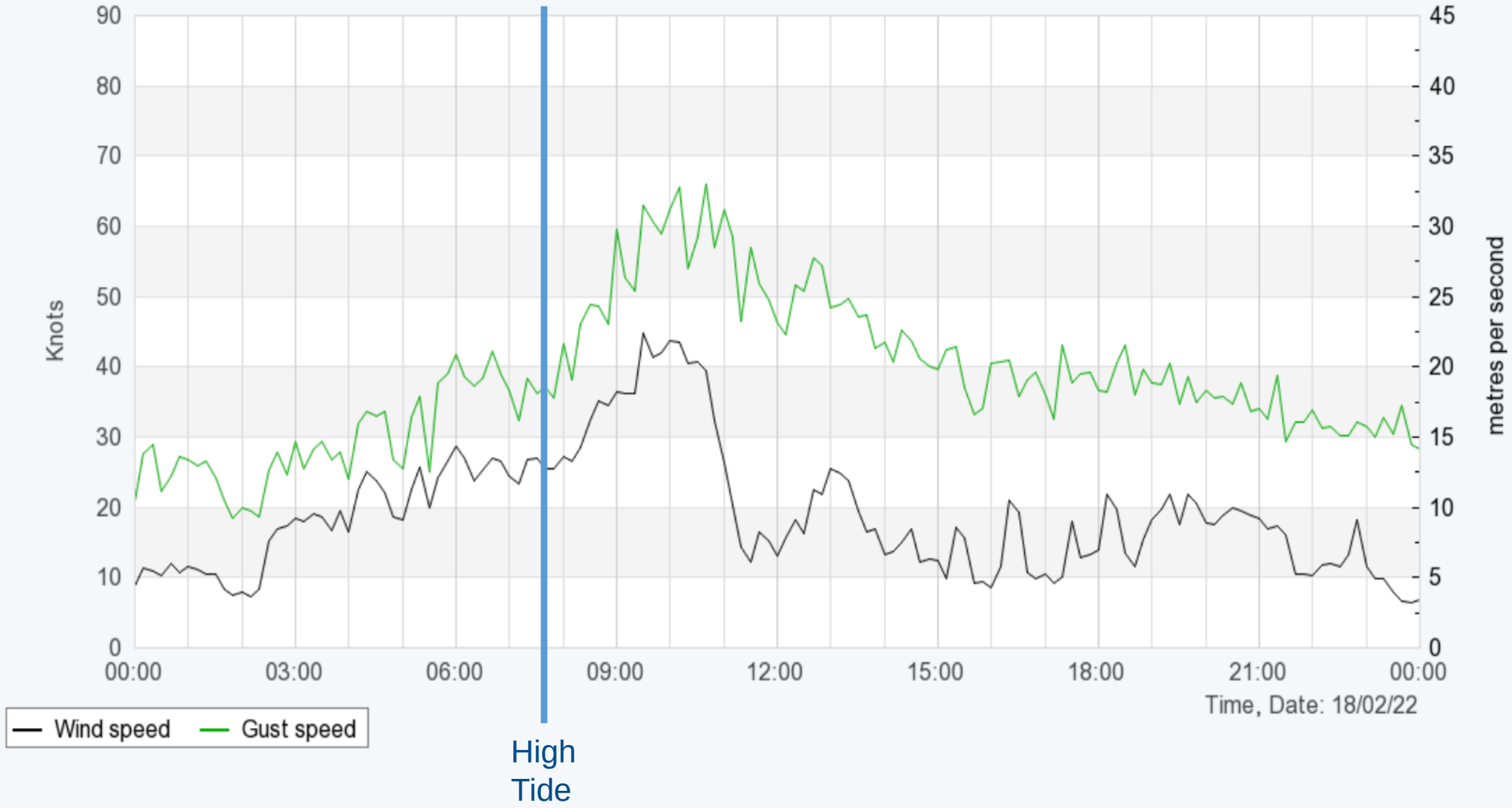
0 2.5km

Acknowledgement: Boundary forcing data provided by Met Office

1

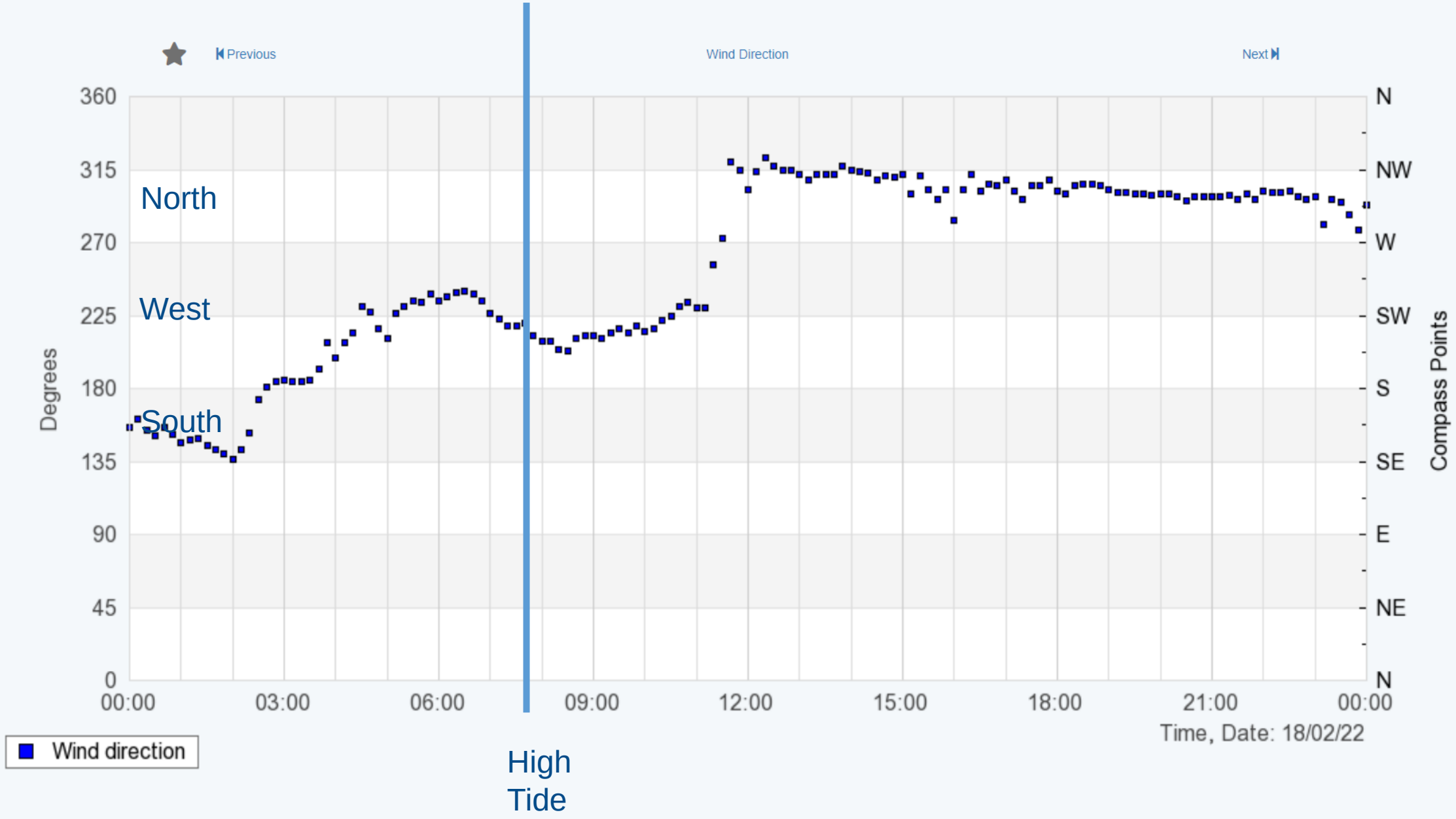
https://coastalmonitoring.org/realtimedata/?user_indate=18-02-2022&chart=99&tab=met&disp_option=&datum=chart&range=default&submit=Go&website2=

Previous Wind Speed Next



National Coastal Monitoring - Weston Bay

https://coastalmonitoring.org/realtimedata/?user_indate=18-02-2022&chart=99&tab=met&disp_option=&datum=chart&range=default&submit=Go&website2=



Eunice – Waves

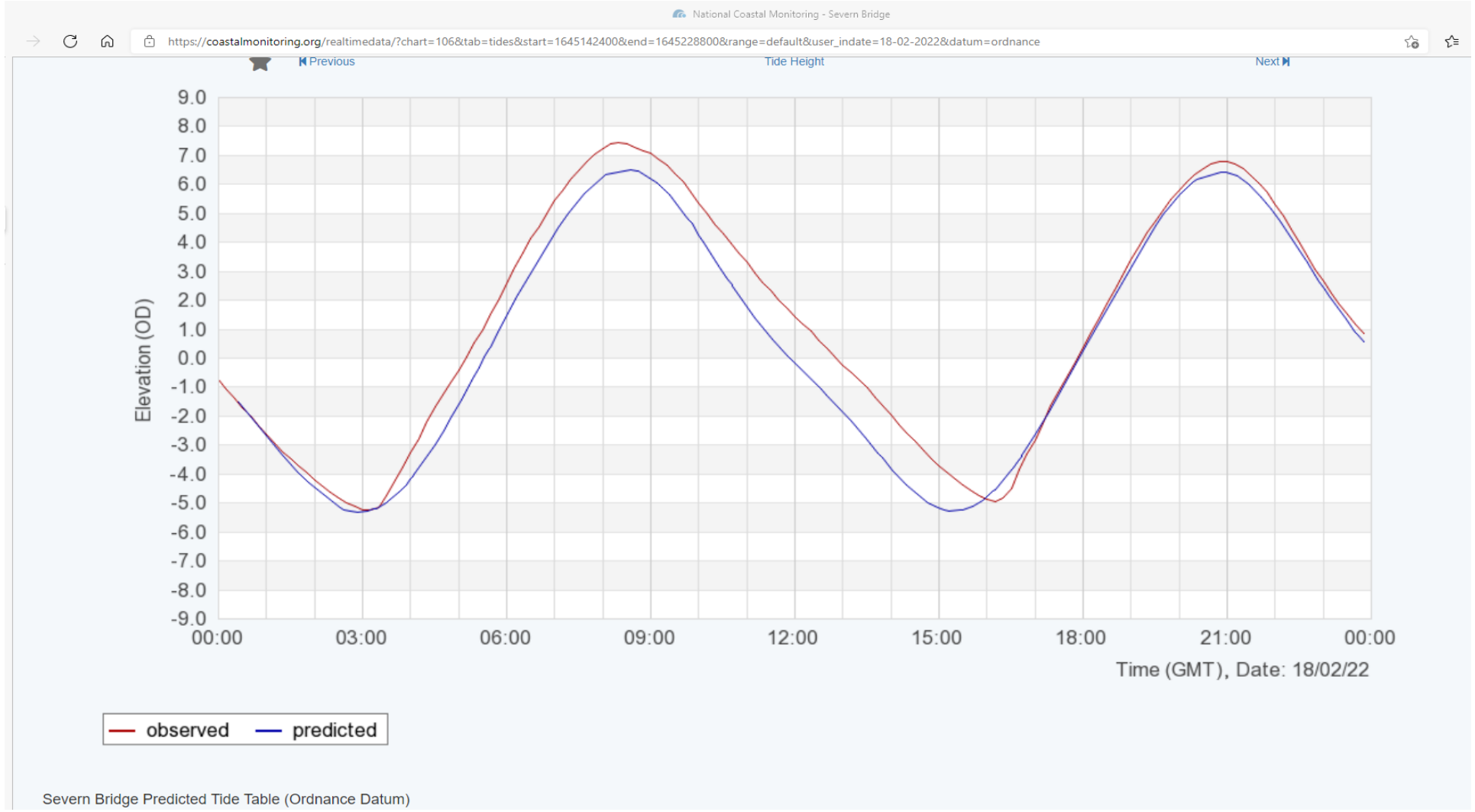
E Warwick-Champion Channel Coastal Observatory

