

## Westover, Milford-on-Sea Urgent Coast Protection Works

### The Problem

Part of a 1960's concrete and masonry seawall has failed on the Milford-on-Sea coastal frontage. Since the 4 November 2019 the site has experienced a continuous period of storms and damaging waves, that have impacted significantly on the coastline. The events include Storm Ciara on 3 February 2020, Storm Dennis on 13 February 2020 and Storm Ellen on 21 August 2020. The effect of the storms has been to significantly erode the beach and allow waves to overtop the seawall. The seawall has collapsed because the foundations have been undermined. The large waves have demolished sections and are continuing to erode the cliffs behind. From wave buoys that are out in the bay, the recordings have shown over the last 17 years that of the 50 biggest storms, Milford-on-Sea experienced 8 of these through the 2019/20 winter period.

### Failure

The damage is contained in three main sections:

Area 1: Western Section 120m completely failed. Movement was first detected on 4 February 2020 with a total collapse by 23/24 February 2020.

Area 2: Central Section 70m in front of the beach huts. Movement was first detected 25 February 2020. The promenade material has been lost through the seawall cracks. The subsequent void behind the wall allowed two beach huts to topple forward. The wall has moved seaward by approximately 1m. The timber groynes have failed as the wall moves out and is pushing the groynes over. Some piles and planks have even shattered under the pressure. Other groynes in the area have fallen over due to the loss of beach. As the beach level has dropped more of the pile becomes exposed. Less length in the ground means less stability, so the pile then gives way and falls over.

Area 3: Eastern Section 110m. This section is currently not showing any sign of movement in the wall. The sheet piles at the wall foundation are beginning to show signs of movement, the failure length of Area 2 extending into the eastern section decreasing the length of Area 3. The timber groynes have fared better in this location as this is the last area to have lost significant amounts of beach. As the beach is lost from here, during the storms, the groynes become increasingly unstable.



The loss of the beach, groynes and the seawall collapse means there is a considerable and significant risk to property. The emergency works are needed as the White House development has been identified as being at particularly high risk of erosion, because of continued progressive failure of the seawall along Area 3. This property is a Grade II listed building that dates back to 1903.

#### **Timeline of Events on the Western Seawall:**

- Significant damage occurred resulting in beach lowering and waves overtopping the seawall during a storm on 2 November 2019
- Further beach losses during the early and middle parts of December 2019 due to ongoing stormy weather
- Loss of a section of a groyne on 14 December 2019
- By January 2020, the beach had fallen to very low level with sheet piling exposed by 2m at the toe of the seawall
- The toe of the seawall failed on 2 February 2020 and a second timber groyne also failed
- The seawall was constantly under substantial wave attack during Storms Ciara, on 8 February and Storm Dennis on 15 February 2020
- February 2020, the seawall sheet piling becomes unstable with beach material drawn from below the seawall. The sheet piles became detached from the toe, the seawall cracks and moves forward
- Western section of seawall (95m) eventually collapses (23 February 2020)

#### **Timeline of Events on the Eastern Seawall:**

- In early January a small hole appeared in the promenade, and the area was fenced off near the first beach hut
- Storm Dennis saw the hole size increase only fractionally
- By the very end of February significant cracks had appeared in the seawall and a lot of the promenade material had gone
- One beach hut had fallen into the void and two others were teetering on the edge
- A large crack appeared at the end of the beach huts and the cordon area was extended to include a large section of the coastal path and open space as a void appeared around the hole
- Mid-March saw the voids increase in size and combine, causing further movement of the seawall as the supporting soil was lost
- Over the summer months the ground behind the seawall continued to be lost, albeit slowly
- The Storms Ellen (19-20 August 2020) and Francis (24-25 August 2020) finally collapsed the most vulnerable section of seawall and eroded much of the slope behind
- The seawall here separated at a joint leaving the top section lying over behind the wall and the base section still in place

## Images of The Storms Causing the Final Failure



Storm Ciara – 10 February 2020



Storm Dennis – 24 February 2020

## Images of the Progress of the Damage



Image taken 17 February 2020



Image taken 27 February 2020



27 February 2020 and 22 May 2020 - Beach huts falling forwards into the void in Area 2.



Early March 2020 - Cracks appear in seawall in Area 2.

