

Assessment of Coastal Erosion at Thorpeness

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27th February 2026

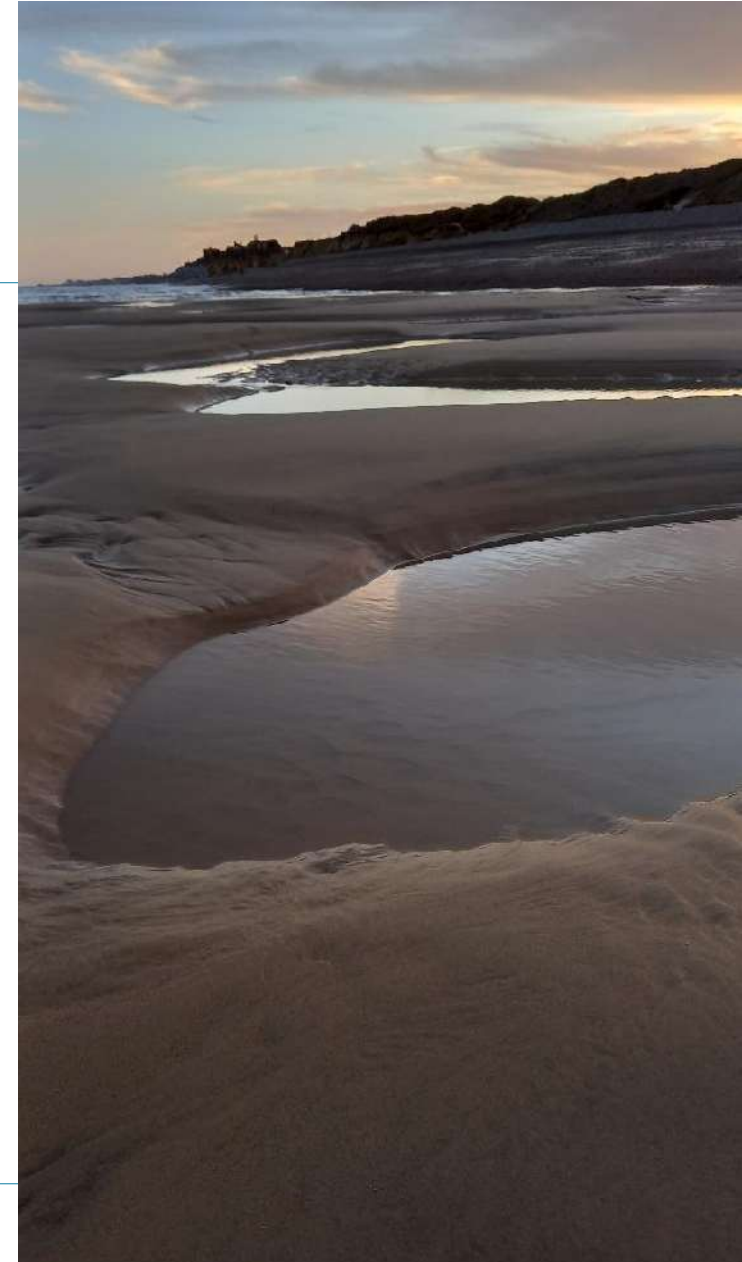


moffatt & nichol



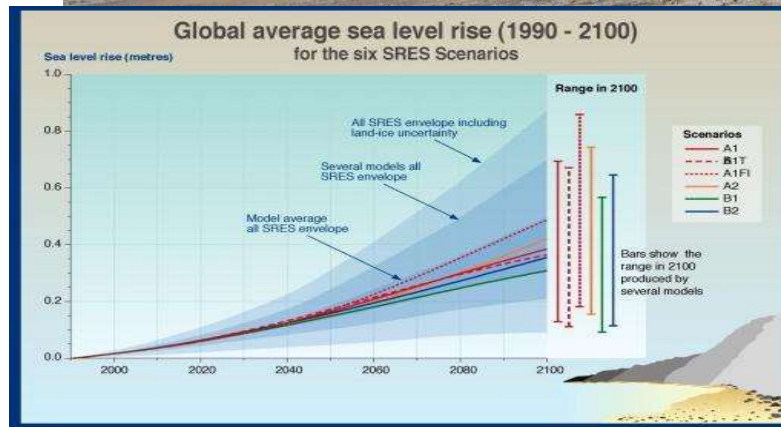
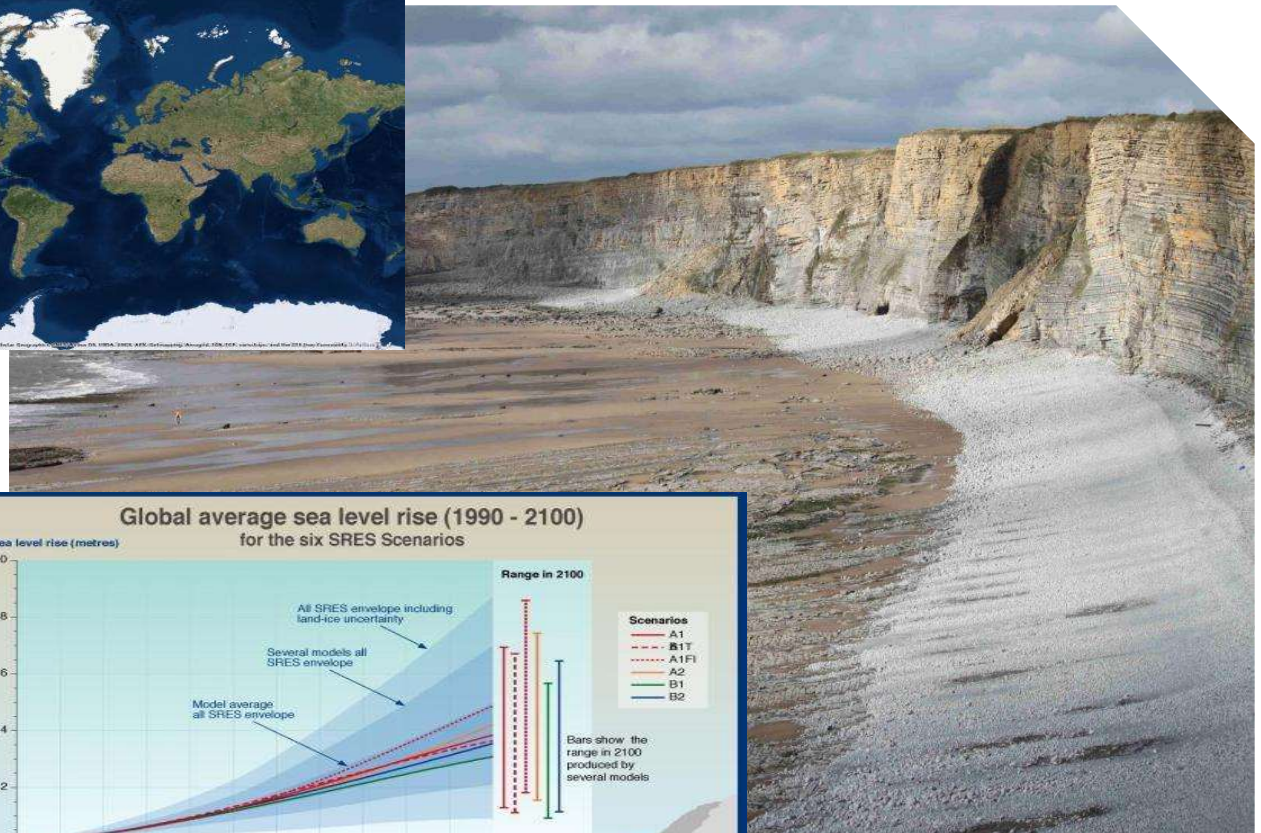
Scope