North Cornwall – Storms Eunice and Franklin (18-Feb-2022 to 20/21-Feb-2022)

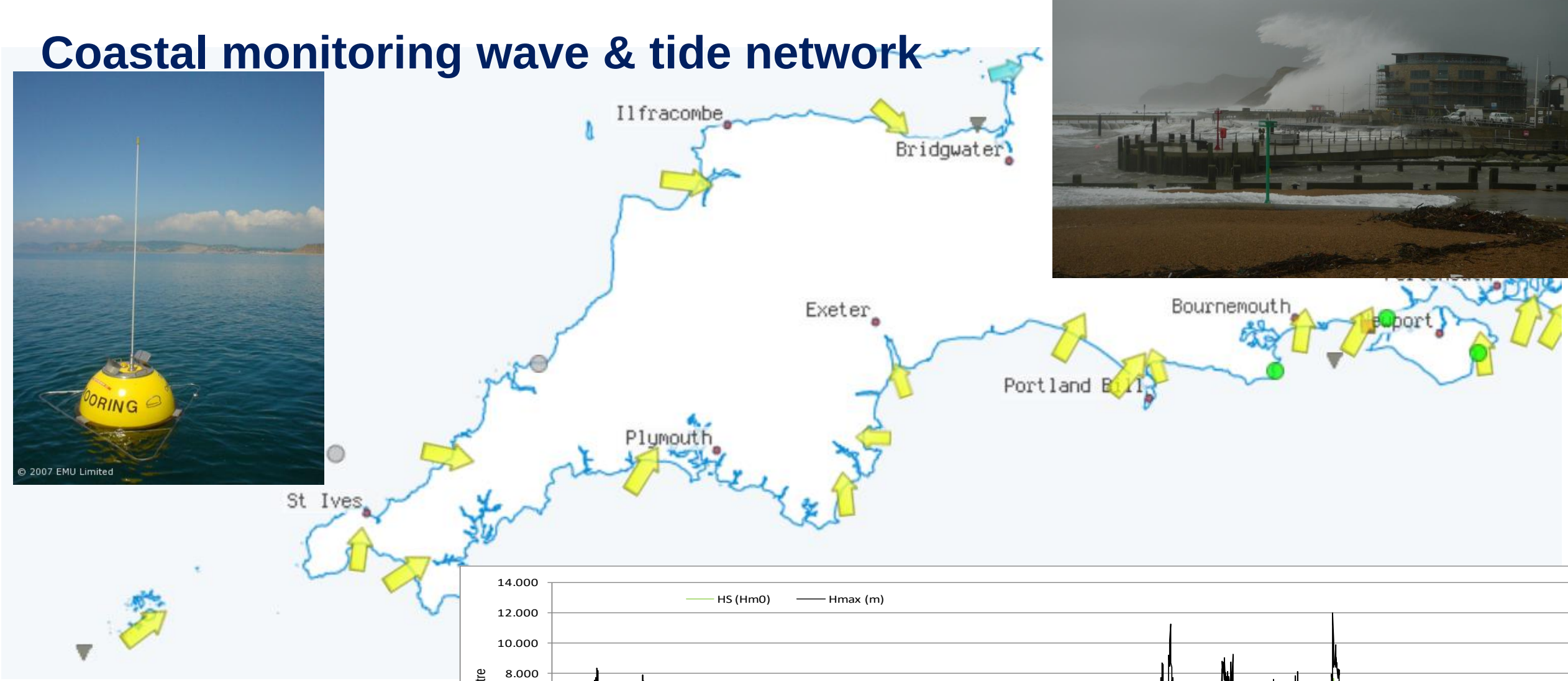
18 Feb 2022 (Eunice)						
Site	**SMS**	**Sci**	**Bdf***	**Scw**	**Mhd***	**Wst**
Max Hs Timestamp	18-Feb-2022 07:30:00	18-Feb-2022 11:00:00	18-Feb-2022 16:00:00	18-Feb-2022 12:00:00	18-Feb-2022 11:30:00	18-Feb-2022 11:30:00
Max Hs (m)	4.97	11.48	~ 6.57	5.42	~ 3.08	3.02
RP	> 1 in 1	> 1 in 2	> 1 in 10	> 1 in 1	> 1 in 100	1 in 100
Storm Duration (hours)	1.0	10	10	10	6	5
Water level (m OD)	0.63	-1.83	~ -1.00	~ -3.30	~ -0.35	~ -0.35
Water level (m CD)	4.54	1.08	~ 3.80	~ 1.50	~ 5.55	~ 5.55
Tidal stage	HW+2	HW+5	HW-4	HW+5	HW+4	HW+4
Tidal surge (m)	~ 0.05	~ 0.05	~ -0.3	~ -0.1	~ 0.75	~ 0.75
JRP	-	-	-	-	> 1 in 100	> 1 in 100
*Breaking waves						

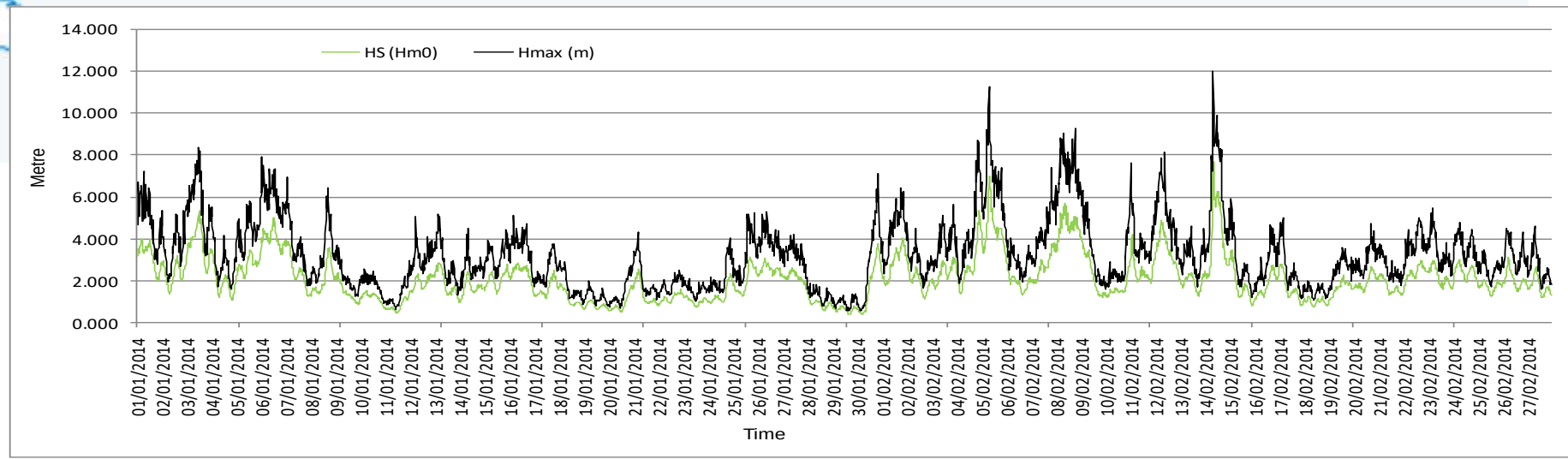
20/21 Feb 2022 (Franklin)						
Site	**SMS**	**Sci**	**Bdf***	**Scw**	**Mhd**	**Wst**
Max Hs Timestamp	-	21-Feb-2022 05:00:00	21-Feb-2022 06:30:00	20-Feb-2022 19:00:00	20-Feb-2022 23:00:00	20-Feb-2022 20:00:00
Max Hs	-	10.28	~ 5.61	5.01	3.00	2.32
RP	-	> 1 in 1	> 1 in 0.25	> 1 in 0.25	> 1 in 20	> 1 in 0.25
Storm Duration	-	10.5	17	6.5	11	6.5
Water level (OD)	-	0.49	~ 1.30	~ 3.00	~ 3.40	~ 4.20
Water level (CD)	-	3.40	~ 6.10	~ 7.80	~ 9.30	~ 10.10
Tidal stage	-	HW-2	HW-2	HW-2	HW+2	HW-1
Tidal surge	-	~ -0.1	~ -0.2	~ 0.3	~ -0.1	~ 0.1
JRP	-	-	-	-	1 in 100	> 1 in 5

Eunice – Severn Bridge Tide Gauge



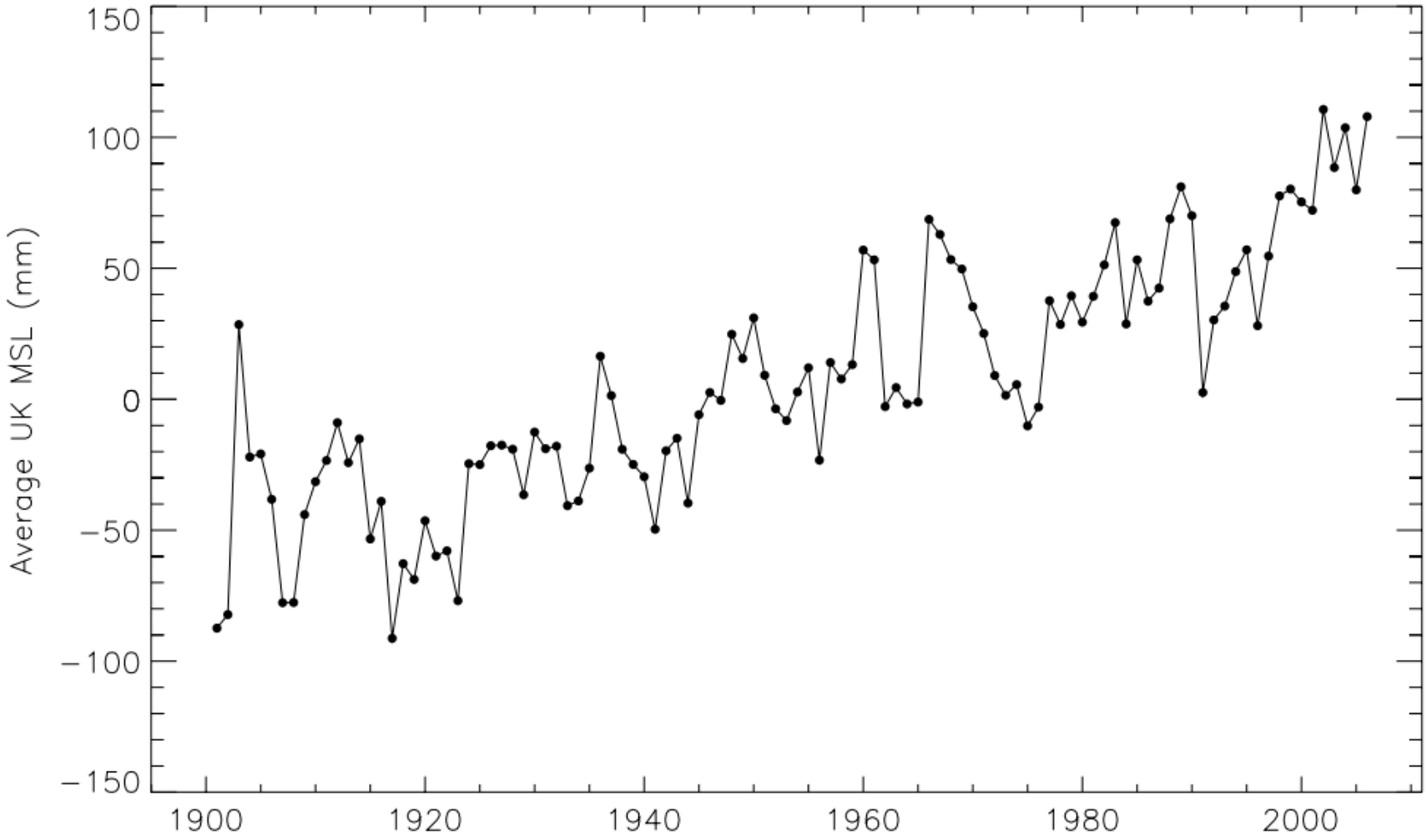
Coastal monitoring wave & tide network





UK Average Sea Level Rise

(National Tide and Sea Level Facility)