### **Coastal Path**

To date the erosion has led to the cliffs retreating by several metres which has resulted in loss of support to the cliff path, which is now closed for safety reasons. As the seawall continues to fail, the erosion of the cliffs will progress landward and to the east.

### **Urgent Works**

This is Phase-1 and will consist of the construction of a rock revetment across Areas 2 & 3. This effectively replaces the function of a beach by adding weight to the toe of the seawall to prevent further failure and will also reduce wave impact on the structure, along with reducing wave overtopping that would otherwise lead to further failure this winter. These works are an effort to slow the failure of the wall. A long-term solution will, however, need to be developed by the Council in partnership with landowners.

As of late August 2020, works are now underway with contractor Earlcoate, employed to undertake the construction of the defence. The revetment will join the existing revetment fronting the White House, extending 180m to the west. This will be constructed using around 9,000 tonne of rock armourstone, with the majority being Larvik rock from a Norwegian Quarry. This is the same rock that was used to construct the revetment and rock breakwater at Hurst Spit.

The rock revetment construction phase is due to commence early to mid-September. The rock will be transported from Norway by ship, the Hagland Saga. This will dock and offload onto a specially designated quay in Southampton. Once the ship has departed to collect the next load, a barge will moor alongside and be loaded. This barge will be towed to the site by a tug and the rock will then be offloaded during high tide to enable the contractor to collect and place during the low tide.

As the works are located in the intertidal zone, they will need to coincide with either low or high water (depending on the type operation), which could be any time of the day or night. It is likely

that during these works, there will be times when the operations are unavoidably noisy. Efforts will, therefore, be made to keep noise to a minimum. Where possible information will be posted on these pages detailing if and when noisy operations are likely to be undertaken during the night, so that local residents know what is going on, what to expect and when.

In order for the machinery to get to the site of the revetment a haul road is having to be built along a 150m length of the promenade from Hordle Cliff through to Westover. This road is being constructed using 1,600 tonne of local Portland limestone. It is being delivered to site by road.

### **Finance**

The cost of the Urgent Works is estimated at around £1.5M. Due to the urgent nature, NFDC has allocated £1.5M to undertake Phase-1. The Council would then seek to recover the cost of these urgent works through the following:

- 1 In year funding through the Environment Agency (via business case development).
- 2 Through a Local Levy Bid by applying to the Southern Regional Flood and Coastal Committee for a contribution.
- 3 Through a contribution from NFDC.

### **Permissive Powers**

As the Coast Protection Authority, the Council can act through the exercising of its discretionary powers under the Coast Protection Act. The Act does not, as a matter of law, impose any duties on a local authority to undertake repairs - recognising that that would be an unsustainable financial burden, falling ultimately on the general taxpayer. Landowners, when acquiring land close to the coast, need to consider the possible and potential consequences of the forces of nature on their land. In recent times, this has been evidenced by many examples of coastal erosion around the coast of Britain with the loss of properties.

The Council does have discretion to undertake urgent works and to try and seek some retrospective funding from government. However, that funding is understandably limited and is absolutely not guaranteed. The risk to the White House that has been highlighted with the Jacob's Report has resulted in the Council agreeing to put in place limited urgent works to protect the development for the forthcoming winter period. This, in itself, is extremely challenging within the available timescale and the preparation and development work required to get a contractor on site. The decision to undertake these urgent works cannot and should not, be seen as a precedent.