- › Extraordinary severe cliff erosion at Thorpeness
- › East Suffolk Council have requested support from Moffatt & Nichol (M&N) to explore possible future erosion potential
 - › drawing on intensive data collection
 - › to inform **near-term** coastal decision-making
- › M&N results are
 - › focussed on change to the summer (of 2026)
 - › iterative
 - › subject to high (diminishing) uncertainty



Environment Agency Research & Development Project

Cliff And Shore Sensitivity to Accelerated Sea Level Rise

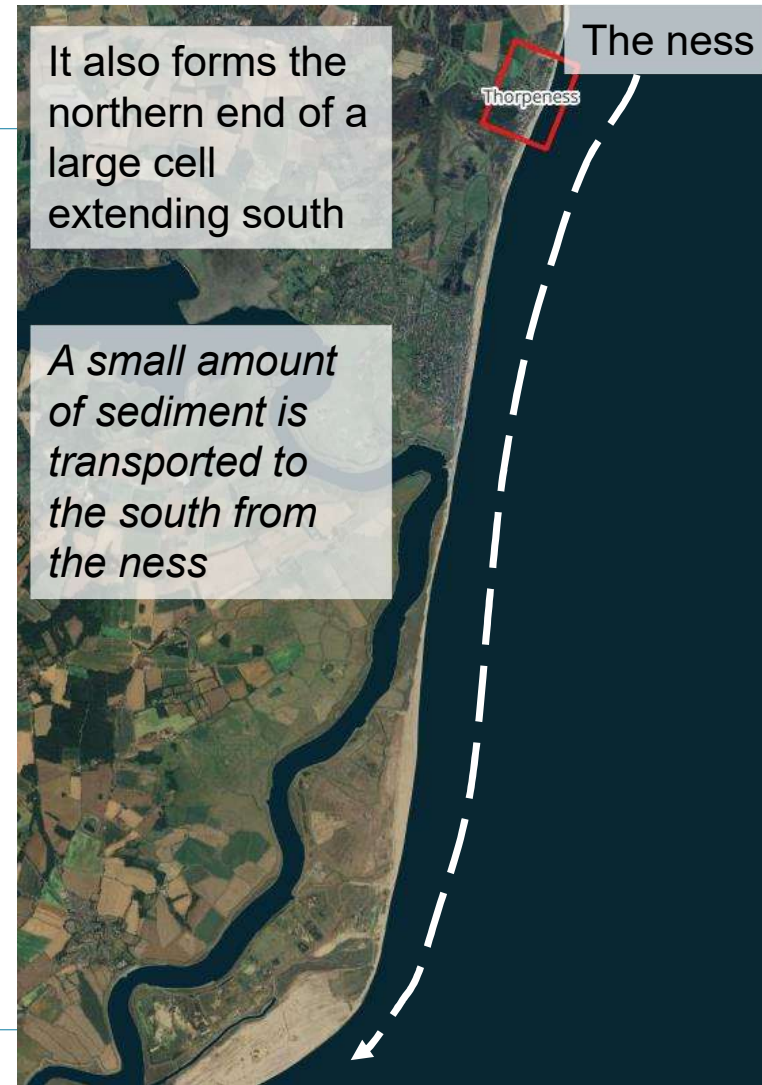
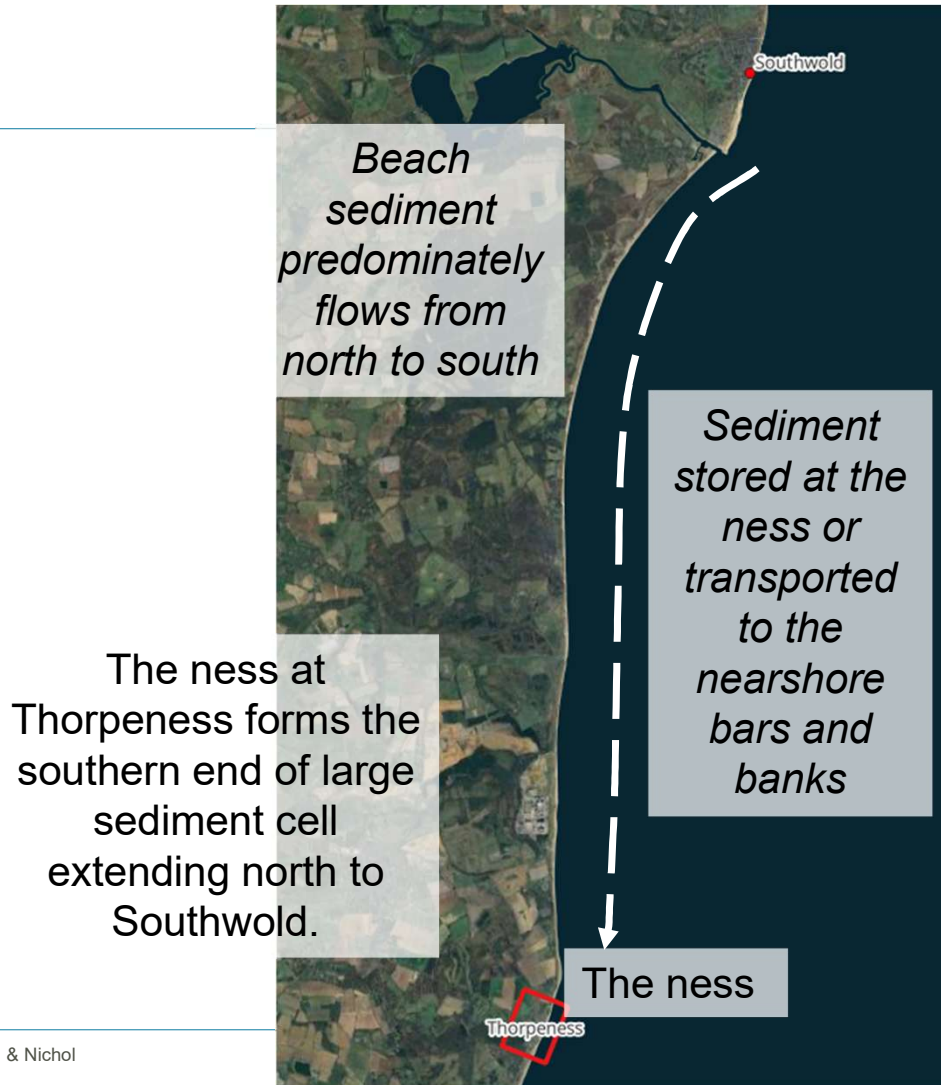