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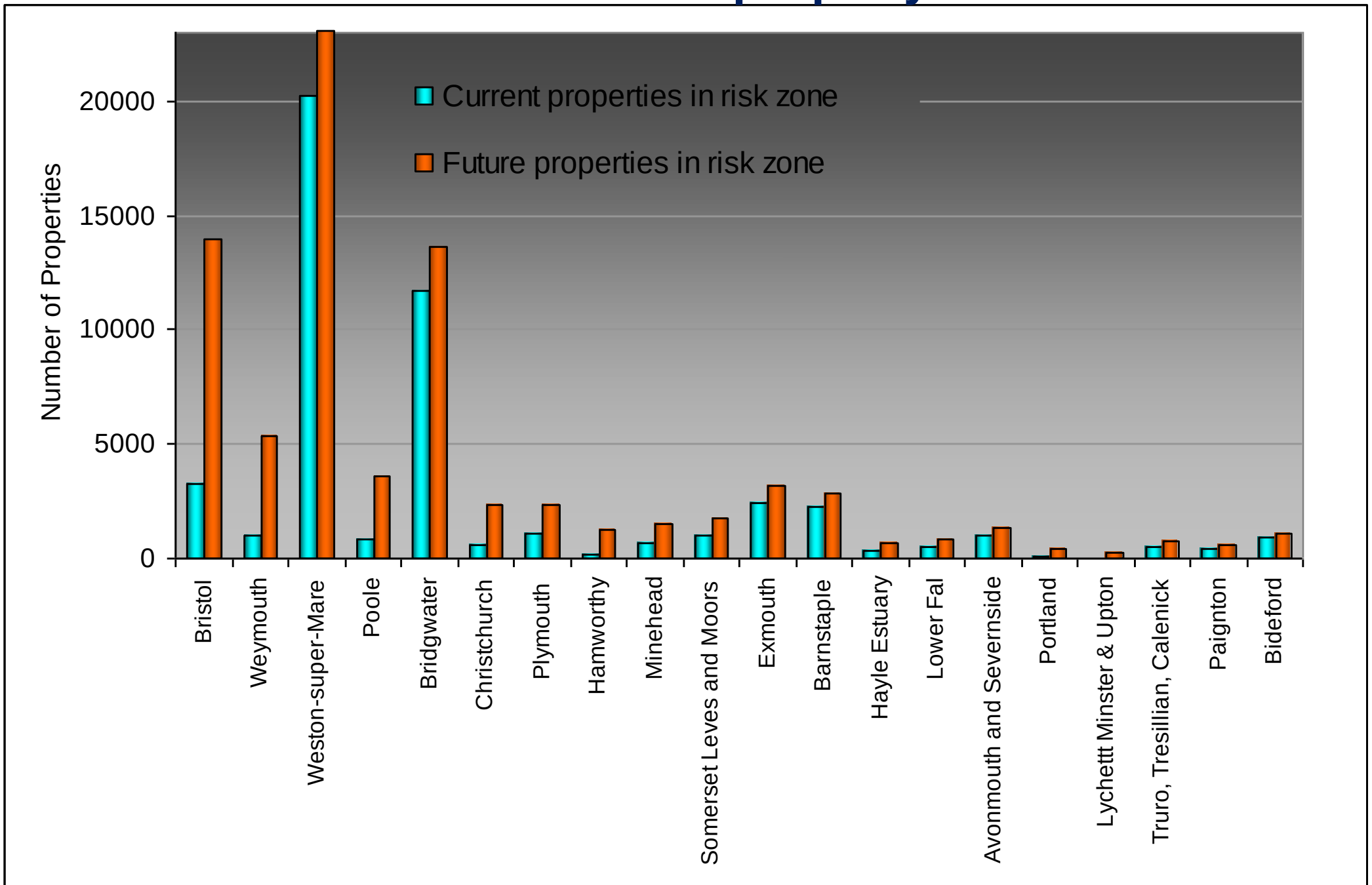
Current and Future property at risk

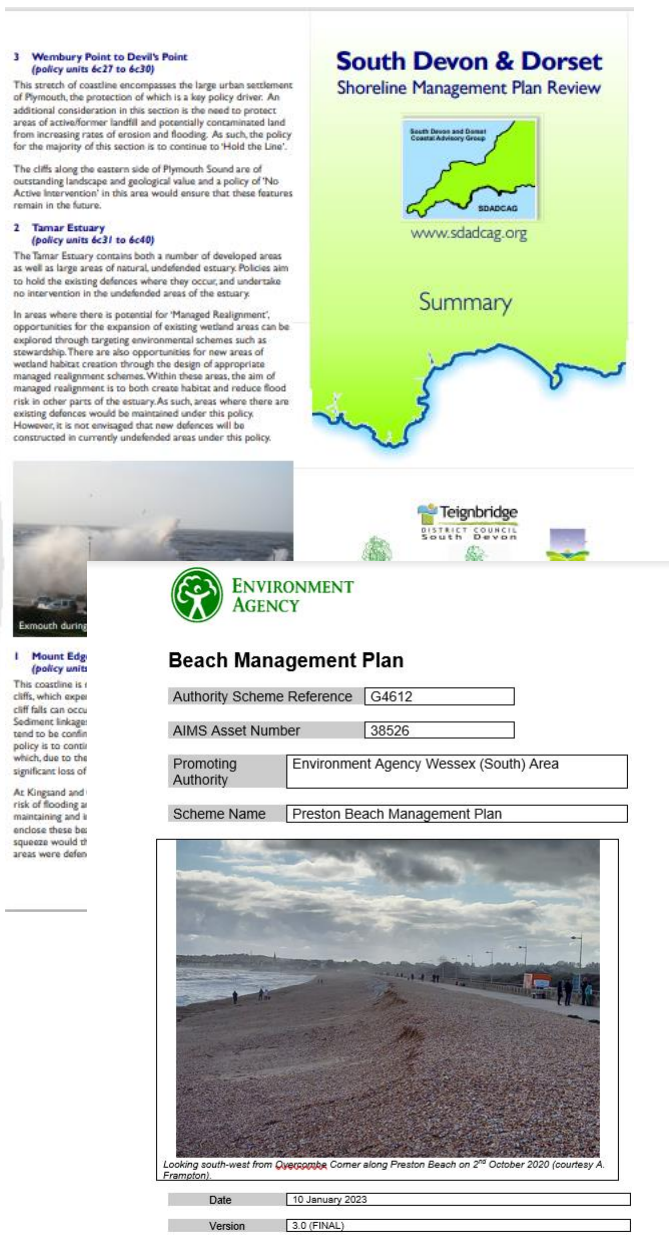


Managing the risks

- Responsibilities
  - EA
  - Local Authorities
  - Water Companies
  - IDBs
  - Others
- Coastal Groups
  - SECG
  - SWCG

- Maintenance
- Inspection
- Shoreline Management Plans
- Local Plan
- SFRA
- Severn Estuary Strategy
- Emergency Plans
- Beach Management Plans
- CCMAs
- DWMPs