### **Landowner**

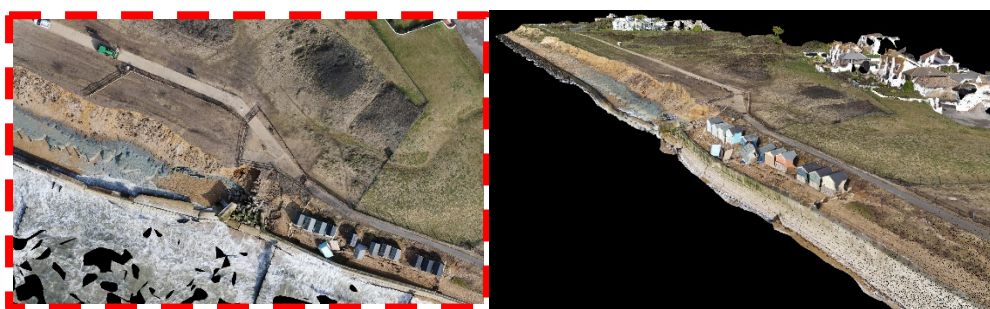
At this location there is a complicated land ownership issue. Part of the site is privately owned, and part is on unregistered land.

## Timetable

Urgent construction of the rock revetment is due to commence early September 2020.

## Monitoring of the Seawall

Access to the site is very challenging, particularly to the lower beach areas. The site has been inspected weekly by a NFDC Engineer. Notes and images have helped to record the condition of the seawall, the rate of failure and the erosion of the cliffs in the area. In order to obtain empirical data, NFDC regularly monitor the seawall collecting information by various means such as a fixed wing drone aircraft. This enables the changes to be quantified and will enable decisions based on the data collected.



## The Future after the Urgent Works

It is recognised that following the completion of Phase 1 (Urgent Works) there is a need to complete a full works scheme that provides the required protection across the whole frontage (over and above the urgent works). This is likely to take the form of a rock structure all along the damaged section, along with associated ancillary works.

In order to develop a full works scheme, a bid has been made to the Southern Regional Flood and Coastal Committee (SRFCC). This will allow NFDC to undertake preliminary work to advance the necessary applications to undertake construction of Phase 2. Part of the application process is the evidence of the cost of the scheme in relation to the benefits that are achieved. Funding contributions will be required from those who benefit from the works. This is a core principal of the national funding policy and without these funding contributions, a works scheme will not take place.

Clearly key beneficiaries will be those property owners whose properties are better protected by any works scheme and they will be required to contribute. This will include properties from Shingles Bank through to the White House. During the development of the full scheme there will be further consideration as to what other properties can reasonably be said to benefit. A key outcome of Bid 2 will include: -

- Undertaking a broader economic footprint study for the area at risk to identify all of the benefits of any future scheme alongside identifying beneficiaries and wider funding partners.

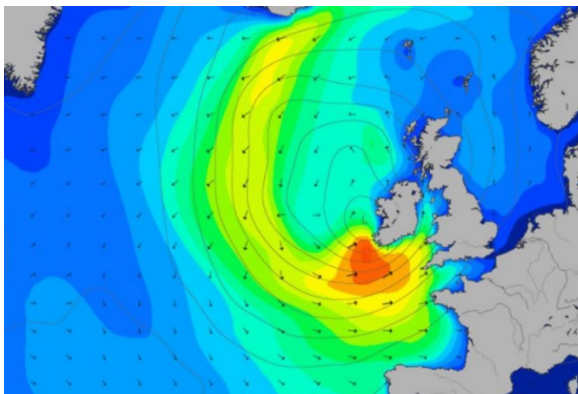
- Develop a funding strategy to identify and assist in securing funding for scheme delivery.

The Secretary of State has also identified that “Under the Partnership Funding policy, the amount any scheme receives depends on the number of households protected, the damages prevented and any other benefits a scheme will bring. Where the Government grant is insufficient to cover the full cost, a scheme can proceed if local contributions can be found. Funding can be secured from a range of sources, such as a local levy to which councils contribute, and directly from local beneficiaries.”

What cannot be guaranteed at this point, is the success of this bid or future bids to undertake the full works scheme.

### **Recent Storms – Ellen & Frances: August 2020**

Storm Ellen strengthened into a 900-mile-wide "weather bomb".



The Met Office said: “A 'weather bomb' has "explosive cyclogenesis" it is not a perfect meteorological term but is defined as an intense low-pressure system with a central pressure that falls 24 millibars in a 24-hour period. Storm Ellen is currently bringing some unseasonably windy weather across the west with Wales having seen the strongest winds so far.”