Approach

- › Develop context:
 - › Overview of study area including key features
 - › Review medium to long-term trends
- › Interpret recent erosion
 - › Review failure of defences (2024 to 2026)
 - › Analysis of survey data
- › Perform a high-level 'sediment balancing' assessment and expert interpretation



The Ness



Thorpeness Beach

- › Shingle over sand
- › The shingle is very valuable as a defence
 - › Good at absorbing wave energy
 - › Tends to be pushed up the beach by energetic waves
- › Sand is valuable as the foundation of the shingle
 - › Tends to be drawn down by energetic conditions



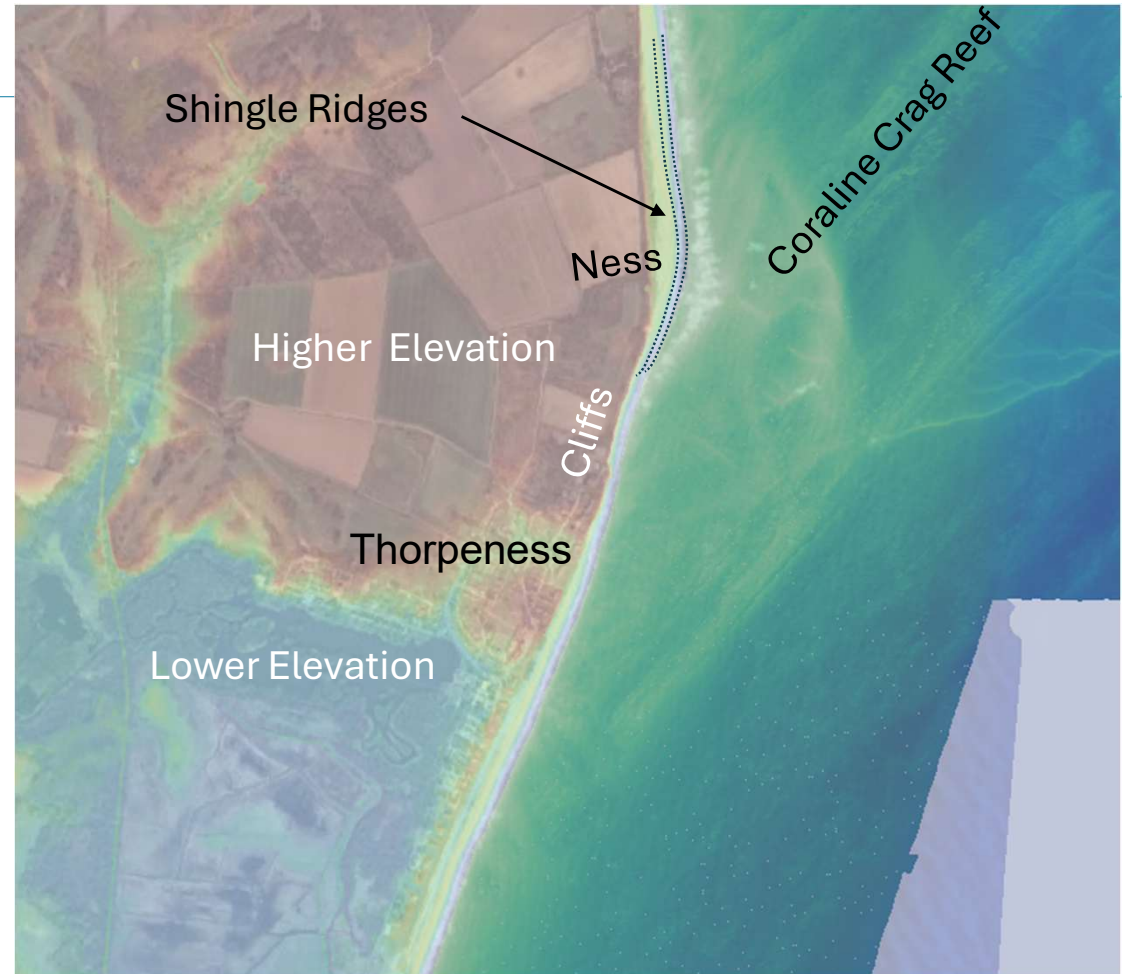
Thorpeness Cliffs

- › The Thorpeness cliffs are soft
 - › They need a beach for protection
 - › The beach (and cliffs) needs a shore platform
- › Sediments released from the cliffs are typically much finer than the shingle of which the upper beach is typically comprised
- › These are valuable for the lower beach, but of limited benefit for the upper beach
- › Some material is so fine it is readily washed away by waves and tides