Environment Agency

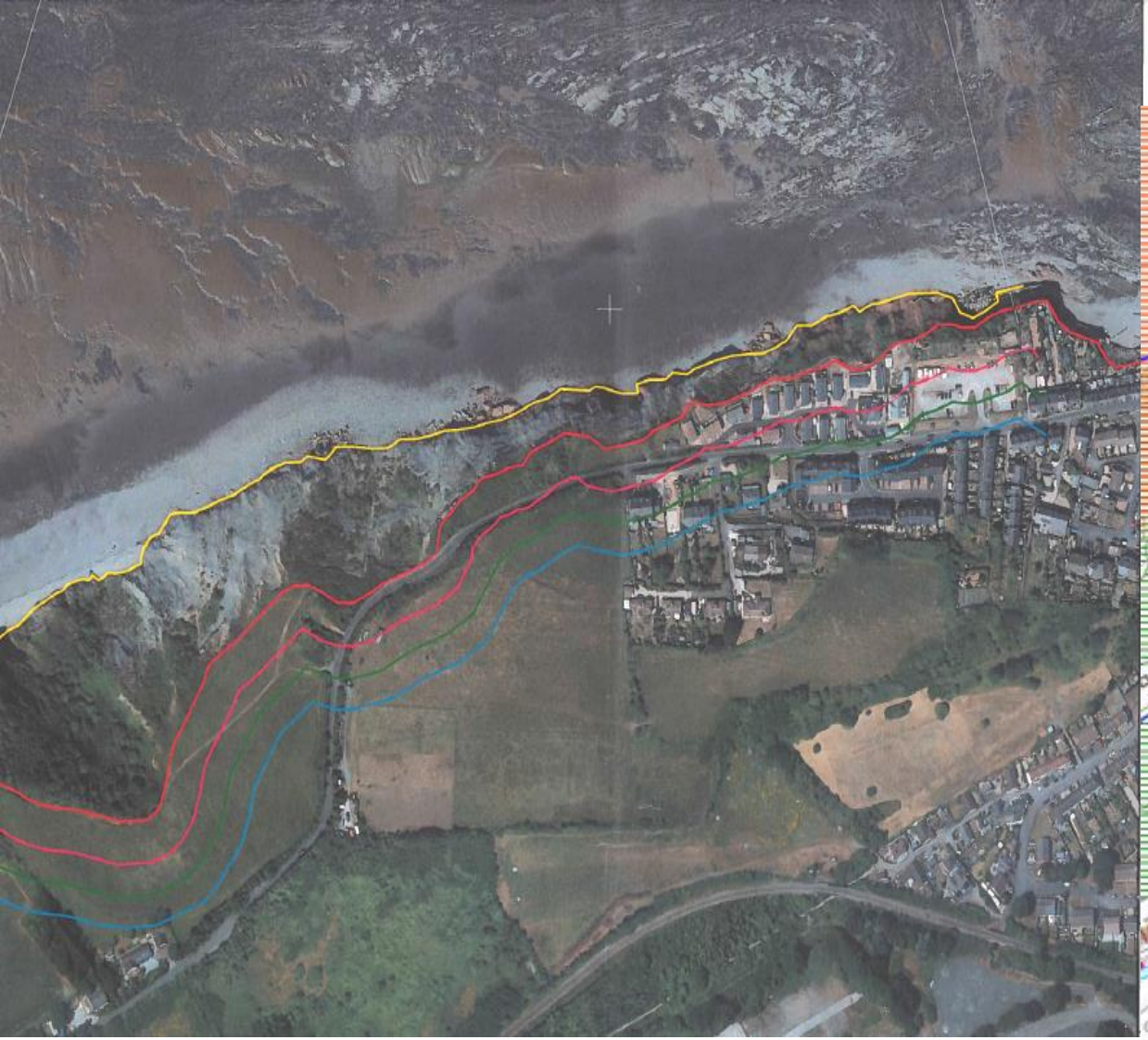


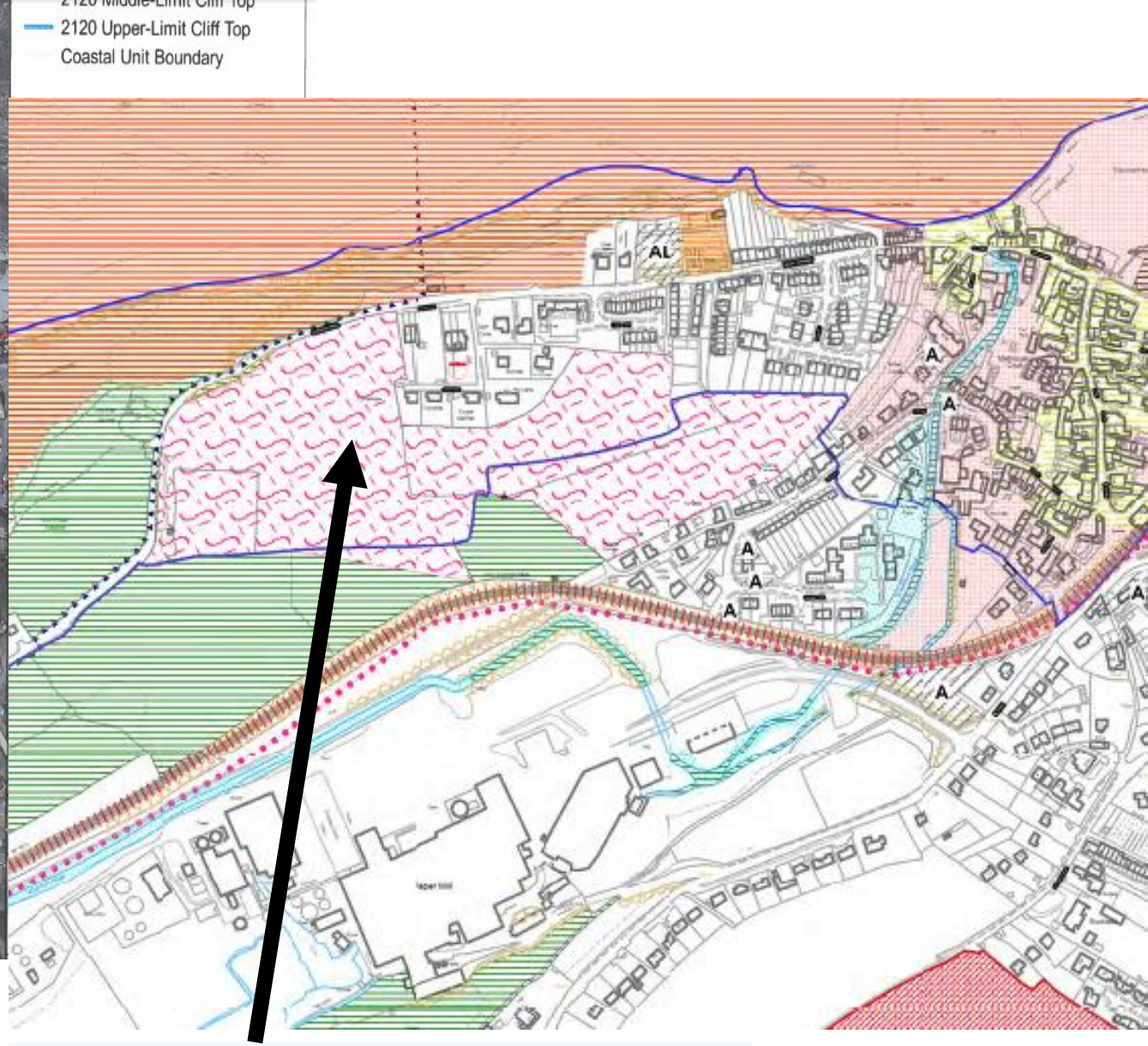
Watchet


Cleeve Hill
West St
Sea Spray Cottage
Pebbles Tavern
Watchet Museum
Marina
The Georgian House
Co-op Food - Watchet
Memorial Ground Playground
Wyndham House B&B
Watchet Boat Museum
Mill St
Whitehall
Towells Joe
South Rd
Beverley Dr
Honeysuckle Cottage
TierneyPrior

Environment Agency


ROAD CLOSED FOR
PUBLIC SAFETY DUE
TO UNSTABLE CLIFFS
NO UNAUTHORISED
ACCESS BEYOND
THIS POINT
0300 123 2224





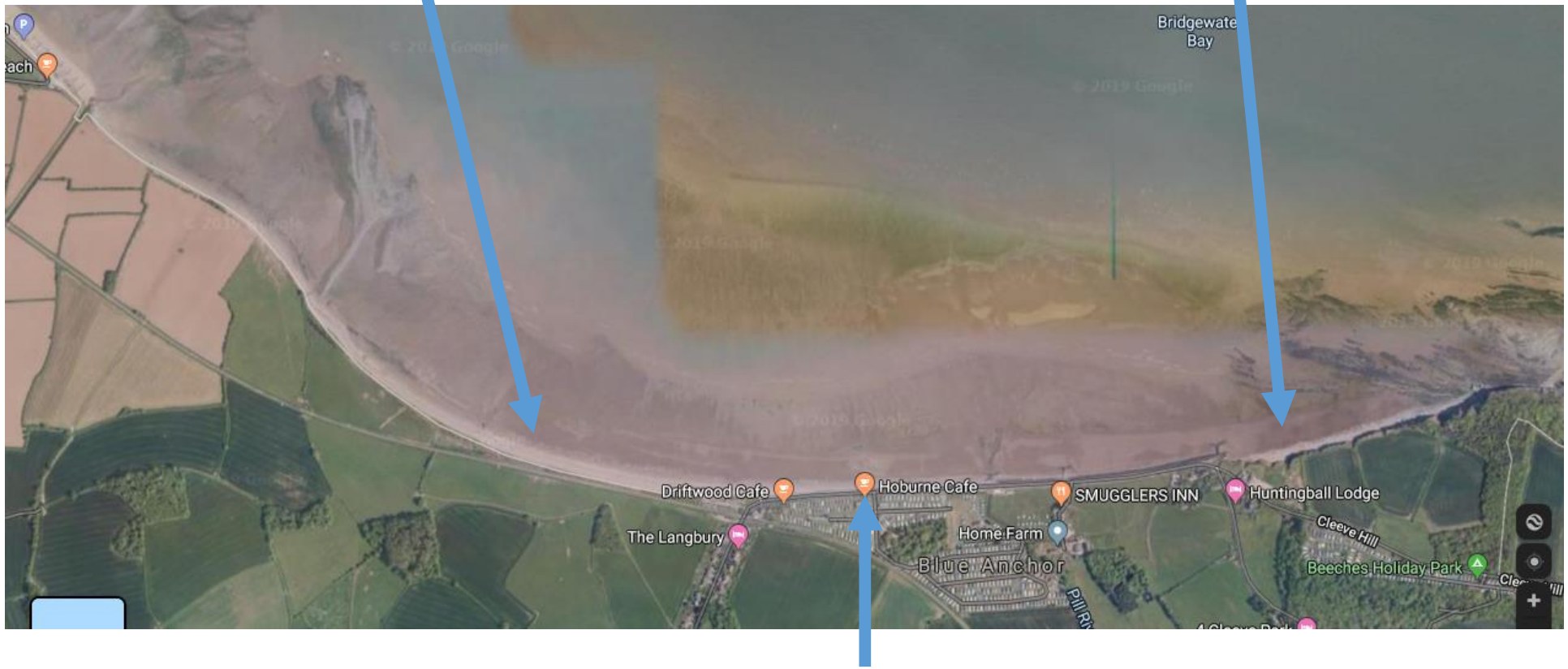
Long term Strategic Allocation (mixed use) Post 2026

THE tide breaks over the seafront at Blue Anchor. The road soon flooded.

Blue Anchor

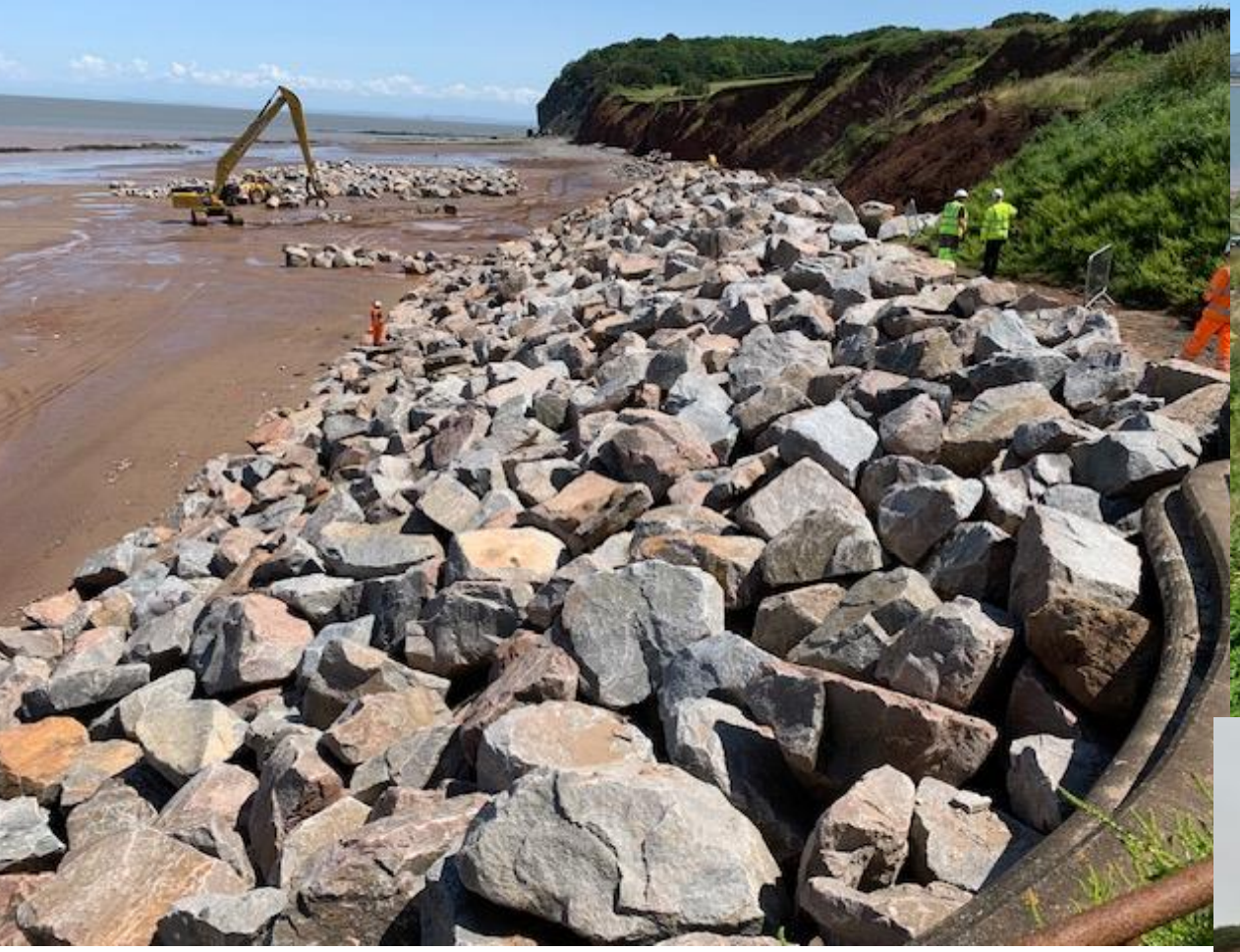
Coastline eroding back towards railway

Coastline eroding back into soft cliffs



Highway Sea Wall – hard structure stopping roll-back of coastline and preventing evolution of natural bay