Severe Weather Europe (SWE) warns most of Ireland and Northern Ireland, Wales, west-southwest England, southern Scotland, and north-western France face threats of severe storms, capable of producing severe damaging winds, torrential rainfall, tornadoes, and marginal hail.

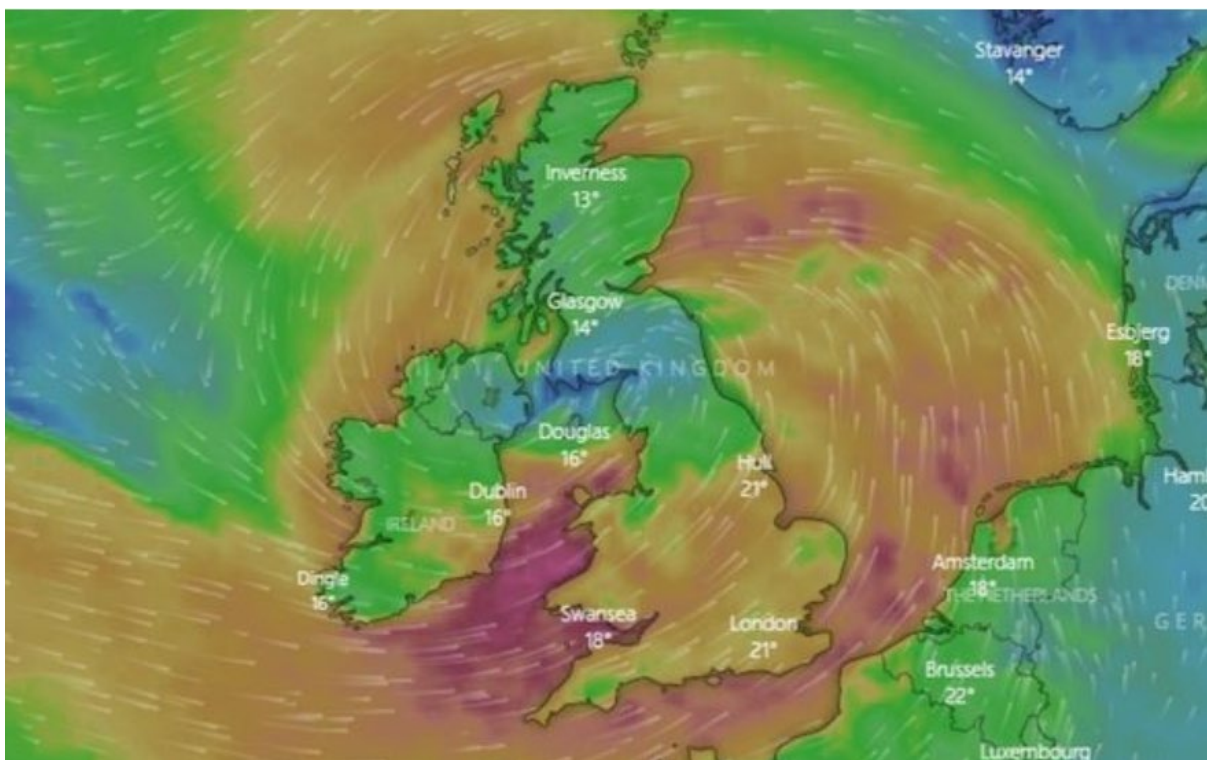
Storm Ellen was formed from a "decayed tropical cyclone" and other storm systems and was named by Met Eireann on Tuesday.

Deputy Chief Meteorologist, Matthew Lehnert said: “Along with the sometimes-heavy rain, strong winds have the potential to cause impacts that are not common in August.”



Day after Storm Ellen – 21 August 2020

Storm Francis is the latest storm to be named by the Met Office, following the tails of Storm Ellen earlier this month.



The Met Office warned maximum wind gusts of 70mph could be possible in some regions, and that Francis could spark up to 90mm of rainfall in some areas.