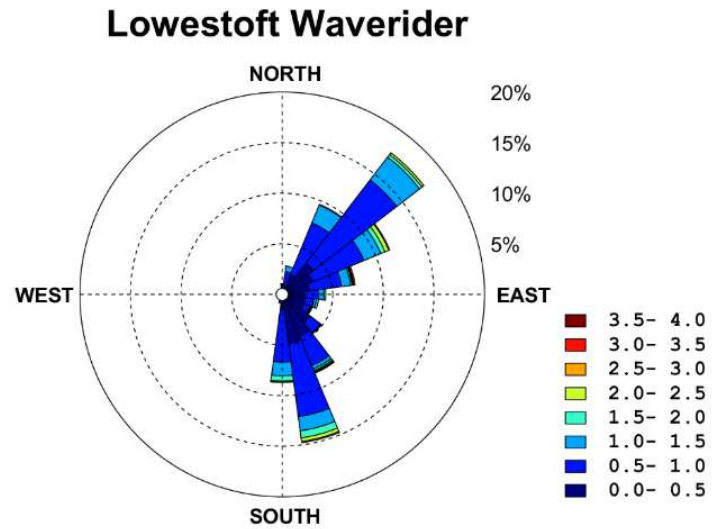


The Ness

- › The ness comprises:
 - › Shingle ridges, perched on;
 - › Subtidal sand platform and nearshore bar, over
 - › Coraline Crag reef
- › Ultimately it is the reef that anchors the ness, allowing this area to emerge as a headland
- › All these features influence the stability of the Thorpeness shoreline
 - › Protection from northerly waves
 - › Delivery of sediment



Wave Climate



Defences

- › The defences comprised:
 - › Gabion Baskets – introduced in the 1970s
 - › Geotextile Bags – introduced in 2011 following a storm in 2010
 - › Minor beach management
 - › Rock Revetment constructed early 2020s



Cliff Stability North of Thorpeness since 2001

- › Until 2001 cliffs appear to have been well vegetated and stable, protected by a relatively wide beach
- › By 2007 cliffs appear to have actively eroded and failed – less beach
- › By 2012 exposure of geotextile bags in front of the Red House and erosion of the adjacent cliff
- › Over the following years continual exposure of geotextile bags at the cliff toe as the beach gradually narrows



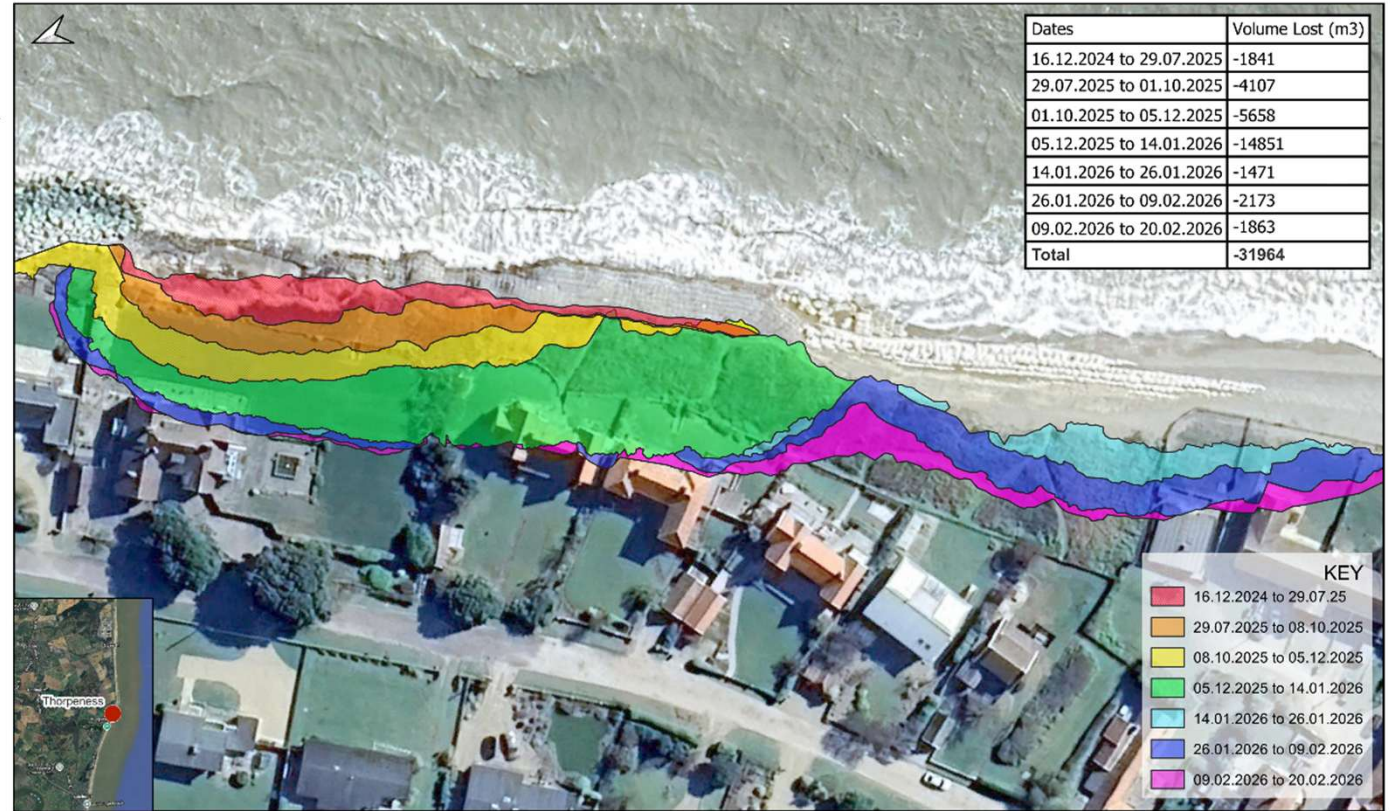
Approaching Winter 2025/26

- › Between Sept. 24 – Dec. 24 localized, bare cliff face is observed above gabion baskets - evidence of wave overtopping.
- › This may have coincided with a localised low point in the baskets – see Dec. 24 photo
- › After Dec. 24 – Oct. 25 baskets become increasingly degraded and less protective. This results in further cliff retreat here and further south.