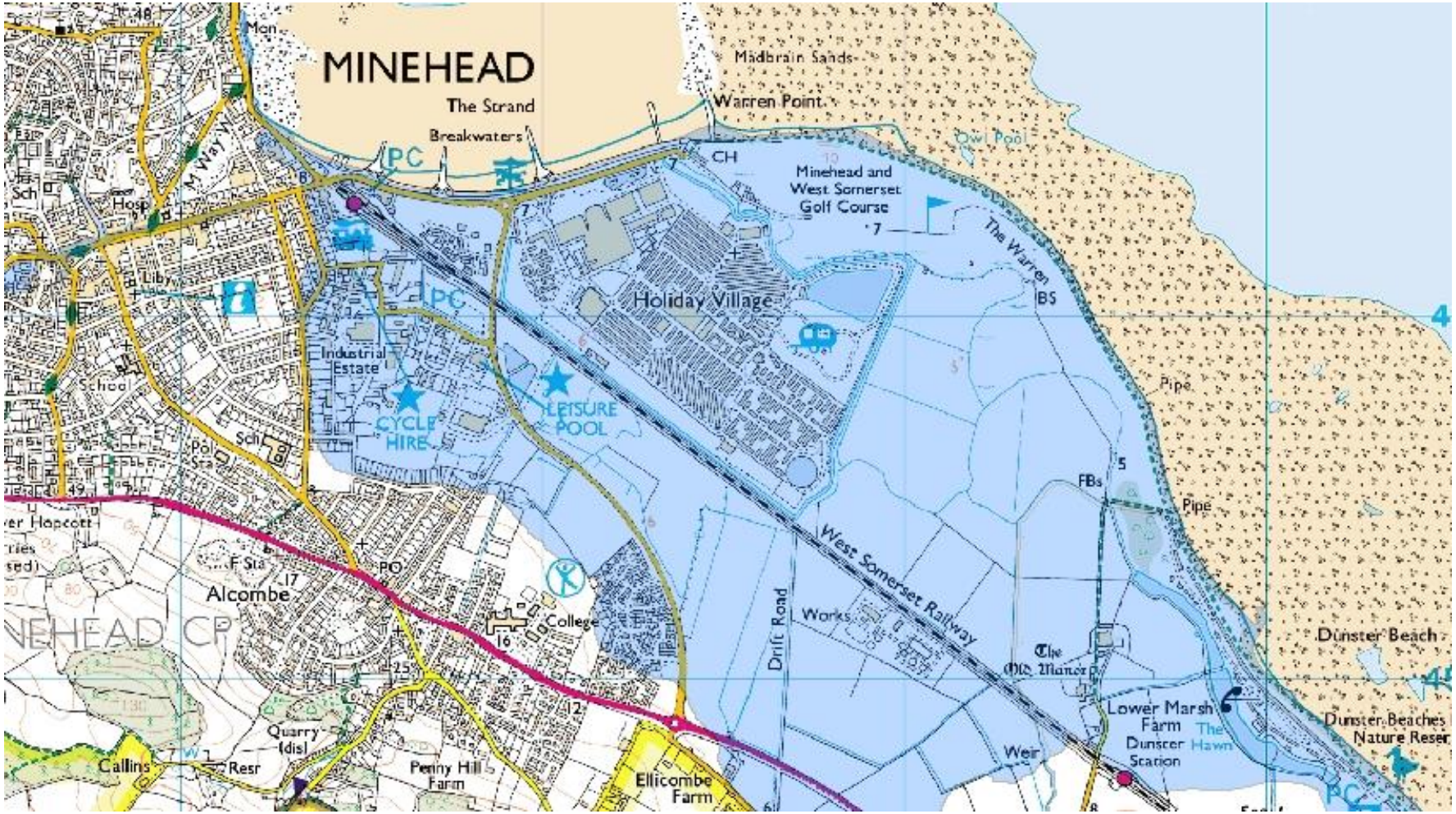
Coastal erosion, Blue Anchor, West Somerset



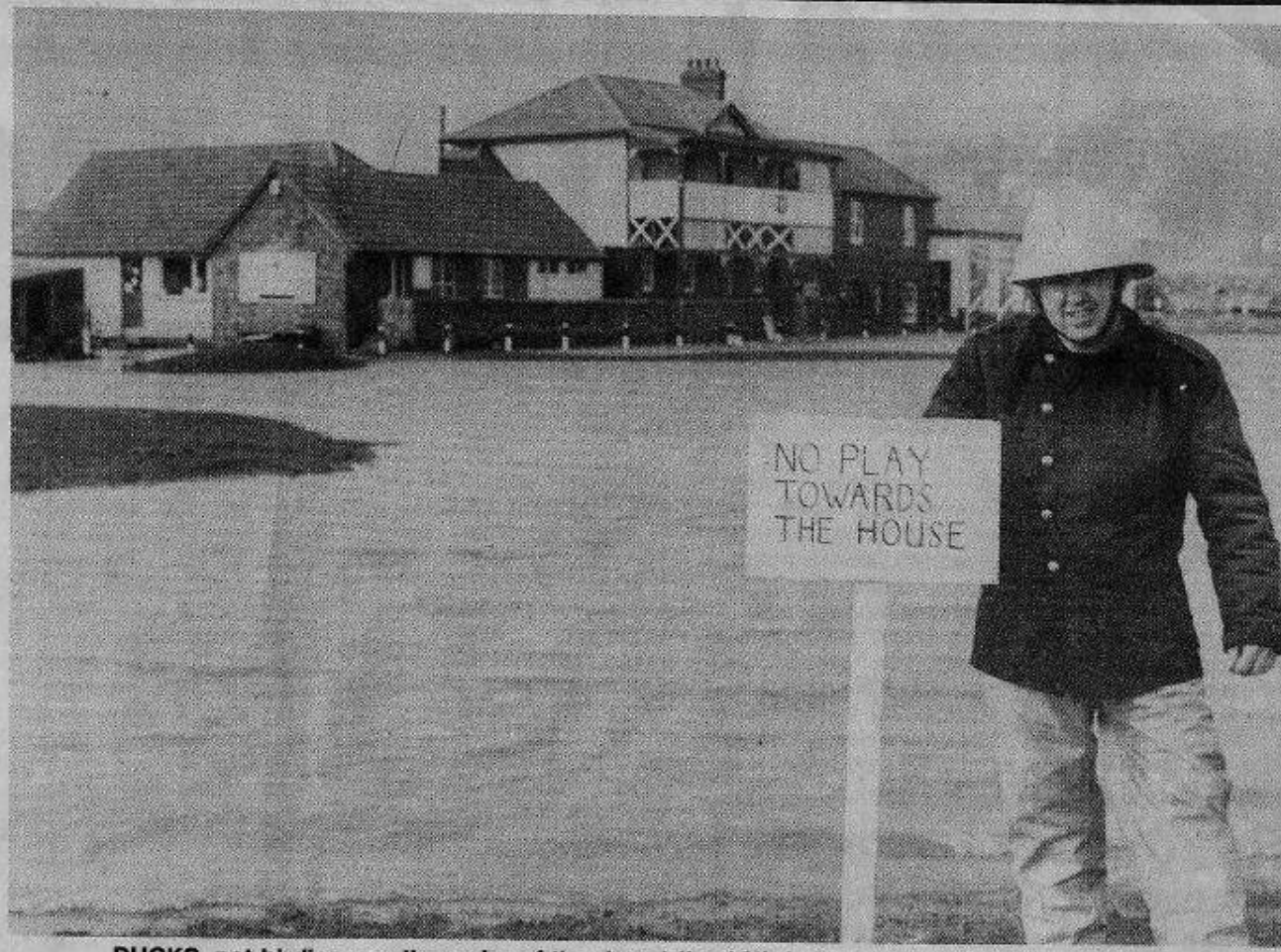
Dunster Beach

Environment Agency

Tidal flood Zone 3 – 634 properties + Butlins,
W Somerset Railway etc



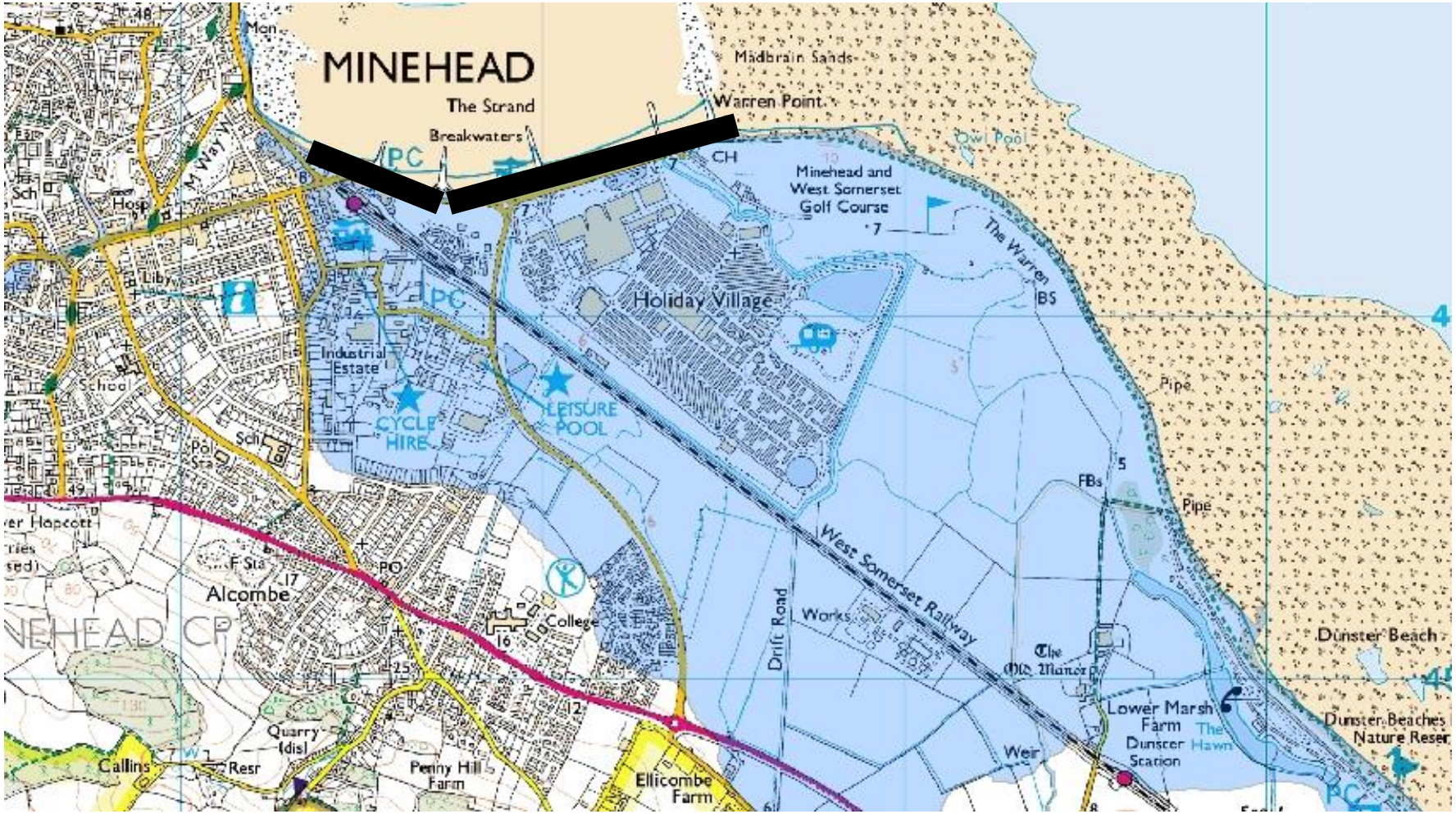
SHINGLE covers the road outside Minehead's Golf Club as the beach moved landwards.