Chief Meteorologist Steve Ramsdale, said: “Storm Francis arrived early on Tuesday morning, bringing another spell of wet and windy weather for the UK over the next few days. Wind speeds this strong are unusual during August. A number of severe weather warnings have been issued and these warnings can be updated regularly. The Met Office also forecast a rainy day on Friday, and wind in the east later on. Looking ahead into next week, overall conditions look to turn more unsettled with spells of rain and strong winds, most likely across southern areas.”





Day after Storm Francis – 24 August 2020

**Glossary**

Funding sources:

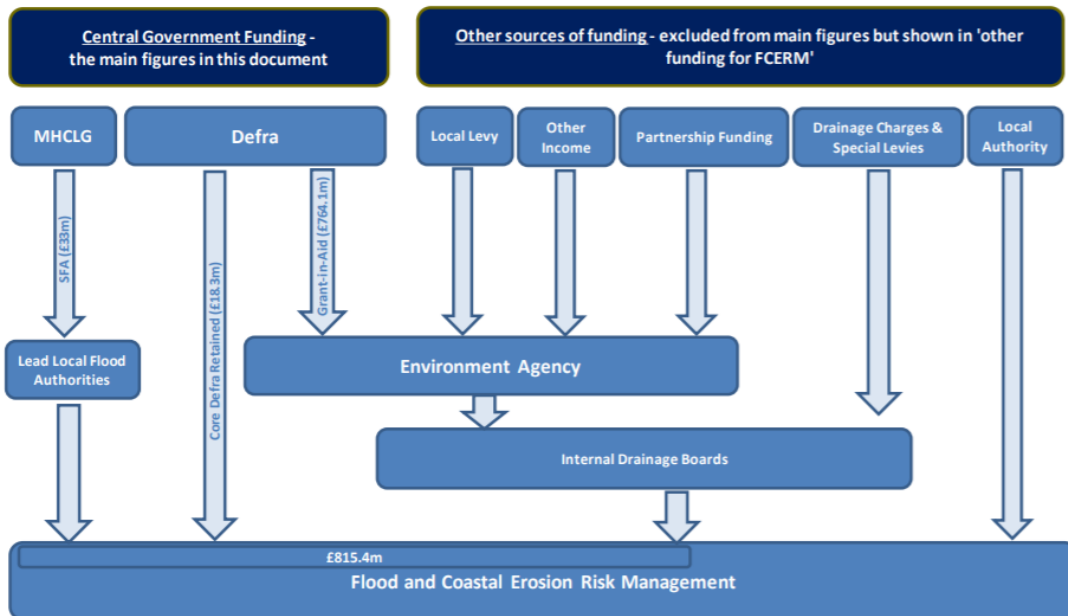
Taken from

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/877997/FCERM\\_Funding\\_Statistics\\_Publication\\_September\\_2019\\_accessv2.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/877997/FCERM_Funding_Statistics_Publication_September_2019_accessv2.pdf)

## Explanation of funding sources

**Figure 1 – Diagram of Flood and Coastal Erosion Risk Management funding**

The figures included in this diagram are the 2019/20 budget allocations, as per Table 1 on page 4.



Local Levy is raised through the Council Tax system. The levy on local authorities is administered by the Environment Agency. The Regional Flood and Coastal Committee are the body that approve levy expenditure. The RFCC's ensure there are coherent plans for managing flood and coastal erosion risks across the catchments and shorelines, encourage efficient, targeted and risk-based investment and provide a link between the EA, Lead Local Flood Authorities (LLFA's) and other relevant bodies in the region.

## Wave Buoy

[https://www.channelcoast.org/data\\_management/real\\_time\\_data/charts/?chart=73&tab=info&disp\\_option=](https://www.channelcoast.org/data_management/real_time_data/charts/?chart=73&tab=info&disp_option=)

## Milford-on-Sea wave buoy

<b>Wave buoy location</b>	50° 42.75' N 001° 36.91' W
<b>WMO code</b>	6201009
<b>Approximate water depth</b>	10 m CD
<b>Approximate spring tidal range</b>	2 m
<b>Storm alert threshold</b>	2.74 m