Winter 2025/26

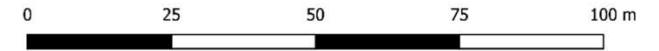
- › Rapid development of the embayment in the north
- › Losses then develop in the south
- › Clear dependence on residual benefits of structures
- › Effect of the structures is diminishing (with the exception of the Rock armour)
- › Delivered some 32,000 m³ of material into the coastal system (by 20th February 2026).



This project is funded by Delta as part of the 2025 Coastal Flood and Coastal Erosion Programme which is managed by the Environment Agency.



The programme will drive innovation in flood and coastal resilience and help tackle the changing climate.



Thorpeness | Volume of Material Lost Between December 2024 and February 2026

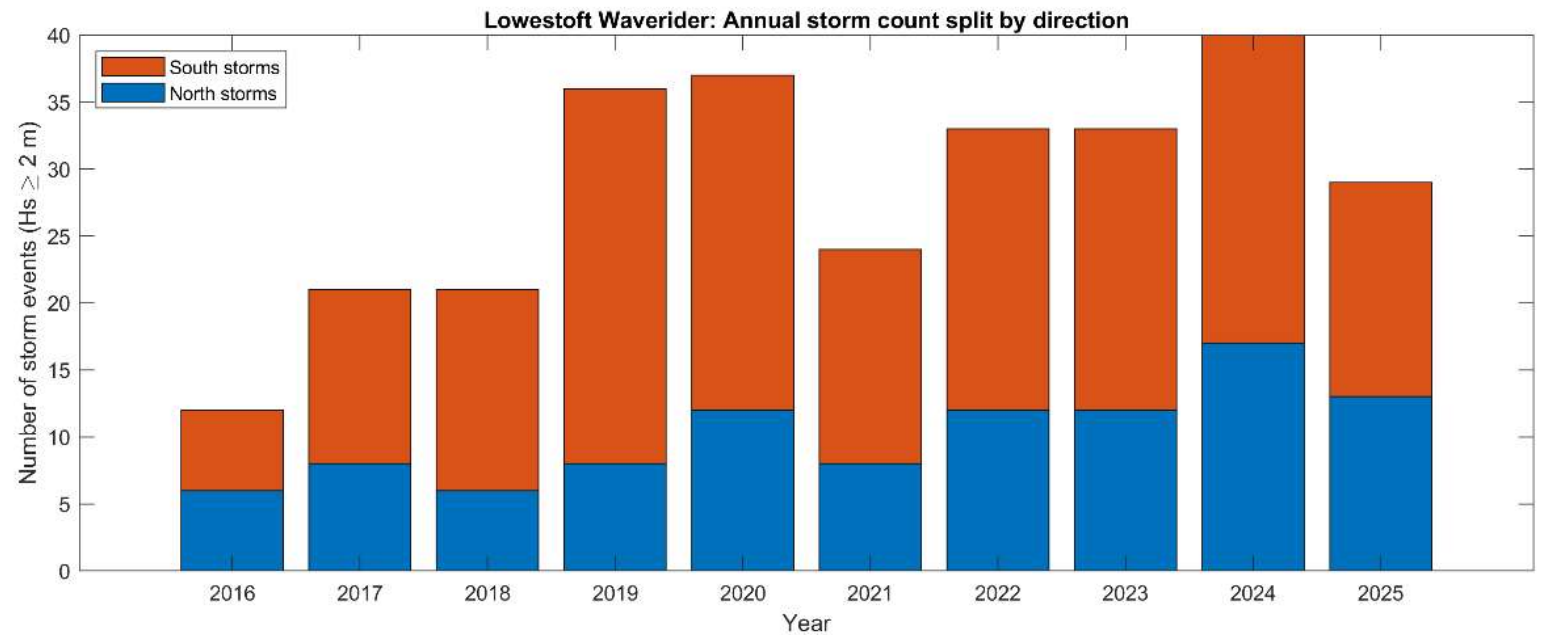
CPE February 2026

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Can These Losses be Explained by Recent Storms?