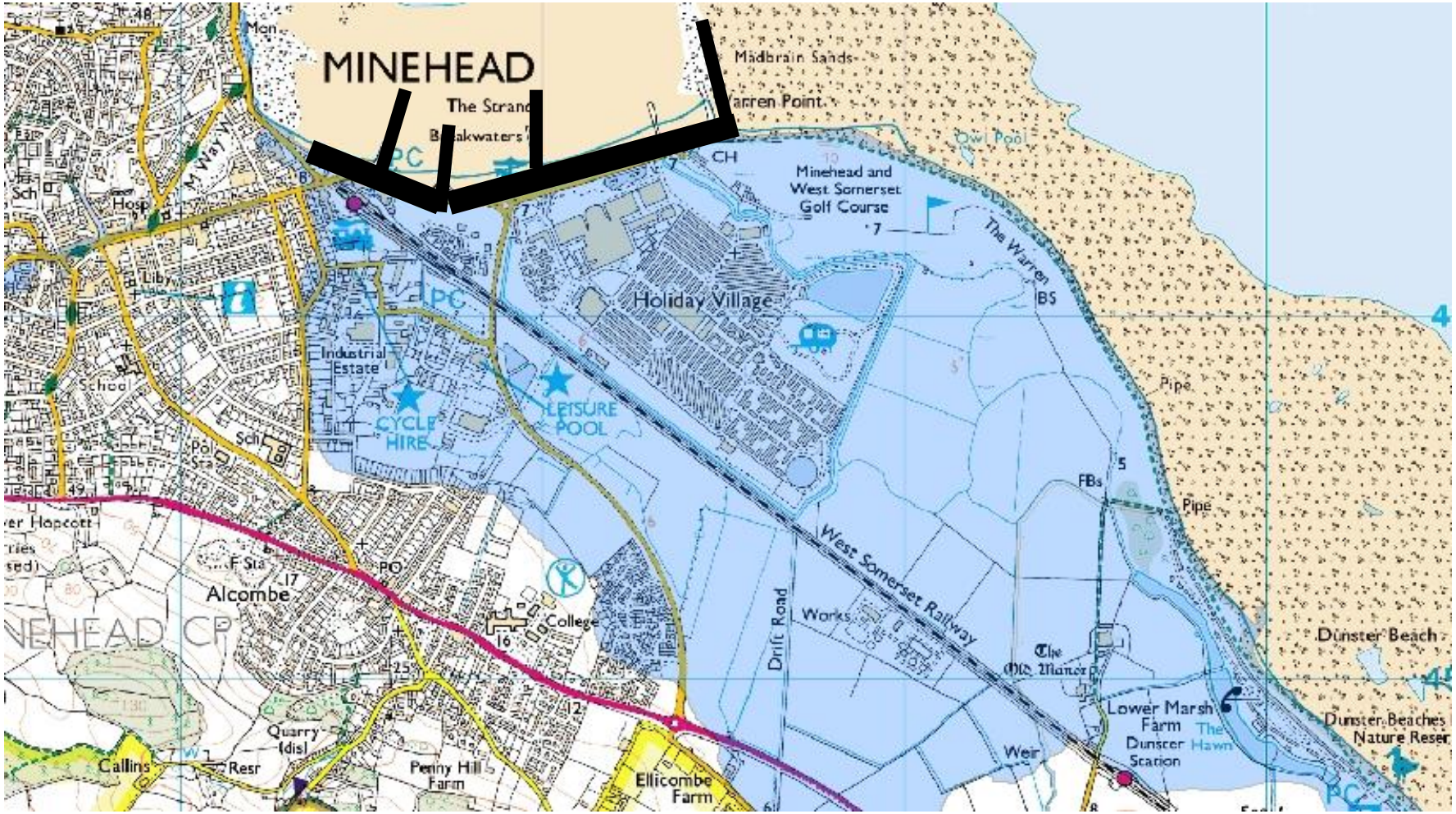
DUCKS, not birdies, are the order of the day at the 18th hole on the golf course at Minehead.

'Force of water smashed through everything'