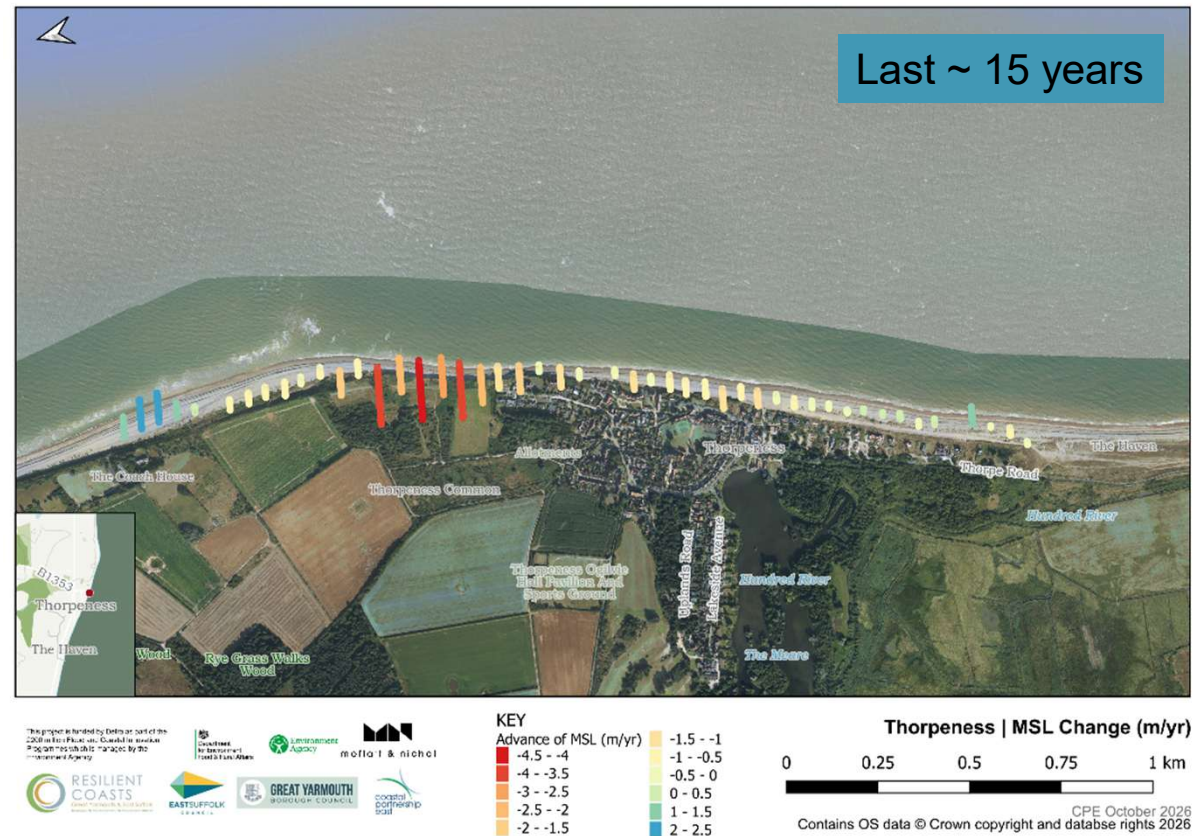
Storms in 2025 not unusual in terms of

- › Number
- › North/ South balance
- › Severity



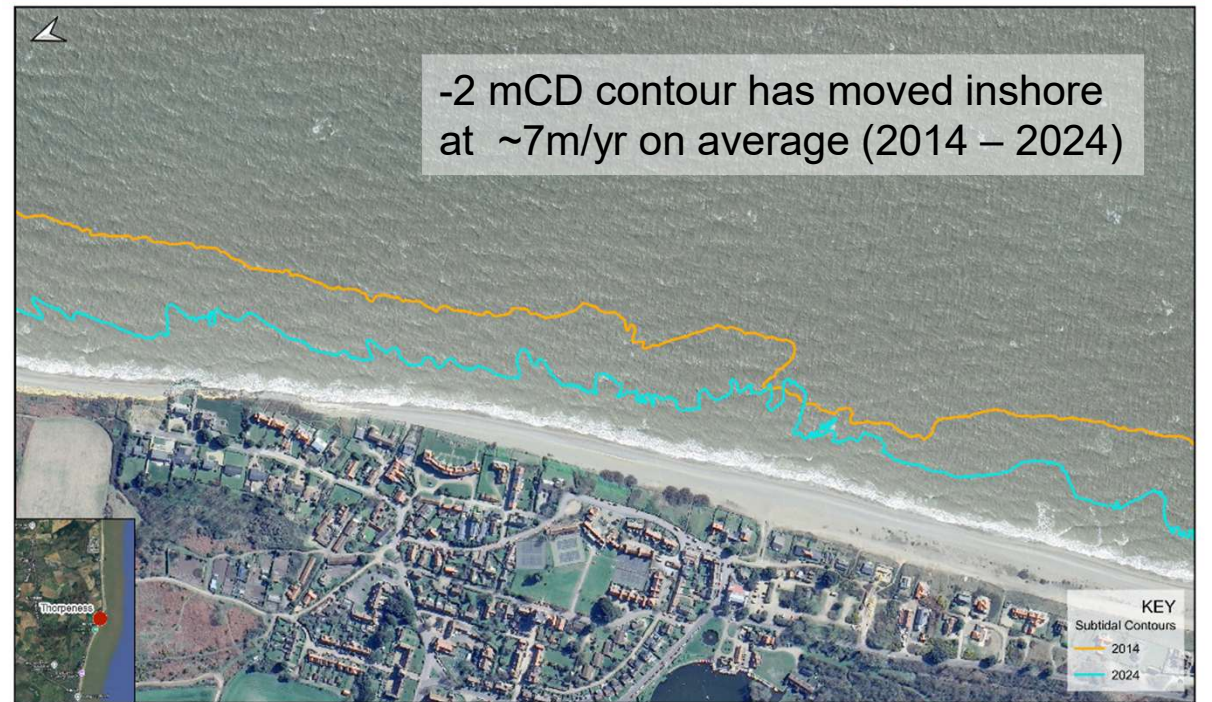
Are Losses Explained by a Sudden Drop in Beach Levels?

- › Observations of cliff retreat over this period coincide with beach loss
- › Since 2009/11, beach position along most of the frontage has fluctuated but generally retreated landwards
- › Highest rates of recession occur at the cliffs to the south of the ness
- › In most cases, except to the south of Thorpeness (Thorpe Road), this has resulted in a smaller beach over the last 15 years



Are Losses Explained by a Sudden Drop in Below Low Tide?

- › Between 2014 (possibly earlier) and 2024 (the most recent data) the nearshore has consistently **deepened** along the Thorpeness frontage.
- › Deeper nearshore waters tends to increase wave energy on the beach
- › May partly explain the trend for beach loss



This paper is funded by Defra as part of the £200m Flood and Coastal Erosion Risk Management plan, managed by the Marine Management Organisation.

The project names and other information included within this report have been checked for accuracy.



Thorpeness | Subtidal Contours Between 2014 and 2024

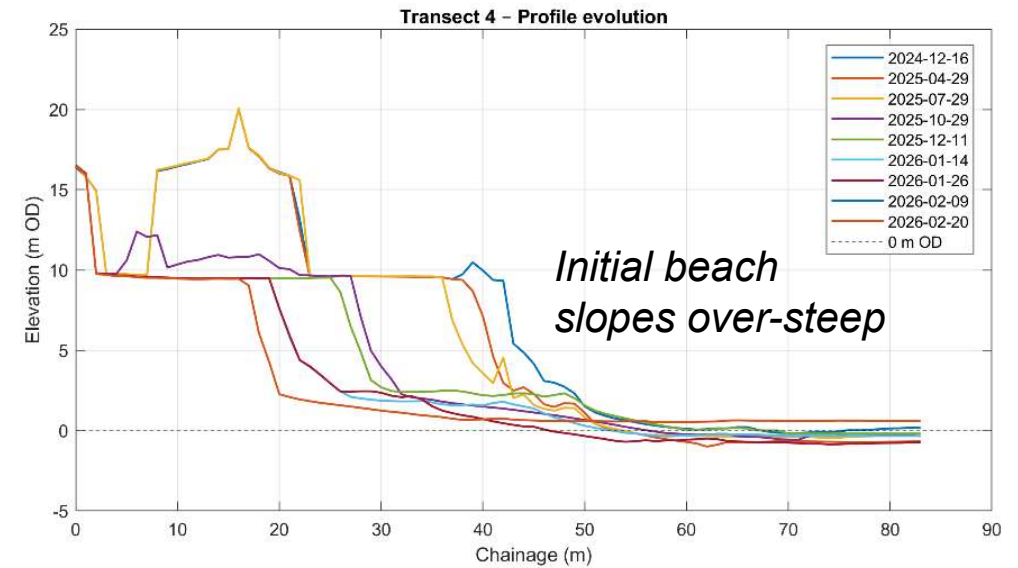
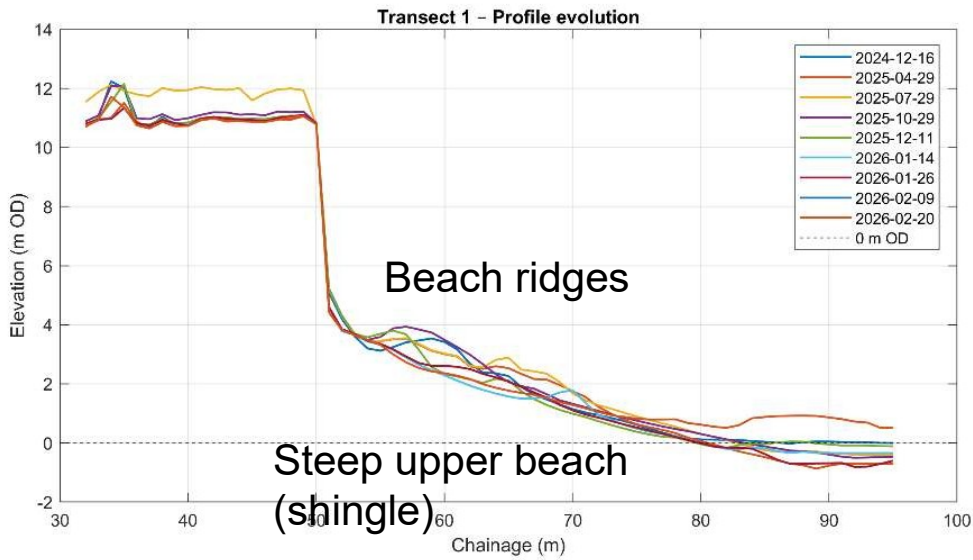
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Is the Shore in Equilibrium?

- › A simple common starting point for many assessments
- › Not a projection
- › Northern Thorpeness projecting as a (subtle) headland

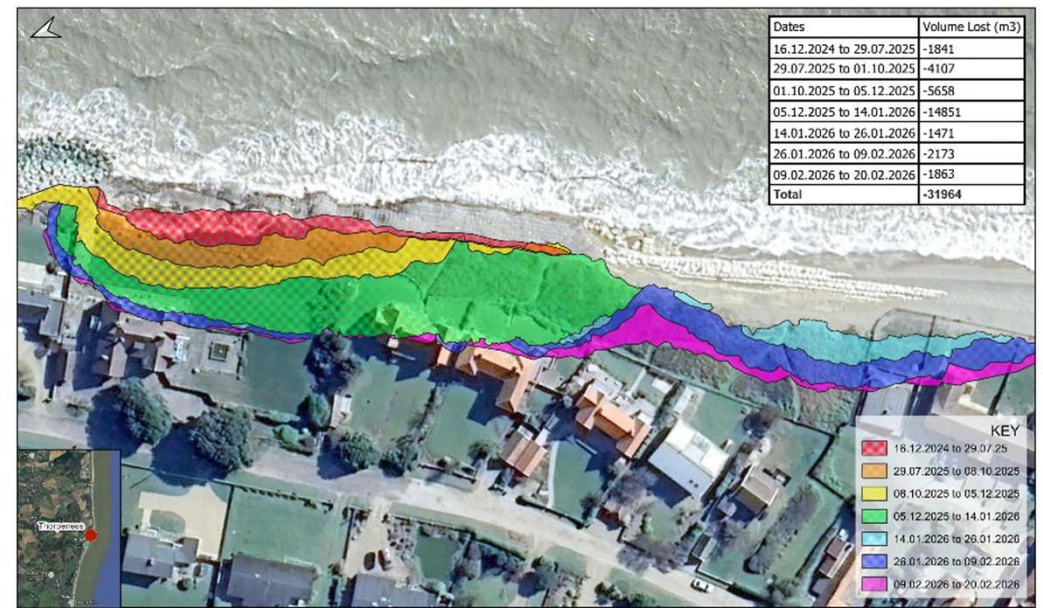


Cross-Shore Disequilibrium?



Interpretation of Past Change

- › Natural long-term retreat across this region
- › Northern part of Thorpeness village particularly prone to periods of higher exposure
- › Since 1970s the defences have held the cliff toe
- › Progressive losses of:
 - › Average beach level in front of defences
 - › The beach substrate level
 - › Cliffs to north
 - › Beach to south
- › Increasing disequilibrium (*recessive potential*)
 - › Shore 'primed' for a rapid response
 - › **Coastal 'catch-up'**
- › Response triggered by a spell of low beaches and defence loss
- › **Potential for 'over-correction'**