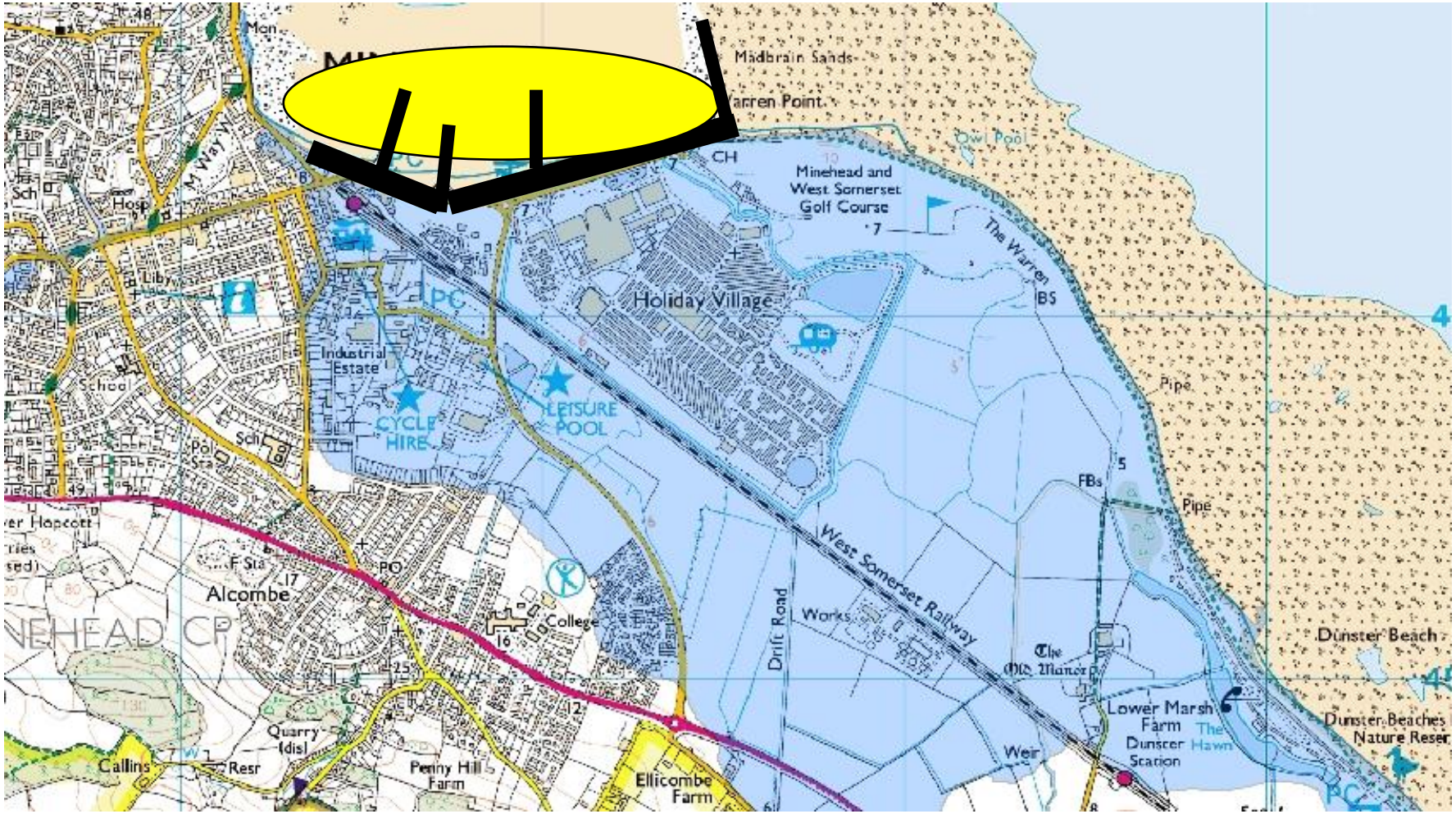
1997 Scheme – Wave Return Wall



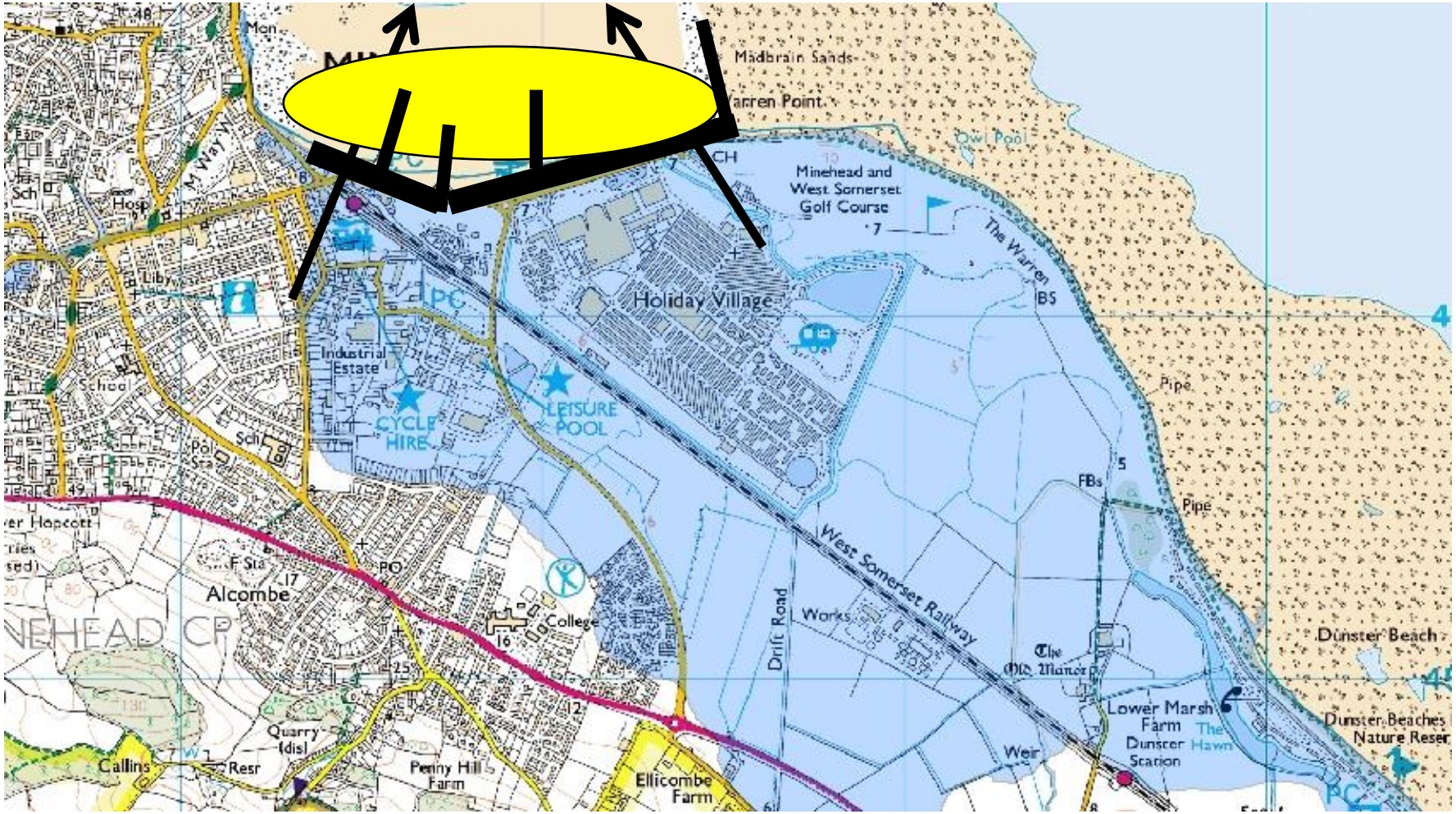
1997 Scheme - Groynes



1997 Scheme – Beach Recharge



1997 Scheme - Outfalls




CASE
CASE

Channel Coastal Observat ×

www.channelcoast.org/data_management/real_time_data/charts/?chart=74&tab=waves&start=1

programme
- background
- aims
- design
- survey techniques
- analysis
- survey schedule
- administration

general
- contact us
- FAQ
- vacancies
- links
- abbreviations
- education

national programmes
- seen a surveyor
- procurement

Minehead

Waves | Wave Spectra | 1Hz Data | Latest | Information | Statis

Display to date: Go Select today

Prev

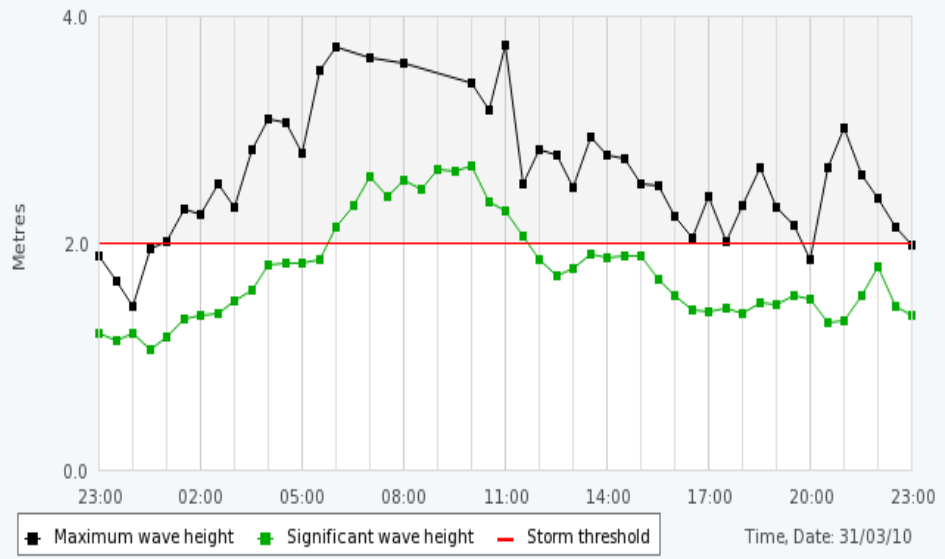
Range: Day

Latest Waves Data:

Time (GMT)	Latitude	Longitude	Wave Height (m)	Max Wave Height (m)	Tpeak (s)	Tz (s)	Mea
14-05-2015 11:00	51.22698	-3.46801	0.36	0.72	3.9	2.9	

Date	Highest Hs 2015
30-01	2.7m

Wave Height Turn off storm threshold



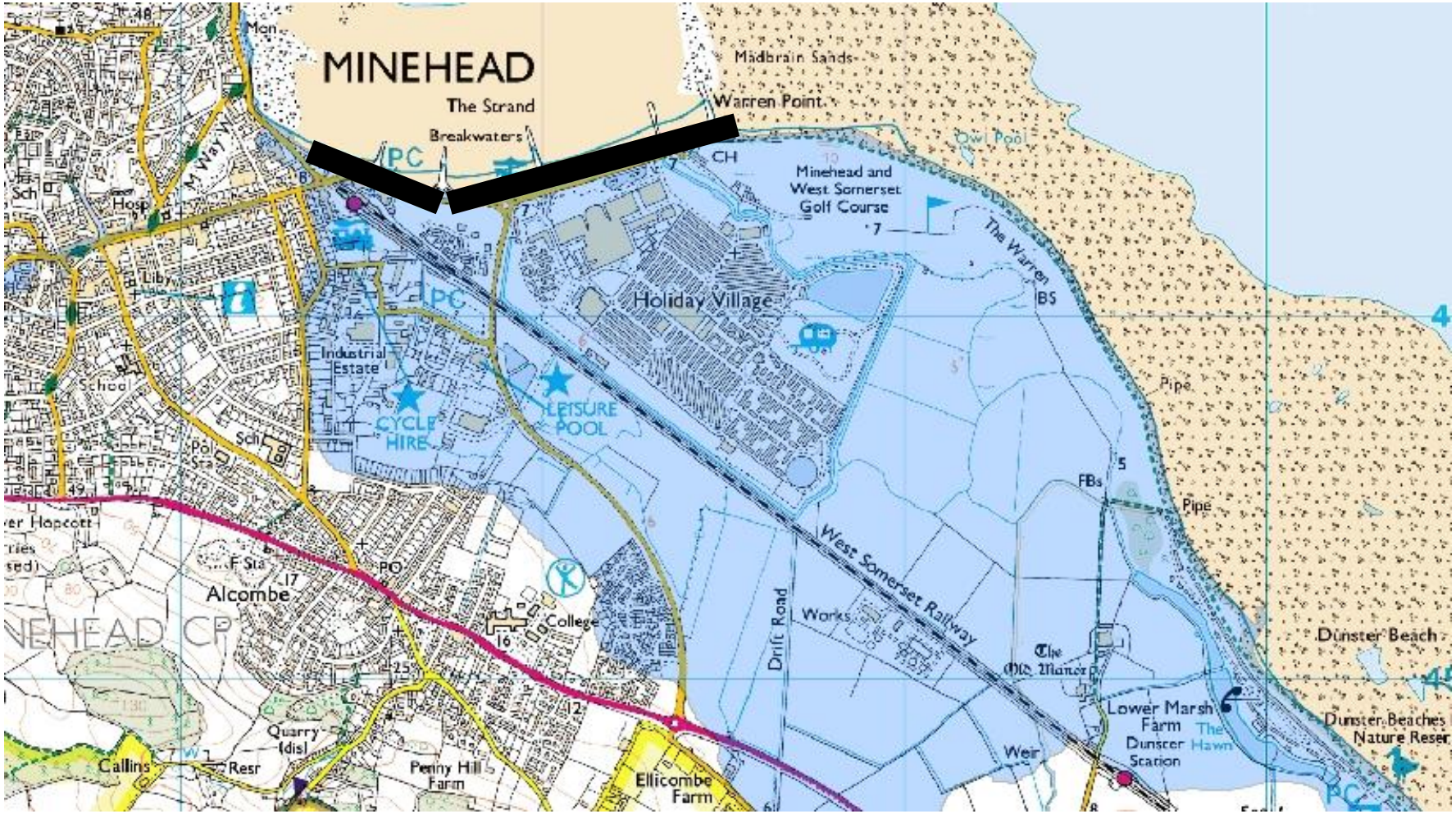
97%

14/05/2015

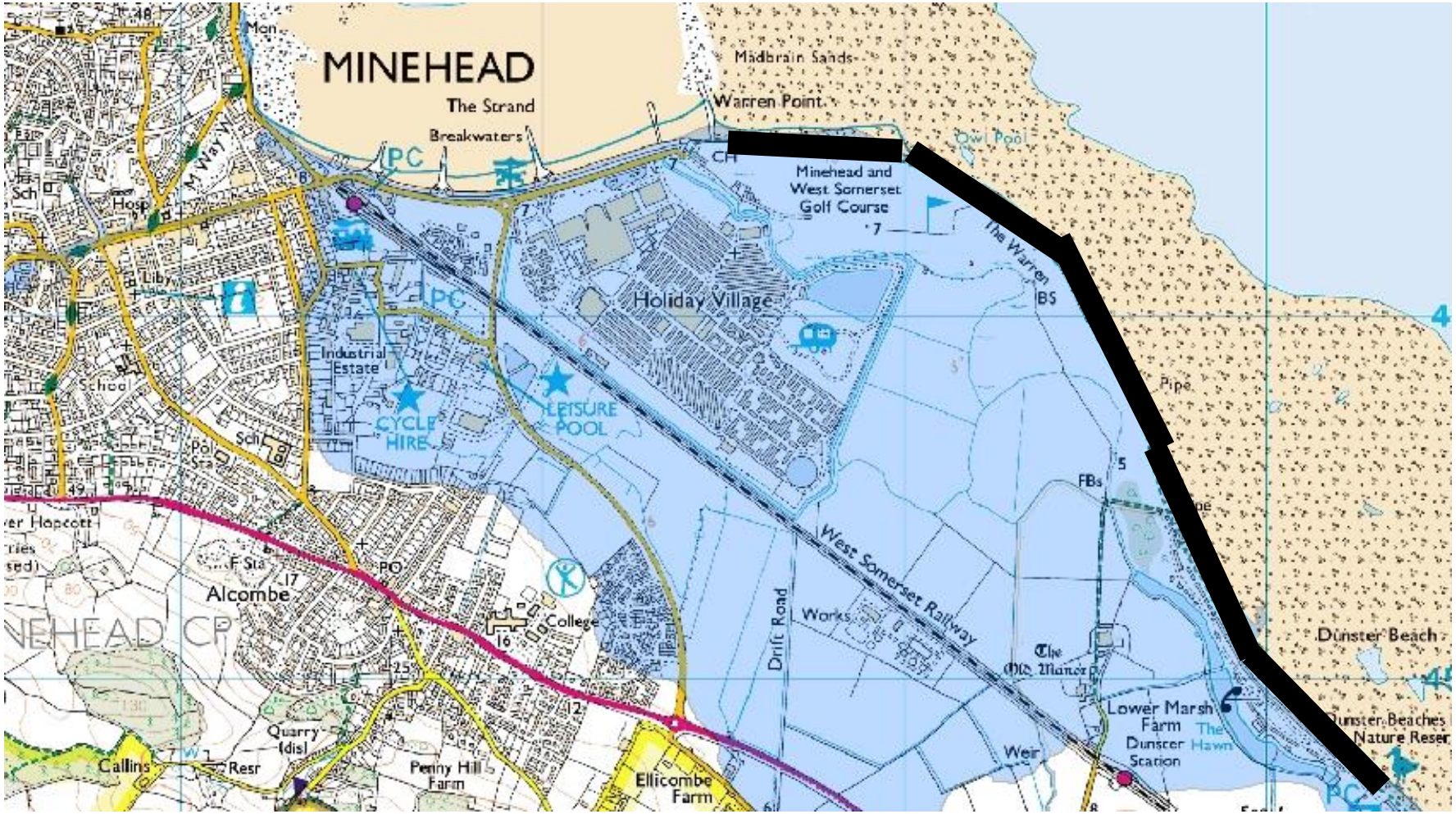
Emergency works 2011

Minehead Emergency Works 2023

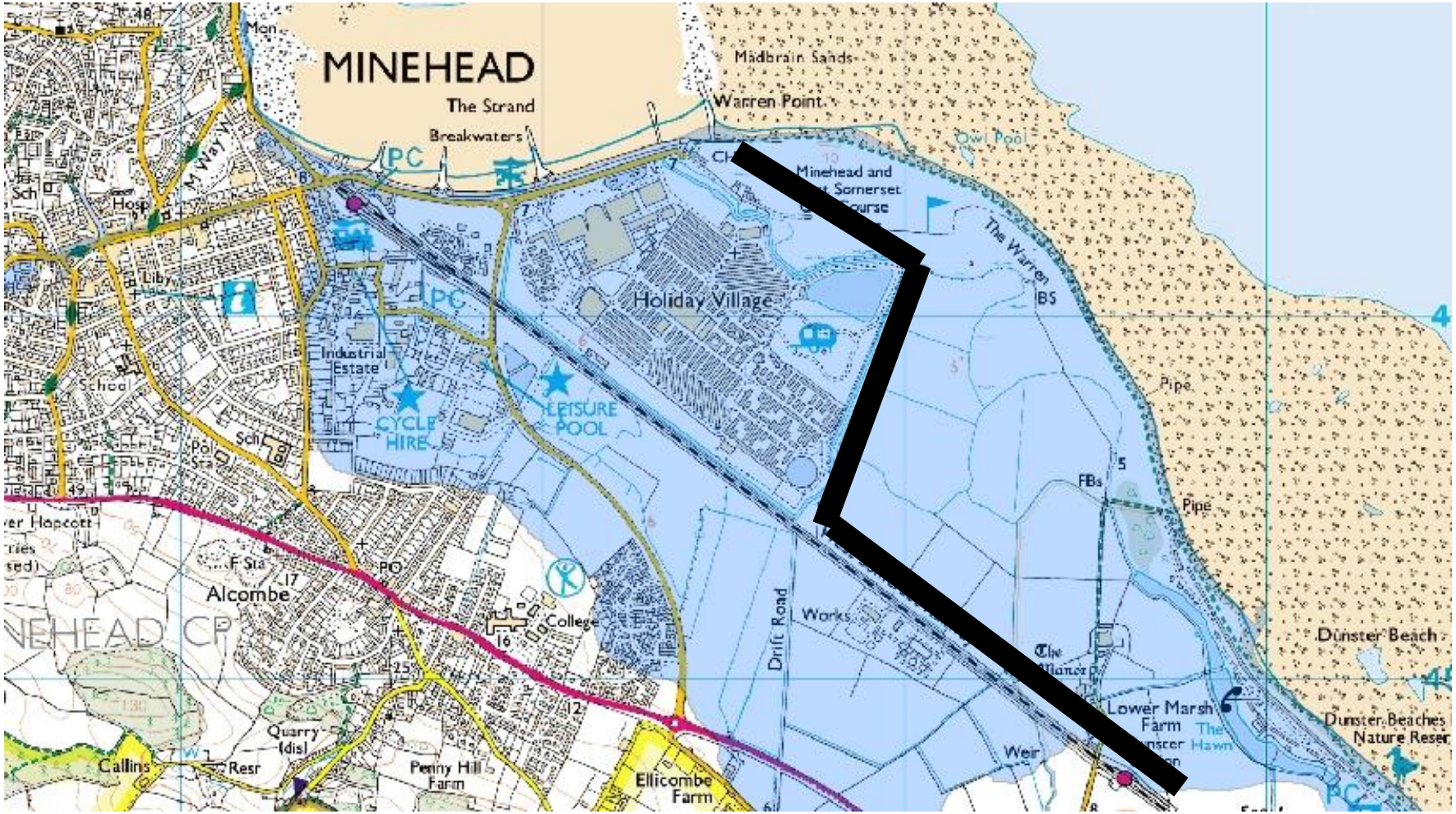
2115 – What would you do?

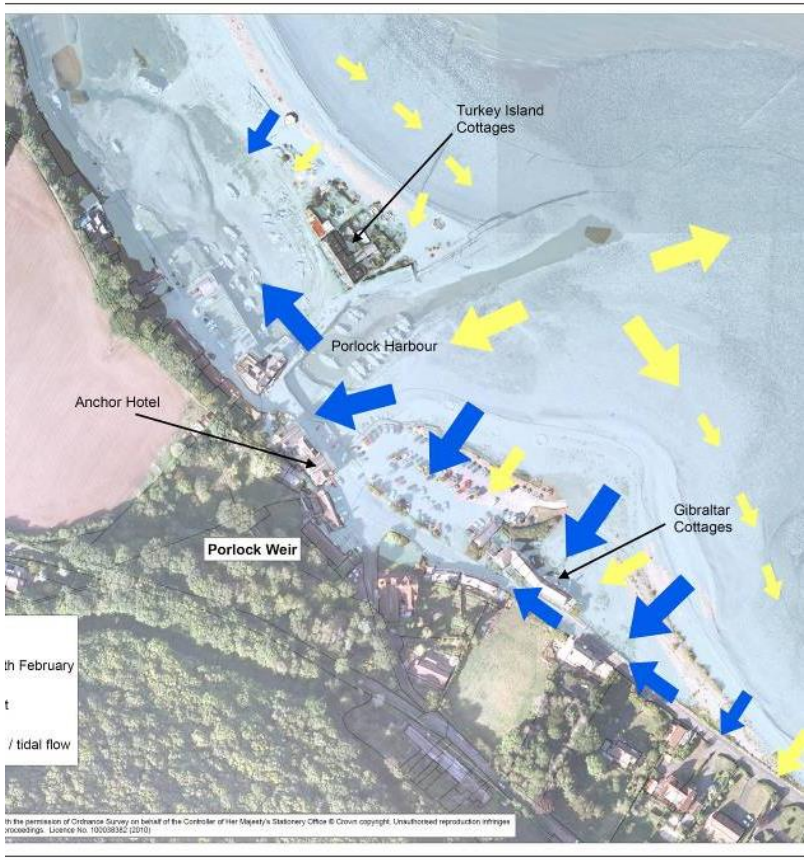


2115 – What would you do?



2115 – What would you do?





Porlock Weir

PORLOCK NEWS
THE Coastal
Friday 7th February 2014 www.somersetcoastalchange.org.uk

'DEVASTATION'

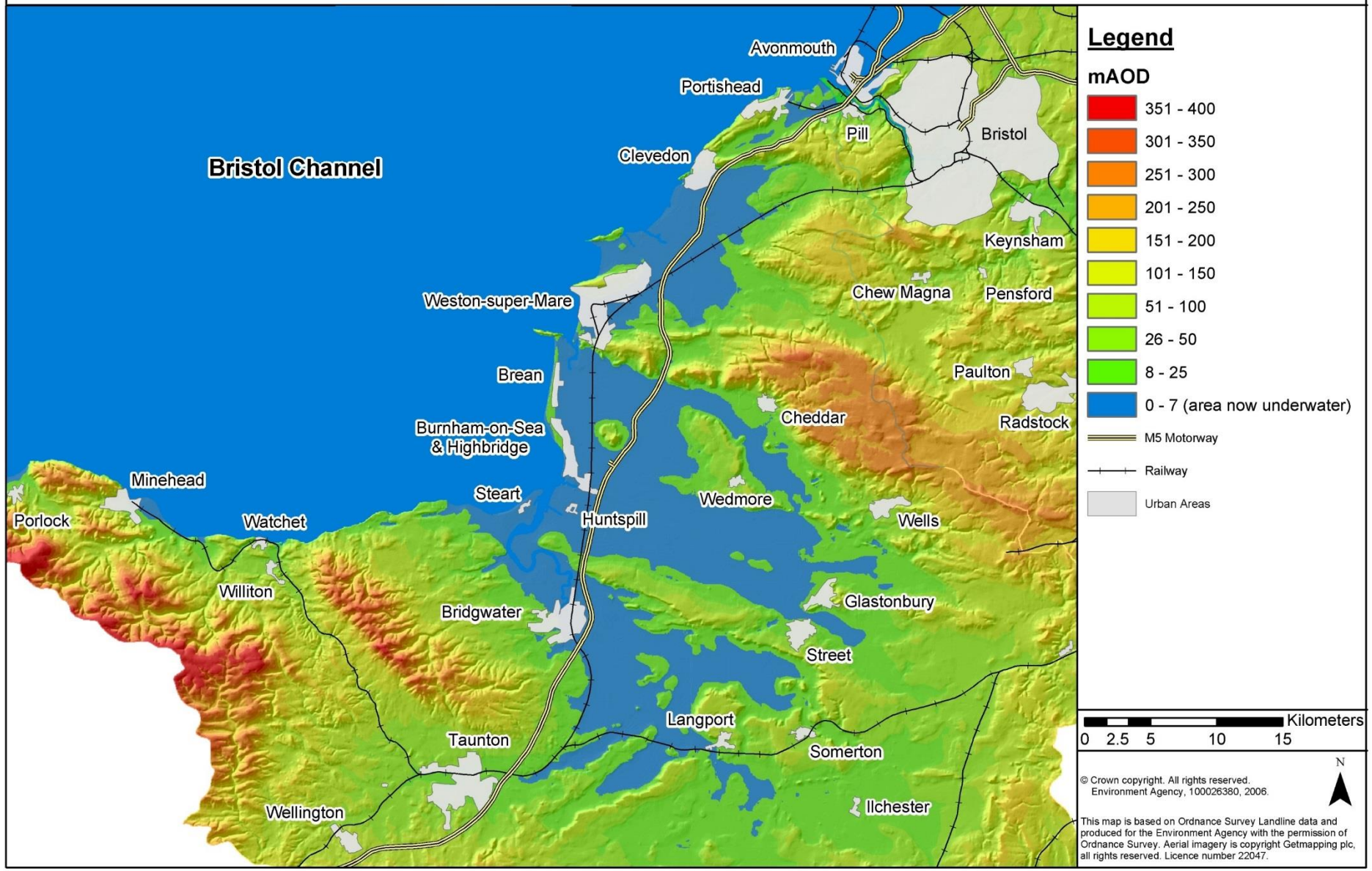
Porlock Weir hit by massive storm on Wednesday night

Reporter Paul Jones

The idyllic coastal setting that brings thousands of tourists to Porlock Weir each year turned into a scene of devastation on Wednesday night. A storm surge coincided with high tides and gale force winds to cause flooding and severe damage which has driven local people from their homes.

CONTINUED next page

Somerset: Unprotected by Sea Defences



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