0 25 50 75 100 m

Thorpeness | Volume of Material Lost Between December 2024 and February 2026
CPE February 2026
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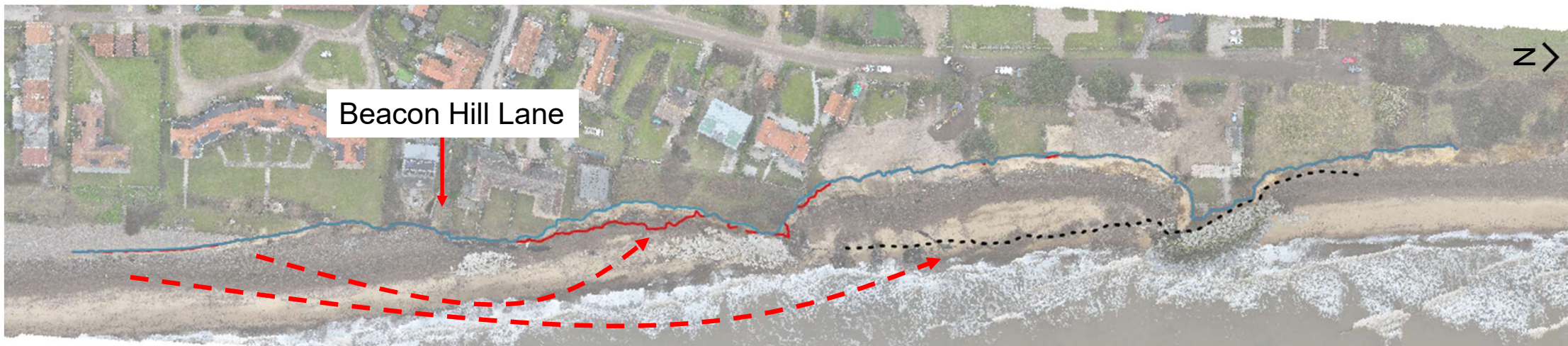
Narrative of Change to Summer 2026

- › **Assumed removal of defences**
- › Allows natural processes to reduce the localised 'headlands' immediately behind them.
- › This in turn promotes the movement of beach sediments along the shore, from the (relatively full) beaches to the south and the (currently quite limited) beaches to the north.
- › As sediment connectivity returns to the system the shoreline across the study area will tend to align with that to the north and to the south, becoming more continuous.
- › Once the more natural shoreline shape is reached recession rates can be expected to return to more natural rates
- › **Until this sediment connectivity returns the system is at risk of 'overcompensation' in the form of erosion beyond that needed for the recovery of equilibrium.**



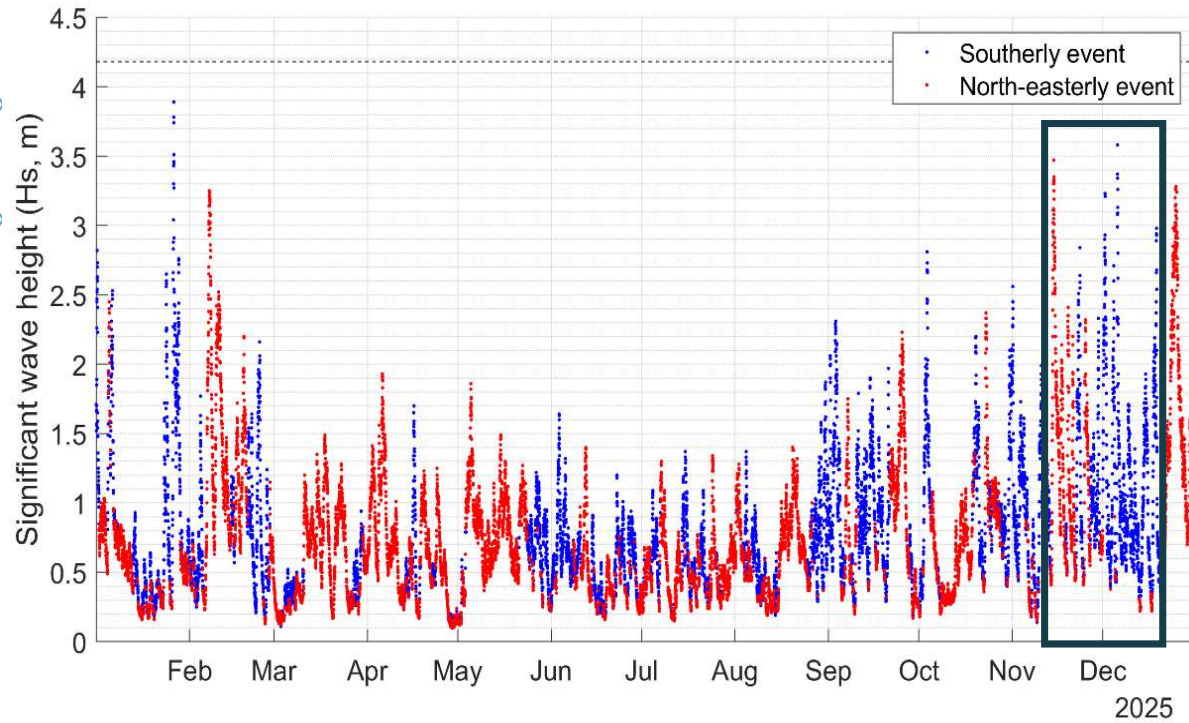
Projecting Future Change

- › A sediment balance method has been used to estimate the retreat of the shore to the south necessary to correct the sediment deficit
- › To complete this rapid assessment, we have assumed that sediment is released from the beach to the south of Beacon Hill Lane
- › It was further assumed that:
 - › highest retreat rates occur closest to the defended frontage; and
 - › the profile shape is maintained as it moves landwards.



Temporary Localised Beach Recovery

Observations suggest shingle influx to the Transect 4 area (e.g. photo from Jan. 26)



Change to Summer 2026



Best Estimate
Envelope of erosion potential

Conclusions

- › An analysis of erosion behaviours at Thorpeness (high-level and subject to uncertainty)
- › **Behaviours interpreted as coastal 'catch-up':**
 - › rapid losses triggered by defence failure
 - › due to disequilibrium (both along and across the shore)
- › Although defences had, for a time, held the cliff in place erosion continued:
 - › on the beach fronting the defences
 - › (probably) in the substrate of the beach
 - › along the cliffs to the north
 - › (to a lesser extent) along the beaches to the south
- › High-level estimate of the 'natural' equilibrium (dynamically stable) coastal form has been derived
- › Recommend reestablishing:
 - › cliff alignment and
 - › free movement of beach along the shore



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